

# Alameda County Employees' Retirement Association

Actuarial Valuation and Review  
as of December 31, 2017



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

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*June 12, 2018*

*Board of Retirement  
Alameda County Employees' Retirement Association  
475 14<sup>th</sup> Street, Suite 1000  
Oakland, CA 94612*

*Dear Board Members:*

*We are pleased to submit this Actuarial Valuation and Review as of December 31, 2017. It summarizes the actuarial data used in the valuation, establishes the funding requirements for fiscal 2018-2019 and analyzes the preceding year's experience.*

*This report was prepared in accordance with generally accepted actuarial principles and practices, at the request of the Board to assist in administering the Plan. The census and financial information on which our calculations were based were prepared by ACERA. 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.*

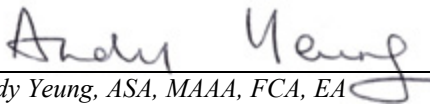
*The actuarial calculations were completed under the supervision of Eva Yum, FSA, MAAA, Enrolled Actuary. We are members of the American Academy of Actuaries and we meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein. To the best of our knowledge,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


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

*Sincerely,*

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

By:

  
\_\_\_\_\_  
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Vice President and Actuary*

  
\_\_\_\_\_  
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Associate Actuary*

*DNA/hy*

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

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### Purpose and Scope

This report has been prepared by Segal Consulting (“Segal”) to present a valuation of the Alameda County Employees' Retirement Association as of December 31, 2017. The valuation was performed to determine whether the assets and contributions are sufficient to provide the prescribed benefits. The contribution requirements presented in this report are based on:

- The benefit provisions of the Retirement Association, as administered by the Board of Retirement;
- The characteristics of covered active members<sup>1</sup>, inactive vested members, retired members and beneficiaries as of November 30, 2017, provided by the Retirement Association;
- The assets of the Plan as of December 31, 2017, provided by the Retirement Association;
- Economic assumptions regarding future salary increases and investment earnings; and
- Other actuarial assumptions, regarding employee terminations, retirement, death, etc. that the Board has adopted for the December 31, 2017 valuation.

One of the general goals of an actuarial valuation is to establish contributions that fully fund the Association's liabilities, and that, as a percentage of payroll, remain as level as possible for each generation of active members. Annual actuarial valuations measure the progress toward this goal, as well as test the adequacy of the contribution rates. In preparing this valuation, we have employed generally accepted actuarial methods and assumptions to evaluate the 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 consistent, both internally and with prior year's information.

*Ref: Pgs. 72-73*

The contribution requirements are determined as a percentage of payroll. The Association's employer rates provide for both normal cost and a payment or credit to amortize any unfunded or overfunded actuarial accrued liabilities. In this valuation, we have reflected the Board's funding policy to amortize the Association's unfunded actuarial accrued liability using a layered approach. The aggregate employer contribution rate calculated on this basis is 28.03% of payroll. In this valuation, we have

*Ref: Pgs. 55-56*

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<sup>1</sup> Similar to last year, ACERA's pension administration system did not pick up the first pay period in determining the service credit earned by continuing active members during 2015/2016 (i.e., from December 1, 2015 through November 30, 2016). Accordingly, we have been directed by ACERA to add service for one additional pay period for those members in this year's valuation.

Also note that on September 12, 2012, the Governor of California approved AB 197, which, in part, excludes “various payments from the definition of compensation earnable” including “payments made at the termination of employment.” We understand that action was taken by the Board to implement AB 197, which was subsequently challenged in a lawsuit. Based on information recently provided by ACERA, we understand that the Retirement Office is currently working with their counsel on the lawsuit and are evaluating the next steps and seeking direction from the Board of Retirement. ACERA believes it will likely be a significant amount of time before the lawsuit is resolved and has therefore not changed their calculation process for determining compensation earnable. Accordingly, we understand that the compensation information ACERA has provided to us for this valuation is consistent with the information they provided to us for last year's valuation.

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

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applied the 7.25% net investment earnings, 3.00% inflation, and 0.50% across-the-board salary increase assumptions adopted by the Board from the December 1, 2013 – November 30, 2016 experience study. The 7.25% investment return assumption has been developed without taking into consideration the impact of the “excess earnings” sharing mechanism between the SRBR and the Retirement Plan.<sup>2</sup>

The rates calculated in this report may be adopted by the Board for the fiscal year that extends from July 1, 2018 through June 30, 2019.

### Significant Issues in this Valuation

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

*Ref: Pg. 64*

- The results of this valuation reflect changes in the economic and demographic assumptions as recommended by Segal Consulting and adopted by the Board on December 21, 2017. These assumptions were documented in our Actuarial Experience Study report dated September 6, 2017 and are also outlined in Section 4, Exhibit II of this report. Note in particular that the assumed net investment return was reduced from 7.60% to 7.25% and the mortality assumptions were strengthened to anticipate longer life expectancies for retired members and beneficiaries.

These assumption changes resulted in an increase in the aggregate member rate of 0.65% of payroll and an increase in the average employer rate of 3.49% of payroll. Out of the 3.49% of payroll increase in the average employer rate, 0.94% is the increase in the normal cost rate and 2.55% is an increase in the unfunded actuarial accrued liability (UAAL) rate.

*Ref: Pg. 28*

- In the December 31, 2016 valuation, the ratio of the valuation value of assets to actuarial accrued liabilities was 78.1%. In this December 31, 2017 valuation, the funded ratio has decreased to 76.0%. The funded ratio if measured on a market value of assets basis increased from 74.5% as of December 31, 2016 to 77.7% as of December 31, 2017. The changes in the above ratios were primarily the result of changes in actuarial assumptions (for the valuation value and market value funded ratios), and the gain on the market value of assets (for the market value funded ratio).

*Ref: Pg. 8 and Pg. 54*

- The Association's UAAL as of December 31, 2016 was \$1,801.6 million. In this year's valuation, the UAAL has increased to \$2,156.7 million. The increase in the UAAL was primarily due to (a) the loss due to actual contributions lower than expected<sup>3</sup> and (b) changes in actuarial assumptions, offset somewhat by (c) higher than expected return on investments (after smoothing), (d) lower than expected salary increases for active members, and (e) other actuarial gains. A reconciliation of the Association's UAAL is provided in Section 3, Exhibit H. A schedule of the current UAAL

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<sup>2</sup> For informational purposes only, we have provided on page iv the estimated impact future excess earnings allocations may have on the Retirement Plan.

<sup>3</sup> Including scheduled delay in implementing contribution rates after date of valuation.

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

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amortization amounts may be found in Section 3, Exhibit I. Note that a graphical projection of the UAAL amortization bases and payments has been included as a new Exhibit J in Section 3.

*Ref: Pg. 25 and Pg. 112*

- The aggregate employer rate calculated in this valuation has increased from 24.89% of payroll to 28.03% of payroll. This change was primarily due to (a) small actuarial losses<sup>4</sup> and (b) changes in actuarial assumptions offset somewhat by (c) higher than expected return on investments (after smoothing), (d) lower than expected salary increases for active members and (e) amortizing the prior year's UAAL over a larger than expected projected total payroll. A reconciliation of the Association's aggregate employer rate is provided in Section 2, Subsection D (see Chart 15).

A schedule of the projected contributions by each participating employer is provided in Appendix B. Under the Board of Retirement's current actuarial funding policy, the UAAL is paid off by the employers in the General Tiers 1, 2, and 4 membership group in proportion to their payroll. It should be noted that the payroll for Office of Education has decreased from about \$83,000 in the December 31, 2016 valuation to \$0 in the December 31, 2017 valuation. As there is a continuing need to pay off the UAAL in that membership group, we would recommend to the Board that ACERA consider establishing a new policy to determine and allocate the UAAL payment for an employer with a declining payroll.

Employer rates for AHS/Court/First 5 are higher than the County's rates to reflect that only the County has received a reimbursement of \$5.8 million for the implicit retiree health benefit subsidy paid by the County for 2017 (note that this is an estimated amount provided by ACERA). The \$5.8 million and the unused credit from prior years' transfers (the balance of prior transfers was about \$61.3 million<sup>5</sup> as of December 31, 2017) have been recognized over separate 20-year periods.

*Ref: Pg. 26 and Pg. 92*

- The aggregate member rate calculated in this valuation increased from 8.75% of payroll to 9.37% of payroll. This change is due to changes in actuarial assumptions offset slightly by a change in membership demographics. A reconciliation of the Association's aggregate member rate is provided in Section 2, Subsection D (see Chart 16).

The individual member rates have been updated to reflect the valuation as of December 31, 2017. The detailed member rates are provided in Appendix A of this report.

*Ref: Pg. 6*

- As indicated in Section 2, Subsection B (see Chart 7) of this report, the total unrecognized net investment gain as of December 31, 2017 is \$309.1 million (in the previous valuation, this amount was a \$343.9 million net loss). This net investment gain will be recognized in the determination of the actuarial value of assets for funding purposes in the next few years, and will offset any investment losses that may occur after December 31, 2017. This implies that if the Association earns the assumed net rate of investment return of 7.25% per year on a **market value** basis, it will result in

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<sup>4</sup> Including changes in membership demographics, lower contributions than expected and scheduled delay in implementing contribution rates after date of valuation.

<sup>5</sup> See Appendix C for a schedule of the outstanding balances of the unused credit.

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

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investment gains on the actuarial value of assets in the next few years. So, if the actual market return is equal to the assumed 7.25% rate and all other actuarial assumptions are met, the contribution requirements would generally decrease in the next few years.

The net deferred gain of \$309.1 million represents 3.8% of the market value of assets as of December 31, 2017. Unless offset by future investment losses or other unfavorable experience, the recognition of the \$309.1 million deferred market gain is expected to have an impact on the Association's future funded percentage and contribution rate requirements. Under a simplified approach, which takes into account the size of the valuation and the SRBR reserves, this potential impact may be illustrated as follows:

- If one-half of the net deferred gain after restoring the Contingency Reserve to 1% of total assets were recognized immediately in the valuation value of assets, the funded percentage would increase from 76.0% to 77.7%.
  - If one-half of the net deferred gain after restoring the Contingency Reserve to 1% of total assets were recognized immediately in the valuation value of assets, the aggregate employer rate would decrease from 28.03% to about 27.0% of payroll.
- Similar to what we disclosed in our December 31, 2016 valuation report, the 7.25% investment return assumption that the Board approved on December 21, 2017 for determining the liabilities for funding purposes and used for establishing the employer and employee contribution rates in this report has continued to be developed without considering the impact of any future 50/50 excess earnings allocation. This is based on our understanding that Article 5.5 of the Statute, which authorizes the allocation of 50% of excess earnings to the SRBR, does not allow for the use of a different investment return for funding than is used for interest crediting. This would appear in effect to preclude the prefunding of the SRBR through the use of an assumption lower than the market earnings assumption of 7.25%.

As required by the Actuarial Standard of Practice (ASOP) No. 4 ("Measuring Pension Obligations and Determining Pension Plan Costs or Contributions"), we performed a stochastic model, as detailed in our 2013-2016 experience study report, to estimate the impact of the 50% allocation of future excess earnings to the SRBR. The results of our model indicated that the 50/50 allocation of future excess earnings would have about the same impact as an "outflow" (i.e., assets not available to fund the benefits included in this valuation) that would average approximately 0.60% of assets over time. **For informational purposes only**, when we applied the results of our stochastic model to this valuation, we have estimated that such an annual outflow would increase the AAL measured in this valuation using a 7.25% investment return assumption from \$8.99 billion to \$9.65 billion (for a difference of \$0.66 billion) and would increase the employer's contribution rate by about 4% - 5% of payroll.

Ref: Pg. 53

- In 2017, there were no "excess earnings" credited to the valuation reserves or the SRBR. The Contingency Reserve is about 0.90% of total assets as of December 31, 2017. A complete presentation of the Association's reserves is in Section 3, Exhibit G.

## **SECTION 1: Valuation Summary for the Alameda County Employees' Retirement Association**

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- The actuarial valuation report as of December 31, 2017 is based on financial information as of that date. Changes in the value of assets subsequent to that date are not reflected. Declines in asset values will increase the actuarial cost of the plan, while increases will decrease the actuarial cost of the plan.

### Impact of Future Experience on Contribution Rates

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

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



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

**Summary of Key Valuation Results (Dollar amounts in thousands)**

	December 31, 2017		December 31, 2016	
<b>Employer Contribution Rates:</b>				
<u>County Only</u>	Total Rate	Estimated Annual Amount <sup>(1)</sup>	Total Rate	Estimated Annual Amount <sup>(1)</sup>
General Tier 1	22.30%	\$2,294	20.10%	\$2,067
General Tier 2	21.57	86,959	19.37	78,091
General Tier 4	20.90	31,016	18.63	27,647
Safety Tier 1 <sup>(3)</sup>	76.41	801	68.31	717
Safety Tier 2	61.19	75,982	53.25	66,123
Safety Tier 2C	62.54	1,882	54.64	1,645
Safety Tier 2D	59.64	7,886	51.11	6,758
Safety Tier 4	57.92	17,247	50.90	15,156
County Combined	30.57	224,067	27.03	198,204
<u>AHS, Court &amp; First 5 Only</u>				
General Tier 1	23.06	667	20.81	602
General Tier 2	22.33	47,306	20.08	42,539
General Tier 4	21.66	21,449	19.34	19,152
<u>Other Districts</u>				
General Tier 1	28.32	1,171	26.21	1,084
General Tier 2	27.59	100	25.48	93
General Tier 3	29.77	661	26.39	586
General Tier 4 (Housing Authority, Office of Education)	26.92	168	24.74	155
General Tier 4 (LARPD Only)	23.12	342	19.76	292
All Categories Combined	28.03	295,931	24.89	262,707
<b>Average Member Contribution Rates:</b>				
	Total Rate	Estimated Annual Amount <sup>(1)</sup>	Total Rate <sup>(2)</sup>	Estimated Annual Amount <sup>(1)</sup>
General Tier 1	9.59%	\$1,660	8.97%	\$1,553
General Tier 2	7.81	48,060	7.32	45,045
General Tier 3	13.56	301	12.85	285
General Tier 4	8.76	21,859	8.10	20,212
Safety Tier 1	11.57	121	11.10	117
Safety Tier 2	15.84	19,669	14.90	18,502
Safety Tier 2C	13.52	407	12.58	379
Safety Tier 2D	16.42	2,171	15.44	2,042
Safety Tier 4	15.75	4,690	14.20	4,228
All Categories Combined	9.37	98,938	8.75	92,363

<sup>(1)</sup> Based on December 31, 2017 projected annual compensation.

<sup>(2)</sup> Average rates have been recalculated by applying the individual entry age based member rates determined in the December 31, 2016 valuation to the Association membership as of December 31, 2017.

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

**Summary of Key Valuation Results - continued (Dollar amounts in thousands)**

	December 31, 2017	December 31, 2016
<b>Funded Status:</b>		
Actuarial Accrued Liability (AAL) <sup>(3)</sup>	\$8,987,061	\$8,237,715
Valuation Value of Assets (VVA) <sup>(4)</sup>	6,830,379	6,436,138
Market Value of Assets (MVA)	6,980,597 <sup>(5)</sup>	6,133,324 <sup>(6)</sup>
Funded Percentage on VVA Basis	76.0%	78.1%
Funded Percentage on MVA Basis	77.7%	74.5%
Unfunded Actuarial Accrued Liability (UAAL) on VVA Basis	\$2,156,682	\$1,801,577
Unfunded Actuarial Accrued Liability (UAAL) on MVA Basis	2,006,464	2,104,391
<b>Key Economic Assumptions:</b>		
Interest Rate	7.25%	7.60%
Inflation Rate	3.00%	3.25%
Across-the-Board Salary Increase	0.50%	0.50%

<sup>(3)</sup> Excludes liabilities held for SRBR and other non-valuation reserves.

<sup>(4)</sup> Excludes Reserve for Interest Fluctuations (Contingency Reserve) if positive, Supplemental Retirees Benefit Reserve, and 401(h) Reserve.

<sup>(5)</sup> Equals Valuation Value of Assets plus one-half of the deferred market gains after restoring the Contingency Reserve to 1% of total assets.

<sup>(6)</sup> Equals Valuation Value of Assets plus a proportion of the deferred market losses after netting out the Contingency Reserve that is commensurate with the size of the valuation reserves.

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

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

	<b>December 31, 2017</b>	<b>December 31, 2016</b>	<b>Change From Prior Year</b>
<b>Active Members:</b>			
Number of members	11,323	11,111	1.9%
Average age	47.1	47.3	-0.2
Average service	11.4	11.6	-0.2
Projected total compensation	\$1,055,661,000	\$1,003,651,000	5.2%
Average projected compensation	\$93,232	\$90,329	3.2%
<b>Retired Member and Beneficiaries:</b>			
Number of members:			
Service retired	7,379	7,134	3.4%
Disability retired	888	887	0.1%
Beneficiaries	1,212	1,221	-0.7%
Total	9,479	9,242	2.6%
Average age	71.6	71.3	0.3
Average monthly benefit <sup>(1)</sup>	\$3,880	\$3,757	3.3%
<b>Vested Terminated Members:</b>			
Number of vested terminated members <sup>(2)</sup>	2,447	2,263	8.1%
Average age	48.0	48.1	-0.1
<b>Summary of Financial Data (dollar amounts in thousands):</b>			
Market value of assets	\$8,112,100	\$6,965,580	16.5%
Return on market value of assets	18.77%	6.91%	11.86%
Actuarial value of assets	\$7,803,026	\$7,309,485	6.8%
Return on actuarial value of assets	8.85%	6.53%	2.32%
Valuation value of assets	\$6,830,379	\$6,436,138	6.1%
Return on valuation value of assets	7.77%	7.24%	0.53%

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

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

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

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### Important Information about Actuarial Valuations

An actuarial valuation is a budgeting tool with respect to the financing of future projected obligations of a pension plan. It is an estimated forecast – the actual long-term cost of the plan will be determined by the actual benefits and expenses paid and the actual investment experience of the plan.

In order to prepare an actuarial valuation, Segal 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. Even where they appear precise, outside factors may change how they operate. It is important to keep Segal informed with respect to plan provisions and administrative procedures, and to review the plan summary included in our 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. The Association uses an “actuarial value of assets” that differs from market value to gradually reflect six-month changes in the market value of assets in determining the contribution requirements.
- **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, termination, 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. Segal is not responsible for the use or misuse of its report, particularly by any other party.

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

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- An actuarial valuation is a measurement of the plan's assets and liabilities at a specific date. Accordingly, except where otherwise noted, Segal did not perform an analysis of the potential range of future financial measures. The actual long-term cost of the plan will be determined by the actual benefits and expenses paid and the actual investment experience of the plan.
- If 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 Alameda County Employees' Retirement Association**

**A. MEMBER DATA**

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

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

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

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

**CHART 1**  
**Member Population: 2008 – 2017**

<b>Year Ended December 31</b>	<b>Active Members</b>	<b>Vested Terminated Members*</b>	<b>Retired Members and Beneficiaries</b>	<b>Ratio of Non-Actives to Actives</b>
2008	11,173	1,773	7,246	0.81
2009	10,927	1,816	7,333	0.84
2010	10,879	1,785	7,558	0.86
2011	10,724	1,796	7,906	0.90
2012	10,800	1,835	8,175	0.93
2013	10,877	1,902	8,566	0.96
2014	11,025	1,995	8,813	0.98
2015	11,071	2,027	8,990	1.00
2016	11,111	2,263	9,242	1.04
2017	11,323	2,447	9,479	1.05

\* Includes terminated members due a refund of member contributions

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

**Active Members**

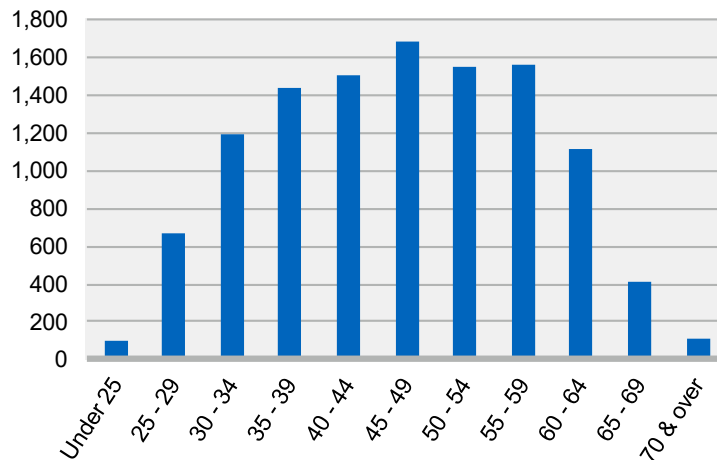
Plan costs are affected by the age, years of service and compensation of active members. In this year's valuation, there were 11,323 active members with an average age of 47.1, average years of service of 11.4 and average compensation of \$93,232. The 11,111 active members in the prior valuation had an average age of 47.3, average service of 11.6 and average compensation of \$90,330.

**Inactive Members**

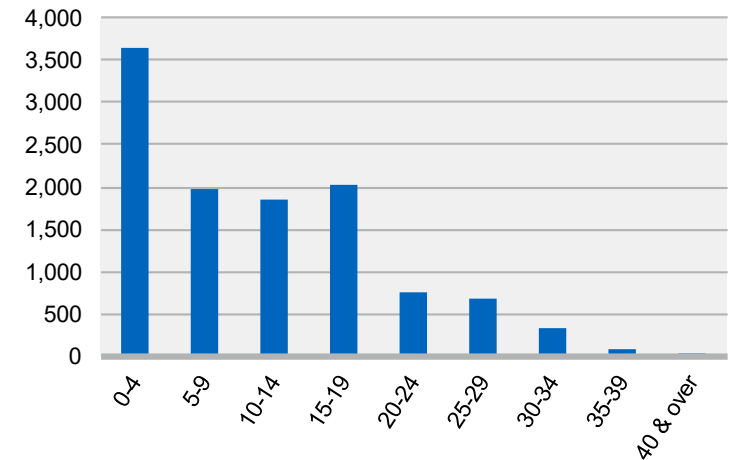
In this year's valuation, there were 2,447 members with a vested right to a deferred or immediate vested benefit or entitled to a refund of their member contributions, versus 2,263 members in the prior valuation.

*These graphs show a distribution of active members by age and by years of service. Age and years of service have been projected to December 31, 2017 based on census data collected as of November 30, 2017.*

**CHART 2**  
**Distribution of Active Members by Age as of December 31, 2017**



**CHART 3**  
**Distribution of Active Members by Years of Service as of December 31, 2017**



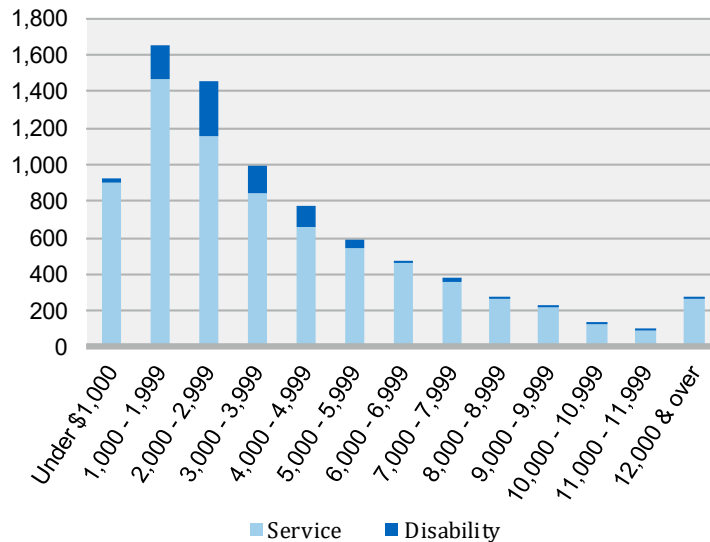
**SECTION 2: Valuation Results for the Alameda County Employees' Retirement Association**

**Retired Members and Beneficiaries**

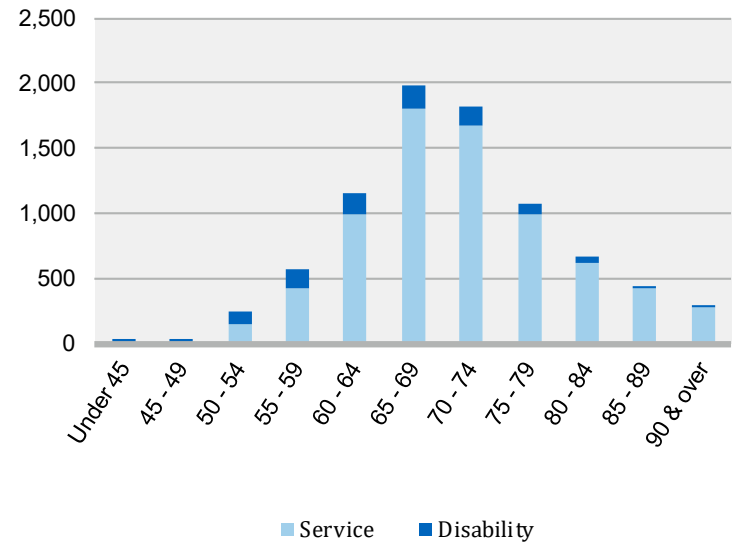
As of December 31, 2017, 8,267 retired members and 1,212 beneficiaries were receiving total monthly benefits of \$36,775,403. For comparison, in the previous valuation there were 8,021 retired members and 1,221 beneficiaries receiving monthly benefits of \$34,724,913. These monthly benefits exclude supplemental COLA benefits payable from the Supplemental Retirees Benefit Reserve (SRBR).

