Sonoma County Employees' Retirement Association

Actuarial Valuation and Review as of December 31, 2017

Segal Consulting

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.

Segal Consulting
100 Montgomery Street, Suite 500 San Francisco, CA 94104
T 415.263.8200 www.segalco.com

April 20, 2018

Board of Retirement
Sonoma County Employees' Retirement Association
433 Aviation Boulevard, Suite 100
Santa Rosa, CA 95403

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 the fiscal year beginning July 1, 2019 and analyzes the preceding year's experience.

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

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

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

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

Sincerely,

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

By:

Paul Angelo, FSA, MAAA, FCA, EA	*Andy Yeung, ASA, MAAA, FCA, EA*	*Molly Calcagno, ASA, MAAA*
Senior Vice President and Actuary	*Vice President and Actuary*	*Assistant Actuary*

MAM/bqb

SECTION 1

VALUATION SUMMARY

SECTION 2

VALUATION RESULTS

SECTION 3

SUPPLEMENTAL INFORMATION

SECTION 4

REPORTING INFORMATION

Purpose

This report has been prepared by Segal Consulting (Segal) to present a valuation of the Sonoma 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, inactive vested members, retired members and beneficiaries as of December 31, 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.

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 reasonably consistent, both internally and with prior years' information.

Reference: Pg. 72

The contribution requirements are determined as a percentage of payroll. The Association's employer rates provide for both normal cost and a contribution to amortize any unfunded or overfunded actuarial accrued liabilities. Consistent with previous valuations, we have applied the funding policy adopted by the Board to amortize the Association's outstanding balance of the December 31, 2007 unfunded actuarial accrued liability (UAAL) as well as any new UAAL established on each subsequent actuarial valuation after the December 31, 2007 valuation over separate 20-year declining periods.

The rates calculated in this report may be adopted by the Board for the fiscal year that extends from July 1, 2019 through June 30, 2020.

Significant Issues in Valuation Year

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

- Active members represented by some of the bargaining groups have agreed to pay additional employee normal cost contributions that are above those determined under the County Employees Retirement Law of 1937 (CERL), as permitted under the California Public Employees' Pension Reform Act of 2013 (CalPEPRA). As the specific amount of those higher contributions (some of which were paid starting in the 2016/2017 fiscal year) are dependent on the specific bargaining agreements, we have continued to include in this report only the minimum member contribution rates specified in the CERL. The final member rates adjusted to include the additional employee normal cost contributions will be provided in side letters based on the terms of the bargaining agreements.

Reference: Pg. 21
Reference: Pg. 36
Reference: Pgs. 68-72
Reference: Pgs. 73-74

- The ratio of the valuation value of assets to actuarial accrued liabilities increased from 85.5% to 87.7%. The funded ratio measured on a market value basis increased from 86.0% to 94.2%. The Association's UAAL decreased from $408.2 million as of December 31, 2016 to $359.6 million as of December 31, 2017. The decrease in UAAL is primarily due to investment return (after "smoothing") higher than the 7.25% return assumption used in the December 31, 2016 valuation. A complete reconciliation of the Association's UAAL is provided in Section 3, Exhibit H. A schedule of the current UAAL amortization amounts is provided in Section 4, Appendix D. Note that a graphical projection of the UAAL amortization bases and payments has been provided as a new Appendix E in Section 4.

Reference: Pg. 18

- The average employer contribution rate calculated in this valuation decreased from 19.85% of payroll to 19.00% of payroll. This change was due to: (i) investment return (after "smoothing") higher than the 7.25% return assumption used in the December 31, 2016 valuation, (ii) demographic changes, (iii) higher than expected increase in total payroll, and (iv) other experience gains, offset to some degree by (v) higher than expected individual salary increases and (vi) lower than expected contributions. A complete reconciliation of the Association's aggregate employer rate is provided in Section 2, Subsection D (see Chart 14).

Reference: Pg. 19

- The average member contribution rate calculated in this valuation decreased from 11.65% of payroll to 11.61% of payroll. This change was due to demographic changes. A complete reconciliation of the Association's average member rate is provided in Section 2, Subsection D (see Chart 15).

Reference: Pg. 6

- As indicated in Section 2, Subsection B (see Chart 7) of this report, the total unrecognized investment gain as of December 31, 2017 was $190.7 million (as compared to an unrecognized gain of $15.7 million in the December 31, 2016 valuation). This investment gain will be recognized in the determination of the actuarial value of assets for funding purposes over the next few years, and will offset a portion of any investment losses that may occur after December 31, 2017. This implies that earning the assumed rate of investment return of 7.25% per year (net of expenses) on a market value basis will result in investment gains on the actuarial value of assets in the next few years. Therefore, if the actual market return is equal to the assumed 7.25% rate and all other actuarial assumptions are met, the employer contribution requirements would generally decrease over the next few years. The potential impact associated with the deferred investment gains may be illustrated as follows:

- If the net deferred gains in this year's valuation were recognized immediately and entirely in the valuation value of assets, the funded ratio would increase from 87.7% to 94.2%.

  For comparison purposes, if all the net deferred gains in the December 31, 2016 valuation had been recognized immediately in the December 31, 2016 valuation, the funded ratio in last year's valuation would have increased from 85.5% to 86.0%.

- If the net deferred gains in this year's valuation were recognized immediately and entirely in the valuation value of assets, the aggregate employer contribution rate would decrease from 19.0% to 15.3%.

  For comparison purposes, if all the net deferred gains in the December 31, 2016 valuation had been recognized immediately in the December 31, 2016 valuation, the aggregate employer contribution rate in last year's valuation would have decreased from 20.1% to 19.8%.

➤ 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.

➤ Safety-County members pay an additional UAAL contribution amount equal to 3.00% of payroll from February 1, 2005 through the last pay period in June 2023. Effective with the first pay period in July 2023, the employer UAAL contribution rate will have to increase to offset for this expiration of the 3.00% rate paid by the Safety-County members.

General-County and General-Court members pay an additional UAAL contribution amount equal to 3.03% of payroll from July 1, 2004 to June 30, 2024. Effective July 1, 2024, the employer UAAL contribution rate will have to increase to offset for this expiration of the 3.03% rate paid by the General-County and General-Court members.

Reference: Pg. 35

➤ In this report, we have provided the amount of transfer that would be required to "true-up" the COLA and the Retired Member reserves so that the reserves after the "true-up" are equal to the present value of the COLA and retiree benefits for members currently receiving such benefits.

Reference: Pg. 16

➤ Effective with the December 31, 2007 valuation, we have calculated a separate Normal Cost rate for Safety-VOM based on the demographics of Safety employees of VOM. Any new Safety UAAL will continue to be allocated between Safety-County and Safety-VOM based on their proportions of payroll to the total Safety payroll.

Reference: Pg. 15

➤ Effective with the restatement of the December 31, 2012 contribution rates, we have calculated a separate Normal Cost rate for General Plan A-County. Note that the Normal Cost rate for all other General employers continues to be developed on a pooled basis. However, starting with the December 31, 2015 valuation, we have adjusted the Normal Cost rate for General Plan A-VOM relative to that paid by General Plan A-Court. As stated in our Actuarial Experience Study dated

October 2, 2015, this adjustment is to reflect SCERA's determination that, for General Plan A-VOM, the cashout cost paid by members should no longer be adjusted by a factor of 91%. Previously, the cashout cost paid by members for both General Plan A-VOM and General Plan A-Court were adjusted by a factor of 91% to represent the exclusion of the cashout of sick leave. These assumptions are outlined in Section 4, Exhibit III. The cashout cost is used to develop member rates which then affects the employer rates.

Similar to Safety, any new General UAAL will continue to be allocated between General-County, General-Court and General-VOM based on the proportions of their payroll to the total General payroll.

Impact of Future Experience on Contribution Rates

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

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

Important Information about Actuarial Valuations

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

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

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

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

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

cost of the plan will be determined by the actual benefits and expenses paid and the actual investment experience of the plan.

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

Summary of Key Valuation Results (Dollar amounts in thousands)

	December 31, 2017		December 31, 2016	
Employer Contribution Rates:	Total Rate	Estimated Annual Amount[1]	Total Rate	Estimated Annual Amount[1]
General Plan A – County	18.26%	$34,042	19.00%	$35,421
General Plan A – Court	31.16%	2,990	30.58%	2,935
General Plan A – Valley of the Moon	16.57%	44	18.23%	48
General Plan B – County	13.19%	12,452	13.94%	13,160
General Plan B – Court	25.21%	897	24.64%	877
General Plan B – Valley of the Moon	10.65%	13	12.32%	16
Safety Plan A – County	27.45%	15,238	28.83%	16,004
Safety Plan A – Valley of the Moon	35.45%	1,380	36.27%	1,412
Safety Plan B – County	20.08%	3,076	22.03%	3,375
Safety Plan B – Valley of the Moon	21.20%	138	22.65%	148
All Categories combined	19.00%	70,270	19.85%	73,396
Average Member Contribution Rates[2]:	Total Rate	Estimated Annual Amount[1]	Total Rate	Estimated Annual Amount[1]
General Plan A – County (Average Entry Age: 36)	11.93%	$22,241	11.93%	$22,241
General Plan A – Court (Average Entry Age: 35)	12.08%	1,159	12.08%	1,159
General Plan A – Valley of the Moon (Average Entry Age: 52)	12.13%	32	12.13%	32
General Plan B – County	10.37%	9,789	10.45%	9,865
General Plan B – Court	10.37%	369	10.45%	372
General Plan B – Valley of the Moon	7.34%	9	7.42%	10
Safety Plan A – County (Average Entry Age: 30)	12.07%	6,700	12.07%	6,700
Safety Plan A – Valley of the Moon (Average Entry Age: 36)	10.67%	415	10.67%[3]	415
Safety Plan B – County	13.98%	2,142	14.54%	2,227
Safety Plan B – Valley of the Moon	9.97%	65	9.47%	62
All Categories combined	11.61%	42,921	11.65%	43,083

(1) *Based on December 31, 2017 projected annual compensation.*

(2) *Includes an additional UAAL contribution rate of 3.03% and 3.00% of payroll for General (County and Court) and Safety-County members, respectively.*

(3) *This is the contribution rate calculated in the December 31, 2016 valuation but reflecting the average entry age of 36 using the membership demographics as of December 31, 2017. In the December 31, 2016 valuation, the average entry age was 35 and the corresponding rate at that age was 10.48%.*

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

	December 31, 2017	December 31, 2016
Funded Status:		
Actuarial accrued liability (AAL)	$2,916,856	$2,807,398
Valuation value of assets (VVA)[3]	2,557,299	2,399,171
Market value of assets (MVA)[3]	2,748,040	2,414,828
Funded percentage on a VVA basis	87.7%	85.5%
Funded percentage on a MVA basis	94.2%	86.0%
Unfunded Actuarial Accrued Liability on a VVA basis	$359,557	$408,227
Unfunded Actuarial Accrued Liability on a MVA basis	168,816	392,570
Key Assumptions:		
Interest rate	7.25%	7.25%
Inflation rate	3.00%	3.00%
Across the board salary increase	0.50%	0.50%

(3) *Excludes non-valuation reserves.*

Summary of Key Valuation Demographic and Financial Data

	December 31, 2017	December 31, 2016	Change From Prior Year
Active Members:			
Number of members	4,110	4,112	0.0%
Average age	45.5	45.5	0.0
Average service	9.6	9.4	0.2
Projected total compensation	$369,750,901	$356,129,644	3.8%
Average projected compensation	$89,964	$86,607	3.9%
Retired Member and Beneficiaries:			
Number of members:			
Service retired	3,728	3,630	2.7%
Disability retired	637	628	1.4%
Beneficiaries	571	554	3.1%
Total	4,936	4,812	2.6%
Average age	68.5	68.2	0.3
Average monthly benefit	$2,799	$2,747	1.9%
Vested Terminated Members:			
Number of terminated vested members(1)	1,181	1,112	6.2%
Average age	45.5	45.7	-0.2
Summary of Financial Data (Dollar amounts in thousands):			
Market value of assets	$2,748,040	$2,414,828	13.8%
Return on market value of assets	16.40%	8.23%	N/A
Actuarial value of assets	$2,557,299	$2,399,171	6.6%
Return on actuarial value of assets	9.12%	7.21%	N/A
Valuation value of assets	$2,557,299	$2,399,171	6.6%
Return on valuation value of assets	9.12%	7.21%	N/A

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

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

Year Ended December 31	Active Members	Vested Terminated Members[1]	Retired Members and Beneficiaries	Ratio of Non-Actives to Actives
2008	4,193	853	3,399	1.01
2009	3,984	881	3,570	1.12
2010	3,780	904	3,780	1.24
2011	3,587	919	4,021	1.38
2012	3,620	876	4,258	1.42
2013	3,833	918	4,394	1.39
2014	3,922	975	4,506	1.40
2015	4,071	1,047	4,653	1.40
2016	4,112	1,112	4,812	1.44
2017	4,110	1,181	4,936	1.49

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

Active Members

Plan costs are affected by the age, years of service and compensation of active members. In this year's valuation, there were 4,110 active members with an average age of 45.5, average years of service of 9.6 years and average projected compensation of $89,964. The 4,112 active members in the prior valuation had an average age of 45.5, average service of 9.4 years and average projected compensation of $86,607.

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

Inactive Members

In this year's valuation, there were 1,181 members with a vested right to a deferred or immediate vested benefit or entitled to a return of their member contributions versus 1,112 in the prior valuation.

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

CHART 2

Distribution of Active Members by Age as of December 31, 2017

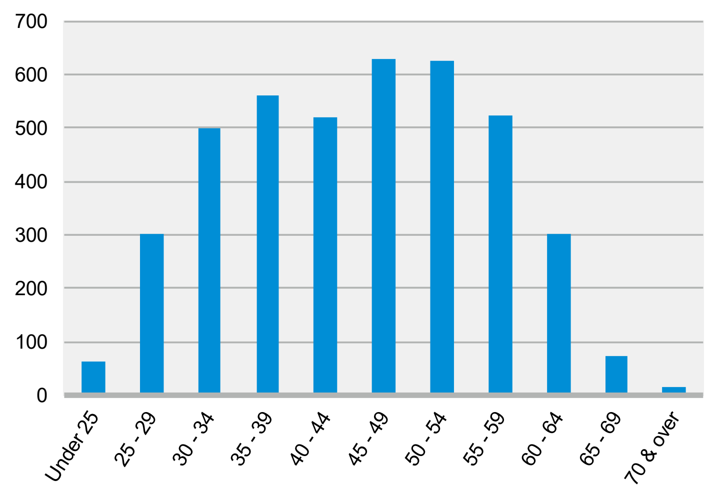
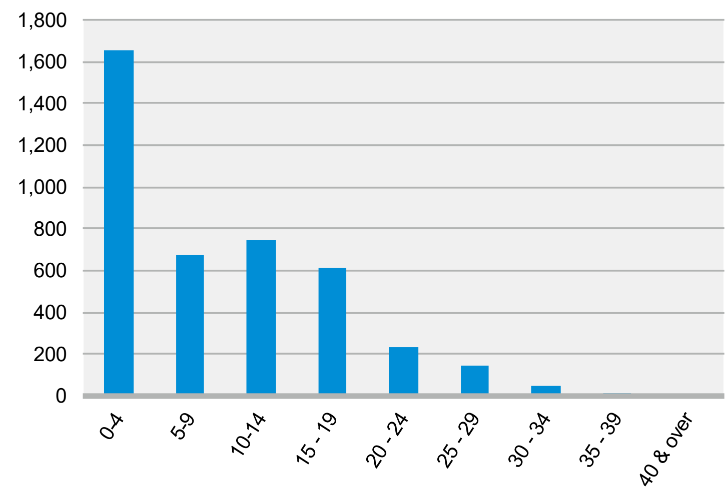


CHART 3

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



Retired Members and Beneficiaries

As of December 31, 2017, 4,365 retired members and 571 beneficiaries were receiving total monthly benefits of $13,817,223. For comparison, in the previous valuation, there were 4,258 retired members and 554 beneficiaries receiving monthly benefits of $13,217,558.

