



AGENDA

RETIREMENT BOARD MEETING

SPECIAL MEETING
October 20, 2016
9:00 a.m.

Retirement Board Conference Room
The Willows Office Park
1355 Willow Way, Suite 221
Concord, California

THE RETIREMENT BOARD MAY DISCUSS AND TAKE ACTION ON THE FOLLOWING:

1. Pledge of Allegiance.
2. Accept comments from the public.
3. Approve minutes from the September 14, 2016 meeting.

CLOSED SESSION

4. The Board will meet in closed session pursuant to Govt. Code Section 54956.9(d)(2) to confer with legal counsel regarding potential litigation.

OPEN SESSION

5. Educational presentation from Segal on Actuarial 101.
6. Presentation from Segal regarding the December 31, 2015 Valuation Report.
7. Consider and take possible action to adopt the December 31, 2015 Valuation Report and contribution rates for the period July 1, 2017 – June 30, 2018.
8. Consider and take possible action to approve the GASB 68 report from Segal.
9. Miscellaneous
 - a. Staff Report
 - b. Outside Professionals' Report
 - c. Trustees' Comments

The Retirement Board will provide reasonable accommodations for persons with disabilities planning to attend Board meetings who contact the Retirement Office at least 24 hours before a meeting.



Meeting Date
10/20/16
Agenda Item
#3

MINUTES

RETIREMENT BOARD MEETING MINUTES

REGULAR MEETING
September 14, 2016
9:00 a.m.

Retirement Board Conference Room
The Willows Office Park
1355 Willow Way, Suite 221
Concord, California

Present: Debora Allen, Candace Andersen, Jerry Holcombe, David MacDonald, John Phillips, William Pigeon, Gabe Rodrigues, Todd Smithey, Jerry Telles and Belinda Zhu (Deputy Treasurer, present and voting in Russell Watts' absence)

Absent: Scott Gordon, Louie Kroll and Russell Watts

Staff: Gail Strohl, Chief Executive Officer; Timothy Price, Chief Investment Officer; Karen Levy, General Counsel; Wrally Dutkiewicz, Compliance Officer; Henry Gudino, Accounting Manager; Christina Dunn, Administrative/HR Manager; Tim Hoppe, Retirement Services Manager; and Alexis Cox, Member Services Manager

Outside Professional Support:
Ed Hoffman
Susan Hastings
Masa Shirohira

Representing:
Verus Investors LLC
Laughlin, Falbo, Levy & Moresi LLP
Wiley Price & Radulovich LLP

1. **Pledge of Allegiance**

Andersen led all in the *Pledge of Allegiance*.

MacDonald was present for subsequent discussion and voting.

2. **Recognition of Kelli Ingersoll for 25 years of service and Francisca Citero for 20 years of service**

Phillips recognized and congratulated Kelli Ingersoll for her 25 years of service and Francisca Citero for her 20 years of service.

3. **Accept comments from the public**

No member of the public offered comment.

4. **Approval of Minutes**

It was M/S/C to approve the minutes of the July 13, 2016 meeting. (Yes: Andersen, Holcombe, MacDonald, Phillips, Rodrigues, Smithey, Telles and Zhu).

It was M/S/C to approve the minutes of the July 27, 2016 meeting with a correction to page 2, 5th line down, changing the word discuss to discussion. (Yes: Andersen, Holcombe, MacDonald, Phillips, Rodrigues, Smithey, Telles and Zhu).

It was M/S/C to approve the minutes of the August 10, 2016 meeting. (Yes: Andersen, Holcombe, MacDonald, Phillips, Rodrigues, Smithey, Telles and Zhu).

5. Routine Items

It was M/S/C to approve the routine items of the September 14, 2016 meeting. (Yes: Andersen, Holcombe, MacDonald, Phillips, Rodrigues, Smithey, Telles and Zhu)

CLOSED SESSION

The Board moved into closed session pursuant to Govt. Code Section 54957, 54957.6 and 54956.9(d)(1).

The Board moved into open session.

6. It was M/S/C to accept the Administrative Law Judge's recommendation and deny the service connected disability retirement for Nidia Santos. (Yes: Andersen, Holcombe, Phillips, Rodrigues, Smithey, Telles and Zhu. No: MacDonald)

Allen and Pigeon were present for subsequent discussion and voting.

7. This item was continued.

8. It was M/S/C to accept the Administrative Law Judge's recommendation and grant the service connected disability retirement for DiAngela Davis-Russell. (Yes: Allen, Andersen, Holcombe, MacDonald, Phillips, Rodrigues, Smithey and Zhu, Abs.: Telles)

9. It was M/S/C to accept the Administrative Law Judge's recommendation and grant the service connected disability retirement for David Reese. (Yes: Allen, Andersen, Holcombe, MacDonald, Phillips, Rodrigues, Telles and Zhu. No: Smithey)

10. It was M/S/C to accept the Administrative Law Judge's recommendation and deny the service connected disability retirement for Matthew Wastaney. (Yes: Allen, Andersen, Holcombe, MacDonald, Phillips, Rodrigues, Smithey, Telles and Zhu)

11. There was no reportable action related to Govt. Code Section 54957.6.

12. There was no reportable action related to Govt. Code Section 54956.9(d)(1).

Smithey was no longer present for subsequent discussion and voting.

13. Presentation from staff and Verus on recommended structure and manager lineup for liquidity sub-portfolio

Price gave a brief overview of the structure and manager lineup for the liquidity sub-portfolio.

Hoffman reviewed the evaluation criteria of the firms and the process for determining qualified firms. He defined solutions based managers and product based managers and the desirable benefits and potential drawbacks of combining a solutions manager with product managers. He noted that solutions managers combine investment strategies with liability modeling and cash flow management capabilities and products managers complete investment strategies only.

Hoffman reviewed the three finalist investment managers including their strategy, process and fees. He reviewed the liquidity portfolio design and the recommended positioning percentages for each manager.

Andersen and Pigeon were no longer present for subsequent discussion and voting.

14. Presentation from finalist liquidity managers proposing to serve CCCERA

- a) Insight Investment – Clifford Corso and Jesse Fogarty

Corso waived the confidentiality statement in the Insight Investment presentation materials.

- b) Dimensional Fund Advisors - David Plecha

- c) Sit Investment Associates – Bryce Doty

Fogarty, Plecha and Doty discussed the organizational structure of their respective company. Fogarty, Plecha and Doty discussed the investment fundamentals of their company. There was discussion on how communication would occur between the three organizations.

It was noted that Insight would act as the “quarterback” which would minimize the operational burden on staff and optimize the full liquidity portfolio around the exposures of the other managers.

15. Consider and take possible action to retain one or more liquidity managers and establish proposed liquidity sub-portfolio structure and procedures

It was M/S/C to retain Insight Investment with a 50% allocation of the liquidity sub portfolio, Dimensional Fund Advisors and Sit Investment Associates with 25% allocations each of the liquidity sub portfolio, subject to due diligence and authorize the CEO to negotiate and execute final contracts. (Yes: Allen, Holcombe, MacDonald, Phillips, Rodrigues, Telles and Zhu)

Zhu was no longer present for subsequent discussion and voting.

16. Consider and take possible action to authorize the CEO renew a maintenance and support agreement with CPAS Systems, Inc.

It was M/S/C to authorize the CEO to renew a one year maintenance and support agreement with CPAS Systems, Inc. (Yes: Allen, Holcombe, MacDonald, Phillips, Rodrigues and Telles)

17. Consider and take possible action to authorize the CEO to renew insurance policies for fiduciary and excess fiduciary liability insurance

It was M/S/C to authorize the CEO to renew insurance policies for fiduciary and excess fiduciary liability insurance. (Yes: Allen, Holcombe, MacDonald, Phillips, Rodrigues and Telles)

18. Consider and take possible action to issue a Request for Proposal for pension administration information management and reporting audit services

Dutkiewicz reviewed the background of Subledger and CPAS, noting the purpose of deploying CPAS was to eventually replace and decommission Subledger. In order for CCCERA to finalize the Subledger Decommissioning Plan an audit of key data points, processes and reports should be completed by an external auditor to provide assurance that its pension administration information and reporting capabilities will fully operate as intended in CPAS.

It was M/S/C to issue a request for proposal for pension administration information management and reporting audit services. (Yes: Allen, Holcombe, MacDonald, Phillips, Rodrigues and Telles)

19. Consider and take possible action on SACRS Voting Proxy Form

It was M/S/C to authorize MacDonald as the Voting Delegate and Rodrigues as the Alternate Voting Delegate to vote on behalf of CCCERA at the upcoming SACRS Conference. (Yes: Allen, Holcombe, MacDonald, Phillips, Rodrigues and Telles)

The previous motion was rescinded and it was M/S/C to continue this item to the next meeting. (Yes: Allen, Holcombe, MacDonald, Phillips, Rodrigues and Telles)

20. Consider and take possible action to temporarily suspend the use of Vertas in the transition manager pool

Hoffman reported the SEC filed a securities enforcement action Compliant against GTS and three of its executive level employees. He noted that the majority of the Vertas transition management team was previously employed by GTS. Verus is recommending excluding Vertas from transition management activity at least until the SEC has concluded its case against GTS and each of the three executive level employees.

It was M/S/C to temporarily suspend the use of Vertas in the transition manager pool until there is resolution from the SEC. (Yes: Allen, Holcombe, MacDonald, Phillips and Rodrigues. Abs.: Telles)

21. Consider authorizing the attendance of Board and/or staff:

- a. There was no action on this item.
- b. It was M/S/C to authorize the attendance of all Board members and 7 staff members at the SACRS Fall Conference, SACRS, November 8-11, 2016, Indian Wells, CA. (Yes: Allen, Holcombe, MacDonald, Phillips, Rodrigues and Telles)
- c. It was M/S/C to authorize the attendance of 1 staff member at the Long Wharf Real Estate Partners Annual Meeting, November 16-17, 2016, Dallas, TX. (Yes: Allen, Holcombe, MacDonald, Phillips, Rodrigues and Telles)

22. Miscellaneous

(a) Staff Report –

Strohl reported in the past active and retired members have received separate newsletters but starting now there will be a combined newsletter for all members. Next month she will bring a draft strategic plan to the board.

Dunn reported we had CCCERA's 2nd benefits open enrollment workshop for staff and it went well.

Dutkiewicz reported he is continuing to work on documenting the Subledger decommissioning project and procedures for the member services department.

Gudino will be interviewing for the vacant Accounting Supervisor on Friday; he is working on receiving contributions from employers through wire transfers.

Price reported the on-site visits for the liquidity managers will be on September 29th to Dimensional Fund Advisors and October 5th to Insight Investment.

(b) Outside Professionals' Report -

None

(c) Trustees' comments –

Rodrigues reported he reviewed the County Employees' Retirement Law of 1937 and noticed there is a lot of information on normal cost and asked if there could be an educational session on normal cost. Strohl noted that Segal will provide an educational session on normal cost when the valuation report is presented to the Board.

It was **M/S/C** to adjourn the meeting. (Yes: Allen, Holcombe, MacDonald, Phillips, Rodrigues and Telles)

John Phillips, Chairman

Scott Gordon, Secretary

Meeting Date
10/20/16
Agenda Item
#5

**Contra Costa County Employees'
Retirement Association (CCCERA)**

 Segal Consulting

Actuarial 101

October 20, 2016

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

*John Monroe, ASA, MAAA, EA
Vice President & Actuary*

The Segal Group

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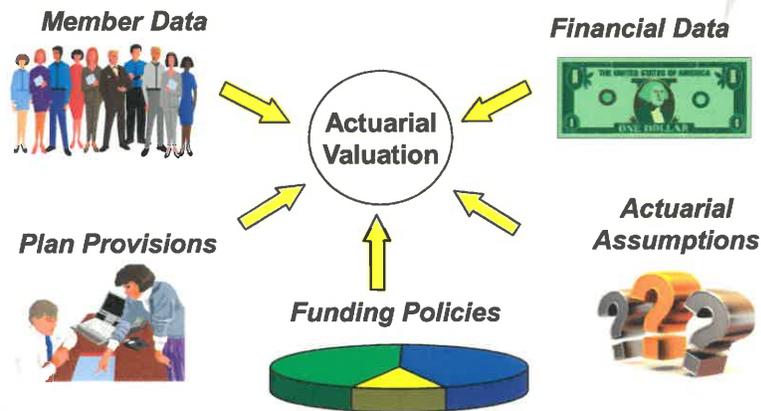
 Segal Consulting 1

Actuarial Procedures and Decisions

- **Actuarial valuation (performed every year):**
 - Provides recommended employer and employee contribution rates
 - Also funded status, review of recent experience
- **Experience analysis (performed every 3 years):**
 - Provides recommended economic and demographic assumptions
 - Study completed in first half of 2016
 - Assumptions adopted by Board effective with December 31, 2015 valuation
- **Funding policy**
 - Full review of all policy components in 2013/2014
 - Substantive review only as needed

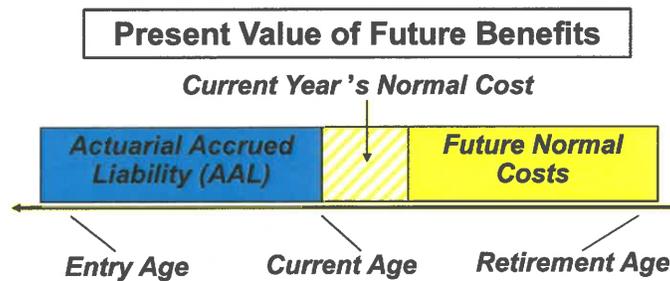
 Segal Consulting 2

What goes into an Actuarial Valuation?

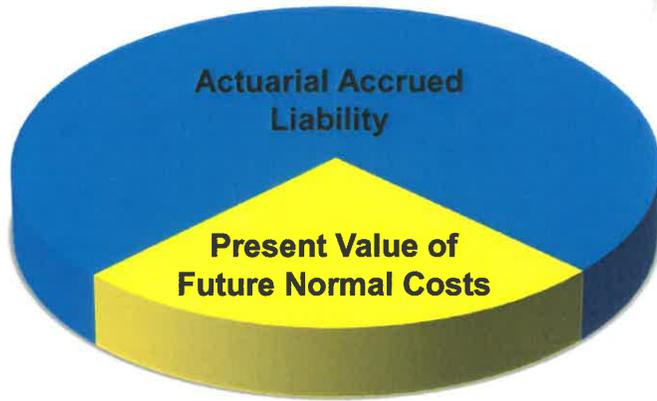


Actuarial Terminology

- **The Normal Cost is the portion of the long term cost allocated to a year of service**—only active members have a current Normal Cost
- **The Actuarial Accrued Liability (AAL) measures the Normal Costs from past years**—for retired members, the AAL is the entire present value of their benefit

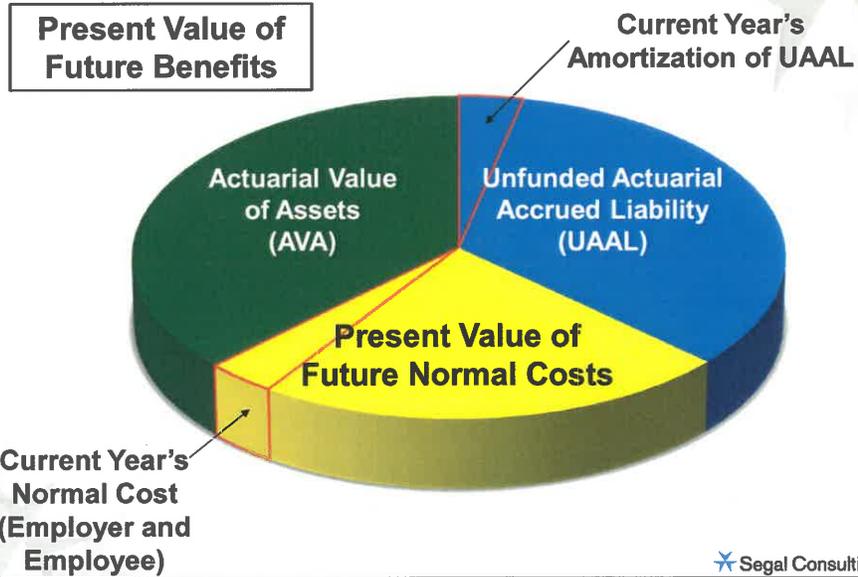


Present Value of Future Benefits—Entire Plan



Segal Consulting 5

Contribution Elements



Segal Consulting 6

Funding Policy – Three funding policy components

- Actuarial cost method – changed in December 31, 2009 valuation
 - Entry age – level percent of pay Normal Cost
- Asset smoothing
 - 5-year smoothing period with no “market value corridor”
- Unfunded Actuarial Accrued Liability amortization
 - Declining period for all UAAL as of December 31, 2007
 - 7 years remaining as of December 31, 2015
 - Layered approach for UAAL established after December 31, 2007
 - 18-year periods for gains/losses or changes in actuarial assumptions
 - 10-year period for plan amendments
 - » Except retirement incentives which are funded in full upon adoption of incentive
 - Level percent of pay amortization

✧ Segal Consulting 7

Selection of Actuarial Assumptions

- Two kinds: demographic and economic
 - Objective, long term
 - Based on triennial experience analysis
 - Consistency among assumptions, especially economic
- Recent experience and/or future expectations
 - Demographic: recent experience
 - Economic: more forward looking and macroeconomic
- Client specific or not
 - For Segal and CCCERA all are client specific except price inflation
- Desired long term cost pattern
 - Good assumptions produce level costs
 - Equity among different generation of tax payers
 - Also equity between employer and member contributions
 - Beware “results based” assumption setting

✧ Segal Consulting 8

Role of Assumptions and Methods

$$\mathbf{C + I = B + E}$$

Contributions + Investment Income
equals
Benefit Payments + Expenses

- Actuarial valuation determines the current or “measured” cost, not the ultimate cost
- Assumptions and funding methods affect only the timing of costs



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

John Monroe, ASA, EA, MAAA
Vice President and Actuary

JEM/gxk

SECTION 1

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

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

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

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

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
Average Employer Contribution Rates⁽¹⁾:				
General	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
Safety				
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
All Employers combined	39.23%	\$292,782,263	40.06%	\$279,598,401
Average Member Contribution Rates⁽¹⁾:				
General	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
Safety				
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
All Categories Combined	12.09%	\$90,220,114	11.84%	\$82,617,142

⁽¹⁾ 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	
Refundability Factors				
General	Legacy Tiers	PEPRA Tiers	Legacy Tiers	PEPRA Tiers
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
Safety				
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
Funded Status:				
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	
Key Assumptions:				
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

	December 31, 2015	December 31, 2014	Percentage Change
Active Members:			
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%
Retired Member and Beneficiaries:			
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%
Vested Terminated Members:			
Number of terminated vested members ⁽¹⁾	2,790	2,647	5.4%
Average age	46.5	46.7	N/A
Summary of Financial Data:			
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

⁽¹⁾ 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

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

- 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

Year Ended December 31	Active Members	Vested Terminated Members⁽¹⁾	Retired Members and Beneficiaries	Ratio of Non-Actives to Actives
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

⁽¹⁾ 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

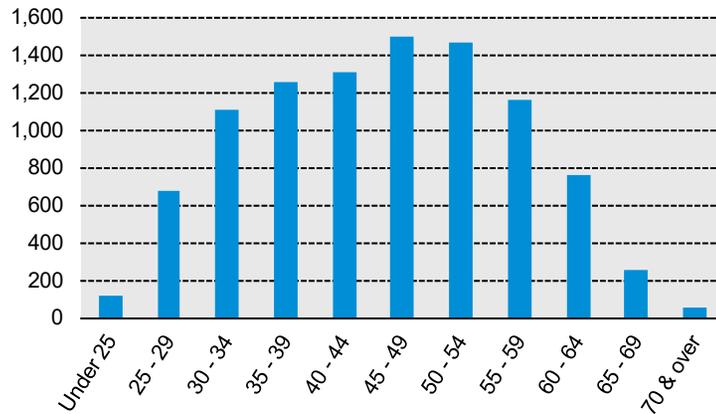
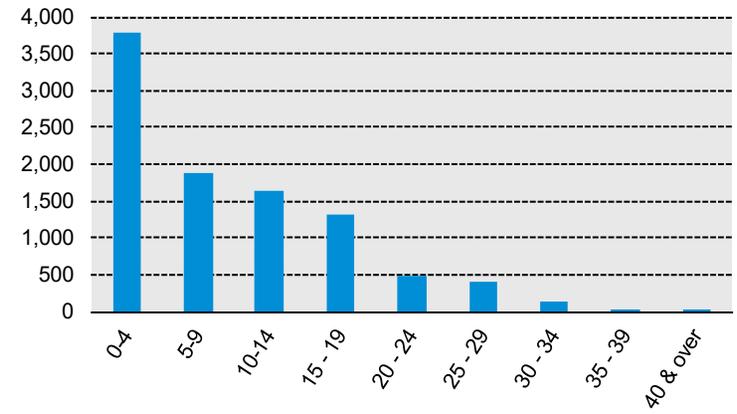


CHART 3
Distribution of Active Members by Years of Service as of December 31, 2015



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

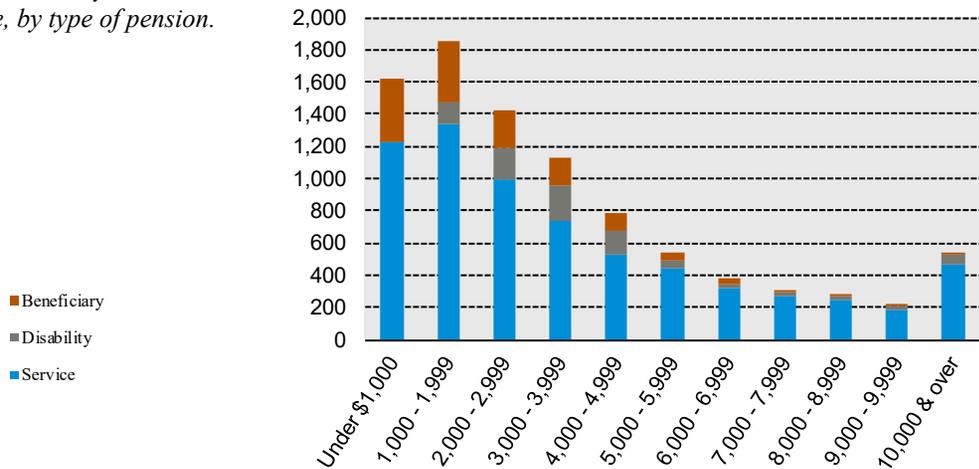
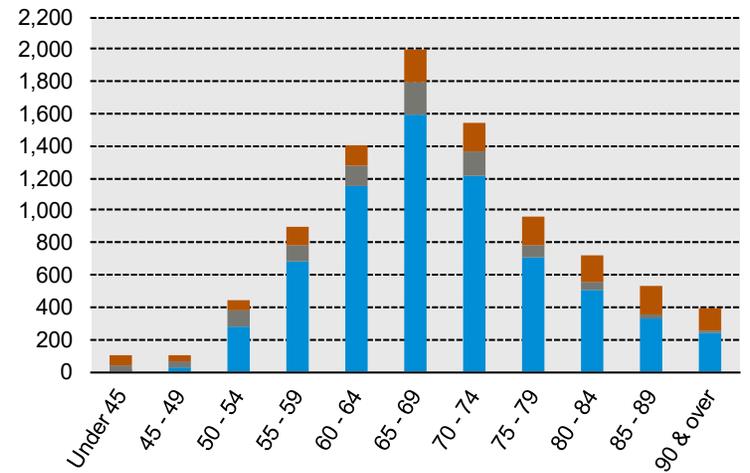


CHART 5

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.

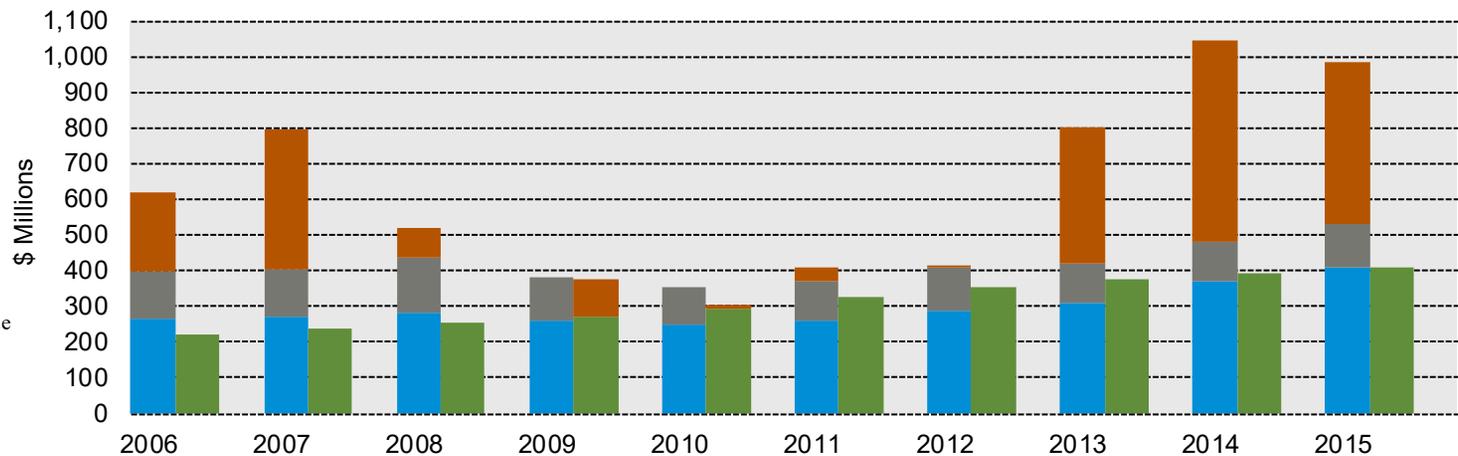
Retirement plan assets change as a result of the net impact of these income and expense components. The adjustment toward market value shown in the chart is the “non-cash” earnings on investment implicitly included in the Actuarial Value of Assets. Additional financial information, including a summary 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 Return
From	To	Return (net)	Return (net)	Gain (Loss)		
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 ⁽¹⁾						\$(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>

⁽¹⁾ *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 General County and Small Districts	Cost Group #3 Central Contra Costa Sanitary District	Cost Group #4 Contra Costa Housing Authority	Cost Group #5 Contra Costa County Fire Protection District	Cost Group #6 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					Total
	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.

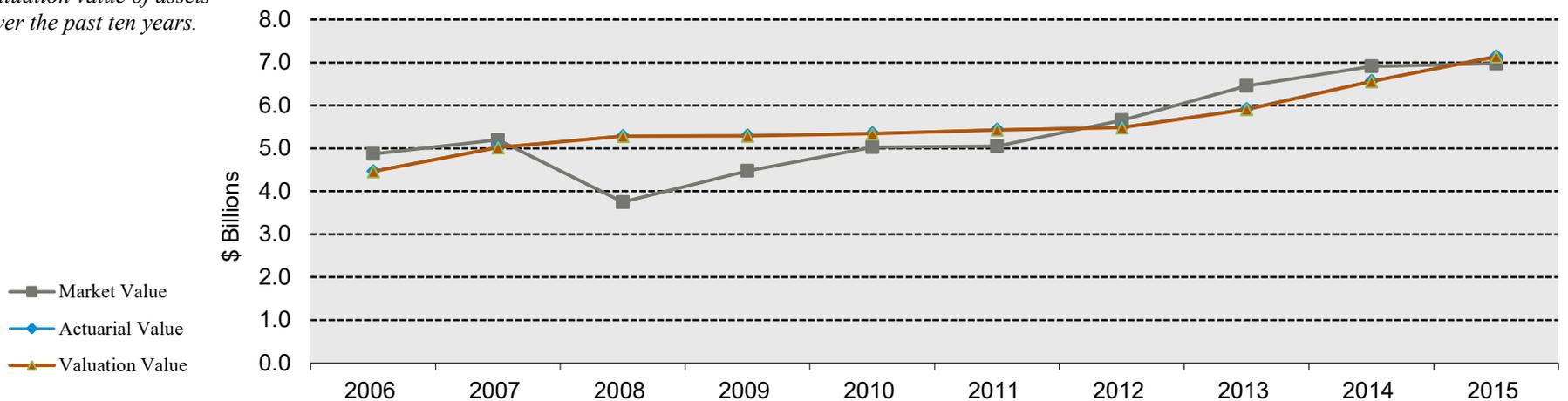
SECTION 2: Valuation Results for the Contra Costa County Employees' Retirement Association

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

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.

**CHART 10
Actuarial Experience for Year Ended December 31, 2015**

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

⁽¹⁾ Details in Chart 11

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

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

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

	Market Value	Actuarial Value	Valuation Value
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

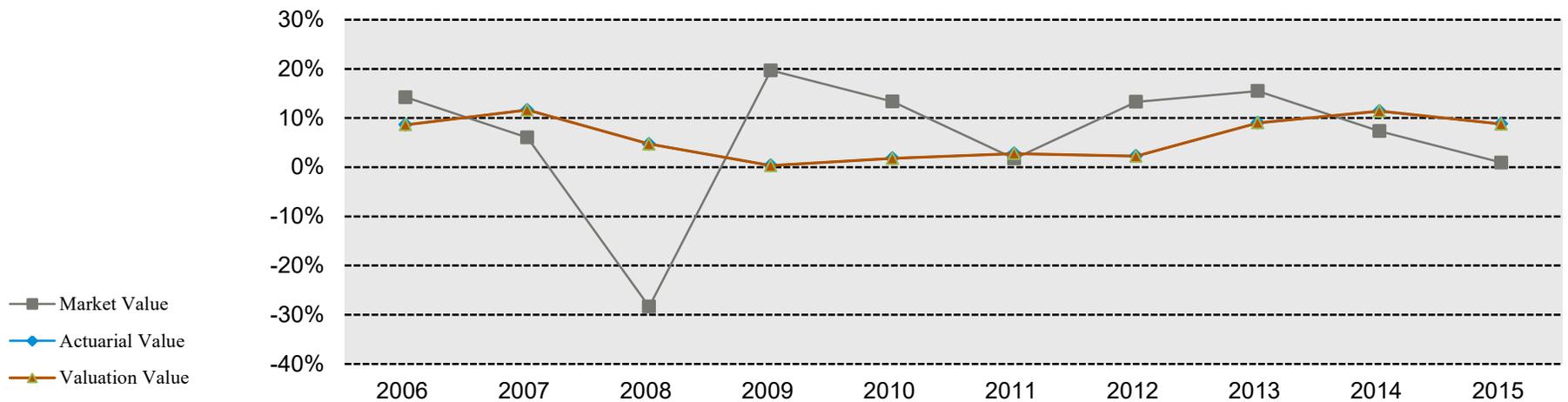
Year Ended December 31	Market Value Investment Return		Actuarial Value Investment Return		Valuation Value Investment Return	
	Amount	Percent of Assets	Amount	Percent of Assets	Amount	Percent of Assets
2006	603,899,378	14.23%	353,776,306	8.63%	352,838,472	8.64%
2007	294,694,885	6.03%	522,206,583	11.63%	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.

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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



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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.

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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

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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

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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.

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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.

	<u>Average Normal Cost Rates Before Administrative Expense</u>	<u>Weighting</u>	<u>Total Loading</u>
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.

<u>Allocation of Administrative Expense Load as % of Payroll</u>	
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

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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

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Summary of Cost Groups and Employers

GENERAL

Cost Group	Employer Name	Benefit Structure	Special Adjustment
(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	

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Summary of Cost Groups and Employers (continued)

SAFETY

Cost Group	Employer Name	Benefit Structure	Special Adjustment
(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.