*These graphs show a distribution of the current retired members based on their monthly amount and age, by type of pension. Age has been projected to December 31, 2017 based on census data collected as of November 30, 2017.*

**CHART 4**  
**Distribution of Retired Members (Excl. Beneficiaries) by Type and by Monthly Amount as of December 31, 2017**



**CHART 5**  
**Distribution of Retired Members (Excl. Beneficiaries) by Type and by Age as of December 31, 2017**





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

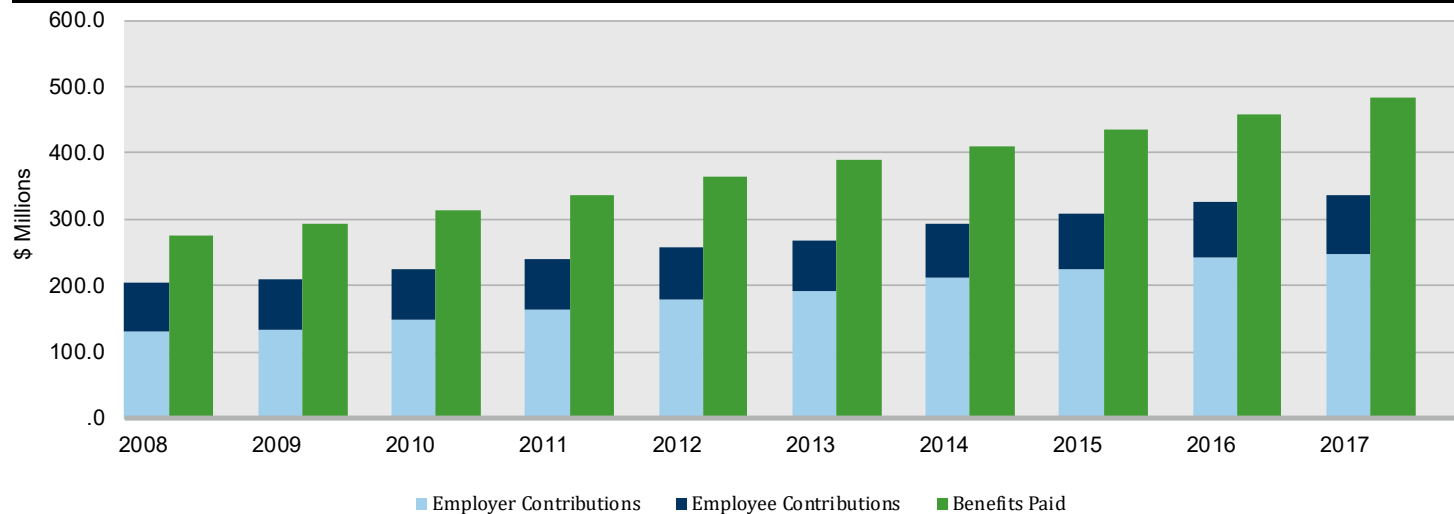
### B. FINANCIAL INFORMATION

Retirement plan funding anticipates that, over the long term, both contributions and investment earnings (less investment fees and administrative expenses) will be needed to cover benefit payments. Retirement plan assets change as a result of the net impact of these income and expense components.

Additional financial information, including a summary of these transactions for the valuation year, is presented in Section 3, Exhibits D and E.

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

**CHART 6**  
**Comparison of Contributions with Benefits**  
**for Years Ended December 31, 2008 through 2017**



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

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It is generally considered desirable to have level and predictable plan costs from one year to the next. For this reason, the Board of Retirement has approved an asset valuation method that gradually adjusts to market value. Under this valuation method, the full value of market fluctuations is not recognized in a single year and, as a result, the asset value and the plan costs are more stable.

The amount of the adjustment to recognize market value is treated as income, which may be positive or negative. Realized and unrealized gains and losses are treated equally and, therefore, the sale of assets has no immediate effect on the actuarial value of assets.

The determination of the Actuarial Value of Assets is provided on the following page.

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

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

### CHART 7

#### Determination of Actuarial Value of Assets for Year Ended December 31, 2017

Six Month Period		Total Actual Market Return (net)	Expected Market Return (net)	Investment Gain (Loss)	Deferred Factor	Deferred Return
From	To					
01/01/2013	06/30/2013	\$379,463,693	\$219,754,365	\$159,709,329	0.0	\$0
07/01/2013	12/31/2013	715,724,522	232,095,516	483,629,006	0.1	48,362,901
01/01/2014	06/30/2014	337,783,821	257,878,773	79,905,048	0.2	15,981,010
07/01/2014	12/31/2014	-71,755,579	268,735,880	-340,491,459	0.3	-102,147,438
01/01/2015	06/30/2015	210,088,252	263,436,620	-53,348,368	0.4	-21,339,347
07/01/2015	12/31/2015	-230,048,258	262,185,431	-492,233,689	0.5	-246,116,844
01/01/2016	06/30/2016	75,639,795	251,178,961	-175,539,165	0.6	-105,323,499
07/01/2016	12/31/2016	379,000,419	251,534,721	127,465,699	0.7	89,225,989
01/01/2017	06/30/2017	658,890,554	263,335,665	395,554,890	0.8	316,443,912
07/01/2017	12/31/2017	634,431,651	285,557,601	348,874,050	0.9	313,986,645
1.	Total Deferred Return*					\$309,073,327
2.	Net Market Value					\$8,112,099,556
3.	Actuarial Value of Assets (Item 2 – Item 1)					\$7,803,026,229
4.	Actuarial Value as a Percentage of Market Value (Before Corridor; Item 3 / Item 2)					96.2%
5.	Actuarial Value of Assets – Corridor Limits:					
a.	Lower Limit – 60% of Net Market Value					\$4,867,259,734
b.	Upper Limit – 140% of Net Market Value					\$11,356,939,379
6.	Actuarial Value of Assets (within corridor)					\$7,803,026,229
7.	Non-valuation reserves and designations:					
a.	Reserve for Interest Fluctuations (Contingency Reserve), but no less than \$0					\$77,124,340
b.	Supplemental Retirees Benefit Reserve (SRBR)					893,770,614
c.	Other Non-Valuation Reserve (401(h) Reserve)					7,582,098
d.	SRBR Transfer to Employer Advance Reserve**					-5,830,283
e.	Subtotal					\$972,646,770
8.	Valuation Value of Assets (Item 6 – Item 7e)					\$6,830,379,459

Note: Results may not add due to rounding.

\* The amounts of deferred return that will be recognized in each subsequent valuation are as follows:

12/31/18: \$26,400,302 12/31/19: -\$3,894,463 12/31/20: \$90,047,726 12/31/21: \$161,632,358 12/31/22: \$34,887,405

\*\* Estimate provided by ACERA.

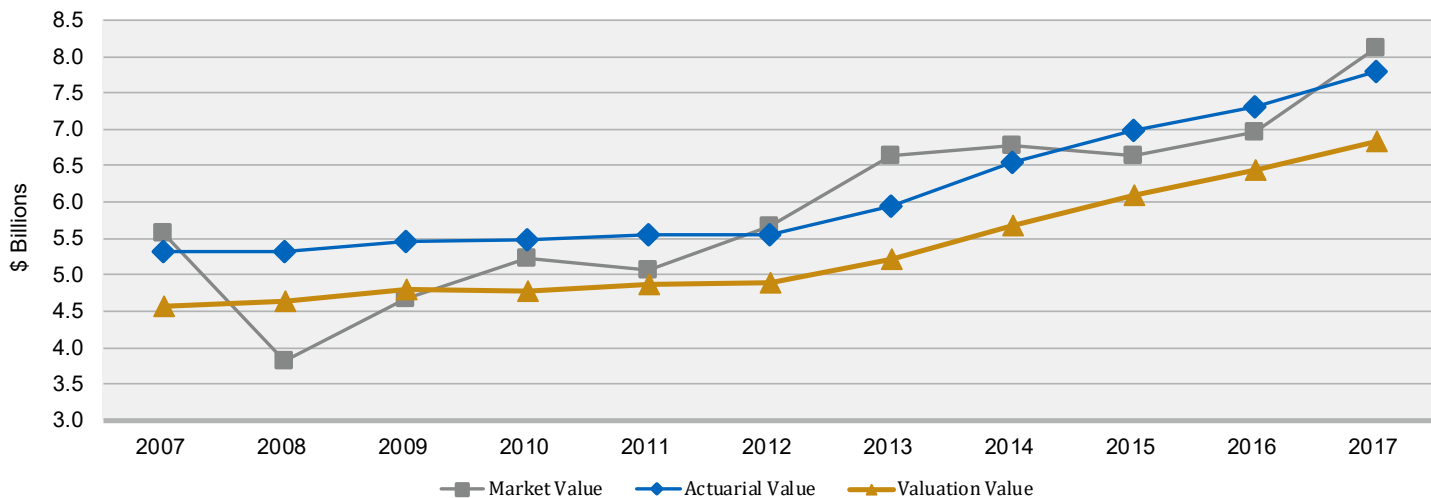
## SECTION 2: Valuation Results for the Alameda County Employees' Retirement Association

The market value, actuarial value, and valuation value of assets are representations of ACERA'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 asset value is significant because ACERA's liabilities are compared to these assets to determine what portion, if any, remains unfunded. Amortization of the unfunded actuarial accrued liability is an important element in determining the contribution requirement.

*This chart shows the change in market value, actuarial value and valuation value over the past eleven years.*

**CHART 8**

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



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

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**C. ACTUARIAL EXPERIENCE**

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

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

requirements to remain stable, assumptions should approximate experience.

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

The total experience gain was \$21.5 million, a net gain of \$10.8 million from investments and a gain of \$10.7 million from all other sources. The net experience variation from individual sources other than investments was 0.12% of the actuarial accrued liability. A discussion of the major components of the actuarial experience is on the following pages.

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

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**CHART 9**  
**Actuarial Experience for Year Ended December 31, 2017**

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1. Net gain from investments <sup>(1)</sup>	-\$10,829,000
2. Net gain from other experience <sup>(2)</sup>	<u>-10,688,000</u>
3. Net experience gain: (1) + (2)	-\$21,517,000

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

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

**SECTION 2: Valuation Results for the Alameda 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 ACERA’s investment policy. For valuation purposes, the assumed rate of return on the valuation value of assets was 7.60% for the December 31, 2016 valuation. The actual rate of return on a valuation value of assets basis for the 2017 plan year was 7.77%.

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

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

**CHART 10  
Investment Experience for Year Ended December 31, 2017 –  
Valuation Value, Actuarial Value and Market Value of Assets**

	<b>Valuation Value</b>	<b>Actuarial Value</b>	<b>Market Value</b>
1. Actual return	\$495,891,253	\$640,343,891	\$1,293,322,206
2. Average value of assets	\$6,382,398,264	\$7,236,083,754	\$6,892,178,766
3. Actual rate of return: (1) ÷ (2)	7.77%	8.85%	18.77%
4. Assumed rate of return	7.60%	7.60%	7.60%
5. Expected return: (2) x (4)	\$485,062,268	\$549,942,365	\$523,805,586
6. Actuarial gain/(loss): (1) - (5)	<u>\$10,828,985</u>	<u>\$90,401,526</u>	<u>\$769,516,620</u>

**SECTION 2: Valuation Results for the Alameda 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 rate of return on an actuarial, valuation, and market basis for the last ten years, including five-year and ten-year averages.

**CHART 11**  
**Investment Return – Valuation Value, Actuarial Value and Market Value: 2008 – 2017**

Year Ended December 31	Valuation Value Investment Return		Actuarial Value Investment Return		Market Value Investment Return	
	Amount	Percent	Amount	Percent	Amount	Percent
2008	\$118,705,974	2.61%	\$81,465,408	1.54%	-\$1,698,059,095	-30.65%
2009	190,184,291	4.12%	208,175,576	3.94%	953,666,087	25.33%
2010	36,890,575	0.77%	122,091,092	2.26%	635,617,239	13.72%
2011	149,447,325	3.15%	164,671,046	3.03%	-53,810,165	-1.04%
2012	76,720,113	1.59%	91,936,980	1.67%	698,682,557	13.91%
2013	410,409,663	8.48%	533,248,385	9.73%	1,095,188,215	19.53%
2014	548,585,891	10.61%	710,015,277	12.05%	266,028,241	4.04%
2015	489,086,474	8.68%	569,295,018	8.78%	-19,960,005	-0.30%
2016	436,958,056	7.24%	452,144,779	6.53%	454,641,033	6.91%
2017	495,891,253	7.77%	640,343,891	8.85%	1,293,322,206	18.77%
Five-Year Average Return		8.55%		9.17%		9.50%
Ten-Year Average Return		5.45%		5.78%		5.78%

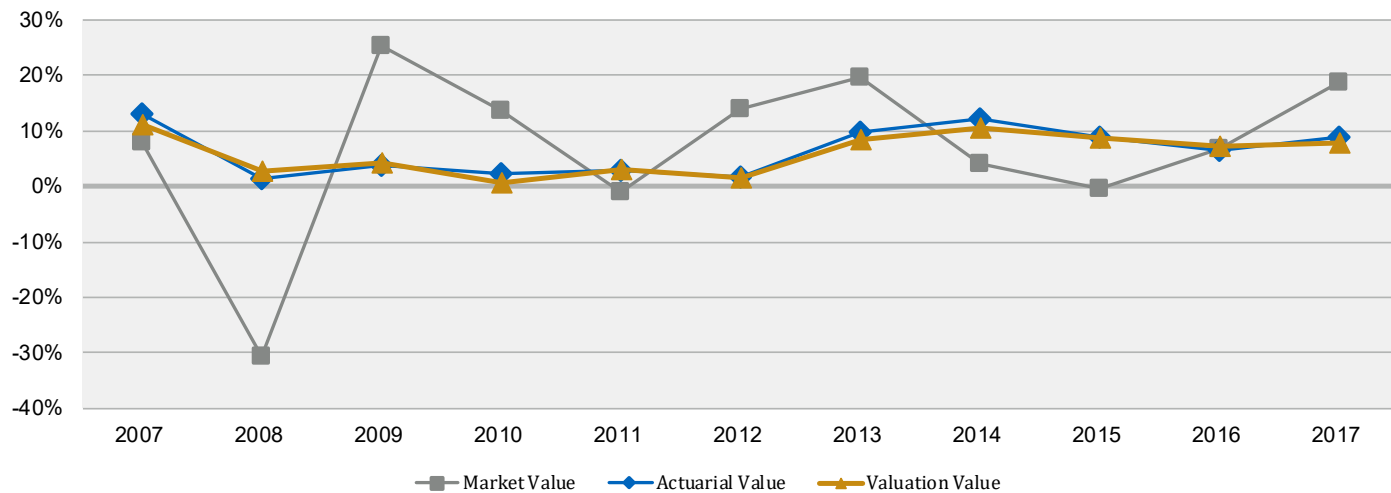
**SECTION 2: Valuation Results for the Alameda County Employees' Retirement Association**

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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.

*This chart illustrates how this leveling effect has actually worked over the years 2007 – 2017.*

**CHART 12**  
**Market, Actuarial and Valuation Value Rates of Return for Years Ended December 31, 2007 - 2017**





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

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### **Other Experience**

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

- the extent of actual turnover among the participants,
- retirement experience (earlier or later than expected),
- mortality (more or fewer deaths than expected),

- the number of disability retirements, and
- salary increases different than assumed.

The net gain from this other experience for the year ended December 31, 2017 amounted to \$10.7 million which is 0.12% of the actuarial accrued liability. See Exhibit H for a detailed development of the Unfunded Actuarial Accrued Liability.

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

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### D. EMPLOYER AND MEMBER CONTRIBUTIONS

Employer contributions consist of two components:

#### *Normal Cost*

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

#### *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 annual rate of 3.50% (i.e., 3.00% inflation plus 0.50% across-the-board salary increase).

Prior to January 1, 2012, the total UAAL was amortized on a 30-year decreasing period, with 21 years remaining as of December 31, 2011 (and 15 years remaining as of December 31, 2017). On or after January 1, 2012, any new UAAL resulting from plan amendments are amortized over separate decreasing 15-year periods; early retirement incentive programs (ERIPs) are amortized over separate decreasing 5-year periods; assumption and method changes are amortized over separate decreasing 20-year periods; and experience gains/losses are also amortized over separate decreasing 20-year periods.

The recommended employer contributions are provided on Chart 13.

#### Member Contributions

##### *Non-Tier 4 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-Tier 4 General and Safety members, respectively. The basic contribution rate is determined so that the accumulation of a member's basic contributions made in a given year until a certain age will be sufficient

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

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to fund an annuity at that age that is equal to 1/100 of Final Average Salary for General Tier 1, General Tier 3, and all Safety non-Tier 4 members and 1/120 of Final Average Salary for General Tier 2 members. That age is 60 for General Tier 1 and Tier 2, 55 for General Tier 3, and 50 for all Safety non-Tier 4 members. It is assumed that contributions are made annually at the same rate, starting at entry age. In addition to the basic contributions, members pay one-half of the total normal cost necessary to fund cost-of-living benefits. As instructed by ACERA, we have also included a 3% cost-sharing contribution that we understand will be paid by Safety Tier 1 and Tier 2 members. For Safety Tier 2C members, there are no cost-sharing contributions. For Safety Tier 2D members, the cost-sharing contribution rate is 5% of salary for the first 5 years of vesting service and 3% of salary for each subsequent year of vesting service (even after the member attains 30 years of service).

Accumulation includes semi-annual crediting of interest at the assumed investment earnings rate. Following the procedure established by the Board, basic member rates have been adjusted to anticipate conversion of terminal pay at retirement.

### *Tier 4 Members*

Pursuant to Section 7522.30(a) of the Government Code, Tier 4 members are required to contribute at least 50% of the Normal Cost rate.

When previously calculating member rates, there were certain additional requirements that had to be met such as requiring the employee rates be rounded to the nearest one quarter of one percent and requiring the new employees to pay the contribution rate of “similarly situated employees”, if it is greater. (reference: Section 7522.30(c)). Furthermore, Section 7522.30(d) indicated that “once established, the employee contribution rate described in subdivision (c) shall not be adjusted on account of a change to the normal cost rate unless the normal cost rate increases or decreases by more than 1 percent of payroll above or below the normal cost rate in effect at the time the employee contribution rate is first established or, if later, the normal cost rate in effect at the time of the last adjustment to the employee contribution rate under this section.”

However, as we referenced in our letter dated February 26, 2014, Assembly Bill 1380 (AB 1380) was approved by the Governor on September 6, 2013. In particular, Section 31620.5(a) was added to the Government Code to provide the Board with the discretion

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

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to not apply the rounding previously required under Section 7522.30(c). We understand that our recommendation in that letter to no longer apply the rounding rule effective with the December 31, 2013 valuation was adopted by the Board, and the results in this valuation reflect that action taken by the Board.

Section 31620.5(b) of AB 1380 also stipulates that the “one percent rule” under Section 7522.30(d) “shall not apply to the contribution rates of members of retirement systems established pursuant to this chapter.”

Therefore, in preparing the Normal Cost rates in this report, we have assumed that exactly 50% of the Normal Cost would be paid by the Tier 4 members.

The member contribution rates for all members are provided in Appendix A.

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

**CHART 13**  
**Recommended Employer Contribution Rates (Estimated - Dollar Amounts in Thousands)**

County Only	December 31, 2017						December 31, 2016	
	BASIC		COLA		TOTAL		BASIC AND COLA COMBINED	
	<u>Rate</u>	<u>Estimated Annual Amount*</u>	<u>Rate</u>	<u>Estimated Annual Amount*</u>	<u>Rate</u>	<u>Estimated Annual Amount*</u>	<u>Rate</u>	<u>Estimated Annual Amount*</u>
<b>General Tier 1 Members</b>								
Normal Cost	7.52%	\$773	2.64%	\$272	10.16%	\$1,045	9.57%	\$984
UAAL (Before POB Credit)	13.61%	1,400	4.55%	468	18.16%	1,868	16.64%	1,711
Pension Obligation Bond Credit	-3.66%	-376	-1.60%	-165	-5.26%	-541	-5.40%	-555
Implicit Retiree Health Benefit Subsidy	<u>-0.76%</u>	<u>-78</u>	<u>0.00%</u>	<u>0</u>	<u>-0.76%</u>	<u>-78</u>	<u>-0.71%</u>	<u>-73</u>
Total Contribution	16.71%	\$1,719	5.59%	\$575	22.30%	\$2,294	20.10%	\$2,067
<b>General Tier 2 Members</b>								
Normal Cost	7.82%	\$31,526	1.61%	\$6,491	9.43%	\$38,017	8.84%	\$35,639
UAAL (Before POB Credit)	13.61%	54,869	4.55%	18,343	18.16%	73,212	16.64%	67,084
Pension Obligation Bond Credit	-3.66%	-14,755	-1.60%	-6,451	-5.26%	-21,206	-5.40%	-21,770
Implicit Retiree Health Benefit Subsidy	<u>-0.76%</u>	<u>-3,064</u>	<u>0.00%</u>	<u>0</u>	<u>-0.76%</u>	<u>-3,064</u>	<u>-0.71%</u>	<u>-2,862</u>
Total Contribution	17.01%	\$68,576	4.56%	\$18,383	21.57%	\$86,959	19.37%	\$78,091
<b>General Tier 4 Members</b>								
Normal Cost	7.13%	\$10,581	1.63%	\$2,419	8.76%	\$13,000	8.10%	\$12,021
UAAL (Before POB Credit)	13.61%	20,198	4.55%	6,752	18.16%	26,950	16.64%	24,694
Pension Obligation Bond Credit	-3.66%	-5,432	-1.60%	-2,374	-5.26%	-7,806	-5.40%	-8,014
Implicit Retiree Health Benefit Subsidy	<u>-0.76%</u>	<u>-1,128</u>	<u>0.00%</u>	<u>0</u>	<u>-0.76%</u>	<u>-1,128</u>	<u>-0.71%</u>	<u>-1,054</u>
Total Contribution	16.32%	\$24,219	4.58%	\$6,797	20.90%	\$31,016	18.63%	\$27,647

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

**CHART 13 (continued)**

**Recommended Employer Contribution Rates (Estimated - Dollar Amounts in Thousands)**

County Only	December 31, 2017						December 31, 2016	
	BASIC		COLA		TOTAL		BASIC AND COLA COMBINED	
	<u>Rate</u>	<u>Estimated Annual Amount*</u>	<u>Rate</u>	<u>Estimated Annual Amount*</u>	<u>Rate</u>	<u>Estimated Annual Amount*</u>	<u>Rate</u>	<u>Estimated Annual Amount*</u>
<b>Safety Tier 1 Members</b>								
Normal Cost	26.38%	\$277	10.86%	\$114	37.24%	\$391	34.61%	\$363
Member Cost Sharing Contributions (Adjusted for Refunds)	-3.00%	-32	0.00%	0	-3.00%	-32	-3.00%	-32
UAAL (Before POB Credit)	36.65%	385	11.30%	118	47.95%	503	42.50%	446
Pension Obligation Bond Credit	-3.08%	-32	-1.94%	-21	-5.02%	-53	-5.09%	-53
Implicit Retiree Health Benefit Subsidy	<u>-0.76%</u>	<u>-8</u>	<u>0.00%</u>	<u>0</u>	<u>-0.76%</u>	<u>-8</u>	<u>-0.71%</u>	<u>-7</u>
Total Contribution	56.19%	\$590	20.22%	\$211	76.41%	\$801	68.31%	\$717
<b>Safety Tier 2 Members</b>								
Normal Cost	18.18%	\$22,575	3.76%	\$4,669	21.94%	\$27,244	19.46%	\$24,164
Member Cost Sharing Contributions (Adjusted for Refunds)	-2.92%	-3,626	0.00%	0	-2.92%	-3,626	-2.91%	-3,613
UAAL (Before POB Credit)	36.65%	45,509	11.30%	14,032	47.95%	59,541	42.50%	52,774
Pension Obligation Bond Credit	-3.08%	-3,825	-1.94%	-2,408	-5.02%	-6,233	-5.09%	-6,320
Implicit Retiree Health Benefit Subsidy	<u>-0.76%</u>	<u>-944</u>	<u>0.00%</u>	<u>0</u>	<u>-0.76%</u>	<u>-944</u>	<u>-0.71%</u>	<u>-882</u>
Total Contribution	48.07%	\$59,689	13.12%	\$16,293	61.19%	\$75,982	53.25%	\$66,123

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

**CHART 13 (continued)**

**Recommended Employer Contribution Rates (Estimated - Dollar Amounts in Thousands)**

County Only	December 31, 2017						December 31, 2016	
	BASIC		COLA		TOTAL		BASIC AND COLA COMBINED	
	<u>Rate</u>	<u>Estimated Annual Amount*</u>	<u>Rate</u>	<u>Estimated Annual Amount*</u>	<u>Rate</u>	<u>Estimated Annual Amount*</u>	<u>Rate</u>	<u>Estimated Annual Amount*</u>
<b>Safety Tier 2C Members</b>								
Normal Cost	16.71%	\$503	3.66%	\$110	20.37%	\$613	17.94%	\$540
Member Cost Sharing Contributions (Adjusted for Refunds)	0.00%	0	0.00%	0	0.00%	0	0.00%	0
UAAL (Before POB Credit)	36.65%	1,103	11.30%	340	47.95%	1,443	42.50%	1,279
Pension Obligation Bond Credit	-3.08%	-93	-1.94%	-58	-5.02%	-151	-5.09%	-153
Implicit Retiree Health Benefit Subsidy	<u>-0.76%</u>	<u>-23</u>	<u>0.00%</u>	<u>0</u>	<u>-0.76%</u>	<u>-23</u>	<u>-0.71%</u>	<u>-21</u>
Total Contribution	49.52%	\$1,490	13.02%	\$392	62.54%	\$1,882	54.64%	\$1,645
<b>Safety Tier 2D Members</b>								
Normal Cost	16.93%	\$2,239	3.67%	\$485	20.60%	\$2,724	18.29%	\$2,418
Member Cost Sharing Contributions (Adjusted for Refunds)	-3.13%	-414	0.00%	0	-3.13%	-414	-3.88%	-513
UAAL (Before POB Credit)	36.65%	4,846	11.30%	1,494	47.95%	6,340	42.50%	5,620
Pension Obligation Bond Credit	-3.08%	-407	-1.94%	-257	-5.02%	-664	-5.09%	-673
Implicit Retiree Health Benefit Subsidy	<u>-0.76%</u>	<u>-100</u>	<u>0.00%</u>	<u>0</u>	<u>-0.76%</u>	<u>-100</u>	<u>-0.71%</u>	<u>-94</u>
Total Contribution	46.61%	\$6,164	13.03%	\$1,722	59.64%	\$7,886	51.11%	\$6,758