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

CHART 4

Distribution of Retired Members by Type and by Monthly Amount as of December 31, 2017

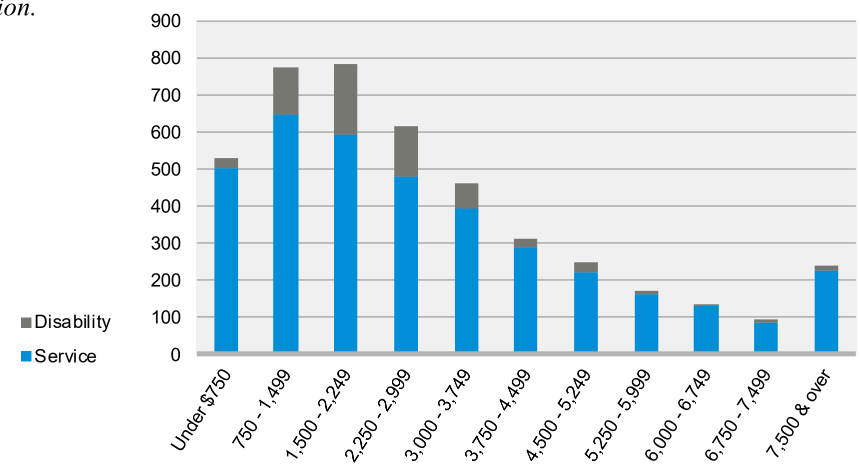
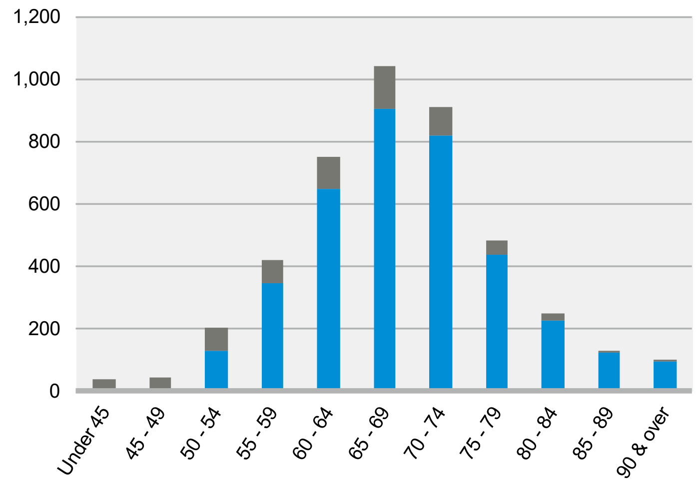


CHART 5

Distribution of Retired Members by Type and by Age as of December 31, 2017



B. FINANCIAL INFORMATION

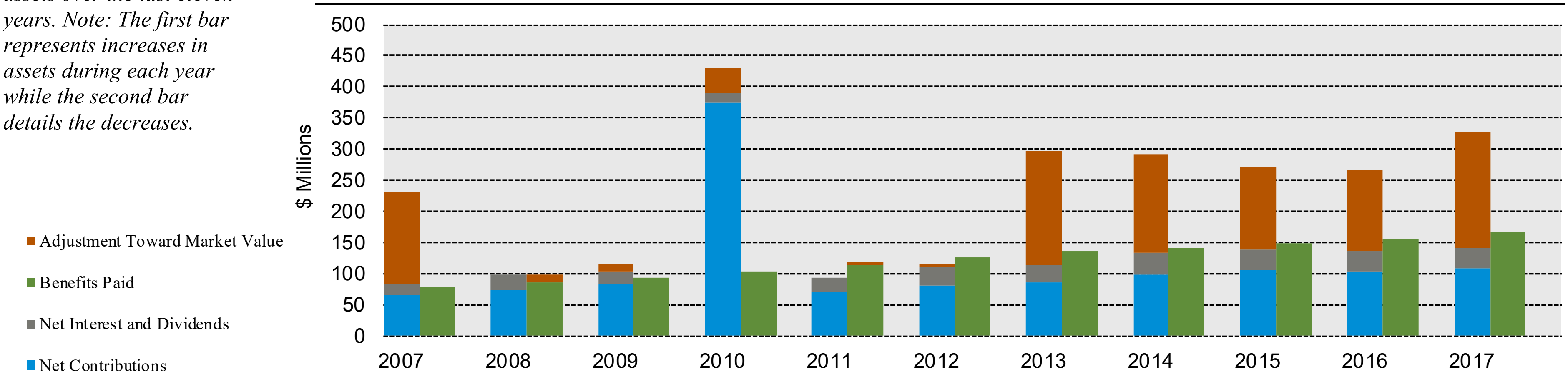
Retirement plan funding anticipates that, over the long term, both contributions and net investment earnings (less investment fees and administrative expenses) will be needed to cover benefit payments.

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

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

CHART 6

Comparison of Increases and Decreases in the Actuarial Value of Assets for Years Ended December 31, 2007 - 2017



It is desirable to have level and predictable plan costs from one year to the next. For this reason, the Board of Retirement has approved an asset valuation method that gradually adjusts to market value. Under this 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.

The determination of the actuarial and valuation value of assets is provided on the following page.

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

The following are points of note in the asset smoothing method used by the actuary in developing the actuarial value and valuation value of assets. First, we calculated the actual return on market value by taking the difference between the end of year and beginning of year market value of assets and adjusting that difference for the non-investment cash flows. Those cash flows included contributions received, benefit payments and administrative expenses made during the last calendar year. Second, the amount subject to smoothing is determined as the actual market return earned during the last calendar year that was in excess/below the expected return on the valuation value of assets.

CHART 7

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

Plan Year Ending December 31	Actual Return On Market Value[1]	Expected Return On Valuation Value[1]	Investment Gain/(Loss)	Deferred Factor	Deferred Return
Combined Net Deferred Loss as of December 31, 2015			$(6,929,361)	0.50	$(3,464,681)
2016	$189,948,848	$163,881,357	26,067,491	0.60	15,640,495
2017	394,910,340	171,703,340	223,207,000	0.80	178,565,600
1. Total Deferred Return					$190,741,414
2. Net Market Value of Assets					2,748,040,446
3. Actuarial Value of Assets (Item 2 – Item 1)					$2,557,299,032
4. Ratio of Actuarial Value to Market Value					93.1%
5. Non-Valuation Reserves and Other Adjustments					
a. Interest Fluctuation Reserve					$0
b. Undistributed Reserve					0
c. Negative Contingency Reserve (Before Any Transfer)					(522,160,964)
d. Transfer to True-Up Reserves					1,083,541
e. Negative Contingency Reserve (After Transfers) (Item 5c + Item 5d)					(521,077,423)
f. Total (Item 5a + Item 5b + Max (Item 5e,0))					$0
6. Valuation Value of Assets (Item 3 – Item 5f)					$2,557,299,032

The amounts of deferred return as of December 31, 2017 to be recognized in each subsequent valuation are as follows:

December 31, 2018	$48,122,558
December 31, 2019	48,122,558
December 31, 2020	49,854,898
December 31, 2021	44,641,400
Total	$190,741,414

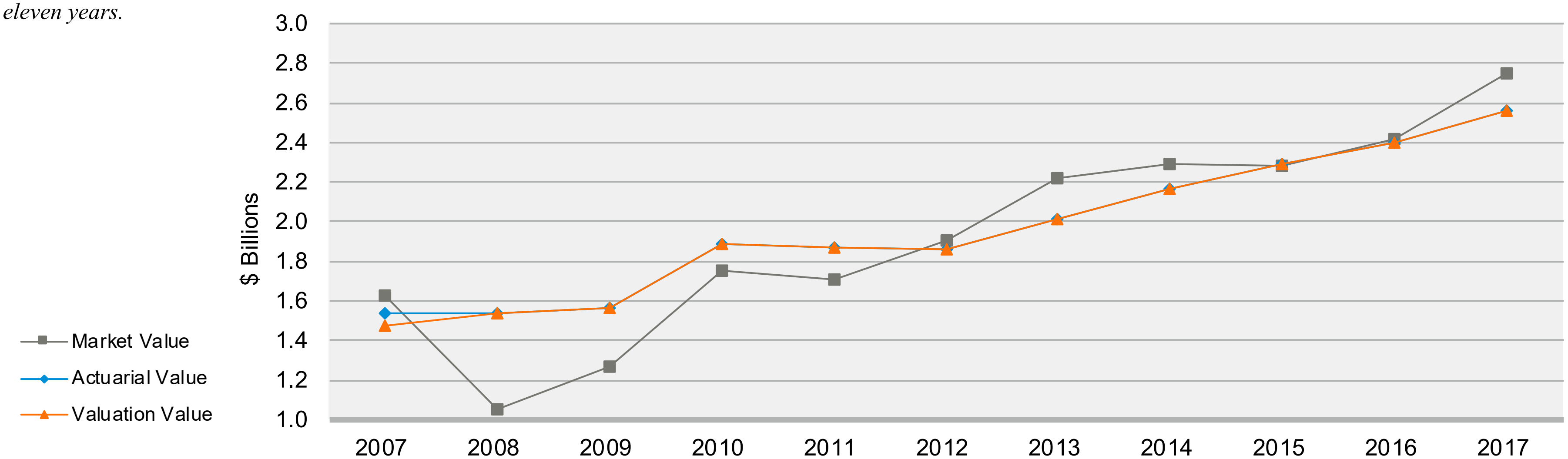
[1] *See note above on how these amounts are determined.*

The market value, actuarial value, and valuation value of assets are representations of the SCERA'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 SCERA'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



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 $39.0 million, a gain of $44.3 million from investments (after smoothing and relative to a return of 7.25% assumed in the December 31, 2016 valuation), a loss of $4.6 million from contribution experience and a loss of $0.7 million from all other sources. The loss from all other sources was 0.0% 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.

CHART 9

Actuarial Experience for Year Ended December 31, 2017

1. Net gain from investments on valuation value of assets[1]	$44,256,000
2. Net loss from contribution experience	(4,568,000)
3. Net loss from other experience[2]	(696,000)
4. Net experience gain: (1) + (2) + (3)	$38,992,000

(1) *Details in Chart 10.*

(2) *See Section 3, Exhibit H.*

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 SCERA's investment policy. For valuation purposes, the assumed rate of return on the valuation value of assets was 7.25% based on the December 31, 2016 valuation. The actual rate of return on a ("smoothed") valuation basis for the 2017 plan year was 9.12%.

Since the actual return for the year on the valuation value of assets was greater than the assumed return, SCERA experienced an actuarial gain during the year ended December 31, 2017 with regard to its investments.

For this valuation, there is no difference between the return on the valuation value of assets and the return on the actuarial value of assets.

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

	Valuation Value	Actuarial Value	Market Value
1. Actual return[1]	$216,094,135	$216,094,135	$391,178,577
2. Average value of assets	$2,370,187,817	$2,370,187,817	$2,385,844,789
3. Actual rate of return: (1) ÷ (2)	9.12%	9.12%	16.40%
4. Assumed rate of return	7.25%	7.25%	7.25%
5. Expected return: (2) x (4)	$171,838,617	$171,838,617	$172,973,747
6. Actuarial gain/(loss): (1) – (5)	$44,255,518	$44,255,518	$218,204,830

[1] *Net of administrative and investment expenses.*

One measure of actuarial experience is to see how the assumed investment rate of return has compared to actual experience over time. The chart below shows the rate of return on a valuation, actuarial and market basis for the last ten years.

CHART 11

Investment Return – Actuarial Value, Valuation Value and Market Value: 2008 – 2017 (Dollar amount in thousands)

Year Ended December 31	Valuation Value Investment Return[1]		Actuarial Value Investment Return[1]		Market Value Investment Return[1]	
	Amount	Percent	Amount	Percent	Amount	Percent
2008	$70,012	4.75%	$13,753	0.90%	-$556,235	-34.33%
2009	32,771	2.13%	32,771	2.13%	224,056	21.28%
2010	54,093	3.27%	54,093	3.27%	207,173	15.23%
2011	19,508	1.04%	19,508	1.04%	1,179	0.07%
2012	33,652	1.82%	33,652	1.82%	239,065	14.16%
2013	208,550	11.38%	208,550	11.38%	366,462	19.49%
2014	193,799	9.71%	193,799	9.71%	114,072	5.18%
2015	164,257	7.65%	164,257	7.65%	31,063	1.37%
2016	163,144	7.21%	163,144	7.21%	185,730	8.23%
2017	216,094	9.12%	216,094	9.12%	391,179	16.40%
Five-Year Average Return		9.00%		9.00%		9.92%
Ten-Year Average Return		5.75%		5.35%		5.34%

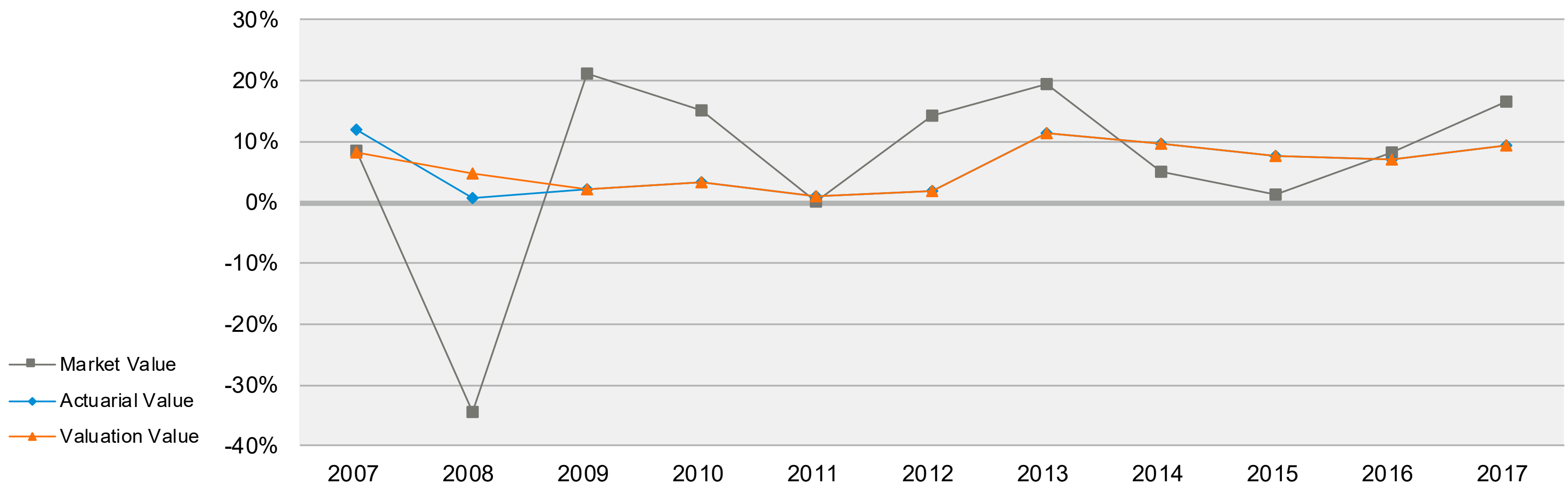
[1] *Net of administrative and investment expenses.*

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 last eleven years.