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

Cost Group #1	December 31, 2015 (Recommended Rates for FY 17-18) ⁽¹⁾				December 31, 2014 (Recommended Rates for FY 16-17)			
	Basic	COLA	Total	Estimated Annual Amount	Basic	COLA	Total	Estimated Annual Amount
County General Tier 1 w/Courts								
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			
Cost Group #1 District General Tier 1 w/o POB								
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			
Cost Group #1 District General Tier 1 w/ POB (Moraga)								
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			
Cost Group #1 District General Tier 1 w/ UAAL Prepayment (First Five)								
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			

⁽¹⁾ 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.

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

Cost Group #1	December 31, 2015 (Recommended Rates for FY 17-18) ⁽¹⁾				December 31, 2014 (Recommended Rates for FY 16-17)			
	Basic	COLA	Total	Estimated Annual Amount	Basic	COLA	Total	Estimated Annual Amount
County General Tier 4 (3% COLA) w/ Courts								
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		
Cost Group #1 District General Tier 4 (3% COLA) w/o POB								
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		
Cost Group #1 District General Tier 4 (3% COLA) w/ POB (Moraga)								
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		
Cost Group #1 District General Tier 4 (3% COLA) with UAAL Prepayment (First Five)								
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		

⁽¹⁾ 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) ⁽¹⁾				December 31, 2014 (Recommended Rates for FY 16-17)			
	Basic	COLA	Total	Estimated Annual Amount	Basic	COLA	Total	Estimated Annual Amount
Cost Group #1								
County General Tier 4 (2% COLA) w/ Courts								
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		
Cost Group #2								
County General Tier 3 w/ Courts								
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		
Cost Group #2								
District General Tier 3 w/o POB								
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		
Cost Group #2								
County General Tier 5 (3%/4% COLA) w/ Courts								
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		

⁽¹⁾ 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) ⁽¹⁾				December 31, 2014 (Recommended Rates for FY 16-17)			
	Basic	COLA	Total	Estimated Annual Amount	Basic	COLA	Total	Estimated Annual Amount
Cost Group #2								
District General Tier 5								
(3%/4% COLA) w/o POB								
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			
Cost Group #2								
County General Tier 5								
(2% COLA) w/ Courts								
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			
Cost Group #2								
District General Tier 5								
(2% COLA) w/o POB								
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			

⁽¹⁾ 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 #3	December 31, 2015 (Recommended Rates for FY 17-18) ⁽¹⁾				December 31, 2014 (Recommended Rates for FY 16-17)			
	Basic	COLA	Total	Estimated Annual Amount	Basic	COLA	Total	Estimated Annual Amount
CCCSD General Tier 1								
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			
Cost Group #3 CCCSD General Tier 4 (3% COLA)								
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			
Cost Group #4 Contra Costa Housing Authority General Tier 1								
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			
Cost Group #4 Contra Costa Housing Authority General Tier 4 (3% COLA)								
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			

⁽¹⁾ 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 #5	December 31, 2015 (Recommended Rates for FY 17-18) ⁽¹⁾				December 31, 2014 (Recommended Rates for FY 16-17)			
	Basic	COLA	Total	Estimated Annual Amount	Basic	COLA	Total	Estimated Annual Amount
CCCCFPD General Tier 1								
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			
Cost Group #5 CCCCFPD General Tier 4 (3% COLA)								
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			
Cost Group #5 CCCCFPD General Tier 4 (2% COLA)								
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			

⁽¹⁾ 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) ⁽¹⁾				December 31, 2014 (Recommended Rates for FY 16-17)			
	Basic	COLA	Total	Estimated Annual Amount	Basic	COLA	Total	Estimated Annual Amount
Cost Group #6 Non-Enhanced District General Tier 1								
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			
Cost Group #6 Non-Enhanced District General Tier 4 (3% COLA)								
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			
Cost Group #7 County Safety Tier A								
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			
Cost Group #7 County Safety Tier D								
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			

⁽¹⁾ 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) ⁽¹⁾				December 31, 2014 (Recommended Rates for FY 16-17)			
	Basic	COLA	Total	Estimated Annual Amount	Basic	COLA	Total	Estimated Annual Amount
Cost Group #8								
CCCYPD Safety Tier A								
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			
Cost Group #8								
East CCCYPD Safety Tier A								
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			
Cost Group #8								
CCCYPD Safety Tier D								
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			
Cost Group #8								
East CCCYPD Safety Tier D								
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			

⁽¹⁾ 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) ⁽¹⁾				December 31, 2014 (Recommended Rates for FY 16-17)			
	Basic	COLA	Total	Estimated Annual Amount	Basic	COLA	Total	Estimated Annual Amount
CCCCFPD Safety Tier E								
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			
Cost Group #9								
County Safety Tier C								
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			
Cost Group #9								
County Safety Tier E								
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			

⁽¹⁾ 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) ⁽¹⁾				December 31, 2014 (Recommended Rates for FY 16-17)			
	Basic	COLA	Total	Estimated Annual Amount	Basic	COLA	Total	Estimated Annual Amount
Cost Group #10								
Moraga-Orinda FD Safety Tier A								
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			
Cost Group #10								
Moraga-Orinda FD Safety Tier D								
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			
Cost Group #11								
San Ramon FD Safety Tier A								
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			
Cost Group #11								
San Ramon FD Safety Tier D								
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			

⁽¹⁾ 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) ⁽¹⁾				December 31, 2014 (Recommended Rates for FY 16-17)			
	Basic	COLA	Total	Estimated Annual Amount	Basic	COLA	Total	Estimated Annual Amount
Cost Group #12								
Non-Enhanced Rodeo-Hercules								
FPD Safety Tier A								
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> ⁽²⁾	<u>1,272,039</u>	<u>40.78%</u>	<u>26.57%</u>	<u>67.35%</u> ⁽³⁾	<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			
Cost Group #12								
Non-Enhanced Rodeo-Hercules								
FPD Safety Tier D								
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> ⁽²⁾	<u>303,321</u>	<u>40.78%</u>	<u>26.57%</u>	<u>67.35%</u> ⁽³⁾	<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			
Total All Employers Combined (Aggregate)								
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			

⁽¹⁾ 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.

⁽²⁾ 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.

⁽³⁾ 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 ⁽¹⁾	Estimated Annual Dollar Cost ⁽²⁾
Recommended Average Employer Contribution Rate in December 31, 2014 Valuation	40.06%	\$279,598,401
Effect of investment (gain)/loss ⁽³⁾	(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 ⁽⁴⁾
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 ⁽⁵⁾	(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
Total change	(0.83%)	13,183,862
Recommended Average Employer Contribution Rate in December 31, 2015 Valuation	39.23%	\$292,782,263

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

⁽²⁾ Based on projected total payroll for each valuation date shown.

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

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

⁽⁵⁾ 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 ⁽¹⁾	Estimated Annual Dollar Cost ⁽²⁾
Recommended Average Member Contribution Rate in December 31, 2014 Valuation	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 ⁽³⁾	<u>(0.15%)</u>	<u>4,617,561</u>
Total change	<u>0.25%</u>	<u>\$7,602,972</u>
Recommended Average Member Contribution Rate in December 31, 2015 Valuation	12.09%	\$90,220,114

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

⁽²⁾ Based on projected total payroll for each valuation date shown.

⁽³⁾ 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

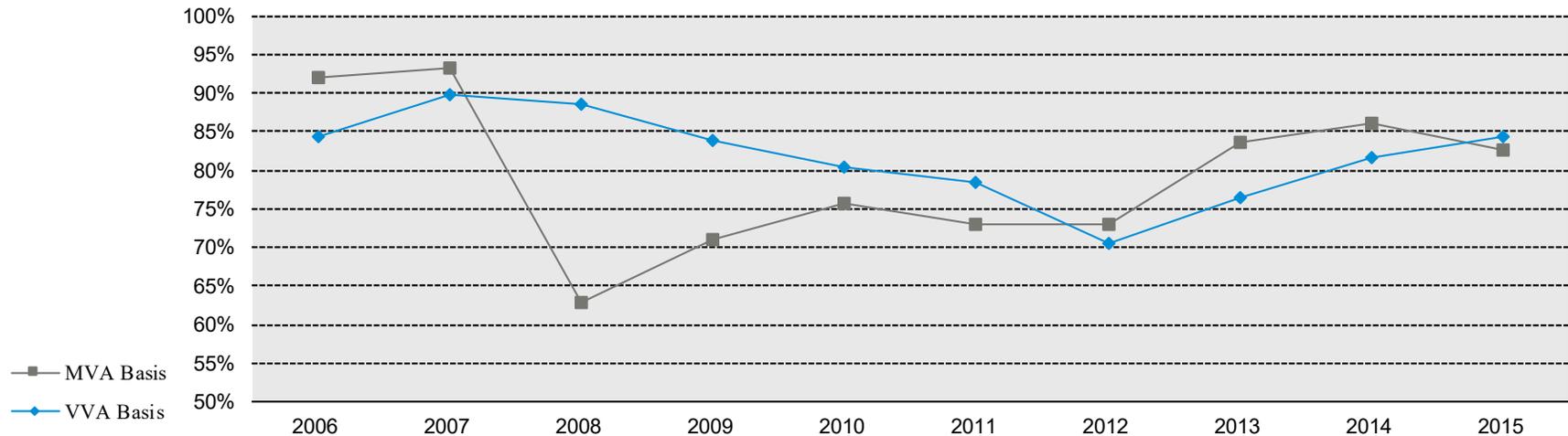
E. FUNDED RATIO

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

Actuarial Valuation Date	Valuation Value of Assets⁽¹⁾ (a)	Actuarial Accrued Liability (AAL)⁽²⁾ (b)	Unfunded/ (Overfunded) AAL (UAAL) (b) – (a)	Funded Ratio (a) / (b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll [(b) – (a)] / (c)
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%

⁽¹⁾ Excludes assets for non-valuation reserves.

⁽²⁾ 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	Asset Volatility Ratios			Liability Volatility Ratios		
	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	
Active members in valuation			
Number	590	606	-2.6%
Average age	49.9	49.1	N/A
Average service	15.2	14.4	N/A
Projected total payroll ⁽¹⁾	\$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%
Vested terminated members	238	239	-0.4%
Retired members			
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%
Disabled members			
Number in pay status ⁽²⁾	275	283	-2.8%
Average age	71.0	70.5	N/A
Average monthly benefit	\$2,744	\$2,665	3.0%
Beneficiaries			
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%

⁽¹⁾ Calculated by increasing actual calendar year salaries by the assumed salary scale.

⁽²⁾ 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	
Active members in valuation			
Number ⁽¹⁾	0	0	N/A
Average age	N/A	N/A	N/A
Average service	N/A	N/A	N/A
Projected total payroll ⁽²⁾	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
Vested terminated members	220	248	-11.3%
Retired members			
Number in pay status	428	417	2.6%
Average age	74.1	73.6	N/A
Average monthly benefit	\$845	\$824	2.5%
Disabled members			
Number in pay status ⁽³⁾	46	42	9.5%
Average age	69.8	70.5	N/A
Average monthly benefit	\$2,237	\$2,074	7.9%
Beneficiaries			
Number in pay status	101	98	3.1%
Average age	67.1	66.9	N/A
Average monthly benefit	\$828	\$834	-0.7%

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

⁽²⁾ Calculated by increasing actual calendar year salaries by the assumed salary scale.

⁽³⁾ 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

Category	Year Ended December 31		Change From Prior Year
	2015	2014	
Active members in valuation			
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 ⁽¹⁾	\$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%
Vested terminated members			
	1,590	1,613	-1.4%
Retired members			
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%
Disabled members			
Number in pay status ⁽²⁾	86	85	1.2%
Average age	61.3	61.8	N/A
Average monthly benefit	\$2,250	\$2,185	3.0%
Beneficiaries			
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%

⁽¹⁾ Calculated by increasing actual calendar year salaries by the assumed salary scale.

⁽²⁾ 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	
Active members in valuation			
Number	5	2	150.0%
Average age	40.4	31.8	N/A
Average service	0.9	0.3	N/A
Projected total payroll ⁽¹⁾	\$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
Vested terminated members	0	0	N/A
Retired members			
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
Disabled members			
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
Beneficiaries			
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

⁽¹⁾ 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	
Active members in valuation			
Number	78	44	77.3%
Average age	41.3	38.8	N/A
Average service	1.0	0.7	N/A
Projected total payroll ⁽¹⁾	\$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
Vested terminated members	4	3	33.3%
Retired members			
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
Disabled members			
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
Beneficiaries			
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

⁽¹⁾ 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	
Active members in valuation			
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 ⁽¹⁾	\$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%
Vested terminated members	132	23	473.9%
Retired members			
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
Disabled members			
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
Beneficiaries			
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

⁽¹⁾ 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	
Active members in valuation			
Number	948	954	-0.6%
Average age	40.8	39.6	N/A
Average service	1.9	1.1	N/A
Projected total payroll ⁽¹⁾	\$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
Vested terminated members	209	140	49.3%
Retired members			
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
Disabled members			
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
Beneficiaries			
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

⁽¹⁾ 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

viii. Safety Tier A

Category	Year Ended December 31		Change From Prior Year
	2015	2014	
Active members in valuation			
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 ⁽¹⁾	\$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%
Vested terminated members			
	307	317	-3.2%
Retired members			
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%
Disabled members			
Number in pay status ⁽²⁾	514	509	1.0%
Average age	62.8	62.3	N/A
Average monthly benefit	\$5,710	\$5,542	3.0%
Beneficiaries			
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%

⁽¹⁾ Calculated by increasing actual calendar year salaries by the assumed salary scale.

⁽²⁾ 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	
Active members in valuation			
Number	147	164	-10.4%
Average age	35.1	34.0	N/A
Average service	5.9	5.0	N/A
Projected total payroll ⁽¹⁾	\$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%
Vested terminated members			
	61	51	19.6%
Retired members			
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
Disabled members			
Number in pay status ⁽²⁾	4	2	100.0%
Average age	40.5	37.6	N/A
Average monthly benefit	\$3,624	\$3,588	1.0%
Beneficiaries			
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

⁽¹⁾ Calculated by increasing actual calendar year salaries by the assumed salary scale.

⁽²⁾ 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

Category	Year Ended December 31		Change From Prior Year
	2015	2014	
Active members in valuation			
Number	92	81	13.6%
Average age	33.4	33.3	N/A
Average service	1.5	0.8	N/A
Projected total payroll ⁽¹⁾	\$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
Vested terminated members			
	13	10	30.0%
Retired members			
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
Disabled members			
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
Beneficiaries			
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

⁽¹⁾ 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

xi. Safety Tier E

Category	Year Ended December 31		Change From Prior Year
	2015	2014	
Active members in valuation			
Number	142	76	86.8%
Average age	31.2	31.0	N/A
Average service	1.3	1.0	N/A
Projected total payroll ⁽¹⁾	\$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
Vested terminated members			
	16	3	433.3%
Retired members			
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
Disabled members			
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
Beneficiaries			
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

⁽¹⁾ 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	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
Total	10	4	3	2	1	--	--	--	--	--
	\$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	2	--	--	--	--	--	--	--	--
35 - 39	\$35,993	\$35,993	--	--	--	--	--	--	--	--
40 - 44	1	1	--	--	--	--	--	--	--	--
45 - 49	35,630	35,630	--	--	--	--	--	--	--	--
50 - 54	1	1	--	--	--	--	--	--	--	--
55 - 59	63,387	63,387	--	--	--	--	--	--	--	--
60 - 64	--	--	--	--	--	--	--	--	--	--
65 - 69	--	--	--	--	--	--	--	--	--	--
70 & over	--	--	--	--	--	--	--	--	--	--
Total	5	5	--	--	--	--	--	--	--	--
	\$46,075	\$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	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--
Total	14	3	1	1	3	1	4	1
	\$141,814	\$120,860	\$218,348	\$139,114	\$136,153	\$167,331	\$138,293	\$136,383

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	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
Total	92	92	--							
	\$65,230	\$65,230	--							

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
Total	2,125	440	412	438	288	213	122	94	69	49
	\$6,296	\$6,590	\$7,444	\$7,262	\$5,984	\$5,033	\$4,775	\$3,983	\$4,336	\$3,676

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

	Active Participants	Vested Terminated Members	Pensioners	Disableds	Beneficiaries	Total
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
Contribution income:		
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
Investment income:		
Interest, dividends and other income	\$173,789,634	\$160,135,921
Adjustment toward market value ⁽¹⁾	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>
Total income available for benefits	\$986,280,030	\$1,045,058,945
Less benefit payments:		
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)
Change in reserve for future benefits	\$579,375,664	\$650,111,240

⁽¹⁾ 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
Cash equivalents	\$583,481,915	\$613,763,830
Other Assets	484,248	1,408,938
Accounts receivable:		
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 ⁽¹⁾	<u>17,229,968</u>	<u>18,774,112</u>
Total accounts receivable	542,183,373	826,564,453
Investments:		
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>
Total assets	\$8,049,012,435	\$8,146,941,378
Less accounts payable:		
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)
Net assets at market value	<u>\$6,976,582,428</u>	<u>\$6,908,910,230</u>
Net assets at actuarial value	<u>\$7,151,936,096</u>	<u>\$6,572,560,432</u>
Net assets at valuation value	<u>\$7,136,801,380</u>	<u>\$6,557,496,101</u>

⁽¹⁾ 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.

Assets	Basic	COLA	Total
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
Liabilities			
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 ⁽¹⁾	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

⁽¹⁾ Includes nonvested terminated members.

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

EXHIBIT H

Summary of Total Allocated Reserves

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

Note: Results may not add due to rounding.

⁽¹⁾ *Included in valuation value of assets.*

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

⁽³⁾ *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

	Year Ended December 31, 2015
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 ⁽¹⁾	(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).

⁽¹⁾ *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

	Date Established	Source	Initial Amount	Outstanding Balance	Years Remaining	Annual Payment⁽¹⁾
Cost Groups #1 and #2	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 ⁽²⁾	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 ⁽²⁾	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 ⁽³⁾	(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 ⁽²⁾	40,045,512	<u>40,045,512</u>	18	<u>3,072,258</u>
Total for Cost Groups #1 and #2				\$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

	Date Established	Source	Initial Amount	Outstanding Balance	Years Remaining	Annual Payment⁽¹⁾
Cost Group #3	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 ⁽²⁾	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 ⁽³⁾	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 ⁽²⁾	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 ⁽³⁾	(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 ⁽²⁾	44,220	<u>44,220</u>	18	<u>3,393</u>
Total for Cost Group #3				\$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

	Date Established	Source	Initial Amount	Outstanding Balance	Years Remaining	Annual Payment⁽¹⁾
Cost Group #4	December 31, 2007	Restart of Amortization	\$7,770,000	\$5,670,814	7	\$932,861
Contra Costa Housing	December 31, 2008	Actuarial (Gain)/Loss	1,573,513	1,417,127	11	158,715
Authority	December 31, 2009	Actuarial (Gain)/Loss	1,277,079	1,184,908	12	123,687
	December 31, 2009	Assumption Change ⁽²⁾	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 ⁽³⁾	(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 ⁽²⁾	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 ⁽³⁾	(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 ⁽²⁾	432,801	<u>432,801</u>	18	<u>33,204</u>
Total for Cost Group #4				\$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

	Date Established	Source	Initial Amount	Outstanding Balance	Years Remaining	Annual Payment⁽¹⁾
Cost Group #5	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 ⁽²⁾	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 ⁽²⁾	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 ⁽³⁾	(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 ⁽²⁾	355,946	<u>355,946</u>	18	<u>27,308</u>
Total for Cost Group #5				\$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

	Date Established	Source	Initial Amount	Outstanding Balance	Years Remaining	Annual Payment⁽¹⁾
Cost Group #6	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 ⁽²⁾	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 ⁽²⁾	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 ⁽³⁾	(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 ⁽²⁾	33,272	<u>33,272</u>	18	<u>2,553</u>
Total for Cost Group #6				\$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

	Date Established	Source	Initial Amount	Outstanding Balance	Years Remaining	Annual Payment⁽¹⁾
Cost Groups #7 and #9	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 ⁽²⁾	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 ⁽²⁾	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 ⁽³⁾	(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 ⁽⁴⁾	(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 ⁽²⁾	39,775,019	<u>39,775,019</u>	18	<u>3,051,506</u>
Total for Cost Groups #7 and #9				\$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

	Date Established	Source	Initial Amount	Outstanding Balance	Years Remaining	Annual Payment⁽¹⁾
Cost Group #8	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 ⁽²⁾	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 ⁽³⁾	(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 ⁽²⁾	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 ⁽³⁾	(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 ⁽²⁾	24,296,846	<u>24,296,846</u>	18	<u>1,864,034</u>
Total for Cost Group #8				\$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

	Date Established	Source	Initial Amount	Outstanding Balance	Years Remaining	Annual Payment⁽¹⁾
Cost Group #10	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 ⁽²⁾	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 ⁽³⁾	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 ⁽²⁾	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 ⁽³⁾	(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 ⁽²⁾	3,844,347	<u>3,844,347</u>	18	<u>294,935</u>
Total for Cost Group #10				\$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

	Date Established	Source	Initial Amount	Outstanding Balance	Years Remaining	Annual Payment⁽¹⁾
Cost Group #11	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 ⁽²⁾	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 ⁽³⁾	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 ⁽²⁾	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 ⁽³⁾	(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 ⁽²⁾	5,533,144	<u>5,533,144</u>	18	<u>424,498</u>
Total for Cost Group #11				\$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

	Date Established	Source	Initial Amount	Outstanding Balance	Years Remaining	Annual Payment⁽¹⁾
Cost Group #12	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 ⁽²⁾	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 ⁽³⁾	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 ⁽²⁾	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 ⁽³⁾	(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 ⁽²⁾	775,874	<u>775,874</u>	18	<u>59,524</u>
Total for Cost Group #12				\$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

	Date Established	Source	Initial Amount	Outstanding Balance	Years Remaining	Annual Payment⁽¹⁾
Special Adjustments⁽⁵⁾	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>
Total for Special Adjustments				\$(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

	Date Established	Source	Initial Amount	Outstanding Balance	Years Remaining	Annual Payment⁽¹⁾
All Cost Groups Combined	December 31, 2007	Restart of Amortization	\$1,147,096,132	\$837,190,391	7	\$137,719,607
	December 31, 2007	County General POBs ⁽⁵⁾	(453,973,319)	(331,324,290)	7	(54,503,554)
	December 31, 2007	Moraga General POBs ⁽⁵⁾	(701,412)	(511,913)	7	(84,211)
	December 31, 2007	CCCFPD Safety POBs ⁽⁵⁾	(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 ⁽²⁾	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 ⁽³⁾	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 ⁽⁵⁾	(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 ⁽²⁾	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 ⁽³⁾	(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 ⁽⁴⁾	(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 ⁽⁶⁾	115,136,981	<u>115,136,981</u>	18	<u>8,833,213</u>
Total for All Cost Groups				\$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

EXHIBIT J (continued)

Table of Amortization Bases

- (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

EXHIBIT K

Section 415 Limitations

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

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

In particular, Section 415(b) of the IRC limits the maximum annual benefit payable at the Normal Retirement Age to a dollar 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

EXHIBIT L

Definitions of Pension Terms

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

Assumptions or Actuarial Assumptions:

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

- (a) Investment return — the rate of investment yield that the Plan will earn over the long-term future;
- (b) Mortality rates — the death rates of 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

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

EXHIBIT I

Summary of Actuarial Valuation Results

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

1. Retired members as of the valuation date (including 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

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

* 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

EXHIBIT I (continued)

Summary of Actuarial Valuation Results

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

	Dollar Amount	% of Payroll
1. Total normal cost	\$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	

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

EXHIBIT II

Actuarial Assumptions and Methods

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.

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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.

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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.

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Termination Rates Before Retirement (continued):

Age	Rate (%)		
	Disability		
	General Tier 1 and Tier 4 ⁽¹⁾	General Tier 3 and Tier 5 ⁽²⁾	Safety ⁽³⁾
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

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

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

⁽³⁾ 100% of Safety disabilities are assumed to be duty disabilities.

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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.*

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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

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Retirement Rates (Safety):

Age	Rates (%)			
	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

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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.

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.

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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
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

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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.

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Salary Increases:

Annual Rate of Compensation Increase		
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%

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Actuarial Methods

- Actuarial Cost Method:** 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”).
- Actuarial Value of Assets:** 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.
- Valuation Value of Assets:** Actuarial Value of Assets reduced by the value of the non-valuation reserves and designations.
- Amortization Policy:** 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.
- 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.
- Any new UAAL as a result of change in actuarial assumptions or methods will be amortized over a period of 18 years.
- Unless the Board adopts an alternative amortization period after receiving an actuarial analysis:
- 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;
 - 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

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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.

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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.

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

Demographic Assumptions

Post – Retirement Mortality Rates:

<i>Healthy:</i>	<p>For General Members: RP-2000 Combined Healthy Mortality Table projected to 2030 with Scale AA, set back one year.</p> <p>For Safety Members: RP-2000 Combined Healthy Mortality Table projected to 2030 with Scale AA, set back two years.</p>
<i>Disabled:</i>	<p>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.</p> <p>For Safety Members: RP-2000 Combined Healthy Mortality Table projected to 2030 with Scale AA, set forward three years.</p>
<i>Beneficiaries:</i>	<p>Beneficiaries are assumed to have the same mortality as a General Member of the opposite sex who has taken a service (non-disability) retirement.</p> <p>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.</p>
<i>Member Contribution Rates:</i>	<p>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.</p> <p>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.</p>

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

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.

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

Termination Rates Before Retirement (continued):

Age	Rate (%)		
	Disability		
	General Tier 1⁽¹⁾	General Tier 3⁽²⁾	Safety⁽³⁾
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

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

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

⁽³⁾ 100% of Safety disabilities are assumed to be duty disabilities.

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

Termination Rates Before Retirement (continued):

Years of Service	Rate (%)	
	Withdrawal*	
	General	Safety
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.

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

Retirement Rates (General):

Age	Rate (%)			
	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	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):

Age	Rate (%)			
	Safety Tier A (Enhanced)	Safety Tier C (Enhanced)	Safety Tier A (Non-enhanced)	PEPRA Safety Tiers D and E
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

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

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

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

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

Salary Increases:

Annual Rate of Compensation Increase		
Inflation: 3.25% per year, plus “across the board” salary increases of 0.75% per year, plus the following merit and promotional increases.		
Years of Service	General	Safety
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

EXHIBIT III

Summary of Plan Provisions

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.

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

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)

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.

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).

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

Benefit Formula:

<i>PEPRA General Tiers 4 and 5</i> (§7522.20(a))	Retirement Age	Benefit Formula
	52	1.00%xFAS3xYrs
	55	1.30%xFAS3xYrs
	60	1.80%xFAS3xYrs
	62	2.00%xFAS3xYrs
	65	2.30%xFAS3xYrs
	67 or later	2.50%xFAS3xYrs
<i>Safety Tier A (Non-enhanced)(§31664)</i>	50	2.00%xFAS1xYrs
	55 or later	2.62%xFAS1xYrs
<i>Safety Tier A (Enhanced)(§31664.1)</i>	50 or later	3.00%xFAS1xYrs
<i>Safety Tier C (Enhanced)(§31664.1)</i>	50 or later	3.00%xFAS3xYrs
<i>PEPRA Safety Tiers D and E</i> (§7522.25(d))	50	2.00%xFAS3xYrs
	55	2.50%xFAS3xYrs
	57 or later	2.70%xFAS3xYrs

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

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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).

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

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

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.

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

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 PEPRAs Tier 5 disability benefits have a maximum of 4% per year, excess "banked." Benefits for PEPRAs 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."

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.

PEPRA 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.

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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.

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.

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.

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%

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**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

Entry Age	Basic		COLA		Total	
	First \$350	Over \$350	First \$350	Over \$350	First \$350	Over \$350
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

Entry Age	Basic		COLA		Total	
	First \$350	Over \$350	First \$350	Over \$350	First \$350	Over \$350
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

Entry Age	Basic		COLA		Total	
	First \$350	Over \$350	First \$350	Over \$350	First \$350	Over \$350
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

Entry Age	Basic		COLA		Total	
	First \$350	Over \$350	First \$350	Over \$350	First \$350	Over \$350
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

Entry Age	Basic	COLA	Total
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

Entry Age	Basic	COLA	Total
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

**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

Entry Age	Basic	COLA	Total
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

Entry Age	Basic	COLA	Total
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

Entry Age	Basic	COLA	Total
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

Entry Age	Basic	COLA	Total
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

Entry Age	Basic	COLA	Total
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

Entry Age	Basic	COLA	Total
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

Entry Age	Basic	COLA	Total
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

Entry Age	Basic	COLA	Total
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

Entry Age	Basic	COLA	Total
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

Entry Age	Basic	COLA	Total
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

	Basic	COLA	Total
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

**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

	Basic	COLA	Total
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))

Contra Costa County Employees' Retirement Association

**Governmental Accounting Standards (GAS) 68
Actuarial Valuation Based on December 31, 2015
Measurement Date for Employer Reporting
as of June 30, 2016**



This report has been prepared at the request of the Board of Retirement to assist the sponsors of the Fund in preparing their financial report for their liabilities associated with the CCCERA pension plan. This valuation report may not otherwise be copied or reproduced in any form without the consent of the Board of Retirement and may only be provided to other parties in its entirety. The measurements shown in this actuarial valuation may not be applicable for other purposes.

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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 Governmental Accounting Standards (GAS) 68 Actuarial Valuation based on December 31, 2015 measurement date for employer reporting as of June 30, 2016. It contains various information that will need to be disclosed in order for Contra Costa County Employees' Retirement Association (CCCERA) employers to comply with GAS 68.

This report was prepared in accordance with generally accepted actuarial principles and practices at the request of the Board to assist the sponsors in preparing their financial report for their liabilities associated with the CCCERA pension plan. The census and financial information on which our calculations were based was provided by CCCERA. That assistance is gratefully acknowledged.

The measurements shown in this actuarial valuation may not be applicable for other purposes. Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; and changes in plan provisions or applicable law.

The actuarial calculations were completed under the supervision of 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 expectations for CCCERA.

Sincerely,

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

By: 

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



*John Monroe, ASA, MAAA, EA
Vice President and Actuary*

JEM/gxk

SECTION 1

VALUATION SUMMARY

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

Purpose

This report has been prepared by Segal Consulting to present certain disclosure information required by Governmental Accounting Standard (GAS) 68 for employer reporting as of June 30, 2016. The results used in preparing this GAS 68 report are comparable to those used in preparing the Governmental Accounting Standard (GAS) 67 report for the plan based on a reporting date and a measurement date as of December 31, 2015. This valuation is based on:

- The benefit provisions of CCCERA, as administered by the Board;
- The characteristics of covered active members, inactive vested members, and retired members and beneficiaries as of December 31, 2014, provided by CCCERA;
- The assets of the Plan as of December 31, 2015, provided by CCCERA;
- Economic assumptions regarding future salary increases and investment earnings adopted by the Board for the December 31, 2015 valuation; and
- Other actuarial assumptions, regarding employee terminations, retirement, death, etc. adopted by the Board for the December 31, 2015 valuation.

Significant Issues in Valuation Year

- The Governmental Accounting Standards Board (GASB) rules only define pension liability and expense for financial reporting purposes, and do not apply to contribution amounts for pension funding purposes. Employers and plans can still develop and adopt funding policies under current practices.
- When measuring pension liability GASB uses the same actuarial cost method (Entry Age method) and the same type of discount rate (expected return on assets) as CCCERA uses for funding. This means that the Total Pension Liability (TPL) measure for financial reporting shown in this report is determined on generally the same basis as CCCERA's Actuarial Accrued Liability (AAL) measure for funding. We note that the same is generally true for the Normal Cost component of the annual plan cost for funding and financial reporting.
- The TPL and the Plan's Fiduciary Net Position include liabilities and assets held for the Post Retirement Death Benefit Reserve. The TPL only includes a liability up to the amount in the Post Retirement Death Benefit Reserve. This is because we understand that the post retirement death benefit is a nonvested benefit and once the reserve is depleted no further benefits would need to be paid.