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

**CHART 13 (continued)**

**Recommended Employer Contribution Rates (Estimated - Dollar Amounts in Thousands)**

County Only	December 31, 2017						December 31, 2016	
	BASIC		COLA		TOTAL		BASIC AND COLA COMBINED	
	<u>Rate</u>	<u>Estimated Annual Amount*</u>	<u>Rate</u>	<u>Estimated Annual Amount*</u>	<u>Rate</u>	<u>Estimated Annual Amount*</u>	<u>Rate</u>	<u>Estimated Annual Amount*</u>
<b>Safety Tier 4 Members</b>								
Normal Cost	12.39%	\$3,689	3.36%	\$1,001	15.75%	\$4,690	14.20%	\$4,228
Member Cost Sharing Contributions (Adjusted for Refunds)	0.00%	0	0.00%	0	0.00%	0	0.00%	0
UAAL (Before POB Credit)	36.65%	10,913	11.30%	3,365	47.95%	14,278	42.50%	12,655
Pension Obligation Bond Credit	-3.08%	-917	-1.94%	-578	-5.02%	-1,495	-5.09%	-1,516
Implicit Retiree Health Benefit Subsidy	<u>-0.76%</u>	<u>-226</u>	<u>0.00%</u>	<u>0</u>	<u>-0.76%</u>	<u>-226</u>	<u>-0.71%</u>	<u>-211</u>
Total Contribution	45.20%	\$13,459	12.72%	\$3,788	57.92%	\$17,247	50.90%	\$15,156
<b>All County Categories Combined</b>								
Normal Cost	9.84%	\$72,163	2.13%	\$15,561	11.97%	\$87,724	10.96%	\$80,357
Member Cost Sharing Contributions (Adjusted for Refunds)	-0.56%	-4,072	0.00%	0	-0.56%	-4,072	-0.57%	-4,158
UAAL (Before POB Credit)	18.99%	139,223	6.13%	44,912	25.12%	184,135	22.68%	166,263
Pension Obligation Bond Credit	-3.52%	-25,837	-1.68%	-12,312	-5.20%	-38,149	-5.33%	-39,054
Implicit Retiree Health Benefit Subsidy	<u>-0.76%</u>	<u>-5,571</u>	<u>0.00%</u>	<u>0</u>	<u>-0.76%</u>	<u>-5,571</u>	<u>-0.71%</u>	<u>-5,204</u>
Total Contribution	23.99%	\$175,906	6.58%	\$48,161	30.57%	\$224,067	27.03%	\$198,204



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

**CHART 13 (continued)**

**Recommended Employer Contribution Rates (Estimated - Dollar Amounts in Thousands)**

AHS, Court & First 5 Only	December 31, 2017						December 31, 2016	
	BASIC		COLA		TOTAL		BASIC AND COLA COMBINED	
	<u>Rate</u>	<u>Estimated Annual Amount*</u>	<u>Rate</u>	<u>Estimated Annual Amount*</u>	<u>Rate</u>	<u>Estimated Annual Amount*</u>	<u>Rate</u>	<u>Estimated Annual Amount*</u>
<b>General Tier 1 Members</b>								
Normal Cost	7.52%	\$217	2.64%	\$77	10.16%	\$294	9.57%	\$277
UAAL (Before POB Credit)	13.61%	393	4.55%	132	18.16%	525	16.64%	481
Pension Obligation Bond Credit	<u>-3.66%</u>	<u>-106</u>	<u>-1.60%</u>	<u>-46</u>	<u>-5.26%</u>	<u>-152</u>	<u>-5.40%</u>	<u>-156</u>
Total Contribution	17.47%	\$504	5.59%	\$163	23.06%	\$667	20.81%	\$602
<b>General Tier 2 Members</b>								
Normal Cost	7.82%	\$16,567	1.61%	\$3,410	9.43%	\$19,977	8.84%	\$18,727
UAAL (Before POB Credit)	13.61%	28,833	4.55%	9,639	18.16%	38,472	16.64%	35,252
Pension Obligation Bond Credit	<u>-3.66%</u>	<u>-7,754</u>	<u>-1.60%</u>	<u>-3,389</u>	<u>-5.26%</u>	<u>-11,143</u>	<u>-5.40%</u>	<u>-11,440</u>
Total Contribution	17.77%	\$37,646	4.56%	\$9,660	22.33%	\$47,306	20.08%	\$42,539
<b>General Tier 4 Members</b>								
Normal Cost	7.13%	\$7,061	1.63%	\$1,614	8.76%	\$8,675	8.10%	\$8,021
UAAL (Before POB Credit)	13.61%	13,478	4.55%	4,505	18.16%	17,983	16.64%	16,478
Pension Obligation Bond Credit	<u>-3.66%</u>	<u>-3,624</u>	<u>-1.60%</u>	<u>-1,585</u>	<u>-5.26%</u>	<u>-5,209</u>	<u>-5.40%</u>	<u>-5,347</u>
Total Contribution	17.08%	\$16,915	4.58%	\$4,534	21.66%	\$21,449	19.34%	\$19,152

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

**CHART 13 (continued)**  
**Recommended Employer Contribution Rates (Estimated - Dollar Amounts in Thousands)**

Other Districts	December 31, 2017						December 31, 2016	
	BASIC		COLA		TOTAL		BASIC AND COLA COMBINED	
	<u>Rate</u>	<u>Estimated Annual Amount*</u>	<u>Rate</u>	<u>Estimated Annual Amount*</u>	<u>Rate</u>	<u>Estimated Annual Amount*</u>	<u>Rate</u>	<u>Estimated Annual Amount*</u>
<b>General Tier 1 Members</b>								
Normal Cost	7.52%	\$311	2.64%	\$109	10.16%	\$420	9.57%	\$396
UAAL	<u>13.61%</u>	<u>563</u>	<u>4.55%</u>	<u>188</u>	<u>18.16%</u>	<u>751</u>	<u>16.64%</u>	<u>688</u>
Total Contribution	21.13%	\$874	7.19%	\$297	28.32%	\$1,171	26.21%	\$1,084
<b>General Tier 2 Members</b>								
Normal Cost	7.82%	\$28	1.61%	\$6	9.43%	\$34	8.84%	\$32
UAAL	<u>13.61%</u>	<u>50</u>	<u>4.55%</u>	<u>16</u>	<u>18.16%</u>	<u>66</u>	<u>16.64%</u>	<u>61</u>
Total Contribution	21.43%	\$78	6.16%	\$22	27.59%	\$100	25.48%	\$93
<b>General Tier 3 Members</b>								
Normal Cost	11.22%	\$249	4.19%	\$93	15.41%	\$342	14.73%	\$327
UAAL	<u>10.38%</u>	<u>230</u>	<u>3.98%</u>	<u>89</u>	<u>14.36%</u>	<u>319</u>	<u>11.66%</u>	<u>259</u>
Total Contribution	21.60%	\$479	8.17%	\$182	29.77%	\$661	26.39%	\$586
<b>General Tier 4 Members (Housing Authority, Office of Education)</b>								
Normal Cost	7.13%	\$44	1.63%	\$11	8.76%	\$55	8.10%	\$51
UAAL	<u>13.61%</u>	<u>85</u>	<u>4.55%</u>	<u>28</u>	<u>18.16%</u>	<u>113</u>	<u>16.64%</u>	<u>104</u>
Total Contribution	20.74%	\$129	6.18%	\$39	26.92%	\$168	24.74%	\$155

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

**CHART 13 (continued)**

**Recommended Employer Contribution Rates (Estimated - Dollar Amounts in Thousands)**

Other Districts	December 31, 2017						December 31, 2016	
	BASIC		COLA		TOTAL		BASIC AND COLA COMBINED	
	<u>Rate</u>	<u>Estimated Annual Amount*</u>	<u>Rate</u>	<u>Estimated Annual Amount*</u>	<u>Rate</u>	<u>Estimated Annual Amount*</u>	<u>Rate</u>	<u>Estimated Annual Amount*</u>
<b>General Tier 4 Members (LARPD Only)</b>								
Normal Cost	7.13%	\$105	1.63%	\$25	8.76%	\$130	8.10%	\$120
UAAL	<u>10.38%</u>	<u>154</u>	<u>3.98%</u>	<u>58</u>	<u>14.36%</u>	<u>212</u>	<u>11.66%</u>	<u>172</u>
Total Contribution	17.51%	\$259	5.61%	\$83	23.12%	\$342	19.76%	\$292
<b>All Categories Combined</b>								
<b>All Categories Combined</b>								
Normal Cost (Net)	8.78%	\$92,673	1.98%	\$20,906	10.76%	\$113,579	9.87%	\$104,150
UAAL (Net)	<u>13.27%</u>	<u>140,117</u>	<u>4.00%</u>	<u>42,235</u>	<u>17.27%</u>	<u>182,352</u>	<u>15.02%</u>	<u>158,557</u>
Total Contribution	22.05%	\$232,790	5.98%	\$63,141	28.03%	\$295,931	24.89%	\$262,707

\* Amounts are in thousands and are based on the December 31, 2017 annual payroll (also in thousands) shown on the following page.

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

**CHART 13 (continued)**

**Recommended Employer Contribution Rates (Estimated - Dollar Amounts in Thousands)**

**Payroll Breakdown**

	<u>County Only</u>	<u>AHS, Court &amp; First 5</u>	<u>Other Districts</u>	<u>Total</u>
General Tier 1	\$10,285	\$2,890	\$4,137	\$17,312
General Tier 2	403,151	211,849	364	615,364
General Tier 3			2,219	2,219
General Tier 4 (non-LARPD)	148,404	99,027	624	248,055
General Tier 4 (LARPD Only)			1,479	1,479
Safety Tier 1	1,050			1,050
Safety Tier 2	124,173			124,173
Safety Tier 2C	3,010			3,010
Safety Tier 2D	13,223			13,223
Safety Tier 4	29,776			29,776
Total	\$733,072	\$313,766	\$8,823	\$1,055,661

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

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### CHART 14

#### Breakdown of Employer Contribution Rate by Types of Benefit (For information purposes only)

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A breakdown of the approximate portion of the employer contribution rate by the various types of benefit is as follows:

	<b>General</b>	<b>Safety</b>
Service and non-service connected disability benefits	8%	24%
Service retirement and other benefits	<u>92%</u>	<u>76%</u>
	100%	100%

*Note: In developing these percentages, we made the simplifying assumption that the liability for active and inactive members (including members who have already retired) can be approximated by the proportion of the normal cost required to fund disability and non-disability benefits.*

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

The employer contribution rates as of December 31, 2017 are based on all of the data described in the previous sections, the actuarial assumptions described in Section 4, and the Plan provisions adopted at the time of preparation of the Actuarial Valuation. They include all changes affecting future costs, adopted benefit changes, actuarial gains and losses and changes in the actuarial assumptions.

### Reconciliation of Recommended Employer Contribution

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

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

#### CHART 15

#### Reconciliation of Recommended Employer Contribution from December 31, 2016 to December 31, 2017 (Dollars in Thousands)

	Contribution Rate	Estimated Amount*
Recommended Contribution Rate as of December 31, 2016	24.89%	\$262,707
Effect of actuarial experience during 2017		
1. Effect of investment loss	-0.08%	-\$845
2. Effect of lower than expected salary increases for actives	-0.07%	-739
3. Effect of amortizing prior year's UAAL over a larger than expected projected total payroll	-0.21%	-2,217
4. Net effect of other experience **	0.01%	182
5. Effect of change in assumptions	3.49%	36,843
Subtotal	3.14%	\$33,224
Recommended Contribution Rate as of December 31, 2017	28.03%	\$295,931

\* Based on December 31, 2017 projected compensation.

\*\* Including changes in membership demographics, lower contributions than expected and scheduled delay in implementing contribution rates after date of valuation.

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

The member contribution rates as of December 31, 2017 are based on all of the data described in the previous sections, the actuarial assumptions described in Section 4, and the Plan provisions adopted at the time of preparation of the Actuarial Valuation. They include all changes affecting future costs, adopted benefit changes, 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 member contribution rate from the prior valuation to the current year's valuation.

**CHART 16**  
**Reconciliation of Recommended Member Contribution from December 31, 2016 to December 31, 2017**  
**(Dollar Amounts in Thousands)**

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

	Contribution Rate	Estimated Amount*
Average Contribution Rate as of December 31, 2016	8.75%	\$92,363
1. Effect of change in membership demographics	-0.03%	-\$287
2. Effect of change in assumptions	0.65%	6,862
Subtotal	0.62%	\$6,575
Average Contribution Rate as of December 31, 2017	9.37%	\$98,938

\* Based on December 31, 2017 projected compensation.

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

### E. FUNDED RATIO

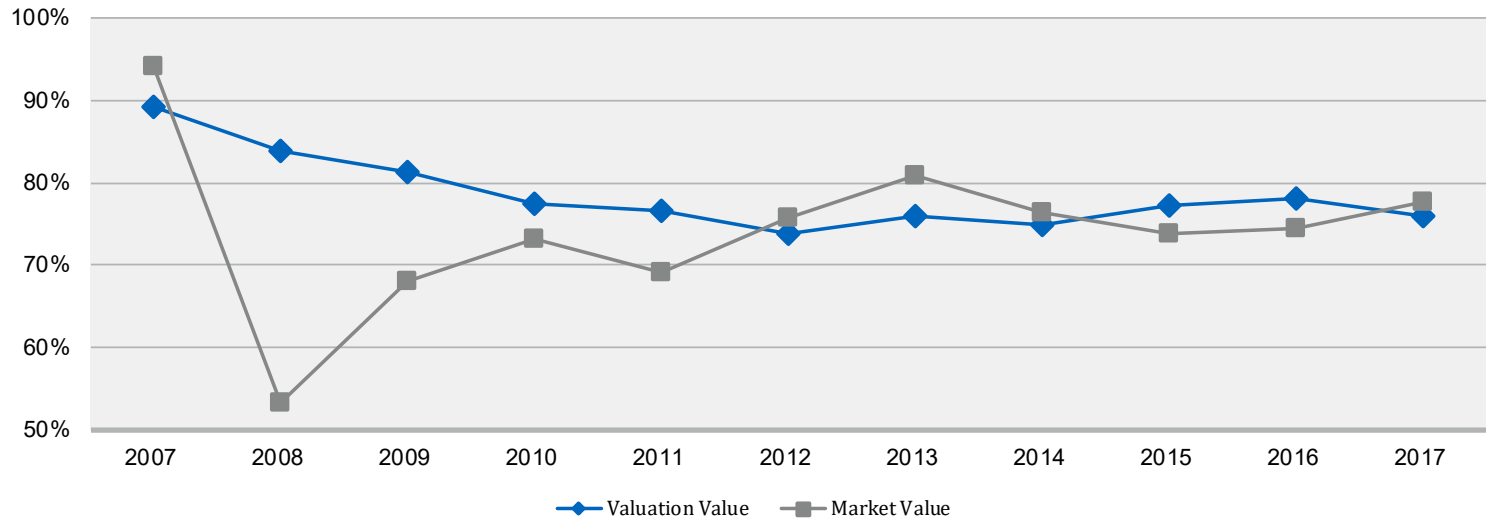
A critical piece of information regarding the Plan's financial status is the funded ratio. These ratios compare the valuation value of assets and the market value of assets to the actuarial accrued liabilities of the Plan as calculated. High ratios indicate a well-funded plan with assets sufficient to 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, 2007 – 2017<sup>(1)</sup>**



<sup>(1)</sup> Prior to the December 31, 2013 valuation, the Funded Ratio on a Market Value basis was calculated using the end-of-year Valuation Value of Assets plus any deferred market gains. Beginning with the December 31, 2013 valuation, the Market Value of Assets for this purpose includes either one-half of any deferred market gains (after restoring the Contingency Reserve to 1% of total assets, if applicable) or a proportion of any deferred investment losses after netting out the Contingency Reserve that is commensurate with the size of the valuation reserves.



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

**CHART 18**

**Schedule of Funding Progress (Dollar Amounts in Thousands)**

<b>Actuarial Valuation Date</b>	<b>Valuation Value of Assets<sup>(1)</sup> (a)</b>	<b>Actuarial Accrued Liability (AAL)<sup>(2)</sup> (b)</b>	<b>Unfunded/ (Overfunded) AAL (UAAL) (b) - (a)</b>	<b>Funded Ratio (%) (a) / (b)</b>	<b>Covered Payroll (c)</b>	<b>UAAL as a Percentage of Covered Payroll (%) [(b) - (a)] / (c)</b>
12/31/2008	\$4,644,010	\$5,537,919	\$893,909	83.9%	\$864,260	103.4%
12/31/2009	4,789,000	5,899,331	1,110,331	81.2	882,606	125.8
12/31/2010	4,776,128	6,162,740	1,386,612	77.5	898,342	154.4
12/31/2011	4,868,689	6,359,483	1,490,794	76.6	892,489	167.0
12/31/2012	4,883,872	6,612,929	1,729,057	73.9	906,500	190.7
12/31/2013	5,210,944	6,861,687	1,650,743	75.9	916,803	180.1
12/31/2014	5,681,097	7,592,072	1,910,975	74.8	948,848	201.4
12/31/2015	6,083,536	7,875,020	1,791,484	77.3	969,534	184.8
12/31/2016	6,436,138	8,237,715	1,801,577	78.1	1,003,651	179.5
12/31/2017	6,830,379	8,987,061	2,156,682	76.0	1,055,661	204.3

<sup>(1)</sup> Excludes assets for SRBR and other non-valuation reserves, and includes the following reimbursement amounts of implicit retiree health benefit subsidy paid by the County (amounts beginning with the 12/31/2010 valuation date are estimates provided by ACERA):

<u>Valuation Date</u>	<u>Reimbursement Amount</u>	<u>For Year</u>
12/31/2008	\$4,149,463	2008
12/31/2009	\$5,287,767	2009
12/31/2010	\$4,500,000	2010
12/31/2011	\$4,411,206	2011
12/31/2012	\$7,370,466	2012
12/31/2013	\$6,993,032	2013
12/31/2014	\$5,215,355	2014
12/31/2015	\$5,324,502	2015
12/31/2016	\$8,865,275	2016
12/31/2017	\$5,830,283	2017

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

**SECTION 2: Valuation Results for the Alameda 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 ACERA, the current AVR is about 6.6. This means that a 1% asset gain/(loss) (relative to the assumed investment return) translates to about 6.6% of one-year's payroll. Since ACERA amortizes actuarial gains and losses over a 20-year period, there would be a 0.5% of payroll decrease/(increase) in the required contribution for each 1% asset gain/(loss).

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

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

For ACERA, the current LVR is about 8.5. This is about 29% higher than the AVR. Therefore, we would expect that contribution volatility will increase over the long-term.

**CHART 19**  
**Volatility Ratios for Years Ended December 31, 2009 – 2017**

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

Year Ended December 31	Asset Volatility Ratios <sup>(1)</sup>				Liability Volatility Ratios			
	General (non-LARPD Tiers 3 & 4)	General (LARPD Tiers 3 & 4)	Safety	Total	General (non-LARPD Tiers 3 & 4)	General (LARPD Tiers 3 & 4)	Safety	Total
2009	4.2	3.0	6.1	4.5	5.9	5.0	10.6	6.7
2010	4.6	3.9	7.0	5.0	6.0	5.6	11.2	6.9
2011	4.5	4.2	7.0	4.9	6.2	6.8	11.9	7.1
2012	5.0	4.9	8.2	5.5	6.3	7.0	12.7	7.3
2013	5.5	5.7	9.1	6.1	6.4	7.4	13.1	7.5
2014	5.5	5.9	9.3	6.1	6.9	7.7	13.9	8.0
2015	5.5	5.7	8.8	6.0	7.0	7.3	13.7	8.1
2016	5.6	6.1	8.9	6.1	7.1	7.7	13.8	8.2
2017	6.0	7.6	9.8	6.6	7.3	9.1	14.6	8.5

<sup>(1)</sup> Prior to the December 31, 2013 valuation, the Asset Volatility Ratio was calculated using the end-of-year Valuation Value of Assets plus any deferred market gains. Beginning with the December 31, 2013 valuation, the adjusted Valuation Value of Assets for this purpose includes either one-half of any deferred market gains (after restoring the Contingency Reserve to 1% of total assets, if applicable) or a proportion of any deferred investment losses after netting out the Contingency Reserve that is commensurate with the size of the valuation reserves.

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

**EXHIBIT A**

**Table of Plan Coverage**

**i. General Tier 1**

<b>Category</b>	<b>Year Ended December 31</b>		<b>Change From Prior Year</b>
	<b>2017</b>	<b>2016</b>	
<b>Active members in valuation</b>			
Number	192	244	-21.3%
Average age	59.5	59.4	0.1
Average service	29.6	29.1	0.5
Projected total compensation	\$17,312,328	\$22,159,196	-21.9%
Projected average compensation	\$90,168	\$90,816	-0.7%
Member account balances	\$72,130,815	\$89,711,598	-19.6%
Total active vested members	192	244	-21.3%
<b>Vested terminated members</b>			
Number	61	71	-14.1%
Average age	61.9	61.0	0.9
<b>Retired members</b>			
Number in pay status	3,272	3,334	-1.9%
Average age	75.9	75.6	0.3
Average monthly benefit <sup>(1)</sup>	\$4,707	\$4,485	4.9%
<b>Disabled members</b>			
Number in pay status	156	164	-4.9%
Average age	72.8	72.5	0.3
Average monthly benefit <sup>(1)</sup>	\$3,114	\$2,958	5.3%
<b>Beneficiaries</b>			
Number in pay status	726	752	-3.5%
Average age	79.7	79.3	0.4
Average monthly benefit <sup>(1)</sup>	\$2,162	\$2,034	6.3%

<sup>(1)</sup> Excludes supplemental benefits paid from SRBR.

Note: Based on the data provided for the December 31, 2017 actuarial valuation, the average age at retirement for the General Tier 1 service and disabled retirees was 59.2 and 52.0, respectively.

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

**EXHIBIT A**

**Table of Plan Coverage**

**ii. General Tier 2**

<b>Category</b>	<b>Year Ended December 31</b>		<b>Change From Prior Year</b>
	<b>2017</b>	<b>2016</b>	
<b>Active members in valuation</b>			
Number	6,512	6,936	-6.1%
Average age	51.2	50.5	0.7
Average service	15.2	14.4	0.8
Projected total compensation	\$615,364,242	\$630,401,481	-2.4%
Projected average compensation	\$94,497	\$90,888	4.0%
Member account balances	\$750,750,981	\$722,922,079	3.8%
Total active vested members	6,284	6,302	-0.3%
<b>Vested terminated members</b>			
Number	1,794	1,756	2.2%
Average age	49.5	49.1	0.4
<b>Retired members</b>			
Number in pay status	2,948	2,678	10.1%
Average age	69.1	68.7	0.4
Average monthly benefit <sup>(1)</sup>	\$2,584	\$2,479	4.2%
<b>Disabled members</b>			
Number in pay status	449	447	0.4%
Average age	63.8	63.2	0.6
Average monthly benefit <sup>(1)</sup>	\$2,538	\$2,429	4.5%
<b>Beneficiaries</b>			
Number in pay status	232	219	5.9%
Average age	66.2	65.4	0.8
Average monthly benefit <sup>(1)</sup>	\$1,288	\$1,260	2.2%

<sup>(1)</sup> Excludes supplemental benefits paid from SRBR.

Note: Based on the data provided for the December 31, 2017 actuarial valuation, the average age at retirement for the General Tier 2 service and disabled retirees was 62.3 and 50.6, respectively.

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

**EXHIBIT A**

**Table of Plan Coverage**

**iii. General Tier 3**

<b>Category</b>	<b>Year Ended December 31</b>		<b>Change From Prior Year</b>
	<b>2017</b>	<b>2016</b>	
<b>Active members in valuation</b>			
Number	27	37	-27.0%
Average age	53.9	53.7	0.2
Average service	16.1	14.7	1.4
Projected total compensation	\$2,218,590	\$2,945,476	-24.7%
Projected average compensation	\$82,170	\$79,607	3.2%
Member account balances	\$5,008,189	\$5,993,262	-16.4%
Total active vested members	25	31	-19.4%
<b>Vested terminated members</b>			
Number	13	10	30.0%
Average age	49.7	48.9	0.8
<b>Retired members</b>			
Number in pay status	22	17	29.4%
Average age	62.9	63.3	-0.4
Average monthly benefit <sup>(1)</sup>	\$4,085	\$4,622	-11.6%
<b>Disabled members</b>			
Number in pay status	1	0	N/A
Average age	64.1	N/A	N/A
Average monthly benefit <sup>(1)</sup>	\$2,065	N/A	N/A
<b>Beneficiaries</b>			
Number in pay status	3	2	50.0%
Average age	61.0	57.8	3.2
Average monthly benefit <sup>(1)</sup>	\$3,292	\$1,154	185.3%

<sup>(1)</sup> Excludes supplemental benefits paid from SRBR.

Note: Based on the data provided for the December 31, 2017 actuarial valuation, the average age at retirement for the General Tier 3 service and disabled retirees was 58.8 and 62.6, respectively.

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

**EXHIBIT A**

**Table of Plan Coverage**

**iv. General Tier 4**

<b>Category</b>	<b>Year Ended December 31</b>		<b>Change From Prior Year</b>
	<b>2017</b>	<b>2016</b>	
<b>Active members in valuation</b>			
Number	3,156	2,456	28.5%
Average age	39.8	39.6	0.2
Average service	2.3	1.9	0.4
Projected total compensation	\$249,534,713 <sup>(1)</sup>	\$183,650,901	35.9%
Projected average compensation	\$79,067	\$74,776	5.7%
Member account balances	\$42,674,606	\$26,475,733	61.2%
Total active vested members	84	40	110.0%
<b>Vested terminated members</b>			
Number	419	265	58.1%
Average age	40.0	39.9	0.1
<b>Retired members</b>			
Number in pay status	2	1	100.0%
Average age	63.5	65.9	-2.4
Average monthly benefit <sup>(2)</sup>	\$3,421	\$5,935	-42.4%
<b>Disabled members</b>			
Number in pay status	1	0	N/A
Average age	65.9	N/A	N/A
Average monthly benefit <sup>(2)</sup>	\$1,693	N/A	N/A
<b>Beneficiaries</b>			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit <sup>(2)</sup>	N/A	N/A	N/A

<sup>(1)</sup> Projected compensation for 2018 has been limited. It is our understanding that in the determination of pension benefits under the CalPEPRA formulas, the compensation that can be taken into account for 2018 is equal to \$121,388. (For an employer that is not enrolled in Social Security, the maximum amount is 120% of \$121,388, or \$145,666). (reference: Section 7522.10). These amounts should be adjusted for changes to the Consumer Price Index for All Urban Consumers after 2018. (reference: Section 7522.10(d)).