CHART 12

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



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 may include:

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

The net loss from this other experience for the year ended December 31, 2017 amounted to $0.7 million, which was 0.0% of the actuarial accrued liability. See Exhibit H for a detailed development of the changes in the Unfunded Actuarial Accrued Liability.

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 determined as a level percentage of the member's career 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 unfunded actuarial accrued liability) is calculated to remain as a level percentage of future active member payroll (including payroll for new members as they enter the 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). The outstanding balance of the December 31, 2007 UAAL as well as any new UAAL established on each subsequent valuation after December 31, 2007 is amortized over separate 20-year declining periods. The UAAL established as a result of including as pensionable salary a cash allowance of $3.45 per hour for General-County and Safety-County members only is amortized over a 20-year declining period with 10 years remaining as of December 31, 2017. The recommended employer contributions are provided in Chart 13a.

Member Contributions:

Normal Cost

Plan A Members

Articles 6 and 6.8 of the CERL define the methodology to be used in the calculation of member basic contribution rates for General Plan A members and Safety Plan A members, respectively. The basic contribution rate is determined so that the accumulation of a member's basic contributions made in a given year until a certain age will be sufficient to fund an annuity at that age that is equal to 1/100 of Final Average Compensation for General and Safety members. That age is 55 for General members and 50 for Safety members. It is assumed that contributions are made annually at the same rate, starting at entry age. Accumulation includes semi-annual crediting of interest at one-half of the assumed investment earning rate. The member contribution rates are provided in Appendix A.

Active members represented by some of the bargaining groups have agreed to pay additional employee normal cost contributions that are above those determined under the CERL as permitted under CalPEPRA. As the specific amount of those higher contributions (some of which were paid starting in the 2016/2017 fiscal year) are dependent on the specific bargaining agreements, we have continued to include only the minimum member contribution rates in this report. The final member rates adjusted to include the additional employee normal cost contributions will be provided in side letters based on the terms of the bargaining agreements.

Plan B Members

Pursuant to Section 7522.30(a) of the Government Code, CalPEPRA members are required to contribute at least 50% of the Normal Cost rate. We have assumed that exactly 50% of the Normal Cost would be paid by the new members. Also of note is that based on our recommendation, SCERA has decided to use the discretion made available by AB1380 to no longer round the member's contribution rate to the nearest ¼% as previously required by CalPEPRA.

Contribution to the Unfunded Actuarial Accrued Liability (UAAL)

General-County and General-Court members (excluding Valley of the Moon) pay an additional UAAL contribution amount equal to 3.03% of payroll for a 20-year period from July 1, 2004 to June 30, 2024 while Safety-County members (excluding Valley of the Moon) pay an additional UAAL contribution amount equal to 3.00% of payroll from February 1, 2005 through the last pay period in June 2023. These rates are subtracted from the employer's UAAL rates, after adjustment for refundability.

CHART 13a

Recommended Employer Contribution Rates (Dollar Amounts in Thousands)

	December 31, 2017 Actuarial Valuation		December 31, 2016 Actuarial Valuation	
General Plan A-County Members	Rate	Estimated Annual Amount[1]	Rate	Estimated Annual Amount[1]
Normal Cost	12.41%	$23,136	12.48%	$23,266
UAAL	5.85%	10,906	6.52%	12,155
Total Contribution	18.26%	$34,042	19.00%	$35,421
General Plan A-Court Members				
Normal Cost	13.29%	$1,275	13.36%	$1,282
UAAL	17.87%	1,715	17.22%	1,653
Total Contribution	31.16%	$2,990	30.58%	$2,935
General Plan A-Valley of the Moon Members				
Normal Cost	13.26%	$35	13.33%	$35
UAAL	3.31%	9	4.90%	13
Total Contribution	16.57%	$44	18.23%	$48
General Plan B-County Members				
Normal Cost	7.34%	$6,929	7.42%	$7,005
UAAL	5.85%	5,523	6.52%	6,155
Total Contribution	13.19%	$12,452	13.94%	$13,160
General Plan B-Court Members				
Normal Cost	7.34%	$261	7.42%	$264
UAAL	17.87%	636	17.22%	613
Total Contribution	25.21%	$897	24.64%	$877
General Plan B-Valley of the Moon Members				
Normal Cost	7.34%	$9	7.42%	$10
UAAL	3.31%	4	4.90%	6
Total Contribution	10.65%	$13	12.32%	$16

[1] *Amounts are in thousands and are based on December 31, 2017 projected annual payroll (also in thousands) as shown on page 16.*

CHART 13a (continued)

Recommended Employer Contribution Rates (Dollar Amounts in Thousands)

	December 31, 2017 Actuarial Valuation		December 31, 2016 Actuarial Valuation	
Safety Plan A-County Members	Rate	Estimated Annual Amount[1]	Rate	Estimated Annual Amount[1]
Normal Cost	18.35%	$10,186	18.34%	$10,181
UAAL	9.10%	5,052	10.49%	5,823
Total Contribution	27.45%	$15,238	28.83%	$16,004
Safety Plan A-Valley of the Moon Members				
Normal Cost	24.22%	$943	23.09%	$899
UAAL	11.23%	437	13.18%	513
Total Contribution	35.45%	$1,380	36.27%	$1,412
Safety Plan B-County Members				
Normal Cost	10.98%	$1,682	11.54%	$1,768
UAAL	9.10%	1,394	10.49%	1,607
Total Contribution	20.08%	$3,076	22.03%	$3,375
Safety Plan B-Valley of the Moon Members				
Normal Cost	9.97%	$65	9.47%	$62
UAAL	11.23%	73	13.18%	86
Total Contribution	21.20%	$138	22.65%	$148
All Categories Combined				
Normal Cost	12.04%	$44,521	12.11%	$44,772
UAAL	6.96%	25,749	7.74%	28,624
Total Contribution	19.00%	$70,270	19.85%	$73,396

[1] *Amounts are in thousands and are based on December 31, 2017 projected annual payroll (also in thousands):*

General Plan A-County	$186,428
General Plan A-Court	9,597
General Plan A-Valley of the Moon	264
General Plan B-County	94,402
General Plan B-Court	3,559
General Plan B-Valley of the Moon	129
Safety Plan A-County	55,511
Safety Plan A-Valley of the Moon	3,892
Safety Plan B-County	15,319
Safety Plan B-Valley of the Moon	650
Total	$369,751

CHART 13b

Breakdown of the Employers' Plus Employees' Normal Cost Contributions to Fund for Each Type of Benefit

Normal Cost	Elements of Normal Cost for Plan A Members: All General	Safety-County	Safety-Valley of the Moon	Overall
Service Retirement	82%	63%	66%	77%
Vested Termination and Ordinary Withdrawal	11%	8%	5%	10%
Non-Service and Service Connected Disability	7%	29%	29%	13%
Non-Service and Service Connected Death	0%	0%	0%	0%
Total Employer Plus Employee Normal Cost	100%	100%	100%	100%

Normal Cost	Elements of Normal Cost for Plan B Members: All General	Safety-County	Safety-Valley of the Moon	Overall
Service Retirement	78%	56%	56%	74%
Vested Termination and Ordinary Withdrawal	11%	10%	10%	10%
Non-Service and Service Connected Disability	10%	34%	33%	15%
Non-Service and Service Connected Death	1%	0%	1%	1%
Total Employer Plus Employee Normal Cost	100%	100%	100%	100%

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

The 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 Contribution

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

CHART 14

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

	Contribution Rate	Estimated Annual Dollar Cost[1]
Recommended Average Employer Contribution Rate as of December 31, 2016	19.85%	$73,396
Effect of investment gain[2]	-0.85%	$(3,143)
Effect of difference between actual and expected contributions[3]	0.09%	333
Effect of difference in actual versus expected individual salary increases	0.09%	333
Effect of decrease in UAAL rate from higher than expected increases in total payroll	-0.03%	(111)
Effect of demographic changes	-0.07%	(259)
Effect of other experience gains	-0.08%	(279)
Subtotal	-0.85%	$(3,126)
Recommended Average Employer Contribution Rate as of December 31, 2017	19.00%	$70,270

(1) *Based on December 31, 2017 projected annual payroll of $369,751.*

(2) *Return on valuation assets was 9.12% and therefore was greater than the 7.25% assumed in the December 31, 2016 valuation.*

(3) *Includes impact of 18-month delay in rate implementation, phase-in of the impact of the changes in actuarial assumptions on the employer contribution rate (if any) and difference between normal cost and UAAL contributions due to actual payroll different than expected during 2017.*

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

Reconciliation of Recommended Contribution Rate

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

CHART 15

Reconciliation of Recommended Member Contribution from December 31, 2016 to December 31, 2017

	General Plan A-County Contribution Rate [(1)]	General Plan A-Court Contribution Rate [(1)]	General Plan A-Valley of the Moon Contribution Rate	Safety Plan A-County Contribution Rate [(2)]	Safety Plan A-Valley of the Moon Contribution Rate	
Recommended Average Member Contribution Rate as of December 31, 2016[(3)]	11.93%	12.08%	12.13%	12.07%	10.67%[(5)]	
Effect of demographic changes	0.00%	0.00%	0.00%	0.00%	0.00%	
Recommended Average Member Contribution Rate as of December 31, 2017[(4)]	11.93%	12.08%	12.13%	12.07%	10.67%	
	General Plan B-County Contribution Rate [(1)]	**General Plan B-Court Contribution Rate [(1)]**	**General Plan B-Valley of the Moon Contribution Rate**	**Safety Plan B-County Contribution Rate [(2)]**	**Safety Plan B-Valley of the Moon Contribution Rate**	**Total Contribution Rate**
Recommended Average Member Contribution Rate as of December 31, 2016	10.45%	10.45%	7.42%	14.54%	9.47%	11.65%
Effect of demographic changes	-0.08%	-0.08%	-0.08%	-0.56%	0.50%	-0.04%
Recommended Average Member Contribution Rate as of December 31, 2017	10.37%	10.37%	7.34%	13.98%	9.97%	11.61%

(1) *Rates include an additional UAAL contribution rate of 3.03% of payroll.*

(2) *Rates include an additional UAAL contribution rate of 3.00% of payroll.*

(3) *The above rates are based on average entry age. The weighted average member contribution rates as of December 31, 2016 are 11.80%, 11.95%, 10.61%, 11.64% and 9.01% for General-County, General-Court, General-Valley of the Moon, Safety-County and Safety-Valley of the Moon, respectively.*

(4) *The above rates are based on average entry age. The weighted average member contribution rates as of December 31, 2017 are 11.76%, 11.92%, 10.61%, 11.57% and 9.17% for General-County, General-Court, General-Valley of the Moon, Safety-County and Safety-Valley of the Moon, respectively.*

(5) *This is the contribution rate calculated in the December 31, 2016 valuation but reflecting the average entry age of 36 using the membership demographics as of December 31, 2017. In the December 31, 2016 valuation, the average entry age was 35 and the corresponding rate at that age was 10.48%.*

E. FUNDED RATIO

A critical piece of information regarding the Plan's financial status is the funded ratio. This ratio compares the valuation value of assets to the actuarial accrued liabilities of the Plan as calculated. High ratios indicate a well-funded plan with assets sufficient to pay most benefits. 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 ratios for this plan.

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 16

Funded Ratio for Plan Years Ending December 31, 2007 - 2017

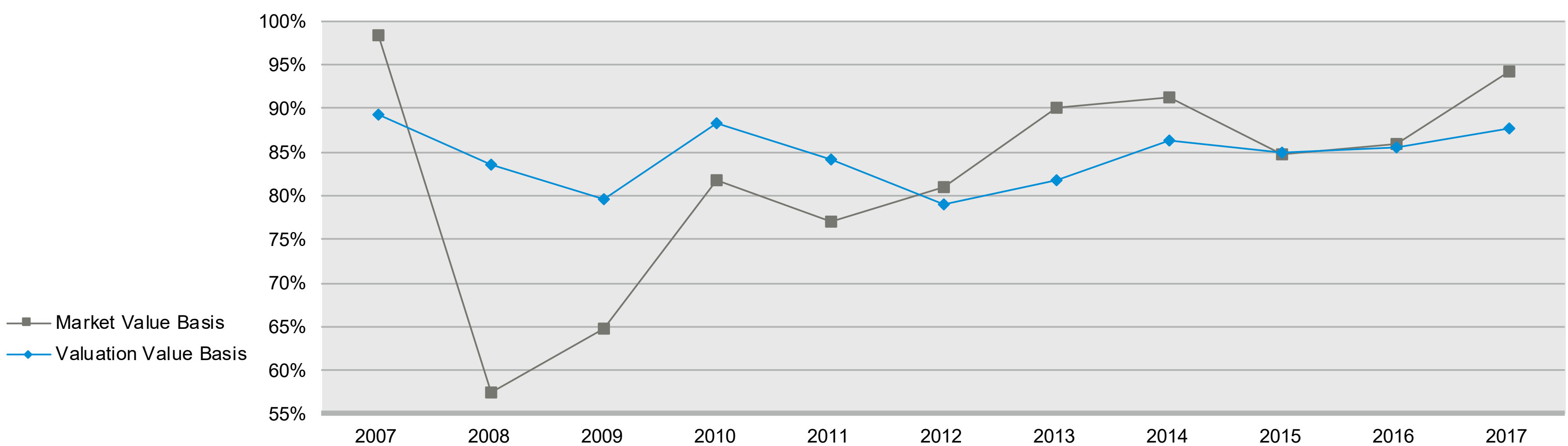


CHART 17

Schedule of Funding Progress (Dollar Amounts in Thousands)

Actuarial Valuation Date	Valuation Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded/ (Overfunded) AAL (UAAL) (b) - (a)	Funded Ratio (a) / (b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll [(b) - (a)] / (c)
12/31/2008	$1,540,461	$1,842,404	$301,943	83.6%	$334,391	90.3%
12/31/2009	1,564,970	1,967,058	402,088	79.6%	322,484	124.7%
12/31/2010	1,890,874	2,139,460	248,586	88.4%	323,601	76.8%
12/31/2011	1,867,117	2,220,520	353,403	84.1%	308,644	114.5%
12/31/2012	1,856,847	2,351,087	494,240	79.0%	302,764	163.2%
12/31/2013	2,016,781	2,466,224	449,443	81.8%	329,896	136.2%
12/31/2014	2,167,210	2,510,253	343,043	86.3%	324,418	105.7%
12/31/2015	2,289,057	2,694,979	405,922	84.9%	339,518	119.6%
12/31/2016	2,399,171	2,807,398	408,227	85.5%	356,129	114.6%
12/31/2017	2,557,299	2,916,856	359,557	87.7%	369,751	97.2%

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 SCERA, the current AVR is about 7.4. This means that a 1% asset gain/(loss) (relative to the assumed investment return) translates to about 7.4% of one year's payroll. Since SCERA 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). As the plan approaches full funding, we expect the AVR to increase.