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

- The Net Pension Liability (NPL) is equal to the difference between the TPL and the Plan's Fiduciary Net Position. The Plan's Fiduciary Net Position is equal to the market value of assets and therefore, the NPL measure is very similar to an Unfunded Actuarial Accrued Liability (UAAL) on a market value basis.

For this report, the reporting dates for the employer are June 30, 2016 and 2015. The NPL was measured as of December 31, 2015 and 2014, respectively, and determined based upon rolling forward the TPL from actuarial valuations as of December 31, 2014 and 2013, respectively. The Plan's Fiduciary Net Position (plan assets) was valued as of the measurement dates. In addition, any changes in actuarial assumptions or plan provisions that occurred between the valuation date and the measurement date have been reflected. Consistent with the provisions of GAS 68, the assets and liabilities measured as of December 31, 2015 and 2014 are not adjusted or rolled forward to June 30, 2016 and 2015 reporting dates, respectively.

- The NPL increased from \$1.20 billion as of December 31, 2014 to \$1.51 billion as of December 31, 2015 primarily due to the 0.94% return on the market value of assets during 2015 (that was less than the assumed return of 7.25%) and to changes in actuarial assumptions. The \$1.51 billion was measured using the new actuarial assumptions (see additional discussion below) and the NPL would have been lower by about \$72 million if measured using the old assumptions. Changes in these values during the last two fiscal years ending December 31, 2015 and December 31, 2014 can be found in Exhibit 5.
- The discount rate originally used to determine the TPL and NPL as of December 31, 2015 and 2014 was 7.25%, following the same assumptions used by CCCERA in the pension funding valuations as of December 31, 2014 and December 31, 2013 respectively. However, as the Retirement Board adopted a new discount rate of 7.00% (together with a new inflation assumption of 2.75%) as well as new demographic assumptions for use in the pension funding valuation as of December 31, 2015, we have reflected the impact of these assumption changes by (1) revaluing the TPL as of December 31, 2014 (before the roll forward) using the new actuarial assumptions and (2) using this revalued TPL in rolling forward the results from December 31, 2014 to December 31, 2015. The detailed calculations of the discount rate of 7.00% used in calculation of the TPL and NPL as of December 31, 2015 can be found in Appendix A of Section 3. Various other information that is required to be disclosed can be found throughout Exhibits 1 through 13 in Section 2.
- Results shown in this report exclude any employer contributions made after the measurement date of December 31, 2015. For employers that participate in the prepayment program, it is our understanding that the portion of the prepayment made in July 2015 that was for the period from January 1, 2016 through June 30, 2016 has also been excluded. Employers should consult with their auditors to determine the deferred outflow that should be created for these contributions.

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

- All Cost Groups except Cost Groups #1, #2, #6 and #8 only have one active employer, so all of the NPL for those Cost Groups are allocated to that employer.

For Cost Groups #1, #2, #6 and #8, the NPL is allocated based on the actual compensation by employer within the Cost Group. The steps we used are as follows:

- Calculate ratio of employer's compensation to the total compensation for the Cost Group.
- Multiply this ratio by an "adjusted" NPL. This adjusted NPL is larger than the actual NPL as it excludes proceeds from Pension Obligation Bonds and any UAAL prepayments from the Cost Group's assets when determining the employer's proportionate share of the NPL for the Cost Group.
- Subtract from the adjusted NPL the outstanding balance of the proceeds from any Pension Obligation Bonds and any UAAL prepayments for those employers in each Cost Group that are subject to these adjustments.
- If the employer is in several Cost Groups, the employer's total allocated NPL is the sum of its allocated NPL from each Cost Group.
- Any NPL associated with terminated employers has been reallocated to the other employers. The GASB 68 results for the terminated employers is provided in a separate letter subsequent to completion of this report.

Proportionate share of total plan NPL is then the ratio of the employer's total allocated NPL to the total NPL of all employers. The NPL allocation can be found in Exhibit 7 in Section 2.

- Page iv contains a summary with the names for all active participating employers in CCCERA. Also shown are the employer name abbreviations and employer numbers that are used throughout the rest of this report.

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

Summary of Active Participating Employers within CCCERA

#	<u>Employer Name</u>	<u>Abbreviation</u>
1	Bethel Island Municipal Improvement District	1 - BIMID
2	Byron-Brentwood-Knightsen Union Cemetery District	2 - Union Cemetery
3	Contra Costa Mosquito & Vector Control District	3 - CC Mosquito
4	Contra Costa County Fire Protection District	4 - CCCFPD
5	Central Contra Costa Sanitary District	5 - CCCSD
6	First 5 CC Children & Families Commission	6 - First 5
7	Contra Costa County	7 - County
8	Contra Costa County Employees' Retirement Association	8 - CCCERA (the employer)
9	East Contra Costa Fire Protection District	9 - ECCFPD
10	Contra Costa Housing Authority	10 - Housing Authority
11	In-Home Supportive Services Authority	11 - IHSS
12	Contra Costa Local Agency Formation Commission	12 - LAFCO
13	Moraga-Orinda Fire Protection District	13 - MOFD
14	Rodeo Sanitary District	14 - Rodeo SD
15	Rodeo-Hercules Fire Protection District	15 - RHFD
16	San Ramon Valley Fire Protection District	16 - SRVFPD
17	Contra Costa Superior Court	17 - Court

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

Summary of Key Valuation Results

Reporting Date for Employer under GAS 68	6/30/2016⁽¹⁾	6/30/2015⁽¹⁾
Measurement Date for Employer under GAS 68	12/31/2015	12/31/2014
Disclosure elements for fiscal year ending December 31:		
1. Service cost ⁽²⁾	\$192,923,283	\$192,256,663
2. Total Pension Liability	8,483,709,568	8,104,611,627
3. Plan's Fiduciary Net Position	6,976,582,428	6,908,910,230
4. Net Pension Liability	1,507,127,140	1,195,701,397
5. Pension Expense	243,133,717	172,499,176
Schedule of contributions for fiscal year ending December 31:		
6. Actuarially determined contributions	\$321,220,270	\$288,760,413
7. Actual contributions	321,220,270	288,760,413
8. Contribution deficiency (excess) (6) – (7)	0	0
Demographic data for plan year ending December 31:⁽³⁾		
9. Number of retired members and beneficiaries	9,068	8,871
10. Number of vested terminated members ⁽⁴⁾	2,790	2,647
11. Number of active members	9,645	9,159
Key assumptions as of December 31:		
12. Investment rate of return	7.00%	7.25%
13. Inflation rate	2.75%	3.25%
14. Projected salary increases ⁽⁵⁾	General: 4.00% to 13.25% and Safety: 4.00% to 13.75%	General: 4.75% to 13.50% and Safety: 4.75% to 14.00%

⁽¹⁾ The reporting dates and measurement dates for the plan are December 31, 2015 and 2014, respectively.

⁽²⁾ Please note that service cost is always based on the previous year's assumptions, meaning both the 2015 and 2014 service costs are based on those assumptions shown as of December 31, 2014.

⁽³⁾ Data as of December 31, 2014 is used in the measurement of the TPL as of December 31, 2015.

⁽⁴⁾ Includes terminated members with member contributions on deposit.

⁽⁵⁾ Includes inflation at 2.75% and 3.25% plus real across-the-board salary increase of 0.50% and 0.75% plus promotional and merit increases as of December 31, 2015 and 2014 respectively. .

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

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 CCCERA. 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 CCCERA.
- **Actuarial assumptions** In preparing an actuarial valuation, Segal projects the benefits to be paid to existing plan participants for the rest of their lives and the lives of their beneficiaries. This projection requires actuarial assumptions as to the probability of death, disability, withdrawal, and retirement of each participant for each year. In addition, the benefits projected to be paid for each of those events in each future year reflect actuarial assumptions as to salary increases and cost-of-living adjustments. The projected benefits are then discounted to a present value, based on the assumed rate of return that is expected to be achieved on the plan’s assets. There is a reasonable range for each assumption used in the projection and the results may vary materially based on which assumptions are selected. It is important for any user of an actuarial valuation to understand this concept. Actuarial assumptions are periodically reviewed to ensure that future valuations reflect emerging plan experience. While future changes in actuarial assumptions may have a significant impact on the reported results, that does not mean that the previous assumptions were unreasonable.

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

- The valuation is prepared at the request of the Board to assist the sponsors of the Fund in preparing items related to the pension plan in their financial reports. Segal is not responsible for the use or misuse of its report, particularly by any other party.
- An actuarial valuation is a measurement of the plan’s assets and liabilities at a specific date. Accordingly, except where otherwise noted, Segal did not perform an analysis of the potential range of future financial measures. The actual long-term cost of the plan will be determined by the actual benefits and expenses paid and the actual investment experience of the plan.

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

- If CCCERA 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 CCCERA, it is not a fiduciary in its capacity as actuaries and consultants with respect to CCCERA.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 1

General Information – “Financial Statements”, Note Disclosures and Required Supplementary Information for a Cost-Sharing Pension Plan

Plan Description

Plan administration. The Contra Costa County Employees' Retirement Association (CCCERA) was established by the County of Contra Costa in 1945. CCCERA is governed by the County Employees' Retirement Law of 1937 (California Government Code Section 31450 et. seq), the California Public Employees' Pension Reform Act of 2013 (PEPRA), and the regulations, procedures, and policies adopted by CCCERA's Board of Retirement. CCCERA is a cost-sharing multiple employer public employee retirement association whose main function is to provide service retirement, disability, death and survivor benefits to the General and Safety members employed by the County of Contra Costa. CCCERA also provides retirement benefits to the employee members for 16 other participating agencies which are members of CCCERA.

The management of CCCERA is vested with the CCCERA Board of Retirement. The Board consists of twelve trustees. Of the twelve members, three are alternates. Four trustees are appointed by the County Board of Supervisors; four trustees (including the Safety alternate) are elected by CCCERA's active members; two trustees (including one alternate) are elected by the retired membership. Board members serve three-year terms, with the exception of the County Treasurer who is elected by the general public and serves during his tenure in office.

Plan membership. At December 31, 2015, pension plan membership consisted of the following:

Retired members or beneficiaries currently receiving benefits	9,068
Vested terminated members entitled to, but not yet receiving benefits ⁽¹⁾	2,790
Active members	<u>9,645</u>
Total	21,503

⁽¹⁾ Includes members who terminate with less than five years of service and leave accumulated contributions on deposit

Note: Data as of December 31, 2015 is not used in the measurement of the TPL as of December 31, 2015.

Benefits provided. CCCERA provides service retirement, disability, death and survivor benefits to eligible employees. All regular full-time employees of the County of Contra Costa or participating agencies become members of CCCERA effective on the first day of the first full pay period after employment. Part-time employees in permanent positions must work at least 20 hours a week in order to be a member of CCCERA. There are separate retirement plans for General and Safety member employees. Safety membership is extended to those involved in active law enforcement, fire suppression, and certain other

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

“Safety” classifications. There are currently five tiers applicable to Safety members. Safety members with membership dates before January 1, 2013 are included in Tier A (Enhanced and Non-Enhanced). 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. Any new Safety Member who becomes a member on or after January 1, 2013 is designated PEPRA Safety Tier D or E (Safety members from certain bargaining units) and is subject to the provisions of California Government Code 7522 et seq.

All other employees are classified as General members. There are currently eight tiers applicable to General members. General Tier 1 (Enhanced and Non-Enhanced) includes general members hired before July 1, 1980 and electing not to transfer to Tier 2 Plan. In addition, 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. General Tier 2 includes 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 (Enhanced and Non-Enhanced). Effective January 1, 2005, all CNA employees in Tier 2 were placed in Tier 3. New General Members who become a member on or after January 1, 2013 are designated as PEPRA General Tier 4 (hired by specific employers who did not adopt Tier 2) and Tier 5 (with 2%/3% maximum COLAs) and are subject to the provisions of California Government Code 7522 et seq.

General members prior to January 1, 2013, are eligible to retire once they attain the age of 70 regardless of service or at age 50 and have acquired 10 or more years of retirement service credit. A member with 30 years of service is eligible to retire regardless of age. General members who are first hired on or after January 1, 2013, are eligible to retire once they have attained the age of 70 regardless of service or at age 52, and have acquired five years of retirement service credit.

Safety members prior to January 1, 2013, are eligible to retire once they attain the age of 70 regardless of service or at age 50 and have acquired 10 or more years of retirement service credit. A member with 20 years of service is eligible to retire regardless of age. Safety members who are first hired on or after January 1, 2013, are eligible to retire once they have attained the age of 70 regardless of service or at age 50, and have acquired five years of retirement service credit.

The retirement benefit the member will receive is based upon age at retirement, final average compensation, years of retirement service credit and retirement plan and tier.

General Tier 1 and Tier 3 benefits are calculated pursuant to the provisions of Sections §31676.11 and §31676.16 for Non-Enhanced and Enhanced benefit formulae, respectively. The monthly allowance is equal to 1/60th (Non-Enhanced) and 1/50th (Enhanced) of final compensation times years of accrued retirement service credit times age factor from either section §31676.11 (Non-Enhanced) or §31676.16 (Enhanced). Note that for members previously covered under the Non-Enhanced formula (§31676.11), they are entitled to at least the benefits they could have received under the Non-Enhanced formula (§31676.11). General Tier 2 benefit is calculated pursuant to the provisions of Sections §31752. General member benefits for

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

those with membership dates on or after January 1, 2013 (PEPRA General Tier 4 and Tier 5) are calculated pursuant to the provisions found in California Government Code Section §7522.20(a). The monthly allowance is equal to the final compensation multiplied by years of accrued retirement credit multiplied by the age factor from Section §7522.20(a).

Safety member benefits are calculated pursuant to the provisions of California Government Code Sections §31664 and §31664.1 for Non-Enhanced and Enhanced formulae, respectively. The monthly allowance is equal to 1/50th (or 2%) of final compensation times years of accrued retirement service credit times age factor from Section §31664 (Non-Enhanced) or 3% of final compensation times years of accrued retirement service credit times age factor from §31664.1 (Enhanced). For those Safety member with membership dates on or after January 1, 2013 (PEPRA Safety Tier D and Tier E) benefits are calculated pursuant to the provisions found in California Government Code Section §7522.25(d). The monthly allowance is equal to the final compensation multiplied by years of accrued retirement service credit multiplied by the age factor from Section §7522.25(d).

For members with membership dates before January 1, 2013, the maximum monthly retirement allowance is 100% of final compensation. There is no final compensation limit on the maximum retirement benefit for members with membership dates on or after January 1, 2013. However, the maximum amount of compensation earnable that can be taken into account for 2015 for members with membership dates on or after January 1, 1996 but before January 1, 2013 is \$265,000. For members with membership dates on or after January 1, 2013 the maximum amount of pensionable compensation that can be taken into account for 2015 is equal to \$117,020 for those enrolled in Social Security (\$140,424 for those not enrolled in Social Security). These limits are adjusted on an annual basis. Members are exempt from paying member contributions and employers are exempt from paying employer contributions on compensation in excess of the annual cap.

Final average compensation consists of the highest 12 consecutive months for General Tier 1, General Tier 3 (non-disability) and Safety Tier A members and the highest 36 consecutive months for General Tier 2, General Tier 3 (disability), PEPRA General Tier 4, PEPRA General Tier 5, Safety Tier C, PEPRA Safety Tier D and PEPRA Safety Tier E members.

The member may elect an unmodified retirement allowance, or choose an optional retirement allowance. The unmodified retirement allowance provides the highest monthly benefit and a 60% continuance to an eligible surviving spouse or domestic partner. An eligible surviving spouse or domestic partner is one married to or registered with the member one year prior to the effective retirement date or at least two years prior to the date of death and has attained age 55 on or prior to the date of death. There are four optional retirement allowances the member may choose. Each of the optional retirement allowances requires a reduction in the unmodified retirement allowance in order to allow the member the ability to provide certain benefits to a surviving spouse, domestic partner, or named beneficiary having an insurable interest in the life of the member.

CCCERA provides an annual cost-of-living benefit to all retirees. The cost-of-living adjustment, based upon the Consumer Price Index for the San Francisco-Oakland-San Jose Area, is capped at 3.0% for General Tier 1, General Tier 3 (non-disability

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benefits), PEPRA General Tier 4, PEPRA General Tier 5-3% (non-disability benefits), Safety Tier A and PEPRA Safety Tier D. The cost-of-living adjustment is capped at 4.0% for General Tier 3 (disability benefits), General Tier 2 and PEPRA General Tier 5-3% (disability benefits). The cost-of-living adjustment is capped at 2.0% for General Tier 5-2%, Safety Tier C and PEPRA Safety Tier E.

The County of Contra Costa and participating agencies contribute to the retirement plan based upon actuarially determined contribution rates adopted by the Board of Retirement. Employer contribution rates are adopted annually based upon recommendations received from CCCERA's actuary after the completion of the annual actuarial valuation. The average employer contribution rate as of December 31, 2015 for the fiscal year beginning July 1, 2015 (based on the December 31, 2013 valuation) was 43.58% of compensation.

Members are required to make contributions to CCCERA regardless of the retirement plan or tier in which they are included. The average member contribution rate as of December 31, 2015 for the fiscal year beginning July 1, 2015 (based on the December 31, 2013 valuation) was 11.91% of compensation.

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EXHIBIT 2

Net Pension Liability

Reporting Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Measurement Date for Employer under GAS 68	December 31, 2015	December 31, 2014
The components of the Net Pension Liability are as follows:		
Total Pension Liability	\$8,483,709,568	\$8,104,611,627
Plan's Fiduciary Net Position	<u>(6,976,582,428)</u>	<u>(6,908,910,230)</u>
Net Pension Liability	\$1,507,127,140	\$1,195,701,397
Plan's Fiduciary Net Position as a percentage of the Total Pension Liability	82.24%	85.25%

The Net Pension Liability (NPL) was measured as of December 31, 2015 and 2014. The Plan's Fiduciary Net Position (plan assets) was valued as of the measurement date while the Total Pension Liability (TPL) was determined based upon rolling forward the TPL from actuarial valuations as of December 31, 2014 and 2013, respectively.

Plan provisions. The plan provisions used in the measurement of the NPL as of December 31, 2015 and 2014 are the same as those used in the CCCERA actuarial valuation as of December 31, 2015 and 2014, respectively. The TPL and the Plan's Fiduciary Net Position include liabilities and assets held for the Post Retirement Death Benefit Reserve.

Actuarial assumptions and methods. The TPL as of December 31, 2015 was measured by (1) valuing the TPL as of December 31, 2014 (before the roll forward) to include the following actuarial assumptions that the Retirement Board has adopted for use in the pension funding valuation as of December 31, 2015 and (2) using this TPL in rolling forward the results from December 31, 2014 to December 31, 2015. In particular, the following actuarial assumptions were applied to all periods included in the December 31, 2015 measurement:

Inflation	2.75%
Salary increases	General: 4.00% to 13.25% and Safety: 4.00% to 13.75%, varying by service, including inflation.
Investment rate of return	7.00%, net of pension plan investment expense, including inflation.
Administrative expenses	1.14% of payroll allocated to both the employer and member based on the components of the Normal Cost rates for the employer and member.
Other assumptions	Same as those used in December 31, 2015 funding valuation. See the CCCERA Actuarial Experience Study for the period January 1, 2012 through December 31, 2014 for details.

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The TPL as of December 31, 2014 was measured as of December 31, 2013 used the same actuarial assumptions in the pension funding valuation as of December 31, 2014 and rolling forward the results from December 31, 2013 to December 31, 2014. In particular, the following actuarial assumptions were applied to all periods included in the December 31, 2014 measurement:

Inflation	3.25%
Salary increases	General: 4.75% to 13.50% and Safety: 4.75% to 14.00%, varying by service, including inflation.
Investment rate of return	7.25%, net of pension plan investment expense, including inflation.
Other assumptions	Same as those used in December 31, 2014 funding valuation.

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EXHIBIT 3

Target Asset Allocation

The long-term expected rate of return on pension plan investments was determined in 2016 using a building-block method in which expected future real rates of return (expected returns, net of inflation) are developed for each major asset class. These returns are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage, adding expected inflation and subtracting expected investment expenses and a risk margin. The target allocation and projected arithmetic real rates of return for each major asset class, after deducting inflation but before deducting investment expenses, used in the derivation of the long-term expected investment rate of return assumption are summarized in the following table:

Asset Class	Target Allocation	Long-Term Expected Real Rate of Return
Large Cap U.S. Equity	6%	5.75%
Developed International Equity	10%	6.99%
Emerging Markets Equity	14%	8.95%
Short-Term Govt/Credit	24%	0.20%
U.S. Treasury	2%	0.30%
Real Estate	7%	4.45%
Cash & Equivalents	1%	-0.46%
Risk Diversifying Strategies	2%	4.30%
Private Credit	17%	6.30%
Private Equity	<u>17%</u>	8.10%
Total	100%	

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EXHIBIT 3 (continued)

Target Asset Allocation

Discount rate: The discount rates used to measure the TPL were 7.00% and 7.25% as of December 31, 2015 and December 31, 2014, respectively. The projection of cash flows used to determine the discount rate assumed plan member contributions will be made at the current contribution rates and that employer contributions will be made at rates equal to the actuarially determined contribution rates. For this purpose, only employee and employer contributions that are intended to fund benefits for current plan members and their beneficiaries are included. Projected employer contributions that are intended to fund the service costs for future plan members and their beneficiaries, as well as projected contributions from future plan members, are not included. Based on those assumptions, the Plan's Fiduciary Net Position was projected to be available to make all projected future benefit payments for current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the TPL as of both December 31, 2015 and December 31, 2014.

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EXHIBIT 4

Discount Rate Sensitivity

Sensitivity of the Net Pension Liability to changes in the discount rate. The following presents the NPL of the CCCERA as of December 31, 2015, which is allocated to all employers, calculated using the discount rate of 7.00%, as well as what the CCCERA's NPL would be if it were calculated using a discount rate that is 1-percentage-point lower (6.00%) or 1-percentage-point higher (8.00%) than the current rate. The determination of the NPL by employer is shown later in Exhibit 7.

Employer	1% Decrease (6.00%)	Current Discount Rate (7.00%)	1% Increase (8.00%)
1 - BIMID	\$181,449	\$111,818	\$55,117
2 - Union Cemetery	385,814	147,774	(46,065)
3 - CC Mosquito	9,193,804	5,665,700	2,792,721
4 - CCCFPD	304,660,664	174,340,795	68,219,700
5 - CCCSD	140,696,391	91,746,888	51,886,697
6 - First 5	4,807,924	2,465,341	557,746
7 - County	1,869,981,834	1,024,104,604	335,296,219
8 - CCCERA (the employer)	11,584,028	7,138,680	3,518,778
9 - ECCFPD	33,890,341	22,992,216	14,117,736
10 - Housing Authority	18,553,691	10,788,391	4,465,010
11 - IHSS	2,097,830	1,292,792	637,239
12 - LAFCO	649,366	400,173	197,252
13 - MOFD	64,834,884	39,299,357	18,505,458
14 - Rodeo SD	1,027,695	393,628	(122,701)
15 - RHFD	21,031,844	15,252,152	10,545,677
16 - SRVFPD	135,607,222	80,736,003	36,053,685
17 - Court	<u>58,461,789</u>	<u>30,250,828</u>	<u>7,278,290</u>
Total for all Employers	\$2,677,646,570	\$1,507,127,140	\$553,958,559

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 5

Schedule of Changes in Net Pension Liability – Last Two Plan Years

Reporting Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Measurement Date for Employer under GAS 68	December 31, 2015	December 31, 2014
Total Pension Liability		
1. Service cost	\$192,923,283	\$192,256,663
2. Interest	582,342,316	561,216,191
3. Change of benefit terms	0	0
4. Differences between expected and actual experience	(62,117,935)	(183,604,761)
5. Changes of assumptions	72,186,307	(75,608)
6. Benefit payments, including refunds of member contributions	<u>(406,236,030)</u>	<u>(394,947,705)</u>
7. Net change in Total Pension Liability	\$379,097,941	\$174,844,780
8. Total Pension Liability – beginning	<u>8,104,611,627</u>	<u>7,929,766,847</u>
9. Total Pension Liability – ending	<u>\$8,483,709,568</u>	<u>\$8,104,611,627</u>
Plan's Fiduciary Net Position		
10. Contributions – employer (including employer subvention)	\$323,720,270	\$293,760,413
11. Contributions – plan members (including member subvention)	85,360,637	78,257,665
12. Net investment income	73,611,016	480,502,256
13. Benefit payments, including refunds of member contributions	(406,236,030)	(394,947,705)
14. Administrative expense	(8,115,359)	(6,979,995)
15. Other	<u>(668,336)</u>	<u>0</u>
16. Net change in Plan's Fiduciary Net Position	\$67,672,198	\$450,592,634
17. Plan's Fiduciary Net Position – beginning	<u>6,908,910,230</u>	<u>6,458,317,596</u>
18. Plan's Fiduciary Net Position – ending	\$6,976,582,428	\$6,908,910,230
19. Net Pension Liability – ending (9) – (18)	<u>\$1,507,127,140</u>	<u>\$1,195,701,397</u>
20. Plan's Fiduciary Net Position as a percentage of the Total Pension Liability	82.24%	85.25%
21. Covered employee payroll ⁽¹⁾	\$709,818,858	\$671,485,798
22. Plan Net Pension Liability as percentage of covered employee payroll	212.33%	178.07%

⁽¹⁾ Covered employee payroll represents compensation earnable and pensionable compensation. Only compensation earnable and pensionable compensation that would possibly go into the determination of retirement benefits are included.

Notes to Schedule:

Benefit changes: None

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 6

Schedule of Employer Contributions – Last Ten Plan Years

Year Ended December 31	Actuarially Determined Contributions⁽¹⁾	Contributions in Relation to the Actuarially Determined Contributions	Contribution Deficiency/(Excess)	Covered-Employee Payroll⁽²⁾	Contributions as a Percentage of Covered Employee Payroll
2006	\$179,755,315	\$179,755,315 ⁽³⁾	\$0	\$627,546,408	28.64%
2007	196,929,570	196,929,570	0	653,953,163	30.11%
2008	206,518,693	206,518,693	0	671,617,932	30.75%
2009	195,631,673	195,631,673	0	704,947,668	27.75%
2010	183,950,930	183,950,930	0	694,443,999	26.49%
2011	200,388,994	200,388,994	0	687,443,206	29.15%
2012	212,321,325	212,321,325	0	666,394,146	31.86%
2013	228,017,452	228,017,452 ⁽⁴⁾	0	638,635,912	35.70%
2014	288,760,413	288,760,413 ⁽⁵⁾	0	671,485,798	43.00%
2015	321,220,270	321,220,270 ⁽⁶⁾	0	709,818,858	45.25%

⁽¹⁾ All "Actuarially Determined Contributions" through June 30, 2014 were determined as the "Annual Required Contribution" under GAS 25 and 27. They include any employer subvention of member contributions.

⁽²⁾ Covered employee payroll represents compensation earnable and pensionable compensation. Only compensation earnable and pensionable compensation that would possibly go into the determination of retirement benefits are included.

⁽³⁾ Excludes Pension Obligation Bond proceeds of \$11,693,396.

⁽⁴⁾ Excludes additional contributions towards UAAL of \$7,000,000.

⁽⁵⁾ Excludes additional contributions towards UAAL of \$5,000,000.

⁽⁶⁾ Excludes additional contributions towards UAAL of \$2,500,000.

