



# **Los Angeles County Employees Retirement Association**

## **Actuarial Valuation of Retirement Benefits June 30, 2016**

Prepared by:

**Mark C. Olleman**, FSA, EA, MAAA

**Nick J. Collier**, ASA, EA, MAAA

**Craig Glyde**, ASA, EA, MAAA

Milliman, Inc.  
1301 Fifth Avenue, Suite 3800  
Seattle, WA 98101-2605  
Tel +1 206 624 7940  
milliman.com



1301 Fifth Avenue  
Suite 3800  
Seattle, WA 98101-2605  
USA

Tel +1 206 624 7940  
Fax +1 206 623 3485

milliman.com

February 21, 2017

Board of Investments  
LACERA  
300 North Lake Avenue, Suite 820  
Pasadena, CA 91101-4199

Dear Members of the Board:

As requested, we have performed an actuarial valuation of retirement benefits for the Los Angeles County Employees Retirement Association (LACERA) as of June 30, 2016 to be used in determining the contribution rates effective July 1, 2017. The major findings of the valuation are contained in this report. This report reflects the benefit provisions and contribution rates in effect as of June 30, 2016, and LACERA's Funding Policy that was adopted in December of 2009 and amended as of February 2013, as well as the three-year phase-in of the employer contribution rate that was adopted at the December 2016 Board of Investments meeting. It should be noted that under the amended Funded Policy, the reserve value for STAR benefits is included in the Valuation Assets for 2014 and future valuations; however, the liability for any potential STAR benefits that may be granted in the future is not included in this valuation.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by LACERA's staff. This information includes, but is not limited to, statutory provisions, employee data, and financial information. In our examination of these data, we have found them to be reasonably consistent and comparable with data used for other purposes. Since the valuation results are dependent on the integrity of the data supplied, the results can be expected to differ if the underlying data is incomplete or missing. It should be noted that if any data or other information is inaccurate or incomplete, our calculations may need to be revised.

All costs, liabilities, rates of interest, and other factors for LACERA have been determined on the basis of actuarial assumptions and methods that are individually reasonable (taking into account the experience of LACERA and reasonable expectations); and that, in combination, offer a reasonable estimate of anticipated experience affecting LACERA. Further, in our opinion, each actuarial assumption used is reasonably related to the experience of the Plan and to reasonable expectations, which, in combination, represent a reasonable estimate of anticipated experience for LACERA.

This valuation report is only an estimate of LACERA's financial condition as of a single date. It can neither predict LACERA's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of benefits, only the timing of contributions. While the valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct. Determining results using alternative assumptions (except the +/- 0.5% results shown at the end of the Executive Summary) is outside the scope of our engagement.

This work product was prepared solely for LACERA for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work. Milliman recommends that third parties be aided by their own actuary or other qualified professional when reviewing the Milliman work product.

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 or additional cost or contribution requirements based on the Plan's funded status); and changes in plan provisions or applicable law. Due to the limited scope of our assignment, we did not perform an analysis of the potential range of future measurements. The Board of Investments has the final decision regarding the appropriateness of the assumptions and adopted them as indicated in Appendix A of this report.

Actuarial computations presented in this report are for purposes of determining the recommended funding amounts of LACERA. The calculations in the enclosed report have been made on a basis consistent with our understanding of LACERA's funding requirements as stated under their Funding Policy, with a modification to reflect the three-year phase-in of the employer contribution rate change due to the new assumptions. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes. Milliman has provided LACERA financial reporting results relevant to GASB Statements No. 67 and 68 in a separate report.

Milliman's work is prepared solely for the internal business use of LACERA. To the extent that Milliman's work is not subject to disclosure under applicable public records laws, Milliman's work may not be provided to third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of its work product. Milliman's consent to release its work product to any third party may be conditioned on the third party signing a Release, subject to the following exceptions:

- (a) LACERA may provide a copy of Milliman's work, in its entirety, to LACERA's professional service advisors who are subject to a duty of confidentiality and who agree to not use Milliman's work for any purpose other than to benefit LACERA.
- (b) LACERA may provide a copy of Milliman's work, in its entirety, to other governmental entities, as required by law.

No third party recipient of Milliman's work product should rely upon Milliman's work product. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are pension actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the plan sponsors. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices. We are members of the American Academy of Actuaries and meet the Qualification Standards to render the actuarial opinion contained herein.

This work product was prepared solely for LACERA for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work. Milliman recommends that third parties be aided by their own actuary or other qualified professional when reviewing the Milliman work product.



We would like to express our appreciation to Mr. Gregg Rademacher, Chief Executive Officer of LACERA, and to members of his staff, who gave substantial assistance in supplying the data on which this report is based.

We respectfully submit the following report, and we look forward to discussing it with you.

Sincerely,

A handwritten signature in black ink that reads "Mark C. Olleman".

Mark C. Olleman, FSA, EA, MAAA  
Consulting Actuary

A handwritten signature in black ink that reads "Nick J. Collier".

Nick J. Collier, ASA, EA, MAAA  
Consulting Actuary

A handwritten signature in black ink that reads "Craig Glyde".

Craig Glyde, ASA, EA, MAAA  
Consulting Actuary

MCO/NJC/CG/nlo

Table of Contents

The Table of Contents is linked.

	Page
<b>Section 1</b>	<b>Summary of the Findings ..... 1</b>
Exhibit 1	Summary of Significant Valuation Results ..... 11
<b>Section 2</b>	<b>Scope of the Report ..... 13</b>
<b>Section 3</b>	<b>Assets ..... 15</b>
Exhibit 2	Statement of Fiduciary Net Position As of June 30, 2016 and June 30, 2015 ..... 19
Exhibit 3	Statement of Changes in Fiduciary Net Position For the Years Ended June 30, 2016 and 2015 ..... 20
Exhibit 4	Allocation of Assets by Accounting Reserve Amounts ..... 21
Exhibit 5	Five-Year Smoothing of Gains and Losses on Market Value ..... 22
Exhibit 6	Allocation of Valuation and Non-Valuation Assets ..... 23
<b>Section 4</b>	<b>Actuarial Liabilities ..... 25</b>
Exhibit 7	Actuarial Balance Sheet – June 30, 2016 ..... 26
Exhibit 8a	Analysis of Change in Unfunded Actuarial Accrued Liability ..... 31
Exhibit 8b	History of Changes in Unfunded Actuarial Accrued Liability ..... 32
<b>Section 5</b>	<b>Member Contributions ..... 33</b>
Exhibit 9	Sample Member Contribution Rates ..... 35
<b>Section 6</b>	<b>Employer Contributions ..... 37</b>
Exhibit 10	Calculated Normal Cost Contribution Rates – June 30, 2016 ..... 40
Exhibit 11a	Total Employer Contributions (without phase-in of new assumptions) ..... 41
Exhibit 11b	Total Employer Contributions (with phase-in of new assumptions) ..... 42
Exhibit 12	Unfunded Actuarial Accrued Liability Detail ..... 43
<b>Section 7</b>	<b>Supplemental Information ..... 45</b>
Exhibit 13	Schedule of Funding Progress ..... 46
Exhibit 14	Schedule of Contributions from the Employer ..... 47
Exhibit 15	Solvency Test ..... 48
<b>Section 8</b>	<b>Cash Flow History and Projections ..... 49</b>
Exhibit 16a	Cash Flow History and Projections – Dollars ..... 50
Exhibit 16b	Cash Flow History and Projections – Charts ..... 51
<b>Appendix A</b>	<b>Actuarial Procedures and Assumptions ..... A-1</b>
<b>Appendix B</b>	<b>Summary of Plan Provisions ..... B-1</b>
<b>Appendix C</b>	<b>Valuation Data and Schedules ..... C-1</b>
<b>Appendix D</b>	<b>Member Contribution Rates ..... D-1</b>
<b>Appendix E</b>	<b>Historical Information ..... E-1</b>
<b>Appendix F</b>	<b>Glossary ..... F-1</b>

## Section 1 Summary of the Findings



### Overview

### 2016 Valuation Results

	June 30, 2016	June 30, 2015
Employer Contribution Rate with Phase-in	19.70% <sup>(1)</sup>	17.77%
Funded Ratio	79.4%	83.3%

1. Employer contribution rate without phase-in is 21.21%.

This report presents the results of the June 30, 2016 actuarial valuation. This valuation determines the required contribution rates payable starting July, 2017. Several key points are summarized as follows:

- **Investment Returns:** For the fiscal year ending in 2016, the fund returned 1.1% on a market basis (gross of investment expenses), a rate of return less than the assumed rate. In total, there was a \$3.6 billion loss on market assets relative to the assumed rate of return for the prior year of 7.50%. However, the recognition of net asset gains from prior years partially offset this loss, resulting in a return on actuarial assets of 6.5%. The resulting loss on actuarial assets was \$496 million.
- **Employer Contribution Rates:** The total calculated employer contribution rate increased from the prior valuation by 3.44% (from 17.77% to 21.21%) of payroll. At the December 2016 meeting, the Board of Investments (BOI) adopted a three-year phase-in of the increase in the employer contribution rate due to the new assumptions. After reflecting the phase-in, the employer contribution rate is 19.70% of payroll. The phase-in of the assumption change costs is discussed on the next page.

The increase is primarily due to the assumption changes adopted by the Board of Investments effective June 30, 2016, which resulted in an increase of 1.36% of payroll (2.87% without the phase-in). Recognition of net asset losses from the current and prior years resulted in a 0.39% increase. All other sources, including Cost of Living Adjustments (COLAs) less than assumed and salary increases greater than assumed, resulted in a net increase of 0.18% of payroll. See the “Analysis of Change” section that follows for a listing of the sources of change.

- **Member Contribution Rates:** New member contribution rates are being recommended effective July 1, 2017, based on the new assumptions adopted with the 2016 Investigation of Experience. As shown in Section 5, we are recommending an increase in member rates. The average rate for all contributing members increased from 7.84% to 8.29% of payroll.
- **Funding:** The Funded Ratio decreased from 83.3% to 79.4% primarily due to the assumption changes effective June 30, 2016, which caused a decrease of 3.9% in the Funded Ratio. Recognition of current and prior year asset losses caused a 0.8% decrease. See the “Analysis of Change” section that follows for a listing of the sources of change.

**Overview  
 (continued)**

- 2016 Assumption Changes:** At the December 2016 BOI meeting, the Board adopted new assumptions with the 2016 Investigation of Experience report. The adopted assumptions included a decrease in the investment return assumption to 7.25%, a decrease in the wage growth assumption to 3.25%, a decrease in the CPI assumption to 2.75%, and an increase in life expectancies. All assumption changes have been reflected in the June 30, 2016 actuarial valuation, although the impact on the employer contribution rate is being phased in over three years.

**Phase-In of Employer  
 Contribution Rate  
 Increase Due to New  
 Assumptions**

The calculated employer contribution rate for the next fiscal year represents a 3.44% of pay increase as compared to the rate employers are currently paying. The portion of the increase attributable to the new assumptions is 2.87% of pay. As adopted at the December BOI meeting, the increase in the calculated employer contribution rate due to the new assumptions is to be recognized over a three-year period (the time until the next investigation of experience). Phasing in these increases may be viewed as consistent with one of the goals of LACERA’s Retirement Benefit Funding Policy: “...to achieve and maintain stable employer contributions that are as low as possible.” The phase-in approach is not specifically addressed in Section II of the Funding Policy which discusses setting contribution rates. Our understanding, based on discussions with LACERA, is that the three-year phase-in that was adopted temporarily modifies the calculation specified in the Funding Policy.

Recognizing this evenly over a three-year period would result in about 0.96% of pay per year. In other words, this option would defer two-thirds of the increase in the employer rate calculation for the year beginning July 1, 2017. An additional test needs to be applied to this calculation. In Section II 1A(4) of the Funding Policy, it states: “In no case shall the total amount contributed by the employer be less than the Normal Cost Rate for the year, plus a 30-year amortization of the total UAAL.” We interpret this to mean that if the rate increase is phased in, we need to limit the phase-in, so that the contribution rate is still sufficient to amortize the UAAL over a period of 30 years or less. Note that a minimum 30-year amortization requirement is also included in Section 31453.5 of the County Retirement Law.

Applying the phase-in and the 30-year minimum amortization to the employer contribution rate, we project the following rates (assuming all actuarial assumptions are met and reflecting the projected recognition of deferred asset gains and losses):

Fiscal Year Starting 7/1	Projected Employer Contribution Rate	
	Without Phase-in	With Phase-in <sup>(1)</sup>
2017	21.21%	19.70%
2018	21.25%	20.38%
2019	21.57%	21.71%
2020	22.42%	22.57%
2021	22.97%	23.11%
2022	22.97%	23.11%
2023	22.97%	23.11%
2024	22.97%	23.11%
2025	22.97%	23.11%
2026	22.97%	23.11%

1. The 30-year minimum amortization applies in the fiscal year starting July 1, 2017.

**Phase-In of Employer Contribution Rate Increase Due to New Assumptions (continued)**

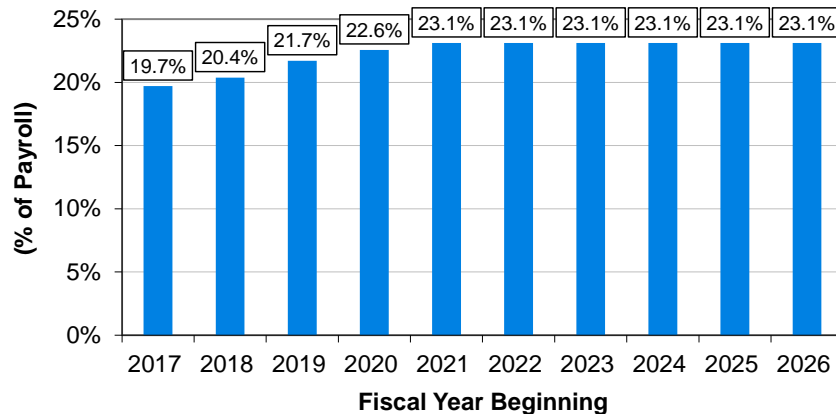
As shown in the preceding chart, the phase-in approach initially results in lower employer contribution rates. Ultimately, the rates are projected to be slightly higher due to the lower contributions expected to be received during the phase-in period. Also note that the preliminary calculation of the phased-in contribution rate for fiscal year beginning July 1, 2017 was 19.30% of pay (21.21% calculated rate less 1.91% deferred recognition); however, due to the application of the 30-year minimum amortization of the UAAL, the final phased-in employer contribution rate for that period is 19.70%.

**Employer Contribution Rate**

The employer contribution rate beginning July 1, 2017 is 19.70% of payroll (21.21% without the phase-in). It should be noted that 19.70% is a weighted average for all LACERA plans. The actual percent of payroll to be contributed by the employers varies by plan as shown in Exhibit 11b.

The new calculated rate is effective for the fiscal year beginning July 1, 2017. Based on asset gains and losses that are currently being deferred and the phasing in of the contribution increases due to the new assumptions, it is expected that the employer contribution rate will increase over the next few years if all actuarial assumptions are met. To illustrate this impact, we have performed a 10-year projection of the employer contribution rate that assumes all actuarial assumptions are met and reflects the projected recognition of deferred asset gains and losses existing as of June 30, 2016. This projection is shown in the chart below.

**Projected Employer Contribution Rate<sup>(1)</sup>**



1. Projections assume that all actuarial assumptions are met after June 30, 2016, and reflect the phasing in of the new assumption costs and the scheduled recognition of asset gains and losses currently being deferred. Actual results will vary.



**Analysis of Change**

The following chart shows that the assumption changes adopted effective June 30, 2016 were the most significant factor affecting the employer contribution rate and the Funded Ratio.

Sources of Change	Employer Contribution Rate	Funded Ratio
<b>June 30, 2015 Actuarial Valuation</b>	<b>17.77%</b>	<b>83.3%</b>
Expected Year-to-Year Change	0.00%	0.8%
Assumption Changes	2.87%	-3.9%
Recognized Asset Gain/Loss		
From Current Year	0.54%	-1.1%
From Prior Years	-0.15%	0.3%
Combined Asset Gain/Loss	<u>0.39%</u>	<u>-0.8%</u>
Contributions < Assumed	0.01%	0.1%
Payroll Increase > Assumed	-0.08%	0.0%
Liability Gain/Loss		
Salary Increase > Assumed	0.20%	-0.2%
Retiree COLAs < Assumed	-0.12%	0.2%
Other	0.17%	-0.1%
Combined Liability Gain/Loss	<u>0.25%</u>	<u>-0.1%</u>
<b>Total Change</b>	<b><u>3.44%</u></b>	<b><u>-3.9%</u></b>
<b>Preliminary Calculation</b>	<b>21.21%</b>	<b>79.4%</b>
Deferred Recognition of New Assump.	-1.51%	0.0%
<b>June 30, 2016 Actuarial Valuation</b>	<b>19.70%</b>	<b>79.4%</b>

1. Employer contribution rate reflects 1/3rd recognition of increase due to assumption changes.

**Funding Progress**

Based on the 2015 valuation, the expected UAAL of June 30, 2016 was \$9.39 billion. The actual UAAL for the fiscal year ending June 30, 2016 is \$12.84 billion. The additional \$3.45 billion was primarily due to the new assumptions which added \$2.92 billion and a net loss on Valuation Assets of \$0.50 billion.

One measure of the funding adequacy of the Plan is the Funded Ratio, which compares the value of the actuarial value of assets (net of certain non-valuation reserves) to the Actuarial Accrued Liability (AAL), for all LACERA plans combined. LACERA's Funded Ratio was 94.5% as of June 30, 2008. As shown in the graph that follows, the Funded Ratio decreased steadily over the five year period following the economic downturn, to a low of 75.0% as of June 30, 2013, due to the recognition of asset losses. After increasing in 2014 and 2015, the Funded Ratio has decreased to 79.4% in 2016, primarily as a result of the 2016 assumption changes. Assets losses in 2015 and 2016 have also contributed to the decrease. As of the 2016 valuation, deferred net asset losses are being recognized in the Valuation Assets.

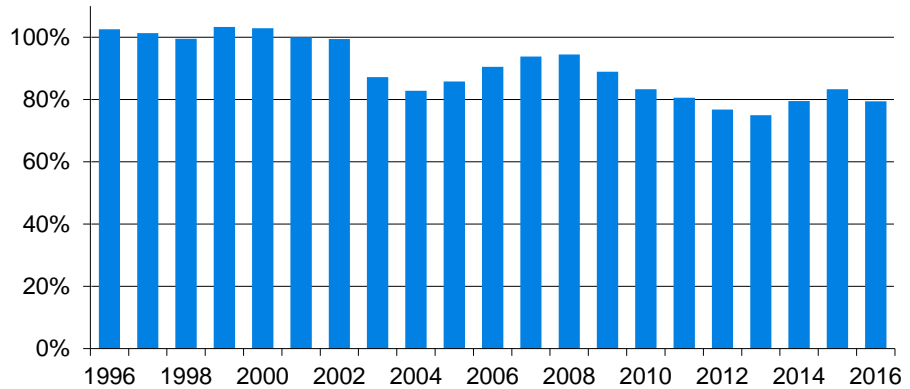
**Funding Progress  
 (continued)**

On June 30, 2016, the market value of the fund (including non-valuation reserves) was \$47.8 billion. The actuarial value of assets was \$49.9 billion, split between \$0.5 billion of non-Valuation Assets and \$49.4 billion of Valuation Assets. The Valuation Assets are equal to 79.4% of the \$62.2 billion AAL. The actuarial value of assets is approximately 104% of the market value of assets.

All dollar amounts in billions

	Market Value of Total Assets	Actuarial Value		Actuarial Accrued Liability	Funded Ratio
		Non-Valuation Reserves	Valuation Assets		
2007	\$ 40.9	\$ 0.8	\$ 37.0	\$ 39.5	93.8%
2008	38.7	0.9	39.7	42.0	94.5
2009	30.5	0.8	39.5	44.5	88.9
2010	33.4	0.8	38.8	46.6	83.3
2014	39.5	0.9	39.2	48.6	80.6
2012	38.3	0.9	39.0	50.8	76.8
2013	41.8	0.4	39.9	53.2	75.0
2014	47.7	0.5	43.7	54.9	79.5
2015	48.8	0.5	47.3	56.8	83.3
2016	47.8	0.5	49.4	62.2	79.4

Historical Funded Ratios



## Association Assets

- **Market Value:** The market value of assets has increased over the past 10 years. The average rate of return for the fund over that period is 6.0% (gross of investment expenses), as reported by LACERA. However, due to benefit payments being greater than contributions, the total annual increase in the market value has averaged less. This is typical of a mature retirement system. The values shown in the market value column are total assets net of liabilities and include all reserves.
- **Actuarial Assets:** The market value of total assets is used in calculating the actuarial value of assets. Under the actuarial asset method, the market value returns in excess of (or less than) the assumption are smoothed over a five-year period.
- **Valuation Reserves:** The reserves represent the ownership of LACERA's assets. The reserves are established in compliance with the County Employees Retirement Law of 1937 as administered by the Board of Investments. These assets also reflect five-year smoothing. On a smoothed basis, the fund returned 6.5% for the prior year.
- **Non-Valuation Reserves:** The non-valuation reserves are set aside for obligations or contingencies. They are not used to fund the retirement benefits unless explicitly stated. These assets may also reflect smoothing.
- **Valuation Assets:** This is the combination of the valuation reserves and the portion of the non-valuation reserves that are recognized for funding purposes only as specified in LACERA's Funding Policy. It should be noted that under this policy the reserve value for STAR benefits is included in the Valuation Assets; however, the liability for any STAR benefits that may be granted in the future is not included in the valuation.

## Future Impact of Recognition of Deferred Losses

The smoothing method is currently deferring \$2.01 billion in net asset losses. As the currently deferred gains and losses are recognized over upcoming valuations, it is expected there will be increases in the calculated employer contribution rate.

The potential future impact of the recognition of these deferred gains and losses, as well as the phasing in of the new assumption costs, on the projected employer contribution rate is illustrated in the chart on page 3.

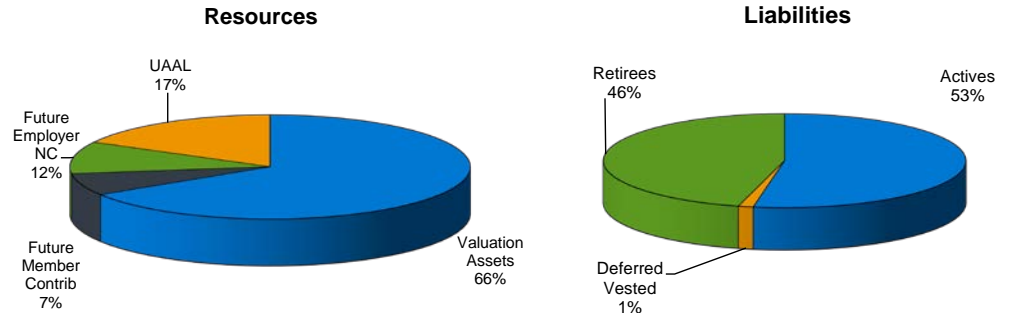
## Actuarial Balance Sheet

The first step in the valuation process is to compare the total actuarial assets of LACERA with its total liabilities for all plans. In this analysis, assets equal those currently on hand, at the actuarial value, and also expected future contributions by both the employers and members. Liabilities reflect benefits already earned in the past and those expected to be earned in the future by current members. This relationship is shown in the following chart. The AAL is the total of these liabilities less expected future Normal Cost contributions.

Comparing the current and future assets to the current and future liabilities, we then determine the annual contribution amount for the coming fiscal year.

**Actuarial Balance Sheet (continued)**

The 2016 actuarial valuation indicates that LACERA's Valuation Assets are less than its AAL. The difference between these two values is the UAAL. It is discussed, along with the effect of the experience gains and losses, in detail in Section 4, Actuarial Liabilities.



**Funding Policy**

The Board of Investments adopted a new Funding Policy in 2009, which was amended in 2013. Significant provisions of this policy, first reflected in the June 30, 2009 actuarial valuation, are as follows:

- **Asset Smoothing Period:** Asset gains and losses are smoothed over a five-year period.
- **Amortization Period:** The Funding Policy utilizes a “layered” amortization method. Under the policy, the UAAL amount as of the valuation for which the policy was first effective (June 30, 2009) is amortized over a closed 30-year period. Subsequent gains and losses on the UAAL are amortized over new closed 30-year periods. The employer contribution rate is not allowed to be less than the rate if LACERA amortized the total UAAL over a 30-year period. Exhibit 12 of this report illustrates in detail the calculation of the total UAAL rate for the fiscal year beginning in 2016.

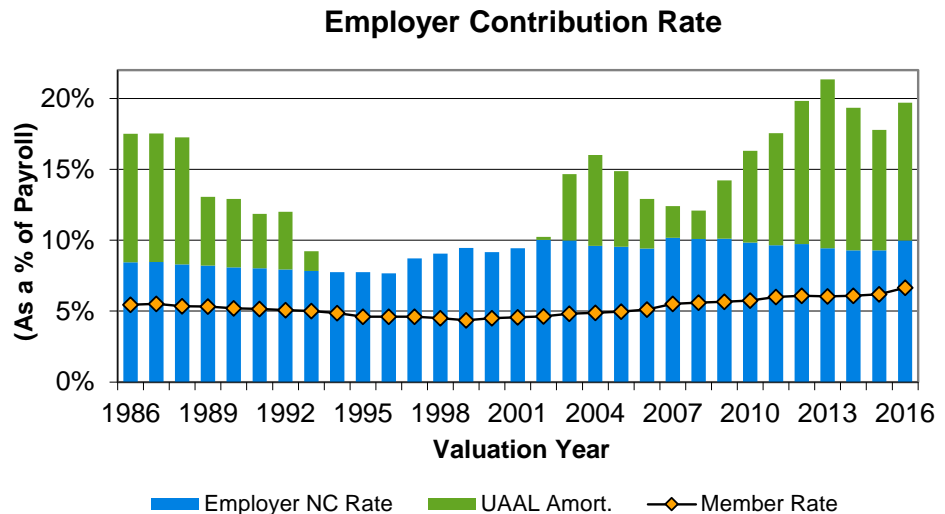
If LACERA moves to a negative UAAL position, only the normal cost rate will generally be paid. If the Funded Ratio exceeds 120%, the “surplus” amount will be amortized over an open 30-year period.

- **STAR Reserve:** The STAR reserve is included in the Valuation Assets. There is no corresponding liability for future STAR benefits included in the valuation. The inclusion of the STAR reserve in the Valuation Assets was formalized for the current and future actuarial valuations in the February 2013 amendment to LACERA's Funding Policy.

Note that if the STAR reserve of \$614 million was excluded from the Valuation Assets, the UAAL would increase by this amount. Under this hypothetical scenario, the calculated 2016 employer contribution rate would increase by 0.49% of payroll, and the Funded Ratio would decrease by 1.0% to 78.4%.

**Employer Contribution Rates**

Based on the results of the valuation, the calculated employer contribution rate will increase for the fiscal year beginning in 2017 to a rate of 19.70% of pay (21.21% without the phase-in). A historical perspective of the employer contribution rates is shown in the following graph.

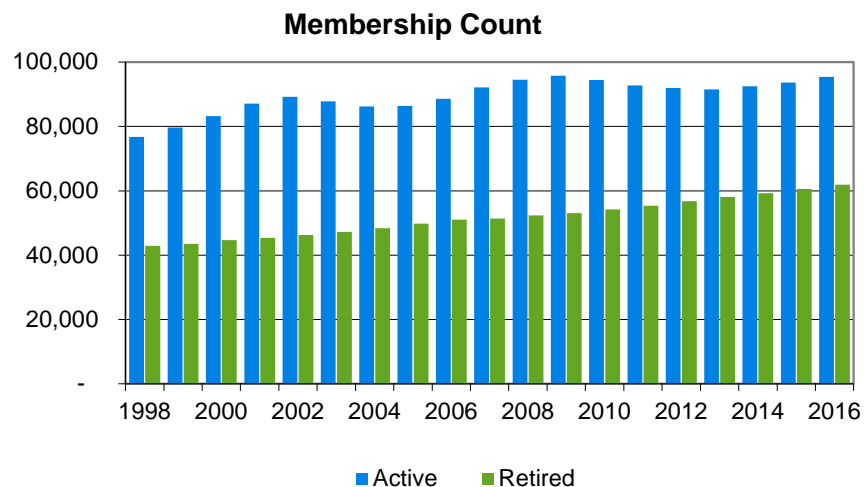


**Member Rates**

Since this is an Investigation of Experience study year, we have recommended changes to member contribution rates. These new member rates reflect the assumptions adopted by the Board of Investments. For members of General Plan G and Safety Plan C, new member rates are being recommended that are equal to one-half of the Plan’s normal cost rate calculated as of the June 30, 2016 valuation. Note that LACERA has elected not to round member rates for General Plan G and Safety Plan C. All new member rates would be effective July 1, 2017. Member rates for all plans are discussed in Section 5 and are shown in detail in Appendix D.

**Member Information**

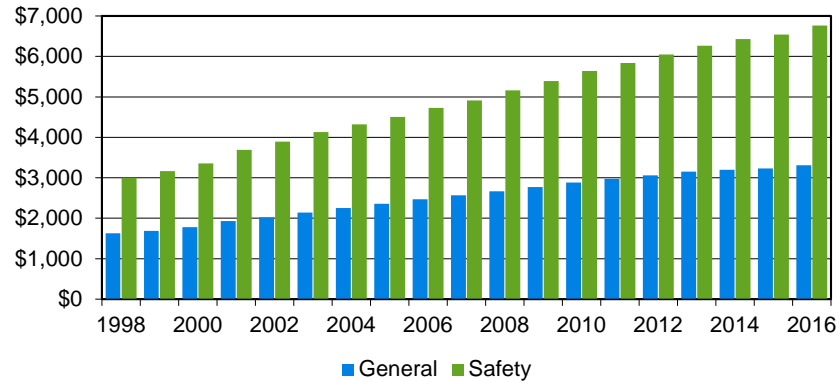
Payroll and active membership have each increased since 2015. As of June 30, 2016, the annualized payroll is \$7.39 billion for 95,444 active members. This is a result of a 2.5% increase in average pay and a 1.9% increase in the number of active members.



**Member Information  
 (continued)**

Retired member counts and average retirement benefit amounts continue to increase steadily. For 2016, there were 61,914 retired members and beneficiaries with an average benefit of \$3,974 per month. This represents a 2.2% increase in count and a 2.8% increase in the average monthly benefit.

**Average Monthly Retirement Benefit**



**Analysis of Change in  
 Member Population**

The following table summarizes the year-to-year change in member population. In addition to the movement shown below, 160 members transferred from Plan E to Plan D during the past year, and 39 members transferred from Plan D to Plan E.

	Active Contributing Members	Vested Former Members <sup>(1)</sup>	Retirees, Disabilities, & Beneficiaries
<b>June 30, 2015 Valuation</b>	<b>93,674</b>	<b>13,129</b>	<b>60,606</b>
Termination without Refund	(1,316)	1,316	-
Termination with Refund	(391)	(316)	-
Active/Former Death with Annuity	(61)	(66)	127
Service Retirement	(2,210)	(392)	2,602
Disability Retirement	(220)	(6)	226
Retiree Death without Beneficiary	-	-	(1,645)
New Entrants	5,828	-	-
Rehires	140	(138)	(2)
<b>Total Change</b>	<b>1,770</b>	<b>398</b>	<b>1,308</b>
<b>June 30, 2016 Valuation</b>	<b>95,444</b>	<b>13,527</b>	<b>61,914</b>

1. Includes non-vested former members who have not taken a refund of their contributions.

**Sensitivity to Investment Return**

The valuation results are projections based on the actuarial assumptions. Actual experience will differ from these assumptions, either increasing or decreasing the ultimate cost. Of the assumptions, the investment return generally has the biggest impact. The following table provides a simple analysis on how the short-term costs are affected by the investment return assumption. Note that the long-term cost of the System will be largely driven by actual investment returns and other experience; the assumptions impact the timing of the contributions.

	Investment Return Assumption		
	Current 7.25%	+0.5% 7.75%	-0.5% 6.75%
<b>Employer Contribution Rate</b>	21.21%	17.07%	25.85%
Change		-4.14%	4.64%
<b>Funded Ratio</b>	79.4%	84.4%	74.5%
Change		5.0%	-4.9%

*Note: Employer contribution rates shown do not reflect phase-in.*

**Summary Valuation Results**

The following Exhibit 1 presents a summary of key data elements on June 30, 2016 and June 30, 2015, and how they changed over the past year. More detail on each of these elements can be found in the following Sections and Exhibits of this report.