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 SCERA, the current LVR is about 7.9. This is about 7% higher than the AVR. Therefore, we would expect that contribution volatility will increase over the long-term.

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

CHART 18

Volatility Ratios for Years Ended December 31, 2009 – 2017

	Asset Volatility Ratio			Liability Volatility Ratio		
Year Ended December 31	General	Safety	Total	General	Safety	Total
2009	3.8	4.4	3.9	5.9	6.8	6.1
2010	5.2	6.1	5.4	6.4	7.5	6.6
2011	5.3	6.3	5.5	6.9	8.2	7.2
2012	6.0	7.2	6.3	7.6	8.8	7.9
2013	6.4	7.8	6.7	7.2	8.6	7.5
2014	6.7	8.5	7.1	7.4	9.2	7.7
2015	6.3	8.5	6.7	7.4	10.1	7.9
2016	6.3	8.8	6.8	7.3	10.2	7.9
2017	6.9	9.5	7.4	7.3	10.1	7.9

EXHIBIT A

Table of Plan Coverage

i. General Plan A

Category	Year Ended December 31 2017	Year Ended December 31 2016	Change From Prior Year
Active members in valuation			
Number	2,122	2,289	-7.3%
Average age	49.6	49.0	0.6
Average service	13.3	12.5	0.8
Projected total compensation	$196,289,176	$203,358,108	-3.5%
Projected average compensation	$92,502	$88,841	4.1%
Account balances	$353,671,976	$341,505,172	3.6%
Total active vested members	1,942	1,925	0.9%
Vested terminated members[(1)]	716	726	-1.4%
Retired members			
Number in pay status	3,251	3,176	2.4%
Average age	69.7	69.4	0.3
Average monthly benefit	$2,855	$2,815	1.4%
Disabled members			
Number in pay status	342	341	0.3%
Average age	66.4	66.0	0.4
Average monthly benefit	$1,804	$1,778	1.5%
Beneficiaries			
Number in pay status	467	454	2.9%
Average age	72.6	72.7	-0.1
Average monthly benefit	$1,264	$1,199	5.4%

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

EXHIBIT A

Table of Plan Coverage

ii. General Plan B

Category	Year Ended December 31 2017	Year Ended December 31 2016	Change From Prior Year
Active members in valuation			
Number	1,263	1,122	12.6%
Average age	40.9	40.5	0.4
Average service	2.5	1.9	0.6
Projected total compensation	$98,089,860	$81,875,676	19.8%
Projected average compensation	$77,664	$72,973	6.4%
Account balances	$24,416,818	$15,504,868	57.5%
Total active vested members	36	16	125.0%
Vested terminated members[1]	260	189	37.6%
Retired members			
Number in pay status	1	0	N/A
Average age	70.8	N/A	N/A
Average monthly benefit	$1,022	N/A	N/A
Disabled members			
Number in pay status	2	1	100.0%
Average age	55.8	53.4	2.4
Average monthly benefit	$1,901	$1,892	0.5%
Beneficiaries			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit	N/A	N/A	N/A

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

EXHIBIT A

Table of Plan Coverage

iii. Safety Plan A

Category	Year Ended December 31 2017	Year Ended December 31 2016	Change From Prior Year
Active members in valuation			
Number	541	571	-5.3%
Average age	44.5	44.2	0.3
Average service	14.0	13.6	0.4
Projected total compensation	$59,402,499	$60,138,808	-1.2%
Projected average compensation	$109,801	$105,322	4.3%
Account balances	$119,985,250	$116,920,168	2.6%
Total active vested members	482	490	-1.6%
Vested terminated members[(1)]	180	181	-0.6%
Retired members			
Number in pay status	476	454	4.8%
Average age	64.7	64.4	0.3
Average monthly benefit	$4,607	$4,495	2.5%
Disabled members			
Number in pay status	291	285	2.1%
Average age	59.2	58.8	0.4
Average monthly benefit	$3,201	$3,155	1.5%
Beneficiaries			
Number in pay status	104	100	4.0%
Average age	62.9	63.7	-0.8
Average monthly benefit	$1,879	$1,825	3.0%

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

EXHIBIT A

Table of Plan Coverage

iv. Safety Plan B

Category	Year Ended December 31 2017	Year Ended December 31 2016	Change From Prior Year
Active members in valuation			
Number	184	130	41.5%
Average age	32.5	33.1	-0.6
Average service	2.0	1.7	0.3
Projected total compensation	$15,969,366	$10,757,052	48.5%
Projected average compensation	$86,790	$82,747	4.9%
Account balances	$4,252,455	$2,420,416	75.7%
Total active vested members	1	1	0.0%
Vested terminated members[(1)]	25	16	56.3%
Retired members			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit	N/A	N/A	N/A
Disabled members			
Number in pay status	2	1	100.0%
Average age	35.7	33.4	2.3
Average monthly benefit	$2,243	$2,251	-0.4%
Beneficiaries			
Number in pay status	0	0	N/A
Average age	N/A	N/A	N/A
Average monthly benefit	N/A	N/A	N/A

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

EXHIBIT B

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

i. General Plan A

		Years of Service								
Age	**Total**	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40 & over**
Under 25	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
25 – 29	21	6	15	- -	- -	- -	- -	- -	- -	- -
	$80,759	$94,333	$75,329	- -	- -	- -	- -	- -	- -	- -
30 – 34	125	25	81	19	- -	- -	- -	- -	- -	- -
	83,181	87,962	84,021	$73,305	- -	- -	- -	- -	- -	- -
35 – 39	259	40	99	99	21	- -	- -	- -	- -	- -
	89,917	97,618	89,312	88,215	$86,123	- -	- -	- -	- -	- -
40 – 44	269	28	80	95	60	6	- -	- -	- -	- -
	92,797	102,519	89,488	93,867	91,059	$91,986	- -	- -	- -	- -
45 – 49	372	23	82	114	103	35	15	- -	- -	- -
	91,956	97,275	89,959	94,240	89,599	89,193	$99,991	- -	- -	- -
50 – 54	421	28	73	98	113	52	44	13	- -	- -
	95,352	110,985	93,923	88,625	91,588	106,082	103,028	$84,221	- -	- -
55 – 59	384	25	62	93	102	43	36	21	2	- -
	95,716	111,266	98,581	93,107	91,128	97,053	92,390	105,681	$94,276	- -
60 – 64	203	5	43	53	64	20	12	4	2	- -
	92,202	101,015	90,484	90,429	86,474	115,040	80,695	125,466	111,504	- -
65 – 69	55	- -	13	16	14	5	3	4	- -	- -
	88,424	- -	82,930	73,918	96,097	113,246	95,781	100,902	- -	- -
70 & over	13	- -	3	1	8	- -	1	- -	- -	- -
	96,833	- -	136,145	121,919	76,663	- -	115,176	- -	- -	- -
Total	2,122	180	551	588	485	161	111	42	4	- -
	$92,502	$100,955	$90,125	$90,524	$89,976	$100,809	$96,667	$100,468	$102,890	- -

EXHIBIT B

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

ii. General Plan B

		Years of Service								
Age	**Total**	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40 & over**
Under 25	39	39	- -	- -	- -	- -	- -	- -	- -	- -
	$58,878	$58,878	- -	- -	- -	- -	- -	- -	- -	- -
25 – 29	194	194	- -	- -	- -	- -	- -	- -	- -	- -
	69,513	69,513	- -	- -	- -	- -	- -	- -	- -	- -
30 – 34	269	266	3	- -	- -	- -	- -	- -	- -	- -
	75,081	75,124	$71,249	- -	- -	- -	- -	- -	- -	- -
35 – 39	195	190	5	- -	- -	- -	- -	- -	- -	- -
	78,539	77,932	101,612	- -	- -	- -	- -	- -	- -	- -
40 – 44	133	130	3	- -	- -	- -	- -	- -	- -	- -
	82,323	82,117	91,258	- -	- -	- -	- -	- -	- -	- -
45 – 49	112	108	4	- -	- -	- -	- -	- -	- -	- -
	80,739	81,044	72,492	- -	- -	- -	- -	- -	- -	- -
50 – 54	127	126	1	- -	- -	- -	- -	- -	- -	- -
	80,079	79,863	107,372	- -	- -	- -	- -	- -	- -	- -
55 – 59	100	92	7	1	- -	- -	- -	- -	- -	- -
	86,346	88,106	66,710	$61,869	- -	- -	- -	- -	- -	- -
60 – 64	75	69	6	- -	- -	- -	- -	- -	- -	- -
	84,540	85,965	68,151	- -	- -	- -	- -	- -	- -	- -
65 – 69	16	13	2	1	- -	- -	- -	- -	- -	- -
	87,690	85,771	113,287	61,450	- -	- -	- -	- -	- -	- -
70 & over	3	2	1	- -	- -	- -	- -	- -	- -	- -
	85,431	97,891	60,513	- -	- -	- -	- -	- -	- -	- -
Total	1,263	1,229	32	2	- -	- -	- -	- -	- -	- -
	$77,664	$77,633	$79,871	$61,660	- -	- -	- -	- -	- -	- -

EXHIBIT B

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

iii. Safety Plan A

		Years of Service								
Age	**Total**	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40 & over**
Under 25	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
25 – 29	14	12	2	- -	- -	- -	- -	- -	- -	- -
	$102,952	$103,814	$97,786	- -	- -	- -	- -	- -	- -	- -
30 – 34	57	17	22	18	- -	- -	- -	- -	- -	- -
	100,721	103,126	100,626	$98,566	- -	- -	- -	- -	- -	- -
35 – 39	95	9	25	55	6	- -	- -	- -	- -	- -
	103,469	109,036	95,928	104,718	$115,087	- -	- -	- -	- -	- -
40 – 44	112	7	10	39	50	6	- -	- -	- -	- -
	110,641	110,484	100,631	108,545	113,488	$117,411	- -	- -	- -	- -
45 – 49	141	8	12	26	39	39	16	1	- -	- -
	114,948	121,362	113,686	110,215	106,226	120,073	$126,806	$152,289	- -	- -
50 – 54	67	2	5	9	20	20	10	1	- -	- -
	114,667	121,448	111,430	99,247	112,736	111,370	141,463	92,695	- -	- -
55 – 59	35	4	6	6	5	4	9	1	- -	- -
	109,983	96,627	100,799	104,571	112,192	115,410	121,401	115,487	- -	- -
60 – 64	19	- -	4	5	5	1	3	- -	1	- -
	110,226	- -	127,675	115,963	98,712	93,006	99,115	- -	$119,862	- -
65 – 69	1	- -	1	- -	- -	- -	- -	- -	- -	- -
	164,745	- -	164,745	- -	- -	- -	- -	- -	- -	- -
70 & over	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Total	541	59	87	158	125	70	38	3	1	- -
	$109,801	$107,693	$103,626	$105,905	$110,536	$116,705	$127,197	$120,157	$119,862	- -

EXHIBIT B

Members in Active Service and Projected Average Compensation as of December 31, 2017
By Age and Years of Service
iv. Safety Plan B

		Years of Service								
Age	**Total**	**0-4**	**5-9**	**10-14**	**15-19**	**20-24**	**25-29**	**30-34**	**35-39**	**40 & over**
Under 25	24	24	- -	- -	- -	- -	- -	- -	- -	- -
	$78,420	$78,420	- -	- -	- -	- -	- -	- -	- -	- -
25 – 29	72	72	- -	- -	- -	- -	- -	- -	- -	- -
	85,404	85,404	- -	- -	- -	- -	- -	- -	- -	- -
30 – 34	49	49	- -	- -	- -	- -	- -	- -	- -	- -
	88,217	88,217	- -	- -	- -	- -	- -	- -	- -	- -
35 – 39	11	11	- -	- -	- -	- -	- -	- -	- -	- -
	78,117	78,117	- -	- -	- -	- -	- -	- -	- -	- -
40 – 44	7	7	- -	- -	- -	- -	- -	- -	- -	- -
	79,998	79,998	- -	- -	- -	- -	- -	- -	- -	- -
45 – 49	3	3	- -	- -	- -	- -	- -	- -	- -	- -
	80,975	80,975	- -	- -	- -	- -	- -	- -	- -	- -
50 – 54	10	10	- -	- -	- -	- -	- -	- -	- -	- -
	113,759	113,759	- -	- -	- -	- -	- -	- -	- -	- -
55 – 59	3	3	- -	- -	- -	- -	- -	- -	- -	- -
	108,785	108,785	- -	- -	- -	- -	- -	- -	- -	- -
60 – 64	5	4	1	- -	- -	- -	- -	- -	- -	- -
	97,883	101,585	$83,079	- -	- -	- -	- -	- -	- -	- -
65 – 69	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
70 & over	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Total	184	183	1	- -	- -	- -	- -	- -	- -	- -
	$86,790	$86,810	$83,079	- -	- -	- -	- -	- -	- -	- -

EXHIBIT C

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

	Active Members	Vested Terminated Members[1]	Disabled Pensioners	Retired Members	Beneficiaries	Total
Number as of December 31, 2016	4,112	1,112	628	3,630	554	10,036
New members	325	24[2]	N/A	N/A	N/A	349
Terminations – with vested rights	-137	137	N/A	N/A	N/A	0
Contribution refunds	-41	-37	N/A	N/A	N/A	-78
Retirements	-138	-42	N/A	180	N/A	0
New disabilities	-19	-2	23	-2	N/A	0
Return to work	11	-10	0	-1	N/A	0
Died with or without beneficiary	-3	-1	-14	-79	17[3]	-80
Data adjustments	0	0	0	0	0	0
Number as of December 31, 2017	4,110	1,181	637	3,728	571	10,227

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

(2) *Includes members who are included for the first time in this year's valuation as they were hired and terminated in the 2017 calendar year.*

(3) *This is the net increase in the number of beneficiaries after subtracting the number of beneficiaries who died during the year.*

EXHIBIT D
Summary Statement of Income and Expenses on an Actuarial Value Basis

	Year Ended December 31, 2017		Year Ended December 31, 2016	
Contribution income:				
Employer contributions	$63,821,713		$63,639,564	
Employee contributions	44,160,995		40,782,605	
Net contribution income		$107,982,707		$104,422,169
Investment income:				
Interest, dividends and other income	$54,211,347		$54,493,705	
Recognition of capital appreciation	185,811,612		131,373,737	
Less investment fees and administrative expenses	(23,928,824)		(22,723,918)	
Net investment income		216,094,135		163,143,524
Total income available for benefits		$324,076,842		$267,565,693
Less benefit payments:				
Service retirement and disability benefits	$(162,973,355)		$(155,220,271)	
Member refunds	(2,975,193)		(2,231,475)	
Net benefit payments		$(165,948,548)		$(157,451,746)
Change in assets held for future benefits		$158,128,295		$110,113,947

Results may be off due to rounding.