<sup>(2)</sup> Excludes supplemental benefits paid from SRBR.

Note: Based on the data provided for the December 31, 2017 actuarial valuation, the average age at retirement for the General Tier 4 service and disabled retirees was 61.3 and 63.5, respectively. For all the General Tiers combined, the average age at retirement for the service retirees and disabled retirees was 60.7 and 51.0, respectively.

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

**EXHIBIT A**

**Table of Plan Coverage**

**v. Safety Tier 1**

<b>Category</b>	<b>Year Ended December 31</b>		<b>Change From Prior Year</b>
	<b>2017</b>	<b>2016</b>	
<b>Active members in valuation</b>			
Number	5	6	-16.7%
Average age	60.3	59.9	0.4
Average service	27.7	24.4	3.3
Projected total compensation	\$1,050,029	\$1,159,133	-9.4%
Projected average compensation	\$210,006	\$193,189	8.7%
Member account balances	\$4,342,104	\$4,345,319	-0.1%
Total active vested members	5	6	-16.7%
<b>Vested terminated members</b>			
Number	8	11	-27.3%
Average age	58.4	57.5	0.9
<b>Retired members</b>			
Number in pay status	624	630	-1.0%
Average age	71.4	70.6	0.8
Average monthly benefit <sup>(1)</sup>	\$8,056	\$7,803	3.2%
<b>Disabled members</b>			
Number in pay status	100	105	-4.8%
Average age	68.8	67.8	1.0
Average monthly benefit <sup>(1)</sup>	\$5,602	\$5,324	5.2%
<b>Beneficiaries</b>			
Number in pay status	187	185	1.1%
Average age	74.2	73.5	0.7
Average monthly benefit <sup>(1)</sup>	\$3,249	\$3,148	3.2%

<sup>(1)</sup> Excludes supplemental benefits paid from SRBR.

Note: Based on the data provided for the December 31, 2017 actuarial valuation, the average age at retirement for the Safety Tier 1 service and disabled retirees was 54.9 and 49.0, respectively.

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

**EXHIBIT A**

**Table of Plan Coverage**

**vi. Safety Tier 2**

<b>Category</b>	<b>Year Ended December 31</b>		<b>Change From Prior Year</b>
	<b>2017</b>	<b>2016</b>	
<b>Active members in valuation</b>			
Number	991	1,041	-4.8%
Average age	45.9	45.3	0.6
Average service	15.5	14.7	0.8
Projected total compensation	\$124,173,300	\$124,544,061	-0.3%
Projected average compensation	\$125,301	\$119,639	4.7%
Member account balances	\$275,766,662	\$256,633,277	7.5%
Total active vested members	990	1,040	-4.8%
<b>Vested terminated members</b>			
Number	125	131	-4.6%
Average age	46.2	46.0	0.2
<b>Retired members</b>			
Number in pay status	510	474	7.6%
Average age	62.2	61.8	0.4
Average monthly benefit <sup>(1)</sup>	\$5,807	\$5,716	1.6%
<b>Disabled members</b>			
Number in pay status	181	171	5.8%
Average age	57.0	56.5	0.5
Average monthly benefit <sup>(1)</sup>	\$4,591	\$4,394	4.5%
<b>Beneficiaries</b>			
Number in pay status	64	63	1.6%
Average age	59.7	56.9	2.8
Average monthly benefit <sup>(1)</sup>	\$2,567	\$2,386	7.6%

<sup>(1)</sup> Excludes supplemental benefits paid from SRBR.

Note: Based on the data provided for the December 31, 2017 actuarial valuation, the average age at retirement for the Safety Tier 2 service and disabled retirees was 55.7 and 47.1, respectively.



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

**EXHIBIT A**

**Table of Plan Coverage**

**vii. Safety Tier 2C**

<b>Category</b>	<b>Year Ended December 31</b>		<b>Change From Prior Year</b>
	<b>2017</b>	<b>2016</b>	
<b>Active members in valuation</b>			
Number	26	27	-3.7%
Average age	41.8	41.0	0.8
Average service	6.1	5.3	0.8
Projected total compensation	\$3,009,549	\$3,025,638	-0.5%
Projected average compensation	\$115,752	\$112,061	3.3%
Member account balances	\$1,868,043	\$1,607,020	16.2%
Total active vested members	21	15	40.0%
<b>Vested terminated members</b>			
Number	8	6	33.3%
Average age	43.2	40.7	2.5
<b>Retired members</b>			
Number in pay status	1	0	N/A
Average age	50.5	N/A	N/A
Average monthly benefit <sup>(1)</sup>	\$825	N/A	N/A
<b>Disabled members</b>			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit <sup>(1)</sup>	N/A	N/A	N/A
<b>Beneficiaries</b>			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit <sup>(1)</sup>	N/A	N/A	N/A

<sup>(1)</sup> Excludes supplemental benefits paid from SRBR.

Note: Based on the data provided for the December 31, 2017 actuarial valuation, the average age at retirement for the Safety Tier 2C service retirees was 50.0.

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

**EXHIBIT A**

**Table of Plan Coverage**

**viii. Safety Tier 2D**

<b>Category</b>	<b>Year Ended December 31</b>		<b>Change From Prior Year</b>
	<b>2017</b>	<b>2016</b>	
<b>Active members in valuation</b>			
Number	119	119	0.0%
Average age	39.0	38.1	0.9
Average service	7.4	6.3	1.1
Projected total compensation	\$13,223,362	\$12,658,242	4.5%
Projected average compensation	\$111,121	\$106,372	4.5%
Member account balances	\$10,994,083	\$8,705,509	26.3%
Total active vested members	100	53	88.7%
<b>Vested terminated members</b>			
Number	12	9	33.3%
Average age	40.1	38.4	1.7
<b>Retired members</b>			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit <sup>(1)</sup>	N/A	N/A	N/A
<b>Disabled members</b>			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit <sup>(1)</sup>	N/A	N/A	N/A
<b>Beneficiaries</b>			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit <sup>(1)</sup>	N/A	N/A	N/A

<sup>(1)</sup> Excludes supplemental benefits paid from SRBR.

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

**EXHIBIT A**

**Table of Plan Coverage**

**ix. Safety Tier 4**

<b>Category</b>	<b>Year Ended December 31</b>		<b>Change From Prior Year</b>
	<b>2017</b>	<b>2016</b>	
<b>Active members in valuation</b>			
Number	295	245	20.4%
Average age	35.2	34.9	0.3
Average service	2.8	2.2	0.6
Projected total compensation	\$29,775,540 <sup>(1)</sup>	\$23,107,700	28.9%
Projected average compensation	\$100,934	\$94,317	7.0%
Member account balances	\$10,263,584	\$6,277,240	63.5%
Total active vested members	0	0	N/A
<b>Vested terminated members</b>			
Number	7	4	75.0%
Average age	32.9	32.3	0.6
<b>Retired members</b>			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit <sup>(2)</sup>	N/A	N/A	N/A
<b>Disabled members</b>			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit <sup>(2)</sup>	N/A	N/A	N/A
<b>Beneficiaries</b>			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit <sup>(2)</sup>	N/A	N/A	N/A

<sup>(1)</sup> *Projected compensation for 2018 has been limited. It is our understanding that in the determination of pension benefits under the CalPEPRA formulas, the compensation that can be taken into account for 2018 is equal to \$121,388. (For an employer that is not enrolled in Social Security, the maximum amount is 120% of \$121,388, or \$145,666). (reference: Section 7522.10). These amounts should be adjusted for changes to the Consumer Price Index for All Urban Consumers after 2018. (reference: Section 7522.10(d)).*

<sup>(2)</sup> *Excludes supplemental benefits paid from SRBR.*

Notes: For all the Safety Tiers combined, the average age at retirement for the service retirees and disabled retirees was 55.3 and 47.7, respectively.

For all the General and Safety Tiers combined, the average age at retirement for the service retirees and disabled retirees was 59.9 and 50.0, respectively.

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

**EXHIBIT B**

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

**i. General Tier 1**

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	--	--	--	--	--	--	--
	\$71,574	--	\$71,574	--	--	--	--	--	--	--
35 - 39	4	--	2	2	--	--	--	--	--	--
	82,882	--	70,399	\$95,365	--	--	--	--	--	--
40 - 44	5	--	5	--	--	--	--	--	--	--
	77,691	--	77,691	--	--	--	--	--	--	--
45 - 49	7	--	1	3	3	--	--	--	--	--
	80,863	--	61,026	70,193	\$98,145	--	--	--	--	--
50 - 54	13	--	1	5	3	1	--	1	2	--
	78,752	--	76,006	75,747	70,492	\$69,547	--	\$72,335	\$107,837	--
55 - 59	50	--	2	1	1	4	5	12	25	--
	85,162	--	91,914	65,573	73,020	87,448	\$84,793	87,502	84,476	--
60 - 64	83	--	4	4	1	3	10	18	37	6
	88,919	--	77,680	88,768	68,335	90,793	73,910	106,360	86,081	\$89,199
65 - 69	22	--	1	2	1	3	3	3	4	5
	117,267	--	71,978	125,627	63,522	85,988	162,312	119,323	63,137	167,542
70 & over	6	--	--	--	--	--	--	--	1	5
	106,852	--	--	--	--	--	--	--	54,442	117,334
Total	192	--	18	17	9	11	18	34	69	16
	\$90,168	--	\$76,442	\$85,409	\$78,976	\$86,335	\$91,667	\$99,848	\$84,341	\$122,473

*Note: Age and years of service were projected from November 30, 2017 to December 31, 2017.*

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

**EXHIBIT B**

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

**ii. General Tier 2**

Age	Years of Service							
	Total	0-4	5-9	10-14	15-19	20-24	25-29	30 & over
Under 25	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--
25 - 29	28	5	22	1	--	--	--	--
	\$74,220	\$79,219	\$73,420	\$66,813	--	--	--	--
30 - 34	314	37	232	45	--	--	--	--
	83,814	84,673	85,366	75,107	--	--	--	--
35 - 39	655	48	336	216	55	--	--	--
	90,351	100,499	93,725	86,611	\$75,570	--	--	--
40 - 44	816	40	270	259	228	18	1	--
	95,633	100,584	100,029	99,991	86,100	\$77,437	\$82,784	--
45 - 49	1,075	36	233	277	377	117	35	--
	96,219	119,263	96,659	96,902	94,155	99,102	76,760	--
50 - 54	1,137	28	208	218	298	170	168	47
	95,623	106,986	98,759	94,951	93,292	99,786	92,963	\$87,307
55 - 59	1,190	15	173	199	325	142	220	116
	95,963	108,006	103,226	90,188	89,262	95,477	100,352	104,531
60 - 64	874	12	145	136	225	115	159	82
	97,123	124,098	103,094	92,977	90,181	93,935	101,542	104,440
65 - 69	336	7	57	71	102	38	36	25
	93,198	75,330	91,081	85,227	91,981	98,628	98,517	114,713
70 & over	87	2	12	21	23	11	13	5
	82,735	120,782	99,592	79,579	73,839	88,915	73,211	92,395
Total	6,512	230	1,688	1,443	1,633	611	632	275
	\$94,497	\$102,363	\$96,076	\$92,799	\$90,304	\$96,626	\$96,690	\$102,265

*Note: Age and years of service were projected from November 30, 2017 to December 31, 2017.*

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

**EXHIBIT B**

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

**iii. General Tier 3**

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	2	--	--	2	--	--	--	--
	\$74,858	--	--	\$74,858	--	--	--	--
40 - 44	1	--	--	--	1	--	--	--
	69,209	--	--	--	\$69,209	--	--	--
45 - 49	5	1	1	2	1	--	--	--
	69,648	\$69,370	\$65,734	69,209	74,717	--	--	--
50 - 54	7	1	1	3	--	1	1	--
	73,360	92,018	76,948	62,105	--	\$67,961	\$90,280	--
55 - 59	6	--	--	1	2	1	2	--
	80,443	--	--	115,478	64,539	92,077	73,012	--
60 - 64	6	--	2	1	1	--	--	2
	109,208	--	97,884	193,653	94,777	--	--	\$85,526
65 - 69	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--
70 & over	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--
Total	27	2	4	9	5	2	3	2
	\$82,170	\$80,694	\$84,612	\$87,064	\$73,556	\$80,019	\$78,768	\$85,526

*Note: Age and years of service were projected from November 30, 2017 to December 31, 2017.*

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

**EXHIBIT B**

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

**iv. General Tier 4**

Age	Total	Years of Service						
		0-4	5-9	10-14	15-19	20-24	25-29	30 & Over
Under 25	85	85	--	--	--	--	--	--
	\$63,452	\$63,452	--	--	--	--	--	--
25 - 29	535	528	7	--	--	--	--	--
	70,635	70,348	\$92,312	--	--	--	--	--
30 - 34	693	686	7	--	--	--	--	--
	77,154	76,819	109,931	--	--	--	--	--
35 - 39	532	523	6	3	--	--	--	--
	79,834	79,831	82,316	\$75,461	--	--	--	--
40 - 44	398	390	6	2	--	--	--	--
	83,725	83,850	85,852	53,043	--	--	--	--
45 - 49	316	309	6	--	1	--	--	--
	84,198	83,668	105,280	--	\$121,388	--	--	--
50 - 54	212	206	5	1	--	--	--	--
	84,626	84,980	77,795	45,871	--	--	--	--
55 - 59	209	195	9	4	1	--	--	--
	82,777	82,430	77,382	102,143	121,388	--	--	--
60 - 64	117	107	8	1	--	1	--	--
	81,809	81,421	92,386	58,702	--	\$61,830	--	--
65 - 69	46	43	3	--	--	--	--	--
	94,983	95,394	89,086	--	--	--	--	--
70 & over	13	11	2	--	--	--	--	--
	100,116	101,494	92,539	--	--	--	--	--
Total	3,156	3,083	59	11	2	1	--	--
	\$79,067	\$78,836	\$90,394	\$76,874	\$121,388	\$61,830	--	--

*Note: Age and years of service were projected from November 30, 2017 to December 31, 2017.*

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

**EXHIBIT B**

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

**v. Safety Tier 1**

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	--	--	--	--	--	--	--	--
40 - 44	--	--	--	--	--	--	--	--
45 - 49	--	--	--	--	--	--	--	--
50 - 54	--	--	--	--	--	--	--	--
55 - 59	2 \$183,920	--	--	--	--	--	1 \$128,310	1 \$239,530
60 - 64	3 227,396	--	--	1 \$239,500	--	--	1 115,226	1 327,463
65 - 69	--	--	--	--	--	--	--	--
70 & over	--	--	--	--	--	--	--	--
Total	5 \$210,006	--	--	1 \$239,500	--	--	2 \$121,768	2 \$283,497

*Note: Age and years of service were projected from November 30, 2017 to December 31, 2017.*



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

**EXHIBIT B**

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

**vi. Safety Tier 2**

Age	Years of Service							
	Total	0-4	5-9	10-14	15-19	20-24	25-29	30 & Over
Under 25	--	--	--	--	--	--	--	--
25 - 29	--	--	--	--	--	--	--	--
30 - 34	64	--	18	46	--	--	--	--
	\$120,224	--	\$120,130	\$120,261	--	--	--	--
35 - 39	168	--	31	113	24	--	--	--
	124,642	--	109,191	123,863	\$148,266	--	--	--
40 - 44	230	--	21	76	116	17	--	--
	126,092	--	106,083	120,067	130,304	\$149,005	--	--
45 - 49	261	--	17	64	115	59	6	--
	124,593	--	103,662	120,465	121,289	139,620	\$143,485	--
50 - 54	154	1	8	22	71	27	19	6
	127,779	\$83,411	113,309	116,919	124,049	148,019	131,581	\$135,304
55 - 59	73	--	11	12	28	10	6	6
	124,762	--	130,164	116,905	121,118	135,003	108,695	146,583
60 - 64	30	--	2	12	4	7	2	3
	122,200	--	170,066	132,551	97,782	103,298	159,007	101,011
65 - 69	8	--	1	3	3	1	--	--
	127,813	--	90,401	129,402	155,132	78,503	--	--
70 & over	3	--	--	1	1	1	--	--
	181,661	--	--	181,233	124,053	239,697	--	--
Total	991	1	109	349	362	122	33	15
	\$125,301	\$83,411	\$112,900	\$121,772	\$126,523	\$140,643	\$131,247	\$132,957

*Note: Age and years of service were projected from November 30, 2017 to December 31, 2017.*



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

**EXHIBIT B**

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

**viii. Safety Tier 2D**

Age	Total	Years of Service						
		0-4	5-9	10-14	15-19	20-24	25-29	30 & Over
Under 25	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--
25 - 29	12	1	10	1	--	--	--	--
	\$112,242	\$92,628	\$114,067	\$113,610	--	--	--	--
30 - 34	34	3	28	3	--	--	--	--
	114,838	104,891	116,939	105,177	--	--	--	--
35 - 39	24	1	13	8	2	--	--	--
	107,794	103,201	113,296	100,772	\$102,410	--	--	--
40 - 44	27	9	12	2	4	--	--	--
	110,574	105,858	120,323	115,096	89,678	--	--	--
45 - 49	10	4	3	2	1	--	--	--
	98,599	103,688	110,378	79,275	81,559	--	--	--
50 - 54	4	--	2	1	--	--	1	--
	117,263	--	134,510	81,956	--	--	\$118,075	--
55 - 59	8	1	5	1	1	--	--	--
	118,046	140,431	125,579	78,657	97,388	--	--	--
60 - 64	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--
65 - 69	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--
70 & over	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--
Total	119	19	73	18	8	--	1	--
	\$111,121	\$106,232	\$117,257	\$99,148	\$92,810	--	\$118,075	--

*Note: Age and years of service were projected from November 30, 2017 to December 31, 2017.*

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

**EXHIBIT B**

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

**ix. Safety Tier 4**

Age	Total	Years of Service						
		0-4	5-9	10-14	15-19	20-24	25-29	30 & Over
Under 25	9	9	--	--	--	--	--	--
	\$88,617	\$88,617	--	--	--	--	--	--
25 - 29	95	95	--	--	--	--	--	--
	91,978	91,978	--	--	--	--	--	--
30 - 34	85	85	--	--	--	--	--	--
	96,867	96,867	--	--	--	--	--	--
35 - 39	40	40	--	--	--	--	--	--
	100,576	100,576	--	--	--	--	--	--
40 - 44	18	18	--	--	--	--	--	--
	100,359	100,359	--	--	--	--	--	--
45 - 49	7	7	--	--	--	--	--	--
	105,438	105,438	--	--	--	--	--	--
50 - 54	21	21	--	--	--	--	--	--
	134,519	134,519	--	--	--	--	--	--
55 - 59	19	19	--	--	--	--	--	--
	133,263	133,263	--	--	--	--	--	--
60 - 64	1	1	--	--	--	--	--	--
	81,877	81,877	--	--	--	--	--	--
65 - 69	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--
70 & over	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--
Total	295	295	--	--	--	--	--	--
	\$100,934	\$100,934	--	--	--	--	--	--

*Note: Age and years of service were projected from November 30, 2017 to December 31, 2017.*

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

**EXHIBIT C**

**Reconciliation of Member Data – December 31, 2016 to December 31, 2017**

	<b>Active Members</b>	<b>Vested Terminated Members</b>	<b>Pensioners</b>	<b>Disableds</b>	<b>Beneficiaries</b>	<b>Total</b>
Number as of December 31, 2016	11,111	2,263	7,134	887	1,221	22,616
New members	997	0	0	0	68	1,065
Terminations – with vested rights	-308	308	0	0	0	0
Contributions refunds	-126	-77	0	0	0	-203
Retirements	-349	-78	427	0	0	0
New disabilities	-14	-2	-12	28	0	0
Return to work	27	-27	0	0	0	0
Died with or without beneficiary	-14	-2	-170	-25	-72	-283
Data adjustments	-1	62*	0	-2	-5**	54
Number as of December 31, 2017	11,323	2,447	7,379	888	1,212	23,249

\* Out of the net 62 data adjustments: 1 non-member from last year went to payment status this year; 57 members were hired and terminated employment after November 30, 2016 (i.e., the census data collection date for last year's valuation); 1 member was classified as contribution refunds in the December 31, 2016 valuation data, and terminated vested in the December 31, 2017 data; and 5 members were miscellaneous records added to the terminated vested file.

\*\* Net count includes 1 non-member from terminated vested status last year, less 6 suspended beneficiary records since last year.

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

**EXHIBIT D**

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

	Year Ended December 31,	
	2017	2016
<b>Contribution income:</b>		
Employer contributions	\$247,063,550	\$241,728,451
Employee contributions	<u>89,325,824</u>	<u>85,736,229</u>
Contribution income	\$336,389,374	\$327,464,680
<b>Investment income:</b>		
Interest, dividends and other income	\$135,579,452	\$150,821,742
Adjustment toward market value	578,459,533	364,486,818
Less investment and administrative fees	<u>-73,695,094</u>	<u>-63,163,781</u>
Net investment income	<u>\$640,343,891</u>	<u>\$452,144,779</u>
<b>Total income available for benefits</b>	<b>\$976,733,265</b>	<b>\$779,609,459</b>
<b>Less benefit payments:</b>		
Service retirement	-\$433,464,465	-\$409,692,997
Death payments	-2,699,945	-2,708,323
Supplemental cost of living	-1,231,500	-1,350,784
Members refunds	-7,892,706	-8,470,733
Health insurance subsidies	<u>-37,903,590</u>	<u>-34,927,467</u>
Benefit payments	-\$483,192,206	-\$457,150,304
<b>Change in reserve for future benefits</b>	<b>\$493,541,059</b>	<b>\$322,459,155</b>

*Note: Results may not total properly due to rounding.*

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

**EXHIBIT E**

**Summary Statement of Assets**

ASSETS	Year Ended December 31,	
	2017	2016
Cash	\$17,130,210	\$1,265,311
Securities Lending Collateral	406,876,406	322,843,693
<b>Accounts Receivable:</b>		
Contributions	\$14,212,011	\$12,752,670
Investment Receivables	17,974,522	16,611,469
Investments Sold	9,858,317	8,464,718
Foreign Exchange Contracts	666,144	23,750
Others	<u>198,762</u>	<u>189,493</u>
Total Accounts Receivable	\$42,909,756	\$38,042,099
Prepaid Expenses	847,774	823,217
<b>Investments:</b>		
Short-Term Investments	\$210,167,993	\$209,671,001
Equities	5,105,580,651	4,168,597,795
Fixed Income Investments	1,231,352,419	1,049,038,552
Real Estate	512,139,741	491,822,710
Capital Assets	1,604,962	1,755,805
Private Equity and Alternative Investments	<u>1,047,693,755</u>	<u>1,044,408,423</u>
Total Investments at Market Value	<u>\$8,108,539,521</u>	<u>\$6,965,294,285</u>
<b>Total Assets</b>	<b>\$8,576,303,667</b>	<b>\$7,328,268,605</b>

*Note: Results may not total properly due to rounding.*

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

**EXHIBIT E (Continued)**

**Summary Statement of Assets**

<b>LIABILITIES</b>	<b>Year Ended December 31,</b>	
	<b>2017</b>	<b>2016</b>
<b>Less Accounts Payable:</b>		
Securities Lending & Investments Purchased	-\$444,428,669	-\$341,346,892
Investment-Related Payables	-12,594,238	-12,660,204
Futures Contracts & Equity Swaps	-230,781	-225,735
Foreign Exchange Contracts	-467,537	-2,956,982
Accrued Administration Expense	-2,495,061	-2,055,379
Members Benefits & Refunds, and Retirement Payroll Deductions Payable	<u>-3,987,825</u>	<u>-3,443,232</u>
Total Accounts Payable	-\$464,204,111	-\$362,688,423
<b>NET ASSETS</b>		
<b>Net Assets at Market Value</b>	<u>\$8,112,099,556</u>	<u>\$6,965,580,182</u>
<b>Net Assets at Actuarial Value</b>	<u>\$7,803,026,229</u>	<u>\$7,309,485,170</u>
<b>Net Assets at Valuation Value</b>	<u>\$6,830,379,459</u>	<u>\$6,436,138,605</u>

*Note: Results may not total properly due to rounding.*



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

**EXHIBIT F**

**Actuarial Balance Sheet**

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

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

**Actuarial Balance Sheet (Dollar Amounts in Thousands)**

<b>Assets</b>	<b><u>Basic</u></b>	<b><u>COLA</u></b>	<b><u>Total</u></b>
1. Total valuation assets	\$4,626,381	\$2,203,998	\$6,830,379
2. Present value of future contributions by members	655,419	166,604	822,023
3. Present value of future employer contributions for:			
a. entry age normal cost	666,962	143,592	810,554
b. unfunded actuarial accrued liability	1,636,326	520,356	2,156,682
4. Total current and future assets	\$7,585,088	\$3,034,550	\$10,619,638
<b>Liabilities</b>			
5. Present value of benefits already granted	\$3,382,847	\$2,045,252	\$5,428,099
6. Present value of benefits to be granted to present non-retired members	4,202,241	989,298	5,191,539
7. Total liabilities	\$7,585,088	\$3,034,550	\$10,619,638

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

**EXHIBIT G**

**Summary of Reported Asset Information as of December 31, 2017**

	<b>Reserves</b>
<b>Used in Development of Valuation Value of Assets</b>	
Members deposit-basic	\$1,197,274,376
Members cost-of-living	265,446,542
Employer advance (before transfer from SRBR to employer advance)	916,408,841
Pension reserve-current	1,575,906,610
Pension reserve-prior	4,791,746
Annuity reserve	923,878,901
Cost-of-living reserve	1,938,550,848
Survivor death benefit	2,291,312
SRBR transfer to employer advance	5,830,283*
Reserve for interest fluctuations (contingency reserve), if negative	0
Subtotal	<u>\$6,830,379,459</u>
<b>Not Used in Development of Valuation Value of Assets</b>	
401(h) account	\$7,582,098
Supplemental retirees benefit reserve (before transfer from SRBR to employer advance)	893,770,614
Reserve for interest fluctuations (contingency reserve), if positive	77,124,340
Market stabilization reserve	309,073,327
SRBR transfer to employer advance	-5,830,283*
Subtotal	<u>\$1,281,720,096</u>
Total	<u>\$8,112,099,556</u>

\* Estimate provided by ACERA.