See accompanying notes to this schedule on next page.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

Notes to Exhibit 6

Methods and assumptions used to establish "actuarially determined contribution" rates:

Valuation date	Actuarially determined contribution rates are calculated as of December 31, two and a half years prior to the end of the fiscal year in which contributions are reported	
Actuarial cost method	Entry Age Actuarial Cost Method	
Amortization method	Level percent of payroll	
Remaining amortization period	Remaining balance of December 31, 2007 UAAL is amortized over a fixed (decreasing or closed) period with 8 years remaining as of December 31, 2014. Any changes in UAAL after December 31, 2007 will be separately amortized over a fixed 18-year period effective with that valuation. Effective December 31, 2013, any changes in UAAL due to plan amendments (with the exception of a change due to retirement incentives) will be amortized over a 10-year fixed period effective with that valuation. The entire increase in UAAL resulting from a temporary retirement incentive will be funded in full upon adoption of the incentive.	
Asset valuation method	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. The Actuarial Value of Assets is reduced by the value of the non-valuation reserves and designations.	
Actuarial assumptions:	<u>December 31, 2015 Valuation Date</u>	<u>December 31, 2014 Valuation Date</u>
Investment rate of return	7.00%, net of pension plan investment expenses, including inflation	7.25%, net of pension plan administration and investment expenses, including inflation
Inflation rate	2.75%	3.25%
Administrative expenses	1.14% of payroll allocated to both the employer and member based on the components of the Normal Cost rates for the employer and member.	Not Applicable
Real across-the-board salary increase	0.50%	0.75%
Projected salary increases ⁽¹⁾	General: 4.00% to 13.25% and Safety: 4.00% to 13.75%	General: 4.75% to 13.50% and Safety: 4.75% to 14.00%
Cost of living adjustments	2.75% per year except for Safety Tier C, PEPRA Tier E benefits and PEPRA Tier 4 (2% COLA) and Tier 5 (2% COLA) benefits for members covered under certain memoranda of understanding are assumed to increase at 2% per year. All increases are contingent upon actual increases in CPI.	3% per year except for Tier 3 and PEPRA Tier 5 (3% COLA) disability benefits and Tier 2 benefits that are valued as a 3.25% increase per year. Safety Tier C, PEPRA Tier E and PEPRA Tier 5 (2% COLA) benefits for members are assumed to increase at 2% per year. All increases are contingent upon actual increases in CPI.
Other assumptions	Same as those used in the December 31, 2015 funding actuarial valuation	Same as those used in the December 31, 2014 funding actuarial valuation

⁽¹⁾ Includes inflation at 2.75% plus real across-the-board salary increases of 0.50% plus promotional and merit increases for December 31, 2015 and includes inflation at 3.25% plus real across-the-board salary increases of 0.75% plus promotional and merit increases for December 31, 2014 12

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 7

Determination of Proportionate Share

**Actual Compensation by Employer and Cost Group
January 1, 2015 to December 31, 2015**

Employer	Cost Group	Cost Group	Cost Group #3	Cost Group #3	Cost Group #4	Cost Group #4
	#1 & 2	#1 & 2		Percentage		Percentage
1 - BIMID	\$58,347	0.011%	\$0	0.000%	\$0	0.000%
2 - Union Cemetery	0	0.000%	0	0.000%	0	0.000%
3 - CC Mosquito	2,956,365	0.554%	0	0.000%	0	0.000%
4 - CCCFPD	0	0.000%	0	0.000%	0	0.000%
5 - CCCSD	0	0.000%	29,061,743	100.000%	0	0.000%
6 - First 5	1,962,961	0.368%	0	0.000%	0	0.000%
7 - County	496,691,250	93.119%	0	0.000%	0	0.000%
8 - CCCERA (the employer)	3,724,967	0.698%	0	0.000%	0	0.000%
9 - ECCFPD	54,076	0.010%	0	0.000%	0	0.000%
10 - Housing Authority	0	0.000%	0	0.000%	4,841,907	100.000%
11 - IHSS	674,579	0.126%	0	0.000%	0	0.000%
12 - LAFCO	208,810	0.039%	0	0.000%	0	0.000%
13 - MOFD	508,374	0.095%	0	0.000%	0	0.000%
14 - Rodeo SD	0	0.000%	0	0.000%	0	0.000%
15 - RHFD	10,784	0.002%	0	0.000%	0	0.000%
16 - SRVFPD	2,902,073	0.544%	0	0.000%	0	0.000%
17 - Court	<u>23,639,297</u>	<u>4.432%</u>	<u>0</u>	<u>0.000%</u>	<u>0</u>	<u>0.000%</u>
Total	\$533,391,883	100.000%	\$29,061,743	100.000%	\$4,841,907	100.000%

Note: Results may not add due to rounding.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 7 (continued)

Determination of Proportionate Share

Actual Compensation by Employer and Cost Group January 1, 2015 to December 31, 2015				
Employer	Cost Group #5		Cost Group #6	
	Cost Group #5	Percentage	Cost Group #6	Percentage
1 - BIMID	\$0	0.000%	\$0	0.000%
2 - Union Cemetery	0	0.000%	213,336	27.295%
3 - CC Mosquito	0	0.000%	0	0.000%
4 - CCCFPD	3,500,227	100.000%	0	0.000%
5 - CCCSD	0	0.000%	0	0.000%
6 - First 5	0	0.000%	0	0.000%
7 - County	0	0.000%	0	0.000%
8 - CCCERA (the employer)	0	0.000%	0	0.000%
9 - ECCFPD	0	0.000%	0	0.000%
10 - Housing Authority	0	0.000%	0	0.000%
11 - IHSS	0	0.000%	0	0.000%
12 - LAFCO	0	0.000%	0	0.000%
13 - MOFD	0	0.000%	0	0.000%
14 - Rodeo SD	0	0.000%	568,265	72.705%
15 - RHFD	0	0.000%	0	0.000%
16 - SRVFPD	0	0.000%	0	0.000%
17 - Court	<u>0</u>	<u>0.000%</u>	<u>0</u>	<u>0.000%</u>
Total	\$3,500,227	100.000%	\$781,601	100.000%

Note: Results may not add due to rounding.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 7 (continued)

Determination of Proportionate Share

**Actual Compensation by Employer and Cost Group
January 1, 2015 to December 31, 2015**

Employer	Cost Group	Cost Group	Cost Group #8	Cost Group #8	Cost Group #10	Cost Group #10
	#7 & 9	#7 & 9		Percentage		Percentage
1 - BIMID	\$0	0.000%	\$0	0.000%	\$0	0.000%
2 - Union Cemetery	0	0.000%	0	0.000%	0	0.000%
3 - CC Mosquito	0	0.000%	0	0.000%	0	0.000%
4 - CCCFPD	0	0.000%	28,775,170	91.934%	0	0.000%
5 - CCCSD	0	0.000%	0	0.000%	0	0.000%
6 - First 5	0	0.000%	0	0.000%	0	0.000%
7 - County	81,621,428	100.000%	0	0.000%	0	0.000%
8 - CCCERA (the employer)	0	0.000%	0	0.000%	0	0.000%
9 - ECCFPD	0	0.000%	2,524,725	8.066%	0	0.000%
10 - Housing Authority	0	0.000%	0	0.000%	0	0.000%
11 - IHSS	0	0.000%	0	0.000%	0	0.000%
12 - LAFCO	0	0.000%	0	0.000%	0	0.000%
13 - MOFD	0	0.000%	0	0.000%	6,349,629	100.000%
14 - Rodeo SD	0	0.000%	0	0.000%	0	0.000%
15 - RHFD	0	0.000%	0	0.000%	0	0.000%
16 - SRVFPD	0	0.000%	0	0.000%	0	0.000%
17 - Court	<u>0</u>	<u>0.000%</u>	<u>0</u>	<u>0.000%</u>	<u>0</u>	<u>0.000%</u>
Total	\$81,621,428	100.000%	\$31,299,894	100.000%	\$6,349,629	100.000%

Note: Results may not add due to rounding.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 7 (continued)

Determination of Proportionate Share

Actual Compensation by Employer and Cost Group January 1, 2015 to December 31, 2015						
Employer	Cost Group #11		Cost Group #12		Total	Total
	Cost Group #11	Percentage	Cost Group #12	Percentage	Compensation	Percentage
1 - BIMID	\$0	0.000%	\$0	0.000%	\$58,347	0.008%
2 - Union Cemetery	0	0.000%	0	0.000%	213,336	0.030%
3 - CC Mosquito	0	0.000%	0	0.000%	2,956,365	0.416%
4 - CCCFPD	0	0.000%	0	0.000%	32,275,397	4.547%
5 - CCCSD	0	0.000%	0	0.000%	29,061,743	4.094%
6 - First 5	0	0.000%	0	0.000%	1,962,961	0.277%
7 - County	0	0.000%	0	0.000%	578,312,679	81.473%
8 - CCCERA (the employer)	0	0.000%	0	0.000%	3,724,967	0.525%
9 - ECCFPD	0	0.000%	0	0.000%	2,578,801	0.363%
10 - Housing Authority	0	0.000%	0	0.000%	4,841,907	0.682%
11 - IHSS	0	0.000%	0	0.000%	674,579	0.095%
12 - LAFCO	0	0.000%	0	0.000%	208,810	0.029%
13 - MOFD	0	0.000%	0	0.000%	6,858,003	0.966%
14 - Rodeo SD	0	0.000%	0	0.000%	568,265	0.080%
15 - RHFD	0	0.000%	2,332,060	100.000%	2,342,844	0.330%
16 - SRVFPD	16,638,484	100.000%	0	0.000%	19,540,557	2.753%
17 - Court	<u>0</u>	<u>0.000%</u>	<u>0</u>	<u>0.000%</u>	<u>23,639,297</u>	<u>3.330%</u>
Total	\$16,638,484	100.000%	\$2,332,060	100.000%	\$709,818,858	100.000%

Note: Results may not add due to rounding.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 7 (continued)

Determination of Proportionate Share

**PART ONE - Allocation of December 31, 2015 Net Pension Liability (NPL)
Excluding Pension Obligation Bonds (POB) and UAAL Prepayments for Certain Employers**

Employer	Cost Group #1 & 2		Cost Group #3	Cost Group #3		Cost Group #4	Cost Group #4
	Cost Group #1 & 2	Percentage		Percentage	Percentage		
1 - BIMID	\$111,818	0.011%	\$0	0.000%	\$0	0.000%	
2 - Union Cemetery	0	0.000%	0	0.000%	0	0.000%	
3 - CC Mosquito	5,665,700	0.554%	0	0.000%	0	0.000%	
4 - CCCFPD	0	0.000%	0	0.000%	0	0.000%	
5 - CCCSD	0	0.000%	91,746,888	100.000%	0	0.000%	
6 - First 5	3,761,900	0.368%	0	0.000%	0	0.000%	
7 - County	951,879,596	93.119%	0	0.000%	0	0.000%	
8 - CCCERA (the employer)	7,138,680	0.698%	0	0.000%	0	0.000%	
9 - ECCFPD	103,634	0.010%	0	0.000%	0	0.000%	
10 - Housing Authority	0	0.000%	0	0.000%	10,788,391	100.000%	
11 - IHSS	1,292,792	0.126%	0	0.000%	0	0.000%	
12 - LAFCO	400,173	0.039%	0	0.000%	0	0.000%	
13 - MOFD	974,269	0.095%	0	0.000%	0	0.000%	
14 - Rodeo SD	0	0.000%	0	0.000%	0	0.000%	
15 - RHFD	20,667	0.002%	0	0.000%	0	0.000%	
16 - SRVFPD	5,561,652	0.544%	0	0.000%	0	0.000%	
17 - Court	<u>45,303,324</u>	<u>4.432%</u>	<u>0</u>	<u>0.000%</u>	<u>0</u>	<u>0.000%</u>	
Total	\$1,022,214,205	100.000%	\$91,746,888	100.000%	\$10,788,391	100.000%	

Note: Results may not add due to rounding.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 7 (continued)

Determination of Proportionate Share

PART ONE - Allocation of December 31, 2015 Net Pension Liability (NPL)				
<u>Excluding Pension Obligation Bonds (POB) and UAAL Prepayments for Certain Employers</u>				
Employer	Cost Group #5		Cost Group #6	
	Cost Group #5	Percentage	Cost Group #6	Percentage
1 - BIMID	\$0	0.000%	\$0	0.000%
2 - Union Cemetery	0	0.000%	147,774	27.295%
3 - CC Mosquito	0	0.000%	0	0.000%
4 - CCCFPD	6,532,307	100.000%	0	0.000%
5 - CCCSD	0	0.000%	0	0.000%
6 - First 5	0	0.000%	0	0.000%
7 - County	0	0.000%	0	0.000%
8 - CCCERA (the employer)	0	0.000%	0	0.000%
9 - ECCFPD	0	0.000%	0	0.000%
10 - Housing Authority	0	0.000%	0	0.000%
11 - IHSS	0	0.000%	0	0.000%
12 - LAFCO	0	0.000%	0	0.000%
13 - MOFD	0	0.000%	0	0.000%
14 - Rodeo SD	0	0.000%	393,628	72.705%
15 - RHFD	0	0.000%	0	0.000%
16 - SRVFPD	0	0.000%	0	0.000%
17 - Court	<u>0</u>	<u>0.000%</u>	<u>0</u>	<u>0.000%</u>
Total	\$6,532,307	100.000%	\$541,402	100.000%

Note: Results may not add due to rounding.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 7 (continued)

Determination of Proportionate Share

**PART ONE - Allocation of December 31, 2015 Net Pension Liability (NPL)
Excluding Pension Obligation Bonds (POB) and UAAL Prepayments for Certain Employers**

Employer	Cost Group	Cost Group	Cost Group #8		Cost Group #10	
	#7 & 9	#7 & 9 Percentage	Cost Group #8	Percentage	Cost Group #10	Percentage
1 - BIMID	\$0	0.000%	\$0	0.000%	\$0	0.000%
2 - Union Cemetery	0	0.000%	0	0.000%	0	0.000%
3 - CC Mosquito	0	0.000%	0	0.000%	0	0.000%
4 - CCCFPD	0	0.000%	260,869,166	91.934%	0	0.000%
5 - CCCSD	0	0.000%	0	0.000%	0	0.000%
6 - First 5	0	0.000%	0	0.000%	0	0.000%
7 - County	388,496,801	100.000%	0	0.000%	0	0.000%
8 - CCCERA (the employer)	0	0.000%	0	0.000%	0	0.000%
9 - ECCFPD	0	0.000%	22,888,582	8.066%	0	0.000%
10 - Housing Authority	0	0.000%	0	0.000%	0	0.000%
11 - IHSS	0	0.000%	0	0.000%	0	0.000%
12 - LAFCO	0	0.000%	0	0.000%	0	0.000%
13 - MOFD	0	0.000%	0	0.000%	38,837,001	100.000%
14 - Rodeo SD	0	0.000%	0	0.000%	0	0.000%
15 - RHFD	0	0.000%	0	0.000%	0	0.000%
16 - SRVFPD	0	0.000%	0	0.000%	0	0.000%
17 - Court	<u>0</u>	<u>0.000%</u>	<u>0</u>	<u>0.000%</u>	<u>0</u>	<u>0.000%</u>
Total	\$388,496,801	100.000%	\$283,757,748	100.000%	\$38,837,001	100.000%

Note: Results may not add due to rounding.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 7 (continued)

Determination of Proportionate Share

PART ONE - Allocation of December 31, 2015 Net Pension Liability (NPL)						
<u>Excluding Pension Obligation Bonds (POB) and UAAL Prepayments for Certain Employers</u>						
Employer	Cost Group #11		Cost Group #12		Total NPL	Total Percentage
	Cost Group #11	Percentage	Cost Group #12	Percentage		
1 - BIMID	\$0	0.000%	\$0	0.000%	\$111,818	0.006%
2 - Union Cemetery	0	0.000%	0	0.000%	147,774	0.008%
3 - CC Mosquito	0	0.000%	0	0.000%	5,665,700	0.293%
4 - CCCFPD	0	0.000%	0	0.000%	267,401,473	13.831%
5 - CCCSD	0	0.000%	0	0.000%	91,746,888	4.746%
6 - First 5	0	0.000%	0	0.000%	3,761,900	0.195%
7 - County	0	0.000%	0	0.000%	1,340,376,397	69.330%
8 - CCCERA (the employer)	0	0.000%	0	0.000%	7,138,680	0.369%
9 - ECCFPD	0	0.000%	0	0.000%	22,992,216	1.189%
10 - Housing Authority	0	0.000%	0	0.000%	10,788,391	0.558%
11 - IHSS	0	0.000%	0	0.000%	1,292,792	0.067%
12 - LAFCO	0	0.000%	0	0.000%	400,173	0.021%
13 - MOFD	0	0.000%	0	0.000%	39,811,270	2.059%
14 - Rodeo SD	0	0.000%	0	0.000%	393,628	0.020%
15 - RHFD	0	0.000%	15,231,485	100.000%	15,252,152	0.789%
16 - SRVFPD	75,174,351	100.000%	0	0.000%	80,736,003	4.176%
17 - Court	<u>0</u>	<u>0.000%</u>	<u>0</u>	<u>0.000%</u>	<u>45,303,324</u>	<u>2.343%</u>
Total	\$75,174,351	100.000%	\$15,231,485	100.000%	\$1,933,320,579	100.000%

Note: Results may not add due to rounding.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 7 (continued)

Determination of Proportionate Share

**PART TWO - Allocation of December 31, 2015 Net Pension Liability (NPL)
Including Pension Obligation Bonds (POB) and UAAL Prepayments for Certain Employers**

Employer	Cost Group #1 & 2		Cost Group #3	Cost Group #3		Cost Group #4	Cost Group #4
	Cost Group #1 & 2	Percentage		Percentage	Percentage		
1 - BIMID	\$111,818	0.016%	\$0	0.000%	\$0	0.000%	
2 - Union Cemetery	0	0.000%	0	0.000%	0	0.000%	
3 - CC Mosquito	5,665,700	0.822%	0	0.000%	0	0.000%	
4 - CCCFPD	0	0.000%	0	0.000%	0	0.000%	
5 - CCCSD	0	0.000%	91,746,888	100.000%	0	0.000%	
6 - First 5	2,465,341	0.358%	0	0.000%	0	0.000%	
7 - County	635,607,803	92.240%	0	0.000%	0	0.000%	
8 - CCCERA (the employer)	7,138,680	1.036%	0	0.000%	0	0.000%	
9 - ECCFPD	103,634	0.015%	0	0.000%	0	0.000%	
10 - Housing Authority	0	0.000%	0	0.000%	10,788,391	100.000%	
11 - IHSS	1,292,792	0.188%	0	0.000%	0	0.000%	
12 - LAFCO	400,173	0.058%	0	0.000%	0	0.000%	
13 - MOFD	462,356	0.067%	0	0.000%	0	0.000%	
14 - Rodeo SD	0	0.000%	0	0.000%	0	0.000%	
15 - RHFD	20,667	0.003%	0	0.000%	0	0.000%	
16 - SRVFPD	5,561,652	0.807%	0	0.000%	0	0.000%	
17 - Court	<u>30,250,828</u>	<u>4.390%</u>	<u>0</u>	<u>0.000%</u>	<u>0</u>	<u>0.000%</u>	
Total	\$689,081,444	100.000%	\$91,746,888	100.000%	\$10,788,391	100.000%	

Note: Results may not add due to rounding.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 7 (continued)

Determination of Proportionate Share

PART TWO - Allocation of December 31, 2015 Net Pension Liability (NPL)				
<u>Including</u> Pension Obligation Bonds (POB) and UAAL Prepayments for Certain Employers				
Employer	Cost Group #5		Cost Group #6	
	Cost Group #5	Percentage	Cost Group #6	Percentage
1 - BIMID	\$0	0.000%	\$0	0.000%
2 - Union Cemetery	0	0.000%	147,774	27.295%
3 - CC Mosquito	0	0.000%	0	0.000%
4 - CCCFPD	6,532,307	100.000%	0	0.000%
5 - CCCSD	0	0.000%	0	0.000%
6 - First 5	0	0.000%	0	0.000%
7 - County	0	0.000%	0	0.000%
8 - CCCERA (the employer)	0	0.000%	0	0.000%
9 - ECCFPD	0	0.000%	0	0.000%
10 - Housing Authority	0	0.000%	0	0.000%
11 - IHSS	0	0.000%	0	0.000%
12 - LAFCO	0	0.000%	0	0.000%
13 - MOFD	0	0.000%	0	0.000%
14 - Rodeo SD	0	0.000%	393,628	72.705%
15 - RHFD	0	0.000%	0	0.000%
16 - SRVFPD	0	0.000%	0	0.000%
17 - Court	<u>0</u>	<u>0.000%</u>	<u>0</u>	<u>0.000%</u>
Total	\$6,532,307	100.000%	\$541,402	100.000%

Note: Results may not add due to rounding.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 7 (continued)

Determination of Proportionate Share

PART TWO - Allocation of December 31, 2015 Net Pension Liability (NPL)						
<u>Including Pension Obligation Bonds (POB) and UAAL Prepayments for Certain Employers</u>						
Employer	Cost Group #7 & 9	Cost Group #7 & 9 Percentage	Cost Group #8	Cost Group #8 Percentage	Cost Group #10	Cost Group #10 Percentage
1 - BIMID	\$0	0.000%	\$0	0.000%	\$0	0.000%
2 - Union Cemetery	0	0.000%	0	0.000%	0	0.000%
3 - CC Mosquito	0	0.000%	0	0.000%	0	0.000%
4 - CCCFPD	0	0.000%	167,808,488	87.997%	0	0.000%
5 - CCCSD	0	0.000%	0	0.000%	0	0.000%
6 - First 5	0	0.000%	0	0.000%	0	0.000%
7 - County	388,496,801	100.000%	0	0.000%	0	0.000%
8 - CCCERA (the employer)	0	0.000%	0	0.000%	0	0.000%
9 - ECCFPD	0	0.000%	22,888,582	12.003%	0	0.000%
10 - Housing Authority	0	0.000%	0	0.000%	0	0.000%
11 - IHSS	0	0.000%	0	0.000%	0	0.000%
12 - LAFCO	0	0.000%	0	0.000%	0	0.000%
13 - MOFD	0	0.000%	0	0.000%	38,837,001	100.000%
14 - Rodeo SD	0	0.000%	0	0.000%	0	0.000%
15 - RHFD	0	0.000%	0	0.000%	0	0.000%
16 - SRVFPD	0	0.000%	0	0.000%	0	0.000%
17 - Court	<u>0</u>	<u>0.000%</u>	<u>0</u>	<u>0.000%</u>	<u>0</u>	<u>0.000%</u>
Total	\$388,496,801	100.000%	\$190,697,070	100.000%	\$38,837,001	100.000%

Note: Results may not add due to rounding.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 7 (continued)

Determination of Proportionate Share

PART TWO - Allocation of December 31, 2015 Net Pension Liability (NPL)						
<u>Including Pension Obligation Bonds (POB) and UAAL Prepayments for Certain Employers</u>						
Employer	Cost Group #11		Cost Group #12		Total NPL	Total Percentage
	Cost Group #11	Percentage	Cost Group #12	Percentage		
1 - BIMID	\$0	0.000%	\$0	0.000%	\$111,818	0.007%
2 - Union Cemetery	0	0.000%	0	0.000%	147,774	0.010%
3 - CC Mosquito	0	0.000%	0	0.000%	5,665,700	0.376%
4 - CCCFPD	0	0.000%	0	0.000%	174,340,795	11.568%
5 - CCCSD	0	0.000%	0	0.000%	91,746,888	6.088%
6 - First 5	0	0.000%	0	0.000%	2,465,341	0.164%
7 - County	0	0.000%	0	0.000%	1,024,104,604	67.951%
8 - CCCERA (the employer)	0	0.000%	0	0.000%	7,138,680	0.474%
9 - ECCFPD	0	0.000%	0	0.000%	22,992,216	1.526%
10 - Housing Authority	0	0.000%	0	0.000%	10,788,391	0.716%
11 - IHSS	0	0.000%	0	0.000%	1,292,792	0.086%
12 - LAFCO	0	0.000%	0	0.000%	400,173	0.027%
13 - MOFD	0	0.000%	0	0.000%	39,299,357	2.608%
14 - Rodeo SD	0	0.000%	0	0.000%	393,628	0.026%
15 - RHFD	0	0.000%	15,231,485	100.000%	15,252,152	1.012%
16 - SRVFPD	75,174,351	100.000%	0	0.000%	80,736,003	5.357%
17 - Court	<u>0</u>	<u>0.000%</u>	<u>0</u>	<u>0.000%</u>	<u>30,250,828</u>	<u>2.007%</u>
Total	\$75,174,351	100.000%	\$15,231,485	100.000%	\$1,507,127,140	100.000%

Note: Results may not add due to rounding.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 7 (continued)

Determination of Proportionate Share

Notes Regarding Determination of Proportionate Share as of December 31, 2015 Measurement Date:

1. Based on actual January 1, 2015 through December 31, 2015 compensation information that was provided by CCCERA.
2. The Net Pension Liability (NPL) for each Cost Group is the Total Pension Liability (TPL) minus the Plan's Fiduciary Net Position (plan assets). The TPL for each Cost Group is obtained from internal valuation results based on the actual participants in each Cost Group. The Plan's Fiduciary Net Position for each Cost Group was determined by adjusting the Valuation Value of Assets (VVA) for each Cost Group (which is used to determine employer contribution rates) by the ratio of the total CCCERA Plan's Fiduciary Net Position to total CCCERA VVA. Based on this methodology, any non-valuation reserves (such as the Post Retirement Death Benefit) are allocated amongst the cost groups based on each cost group's valuation value of assets.
3. For Cost Groups that have one employer, all of the NPL for that Cost Group is allocated to the corresponding employer.
4. For Cost Groups that have multiple employers, the NPL is allocated based on the actual compensation within the Cost Group.
 - a. First calculate ratio of employer's compensation to the total compensation for the Cost Group.
 - b. This ratio is multiplied by an "adjusted" NPL. This adjusted NPL is larger than the actual NPL as it excludes proceeds from Pension Obligation Bonds and any Unfunded Actuarial Accrued Liability (UAAL) prepayments from the Cost Group's assets when determining the employer's proportionate share of the NPL for the Cost Group. The allocation of the adjusted NPL is shown above in PART ONE of Exhibit 7.
 - c. The amounts of the proceeds from Pension Obligation Bonds and UAAL prepayments as of December 31, 2015 allocated to those employers within each Cost Group are as follows:

Cost Group #1: County	\$316,271,793
Cost Group #1: Court	\$15,052,496
Cost Group #1: MOFD	\$511,913
Cost Group #1: First 5	\$1,296,559
Cost Group #8: CCCFPD	\$93,060,678

Note that the proceeds from Pension Obligation Bonds for Contra Costa County and the Superior Court as of December 31, 2015 (total of \$331,324,289) were allocated proportionally based on the compensation information.
 - d. Subtract from the adjusted NPL in PART ONE the outstanding balance of the proceeds from any Pension Obligation Bonds and any UAAL prepayments for those employers in each Cost Group that are subject to these adjustments. The resulting actual NPL is shown in PART TWO of Exhibit 7.
5. If the employer is in several Cost Groups, the employer's total allocated NPL is the sum of its allocated NPL from each Cost Group.
6. Cost Group #1 and Cost Group #2 were combined and Cost Group #7 and Cost Group #9 were combined consistent with the determination of the UAAL rate in the annual funding actuarial valuation.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 7 (continued)

Determination of Proportionate Share

Notes Regarding Determination of Proportionate Share as of December 31, 2015 Measurement Date:

The following items are allocated based on the corresponding employer allocation percentage or proportionate share shown above on the total Plan basis.

- 1) Net Pension Liability
- 2) Service cost
- 3) Interest on the Total Pension Liability
- 4) Expensed portion of current-period benefit changes
- 5) Expensed portion of current-period difference between expected and actual experience in the Total Pension Liability
- 6) Expensed portion of current-period changes of assumptions or other inputs
- 7) Member contributions
- 8) Projected earnings on plan investments
- 9) Expensed portion of current-period differences between actual and projected earnings on plan investments
- 10) Administrative expense
- 11) Other expenses
- 12) Recognition of beginning of year deferred outflows of resources as pension expense
- 13) Recognition of beginning of year deferred inflows of resources as pension expense

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 7 (continued)

Determination of Proportionate Share

Actual Compensation by Employer and Cost Group January 1, 2014 to December 31, 2014						
Employer	Cost Group #1 & 2	Cost Group #1 & 2 Percentage	Cost Group #3	Cost Group #3 Percentage	Cost Group #4	Cost Group #4 Percentage
1 - BIMID	\$63,762	0.013%	\$0	0.000%	\$0	0.000%
2 - Union Cemetery	0	0.000%	0	0.000%	0	0.000%
3 - CC Mosquito	2,840,172	0.565%	0	0.000%	0	0.000%
4 - CCCFPD	0	0.000%	0	0.000%	0	0.000%
5 - CCCSD	0	0.000%	26,906,131	100.000%	0	0.000%
6 - First 5	1,735,009	0.345%	0	0.000%	0	0.000%
7 - County	468,102,519	93.196%	0	0.000%	0	0.000%
8 - CCCERA (the employer)	3,262,463	0.650%	0	0.000%	0	0.000%
9 - ECCFPD	52,840	0.011%	0	0.000%	0	0.000%
10 - Housing Authority	0	0.000%	0	0.000%	4,691,885	100.000%
11 - IHSS	578,877	0.115%	0	0.000%	0	0.000%
12 - LAFCO	202,859	0.040%	0	0.000%	0	0.000%
13 - MOFD	486,284	0.097%	0	0.000%	0	0.000%
14 - Rodeo SD	0	0.000%	0	0.000%	0	0.000%
15 - RHFD	80,616	0.016%	0	0.000%	0	0.000%
16 - SRVFPD	2,792,368	0.556%	0	0.000%	0	0.000%
17 - Court	<u>22,081,605</u>	<u>4.396%</u>	<u>0</u>	<u>0.000%</u>	<u>0</u>	<u>0.000%</u>
Total	\$502,279,374	100.000%	\$26,906,131	100.000%	\$4,691,885	100.000%

Note: Results may not add due to rounding.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 7 (continued)

Determination of Proportionate Share

Actual Compensation by Employer and Cost Group January 1, 2014 to December 31, 2014				
Employer	Cost Group #5		Cost Group #6	
	Cost Group #5	Percentage	Cost Group #6	Percentage
1 - BIMID	\$0	0.000%	\$0	0.000%
2 - Union Cemetery	0	0.000%	213,716	26.612%
3 - CC Mosquito	0	0.000%	0	0.000%
4 - CCCFPD	3,469,231	100.000%	0	0.000%
5 - CCCSD	0	0.000%	0	0.000%
6 - First 5	0	0.000%	0	0.000%
7 - County	0	0.000%	0	0.000%
8 - CCCERA (the employer)	0	0.000%	0	0.000%
9 - ECCFPD	0	0.000%	0	0.000%
10 - Housing Authority	0	0.000%	0	0.000%
11 - IHSS	0	0.000%	0	0.000%
12 - LAFCO	0	0.000%	0	0.000%
13 - MOFD	0	0.000%	0	0.000%
14 - Rodeo SD	0	0.000%	589,379	73.388%
15 - RHFD	0	0.000%	0	0.000%
16 - SRVFPD	0	0.000%	0	0.000%
17 - Court	<u>0</u>	<u>0.000%</u>	<u>0</u>	<u>0.000%</u>
Total	\$3,469,231	100.000%	\$803,095	100.000%

Note: Results may not add due to rounding.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 7 (continued)

Determination of Proportionate Share

Actual Compensation by Employer and Cost Group January 1, 2014 to December 31, 2014						
Employer	Cost Group #7 & 9	Cost Group #7 & 9 Percentage	Cost Group #8	Cost Group #8 Percentage	Cost Group #10	Cost Group #10 Percentage
1 - BIMID	\$0	0.000%	\$0	0.000%	\$0	0.000%
2 - Union Cemetery	0	0.000%	0	0.000%	0	0.000%
3 - CC Mosquito	0	0.000%	0	0.000%	0	0.000%
4 - CCCFPD	0	0.000%	26,113,394	89.754%	0	0.000%
5 - CCCSD	0	0.000%	0	0.000%	0	0.000%
6 - First 5	0	0.000%	0	0.000%	0	0.000%
7 - County	79,566,908	100.000%	0	0.000%	0	0.000%
8 - CCCERA (the employer)	0	0.000%	0	0.000%	0	0.000%
9 - ECCFPD	0	0.000%	2,981,124	10.246%	0	0.000%
10 - Housing Authority	0	0.000%	0	0.000%	0	0.000%
11 - IHSS	0	0.000%	0	0.000%	0	0.000%
12 - LAFCO	0	0.000%	0	0.000%	0	0.000%
13 - MOFD	0	0.000%	0	0.000%	6,863,879	100.000%
14 - Rodeo SD	0	0.000%	0	0.000%	0	0.000%
15 - RHFD	0	0.000%	0	0.000%	0	0.000%
16 - SRVFPD	0	0.000%	0	0.000%	0	0.000%
17 - Court	<u>0</u>	<u>0.000%</u>	<u>0</u>	<u>0.000%</u>	<u>0</u>	<u>0.000%</u>
Total	\$79,566,908	100.000%	\$29,094,518	100.000%	\$6,863,879	100.000%

Note: Results may not add due to rounding.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 7 (continued)

Determination of Proportionate Share

Actual Compensation by Employer and Cost Group January 1, 2014 to December 31, 2014						
Employer	Cost Group #11		Cost Group #12		Total Compensation	Total Percentage
	Cost Group #11	Percentage	Cost Group #12	Percentage		
1 - BIMID	\$0	0.000%	\$0	0.000%	\$63,762	0.009%
2 - Union Cemetery	0	0.000%	0	0.000%	213,716	0.032%
3 - CC Mosquito	0	0.000%	0	0.000%	2,840,172	0.423%
4 - CCCFPD	0	0.000%	0	0.000%	29,582,625	4.406%
5 - CCCSD	0	0.000%	0	0.000%	26,906,131	4.007%
6 - First 5	0	0.000%	0	0.000%	1,735,009	0.258%
7 - County	0	0.000%	0	0.000%	547,669,428	81.561%
8 - CCCERA (the employer)	0	0.000%	0	0.000%	3,262,463	0.486%
9 - ECCFPD	0	0.000%	0	0.000%	3,033,964	0.452%
10 - Housing Authority	0	0.000%	0	0.000%	4,691,885	0.699%
11 - IHSS	0	0.000%	0	0.000%	578,877	0.086%
12 - LAFCO	0	0.000%	0	0.000%	202,859	0.030%
13 - MOFD	0	0.000%	0	0.000%	7,350,163	1.095%
14 - Rodeo SD	0	0.000%	0	0.000%	589,379	0.088%
15 - RHFD	0	0.000%	1,988,894	100.000%	2,069,510	0.308%
16 - SRVFPD	15,821,884	100.000%	0	0.000%	18,614,252	2.772%
17 - Court	<u>0</u>	<u>0.000%</u>	<u>0</u>	<u>0.000%</u>	<u>22,081,605</u>	<u>3.288%</u>
Total	\$15,821,884	100.000%	\$1,988,894	100.000%	\$671,485,798	100.000%

Note: Results may not add due to rounding.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 7 (continued)

Determination of Proportionate Share

**PART ONE - Allocation of December 31, 2014 Net Pension Liability (NPL)
Excluding Pension Obligation Bonds (POB) and UAAL Prepayments for Certain Employers**