EXHIBIT E
Summary Statement of Plan Assets

	Year Ended December 31, 2017		Year Ended December 31, 2016	
Cash equivalents		$169,820,129		$121,873,466
Accounts receivable:				
Contributions, interest and dividends, and securities sold	$86,471,959		$54,791,035	
Other receivable	92,391		87,960	
Total accounts receivable		86,564,350		54,878,995
Investments:				
Domestic and international stocks	$1,552,900,954		$1,452,093,875	
Domestic and international bonds	550,608,507		505,697,258	
Real estate	444,839,372		345,598,771	
Securities lending collateral	24,316,052		39,678,576	
Miscellaneous	130,450,382		102,627,788	
Total investments at market value		2,703,115,267		2,445,696,268
Total assets		2,959,499,745		2,622,448,729
Less accounts payable		$(211,459,299)		$(207,621,021)
Net assets at market value		$2,748,040,446		$2,414,827,709
Net assets at actuarial value		$2,557,299,032		$2,399,170,737
Net assets at valuation value		$2,557,299,032		$2,399,170,737

Results may be off due to rounding.

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 are anticipated to be made by the Plan for current participants. We then discount these payments at the valuation interest rate to the date of the valuation, thereby determining their present value. We refer to this present value as the "liability" of the Plan.

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

Actuarial Balance Sheet (Dollar Amounts in Thousands)

Assets		Basic	COLA	Total
1	Total valuation assets	$2,518,794	$38,505	$2,557,299
2	Present value of future contributions by members[1]	223,875	0	223,875
3	Present value of future employer contributions for:			
	a Entry age normal cost	284,595	0	284,595
	b Unfunded actuarial accrued liability[1]	359,557	0	359,557
4	Total current and future assets	$3,386,821	$38,505	$3,425,326
Liabilities				
5	Present value of benefits already granted	$1,746,945	$38,505	$1,785,450
6	Present value of benefits to be granted	1,639,876	0	1,639,876
7	Total liabilities	$3,386,821	$38,505	$3,425,326

(1) *Before reflecting supplemental contributions payable by certain members for the UAAL.*

EXHIBIT G
Summary of Reported Reserve Information as of December 31, 2017

Reserves	Before True-Up	After True-Up	Transfer Amount
Member reserves [1]			
General	$431,155,576	$431,155,576	$0
Safety	138,219,390	138,219,390	0
Employer reserves [1]			
General	$517,990,006	$516,772,947	$(1,217,059)
Safety	206,506,622	206,778,543	271,921
Retired member reserve [1]			
General	$1,293,514,941	$1,294,732,000	$1,217,059
Safety	452,484,921	452,213,000	(271,921)
COLA	39,588,541	38,505,000	(1,083,541)
Negative contingency reserve [1]	(522,160,964)	(521,077,423)	1,083,541
Total valuation reserve [1]	$2,557,299,032	$2,557,299,032	$0
Undistributed reserve [2]	$0	$0	$0
Interest fluctuation reserve [2]	0	0	0
Market stabilization reserve [2]	190,741,414	190,741,414	0
Net market value	$2,748,040,446	$2,748,040,446	$0

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

(2) *Not included in development of valuation value of assets.*

Results may be off due to rounding.

EXHIBIT H

Development of Unfunded Actuarial Accrued Liability for Year Ended December 31, 2017

			(Dollar Amounts in Thousands)
1	Unfunded Actuarial Accrued Liability as of December 31, 2016		$408,227
2	Normal Cost		74,355
3	Expected employer and member contributions		(112,391)
4	Interest		28,358
5	Expected Unfunded Actuarial Accrued Liability		$398,549
6	Actuarial (gains)/losses due to all changes:		
	Experience (gains)/losses		
	(a) Investment gain	$(44,256)	
	(b) Contributions less than expected [1]	4,568	
	(c) Salary increases higher than expected	4,586	
	(d) Other experience gains	(3,890)	
	(e) Total experience gains and losses		$(38,992)
7	Unfunded Actuarial Accrued Liability as of December 31, 2017		$359,557

[1] *Includes impact of 18-month delay in rate implementation, phase-in of the impact of the changes in actuarial assumptions on the employer contribution rate and difference between normal cost and UAAL contributions due to actual payroll different than expected during 2017.*

Note: Net loss from other experience of $0.7 million (as shown on page 8) is equal to 6(c)+ 6(d).

EXHIBIT I
Section 415 Limitations

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

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

In particular, Section 415(b) of the IRC limits the maximum annual benefit payable at the Normal Retirement Age to a dollar indexed for inflation. That limit is $215,000 for 2017 and $220,000 for 2018. Normal Retirement Age for these purposes is age 62. These are the limits in simplified terms. They must be adjusted based on each participant’s circumstances, for such things as age at retirement, form of benefits chosen and after tax contributions.

Plan A 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.

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

EXHIBIT J
Definitions of Pension Terms

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

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

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

(b) Mortality rates — the death rates of 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. There are many approaches to recognizing the unfunded or overfunded actuarial accrued liability, from meeting the interest accrual only to amortizing it over a specific period of time.

Amortization of the Unfunded/ (Overfunded) Actuarial Accrued Liability:	Payments made over a period of years equal in value to the Plan's unfunded or overfunded actuarial accrued liability.
Investment Return:	The rate of earnings of the Plan from its investments, including interest, dividends and capital gain and loss adjustments, computed as a percentage of the average value of the fund. For actuarial purposes, the investment return often reflects a smoothing of the market gains and losses to avoid significant swings in the value of assets from one year to the next.

EXHIBIT I
Summary of Actuarial Valuation Results

The valuation was made with respect to the following data supplied to us:			
1.	Retired members as of the valuation date (including 571 beneficiaries in pay status)		4,936
2.	Members inactive during year ended December 31, 2017 with vested rights[1]		1,181
3.	Members active during the year ended December 31, 2017		4,110
The actuarial factors as of the valuation date are as follows (amounts in 000s):			
1.	Normal cost		$75,927
2.	Present value of future benefits		3,425,326
3.	Present value of future normal costs		508,470
4.	Actuarial accrued liability		2,916,856
	Retired members and beneficiaries	$1,785,450	
	Inactive members with vested rights	92,666	
	Active members	1,038,740	
5.	Valuation value of assets[2] ($2,748,040 at market value as reported by the Retirement Association)		2,557,299
6.	Unfunded actuarial accrued liability		$359,557

[1] *Includes members who choose to leave their contributions on deposit even though they have less than five years of service.*

[2] *Excludes non-valuation reserves.*

EXHIBIT I (continued)
Summary of Actuarial Valuation Results

The determination of the recommended average employer contribution is as follows (amounts in 000s):	Dollar Amount	% of Payroll
1. Total normal cost	$75,927	20.53%
2. Expected employee normal cost contributions (excluding expected employee supplemental contributions)	31,406	8.49%
3. Employer normal cost: (1) - (2)	$44,521	12.04%
4. Amortization of unfunded actuarial accrued liability (less expected employee supplemental contributions to reduce the employer's UAAL)	25,749	6.96%
5. Total recommended average employer contribution: (3) + (4)	$70,270	19.00%
6. Projected compensation	$369,751	

EXHIBIT II

Schedule of Employer Contributions (Dollar Amounts in Thousands)

Plan Year Ended December 31	Annual Required Contributions	Actual Contributions	Percentage Contributed
2008	$38,553 (1)	$38,553	100.0% (1)
2009	47,577 (1)	47,577	100.0% (1)
2010	48,426 (2)	48,426 (3)	100.0% (2)
2011	35,711 (4)	35,711	100.0% (4)
2012	45,079 (2)	45,079	100.0% (2)
2013	51,852 (5)	51,852	100.0% (5)
2014	61,179 (6)	61,179	100.0% (6)
2015	64,687	68,240	105.5%
2016	63,640	63,640	100.0%
2017	63,822	63,822	100.0%

(1) *Determined using an amortization period of about 29 years (an amortization period of up to 30 years was allowed by GASB).*

(2) *Determined using an amortization period of about 26 years (an amortization period of up to 30 years was allowed by GASB).*

(3) *Excludes $289.3 million in proceeds from issuance of Pension Obligation Bonds.*

(4) *Determined using an amortization period of about 23 years (an amortization period of up to 30 years was allowed by GASB).*

(5) *Determined using an amortization period of about 27 years (an amortization period of up to 30 years was allowed by GASB).*

(6) *Determined using an amortization period of about 28 years (an amortization period of up to 30 years was allowed by GASB).*

Note: Reference to GASB is under the old Statements 25 and 27.

EXHIBIT III
Actuarial Assumptions and Actuarial Cost Method

Rationale for Assumptions: The information and analysis used in selecting each assumption that has a significant effect on this actuarial valuation is shown in the January 1, 2012 through December 31, 2014 Actuarial Experience Study dated October 2, 2015 and the Economic Actuarial Assumption Study for December 31, 2015 Actuarial Valuation dated September 30, 2015. Unless otherwise noted, all actuarial assumptions and methods shown below apply to all members. These assumptions have been adopted by the Board.

<u>**Economic Assumptions**</u>

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

Employee Contribution Crediting Rate: ½ of the net investment return credited semi-annually.

Cost-of-Living Adjustment for Retirees: Not applicable.

Salary Scale:

Annual Rate of Compensation Increase (%)

Inflation: 3.00% per year; plus "Across the Board" salary increases of 0.50% per year; plus Merit and Promotion increases as follows:

Years of Service	General	Safety
0	6.00	8.50
1	5.00	4.75
2	3.75	3.75
3	2.50	2.75
4	1.50	1.75
5+	0.50	0.50

Increase in Section 7522.10 Compensation Limit:	Increase of 3.00% per year from the valuation date.

<u>Demographic Assumptions</u>

Mortality Rates:

Healthy Retirement:	For General Members: Headcount-Weighted RP-2014 Healthy Annuitant Table projected 20 years with the two-dimensional scale MP20142D set back one year for males and set forward one year for females. For Safety Members: Headcount-Weighted RP-2014 Healthy Annuitant Table projected 20 years with the two-dimensional scale MP20142D set back one year.
Disabled Retirement:	For General Members: Headcount-Weighted RP-2014 Healthy Annuitant Table projected 20 years with the two-dimensional scale MP20142D set forward five years. For Safety Members: Headcount-Weighted RP-2014 Healthy Annuitant Table projected 20 years with the two-dimensional scale MP20142D set forward four years.
Beneficiaries:	Beneficiaries are assumed to have the same mortality as a General Member who has taken a service (non-disability) retirement.

The mortality tables shown above were determined to have a 15% to 20% margin to reflect future mortality improvement, based on a review of the mortality experience in the January 1, 2012 – December 31, 2014 Actuarial Experience Study.

Employee Contribution Rates and Optional Benefits:	For General Members: Headcount-Weighted RP-2014 Healthy Table projected 20 years with the two-dimensional scale MP20142D set back one year for males and set forward one year for females weighted 33.33% male and 66.67% female. For Safety Members: Headcount-Weighted RP-2014 Healthy Table projected 20 years with the two-dimensional scale MP20142D set back one year weighted 75% male and 25% female.

Termination Rates Before Retirement:

Pre-Retirement Mortality Rates: For General Members: Headcount-Weighted RP-2014 Employee Table projected 20 years with the two-dimensional scale MP20142D times 1/2.

For Safety Members: Headcount-Weighted RP-2014 Employee Table projected 20 years with the two-dimensional scale MP20142D times 1/2.

	Rate (%)			
	General		Safety	
Age	Male	Female	Male	Female
30	0.02	0.01	0.02	0.01
35	0.03	0.01	0.03	0.01
40	0.03	0.02	0.03	0.02
45	0.05	0.03	0.05	0.03
50	0.08	0.06	0.08	0.06
55	0.14	0.09	0.14	0.09
60	0.23	0.12	0.23	0.12

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

Termination Rates Before Retirement (continued):

Disability Rates:

	Rate (%)	
Age	General[1]	Safety[2]
20	0.05	0.06
25	0.05	0.16
30	0.08	0.38
35	0.13	0.65
40	0.18	0.90
45	0.29	1.60
50	0.38	2.30
55	0.43	2.80
60	0.51	0.00

(1) *50% of General disabilities are assumed to be service connected disabilities. The other 50% are assumed to be non-service connected disabilities.*

(2) *95% of Safety disabilities are assumed to be service connected disabilities. The other 5% are assumed to be non-service connected disabilities.*

Termination Rates Before Retirement (continued):

Withdrawal Rates:

	Rate (%)	
	Withdrawal (< 5 Years of Service)	
Years of Service	General	Safety
0	6.0	4.0
1	4.0	2.4
2	3.0	1.6
3	2.5	1.6
4	2.0	1.6

	Rate (%)	
	Withdrawal (5+ Years of Service)	
Age	General	Safety
20	1.50	1.60
25	1.50	1.60
30	1.50	1.26
35	1.05	0.70
40	0.60	0.34
45	0.44	0.14
50	0.34	0.00
55	0.24	0.00
60	0.14	0.00

No withdrawal is assumed after a member is assumed to retire.

Termination Rates Before Retirement (continued):

Vested Termination Rates:

	Rate (%)	
	Vested Termination (<5 Years of Service)	
Years of Service	General	Safety
0	6.25	6.00
1	5.50	4.00
2	4.00	4.00
3	3.00	4.00
4	3.00	4.00

	Rate (%)	
	Vested Termination (5+ Years of Service)	
Age	General	Safety
20	3.00	4.00
25	3.00	4.00
30	3.00	3.40
35	3.00	2.10
40	2.40	1.05
45	2.00	0.60
50	2.00	0.00
55	1.70	0.00
60	1.50	0.00

No vested termination is assumed after a member is assumed to retire.

Retirement Rates:

	Rate (%)					
	General			Safety		
Age	Plan A Before 30 Years	Plan A 30 or More Years	Plan B	Plan A Before 30 Years	Plan A 30 or More Years	Plan B
50	7.0	10.0	0.0	14.0	10.0	4.0
51	7.0	10.0	0.0	16.0	12.0	5.0
52	7.0	12.0	4.0	16.0	18.0	6.0
53	8.0	16.0	1.5	18.0	25.0	6.0
54	9.0	20.0	2.5	24.0	50.0	8.0
55	10.0	25.0	2.5	30.0	100.0	20.0
56	10.0	30.0	4.5	30.0	100.0	15.0
57	10.0	30.0	5.5	25.0	100.0	15.0
58	15.0	30.0	6.5	25.0	100.0	20.0
59	20.0	40.0	7.5	25.0	100.0	20.0
60	25.0	40.0	8.5	100.0	100.0	100.0
61	25.0	45.0	9.5	100.0	100.0	100.0
62	30.0	45.0	14.5	100.0	100.0	100.0
63	30.0	45.0	16.5	100.0	100.0	100.0
64	30.0	45.0	19.0	100.0	100.0	100.0
65	30.0	45.0	24.0	100.0	100.0	100.0
66	40.0	45.0	20.0	100.0	100.0	100.0
67	40.0	50.0	20.0	100.0	100.0	100.0
68	50.0	50.0	20.0	100.0	100.0	100.0
69	80.0	80.0	20.0	100.0	100.0	100.0
70	100.0	100.0	100.0	100.0	100.0	100.0

Retirement Age and Benefit for Deferred Vested Members:	For deferred vested members, we make the following retirement assumption: General: Age 58 Safety: Age 52 We assumed that 30% of General and 45% of Safety deferred vested members will continue to work for a reciprocal employer. For reciprocals, we assume 4.00% compensation increases per annum.
Future Benefit Accruals:	1.0 year of service per year.
Unknown Data for Members:	Same as those exhibited by members with similar known characteristics. If not specified, members are assumed to be male.
Definition of Active Members:	First day of pay period following employment.
Percent Married:	70% of male members and 55% of female members are assumed to be married at retirement or pre-retirement death.
Age of Spouse:	Male retirees are 4 years older than their spouses and female retirees are 2 years younger than their spouses.
Cashouts for General Plan A Court members:	The following assumption for a one-time compensation increase at retirement from vacation, sick leave and holiday cashouts is used: General members: 4% Note: For the purposes of calculating member contribution rates, these assumptions are adjusted by a factor of 91% since about 9% of the full costs included above have been determined by SCERA to be from the cashout of sick leave which is excluded from the cashout cost paid by the active members.