**Exhibit 1 Summary of Significant Valuation Results**

	June 30, 2016	June 30, 2015	Percentage Change
I. Total Membership			
A. Active Members	95,444	93,674	1.9%
B. Retired Members & Beneficiaries	61,914	60,606	2.2%
C. Vested Former Members	13,527	13,129	3.0%
D. Total	170,885	167,409	2.1%
II. Pay Rate as of June 30, 2016			
A. Annual Total (\$millions)	\$ 7,390	\$ 7,078	4.4%
B. Monthly Average per Active Member	\$ 6,452	\$ 6,297	2.5%
III. Average Monthly Benefit Paid to Current Retirees and Beneficiaries			
A. Service Retirement	\$ 3,975	\$ 3,881	2.4%
B. Disability Retirement	\$ 5,127	\$ 4,943	3.7%
C. Surviving Spouse and Dependents	\$ 2,733	\$ 2,643	3.4%
D. Total	\$ 3,974	\$ 3,867	2.8%
IV. Actuarial Accrued Liability (\$millions)			
A. Active Members	\$ 26,883	\$ 24,086	11.6%
B. Retired Members	\$ 34,323	\$ 31,790	8.0%
C. Vested Former Members	\$ 993	\$ 943	5.3%
D. Total	\$ 62,199	\$ 56,819	9.5%
V. Assets			
A. Market Value of Fund (\$millions)	\$ 47,847	\$ 48,818	(2.0)%
B. Actuarial Value (\$millions)			
1. Valuation Reserves	\$ 49,358	\$ 47,328	4.3%
2. Non-valuation Reserves	\$ 500	\$ 510	(1.9)%
C. Annual Investment Return			
1. Market Basis (Gross Return)	1.1%	4.3%	n/a
2. Valuation (Actuarial) Basis	6.5%	10.5%	n/a
VI. Unfunded Actuarial Accrued Liability or (Surplus Funding) in \$millions	\$ 12,841	\$ 9,491	35.3%
VII. Employer contribution rate for all plans combined as a percent of total payroll			
A. Gross Normal Cost	16.62%	15.46%	7.5%
B. Member Contributions <sup>(1)</sup>	(6.65)%	(6.18)%	7.6%
C. Employer Normal Cost	9.97%	9.28%	7.4%
D. UAAL Amortization	11.24%	8.49%	32.4%
E. Calculated Contribution Rate	21.21%	17.77%	19.4%
F. Deferred Recognition of new assumptions	(1.51)%	n/a	n/a
G. Employer Contribution Rate with phase-in	19.70%	17.77%	10.9%
VIII. Funded Ratio	79.4%	83.3%	(4.7)%
IX. Results Based on Market Value (Informational Purposes Only)			
Calculated Contribution Rate	22.79%	16.97%	34.3%
Funded Ratio (excluding non-valuation reserves)	76.1%	85.0%	(10.5)%

1. Includes non-contributory members. The average rate for contributory plans increased from 7.84% to 8.29%.



This page intentionally left blank.

## Section 2 Scope of the Report



This report presents the actuarial valuation of the Los Angeles County Employees Retirement Association as of June 30, 2016. This valuation was requested by the Board of Investments. Section 31453 of the County Employees Retirement Law of 1937 (the '37 Act) requires an actuarial valuation to be performed at least every three years for the purpose of setting contribution rates. The 2016 valuation meets this requirement. Under LACERA's Funding Policy, annual valuations determine the employer contribution rates each year. Member contribution rates for all plans except General Plan G and Safety Plan C are set in years in which relevant actuarial assumptions are altered, such as 2016. For members of General Plan G and Safety Plan C, member contribution rates are recalculated each year, based on one-half of the Plan's normal cost rate.

In reading our cover letter, please pay particular attention to the guidelines employed in the preparation of this report. We also comment on the sources and reliability of both the data and the actuarial assumptions upon which our findings depend. Those comments are the basis for our certification that this report is complete and accurate to the best of our knowledge and belief.

A summary of the findings resulting from this valuation is presented in the previous section. Section 3 describes the assets and investment experience of the system. The assets and investment income are presented in Exhibits 2-4. Exhibit 5 develops the actuarial value of assets as of June 30, 2016. Exhibit 6 develops the Valuation Assets used for funding benefits.

Section 4 describes the benefit obligations of LACERA. Exhibit 7 is the Actuarial Balance Sheet and Exhibit 8a analyzes the change in UAAL. Exhibit 8b shows a history of these changes.

Section 5 discusses the member contribution rates.

Section 6 discusses the employer contributions needed to fund the benefits under the actuarial cost method in use.

Section 7 discloses supplemental information for use in the CAFR. Milliman provides LACERA financial reporting information relevant to GASB Statements No. 67 and 68 in separate reports.

Section 8 shows the estimated cash flow of the system, including a projection of both contributions and benefit payments.

**Scope of the Report  
(continued)**

This report includes several appendices:

- Appendix A A summary of the actuarial procedures and assumptions used to estimate liabilities and contributions.
- Appendix B A summary of the current benefit structure, as determined by the provisions of governing law on June 30, 2016.
- Appendix C Schedules of valuation data classified by various categories of plan members.
- Appendix D Member contribution rates by plan.
- Appendix E Historical information.
- Appendix F A glossary of actuarial terms used in this report.

**Section 3 Assets**



In many respects, an actuarial valuation can be thought of as an inventory process. The inventory is taken as of the actuarial valuation date, which for this valuation is June 30, 2016. On that date, the assets available for the payment of retirement benefits are appraised. These assets are compared with the actuarial liabilities (both accrued and future) for current members, which are generally in excess of the actuarial assets. The purpose of the valuation is to determine what future contributions by the members and employers are needed to pay all expected future benefits.

This section of the report looks at the determination of assets used for funding purposes. In the next section, the actuarial liabilities will be discussed. Sections 5 and 6 review the process for determining required contributions based on the relationship between the actuarial assets and the actuarial liabilities.

A historical summary of the system’s assets is presented below:  
 (All dollar amounts in billions)

	Market Value of Total Assets	Actuarial Value		Total Fund Return (%) <sup>(1)</sup>
		Non- Valuation Reserves	Valuation Assets	
2007	\$ 40.9	\$ 0.8	\$ 37.0	19.1
2008	38.7	0.9	39.7	-1.5
2009	30.5	0.8	39.5	-18.3
2010	33.4	0.8	38.8	11.8
2011	39.5	0.9	39.2	20.4
2012	38.3	0.9	39.0	0.3
2013	41.8	0.4	39.9	12.1
2014	47.7	0.5	43.7	16.8
2015	48.8	0.5	47.3	4.3
2016	47.8	0.5	49.4	1.1

1. As reported in the Investment Section of the CAFR, gross of investment expenses.

On June 30, 2016, the total market value of the fund, less current liabilities, was \$47.8 billion. The actuarial value of the fund was determined to be \$49.9 billion, including the non-valuation reserves. The average total fund return for the last 10 years is 6.0% gross of fees, as reported by LACERA.

**Financial Exhibits**

Exhibit 2 presents a Statement of Fiduciary Net Position and Exhibit 3 presents a Statement of Changes in Fiduciary Net Position. Exhibit 4 describes the allocation of LACERA's assets by the various reserve values determined for accounting purposes as disclosed in the Comprehensive Annual Financial Report (CAFR).

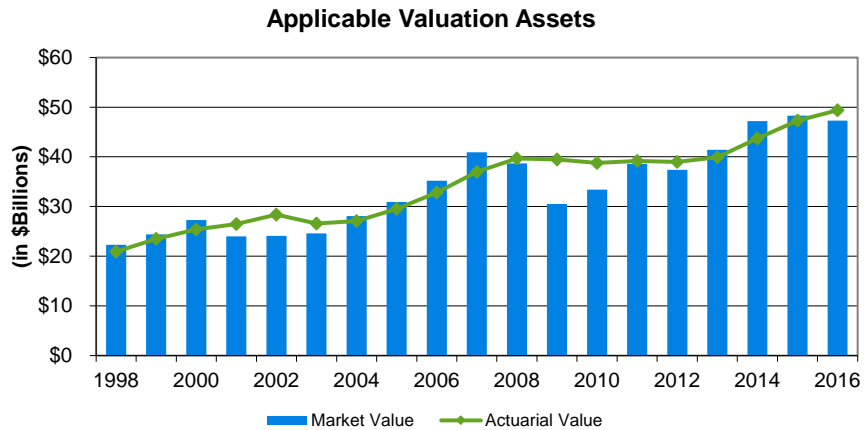
Exhibits 2-4 are taken directly from data furnished to us by LACERA in its annual financial report. We have accepted these tables for use in this report without audit, but we have reviewed them both for the prior year and the current year for reasonableness and consistency with previous reports.

**Actuarial Asset Method**

The actuarial asset method computes the expected market value of assets based on the prior year's market value of assets, the actual cash flow of contributions and benefit payments, and the assumed investment rate of return. For the previous year, the assumed rate of return was 7.50%, net of all expenses. The difference between the actual market value and the computed expected market value is smoothed, or recognized, over a five-year period.

**Actuarial Value of Assets**

The development of the June 30, 2016 actuarial value of assets is shown in Exhibit 5. Note the smoothing process is deferring past investment gains and losses, and is currently in a net actuarial gain position. The result is an actuarial value of assets that is larger than the June 30, 2016 market value by \$2.0 billion. The following graph shows a historical comparison of the actuarial and market assets used for valuation purposes.



## Funding Policy

Under the Board of Investments' long-term Funding Policy, the following is the allocation of actuarial assets. A Funded Ratio equal to 100% is the Funding Goal.

For funding purposes and for setting contributions rates, recognized earnings for a plan year is the recognized investment income as determined by the Actuarial Asset Method and includes both unrealized income and net realized income, together with the prior balance in the Contingency Reserve. The allocation of recognized earnings is performed once a year as of the Valuation Date in the following order of priority:

- Priority 1: Allocate to the Member Reserve so the Actuarial Asset allocation to that Reserve equals the accounting value for that Reserve on the Valuation Date.
- Priority 2: Allocate to the Advanced Employer Contributions Reserve so the Actuarial Asset allocation to that Reserve equals the accounting value for that Reserve on the Valuation Date.
- Priority 3: Allocate to the Employer Reserve so the Actuarial Asset allocation to that reserve equals the accounting value for that Reserve on the Valuation Date.
- Priority 4: Allocate to the County Contribution Credit Reserve so the Actuarial Asset allocation to that reserve equals the accounting value for that Reserve on the Valuation Date. Note: This Reserve is not a Valuation Reserve.
- Priority 5: Allocate to the Employer Reserve so the total amounts allocated equal one year's interest at the assumed interest rate used in the actuarial valuation as of the preceding Valuation Date to the extent there are positive recognized earnings to allocate.
- Priority 6: Allocate to the Contingency Reserve an amount equal to 1% of the Market Value of Assets as of the Valuation Date to the extent there are positive recognized earnings to allocate.
- Priority 7: Allocate to the Employer Reserve an amount, if necessary, when combined with other Valuation Reserves, to provide 100% funding of the AAL as of the Valuation Date to reach the Funding Goal. In the event there are negative recognized earnings, allocate the entire amount.
- Priority 8: The Board may consider additional actions as permitted under the County Employee Retirement Law (CERL) using funds in excess of the amount needed to meet the Funding Goal for funding discretionary benefits. "Excess Earnings" as defined in the County Employees Retirement Law (CERL) may be appropriated upon reaching the Funding Goal; however, the Board may consider adjustment to the employer's contributions only upon satisfying California Government Code Section 7522.52(b).

## Valuation Assets

Valuation Assets are the actuarial value of the fund, less the value of any reserves which have been set aside for current liabilities and special benefits that are to be funded outside of the actuarially determined contribution rates. The '37 Act requires the Contingency Reserve be set at a minimum of 1.0% of assets.

The Funding Policy allows the STAR Reserve to be allocated to the Valuation Assets (subject to periodic review), if needed. The June 30, 2016 STAR Reserve accounting value of \$614 million was included in Valuation Assets and used to determine the contribution rates for the fiscal year commencing July 1, 2017. Although the reserve value for STAR benefits is included in the 2016 Valuation Assets, there is no liability for STAR benefits that may be granted in the future included in this valuation.

The non-valuation reserve allocations for funding purposes shown in Exhibit 6 are not the same as those shown in the annual report and in Exhibit 4.

**Exhibit 2 Statement of Fiduciary Net Position  
 As of June 30, 2016 and June 30, 2015**

	2016	2015
<b>Assets</b>		
Cash and Short-Term Investments	\$ 846,783,214	\$ 1,309,413,884
Cash Collateral on Loaned Securities	872,138,652	1,033,471,101
Receivables		
Contributions Receivable	78,033,896	81,248,779
Accounts Receivable - Sale of Investments	1,035,639,923	778,037,878
Accrued Interest and Dividends	130,324,747	99,636,763
Accounts Receivable - Other	34,094,876	102,145,746
Total Receivables	<u>1,278,093,442</u>	<u>1,061,069,166</u>
Investments at Fair Value		
Equity	22,464,825,665	24,689,700,939
Fixed Income	13,685,275,872	12,781,560,058
Private Equity	4,410,209,484	4,346,854,227
Real Estate	6,062,780,002	5,480,795,408
Hedge Funds	1,275,576,023	691,536,508
Total Investments	<u>47,898,667,047</u>	<u>47,990,447,140</u>
<b>Total assets</b>	<b><u>50,895,682,355</u></b>	<b><u>51,394,401,291</u></b>
<b>Liabilities</b>		
Accounts Payable - Purchase of Investments	2,104,540,164	1,471,192,422
Retiree Payroll and Other Payables	847,454	622,440
Accrued Expenses	32,265,493	30,432,277
Tax Withholding Payable	32,748,492	30,693,252
Obligations under Securities Lending Program	872,138,652	1,033,471,101
Accounts Payable - Other	6,448,263	9,639,436
Total liabilities	<u>3,048,988,519</u>	<u>2,576,050,929</u>
<b>Net position restricted for pension benefits</b>	<b><u>\$ 47,846,693,836</u></b>	<b><u>\$ 48,818,350,362</u></b>



**Exhibit 3 Statement of Changes in Fiduciary Net Position  
 For the Years Ended June 30, 2016 and 2015**

	2016	2015
<b>Additions</b>		
Contributions		
Employer	\$ 1,443,129,898	\$ 1,494,975,013
Member	458,665,176	441,258,367
Total Contributions	<u>1,901,795,074</u>	<u>1,936,233,380</u>
Investment Income		
From Investing Activities:		
Net Appreciation/(Depreciation) in Fair Value of Investments	(966,251,016)	(330,804,350)
Investment Income/(Loss)	1,147,977,519	2,421,690,583
Total Investing Activity Income	<u>181,726,504</u>	<u>2,090,886,233</u>
Less Expenses From Investing Activities	<u>(106,566,465)</u>	<u>(108,079,781)</u>
Net Investing Activity Income	75,160,039	1,982,806,452
From Securities Lending Activities:		
Securities Lending Income	6,409,361	5,457,423
Less Expenses From Securities Lending Activities:		
Borrower Rebates	245,597	2,533,471
Management Fees	(1,226,774)	(1,438,970)
Total Expenses from Securities Lending Activities	<u>(981,177)</u>	<u>1,094,501</u>
Net Securities Lending Income	5,428,184	6,551,924
Total Net Investment Income	<u>80,588,222</u>	<u>1,989,358,376</u>
Miscellaneous	2,780,878	1,694,710
Total Additions	<u>1,985,164,174</u>	<u>3,927,286,466</u>
<b>Deductions</b>		
Retiree Payroll	2,859,011,063	2,740,969,892
Administrative Expenses	67,644,631	62,590,949
Refunds	27,092,265	25,410,525
Lump Sum Death Benefits	3,082,933	2,029,406
Miscellaneous	(10,192)	212,346
Total Deductions	<u>2,956,820,701</u>	<u>2,831,213,118</u>
Net increase/(decrease)	(971,656,527)	1,096,073,348
<b>Net position restricted for pension benefits</b>		
Beginning of Year	48,818,350,362	47,722,277,014
End of Year	<u>\$ 47,846,693,836</u>	<u>\$ 48,818,350,362</u>

**Exhibit 4 Allocation of Assets by Accounting Reserve Amounts  
 (Dollars in Thousands)**

	June 30, 2016	June 30, 2015
1. Member Reserves		
a. Active Members	\$ 19,346,808	\$ 18,784,899
b. Unclaimed Deposits	<u>-</u>	<u>-</u>
c. Total Member Reserves	\$ 19,346,808	\$ 18,784,899
2. Employer Reserves		
a. Actual Employer Contributions	\$ 20,802,531	\$ 21,369,846
b. Advanced Employer Contributions	<u>-</u>	<u>-</u>
c. Total Employer Contributions	\$ 20,802,531	\$ 21,369,846
3. County Contribution Credit Reserve	\$ 21,891	\$ 21,891
4. STAR Reserve	614,011	614,011
5. Contingency Reserve	<u>-</u>	<u>-</u>
6. Total Reserves at Book Value	\$ 40,785,241	\$ 40,790,647
7. Unrealized Investment Portfolio Appreciation	<u>7,061,453</u>	<u>8,027,703</u>
8. <b>Total Reserves at Fair Value</b>	<b>\$ 47,846,694</b>	<b>\$ 48,818,350</b>

Note: These amounts were determined by LACERA for accounting purposes and are reported in the June 30, 2016 CAFR.

**Exhibit 5 Five-Year Smoothing of Gains and Losses on Market Value  
 (Dollars in Thousands)**

June 30, 2016 Valuation					
Plan Year Ending	Contributions	Benefit Payments	Expected Market Value	Actual Market Value	Phase-Out of Gain / (Loss)
06/30/2016	\$ 1,901,795	\$ 2,889,186	\$ 51,455,977	\$ 47,846,694	80.00% x \$ (3,609,283) = \$ (2,887,426)
06/30/2015	1,936,233	2,768,410	50,438,628	48,818,350	60.00% x (1,620,278) = (972,167)
06/30/2014	1,759,443	2,662,401	43,970,326	47,722,277	40.00% x 3,751,951 = 1,500,780
06/30/2013	1,402,767	2,541,351	40,037,011	41,773,519	20.00% x 1,736,508 = 347,302
06/30/2012					= 0
					Total Phase-Out of Gain / (Loss) = \$ (2,011,511)
					Total Market Value of Assets = 47,846,694
					Total Actuarial Value of Assets = \$ <b>49,858,205</b>
Total Actuarial Value of Assets = Total Market Value of Assets less the Total Phase-Out amount Phase-Out amounts will be recognized in future years.					

**Exhibit 6 Allocation of Valuation and Non-Valuation Assets**  
**(Dollars in Thousands)**

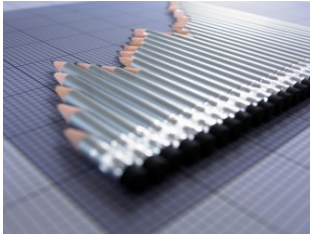
	June 30, 2016	June 30, 2015
1. Total Market Value of Assets	\$ 50,895,682	\$ 51,394,401
2. Current Liabilities	<u>3,048,988</u>	<u>2,576,051</u>
3. Net Assets Held in Trust for Pension Benefits	\$ 47,846,694	\$ 48,818,350
4. Market Stabilization Reserve <sup>(1)</sup>	<u>(2,011,511)</u>	<u>980,005</u>
5. Actuarial Value of Fund Assets	\$ 49,858,205	\$ 47,838,345
6. Non-Valuation Reserves <sup>(2)</sup>		
a. Unclaimed Deposits	\$ -	\$ -
b. Contingency Reserve	478,467	488,184
c. Advanced Employer Contributions	-	-
d. County Contribution Credit Reserve	21,891	21,891
e. Reserve for STAR Program	-	-
f. Total	<u>\$ 500,358</u>	<u>\$ 510,075</u>
7. Valuation Assets <sup>(2)</sup>		
a. Member Reserves	\$ 19,346,808	\$ 18,784,899
b. Employer Reserves for Funding Purposes	<u>\$ 30,011,039</u>	<u>\$ 28,543,371</u>
c. Total	\$ 49,357,847	\$ 47,328,270

1. The Market Stabilization Reserve represents the difference between the Market Value of the fund less Current Liabilities, and the Actuarial Value of the fund as determined in Exhibit 5.

2. The values used for funding purposes for all reserves are based on the Board's Funding Policy. Amounts used for funding purposes may differ from those reported in the financial report as shown in Exhibit 4.

This page intentionally left blank.

## Section 4 Actuarial Liabilities



In the previous section, an actuarial valuation was compared with an inventory process, and an analysis was given of the inventory of LACERA's assets as of the valuation date, June 30, 2016. In this section, the discussion will focus on the commitments of LACERA for retirement benefits, which are referred to as its actuarial liabilities.

In an active system, the actuarial liabilities will almost always exceed the actuarial assets. This is usually expected in all but a fully closed down fund, where no further contributions of any sort are anticipated. This deficiency has to be provided by future contributions. An actuarial valuation method sets out a schedule of future contributions that will deal with this deficiency in an orderly fashion. The determination of the level of future contributions needed is discussed in the next section.

### Actuarial Balance Sheet – Liabilities

First, we need to determine the amount of the deficiency. We compare the Valuation Assets to the actuarial liabilities. The difference is the amount that needs to be funded by the member and employer contributions in the future. Both the current and future assets (contributions) are compared to the actuarial liabilities in the Actuarial Balance Sheet.

Exhibit 7 contains an analysis of the actuarial present value of all future benefits for inactive members (both retired and vested former members) and active members. The analysis is given by class of membership, by plan and by type of benefit. Note that for purposes of this exhibit the Valuation Assets are shown allocated by plan in proportion to each plan's reserves (employer and member).

The actuarial liabilities include the actuarial present value of all future benefits expected to be paid with respect to each member. For an active member, this value includes measures of both benefits already earned and future benefits to be earned. For all members, active and inactive, the value extends over the rest of their lives and for the lives of any surviving beneficiaries.

The actuarial assumptions used to determine the liabilities are based on the results of the 2016 Investigation of Experience Report. New assumptions were adopted by the Board effective with the June 30, 2016 actuarial valuation. See Appendix A of this report for details.

All liabilities reflect the benefits effective through June 30, 2016. This includes permanent STAR COLAs that have been adopted through the valuation date, but does not include the value of any future STAR benefits that may be granted in the future.

**Exhibit 7 Actuarial Balance Sheet – June 30, 2016**  
**(Dollars in Millions)**

	General						Safety			All Plans
	Plan A	Plan B	Plan C	Plan D	Plan E	Plan G	Plan A	Plan B	Plan C	
<b>LIABILITIES</b>										
Present Value of Benefits - Inactives										
- Retirees and Beneficiaries	\$ 12,364	\$ 418	\$ 229	\$ 5,473	\$ 2,961	\$ 1	\$ 7,554	\$ 5,320	\$ 3	\$ 34,323
- Vested Former	13	5	1	478	389	5	1	101	0	993
- Inactive Total	12,377	423	230	5,951	3,350	6	7,555	5,421	3	35,316
Present Value of Benefits - Actives										
- Service Retirement	\$ 230	\$ 88	\$ 74	\$ 17,379	\$ 6,085	\$ 1,785	\$ 21	\$ 7,163	\$ 257	\$ 33,082
- Transfer Service (prior LACERA plan)	*	*	*	201	382	*	*	10	*	593
- Disability Retirement	3	1	1	913	N/A	149	2	3,572	174	4,815
- Death	2	1	1	350	N/A	43	*	63	5	465
- Termination (No Refund)	*	0	0	186	89	74	0	40	8	397
- Refund of Member Contributions	*	0	0	48	N/A	48	0	11	4	107
- Active Total	235	90	76	19,077	6,556	2,099	23	10,859	448	39,459
<b>Total Actuarial Liabilities</b>	<b>\$ 12,612</b>	<b>\$ 513</b>	<b>\$ 306</b>	<b>\$ 25,028</b>	<b>\$ 9,906</b>	<b>\$ 2,105</b>	<b>\$ 7,578</b>	<b>\$ 16,276</b>	<b>\$ 451</b>	<b>\$ 74,775</b>
<b>ASSETS</b>										
Valuation Assets	\$ 806	\$ 446	\$ 304	\$ 21,515	\$ 11,258	\$ 397	\$ 490	\$ 14,088	\$ 54	\$ 49,358
PV Future Member Contributions	3	2	1	2,824	N/A	999	*	1,087	223	5,139
PV Future Employer Normal Cost Contribs.	8	1	3	3,194	1,239	998	*	1,772	222	7,437
UAAL or (Surplus Funding)	11,795	64	(2)	(2,505)	(2,591)	(289)	7,088	(671)	(48)	12,841
<b>Total Current and Future Assets</b>	<b>\$ 12,612</b>	<b>\$ 513</b>	<b>\$ 306</b>	<b>\$ 25,028</b>	<b>\$ 9,906</b>	<b>\$ 2,105</b>	<b>\$ 7,578</b>	<b>\$ 16,276</b>	<b>\$ 451</b>	<b>\$ 74,775</b>

\* Less than \$0.5 million

**Actuarial Balance Sheet – Liabilities (continued)**

All liabilities reflect the benefits effective through June 30, 2016. This includes permanent STAR COLAs that have been adopted through the valuation date, but does not include the value of any future STAR benefits that may be granted in the future.

**Actuarial Balance Sheet – Assets**

For the purpose of the Actuarial Balance Sheet, LACERA's assets are equal to the sum of:

- (a) Assets currently available to pay benefits and considered for funding purposes (the Valuation Assets);
- (b) The present value of future contributions expected to be made by current active members; and
- (c) The present value of future contributions expected to be made by the employer.

**Actuarial Cost Method**

The Actuarial Balance sheet determines the amount of future contributions that are needed, but the method used to determine when those future contributions will be made in future years is called the "actuarial cost method." For this valuation, the entry age actuarial cost method has been used. Under this method, the contributions required to meet the difference between current assets and current actuarial liabilities are allocated each year between two elements:

- A normal cost amount; and
- Whatever amount is left over, which is used to amortize what is called the UAAL (Unfunded Actuarial Accrued Liability).

The two items described above – the Normal Cost and UAAL – are the keys to understanding the actuarial cost method.

**Normal Cost**

The Normal Cost is the theoretical contribution rate that will meet the ongoing costs of a group of average new employees. Suppose that a group of new employees was covered under a separate fund from which all benefits and to which all contributions and associated investment returns were paid. Under the entry age actuarial cost method, the Normal Cost contribution rate maintains the funding of benefits as a level percentage of pay. If experience follows the actuarial assumptions precisely, the fund would be completely liquidated when the last payment to the last survivor of the group is made.

By applying the Normal Cost contribution rate to the present value of salaries expected to be paid in the future, we determine the present value of future Normal Cost contributions. Future contributions are expected to be made by both the members and the employer. The member contribution rates are determined based upon requirements established in the '37 Act and the actuarial assumptions. Based on these member contribution rates, we determine the present value of future member contributions. We subtract that value from the total future Normal Cost contributions expected, based on the entry age cost method. The remaining difference is the employer's portion of the future Normal Cost contributions.



**Actuarial Accrued Liability**

The difference between the present value of all future obligations and the present value of the future Normal Cost contributions is referred to as the Actuarial Accrued Liability (AAL). The AAL is then compared to the value of assets available to fund benefits, and the difference is referred to as the UAAL. The results for LACERA for all plans are summarized below:

(Dollars in millions)	<u>2016</u>	<u>2015</u>	<u>Percent Change</u>
A. Actuarial present value of all future benefits for contributing members, former contributing members, and their survivors	\$ 74,775	\$ 67,839	10.2%
B. Actuarial present value of total future normal costs for current members	\$ 12,576	\$ 11,020	14.1%
C. Actuarial accrued liability [A-B]	\$ 62,199	\$ 56,819	9.5%
D. Valuation Assets	\$ 49,358	\$ 47,328	4.3%
E. UAAL or (Surplus Funding) [C-D]	\$ 12,841	\$ 9,491	35.3%
F. Funded Ratio [D/C]	79.4%	83.3%	-4.7%

**Unfunded Actuarial Accrued Liability/ Surplus Funding**

The portion allocated to service already rendered or accrued is called the AAL. The difference between the AAL and the Valuation Assets is called the UAAL. If a UAAL amount exists, it usually results from prior years' benefit or assumption changes and the net effect of accumulated gains and losses. If the employer had always contributed the current Normal Cost, and if there were no prior benefit or assumption changes, and if actual experience exactly matched the actuarial assumptions, then the present value of all future Normal Cost contributions would be sufficient to fund all benefits and there would be no UAAL.

The term "fully funded" is often applied to a system in which contributions for everyone at the Normal Cost rate are expected to be sufficient to pay for the benefits of existing employees. More often than not, systems are not fully funded, either because of past benefit improvements that have not been completely paid for or because of actuarial deficiencies that have occurred because experience has not been as favorable as anticipated. Under these circumstances, a UAAL exists, implying that past experience has varied from what was assumed to have occurred, based on the current benefit levels and actuarial assumptions.

However, even if a system does not have a positive UAAL, a portion or all of the Normal Cost contribution payments will need to be continued in order to have sufficient funds to pay future benefits. The use of the term "fully funded" may seem to imply no further contributions are required. Therefore, a better term is a "well-funded" plan. This occurs when the value of the assets equals or exceeds the AAL and the difference can be referred to as the Surplus Funding.

Exhibit 7 shows how the UAAL, or Surplus Funding, was derived for each level of plan benefits. In the Actuarial Balance sheet, the total actuarial liability for all future benefits must be equal to the current and future assets.

**Unfunded Actuarial  
Accrued Liability/  
Surplus Funding  
(continued)**

The Actuarial Balance Sheet for each plan, as well as its UAAL, or Surplus Funding amount, is based on an estimated allocation of the total LACERA Valuation Assets, as disclosed in Exhibit 7. The allocation is based on the relative value of each plan's employer and member reserves as reported to us by LACERA. These allocations are shown for illustrative purposes only, as the UAAL contribution rates are assumed paid by the employer based on the valuation results in aggregate.

**Funding Adequacy**

A key consideration in determining the adequacy of the funding of LACERA is how the UAAL is being funded. If the UAAL amount is positive, that is, the AAL to be funded is greater than the Valuation Assets, then the UAAL is amortized. Under LACERA's Funding Policy, any positive amount must be amortized over layered 30-year periods.

If future experience is more favorable than expected based on the actuarial assumptions, then LACERA may move to a Surplus Funding position. Conversely, if experience is less favorable, a larger UAAL will develop.

**Analysis of Change in  
Unfunded Actuarial  
Accrued Liability**

The UAAL, at any date after establishment of a system, is affected by any actuarial gains (decreases in UAAL) or losses (increases in UAAL) arising when the actual experience of the system varies from the experience anticipated by the actuarial assumptions used in the valuations. To the extent actual experience, as it develops, differs from that expected according to the assumptions used, so also will the emerging costs differ from the estimated costs.

The funding level this year has decreased, primarily due to the new assumptions which resulted in a \$2,922 million increase in the UAAL.

The 2016 actuarial valuation reflects an actuarial experience loss of \$530 million for the fiscal year just ended. The loss was mainly due to a \$496 million loss on actuarial assets, as well as other factors. The effect of the experience gains and losses on the UAAL or Surplus Funding is shown in Exhibit 8a. In addition to the gain on actuarial assets, some other factors which impacted the liabilities are:

- **Salary Increases:** Individual salaries for continuing active members increased at a rate greater than the valuation assumption. This resulted in a loss of \$162 million.
- **Actual CPI versus Assumption:** The actual CPI increase was less than assumed for members of Plan A, although some members had positive COLA banks to make up for this. The members who received COLA increases less than the assumption generated a gain of \$191 million.
- **Mortality Experience:** An actuarial loss due to mortality generally indicates that retired members are living longer than the current assumption would predict. This year, there was a small relative gain of \$4 million due to mortality, indicating retirees are currently living slightly shorter lives than assumed in the 2015 valuation assumptions.

**Analysis of Change in  
Unfunded Actuarial  
Accrued Liability  
(continued)**

- **Other:** Examples of this are gains and losses from termination, service retirement, disability retirement, death, service purchases, reciprocity, and transfers between plans.

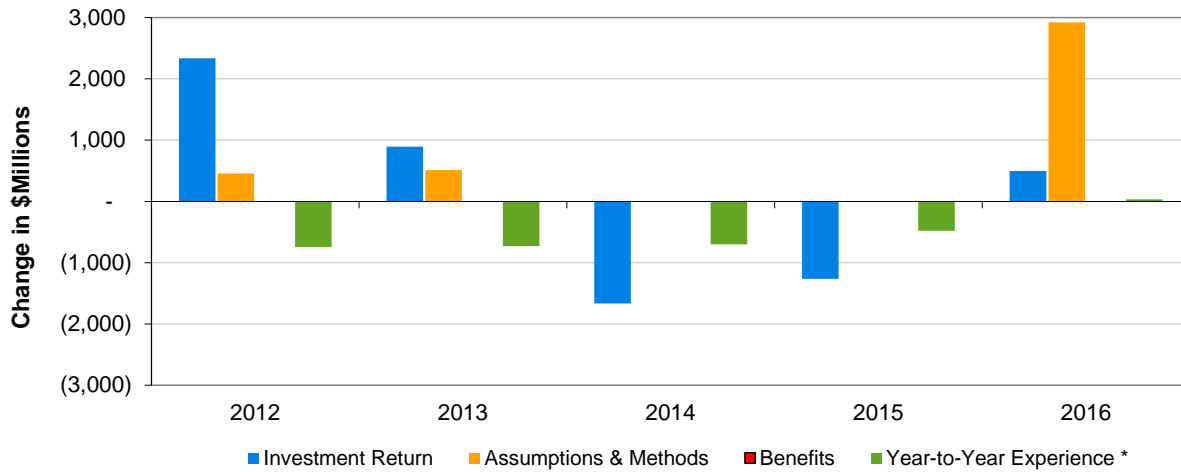
**Change in Unfunded  
Actuarial Accrued  
Liability – History**

Exhibit 8b shows the sources of change in the UAAL over the past five valuations. As is generally the case, the biggest source of change is a return on investments that is either greater than or less than the assumption, causing asset gains and losses.