Note: Results may not total properly due to rounding.

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

**EXHIBIT H**

**Development of Unfunded Actuarial Accrued Liability as of December 31, 2017**

	<b>(Dollar Amounts in Thousands)</b>
1. Unfunded actuarial accrued liability at beginning of year	\$1,801,577
2. Total Normal Cost at middle of year	188,082
3. Expected employer and member contributions	-339,247
4. Interest (whole year on (1) plus partial year on (2) + (3))	<u>131,748</u>
5. Expected unfunded actuarial accrued liability at end of year	\$1,782,160
6. Actuarial (gain)/loss due to all changes*:	
a. Gain from investments	-\$10,829
b. Gain from lower than expected salary increases for actives	-10,404
c. Loss due to actual contributions less than expected** (with interest to end of year)	2,967
d. Other experience gains	-3,251
e. Change in actuarial assumptions	<u>396,039</u>
f. Subtotal	\$374,522
7. Actual unfunded actuarial accrued liability at end of year (5) + (6f)	\$2,156,682

\* The "net gain from other experience" of \$10,688 from Chart 9 is equal to the sum of items 6b through 6d.

\*\* Including scheduled delay in implementing contribution rates after date of valuation.

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

**EXHIBIT I**

**Table of Amortization Bases (Dollar Amounts in Thousands)**

Type	Date Established	Initial Years	Initial Amount	Outstanding Balance	Years Remaining	Annual Payment*
<b>General (All, Excluding LARPD Tier 3 and Tier 4 )</b>						
Combined Bases	12/31/2011	21	\$885,036	\$874,867	15	\$76,805
Experience Loss	12/31/2012	20	165,501	162,587	15	14,273
Experience Gain	12/31/2013	20	-75,003	-74,352	16	-6,220
Experience Gain	12/31/2014	20	-156,281	-155,731	17	-12,458
Change in Assumptions	12/31/2014	20	350,827	349,594	17	27,967
Experience Gain	12/31/2015	20	-98,619	-98,668	18	-7,575
Experience Loss	12/31/2016	20	3,655	3,660	19	270
Experience Gain	12/31/2017	20	-27,249	-27,249	20	-1,943
Change in Assumptions	12/31/2017	20	260,437	<u>260,437</u>	20	<u>18,573</u>
Total				\$1,295,145		\$109,692
<b>General (LARPD Tier 3 and Tier 4 Only)**</b>						
Combined Bases	12/31/2011	21	\$7,060	\$6,979	15	\$613
Experience Loss	12/31/2012	20	370	363	15	32
Experience Gain	12/31/2013	20	-534	-529	16	-44
Experience Gain	12/31/2014	20	-1,562	-1,557	17	-125
Change in Assumptions	12/31/2014	20	1,303	1,299	17	104
Experience Gain***	12/31/2015	20	-1,506	-1,508	18	-116
Experience Loss	12/31/2016	20	139	139	19	10
Experience Gain****	12/31/2017	20	-622	-622	20	-44
Change in Assumptions	12/31/2017	20	1,418	<u>1,418</u>	20	<u>101</u>
Total				\$5,982		\$531
<b>General (All General Members Combined)</b>						
Combined Bases	12/31/2011	21	\$892,096	\$881,846	15	\$77,418
Experience Loss	12/31/2012	20	165,871	162,950	15	14,305
Experience Gain	12/31/2013	20	-75,537	-74,881	16	-6,264
Experience Gain	12/31/2014	20	-157,843	-157,288	17	-12,583
Change in Assumptions	12/31/2014	20	352,130	350,893	17	28,071
Experience Gain	12/31/2015	20	-100,125	-100,176	18	-7,691
Experience Loss	12/31/2016	20	3,794	3,799	19	280
Experience Gain	12/31/2017	20	-27,871	-27,871	20	-1,987
Change in Assumptions	12/31/2017	20	261,855	<u>261,855</u>	20	<u>18,674</u>
Total				\$1,301,127		\$110,223

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

**EXHIBIT I**

**Table of Amortization Bases (Continued)**

Type	Date Established	Initial Years	Initial Amount	Outstanding Balance	Years Remaining	Annual Payment*
<b>Safety</b>						
Combined Bases	12/31/2011	21	\$598,698	\$591,822	15	\$51,956
Experience Loss	12/31/2012	20	63,130	62,020	15	5,445
Experience Gain	12/31/2013	20	-9,350	-9,269	16	-775
Experience Gain	12/31/2014	20	-43,238	-43,087	17	-3,447
Change in Assumptions	12/31/2014	20	107,552	107,174	17	8,574
Experience Gain	12/31/2015	20	-12,850	-12,857	18	-987
Experience Loss	12/31/2016	20	19,183	19,214	19	1,420
Experience Loss	12/31/2017	20	6,354	6,354	20	453
Change in Assumptions	12/31/2017	20	134,184	<u>134,184</u>	20	<u>9,569</u>
Total				\$855,555		\$72,208
<b>Total</b>						
Combined Bases	12/31/2011	21	\$1,490,794	\$1,473,668	15	\$129,374
Experience Loss	12/31/2012	20	229,001	224,970	15	19,750
Experience Gain	12/31/2013	20	-84,887	-84,150	16	-7,039
Experience Gain	12/31/2014	20	-201,081	-200,375	17	-16,030
Change in Assumptions	12/31/2014	20	459,682	458,067	17	36,645
Experience Gain	12/31/2015	20	-112,975	-113,033	18	-8,678
Experience Loss	12/31/2016	20	22,977	23,013	19	1,700
Experience Gain	12/31/2017	20	-21,517	-21,517	20	-1,534
Change in Assumptions	12/31/2017	20	396,039	<u>396,039</u>	20	<u>28,243</u>
Total				\$2,156,682		\$182,431

Note: The equivalent single amortization period is 16 years.

\* Level percentage of payroll.

\*\* When LARPD General Tier 3 was established in 2008, they were classified as a stand-alone group since they were the only employer with the higher 2.5% at 55 benefit (i.e., Section 31676.18), and the cost to upgrade the past service under that formula was only to be paid by LARPD. (reference: Segal's letter dated October 7, 2008). The initial UAAL rate for that group was based on an allocation of assets needed to maintain the total employer rate from the December 31, 2007 valuation before any benefit improvements for General Tier 3. The UAAL rate for LARPD General Tier 3 was then increased to reflect the benefit improvement. When LARPD General Tier 4 was later established in 2013, that tier was combined with LARPD General Tier 3 for purpose of determining their UAAL rate only (as normal cost for LARPD General Tier 4 has continued to be developed on a pooled basis with other General employers offering General Tier 4 benefits), in order to continue with the open-group level percentage of payroll approach for paying off the UAAL amount for General Tier 3 (that is now closed to new entrants because of CalPEPRA).

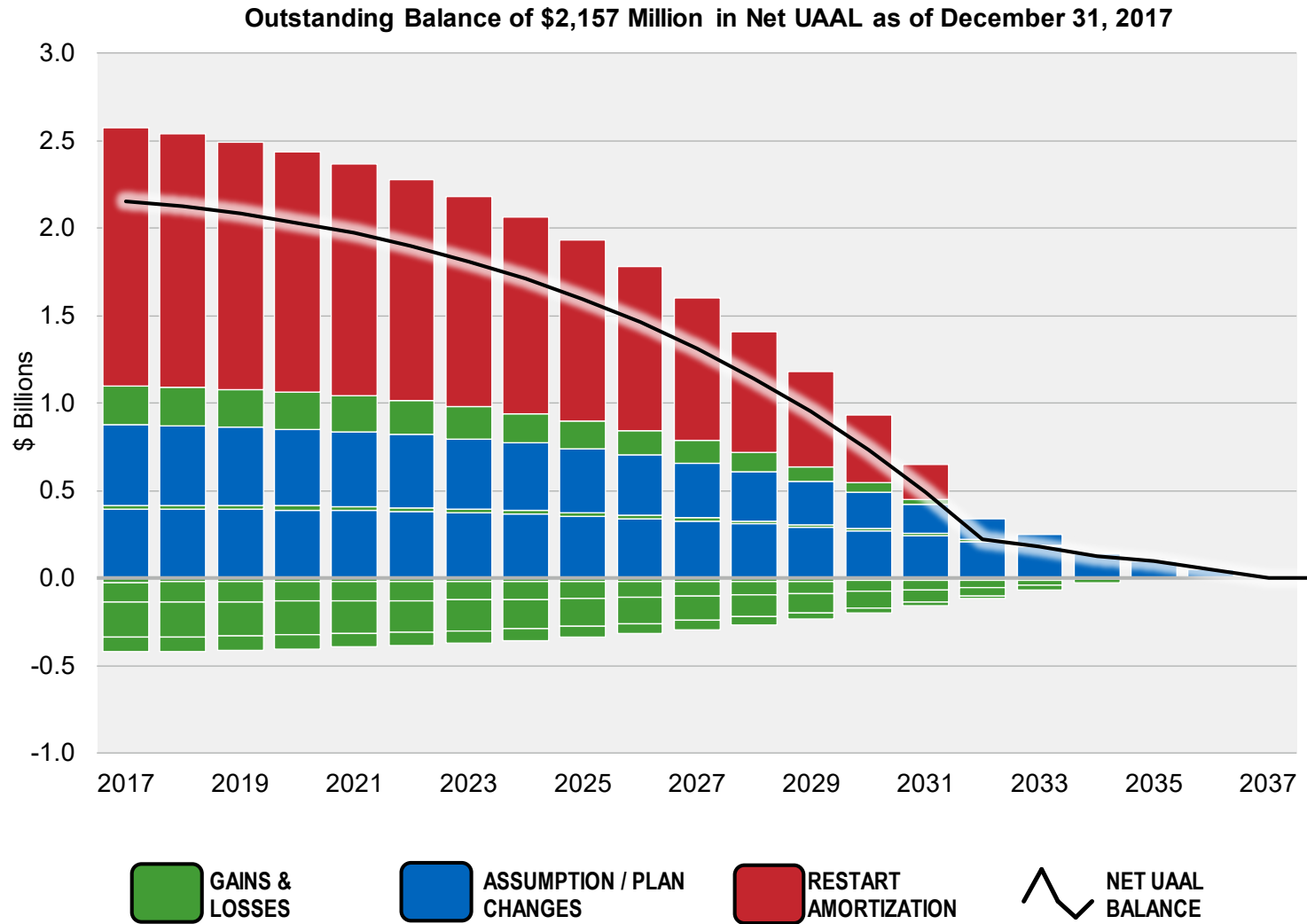
\*\*\* There is a liability gain from the death of one of LARPD's Tier 3 retirees and the withdrawal of one of LARPD's Tier 3 actives.

\*\*\*\* There is a liability gain from the death of one of LARPD's Tier 3 retirees.

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

EXHIBIT J

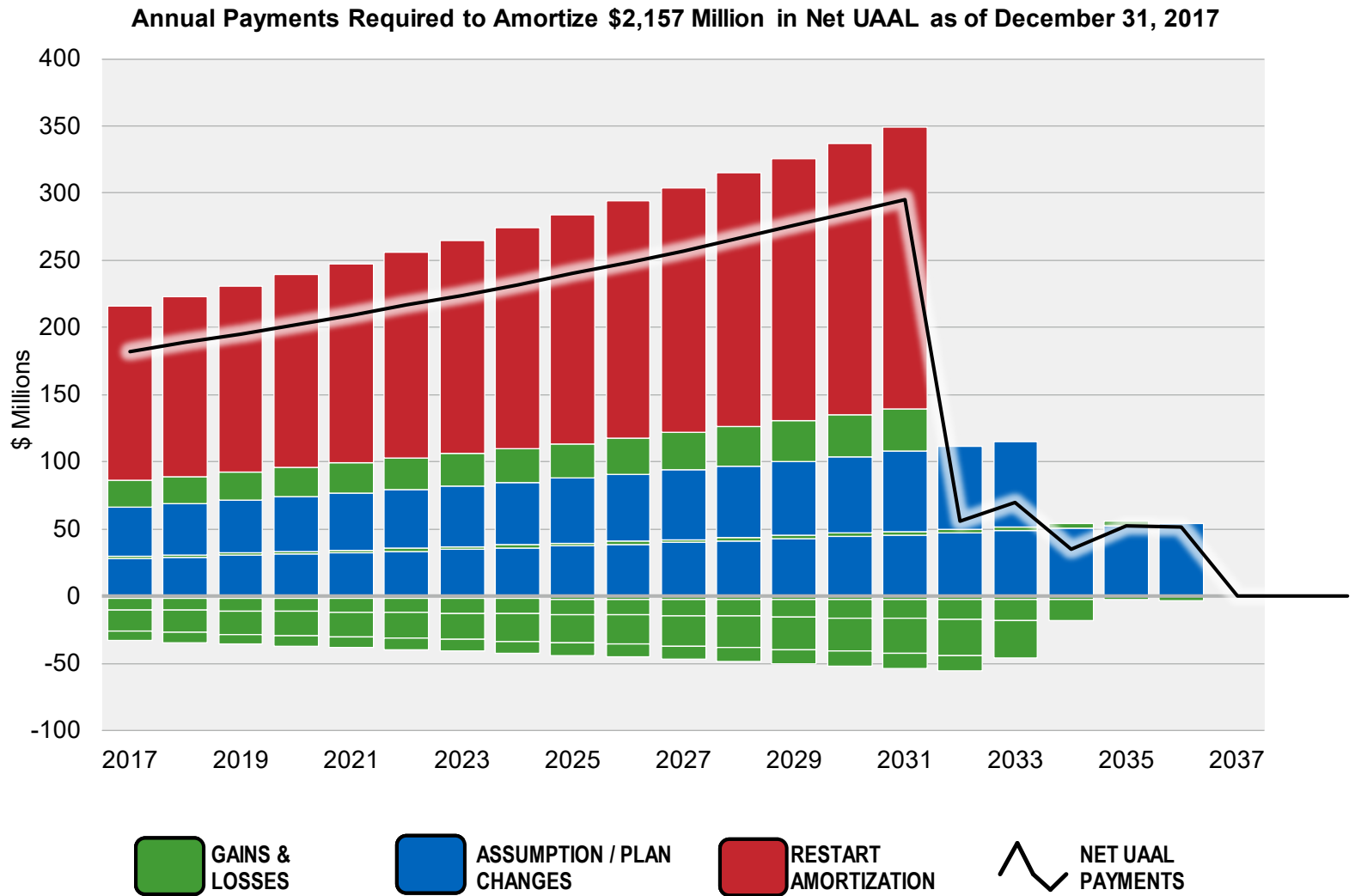
Projection of UAAL Balances and Payments (1 of 2)



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

**EXHIBIT J**

**Projection of UAAL Balances and Payments (2 of 2)**



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

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#### EXHIBIT K

#### Section 415 Limitations

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

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

In particular, Section 415(b) of the IRC limits the maximum annual benefit payable at the Normal Retirement Age to a dollar limit of \$160,000 indexed for inflation. That limit is \$215,000 for 2017 and \$220,000 for 2018. Normal Retirement Age (NRA) for these purposes is age 62, except for "qualified public safety employees" whose NRA is 50. 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.

Non-Tier 4 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.

Non-Tier 4 contributions rates determined in this valuation have not been reduced for the Section 415 limitations. Actual limitations will result in gains as they occur.



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

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**EXHIBIT L**  
**Definitions of Pension Terms**

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

**Assumptions or Actuarial Assumptions:**

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

- (a) Investment return — the rate of investment yield that the Plan will earn over the long-term future net, in this case, of investment and administrative expenses.
- (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 the interest that the sum is expected to earn before it is entirely paid out in benefits.

**Unfunded (Overfunded) Actuarial Accrued Liability:**

The extent to which the actuarial accrued liability of the Plan exceeds (or is exceeded by) the assets of the Plan.

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

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

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

**Investment Return:**

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

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

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### EXHIBIT I

#### Summary of Actuarial Valuation Results

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

1. Retired members as of the valuation date (including 1,212 beneficiaries in pay status)	9,479
2. Members inactive during year ended December 31, 2017 with vested rights	2,447
3. Members active during the year ended December 31, 2017	11,323

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

1. Normal cost	\$212,517
2. Present value of future benefits	10,619,638
3. Present value of future normal costs	1,632,577
4. Actuarial accrued liability*	8,987,061
Retired members and beneficiaries	\$5,428,099
Inactive members with vested rights	234,639
Active members	3,324,323
5. Valuation value of assets** (\$8,112,100 at market value as reported by Retirement Association)	6,830,379
6. Unfunded actuarial accrued liability	\$2,156,682

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\* Excludes liabilities held for SRBR and other non-valuation reserves.

\*\* Excludes Reserve for Interest Fluctuations (Contingency Reserve) if positive, Supplemental Retirees Benefit Reserve, and 401(h) Reserve.

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

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

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

	<b>Dollar Amount</b>	<b>% of Payroll</b>
1. Total normal cost	\$212,517	20.13%
2. Expected employee contributions	<u>-98,938</u>	<u>-9.37%</u>
3. Employer normal cost: (1) + (2)	\$113,579	10.76%
4. Amortization of unfunded actuarial accrued liability	<u>182,352</u>	<u>17.27%</u>
5. Total recommended average employer contribution: (3) + (4)	\$295,931	28.03%
6. Projected compensation	\$1,055,661	

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

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**EXHIBIT II**

**Actuarial Assumptions and Actuarial Cost Method**

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**Rationale for Assumptions:**

The information and analysis used in selecting each assumption that has a significant effect on this actuarial valuation is shown in the December 1, 2013 through November 30, 2016 Actuarial Experience Study report dated September 6, 2017. Unless otherwise noted, all actuarial assumptions and methods shown below apply to all tiers. These assumptions were adopted by the Board.

**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 3.00% per year, retiree COLA increases due to CPI subject to a 3% maximum change per year for General Tier 1, General Tier 3, and Safety Tier 1, and 2% maximum change per year for General Tier 2, General Tier 4, Safety Tier 2, Safety Tier 2C, Safety Tier 2D, and Safety Tier 4.

**Payroll Growth:**

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

**Increase in Section 7522.10  
Compensation Limit:**

Increase of 3.00% per year from valuation date.

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

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**Salary Increases:**

Annual Rate of Compensation Increase (%)					
Inflation: 3.00%; plus an additional 0.50% “across the board” salary increases (other than inflation); plus the following Merit and Promotional increases based on service.					
Service	General	Safety	Service	General	Safety
0-1	4.80%	7.80%	6-7	1.50%	1.60%
1-2	4.80	7.80	7-8	1.10	1.00
2-3	3.90	7.00	8-9	0.80	1.00
3-4	2.40	4.40	9-10	0.80	0.90
4-5	1.90	3.50	10-11	0.50	0.80
5-6	1.60	2.30	11+	0.40	0.80

**Terminal Pay Assumptions:**

Additional pay elements are expected to be received during a member’s final average earnings period. The percentages, added to the final year salary, used in this valuation are:

	<u>Service Retirement</u>	<u>Disability Retirement</u>
General Tier 1	8.0%	6.5%
General Tier 2	3.0%	1.4%
General Tier 3	8.0%	6.5%
General Tier 4	N/A	N/A
Safety Tier 1	8.5%	6.4%
Safety Tier 2	3.5%	2.1%
Safety Tier 2C	3.5%	2.1%
Safety Tier 2D	3.5%	2.1%
Safety Tier 4	N/A	N/A

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

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### **Demographic Assumptions:**

#### **Post-Retirement Mortality Rates - Healthy**

*General Members and  
All Beneficiaries:*

Headcount-Weighted RP-2014 (RPH-2014) Healthy Annuitant Mortality Tables, with no setback for males and females, projected generationally with the two-dimensional MP-2016 projection scale.

*Safety Members:*

Headcount-Weighted RP-2014 (RPH-2014) Healthy Annuitant Mortality Tables, with no setback for males and females, projected generationally with the two-dimensional MP-2016 projection scale.

#### **Post-Retirement Mortality Rates - Disabled**

*General Members:*

Headcount-Weighted RP-2014 (RPH-2014) Healthy Annuitant Mortality Tables, set forward seven years for males and set forward four years for females, projected generationally with the two-dimensional MP-2016 projection scale.

*Safety Members:*

Headcount-Weighted RP-2014 (RPH-2014) Healthy Annuitant Mortality Tables, set forward two years for males and with no set forward for females, projected generationally with the two-dimensional MP-2016 projection scale.

The RPH-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.

#### **Pre-Retirement Mortality Rates**

*General and Safety Members:*

Headcount-Weighted RP-2014 (RPH-2014) Employee Mortality Tables times 80%, projected generationally with the two-dimensional MP-2016 projection scale.

#### **Employee Contribution Rates**

*General Members:*

Headcount-Weighted RP-2014 (RPH-2014) Healthy Annuitant Mortality Tables, with no setback for males and females, projected 20 years with the two-dimensional mortality improvement Scale MP-2016, weighted 30% male and 70% female.

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

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### Employee Contribution Rates (Continued)

*Safety Members:*

Headcount-Weighted RP-2014 (RPH-2014) Healthy Annuitant Mortality Tables, with no setback for males and females, projected 20 years with the two-dimensional mortality improvement Scale MP-2016, weighted 75% male and 25% female.

### Optional Forms of Benefit

*Service Retirement and  
All Beneficiaries*

General Members: Headcount-Weighted RP-2014 (RPH-2014) Healthy Annuitant Mortality Tables, with no setback for males and females, projected 20 years with the two-dimensional mortality improvement Scale MP-2016, weighted 30% male and 70% female.

General Beneficiaries: Headcount-Weighted RP-2014 (RPH-2014) Healthy Annuitant Mortality Tables, with no setback for males and females, projected 20 years with the two-dimensional mortality improvement Scale MP-2016, weighted 70% male and 30% female.

Safety Members: Headcount-Weighted RP-2014 (RPH-2014) Healthy Annuitant Mortality Tables, with no setback for males and females, projected 20 years with the two-dimensional mortality improvement Scale MP-2016, weighted 75% male and 25% female.

Safety Beneficiaries: Headcount-Weighted RP-2014 (RPH-2014) Healthy Annuitant Mortality Tables, with no setback for males and females, projected 20 years with the two-dimensional mortality improvement Scale MP-2016, weighted 25% male and 75% female.

*Disability Retirement*

General Members: Headcount-Weighted RP-2014 (RPH-2014) Healthy Annuitant Mortality Tables, set forward seven years for males and set forward four years for females, projected 20 years with the two-dimensional mortality improvement Scale MP-2016, weighted 30% male and 70% female.

Safety Members: Headcount-Weighted RP-2014 (RPH-2014) Healthy Annuitant Mortality Tables, set forward two years for males and with no set forward for females, projected 20 years with the two-dimensional mortality improvement Scale MP-2016, weighted 75% male and 25% female.



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

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**Termination Rates Before Retirement<sup>(1)</sup>:**

<b>Age</b>	<b>Rate (%)</b>			
	<b>Mortality</b>			
	<b>General<sup>(2)</sup></b>		<b>Safety<sup>(2)</sup></b>	
	<b>Male</b>	<b>Female</b>	<b>Male</b>	<b>Female</b>
25	0.05	0.02	0.05	0.02
30	0.05	0.02	0.05	0.02
35	0.05	0.03	0.05	0.03
40	0.06	0.04	0.06	0.04
45	0.10	0.07	0.10	0.07
50	0.17	0.11	0.17	0.11
55	0.27	0.17	0.27	0.17
60	0.45	0.24	0.45	0.24
65	0.78	0.36	0.78	0.36

<sup>(1)</sup> Note that generational projections beyond the base year (2014) are not reflected in the above mortality rates. All pre-retirement deaths are assumed to be non-service connected.

<sup>(2)</sup> Based on the Headcount-Weighted RP-2014 (RPH-2014) Employee Mortality Tables times 80%, projected generationally with the two-dimensional MP-2016 projection scale.

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

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

<b>Age</b>	<b>Rate (%)</b>	
	<b>Disability</b>	
	<b>General<sup>(1)</sup></b>	<b>Safety<sup>(2)</sup></b>
20	0.00	0.00
25	0.01	0.03
30	0.03	0.26
35	0.05	0.58
40	0.08	0.73
45	0.19	0.78
50	0.31	1.52
55	0.38	2.00
60	0.43	2.60

<sup>(1)</sup> 60% of General disabilities are assumed to be service connected disabilities. The other 40% are assumed to be non-service connected disabilities.

<sup>(2)</sup> 100% of Safety disabilities are assumed to be service connected disabilities.

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

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

<b>Years of Service</b>	<b>Rate (%)</b>	
	<b>Termination (&lt; 5 Years of Service)<sup>(1)</sup></b>	
	<b>General</b>	<b>Safety</b>
0	11.00	4.00
1	9.00	3.50
2	8.00	3.50
3	6.00	2.50
4	6.00	2.00

<b>Age</b>	<b>Termination (5+ Years of Service)<sup>(2)</sup></b>	
	<b>General</b>	<b>Safety</b>
20	6.00	2.00
25	6.00	2.00
30	5.40	2.00
35	4.40	1.70
40	3.40	1.20
45	3.00	1.00
50	3.00	1.00
55	3.00	1.00
60	3.00	0.40

<sup>(1)</sup> 60% of all terminated members will choose a refund of contributions and 40% will choose a deferred vested benefit.

<sup>(2)</sup> 35% of all terminated members will choose a refund of contributions and 65% will choose a deferred vested benefit. No termination is assumed after a member is eligible for retirement (as long as a retirement rate is present).