Cashouts for Plan A VOM members:	The following assumptions for a one-time compensation increase at retirement from vacation, sick leave and holiday cashouts are used: General members: 4% Safety members: 6%

<u>Actuarial Methods</u>

Actuarial Value of Assets:	Market value of assets less unrecognized returns in each of the last five years. Unrecognized return is equal to the difference between the actual market return and the expected return on valuation value and are recognized over a five-year period. Deferred gains and losses as of December 31, 2015 have been combined and will be recognized in equal amounts over a four-year period starting January 1, 2016.
Valuation Value of Assets:	The Actuarial Value of Assets reduced by the value of the non-valuation reserves.
Actuarial Cost Method:	Entry Age Actuarial 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.
Changes in Actuarial Assumptions and Methods:	There were no changes in actuarial assumptions or methods since the prior valuation.

EXHIBIT IV
Summary of Plan Provisions

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

Membership Eligibility:	All permanent employees of the County of Sonoma or contracting district, scheduled to work at least 50% of a full-time position are eligible to become a member of the Retirement Association.
Plan A	All General and Safety members with membership dates before January 1, 2013.
Plan B	All General and Safety members with membership dates on or after January 1, 2013.
Final Compensation for Benefit Determination:	
Plan A	Highest consecutive one year of compensation earnable (§31462.1)(FAC1).
Plan B	Highest consecutive three years of pensionable compensation (§7522.10(c), §7522.32 and §7522.34)(FAC3).
Service:	Years of service (Yrs).
Service Retirement Eligibility:	
General	
Plan A	Age 50 with 10 years of service credit, or age 70 regardless of service credit, or after 30 years of service credit, regardless of age (§31672).
Plan B	Age 52 with 5 years of service credit (§7522.20(a)) or age 70 regardless of service credit.
Safety	
Plan A	Age 50 with 10 years of service credit, or age 70 regardless of service credit, or after 20 years of service credit, regardless of age (§31672).
Plan B	Age 50 with 5 years of service credit (§7522.25(d)) or age 70 regardless of service credit.

Benefit Formula:

	Retirement Age	Benefit Formula
General Plan A – County (§31676.17)	50	(2.00%xFAC1 – 1/3x2.00%x$350 x 12)xYrs
	55	(2.50%xFAC1 – 1/3x2.50%x$350 x 12)xYrs
	60 or later	(3.00%xFAC1 – 1/3x3.00%x$350 x 12)xYrs
General Plan A – Court (§31676.17)	50	(2.00%xFAC1 – 1/3x2.00%x$350 x 12)xYrs
	55	(2.50%xFAC1 – 1/3x2.50%x$350 x 12)xYrs
	60 or later	(3.00%xFAC1 – 1/3x3.00%x$350 x 12)xYrs
General Plan A – Valley of the Moon (§31676.17)	50	2.00%xFAC1xYrs
	55	2.50%xFAC1xYrs
	60 or later	3.00%xFAC1xYrs
General Plan B (§7522.20(a))	52	1.00%xFAC3xYrs
	55	1.30%xFAC3xYrs
	60	1.80%xFAC3xYrs
	62	2.00%xFAC3xYrs
	65	2.30%xFAC3xYrs
	67 or later	2.50%xFAC3xYrs

	Retirement Age	Benefit Formula
Safety Plan A – County (§31664.1)	50	(3.00%xFAC1 – 1/3x3.00%x$350x12)xYrs
	55	(3.00%xFAC1 – 1/3x3.00%x$350x12)xYrs
	60 or later	(3.00%xFAC1 – 1/3x3.00%x$350x12)xYrs
Safety Plan A – Valley of the Moon (§31664.1)	50	3.00%xFAC1xYrs
	55	3.00%xFAC1xYrs
	60 or later	3.00%xFAC1xYrs
Safety Plan B (§7522.25(d))	50	2.00%xFAC3xYrs
	55	2.50%xFAC3xYrs
	57 or later	2.70%xFAC3xYrs

Maximum Benefit:

Plan A	100% of Final Average Compensation (§31676.17, §31664.1)
Plan B	None

Non-Service Connected Disability:	
General Plan A Members	
Eligibility	Five years of service (§31720).
Benefit Formula	1.8% of FAC per year of service. If the benefit does not exceed one-third of Final Average Compensation, the service is projected to 62, and the total benefit cannot be more than one-third of Final Average Compensation (§31727.1). The Service Retirement benefit is payable, if greater.
Safety Plan A Members	
Eligibility	Five years of service (§31720).
Benefit Formula	1.8% of FAC per year of service. If the benefit does not exceed one-third of Final Average Compensation, the service is projected to 55, and the total benefit cannot be more than one-third of Final Average Compensation (§31727.2). The Service Retirement benefit is payable, if greater.
All Plan B Members	
Eligibility	Five years of service (§31720).
Benefit Formula	1.5% of FAC per year of service. If the benefit does not exceed one-third of Final Average Compensation, the service is projected to 65, and the total benefit cannot be more than one-third of Final Average Compensation (§31727). The Service Retirement benefit is payable, if greater.
Service Connected Disability:	
All Members	
Eligibility	No age or service requirements (§31720).
Benefit Formula	50% of the Final Average Compensation or 100% of Service Retirement benefit, if larger (§31727.4).

Pre-Retirement Death:

All Members

Eligibility	None.
Basic lump sum benefit	Refund of employee contributions with interest, plus one month's compensation for each year of service, to a maximum of six months' compensation (§37181).
Service Connected Death	50% of Final Compensation or 100% of Service Retirement benefit, if greater, payable to spouse or registered domestic partner (§31787).

OR

Vested Members

Eligibility	Five years of service.
Basic benefit	60% of the greater of Service Retirement or Non-Service Connected Disability benefit payable to surviving eligible spouse or registered domestic partner (§31765.1, §31781.1), in lieu of the basic lump sum benefit above.
Service Connected Death	50% of Final Compensation or 100% of Service Retirement benefit, if greater, payable to spouse or registered domestic partner (§31787).

Death After Retirement:

All Members

Service or Non Service Connected Disability Retirement	60% of member's unmodified allowance continued to eligible spouse or registered domestic partner (§31760.1).
Service Connected Disability Retirement	100% of member's unmodified allowance continued to eligible spouse or registered domestic partner (§31786).

Withdrawal Benefits:	
Less than Five Years of Service	Refund of accumulated employee contributions with interest, or earned benefit at age 70 (§31628). A member may also elect to leave contributions on deposit in the retirement fund (§31629.5).
Five or More Years Service	If contributions left on deposit, eligible for retirement benefits at any time after meeting eligibility criteria to retire (§31700).
Employer Contributions:	The amortization period for the outstanding balance of the December 31, 2007 Unfunded Actuarial Accrued Liability as well as for UAAL established on each subsequent valuation as a result of actuarial gains or losses and changes in actuarial assumptions is amortized over a declining 20-year period. The amortization period for UAAL established as a result of including as pensionable salary a cash allowance is amortized over a declining 20-year period with 10 years remaining as of December 31, 2017.
Member Contributions:	Please refer to Appendix A for the specific rates.
General Plan A	Provide for an average annuity at age 55 equal to 1/100 of FAC. (§31621.8)
General Plan B	50% of the total Normal Cost rate.
Safety Plan A	Provide for an average annuity at age 50 equal to 1/100 of FAC. (§31639.25)
Safety Plan B	50% of the total Normal Cost rate.
Additional Contributions	
General – County & Courts	An additional UAAL contribution amount equal to 3.03% of payroll will be paid from July 1, 2004 to June 30, 2024.
Safety – County	An additional UAAL contribution amount equal to 3.00% of payroll will be paid from February 1, 2005 through the last pay period in June 2023.

Other Information:	Safety Plan A members with 30 or more years of service are exempt from paying member contributions. The same applies for General Plan A members hired on or before March 7, 1973.

NOTE: *The summary of major plan provisions is designed to outline principle 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.*

Appendix A
Member Contribution Rates

Comparison of Total Member Rate[1] from December 31, 2017 (New) and December 31, 2016 (Current) Valuations

General Plan A – County[2]				Safety Plan A – County[4]			
Entry Age	Current	New	**Change**	Entry Age	Current	New	**Change**
25	7.32%	7.32%	**0.00%**	25	8.30%	8.30%	**0.00%**
35	8.75%	8.75%	**0.00%**	35	9.92%	9.92%	**0.00%**
45	10.49%	10.49%	**0.00%**	45	12.11%	12.11%	**0.00%**

General Plan A – Court[2]				Safety Plan A – VOM			
Entry Age	Current	New	**Change**	Entry Age	Current	New	**Change**
25	7.58%	7.58%	**0.00%**	25	8.78%	8.78%	**0.00%**
35	9.05%	9.05%	**0.00%**	35	10.48%	10.48%	**0.00%**
45	10.84%	10.84%	**0.00%**	45	12.68%	12.68%	**0.00%**

General Plan A – VOM				Safety Plan B – County[4]			
Entry Age	Current	New	**Change**	Entry Age	Current	New	**Change**
25	7.60%	7.60%	**0.00%**	Any[3]	11.54%	10.98%	**(0.56%)**
35	9.08%	9.08%	**0.00%**				
45	10.87%	10.87%	**0.00%**				

General Plan B[2]				Safety Plan B – VOM			
Entry Age	Current	New	**Change**	Entry Age	Current	New	**Change**
Any[3]	7.42%	7.34%	**(0.08%)**	Any[3]	9.47%	9.97%	**0.50%**

(1) *For Plan A integrated members, contributions for the first $350 of monthly payroll are based on 2/3 of the above rates.*

(2) *Rates exclude an additional UAAL contribution rate of 3.03% of payroll payable from July 1, 2004 to June 30, 2024 for County and Court members only.*

(3) *Plan B member rates are independent of entry age.*

(4) *Rates exclude an additional UAAL contribution rate of 3.00% of payroll payable from February 1, 2005 to the last pay period in June 2023 for County members only.*

Appendix A
Member Contribution Rates (continued)

General Members' Contribution Rates from the December 31, 2017 Actuarial Valuation (As a Percentage of Monthly Payroll)

Plan A – County			Plan A – Court			Plan A – VOM	
Entry Age	First $350*	Over $350	Entry Age	First $350*	Over $350	Entry Age	All Eligible Pay
16	4.14%	6.20%	16	4.28%	6.43%	16	6.45%
17	4.21%	6.32%	17	4.36%	6.55%	17	6.57%
18	4.29%	6.44%	18	4.45%	6.67%	18	6.69%
19	4.37%	6.56%	19	4.53%	6.79%	19	6.82%
20	4.45%	6.68%	20	4.61%	6.92%	20	6.94%
21	4.54%	6.80%	21	4.70%	7.05%	21	7.07%
22	4.62%	6.93%	22	4.78%	7.18%	22	7.20%
23	4.70%	7.06%	23	4.87%	7.31%	23	7.33%
24	4.79%	7.18%	24	4.96%	7.44%	24	7.47%
25	4.88%	7.32%	25	5.05%	7.58%	25	7.60%
26	4.97%	7.45%	26	5.14%	7.71%	26	7.74%
27	5.06%	7.58%	27	5.24%	7.85%	27	7.88%
28	5.15%	7.72%	28	5.33%	7.99%	28	8.02%
29	5.24%	7.86%	29	5.43%	8.14%	29	8.17%
30	5.33%	8.00%	30	5.52%	8.28%	30	8.31%
31	5.43%	8.15%	31	5.62%	8.43%	31	8.46%
32	5.53%	8.29%	32	5.72%	8.58%	32	8.61%
33	5.63%	8.44%	33	5.82%	8.74%	33	8.77%
34	5.73%	8.59%	34	5.93%	8.89%	34	8.92%
35	5.83%	8.75%	35	6.03%	9.05%	35	9.08%
36	5.93%	8.90%	36	6.14%	9.21%	36	9.24%
37	6.04%	9.06%	37	6.25%	9.38%	37	9.41%
38	6.15%	9.22%	38	6.36%	9.54%	38	9.58%
39	6.26%	9.39%	39	6.48%	9.71%	39	9.75%
40	6.37%	9.56%	40	6.59%	9.89%	40	9.92%

Appendix A
Member Contribution Rates (continued)

General Members' Contribution Rates from the December 31, 2017 Actuarial Valuation
(As a Percentage of Monthly Payroll)

Plan A – County			Plan A – Court			Plan A – VOM	
Entry Age	First $350*	Over $350	Entry Age	First $350*	Over $350	Entry Age	All Eligible Pay
41	6.49%	9.73%	41	6.71%	10.07%	41	10.10%
42	6.61%	9.91%	42	6.83%	10.25%	42	10.28%
43	6.73%	10.10%	43	6.96%	10.44%	43	10.47%
44	6.86%	10.29%	44	7.09%	10.63%	44	10.67%
45	6.99%	10.49%	45	7.22%	10.84%	45	10.87%
46	7.13%	10.70%	46	7.37%	11.05%	46	11.08%
47	7.28%	10.92%	47	7.51%	11.27%	47	11.31%
48	7.44%	11.16%	48	7.68%	11.51%	48	11.55%
49	7.62%	11.44%	49	7.85%	11.78%	49	11.82%
50	7.76%	11.64%	50	7.98%	11.97%	50	12.01%
51	7.85%	11.77%	51	8.06%	12.09%	51	12.12%
52	7.88%	11.82%	52	8.07%	12.10%	52	12.13%
53	7.84%	11.77%	53	7.98%	11.97%	53	11.99%
54 & Over	7.76%	11.65%	54 & Over	7.76%	11.65%	54 & Over	11.65%

Interest:	7.25%
COLA:	0.00%
Mortality:	Headcount-Weighted RP-2014 Healthy Table projected 20 years with the two-dimensional scale MP20142D set back one year for males and set forward one year for females weighted 33.33% male and 66.67% female.
Salary Increase:	Inflation (3.00%) + Across the board increase (0.50%) + Merit (see Exhibit III)
Note:	**The above rates exclude an additional UAAL contribution rate of 3.03% of payroll payable from July 1, 2004 to June 30, 2024 for County and Court members only.**

* *For integrated members only.*

Appendix A
Member Contribution Rates (continued)

General Members' Contribution Rates from the December 31, 2017 Actuarial Valuation
(As a Percentage of Monthly Payroll)

	Plan B
	All Eligible Pay*
All Members	7.34%

Interest:	7.25%
COLA:	0.00%
Mortality:	Headcount-Weighted RP-2014 Healthy Table projected 20 years with the two-dimensional scale MP20142D set back one year for males and set forward one year for females weighted 33.33% male and 66.67% female.
Salary Increase:	Inflation (3.00%) + Across the board increase (0.50%) + Merit (see Exhibit III)
Note:	**The above rates exclude an additional UAAL contribution rate of 3.03% of payroll payable from July 1, 2004 to June 30, 2024 for County and Court members only.**