Employer	Cost Group #1 & 2		Cost Group #3		Cost Group #4	
	Cost Group #1 & 2	Percentage	Cost Group #3	Percentage	Cost Group #4	Percentage
1 - BIMID	\$114,600	0.013%	\$0	0.000%	\$0	0.000%
2 - Union Cemetery	0	0.000%	0	0.000%	0	0.000%
3 - CC Mosquito	5,104,681	0.565%	0	0.000%	0	0.000%
4 - CCCFPD	0	0.000%	0	0.000%	0	0.000%
5 - CCCSD	0	0.000%	89,535,510	100.000%	0	0.000%
6 - First 5	3,118,357	0.345%	0	0.000%	0	0.000%
7 - County	841,327,344	93.196%	0	0.000%	0	0.000%
8 - CCCERA (the employer)	5,863,670	0.650%	0	0.000%	0	0.000%
9 - ECCFPD	94,970	0.011%	0	0.000%	0	0.000%
10 - Housing Authority	0	0.000%	0	0.000%	8,652,807	100.000%
11 - IHSS	1,040,424	0.115%	0	0.000%	0	0.000%
12 - LAFCO	364,601	0.040%	0	0.000%	0	0.000%
13 - MOFD	874,006	0.097%	0	0.000%	0	0.000%
14 - Rodeo SD	0	0.000%	0	0.000%	0	0.000%
15 - RHFD	144,892	0.016%	0	0.000%	0	0.000%
16 - SRVFPD	5,018,763	0.556%	0	0.000%	0	0.000%
17 - Court	<u>39,687,583</u>	<u>4.396%</u>	<u>0</u>	<u>0.000%</u>	<u>0</u>	<u>0.000%</u>
Total	\$902,753,891	100.000%	\$89,535,510	100.000%	\$8,652,807	100.000%

Note: Results may not add due to rounding.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 7 (continued)

Determination of Proportionate Share

PART ONE - Allocation of December 31, 2014 Net Pension Liability (NPL)				
<u>Excluding Pension Obligation Bonds (POB) and UAAL Prepayments for Certain Employers</u>				
Employer	Cost Group #5		Cost Group #6	
	Cost Group #5	Percentage	Cost Group #6	Percentage
1 - BIMID	\$0	0.000%	\$0	0.000%
2 - Union Cemetery	0	0.000%	66,340	26.612%
3 - CC Mosquito	0	0.000%	0	0.000%
4 - CCCFPD	4,878,216	100.000%	0	0.000%
5 - CCCSD	0	0.000%	0	0.000%
6 - First 5	0	0.000%	0	0.000%
7 - County	0	0.000%	0	0.000%
8 - CCCERA (the employer)	0	0.000%	0	0.000%
9 - ECCFPD	0	0.000%	0	0.000%
10 - Housing Authority	0	0.000%	0	0.000%
11 - IHSS	0	0.000%	0	0.000%
12 - LAFCO	0	0.000%	0	0.000%
13 - MOFD	0	0.000%	0	0.000%
14 - Rodeo SD	0	0.000%	182,951	73.388%
15 - RHFD	0	0.000%	0	0.000%
16 - SRVFPD	0	0.000%	0	0.000%
17 - Court	<u>0</u>	<u>0.000%</u>	<u>0</u>	<u>0.000%</u>
Total	\$4,878,216	100.000%	\$249,291	100.000%

Note: Results may not add due to rounding.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 7 (continued)

Determination of Proportionate Share

PART ONE - Allocation of December 31, 2014 Net Pension Liability (NPL)						
Excluding Pension Obligation Bonds (POB) and UAAL Prepayments for Certain Employers						
Employer	Cost Group #7 & 9	Cost Group #7 & 9 Percentage	Cost Group #8	Cost Group #8 Percentage	Cost Group #10	Cost Group #10 Percentage
1 - BIMID	\$0	0.000%	\$0	0.000%	\$0	0.000%
2 - Union Cemetery	0	0.000%	0	0.000%	0	0.000%
3 - CC Mosquito	0	0.000%	0	0.000%	0	0.000%
4 - CCCFPD	0	0.000%	212,146,949	89.754%	0	0.000%
5 - CCCSD	0	0.000%	0	0.000%	0	0.000%
6 - First 5	0	0.000%	0	0.000%	0	0.000%
7 - County	308,608,013	100.000%	0	0.000%	0	0.000%
8 - CCCERA (the employer)	0	0.000%	0	0.000%	0	0.000%
9 - ECCFPD	0	0.000%	24,218,850	10.246%	0	0.000%
10 - Housing Authority	0	0.000%	0	0.000%	0	0.000%
11 - IHSS	0	0.000%	0	0.000%	0	0.000%
12 - LAFCO	0	0.000%	0	0.000%	0	0.000%
13 - MOFD	0	0.000%	0	0.000%	28,293,121	100.000%
14 - Rodeo SD	0	0.000%	0	0.000%	0	0.000%
15 - RHFD	0	0.000%	0	0.000%	0	0.000%
16 - SRVFPD	0	0.000%	0	0.000%	0	0.000%
17 - Court	<u>0</u>	<u>0.000%</u>	<u>0</u>	<u>0.000%</u>	<u>0</u>	<u>0.000%</u>
Total	\$308,608,013	100.000%	\$236,365,799	100.000%	\$28,293,121	100.000%

Note: Results may not add due to rounding.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 7 (continued)

Determination of Proportionate Share

PART ONE - Allocation of December 31, 2014 Net Pension Liability (NPL)						
<u>Excluding Pension Obligation Bonds (POB) and UAAL Prepayments for Certain Employers</u>						
Employer	Cost Group #11		Cost Group #12		Total NPL	Total Percentage
	Cost Group #11	Percentage	Cost Group #12	Percentage		
1 - BIMID	\$0	0.000%	\$0	0.000%	\$114,600	0.007%
2 - Union Cemetery	0	0.000%	0	0.000%	66,340	0.004%
3 - CC Mosquito	0	0.000%	0	0.000%	5,104,681	0.308%
4 - CCCFPD	0	0.000%	0	0.000%	217,025,165	13.096%
5 - CCCSD	0	0.000%	0	0.000%	89,535,510	5.403%
6 - First 5	0	0.000%	0	0.000%	3,118,357	0.188%
7 - County	0	0.000%	0	0.000%	1,149,935,357	69.390%
8 - CCCERA (the employer)	0	0.000%	0	0.000%	5,863,670	0.354%
9 - ECCFPD	0	0.000%	0	0.000%	24,313,820	1.467%
10 - Housing Authority	0	0.000%	0	0.000%	8,652,807	0.522%
11 - IHSS	0	0.000%	0	0.000%	1,040,424	0.063%
12 - LAFCO	0	0.000%	0	0.000%	364,601	0.022%
13 - MOFD	0	0.000%	0	0.000%	29,167,127	1.760%
14 - Rodeo SD	0	0.000%	0	0.000%	182,951	0.011%
15 - RHFD	0	0.000%	13,354,320	100.000%	13,499,212	0.815%
16 - SRVFPD	64,508,251	100.000%	0	0.000%	69,527,014	4.195%
17 - Court	<u>0</u>	<u>0.000%</u>	<u>0</u>	<u>0.000%</u>	<u>39,687,583</u>	<u>2.395%</u>
Total	\$64,508,251	100.000%	\$13,354,320	100.000%	\$1,657,199,219	100.000%

Note: Results may not add due to rounding.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 7 (continued)

Determination of Proportionate Share

**PART TWO - Allocation of December 31, 2014 Net Pension Liability (NPL)
Including Pension Obligation Bonds (POB) and UAAL Prepayments for Certain Employers**

Employer	Cost Group #1 & 2		Cost Group #3	Cost Group #3		Cost Group #4	Cost Group #4
	Cost Group #1 & 2	Percentage		Percentage	Percentage		
1 - BIMID	\$114,600	0.021%	\$0	0.000%	\$0	0.000%	
2 - Union Cemetery	0	0.000%	0	0.000%	0	0.000%	
3 - CC Mosquito	5,104,681	0.942%	0	0.000%	0	0.000%	
4 - CCCFPD	0	0.000%	0	0.000%	0	0.000%	
5 - CCCSD	0	0.000%	89,535,510	100.000%	0	0.000%	
6 - First 5	1,683,167	0.311%	0	0.000%	0	0.000%	
7 - County	498,742,275	92.016%	0	0.000%	0	0.000%	
8 - CCCERA (the employer)	5,863,670	1.082%	0	0.000%	0	0.000%	
9 - ECCFPD	94,970	0.018%	0	0.000%	0	0.000%	
10 - Housing Authority	0	0.000%	0	0.000%	8,652,807	100.000%	
11 - IHSS	1,040,424	0.192%	0	0.000%	0	0.000%	
12 - LAFCO	364,601	0.067%	0	0.000%	0	0.000%	
13 - MOFD	319,726	0.059%	0	0.000%	0	0.000%	
14 - Rodeo SD	0	0.000%	0	0.000%	0	0.000%	
15 - RHFD	144,892	0.027%	0	0.000%	0	0.000%	
16 - SRVFPD	5,018,763	0.926%	0	0.000%	0	0.000%	
17 - Court	<u>23,526,961</u>	<u>4.341%</u>	<u>0</u>	<u>0.000%</u>	<u>0</u>	<u>0.000%</u>	
Total	\$542,018,730	100.000%	\$89,535,510	100.000%	\$8,652,807	100.000%	

Note: Results may not add due to rounding.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 7 (continued)

Determination of Proportionate Share

PART TWO - Allocation of December 31, 2014 Net Pension Liability (NPL)				
<u>Including</u> Pension Obligation Bonds (POB) and UAAL Prepayments for Certain Employers				
Employer	Cost Group #5		Cost Group #6	
	Cost Group #5	Percentage	Cost Group #6	Percentage
1 - BIMID	\$0	0.000%	\$0	0.000%
2 - Union Cemetery	0	0.000%	66,340	26.612%
3 - CC Mosquito	0	0.000%	0	0.000%
4 - CCCFPD	4,878,216	100.000%	0	0.000%
5 - CCCSD	0	0.000%	0	0.000%
6 - First 5	0	0.000%	0	0.000%
7 - County	0	0.000%	0	0.000%
8 - CCCERA (the employer)	0	0.000%	0	0.000%
9 - ECCFPD	0	0.000%	0	0.000%
10 - Housing Authority	0	0.000%	0	0.000%
11 - IHSS	0	0.000%	0	0.000%
12 - LAFCO	0	0.000%	0	0.000%
13 - MOFD	0	0.000%	0	0.000%
14 - Rodeo SD	0	0.000%	182,951	73.388%
15 - RHFD	0	0.000%	0	0.000%
16 - SRVFPD	0	0.000%	0	0.000%
17 - Court	<u>0</u>	<u>0.000%</u>	<u>0</u>	<u>0.000%</u>
Total	\$4,878,216	100.000%	\$249,291	100.000%

Note: Results may not add due to rounding.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 7 (continued)

Determination of Proportionate Share

PART TWO - Allocation of December 31, 2014 Net Pension Liability (NPL)						
<u>Including Pension Obligation Bonds (POB) and UAAL Prepayments for Certain Employers</u>						
Employer	Cost Group #7 & 9	Cost Group #7 & 9 Percentage	Cost Group #8	Cost Group #8 Percentage	Cost Group #10	Cost Group #10 Percentage
1 - BIMID	\$0	0.000%	\$0	0.000%	\$0	0.000%
2 - Union Cemetery	0	0.000%	0	0.000%	0	0.000%
3 - CC Mosquito	0	0.000%	0	0.000%	0	0.000%
4 - CCCFPD	0	0.000%	111,384,288	82.140%	0	0.000%
5 - CCCSD	0	0.000%	0	0.000%	0	0.000%
6 - First 5	0	0.000%	0	0.000%	0	0.000%
7 - County	308,608,013	100.000%	0	0.000%	0	0.000%
8 - CCCERA (the employer)	0	0.000%	0	0.000%	0	0.000%
9 - ECCFPD	0	0.000%	24,218,850	17.860%	0	0.000%
10 - Housing Authority	0	0.000%	0	0.000%	0	0.000%
11 - IHSS	0	0.000%	0	0.000%	0	0.000%
12 - LAFCO	0	0.000%	0	0.000%	0	0.000%
13 - MOFD	0	0.000%	0	0.000%	28,293,121	100.000%
14 - Rodeo SD	0	0.000%	0	0.000%	0	0.000%
15 - RHFD	0	0.000%	0	0.000%	0	0.000%
16 - SRVFPD	0	0.000%	0	0.000%	0	0.000%
17 - Court	<u>0</u>	<u>0.000%</u>	<u>0</u>	<u>0.000%</u>	<u>0</u>	<u>0.000%</u>
Total	\$308,608,013	100.000%	\$135,603,138	100.000%	\$28,293,121	100.000%

Note: Results may not add due to rounding.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 7 (continued)

Determination of Proportionate Share

PART TWO - Allocation of December 31, 2014 Net Pension Liability (NPL)						
<u>Including Pension Obligation Bonds (POB) and UAAL Prepayments for Certain Employers</u>						
Employer	Cost Group #11		Cost Group #12		Total NPL	Total Percentage
	Cost Group #11	Percentage	Cost Group #12	Percentage		
1 - BIMID	\$0	0.000%	\$0	0.000%	\$114,600	0.010%
2 - Union Cemetery	0	0.000%	0	0.000%	66,340	0.006%
3 - CC Mosquito	0	0.000%	0	0.000%	5,104,681	0.427%
4 - CCCFPD	0	0.000%	0	0.000%	116,262,504	9.723%
5 - CCCSD	0	0.000%	0	0.000%	89,535,510	7.488%
6 - First 5	0	0.000%	0	0.000%	1,683,167	0.141%
7 - County	0	0.000%	0	0.000%	807,350,288	67.521%
8 - CCCERA (the employer)	0	0.000%	0	0.000%	5,863,670	0.490%
9 - ECCFPD	0	0.000%	0	0.000%	24,313,820	2.033%
10 - Housing Authority	0	0.000%	0	0.000%	8,652,807	0.724%
11 - IHSS	0	0.000%	0	0.000%	1,040,424	0.087%
12 - LAFCO	0	0.000%	0	0.000%	364,601	0.030%
13 - MOFD	0	0.000%	0	0.000%	28,612,847	2.393%
14 - Rodeo SD	0	0.000%	0	0.000%	182,951	0.015%
15 - RHFD	0	0.000%	13,354,320	100.000%	13,499,212	1.129%
16 - SRVFPD	64,508,251	100.000%	0	0.000%	69,527,014	5.815%
17 - Court	<u>0</u>	<u>0.000%</u>	<u>0</u>	<u>0.000%</u>	<u>23,526,961</u>	<u>1.968%</u>
Total	\$64,508,251	100.000%	\$13,354,320	100.000%	\$1,195,701,397	100.000%

Note: Results may not add due to rounding.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 7 (continued)

Determination of Proportionate Share

Notes Regarding Determination of Proportionate Share as of December 31, 2014 Measurement Date:

1. Based on actual January 1, 2014 through December 31, 2014 compensation information that was provided by CCCERA.
2. The Net Pension Liability (NPL) for each Cost Group is the Total Pension Liability (TPL) minus the Plan's Fiduciary Net Position (plan assets). The TPL for each Cost Group is obtained from internal valuation results based on the actual participants in each Cost Group. The Plan's Fiduciary Net Position for each Cost Group was determined by adjusting the Valuation Value of Assets (VVA) for each Cost Group (which is used to determine employer contribution rates) by the ratio of the total CCCERA Plan's Fiduciary Net Position to total CCCERA VVA. Based on this methodology, any non-valuation reserves (such as the Post Retirement Death Benefit) are allocated amongst the cost groups based on each cost group's valuation value of assets.
3. For Cost Groups that have one employer, all of the NPL for that Cost Group is allocated to the corresponding employer.
4. For Cost Groups that have multiple employers, the NPL is allocated based on the actual compensation within the Cost Group.
 - a. First calculate ratio of employer's compensation to the total compensation for the Cost Group.
 - b. This ratio is multiplied by an "adjusted" NPL. This adjusted NPL is larger than the actual NPL as it excludes proceeds from Pension Obligation Bonds and any Unfunded Actuarial Accrued Liability (UAAL) prepayments from the Cost Group's assets when determining the employer's proportionate share of the NPL for the Cost Group. The allocation of the adjusted NPL is shown above in PART ONE of Exhibit 7.
 - c. The amounts of the proceeds from Pension Obligation Bonds and UAAL prepayments as of December 31, 2014 allocated to those employers within each Cost Group are as follows:

Cost Group #1: County	\$342,585,069
Cost Group #1: Court	\$16,160,622
Cost Group #1: MOFD	\$554,280
Cost Group #1: First 5	\$1,435,190
Cost Group #8: CCCFPD	\$100,762,661

Note that the proceeds from Pension Obligation Bonds for Contra Costa County and the Superior Court as of December 31, 2014 (total of \$358,745,691) were allocated proportionally based on the compensation information.
 - d. Subtract from the adjusted NPL in PART ONE the outstanding balance of the proceeds from any Pension Obligation Bonds and any UAAL prepayments for those employers in each Cost Group that are subject to these adjustments. The resulting actual NPL is shown in PART TWO of Exhibit 7.
5. If the employer is in several Cost Groups, the employer's total allocated NPL is the sum of its allocated NPL from each Cost Group.
6. Cost Group #1 and Cost Group #2 were combined and Cost Group #7 and Cost Group #9 were combined consistent with the determination of the UAAL rate in the annual funding actuarial valuation.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 8

Pension Expense: Total for all Employers

Reporting Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Measurement Date for Employer under GAS 68	December 31, 2015	December 31, 2014
Components of Pension Expense		
1. Service cost	\$192,923,283	\$192,256,663
2. Interest on the Total Pension Liability	582,342,316	561,216,191
3. Expensed portion of current-period changes in proportion and differences between employer's contributions and proportionate share of contributions	0	0
4. Expensed portion of current-period benefit changes	0	0
5. Expensed portion of current-period difference between expected and actual experience in the Total Pension Liability	(13,742,906)	(39,914,078)
6. Expensed portion of current-period changes of assumptions or other inputs	15,970,422	(16,437)
7. Member contributions ⁽¹⁾	(85,360,637)	(78,257,665)
8. Projected earnings on plan investments	(500,572,558)	(467,143,802)
9. Expensed portion of current-period differences between actual and projected earnings on plan investments	85,392,308	(2,671,691)
10. Administrative expense	8,115,359	6,979,995
11. Other expenses	668,336	0
12. Recognition of beginning of year deferred outflows of resources as pension expense	0	0
13. Recognition of beginning of year deferred inflows of resources as pension expense	(42,602,206)	0
14. Net amortization of deferred amounts from changes in proportion and differences between employer's contributions and proportionate share of contributions	<u>0</u>	<u>0</u>
Pension Expense	\$243,133,717	\$172,449,176

⁽¹⁾ Includes any member subvention of employer contributions.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 8 (continued)

Pension Expense: 1 - BIMID

Reporting Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Measurement Date for Employer under GAS 68	December 31, 2015	December 31, 2014
Components of Pension Expense		
1. Service cost	\$14,314	\$18,426
2. Interest on the Total Pension Liability	43,206	53,789
3. Expensed portion of current-period changes in proportion and differences between employer's contributions and proportionate share of contributions	(5,484)	331
4. Expensed portion of current-period benefit changes	0	0
5. Expensed portion of current-period difference between expected and actual experience in the Total Pension Liability	(1,020)	(3,825)
6. Expensed portion of current-period changes of assumptions or other inputs	1,185	(2)
7. Member contributions	(6,333)	(7,500)
8. Projected earnings on plan investments	(37,139)	(44,773)
9. Expensed portion of current-period differences between actual and projected earnings on plan investments	6,335	(256)
10. Administrative expense	602	669
11. Other expenses	50	0
12. Recognition of beginning of year deferred outflows of resources as pension expense	0	0
13. Recognition of beginning of year deferred inflows of resources as pension expense	(3,161)	0
14. Net amortization of deferred amounts from changes in proportion and differences between employer's contributions and proportionate share of contributions	<u>331</u>	<u>0</u>
Pension Expense	\$12,886	\$16,859

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 8 (continued)

Pension Expense: 2 - Union Cemetery

Reporting Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Measurement Date for Employer under GAS 68	December 31, 2015	December 31, 2014
Components of Pension Expense		
1. Service cost	\$18,914	\$10,667
2. Interest on the Total Pension Liability	57,099	31,137
3. Expensed portion of current-period changes in proportion and differences between employer's contributions and proportionate share of contributions	21,457	11,183
4. Expensed portion of current-period benefit changes	0	0
5. Expensed portion of current-period difference between expected and actual experience in the Total Pension Liability	(1,347)	(2,215)
6. Expensed portion of current-period changes of assumptions or other inputs	1,566	(1)
7. Member contributions	(8,370)	(4,342)
8. Projected earnings on plan investments	(49,081)	(25,918)
9. Expensed portion of current-period differences between actual and projected earnings on plan investments	8,373	(148)
10. Administrative expense	796	387
11. Other expenses	66	0
12. Recognition of beginning of year deferred outflows of resources as pension expense	0	0
13. Recognition of beginning of year deferred inflows of resources as pension expense	(4,177)	0
14. Net amortization of deferred amounts from changes in proportion and differences between employer's contributions and proportionate share of contributions	<u>11,183</u>	<u>0</u>
Pension Expense	\$56,479	\$20,750

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 8 (continued)

Pension Expense: 3 - CC Mosquito

Reporting Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Measurement Date for Employer under GAS 68	December 31, 2015	December 31, 2014
Components of Pension Expense		
1. Service cost	\$725,251	\$820,780
2. Interest on the Total Pension Liability	2,189,183	2,395,941
3. Expensed portion of current-period changes in proportion and differences between employer's contributions and proportionate share of contributions	(114,998)	7,670
4. Expensed portion of current-period benefit changes	0	0
5. Expensed portion of current-period difference between expected and actual experience in the Total Pension Liability	(51,663)	(170,401)
6. Expensed portion of current-period changes of assumptions or other inputs	60,037	(70)
7. Member contributions	(320,894)	(334,097)
8. Projected earnings on plan investments	(1,881,788)	(1,994,327)
9. Expensed portion of current-period differences between actual and projected earnings on plan investments	321,013	(11,406)
10. Administrative expense	30,508	29,799
11. Other expenses	2,512	0
12. Recognition of beginning of year deferred outflows of resources as pension expense	0	0
13. Recognition of beginning of year deferred inflows of resources as pension expense	(160,153)	0
14. Net amortization of deferred amounts from changes in proportion and differences between employer's contributions and proportionate share of contributions	<u>7,670</u>	<u>0</u>
Pension Expense	\$806,678	\$743,889

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 8 (continued)

Pension Expense: 4 - CCCFPD

Reporting Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Measurement Date for Employer under GAS 68	December 31, 2015	December 31, 2014
Components of Pension Expense		
1. Service cost	\$22,316,895	\$18,693,831
2. Interest on the Total Pension Liability	67,363,940	54,569,142
3. Expensed portion of current-period changes in proportion and differences between employer's contributions and proportionate share of contributions	2,371,786	(2,334,392)
4. Expensed portion of current-period benefit changes	0	0
5. Expensed portion of current-period difference between expected and actual experience in the Total Pension Liability	(1,589,746)	(3,880,995)
6. Expensed portion of current-period changes of assumptions or other inputs	1,847,420	(1,598)
7. Member contributions	(9,874,310)	(7,609,284)
8. Projected earnings on plan investments	(57,905,014)	(45,422,133)
9. Expensed portion of current-period differences between actual and projected earnings on plan investments	9,877,974	(259,778)
10. Administrative expense	938,765	678,691
11. Other expenses	77,311	0
12. Recognition of beginning of year deferred outflows of resources as pension expense	0	0
13. Recognition of beginning of year deferred inflows of resources as pension expense	(4,928,119)	0
14. Net amortization of deferred amounts from changes in proportion and differences between employer's contributions and proportionate share of contributions	<u>(2,334,392)</u>	<u>0</u>
Pension Expense	\$28,162,510	\$14,433,484

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 8 (continued)

Pension Expense: 5 - CCCSD

Reporting Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Measurement Date for Employer under GAS 68	December 31, 2015	December 31, 2014
Components of Pension Expense		
1. Service cost	\$11,744,271	\$14,396,402
2. Interest on the Total Pension Liability	35,450,291	42,024,521
3. Expensed portion of current-period changes in proportion and differences between employer's contributions and proportionate share of contributions	(3,509,681)	533,503
4. Expensed portion of current-period benefit changes	0	0
5. Expensed portion of current-period difference between expected and actual experience in the Total Pension Liability	(836,604)	(2,988,813)
6. Expensed portion of current-period changes of assumptions or other inputs	972,205	(1,231)
7. Member contributions	(5,196,358)	(5,860,025)
8. Projected earnings on plan investments	(30,472,528)	(34,980,271)
9. Expensed portion of current-period differences between actual and projected earnings on plan investments	5,198,286	(200,059)
10. Administrative expense	494,025	522,670
11. Other expenses	40,685	0
12. Recognition of beginning of year deferred outflows of resources as pension expense	0	0
13. Recognition of beginning of year deferred inflows of resources as pension expense	(2,593,424)	0
14. Net amortization of deferred amounts from changes in proportion and differences between employer's contributions and proportionate share of contributions	<u>533,503</u>	<u>0</u>
Pension Expense	\$11,824,671	\$13,446,697

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 8 (continued)

Pension Expense: 6 - First 5

Reporting Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Measurement Date for Employer under GAS 68	December 31, 2015	December 31, 2014
Components of Pension Expense		
1. Service cost	\$315,582	\$270,636
2. Interest on the Total Pension Liability	952,589	790,014
3. Expensed portion of current-period changes in proportion and differences between employer's contributions and proportionate share of contributions	85,659	23,732
4. Expensed portion of current-period benefit changes	0	0
5. Expensed portion of current-period difference between expected and actual experience in the Total Pension Liability	(22,480)	(56,186)
6. Expensed portion of current-period changes of assumptions or other inputs	26,124	(23)
7. Member contributions	(139,632)	(110,162)
8. Projected earnings on plan investments	(818,831)	(657,590)
9. Expensed portion of current-period differences between actual and projected earnings on plan investments	139,684	(3,761)
10. Administrative expense	13,275	9,826
11. Other expenses	1,093	0
12. Recognition of beginning of year deferred outflows of resources as pension expense	0	0
13. Recognition of beginning of year deferred inflows of resources as pension expense	(69,688)	0
14. Net amortization of deferred amounts from changes in proportion and differences between employer's contributions and proportionate share of contributions	<u>23,732</u>	<u>0</u>
Pension Expense	\$507,107	\$266,486

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 8 (continued)

Pension Expense: 7 - County

Reporting Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Measurement Date for Employer under GAS 68	December 31, 2015	December 31, 2014
Components of Pension Expense		
1. Service cost	\$131,092,873	\$129,813,748
2. Interest on the Total Pension Liability	395,706,127	378,939,134
3. Expensed portion of current-period changes in proportion and differences between employer's contributions and proportionate share of contributions	5,130,230	3,792,342
4. Expensed portion of current-period benefit changes	0	0
5. Expensed portion of current-period difference between expected and actual experience in the Total Pension Liability	(9,338,413)	(26,950,409)
6. Expensed portion of current-period changes of assumptions or other inputs	10,852,026	(11,098)
7. Member contributions	(58,003,217)	(52,840,409)
8. Projected earnings on plan investments	(340,142,943)	(315,420,459)
9. Expensed portion of current-period differences between actual and projected earnings on plan investments	58,024,738	(1,803,954)
10. Administrative expense	5,514,450	4,712,966
11. Other expenses	454,140	0
12. Recognition of beginning of year deferred outflows of resources as pension expense	0	0
13. Recognition of beginning of year deferred inflows of resources as pension expense	(28,948,530)	0
14. Net amortization of deferred amounts from changes in proportion and differences between employer's contributions and proportionate share of contributions	<u>3,792,342</u>	<u>0</u>
Pension Expense	\$174,133,823	\$120,231,861

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 8 (continued)

Pension Expense: 8 - CCCERA (the employer)

Reporting Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Measurement Date for Employer under GAS 68	December 31, 2015	December 31, 2014
Components of Pension Expense		
1. Service cost	\$913,803	\$942,819
2. Interest on the Total Pension Liability	2,758,331	2,752,181
3. Expensed portion of current-period changes in proportion and differences between employer's contributions and proportionate share of contributions	(17,825)	587
4. Expensed portion of current-period benefit changes	0	0
5. Expensed portion of current-period difference between expected and actual experience in the Total Pension Liability	(65,095)	(195,737)
6. Expensed portion of current-period changes of assumptions or other inputs	75,646	(81)
7. Member contributions	(404,320)	(383,772)
8. Projected earnings on plan investments	(2,371,019)	(2,290,854)
9. Expensed portion of current-period differences between actual and projected earnings on plan investments	404,470	(13,102)
10. Administrative expense	38,439	34,230
11. Other expenses	3,166	0
12. Recognition of beginning of year deferred outflows of resources as pension expense	0	0
13. Recognition of beginning of year deferred inflows of resources as pension expense	(201,790)	0
14. Net amortization of deferred amounts from changes in proportion and differences between employer's contributions and proportionate share of contributions	<u>587</u>	<u>0</u>
Pension Expense	\$1,134,393	\$846,271

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 8 (continued)

Pension Expense: 9 - ECCFPD

Reporting Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Measurement Date for Employer under GAS 68	December 31, 2015	December 31, 2014
Components of Pension Expense		
1. Service cost	\$2,943,173	\$3,909,413
2. Interest on the Total Pension Liability	8,884,015	11,411,971
3. Expensed portion of current-period changes in proportion and differences between employer's contributions and proportionate share of contributions	(1,877,402)	(573,399)
4. Expensed portion of current-period benefit changes	0	0
5. Expensed portion of current-period difference between expected and actual experience in the Total Pension Liability	(209,657)	(811,627)
6. Expensed portion of current-period changes of assumptions or other inputs	243,639	(334)
7. Member contributions	(1,302,233)	(1,591,319)
8. Projected earnings on plan investments	(7,636,564)	(9,499,069)
9. Expensed portion of current-period differences between actual and projected earnings on plan investments	1,302,716	(54,327)
10. Administrative expense	123,805	141,934
11. Other expenses	10,196	0
12. Recognition of beginning of year deferred outflows of resources as pension expense	0	0
13. Recognition of beginning of year deferred inflows of resources as pension expense	(649,925)	0
14. Net amortization of deferred amounts from changes in proportion and differences between employer's contributions and proportionate share of contributions	<u>(573,399)</u>	<u>0</u>
Pension Expense	\$1,258,364	\$2,933,243

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 8 (continued)

Pension Expense: 10 - Housing Authority

Reporting Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Measurement Date for Employer under GAS 68	December 31, 2015	December 31, 2014
Components of Pension Expense		
1. Service cost	\$1,380,994	\$1,391,284
2. Interest on the Total Pension Liability	4,168,551	4,061,294
3. Expensed portion of current-period changes in proportion and differences between employer's contributions and proportionate share of contributions	(20,643)	(7,224)
4. Expensed portion of current-period benefit changes	0	0
5. Expensed portion of current-period difference between expected and actual experience in the Total Pension Liability	(98,375)	(288,842)
6. Expensed portion of current-period changes of assumptions or other inputs	114,320	(119)
7. Member contributions	(611,033)	(566,319)
8. Projected earnings on plan investments	(3,583,223)	(3,380,531)
9. Expensed portion of current-period differences between actual and projected earnings on plan investments	611,259	(19,334)
10. Administrative expense	58,092	50,511
11. Other expenses	4,784	0
12. Recognition of beginning of year deferred outflows of resources as pension expense	0	0
13. Recognition of beginning of year deferred inflows of resources as pension expense	(304,957)	0
14. Net amortization of deferred amounts from changes in proportion and differences between employer's contributions and proportionate share of contributions	<u>(7,224)</u>	<u>0</u>
Pension Expense	\$1,712,545	\$1,240,720

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 8 (continued)