**Exhibit 8a Analysis of Change in Unfunded Actuarial Accrued Liability**  
**(Dollars in Millions)**

	Amount	As a Percent of June 30, 2016 Actuarial Accrued Liability
<b>Unfunded Actuarial Accrued Liability - June 30, 2015</b>	<b>\$ 9,491</b>	<b>15.3%</b>
Increase in UAAL due to New Assumptions	2,922	4.7%
Interest Accrued	682	1.1%
Benefits Accrued (Normal Cost)	1,118	1.8%
Contributions		
Employer - Cash	\$ (1,443)	-2.3%
Employer - Contribution Credit	-	0.0%
Member	(459)	-0.7%
Total	<u>(1,902)</u>	-3.1%
<b>Expected Unfunded Actuarial Acc. Liability - June 30, 2016</b>	<b>\$ 12,311</b>	<b>19.8%</b>
Source of Change		
Asset (Gains) and Losses		
(Gain)/Loss due to Investment Income	496	0.8%
Actuarial (Gains) and Losses		
Salary Increases Greater than Expected	\$ 162	0.3%
CPI Less than Expected	(191)	-0.3%
Mortality Experience	(4)	0.0%
All Other Experience	67	0.1%
Total	<u>34</u>	0.1%
<b>Total Changes</b>	<b><u>530</u></b>	<b>0.9%</b>
<b>Unfunded Actuarial Accrued Liability - June 30, 2016</b>	<b>\$ 12,841</b>	<b>20.6%</b>

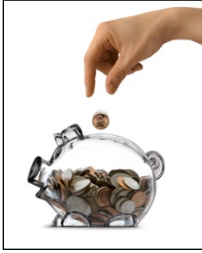
**Exhibit 8b History of Changes in Unfunded Actuarial Accrued Liability  
 (Dollars in Millions)**



	2012	2013	2014	2015	2016	2012-16
<b>Prior Valuation UAAL</b>	\$ 9,405	\$ 11,770	\$ 13,315	\$ 11,288	\$ 9,491	\$ 9,405
Increase in UAAL due to:						
Expected Increase / (Decrease)	315	870	338	(54)	(102)	1,367
Asset (Gains) and Losses	2,337	893	(1,664)	(1,263)	496	799
Changes in Benefits	-	-	-	-	-	-
Changes in Assumptions	457	511	-	-	2,922	3,890
Changes in Methods	-	-	-	-	-	-
Salary Increases	(629)	(563)	(291)	79	162	(1,242)
CPI Less than Expected	(181)	(190)	(427)	(570)	(191)	(1,559)
Mortality Experience	(22)	(42)	(26)	(59)	(4)	(153)
All Other Experience	88	66	43	70	67	334
<b>Total Increase / (Decrease)</b>	<b>2,365</b>	<b>1,545</b>	<b>(2,027)</b>	<b>(1,797)</b>	<b>3,350</b>	<b>3,436</b>
<b>Valuation UAAL</b>	<b>\$ 11,770</b>	<b>\$ 13,315</b>	<b>\$ 11,288</b>	<b>\$ 9,491</b>	<b>\$ 12,841</b>	<b>\$ 12,841</b>
<b>Funded Ratio</b>	<b>76.8%</b>	<b>75.0%</b>	<b>79.5%</b>	<b>83.3%</b>	<b>79.4%</b>	<b>79.4%</b>

\* Year-to-Year Experience includes changes due to Salary, CPI, Mortality and Other Experience.

## Section 5 Member Contributions



### Normal Contributions for non-PEPRA Plans

Member contributions are of two types: Normal contributions and cost-of-living contributions.

Normal contributions for each non-PEPRA plan (all plans except General Plan G and Safety Plan C) are defined in the following sections of the County Employees' Retirement Law:

Plan	'37 Act Reference	Formula
General A	31621.3	1/240th of FAC at age 55
General B	31621.1	1/120th of FAC at age 55
General C	31621	1/120th of FAC at age 60
General D	31621	1/120th of FAC at age 60
General E	N/A	Plan E is non-contributory
Safety A	31639.5	1/200th of FAC at age 50
Safety B	31639.25	1/100th of FAC at age 50

Note: FAC = Final Average Compensation

Normal member contributions are determined using the Entry Age Normal Funding Method and the following actuarial assumptions:

1. Expected rate of return on assets.
2. Individual salary increase rate (wage growth + merit).
3. Mortality for members on service retirement.

Effective with the 2016 valuation, the assumed rate of investment return was lowered to 7.25%, the wage growth assumption was lowered to 3.25%, and the mortality assumptions were revised. These assumption changes necessitate a change in the normal member contribution rates. Normal member contribution rates increased at all ages.

Member contribution rates for General Plan G and Safety Plan C are discussed below.

### Cost-of-Living Contributions for non-PEPRA Plans

The determination of the member cost-of-living contributions is based on Section 31873 of the County Employees' Retirement Law. This section requires that the cost of this benefit be shared equally between members and the employer. Unlike the member normal contributions, these rates are based on the actuarial cost of the benefits and reflect all assumptions used in the valuation of liabilities.

**Cost-of-Living Contributions for non-PEPRA Plans (continued)**

Since 2016 is an Investigation of Experience study year, we are recommending a change in the member cost-of-living contribution rates. The cost-of-living contributions, expressed as a percentage of the normal contribution rates, are based on the June 30, 2016 actuarial valuation (the most recent valuation with which member rates were changed) and are as follows:

Plan	COLA %
General A	79.37%
General B	23.97%
General C	25.46%
General D	24.49%
General E	0.00%
Safety A	86.98%
Safety B	31.63%

The relative magnitude of these amounts reflects the differences in the normal contribution rates for each plan and the different cost-of-living benefits offered by the different plans. The rate for Plan E is 0.00%, since it is non-contributory.

A sample of the current member contribution rates (normal plus cost-of-living) can be found in Exhibit 9.

Full disclosure of the member rates, showing both the normal and the total (normal plus cost-of-living) contribution rates, can be found in Appendix D.

**Member Contribution Rates for General Plan G and Safety Plan C (PEPRA Plans)**

Members of the two plans developed in compliance with the Public Employees' Pension Reform Act of 2013 (PEPRA) contribute a flat rate (i.e., does not vary by entry age) based on whether they are in the General or Safety plan. This rate is set equal to one half of the total Normal Cost rate. We are recommending changes to the member contribution rates for these plans, as shown below, to reflect the Plan's Normal Cost rates for the 2016 valuation.

	General Plan G	Safety Plan C
<b>All Ages: Recommended</b>	<b>8.31%</b>	<b>14.00%</b>
All Ages: Current	7.58%	13.44%
Ratio (Rec'd / Current)	109.6%	104.2%

Note that the member contribution rates for these plans are further split for purposes of this report into a "Normal" and "Cost of Living" component. The cost-of-living component for these members, as shown in Exhibit 9 below, represents one-half of the cost of COLA for these plans.

**Average Member Rates**

The average member contribution rate for only those members in contributory plans at June 30, 2016 is 8.29% of payroll. This number compares to 6.65% of payroll, which is the average member contribution rate among all members. The 6.65% offsets the gross normal cost to yield the employer normal cost rate.

Exhibit 9 Sample Member Contribution Rates

<b>Recommended Rates (Based on 2016 Valuation)</b>						
	<b>Entry Age</b>	<b>Normal</b>	<b>Cost of Living</b>	<b>Total as a % of Pay</b>	<b>Current Rate (Total)</b>	<b>Ratio (New / Current)</b>
<b>General Members</b>						
<b>Plan A</b>	25	2.97%	2.36%	5.33%	5.30%	100.6%
	35	3.71%	2.94%	6.65%	6.63%	100.3%
	45	4.56%	3.62%	8.18%	8.14%	100.5%
	55	4.93%	3.91%	8.84%	8.80%	100.5%
<b>Plan B</b>	25	5.93%	1.42%	7.35%	7.08%	103.8%
	35	7.41%	1.78%	9.19%	8.84%	104.0%
	45	9.13%	2.19%	11.32%	10.88%	104.0%
	55	9.87%	2.37%	12.24%	11.75%	104.2%
<b>Plan C</b>	25	5.04%	1.28%	6.32%	6.03%	104.8%
	35	6.29%	1.60%	7.89%	7.52%	104.9%
	45	7.86%	2.00%	9.86%	9.39%	105.0%
	55	9.29%	2.37%	11.66%	11.11%	105.0%
<b>Plan D</b>	25	5.04%	1.23%	6.27%	5.90%	106.3%
	35	6.29%	1.54%	7.83%	7.36%	106.4%
	45	7.86%	1.92%	9.78%	9.19%	106.4%
	55	9.29%	2.28%	11.57%	10.87%	106.4%
<b>Plan G</b>	All Ages	6.79%	1.53%	8.31%	7.58%	109.6%
<b>Safety Members</b>						
<b>Plan A</b>	25	4.18%	3.64%	7.82%	8.00%	97.8%
	35	5.15%	4.48%	9.63%	9.86%	97.7%
	45	6.15%	5.35%	11.50%	11.76%	97.8%
	55	6.21%	5.40%	11.61%	11.86%	97.9%
<b>Plan B</b>	25	8.36%	2.64%	11.00%	10.71%	102.7%
	35	10.31%	3.26%	13.57%	13.19%	102.9%
	45	12.31%	3.89%	16.20%	15.74%	102.9%
	55	12.42%	3.93%	16.35%	15.87%	103.0%
<b>Plan C</b>	All Ages	10.97%	3.03%	14.00%	13.44%	104.2%

Note: A portion of some of the member contribution rates is paid for (“picked up”) by the employer and is not considered part of the member’s contribution account for refund purposes. Such contributions are referred to as the surcharge amount and are subject to change each year. The rates shown in the table are prior to any surcharge payments.



This page intentionally left blank.

## Section 6 Employer Contributions



Contributions to LACERA are determined using the Entry Age Normal Cost Method. The portion of the actuarial present value of retirement benefits allocated to a valuation year by the Actuarial Cost Method is called the Normal Cost. These amounts are usually expressed as a percentage of payroll and called the Normal Cost Contribution Rate. Exhibit 10 illustrates the Normal Cost Rates by type of benefit and for each plan based on this valuation. A comparison with last year is also shown.

Under the Funding Policy, the total contribution rate is set equal to the Normal Cost contribution plus a payment by the employer towards the UAAL. A portion of the Normal Cost contribution is funded by member contributions. The remainder is paid for by the employer.

### Calculated Employer Contribution Rate

The total calculated employer contribution rates for each plan, along with a comparison to the prior year's calculated rates, can be found in Exhibit 11a. These results are expressed as a percentage of payroll and annual contribution dollars. Note that LACERA's UAAL contribution rate is not determined separately for each plan, but is funded evenly as a percentage of pay over salaries for all members. The total calculated employer contribution rate was 17.77% for the fiscal year beginning in 2016.

For the fiscal year beginning in 2017, the total calculated employer contribution rate increases to 21.21%. This is equal to the net aggregate calculated Normal Cost contribution rate of 9.97% based on the 2016 valuation, plus a 30-year layered amortization payment of the UAAL.

(All values as a % of Payroll)

Employer Normal Cost	9.97%
30-year Layered Amortization of UAAL	<u>11.24%</u>
Calculated Employer Contribution Rate	21.21%

The 3.44% increase from last year in the calculated employer contribution rate is primarily due to the assumption changes adopted by the Board of Investments effective June 30, 2016. These changes resulted in an increase of 2.87% in the employer contribution rate. Recognition of investment losses caused a 0.39% increase in the UAAL rate. Other sources, including COLA increases smaller than assumed and salary increases greater than assumed, increased the UAAL rate by about 0.18%. The UAAL rate reflects a layered 30-year amortization from the valuation date with a July 1, 2017 implementation date for the new employer contribution rate.

**Calculated Employer Contribution Rate (continued)**

The change in the calculated Normal Cost contribution rates from year to year is generally due to a few factors. These factors include:

1. **New Assumptions:** The new assumptions adopted for the 2016 valuation caused an increase in the normal cost rate.
2. **Experience:** Normal experience from year to year reflects differences in both the weighting between membership groups and their characteristics, as well as what was assumed to occur during the past fiscal year and what actually occurred, particularly with respect to salary increases.
3. **Change in Plan Proportion:** As new LACERA members are hired into General Plan G and Safety Plan C, the normal cost rates for these plans will represent a larger share of the overall normal cost rate for LACERA. These plans do not have substantially lower gross normal cost rates than prior LACERA plans; however, due to the higher member contributions for General Plan G and Safety Plan C, the plans generally have a lower employer normal cost. Therefore, as these plans grow to represent a larger share of the overall employer normal cost, the employer normal cost will be expected to decrease gradually over time.

**Employer Contribution Rate with phase-in**

At the December 2016 meeting, the Board of Investments adopted a three-year phase-in of the impact of the change in employer contribution rate resulting from the new assumptions adopted effective June 30, 2016. The total employer contribution rate with phase-in for each plan can be found in Exhibit 11b. These results are expressed as a percentage of payroll and annual contribution dollars.

For the fiscal year beginning in 2017, the total employer contribution rate with phase-in is 19.70%. This is equal to the net aggregate calculated Normal Cost contribution rate of 9.97% based on the 2016 valuation, plus a 30-year layered amortization payment of the UAAL.

(All values as a % of payroll)

Calculated Employer Contribution Rate	21.21%
Deferred recognition of new assumptions	<u>(1.51)%</u>
Employer Contribution Rate with phase-in	19.70%

Note that recognizing the phase-in evenly over a three-year period would result in an annual recognition of approximately 0.96% of payroll, and a deferred recognition of 1.91% in the first year. In Section II 1A(4) of the Funding Policy, the policy states: "In no case shall the total amount contributed by the employer be less than the Normal Cost Rate for the year, plus a 30-year amortization of the total UAAL." We interpret this to mean that if the rate increase is phased in, we need to limit the phase-in, so that the contribution rate is still sufficient to amortize the UAAL over a period of 30 years or less. 1.51% is the maximum amount that can be deferred and still have the total employer contribution rate satisfy this minimum. For purposes of the minimum calculation, we used the 30-year period beginning July 1, 2017 (the date of implementation of the new contribution rate).

**Hypothetical  
 Population Used for  
 Normal Cost Rate for  
 New Plans**

For plans that have been in existence for less than five years, the normal cost rate is calculated based on a hypothetical population which includes all current active members with less than five years of service, as if each of these members had entered the respective new plan (split by General and Safety).

The following table shows a comparison between what the normal cost rate would have been if it had been based on the current population only, and the normal cost rate based on the hypothetical smoothed population used in the valuation.

	Current Population	Smoothed Population
<b>General Plan G</b>		
Normal Cost Rate	16.55%	16.62%
Member Rate	8.28%	8.31%
<b>Safety Plan C</b>		
Normal Cost Rate	27.89%	28.00%
Member Rate	13.95%	14.00%

**Exhibit 10 Calculated Normal Cost Contribution Rates – June 30, 2016**

A. Normal Cost Contribution Rate	General							Safety				Grand Total
	Plan A	Plan B	Plan C	Plan D	Plan E	Plan G	Total	Plan A	Plan B	Plan C	Total	
Service Retirement	19.45%	13.99%	12.28%	13.42%	9.33%	14.10%	12.52%	15.53%	14.69%	15.36%	14.73%	12.95%
Disability Retirement	1.05%	0.72%	0.66%	1.16%	0.00%	1.25%	0.89%	9.77%	9.70%	11.59%	9.82%	2.60%
Death	0.28%	0.22%	0.21%	0.36%	0.00%	0.34%	0.27%	0.33%	0.29%	0.27%	0.29%	0.27%
Termination (No Refund)	0.30%	0.32%	0.28%	0.56%	0.51%	0.51%	0.54%	0.45%	0.46%	0.48%	0.46%	0.52%
Refund of Member Contributions	0.09%	0.12%	0.11%	0.38%	0.00%	0.42%	0.29%	0.17%	0.24%	0.30%	0.24%	0.28%
<b>Total</b>	<b>21.17%</b>	<b>15.37%</b>	<b>13.54%</b>	<b>15.88%</b>	<b>9.84%</b>	<b>16.62%</b>	<b>14.51%</b>	<b>26.25%</b>	<b>25.38%</b>	<b>28.00%</b>	<b>25.54%</b>	<b>16.62%</b>
B. Member Contributions	(5.30)%	(7.60)%	(6.47)%	(7.44)%	0.00%	(8.31)%	(5.72)%	(1.53)%	(10.35)%	(14.00)%	(10.57)%	(6.65)%
C. Net Employer Normal Cost as of June 30, 2016 (A) - (B)	15.87%	7.77%	7.07%	8.44%	9.84%	8.31%	8.79%	24.72%	15.03%	14.00%	14.97%	9.97%
D. Net Employer Normal Cost as of June 30, 2015	15.14%	7.45%	6.83%	7.70%	9.00%	7.58%	8.06%	23.76%	14.48%	13.44%	14.45%	9.28%
E. Increase (Decrease) as a Percentage of Payroll (C) - (D)	0.73%	0.32%	0.24%	0.74%	0.84%	0.73%	0.73%	0.96%	0.55%	0.56%	0.52%	0.69%
F. Estimated Payroll for fiscal year beginning July 1, 2017*	\$ 24	\$ 9	\$ 8	\$ 3,829	\$ 1,514	\$ 791	\$ 6,174	\$ 2	\$ 1,363	\$ 92	\$ 1,456	\$ 7,630
G. Estimated Total Normal Cost Contribution in Dollars (A x F)**	\$ 5	\$ 1	\$ 1	\$ 608	\$ 149	\$ 131	\$ 896	\$ -	\$ 346	\$ 26	\$ 372	\$ 1,268

\* Estimated Payroll based upon annualized salary rate as of June 30, 2016 increased by 3.25% wage inflation. Dollar figures in millions.

\*\* The timing of the Normal Cost shown in this exhibit is spread over the entire year and corresponds to payroll timing.

Exhibit 11a Total Employer Contributions (without phase-in of new assumptions)

	General							Safety				All Plans
	Plan A	Plan B	Plan C	Plan D	Plan E	Plan G	Total	Plan A	Plan B	Plan C	Total	
<b>A. Net Employer Normal Cost</b>												
1. Basic Benefits	12.65%	6.27%	5.76%	7.05%	8.24%	6.99%	7.35%	19.31%	12.25%	11.22%	12.36%	8.27%
2. Cost-of-Living Benefits	3.22%	1.50%	1.31%	1.39%	1.60%	1.32%	1.44%	5.41%	2.78%	2.78%	2.61%	1.70%
3. Total June 30, 2016	15.87%	7.77%	7.07%	8.44%	9.84%	8.31%	8.79%	24.72%	15.03%	14.00%	14.97%	9.97%
B. UAAL Contribution Rate	11.24%	11.24%	11.24%	11.24%	11.24%	11.24%	11.24%	11.24%	11.24%	11.24%	11.24%	11.24%
<b>C. Total June 30, 2016 Contribution Rate (A) + (B)</b>	<b>27.11%</b>	<b>19.01%</b>	<b>18.31%</b>	<b>19.68%</b>	<b>21.08%</b>	<b>19.55%</b>	<b>20.03%</b>	<b>35.96%</b>	<b>26.27%</b>	<b>25.24%</b>	<b>26.21%</b>	<b>21.21%</b>
D. Total June 30, 2015 Contribution Rate	23.63%	15.94%	15.32%	16.19%	17.49%	16.07%	16.55%	32.25%	22.97%	21.93%	22.94%	17.77%
E. Estimated Payroll for fiscal year beginning July 1, 2017*	\$ 24	\$ 9	\$ 8	\$ 3,829	\$ 1,514	\$ 791	\$ 6,174	\$ 2	\$ 1,363	\$ 92	\$ 1,456	\$ 7,630
<b>F. Estimated Annual Contribution (C x E)</b>	<b>\$ 6</b>	<b>\$ 2</b>	<b>\$ 1</b>	<b>\$ 754</b>	<b>\$ 319</b>	<b>\$ 155</b>	<b>\$ 1,237</b>	<b>\$ 1</b>	<b>\$ 358</b>	<b>\$ 23</b>	<b>\$ 382</b>	<b>\$ 1,619</b>
G. Last Year's Estimated Annual Contribution	\$ 7	\$ 2	\$ 2	\$ 612	\$ 272	\$ 86	\$ 980	\$ 1	\$ 310	\$ 12	\$ 322	\$ 1,302
H. Increase / (Decrease) in Annual Contribution	\$ (1)	\$ -	\$ (1)	\$ 142	\$ 47	\$ 69	\$ 257	\$ -	\$ 48	\$ 11	\$ 60	\$ 317

\* Estimated Payroll based upon annualized salary rate as of June 30, 2016 increased by 3.25% wage inflation. Dollar figures in millions.

Exhibit 11b Total Employer Contributions (with phase-in of new assumptions)

	General							Safety				All Plans
	Plan A	Plan B	Plan C	Plan D	Plan E	Plan G	Total	Plan A	Plan B	Plan C	Total	
<b>A. Net Employer Normal Cost</b>												
1. Basic Benefits	12.65%	6.27%	5.76%	7.05%	8.24%	6.99%	7.35%	19.31%	12.25%	11.22%	12.36%	8.27%
2. Cost-of-Living Benefits	3.22%	1.50%	1.31%	1.39%	1.60%	1.32%	1.44%	5.41%	2.78%	2.78%	2.61%	1.70%
3. Total June 30, 2016	15.87%	7.77%	7.07%	8.44%	9.84%	8.31%	8.79%	24.72%	15.03%	14.00%	14.97%	9.97%
B. UAAL Contribution Rate	11.24%	11.24%	11.24%	11.24%	11.24%	11.24%	11.24%	11.24%	11.24%	11.24%	11.24%	11.24%
<b>C. Calculated June 30, 2016 Contribution Rate (A) + (B)</b>	<b>27.11%</b>	<b>19.01%</b>	<b>18.31%</b>	<b>19.68%</b>	<b>21.08%</b>	<b>19.55%</b>	<b>20.03%</b>	<b>35.96%</b>	<b>26.27%</b>	<b>25.24%</b>	<b>26.21%</b>	<b>21.21%</b>
D. Deferred Recognition of new assumptions	(1.51)%	(1.51)%	(1.51)%	(1.51)%	(1.51)%	(1.51)%	(1.51)%	(1.51)%	(1.51)%	(1.51)%	(1.51)%	(1.51)%
<b>E. Total June 30, 2016 Contribution Rate with phase-in (C) + (D)</b>	<b>25.60%</b>	<b>17.50%</b>	<b>16.80%</b>	<b>18.17%</b>	<b>19.57%</b>	<b>18.04%</b>	<b>18.52%</b>	<b>34.45%</b>	<b>24.76%</b>	<b>23.73%</b>	<b>24.70%</b>	<b>19.70%</b>
F. Total June 30, 2015 Contribution Rate	23.63%	15.94%	15.32%	16.19%	17.49%	16.07%	16.55%	32.25%	22.97%	21.93%	22.94%	17.77%
G. Estimated Payroll for fiscal year beginning July 1, 2017*	\$ 24	\$ 9	\$ 8	\$ 3,829	\$ 1,514	\$ 791	\$ 6,174	\$ 2	\$ 1,363	\$ 92	\$ 1,456	\$ 7,630
<b>H. Estimated Annual Contribution (E x G)</b>	<b>\$ 6</b>	<b>\$ 1</b>	<b>\$ 1</b>	<b>\$ 696</b>	<b>\$ 296</b>	<b>\$ 143</b>	<b>\$ 1,144</b>	<b>\$ 1</b>	<b>\$ 337</b>	<b>\$ 22</b>	<b>\$ 360</b>	<b>\$ 1,504</b>
I. Last Year's Estimated Annual Contribution	\$ 7	\$ 2	\$ 2	\$ 612	\$ 272	\$ 86	\$ 980	\$ 1	\$ 310	\$ 12	\$ 322	\$ 1,302
J. Increase / (Decrease) in Annual Contribution	\$ (1)	\$ (1)	\$ (1)	\$ 84	\$ 24	\$ 57	\$ 164	\$ -	\$ 27	\$ 10	\$ 38	\$ 202

\* Estimated Payroll based upon annualized salary rate as of June 30, 2016 increased by 3.25% wage inflation. Dollar figures in millions.

Exhibit 12 Unfunded Actuarial Accrued Liability Detail

Unfunded Actuarial Accrued Liability - 30 Year Layered Amortization Detail							
Date Established	Description	Balance as of June 30, 2016	Interest on Balance	Amort. Payment on June 30, 2017 <sup>(1)</sup>	Balance as of June 30, 2017 <sup>(2)</sup>	Remaining Period as of June 30, 2017	July 1, 2017 Amortization Payment
June 30, 2009	Initial UAAL	\$ 5,599.4	\$ 406.0	\$ 384.3	\$ 5,621.1	22 Years	\$ 377.7
June 30, 2010	(Gain) / Loss	3,032.3	219.8	202.7	3,049.4	23 Years	199.2
June 30, 2011	(Gain) / Loss	1,492.1	108.2	97.3	1,503.0	24 Years	95.6
June 30, 2012	(Gain) / Loss	2,423.5	175.7	154.4	2,444.8	25 Years	151.8
June 30, 2013	(Gain) / Loss	1,361.7	98.7	84.9	1,375.5	26 Years	83.4
June 30, 2014	(Gain) / Loss	(2,507.0)	(181.8)	(153.1)	(2,535.7)	27 Years	(150.5)
June 30, 2015	(Gain) / Loss	(1,948.3)	(141.3)	(116.7)	(1,972.9)	28 Years	(114.7)
June 30, 2016	(Gain) / Loss	3,387.3	245.6	(143.5) <sup>(3)</sup>	3,776.4	29 Years	215.3
Total Amortization Payment July 1, 2017:							\$ 857.8
Projected Payroll July 1, 2017:							\$ 7,630.2
UAAL as of June 30, 2016:		<u>\$ 12,841.0</u>	UAAL Contribution Rate (as a % of Payroll) FYB July 1, 2017:				<u>11.24%</u>

Explanatory Notes:

1. Amortization Payments are based on a fixed schedule that increases by the payroll assumption each year.
2. The assets and liabilities used in the calculation of the UAAL are as of June 30, 2016; whereas, the contribution rates are not effective until July 1, 2017. Therefore, the UAAL is adjusted to June 30, 2017 based on the actual contribution rate for the period.
3. The 30-year amortization of UAAL does not begin until July 1, 2017; however, the UAAL amount is adjusted based on the July 1, 2016 contribution rate.



This page intentionally left blank.

## Section 7 Supplemental Information



Governmental Accounting Standards Board (GASB) Statement No. 67 sets out requirements for defined benefit pension plan reporting and disclosures. GASB Statement No. 68 sets out requirements for accounting by state and local government employers.

Milliman provides LACERA with results relevant to Statements No. 67 and 68 in separate stand-alone financial reporting valuation reports.

For informational purposes, we have provided the following exhibits in this report that LACERA may use in the Comprehensive Annual Financial Report (CAFR):

1. A Schedule of Funding Progress
2. A Schedule of Employer Contributions
3. A Solvency Test

The Schedule of Funding Progress, Exhibit 13, compares actuarial assets and liabilities of the system, based on the actuarial funding method used. The required Schedule of Employer Contributions, Exhibit 14, compares the employer contributions required based on the actuarial valuation with the employer contributions actually made. Information shown in this exhibit comes from LACERA's audited financial statements.

Exhibit 15 compares the Actuarial Value of Valuation Assets to the types of Actuarial Accrued Liabilities, applying them first to Active Member contributions, then to retirees and beneficiaries, and then the remaining amount to the Active Members benefits. This is referred to as the Solvency Test.

**Exhibit 13 Schedule of Funding Progress**  
**(All Dollars in Thousands)**

<u>Actuarial Valuation Date</u>	<u>(a) Actuarial Value of Valuation Assets</u>	<u>(b) Actuarial Accrued Liabilities</u>	<u>(b-a) Unfunded Actuarial Accrued Liabilities (UAAL)</u>	<u>(a/b) Funded Ratio</u>	<u>(c) Covered Payroll<sup>(1)</sup></u>	<u>[(b-a)/c] UAAL as a Percentage of Covered Payroll</u>
June 30, 2007 <sup>(2)</sup>	37,041,832	39,502,456	2,460,624	93.8%	5,615,736	43.8%
June 30, 2008	39,662,361	41,975,631	2,313,270	94.5%	6,123,888	37.8%
June 30, 2009	39,541,865	44,468,636	4,926,771	88.9%	6,547,616	75.2%
June 30, 2010 <sup>(2)</sup>	38,839,392	46,646,838	7,807,446	83.3%	6,695,439	116.6%
June 30, 2011 <sup>(2)</sup>	39,193,627	48,598,166	9,404,539	80.6%	6,650,674	141.4%
June 30, 2012 <sup>(2)</sup>	39,039,364	50,809,425	11,770,061	76.8%	6,619,816	177.8%
June 30, 2013 <sup>(2)</sup>	39,932,416	53,247,776	13,315,360	75.0%	6,595,902	201.9%
June 30, 2014	43,654,462	54,942,453	11,287,991	79.5%	6,672,228	169.2%
June 30, 2015	47,328,270	56,819,215	9,490,945	83.3%	6,948,738	136.6%
June 30, 2016	49,357,847	62,199,214	12,841,367	79.4%	7,279,091	176.4%

1. Covered Payroll includes compensation paid to all active employees on which contributions are calculated, as reported by LACERA. Covered Payroll differs from the Active Member Valuation Payroll shown in Table C-1, which is an annualized compensation of only those members who were active on the actuarial valuation date.

2. Assumption changes.

**Exhibit 14 Schedule of Contributions from the Employer**  
**(All Dollars in Thousands)**

Fiscal Year Ending	Actuarially Determined Employer Contribution	Actual Employer Contributions			Percentage of Actuarially Determined Contribution Contributed
		Cash Payment	Transfer from Reserve Accounts	Total	
6/30/2007	\$ 863,626	\$ 751,851	\$ 111,775	\$ 863,626	100%
6/30/2008	827,911	788,029	40,601	828,630	100%
6/30/2009	847,172	831,672	15,500	847,172	100%
6/30/2010	843,704	843,703	0	843,703	100%
6/30/2011	944,174	944,174	0	944,174	100%
6/30/2012	1,078,929	1,078,929	0	1,078,929	100%
6/30/2013	1,172,014	723,195	448,819	1,172,014	100%
6/30/2014	1,320,442	1,320,442	0	1,320,442	100%
6/30/2015	1,494,975	1,494,975	0	1,494,975	100%
6/30/2016	1,443,130	1,443,130	0	1,443,130	100%

**Exhibit 15 Solvency Test  
(Dollars in Millions)**

Actuarial Valuation Date	Actuarial Value of Valuation Assets	Actuarial Accrued Liabilities for			Portion of Actuarial Accrued Liabilities Covered by Assets		
		Active Member Contributions (A)	Retirees and Beneficiaries <sup>(1)</sup> (B)	Active Members (Employer Financed Portion) (C)	(A)	(B)	(C)
June 30, 2007	37,042	4,852	22,398	12,253	100%	100%	80%
June 30, 2008	39,662	5,279	23,730	12,966	100%	100%	82%
June 30, 2009	39,542	5,795	24,692	13,982	100%	100%	65%
June 30, 2010	38,839	6,278	26,220	14,148	100%	100%	45%
June 30, 2011	39,194	6,529	27,559	14,511	100%	100%	35%
June 30, 2012	39,039	6,961	29,118	14,730	100%	100%	20%
June 30, 2013	39,932	7,837	30,980	14,430	100%	100%	8%
June 30, 2014	43,654	8,354	31,882	14,706	100%	100%	23%
June 30, 2015	47,328	8,805	32,734	15,280	100%	100%	38%
June 30, 2016	49,358	8,767	35,316	18,116	100%	100%	29%

1. Includes vested former members.

## Section 8 Cash Flow History and Projections



### Cash Flow Projection

Exhibits 16a and 16b contain tables and graphs that illustrate both the cash flow history for the past 10 years and a projection on the valuation basis for the next 10 years.

Contributions include both employer and member contributions. Exhibit 16a shows that net cash flow has been fairly level over the last five years. In future years, the cash flow is expected to become increasingly negative. This is a typical pattern for a mature retirement system where it is expected that contributions will be less than benefits and that the system will begin drawing on the fund that has been built up over prior years.

Note that the actual cash contributions do not reflect the transfers made between reserve funds, but only cash coming into the system. We are assuming no further transfers, only full cash contributions.

The projected cash flows include contributions, statutory benefits, and administrative expenses only. They are based on the actuarial assumptions as stated in Appendix A of this valuation report. The total employer contribution rate is assumed to be 17.77% for the first year and 19.70% for the second year; total employer contributions for the remainder of the period reflect the expected recognition of asset losses currently being deferred. The aggregate member rate is assumed to stay at the calculated rate for June 30, 2016 of 6.65% of payroll. Expenses are based on the expenses for the year ended June 30, 2016, increased annually with the actuarial inflation assumption of 2.75%.

Any increases or reductions in future contribution rates will increase or decrease the net cash flow. The projected cash flows do not include:

- Projected STAR benefits that have not yet been granted. STAR benefits that were vested as of January 2016 are included.
- Projected benefits payable under certain insurance contracts for a group of retired members. These payments are netted against the total expected retiree benefits.