* *It is our understanding that in the determination of pension benefits under the CalPEPRA formulas, the maximum 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 $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)).*

Appendix A
Member Contribution Rates (continued)

Safety Members' Contribution Rates from the December 31, 2017 Actuarial Valuation
(As a Percentage of Monthly Payroll)

Plan A – County			Plan A – VOM	
Entry Age	First $350*	Over $350	Entry Age	All Eligible Pay
16	4.70%	7.05%	16	7.47%
17	4.79%	7.18%	17	7.60%
18	4.87%	7.31%	18	7.74%
19	4.96%	7.45%	19	7.88%
20	5.05%	7.58%	20	8.03%
21	5.15%	7.72%	21	8.17%
22	5.24%	7.86%	22	8.32%
23	5.34%	8.00%	23	8.47%
24	5.43%	8.15%	24	8.62%
25	5.53%	8.30%	25	8.78%
26	5.63%	8.45%	26	8.94%
27	5.73%	8.60%	27	9.10%
28	5.83%	8.75%	28	9.26%
29	5.94%	8.91%	29	9.42%
30	6.05%	9.07%	30	9.59%
31	6.16%	9.23%	31	9.76%
32	6.27%	9.40%	32	9.94%
33	6.38%	9.57%	33	10.12%
34	6.50%	9.74%	34	10.30%
35	6.61%	9.92%	35	10.48%
36	6.74%	10.10%	36	10.67%
37	6.86%	10.29%	37	10.87%
38	6.99%	10.49%	38	11.07%
39	7.12%	10.69%	39	11.27%
40	7.26%	10.90%	40	11.49%

Appendix A
Member Contribution Rates (continued)

Safety Members' Contribution Rates from the December 31, 2017 Actuarial Valuation
(As a Percentage of Monthly Payroll)

Plan A – County			Plan A – VOM	
Entry Age	First $350*	Over $350	Entry Age	All Eligible Pay
41	7.41%	11.12%	41	11.71%
42	7.57%	11.36%	42	11.95%
43	7.74%	11.62%	43	12.21%
44	7.94%	11.91%	44	12.50%
45	8.07%	12.11%	45	12.68%
46	8.16%	12.24%	46	12.77%
47	8.20%	12.30%	47	12.78%
48	8.21%	12.31%	48	12.66%
49 & Over	8.03%	12.05%	49 & Over	12.05%

Interest:	7.25%
COLA:	0.00%
Mortality:	Headcount-Weighted RP-2014 Healthy Table projected 20 years with the two-dimensional scale MP20142D set back one year weighted 75% male and 25% female.
Salary Increase:	Inflation (3.00%) + Across the board increase (0.50%) + Merit (see Exhibit III)
Note:	**The above rates exclude an additional UAAL contribution rate of 3.00% of payroll payable from February 1, 2005 to the last pay period in June 2023 for County members only.**

* *For integrated members only.*

Appendix A
Member Contribution Rates (continued)

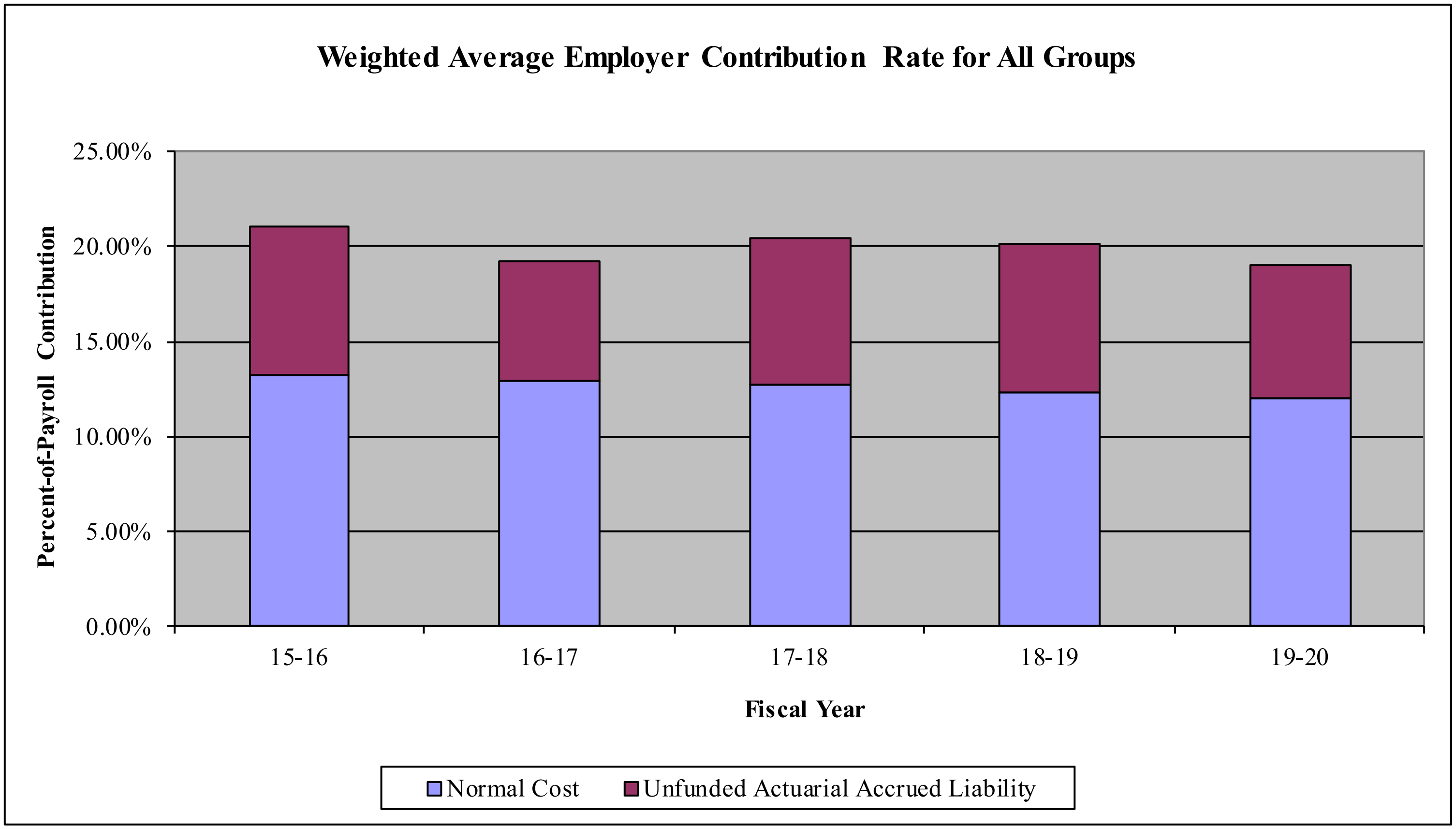
Safety Members' Contribution Rates from the December 31, 2017 Actuarial Valuation (As a Percentage of Monthly Payroll)			
Plan B – County		**Plan B – VOM**	
	All Eligible Pay*		**All Eligible Pay***
All Members	10.98%	All Members	9.97%

Interest:	7.25%
COLA:	0.00%
Mortality:	Headcount-Weighted RP-2014 Healthy Table projected 20 years with the two-dimensional scale MP20142D set back one year weighted 75% male and 25% female.
Salary Increase:	Inflation (3.00%) + Across the board increase (0.50%) + Merit (see Exhibit III)
Note:	**The above rates exclude an additional UAAL contribution rate of 3.00% of payroll payable from February 1, 2005 to the last pay period in June 2023 for County members only.**

* *It is our understanding that in the determination of pension benefits under the CalPEPRA formulas, the maximum 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 $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)).*

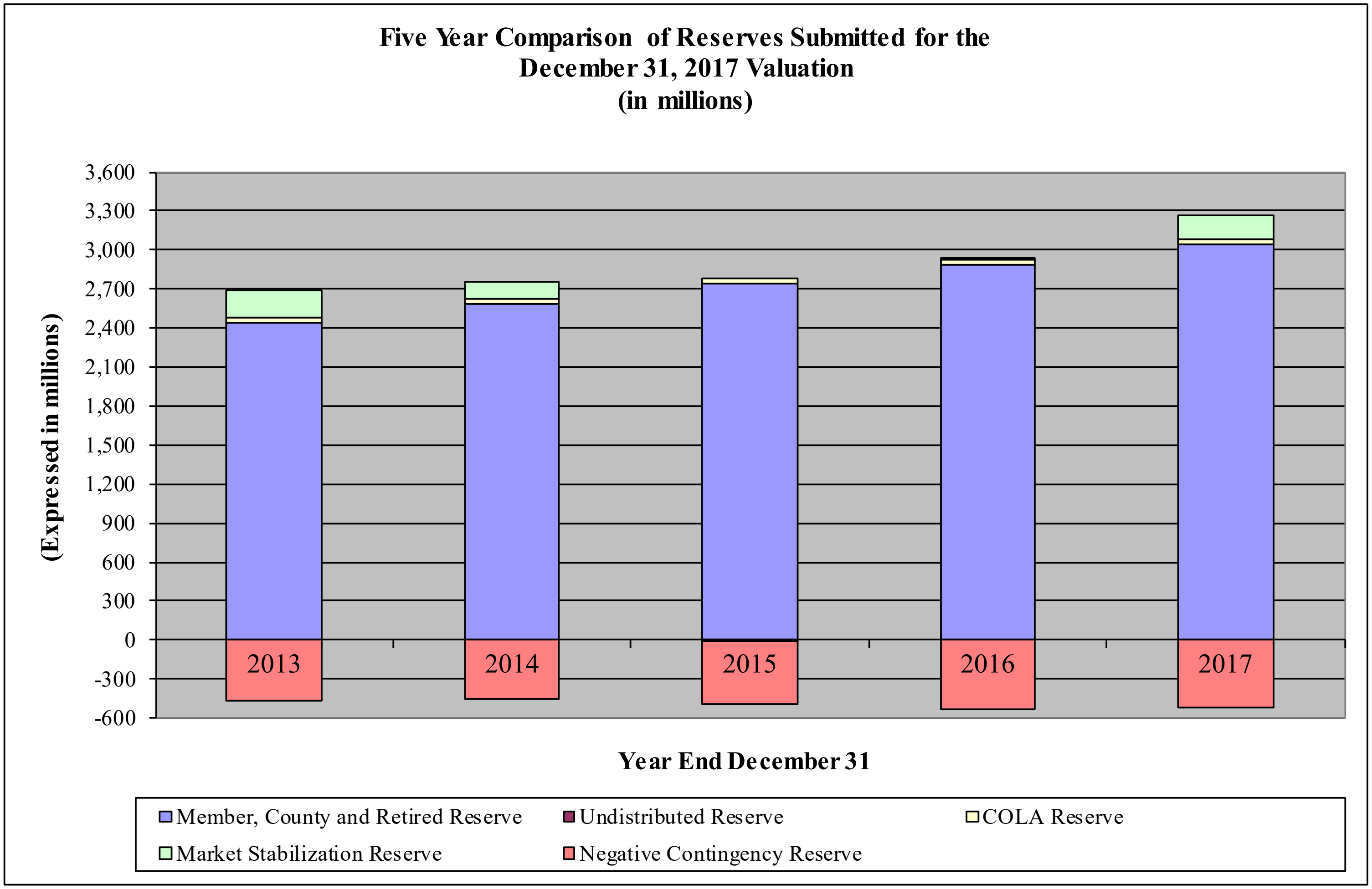
Appendix B
Average Employer Contribution Rates

The following chart displays the historical and future average employer contribution rates, broken down by normal cost and unfunded actuarial accrued liability. These rates have not been adjusted for any contribution rate phase-in (if applicable).



Appendix C
Reserves

The following chart displays the 5-year historical reserves balance after "true-up".



Appendix D
Amortization Schedule for UAAL (Dollar Amounts in Thousands)

	Date Established	Source	Initial Amount	Outstanding Balance	Years Remaining	Annual Payment[3]
General	December 31, 2007	Restart amortization - County	$123,396	$30,921 [2][4]	11	$3,466
	December 31, 2007	Restart amortization - Court	8,599	7,658	11	858
	December 31, 2007[1]	Cash Allowance - County	55,982	13,670 [2][4]	10	1,658
	December 31, 2008	Actuarial loss - County	44,591	11,299 [2][4]	11	1,267
	December 31, 2008	Actuarial loss - Court	3,107	2,797	11	314
	December 31, 2009[1]	Early Retirement Option - County	1,448	378 [2][4]	12	39
	December 31, 2009	Actuarial loss - County	45,691	11,918 [2][4]	12	1,245
	December 31, 2009	Actuarial loss - Court	2,859	2,651	12	277
	December 31, 2009	Actuarial loss - VOM	13	13	12	1
	December 31, 2009	Assumption changes - County	10,990	2,866 [2][4]	12	299
	December 31, 2009	Assumption changes - Court	688	638	12	67
	December 31, 2009	Assumption changes - VOM	3	3	12	0
	December 31, 2010	Actuarial loss - County	48,235	45,253 [4]	13	4,437
	December 31, 2010	Actuarial loss - Court	3,044	2,885	13	283
	December 31, 2010	Actuarial loss - VOM	14	14	13	1
	December 31, 2010	Assumption changes - County	37,393	35,080 [4]	13	3,439
	December 31, 2010	Assumption changes - Court	2,360	2,237	13	219
	December 31, 2010	Assumption changes - VOM	11	11	13	1
	December 31, 2011	Actuarial loss - County	74,087	70,708 [4]	14	6,543
	December 31, 2011	Actuarial loss - Court	4,760	4,589	14	425
	December 31, 2011	Actuarial loss - VOM	23	23	14	2
	December 31, 2012	Actuarial loss - County	71,616	69,185 [4]	15	6,074
	December 31, 2012	Actuarial loss - Court	4,188	4,088	15	359
	December 31, 2012	Actuarial loss - VOM	99	98	15	9
	December 31, 2012	Assumption changes - County	64,345	62,160 [4]	15	5,457
	December 31, 2012	Assumption changes - Court	3,763	3,672	15	322
	December 31, 2012	Assumption changes - VOM	89	88	15	8
	December 31, 2012	Compensation earnable change - County	(8,157)	(7,879) [4]	15	(692)
	December 31, 2012	Compensation earnable change - Court	(477)	(465)	15	(41)
	December 31, 2012	Compensation earnable change - VOM	(11)	(11)	15	(1)
	December 31, 2012	Cashout change - County	(20,626)	(19,927) [4]	15	(1,749)

(1) *Payment is only made by the County and not by the Court or Valley of the Moon because the programs were only available to County employees.*

(2) *Adjusted to reflect $289.3 million in proceeds from issuance of Pension Obligation Bonds by the County.*

(3) *Before adjustments for supplemental contributions paid by certain employees to reduce the employer's UAAL.*

(4) *Adjusted to reflect $3.7 million from an additional UAAL payment by the County.*

Appendix D (continued)
Amortization Schedule for UAAL (Dollar Amounts in Thousands)