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

**Retirement Rates:**

Age	Rate (%)							
	General Tier 1	General Tier 2	General Tier 3	General Tier 4	Safety Tier 1 <sup>(1)</sup>	Safety Tier 2, 2D <sup>(1)</sup>	Safety Tier 2C <sup>(1)</sup>	Safety Tier 4
49	0.00	0.00	0.00	0.00	0.00	10.00	0.00	0.00
50	4.00	2.00	6.00	0.00	35.00	15.00	4.00	4.00
51	4.00	2.00	3.00	0.00	30.00	15.00	2.00	2.00
52	4.00	2.00	5.00	4.00	25.00	15.00	2.00	2.00
53	4.00	2.00	6.00	1.50	35.00	15.00	3.00	3.00
54	4.00	2.00	6.00	1.50	45.00	15.00	6.00	6.00
55	6.00	2.00	12.00	2.00	45.00	15.00	10.00	10.00
56	8.00	3.00	13.00	2.50	45.00	15.00	12.00	12.00
57	10.00	4.00	13.00	3.50	45.00	15.00	20.00	20.00
58	12.00	4.00	14.00	3.50	45.00	20.00	10.00	10.00
59	14.00	5.00	16.00	4.50	45.00	20.00	15.00	15.00
60	20.00	7.00	21.00	6.00	45.00	30.00	60.00	60.00
61	20.00	9.00	20.00	8.00	45.00	30.00	60.00	60.00
62	35.00	15.00	30.00	18.00	45.00	30.00	60.00	60.00
63	30.00	16.00	25.00	15.00	45.00	30.00	60.00	60.00
64	30.00	18.00	25.00	17.00	45.00	50.00	60.00	60.00
65	35.00	25.00	30.00	22.00	100.00	100.00	100.00	100.00
66	35.00	25.00	25.00	25.00	100.00	100.00	100.00	100.00
67	30.00	25.00	25.00	25.00	100.00	100.00	100.00	100.00
68	30.00	30.00	25.00	30.00	100.00	100.00	100.00	100.00
69	35.00	35.00	50.00	35.00	100.00	100.00	100.00	100.00
70	65.00	50.00	65.00	50.00	100.00	100.00	100.00	100.00
71	65.00	50.00	65.00	50.00	100.00	100.00	100.00	100.00
72	65.00	50.00	65.00	50.00	100.00	100.00	100.00	100.00
73	65.00	50.00	65.00	50.00	100.00	100.00	100.00	100.00
74	65.00	50.00	65.00	50.00	100.00	100.00	100.00	100.00
75	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

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

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

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

For deferred vested members, retirement age assumptions are as follows:

General Age:	61
Safety Age:	56

For future deferred vested members who terminate with less than five years of service and are not vested, we assume that they will retire at age 70 for both General and Safety if they decide to leave their contributions on deposit.

We assume that 30% of future General and 60% of future Safety deferred vested members will continue to work for a reciprocal employer. For reciprocals, we assume 3.90% and 4.30% compensation increases per annum for General and Safety, respectively.

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**Future Benefit Accruals:**

1.0 year of service per year of employment plus 0.003 year of additional service for General members and 0.006 years of additional service for Safety members, to anticipate conversion of unused sick leave for each year of employment.

**Unknown Data for Members:**

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

**Inclusion of Deferred Vested Members:**

All deferred vested members are included in the valuation.

**Percent Married:**

70% of male members; 50% of female members.

**Age of Spouse:**

Female spouses are 3 years younger than their male member spouses. Male spouses are 2 years older than their female member spouses.

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**Actuarial Value of Assets:**

The Actuarial Value of Assets is determined by phasing in any difference between actual and expected market return over 10 six-month interest crediting periods.

**Valuation Value of Assets:**

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

**Actuarial Cost Method:**

Entry Age Cost Method. Entry Age is the age at the member's hire date. Actuarial Accrued Liability is calculated on an individual basis and is based on costs allocated as a level percentage of compensation. The Normal Cost is also calculated on an individual basis where the Entry Age Normal Cost is calculated as the sum of the individual Normal Costs.

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

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**Actuarial Cost Method: (Continued)** Prior to January 1, 2012, the total UAAL was amortized on a 30-year decreasing period, with 21 years remaining as of December 31, 2011 (and 15 years remaining as of December 31, 2017). On or after January 1, 2012, any new UAAL resulting from plan amendments are amortized over separate decreasing 15-year periods; early retirement incentive programs (ERIPs) are amortized over separate decreasing 5-year periods; assumption and method changes are amortized over separate decreasing 20-year periods; and experience gains/losses are also amortized over separate decreasing 20-year periods.

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**Changes in Actuarial Assumptions:** Based on the December 1, 2013 – November 30, 2016 actuarial experience study, the following actuarial assumptions were changed. Previously, these assumptions were as follows:

**Economic Assumptions:**

**Net Investment Return:** 7.60%, net of administration and investment expenses

**Employee Contribution Crediting Rate:** 7.60%, compounded semi-annually.

**Consumer Price Index:** Increase of 3.25% per year, retiree COLA increases due to CPI subject to a 3% maximum change per year for General Tier 1, General Tier 3, and Safety Tier 1, and 2% maximum change per year for General Tier 2, General Tier 4, Safety Tier 2, Safety Tier 2C, Safety Tier 2D, and Safety Tier 4.

**Payroll Growth:** Inflation of 3.25% per year plus real “across the board” salary increases of 0.50% per year.

**Increase in Section 7522.10 Compensation Limit:** Increase of 3.25% per year from valuation date.

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

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**Changes in Actuarial Assumptions (Prior Assumptions Continued)**

**Salary Increases:**

Annual Rate of Compensation Increase (%)					
Inflation: 3.25%; plus an additional 0.50% “across the board” salary increases (other than inflation); plus the following Merit and Promotional increases based on service.					
Service	General	Safety	Service	General	Safety
0-1	3.70%	6.70%	6-7	1.30%	1.40%
1-2	3.70	6.70	7-8	1.10	0.90
2-3	3.20	5.90	8-9	0.70	0.80
3-4	2.10	3.80	9-10	0.60	0.80
4-5	1.70	3.30	10-11	0.50	0.70
5-6	1.40	2.50	11+	0.40	0.70

**Terminal Pay Assumptions:**

Additional pay elements are expected to be received during a member’s final average earnings period. The percentages, added to the final year salary, used in this valuation are:

	<u>Service Retirement</u>	<u>Disability Retirement</u>
General Tier 1	8.0%	6.5%
General Tier 2	3.0%	1.4%
General Tier 3	8.0%	6.5%
General Tier 4	N/A	N/A
Safety Tier 1	8.5%	6.4%
Safety Tier 2	4.0%	2.1%
Safety Tier 2C	4.0%	2.1%
Safety Tier 2D	4.0%	2.1%
Safety Tier 4	N/A	N/A

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

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**Changes in Actuarial Assumptions (Prior Assumptions Continued)**

**Demographic Assumptions:**

**Post-Retirement Mortality Rates**

*Healthy:*

For General members and all beneficiaries: RP-2000 Combined Healthy Mortality Table projected with Scale BB to 2020, set back one year for males and females.

For Safety members: RP-2000 Combined Healthy Mortality Table projected with Scale BB to 2020, with no setback for males and set back two years for females.

*Disabled:*

For General members: RP-2000 Combined Healthy Mortality Table projected with Scale BB to 2020, set forward seven years for males and set forward four years for females.

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

The above mortality tables contain a margin of about 10% for General and Safety members and beneficiaries combined, based on actual to expected deaths, as a provision to reflect future mortality improvement, based on a review of mortality experience as of the measurement date.

*Employee Contribution Rates:*

For General members: RP-2000 Combined Healthy Mortality Table projected with Scale BB to 2020, set back one year for males and females, weighted 30% male and 70% female.

For Safety members: RP-2000 Combined Healthy Mortality Table projected with Scale BB to 2020, with no setback for males and set back two years for females, weighted 75% male and 25% female.



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

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### Changes in Actuarial Assumptions (Prior Assumptions Continued)

#### *Optional Forms of Benefit:*

##### *Service Retirement and All Beneficiaries*

General members: RP-2000 Combined Healthy Mortality Table projected with Scale BB to 2020, set back one year for males and females, weighted 30% male and 70% female.

General beneficiaries: RP-2000 Combined Healthy Mortality Table projected with Scale BB to 2020, set back one year for males and females, weighted 70% male and 30% female.

Safety members: RP-2000 Combined Healthy Mortality Table projected with Scale BB to 2020, with no setback for males and set back two years for females, weighted 75% male and 25% female.

Safety beneficiaries: RP-2000 Combined Healthy Mortality Table projected with Scale BB to 2020, set back one year for males and females, weighted 25% male and 75% female.

##### *Disability Retirement*

General members: RP-2000 Combined Healthy Mortality Table projected with Scale BB to 2020, set forward seven years for males and set forward four years for females, weighted 30% male and 70% female.

Safety members: RP-2000 Combined Healthy Mortality Table projected with Scale BB to 2020, set forward six years for males and set forward three years for females, weighted 75% male and 25% female.

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

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**Changes in Actuarial Assumptions (Prior Assumptions Continued)**

**Termination Rates Before Retirement:**

<b>Age</b>	<b>Rate (%)</b>			
	<b>Mortality</b>			
	<b>General</b>		<b>Safety</b>	
	<b>Male</b>	<b>Female</b>	<b>Male</b>	<b>Female</b>
25	0.04	0.02	0.04	0.02
30	0.04	0.02	0.04	0.02
35	0.07	0.04	0.07	0.04
40	0.10	0.06	0.10	0.06
45	0.13	0.10	0.14	0.09
50	0.19	0.15	0.20	0.14
55	0.30	0.22	0.34	0.21
60	0.53	0.37	0.59	0.33
65	0.90	0.68	1.00	0.60

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

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

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**Changes in Actuarial Assumptions (Prior Assumptions Continued)**

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

<b>Age</b>	<b>Rate (%)</b>	
	<b>Disability</b>	
	<b>General<sup>(1)</sup></b>	<b>Safety<sup>(2)</sup></b>
20	0.00	0.00
25	0.01	0.03
30	0.03	0.23
35	0.08	0.41
40	0.13	0.48
45	0.21	0.65
50	0.31	1.35
55	0.38	1.90
60	0.43	2.15

<sup>(1)</sup> 60% of General disabilities are assumed to be service connected disabilities. The other 40% are assumed to be non-service connected disabilities.

<sup>(2)</sup> 100% of Safety disabilities are assumed to be service connected disabilities.

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

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**Changes in Actuarial Assumptions (Prior Assumptions Continued)**

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

<b>Years of Service</b>	<b>Rate (%)</b>	
	<b>Termination (&lt; 5 Years of Service)<sup>(1)</sup></b>	
	<b>General</b>	<b>Safety</b>
0	10.00	5.00
1	9.00	4.00
2	7.00	3.00
3	6.00	2.00
4	5.00	1.00

<b>Age</b>	<b>Termination (5+ Years of Service)<sup>(2)</sup></b>	
	<b>General</b>	<b>Safety</b>
20	5.00	2.00
25	5.00	2.00
30	5.00	1.70
35	4.40	1.20
40	3.40	1.00
45	2.70	1.00
50	2.50	1.00
55	2.50	1.00
60	2.50	0.40

<sup>(1)</sup> 60% of all terminated members will choose a refund of contributions and 40% will choose a deferred vested benefit.

<sup>(2)</sup> 40% of all terminated members will choose a refund of contributions and 60% will choose a deferred vested benefit. No termination is assumed after a member is eligible for retirement.

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

**Changes in Actuarial Assumptions (Prior Assumptions Continued)**

**Retirement Rates:**

Age	Rate (%)							
	General Tier 1	General Tier 2	General Tier 3	General Tier 4	Safety Tier 1 <sup>(1)</sup>	Safety Tier 2, 2D <sup>(1)</sup>	Safety Tier 2C <sup>(1)</sup>	Safety Tier 4
50	4.00	2.00	6.00	0.00	35.00	15.00	4.00	4.00
51	4.00	2.00	3.00	0.00	30.00	15.00	2.00	2.00
52	4.00	2.00	5.00	4.00	25.00	15.00	2.00	2.00
53	4.00	2.00	6.00	1.50	35.00	15.00	3.00	3.00
54	4.00	2.00	6.00	1.50	45.00	15.00	6.00	6.00
55	7.00	2.00	12.00	2.50	45.00	15.00	10.00	10.00
56	9.00	3.00	13.00	2.50	45.00	20.00	12.00	12.00
57	12.00	4.00	13.00	3.50	45.00	25.00	20.00	20.00
58	12.00	4.00	14.00	4.50	45.00	25.00	10.00	10.00
59	16.00	5.00	16.00	4.50	45.00	25.00	15.00	15.00
60	24.00	6.00	21.00	4.50	100.00	30.00	60.00	60.00
61	24.00	9.00	20.00	7.50	100.00	30.00	60.00	60.00
62	40.00	18.00	30.00	19.00	100.00	30.00	60.00	60.00
63	35.00	18.00	25.00	15.00	100.00	30.00	60.00	60.00
64	35.00	20.00	25.00	17.00	100.00	100.00	100.00	100.00
65	35.00	25.00	30.00	21.00	100.00	100.00	100.00	100.00
66	35.00	25.00	25.00	20.00	100.00	100.00	100.00	100.00
67	30.00	25.00	25.00	20.00	100.00	100.00	100.00	100.00
68	25.00	30.00	25.00	30.00	100.00	100.00	100.00	100.00
69	35.00	35.00	50.00	35.00	100.00	100.00	100.00	100.00
70	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

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

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

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**Changes in Actuarial Assumptions (Prior Assumptions Continued)**

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

For deferred vested members, retirement age assumptions are as follows:

General Age:	60
Safety Age:	56

For future deferred vested members who terminate with less than five years of service and are not vested, we assume that they will retire at age 70 for both General and Safety if they decide to leave their contributions on deposit.

We assume that 30% of future General and 60% of future Safety deferred vested members will continue to work for a reciprocal employer. For reciprocals, we assume 4.15% and 4.45% compensation increases per annum for General and Safety, respectively.

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**Future Benefit Accruals:**

1.0 year of service per year of employment plus 0.005 year of additional service to anticipate conversion of unused sick leave for each year of employment.

**Age of Spouse:**

Female (or male) spouses are 3 years younger (or older) than their spouses.

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

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**EXHIBIT III**  
**Summary of Plan Provisions**

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

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**Membership Eligibility:**

	Membership with ACERA usually begins with the second pay period following appointment to a full time County or member District position <sup>(1)</sup> . ACERA members who change from full time to part time will continue to participate at ACERA.
<i>General and Safety Tier 1</i>	All General and Safety members hired on or before June 30, 1983 <sup>(2)</sup> .
<i>General and Safety Tier 2</i>	All General and Safety members hired after June 30, 1983 <sup>(3)</sup> , and not in any of the other Tiers listed below.
<i>General Tier 3</i>	Only General LARPD members hired before October 1, 2008 who elected the 2.5% at 55 formula and all General LARPD members hired after that date.
<i>General and Safety Tier 4</i>	All General and Safety members with membership dates on or after January 1, 2013.
<i>Safety Tier 2C</i>	All Safety members in the Sheriff's Department (excluding Probation Officers) hired on or after October 17, 2010 who elected the 2% at 50 formula.
<i>Safety Tier 2D</i>	All Safety members in the Sheriff's Department (excluding Probation Officers) hired on or after October 17, 2010 who elected the 3% at 55 formula.

<sup>(1)</sup> For Housing Authority and LARPD, membership with ACERA begins on the first day of hire.

<sup>(2)</sup> For Housing Authority General members, the hire date is on or before September 30, 2011 (instead of June 30, 1983). For LARPD General members, the hire date is on or before September 30, 2008 (instead of June 30, 1983).

<sup>(3)</sup> For Housing Authority General members, the hire date is after September 30, 2011 (instead of June 30, 1983).

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

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**Final Compensation for Benefit Determination:**

*General Tier 1, General Tier 3 and Safety Tier 1*

Highest consecutive twelve months of compensation earnable (§31462.1) (FAS1).

*General Tier 2, General Tier 4, Safety Tier 2, Safety Tier 2C, Safety Tier 2D, and Safety Tier 4*

For non-Tier 4 members, highest consecutive thirty-six months of compensation earnable (§31462), and for Tier 4 members, highest consecutive thirty-six months of pensionable compensation (§7522.10(c), §7522.32 and §7522.34) (FAS3).

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**Service:**

Years of service (Yrs).

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**Service Retirement Eligibility:**

*General*

*Non-Tier 4*

Age 50 with 5 years of service and a total of 10 years of qualifying membership, or age 70 regardless of service, or after 30 years, regardless of age (§31672).

*Tier 4*

Age 52 with 5 years of service (§7522.20(a)) or age 70 regardless of service (§31672.3).

*Safety*

*Non-Tier 4*

Age 50 with 5 years of service and a total of 10 years of qualifying membership, or age 70 regardless of service, or after 20 years, regardless of age (§31663.25).

*Tier 4*

Age 50 with 5 years of service (§7522.25(d)) or age 70 regardless of service (§31672.3).



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

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**Benefit Formula:**

	<b>Retirement Age</b>	<b>Benefit Formula</b>
<i>General Tier 1 (§31676.12)</i>	50	$(1.34\% \times \text{FAS1} - 1/3 \times 1.34\% \times \$350 \times 12) \times \text{Yrs}$
	55	$(1.77\% \times \text{FAS1} - 1/3 \times 1.77\% \times \$350 \times 12) \times \text{Yrs}$
	60	$(2.34\% \times \text{FAS1} - 1/3 \times 2.34\% \times \$350 \times 12) \times \text{Yrs}$
	62 or later	$(2.62\% \times \text{FAS1} - 1/3 \times 2.62\% \times \$350 \times 12) \times \text{Yrs}$
<i>General Tier 2 (§31676.1)</i>	<b>Retirement Age</b>	<b>Benefit Formula</b>
	50	$(1.18\% \times \text{FAS3} - 1/3 \times 1.18\% \times \$350 \times 12) \times \text{Yrs}$
	55	$(1.49\% \times \text{FAS3} - 1/3 \times 1.49\% \times \$350 \times 12) \times \text{Yrs}$
	60	$(1.92\% \times \text{FAS3} - 1/3 \times 1.92\% \times \$350 \times 12) \times \text{Yrs}$
	62	$(2.09\% \times \text{FAS3} - 1/3 \times 2.09\% \times \$350 \times 12) \times \text{Yrs}$
<i>General Tier 3 (§31676.18)</i>	65	$(2.43\% \times \text{FAS3} - 1/3 \times 2.43\% \times \$350 \times 12) \times \text{Yrs}$
	<b>Retirement Age</b>	<b>Benefit Formula</b>
<i>General Tier 3 (§31676.18)</i>	50	$2.00\% \times \text{FAS1} \times \text{Yrs}$
	55 or later	$2.50\% \times \text{FAS1} \times \text{Yrs}$
<i>General Tier 4 (§7522.20(a))</i>	<b>Retirement Age</b>	<b>Benefit Formula</b>
	52	$1.00\% \times \text{FAS3} \times \text{Yrs}$
	55	$1.30\% \times \text{FAS3} \times \text{Yrs}$
	60	$1.80\% \times \text{FAS3} \times \text{Yrs}$
	62	$2.00\% \times \text{FAS3} \times \text{Yrs}$
	65	$2.30\% \times \text{FAS3} \times \text{Yrs}$
67 or later	$2.50\% \times \text{FAS3} \times \text{Yrs}$	

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

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**Benefit Formula: (Continued)**

	<b>Retirement Age</b>	<b>Benefit Formula</b>
<i>Safety Tier 1 (Non-Integrated)</i> (§31664.1)	50	3.00% x FAS1 x Yrs
	55 or later	3.00% x FAS1 x Yrs
<i>Safety Tier 2 (Non-Integrated)</i> (§31664.1)	50	3.00% x FAS3 x Yrs
	55 or later	3.00% x FAS3 x Yrs
<i>Safety Tier 2C (Non-Integrated)</i> (§31664)	50	2.00% x FAS3 x Yrs
	55 or later	2.62% x FAS3 x Yrs
<i>Safety Tier 2D (Non-Integrated)</i> (§31664.2)	50	2.29% x FAS3 x Yrs
	55 or later	3.00% x FAS3 x Yrs
<i>Safety Tier 4 (Non-Integrated)</i> (§7522.25(d))	50	2.00% x FAS3 x Yrs
	55	2.50% x FAS3 x Yrs
	57 or later	2.70% x FAS3 x Yrs

**Maximum Benefit:**

<i>Non-Tier 4</i>	100% of Highest Average Compensation (§31676.1, §31676.12, §31676.18, §31664, §31664.1, and §31664.2).
<i>Tier 4</i>	None

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

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**Ordinary Disability:**

General Tier 1, Tier 2, Tier 3, and Tier 4

<i>Eligibility</i>	Five years of service (§31720).
<i>Benefit Formula</i>	1.8% per year of service for General Tier 1 and Tier 3 and 1.5% per year of service for General Tier 2 and Tier 4. If the benefit does not exceed one-third of Final Compensation, the service is projected to 62 for General Tier 1 and Tier 3, and to age 65 for General Tier 2 and Tier 4, but the total benefit cannot be more than one-third of Final Compensation (§31727.1 and §31727).

Safety Tier 1, Tier 2, Tier 2C, Tier 2D, and Tier 4

<i>Eligibility</i>	Five years of service (§31720).
<i>Benefit Formula</i>	1.8% per year of service. If the benefit does not exceed one-third of Final Compensation, the service is projected to 55, but the total benefit cannot be more than one-third of Final Compensation (§31727.2).

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**Line-of-Duty Disability:**

All Members

<i>Eligibility</i>	No age or service requirements (§31720).
<i>Benefit Formula</i>	50% of the Final Compensation or 100% of Service Retirement benefit, if greater (§31727.4).

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

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**Pre-Retirement Death:**

All Members

<i>Eligibility</i>	None.
<i>Basic lump sum benefit</i>	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).
<i>Death in line of duty</i>	50% of Final Compensation or 100% of Service Retirement benefit, if greater, payable to spouse or minor children (§31787).

OR

Vested Members

<i>Eligibility</i>	Five years of service.
<i>Basic benefit</i>	60% of the greater of Service or Ordinary Disability Retirement benefit payable to surviving eligible spouse (§31765.1, §31781.1), in lieu of the basic lump sum benefit above.
<i>Death in line of duty</i>	50% of Final compensation or 100% of Service Retirement benefit, if greater, payable to spouse or minor children (§31787).

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

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**Death After Retirement:**

*All Members*

*Service or*

*Ordinary Disability Retirement*

60% of member's unmodified allowance continued to eligible spouse (§31760.1) and lump sum death burial benefit<sup>(1)</sup> payable to member's beneficiary (§31789.3). An eligible spouse is a surviving spouse who was married to the member at least one year prior to the date of retirement (§31760.1).

*Line-of-Duty Disability*

100% of member's allowance continued to eligible spouse (§31786).

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**Withdrawal Benefits:**

*Less than Five Years of Service*

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

*Five or More Years of Service*

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

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**Post-retirement**

**Cost-of-Living Benefits:**

*General Tier 1, General Tier 3  
and Safety Tier 1*

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

*General Tier 2, General Tier 4  
Safety Tier 2, Safety Tier 2C,  
Safety Tier 2D, and Safety Tier 4*

Future changes based on Consumer Price Index to a maximum of 2% per year; excess "banked" (§31870).

<sup>(1)</sup> Based on action taken by the Board in February 2014, we are continuing to exclude the death burial benefit from the pension valuation.

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

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<b>County Contributions:</b>	Prior to January 1, 2012, the total UAAL was amortized on a 30-year decreasing period, with 21 years remaining as of December 31, 2011. On or after January 1, 2012, plan amendments are amortized over separate decreasing 15-year periods; early retirement incentive programs (ERIPs) are amortized over separate decreasing 5-year periods; assumption and method changes are amortized over separate decreasing 20-year periods; and experience gains/losses are also amortized over separate decreasing 20-year periods.
<b>Supplemental Benefit:</b>	Non-vested supplemental COLA and medical benefits are also paid from the Supplemental Retirees Benefit Reserve to eligible retirees and survivors. These benefits have been excluded from this valuation.
<b>Member Contributions:</b>	Please refer to Appendix A for specific rates.
<i>General Tier 1</i>	
<i>Basic</i>	Provide for an average annuity at age 60 equal to 1/100 of FAS1 (§31621.2).
<i>Cost-of-Living</i>	Provide for one-half of future Cost-of-Living costs.
<i>General Tier 2</i>	
<i>Basic</i>	Provide for an average annuity at age 60 equal to 1/120 of FAS3 (§31621).
<i>Cost-of-Living</i>	Provide for one-half of future Cost-of-Living costs.
<i>General Tier 3</i>	
<i>Basic</i>	Provide for an average annuity at age 55 equal to 1/100 of FAS1 (§31621.8).
<i>Cost-of-Living</i>	Provide for one-half of future Cost-of-Living costs.
<i>General Tier 4</i>	50% of the total Normal Cost rate.

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

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**Member Contributions: (Continued)**

*Safety Non-Tier 4*

*Basic*

Provide for an average annuity at age 50 equal to 1/100 of FAS1 (FAS3 for Tier 2, Tier 2C, and Tier 2D) (\$31639.25). As instructed by ACERA, we have also included a 3% cost sharing contribution that we understand will be paid by Safety Tier 1 and Tier 2 members. For Safety Tier 2C members, there are no cost-sharing contributions. For Safety Tier 2D members, the cost-sharing contribution rate is 5% of salary for the first 5 years of employment and 3% of salary for each subsequent year of employment (even after the member attains 30 years of service).

*Cost-of-Living*

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

*Safety Tier 4*

50% of the total Normal Cost rate.

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**Other Information:**

Non-Tier 4 Safety members with 30 or more years of service are exempt from paying member contributions (however, Tier 2D Safety members are required to continue paying the 3% cost-sharing contribution after 30 years of service). This exemption also applies for General members hired on or before March 7, 1973.