Pension Expense: 11 - IHSS

Reporting Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Measurement Date for Employer under GAS 68	December 31, 2015	December 31, 2014
Components of Pension Expense		
1. Service cost	\$165,488	\$167,290
2. Interest on the Total Pension Liability	499,525	488,335
3. Expensed portion of current-period changes in proportion and differences between employer's contributions and proportionate share of contributions	32	(2,429)
4. Expensed portion of current-period benefit changes	0	0
5. Expensed portion of current-period difference between expected and actual experience in the Total Pension Liability	(11,788)	(34,731)
6. Expensed portion of current-period changes of assumptions or other inputs	13,699	(14)
7. Member contributions	(73,221)	(68,095)
8. Projected earnings on plan investments	(429,384)	(406,479)
9. Expensed portion of current-period differences between actual and projected earnings on plan investments	73,248	(2,325)
10. Administrative expense	6,961	6,074
11. Other expenses	573	0
12. Recognition of beginning of year deferred outflows of resources as pension expense	0	0
13. Recognition of beginning of year deferred inflows of resources as pension expense	(36,544)	0
14. Net amortization of deferred amounts from changes in proportion and differences between employer's contributions and proportionate share of contributions	<u>(2,429)</u>	<u>0</u>
Pension Expense	\$206,160	\$147,626

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 8 (continued)

Pension Expense: 12 - LAFCO

Reporting Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Measurement Date for Employer under GAS 68	December 31, 2015	December 31, 2014
Components of Pension Expense		
1. Service cost	\$51,225	\$58,625
2. Interest on the Total Pension Liability	154,624	171,130
3. Expensed portion of current-period changes in proportion and differences between employer's contributions and proportionate share of contributions	(7,922)	1,817
4. Expensed portion of current-period benefit changes	0	0
5. Expensed portion of current-period difference between expected and actual experience in the Total Pension Liability	(3,649)	(12,171)
6. Expensed portion of current-period changes of assumptions or other inputs	4,240	(5)
7. Member contributions	(22,665)	(23,863)
8. Projected earnings on plan investments	(132,912)	(142,445)
9. Expensed portion of current-period differences between actual and projected earnings on plan investments	22,673	(815)
10. Administrative expense	2,155	2,128
11. Other expenses	177	0
12. Recognition of beginning of year deferred outflows of resources as pension expense	0	0
13. Recognition of beginning of year deferred inflows of resources as pension expense	(11,312)	0
14. Net amortization of deferred amounts from changes in proportion and differences between employer's contributions and proportionate share of contributions	<u>1,817</u>	<u>0</u>
Pension Expense	\$58,451	\$54,401

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 8 (continued)

Pension Expense: 13 - MOFD

Reporting Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Measurement Date for Employer under GAS 68	December 31, 2015	December 31, 2014
Components of Pension Expense		
1. Service cost	\$5,030,604	\$4,600,654
2. Interest on the Total Pension Liability	15,184,969	13,429,769
3. Expensed portion of current-period changes in proportion and differences between employer's contributions and proportionate share of contributions	(254,240)	(640,955)
4. Expensed portion of current-period benefit changes	0	0
5. Expensed portion of current-period difference between expected and actual experience in the Total Pension Liability	(358,356)	(955,134)
6. Expensed portion of current-period changes of assumptions or other inputs	416,440	(393)
7. Member contributions	(2,225,836)	(1,872,687)
8. Projected earnings on plan investments	(13,052,767)	(11,178,639)
9. Expensed portion of current-period differences between actual and projected earnings on plan investments	2,226,662	(63,933)
10. Administrative expense	211,613	167,030
11. Other expenses	17,427	0
12. Recognition of beginning of year deferred outflows of resources as pension expense	0	0
13. Recognition of beginning of year deferred inflows of resources as pension expense	(1,110,881)	0
14. Net amortization of deferred amounts from changes in proportion and differences between employer's contributions and proportionate share of contributions	<u>(640,955)</u>	<u>0</u>
Pension Expense	\$5,444,680	\$3,485,712

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 8 (continued)

Pension Expense: 14 - Rodeo SD

Reporting Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Measurement Date for Employer under GAS 68	December 31, 2015	December 31, 2014
Components of Pension Expense		
1. Service cost	\$50,385	\$29,417
2. Interest on the Total Pension Liability	152,095	85,870
3. Expensed portion of current-period changes in proportion and differences between employer's contributions and proportionate share of contributions	56,007	32,085
4. Expensed portion of current-period benefit changes	0	0
5. Expensed portion of current-period difference between expected and actual experience in the Total Pension Liability	(3,589)	(6,107)
6. Expensed portion of current-period changes of assumptions or other inputs	4,171	(3)
7. Member contributions	(22,294)	(11,974)
8. Projected earnings on plan investments	(130,738)	(71,476)
9. Expensed portion of current-period differences between actual and projected earnings on plan investments	22,303	(409)
10. Administrative expense	2,120	1,068
11. Other expenses	175	0
12. Recognition of beginning of year deferred outflows of resources as pension expense	0	0
13. Recognition of beginning of year deferred inflows of resources as pension expense	(11,127)	0
14. Net amortization of deferred amounts from changes in proportion and differences between employer's contributions and proportionate share of contributions	<u>32,085</u>	<u>0</u>
Pension Expense	\$151,593	\$58,471

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 8 (continued)

Pension Expense: 15 – RHFD

Reporting Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Measurement Date for Employer under GAS 68	December 31, 2015	December 31, 2014
Components of Pension Expense		
1. Service cost	\$1,952,386	\$2,170,536
2. Interest on the Total Pension Liability	5,893,314	6,336,010
3. Expensed portion of current-period changes in proportion and differences between employer's contributions and proportionate share of contributions	(590,374)	(510,910)
4. Expensed portion of current-period benefit changes	0	0
5. Expensed portion of current-period difference between expected and actual experience in the Total Pension Liability	(139,078)	(450,621)
6. Expensed portion of current-period changes of assumptions or other inputs	161,621	(186)
7. Member contributions	(863,851)	(883,512)
8. Projected earnings on plan investments	(5,065,803)	(5,273,953)
9. Expensed portion of current-period differences between actual and projected earnings on plan investments	864,172	(30,163)
10. Administrative expense	82,128	78,803
11. Other expenses	6,764	0
12. Recognition of beginning of year deferred outflows of resources as pension expense	0	0
13. Recognition of beginning of year deferred inflows of resources as pension expense	(431,135)	0
14. Net amortization of deferred amounts from changes in proportion and differences between employer's contributions and proportionate share of contributions	<u>(510,910)</u>	<u>0</u>
Pension Expense	\$1,359,234	\$1,436,004

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 8 (continued)

Pension Expense: 16 - SRVFPD

Reporting Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Measurement Date for Employer under GAS 68	December 31, 2015	December 31, 2014
Components of Pension Expense		
1. Service cost	\$10,334,797	\$11,179,239
2. Interest on the Total Pension Liability	31,195,770	32,633,303
3. Expensed portion of current-period changes in proportion and differences between employer's contributions and proportionate share of contributions	(1,847,448)	(806,829)
4. Expensed portion of current-period benefit changes	0	0
5. Expensed portion of current-period difference between expected and actual experience in the Total Pension Liability	(736,200)	(2,320,903)
6. Expensed portion of current-period changes of assumptions or other inputs	855,527	(956)
7. Member contributions	(4,572,724)	(4,550,485)
8. Projected earnings on plan investments	(26,815,407)	(27,163,231)
9. Expensed portion of current-period differences between actual and projected earnings on plan investments	4,574,421	(155,352)
10. Administrative expense	434,735	405,869
11. Other expenses	35,802	0
12. Recognition of beginning of year deferred outflows of resources as pension expense	0	0
13. Recognition of beginning of year deferred inflows of resources as pension expense	(2,282,178)	0
14. Net amortization of deferred amounts from changes in proportion and differences between employer's contributions and proportionate share of contributions	<u>(806,829)</u>	<u>0</u>
Pension Expense	\$10,370,266	\$9,220,655

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 8 (continued)

Pension Expense: 17 - Court

Reporting Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Measurement Date for Employer under GAS 68	December 31, 2015	December 31, 2014
Components of Pension Expense		
1. Service cost	\$3,872,328	\$3,782,896
2. Interest on the Total Pension Liability	11,688,687	11,042,650
3. Expensed portion of current-period changes in proportion and differences between employer's contributions and proportionate share of contributions	580,846	472,888
4. Expensed portion of current-period benefit changes	0	0
5. Expensed portion of current-period difference between expected and actual experience in the Total Pension Liability	(275,846)	(785,361)
6. Expensed portion of current-period changes of assumptions or other inputs	320,556	(323)
7. Member contributions	(1,713,346)	(1,539,820)
8. Projected earnings on plan investments	(10,047,417)	(9,191,654)
9. Expensed portion of current-period differences between actual and projected earnings on plan investments	1,713,981	(52,569)
10. Administrative expense	162,890	137,340
11. Other expenses	13,415	0
12. Recognition of beginning of year deferred outflows of resources as pension expense	0	0
13. Recognition of beginning of year deferred inflows of resources as pension expense	(855,105)	0
14. Net amortization of deferred amounts from changes in proportion and differences between employer's contributions and proportionate share of contributions	<u>472,888</u>	<u>0</u>
Pension Expense	\$5,933,877	\$3,866,047

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 9

Deferred Outflows of Resources and Deferred Inflows of Resources: Total for all Employers

Reporting Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Measurement Date for Employer under GAS 68	December 31, 2015	December 31, 2014
Deferred Outflows of Resources		
1. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$41,703,950	\$17,554,100
2. Changes of assumptions or other inputs	56,215,885	0
3. Net excess of projected over actual earnings on pension plan investments (if any)	333,554,162	0
4. Difference between expected and actual experience in the Total Pension Liability	<u>0</u>	<u>0</u>
5. Total Deferred Outflows of Resources	\$431,473,997	\$17,554,100
Deferred Inflows of Resources		
6. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$41,703,950	\$17,554,100
7. Changes of assumptions or other inputs	42,734	59,171
8. Net excess of actual over projected earnings on pension plan investments (if any)	0	10,686,763
9. Difference between expected and actual experience in the Total Pension Liability	<u>152,151,634</u>	<u>143,690,683</u>
10. Total Deferred Inflows of Resources	\$193,898,318	\$171,990,717

Deferred outflows of resources and deferred inflows of resources related to pension will be recognized as follows:

Reporting Date for Employer under GAS 68 Year Ended June 30:

2016	N/A	\$(42,602,206)
2017	\$45,017,618	(42,602,206)
2018	45,017,618	(42,602,206)
2019	60,989,825	(26,629,999)
2020	86,550,618	0
2021	0	0
Thereafter	0	0

⁽¹⁾ Calculated in accordance with Paragraphs 54 and 55 of GAS 68.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 9 (continued)

Deferred Outflows of Resources and Deferred Inflows of Resources: 1 – BIMID

Reporting Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Measurement Date for Employer under GAS 68	December 31, 2015	December 31, 2014
Deferred Outflows of Resources		
1. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$862	\$1,193
2. Changes of assumptions or other inputs	4,171	0
3. Net excess of projected over actual earnings on pension plan investments (if any)	24,747	0
4. Difference between expected and actual experience in the Total Pension Liability	<u>0</u>	<u>0</u>
5. Total Deferred Outflows of Resources	\$29,780	\$1,193
Deferred Inflows of Resources		
6. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$19,304	\$0
7. Changes of assumptions or other inputs	3	6
8. Net excess of actual over projected earnings on pension plan investments (if any)	0	1,024
9. Difference between expected and actual experience in the Total Pension Liability	<u>11,289</u>	<u>13,772</u>
10. Total Deferred Inflows of Resources	\$30,596	\$14,802

Deferred outflows of resources and deferred inflows of resources related to pension will be recognized as follows:

Reporting Date for Employer under GAS 68 Year Ended June 30:

2016	N/A	\$(3,752)
2017	\$(1,813)	(3,752)
2018	(1,813)	(3,752)
2019	(759)	(2,353)
2020	3,569	0
2021	0	0
Thereafter	0	0

⁽¹⁾ Calculated in accordance with Paragraphs 54 and 55 of GAS 68.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 9 (continued)

Deferred Outflows of Resources and Deferred Inflows of Resources: 2 - Union Cemetery

Reporting Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Measurement Date for Employer under GAS 68	December 31, 2015	December 31, 2014
Deferred Outflows of Resources		
1. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$104,605	\$40,259
2. Changes of assumptions or other inputs	5,512	0
3. Net excess of projected over actual earnings on pension plan investments (if any)	32,705	0
4. Difference between expected and actual experience in the Total Pension Liability	<u>0</u>	<u>0</u>
5. Total Deferred Outflows of Resources	\$142,822	\$40,259
Deferred Inflows of Resources		
6. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$0	\$0
7. Changes of assumptions or other inputs	4	3
8. Net excess of actual over projected earnings on pension plan investments (if any)	0	593
9. Difference between expected and actual experience in the Total Pension Liability	<u>14,918</u>	<u>7,972</u>
10. Total Deferred Inflows of Resources	\$14,922	\$8,568

Deferred outflows of resources and deferred inflows of resources related to pension will be recognized as follows:

Reporting Date for Employer under GAS 68 Year Ended June 30:

2016	N/A	\$8,819
2017	\$37,054	8,819
2018	37,054	8,819
2019	34,147	5,234
2020	19,645	0
2021	0	0
Thereafter	0	0

⁽¹⁾ Calculated in accordance with Paragraphs 54 and 55 of GAS 68.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 9 (continued)

Deferred Outflows of Resources and Deferred Inflows of Resources: 3 - CC Mosquito

Reporting Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Measurement Date for Employer under GAS 68	December 31, 2015	December 31, 2014
Deferred Outflows of Resources		
1. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$19,940	\$27,610
2. Changes of assumptions or other inputs	211,331	0
3. Net excess of projected over actual earnings on pension plan investments (if any)	1,253,921	0
4. Difference between expected and actual experience in the Total Pension Liability	<u>0</u>	<u>0</u>
5. Total Deferred Outflows of Resources	\$1,485,192	\$27,610
Deferred Inflows of Resources		
6. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$404,793	\$0
7. Changes of assumptions or other inputs	161	253
8. Net excess of actual over projected earnings on pension plan investments (if any)	0	45,624
9. Difference between expected and actual experience in the Total Pension Liability	<u>571,979</u>	<u>613,443</u>
10. Total Deferred Inflows of Resources	\$976,933	\$659,320

Deferred outflows of resources and deferred inflows of resources related to pension will be recognized as follows:

Reporting Date for Employer under GAS 68 Year Ended June 30:

2016	N/A	\$(174,207)
2017	\$61,905	(174,207)
2018	61,905	(174,207)
2019	118,879	(109,089)
2020	265,570	0
2021	0	0
Thereafter	0	0

⁽¹⁾ Calculated in accordance with Paragraphs 54 and 55 of GAS 68.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 9 (continued)

Deferred Outflows of Resources and Deferred Inflows of Resources: 4 - CCCFPD

Reporting Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Measurement Date for Employer under GAS 68	December 31, 2015	December 31, 2014
Deferred Outflows of Resources		
1. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$8,348,686	\$0
2. Changes of assumptions or other inputs	6,502,917	0
3. Net excess of projected over actual earnings on pension plan investments (if any)	38,584,733	0
4. Difference between expected and actual experience in the Total Pension Liability	<u>0</u>	<u>0</u>
5. Total Deferred Outflows of Resources	\$53,436,336	\$0
Deferred Inflows of Resources		
6. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$6,069,420	\$8,403,812
7. Changes of assumptions or other inputs	4,943	5,753
8. Net excess of actual over projected earnings on pension plan investments (if any)	0	1,039,114
9. Difference between expected and actual experience in the Total Pension Liability	<u>17,600,530</u>	<u>13,971,581</u>
10. Total Deferred Inflows of Resources	\$23,674,893	\$23,420,260

Deferred outflows of resources and deferred inflows of resources related to pension will be recognized as follows:

Reporting Date for Employer under GAS 68 Year Ended June 30:

2016	N/A	\$(6,476,763)
2017	\$5,244,922	(6,476,763)
2018	5,244,922	(6,476,763)
2019	8,026,304	(3,989,971)
2020	11,245,295	0
2021	0	0
Thereafter	0	0

⁽¹⁾ Calculated in accordance with Paragraphs 54 and 55 of GAS 68.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 9 (continued)

Deferred Outflows of Resources and Deferred Inflows of Resources: 5 - CCCSD

Reporting Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Measurement Date for Employer under GAS 68	December 31, 2015	December 31, 2014
Deferred Outflows of Resources		
1. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$1,387,107	\$1,920,610
2. Changes of assumptions or other inputs	3,422,162	0
3. Net excess of projected over actual earnings on pension plan investments (if any)	20,305,225	0
4. Difference between expected and actual experience in the Total Pension Liability	<u>0</u>	<u>0</u>
5. Total Deferred Outflows of Resources	\$25,114,494	\$1,920,610
Deferred Inflows of Resources		
6. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$12,354,075	\$0
7. Changes of assumptions or other inputs	2,601	4,431
8. Net excess of actual over projected earnings on pension plan investments (if any)	0	800,237
9. Difference between expected and actual experience in the Total Pension Liability	<u>9,262,284</u>	<u>10,759,725</u>
10. Total Deferred Inflows of Resources	\$21,618,960	\$11,564,393

Deferred outflows of resources and deferred inflows of resources related to pension will be recognized as follows:

Reporting Date for Employer under GAS 68 Year Ended June 30:

2016	N/A	\$(2,656,600)
2017	\$(235,715)	(2,656,600)
2018	(235,715)	(2,656,600)
2019	523,197	(1,673,983)
2020	3,443,767	0
2021	0	0
Thereafter	0	0

⁽¹⁾ Calculated in accordance with Paragraphs 54 and 55 of GAS 68.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 9 (continued)

Deferred Outflows of Resources and Deferred Inflows of Resources: 6 - First 5

Reporting Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Measurement Date for Employer under GAS 68	December 31, 2015	December 31, 2014
Deferred Outflows of Resources		
1. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$363,223	\$85,435
2. Changes of assumptions or other inputs	91,957	0
3. Net excess of projected over actual earnings on pension plan investments (if any)	545,624	0
4. Difference between expected and actual experience in the Total Pension Liability	<u>0</u>	<u>0</u>
5. Total Deferred Outflows of Resources	\$1,000,804	\$85,435
Deferred Inflows of Resources		
6. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$0	\$0
7. Changes of assumptions or other inputs	70	83
8. Net excess of actual over projected earnings on pension plan investments (if any)	0	15,044
9. Difference between expected and actual experience in the Total Pension Liability	<u>248,888</u>	<u>202,271</u>
10. Total Deferred Inflows of Resources	\$248,958	\$217,398

Deferred outflows of resources and deferred inflows of resources related to pension will be recognized as follows:

Reporting Date for Employer under GAS 68 Year Ended June 30:

2016	N/A	\$(36,238)
2017	\$183,030	(36,238)
2018	183,030	(36,238)
2019	199,664	(23,249)
2020	186,122	0
2021	0	0
Thereafter	0	0

⁽¹⁾ Calculated in accordance with Paragraphs 54 and 55 of GAS 68.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 9 (continued)

Deferred Outflows of Resources and Deferred Inflows of Resources: 7 - County

Reporting Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Measurement Date for Employer under GAS 68	December 31, 2015	December 31, 2014
Deferred Outflows of Resources		
1. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$27,918,510	\$13,652,435
2. Changes of assumptions or other inputs	38,199,131	0
3. Net excess of projected over actual earnings on pension plan investments (if any)	226,652,645	0
4. Difference between expected and actual experience in the Total Pension Liability	<u>0</u>	<u>0</u>
5. Total Deferred Outflows of Resources	\$292,770,286	\$13,652,435
Deferred Inflows of Resources		
6. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$0	\$0
7. Changes of assumptions or other inputs	29,040	39,954
8. Net excess of actual over projected earnings on pension plan investments (if any)	0	7,215,816
9. Difference between expected and actual experience in the Total Pension Liability	<u>103,388,218</u>	<u>97,021,475</u>
10. Total Deferred Inflows of Resources	\$103,417,258	\$104,277,245

Deferred outflows of resources and deferred inflows of resources related to pension will be recognized as follows:

Reporting Date for Employer under GAS 68 Year Ended June 30:

2016	N/A	\$(24,973,120)
2017	\$39,512,395	(24,973,120)
2018	39,512,395	(24,973,120)
2019	48,848,700	(15,705,450)
2020	61,479,538	0
2021	0	0
Thereafter	0	0

⁽¹⁾ Calculated in accordance with Paragraphs 54 and 55 of GAS 68.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 9 (continued)

Deferred Outflows of Resources and Deferred Inflows of Resources: 8 - CCCERA (the employer)

Reporting Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Measurement Date for Employer under GAS 68	December 31, 2015	December 31, 2014
Deferred Outflows of Resources		
1. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$1,528	\$2,115
2. Changes of assumptions or other inputs	266,273	0
3. Net excess of projected over actual earnings on pension plan investments (if any)	1,579,917	0
4. Difference between expected and actual experience in the Total Pension Liability	<u>0</u>	<u>0</u>
5. Total Deferred Outflows of Resources	\$1,847,718	\$2,115
Deferred Inflows of Resources		
6. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$62,746	\$0
7. Changes of assumptions or other inputs	202	290
8. Net excess of actual over projected earnings on pension plan investments (if any)	0	52,407
9. Difference between expected and actual experience in the Total Pension Liability	<u>720,684</u>	<u>704,653</u>
10. Total Deferred Inflows of Resources	\$783,632	\$757,350

Deferred outflows of resources and deferred inflows of resources related to pension will be recognized as follows:

Reporting Date for Employer under GAS 68 Year Ended June 30:

2016	N/A	\$(208,332)
2017	\$195,993	(208,332)
2018	195,993	(208,332)
2019	271,414	(130,239)
2020	400,686	0
2021	0	0
Thereafter	0	0

⁽¹⁾ Calculated in accordance with Paragraphs 54 and 55 of GAS 68.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 9 (continued)

Deferred Outflows of Resources and Deferred Inflows of Resources: 9 - ECCFPD

Reporting Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Measurement Date for Employer under GAS 68	December 31, 2015	December 31, 2014
Deferred Outflows of Resources		
1. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$0	\$0
2. Changes of assumptions or other inputs	857,610	0
3. Net excess of projected over actual earnings on pension plan investments (if any)	5,088,588	0
4. Difference between expected and actual experience in the Total Pension Liability	<u>0</u>	<u>0</u>
5. Total Deferred Outflows of Resources	\$5,946,198	\$0
Deferred Inflows of Resources		
6. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$8,099,295	\$2,064,238
7. Changes of assumptions or other inputs	652	1,203
8. Net excess of actual over projected earnings on pension plan investments (if any)	0	217,308
9. Difference between expected and actual experience in the Total Pension Liability	<u>2,321,173</u>	<u>2,921,858</u>
10. Total Deferred Inflows of Resources	\$10,421,120	\$5,204,607

Deferred outflows of resources and deferred inflows of resources related to pension will be recognized as follows:

Reporting Date for Employer under GAS 68 Year Ended June 30:

2016	N/A	\$(1,439,687)
2017	\$(1,764,028)	(1,439,687)
2018	(1,764,028)	(1,439,687)
2019	(1,291,003)	(885,546)
2020	344,137	0
2021	0	0
Thereafter	0	0

⁽¹⁾ Calculated in accordance with Paragraphs 54 and 55 of GAS 68.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 9 (continued)

Deferred Outflows of Resources and Deferred Inflows of Resources: 10 - Housing Authority

Reporting Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Measurement Date for Employer under GAS 68	December 31, 2015	December 31, 2014
Deferred Outflows of Resources		
1. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$0	\$0
2. Changes of assumptions or other inputs	402,407	0
3. Net excess of projected over actual earnings on pension plan investments (if any)	2,387,664	0
4. Difference between expected and actual experience in the Total Pension Liability	<u>0</u>	<u>0</u>
5. Total Deferred Outflows of Resources	\$2,790,071	\$0
Deferred Inflows of Resources		
6. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$91,447	\$26,007
7. Changes of assumptions or other inputs	306	428
8. Net excess of actual over projected earnings on pension plan investments (if any)	0	77,336
9. Difference between expected and actual experience in the Total Pension Liability	<u>1,089,139</u>	<u>1,039,831</u>
10. Total Deferred Inflows of Resources	\$1,180,892	\$1,143,602

Deferred outflows of resources and deferred inflows of resources related to pension will be recognized as follows:

Reporting Date for Employer under GAS 68 Year Ended June 30:

2016	N/A	\$(315,519)
2017	\$294,380	(315,519)
2018	294,380	(315,519)
2019	411,602	(197,045)
2020	608,817	0
2021	0	0
Thereafter	0	0

⁽¹⁾ Calculated in accordance with Paragraphs 54 and 55 of GAS 68.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 9 (continued)

Deferred Outflows of Resources and Deferred Inflows of Resources: 11 - IHSS

Reporting Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Measurement Date for Employer under GAS 68	December 31, 2015	December 31, 2014
Deferred Outflows of Resources		
1. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$114	\$0
2. Changes of assumptions or other inputs	48,221	0
3. Net excess of projected over actual earnings on pension plan investments (if any)	286,118	0
4. Difference between expected and actual experience in the Total Pension Liability	<u>0</u>	<u>0</u>
5. Total Deferred Outflows of Resources	\$334,453	\$0
Deferred Inflows of Resources		
6. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$6,314	\$8,743
7. Changes of assumptions or other inputs	37	51
8. Net excess of actual over projected earnings on pension plan investments (if any)	0	9,299
9. Difference between expected and actual experience in the Total Pension Liability	<u>130,513</u>	<u>125,031</u>
10. Total Deferred Inflows of Resources	\$136,864	\$143,124

Deferred outflows of resources and deferred inflows of resources related to pension will be recognized as follows:

Reporting Date for Employer under GAS 68 Year Ended June 30:

2016	N/A	\$(39,499)
2017	\$36,218	(39,499)
2018	36,218	(39,499)
2019	50,892	(24,627)
2020	74,261	0
2021	0	0
Thereafter	0	0

⁽¹⁾ Calculated in accordance with Paragraphs 54 and 55 of GAS 68.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 9 (continued)

Deferred Outflows of Resources and Deferred Inflows of Resources: 12 - LAFCO

Reporting Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Measurement Date for Employer under GAS 68	December 31, 2015	December 31, 2014
Deferred Outflows of Resources		
1. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$4,726	\$6,543
2. Changes of assumptions or other inputs	14,926	0
3. Net excess of projected over actual earnings on pension plan investments (if any)	88,565	0
4. Difference between expected and actual experience in the Total Pension Liability	<u>0</u>	<u>0</u>
5. Total Deferred Outflows of Resources	\$108,217	\$6,543
Deferred Inflows of Resources		
6. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$27,887	\$0
7. Changes of assumptions or other inputs	11	18
8. Net excess of actual over projected earnings on pension plan investments (if any)	0	3,259
9. Difference between expected and actual experience in the Total Pension Liability	<u>40,399</u>	<u>43,815</u>
10. Total Deferred Inflows of Resources	\$68,297	\$47,092

Deferred outflows of resources and deferred inflows of resources related to pension will be recognized as follows:

Reporting Date for Employer under GAS 68 Year Ended June 30:

2016	N/A	\$(11,174)
2017	\$5,848	(11,174)
2018	5,848	(11,174)
2019	9,364	(7,027)
2020	18,860	0
2021	0	0
Thereafter	0	0

⁽¹⁾ Calculated in accordance with Paragraphs 54 and 55 of GAS 68.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 9 (continued)

Deferred Outflows of Resources and Deferred Inflows of Resources: 13 - MOFD

Reporting Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Measurement Date for Employer under GAS 68	December 31, 2015	December 31, 2014
Deferred Outflows of Resources		
1. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$0	\$0
2. Changes of assumptions or other inputs	1,465,867	0
3. Net excess of projected over actual earnings on pension plan investments (if any)	8,697,650	0
4. Difference between expected and actual experience in the Total Pension Liability	<u>0</u>	<u>0</u>
5. Total Deferred Outflows of Resources	\$10,163,517	\$0
Deferred Inflows of Resources		
6. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$2,561,411	\$2,307,439
7. Changes of assumptions or other inputs	1,114	1,416
8. Net excess of actual over projected earnings on pension plan investments (if any)	0	255,732
9. Difference between expected and actual experience in the Total Pension Liability	<u>3,967,457</u>	<u>3,438,484</u>
10. Total Deferred Inflows of Resources	\$6,529,982	\$6,003,071

Deferred outflows of resources and deferred inflows of resources related to pension will be recognized as follows:

Reporting Date for Employer under GAS 68 Year Ended June 30:

2016	N/A	\$(1,660,416)
2017	\$278,670	(1,660,416)
2018	278,670	(1,660,416)
2019	951,537	(1,021,823)
2020	2,124,658	0
2021	0	0
Thereafter	0	0

⁽¹⁾ Calculated in accordance with Paragraphs 54 and 55 of GAS 68.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 9 (continued)

Deferred Outflows of Resources and Deferred Inflows of Resources: 14 - Rodeo SD

Reporting Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Measurement Date for Employer under GAS 68	December 31, 2015	December 31, 2014
Deferred Outflows of Resources		
1. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$280,564	\$115,504
2. Changes of assumptions or other inputs	14,682	0
3. Net excess of projected over actual earnings on pension plan investments (if any)	87,117	0
4. Difference between expected and actual experience in the Total Pension Liability	<u>0</u>	<u>0</u>
5. Total Deferred Outflows of Resources	\$382,363	\$115,504
Deferred Inflows of Resources		
6. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$0	\$0
7. Changes of assumptions or other inputs	11	9
8. Net excess of actual over projected earnings on pension plan investments (if any)	0	1,635
9. Difference between expected and actual experience in the Total Pension Liability	<u>39,739</u>	<u>21,986</u>
10. Total Deferred Inflows of Resources	\$39,750	\$23,630

Deferred outflows of resources and deferred inflows of resources related to pension will be recognized as follows:

Reporting Date for Employer under GAS 68 Year Ended June 30:

2016	N/A	\$25,567
2017	\$99,850	25,567
2018	99,850	25,567
2019	91,185	15,173
2020	51,728	0
2021	0	0
Thereafter	0	0

⁽¹⁾ Calculated in accordance with Paragraphs 54 and 55 of GAS 68.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 9 (continued)

Deferred Outflows of Resources and Deferred Inflows of Resources: 15 - RHFD

Reporting Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Measurement Date for Employer under GAS 68	December 31, 2015	December 31, 2014
Deferred Outflows of Resources		
1. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$0	\$0
2. Changes of assumptions or other inputs	568,906	0
3. Net excess of projected over actual earnings on pension plan investments (if any)	3,375,574	0
4. Difference between expected and actual experience in the Total Pension Liability	<u>0</u>	<u>0</u>
5. Total Deferred Outflows of Resources	\$3,944,480	\$0
Deferred Inflows of Resources		
6. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$3,406,483	\$1,839,275
7. Changes of assumptions or other inputs	432	668
8. Net excess of actual over projected earnings on pension plan investments (if any)	0	120,651
9. Difference between expected and actual experience in the Total Pension Liability	<u>1,539,777</u>	<u>1,622,237</u>
10. Total Deferred Inflows of Resources	\$4,946,692	\$3,582,831

Deferred outflows of resources and deferred inflows of resources related to pension will be recognized as follows:

Reporting Date for Employer under GAS 68 Year Ended June 30:

2016	N/A	\$(991,880)
2017	\$(645,705)	(991,880)
2018	(645,705)	(991,880)
2019	(279,701)	(607,191)
2020	568,899	0
2021	0	0
Thereafter	0	0

⁽¹⁾ Calculated in accordance with Paragraphs 54 and 55 of GAS 68.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 9 (continued)

Deferred Outflows of Resources and Deferred Inflows of Resources: 16 - SRVFPD

Reporting Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Measurement Date for Employer under GAS 68	December 31, 2015	December 31, 2014
Deferred Outflows of Resources		
1. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$0	\$0
2. Changes of assumptions or other inputs	3,011,455	0
3. Net excess of projected over actual earnings on pension plan investments (if any)	17,868,320	0
4. Difference between expected and actual experience in the Total Pension Liability	<u>0</u>	<u>0</u>
5. Total Deferred Outflows of Resources	\$20,879,775	\$0
Deferred Inflows of Resources		
6. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$8,600,775	\$2,904,586
7. Changes of assumptions or other inputs	2,289	3,441
8. Net excess of actual over projected earnings on pension plan investments (if any)	0	621,408
9. Difference between expected and actual experience in the Total Pension Liability	<u>8,150,682</u>	<u>8,355,250</u>
10. Total Deferred Inflows of Resources	\$16,753,746	\$11,884,685

Deferred outflows of resources and deferred inflows of resources related to pension will be recognized as follows:

Reporting Date for Employer under GAS 68 Year Ended June 30:

2016	N/A	\$(3,284,040)
2017	\$(242,707)	(3,284,040)
2018	(242,707)	(3,284,040)
2019	935,646	(2,032,565)
2020	3,675,797	0
2021	0	0
Thereafter	0	0

⁽¹⁾ Calculated in accordance with Paragraphs 54 and 55 of GAS 68.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 9 (continued)

Deferred Outflows of Resources and Deferred Inflows of Resources: 17 - Court

Reporting Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Measurement Date for Employer under GAS 68	December 31, 2015	December 31, 2014
Deferred Outflows of Resources		
1. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$3,274,085	\$1,702,396
2. Changes of assumptions or other inputs	1,128,357	0
3. Net excess of projected over actual earnings on pension plan investments (if any)	6,695,049	0
4. Difference between expected and actual experience in the Total Pension Liability	<u>0</u>	<u>0</u>
5. Total Deferred Outflows of Resources	\$11,097,491	\$1,702,396
Deferred Inflows of Resources		
6. Changes in proportion and differences between employer's contributions and proportionate share of contributions ⁽¹⁾	\$0	\$0
7. Changes of assumptions or other inputs	858	1,164
8. Net excess of actual over projected earnings on pension plan investments (if any)	0	210,276
9. Difference between expected and actual experience in the Total Pension Liability	<u>3,053,965</u>	<u>2,827,299</u>
10. Total Deferred Inflows of Resources	\$3,054,823	\$3,038,739

Deferred outflows of resources and deferred inflows of resources related to pension will be recognized as follows:

Reporting Date for Employer under GAS 68 Year Ended June 30:

2016	N/A	\$(365,365)
2017	\$1,957,321	(365,365)
2018	1,957,321	(365,365)
2019	2,088,757	(240,248)
2020	2,039,269	0
2021	0	0
Thereafter	0	0

⁽¹⁾ Calculated in accordance with Paragraphs 54 and 55 of GAS 68.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 9 (continued)

Deferred Outflows of Resources and Deferred Inflows of Resources

There are changes in each employer's proportionate share of the total Net Pension Liability (NPL) during the measurement period ended December 31, 2015. The net effect of the change on the employer's proportionate share of the collective NPL and collective deferred outflows of resources and deferred inflows of resources for the current period is recognized over the average of the expected remaining service lives of all employees that are provided with pensions through CCCERA which is 4.52 years determined as of December 31, 2014 (the beginning of the measurement period ending December 31, 2015). This is described in Paragraph 33a. of GAS 68.