Exhibit 16a Cash Flow History and Projections – Dollars

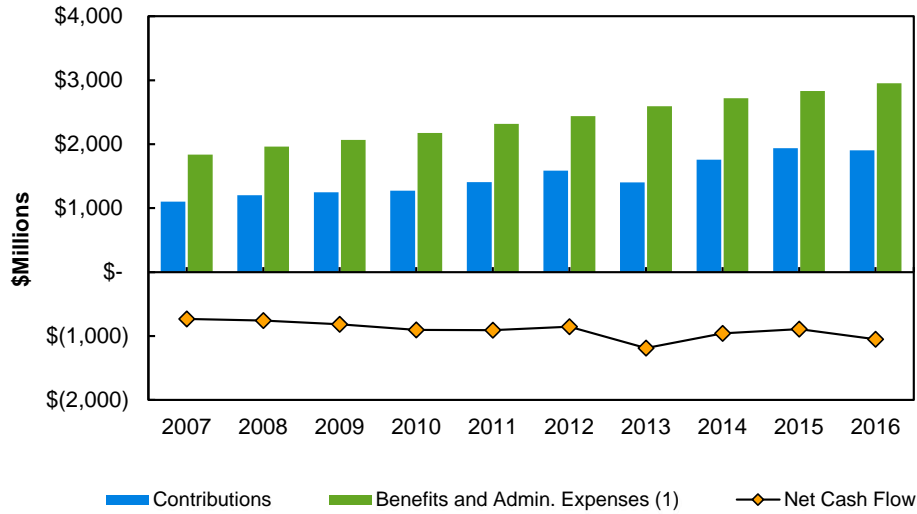
Plan Year Ending	Cash Flow History		
	Total Contributions	Benefits & Administrative Expenses <sup>(1)</sup>	Net Cash Flow
2007	\$ 1,100	\$ 1,835	\$ (735)
2008	1,203	1,960	(757)
2009	1,247	2,065	(818)
2010	1,273	2,177	(904)
2011	1,408	2,318	(910)
2012	1,586	2,439	(853)
2013	1,403	2,593	(1,190)
2014	1,759	2,719	(960)
2015	1,936	2,829	(893)
2016	1,902	2,954	(1,052)

Plan Year Ending	Cash Flow Projections <sup>(2)</sup>		
	Total Contributions	Benefits & Administrative Expenses <sup>(1)</sup>	Net Cash Flow
2017	\$ 1,770	\$ 3,184	\$ (1,414)
2018	2,015	3,288	(1,272)
2019	2,140	3,451	(1,311)
2020	2,324	3,622	(1,298)
2021	2,478	3,801	(1,323)
2022	2,612	3,988	(1,376)
2023	2,704	4,182	(1,478)
2024	2,798	4,384	(1,586)
2025	2,896	4,593	(1,697)
2026	2,997	4,805	(1,808)

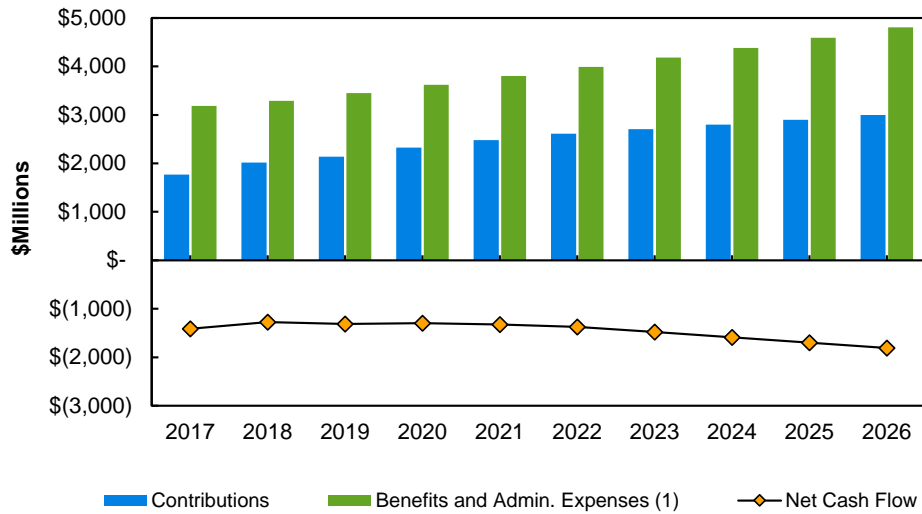
1. Investment expenses are assumed to be covered by investment return.
2. Future contributions reflect the expected impact of asset gains and losses currently being deferred.

Exhibit 16b Cash Flow History and Projections – Charts

Cash Flow History



Cash Flow Projections<sup>(2)</sup>



1. Investment expenses are assumed to be covered by investment return.
2. Future contributions reflect the expected impact of asset gains and losses currently being deferred.



## Appendix A Actuarial Procedures and Assumptions



The actuarial procedures and assumptions used in this valuation are described in this section. The assumptions were reviewed and changed for the June 30, 2016 actuarial valuation as a result of the 2016 triennial Investigation of Experience Study. Please refer to that Investigation of Experience report for the data and rationale used in the selection and recommendation of each assumption.

The actuarial assumptions used in the valuations are intended to estimate the future experience of the members of LACERA and of LACERA itself in areas that affect the projected benefit flow and anticipated investment earnings. Any variations in future experience from that expected from these assumptions will result in corresponding changes in the estimated costs of LACERA's benefits.

Table A-1 summarizes the assumptions. The mortality rates are taken from the sources listed.

Tables A-2 and A-3 show how members are expected to leave retired status due to death.

Table A-4 presents the probability of refund of contributions upon termination of employment while vested.

Table A-5 presents the expected annual percentage increase in salaries.

Tables A-6 to A-13 were developed from the experience as measured by the 2016 Investigation of Experience Study. The rates are the probabilities a member will leave the system for various reasons.

### Actuarial Cost Method

The actuarial valuation is prepared using the entry age actuarial cost method. Under the principles of this method, the actuarial present value of the projected benefits of each individual included in the valuation is allocated as a level percentage of the individual's projected compensation between entry age and assumed exit (until maximum retirement age).

For members who transferred between plans, entry age is based on original entry into the system.

The portion of this actuarial present value allocated to a valuation year is called the normal cost. The portion of this actuarial present value not provided for at a valuation date by the sum of (a) the actuarial value of the assets, and (b) the actuarial present value of future normal costs is called the Unfunded Actuarial Accrued Liability (UAAL). The original UAAL as of June 30, 2009 is amortized as a level percentage of the projected salaries of present and future members of LACERA over a closed 30-year period. Future gains and losses are amortized over new closed 30-year periods. This is referred to as "layered" amortization.

<b>Actuarial Cost Method (continued)</b>	<p>For plans that have been in existence for less than five years, the normal cost rate is calculated based on a hypothetical population which includes all current active members with less than five years of service, as if each of these members had entered their respective new plan (split by General and Safety). This normal cost rate is then multiplied by the present value of future compensation of current active members in the respective plans to calculate the present value of future normal costs in aggregate. For all plans, the present value of future benefits minus the present value of future normal costs will be equal to the Actuarial Accrued Liability (AAL).</p> <p>For General Plan G and Safety Plan C, the normal cost rate is rounded up to the nearest 0.02%.</p>
<b>Records and Data</b>	<p>The data used in this valuation consist of financial information and the age, service, and salary records for active and inactive members and their survivors. All of the data were supplied by LACERA and are accepted for valuation purposes without audit.</p>
<b>Replacement of Former Members</b>	<p>The ages and relative salaries at entry of future members are assumed to follow a new entrant distribution based on the pattern of current members. Under this assumption, the normal cost rates for active members will remain fairly stable in future years unless there are changes in the governing law, the actuarial assumptions, or the pattern of the new entrants.</p>
<b>Growth in Membership</b>	<p>For benefit determination purposes, no growth in the membership of LACERA is assumed. For funding purposes, if amortization is required, the total payroll of covered members is assumed to grow due to the combined effects of future wage increases of current active members and the replacement of the current active members by new employees. No growth in the total number of active members is assumed.</p>
<b>Internal Revenue Code Section 415 Limit</b>	<p>The Internal Revenue Code Section 415 maximum benefit limitations are not reflected in the valuation for funding purposes. Any limitation is reflected in a member's benefit after retirement.</p>
<b>Internal Revenue Code Section 401(a)(17)</b>	<p>The Internal Revenue Code Section 401(a)(17) maximum compensation limitation is not reflected in the valuation for funding purposes. Any limitation is reflected in a member's benefit after retirement.</p>
<b>Employer Contributions</b>	<p>The employer contribution rate is set by the Board of Investments based on actuarial valuations.</p>
<b>Member Contributions</b>	<p>The member contribution rates vary by entry age and are described in the law. Code references are shown in Appendix B of the valuation report. The methods and assumptions used are detailed later in this section.</p> <p>The individual member rates by entry age, plan and class are illustrated in Appendix D of the valuation report.</p>

<b>Valuation of Assets</b>	<p>The assets are valued using a five-year smoothed method based on the difference between the expected market value and the actual market value of the assets as of the valuation date. The expected market value is the prior year's market value increased with the net increase in the cash flow of funds, all increased with interest during the past fiscal year at the expected investment return rate assumption. The five-year smoothing valuation basis for all assets was adopted effective June 30, 2009.</p>
<b>Investment Earnings and Expenses</b>	<p>The future investment earnings of the assets of LACERA are assumed to accrue at an annual rate of 7.25% compounded annually, net of both investment and administrative expenses. This rate was adopted effective June 30, 2016.</p>
<b>Postretirement Benefit Increases</b>	<p>Postretirement increases are assumed for the valuation in accordance with the benefits provided as described in Appendix B. These adjustments are assumed payable each year in the future as they are less than the expected increase in the Consumer Price Index (CPI) of 2.75% per year. This CPI rate was adopted effective June 30, 2016.</p>
<b>Interest on Member Contributions</b>	<p>The annual credited interest rate on member contributions is assumed to be 7.25% compounded semi-annually for an annualized rate of 7.38%. This rate was adopted effective June 30, 2016.</p>
<b>Future Salaries</b>	<p>The rates of annual salary increase assumed for the purpose of the valuation are illustrated in Table A-5. In addition to increases in salary due to promotions and longevity, this scale includes an assumed 3.25% per annum rate of increase in the general wage level of the membership. These rates were adopted effective June 30, 2016.</p> <p>Increases are assumed to occur mid-year (i.e., January 1<sup>st</sup>) and only apply to base salary, excluding megaflex compensation. The mid-year timing reflects that salary increases occur throughout the year, or on average mid-year.</p> <p>For plans with a one-year final average compensation period, actual average annual compensation is used. For other plans, the monthly rate as of June of the valuation year was annualized. Due to irregular compensation payments included as pensionable earnings, actual annual pay is preferred over annualizing a single monthly payment amount.</p>
<b>Social Security Wage Base</b>	<p>Plan E members have their benefits offset by an assumed Social Security Benefit. For valuation funding purposes, we need to project the Social Security Benefit. We assume the current Social Security provisions will continue and the annual Wage Base will increase at the rate of 3.25% per year. Note, statutory provisions describe exactly how to compute the offset for purposes of determining a member's offset amount at time of termination or retirement. This rate was adopted effective June 30, 2016.</p> <p>Note that it is assumed all Plan E members born after 1950 have less than 10 years of Social Security-covered service and, therefore, do not have their benefit offset.</p>

**Social Security Wage Base  
 (continued)**

General Plan G and Safety Plan C members have their compensation limited to approximately 120% of the Social Security Wage Base. The limit for 2016 is \$140,424 (after applying the 120% factor) and is projected to increase at the CPI rate of 3.25%. This rate of future increase was adopted effective June 30, 2016.

**Retirement**

Members in General Plans A-D may retire at age 50 with 10 years of service, or any age with 30 years of service, or age 70 regardless of the number of years of service. General Plan G members are eligible to retire at age 52 with 5 years of service, or age 70 regardless of the number of years of service. Non-contributory Plan E members may retire at age 55 with 10 years of service. Members of Safety Plans A and B may retire at age 50 with 10 years of service, or any age with 20 years of service. Safety Plan C members are eligible to retire at age 50 with 5 years of County service. The retirement rates vary by age and are shown by plan in Tables A-6 through A-13.

All general members who attain or who have attained age 75 in active service and all safety members who have attained age 65 in active service are assumed to retire immediately (except for Safety Plan C members who have not yet attained 5 years of service).

Vested former members are assumed to retire at the later of their current age and the assumed retirement age specified as follows:

Assumption for Deferred Commencement	
Plan	Age at Commencement
GA	62
GB	62
GC	62
GD	57
GE	62
GG	57
SA	55
SB	50
SC	50

The assumptions regarding termination of employment, early retirement, and unreduced service retirement are treated as a single set of decrements in regards to a particular member. For example, a General Plan D member hired at age 30 has a probability to withdraw from LACERA due to death, disability, or other termination of employment until age 50. After age 50, the member could still withdraw due to death, disability, or retirement. Thus, in no year during the member's projected employment would they be eligible for both a probability of other termination of employment and a probability of retirement.

The retirement probabilities were adopted effective June 30, 2016.

**Disability**

The rates of disability used in the valuation are also illustrated in Tables A-6 through A-13. These rates were adopted effective June 30, 2016.

**Postretirement  
 Mortality – Other Than  
 Disabled Members**

The same postretirement mortality rates are used in the valuation for active members, members retired for service, and beneficiaries. These rates are illustrated in Table A-2. Current beneficiary mortality is assumed to be the same assumption as healthy members of the same sex. Future beneficiaries are assumed to be of the opposite sex, and have the same mortality as General members. Note that these assumptions include a projection for expected future mortality improvement. These rates were adopted effective June 30, 2016.

*Males* General members: RP-2014 Healthy Annuitant Mortality Table for Males multiplied by 105%, with MP-2014 Ultimate Projection Scale.  
 Safety members: RP-2014 Healthy Annuitant Mortality Table for Males multiplied by 95%, with MP-2014 Ultimate Projection Scale.

*Females* General members: RP-2014 Healthy Annuitant Mortality Table for Females, with MP-2014 Ultimate Projection Scale.  
 Safety members: Same as General Females.

**Postretirement  
 Mortality – Disabled  
 Members**

For disabled members, the mortality rates used in the valuation rates are illustrated in Table A-3. Note that these assumptions include a projection for expected future mortality improvement. These rates were adopted effective June 30, 2016.

*Males* General members: Average of RP-2014 Healthy Annuitant Mortality Table for Males multiplied by 105% and RP-2014 Disabled Annuitant Mortality Table for Males, both projected with MP-2014 Ultimate Projection Scale.

Safety members: RP-2014 Healthy Annuitant Mortality Table for Males, with MP-2014 Ultimate Projection Scale.

*Females* General members: Average of RP-2014 Healthy Annuitant Mortality Table for Females multiplied by 100% and RP-2014 Disabled Annuitant Mortality Table for Males, both projected with MP-2014 Ultimate Projection Scale.

Safety members: RP-2014 Healthy Annuitant Mortality Table for Females, with MP-2014 Ultimate Projection Scale.

**Mortality while in  
 Active Status**

For active members, the mortality rates used in the valuation rates are illustrated in Tables A-6 through A-13. These rates were adopted effective June 30, 2016.

Class	Gender	Proposed Table	
General	Male	RP 2014E Male, Generational <sup>(1)</sup>	-2
General	Female	RP 2014E Female, Generational <sup>(1)</sup>	-0
Safety	Male	RP 2014E Male, Generational <sup>(1)</sup>	-6
Safety	Female	RP 2014E Female, Generational <sup>(1)</sup>	-0

1. Projection using MP-2014 Ultimate projection scale.

Note that Safety members have an additional service-connected mortality rate of 0.01% per year.

**Other Employment  
Terminations**

Tables A-6 to A-13 show, for all ages, the rates assumed in this valuation for future termination from active service other than for death, disability or retirement. These rates do not apply to members eligible for service retirement. These rates were adopted effective June 30, 2016.

Terminating employees may withdraw their contributions immediately upon termination of employment and forfeit the right to further benefits, or they may leave their contributions with LACERA. Former contributing members whose contributions are on deposit may later elect to receive a refund, may return to work or may remain inactive until becoming eligible to receive a retirement benefit under either LACERA or a reciprocal retirement system. All terminating members who are not eligible for vested benefits are assumed to withdraw their contributions immediately.

All terminating members are assumed not to be rehired. Table A-4 gives the assumed probabilities that vested members will withdraw their contributions and elect a refund immediately upon termination and the probability the remaining members will elect a deferred retirement allowance. All non-vested members are assumed to elect a refund and withdraw their contributions. These rates were adopted effective June 30, 2016.

**Probability of Eligible  
Survivors**

For members not currently in pay status, 77% of all males and 50% of all females are assumed to have eligible survivors (spouses or qualified domestic partners). Survivors are assumed to be four years younger than male members and two years older than female members. Survivors are assumed to be of the opposite sex as the member. There is no explicit assumption for children's benefits. We believe the survivor benefits based on this assumption are sufficient to cover children's benefits as they occur.

**Valuation of Vested  
Former Members**

The deferred retirement allowance is calculated based on the member's final compensation and service at termination. The compensation amount is projected until the assumed retirement age for members who are assumed to be employed by a reciprocal agency. For members who are missing compensation data, Final Compensation is estimated as the average amount for all members who terminated during the same year and had a valid compensation amount. The greater of the present value of the calculated benefit and the employee's current contribution balance is valued.

**Reciprocal  
Employment**

16% of General and 35% of Safety current and future vested former members are assumed to work for a reciprocal employer.

Current vested reciprocal members are assumed to receive annual salary increases of 4.25%. Future reciprocal vested members are assumed to receive the same salary increases they would have received if they had stayed in active employment with LACERA and retired at the assumed retirement age.

**Valuation of Annuity Purchases**

Over 30 years ago, LACERA purchased single life annuities from two insurance companies for some retired members (currently less than 1% of the retired population). The total liability for these members is calculated and then offset by the expected value of the benefit to be paid by the insurance companies.

For affected members, the insurance companies are responsible for:

- (1) Straight life annuity payments
- (2) Statutory COLAs

LACERA is responsible for:

- (1) Benefit payments payable to any beneficiary
- (2) STAR COLAs

**Member Contribution Rate Assumptions**

The following assumptions summarize the procedures used to compute member contribution rates based on entry age:

In general, the member rate is determined by the Present Value of the Future Benefit (PVFB) payable at retirement age, divided by the present value of all future salaries payable between age at entry and retirement age. For these purposes, per the CERL:

- A. The Annuity factor used for general members is based on a 35% / 65% blend of the male and female valuation mortality tables and projection scale, with a static projection to 2040. For Safety members, it is based on a 90% / 10% blend of the male and female annuity factors.
- B. The annuity factor used in determining the present value of future benefits (PVFB) at entry age is equal to the life only annuity factor at 7.25%.
- C. The Final Compensation is based on the salary paid in the year prior to attaining the retirement age.

Example: For a Plan C Member who enters at age 59 or earlier, the Final Compensation at retirement (age 60) will be the monthly average of the annual salaries during age 59.

- D. Member Rates are assumed to increase with entry age. There are a few exceptions at the higher entry ages where the calculated rate is less than the previous entry age (for example, age 53 for General A). In these cases the member contribution rate is adjusted so that it is no less than the value for the previous entry age.

**Implementation Schedule for Changes in Assumptions**

LACERA implements changes in member and employer contribution rates, interest crediting rates and operating tables in the fiscal year following adoption of the valuation or investigation of experience that the rates and tables are based upon. For example, a change in the investment return assumption adopted for use in the June 30, 2016 actuarial valuation is used for crediting interest to reserves in the fiscal year beginning July 1, 2017.

**Table A-1 Summary of Valuation Assumptions as of June 30, 2016**

I.	Economic assumptions	
A.	General wage increases	3.25%
B.	Investment earnings	7.25%
C.	Growth in membership	0.00%
D.	Postretirement benefit increases (varies by plan)	Plan COLA not greater than CPI assumption.
E.	CPI inflation assumption	2.75%
II.	Demographic assumptions	
A.	Salary increases due to service	Table A-5
B.	Retirement	Tables A-6 to A-13
C.	Disability	Tables A-6 to A-13
D.	Mortality during active employment	Tables A-6 to A-13
E.	Mortality for active members after termination and service retired members	Table A-2

Basis – RP-2014 Healthy Annuitant Mortality Table for respective genders with MP-2014 Ultimate Projection Scale:

<u>Class of Members</u>	<u>Adjustment</u>
General – males	105% of rates
General – females	100% of rates
Safety – males	95% of rates
Safety – females	100% of rates

F.	Mortality among disabled members	Table A-3
----	----------------------------------	-----------

Basis – Average of RP-2014 Healthy Annuitant and Disabled Mortality Tables for respective genders, with MP-2014 Ultimate Projection Scale:

General – males	105% of Healthy Rates
General – females	100% of rates

Basis – RP-2014 Healthy Mortality Table, for respective genders with MP-2014 Ultimate Projection Scale:

Safety – males	100% of rates
Safety – females	100% of rates

G.	Mortality for beneficiaries	Table A-2
----	-----------------------------	-----------

Basis – Beneficiaries are assumed to have the same mortality as a general member of the opposite sex who has taken a service retirement.

H.	Other terminations of employment	Tables A-6 to A-13
----	----------------------------------	--------------------

I.	Refund of contributions on vested termination	Table A-4
----	---	-----------



Table A-2 Mortality for Members Retired for Service<sup>(1)</sup>

Age	Safety Male	Safety Female	General Male	General Female
20	0.090%	0.041%	0.103%	0.041%
25	0.108%	0.044%	0.122%	0.044%
30	0.101%	0.055%	0.114%	0.055%
35	0.116%	0.072%	0.132%	0.072%
40	0.140%	0.100%	0.159%	0.100%
45	0.217%	0.165%	0.246%	0.165%
50	0.386%	0.277%	0.427%	0.277%
55	0.545%	0.362%	0.602%	0.362%
60	0.738%	0.519%	0.816%	0.519%
65	1.046%	0.805%	1.156%	0.805%
70	1.593%	1.287%	1.761%	1.287%
75	2.548%	2.094%	2.817%	2.094%
80	4.249%	3.484%	4.696%	3.484%
85	7.362%	6.050%	8.137%	6.050%
90	12.911%	10.713%	14.270%	10.713%

**Annual Projected Mortality Improvement**

Age	All Groups
65 & Less	1.000%
70	1.000%
75	1.000%
80	1.000%
85	1.000%
90	0.930%
95	0.850%
100	0.640%
105	0.430%
110	0.210%
115	0.000%

1. Mortality rates are those applicable for the fiscal year beginning in 2014. Annual projected improvements are assumed in the following years under the schedule shown. For example, the annual mortality rate for an 85-year old Safety male in fiscal year beginning in 2017 is 7.143% calculated as follows:

$$\begin{aligned}
 \text{Age 85 rate in 2017} &= \text{Age 85 rate in 2014 with 3 years improvement} \\
 &= 7.362\% \times (100.0\% - 1.0\%) \times (100.0\% - 1.0\%) \times (100.0\% - 1.0\%) \\
 &= 7.143\%
 \end{aligned}$$

Table A-3 Mortality for Members Retired for Disability<sup>(1)</sup>

Age	Safety Male	Safety Female	General Male	General Female
20	0.098%	0.041%	0.407%	0.132%
25	0.117%	0.045%	0.485%	0.141%
30	0.109%	0.058%	0.453%	0.178%
35	0.126%	0.075%	0.524%	0.233%
40	0.151%	0.109%	0.629%	0.322%
45	0.234%	0.184%	0.975%	0.535%
50	0.406%	0.277%	1.233%	0.734%
55	0.573%	0.362%	1.470%	0.905%
60	0.777%	0.519%	1.738%	1.109%
65	1.101%	0.805%	2.162%	1.445%
70	1.677%	1.287%	2.898%	2.054%
75	2.683%	2.094%	4.123%	3.099%
80	4.472%	3.484%	6.179%	4.794%
85	7.750%	6.050%	9.734%	7.546%
90	13.591%	10.713%	15.785%	11.989%

1. Mortality rates are those applicable the year fiscal year beginning in 2014. Annual projected improvements are assumed in the following years under the schedule shown on the preceding page.

**Table A-4 Immediate Refund of Contributions upon Termination of Employment (Excludes Plan E)**

<b>Years of Service</b>	<b>Safety</b>	<b>General</b>
0	100%	100%
1	100%	100%
2	100%	100%
3	100%	100%
4	100%	100%
5	35%	35%
6	35%	35%
7	35%	35%
8	33%	34%
9	31%	34%
10	29%	33%
11	27%	33%
12	25%	32%
13	22%	31%
14	19%	30%
15	16%	30%
16	13%	29%
17	10%	28%
18	6%	25%
19	2%	23%
20	0%	20%
21	0%	18%
22	0%	15%
23	0%	12%
24	0%	9%
25	0%	6%
26	0%	3%
27	0%	0%
28	0%	0%
29	0%	0%
30 or More	0%	0%

Table A-5 Annual Increase in Salary<sup>(1)</sup>

Years of Service	General	Safety
<1	6.00%	8.00%
1	5.25%	7.00%
2	4.50%	6.00%
3	3.75%	4.00%
4	3.00%	3.00%
5	2.50%	2.50%
6	2.00%	2.00%
7	1.75%	1.75%
8	1.50%	1.50%
9	1.30%	1.30%
10	1.15%	1.15%
11	1.00%	1.00%
12	0.85%	0.85%
13	0.70%	0.70%
14	0.60%	0.60%
15	0.50%	0.50%
16	0.40%	0.50%
17	0.35%	0.50%
18	0.30%	0.50%
19	0.25%	0.50%
20 or More	0.25%	0.50%

1. The total expected increase in salary includes both merit (shown above) and the general wage increase assumption of 3.25% per annum. The total result is compounded rather than additive. For example, the total increase to service less than one year is 9.44% for General members.

**Appendix A Rates of Separation From Active Service  
Tables A-6 to A-13**

A schedule of the probabilities of termination of employment due to the following causes can be found on the following pages:

Service Retirement:	Member retires after meeting age and service requirements for reasons other than disability.
Other terminations:	Member terminates and elects a refund of member contributions, or a deferred retirement allowance.
Service-Connected Disability:	Member receives disability retirement; disability is service-connected.
Nonservice-Connected Disability:	Member receives disability retirement; disability is not service-connected.
Service-Connected Pre-Retirement Death:	Member dies before retirement; death is service-connected.
Nonservice-Connected Pre-Retirement Death:	Member dies before retirement; death is not service-connected.

Each rate represents the probability that a member will separate from service at each age due to the particular cause. For example, a rate of 0.0300 for a member's service retirement at age 50 means we assume that 30 out of 1,000 members who are age 50 will retire at that age.

Each table represents the detailed rates needed for each LACERA plan by sex:

Table A-6: General Plan A, B & C Males	A-10: General Plan E Males
A-7: General Plan A, B & C Females	A-11: General Plan E Females
A-8: General Plan D & G Males	A-12: Safety Plan A, B & C Males
A-9: General Plan D & G Females	A-13: Safety Plan A, B & C Females

**Table A-6 Rate of Separation From Active Service For General Members  
 Plans A, B and C - Male**

Age	Service Retirement	Other Terminations	Service-Connected Disability	Nonservice-Connected Disability	Service-Connected Pre-Retirement Death	Non service-Connected Pre-Retirement Death
18	0.0000	0.0050	0.0002	0.0001	N/A	0.0003
19	0.0000	0.0050	0.0002	0.0001	N/A	0.0003
20	0.0000	0.0050	0.0002	0.0001	N/A	0.0003
21	0.0000	0.0050	0.0002	0.0001	N/A	0.0004
22	0.0000	0.0050	0.0002	0.0001	N/A	0.0004
23	0.0000	0.0050	0.0002	0.0001	N/A	0.0004
24	0.0000	0.0050	0.0002	0.0001	N/A	0.0005
25	0.0000	0.0050	0.0002	0.0001	N/A	0.0005
26	0.0000	0.0050	0.0002	0.0001	N/A	0.0005
27	0.0000	0.0050	0.0002	0.0001	N/A	0.0005
28	0.0000	0.0050	0.0002	0.0001	N/A	0.0005
29	0.0000	0.0050	0.0002	0.0001	N/A	0.0004
30	0.0000	0.0050	0.0002	0.0001	N/A	0.0004
31	0.0000	0.0050	0.0002	0.0001	N/A	0.0004
32	0.0000	0.0050	0.0002	0.0001	N/A	0.0005
33	0.0000	0.0050	0.0002	0.0001	N/A	0.0005
34	0.0000	0.0050	0.0003	0.0001	N/A	0.0005
35	0.0000	0.0050	0.0003	0.0001	N/A	0.0005
36	0.0000	0.0050	0.0004	0.0001	N/A	0.0005
37	0.0000	0.0050	0.0004	0.0001	N/A	0.0005
38	0.0000	0.0050	0.0005	0.0001	N/A	0.0005
39	0.0000	0.0050	0.0006	0.0001	N/A	0.0006
40	0.0300	0.0050	0.0006	0.0002	N/A	0.0006
41	0.0300	0.0050	0.0007	0.0002	N/A	0.0006
42	0.0300	0.0050	0.0008	0.0002	N/A	0.0006
43	0.0300	0.0050	0.0008	0.0003	N/A	0.0007
44	0.0300	0.0050	0.0009	0.0003	N/A	0.0007
45	0.0300	0.0050	0.0009	0.0003	N/A	0.0008
46	0.0300	0.0050	0.0010	0.0004	N/A	0.0009
47	0.0300	0.0050	0.0010	0.0004	N/A	0.0010
48	0.0300	0.0050	0.0010	0.0004	N/A	0.0011
49	0.0300	0.0050	0.0011	0.0004	N/A	0.0012
50	0.0300	0.0050	0.0011	0.0004	N/A	0.0014
51	0.0300	0.0050	0.0012	0.0004	N/A	0.0015
52	0.0300	0.0050	0.0012	0.0004	N/A	0.0017
53	0.0300	0.0050	0.0016	0.0005	N/A	0.0019
54	0.0600	0.0050	0.0019	0.0006	N/A	0.0021
55	0.1000	0.0050	0.0023	0.0006	N/A	0.0023
56	0.1200	0.0050	0.0026	0.0007	N/A	0.0025
57	0.1700	0.0050	0.0030	0.0008	N/A	0.0028
58	0.2200	0.0050	0.0035	0.0009	N/A	0.0031
59	0.2400	0.0050	0.0040	0.0010	N/A	0.0034
60	0.2600	0.0050	0.0045	0.0010	N/A	0.0038
61	0.3100	0.0050	0.0050	0.0011	N/A	0.0042
62	0.3500	0.0050	0.0055	0.0012	N/A	0.0047
63	0.2800	0.0050	0.0053	0.0014	N/A	0.0052
64	0.2800	0.0050	0.0051	0.0015	N/A	0.0059
65	0.2800	0.0050	0.0049	0.0017	N/A	0.0066
66	0.2800	0.0050	0.0047	0.0018	N/A	0.0074
67	0.2800	0.0050	0.0045	0.0020	N/A	0.0083
68	0.2800	0.0050	0.0045	0.0022	N/A	0.0092
69	0.2800	0.0050	0.0045	0.0023	N/A	0.0102
70	0.2800	0.0050	0.0045	0.0025	N/A	0.0113
71	0.2800	0.0050	0.0045	0.0026	N/A	0.0125
72	0.2800	0.0050	0.0045	0.0028	N/A	0.0139
73	0.2800	0.0050	0.0045	0.0030	N/A	0.0154
74	0.2800	0.0050	0.0045	0.0031	N/A	0.0170
75	1.0000	0.0000	0.0000	0.0000	N/A	0.0189

**Table A-7 Rate of Separation From Active Service For General Members  
 Plans A, B and C - Female**

Age	Service Retirement	Other Terminations	Service-Connected Disability	Nonservice-Connected Disability	Service-Connected Pre-Retirement Death	Non service-Connected Pre-Retirement Death
18	0.0000	0.0050	0.0002	0.0001	N/A	0.0002
19	0.0000	0.0050	0.0002	0.0001	N/A	0.0002
20	0.0000	0.0050	0.0002	0.0001	N/A	0.0002
21	0.0000	0.0050	0.0002	0.0001	N/A	0.0002
22	0.0000	0.0050	0.0002	0.0001	N/A	0.0002
23	0.0000	0.0050	0.0002	0.0001	N/A	0.0002
24	0.0000	0.0050	0.0002	0.0001	N/A	0.0002
25	0.0000	0.0050	0.0002	0.0001	N/A	0.0002
26	0.0000	0.0050	0.0002	0.0001	N/A	0.0002
27	0.0000	0.0050	0.0002	0.0001	N/A	0.0002
28	0.0000	0.0050	0.0002	0.0001	N/A	0.0002
29	0.0000	0.0050	0.0002	0.0001	N/A	0.0002
30	0.0000	0.0050	0.0002	0.0001	N/A	0.0002
31	0.0000	0.0050	0.0002	0.0001	N/A	0.0002
32	0.0000	0.0050	0.0002	0.0001	N/A	0.0002
33	0.0000	0.0050	0.0002	0.0001	N/A	0.0003
34	0.0000	0.0050	0.0003	0.0001	N/A	0.0003
35	0.0000	0.0050	0.0003	0.0001	N/A	0.0003
36	0.0000	0.0050	0.0004	0.0001	N/A	0.0003
37	0.0000	0.0050	0.0004	0.0001	N/A	0.0003
38	0.0000	0.0050	0.0004	0.0001	N/A	0.0003
39	0.0000	0.0050	0.0004	0.0001	N/A	0.0004
40	0.0300	0.0050	0.0005	0.0002	N/A	0.0004
41	0.0300	0.0050	0.0005	0.0002	N/A	0.0004
42	0.0300	0.0050	0.0005	0.0002	N/A	0.0005
43	0.0300	0.0050	0.0006	0.0003	N/A	0.0005
44	0.0300	0.0050	0.0007	0.0003	N/A	0.0006
45	0.0300	0.0050	0.0008	0.0003	N/A	0.0007
46	0.0300	0.0050	0.0009	0.0004	N/A	0.0007
47	0.0300	0.0050	0.0010	0.0004	N/A	0.0008
48	0.0300	0.0050	0.0011	0.0004	N/A	0.0009
49	0.0300	0.0050	0.0012	0.0004	N/A	0.0010
50	0.0300	0.0050	0.0013	0.0004	N/A	0.0011
51	0.0300	0.0050	0.0014	0.0004	N/A	0.0012
52	0.0300	0.0050	0.0015	0.0004	N/A	0.0013
53	0.0300	0.0050	0.0016	0.0005	N/A	0.0014
54	0.0600	0.0050	0.0016	0.0006	N/A	0.0015
55	0.1000	0.0050	0.0017	0.0006	N/A	0.0017
56	0.1200	0.0050	0.0017	0.0007	N/A	0.0018
57	0.1700	0.0050	0.0018	0.0008	N/A	0.0019
58	0.2200	0.0050	0.0020	0.0009	N/A	0.0021
59	0.2400	0.0050	0.0023	0.0010	N/A	0.0023
60	0.2600	0.0050	0.0025	0.0010	N/A	0.0024
61	0.3100	0.0050	0.0028	0.0011	N/A	0.0026
62	0.3500	0.0050	0.0030	0.0012	N/A	0.0029
63	0.2800	0.0050	0.0030	0.0014	N/A	0.0031
64	0.2800	0.0050	0.0030	0.0015	N/A	0.0034
65	0.2800	0.0050	0.0030	0.0017	N/A	0.0037
66	0.2800	0.0050	0.0030	0.0018	N/A	0.0041
67	0.2800	0.0050	0.0030	0.0020	N/A	0.0046
68	0.2800	0.0050	0.0030	0.0022	N/A	0.0051
69	0.2800	0.0050	0.0030	0.0023	N/A	0.0057
70	0.2800	0.0050	0.0030	0.0025	N/A	0.0063
71	0.2800	0.0050	0.0030	0.0026	N/A	0.0070
72	0.2800	0.0050	0.0030	0.0028	N/A	0.0078
73	0.2800	0.0050	0.0030	0.0030	N/A	0.0087
74	0.2800	0.0050	0.0030	0.0031	N/A	0.0097
75	1.0000	0.0000	0.0000	0.0000	N/A	0.0108