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

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

**Appendix A  
Member Contribution Rates**

Comparison of Total Member Rate<sup>(1)</sup> from December 31, 2017 (New) and December 31, 2016 (Current) Valuations

<b>General Tier 1</b>				<b>General Tier 2</b>			
Entry Age	Current	New	Change	Entry Age	Current	New	Change
25	8.80%	9.41%	<b>0.61%</b>	25	6.01%	6.45%	<b>0.44%</b>
35	10.67%	11.37%	<b>0.70%</b>	35	7.29%	7.78%	<b>0.49%</b>
45	12.92%	13.72%	<b>0.80%</b>	45	8.82%	9.39%	<b>0.57%</b>
<b>General Tier 3</b>				<b>General Tier 4</b>			
Entry Age	Current	New	Change	Entry Age <sup>(2)</sup>	Current	New	Change
25	10.30%	10.93%	<b>0.63%</b>	Any	8.10%	8.76%	<b>0.66%</b>
35	12.45%	13.18%	<b>0.73%</b>				
45	15.10%	15.97%	<b>0.87%</b>				
<b>Safety Tier 1</b>				<b>Safety Tier 2</b>			
Entry Age	Current	New	Change	Entry Age	Current	New	Change
25	16.86%	18.12%	<b>1.26%</b>	25	14.19%	15.13%	<b>0.94%</b>
30	18.13%	19.43%	<b>1.30%</b>	30	15.21%	16.18%	<b>0.97%</b>
35	19.55%	20.90%	<b>1.35%</b>	35	16.36%	17.35%	<b>0.99%</b>
<b>Safety Tier 2C</b>				<b>Safety Tier 2D (with less than 5 years of vesting service)</b>			
Entry Age	Current	New	Change	Entry Age	Current	New	Change
25	10.66%	11.59%	<b>0.93%</b>	25	16.00%	16.94%	<b>0.94%</b>
30	11.64%	12.60%	<b>0.96%</b>	30	17.01%	17.98%	<b>0.97%</b>
35	12.73%	13.72%	<b>0.99%</b>	35	18.13%	19.14%	<b>1.01%</b>
<b>Safety Tier 2D (with 5 or more years of vesting service)</b>				<b>Safety Tier 4</b>			
Entry Age	Current	New	Change	Entry Age <sup>(2)</sup>	Current	New	Change
25	14.00%	14.94%	<b>0.94%</b>	Any	14.20%	15.75%	<b>1.55%</b>
30	15.01%	15.98%	<b>0.97%</b>				
35	16.13%	17.14%	<b>1.01%</b>				

<sup>(1)</sup> For the non-CalPEPRA tiers, contributions for the first \$161 of biweekly payroll are based on 2/3 of the above rates for integrated members.

<sup>(2)</sup> Tier 4 member rates are independent of entry age.



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

Breakdown of member rate between basic and COLA calculated in the December 31, 2017 and December 31, 2016 valuations:

	December 31, 2017 Actuarial Valuation								December 31, 2016 Actuarial Valuation <sup>(1)</sup>							
	BASIC		COLA		COST SHARING CONTRIBUTIONS		TOTAL		BASIC		COLA		COST SHARING CONTRIBUTIONS		TOTAL	
	Rate	Estimated Annual Amount*	Rate	Estimated Annual Amount*	Rate	Estimated Annual Amount*	Rate	Estimated Annual Amount*	Rate	Estimated Annual Amount*	Rate	Estimated Annual Amount*	Rate	Estimated Annual Amount*	Rate	Estimated Annual Amount*
<b>General Tier 1 Members</b>	6.89%	\$1,193	2.70%	\$467			9.59%	\$1,660	6.55%	\$1,134	2.42%	\$419			8.97%	\$1,553
<b>General Tier 2 Members</b>	6.27%	38,583	1.54%	9,477			7.81%	48,060	5.97%	36,737	1.35%	8,308			7.32%	45,045
<b>General Tier 3 Members</b>	9.73%	216	3.83%	85			13.56%	301	9.36%	208	3.49%	77			12.85%	285
<b>General Tier 4 Members</b>	7.13%	17,792	1.63%	4,067			8.76%	21,859	6.71%	16,744	1.39%	3,468			8.10%	20,212
<b>Safety Tier 1 Members</b>	5.33%	56	3.24%	33	3.00%	\$32	11.57%	121	5.23%	55	2.87%	30	3.00%	\$32	11.10%	117
<b>Safety Tier 2 Members</b>	9.11%	11,312	3.73%	4,632	3.00%	3,725	15.84%	19,669	8.73%	10,840	3.17%	3,937	3.00%	3,725	14.90%	18,502
<b>Safety Tier 2C Members</b>	10.03%	302	3.49%	105	0.00%	0	13.52%	407	9.69%	292	2.89%	87	0.00%	0	12.58%	379
<b>Safety Tier 2D Members</b>	9.44%	1,248	3.67%	485	3.31%	438	16.42%	2,171	9.05%	1,197	3.08%	407	3.31%	438	15.44%	2,042
<b>Safety Tier 4 Members</b>	12.39%	3,689	3.36%	1,001	0.00%	0	15.75%	4,690	11.43%	3,403	2.77%	825	0.00%	0	14.20%	4,228
<b>All Member Categories Combined</b>	7.05%	\$74,391	1.92%	\$20,352	0.40%	\$4,195	9.37%	\$98,938	6.69%	\$70,610	1.66%	\$17,558	0.40%	\$4,195	8.75%	\$92,363

(1) These rates have been re-calculated by applying the individual entry age based member rates determined in December 31, 2016 valuation to the Association membership as of December 31, 2017.

(2) Determined based on proportion of members contributing 5.00% (with less than 5 years of vesting service) and 3.00% (with 5 or more years of vesting service).

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

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\* Amounts are in thousands and are based on December 31, 2017 annual payroll (also in thousands):

	<u>County Only</u>	<u>AHS, Court &amp; First 5</u>	<u>Other Districts</u>	<u>Total</u>
General Tier 1	\$10,285	\$2,890	\$4,137	\$17,312
General Tier 2	403,151	211,849	364	615,364
General Tier 3			2,219	2,219
General Tier 4	148,404	99,027	2,103	249,534
Safety Tier 1	1,050			1,050
Safety Tier 2	124,173			124,173
Safety Tier 2C	3,010			3,010
Safety Tier 2D	13,223			13,223
Safety Tier 4	29,776			29,776
Total	<u>\$733,072</u>	<u>\$313,766</u>	<u>\$8,823</u>	<u>\$1,055,661</u>

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

**Appendix A**

**Member Contribution Rates (Continued)**

**General Tier 1 Members' Contribution Rates Based on the December 31, 2017 Actuarial Valuation (as a % of payroll)**

<u>Entry Age</u>	<u>Basic Only</u>		<u>COLA Only</u>		<u>Total</u>	
	<u>First \$161</u>	<u>Over \$161*</u>	<u>First \$161</u>	<u>Over \$161*</u>	<u>First \$161</u>	<u>Over \$161*</u>
15	3.79%	5.68%	1.48%	2.22%	5.27%	7.90%
16	3.79%	5.68%	1.48%	2.22%	5.27%	7.90%
17	3.86%	5.79%	1.51%	2.27%	5.37%	8.06%
18	3.94%	5.91%	1.54%	2.31%	5.48%	8.22%
19	4.02%	6.03%	1.57%	2.36%	5.59%	8.39%
20	4.10%	6.14%	1.60%	2.40%	5.70%	8.54%
21	4.18%	6.26%	1.63%	2.45%	5.81%	8.71%
22	4.26%	6.39%	1.67%	2.50%	5.93%	8.89%
23	4.34%	6.51%	1.70%	2.55%	6.04%	9.06%
24	4.42%	6.64%	1.73%	2.60%	6.15%	9.24%
25	4.51%	6.76%	1.77%	2.65%	6.28%	9.41%
26	4.60%	6.89%	1.80%	2.70%	6.40%	9.59%
27	4.68%	7.03%	1.83%	2.75%	6.51%	9.78%
28	4.77%	7.16%	1.87%	2.80%	6.64%	9.96%
29	4.87%	7.30%	1.91%	2.86%	6.78%	10.16%
30	4.96%	7.44%	1.94%	2.91%	6.90%	10.35%
31	5.05%	7.58%	1.98%	2.97%	7.03%	10.55%
32	5.15%	7.72%	2.01%	3.02%	7.16%	10.74%
33	5.25%	7.87%	2.05%	3.08%	7.30%	10.95%
34	5.35%	8.02%	2.09%	3.14%	7.44%	11.16%
35	5.45%	8.17%	2.13%	3.20%	7.58%	11.37%
36	5.55%	8.32%	2.17%	3.26%	7.72%	11.58%
37	5.65%	8.48%	2.21%	3.32%	7.86%	11.80%
38	5.76%	8.64%	2.25%	3.38%	8.01%	12.02%
39	5.87%	8.80%	2.30%	3.45%	8.17%	12.25%

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

**Appendix A  
Member Contribution Rates (Continued)**

**General Tier 1 Members' Contribution Rates Based on the December 31, 2017 Actuarial Valuation (as a % of payroll) - continued**

Entry Age	Basic Only		COLA Only		Total	
	First \$161	Over \$161*	First \$161	Over \$161*	First \$161	Over \$161*
40	5.98%	8.97%	2.34%	3.51%	8.32%	12.48%
41	6.09%	9.14%	2.39%	3.58%	8.48%	12.72%
42	6.21%	9.31%	2.43%	3.65%	8.64%	12.96%
43	6.33%	9.49%	2.48%	3.72%	8.81%	13.21%
44	6.45%	9.68%	2.53%	3.79%	8.98%	13.47%
45	6.58%	9.86%	2.57%	3.86%	9.15%	13.72%
46	6.70%	10.06%	2.63%	3.94%	9.33%	14.00%
47	6.84%	10.26%	2.67%	4.01%	9.51%	14.27%
48	6.98%	10.47%	2.73%	4.10%	9.71%	14.57%
49	7.12%	10.67%	2.79%	4.18%	9.91%	14.85%
50	7.24%	10.86%	2.83%	4.25%	10.07%	15.11%
51	7.37%	11.06%	2.89%	4.33%	10.26%	15.39%
52	7.49%	11.24%	2.93%	4.40%	10.42%	15.64%
53	7.59%	11.39%	2.97%	4.46%	10.56%	15.85%
54	7.69%	11.54%	3.01%	4.52%	10.70%	16.06%
55	7.78%	11.67%	3.05%	4.57%	10.83%	16.24%
56	7.84%	11.76%	3.07%	4.60%	10.91%	16.36%
57	7.80%	11.70%	3.05%	4.58%	10.85%	16.28%
58	7.66%	11.49%	3.00%	4.50%	10.66%	15.99%
59 & Over	7.34%	11.01%	2.87%	4.31%	10.21%	15.32%

\* Use these rates for Non-Integrated Members

Interest:	7.25% per annum
COLA:	3.00%
Mortality:	Headcount-Weighted RP-2014 (RPH-2014) Healthy Annuitant Mortality Tables, with no setback for males and females, projected 20 years with the two-dimensional mortality improvement Scale MP-2016, weighted 30% male and 70% female.
Salary Increase:	Inflation (3.00%) + Across-the-Board Increase (0.50%) + Merit (See Exhibit II)
COLA Loading Factor:	39.14%
Terminal Pay:	8.0%

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

**Appendix A  
Member Contribution Rates (Continued)**

**General Tier 2 Members' Contribution Rates Based on the December 31, 2017 Actuarial Valuation (as a % of payroll)**

<u>Entry Age</u>	<u>Basic Only</u>		<u>COLA Only</u>		<u>Total</u>	
	<u>First \$161</u>	<u>Over \$161*</u>	<u>First \$161</u>	<u>Over \$161*</u>	<u>First \$161</u>	<u>Over \$161*</u>
15	2.90%	4.35%	0.71%	1.07%	3.61%	5.42%
16	2.90%	4.35%	0.71%	1.07%	3.61%	5.42%
17	2.96%	4.43%	0.73%	1.09%	3.69%	5.52%
18	3.01%	4.52%	0.74%	1.11%	3.75%	5.63%
19	3.07%	4.61%	0.75%	1.13%	3.82%	5.74%
20	3.13%	4.70%	0.77%	1.15%	3.90%	5.85%
21	3.20%	4.79%	0.79%	1.18%	3.99%	5.97%
22	3.26%	4.89%	0.80%	1.20%	4.06%	6.09%
23	3.32%	4.98%	0.81%	1.22%	4.13%	6.20%
24	3.39%	5.08%	0.83%	1.25%	4.22%	6.33%
25	3.45%	5.18%	0.85%	1.27%	4.30%	6.45%
26	3.52%	5.28%	0.86%	1.29%	4.38%	6.57%
27	3.58%	5.38%	0.88%	1.32%	4.46%	6.70%
28	3.65%	5.48%	0.89%	1.34%	4.54%	6.82%
29	3.72%	5.58%	0.91%	1.37%	4.63%	6.95%
30	3.79%	5.69%	0.93%	1.40%	4.72%	7.09%
31	3.87%	5.80%	0.95%	1.42%	4.82%	7.22%
32	3.94%	5.91%	0.97%	1.45%	4.91%	7.36%
33	4.01%	6.02%	0.99%	1.48%	5.00%	7.50%
34	4.09%	6.13%	1.00%	1.50%	5.09%	7.63%
35	4.17%	6.25%	1.02%	1.53%	5.19%	7.78%
36	4.25%	6.37%	1.04%	1.56%	5.29%	7.93%
37	4.33%	6.49%	1.06%	1.59%	5.39%	8.08%
38	4.41%	6.61%	1.08%	1.62%	5.49%	8.23%
39	4.49%	6.73%	1.10%	1.65%	5.59%	8.38%

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

**Appendix A**

**Member Contribution Rates (Continued)**

**General Tier 2 Members' Contribution Rates Based on the December 31, 2017 Actuarial Valuation (as a % of payroll) - continued**

<u>Entry Age</u>	<u>Basic Only</u>		<u>COLA Only</u>		<u>Total</u>	
	<u>First \$161</u>	<u>Over \$161*</u>	<u>First \$161</u>	<u>Over \$161*</u>	<u>First \$161</u>	<u>Over \$161*</u>
40	4.57%	6.86%	1.12%	1.68%	5.69%	8.54%
41	4.66%	6.99%	1.15%	1.72%	5.81%	8.71%
42	4.75%	7.12%	1.17%	1.75%	5.92%	8.87%
43	4.84%	7.26%	1.19%	1.78%	6.03%	9.04%
44	4.93%	7.40%	1.21%	1.82%	6.14%	9.22%
45	5.03%	7.54%	1.23%	1.85%	6.26%	9.39%
46	5.13%	7.69%	1.26%	1.89%	6.39%	9.58%
47	5.23%	7.84%	1.28%	1.92%	6.51%	9.76%
48	5.33%	7.99%	1.31%	1.96%	6.64%	9.95%
49	5.42%	8.13%	1.33%	1.99%	6.75%	10.12%
50	5.51%	8.27%	1.35%	2.03%	6.86%	10.30%
51	5.59%	8.39%	1.37%	2.06%	6.96%	10.45%
52	5.67%	8.50%	1.39%	2.09%	7.06%	10.59%
53	5.73%	8.60%	1.41%	2.11%	7.14%	10.71%
54	5.79%	8.68%	1.42%	2.13%	7.21%	10.81%
55	5.81%	8.71%	1.43%	2.14%	7.24%	10.85%
56	5.78%	8.67%	1.42%	2.13%	7.20%	10.80%
57	5.72%	8.58%	1.40%	2.10%	7.12%	10.68%
58	5.91%	8.87%	1.45%	2.18%	7.36%	11.05%
59 & Over	6.12%	9.18%	1.50%	2.25%	7.62%	11.43%

\* Use these rates for Non-Integrated Members

Interest:	7.25% per annum
COLA:	2.00%
Mortality:	Headcount-Weighted RP-2014 (RPH-2014) Healthy Annuitant Mortality Tables, with no setback for males and females, projected 20 years with the two-dimensional mortality improvement Scale MP-2016, weighted 30% male and 70% female.
Salary Increase:	Inflation (3.00%) + Across-the-Board Increase (0.50%) + Merit (See Exhibit II)
COLA Loading Factor:	24.53%
Terminal Pay:	3.0%

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

**Appendix A**

**Member Contribution Rates (Continued)**

**General Tier 3 Members' Contribution Rates Based on the December 31, 2017 Actuarial Valuation (as a % of payroll)**

<u>Entry Age</u>	<u>Basic Only</u>		<u>COLA Only</u>		<u>Total</u>	
	<u>First \$161</u>	<u>Over \$161*</u>	<u>First \$161</u>	<u>Over \$161*</u>	<u>First \$161</u>	<u>Over \$161*</u>
15	4.40%	6.60%	1.73%	2.60%	6.13%	9.20%
16	4.40%	6.60%	1.73%	2.60%	6.13%	9.20%
17	4.49%	6.73%	1.77%	2.65%	6.26%	9.38%
18	4.58%	6.86%	1.80%	2.70%	6.38%	9.56%
19	4.67%	7.00%	1.83%	2.75%	6.50%	9.75%
20	4.76%	7.13%	1.87%	2.81%	6.63%	9.94%
21	4.85%	7.27%	1.91%	2.86%	6.76%	10.13%
22	4.94%	7.41%	1.95%	2.92%	6.89%	10.33%
23	5.03%	7.55%	1.98%	2.97%	7.01%	10.52%
24	5.13%	7.70%	2.02%	3.03%	7.15%	10.73%
25	5.23%	7.84%	2.06%	3.09%	7.29%	10.93%
26	5.33%	7.99%	2.09%	3.14%	7.42%	11.13%
27	5.43%	8.14%	2.13%	3.20%	7.56%	11.34%
28	5.53%	8.30%	2.17%	3.26%	7.70%	11.56%
29	5.64%	8.46%	2.22%	3.33%	7.86%	11.79%
30	5.74%	8.62%	2.26%	3.39%	8.00%	12.01%
31	5.85%	8.78%	2.30%	3.45%	8.15%	12.23%
32	5.96%	8.94%	2.35%	3.52%	8.31%	12.46%
33	6.07%	9.11%	2.39%	3.58%	8.46%	12.69%
34	6.19%	9.28%	2.43%	3.65%	8.62%	12.93%
35	6.31%	9.46%	2.48%	3.72%	8.79%	13.18%
36	6.43%	9.64%	2.53%	3.79%	8.96%	13.43%
37	6.55%	9.82%	2.57%	3.86%	9.12%	13.68%
38	6.67%	10.01%	2.63%	3.94%	9.30%	13.95%
39	6.80%	10.20%	2.67%	4.01%	9.47%	14.21%

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

**Appendix A**

**Member Contribution Rates (Continued)**

**General Tier 3 Members' Contribution Rates Based on the December 31, 2017 Actuarial Valuation (as a % of payroll) – continued**

<u>Entry Age</u>	<u>Basic Only</u>		<u>COLA Only</u>		<u>Total</u>	
	<u>First \$161</u>	<u>Over \$161*</u>	<u>First \$161</u>	<u>Over \$161*</u>	<u>First \$161</u>	<u>Over \$161*</u>
40	6.93%	10.40%	2.73%	4.09%	9.66%	14.49%
41	7.07%	10.61%	2.78%	4.17%	9.85%	14.78%
42	7.21%	10.82%	2.84%	4.26%	10.05%	15.08%
43	7.36%	11.04%	2.89%	4.34%	10.25%	15.38%
44	7.50%	11.26%	2.95%	4.43%	10.45%	15.69%
45	7.64%	11.46%	3.01%	4.51%	10.65%	15.97%
46	7.78%	11.66%	3.06%	4.59%	10.84%	16.25%
47	7.90%	11.85%	3.11%	4.66%	11.01%	16.51%
48	8.01%	12.01%	3.15%	4.72%	11.16%	16.73%
49	8.11%	12.17%	3.19%	4.79%	11.30%	16.96%
50	8.20%	12.30%	3.23%	4.84%	11.43%	17.14%
51	8.27%	12.40%	3.25%	4.88%	11.52%	17.28%
52	8.22%	12.33%	3.23%	4.85%	11.45%	17.18%
53	8.08%	12.12%	3.18%	4.77%	11.26%	16.89%
54 & over	7.74%	11.61%	3.05%	4.57%	10.79%	16.18%

\* Use these rates for Non-Integrated Members

Interest:	7.25% per annum
COLA:	3.00%
Mortality:	Headcount-Weighted RP-2014 (RPH-2014) Healthy Annuitant Mortality Tables, with no setback for males and females, projected 20 years with the two-dimensional mortality improvement Scale MP-2016, weighted 30% male and 70% female.
Salary Increase:	Inflation (3.00%) + Across-the-Board Increase (0.50%) + Merit (See Exhibit II)
COLA Loading Factor:	39.34%
Terminal Pay:	8.0%



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

**Appendix A  
Member Contribution Rates (Continued)**

**General Tier 4 Members' Contribution Rates Based on the December 31, 2017 Actuarial Valuation (as a % of eligible payroll)\***

	Basic Only	COLA Only	Total
	<u>Eligible Pay</u>	<u>Eligible Pay</u>	<u>Eligible Pay</u>
All General Tier 4 Members	7.13%	1.63%	8.76%

Interest:	7.25% per annum
COLA:	2.00%
Mortality:	Headcount-Weighted RP-2014 (RPH-2014) Healthy Annuitant Mortality Tables, with no setback for males and females, projected 20 years with the two-dimensional mortality improvement Scale MP-2016, weighted 30% male and 70% female.
Salary Increase:	Inflation (3.00%) + Across-the-Board Increase (0.50%) + Merit (See Exhibit II)
COLA Loading Factor:	22.86%
Terminal Pay:	0.0%

\* It is our understanding that in the determination of pension benefits under the CalPEPRA formulas, the compensation that can be taken into account for 2018 is equal to \$121,388. (For an employer that is not enrolled in Social Security, the maximum amount is 120% of \$121,388, or \$145,666). (reference: Section 7522.10). These amounts should be adjusted for changes to the Consumer Price Index for All Urban Consumers after 2018. (reference: Section 7522.10(d))

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

**Appendix A**

**Member Contribution Rates (Continued)**

Safety Tier 1 Members' Contribution Rates Based on the December 31, 2017 Actuarial Valuation (as a % of payroll)

Entry Age	Basic Only		Cost Sharing Contributions		COLA Only		Total	
	First \$161	Over \$161*	First \$161	Over \$161*	First \$161	Over \$161*	First \$161	Over \$161*
15	5.40%	8.11%	3.00%	3.00%	3.28%	4.92%	11.68%	16.03%
16	5.40%	8.11%	3.00%	3.00%	3.28%	4.92%	11.68%	16.03%
17	5.49%	8.24%	3.00%	3.00%	3.33%	5.00%	11.82%	16.24%
18	5.59%	8.38%	3.00%	3.00%	3.39%	5.09%	11.98%	16.47%
19	5.68%	8.52%	3.00%	3.00%	3.45%	5.17%	12.13%	16.69%
20	5.77%	8.66%	3.00%	3.00%	3.51%	5.26%	12.28%	16.92%
21	5.87%	8.81%	3.00%	3.00%	3.56%	5.34%	12.43%	17.15%
22	5.97%	8.95%	3.00%	3.00%	3.62%	5.43%	12.59%	17.38%
23	6.07%	9.10%	3.00%	3.00%	3.68%	5.52%	12.75%	17.62%
24	6.17%	9.25%	3.00%	3.00%	3.75%	5.62%	12.92%	17.87%
25	6.27%	9.41%	3.00%	3.00%	3.81%	5.71%	13.08%	18.12%
26	6.38%	9.57%	3.00%	3.00%	3.87%	5.81%	13.25%	18.38%
27	6.48%	9.73%	3.00%	3.00%	3.93%	5.90%	13.41%	18.63%
28	6.59%	9.89%	3.00%	3.00%	4.00%	6.00%	13.59%	18.89%
29	6.70%	10.05%	3.00%	3.00%	4.07%	6.10%	13.77%	19.15%
30	6.82%	10.22%	3.00%	3.00%	4.14%	6.21%	13.96%	19.43%
31	6.93%	10.40%	3.00%	3.00%	4.21%	6.31%	14.14%	19.71%
32	7.05%	10.58%	3.00%	3.00%	4.28%	6.42%	14.33%	20.00%
33	7.17%	10.76%	3.00%	3.00%	4.35%	6.53%	14.52%	20.29%
34	7.30%	10.95%	3.00%	3.00%	4.43%	6.64%	14.73%	20.59%
35	7.43%	11.14%	3.00%	3.00%	4.51%	6.76%	14.94%	20.90%
36	7.56%	11.34%	3.00%	3.00%	4.59%	6.88%	15.15%	21.22%
37	7.70%	11.55%	3.00%	3.00%	4.67%	7.01%	15.37%	21.56%
38	7.85%	11.77%	3.00%	3.00%	4.77%	7.15%	15.62%	21.92%
39	8.01%	12.01%	3.00%	3.00%	4.86%	7.29%	15.87%	22.30%

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

**Appendix A  
Member Contribution Rates (Continued)**

**Safety Tier 1 Members' Contribution Rates Based on the December 31, 2017 Actuarial Valuation (as a % of payroll) - continued**

Entry Age	Basic Only		Cost Sharing Contributions		COLA Only		Total	
	First \$161	Over \$161*	First \$161	Over \$161*	First \$161	Over \$161*	First \$161	Over \$161*
40	8.16%	12.25%	3.00%	3.00%	4.95%	7.43%	16.11%	22.68%
41	8.33%	12.49%	3.00%	3.00%	5.05%	7.58%	16.38%	23.07%
42	8.51%	12.76%	3.00%	3.00%	5.17%	7.75%	16.68%	23.51%
43	8.67%	13.00%	3.00%	3.00%	5.26%	7.89%	16.93%	23.89%
44	8.79%	13.19%	3.00%	3.00%	5.33%	8.00%	17.12%	24.19%
45	8.85%	13.27%	3.00%	3.00%	5.37%	8.05%	17.22%	24.32%
46	8.86%	13.28%	3.00%	3.00%	5.37%	8.06%	17.23%	24.34%
47	8.68%	13.02%	3.00%	3.00%	5.27%	7.90%	16.95%	23.92%
48	8.41%	12.62%	3.00%	3.00%	5.11%	7.66%	16.52%	23.28%
49 & Over	7.94%	11.91%	3.00%	3.00%	4.82%	7.23%	15.76%	22.14%