In addition, the difference between the actual employer contributions and the proportionate share of the employer contributions during the measurement period ended December 31, 2015 is recognized over the same period. This difference is calculated based on actual employer contributions reported to us by CCCERA for each active employer. Those contributions are then further adjusted so that the employer contributions in total match the employer contributions reported on CCCERA's financial statements.

The net effects of the change on the employer's proportionate share of the collective NPL and collective deferred outflows of resources and deferred inflows of resources and the difference between the actual employer contributions and the proportionate share of the employer contributions for prior periods are continued to be recognized based on the expected remaining service lives of all employees calculated as of those prior measurement dates.

The average of the expected service lives of all employees is determined by:

- Calculating each active employee's expected remaining service life as the present value of \$1 per year of future service at zero percent interest.
- Setting the remaining service life to zero for each nonactive or retired member.
- Dividing the sum of the above amounts by the total number of active employee, nonactive and retired members.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 10

Schedule of Proportionate Share of the Net Pension Liability: Total for all Employers

Reporting Date for Employer under GAS 68 as of June 30	Proportion of the Net Pension Liability	Proportionate share of Net Pension Liability	Covered-employee payroll⁽¹⁾	Proportionate share of the Net Pension Liability as a percentage of its covered-employee payroll	Plan's Fiduciary Net Position as a percentage of the Total Pension Liability
2014	100.000%	\$1,471,449,251	\$638,635,912	230.41%	81.44%
2015	100.000%	1,195,701,397	671,485,798	178.07%	85.25%
2016	100.000%	1,507,127,140	709,818,858	212.33%	82.24%

⁽¹⁾ Covered employee payroll represents compensation earnable and pensionable compensation. Only compensation earnable and pensionable compensation that would possibly go into the determination of retirement benefits are included.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 10 (continued)

Schedule of Proportionate Share of the Net Pension Liability: 1 - BIMID

Reporting Date for Employer under GAS 68 as of June 30	Proportion of the Net Pension Liability	Proportionate share of Net Pension Liability	Covered-employee payroll⁽¹⁾	Proportionate share of the Net Pension Liability as a percentage of its covered-employee payroll	Plan's Fiduciary Net Position as a percentage of the Total Pension Liability
2014	0.010%	\$141,029	\$98,547	143.11%	74.40%
2015	0.010%	114,600	63,762	179.73%	79.57%
2016	0.007%	111,818	58,347	191.64%	77.84%

⁽¹⁾ Covered employee payroll represents compensation earnable and pensionable compensation. Only compensation earnable and pensionable compensation that would possibly go into the determination of retirement benefits are included.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 10 (continued)

Schedule of Proportionate Share of the Net Pension Liability: 2 - Union Cemetery

Reporting Date for Employer under GAS 68 as of June 30	Proportion of the Net Pension Liability	Proportionate share of Net Pension Liability	Covered-employee payroll⁽¹⁾	Proportionate share of the Net Pension Liability as a percentage of its covered-employee payroll	Plan's Fiduciary Net Position as a percentage of the Total Pension Liability
2014	0.006%	\$81,639	\$202,342	40.35%	94.52%
2015	0.006%	66,340	213,716	31.04%	95.83%
2016	0.010%	147,774	213,336	69.27%	91.43%

⁽¹⁾ Covered employee payroll represents compensation earnable and pensionable compensation. Only compensation earnable and pensionable compensation that would possibly go into the determination of retirement benefits are included.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 10 (continued)

Schedule of Proportionate Share of the Net Pension Liability: 3 - CC Mosquito

Reporting Date for Employer under GAS 68 as of June 30	Proportion of the Net Pension Liability	Proportionate share of Net Pension Liability	Covered-employee payroll⁽¹⁾	Proportionate share of the Net Pension Liability as a percentage of its covered-employee payroll	Plan's Fiduciary Net Position as a percentage of the Total Pension Liability
2014	0.427%	\$6,281,902	\$2,787,246	225.38%	74.40%
2015	0.427%	5,104,681	2,840,172	179.73%	79.57%
2016	0.376%	5,665,700	2,956,365	191.64%	77.84%

⁽¹⁾ Covered employee payroll represents compensation earnable and pensionable compensation. Only compensation earnable and pensionable compensation that would possibly go into the determination of retirement benefits are included.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 10 (continued)

Schedule of Proportionate Share of the Net Pension Liability: 4 - CCCFPD

Reporting Date for Employer under GAS 68 as of June 30	Proportion of the Net Pension Liability	Proportionate share of Net Pension Liability	Covered-employee payroll⁽¹⁾	Proportionate share of the Net Pension Liability as a percentage of its covered-employee payroll	Plan's Fiduciary Net Position as a percentage of the Total Pension Liability
2014	9.723%	\$143,074,496	\$30,880,667	463.31%	83.82%
2015	9.723%	116,262,504	29,582,625	393.01%	86.85%
2016	11.568%	174,340,795	32,275,397	540.17%	81.54%

⁽¹⁾ Covered employee payroll represents compensation earnable and pensionable compensation. Only compensation earnable and pensionable compensation that would possibly go into the determination of retirement benefits are included.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 10 (continued)

Schedule of Proportionate Share of the Net Pension Liability: 5 - CCCSD

Reporting Date for Employer under GAS 68 as of June 30	Proportion of the Net Pension Liability	Proportionate share of Net Pension Liability	Covered-employee payroll⁽¹⁾	Proportionate share of the Net Pension Liability as a percentage of its covered-employee payroll	Plan's Fiduciary Net Position as a percentage of the Total Pension Liability
2014	7.488%	\$110,183,830	\$25,791,346	427.21%	67.22%
2015	7.488%	89,535,510	26,906,131	332.77%	73.86%
2016	6.088%	91,746,888	29,061,743	315.70%	74.14%

⁽¹⁾ Covered employee payroll represents compensation earnable and pensionable compensation. Only compensation earnable and pensionable compensation that would possibly go into the determination of retirement benefits are included.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 10 (continued)

Schedule of Proportionate Share of the Net Pension Liability: 6 - First 5

Reporting Date for Employer under GAS 68 as of June 30	Proportion of the Net Pension Liability	Proportionate share of Net Pension Liability	Covered-employee payroll⁽¹⁾	Proportionate share of the Net Pension Liability as a percentage of its covered-employee payroll	Plan's Fiduciary Net Position as a percentage of the Total Pension Liability
2014	0.141%	\$2,071,332	\$1,631,923	126.93%	86.00%
2015	0.141%	1,683,167	1,735,009	97.01%	88.97%
2016	0.164%	2,465,341	1,962,961	125.59%	85.48%

⁽¹⁾ Covered employee payroll represents compensation earnable and pensionable compensation. Only compensation earnable and pensionable compensation that would possibly go into the determination of retirement benefits are included.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 10 (continued)

Schedule of Proportionate Share of the Net Pension Liability: 7 - County

Reporting Date for Employer under GAS 68 as of June 30	Proportion of the Net Pension Liability	Proportionate share of Net Pension Liability	Covered-employee payroll⁽¹⁾	Proportionate share of the Net Pension Liability as a percentage of its covered-employee payroll	Plan's Fiduciary Net Position as a percentage of the Total Pension Liability
2014	67.521%	\$993,538,168	\$513,965,613	193.31%	82.57%
2015	67.521%	807,350,288	547,669,428	147.42%	86.21%
2016	67.951%	1,024,104,604	578,312,679	177.08%	83.30%

⁽¹⁾ Covered employee payroll represents compensation earnable and pensionable compensation. Only compensation earnable and pensionable compensation that would possibly go into the determination of retirement benefits are included.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 10 (continued)

Schedule of Proportionate Share of the Net Pension Liability: 8 - CCCERA (the employer)

Reporting Date for Employer under GAS 68 as of June 30	Proportion of the Net Pension Liability	Proportionate share of Net Pension Liability	Covered-employee payroll⁽¹⁾	Proportionate share of the Net Pension Liability as a percentage of its covered-employee payroll	Plan's Fiduciary Net Position as a percentage of the Total Pension Liability
2014	0.490%	\$7,215,926	\$3,280,849	219.94%	74.40%
2015	0.490%	5,863,670	3,262,463	179.73%	79.57%
2016	0.474%	7,138,680	3,724,967	191.64%	77.84%

⁽¹⁾ Covered employee payroll represents compensation earnable and pensionable compensation. Only compensation earnable and pensionable compensation that would possibly go into the determination of retirement benefits are included.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 10 (continued)

Schedule of Proportionate Share of the Net Pension Liability: 9 - ECCFPD

Reporting Date for Employer under GAS 68 as of June 30	Proportion of the Net Pension Liability	Proportionate share of Net Pension Liability	Covered-employee payroll⁽¹⁾	Proportionate share of the Net Pension Liability as a percentage of its covered-employee payroll	Plan's Fiduciary Net Position as a percentage of the Total Pension Liability
2014	2.033%	\$29,920,976	\$3,075,280	972.95%	69.43%
2015	2.033%	24,313,820	3,033,964	801.39%	74.65%
2016	1.526%	22,992,216	2,578,801	891.59%	70.89%

⁽¹⁾ Covered employee payroll represents compensation earnable and pensionable compensation. Only compensation earnable and pensionable compensation that would possibly go into the determination of retirement benefits are included.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 10 (continued)

Schedule of Proportionate Share of the Net Pension Liability: 10 - Housing Authority

Reporting Date for Employer under GAS 68 as of June 30	Proportion of the Net Pension Liability	Proportionate share of Net Pension Liability	Covered-employee payroll⁽¹⁾	Proportionate share of the Net Pension Liability as a percentage of its covered-employee payroll	Plan's Fiduciary Net Position as a percentage of the Total Pension Liability
2014	0.724%	\$10,648,283	\$4,677,572	227.65%	80.04%
2015	0.724%	8,652,807	4,691,885	184.42%	84.06%
2016	0.716%	10,788,391	4,841,907	222.81%	80.83%

⁽¹⁾ Covered employee payroll represents compensation earnable and pensionable compensation. Only compensation earnable and pensionable compensation that would possibly go into the determination of retirement benefits are included.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 10 (continued)

Schedule of Proportionate Share of the Net Pension Liability: 11 - IHSS

Reporting Date for Employer under GAS 68 as of June 30	Proportion of the Net Pension Liability	Proportionate share of Net Pension Liability	Covered-employee payroll⁽¹⁾	Proportionate share of the Net Pension Liability as a percentage of its covered-employee payroll	Plan's Fiduciary Net Position as a percentage of the Total Pension Liability
2014	0.087%	\$1,280,362	\$600,371	213.26%	74.40%
2015	0.087%	1,040,424	578,877	179.73%	79.57%
2016	0.086%	1,292,792	674,579	191.64%	77.84%

⁽¹⁾ Covered employee payroll represents compensation earnable and pensionable compensation. Only compensation earnable and pensionable compensation that would possibly go into the determination of retirement benefits are included.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 10 (continued)

Schedule of Proportionate Share of the Net Pension Liability: 12 - LAFCO

Reporting Date for Employer under GAS 68 as of June 30	Proportion of the Net Pension Liability	Proportionate share of Net Pension Liability	Covered-employee payroll⁽¹⁾	Proportionate share of the Net Pension Liability as a percentage of its covered-employee payroll	Plan's Fiduciary Net Position as a percentage of the Total Pension Liability
2014	0.030%	\$448,684	\$202,880	221.16%	74.40%
2015	0.030%	364,601	202,859	179.73%	79.57%
2016	0.027%	400,173	208,810	191.64%	77.84%

⁽¹⁾ Covered employee payroll represents compensation earnable and pensionable compensation. Only compensation earnable and pensionable compensation that would possibly go into the determination of retirement benefits are included.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 10 (continued)

Schedule of Proportionate Share of the Net Pension Liability: 13 - MOFD

Reporting Date for Employer under GAS 68 as of June 30	Proportion of the Net Pension Liability	Proportionate share of Net Pension Liability	Covered-employee payroll⁽¹⁾	Proportionate share of the Net Pension Liability as a percentage of its covered-employee payroll	Plan's Fiduciary Net Position as a percentage of the Total Pension Liability
2014	2.393%	\$35,211,427	\$7,353,174	478.86%	80.06%
2015	2.393%	28,612,847	7,350,163	389.28%	83.79%
2016	2.608%	39,299,357	6,858,003	573.04%	78.77%

⁽¹⁾ Covered employee payroll represents compensation earnable and pensionable compensation. Only compensation earnable and pensionable compensation that would possibly go into the determination of retirement benefits are included.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 10 (continued)

Schedule of Proportionate Share of the Net Pension Liability: 14 - Rodeo SD

Reporting Date for Employer under GAS 68 as of June 30	Proportion of the Net Pension Liability	Proportionate share of Net Pension Liability	Covered-employee payroll⁽¹⁾	Proportionate share of the Net Pension Liability as a percentage of its covered-employee payroll	Plan's Fiduciary Net Position as a percentage of the Total Pension Liability
2014	0.015%	\$225,142	\$546,354	41.21%	94.52%
2015	0.015%	182,951	589,379	31.04%	95.83%
2016	0.026%	393,628	568,265	69.27%	91.43%

⁽¹⁾ Covered employee payroll represents compensation earnable and pensionable compensation. Only compensation earnable and pensionable compensation that would possibly go into the determination of retirement benefits are included.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 10 (continued)

Schedule of Proportionate Share of the Net Pension Liability: 15 - RHFD

Reporting Date for Employer under GAS 68 as of June 30	Proportion of the Net Pension Liability	Proportionate share of Net Pension Liability	Covered-employee payroll⁽¹⁾	Proportionate share of the Net Pension Liability as a percentage of its covered-employee payroll	Plan's Fiduciary Net Position as a percentage of the Total Pension Liability
2014	1.129%	\$16,612,346	\$1,766,704	940.30%	59.86%
2015	1.129%	13,499,212	2,069,510	652.29%	65.89%
2016	1.012%	15,252,152	2,342,844	651.01%	63.59%

⁽¹⁾ Covered employee payroll represents compensation earnable and pensionable compensation. Only compensation earnable and pensionable compensation that would possibly go into the determination of retirement benefits are included.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 10 (continued)

Schedule of Proportionate Share of the Net Pension Liability: 16 - SRVFPD

Reporting Date for Employer under GAS 68 as of June 30	Proportion of the Net Pension Liability	Proportionate share of Net Pension Liability	Covered-employee payroll⁽¹⁾	Proportionate share of the Net Pension Liability as a percentage of its covered-employee payroll	Plan's Fiduciary Net Position as a percentage of the Total Pension Liability
2014	5.815%	\$85,561,055	\$19,053,093	449.07%	76.94%
2015	5.815%	69,527,014	18,614,252	373.51%	81.67%
2016	5.357%	80,736,003	19,540,557	413.17%	79.70%

⁽¹⁾ Covered employee payroll represents compensation earnable and pensionable compensation. Only compensation earnable and pensionable compensation that would possibly go into the determination of retirement benefits are included.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 10 (continued)

Schedule of Proportionate Share of the Net Pension Liability: 17 - Court

Reporting Date for Employer under GAS 68 as of June 30	Proportion of the Net Pension Liability	Proportionate share of Net Pension Liability	Covered-employee payroll⁽¹⁾	Proportionate share of the Net Pension Liability as a percentage of its covered-employee payroll	Plan's Fiduciary Net Position as a percentage of the Total Pension Liability
2014	1.968%	\$28,952,654	\$22,721,953	127.42%	84.75%
2015	1.968%	23,526,961	22,081,605	106.55%	87.89%
2016	2.007%	30,250,828	23,639,297	127.97%	85.21%

⁽¹⁾ Covered employee payroll represents compensation earnable and pensionable compensation. Only compensation earnable and pensionable compensation that would possibly go into the determination of retirement benefits are included.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 11

Schedule of Reconciliation of Net Pension Liability: Total for all Employers

Reporting Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Measurement Date for Employer under GAS 68	December 31, 2015	December 31, 2014
Reconciliation of Net Pension Liability		
1. Beginning Net Pension Liability	\$1,195,701,397	\$1,471,449,251
2. Pension Expense	243,133,717	172,449,176
3. Employer Contributions	(323,720,270)	(293,760,413)
4. New Net Deferred Inflows/Outflows	349,410,090	(154,436,617)
5. Change in Allocation of Prior Deferred Inflows/Outflows	0	0
6. New Net Deferred Flows Due to Change in Proportion ⁽¹⁾	0	0
7. Recognition of Prior Deferred Inflows/Outflows	42,602,206	0
8. Recognition of Prior Deferred Flows Due to Change in Proportion ⁽¹⁾	<u>0</u>	<u>0</u>
9. Ending Net Pension Liability	\$1,507,127,140	\$1,195,701,397

⁽¹⁾ Includes differences between employer contributions and proportionate share of contributions.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 11 (continued)

Schedule of Reconciliation of Net Pension Liability: 1 - BIMID

Reporting Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Measurement Date for Employer under GAS 68	December 31, 2015	December 31, 2014
Reconciliation of Net Pension Liability		
1. Beginning Net Pension Liability	\$114,600	\$141,029
2. Pension Expense	12,886	16,859
3. Employer Contributions	(28,462)	(29,679)
4. New Net Deferred Inflows/Outflows	25,924	(14,802)
5. Change in Allocation of Prior Deferred Inflows/Outflows	3,344	0
6. New Net Deferred Flows Due to Change in Proportion ⁽¹⁾	(19,304)	1,193
7. Recognition of Prior Deferred Inflows/Outflows	3,161	0
8. Recognition of Prior Deferred Flows Due to Change in Proportion ⁽¹⁾	<u>(331)</u>	<u>0</u>
9. Ending Net Pension Liability	\$111,818	\$114,600

⁽¹⁾ Includes differences between employer contributions and proportionate share of contributions.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 11 (continued)

Schedule of Reconciliation of Net Pension Liability: 2 - Union Cemetery

Reporting Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Measurement Date for Employer under GAS 68	December 31, 2015	December 31, 2014
Reconciliation of Net Pension Liability		
1. Beginning Net Pension Liability	\$66,340	\$81,639
2. Pension Expense	56,479	20,750
3. Employer Contributions	(71,254)	(67,740)
4. New Net Deferred Inflows/Outflows	34,260	(8,568)
5. Change in Allocation of Prior Deferred Inflows/Outflows	(6,574)	0
6. New Net Deferred Flows Due to Change in Proportion ⁽¹⁾	75,529	40,259
7. Recognition of Prior Deferred Inflows/Outflows	4,177	0
8. Recognition of Prior Deferred Flows Due to Change in Proportion ⁽¹⁾	<u>(11,183)</u>	<u>0</u>
9. Ending Net Pension Liability	\$147,774	\$66,340

⁽¹⁾ Includes differences between employer contributions and proportionate share of contributions.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 11 (continued)

Schedule of Reconciliation of Net Pension Liability: 3 - CC Mosquito

Reporting Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Measurement Date for Employer under GAS 68	December 31, 2015	December 31, 2014
Reconciliation of Net Pension Liability		
1. Beginning Net Pension Liability	\$5,104,681	\$6,281,902
2. Pension Expense	806,678	743,889
3. Employer Contributions	(1,385,627)	(1,289,400)
4. New Net Deferred Inflows/Outflows	1,313,527	(659,320)
5. Change in Allocation of Prior Deferred Inflows/Outflows	78,751	0
6. New Net Deferred Flows Due to Change in Proportion ⁽¹⁾	(404,793)	27,610
7. Recognition of Prior Deferred Inflows/Outflows	160,153	0
8. Recognition of Prior Deferred Flows Due to Change in Proportion ⁽¹⁾	<u>(7,670)</u>	<u>0</u>
9. Ending Net Pension Liability	\$5,665,700	\$5,104,681

⁽¹⁾ Includes differences between employer contributions and proportionate share of contributions.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 11 (continued)

Schedule of Reconciliation of Net Pension Liability: 4 - CCCFPD

Reporting Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Measurement Date for Employer under GAS 68	December 31, 2015	December 31, 2014
Reconciliation of Net Pension Liability		
1. Beginning Net Pension Liability	\$116,262,504	\$143,074,496
2. Pension Expense	28,162,510	14,433,484
3. Employer Contributions	(23,265,920)	(17,825,216)
4. New Net Deferred Inflows/Outflows	40,418,908	(15,016,448)
5. Change in Allocation of Prior Deferred Inflows/Outflows	(2,848,404)	0
6. New Net Deferred Flows Due to Change in Proportion ⁽¹⁾	8,348,686	(8,403,812)
7. Recognition of Prior Deferred Inflows/Outflows	4,928,119	0
8. Recognition of Prior Deferred Flows Due to Change in Proportion ⁽¹⁾	<u>2,334,392</u>	<u>0</u>
9. Ending Net Pension Liability	\$174,340,795	\$116,262,504

⁽¹⁾ Includes differences between employer contributions and proportionate share of contributions.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 11 (continued)

Schedule of Reconciliation of Net Pension Liability: 5 - CCCSD

Reporting Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Measurement Date for Employer under GAS 68	December 31, 2015	December 31, 2014
Reconciliation of Net Pension Liability		
1. Beginning Net Pension Liability	\$89,535,510	\$110,183,830
2. Pension Expense	11,824,671	13,446,697
3. Employer Contributions	(22,752,611)	(24,451,234)
4. New Net Deferred Inflows/Outflows	21,270,461	(11,564,393)
5. Change in Allocation of Prior Deferred Inflows/Outflows	2,163,011	0
6. New Net Deferred Flows Due to Change in Proportion ⁽¹⁾	(12,354,075)	1,920,610
7. Recognition of Prior Deferred Inflows/Outflows	2,593,424	0
8. Recognition of Prior Deferred Flows Due to Change in Proportion ⁽¹⁾	<u>(533,503)</u>	<u>0</u>
9. Ending Net Pension Liability	\$91,746,888	\$89,535,510

⁽¹⁾ Includes differences between employer contributions and proportionate share of contributions.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 11 (continued)

Schedule of Reconciliation of Net Pension Liability: 6 - First 5

Reporting Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Measurement Date for Employer under GAS 68	December 31, 2015	December 31, 2014
Reconciliation of Net Pension Liability		
1. Beginning Net Pension Liability	\$1,683,167	\$2,071,332
2. Pension Expense	507,107	266,486
3. Employer Contributions	(608,742)	(522,688)
4. New Net Deferred Inflows/Outflows	571,561	(217,398)
5. Change in Allocation of Prior Deferred Inflows/Outflows	(35,228)	0
6. New Net Deferred Flows Due to Change in Proportion ⁽¹⁾	301,520	85,435
7. Recognition of Prior Deferred Inflows/Outflows	69,688	0
8. Recognition of Prior Deferred Flows Due to Change in Proportion ⁽¹⁾	<u>(23,732)</u>	<u>0</u>
9. Ending Net Pension Liability	\$2,465,341	\$1,683,167

⁽¹⁾ Includes differences between employer contributions and proportionate share of contributions.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 11 (continued)

Schedule of Reconciliation of Net Pension Liability: 7 - County

Reporting Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Measurement Date for Employer under GAS 68	December 31, 2015	December 31, 2014
Reconciliation of Net Pension Liability		
1. Beginning Net Pension Liability	\$807,350,288	\$993,538,168
2. Pension Expense	174,133,823	120,231,861
3. Employer Contributions	(237,357,344)	(215,794,931)
4. New Net Deferred Inflows/Outflows	237,426,870	(104,277,245)
5. Change in Allocation of Prior Deferred Inflows/Outflows	(663,638)	0
6. New Net Deferred Flows Due to Change in Proportion ⁽¹⁾	18,058,417	13,652,435
7. Recognition of Prior Deferred Inflows/Outflows	28,948,530	0
8. Recognition of Prior Deferred Flows Due to Change in Proportion ⁽¹⁾	<u>(3,792,342)</u>	<u>0</u>
9. Ending Net Pension Liability	\$1,024,104,604	\$807,350,288

⁽¹⁾ Includes differences between employer contributions and proportionate share of contributions.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 11 (continued)

Schedule of Reconciliation of Net Pension Liability: 8 - CCCERA (the employer)

Reporting Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Measurement Date for Employer under GAS 68	December 31, 2015	December 31, 2014
Reconciliation of Net Pension Liability		
1. Beginning Net Pension Liability	\$5,863,670	\$7,215,926
2. Pension Expense	1,134,393	846,271
3. Employer Contributions	(1,678,705)	(1,443,291)
4. New Net Deferred Inflows/Outflows	1,655,021	(757,351)
5. Change in Allocation of Prior Deferred Inflows/Outflows	25,844	0
6. New Net Deferred Flows Due to Change in Proportion ⁽¹⁾	(62,746)	2,115
7. Recognition of Prior Deferred Inflows/Outflows	201,790	0
8. Recognition of Prior Deferred Flows Due to Change in Proportion ⁽¹⁾	<u>(587)</u>	<u>0</u>
9. Ending Net Pension Liability	\$7,138,680	\$5,863,670

⁽¹⁾ Includes differences between employer contributions and proportionate share of contributions.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 11 (continued)

Schedule of Reconciliation of Net Pension Liability: 9 - ECCFPD

Reporting Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Measurement Date for Employer under GAS 68	December 31, 2015	December 31, 2014
Reconciliation of Net Pension Liability		
1. Beginning Net Pension Liability	\$24,313,820	\$29,920,976
2. Pension Expense	1,258,364	2,933,243
3. Employer Contributions	(3,309,654)	(3,335,792)
4. New Net Deferred Inflows/Outflows	5,330,481	(3,140,369)
5. Change in Allocation of Prior Deferred Inflows/Outflows	784,337	0
6. New Net Deferred Flows Due to Change in Proportion ⁽¹⁾	(6,608,456)	(2,064,238)
7. Recognition of Prior Deferred Inflows/Outflows	649,925	0
8. Recognition of Prior Deferred Flows Due to Change in Proportion ⁽¹⁾	<u>573,399</u>	<u>0</u>
9. Ending Net Pension Liability	\$22,992,216	\$24,313,820

⁽¹⁾ Includes differences between employer contributions and proportionate share of contributions.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 11 (continued)

Schedule of Reconciliation of Net Pension Liability: 10 - Housing Authority

Reporting Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Measurement Date for Employer under GAS 68	December 31, 2015	December 31, 2014
Reconciliation of Net Pension Liability		
1. Beginning Net Pension Liability	\$8,652,807	\$10,648,283
2. Pension Expense	1,712,545	1,240,720
3. Employer Contributions	(2,329,742)	(2,092,594)
4. New Net Deferred Inflows/Outflows	2,501,164	(1,117,595)
5. Change in Allocation of Prior Deferred Inflows/Outflows	12,100	0
6. New Net Deferred Flows Due to Change in Proportion ⁽¹⁾	(72,664)	(26,007)
7. Recognition of Prior Deferred Inflows/Outflows	304,957	0
8. Recognition of Prior Deferred Flows Due to Change in Proportion ⁽¹⁾	<u>7,224</u>	<u>0</u>
9. Ending Net Pension Liability	\$10,788,391	\$8,652,807

⁽¹⁾ Includes differences between employer contributions and proportionate share of contributions.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 11 (continued)

Schedule of Reconciliation of Net Pension Liability: 11 - IHSS

Reporting Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Measurement Date for Employer under GAS 68	December 31, 2015	December 31, 2014
Reconciliation of Net Pension Liability		
1. Beginning Net Pension Liability	\$1,040,424	\$1,280,362
2. Pension Expense	206,160	147,626
3. Employer Contributions	(294,506)	(244,440)
4. New Net Deferred Inflows/Outflows	299,719	(134,381)
5. Change in Allocation of Prior Deferred Inflows/Outflows	1,908	0
6. New Net Deferred Flows Due to Change in Proportion ⁽¹⁾	114	(8,743)
7. Recognition of Prior Deferred Inflows/Outflows	36,544	0
8. Recognition of Prior Deferred Flows Due to Change in Proportion ⁽¹⁾	<u>2,429</u>	<u>0</u>
9. Ending Net Pension Liability	\$1,292,792	\$1,040,424

⁽¹⁾ Includes differences between employer contributions and proportionate share of contributions.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 11 (continued)