**Table A-8 Rate of Separation From Active Service For General Members  
 Plan D and G - Male**

Age	Service Retirement	Service-Connected Disability	Nonservice-Connected Disability	Service-Connected Pre-Retirement Death	Non service-Connected Pre-Retirement Death	Years of Service	Other Terminations
18	0.0000	0.0002	0.0001	N/A	0.0003	0	0.0800
19	0.0000	0.0002	0.0001	N/A	0.0003	1	0.0550
20	0.0000	0.0002	0.0001	N/A	0.0003	2	0.0375
21	0.0000	0.0002	0.0001	N/A	0.0004	3	0.0300
22	0.0000	0.0002	0.0001	N/A	0.0004	4	0.0250
23	0.0000	0.0002	0.0001	N/A	0.0004	5	0.0233
24	0.0000	0.0002	0.0001	N/A	0.0005	6	0.0217
25	0.0000	0.0002	0.0001	N/A	0.0005	7	0.0200
26	0.0000	0.0002	0.0001	N/A	0.0005	8	0.0190
27	0.0000	0.0002	0.0001	N/A	0.0005	9	0.0180
28	0.0000	0.0002	0.0001	N/A	0.0005	10	0.0170
29	0.0000	0.0002	0.0001	N/A	0.0004	11	0.0160
30	0.0000	0.0002	0.0001	N/A	0.0004	12	0.0150
31	0.0000	0.0002	0.0001	N/A	0.0004	13	0.0140
32	0.0000	0.0002	0.0001	N/A	0.0005	14	0.0130
33	0.0000	0.0002	0.0001	N/A	0.0005	15	0.0120
34	0.0000	0.0003	0.0001	N/A	0.0005	16	0.0110
35	0.0000	0.0003	0.0001	N/A	0.0005	17	0.0100
36	0.0000	0.0004	0.0001	N/A	0.0005	18	0.0092
37	0.0000	0.0004	0.0001	N/A	0.0005	19	0.0084
38	0.0000	0.0005	0.0001	N/A	0.0005	20	0.0076
39	0.0000	0.0006	0.0001	N/A	0.0006	21	0.0068
40	0.0150	0.0006	0.0002	N/A	0.0006	22	0.0060
41	0.0150	0.0007	0.0002	N/A	0.0006	23	0.0056
42	0.0150	0.0008	0.0002	N/A	0.0006	24	0.0052
43	0.0150	0.0008	0.0003	N/A	0.0007	25	0.0048
44	0.0150	0.0009	0.0003	N/A	0.0007	26	0.0044
45	0.0150	0.0009	0.0003	N/A	0.0008	27	0.0040
46	0.0150	0.0010	0.0004	N/A	0.0009	28	0.0040
47	0.0150	0.0010	0.0004	N/A	0.0010	29	0.0040
48	0.0150	0.0010	0.0004	N/A	0.0011	30 & Above	0.0040
49	0.0150	0.0011	0.0004	N/A	0.0012		
50	0.0150	0.0011	0.0004	N/A	0.0014		
51	0.0120	0.0012	0.0004	N/A	0.0015		
52	0.0120	0.0012	0.0004	N/A	0.0017		
53	0.0150	0.0016	0.0005	N/A	0.0019		
54	0.0200	0.0019	0.0006	N/A	0.0021		
55	0.0250	0.0023	0.0006	N/A	0.0023		
56	0.0250	0.0026	0.0007	N/A	0.0025		
57	0.0300	0.0030	0.0008	N/A	0.0028		
58	0.0350	0.0035	0.0009	N/A	0.0031		
59	0.0500	0.0040	0.0010	N/A	0.0034		
60	0.0600	0.0045	0.0010	N/A	0.0038		
61	0.0800	0.0050	0.0011	N/A	0.0042		
62	0.1000	0.0055	0.0012	N/A	0.0047		
63	0.0900	0.0053	0.0014	N/A	0.0052		
64	0.1500	0.0051	0.0015	N/A	0.0059		
65	0.2000	0.0049	0.0017	N/A	0.0066		
66	0.2000	0.0047	0.0018	N/A	0.0074		
67	0.1800	0.0045	0.0020	N/A	0.0083		
68	0.1800	0.0045	0.0022	N/A	0.0092		
69	0.1800	0.0045	0.0023	N/A	0.0102		
70	0.2000	0.0045	0.0025	N/A	0.0113		
71	0.2000	0.0045	0.0026	N/A	0.0125		
72	0.2000	0.0045	0.0028	N/A	0.0139		
73	0.2000	0.0045	0.0030	N/A	0.0154		
74	0.2000	0.0045	0.0031	N/A	0.0170		
75	1.0000	0.0000	0.0000	N/A	0.0189		



**Table A-9 Rate of Separation From Active Service For General Members  
 Plan D and G - Female**

Age	Service Retirement	Service-Connected Disability	Nonservice-Connected Disability	Service-Connected Pre-Retirement Death	Non service-Connected Retirement Death	Years of Service	Other Terminations
18	0.0000	0.0002	0.0001	N/A	0.0002	0	0.0800
19	0.0000	0.0002	0.0001	N/A	0.0002	1	0.0550
20	0.0000	0.0002	0.0001	N/A	0.0002	2	0.0375
21	0.0000	0.0002	0.0001	N/A	0.0002	3	0.0300
22	0.0000	0.0002	0.0001	N/A	0.0002	4	0.0250
23	0.0000	0.0002	0.0001	N/A	0.0002	5	0.0233
24	0.0000	0.0002	0.0001	N/A	0.0002	6	0.0217
25	0.0000	0.0002	0.0001	N/A	0.0002	7	0.0200
26	0.0000	0.0002	0.0001	N/A	0.0002	8	0.0190
27	0.0000	0.0002	0.0001	N/A	0.0002	9	0.0180
28	0.0000	0.0002	0.0001	N/A	0.0002	10	0.0170
29	0.0000	0.0002	0.0001	N/A	0.0002	11	0.0160
30	0.0000	0.0002	0.0001	N/A	0.0002	12	0.0150
31	0.0000	0.0002	0.0001	N/A	0.0002	13	0.0140
32	0.0000	0.0002	0.0001	N/A	0.0002	14	0.0130
33	0.0000	0.0002	0.0001	N/A	0.0003	15	0.0120
34	0.0000	0.0003	0.0001	N/A	0.0003	16	0.0110
35	0.0000	0.0003	0.0001	N/A	0.0003	17	0.0100
36	0.0000	0.0004	0.0001	N/A	0.0003	18	0.0092
37	0.0000	0.0004	0.0001	N/A	0.0003	19	0.0084
38	0.0000	0.0004	0.0001	N/A	0.0003	20	0.0076
39	0.0000	0.0004	0.0001	N/A	0.0004	21	0.0068
40	0.0150	0.0005	0.0002	N/A	0.0004	22	0.0060
41	0.0150	0.0005	0.0002	N/A	0.0004	23	0.0056
42	0.0150	0.0005	0.0002	N/A	0.0005	24	0.0052
43	0.0150	0.0006	0.0003	N/A	0.0005	25	0.0048
44	0.0150	0.0007	0.0003	N/A	0.0006	26	0.0044
45	0.0150	0.0008	0.0003	N/A	0.0007	27	0.0040
46	0.0150	0.0009	0.0004	N/A	0.0007	28	0.0040
47	0.0150	0.0010	0.0004	N/A	0.0008	29	0.0040
48	0.0150	0.0011	0.0004	N/A	0.0009	30 & Above	0.0000
49	0.0150	0.0012	0.0004	N/A	0.0010		
50	0.0150	0.0013	0.0004	N/A	0.0011		
51	0.0120	0.0014	0.0004	N/A	0.0012		
52	0.0120	0.0015	0.0004	N/A	0.0013		
53	0.0150	0.0016	0.0005	N/A	0.0014		
54	0.0200	0.0016	0.0006	N/A	0.0015		
55	0.0250	0.0017	0.0006	N/A	0.0017		
56	0.0250	0.0017	0.0007	N/A	0.0018		
57	0.0300	0.0018	0.0008	N/A	0.0019		
58	0.0350	0.0020	0.0009	N/A	0.0021		
59	0.0500	0.0023	0.0010	N/A	0.0023		
60	0.0600	0.0025	0.0010	N/A	0.0024		
61	0.0800	0.0028	0.0011	N/A	0.0026		
62	0.1000	0.0030	0.0012	N/A	0.0029		
63	0.0900	0.0030	0.0014	N/A	0.0031		
64	0.1500	0.0030	0.0015	N/A	0.0034		
65	0.2000	0.0030	0.0017	N/A	0.0037		
66	0.2000	0.0030	0.0018	N/A	0.0041		
67	0.1800	0.0030	0.0020	N/A	0.0046		
68	0.1800	0.0030	0.0022	N/A	0.0051		
69	0.1800	0.0030	0.0023	N/A	0.0057		
70	0.2000	0.0030	0.0025	N/A	0.0063		
71	0.2000	0.0030	0.0026	N/A	0.0070		
72	0.2000	0.0030	0.0028	N/A	0.0078		
73	0.2000	0.0030	0.0030	N/A	0.0087		
74	0.2000	0.0030	0.0031	N/A	0.0097		
75	1.0000	0.0000	0.0000	N/A	0.0108		

**Table A-10 Rate of Separation From Active Service For General Members  
 Plan E - Male**

Age	Service Retirement	Service-Connected Disability	Nonservice-Connected Disability	Service-Connected Pre-Retirement Death	Non service-Connected Pre-Retirement Death	Years of Service	Other Terminations
18	0.0000	N/A	N/A	N/A	0.0003	0	0.1500
19	0.0000	N/A	N/A	N/A	0.0003	1	0.0800
20	0.0000	N/A	N/A	N/A	0.0003	2	0.0600
21	0.0000	N/A	N/A	N/A	0.0004	3	0.0450
22	0.0000	N/A	N/A	N/A	0.0004	4	0.0350
23	0.0000	N/A	N/A	N/A	0.0004	5	0.0310
24	0.0000	N/A	N/A	N/A	0.0005	6	0.0270
25	0.0000	N/A	N/A	N/A	0.0005	7	0.0230
26	0.0000	N/A	N/A	N/A	0.0005	8	0.0220
27	0.0000	N/A	N/A	N/A	0.0005	9	0.0210
28	0.0000	N/A	N/A	N/A	0.0005	10	0.0200
29	0.0000	N/A	N/A	N/A	0.0004	11	0.0190
30	0.0000	N/A	N/A	N/A	0.0004	12	0.0180
31	0.0000	N/A	N/A	N/A	0.0004	13	0.0168
32	0.0000	N/A	N/A	N/A	0.0005	14	0.0156
33	0.0000	N/A	N/A	N/A	0.0005	15	0.0144
34	0.0000	N/A	N/A	N/A	0.0005	16	0.0132
35	0.0000	N/A	N/A	N/A	0.0005	17	0.0120
36	0.0000	N/A	N/A	N/A	0.0005	18	0.0116
37	0.0000	N/A	N/A	N/A	0.0005	19	0.0112
38	0.0000	N/A	N/A	N/A	0.0005	20	0.0108
39	0.0000	N/A	N/A	N/A	0.0006	21	0.0104
40	0.0000	N/A	N/A	N/A	0.0006	22	0.0100
41	0.0000	N/A	N/A	N/A	0.0006	23	0.0100
42	0.0000	N/A	N/A	N/A	0.0006	24	0.0100
43	0.0000	N/A	N/A	N/A	0.0007	25	0.0100
44	0.0000	N/A	N/A	N/A	0.0007	26	0.0100
45	0.0000	N/A	N/A	N/A	0.0008	27	0.0100
46	0.0000	N/A	N/A	N/A	0.0009	28	0.0100
47	0.0000	N/A	N/A	N/A	0.0010	29	0.0100
48	0.0000	N/A	N/A	N/A	0.0011	30 & Above	0.0100
49	0.0000	N/A	N/A	N/A	0.0012		
50	0.0000	N/A	N/A	N/A	0.0014		
51	0.0000	N/A	N/A	N/A	0.0015		
52	0.0000	N/A	N/A	N/A	0.0017		
53	0.0000	N/A	N/A	N/A	0.0019		
54	0.0000	N/A	N/A	N/A	0.0021		
55	0.0200	N/A	N/A	N/A	0.0023		
56	0.0200	N/A	N/A	N/A	0.0025		
57	0.0200	N/A	N/A	N/A	0.0028		
58	0.0200	N/A	N/A	N/A	0.0031		
59	0.0300	N/A	N/A	N/A	0.0034		
60	0.0400	N/A	N/A	N/A	0.0038		
61	0.0600	N/A	N/A	N/A	0.0042		
62	0.0900	N/A	N/A	N/A	0.0047		
63	0.0900	N/A	N/A	N/A	0.0052		
64	0.2000	N/A	N/A	N/A	0.0059		
65	0.2500	N/A	N/A	N/A	0.0066		
66	0.1800	N/A	N/A	N/A	0.0074		
67	0.1800	N/A	N/A	N/A	0.0083		
68	0.1800	N/A	N/A	N/A	0.0092		
69	0.1800	N/A	N/A	N/A	0.0102		
70	0.2000	N/A	N/A	N/A	0.0113		
71	0.2000	N/A	N/A	N/A	0.0125		
72	0.2000	N/A	N/A	N/A	0.0139		
73	0.2000	N/A	N/A	N/A	0.0154		
74	0.2000	N/A	N/A	N/A	0.0170		
75	1.0000	N/A	N/A	N/A	0.0189		

**Table A-11 Rate of Separation From Active Service For General Members  
 Plan E - Female**

Age	Service Retirement	Service-Connected Disability	Nonservice-Connected Disability	Service-Connected Pre-Retirement Death	Non service-Connected Pre-Retirement Death	Years of Service	Other Terminations
18	0.0000	N/A	N/A	N/A	0.0002	0	0.1500
19	0.0000	N/A	N/A	N/A	0.0002	1	0.0800
20	0.0000	N/A	N/A	N/A	0.0002	2	0.0600
21	0.0000	N/A	N/A	N/A	0.0002	3	0.0450
22	0.0000	N/A	N/A	N/A	0.0002	4	0.0350
23	0.0000	N/A	N/A	N/A	0.0002	5	0.0310
24	0.0000	N/A	N/A	N/A	0.0002	6	0.0270
25	0.0000	N/A	N/A	N/A	0.0002	7	0.0230
26	0.0000	N/A	N/A	N/A	0.0002	8	0.0220
27	0.0000	N/A	N/A	N/A	0.0002	9	0.0210
28	0.0000	N/A	N/A	N/A	0.0002	10	0.0200
29	0.0000	N/A	N/A	N/A	0.0002	11	0.0190
30	0.0000	N/A	N/A	N/A	0.0002	12	0.0180
31	0.0000	N/A	N/A	N/A	0.0002	13	0.0168
32	0.0000	N/A	N/A	N/A	0.0002	14	0.0156
33	0.0000	N/A	N/A	N/A	0.0003	15	0.0144
34	0.0000	N/A	N/A	N/A	0.0003	16	0.0132
35	0.0000	N/A	N/A	N/A	0.0003	17	0.0120
36	0.0000	N/A	N/A	N/A	0.0003	18	0.0116
37	0.0000	N/A	N/A	N/A	0.0003	19	0.0112
38	0.0000	N/A	N/A	N/A	0.0003	20	0.0108
39	0.0000	N/A	N/A	N/A	0.0004	21	0.0104
40	0.0000	N/A	N/A	N/A	0.0004	22	0.0100
41	0.0000	N/A	N/A	N/A	0.0004	23	0.0100
42	0.0000	N/A	N/A	N/A	0.0005	24	0.0100
43	0.0000	N/A	N/A	N/A	0.0005	25	0.0100
44	0.0000	N/A	N/A	N/A	0.0006	26	0.0100
45	0.0000	N/A	N/A	N/A	0.0007	27	0.0100
46	0.0000	N/A	N/A	N/A	0.0007	28	0.0100
47	0.0000	N/A	N/A	N/A	0.0008	29	0.0100
48	0.0000	N/A	N/A	N/A	0.0009	30 & Above	0.0100
49	0.0000	N/A	N/A	N/A	0.0010		
50	0.0000	N/A	N/A	N/A	0.0011		
51	0.0000	N/A	N/A	N/A	0.0012		
52	0.0000	N/A	N/A	N/A	0.0013		
53	0.0000	N/A	N/A	N/A	0.0014		
54	0.0000	N/A	N/A	N/A	0.0015		
55	0.0200	N/A	N/A	N/A	0.0017		
56	0.0200	N/A	N/A	N/A	0.0018		
57	0.0200	N/A	N/A	N/A	0.0019		
58	0.0200	N/A	N/A	N/A	0.0021		
59	0.0300	N/A	N/A	N/A	0.0023		
60	0.0400	N/A	N/A	N/A	0.0024		
61	0.0600	N/A	N/A	N/A	0.0026		
62	0.0900	N/A	N/A	N/A	0.0029		
63	0.0900	N/A	N/A	N/A	0.0031		
64	0.2000	N/A	N/A	N/A	0.0034		
65	0.2500	N/A	N/A	N/A	0.0037		
66	0.1800	N/A	N/A	N/A	0.0041		
67	0.1800	N/A	N/A	N/A	0.0046		
68	0.1800	N/A	N/A	N/A	0.0051		
69	0.1800	N/A	N/A	N/A	0.0057		
70	0.2000	N/A	N/A	N/A	0.0063		
71	0.2000	N/A	N/A	N/A	0.0070		
72	0.2000	N/A	N/A	N/A	0.0078		
73	0.2000	N/A	N/A	N/A	0.0087		
74	0.2000	N/A	N/A	N/A	0.0097		
75	1.0000	N/A	N/A	N/A	0.0108		

**Table A-12 Rate of Separation From Active Service For Safety Members  
 Plan A, B, and C - Male**

Age	Service Retirement	Service-Connected Disability	Nonservice-Connected Disability	Service-Connected Pre-Retirement Death	Non service-Connected Pre-Retirement Death	Years of Service	Other Terminations
18	0.0000	0.0020	0.0000	0.0001	0.0002	0	0.0300
19	0.0000	0.0020	0.0000	0.0001	0.0002	1	0.0250
20	0.0000	0.0020	0.0000	0.0001	0.0002	2	0.0200
21	0.0000	0.0020	0.0000	0.0001	0.0002	3	0.0150
22	0.0000	0.0020	0.0000	0.0001	0.0003	4	0.0120
23	0.0000	0.0020	0.0000	0.0001	0.0003	5	0.0113
24	0.0000	0.0020	0.0000	0.0001	0.0003	6	0.0107
25	0.0000	0.0020	0.0000	0.0001	0.0004	7	0.0100
26	0.0000	0.0020	0.0000	0.0001	0.0004	8	0.0092
27	0.0000	0.0020	0.0000	0.0001	0.0004	9	0.0084
28	0.0000	0.0020	0.0000	0.0001	0.0005	10	0.0076
29	0.0000	0.0020	0.0000	0.0001	0.0005	11	0.0068
30	0.0000	0.0020	0.0000	0.0001	0.0005	12	0.0060
31	0.0000	0.0020	0.0000	0.0001	0.0005	13	0.0054
32	0.0000	0.0020	0.0000	0.0001	0.0005	14	0.0048
33	0.0000	0.0021	0.0000	0.0001	0.0004	15	0.0042
34	0.0000	0.0022	0.0000	0.0001	0.0004	16	0.0036
35	0.0000	0.0023	0.0000	0.0001	0.0004	17	0.0030
36	0.0000	0.0024	0.0000	0.0001	0.0005	18	0.0024
37	0.0000	0.0025	0.0000	0.0001	0.0005	19	0.0018
38	0.0000	0.0026	0.0000	0.0001	0.0005	20 & Above	0.0000
39	0.0000	0.0027	0.0000	0.0001	0.0005		
40	0.0100	0.0028	0.0000	0.0001	0.0005		
41	0.0100	0.0029	0.0000	0.0001	0.0005		
42	0.0100	0.0030	0.0000	0.0001	0.0005		
43	0.0100	0.0031	0.0000	0.0001	0.0006		
44	0.0100	0.0032	0.0000	0.0001	0.0006		
45	0.0100	0.0033	0.0000	0.0001	0.0006		
46	0.0100	0.0034	0.0000	0.0001	0.0006		
47	0.0100	0.0035	0.0000	0.0001	0.0007		
48	0.0100	0.0040	0.0000	0.0001	0.0007		
49	0.0100	0.0050	0.0000	0.0001	0.0008		
50	0.0100	0.0100	0.0000	0.0001	0.0009		
51	0.0200	0.0120	0.0000	0.0001	0.0010		
52	0.0250	0.0140	0.0000	0.0001	0.0011		
53	0.0300	0.0300	0.0000	0.0001	0.0012		
54	0.1200	0.0500	0.0000	0.0001	0.0014		
55	0.2400	0.1200	0.0000	0.0001	0.0015		
56	0.1500	0.0900	0.0000	0.0001	0.0017		
57	0.1600	0.1000	0.0000	0.0001	0.0019		
58	0.1800	0.1000	0.0000	0.0001	0.0021		
59	0.2500	0.1000	0.0000	0.0001	0.0023		
60	0.3000	0.1000	0.0000	0.0001	0.0025		
61	0.3000	0.1000	0.0000	0.0001	0.0028		
62	0.3000	0.1000	0.0000	0.0001	0.0031		
63	0.3000	0.1000	0.0000	0.0001	0.0034		
64	0.3000	0.1000	0.0000	0.0001	0.0038		
65	1.0000	0.0000	0.0000	0.0000	0.0042		

**Table A-13 Rate of Separation From Active Service For Safety Members  
 Plan A, B, and C – Female**

Age	Service Retirement	Service-Connected Disability	Nonservice-Connected Disability	Service-Connected Pre-Retirement Death	Non service-Connected Pre-Retirement Death	Years of Service	Other Terminations
18	0.0000	0.0030	0.0000	0.0001	0.0002	0	0.0300
19	0.0000	0.0030	0.0000	0.0001	0.0002	1	0.0250
20	0.0000	0.0030	0.0000	0.0001	0.0002	2	0.0200
21	0.0000	0.0030	0.0000	0.0001	0.0002	3	0.0150
22	0.0000	0.0030	0.0000	0.0001	0.0002	4	0.0120
23	0.0000	0.0030	0.0000	0.0001	0.0002	5	0.0113
24	0.0000	0.0030	0.0000	0.0001	0.0002	6	0.0107
25	0.0000	0.0030	0.0000	0.0001	0.0002	7	0.0100
26	0.0000	0.0030	0.0000	0.0001	0.0002	8	0.0092
27	0.0000	0.0030	0.0000	0.0001	0.0002	9	0.0084
28	0.0000	0.0034	0.0000	0.0001	0.0002	10	0.0076
29	0.0000	0.0038	0.0000	0.0001	0.0002	11	0.0068
30	0.0000	0.0042	0.0000	0.0001	0.0002	12	0.0060
31	0.0000	0.0046	0.0000	0.0001	0.0002	13	0.0054
32	0.0000	0.0050	0.0000	0.0001	0.0002	14	0.0048
33	0.0000	0.0056	0.0000	0.0001	0.0003	15	0.0042
34	0.0000	0.0062	0.0000	0.0001	0.0003	16	0.0036
35	0.0000	0.0068	0.0000	0.0001	0.0003	17	0.0030
36	0.0000	0.0074	0.0000	0.0001	0.0003	18	0.0024
37	0.0000	0.0080	0.0000	0.0001	0.0003	19	0.0018
38	0.0000	0.0084	0.0000	0.0001	0.0003	20 & Above	0.0000
39	0.0000	0.0088	0.0000	0.0001	0.0004		
40	0.0100	0.0092	0.0000	0.0001	0.0004		
41	0.0100	0.0096	0.0000	0.0001	0.0004		
42	0.0100	0.0100	0.0000	0.0001	0.0005		
43	0.0100	0.0104	0.0000	0.0001	0.0005		
44	0.0100	0.0108	0.0000	0.0001	0.0006		
45	0.0100	0.0112	0.0000	0.0001	0.0007		
46	0.0100	0.0116	0.0000	0.0001	0.0007		
47	0.0100	0.0120	0.0000	0.0001	0.0008		
48	0.0100	0.0130	0.0000	0.0001	0.0009		
49	0.0100	0.0150	0.0000	0.0001	0.0010		
50	0.0100	0.0180	0.0000	0.0001	0.0011		
51	0.0200	0.0200	0.0000	0.0001	0.0012		
52	0.0250	0.0240	0.0000	0.0001	0.0013		
53	0.0300	0.0280	0.0000	0.0001	0.0014		
54	0.1200	0.0320	0.0000	0.0001	0.0015		
55	0.2400	0.1100	0.0000	0.0001	0.0017		
56	0.1500	0.0700	0.0000	0.0001	0.0018		
57	0.1600	0.0700	0.0000	0.0001	0.0019		
58	0.1800	0.0800	0.0000	0.0001	0.0021		
59	0.2500	0.0800	0.0000	0.0001	0.0023		
60	0.3000	0.0800	0.0000	0.0000	0.0024		
61	0.3000	0.0800	0.0000	0.0000	0.0026		
62	0.3000	0.0800	0.0000	0.0000	0.0029		
63	0.3000	0.0800	0.0000	0.0000	0.0031		
64	0.3000	0.0800	0.0000	0.0000	0.0034		
65	1.0000	0.0000	0.0000	0.0000	0.0037		

## Appendix B Summary of Plan Provisions



All actuarial calculations are based on our understanding of the statutes governing LACERA as contained in the County Employees Retirement Law (CERL) of 1937 and the California Public Employees' Pension Relief Act (PEPRA) with provisions adopted by the LACERA Board, effective through July 1, 2016. The benefit and contribution provisions of this law are summarized briefly below, along with corresponding references to the State Code. This summary does not attempt to cover all the detailed provisions of the law.

<b>MEMBERSHIP</b>	<b>Government Code Section</b>
Permanent employees of Los Angeles County (County) and participating districts who work ¾ time or more are eligible for membership in LACERA.	(31551, 31552, Bylaws)
Employees eligible for safety membership (law enforcement, firefighting and specific lifeguards) become safety members on the first day of the month after date of hire. Employees who become members on or after January 1, 2013, will enter into Safety Plan C.	(31558)
All other employees become general members on the first day of the month after date of hire or the first day of the month after they make an election of either Plan D or Plan E, depending on the law in effect at that time. Employees who become members on or after January 1, 2013 will enter into General Plan G.	(31493, Bylaws)
Elective officers become members on the first day of the month after filing a declaration with the Board of Retirement (Board).	(31553, 31562)
General members in Plan E may transfer all their Plan E service credit to Plan D during an approved transfer period by making the required contributions. Transferred members relinquish, waive, and forfeit any and all vested or accrued benefits available under any other retirement plan and are entitled only to the benefits of Plan D.	

## RETIREMENT PLANS

The County has established nine defined benefit plans. The following outlines the dates these plans were available, based on a member's date of entry into LACERA: (31494.1, 31494.3)

### Safety Member Plans:

**Plan A:** Inception to August 1977

**Plan B:** September 1977 through December 2012

**Plan C:** January 2013 to present (7522.02)

### General Member Plans:

**Plan A:** Inception through August 1977

**Plan B:** September 1977 through September 1978

**Plan C:** October 1978 through May 1979

**Plan D:** June 1979 through December 2012

**Plan E:** January 1982 through December 2012 (31487, 31496)

**Plan G:** January 2013 to present (7522.02)

NOTE: After review of a new member's account, a member with prior membership may be enrolled into one of the pre-PEPRA plans.

## MEMBER CONTRIBUTIONS

### Plans A, B, D and General Plan C members

Contributions are based on the entry age and class of each member and are required of all members in Plans A, B, C, and D. Current member rates are shown in Appendix D. Section 5 provides additional detail on how these rates are calculated. (31620)

Contributions cease when general members are credited with 30 years of service in a contributory plan, provided they were members of LACERA or a reciprocal system on March 7, 1973, and continuously thereafter. All safety members are eligible for the 30-year cessation of contributions. (31625.2, 31836.1)

Interest is credited to contributions semiannually on June 30 and December 31 at an interest rate set by the Board of Investments on amounts that have been on deposit for at least six months. (31591, 31700)

In addition to the normal contributions, members pay one-half of the cost of their plan's COLA. This is discussed further in Section 5 of this report. (31873)

### General Plan G and Safety Plan C members

Members contribute 50% of the aggregate Normal Cost rate for their Plan. (7522.30)

**EMPLOYER CONTRIBUTIONS**

The employer (County or District) contributes to the retirement fund a percent of the total compensation provided for all members based on an actuarial valuation and recommendation of the actuary and the Board of Investments. (31453, 31454 31581)

**SERVICE RETIREMENT ALLOWANCE**

**Eligibility**

- Plans A-B: Safety members** (31662.4, 31662.6, 31663.25)  
 Age 50 with 10 years of County service;  
 Any age with 20 years of service; or
- Plans A-D: General members** (31672)  
 Age 50 with 10 years of County service;  
 Any age with 30 years of service; or  
 Age 70, regardless of service.
- Plan C: Safety members** (7522.25(d))  
 Age 50 with 5 years of service.
- Plan E: General members** (31491.3)  
 Age 65 with 10 years of service.  
 A reduced benefit is also payable at age 55 with 10 years of service.
- Plan G: General members** (7522.20(a))  
 Age 52 with 5 years of service.

**Final Compensation**

- Plans A, B, D and General Plan C** (31462.3, 31461.45)  
 Average of the member's highest monthly pensionable earnings during any 12-consecutive-month period.
- Plan E:** (31488)  
 Average of the member's highest monthly pensionable earnings during any three 12-consecutive month periods.
- General Plan G and Safety Plan C** (7522.32)  
 Average of the member's highest monthly pensionable earnings during any 36-consecutive month period.

The amount of compensation that is taken into account in computing benefits payable to any person who first becomes a member on or after July 1, 1996, shall not exceed the dollar limitations in Section 401(a)(17) of Title 26 of the US Code. (31671)

The amount of compensation taken into account for General Plan G and Safety Plan C members is limited to \$140,424 for 2016. The amount of compensation taken into account shall be adjusted based on changes in the Consumer Price Index for All Urban Consumers. Adjustments shall be effective annually on January 1. (7522.10)



**SERVICE RETIREMENT ALLOWANCE** (continued)

**Monthly Allowance**

<b>Plans A-B:</b>	<b>Safety members</b> 1/50 x Final Compensation x Safety age factor x Years of service. (The Safety Plan A and Safety Plan B age factors are the same.)	(31664)
<b>Plans A-D:</b>	<b>General members</b> 1/60 x Final Compensation x a Plan specific age factor x years of service.	(31676.1) (31676.11) (31676.14)
<b>Plan C:</b>	<b>Safety members</b> Final Compensation x Safety Plan percentage x Years of service.	(7522.25(d))
<b>Plan E:</b>	<b>General members [(a)+(b)-(c)] x d where:</b> (a) 2% x Final Compensation x (Years of Service (up to 35 years), plus (b) 1 % x Final Compensation x Years of Service in excess of 35 (up to 10) (c) Estimated Primary Insurance Amount (PIA) x Years of Covered Service (up to 35) divided by 35. (d) Age Factor  The PIA is calculated based on certain assumptions specified by statute, and an assumed Social Security retirement age of 62.  If retirement occurs prior to age 65, benefit amount is adjusted by an actuarial equivalent factor (see Sample Plan Age Factors).	(31491, 31491.3 (b)&(c))
<b>Plan G:</b>	<b>General members</b> Final Compensation x General Plan percentage x Years of Service.	(7522.20(a))

**Social Security Integration**

<b>Plans A-C:</b>	<b>General Members</b> For County service covered by Social Security prior to January 1, 1983, the 1/60 factor is replaced by 1/90 for the first \$350 of compensation.	(31808)
<b>Plan D:</b>	The 1/90 factor is applied to the first \$1,050 of compensation.	