\* Use these rates for Non-Integrated Members

Interest:	7.25% per annum
COLA:	3.00%
Mortality:	Headcount-Weighted RP-2014 (RPH-2014) Healthy Annuitant Mortality Tables, with no setback for males and females, projected 20 years with the two-dimensional mortality improvement Scale MP-2016, weighted 75% male and 25% female.
Salary Increase:	Inflation (3.00%) + Across-the-Board Increase (0.50%) + Merit (See Exhibit II)
COLA Loading Factor:	60.69%
Terminal Pay:	8.5%

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

**Appendix A**

**Member Contribution Rates (Continued)**

Safety Tier 2 Members' Contribution Rates Based on the December 31, 2017 Actuarial Valuation (as a % of payroll)

Entry Age	Basic Only		Cost Sharing Contributions		COLA Only		Total	
	First \$161	Over \$161*	First \$161	Over \$161*	First \$161	Over \$161*	First \$161	Over \$161*
15	4.94%	7.42%	3.00%	3.00%	2.03%	3.04%	9.97%	13.46%
16	4.94%	7.42%	3.00%	3.00%	2.03%	3.04%	9.97%	13.46%
17	5.03%	7.54%	3.00%	3.00%	2.06%	3.09%	10.09%	13.63%
18	5.11%	7.67%	3.00%	3.00%	2.09%	3.14%	10.20%	13.81%
19	5.20%	7.79%	3.00%	3.00%	2.13%	3.19%	10.33%	13.98%
20	5.28%	7.92%	3.00%	3.00%	2.17%	3.25%	10.45%	14.17%
21	5.37%	8.05%	3.00%	3.00%	2.20%	3.30%	10.57%	14.35%
22	5.46%	8.19%	3.00%	3.00%	2.23%	3.35%	10.69%	14.54%
23	5.55%	8.32%	3.00%	3.00%	2.27%	3.41%	10.82%	14.73%
24	5.64%	8.46%	3.00%	3.00%	2.31%	3.47%	10.95%	14.93%
25	5.74%	8.60%	3.00%	3.00%	2.35%	3.53%	11.09%	15.13%
26	5.83%	8.75%	3.00%	3.00%	2.39%	3.58%	11.22%	15.33%
27	5.93%	8.89%	3.00%	3.00%	2.43%	3.64%	11.36%	15.53%
28	6.03%	9.04%	3.00%	3.00%	2.47%	3.70%	11.50%	15.74%
29	6.13%	9.19%	3.00%	3.00%	2.51%	3.77%	11.64%	15.96%
30	6.23%	9.35%	3.00%	3.00%	2.55%	3.83%	11.78%	16.18%
31	6.34%	9.51%	3.00%	3.00%	2.59%	3.89%	11.93%	16.40%
32	6.45%	9.67%	3.00%	3.00%	2.64%	3.96%	12.09%	16.63%
33	6.56%	9.83%	3.00%	3.00%	2.69%	4.03%	12.25%	16.86%
34	6.67%	10.01%	3.00%	3.00%	2.73%	4.10%	12.40%	17.11%
35	6.79%	10.18%	3.00%	3.00%	2.78%	4.17%	12.57%	17.35%
36	6.91%	10.37%	3.00%	3.00%	2.83%	4.25%	12.74%	17.62%
37	7.04%	10.56%	3.00%	3.00%	2.88%	4.32%	12.92%	17.88%
38	7.17%	10.75%	3.00%	3.00%	2.94%	4.41%	13.11%	18.16%
39	7.30%	10.95%	3.00%	3.00%	2.99%	4.49%	13.29%	18.44%

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

**Appendix A  
Member Contribution Rates (Continued)**

**Safety Tier 2 Members' Contribution Rates Based on the December 31, 2017 Actuarial Valuation (as a % of payroll) - continued**

Entry Age	Basic Only		Cost Sharing Contributions		COLA Only		Total	
	First \$161	Over \$161*	First \$161	Over \$161*	First \$161	Over \$161*	First \$161	Over \$161*
40	7.44%	11.16%	3.00%	3.00%	3.05%	4.57%	13.49%	18.73%
41	7.58%	11.36%	3.00%	3.00%	3.11%	4.66%	13.69%	19.02%
42	7.69%	11.54%	3.00%	3.00%	3.15%	4.73%	13.84%	19.27%
43	7.77%	11.66%	3.00%	3.00%	3.19%	4.78%	13.96%	19.44%
44	7.80%	11.70%	3.00%	3.00%	3.20%	4.80%	14.00%	19.50%
45	7.75%	11.63%	3.00%	3.00%	3.17%	4.76%	13.92%	19.39%
46	7.62%	11.43%	3.00%	3.00%	3.12%	4.68%	13.74%	19.11%
47	7.43%	11.14%	3.00%	3.00%	3.05%	4.57%	13.48%	18.71%
48	7.68%	11.52%	3.00%	3.00%	3.15%	4.72%	13.83%	19.24%
49 & Over	7.94%	11.91%	3.00%	3.00%	3.25%	4.88%	14.19%	19.79%

\*Use these rates for Non-Integrated Members

Interest: 7.25% per annum  
 COLA: 2.00%  
 Mortality: Headcount-Weighted RP-2014 (RPH-2014) Healthy Annuitant Mortality Tables, with no setback for males and females, projected 20 years with the two-dimensional mortality improvement Scale MP-2016, weighted 75% male and 25% female.  
 Salary Increase: Inflation (3.00%) + Across-the-Board Increase (0.50%) + Merit (See Exhibit II)  
 COLA Loading Factor: 40.97%  
 Terminal Pay: 3.5%

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

**Appendix A**

**Member Contribution Rates (Continued)**

**Safety Tier 2C Members' Contribution Rates Based on the December 31, 2017 Actuarial Valuation (as a % of payroll)**

<u>Entry Age</u>	<u>Basic Only</u>		<u>COLA Only</u>		<u>Total</u>	
	<u>First \$161</u>	<u>Over \$161*</u>	<u>First \$161</u>	<u>Over \$161*</u>	<u>First \$161</u>	<u>Over \$161*</u>
15	4.94%	7.42%	1.72%	2.58%	6.66%	10.00%
16	4.94%	7.42%	1.72%	2.58%	6.66%	10.00%
17	5.03%	7.54%	1.75%	2.62%	6.78%	10.16%
18	5.11%	7.67%	1.77%	2.66%	6.88%	10.33%
19	5.20%	7.79%	1.81%	2.71%	7.01%	10.50%
20	5.28%	7.92%	1.83%	2.75%	7.11%	10.67%
21	5.37%	8.05%	1.87%	2.80%	7.24%	10.85%
22	5.46%	8.19%	1.90%	2.85%	7.36%	11.04%
23	5.55%	8.32%	1.93%	2.89%	7.48%	11.21%
24	5.64%	8.46%	1.96%	2.94%	7.60%	11.40%
25	5.74%	8.60%	1.99%	2.99%	7.73%	11.59%
26	5.83%	8.75%	2.03%	3.04%	7.86%	11.79%
27	5.93%	8.89%	2.06%	3.09%	7.99%	11.98%
28	6.03%	9.04%	2.09%	3.14%	8.12%	12.18%
29	6.13%	9.19%	2.13%	3.19%	8.26%	12.38%
30	6.23%	9.35%	2.17%	3.25%	8.40%	12.60%
31	6.34%	9.51%	2.20%	3.30%	8.54%	12.81%
32	6.45%	9.67%	2.24%	3.36%	8.69%	13.03%
33	6.56%	9.83%	2.28%	3.42%	8.84%	13.25%
34	6.67%	10.01%	2.32%	3.48%	8.99%	13.49%
35	6.79%	10.18%	2.36%	3.54%	9.15%	13.72%
36	6.91%	10.37%	2.40%	3.60%	9.31%	13.97%
37	7.04%	10.56%	2.45%	3.67%	9.49%	14.23%
38	7.17%	10.75%	2.49%	3.74%	9.66%	14.49%
39	7.30%	10.95%	2.54%	3.81%	9.84%	14.76%

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

**Appendix A  
Member Contribution Rates (Continued)**

**Safety Tier 2C Members' Contribution Rates Based on the December 31, 2017 Actuarial Valuation (as a % of payroll) - continued**

<u>Entry Age</u>	<u>Basic Only</u>		<u>COLA Only</u>		<u>Total</u>	
	<u>First \$161</u>	<u>Over \$161*</u>	<u>First \$161</u>	<u>Over \$161*</u>	<u>First \$161</u>	<u>Over \$161*</u>
40	7.44%	11.16%	2.59%	3.88%	10.03%	15.04%
41	7.58%	11.36%	2.63%	3.95%	10.21%	15.31%
42	7.69%	11.54%	2.67%	4.01%	10.36%	15.55%
43	7.77%	11.66%	2.70%	4.05%	10.47%	15.71%
44	7.80%	11.70%	2.71%	4.07%	10.51%	15.77%
45	7.75%	11.63%	2.69%	4.04%	10.44%	15.67%
46	7.62%	11.43%	2.65%	3.97%	10.27%	15.40%
47	7.43%	11.14%	2.58%	3.87%	10.01%	15.01%
48	7.68%	11.52%	2.67%	4.00%	10.35%	15.52%
49 & Over	7.94%	11.91%	2.76%	4.14%	10.70%	16.05%

\* Use these rates for Non-Integrated Members

Interest:	7.25% per annum
COLA:	2.00%
Mortality:	Headcount-Weighted RP-2014 (RPH-2014) Healthy Annuitant Mortality Tables, with no setback for males and females, projected 20 years with the two-dimensional mortality improvement Scale MP-2016, weighted 75% male and 25% female.
Salary Increase:	Inflation (3.00%) + Across-the-Board Increase (0.50%) + Merit (See Exhibit II)
COLA Loading Factor:	34.75%
Terminal Pay:	3.5%

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

**Appendix A**

**Member Contribution Rates (Continued)**

**Safety Tier 2D Members' Contribution Rates for Members with Less than 5 Years of Vesting Service Based on the December 31, 2017 Actuarial Valuation**

(as a % of payroll)

Entry Age	Basic Only		Cost Sharing Contributions**		COLA Only		Total	
	First \$161	Over \$161*	First \$161	Over \$161*	First \$161	Over \$161*	First \$161	Over \$161*
15	4.94%	7.42%	5.00%	5.00%	1.92%	2.88%	11.86%	15.30%
16	4.94%	7.42%	5.00%	5.00%	1.92%	2.88%	11.86%	15.30%
17	5.03%	7.54%	5.00%	5.00%	1.95%	2.93%	11.98%	15.47%
18	5.11%	7.67%	5.00%	5.00%	1.99%	2.98%	12.10%	15.65%
19	5.20%	7.79%	5.00%	5.00%	2.02%	3.03%	12.22%	15.82%
20	5.28%	7.92%	5.00%	5.00%	2.05%	3.08%	12.33%	16.00%
21	5.37%	8.05%	5.00%	5.00%	2.09%	3.13%	12.46%	16.18%
22	5.46%	8.19%	5.00%	5.00%	2.12%	3.18%	12.58%	16.37%
23	5.55%	8.32%	5.00%	5.00%	2.16%	3.24%	12.71%	16.56%
24	5.64%	8.46%	5.00%	5.00%	2.19%	3.29%	12.83%	16.75%
25	5.74%	8.60%	5.00%	5.00%	2.23%	3.34%	12.97%	16.94%
26	5.83%	8.75%	5.00%	5.00%	2.27%	3.40%	13.10%	17.15%
27	5.93%	8.89%	5.00%	5.00%	2.31%	3.46%	13.24%	17.35%
28	6.03%	9.04%	5.00%	5.00%	2.34%	3.51%	13.37%	17.55%
29	6.13%	9.19%	5.00%	5.00%	2.38%	3.57%	13.51%	17.76%
30	6.23%	9.35%	5.00%	5.00%	2.42%	3.63%	13.65%	17.98%
31	6.34%	9.51%	5.00%	5.00%	2.47%	3.70%	13.81%	18.21%
32	6.45%	9.67%	5.00%	5.00%	2.51%	3.76%	13.96%	18.43%
33	6.56%	9.83%	5.00%	5.00%	2.55%	3.82%	14.11%	18.65%
34	6.67%	10.01%	5.00%	5.00%	2.59%	3.89%	14.26%	18.90%
35	6.79%	10.18%	5.00%	5.00%	2.64%	3.96%	14.43%	19.14%
36	6.91%	10.37%	5.00%	5.00%	2.69%	4.03%	14.60%	19.40%
37	7.04%	10.56%	5.00%	5.00%	2.73%	4.10%	14.77%	19.66%
38	7.17%	10.75%	5.00%	5.00%	2.79%	4.18%	14.96%	19.93%
39	7.30%	10.95%	5.00%	5.00%	2.84%	4.26%	15.14%	20.21%



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

**Appendix A**

**Member Contribution Rates (Continued)**

**Safety Tier 2D Members' Contribution Rates for Members with Less than 5 Years of Vesting Service Based on the December 31, 2017 Actuarial Valuation - continued**

(as a % of payroll)

Entry Age	Basic Only		Cost Sharing Contributions**		COLA Only		Total	
	First \$161	Over \$161*	First \$161	Over \$161*	First \$161	Over \$161*	First \$161	Over \$161*
40	7.44%	11.16%	5.00%	5.00%	2.89%	4.34%	15.33%	20.50%
41	7.58%	11.36%	5.00%	5.00%	2.95%	4.42%	15.53%	20.78%
42	7.69%	11.54%	5.00%	5.00%	2.99%	4.49%	15.68%	21.03%
43	7.77%	11.66%	5.00%	5.00%	3.02%	4.53%	15.79%	21.19%
44	7.80%	11.70%	5.00%	5.00%	3.03%	4.55%	15.83%	21.25%
45	7.75%	11.63%	5.00%	5.00%	3.01%	4.52%	15.76%	21.15%
46	7.62%	11.43%	5.00%	5.00%	2.96%	4.44%	15.58%	20.87%
47	7.43%	11.14%	5.00%	5.00%	2.89%	4.33%	15.32%	20.47%
48	7.68%	11.52%	5.00%	5.00%	2.99%	4.48%	15.67%	21.00%
49 & Over	7.94%	11.91%	5.00%	5.00%	3.09%	4.63%	16.03%	21.54%

\* Use these rates for Non-Integrated Members

\*\* The 5.00% cost sharing contribution is reduced to 3.00% for members with at least 5 years of vesting service.

Interest:	7.25% per annum
COLA:	2.00%
Mortality:	Headcount-Weighted RP-2014 (RPH-2014) Healthy Annuitant Mortality Tables, with no setback for males and females, projected 20 years with the two-dimensional mortality improvement Scale MP-2016, weighted 75% male and 25% female.
Salary Increase:	Inflation (3.00%) + Across-the-Board Increase (0.50%) + Merit (See Exhibit II)
COLA Loading Factor:	38.87%
Terminal Pay:	3.5%

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

**Appendix A  
Member Contribution Rates (Continued)**

**Safety Tier 2D Members' Contribution Rates for Members with 5 or More Years of Vesting Service Based on the December 31, 2017 Actuarial Valuation**

(as a % of payroll)

Entry Age	Basic Only		Cost Sharing Contributions		COLA Only		Total	
	First \$161	Over \$161*	First \$161	Over \$161*	First \$161	Over \$161*	First \$161	Over \$161*
15	4.94%	7.42%	3.00%	3.00%	1.92%	2.88%	9.86%	13.30%
16	4.94%	7.42%	3.00%	3.00%	1.92%	2.88%	9.86%	13.30%
17	5.03%	7.54%	3.00%	3.00%	1.95%	2.93%	9.98%	13.47%
18	5.11%	7.67%	3.00%	3.00%	1.99%	2.98%	10.10%	13.65%
19	5.20%	7.79%	3.00%	3.00%	2.02%	3.03%	10.22%	13.82%
20	5.28%	7.92%	3.00%	3.00%	2.05%	3.08%	10.33%	14.00%
21	5.37%	8.05%	3.00%	3.00%	2.09%	3.13%	10.46%	14.18%
22	5.46%	8.19%	3.00%	3.00%	2.12%	3.18%	10.58%	14.37%
23	5.55%	8.32%	3.00%	3.00%	2.16%	3.24%	10.71%	14.56%
24	5.64%	8.46%	3.00%	3.00%	2.19%	3.29%	10.83%	14.75%
25	5.74%	8.60%	3.00%	3.00%	2.23%	3.34%	10.97%	14.94%
26	5.83%	8.75%	3.00%	3.00%	2.27%	3.40%	11.10%	15.15%
27	5.93%	8.89%	3.00%	3.00%	2.31%	3.46%	11.24%	15.35%
28	6.03%	9.04%	3.00%	3.00%	2.34%	3.51%	11.37%	15.55%
29	6.13%	9.19%	3.00%	3.00%	2.38%	3.57%	11.51%	15.76%
30	6.23%	9.35%	3.00%	3.00%	2.42%	3.63%	11.65%	15.98%
31	6.34%	9.51%	3.00%	3.00%	2.47%	3.70%	11.81%	16.21%
32	6.45%	9.67%	3.00%	3.00%	2.51%	3.76%	11.96%	16.43%
33	6.56%	9.83%	3.00%	3.00%	2.55%	3.82%	12.11%	16.65%
34	6.67%	10.01%	3.00%	3.00%	2.59%	3.89%	12.26%	16.90%
35	6.79%	10.18%	3.00%	3.00%	2.64%	3.96%	12.43%	17.14%
36	6.91%	10.37%	3.00%	3.00%	2.69%	4.03%	12.60%	17.40%
37	7.04%	10.56%	3.00%	3.00%	2.73%	4.10%	12.77%	17.66%
38	7.17%	10.75%	3.00%	3.00%	2.79%	4.18%	12.96%	17.93%
39	7.30%	10.95%	3.00%	3.00%	2.84%	4.26%	13.14%	18.21%

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

**Appendix A**

**Member Contribution Rates (Continued)**

**Safety Tier 2D Members' Contribution Rates for Members with 5 or More Years of Vesting Service Based on the December 31, 2017 Actuarial Valuation – continued**

(as a % of payroll)

Entry Age	Basic Only		Cost Sharing Contributions		COLA Only		Total	
	First \$161	Over \$161*	First \$161	Over \$161*	First \$161	Over \$161*	First \$161	Over \$161*
40	7.44%	11.16%	3.00%	3.00%	2.89%	4.34%	13.33%	18.50%
41	7.58%	11.36%	3.00%	3.00%	2.95%	4.42%	13.53%	18.78%
42	7.69%	11.54%	3.00%	3.00%	2.99%	4.49%	13.68%	19.03%
43	7.77%	11.66%	3.00%	3.00%	3.02%	4.53%	13.79%	19.19%
44	7.80%	11.70%	3.00%	3.00%	3.03%	4.55%	13.83%	19.25%
45	7.75%	11.63%	3.00%	3.00%	3.01%	4.52%	13.76%	19.15%
46	7.62%	11.43%	3.00%	3.00%	2.96%	4.44%	13.58%	18.87%
47	7.43%	11.14%	3.00%	3.00%	2.89%	4.33%	13.32%	18.47%
48	7.68%	11.52%	3.00%	3.00%	2.99%	4.48%	13.67%	19.00%
49 & Over	7.94%	11.91%	3.00%	3.00%	3.09%	4.63%	14.03%	19.54%

\* Use these rates for Non-Integrated Members

Interest:	7.25% per annum
COLA:	2.00%
Mortality:	Headcount-Weighted RP-2014 (RPH-2014) Healthy Annuitant Mortality Tables, with no setback for males and females, projected 20 years with the two-dimensional mortality improvement Scale MP-2016, weighted 75% male and 25% female.
Salary Increase:	Inflation (3.00%) + Across-the-Board Increase (0.50%) + Merit (See Exhibit II)
COLA Loading Factor:	38.87%
Terminal Pay:	3.5%

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

**Appendix A  
Member Contribution Rates (Continued)**

**Safety Tier 4 Members' Contribution Rates Based on the December 31, 2017 Actuarial Valuation (as a % of eligible payroll)\***

	Basic Only	COLA Only	Total
	<u>Eligible Pay</u>	<u>Eligible Pay</u>	<u>Eligible Pay</u>
All Safety Tier 4 Members	12.39%	3.36%	15.75%

Interest:	7.25% per annum
COLA:	2.00%
Mortality:	Headcount-Weighted RP-2014 (RPH-2014) Healthy Annuitant Mortality Tables, with no setback for males and females, projected 20 years with the two-dimensional mortality improvement Scale MP-2016, weighted 75% male and 25% female.
Salary Increase:	Inflation (3.00%) + Across-the-Board Increase (0.50%) + Merit (See Exhibit II)
COLA Loading Factor:	27.12%
Terminal Pay:	0.0%

\* It is our understanding that in the determination of pension benefits under the CalPEPRA formulas, the compensation that can be taken into account for 2018 is equal to \$121,388. (For an employer that is not enrolled in Social Security, the maximum amount is 120% of \$121,388, or \$145,666). (reference: Section 7522.10). These amounts should be adjusted for changes to the Consumer Price Index for All Urban Consumers after 2018. (reference: Section 7522.10(d))

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

**Appendix B  
Projected Employer Contributions By Each Participating Employer**

Estimated Employer Contribution Requirement for Each Participating Employer in ACERA (\$000s)  
Calculated Based on Projected Employer Compensation Used in the December 31, 2017 Actuarial Valuation

Dollar Contribution<sup>(1)</sup> - Based on December 31, 2017 Valuation

<u>Employer Name (Code)</u>	<u>General</u>				<u>Safety</u>					<u>Total</u>
	<u>Tier 1</u>	<u>Tier 2</u>	<u>Tier 3</u>	<u>Tier 4</u>	<u>Tier 1</u>	<u>Tier 2</u>	<u>Tier 2C</u>	<u>Tier 2D</u>	<u>Tier 4</u>	
Alameda County (101)	\$2,294	\$86,959		\$31,016	\$801	\$75,982	\$1,882	\$7,886	\$17,247	\$224,067
Health System (106)	346	38,563		18,828						57,737
Superior Court (32)	321	7,980		2,230						10,531
First 5 (714)		763		391						1,154
Housing Authority (103)	990	100		168						1,258
LARPD (104)	181		\$661	342						1,184
Office of Education (105)										0
<b>Total</b>	<b>\$4,132</b>	<b>\$134,365</b>	<b>\$661</b>	<b>\$52,975</b>	<b>\$801</b>	<b>\$75,982</b>	<b>\$1,882</b>	<b>\$7,886</b>	<b>\$17,247</b>	<b>\$295,931</b>

Dollar Contribution<sup>(1)</sup> - Based on December 31, 2016 Valuation

<u>Employer Name (Code)</u>	<u>General</u>				<u>Safety</u>					<u>Total</u>
	<u>Tier 1</u>	<u>Tier 2</u>	<u>Tier 3</u>	<u>Tier 4</u>	<u>Tier 1</u>	<u>Tier 2</u>	<u>Tier 2C</u>	<u>Tier 2D</u>	<u>Tier 4</u>	
Alameda County (101)	\$2,067	\$78,091		\$27,647	\$717	\$66,123	\$1,645	\$6,758	\$15,156	\$198,204
Health System (106)	312	34,676		16,812						51,800
Superior Court (632)	290	7,176		1,991						9,457
First 5 (714)		687		349						1,036
Housing Authority (103)	916	93		155						1,164
LARPD (104)	168		\$586	292						1,046
Office of Education (105)										0
<b>Total</b>	<b>\$3,753</b>	<b>\$120,723</b>	<b>\$586</b>	<b>\$47,246</b>	<b>\$717</b>	<b>\$66,123</b>	<b>\$1,645</b>	<b>\$6,758</b>	<b>\$15,156</b>	<b>\$262,707</b>

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

<sup>(1)</sup> Contribution calculated using projected compensation provided below for the December 31, 2017 valuation:

December 31, 2017 Projected Total Compensation (\$000s)

<u>Employer Name (Code)</u>	<u>General</u>				<u>Safety</u>					<u>Total</u>
	<u>Tier 1</u>	<u>Tier 2</u>	<u>Tier 3</u>	<u>Tier 4</u>	<u>Tier 1</u>	<u>Tier 2</u>	<u>Tier 2C</u>	<u>Tier 2D</u>	<u>Tier 4</u>	
Alameda County (101)	\$10,285	\$403,151		\$148,404	\$1,050	\$124,173	\$3,010	\$13,223	\$29,776	\$733,072
Health System (106)	1,496	172,692		86,929						261,117
Superior Court (632)	1,394	35,738		10,295						47,427
First 5 (714)		3,419		1,803						5,222
Housing Authority (103)	3,497	364		624						4,485
LARPD (104)	640		\$2,219	1,479						4,338
Office of Education (105)										0
<b>Total</b>	<b>\$17,312</b>	<b>\$615,364</b>	<b>\$2,219</b>	<b>\$249,534</b>	<b>\$1,050</b>	<b>\$124,173</b>	<b>\$3,010</b>	<b>\$13,223</b>	<b>\$29,776</b>	<b>\$1,055,661</b>

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

**Appendix C**

**Schedule of Outstanding Balances of Prior Implicit Retiree Health Benefit Subsidy Transfers (Dollar Amounts in Thousands)**

<b>For Year(s)</b>	<b>Initial Years</b>	<b>Initial Amount*</b>	<b>Outstanding Balance</b>	<b>Years Remaining</b>	<b>Annual Payment**</b>
Prior to 2013	***	***	\$35,265	15	\$3,096
2013	20	6,993	6,859	16	574
2014	20	5,215	5,102	17	408
2015	20	5,325	5,254	18	403
2016	20	8,865	8,867	19	655
2017	20	5,830	<u>5,830</u>	20	<u>416</u>
Total			\$67,177		\$5,552

\* For years 2013 and later, these amounts are estimates provided by ACERA.

\*\* Level percentage of payroll.

\*\*\* Various initial years and amounts prior to 2013.

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