Schedule of Reconciliation of Net Pension Liability: 12 - LAFCO

Reporting Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Measurement Date for Employer under GAS 68	December 31, 2015	December 31, 2014
Reconciliation of Net Pension Liability		
1. Beginning Net Pension Liability	\$364,601	\$448,684
2. Pension Expense	58,451	54,401
3. Employer Contributions	(103,349)	(97,935)
4. New Net Deferred Inflows/Outflows	92,776	(47,092)
5. Change in Allocation of Prior Deferred Inflows/Outflows	6,086	0
6. New Net Deferred Flows Due to Change in Proportion ⁽¹⁾	(27,887)	6,543
7. Recognition of Prior Deferred Inflows/Outflows	11,312	0
8. Recognition of Prior Deferred Flows Due to Change in Proportion ⁽¹⁾	<u>(1,817)</u>	<u>0</u>
9. Ending Net Pension Liability	\$400,173	\$364,601

⁽¹⁾ Includes differences between employer contributions and proportionate share of contributions.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 11 (continued)

Schedule of Reconciliation of Net Pension Liability: 13 - MOFD

Reporting Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Measurement Date for Employer under GAS 68	December 31, 2015	December 31, 2014
Reconciliation of Net Pension Liability		
1. Beginning Net Pension Liability	\$28,612,847	\$35,211,427
2. Pension Expense	5,444,680	3,485,712
3. Employer Contributions	(4,394,775)	(4,081,222)
4. New Net Deferred Inflows/Outflows	9,111,104	(3,695,631)
5. Change in Allocation of Prior Deferred Inflows/Outflows	(331,408)	0
6. New Net Deferred Flows Due to Change in Proportion ⁽¹⁾	(894,927)	(2,307,439)
7. Recognition of Prior Deferred Inflows/Outflows	1,110,881	0
8. Recognition of Prior Deferred Flows Due to Change in Proportion ⁽¹⁾	<u>640,955</u>	<u>0</u>
9. Ending Net Pension Liability	\$39,299,357	\$28,612,847

⁽¹⁾ Includes differences between employer contributions and proportionate share of contributions.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 11 (continued)

Schedule of Reconciliation of Net Pension Liability: 14 - Rodeo SD

Reporting Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Measurement Date for Employer under GAS 68	December 31, 2015	December 31, 2014
Reconciliation of Net Pension Liability		
1. Beginning Net Pension Liability	\$182,951	\$225,142
2. Pension Expense	151,593	58,471
3. Employer Contributions	(191,656)	(192,536)
4. New Net Deferred Inflows/Outflows	91,258	(23,630)
5. Change in Allocation of Prior Deferred Inflows/Outflows	(16,705)	0
6. New Net Deferred Flows Due to Change in Proportion ⁽¹⁾	197,145	115,504
7. Recognition of Prior Deferred Inflows/Outflows	11,127	0
8. Recognition of Prior Deferred Flows Due to Change in Proportion ⁽¹⁾	<u>(32,085)</u>	<u>0</u>
9. Ending Net Pension Liability	\$393,628	\$182,951

⁽¹⁾ Includes differences between employer contributions and proportionate share of contributions.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 11 (continued)

Schedule of Reconciliation of Net Pension Liability: 15 - RHFD

Reporting Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Measurement Date for Employer under GAS 68	December 31, 2015	December 31, 2014
Reconciliation of Net Pension Liability		
1. Beginning Net Pension Liability	\$13,499,212	\$16,612,346
2. Pension Expense	1,359,234	1,436,004
3. Employer Contributions	(2,186,912)	(966,307)
4. New Net Deferred Inflows/Outflows	3,536,036	(1,743,556)
5. Change in Allocation of Prior Deferred Inflows/Outflows	180,655	0
6. New Net Deferred Flows Due to Change in Proportion ⁽¹⁾	(2,078,118)	(1,839,275)
7. Recognition of Prior Deferred Inflows/Outflows	431,135	0
8. Recognition of Prior Deferred Flows Due to Change in Proportion ⁽¹⁾	<u>510,910</u>	<u>0</u>
9. Ending Net Pension Liability	\$15,252,152	\$13,499,212

⁽¹⁾ Includes differences between employer contributions and proportionate share of contributions.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 11 (continued)

Schedule of Reconciliation of Net Pension Liability: 16 - SRVFPD

Reporting Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Measurement Date for Employer under GAS 68	December 31, 2015	December 31, 2014
Reconciliation of Net Pension Liability		
1. Beginning Net Pension Liability	\$69,527,014	\$85,561,055
2. Pension Expense	10,370,266	9,220,655
3. Employer Contributions	(15,171,991)	(13,370,011)
4. New Net Deferred Inflows/Outflows	18,717,714	(8,980,099)
5. Change in Allocation of Prior Deferred Inflows/Outflows	707,011	0
6. New Net Deferred Flows Due to Change in Proportion ⁽¹⁾	(6,503,018)	(2,904,586)
7. Recognition of Prior Deferred Inflows/Outflows	2,282,178	0
8. Recognition of Prior Deferred Flows Due to Change in Proportion ⁽¹⁾	<u>806,829</u>	<u>0</u>
9. Ending Net Pension Liability	\$80,736,003	\$69,527,014

⁽¹⁾ Includes differences between employer contributions and proportionate share of contributions.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 11 (continued)

Schedule of Reconciliation of Net Pension Liability: 17 - Court

Reporting Date for Employer under GAS 68	June 30, 2016	June 30, 2015
Measurement Date for Employer under GAS 68	December 31, 2015	December 31, 2014
Reconciliation of Net Pension Liability		
1. Beginning Net Pension Liability	\$23,526,961	\$28,952,654
2. Pension Expense	5,933,877	3,866,047
3. Employer Contributions	(8,589,020)	(7,955,397)
4. New Net Deferred Inflows/Outflows	7,013,306	(3,038,739)
5. Change in Allocation of Prior Deferred Inflows/Outflows	(61,090)	0
6. New Net Deferred Flows Due to Change in Proportion ⁽¹⁾	2,044,577	1,702,396
7. Recognition of Prior Deferred Inflows/Outflows	855,105	0
8. Recognition of Prior Deferred Flows Due to Change in Proportion ⁽¹⁾	<u>(472,888)</u>	<u>0</u>
9. Ending Net Pension Liability	\$30,250,828	\$23,526,961

⁽¹⁾ Includes differences between employer contributions and proportionate share of contributions.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 12

Schedule of Recognition of Changes in Total Net Pension Liability

Increase (Decrease) in Pension Expense Arising from the Recognition of the Effects of Differences between Expected and Actual Experience on Total Pension Liability								
Reporting Date for Employer under GAS 68 Year Ended June 30	Differences between Expected and Actual Experience	Recognition Period (Years)	Reporting Date for Employer under GAS 68 Year Ended June 30:					
			2015	2016	2017	2018	2019	2020
2015	\$(183,604,761)	4.60	\$(39,914,078)	\$(39,914,078)	\$(39,914,078)	\$(39,914,078)	\$(23,948,449)	\$0
2016	(62,117,935)	4.52	<u>0</u>	<u>(13,742,906)</u>	<u>(13,742,906)</u>	<u>(13,742,906)</u>	<u>(13,742,906)</u>	<u>(7,146,311)</u>
Net increase (decrease) in pension expense			\$(39,914,078)	\$(53,656,984)	\$(53,656,984)	\$(53,656,984)	\$(37,691,355)	\$(7,146,311)

Increase (Decrease) in Pension Expense Arising from the Recognition of the Effects of Assumption Changes								
Reporting Date for Employer under GAS 68 Year Ended June 30	Effects of Assumption Changes	Recognition Period (Years)	Reporting Date for Employer under GAS 68 Year Ended June 30:					
			2015	2016	2017	2018	2019	2020
2015	\$(75,608)	4.60	\$(16,437)	\$(16,437)	\$(16,437)	\$(16,437)	\$(9,860)	\$0
2016	72,186,307	4.52	<u>0</u>	<u>15,970,422</u>	<u>15,970,422</u>	<u>15,970,422</u>	<u>15,970,422</u>	<u>8,304,619</u>
Net increase (decrease) in pension expense			\$(16,437)	\$15,953,985	\$15,953,985	\$15,953,985	\$15,960,562	\$8,304,619

As described in Exhibit 9, for the current period, the average of the expected remaining service lives of all employees that are provided with pensions through CCCERA (active and inactive employees) determined as of December 31, 2014 (the beginning of the measurement period ending December 31, 2015) is 4.52 years.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 12 (continued)

Schedule of Recognition of Changes in Total Net Pension Liability

Increase (Decrease) in Pension Expense Arising from the Recognition of Differences between Projected and Actual Earnings on Pension Plan Investments

Reporting Date for Employer under GAS 68 Year Ended June 30	Differences between Projected and Actual Earnings	Recognition Period (Years)	Reporting Date for Employer under GAS 68 Year Ended June 30:					
			2015	2016	2017	2018	2019	2020
2015	\$(13,358,454)	5.00	\$(2,671,691)	\$(2,671,691)	\$(2,671,691)	\$(2,671,691)	\$(2,671,690)	\$0
2016	426,961,542	5.00	<u>0</u>	<u>85,392,308</u>	<u>85,392,308</u>	<u>85,392,308</u>	<u>85,392,308</u>	<u>85,392,310</u>
Net increase (decrease) in pension expense			\$(2,671,691)	\$82,720,617	\$82,720,617	\$82,720,617	\$82,720,618	\$85,392,310

The differences between projected and actual earnings on pension plan investments are recognized over a five-year period per Paragraph 33b. of GAS 68.

Total Increase (Decrease) in Pension Expense

Reporting Date for Employer under GAS 68 Year Ended June 30	Total Differences	Reporting Date for Employer under GAS 68 Year Ended June 30:					
		2015	2016	2017	2018	2019	2020
2015	\$(197,038,823)	\$(42,602,206)	\$(42,602,206)	\$(42,602,206)	\$(42,602,206)	\$(26,629,999)	\$0
2016	437,029,914	<u>0</u>	<u>87,619,824</u>	<u>87,619,824</u>	<u>87,619,824</u>	<u>87,619,824</u>	<u>86,550,618</u>
Net increase (decrease) in pension expense		\$(42,602,206)	\$45,017,618	\$45,017,618	\$45,017,618	\$60,989,825	\$86,550,618

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 13

Allocation of Changes in Total Net Pension Liability

In addition to the amounts shown in Exhibit 12, there are changes in each employer's proportionate share of the total Net Pension Liability (NPL) during the measurement period ending on December 31, 2015. The net effect of the change in the employer's proportionate share of the collective NPL and collective deferred outflows of resources and deferred inflows of resources is also recognized over the average of the expected remaining service lives of all employees shown previously. The difference between the actual employer contributions and the proportionate share of the employer contributions during the measurement period ending on December 31, 2015 is recognized over the same period. These amounts are shown on the following page, with the corresponding amounts for the measurement period ending on December 31, 2014 shown on the page after that. While these amounts are different for each employer, they sum to zero over the entire CCCERA.

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 13 (continued)

Allocation of Changes in Total Net Pension Liability

	Total Change to be Recognized	Recognition Period (Years)	Reporting Date for Employer under GAS 68 Year Ended June 30:					Thereafter
			2016	2017	2018	2019	2020	
1 - BIMID	\$(24,788)	4.52	\$(5,484)	\$(5,484)	\$(5,484)	\$(5,484)	\$(2,852)	\$0
2 - Union Cemetery	96,986	4.52	21,457	21,457	21,457	21,457	11,158	0
3 - CC Mosquito	(519,791)	4.52	(114,998)	(114,998)	(114,998)	(114,998)	(59,799)	0
4 - CCCFPD	10,720,472	4.52	2,371,786	2,371,786	2,371,786	2,371,786	1,233,328	0
5 - CCCSD	(15,863,756)	4.52	(3,509,681)	(3,509,681)	(3,509,681)	(3,509,681)	(1,825,032)	0
6 - First 5	387,179	4.52	85,659	85,659	85,659	85,659	44,543	0
7 - County	23,188,647	4.52	5,130,230	5,130,230	5,130,230	5,130,230	2,667,727	0
8 - CCCERA (the employer)	(80,571)	4.52	(17,825)	(17,825)	(17,825)	(17,825)	(9,271)	0
9 - ECCFPD	(8,485,858)	4.52	(1,877,402)	(1,877,402)	(1,877,402)	(1,877,402)	(976,250)	0
10 - Housing Authority	(93,307)	4.52	(20,643)	(20,643)	(20,643)	(20,643)	(10,735)	0
11 - IHSS	146	4.52	32	32	32	32	18	0
12 - LAFCO	(35,809)	4.52	(7,922)	(7,922)	(7,922)	(7,922)	(4,121)	0
13 - MOFD	(1,149,167)	4.52	(254,240)	(254,240)	(254,240)	(254,240)	(132,207)	0
14 - Rodeo SD	253,152	4.52	56,007	56,007	56,007	56,007	29,124	0
15 - RHFD	(2,668,492)	4.52	(590,374)	(590,374)	(590,374)	(590,374)	(306,996)	0
16 - SRVFPD	(8,350,466)	4.52	(1,847,448)	(1,847,448)	(1,847,448)	(1,847,448)	(960,674)	0
17 - Court	<u>2,625,423</u>	4.52	<u>580,846</u>	<u>580,846</u>	<u>580,846</u>	<u>580,846</u>	<u>302,039</u>	<u>0</u>
Total for all Employers	\$0		\$0	\$0	\$0	\$0	\$0	\$0

SECTION 2: GAS 68 Information for the Contra Costa County Employees' Retirement Association

EXHIBIT 13 (continued)

Allocation of Changes in Total Net Pension Liability

The corresponding amounts for the measurement period ending December 31, 2014 are as follows:

	Total Change to be Recognized	Recognition Period (Years)	Reporting Date for Employer under GAS 68 Year Ended June 30:					Thereafter
			2015	2016	2017	2018	2019	
1 - BIMID	\$1,524	4.60	\$331	\$331	\$331	\$331	\$200	\$0
2 - Union Cemetery	51,442	4.60	11,183	11,183	11,183	11,183	6,710	0
3 - CC Mosquito	35,280	4.60	7,670	7,670	7,670	7,670	4,600	0
4 - CCCFPD	(10,738,204)	4.60	(2,334,392)	(2,334,392)	(2,334,392)	(2,334,392)	(1,400,636)	0
5 - CCCSD	2,454,113	4.60	533,503	533,503	533,503	533,503	320,101	0
6 - First 5	109,167	4.60	23,732	23,732	23,732	23,732	14,239	0
7 - County	17,444,777	4.60	3,792,342	3,792,342	3,792,342	3,792,342	2,275,409	0
8 - CCCERA (the employer)	2,702	4.60	587	587	587	587	354	0
9 - ECCFPD	(2,637,637)	4.60	(573,399)	(573,399)	(573,399)	(573,399)	(344,041)	0
10 - Housing Authority	(33,231)	4.60	(7,224)	(7,224)	(7,224)	(7,224)	(4,335)	0
11 - IHSS	(11,172)	4.60	(2,429)	(2,429)	(2,429)	(2,429)	(1,456)	0
12 - LAFCO	8,360	4.60	1,817	1,817	1,817	1,817	1,092	0
13 - MOFD	(2,948,394)	4.60	(640,955)	(640,955)	(640,955)	(640,955)	(384,574)	0
14 - Rodeo SD	147,589	4.60	32,085	32,085	32,085	32,085	19,249	0
15 - RHFD	(2,350,185)	4.60	(510,910)	(510,910)	(510,910)	(510,910)	(306,545)	0
16 - SRVFPD	(3,711,415)	4.60	(806,829)	(806,829)	(806,829)	(806,829)	(484,099)	0
17 - Court	<u>2,175,284</u>	4.60	<u>472,888</u>	<u>472,888</u>	<u>472,888</u>	<u>472,888</u>	<u>283,732</u>	<u>0</u>
Total for all Employers	\$0		\$0	\$0	\$0	\$0	\$0	\$0

SECTION 3: Actuarial Assumptions and Methods and Appendices for the Contra Costa County Employees' Retirement Association

Actuarial Assumptions and Methods

For December 31, 2015 Measurement Date and Employer Reporting as of June 30, 2016

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 Reports dated April 19, 2016.

Economic Assumptions

Net Investment Return:

7.00%, net of investment expenses

Administration Expenses:

1.14% of payroll allocated to both the employer and the member based on normal cost (before expenses) for the employer and member.

**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 0.5% per year.

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.

SECTION 3: Actuarial Assumptions and Methods and Appendices for the Contra Costa County Employees' Retirement Association

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.

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.

SECTION 3: Actuarial Assumptions and Methods and Appendices for the Contra Costa County Employees' Retirement Association

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 (%) Mortality	
	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 3: Actuarial Assumptions and Methods and Appendices for the Contra Costa County Employees' Retirement Association

Termination Rates Before Retirement (continued):

Age	Rate (%) Disability		
	General Tier 1 and Tier 4 ⁽¹⁾	General Tier 3 and Tier 5 ⁽²⁾	Safety ⁽³⁾
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

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

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

⁽³⁾ 100% of Safety disabilities are assumed to be duty disabilities.

SECTION 3: Actuarial Assumptions and Methods and Appendices for the Contra Costa County Employees' Retirement Association

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 3: Actuarial Assumptions and Methods and Appendices for the Contra Costa County Employees' Retirement Association

Retirement Rates (General):

Age	Rate (%)			
	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 3: Actuarial Assumptions and Methods and Appendices for the Contra Costa County Employees' Retirement Association

Retirement Rates (Safety):

Age	Rate (%)			
	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 3: Actuarial Assumptions and Methods and Appendices for the Contra Costa County Employees' Retirement Association

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.

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:

Male retirees are 3 years older than their spouses, and Female retirees 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 3: Actuarial Assumptions and Methods and Appendices for the Contra Costa County Employees' Retirement Association

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:	1.25%
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 3: Actuarial Assumptions and Methods and Appendices for the Contra Costa County Employees' Retirement Association

Service From Accumulated Sick Leave Conversion:

The following assumptions for 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 3: Actuarial Assumptions and Methods and Appendices for the Contra Costa County Employees' Retirement Association

Salary Increases:

Annual Rate of Compensation Increase		
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

SECTION 3: Actuarial Assumptions and Methods and Appendices for the Contra Costa County Employees' Retirement Association

Actuarial Methods

Actuarial Cost Method:	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 percentage of compensation.
Expected Remaining Service Lives:	The average of the expected service lives of all employees is determined by: <ul style="list-style-type: none">• Calculating each active employee's expected remaining service life as the present value of \$1 per year of future service at zero percent interest.• Setting the remaining service life to zero for each nonactive or retired member.• Dividing the sum of the above amounts by the total number of active employee, nonactive and retired members.

Changes in Actuarial Assumptions and Methods:

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 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.

SECTION 3: Actuarial Assumptions and Methods and Appendices for the Contra Costa County Employees' Retirement Association

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

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.

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.

SECTION 3: Actuarial Assumptions and Methods and Appendices for the Contra Costa County Employees' Retirement Association

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

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.

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 3: Actuarial Assumptions and Methods and Appendices for the Contra Costa County Employees' Retirement Association

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

Termination Rates Before Retirement (continued):

Age	Rate (%)		
	Disability		
	General Tier 1⁽¹⁾	General Tier 3⁽²⁾	Safety⁽³⁾
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

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

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

⁽³⁾ 100% of Safety disabilities are assumed to be duty disabilities.

SECTION 3: Actuarial Assumptions and Methods and Appendices for the Contra Costa County Employees' Retirement Association

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

Termination Rates Before Retirement (continued):

<u>Years of Service</u>	<u>Rate (%)</u>	
	<u>Withdrawal*</u>	
	<u>General</u>	<u>Safety</u>
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 3: Actuarial Assumptions and Methods and Appendices for the Contra Costa County Employees' Retirement Association

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

Age	Rate (%)			
	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	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 3: Actuarial Assumptions and Methods and Appendices for the Contra Costa County Employees' Retirement Association

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

Retirement Rates (Safety):

Age	Rate (%)			
	Safety Tier A (Enhanced)	Safety Tier C (Enhanced)	Safety Tier A (Non-enhanced)	PEPRA Safety Tiers D and E
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 3: Actuarial Assumptions and Methods and Appendices for the Contra Costa County Employees' Retirement Association

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 3: Actuarial Assumptions and Methods and Appendices for the Contra Costa County Employees' Retirement Association

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 3: Actuarial Assumptions and Methods and Appendices for the Contra Costa County Employees' Retirement Association

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 3: Actuarial Assumptions and Methods and Appendices for the Contra Costa County Employees' Retirement Association

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

Salary Increases:

Annual Rate of Compensation Increase		
Inflation: 3.25% per year, plus “across the board” salary increases of 0.75% per year, plus the following merit and promotional increases.		
Years of Service	General	Safety
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 3: Actuarial Assumptions and Methods and Appendices for the Contra Costa County Employees' Retirement Association

APPENDIX A

**Calculation of Discount Rate as of December 31, 2015
Projection of Pension Plan's Fiduciary Net Position (\$ in millions)**

Year Beginning January 1	Projected Beginning Plan's Fiduciary Net Position (a)	Projected Total Contributions (b)	Projected Benefit Payments (c)	Projected Administrative Expenses (d)	Projected Investment Earnings (e)	Projected Ending Plan's Fiduciary Net Position (f) = (a) + (b) - (c) - (d) + (e)
2015	\$6,909	\$409	\$406	\$8	\$73	\$6,977
2016	6,977	350	438	7	485	7,366
2017	7,366	347	458	7	512	7,760
2018	7,760	344	478	7	538	8,158
2019	8,158	346	499	6	566	8,564
2020	8,564	354	522	6	594	8,984
2021	8,984	352	545	6	622	9,407
2022	9,407	351	569	6	651	9,834
2023	9,834	265	594	5	677	10,176
2024	10,176	261	620	5	700	10,512
2040	12,257	29	949	1	826	12,162
2041	12,162	25	960	1	819	12,045
2042	12,045	22	969	1	811	11,908
2043	11,908	19	975	1	801	11,751
2044	11,751	16	980	1	789	11,574
2089	5,654	0	61	0	394	5,987
2090	5,987	0	49	0	417	6,354
2091	6,354	0	40	0	443	6,758
2092	6,758	0	32	0	472	7,198
2093	7,198	0	25	0	503	7,676
2127	70,959	0	0 *	0	4,967	75,926
2128	75,926					
2128 Discounted Value:	36 **					

* Less than \$1 million, when rounded.

** \$75,926 million when discounted with interest at the rate of 7.00% per annum has a value of \$36 million as of December 31, 2015.

SECTION 3: Actuarial Assumptions and Methods and Appendices for the Contra Costa County Employees' Retirement Association

APPENDIX A (continued)

**Calculation of Discount Rate as of December 31, 2015
Projection of Pension Plan's Fiduciary Net Position (\$ in millions)**

Notes:

- (1) Amounts may not total exactly due to rounding.
- (2) Amounts shown in the year beginning January 1, 2015 row are actual amounts, based on the unaudited financial statements provided by CCCERA.
- (3) Years 2025-2039, 2045-2088, and 2094-2126 have been omitted from this table.
- (4) Column (a): Except for the "discounted value" shown for 2128, none of the projected beginning Plan's Fiduciary Net Position amounts shown have been adjusted for the time value of money.
- (5) Column (b): Projected total contributions include member and employer normal cost rates applied to closed group projected payroll (based on covered active members as of December 31, 2014); plus employer contributions to the Unfunded Actuarial Accrued Liability; plus member and employer contributions to fund each year's annual administrative expenses. Contributions are assumed to occur halfway through the year, on average.
- (6) Column (c): Projected benefit payments have been determined in accordance with paragraph 39 of GASB Statement No. 67, and are based on the closed group of active, inactive vested, retired members, and beneficiaries as of December 31, 2014. The projected benefit payments reflect the cost of living increase assumptions adopted for use in the December 31, 2015 valuation report and include projected benefits associated with the Post Retirement Death Benefit Reserve.
- (7) Column (d): Projected administrative expenses are assumed to be 1.14% of closed group projected payroll and are assumed to occur halfway through the year, on average.
- (8) Column (e): Projected investment earnings are based on the assumed investment rate of return of 7.00% per annum.
- (9) As illustrated in this Exhibit, the Plan's Fiduciary Net Position was projected to be available to make all projected future benefit payments for current Plan members. In other words, there is no projected "cross-over date" when projected benefits are not covered by projected assets. Therefore, the long-term expected rate of return on Plan investments of 7.00% per annum was applied to all periods of projected benefit payments to determine the Total Pension Liability as of December 31, 2015 shown earlier in this report, pursuant to paragraph 44 of GASB Statement No. 67.

SECTION 3: Actuarial Assumptions and Methods and Appendices for the Contra Costa County Employees' Retirement Association

APPENDIX B

Glossary of Terms

Definitions of certain terms *as they are used in Statement 68*; the terms may have different meanings in other contexts.

Active employees

Individuals employed at the end of the reporting or measurement period, as applicable.

Actual contributions

Cash contributions recognized as additions to a Pension Plan's Fiduciary Net Position.

Actuarial present value of projected benefit payments

Projected benefit payments discounted to reflect the expected effects of the time value (present value) of money and the probabilities of payment.

Actuarial valuation

The determination, as of a point in time (the actuarial valuation date), of the service cost, Total Pension Liability, and related actuarial present value of projected benefit payments for pensions performed in conformity with Actuarial Standards of Practice unless otherwise specified by the GASB.

Actuarial valuation date

The date as of which an actuarial valuation is performed.

Actuarially determined contribution

A target or recommended contribution to a defined benefit pension plan for the reporting period, determined in conformity with Actuarial Standards of Practice based on the most recent measurement available when the contribution for the reporting period was adopted.

Ad hoc cost-of-living adjustments (ad hoc COLAs)

Cost-of-living adjustments that require a decision to grant by the authority responsible for making such decisions.

SECTION 3: Actuarial Assumptions and Methods and Appendices for the Contra Costa County Employees' Retirement Association

APPENDIX B (continued)

Glossary of Terms

Automatic cost-of-living adjustments (automatic COLAs)

Cost-of-living adjustments that occur without a requirement for a decision to grant by a responsible authority, including those for which the amounts are determined by reference to a specified experience factor (such as the earnings experience of the pension plan) or to another variable (such as an increase in the consumer price index).

Closed period

A specific number of years that is counted from one date and declines to zero with the passage of time. For example, if the recognition period initially is five years on a closed basis, four years remain after the first year, three years after the second year, and so forth.

Collective deferred outflows of resources and deferred inflows of resources related to pensions

Deferred outflows of resources and deferred inflows of resources related to pensions arising from certain changes in the collective Net Pension Liability.

Collective Net Pension Liability

The Net Pension Liability for benefits provided through (1) a cost-sharing pension plan or (2) a single-employer or agent pension plan in circumstances in which there is a special funding situation.

Collective pension expense

Pension expense arising from certain changes in the collective Net Pension Liability.

Contributions

Additions to a Pension Plan's Fiduciary Net Position for amounts from employers, nonemployer contributing entities (for example, state government contributions to a local government pension plan), or employees. Contributions can result from cash receipts by the pension plan or from recognition by the pension plan of a receivable from one of these sources.

Cost-of-living adjustments

Postemployment benefit changes intended to adjust benefit payments for the effects of inflation.

Cost-sharing employer

An employer whose employees are provided with pensions through a cost-sharing multiple-employer defined benefit pension plan.

SECTION 3: Actuarial Assumptions and Methods and Appendices for the Contra Costa County Employees' Retirement Association

APPENDIX B (continued)

Glossary of Terms

Cost-sharing multiple-employer defined benefit pension plan (cost-sharing pension plan)

A multiple-employer defined benefit pension plan in which the pension obligations to the employees of more than one employer are pooled and pension plan assets can be used to pay the benefits of the employees of any employer that provides pensions through the pension plan.

Covered-employee payroll

The payroll of employees that are provided with pensions through the pension plan.

Defined benefit pension plans

Pension plans that are used to provide defined benefit pensions.

Defined benefit pensions

Pensions for which the income or other benefits that the employee will receive at or after separation from employment are defined by the benefit terms. The pensions may be stated as a specified dollar amount or as an amount that is calculated based on one or more factors such as age, years of service, and compensation. (A pension that does not meet the criteria of a defined contribution pension is classified as a defined benefit pension for purposes of Statement 68.)

Defined contribution pension plans

Pension plans that are used to provide defined contribution pensions.

Defined contribution pensions

Pensions having terms that (1) provide an individual account for each employee; (2) define the contributions that an employer is required to make (or the credits that it is required to provide) to an active employee's account for periods in which that employee renders service; and (3) provide that the pensions an employee will receive will depend only on the contributions (or credits) to the employee's account, actual earnings on investments of those contributions (or credits), and the effects of forfeitures of contributions (or credits) made for other employees, as well as pension plan administrative costs, that are allocated to the employee's account.

SECTION 3: Actuarial Assumptions and Methods and Appendices for the Contra Costa County Employees' Retirement Association

APPENDIX B (continued)

Glossary of Terms

Discount rate

The single rate of return that, when applied to all projected benefit payments, results in an actuarial present value of projected benefit payments equal to the total of the following:

1. The actuarial present value of benefit payments projected to be made in future periods in which (a) the amount of the Pension Plan's Fiduciary Net Position is projected (under the requirements of Statement 68) to be greater than the benefit payments that are projected to be made in that period and (b) pension plan assets up to that point are expected to be invested using a strategy to achieve the long-term expected rate of return, calculated using the long-term expected rate of return on pension plan investments.
2. The actuarial present value of projected benefit payments not included in (1), calculated using the municipal bond rate.

Entry age actuarial cost method

A method under which the actuarial present value of the projected benefits of each individual included in an actuarial valuation is allocated on a level basis over the earnings or service of the individual between entry age and assumed exit age(s). The portion of this actuarial present value allocated to a valuation year is called the *normal cost*. The portion of this actuarial present value not provided for at a valuation date by the actuarial present value of future normal costs is called the *actuarial accrued liability*.

Inactive employees

Terminated individuals that have accumulated benefits but are not yet receiving them, and retirees or their beneficiaries currently receiving benefits.

Measurement period

The period between the prior and the current measurement dates.

Multiple-employer defined benefit pension plan

A defined benefit pension plan that is used to provide pensions to the employees of more than one employer.

SECTION 3: Actuarial Assumptions and Methods and Appendices for the Contra Costa County Employees' Retirement Association

APPENDIX B (continued)

Glossary of Terms

Net Pension Liability

The liability of employers and nonemployer contributing entities to employees for benefits provided through a defined benefit pension plan.

Pension plans

Arrangements through which pensions are determined, assets dedicated for pensions are accumulated and managed, and benefits are paid as they come due.

Pensions

Retirement income and, if provided through a pension plan, postemployment benefits other than retirement income (such as death benefits, life insurance, and disability benefits). Pensions do not include postemployment healthcare benefits and termination benefits.

Plan members

Individuals that are covered under the terms of a pension plan. Plan members generally include (1) employees in active service (active plan members) and (2) terminated employees who have accumulated benefits but are not yet receiving them and retirees or their beneficiaries currently receiving benefits (inactive plan members).

Postemployment

The period after employment.

Postemployment benefit changes

Adjustments to the pension of an inactive employee.

Projected benefit payments

All benefits estimated to be payable through the pension plan to current active and inactive employees as a result of their past service and their expected future service.

Public employee retirement system

A special-purpose government that administers one or more pension plans; also may administer other types of employee benefit plans, including postemployment healthcare plans and deferred compensation plans.

SECTION 3: Actuarial Assumptions and Methods and Appendices for the Contra Costa County Employees' Retirement Association

APPENDIX B (continued)

Glossary of Terms

Real rate of return

The rate of return on an investment after adjustment to eliminate inflation.

Service costs

The portions of the actuarial present value of projected benefit payments that are attributed to valuation years.

Termination benefits

Inducements offered by employers to active employees to hasten the termination of services, or payments made in consequence of the early termination of services. Termination benefits include early-retirement incentives, severance benefits, and other termination-related benefits.

Total Pension Liability

The portion of the actuarial present value of projected benefit payments that is attributed to past periods of employee service in conformity with the requirements of Statement 68.

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