**SERVICE RETIREMENT ALLOWANCE** (continued)

**Sample Plan Age Factors**

Plan	Age 50	Age 55	Age 60	Age 65 & Up	
General A	0.885	1.169	1.464	1.567	(31676.14)
General B	0.745	1.000	1.309	1.567	(31676.11)
General C&D	0.709	0.895	1.150	1.459	(31676.1)
General E	N/A	0.375	0.601	1.000	(31491.3(a))
Safety A&B	1.000	1.310	1.310	1.310	(31664)

**Sample Plan Age Percentages**

Plan	Age 50	Age 55	Age 60	Age 65 & Up	
General G	N/A	1.30%	1.80%	2.30%*	(7522.20(a))
Safety C	2.00%	2.50%	2.70%	2.70%	(7522.25(d))

\*Maximum percentage for General Plan G is 2.50% at age 67.

**Maximum Allowance**

**Plans A-B and General Plans C-D:**

Allowance may not exceed 100% of final compensation.

**General Plans G and Safety Plan C:**

Maximum allowance does not apply.

**Plan E:** The sum of the normal retirement allowance and the estimated PIA cannot exceed 70% of Final Compensation for a member with 35 or less years of service, and cannot exceed 80% of Final Compensation if service exceeds 35 years. (31491.3)

**Unmodified Retirement Allowance (Normal Form)**

**Plans A-D, G:** Life Annuity payable to retired member with 65% continuance to an eligible survivor (or eligible children). (31760.12, 31785.4)

**Plan E:** Life Annuity payable to retired member with 55% continuance to an eligible survivor (or eligible children). (31491, 31492.1)

Eligible survivor includes certain domestic partners. (31780.2)

**SERVICE RETIREMENT ALLOWANCE** (continued)

**Optional Retirement Allowance**

A member may elect to have the actuarial equivalent of the service or disability retirement allowance applied to a lesser retirement allowance during the retired member's life in order to provide an optional survivor allowance. (31760)

**Unmodified Plus:** Members with eligible survivors may elect a higher percent than the standard unmodified continuance, up to 100%. The benefit is actuarially reduced from the unmodified amount. The elected percent of the member's reduced allowance is payable to the eligible survivor. (31760.5)

**Option 1:** Member's allowance is reduced to pay a cash refund of any unpaid annuity payments (up to the amount of the member's contributions at retirement) to the member's estate or to a beneficiary having an insurable interest in the life of the member. (31761)

**Option 2:** 100% of member's reduced allowance is payable to a surviving spouse or beneficiary having an insurable interest in the life of the member. (31762)

**Option 3:** 50% of member's reduced allowance is payable to a surviving spouse or beneficiary having an insurable interest in the life of the member. (31763)

**Option 4:** Other % of member's reduced allowance is payable to a surviving spouse or beneficiary(ies) having an insurable interest in the life of the member. (31764)

A member may not revoke and name another beneficiary if the member elects Option 2, 3, or 4. (31782)

**Pension Advance Option:** The Pension Advance Option is available to members who are fully insured under Social Security for the purpose of coordinating a member's retirement allowance with benefits receivable from Social Security. It is not available to disability retirees or members who elect Option 2, 3, or 4. The allowance is increased prior to age 62 and then reduced after 62 by amounts which have equivalent actuarial values. The automatic 65% continuance for eligible spouses of members who elect the Pension Advance Option is based on the unmodified allowance the member would have received if the member had not elected the option. (31810, 31811)

**All Allowances** (31600)

All allowances are made on a pro-rata basis (based on the number of days in that month) if not in effect for the entire month of retirement. For deaths that occur mid-month, the full month's payment is made.

**SERVICE-CONNECTED DISABILITY RETIREMENT ALLOWANCE**

**Eligibility**

<b>Plans A-D, G:</b>	Any age or years of service; disability must result from occupational injury or disease, and member must be permanently incapacitated for the performance of duty.	(31720, 31720.5)
<b>Plan E:</b>	Not available under Plan E.	(31487)

**Monthly Allowance**

Greater of (1) 50% of final compensation, and (2) the service retirement allowance, if eligible to retire. (31727.4)

**Normal Form Of Payment**

Life Annuity with 100% continuance to a surviving spouse (or eligible children). (31760, 31786)

**NONSERVICE-CONNECTED DISABILITY RETIREMENT ALLOWANCE**

**Eligibility**

<b>Plans A-D, G:</b>	Any age with five years of service, and permanently incapacitated for the performance of duty.	(31720, 31836)
<b>Plan E:</b>	Not available under Plan E.	(31487)

**Monthly Allowance**

The monthly allowance is equal to a service retirement allowance if the member is eligible to retire; otherwise allowance equals (a) or (b) where: (31726, 31726.5)

<b>General Members:</b>	(a) 90% of 1/60 of Final Compensation x years of service, if member must rely on service in another retirement system in order to be eligible to retire, or allowance exceeds 1/3 of final compensation.	(31727(a))
	(b) 90% of 1/60 of Final Compensation x years of service projected to age 65, not to exceed 1/3 of Final Compensation.	(31727(b))
<b>Safety Members:</b>	1/60 is replaced by 1/50 and age 65 is replaced by age 55 in (a) and (b) above.	(31727.2)

**Normal Form Of Payment**

Life Annuity with 65% continuance to a surviving spouse (or eligible children). (31760, 31760.1, 31760.12, 31785, 31785.4)

## SERVICE-CONNECTED PRE-RETIREMENT DEATH BENEFITS

<b>Eligibility</b>		(31787)
<b>Plans A-D, G:</b>	Active members who die in service as a result of injury or disease arising out of and in the course of employment.	
<b>Plan E:</b>	Not available under Plan E.	(31487)

### Monthly Allowance

An annual death allowance is payable monthly to an eligible survivor (or eligible children) equal to 50% of the member's Final Compensation. (31787)

### Optional Combined Benefit (31781.3)

In lieu of the monthly allowance above, a surviving spouse may elect:

- (a) A lump sum equal to 1/12 of the compensation earned in the preceding 12 months x years of service (benefit not to exceed 50% of the 12 months' compensation), plus
- (b) A monthly payment equal to 50% of the member's Final Compensation, reduced by a monthly amount, which is the actuarial equivalent of (a) above based on the age of surviving spouse.

### Death Benefit (Lump Sum) (31781)

The member's accumulated contributions with interest, plus 1/12 of the compensation earned in the preceding 12 months x years of service (benefit not to exceed 50% of the 12 months' compensation).

### Additional Allowance for Children (31787.5)

25% of death allowance (whether or not the monthly allowance or combined benefit is chosen) for one child, 40% for two children, and 50% for three or more children.

### Additional Amount for Spouse of Safety Member (31787.6)

A surviving spouse of a safety member is also entitled to receive a lump-sum death benefit equal to 12 x monthly rate of compensation at the time of member's death in addition to all other benefits.

**Note:** For valuation purposes, an unmarried member is assumed to take the lump sum benefit. A married member is assumed to take the monthly allowance or the lump sum, whichever is more valuable.

**NONSERVICE-CONNECTED PRE-RETIREMENT DEATH BENEFITS**

**Eligibility** (31780)

**Plans A-D, G:** Active members who die while in service or while physically or mentally incapacitated for the performance of duty.

**Plan E:** Not available under Plan E. (31487)

**Death Benefit (Lump Sum)** (31781)

The member's accumulated contributions with interest, plus 1/12 of the compensation earned in preceding 12 months x the number of completed years of service (benefit not to exceed 50% of the 12 months' compensation).

**Optional Death Benefit**

In lieu of the lump-sum death benefit, the following several optional death benefits are available to provide flexibility to survivors.

**First Optional Death Benefit** (31781.1, 31781.12)

If a member who would have been entitled to a non-service-connected disability retirement allowance dies prior to retirement as a result of such disability, the surviving spouse (or eligible children) may elect to receive an optional death allowance equal to 65% of the monthly retirement allowance to which the member would have been entitled as of the date of death.

**Second Optional Death Benefit** (31781.2, 31765.2)

If a member dies prior to reaching the minimum retirement age but has 10 or more years of County service, a surviving spouse (or eligible children) may elect to leave the amount of the death benefit on deposit until the earliest date the member could have retired and at that time receive the allowance provided for in Section 31765 (an Option 3 benefit) or 31765.2 (a 65% continuance).

**Third Optional Death Benefit**

A surviving spouse of a member who dies after five years of County service may elect a combined benefit equal to:

(a) A lump sum equal to 1/12 of the compensation earnable in the preceding 12 months x the number of completed years of service (benefit not to exceed 50% of the 12 months' compensation), plus (31781.3)

(b) A monthly payment equal to 65% of the monthly retirement allowance to which the member would have been entitled if the member retired or could have retired for a non-service-connected disability as of the date of death, reduced by a monthly amount which is the actuarial equivalent of (a) above based on the age of surviving spouse. (31781.1, 31781.12)

**Fourth Optional Death Benefit**

If a member dies while eligible for a service retirement and the surviving spouse is (31765.1,

designated as beneficiary, the spouse (or eligible children) may elect to receive 65% of the monthly retirement allowance to which the member would have been entitled as of the date of death. 31765.2)

**Fifth Optional Death Benefit**

If a member dies while eligible for a service retirement and the surviving spouse is designated as beneficiary and survives the member by not less than 30 days, the spouse (or eligible children) may elect to receive the same retirement allowance as the spouse would have received had the member retired on the date of death and selected Option 3. (31765)

*Note: For valuation purposes, an unmarried member is assumed to take the lump sum benefit. A married member is assumed to take the first optional death benefit or the lump sum, whichever is more valuable.*

**POSTRETIREMENT DEATH/BURIAL BENEFIT**

**Plans A-E:** A one-time lump-sum benefit of \$5,000 is payable to the estate or to the beneficiary designated by the member upon the death of any member while receiving a retirement allowance. This is in addition to any other death or survivor benefits. The amount may be paid from surplus earnings of the retirement system, if any, but is currently paid by the County based on agreement with LACERA. It is not included for valuation purposes. (31789.3)

**DEFERRED RETIREMENT ALLOWANCE**

**Eligibility**

**Plans A, B, D and General Plan C:**

Five years of county or reciprocal service. (31700)  
 Member contributions must be left on deposit.

**Safety Plan C:** Age 50 with 5 years of service. (7522.20(a))

**Plan E:** Age 55 with 10 years of service. (31491)

**Plan G:** Age 52 with 5 years of service. (7522.25(d))

**DEFERRED RETIREMENT ALLOWANCE** (continued)

**Monthly Allowance**

<b>Plans A-D, G:</b>	Same as service retirement allowance; payable any time after the member would have been eligible for service retirement.	(31703, 31704, 31705)
	If a former member dies before the effective date of the deferred retirement allowance, the member's accumulated contributions are paid to the estate or to the named beneficiary.	(31702)
<b>Plan E:</b>	Same as service retirement allowance at normal retirement age 65 or in an actuarially equivalent reduced amount at early retirement, after age 55.	(31491)

**TRANSFERS BETWEEN PLAN D AND PLAN E**

Members in Plan D may transfer to Plan E on a prospective basis. Members in Plan E may transfer to Plan D on a prospective basis.	(31494.2, 31494.5)
---	--------------------

**RECIPROCITY**

<b>All Plans:</b>	Reciprocal benefits are may be granted to members who are entitled to retirement benefits from two or more retirement systems established under the CERL or from a County retirement system and the California Public Employees' Retirement System (CalPERS). Reciprocity also applies to the members of the State Teachers' Retirement System Defined Benefit Plan.	(31830, 31840.4, 31840.8)
	Final Compensation may be based on service with CalPERS or another County retirement system, if greater.	
	Vested former members are eligible for disability and death benefits from LACERA, if disabled while a member of CalPERS or another County retirement system, but combined benefits are limited.	(31835)



### TRANSFER FROM CALPERS

Whenever firefighting or law enforcement functions performed by a city of the state subject to the California Public Employees Retirement Law are transferred to the County, fire authority, or district, employees performing those functions become members of LACERA. LACERA and CalPERS may enter into an agreement whereby the members' service credit plus the members' and the cities' or states' retirement contributions are transferred from CalPERS to LACERA. (31657)

### COST-OF-LIVING INCREASES

Cost-of-living increases (or decreases) are applied to all retirement allowances (service and disability), optional death allowances, and annual death allowances effective April 1, based on changes in the Consumer Price Index (CPI) from the previous January 1 to the current January 1, to the nearest ½ of 1%. (31870, 31870.1)

**Plan A:** Members (and their beneficiaries) are limited to a maximum 3% cost-of-living increase.

**Plans B-D, G:** Members (and their beneficiaries) are limited to a maximum 2% cost-of-living increase. (31870, 31870.1)

When the CPI exceeds 2% or 3%, the difference between the actual CPI and the maximum cost-of-living increase given in any year is credited to the COLA Accumulation. It may be used in future years to provide cost-of-living increases when the CPI falls below 2% or 3%, depending on the retirement plan.

**Plan E:** Members (and their beneficiaries) are limited to a maximum 2% cost-of-living increase. The 2% is pro-rated based on service earned after June 4, 2002. "Elective COLA" increases for service earned prior to June 4, 2002 may be purchased by the member. (31495.5)

### STAR PROGRAM

Contributory plan members who have a COLA Accumulation of more than 20% resulting from CPI increases that exceeded the maximum cost-of-living increases that could be granted are eligible for a supplemental cost-of-living increase effective January 1 known as the Supplemental Targeted Adjustment for Retirees Cost-of-Living Adjustment (STAR COLA). These benefits are not evaluated in this report, or as part of the actuarially required funding amount, unless they have been vested by the Board of Retirement. (31874.3(b))

## Appendix C Valuation Data and Schedules



On the following table, Exhibit C-1, we present a summary of LACERA membership at June 30, 2016 for active members. Similar information is shown in Exhibit C-2 Retired for retired members and C-2 Former for vested former members.

The number of total active members increased by 1.9% and the total salary increased by 4.4% since the last valuation. The total number of retired members and their beneficiaries increased by 2.2%, while the average retirement benefit amount increased by 2.8%.

Note that salary amounts shown are the prior year annual pensionable earnings for those members of plans with a one-year final compensation period. For plans with a three-year final compensation period (Plan E only), the monthly rate of pay at June 2016 is shown.

Additional statistical data on both active and retired members is shown in the following tables. Additional detailed summaries are supplied to the system staff in a supplementary report.

Exhibit C-3: Age Distribution of Active Members

Exhibit C-4: Age, Service, Compensation Distribution of  
Active Members

Exhibit C-5: Age, Retirement Year, Benefit Amount and  
Plan Distribution of Retired Members

Exhibits C-4 and C-5 are shown for all plans combined as well as for each plan separately.

Data on LACERA membership as of June 30, 2016 was supplied to us by the system staff. Based on our review of this data and discussions with LACERA staff, all retiree and beneficiary records were included in our valuation.

All records for active and former members supplied by LACERA were included in the valuation.

Exhibit C-1 LACERA Membership – Active Members as of June 30, 2016

	Sex	Vested	NonVested	Total Number	Annual Salary	Average Age	Average Monthly Salary	Average Credited Service
<b>General Members</b>								
Plan A	M	78	-	78	\$ 8,651,928	68.5	\$ 9,244	36.1
	F	162	-	162	13,500,108	66.0	6,945	36.1
Plan B	M	25	-	25	2,127,660	65.2	7,092	36.3
	F	68	-	68	5,944,236	61.8	7,285	36.6
Plan C	M	25	-	25	2,088,756	63.5	6,963	37.8
	F	61	-	61	5,221,356	61.9	7,133	36.5
Plan D	M	14,475	897	15,372	1,281,101,736	48.7	6,945	15.9
	F	29,684	1,753	31,437	2,375,612,772	48.3	6,297	16.1
Plan E	M	5,418	1,317	6,735	535,248,852	53.1	6,623	19.8
	F	11,738	2,371	14,109	930,129,744	52.9	5,494	20.9
Plan G	M	26	4,972	4,998	281,728,788	36.5	4,697	1.6
	F	43	9,803	9,846	508,232,004	35.7	4,302	1.5
Total		61,803	21,113	82,916	\$ 5,949,587,940	47.4	\$ 5,980	14.6
<b>Safety Members</b>								
Plan A	M	10	-	10	\$ 1,571,292	62.5	\$ 13,094	37.3
	F	-	-	-	-	N/A	N/A	N/A
Plan B	M	9,235	468	9,703	1,081,575,672	44.5	9,289	17.9
	F	1,487	125	1,612	170,141,964	41.9	8,796	15.2
Plan C	M	10	1,011	1,021	75,363,936	30.2	6,151	1.4
	F	-	182	182	14,031,756	29.4	6,425	1.6
Total		10,742	1,786	12,528	\$ 1,342,684,620	42.8	\$ 8,931	16.0
<b>Grand Total</b>		72,545	22,899	95,444	\$ 7,292,272,560	46.8	\$ 6,367	14.8

Exhibit C-2 Retired LACERA Membership – Retired Members as of June 30, 2016

	Sex	Number	Annual Allowance	Average Age	Average Monthly Benefit
<b>General Members</b>					
Plan A	M	9,004	\$ 556,752,953	78.0	\$ 5,153
	F	15,035	650,552,322	78.1	3,606
Plan B	M	233	13,395,358	72.8	4,791
	F	516	22,698,378	73.0	3,666
Plan C	M	141	6,649,103	71.6	3,930
	F	341	12,593,838	73.1	3,078
Plan D	M	4,616	175,401,402	68.0	3,167
	F	8,223	263,772,370	67.8	2,673
Plan E	M	3,974	108,593,099	71.2	2,277
	F	7,947	177,206,444	70.9	1,858
Plan G	M	3	96,077	74.7	2,669
	F	1	13,025	68.0	1,085
Total		50,034	\$ 1,987,724,369	73.6	\$ 3,311
<b>Safety Members</b>					
Plan A	M	5,323	\$ 492,045,316	74.0	\$ 7,703
	F	2,065	127,940,992	76.3	5,163
Plan B	M	3,604	293,955,364	58.6	6,797
	F	887	50,487,496	54.4	4,743
Plan C	M	1	197,985	69.0	16,499
	F	-	-	N/A	N/A
Total		11,880	\$ 964,627,153	68.3	\$ 6,766
<b>Grand Total</b>		61,914	\$ 2,952,351,522	72.6	\$ 3,974

**Exhibit C-2 Former LACERA Membership – Vested Former Members as of June 30, 2016  
 Subtotaled by Plan and Retirement Type**

	<b>Sex</b>	<b>Number</b>	<b>Average Age</b>
<b>General Members</b>			
Plan A	M	29	69.8
	F	69	68.3
Plan B	M	5	66.6
	F	17	64.8
Plan C	M	6	63.2
	F	15	61.6
Plan D	M	2,555	47.2
	F	5,288	46.1
Plan E	M	1,125	55.5
	F	2,519	55.7
Plan G	M	291	36.3
	F	725	35.8
Total		<u>12,644</u>	<u>48.5</u>
<b>Safety Members</b>			
Plan A	M	6	66.3
	F	-	-
Plan B	M	627	42.0
	F	198	42.4
Plan C	M	48	30.7
	F	4	33.5
Total		<u>883</u>	<u>41.6</u>
<b>Grand Total</b>		<b>13,527</b>	<b>48.0</b>

**Exhibit C-2a LACERA Membership – Retired Members as of June 30, 2016  
 Subtotaled by Plan and Retirement Type**

<u>Plan</u>	<u>Retirement Type</u>	<u>Number</u>	<u>Annual Benefits in Thousands</u>	<u>Average Monthly Benefit</u>
<b>General Plans:</b>				
<b>Plan A</b>				
	Healthy	17,512	\$ 994,295	\$ 4,731
	Disabled	1,766	65,363	3,084
	Beneficiaries	<u>4,761</u>	<u>147,648</u>	<u>2,584</u>
	Total	24,039	\$ 1,207,306	\$ 4,185
<b>Plan B</b>				
	Healthy	622	\$ 32,283	\$ 4,325
	Disabled	63	1,916	2,534
	Beneficiaries	<u>64</u>	<u>1,894</u>	<u>2,466</u>
	Total	749	\$ 36,093	\$ 4,016
<b>Plan C</b>				
	Healthy	374	\$ 16,659	\$ 3,712
	Disabled	52	1,463	2,345
	Beneficiaries	<u>56</u>	<u>1,121</u>	<u>1,668</u>
	Total	482	\$ 19,243	\$ 3,327
<b>Plan D</b>				
	Healthy	9,981	\$ 364,164	\$ 3,040
	Disabled	1,749	54,360	2,590
	Beneficiaries	<u>1,109</u>	<u>20,650</u>	<u>1,552</u>
	Total	12,839	\$ 439,174	\$ 2,851
<b>Plan E</b>				
	Healthy	10,997	\$ 274,616	\$ 2,081
	Disabled	0	0	N/A
	Beneficiaries	<u>924</u>	<u>11,184</u>	<u>1,009</u>
	Total	11,921	\$ 285,800	\$ 1,998
<b>Plan G</b>				
	Healthy	4	\$ 109	\$ 2,271
	Disabled	0	0	N/A
	Beneficiaries	<u>0</u>	<u>0</u>	<u>N/A</u>
	Total	4	\$ 109	\$ 2,271
<b>Safety Plans:</b>				
<b>Plan A</b>				
	Healthy	2,477	\$ 239,307	\$ 8,051
	Disabled	3,336	288,413	7,205
	Beneficiaries	<u>1,575</u>	<u>92,266</u>	<u>4,882</u>
	Total	7,388	\$ 619,986	\$ 6,993
<b>Plan B</b>				
	Healthy	1,890	\$ 170,418	\$ 7,514
	Disabled	2,369	162,809	5,727
	Beneficiaries	<u>232</u>	<u>11,216</u>	<u>4,029</u>
	Total	4,491	\$ 344,443	\$ 6,391
<b>Plan C</b>				
	Healthy	1	\$ 198	\$ 16,500
	Disabled	0	0	N/A
	Beneficiaries	<u>0</u>	<u>0</u>	<u>N/A</u>
	Total	1	\$ 198	\$ 16,500
<b>Grand Totals</b>		61,914	2,952,352	3,974

**Exhibit C-2b LACERA Membership – Retired Members as of June 30, 2016  
 Subtotaled by Retirement Type and Plan**

<u>Type</u>	<u>Plan</u>	<u>Number</u>	<u>Annual Benefits in Thousands</u>	<u>Average Monthly Benefit</u>
<b>Healthy Retirees</b>				
	General A	17,512	\$ 994,295	\$ 4,731
	General B	622	32,283	4,325
	General C	374	16,659	3,712
	General D	9,981	364,164	3,040
	General E	10,997	274,616	2,081
	General G	4	109	2,271
	Safety A	2,477	239,307	8,051
	Safety B	1,890	170,418	7,514
	Safety C	1	198	16,500
	Total	43,858	\$ 2,092,049	\$ 3,975
<b>Disabled Retirees</b>				
	General A	1,766	\$ 65,363	\$ 3,084
	General B	63	1,916	2,534
	General C	52	1,463	2,345
	General D	1,749	54,360	2,590
	Safety A	3,336	288,413	7,205
	Safety B	2,369	162,809	5,727
	Total	9,335	\$ 574,324	\$ 5,127
<b>Beneficiaries</b>				
	General A	4,761	\$ 147,648	\$ 2,584
	General B	64	1,894	2,466
	General C	56	1,121	1,668
	General D	1,109	20,650	1,552
	General E	924	11,184	1,009
	Safety A	1,575	92,266	4,882
	Safety B	232	11,216	4,029
	Total	8,721	\$ 285,979	\$ 2,733
<b>Grand Totals</b>		61,914	\$ 2,952,352	\$ 3,974

**Exhibit C-3 Age Distribution of Active Members as of June 30, 2016**

	Age Groups						Total
	0-29	30-39	40-49	50-59	60-69	70+	
<b>General Plans:</b>							
Plan A							
Male	-	-	-	2	48	28	78
Female	-	-	-	6	123	33	162
Plan B							
Male	-	-	-	1	20	4	25
Female	-	-	-	22	43	3	68
Plan C							
Male	-	-	-	7	17	1	25
Female	-	-	-	22	34	5	61
Plan D							
Male	276	2,950	4,865	4,803	2,225	253	15,372
Female	366	6,624	10,179	9,670	4,213	385	31,437
Plan E							
Male	56	783	1,558	2,284	1,766	288	6,735
Female	90	1,466	3,306	5,315	3,569	363	14,109
Plan G							
Male	1,423	2,011	885	529	143	7	4,998
Female	3,096	3,940	1,732	861	209	8	9,846
<b>Safety Plans:</b>							
Plan A							
Male	-	-	-	1	9	-	10
Female	-	-	-	-	-	-	-
Plan B							
Male	323	2,552	3,744	2,920	159	5	9,703
Female	77	595	625	302	13	-	1,612
Plan C							
Male	571	369	50	28	3	-	1,021
Female	109	66	5	2	-	-	182
<b>Grand Totals:</b>	<b>6,387</b>	<b>21,356</b>	<b>26,949</b>	<b>26,775</b>	<b>12,594</b>	<b>1,383</b>	<b>95,444</b>



**Exhibit C-4 Age and Service Distribution of Active Members by Count and Average Compensation as of June 30, 2016  
 All Plans**

<b>Count</b>													
<b>Age</b>	<b>Years of Service</b>												<b>Total Count</b>
	0-1	1-2	2-3	3-4	4-5	5-9	10-14	15-19	20-24	25-29	30-34	35&Over	
Under 25	485	164	86	34	14	0	0	0	0	0	0	0	783
25-29	1,760	1,410	945	586	265	628	10	0	0	0	0	0	5,604
30-34	1,362	1,195	1,069	832	628	3,681	946	33	0	0	0	0	9,746
35-39	779	758	618	509	413	3,913	3,298	1,254	68	0	0	0	11,610
40-44	544	437	418	310	295	2,724	3,042	3,895	810	61	0	0	12,536
45-49	381	337	343	228	198	2,043	2,368	3,810	2,692	1,844	169	0	14,413
50-54	266	243	257	184	155	1,466	1,795	2,588	2,304	3,693	1,382	148	14,481
55-59	167	164	167	145	134	1,196	1,399	2,087	1,529	2,444	1,692	1,170	12,294
60-64	65	83	90	76	79	797	986	1,501	1,098	1,502	976	1,648	8,901
65 & Over	11	28	30	29	28	486	644	1,019	777	844	389	791	5,076
<b>Total Count</b>	<b>5,820</b>	<b>4,819</b>	<b>4,023</b>	<b>2,933</b>	<b>2,209</b>	<b>16,934</b>	<b>14,488</b>	<b>16,187</b>	<b>9,278</b>	<b>10,388</b>	<b>4,608</b>	<b>3,757</b>	<b>95,444</b>

<b>Average Compensation</b>													
<b>Age</b>	<b>Years of Service</b>												<b>Average Comp.</b>
	0-1	1-2	2-3	3-4	4-5	5-9	10-14	15-19	20-24	25-29	30-34	35&Over	
Under 25	42,563	45,500	49,563	58,301	47,320	-	-	-	-	-	-	-	44,715
25-29	46,395	49,897	54,464	59,668	62,217	61,949	64,327	-	-	-	-	-	52,548
30-34	51,129	55,470	58,745	64,874	68,485	71,462	68,114	84,414	-	-	-	-	64,230
35-39	55,242	61,596	64,398	69,504	75,542	75,306	75,439	78,323	87,349	-	-	-	72,672
40-44	58,211	56,864	60,468	68,763	73,652	75,228	78,239	81,978	92,145	98,249	-	-	77,193
45-49	53,697	59,649	57,575	69,557	71,612	72,870	78,555	82,738	94,252	94,828	96,943	-	82,248
50-54	55,968	54,302	63,084	71,094	62,973	69,238	73,200	76,528	90,620	95,996	102,200	96,606	84,036
55-59	53,492	60,044	56,303	73,176	68,505	68,643	70,505	73,554	86,077	91,639	105,892	86,514	82,819
60-64	70,233	59,980	56,980	69,092	71,832	69,733	72,301	73,658	81,531	85,710	97,010	83,402	80,149
65 & Over	107,361	96,447	61,422	85,925	86,721	68,579	73,830	69,244	75,268	80,012	92,911	84,942	77,113
<b>Avg. Annual Compensation</b>	<b>50,973</b>	<b>55,295</b>	<b>58,647</b>	<b>66,454</b>	<b>69,854</b>	<b>72,217</b>	<b>75,011</b>	<b>78,348</b>	<b>88,673</b>	<b>91,991</b>	<b>101,480</b>	<b>85,215</b>	<b>76,404</b>



This work product was prepared solely for LACERA for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work. Milliman recommends that third parties be aided by their own actuary or other qualified professional when reviewing the Milliman work product.

**Exhibit C-4a Age and Service Distribution of Active Members by Count and Average Compensation as of June 30, 2016  
 General Plan A**

<b>Count</b>														
Age	Years of Service												Total Count	
	0-1	1-2	2-3	3-4	4-5	5-9	10-14	15-19	20-24	25-29	30-34	35&Over		
Under 25	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25-29	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30-34	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35-39	0	0	0	0	0	0	0	0	0	0	0	0	0	0
40-44	0	0	0	0	0	0	0	0	0	0	0	0	0	0
45-49	0	0	0	0	0	0	0	0	0	0	0	0	0	0
50-54	0	0	0	0	0	0	0	0	0	0	0	0	0	0
55-59	0	0	0	0	0	0	0	1	0	0	0	7		8
60-64	0	0	0	0	0	0	2	4	11	4	7	59		87
65 & Over	0	0	0	0	0	4	5	7	16	14	6	93		145
<b>Total Count</b>	0	0	0	0	0	4	7	12	27	18	13	159		240

<b>Compensation</b>														
Age	Years of Service												Average Comp.	
	0-1	1-2	2-3	3-4	4-5	5-9	10-14	15-19	20-24	25-29	30-34	35&Over		
Under 25	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25-29	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30-34	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35-39	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40-44	-	-	-	-	-	-	-	-	-	-	-	-	-	-
45-49	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50-54	-	-	-	-	-	-	-	-	-	-	-	-	-	-
55-59	-	-	-	-	-	-	-	90,228	-	-	-	78,314		79,803
60-64	-	-	-	-	-	-	81,990	103,281	69,479	82,815	87,113	80,940		81,125
65 & Over	-	-	-	-	-	69,930	84,689	110,050	101,621	98,234	109,754	100,241		99,695
<b>Avg. Annual Compensation</b>	-	-	-	-	-	69,930	83,918	106,142	88,526	94,807	97,563	92,114		92,300



**Exhibit C-4b Age and Service Distribution of Active Members by Count and Average Compensation as of June 30, 2016  
 General Plan B**

<b>Count</b>													
Age	Years of Service											Total Count	
	0-1	1-2	2-3	3-4	4-5	5-9	10-14	15-19	20-24	25-29	30-34		35&Over
Under 25	0	0	0	0	0	0	0	0	0	0	0	0	0
25-29	0	0	0	0	0	0	0	0	0	0	0	0	0
30-34	0	0	0	0	0	0	0	0	0	0	0	0	0
35-39	0	0	0	0	0	0	0	0	0	0	0	0	0
40-44	0	0	0	0	0	0	0	0	0	0	0	0	0
45-49	0	0	0	0	0	0	0	0	0	0	0	0	0
50-54	0	0	0	0	0	0	0	0	0	0	0	0	0
55-59	0	0	0	0	0	0	0	1	0	0	1	21	23
60-64	0	0	0	0	0	0	1	0	0	2	3	40	46
65 & Over	0	0	0	0	0	0	0	2	2	2	1	17	24
<b>Total Count</b>	0	0	0	0	0	0	1	3	2	4	5	78	93

<b>Compensation</b>													
Age	Years of Service											Average Comp.	
	0-1	1-2	2-3	3-4	4-5	5-9	10-14	15-19	20-24	25-29	30-34		35&Over
Under 25	-	-	-	-	-	-	-	-	-	-	-	-	-
25-29	-	-	-	-	-	-	-	-	-	-	-	-	-
30-34	-	-	-	-	-	-	-	-	-	-	-	-	-
35-39	-	-	-	-	-	-	-	-	-	-	-	-	-
40-44	-	-	-	-	-	-	-	-	-	-	-	-	-
45-49	-	-	-	-	-	-	-	-	-	-	-	-	-
50-54	-	-	-	-	-	-	-	-	-	-	-	-	-
55-59	-	-	-	-	-	-	-	51,000	-	-	69,252	81,454	79,599
60-64	-	-	-	-	-	-	79,164	-	-	104,454	75,728	87,989	87,713
65 & Over	-	-	-	-	-	-	-	110,568	107,304	113,376	132,852	82,998	91,929
<b>Avg. Annual Compensation</b>	-	-	-	-	-	-	79,164	90,712	107,304	108,915	85,858	85,142	86,795



**Exhibit C-4c Age and Service Distribution of Active Members by Count and Average Compensation as of June 30, 2016  
 General Plan C**

<b>Count</b>														
Age	Years of Service												Total Count	
	0-1	1-2	2-3	3-4	4-5	5-9	10-14	15-19	20-24	25-29	30-34	35&Over		
Under 25	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25-29	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30-34	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35-39	0	0	0	0	0	0	0	0	0	0	0	0	0	0
40-44	0	0	0	0	0	0	0	0	0	0	0	0	0	0
45-49	0	0	0	0	0	0	0	0	0	0	0	0	0	0
50-54	0	0	0	0	0	0	0	0	0	0	0	0	0	0
55-59	0	0	0	0	0	0	0	0	1	0	4	24	29	29
60-64	0	0	0	0	0	0	0	1	0	1	1	26	29	29
65 & Over	0	0	0	0	0	0	0	0	0	0	2	26	28	28
<b>Total Count</b>	0	0	0	0	0	0	0	1	1	1	7	76	86	

<b>Compensation</b>														
Age	Years of Service												Average Comp.	
	0-1	1-2	2-3	3-4	4-5	5-9	10-14	15-19	20-24	25-29	30-34	35&Over		
Under 25	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25-29	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30-34	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35-39	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40-44	-	-	-	-	-	-	-	-	-	-	-	-	-	-
45-49	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50-54	-	-	-	-	-	-	-	-	-	-	-	-	-	-
55-59	-	-	-	-	-	-	-	-	57,984	-	97,671	67,157	71,050	71,050
60-64	-	-	-	-	-	-	-	117,924	-	57,432	183,660	95,931	98,387	98,387
65 & Over	-	-	-	-	-	-	-	-	-	-	119,058	83,012	85,587	85,587
<b>Avg. Annual Compensation</b>	-	-	-	-	-	-	-	117,924	57,984	57,432	116,066	82,425	85,001	



**Exhibit C-4d Age and Service Distribution of Active Members by Count and Average Compensation as of June 30, 2016  
 General Plan D**

<b>Count</b>													
Age	Years of Service												Total Count
	0-1	1-2	2-3	3-4	4-5	5-9	10-14	15-19	20-24	25-29	30-34	35&Over	
Under 25	0	0	0	3	12	0	0	0	0	0	0	0	15
25-29	0	3	6	127	162	322	7	0	0	0	0	0	627
30-34	9	18	28	230	446	2,158	563	23	0	0	0	0	3,475
35-39	10	17	20	174	315	2,578	2,218	714	53	0	0	0	6,099
40-44	7	11	20	118	217	1,895	2,048	2,283	489	42	0	0	7,130
45-49	8	5	15	93	141	1,431	1,618	2,277	1,397	814	115	0	7,914
50-54	3	10	11	64	101	1,079	1,276	1,649	1,287	1,577	615	105	7,777
55-59	2	5	11	45	76	860	965	1,352	963	1,183	731	503	6,696
60-64	1	4	3	27	51	543	694	931	652	813	400	457	4,576
65 & Over	0	1	1	7	12	306	425	612	454	418	137	127	2,500
<b>Total Count</b>	40	74	115	888	1,533	11,172	9,814	9,841	5,295	4,847	1,998	1,192	46,809

<b>Compensation</b>													
Age	Years of Service												Average Comp.
	0-1	1-2	2-3	3-4	4-5	5-9	10-14	15-19	20-24	25-29	30-34	35&Over	
Under 25	-	-	-	46,384	41,842	-	-	-	-	-	-	-	42,750
25-29	-	53,868	59,550	56,773	56,407	51,790	55,342	-	-	-	-	-	54,116
30-34	63,579	70,225	62,451	66,923	67,139	64,887	62,375	82,952	-	-	-	-	65,028
35-39	87,798	79,324	70,948	74,347	74,755	71,733	72,646	73,895	82,674	-	-	-	72,689
40-44	88,227	63,152	79,549	78,761	73,687	74,341	77,069	78,254	86,462	92,857	-	-	77,382
45-49	118,318	58,949	68,322	69,833	73,610	72,036	78,187	81,500	87,946	84,395	93,271	-	80,438
50-54	76,436	72,193	98,763	74,985	64,441	69,537	74,237	78,170	87,241	88,030	96,616	93,864	81,314
55-59	98,286	85,022	87,716	91,603	68,421	70,013	72,520	77,115	87,204	89,556	101,648	91,494	82,976
60-64	54,240	144,315	86,284	90,766	65,645	68,764	75,105	78,511	84,709	88,773	102,736	94,964	83,291
65 & Over	-	39,756	40,740	93,074	56,050	67,047	77,282	70,645	77,333	84,208	104,673	100,309	78,155
<b>Avg. Annual Compensation</b>	87,361	74,698	73,840	71,497	68,643	69,700	74,450	78,080	86,141	87,629	100,042	93,972	78,120



This work product was prepared solely for LACERA for the purposes described herein and may not be appropriate to use for other purposes. Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work. Milliman recommends that third parties be aided by their own actuary or other qualified professional when reviewing the Milliman work product.