	Date Established	Source	Initial Amount	Outstanding Balance	Years Remaining	Annual Payment[(1)]
General (Continued)	December 31, 2013	Actuarial gain - County	$(35,260)	$(34,411) [(2)]	16	$(2,878)
	December 31, 2013	Actuarial gain - Court	(1,884)	(1,857)	16	(155)
	December 31, 2013	Actuarial gain - VOM	(38)	(38)	16	(3)
	December 31, 2014	Actuarial gain - County	(71,508)	(70,227) [(2)]	17	(5,618)
	December 31, 2014	Actuarial gain - Court	(3,657)	(3,628)	17	(290)
	December 31, 2014	Actuarial gain - VOM	(84)	(83)	17	(7)
	December 31, 2015	Actuarial gain - County	(15,879)	(15,640) [(2)]	18	(1,201)
	December 31, 2015	Actuarial gain - Court	(830)	(826)	18	(63)
	December 31, 2015	Actuarial gain - VOM	(18)	(18)	18	(1)
	December 31, 2015	Assumption changes - County	57,580	56,716 [(2)]	18	4,354
	December 31, 2015	Assumption changes - Court	3,009	2,995	18	230
	December 31, 2015	Assumption changes - VOM	64	64	18	5
	December 31, 2016	Actuarial loss - County	7,303	7,295	19	539
	December 31, 2016	Actuarial loss - Court	364	364	19	27
	December 31, 2016	Actuarial loss - VOM	8	8	19	1
	December 31, 2017	Actuarial gain - County	(26,381)	(26,381)	20	(1,881)
	December 31, 2017	Actuarial gain - Court	(1,236)	(1,236)	20	(88)
	December 31, 2017	Actuarial gain - VOM	(37)	(37)	20	(3)
Subtotal				$269,681		$27,555

(1) *Before adjustments for supplemental contributions paid by certain employees to reduce the employer's UAAL.*

(2) *Adjusted to reflect $3.7 million from an additional UAAL payment by the County.*

Appendix D (continued)
Amortization Schedule for UAAL (Dollar Amounts in Thousands)

	Date Established	Source	Initial Amount	Outstanding Balance	Years Remaining	Annual Payment[3]
Safety – County	December 31, 2007	Restart amortization	$43,504	$10,917 [2][4]	11	$1,224
	December 31, 2007[1]	Cash Allowance	14,693	3,593 [2][4]	10	436
	December 31, 2008	Actuarial loss	7,603	1,929 [2][4]	11	216
	December 31, 2009	Actuarial loss	28,643	7,481 [2][4]	12	782
	December 31, 2009	Assumption changes	7,337	1,917 [2][4]	12	200
	December 31, 2010	Actuarial loss	14,765	13,871 [4]	13	1,360
	December 31, 2010	Assumption changes	14,376	13,505 [4]	13	1,324
	December 31, 2011	Actuarial loss	24,746	23,650 [4]	14	2,189
	December 31, 2012	Actuarial loss	26,012	25,162 [4]	15	2,209
	December 31, 2012	Assumption changes	12,268	11,866 [4]	15	1,042
	December 31, 2012	Compensation earnable change	(2,613)	(2,527) [4]	15	(222)
	December 31, 2012	Cashout change	(11,987)	(11,596) [4]	15	(1,018)
	December 31, 2013	Actuarial gain	(6,051)	(5,913) [4]	16	(495)
	December 31, 2014	Actuarial gain	(26,652)	(26,210) [4]	17	(2,097)
	December 31, 2015	Actuarial gain	(5,153)	(5,083) [4]	18	(390)
	December 31, 2015	Assumption changes	31,096	30,671 [4]	18	2,355
	December 31, 2016	Actuarial loss	2,293	2,290	19	169
	December 31, 2017	Actuarial gain	(10,655)	(10,655)	20	(760)
Subtotal				$84,868		$8,524

(1) *Payment is only made by the County and not by Valley of the Moon because the program was only available to County employees.*

(2) *Adjusted to reflect $289.3 million in proceeds from issuance of Pension Obligation Bonds by the County.*

(3) *Before adjustments for supplemental contributions paid by certain employees to reduce the employer's UAAL.*

(4) *Adjusted to reflect $3.7 million from an additional UAAL payment by the County.*

Appendix D (continued)
Amortization Schedule for UAAL (Dollar Amounts in Thousands)

	Date Established	Source	Initial Amount	Outstanding Balance	Years Remaining	Annual Payment
Safety – Valley of the Moon	December 31, 2007	Restart amortization	$1,852	$1,649	11	$185
	December 31, 2008	Actuarial loss	169	152	11	17
	December 31, 2009	Actuarial loss	678	628	12	66
	December 31, 2009	Assumption changes	174	161	12	17
	December 31, 2010	Actuarial loss	344	327	13	32
	December 31, 2010	Assumption changes	335	318	13	31
	December 31, 2011	Actuarial loss	639	616	14	57
	December 31, 2012	Actuarial loss	1,444	1,409	15	124
	December 31, 2012	Assumption changes	681	665	15	58
	December 31, 2012	Compensation earnable change	(145)	(142)	15	(12)
	December 31, 2013	Actuarial gain	(333)	(329)	16	(28)
	December 31, 2014	Actuarial gain	(1,524)	(1,512)	17	(121)
	December 31, 2015	Actuarial gain	(321)	(320)	18	(25)
	December 31, 2015	Assumption changes	1,937	1,928	18	148
	December 31, 2016	Actuarial loss	141	141	19	10
	December 31, 2017	Actuarial gain	(683)	(683)	20	(49)
Subtotal				$5,008		$510

Appendix D (continued)
Amortization Schedule for UAAL (Dollar Amounts in Thousands)

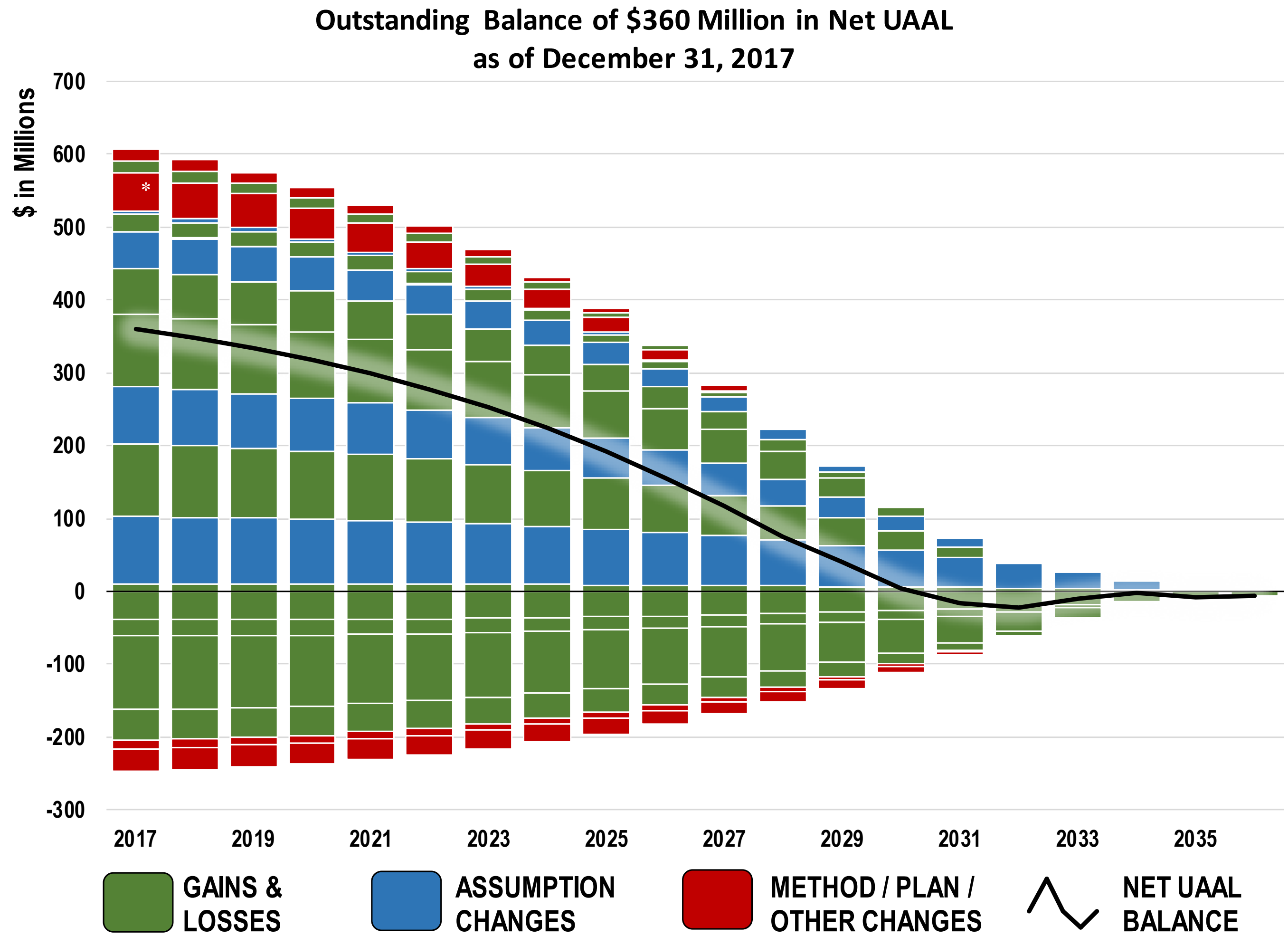
	Date Established	Source	Initial Amount	Outstanding Balance	Years Remaining	Annual Payment[2]
Total	December 31, 2007	Restart amortization	$177,351	$51,145 [1][3]	11	$5,733
	December 31, 2007	Cash Allowance	70,675	17,263 [1][3]	10	2,094
	December 31, 2008	Actuarial loss	55,470	16,177 [1][3]	11	1,814
	December 31, 2009	Early Retirement Option	1,448	378 [1][3]	12	39
	December 31, 2009	Actuarial loss	77,884	22,691 [1][3]	12	2,371
	December 31, 2009	Assumption changes	19,192	5,585 [1][3]	12	583
	December 31, 2010	Actuarial loss	66,402	62,350 [3]	13	6,113
	December 31, 2010	Assumption changes	54,475	51,151 [3]	13	5,014
	December 31, 2011	Actuarial loss	104,255	99,586 [3]	14	9,216
	December 31, 2012	Actuarial loss	103,359	99,942 [3]	15	8,775
	December 31, 2012	Assumption changes	81,146	78,451 [3]	15	6,887
	December 31, 2012	Compensation earnable change	(11,403)	(11,024) [3]	15	(968)
	December 31, 2012	Cashout change	(32,613)	(31,523) [3]	15	(2,767)
	December 31, 2013	Actuarial gain	(43,566)	(42,548) [3]	16	(3,559)
	December 31, 2014	Actuarial gain	(103,425)	(101,660) [3]	17	(8,133)
	December 31, 2015	Actuarial gain	(22,201)	(21,887) [3]	18	(1,680)
	December 31, 2015	Assumption changes	93,686	92,374 [3]	18	7,092
	December 31, 2016	Actuarial loss	10,109	10,098	19	746
	December 31, 2017	Actuarial gain	(38,992)	(38,992)	20	(2,781)
Subtotal				$359,557		$36,589

(1) *Adjusted to reflect $289.3 million in proceeds from issuance of Pension Obligation Bonds by the County.*

(2) *Before adjustments for supplemental contributions paid by certain employees to reduce the employer's UAAL.*

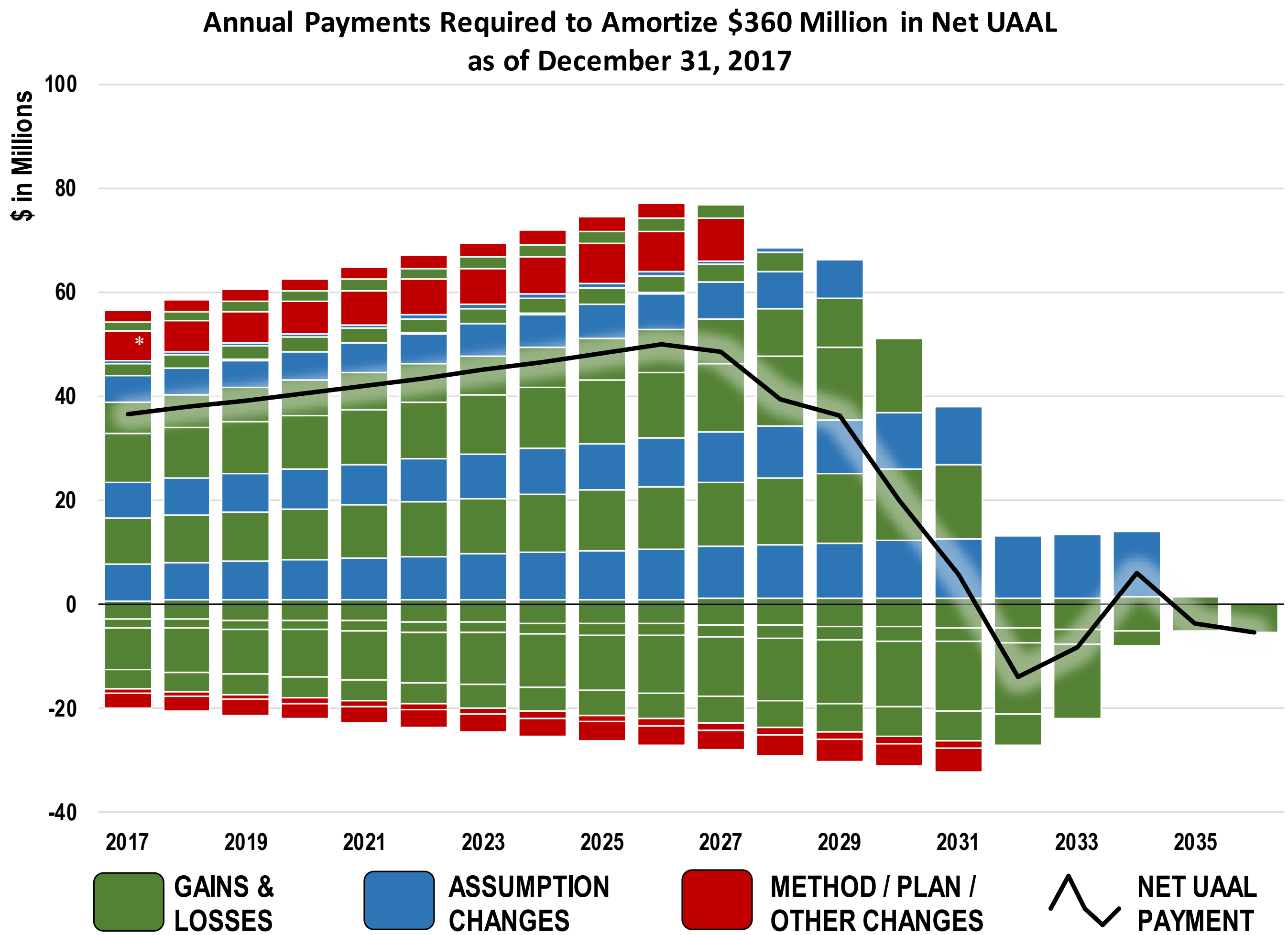
(3) *Adjusted to reflect $3.7 million from an additional UAAL payment by the County.*

Appendix E
Projection of UAAL Outstanding Balances and Payments



** Restart amortization, established December 31, 2007*

Appendix E (continued)
Projection of UAAL Outstanding Balances and Payments



** Restart amortization, established December 31, 2007*

5529903v4/05012.003