**Exhibit C-4e Age and Service Distribution of Active Members by Count and Average Compensation as of June 30, 2016  
 General Plan E**

<b>Count</b>													
Age	Years of Service												Total Count
	0-1	1-2	2-3	3-4	4-5	5-9	10-14	15-19	20-24	25-29	30-34	35&Over	
Under 25	0	0	0	2	0	0	0	0	0	0	0	0	2
25-29	0	0	0	12	37	95	0	0	0	0	0	0	144
30-34	0	0	0	31	96	517	181	3	0	0	0	0	828
35-39	0	0	1	27	56	567	531	236	3	0	0	0	1,421
40-44	0	0	2	29	55	451	599	763	91	3	0	0	1,993
45-49	0	0	0	13	48	416	483	883	560	447	21	0	2,871
50-54	0	0	0	20	47	327	413	711	607	1,085	375	20	3,605
55-59	0	0	0	15	52	316	397	667	444	950	640	513	3,994
60-64	0	0	0	5	25	237	274	548	408	649	527	1,045	3,718
65 & Over	0	0	0	4	16	169	213	395	301	406	242	522	2,268
<b>Total Count</b>	0	0	3	158	432	3,095	3,091	4,206	2,414	3,540	1,805	2,100	20,844

<b>Compensation</b>													
Age	Years of Service												Average Comp.
	0-1	1-2	2-3	3-4	4-5	5-9	10-14	15-19	20-24	25-29	30-34	35&Over	
Under 25	-	-	-	40,614	-	-	-	-	-	-	-	-	40,614
25-29	-	-	-	55,915	51,000	46,921	-	-	-	-	-	-	48,718
30-34	-	-	-	56,715	56,039	56,768	53,493	60,188	-	-	-	-	55,978
35-39	-	-	65,580	82,838	62,863	64,001	60,619	58,985	75,720	-	-	-	62,243
40-44	-	-	61,470	59,114	68,322	62,918	65,624	65,171	63,893	70,932	-	-	64,743
45-49	-	-	-	63,852	63,101	65,419	64,636	67,312	74,670	68,953	65,529	-	68,179
50-54	-	-	-	65,044	56,358	62,314	60,567	62,223	78,132	77,045	73,237	72,391	70,323
55-59	-	-	-	81,959	65,602	62,018	62,482	62,770	75,042	82,808	91,593	71,228	74,626
60-64	-	-	-	52,589	85,262	68,078	63,678	64,047	74,146	79,954	89,888	76,629	75,488
65 & Over	-	-	-	116,646	109,724	69,577	66,465	65,730	69,938	74,670	85,330	77,312	73,402
<b>Avg. Annual Compensation</b>	-	-	62,840	66,780	63,706	62,537	62,706	64,297	74,525	77,826	86,139	75,439	70,302



**Exhibit C-4f Age and Service Distribution of Active Members by Count and Average Compensation as of June 30, 2016  
 General Plan G**

<b>Count</b>													
<b>Age</b>	<b>Years of Service</b>												<b>Total Count</b>
	0-1	1-2	2-3	3-4	4-5	5-9	10-14	15-19	20-24	25-29	30-34	35&Over	
Under 25	382	137	64	15	0	0	0	0	0	0	0	0	598
25-29	1,544	1,266	789	312	6	4	0	0	0	0	0	0	3,921
30-34	1,252	1,076	936	418	6	12	1	0	0	0	0	0	3,701
35-39	731	699	565	247	2	6	0	0	0	0	0	0	2,250
40-44	516	419	388	144	2	6	1	1	0	0	0	0	1,477
45-49	371	323	323	109	1	11	2	0	0	0	0	0	1,140
50-54	256	227	240	92	3	6	2	1	0	0	0	0	827
55-59	165	157	151	83	2	3	2	0	0	0	0	0	563
60-64	64	79	86	41	2	6	3	0	0	0	0	0	281
65 & Over	11	27	28	18	0	2	0	0	0	0	0	0	86
<b>Total Count</b>	5,292	4,410	3,570	1,479	24	56	11	2	0	0	0	0	14,844

<b>Compensation</b>													
<b>Age</b>	<b>Years of Service</b>												<b>Average Comp.</b>
	0-1	1-2	2-3	3-4	4-5	5-9	10-14	15-19	20-24	25-29	30-34	35&Over	
Under 25	36,158	40,405	40,522	44,741	-	-	-	-	-	-	-	-	37,813
25-29	43,370	46,992	49,681	50,404	50,238	53,430	-	-	-	-	-	-	46,390
30-34	49,734	53,287	56,393	56,818	114,022	82,246	51,000	-	-	-	-	-	53,461
35-39	54,170	60,404	63,164	60,615	291,780	110,728	-	-	-	-	-	-	59,435
40-44	57,196	56,379	59,040	60,616	59,694	56,292	41,136	29,340	-	-	-	-	57,752
45-49	52,228	58,966	56,646	68,073	51,252	78,931	62,784	-	-	-	-	-	57,179
50-54	53,796	52,538	60,905	67,808	68,400	121,640	223,602	94,320	-	-	-	-	58,077
55-59	52,950	57,444	52,637	60,728	68,346	162,524	94,824	-	-	-	-	-	56,053
60-64	70,483	55,710	55,487	54,210	52,572	130,564	53,456	-	-	-	-	-	60,339
65 & Over	107,361	98,547	53,911	76,319	-	56,460	-	-	-	-	-	-	79,510
<b>Avg. Annual Compensation</b>	49,080	53,347	56,111	58,244	91,116	92,585	92,266	61,830	-	-	-	-	53,218



**Exhibit C-4g Age and Service Distribution of Active Members by Count and Average Compensation as of June 30, 2016  
 Safety Plan A**

<b>Count</b>														
Age	Years of Service												Total Count	
	0-1	1-2	2-3	3-4	4-5	5-9	10-14	15-19	20-24	25-29	30-34	35&Over		
Under 25	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25-29	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30-34	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35-39	0	0	0	0	0	0	0	0	0	0	0	0	0	0
40-44	0	0	0	0	0	0	0	0	0	0	0	0	0	0
45-49	0	0	0	0	0	0	0	0	0	0	0	0	0	0
50-54	0	0	0	0	0	0	0	0	0	0	0	0	0	0
55-59	0	0	0	0	0	0	0	0	1	0	0	0	0	1
60-64	0	0	0	0	0	0	0	0	0	0	1	5	0	6
65 & Over	0	0	0	0	0	0	0	0	0	0	0	3	0	3
<b>Total Count</b>	0	0	0	0	0	0	0	0	1	0	1	8	0	10

<b>Compensation</b>														
Age	Years of Service												Average Comp.	
	0-1	1-2	2-3	3-4	4-5	5-9	10-14	15-19	20-24	25-29	30-34	35&Over		
Under 25	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25-29	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30-34	-	-	-	-	-	-	-	-	-	-	-	-	-	-
35-39	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40-44	-	-	-	-	-	-	-	-	-	-	-	-	-	-
45-49	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50-54	-	-	-	-	-	-	-	-	-	-	-	-	-	-
55-59	-	-	-	-	-	-	-	-	137,976	-	-	-	-	137,976
60-64	-	-	-	-	-	-	-	-	-	-	107,028	124,133	-	121,282
65 & Over	-	-	-	-	-	-	-	-	-	-	-	235,208	-	235,208
<b>Avg. Annual Compensation</b>	-	-	-	-	-	-	-	-	137,976	-	107,028	165,786	-	157,129





**Exhibit C-4h Age and Service Distribution of Active Members by Count and Average Compensation as of June 30, 2016  
 Safety Plan B**

<b>Count</b>													
Age	Years of Service												Total Count
	0-1	1-2	2-3	3-4	4-5	5-9	10-14	15-19	20-24	25-29	30-34	35&Over	
Under 25	0	0	0	9	2	0	0	0	0	0	0	0	11
25-29	2	4	6	111	59	204	3	0	0	0	0	0	389
30-34	1	7	6	130	76	990	201	7	0	0	0	0	1,418
35-39	5	4	3	51	39	762	549	304	12	0	0	0	1,729
40-44	1	1	1	16	21	372	394	848	230	16	0	0	1,900
45-49	0	1	1	10	8	184	264	650	735	583	33	0	2,469
50-54	1	0	1	3	4	53	104	227	410	1,031	392	23	2,249
55-59	0	1	0	1	4	17	35	66	120	311	316	102	973
60-64	0	0	0	2	1	11	12	17	27	33	37	16	156
65 & Over	0	0	0	0	0	5	1	3	4	4	1	3	21
<b>Total Count</b>	10	18	18	333	214	2,598	1,563	2,122	1,538	1,978	779	144	11,315

<b>Compensation</b>													
Age	Years of Service												Average Comp.
	0-1	1-2	2-3	3-4	4-5	5-9	10-14	15-19	20-24	25-29	30-34	35&Over	
Under 25	-	-	-	81,511	80,190	-	-	-	-	-	-	-	81,271
25-29	67,920	79,653	81,222	85,829	86,228	84,937	85,292	-	-	-	-	-	85,191
30-34	65,808	78,432	80,336	86,499	87,712	93,260	97,439	99,598	-	-	-	-	92,819
35-39	59,062	84,510	91,440	87,408	88,818	95,530	101,058	103,736	110,906	-	-	-	98,306
40-44	69,468	82,212	88,932	84,956	88,571	94,975	103,592	107,187	115,406	117,526	-	-	104,697
45-49	-	77,436	87,996	88,049	89,991	95,768	106,358	108,031	121,156	129,234	129,729	-	115,982
50-54	244,992	-	15,804	88,456	99,561	99,846	107,761	109,325	119,716	128,125	138,669	130,178	124,843
55-59	-	306,060	-	115,704	107,916	105,922	104,567	109,663	117,662	126,537	144,891	144,992	131,139
60-64	-	-	-	105,948	90,132	120,038	109,564	108,074	121,290	123,504	137,529	160,047	126,758
65 & Over	-	-	-	-	-	132,367	121,260	123,184	120,516	103,251	122,988	165,180	126,964
<b>Avg. Annual Compensation</b>	81,142	92,855	79,800	86,475	88,214	94,101	102,699	107,261	119,560	127,989	140,740	144,719	110,625



**Exhibit C-4i Age and Service Distribution of Active Members by Count and Average Compensation as of June 30, 2016  
 Safety Plan C**

<b>Count</b>													
Age	Years of Service												Total Count
	0-1	1-2	2-3	3-4	4-5	5-9	10-14	15-19	20-24	25-29	30-34	35&Over	
Under 25	103	27	22	5	0	0	0	0	0	0	0	0	157
25-29	214	137	144	24	1	3	0	0	0	0	0	0	523
30-34	100	94	99	23	4	4	0	0	0	0	0	0	324
35-39	33	38	29	10	1	0	0	0	0	0	0	0	111
40-44	20	6	7	3	0	0	0	0	0	0	0	0	36
45-49	2	8	4	3	0	1	1	0	0	0	0	0	19
50-54	6	6	5	5	0	1	0	0	0	0	0	0	23
55-59	0	1	5	1	0	0	0	0	0	0	0	0	7
60-64	0	0	1	1	0	0	0	0	0	0	0	0	2
65 & Over	0	0	1	0	0	0	0	0	0	0	0	0	1
<b>Total Count</b>	<b>478</b>	<b>317</b>	<b>317</b>	<b>75</b>	<b>6</b>	<b>9</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1,203</b>

<b>Compensation</b>													
Age	Years of Service												Average Comp.
	0-1	1-2	2-3	3-4	4-5	5-9	10-14	15-19	20-24	25-29	30-34	35&Over	
Under 25	66,319	71,351	75,863	71,426	-	-	-	-	-	-	-	-	68,684
25-29	68,017	75,784	79,345	76,297	73,620	76,468	-	-	-	-	-	-	73,610
30-34	67,325	75,934	78,627	79,538	83,655	90,387	-	-	-	-	-	-	74,629
35-39	68,556	73,179	81,082	77,482	83,244	-	-	-	-	-	-	-	74,348
40-44	73,322	74,954	80,746	73,436	-	-	-	-	-	-	-	-	75,047
45-49	67,638	85,464	84,681	78,016	-	86,148	86,304	-	-	-	-	-	82,327
50-54	106,892	91,206	98,659	95,549	-	73,620	-	-	-	-	-	-	97,098
55-59	-	97,452	97,922	102,888	-	-	-	-	-	-	-	-	98,565
60-64	-	-	97,452	102,888	-	-	-	-	-	-	-	-	100,170
65 & Over	-	-	292,428	-	-	-	-	-	-	-	-	-	292,428
<b>Avg. Annual Compensation</b>	<b>68,252</b>	<b>75,728</b>	<b>80,463</b>	<b>79,071</b>	<b>81,914</b>	<b>83,413</b>	<b>86,304</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>74,311</b>



**Exhibit C-5 Distribution of Retired Members by Age and Retirement Year as of June 30, 2016  
 All Plans**

Age	Retirement Year										Total Count	Average Monthly Benefit
	Pre-1974	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04	2005-09	2010-14	2015-19		
Under 35	0	0	0	0	0	1	8	24	35	50	118	\$ 1,509
35-39	0	0	0	0	0	0	1	13	56	18	88	2,430
40-44	0	0	1	0	0	2	26	49	68	31	177	2,942
45-49	0	0	0	1	11	48	106	99	167	57	489	3,090
50-54	0	0	0	2	62	132	165	164	414	261	1,200	3,046
55-59	0	0	6	39	104	150	168	338	1,485	931	3,221	4,561
60-64	0	9	47	78	116	183	375	1,503	3,213	1,237	6,761	4,285
65-69	8	84	156	145	200	495	1,743	3,418	4,594	1,571	12,414	4,303
70-74	25	151	231	221	559	1,669	3,313	3,191	2,702	568	12,630	4,313
75-79	53	141	193	440	1,299	1,999	2,299	1,618	1,031	294	9,367	3,921
80-84	105	139	399	846	1,695	1,437	1,002	637	580	209	7,049	3,602
85-89	103	272	666	876	1,117	607	369	360	421	135	4,926	3,297
90-94	107	329	520	518	331	175	180	181	203	73	2,617	2,965
95-99	63	183	173	86	61	52	47	40	47	10	762	2,688
100 & Over	20	26	19	5	7	3	4	7	3	1	95	2,418
<b>Total Count</b>	484	1,334	2,411	3,257	5,562	6,953	9,806	11,642	15,019	5,446	<b>61,914</b>	
<b>Avg Monthly Benefit</b>	\$ 2,098	\$ 2,752	\$ 2,829	\$ 3,301	\$ 4,030	\$ 3,896	\$ 4,498	\$ 3,967	\$ 4,096	\$ 4,123		<b>\$ 3,974</b>



**Exhibit C-5a      Distribution of Retired Members by Age and Retirement Year as of June 30, 2016  
 General Plan A**

Age	Retirement Year										Total Count	Average Monthly Benefit
	Pre-1974	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04	2005-09	2010-14	2015-19		
Under 35	0	0	0	0	0	0	0	7	5	3	15	\$ 1,162
35-39	0	0	0	0	0	0	1	4	5	0	10	2,024
40-44	0	0	0	0	0	0	1	4	3	0	8	2,588
45-49	0	0	0	1	0	3	3	7	4	0	18	1,690
50-54	0	0	0	0	1	3	1	5	5	0	15	1,947
55-59	0	0	1	3	2	6	8	17	22	12	71	2,845
60-64	0	4	15	12	13	26	99	230	537	104	1,040	4,644
65-69	2	44	48	39	52	239	604	1,295	894	93	3,310	5,135
70-74	15	66	94	79	339	813	1,673	1,142	387	93	4,701	5,004
75-79	30	84	89	293	858	1,136	1,238	412	257	89	4,486	4,422
80-84	57	89	277	617	1,237	919	365	226	270	94	4,151	3,821
85-89	54	199	509	685	903	326	181	197	262	84	3,400	3,314
90-94	76	260	448	463	238	114	117	132	148	53	2,049	2,892
95-99	54	175	169	78	46	41	37	32	36	7	675	2,708
100 & Over	20	26	19	5	5	2	4	6	2	1	90	2,421
<b>Total Count</b>	308	947	1,669	2,275	3,694	3,628	4,332	3,716	2,837	633	<b>24,039</b>	
<b>Avg Monthly Benefit</b>	\$ 1,615	\$ 2,297	\$ 2,336	\$ 2,922	\$ 3,943	\$ 3,956	\$ 5,228	\$ 5,175	\$ 4,934	\$ 4,097		<b>\$ 4,185</b>



**Exhibit C-5b Distribution of Retired Members by Age and Retirement Year as of June 30, 2016  
 General Plan B**

Age	Retirement Year										Total Count	Average Monthly Benefit	
	Pre-1974	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04	2005-09	2010-14	2015-19			
Under 35	0	0	0	0	0	0	0	0	0	0	0	0	\$ -
35-39	0	0	0	0	0	0	0	0	0	0	0	0	-
40-44	0	0	0	0	0	0	0	0	0	0	1	1	2,529
45-49	0	0	0	0	0	0	0	0	0	0	0	0	-
50-54	0	0	0	0	0	0	0	0	0	0	0	0	-
55-59	0	0	0	0	1	0	0	5	2	3	11	11	2,959
60-64	0	0	0	1	1	2	5	20	66	27	122	122	4,930
65-69	0	0	1	5	4	5	18	56	85	14	188	188	5,165
70-74	0	0	2	3	4	14	44	42	31	4	144	144	4,112
75-79	0	0	0	3	5	21	43	21	11	1	105	105	3,565
80-84	0	0	1	4	11	28	12	13	5	0	74	74	3,218
85-89	0	0	4	6	25	16	6	5	3	3	68	68	1,880
90-94	0	0	1	10	8	6	4	2	1	0	32	32	1,878
95-99	0	0	0	1	1	1	0	0	1	0	4	4	1,886
100 & Over	0	0	0	0	0	0	0	0	0	0	0	0	-
<b>Total Count</b>	0	0	9	33	60	93	132	164	205	53	<b>749</b>		
<b>Avg Monthly Benefit</b>	\$ -	\$ -	\$ 1,354	\$ 1,251	\$ 1,815	\$ 2,338	\$ 3,283	\$ 4,266	\$ 5,745	\$ 5,987			<b>\$ 4,016</b>



**Exhibit C-5c Distribution of Retired Members by Age and Retirement Year as of June 30, 2016  
 General Plan C**

Age	Retirement Year										Total Count	Average Monthly Benefit
	Pre-1974	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04	2005-09	2010-14	2015-19		
Under 35	0	0	0	0	0	0	0	0	0	0	0	\$ -
35-39	0	0	0	0	0	0	0	0	1	0	1	1,499
40-44	0	0	0	0	0	0	0	0	2	0	2	1,363
45-49	0	0	0	0	0	0	0	0	0	0	0	-
50-54	0	0	0	0	0	0	1	0	0	1	2	2,693
55-59	0	0	0	0	0	1	0	2	4	6	13	3,216
60-64	0	1	1	5	1	3	4	12	37	19	83	4,465
65-69	0	0	4	1	1	2	19	22	46	8	103	4,536
70-74	0	0	1	2	8	9	11	28	24	5	88	3,465
75-79	0	0	0	8	10	10	19	16	7	1	71	2,445
80-84	0	0	0	4	8	13	20	10	5	1	61	2,362
85-89	0	0	2	3	12	8	4	3	0	0	32	1,613
90-94	0	0	2	4	7	1	1	1	2	1	19	1,654
95-99	0	0	0	1	3	0	1	1	0	1	7	1,254
100 & Over	0	0	0	0	0	0	0	0	0	0	0	-
<b>Total Count</b>	0	1	10	28	50	47	80	95	128	43	<b>482</b>	
<b>Avg Monthly Benefit</b>	\$ -	\$ 1,704	\$ 1,141	\$ 878	\$ 1,305	\$ 1,886	\$ 2,577	\$ 3,099	\$ 5,317	\$ 5,368		<b>\$ 3,327</b>



**Exhibit C-5d      Distribution of Retired Members by Age and Retirement Year as of June 30, 2016  
 General Plan D**

Age	Retirement Year										Total Count	Average Monthly Benefit
	Pre-1974	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04	2005-09	2010-14	2015-19		
Under 35	0	0	0	0	0	0	3	5	10	20	38	\$ 1,040
35-39	0	0	0	0	0	0	0	5	24	4	33	1,724
40-44	0	0	0	0	0	2	7	13	21	8	51	1,917
45-49	0	0	0	0	3	5	19	23	64	12	126	2,114
50-54	0	0	0	0	9	19	46	59	252	155	540	1,880
55-59	0	0	0	5	17	40	54	189	560	303	1,168	2,296
60-64	0	0	4	9	20	55	151	484	1,008	612	2,343	3,046
65-69	0	1	2	16	39	105	278	590	1,593	659	3,283	3,400
70-74	0	0	3	12	43	157	339	782	976	205	2,517	3,052
75-79	0	0	5	16	46	154	365	498	352	81	1,517	2,565
80-84	0	0	2	16	50	161	250	160	106	32	777	2,240
85-89	0	0	5	9	48	112	65	52	37	14	342	1,983
90-94	0	1	2	10	24	20	12	8	7	1	85	1,488
95-99	0	0	1	3	2	2	3	4	3	0	18	1,095
100 & Over	0	0	0	0	0	0	0	1	0	0	1	2,365
<b>Total Count</b>	0	2	24	96	301	832	1,592	2,873	5,013	2,106	<b>12,839</b>	
<b>Avg Monthly Benefit</b>	\$ -	\$ 5,352	\$ 1,389	\$ 1,408	\$ 1,587	\$ 1,840	\$ 2,160	\$ 2,570	\$ 3,246	\$ 3,474		<b>\$ 2,851</b>



**Exhibit C-5e Distribution of Retired Members by Age and Retirement Year as of June 30, 2016  
 General Plan E**

Age	Retirement Year										Total Count	Average Monthly Benefit
	Pre-1974	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04	2005-09	2010-14	2015-19		
Under 35	0	0	0	0	0	1	1	5	4	8	19	\$ 570
35-39	0	0	0	0	0	0	0	2	6	3	11	1,701
40-44	0	0	0	0	0	0	0	0	9	7	16	1,779
45-49	0	0	0	0	0	0	2	5	17	6	30	937
50-54	0	0	0	0	0	0	1	5	13	4	23	1,044
55-59	0	0	0	0	0	0	2	7	240	163	412	883
60-64	0	0	0	0	0	2	6	309	725	350	1,392	1,396
65-69	0	0	0	0	0	6	257	752	1,768	752	3,535	2,480
70-74	0	0	0	0	1	154	433	1,045	1,202	219	3,054	2,292
75-79	0	0	0	1	52	229	526	628	318	90	1,844	1,884
80-84	0	0	1	21	90	246	308	166	124	42	998	1,490
85-89	0	0	1	22	90	122	69	55	50	11	420	1,222
90-94	0	0	3	18	42	21	24	9	17	6	140	998
95-99	0	0	1	3	9	5	2	2	3	1	26	721
100 & Over	0	0	0	0	1	0	0	0	0	0	1	493
<b>Total Count</b>	0	0	6	65	285	786	1,631	2,990	4,496	1,662	<b>11,921</b>	
<b>Avg Monthly Benefit</b>	\$ -	\$ -	\$ 308	\$ 366	\$ 676	\$ 838	\$ 1,303	\$ 1,674	\$ 2,507	\$ 2,731		<b>\$ 1,998</b>





**Exhibit C-5f Distribution of Retired Members by Age and Retirement Year as of June 30, 2016  
 General Plan G**

Age	Retirement Year										Total Count	Average Monthly Benefit	
	Pre-1974	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04	2005-09	2010-14	2015-19			
Under 35	-	-	-	-	-	-	-	-	-	-	-	-	\$ -
35-39	-	-	-	-	-	-	-	-	-	-	-	-	-
40-44	-	-	-	-	-	-	-	-	-	-	-	-	-
45-49	-	-	-	-	-	-	-	-	-	-	-	-	-
50-54	-	-	-	-	-	-	-	-	-	-	-	-	-
55-59	-	-	-	-	-	-	-	-	-	-	-	-	-
60-64	-	-	-	-	-	-	-	-	-	-	-	-	-
65-69	-	-	-	-	-	-	-	-	-	-	1	1	1,085
70-74	-	-	-	-	-	-	-	-	-	-	1	1	906
75-79	-	-	-	-	-	-	-	-	-	-	2	2	3,550
80-84	-	-	-	-	-	-	-	-	-	-	-	-	-
85-89	-	-	-	-	-	-	-	-	-	-	-	-	-
90-94	-	-	-	-	-	-	-	-	-	-	-	-	-
95-99	-	-	-	-	-	-	-	-	-	-	-	-	-
100 & Over	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total Count</b>	-	-	-	-	-	-	-	-	-	-	4	4	
<b>Avg Monthly Benefit</b>	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 2,273		\$ 2,273



**Exhibit C-5g      Distribution of Retired Members by Age and Retirement Year as of June 30, 2016  
 Safety Plan A**

Age	Retirement Year										Total Count	Average Monthly Benefit
	Pre-1974	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04	2005-09	2010-14	2015-19		
Under 35	0	0	0	0	0	0	0	0	6	3	9	\$ 2,754
35-39	0	0	0	0	0	0	0	0	1	0	1	4,233
40-44	0	0	1	0	0	0	0	0	0	0	1	687
45-49	0	0	0	0	1	0	3	0	1	0	5	5,489
50-54	0	0	0	0	1	1	1	0	3	1	7	4,186
55-59	0	0	0	0	2	1	3	2	29	6	43	8,491
60-64	0	4	15	19	16	34	31	181	169	15	484	8,743
65-69	6	39	94	65	81	113	502	511	94	25	1,530	7,874
70-74	10	85	127	125	155	506	779	124	68	37	2,016	7,384
75-79	23	57	99	118	325	446	102	41	84	29	1,324	6,722
80-84	48	50	118	183	297	69	47	62	69	40	983	6,007
85-89	49	73	144	151	37	23	43	47	68	23	658	5,463
90-94	31	68	64	13	12	13	22	29	28	12	292	5,048
95-99	9	8	2	0	0	3	4	1	4	1	32	5,185
100 & Over	0	0	0	0	1	1	0	0	1	0	3	2,997
<b>Total Count</b>	176	384	664	674	928	1,210	1,537	998	625	192	<b>7,388</b>	
<b>Avg Monthly Benefit</b>	\$ 2,943	\$ 3,861	\$ 4,216	\$ 5,446	\$ 6,699	\$ 7,419	\$ 8,645	\$ 8,852	\$ 7,448	\$ 6,373		<b>\$ 6,993</b>

**Exhibit C-5h Distribution of Retired Members by Age and Retirement Year as of June 30, 2016  
 Safety Plan B**

Age	Retirement Year										Total Count	Average Monthly Benefit
	Pre-1974	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04	2005-09	2010-14	2015-19		
Under 35	0	0	0	0	0	0	4	7	10	16	37	\$ 2,310
35-39	0	0	0	0	0	0	0	2	19	11	32	3,509
40-44	0	0	0	0	0	0	18	32	33	15	98	3,753
45-49	0	0	0	0	7	40	79	64	81	39	310	3,738
50-54	0	0	0	2	51	109	115	95	141	100	613	4,164
55-59	0	0	5	31	82	102	101	116	628	438	1,503	7,320
60-64	0	0	12	32	65	61	79	267	671	110	1,297	7,599
65-69	0	0	7	19	23	25	65	192	113	19	463	6,467
70-74	0	0	4	0	9	16	34	28	14	4	109	4,436
75-79	0	0	0	1	3	3	6	2	2	1	18	3,941
80-84	0	0	0	1	2	1	0	0	1	0	5	2,759
85-89	0	0	1	0	2	0	1	1	1	0	6	968
90-94	0	0	0	0	0	0	0	0	0	0	0	-
95-99	0	0	0	0	0	0	0	0	0	0	0	-
100 & Over	0	0	0	0	0	0	0	0	0	0	0	-
<b>Total Count</b>	0	0	29	86	244	357	502	806	1,714	753	<b>4,491</b>	
<b>Avg Monthly Benefit</b>	\$ -	\$ -	\$ 2,236	\$ 2,419	\$ 3,221	\$ 3,540	\$ 3,911	\$ 5,885	\$ 7,847	\$ 8,268		<b>\$ 6,391</b>



**Exhibit C-5i Distribution of Retired Members and Beneficiaries by Age and Retirement Year as of June 30, 2016  
 Safety Plan C**

Age	Retirement Year										Total Count	Average Monthly Benefit	
	Pre-1974	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04	2005-09	2010-14	2015-19			
Under 35	0	0	0	0	0	0	0	0	0	0	0	0	\$ -
35-39	0	0	0	0	0	0	0	0	0	0	0	0	-
40-44	0	0	0	0	0	0	0	0	0	0	0	0	-
45-49	0	0	0	0	0	0	0	0	0	0	0	0	-
50-54	0	0	0	0	0	0	0	0	0	0	0	0	-
55-59	0	0	0	0	0	0	0	0	0	0	0	0	-
60-64	0	0	0	0	0	0	0	0	0	0	0	0	-
65-69	0	0	0	0	0	0	0	0	0	1	0	1	16,499
70-74	0	0	0	0	0	0	0	0	0	0	0	0	-
75-79	0	0	0	0	0	0	0	0	0	0	0	0	-
80-84	0	0	0	0	0	0	0	0	0	0	0	0	-
85-89	0	0	0	0	0	0	0	0	0	0	0	0	-
90-94	0	0	0	0	0	0	0	0	0	0	0	0	-
95-99	0	0	0	0	0	0	0	0	0	0	0	0	-
100 & Over	0	0	0	0	0	0	0	0	0	0	0	0	-
<b>Total Count</b>	0	0	0	0	0	0	0	0	0	1	0	1	
<b>Avg Monthly Benefit</b>	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 16,499	\$ -		<b>\$ 16,499</b>



## Appendix D Member Contribution Rates



This section illustrates the member normal contribution rates and the normal plus cost-of-living contribution rates by entry age.

Exhibit D-1 Normal Member Contribution Rates

Entry Age	General					Safety		
	Plan A	Plan B	Plan C	Plan D	Plan G	Plan A	Plan B	Plan C
16	2.43%	4.86%	4.12%	4.12%	6.79%	3.63%	7.26%	10.97%
17	2.48%	4.97%	4.21%	4.21%	6.79%	3.63%	7.26%	10.97%
18	2.54%	5.08%	4.31%	4.31%	6.79%	3.63%	7.26%	10.97%
19	2.60%	5.19%	4.41%	4.41%	6.79%	3.70%	7.41%	10.97%
20	2.66%	5.31%	4.51%	4.51%	6.79%	3.78%	7.56%	10.97%
21	2.71%	5.43%	4.61%	4.61%	6.79%	3.86%	7.71%	10.97%
22	2.78%	5.55%	4.71%	4.71%	6.79%	3.94%	7.87%	10.97%
23	2.84%	5.68%	4.82%	4.82%	6.79%	4.02%	8.03%	10.97%
24	2.90%	5.80%	4.93%	4.93%	6.79%	4.10%	8.20%	10.97%
25	2.97%	5.93%	5.04%	5.04%	6.79%	4.18%	8.36%	10.97%
26	3.03%	6.06%	5.15%	5.15%	6.79%	4.27%	8.54%	10.97%
27	3.10%	6.20%	5.27%	5.27%	6.79%	4.36%	8.71%	10.97%
28	3.17%	6.34%	5.38%	5.38%	6.79%	4.45%	8.89%	10.97%
29	3.24%	6.48%	5.51%	5.51%	6.79%	4.54%	9.08%	10.97%
30	3.31%	6.63%	5.63%	5.63%	6.79%	4.63%	9.27%	10.97%
31	3.39%	6.78%	5.75%	5.75%	6.79%	4.73%	9.46%	10.97%
32	3.46%	6.93%	5.88%	5.88%	6.79%	4.83%	9.66%	10.97%
33	3.54%	7.09%	6.01%	6.01%	6.79%	4.94%	9.87%	10.97%
34	3.62%	7.25%	6.15%	6.15%	6.79%	5.04%	10.09%	10.97%
35	3.71%	7.41%	6.29%	6.29%	6.79%	5.15%	10.31%	10.97%
36	3.79%	7.59%	6.43%	6.43%	6.79%	5.27%	10.53%	10.97%
37	3.88%	7.76%	6.57%	6.57%	6.79%	5.37%	10.75%	10.97%
38	3.97%	7.93%	6.72%	6.72%	6.79%	5.48%	10.96%	10.97%
39	4.05%	8.11%	6.88%	6.88%	6.79%	5.59%	11.18%	10.97%
40	4.14%	8.28%	7.04%	7.04%	6.79%	5.69%	11.38%	10.97%
41	4.23%	8.46%	7.20%	7.20%	6.79%	5.79%	11.59%	10.97%
42	4.32%	8.63%	7.36%	7.36%	6.79%	5.89%	11.79%	10.97%
43	4.40%	8.80%	7.53%	7.53%	6.79%	5.99%	11.98%	10.97%
44	4.48%	8.97%	7.69%	7.69%	6.79%	6.08%	12.16%	10.97%
45	4.56%	9.13%	7.86%	7.86%	6.79%	6.15%	12.31%	10.97%
46	4.64%	9.28%	8.03%	8.03%	6.79%	6.21%	12.42%	10.97%
47	4.72%	9.43%	8.19%	8.19%	6.79%	6.21%	12.42%	10.97%
48	4.79%	9.57%	8.35%	8.35%	6.79%	6.21%	12.42%	10.97%
49	4.85%	9.70%	8.51%	8.51%	6.79%	6.21%	12.42%	10.97%
50	4.90%	9.79%	8.66%	8.66%	6.79%	6.21%	12.42%	10.97%
51	4.93%	9.85%	8.81%	8.81%	6.79%	6.21%	12.42%	10.97%
52	4.93%	9.87%	8.95%	8.95%	6.79%	6.21%	12.42%	10.97%
53	4.93%	9.87%	9.08%	9.08%	6.79%	6.21%	12.42%	10.97%
54	4.93%	9.87%	9.20%	9.20%	6.79%	6.21%	12.42%	10.97%
55	4.93%	9.87%	9.29%	9.29%	6.79%	6.21%	12.42%	10.97%
56	4.93%	9.87%	9.35%	9.35%	6.79%	6.21%	12.42%	10.97%
57	4.93%	9.87%	9.36%	9.36%	6.79%	6.21%	12.42%	10.97%
58	4.93%	9.87%	9.36%	9.36%	6.79%	6.21%	12.42%	10.97%
59	4.93%	9.87%	9.36%	9.36%	6.79%	6.21%	12.42%	10.97%
60	4.93%	9.87%	9.36%	9.36%	6.79%	6.21%	12.42%	10.97%

Note: For general members entering after age 60, the rate equals the rate at age 60. Likewise, for safety members entering after age 50, the rate equals the rate at age 50.

Exhibit D-2 Normal Plus Cost-of-Living Member Contribution Rates

Entry Age	General					Safety		
	Plan A	Plan B	Plan C	Plan D	Plan G	Plan A	Plan B	Plan C
16	4.36%	6.02%	5.17%	5.13%	8.31%	6.79%	9.56%	14.00%
17	4.45%	6.16%	5.28%	5.24%	8.31%	6.79%	9.56%	14.00%
18	4.56%	6.30%	5.41%	5.37%	8.31%	6.79%	9.56%	14.00%
19	4.66%	6.43%	5.53%	5.49%	8.31%	6.92%	9.75%	14.00%
20	4.77%	6.58%	5.66%	5.61%	8.31%	7.07%	9.95%	14.00%
21	4.86%	6.73%	5.78%	5.74%	8.31%	7.22%	10.15%	14.00%
22	4.99%	6.88%	5.91%	5.86%	8.31%	7.37%	10.36%	14.00%
23	5.09%	7.04%	6.05%	6.00%	8.31%	7.52%	10.57%	14.00%
24	5.20%	7.19%	6.19%	6.14%	8.31%	7.67%	10.79%	14.00%
25	5.33%	7.35%	6.32%	6.27%	8.31%	7.82%	11.00%	14.00%
26	5.43%	7.51%	6.46%	6.41%	8.31%	7.98%	11.24%	14.00%
27	5.56%	7.69%	6.61%	6.56%	8.31%	8.15%	11.46%	14.00%
28	5.69%	7.86%	6.75%	6.70%	8.31%	8.32%	11.70%	14.00%
29	5.81%	8.03%	6.91%	6.86%	8.31%	8.49%	11.95%	14.00%
30	5.94%	8.22%	7.06%	7.01%	8.31%	8.66%	12.20%	14.00%
31	6.08%	8.41%	7.21%	7.16%	8.31%	8.84%	12.45%	14.00%
32	6.21%	8.59%	7.38%	7.32%	8.31%	9.03%	12.72%	14.00%
33	6.35%	8.79%	7.54%	7.48%	8.31%	9.24%	12.99%	14.00%
34	6.49%	8.99%	7.72%	7.66%	8.31%	9.42%	13.28%	14.00%
35	6.65%	9.19%	7.89%	7.83%	8.31%	9.63%	13.57%	14.00%
36	6.80%	9.41%	8.07%	8.00%	8.31%	9.85%	13.86%	14.00%
37	6.96%	9.62%	8.24%	8.18%	8.31%	10.04%	14.15%	14.00%
38	7.12%	9.83%	8.43%	8.37%	8.31%	10.25%	14.43%	14.00%
39	7.26%	10.05%	8.63%	8.56%	8.31%	10.45%	14.72%	14.00%
40	7.43%	10.26%	8.83%	8.76%	8.31%	10.64%	14.98%	14.00%
41	7.59%	10.49%	9.03%	8.96%	8.31%	10.83%	15.26%	14.00%
42	7.75%	10.70%	9.23%	9.16%	8.31%	11.01%	15.52%	14.00%
43	7.89%	10.91%	9.45%	9.37%	8.31%	11.20%	15.77%	14.00%
44	8.04%	11.12%	9.65%	9.57%	8.31%	11.37%	16.01%	14.00%
45	8.18%	11.32%	9.86%	9.78%	8.31%	11.50%	16.20%	14.00%
46	8.32%	11.50%	10.07%	10.00%	8.31%	11.61%	16.35%	14.00%
47	8.47%	11.69%	10.28%	10.20%	8.31%	11.61%	16.35%	14.00%
48	8.59%	11.86%	10.48%	10.39%	8.31%	11.61%	16.35%	14.00%
49	8.70%	12.03%	10.68%	10.59%	8.31%	11.61%	16.35%	14.00%
50	8.79%	12.14%	10.86%	10.78%	8.31%	11.61%	16.35%	14.00%
51	8.84%	12.21%	11.05%	10.97%	8.31%	11.61%	16.35%	14.00%
52	8.84%	12.24%	11.23%	11.14%	8.31%	11.61%	16.35%	14.00%
53	8.84%	12.24%	11.39%	11.30%	8.31%	11.61%	16.35%	14.00%
54	8.84%	12.24%	11.54%	11.45%	8.31%	11.61%	16.35%	14.00%
55	8.84%	12.24%	11.66%	11.57%	8.31%	11.61%	16.35%	14.00%
56	8.84%	12.24%	11.73%	11.64%	8.31%	11.61%	16.35%	14.00%
57	8.84%	12.24%	11.74%	11.65%	8.31%	11.61%	16.35%	14.00%
58	8.84%	12.24%	11.74%	11.65%	8.31%	11.61%	16.35%	14.00%
59	8.84%	12.24%	11.74%	11.65%	8.31%	11.61%	16.35%	14.00%
60	8.84%	12.24%	11.74%	11.65%	8.31%	11.61%	16.35%	14.00%

Note: For general members entering after age 60, the rate equals the rate at age 60. Likewise, for safety members entering after age 50, the rate equals the rate at age 50.

## Appendix E Historical Information



This section presents historical statistical information on LACERA's membership and the calculated contribution rates.



Exhibit E-1 Active Membership Data

General Members						Safety Members					Total Members				
Valuation Date (June 30)	Number	Annual Salary (in millions)	Average Age	Average Credited Service	Average Monthly Salary	Number	Annual Salary (in millions)	Average Age	Average Credited Service	Average Monthly Salary	Number	Annual Salary (in millions)	Average Age	Average Credited Service	Average Monthly Salary
1998	65,782	\$ 2,837	44.7	12.9	\$ 3,594	10,947	\$ 725	39.9	13.8	\$ 5,519	76,729	\$ 3,562	44.0	13.0	\$ 3,870
1999	68,652	\$ 3,105	44.6	12.7	\$ 3,769	11,024	\$ 753	40.0	13.7	\$ 5,696	79,676	\$ 3,858	43.9	12.8	\$ 4,035
2000	71,940	\$ 3,353	44.4	12.5	\$ 3,884	11,264	\$ 790	39.8	13.8	\$ 5,849	83,204	\$ 4,143	43.8	12.6	\$ 4,150
2001	75,048	\$ 3,608	44.5	12.3	\$ 4,006	12,021	\$ 860	39.6	13.0	\$ 5,967	87,069	\$ 4,468	43.9	12.4	\$ 4,277
2002	77,062	\$ 3,833	44.7	12.3	\$ 4,145	12,190	\$ 894	39.6	13.8	\$ 6,115	89,252	\$ 4,727	44.0	12.5	\$ 4,414
2003	75,995	\$ 3,954	45.2	12.7	\$ 4,336	11,765	\$ 899	40.1	13.7	\$ 6,370	87,760	\$ 4,853	44.5	12.9	\$ 4,609
2004	74,826	\$ 3,967	45.6	13.1	\$ 4,418	11,409	\$ 885	40.6	14.7	\$ 6,467	86,235	\$ 4,852	44.9	13.3	\$ 4,689
2005	75,167	\$ 4,046	45.8	13.2	\$ 4,486	11,217	\$ 905	41.0	14.9	\$ 6,722	86,384	\$ 4,951	45.2	13.4	\$ 4,777
2006	77,167	\$ 4,267	45.7	13.0	\$ 4,608	11,464	\$ 969	41.2	15.0	\$ 7,047	88,631	\$ 5,236	45.1	13.3	\$ 4,924
2007	79,829	\$ 4,673	45.7	12.8	\$ 4,878	12,267	\$ 1,104	40.8	14.4	\$ 7,499	92,096	\$ 5,777	45.1	13.0	\$ 5,227
2008	81,664	\$ 5,017	45.8	12.8	\$ 5,119	12,828	\$ 1,187	40.5	13.7	\$ 7,714	94,492	\$ 6,204	45.1	12.9	\$ 5,471
2009	82,878	\$ 5,348	46.1	13.1	\$ 5,377	12,910	\$ 1,240	40.8	14.0	\$ 8,002	95,788	\$ 6,588	45.4	13.2	\$ 5,731
2010	81,413	\$ 5,318	46.6	13.6	\$ 5,444	12,997	\$ 1,257	41.3	14.5	\$ 8,062	94,410	\$ 6,575	45.9	13.7	\$ 5,804
2011	80,145	\$ 5,295	47.0	14.0	\$ 5,506	12,641	\$ 1,240	41.9	15.1	\$ 8,172	92,786	\$ 6,535	46.3	14.2	\$ 5,869
2012	79,467	\$ 5,272	47.3	14.4	\$ 5,528	12,485	\$ 1,230	42.3	15.5	\$ 8,209	91,952	\$ 6,502	46.7	14.6	\$ 5,892
2013	79,006	\$ 5,253	47.6	14.8	\$ 5,541	12,539	\$ 1,235	42.3	15.7	\$ 8,207	91,545	\$ 6,488	46.9	14.9	\$ 5,906
2014	79,943	\$ 5,488	47.6	14.9	\$ 5,720	12,523	\$ 1,253	42.6	15.8	\$ 8,337	92,466	\$ 6,741	47.0	15.0	\$ 6,075
2015	81,228	\$ 5,706	47.6	14.8	\$ 5,854	12,446	\$ 1,300	42.8	16.0	\$ 8,702	93,674	\$ 7,006	46.9	15.0	\$ 6,233
2016	82,916	\$ 5,950	47.4	14.6	\$ 5,980	12,528	\$ 1,343	42.8	16.0	\$ 8,931	95,444	\$ 7,293	46.8	14.8	\$ 6,367



Exhibit E-2 Retired Membership Data

General Members					Safety Members				Total Members			
Valuation Date (June 30)	Number	Annual Allowance (in millions)	Average Age	Average Monthly Benefit	Number	Annual Allowance (in millions)	Average Age	Average Monthly Benefit	Number	Annual Allowance (in millions)	Average Age	Average Monthly Benefit
1998	35,462	\$ 692	71.1	\$ 1,626	7,425	\$ 267	62.5	\$ 3,001	42,887	\$ 959	69.6	\$ 1,864
1999	35,837	\$ 725	71.4	\$ 1,686	7,674	\$ 291	63.1	\$ 3,166	43,511	\$ 1,016	70.0	\$ 1,947
2000	36,596	\$ 780	71.4	\$ 1,778	8,032	\$ 324	63.1	\$ 3,358	44,628	\$ 1,104	69.9	\$ 2,062
2001	37,077	\$ 890	71.6	\$ 2,001	8,319	\$ 382	63.4	\$ 3,828	45,396	\$ 1,272	70.1	\$ 2,336
2002	37,618	\$ 914	71.8	\$ 2,025	8,624	\$ 403	63.7	\$ 3,892	46,242	\$ 1,317	70.3	\$ 2,374
2003	38,283	\$ 984	71.9	\$ 2,142	8,949	\$ 443	63.9	\$ 4,128	47,232	\$ 1,427	70.4	\$ 2,518
2004	39,097	\$ 1,056	72.0	\$ 2,250	9,235	\$ 478	64.2	\$ 4,318	48,332	\$ 1,534	70.5	\$ 2,645
2005	40,251	\$ 1,138	72.1	\$ 2,355	9,518	\$ 514	64.6	\$ 4,504	49,769	\$ 1,652	70.7	\$ 2,766
2006	41,309	\$ 1,224	72.2	\$ 2,469	9,683	\$ 549	65.0	\$ 4,728	50,992	\$ 1,773	70.8	\$ 2,898
2007	41,584	\$ 1,280	72.2	\$ 2,565	9,808	\$ 578	65.4	\$ 4,914	51,392	\$ 1,858	70.9	\$ 3,013
2008	42,298	\$ 1,356	72.4	\$ 2,671	10,052	\$ 623	65.8	\$ 5,167	52,350	\$ 1,979	71.1	\$ 3,150
2009	42,825	\$ 1,423	72.6	\$ 2,768	10,244	\$ 663	66.3	\$ 5,394	53,069	\$ 2,086	71.4	\$ 3,275
2010	43,752	\$ 1,514	72.7	\$ 2,883	10,444	\$ 706	66.7	\$ 5,638	54,196	\$ 2,220	71.6	\$ 3,414
2011	44,726	\$ 1,597	72.9	\$ 2,976	10,645	\$ 746	67.0	\$ 5,836	55,371	\$ 2,343	71.7	\$ 3,526
2012	45,899	\$ 1,686	73.0	\$ 3,061	10,871	\$ 789	67.3	\$ 6,049	56,770	\$ 2,475	71.9	\$ 3,633
2013	46,939	\$ 1,774	73.2	\$ 3,149	11,147	\$ 837	67.5	\$ 6,261	58,086	\$ 2,611	72.1	\$ 3,746
2014	47,867	\$ 1,836	73.4	\$ 3,196	11,362	\$ 876	67.8	\$ 6,427	59,229	\$ 2,712	72.3	\$ 3,816
2015	48,958	\$ 1,898	73.5	\$ 3,231	11,648	\$ 914	68.0	\$ 6,541	60,606	\$ 2,813	72.5	\$ 3,867
2016	50,034	\$ 1,988	73.6	\$ 3,311	11,880	\$ 965	68.3	\$ 6,766	61,914	\$ 2,952	72.6	\$ 3,974



Exhibit E-3 Contribution Rates

Valuation Date (June 30)	General Plans					Safety Plans					Total All Plans				
	Calculated Normal Cost	Member Contributions	Net Employer Normal Cost	UAAL Rate	Total Employer Contribution	Calculated Normal Cost	Member Contributions	Net Employer Normal Cost	UAAL Rate	Total Employer Contribution	Calculated Normal Cost	Member Contributions	Net Employer Normal Cost	UAAL Rate	Total Employer Contribution
1998	10.27%	3.06%	7.21%	0.00%	7.21%	25.00%	8.70%	16.30%	0.00%	16.30%	13.27%	4.21%	9.06%	0.00%	9.06%
1999	10.98%	3.20%	7.78%	0.00%	7.78%	25.41%	9.12%	16.29%	0.00%	16.29%	13.81%	4.36%	9.45%	0.00%	9.45%
2000	10.91%	3.33%	7.58%	0.00%	7.58%	25.22%	9.44%	15.78%	0.00%	15.78%	13.66%	4.51%	9.15%	0.00%	9.15%
2001	11.27%	3.45%	7.82%	0.00%	7.82%	25.47%	9.27%	16.20%	0.00%	16.20%	14.01%	4.57%	9.44%	0.00%	9.44%
2002	12.04%	3.53%	8.51%	0.21%	8.72%	25.92%	9.37%	16.55%	0.21%	16.76%	14.66%	4.63%	10.03%	0.21%	10.24%
2003	12.25%	3.72%	8.53%	4.66%	13.19%	25.89%	9.55%	16.34%	4.66%	21.00%	14.80%	4.81%	9.99%	4.66%	14.65%
2004	12.20%	3.82%	8.38%	6.41%	14.79%	24.61%	9.61%	15.00%	6.41%	21.41%	14.48%	4.88%	9.60%	6.41%	16.01%
2005	12.22%	3.91%	8.31%	5.33%	13.64%	24.69%	9.68%	15.01%	5.33%	20.34%	14.50%	4.97%	9.53%	5.33%	14.86%
2006	12.22%	4.07%	8.15%	3.49%	11.64%	24.70%	9.70%	15.00%	3.49%	18.49%	14.54%	5.12%	9.42%	3.49%	12.91%
2007	13.15%	4.38%	8.77%	2.24%	11.01%	26.04%	10.18%	15.86%	2.24%	18.10%	15.67%	5.51%	10.16%	2.24%	12.40%
2008	13.18%	4.47%	8.71%	1.99%	10.70%	26.01%	10.22%	15.79%	1.99%	17.78%	15.68%	5.59%	10.09%	1.99%	12.08%
2009	13.29%	4.57%	8.72%	4.12%	12.84%	26.08%	10.21%	15.87%	4.12%	19.99%	15.75%	5.65%	10.10%	4.12%	14.22%
2010	13.32%	4.68%	8.64%	6.47%	15.11%	25.00%	10.19%	14.81%	6.47%	21.28%	15.59%	5.75%	9.84%	6.47%	16.31%
2011	13.36%	4.91%	8.45%	7.89%	16.34%	25.09%	10.50%	14.59%	7.89%	22.48%	15.65%	6.00%	9.65%	7.89%	17.54%
2012	13.50%	5.01%	8.49%	10.09%	18.58%	25.42%	10.52%	14.90%	10.09%	24.99%	15.81%	6.08%	9.73%	10.09%	19.82%
2013	13.25%	5.01%	8.24%	11.90%	20.14%	24.67%	10.26%	14.41%	11.90%	26.31%	15.47%	6.03%	9.44%	11.90%	21.34%
2014	13.14%	5.09%	8.05%	10.04%	18.09%	24.71%	10.23%	14.48%	10.04%	24.52%	15.37%	6.08%	9.29%	10.04%	19.33%
2015	13.28%	5.22%	8.06%	8.49%	16.55%	24.71%	10.26%	14.45%	8.49%	22.94%	15.46%	6.18%	9.28%	8.49%	17.77%
2016	14.51%	5.72%	8.79%	9.73%	18.52%	25.54%	10.57%	14.97%	9.73%	24.70%	16.62%	6.65%	9.97%	9.73%	19.70%



**Exhibit E-4 Funded Status History**

(Dollars in Millions)

Valuation Year	Actuarial Accrued Liability (AAL)	Market Value Basis			Actuarial Value Basis			Covered Payroll	Asset Smoothing Ratio (AVA / MVA)	Asset Volatility Ratio (MVA / Payroll)	Liability Volatility Ratio (AAL / Payroll)
		Market Value of Assets (MVA) <sup>1</sup>	Unfunded AAL (UAAL)/Surplus MVA Basis	Funded Ratio MVA Basis	Actuarial Value of Assets (AVA) <sup>1</sup>	Unfunded AAL (UAAL)/Surplus AVA Basis	Funded Ratio AVA Basis				
1996 <sup>2</sup>	17,300	18,600	1,300	107.5%	17,700	400	102.3%	3,356	95.2%	5.5	5.2
1997 <sup>2</sup>	19,300	21,100	1,800	109.3%	19,600	300	101.6%	3,373	92.9%	6.3	5.7
1998	20,960	22,332	1,372	106.5%	20,851	(109)	99.5%	3,562	93.4%	6.3	5.9
1999	22,785	24,382	1,597	107.0%	23,536	751	103.3%	3,858	96.5%	6.3	5.9
2000	24,721	27,257	2,536	110.3%	25,427	706	102.9%	4,143	93.3%	6.6	6.0
2001	26,490	23,916	(2,574)	90.3%	26,490	-	100.0%	4,469	110.8%	5.4	5.9
2002	28,437	24,085	(4,352)	84.7%	28,262	(175)	99.4%	4,730	117.3%	5.1	6.0
2003	30,474	24,616	(5,858)	80.8%	26,564	(3,910)	87.2%	4,934	107.9%	5.0	6.2
2004	32,700	28,094	(4,606)	85.9%	27,089	(5,611)	82.8%	4,942	96.4%	5.7	6.6
2005	34,375	30,904	(3,471)	89.9%	29,497	(4,878)	85.8%	5,051	95.4%	6.1	6.8
2006	36,259	34,256	(2,003)	94.5%	32,820	(3,439)	90.5%	5,333	95.8%	6.4	6.8
2007	39,503	40,073	570	101.4%	37,042	(2,461)	93.8%	5,886	92.4%	6.8	6.7
2008	41,975	37,834	(4,141)	90.1%	39,662	(2,313)	94.5%	6,257	104.8%	6.0	6.7
2009	44,469	29,723	(14,746)	66.8%	39,542	(4,927)	88.9%	6,673	133.0%	4.5	6.7
2010	46,646	32,629	(14,017)	69.9%	38,839	(7,807)	83.3%	6,739	119.0%	4.8	6.9
2011	48,599	38,587	(10,012)	79.4%	39,194	(9,405)	80.6%	6,705	101.6%	5.8	7.2
2012	50,809	37,453	(13,356)	73.7%	39,039	(11,770)	76.8%	6,675	104.2%	5.6	7.6
2013	53,247	41,334	(11,913)	77.6%	39,932	(13,315)	75.0%	6,656	96.6%	6.2	8.0
2014	54,942	47,223	(7,719)	86.0%	43,654	(11,288)	79.5%	6,815	92.4%	6.9	8.1
2015	56,819	48,308	(8,511)	85.0%	47,328	(9,491)	83.3%	7,078	98.0%	6.8	8.0
2016	62,199	47,347	(14,852)	76.1%	49,358	(12,841)	79.4%	7,390	104.2%	6.4	8.4

1. Asset values exclude non-valuation reserves

2. Only rounded values are available.

**Exhibit E-5 Reconciliation of Changes in Unfunded Actuarial Accrued Liability or Surplus**

*(Dollars in Millions)*

Valuation Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Prior Year UAAL	5,611	4,878	3,439	2,461	2,313	4,927	7,807	9,405	11,770	13,315	11,288	9,491
Normal Cost	769	787	882	990	1,053	1,219	1,200	1,237	1,430	1,163	1,068	1,118
Contributions	(1,076)	(1,196)	(1,258)	(1,249)	(1,310)	(1,322)	(1,461)	(1,646)	(1,455)	(1,824)	(1,936)	(1,902)
Interest	435	378	267	191	179	382	605	724	895	999	814	682
Changes in Assumptions/Methodology	-	-	515	-	-	54	221	457	511	-	-	2,922
Changes in Benefit Provisions	-	-	-	-	-	-	-	-	-	-	-	-
Expected Current Year UAAL	5,739	4,847	3,845	2,393	2,235	5,260	8,372	10,177	13,151	13,653	11,234	12,311
Actual Current Year UAAL	4,878	3,439	2,461	2,313	4,927	7,807	9,405	11,770	13,315	11,288	9,491	12,841
Total (Gain)/Loss on UAAL	(861)	(1,408)	(1,384)	(80)	2,692	2,547	1,033	1,593	164	(2,365)	(1,743)	530
Asset (Gains)/Losses	(790)	(1,642)	(2,187)	(429)	2,465	2,879	1,761	2,337	893	(1,664)	(1,263)	496
Ventura Settlement/Court Cases	-	50	-	15	-	-	-	-	-	-	-	-
Salary Increases	(115)	156	673	298	380	(353)	(579)	(629)	(563)	(291)	79	162
All Other Actuarial (Gains)/Losses	44	28	130	36	(153)	21	(149)	(115)	(166)	(410)	(559)	(128)

**Exhibit E-6 Reconciliation of Changes in Calculated Employer Contribution Rate**

Valuation Year	Prior Year Contribution Rate	Changes in Existing Amortization Bases	Assumption/ Method Changes	Salary/Payroll Variations	Plan Amendments	Asset (Gains)/Losses	Demographic/Other (Gains)/Losses	Current Year Contribution Rate
2004	14.65%	N/A <sup>1</sup>	N/A <sup>1</sup>	N/A <sup>1</sup>	N/A <sup>1</sup>	N/A <sup>1</sup>	N/A <sup>1</sup>	16.01%
2005	16.01%	N/A <sup>1</sup>	N/A <sup>1</sup>	N/A <sup>1</sup>	N/A <sup>1</sup>	N/A <sup>1</sup>	N/A <sup>1</sup>	14.86%
2006	14.86%	-0.29%	0.00%	0.02%	0.00%	-1.82%	0.14%	12.91%
2007	12.91%	-0.28%	1.34%	0.61%	0.00%	-2.14%	-0.04%	12.40%
2008	12.40%	-0.17%	0.00%	0.21%	0.00%	-0.24%	-0.12%	12.08%
2009	12.08%	-0.04%	-1.76%	0.21%	0.00%	3.91%	-0.18%	14.22%
2010	14.22%	0.00%	-0.27%	-0.10%	0.00%	2.29%	0.17%	16.31%
2011	16.31%	0.00%	0.25%	-0.14%	0.00%	1.39%	-0.27%	17.54%
2012	17.54%	0.00%	0.54%	-0.11%	0.00%	1.92%	-0.07%	19.82%
2013	19.82%	0.00%	0.82%	-0.01%	0.00%	0.74%	-0.03%	21.34%
2014	21.34%	0.00%	0.00%	-0.15%	0.00%	-1.43%	-0.43%	19.33%
2015	19.33%	0.00%	0.00%	0.04%	0.00%	-1.04%	-0.56%	17.77%
2016	17.77%	0.00%	2.87%	0.20%	0.00%	0.39%	-0.02%	21.21%

1. Data not available.

Note: 2016 changes are based on the calculated employer contribution rate prior to the phase-in.

**Exhibit E-7 Funding Policy History**

	Description of changes, if any	Effective Date	Impact on Contribution Rate	Impact on Funding Ratio	Rationale
2009	smoothing. Included STAR reserve as a valuation asset. Adopted 30-year layered amortization period.	June 30, 2009	-1.68% <sup>1</sup>	4.40%	See June 30, 2009 valuation report.
2010	Included STAR reserve as a valuation asset.	June 30, 2010	-0.52% <sup>1</sup>	1.40%	See June 30, 2010 valuation report.
2011	Included STAR reserve as a valuation asset.	June 30, 2011	-0.52% <sup>1</sup>	1.20%	See June 30, 2011 valuation report.
2012	Included STAR reserve as a valuation asset for 2012 and future valuations (adopted February 2013).	June 30, 2012	-0.53% <sup>1</sup>	1.20%	See June 30, 2012 valuation report.

1. Note that savings due to inclusion of STAR reserve as valuation asset are not cumulative from year to year.

**Exhibit E-8 History of Changes in Economic Assumptions**

*(Years with no changes excluded)*

	Price Inflation	Wage Inflation	Real Wage Inflation <sup>1</sup>	Investment Return Assumption	Real Investment Return <sup>2</sup>	Effective Date	Change in Contribution Rate	Change in Funding Ratio	Rationale
2004	3.50%	3.75%	0.25%	7.75%	4.25%	July 1, 2004	1.65%	N/A <sup>3</sup>	See 2004 Investigation of Experience Report.
2007	3.50%	4.00%	0.50%	7.75%	4.25%	July 1, 2007	0.66%	-1.3%	See 2007 Investigation of Experience Report.
2011	3.45%	3.95%	0.50%	7.70%	4.25%	July 1, 2011	0.25%	-0.3%	See 2010 Investigation of Experience Report.
2012	3.35%	3.85%	0.50%	7.60%	4.25%	July 1, 2012	0.54%	-0.7%	See 2010 Investigation of Experience Report.
2013	3.00%	3.50%	0.50%	7.50%	4.50%	July 1, 2013	0.37%	-0.1%	See 2013 Investigation of Experience Report.
2016	2.75%	3.25%	0.50%	7.25%	4.50%	July 1, 2016	1.14%	-1.4%	See 2016 Investigation of Experience Report.

1. Excess of assumed wage inflation over price inflation.
2. Excess of assumed investment return over price inflation.
3. Information not available.

*Note: 2016 changes are based on the calculated employer contribution rate prior to the phase-in.*



**Exhibit E-9 History of Changes in Demographic and Other Non-Economic Assumptions**

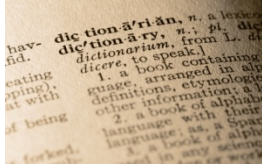
*(Years with no changes excluded)*

	Demographic Assumption Revisions	Effective Date	Change in Contribution Rate	Change in Funding Ratio	Rationale
2004	Mortality, merit salary scale, retirement, termination, probability of refund, probability of eligible survivor revised.	July 1, 2004	-0.63%	N/A <sup>1</sup>	Refer to the 2004 Investigation of Experience Report.
2007	Mortality, retirement, termination, probability of refund, merit salary scale for Safety members	July 1, 2007	0.68%	N/A <sup>1</sup>	Refer to the 2007 Investigation of Experience Report.
2010	Mortality, retirement, termination, probability of refund, assumed benefit commencement age	July 1, 2010	-0.27%	-0.1%	Refer to the 2010 Investigation of Experience Report.
2013	Mortality, retirement, termination, probability of refund, merit salary scale for Safety members, probability of eligible survivor, assumption for beneficiary age, reciprocity assumption revised.	July 1, 2013	0.45%	-0.6%	Refer to the 2013 Investigation of Experience Report.
2016	Mortality, retirement, termination, probability of eligible survivor, assumed benefit commencement age, reciprocity assumption revised.	July 1, 2016	1.73%	-2.5%	Refer to the 2016 Investigation of Experience Report.

1. Information not available.

*Note: 2016 changes are based on the calculated employer contribution rate prior to the phase-in.*

## Appendix F Glossary



The following definitions include excerpts from a list adopted by the major actuarial organizations in the United States. In some cases, the definitions have been modified for specific applicability to LACERA and include terms used exclusively by LACERA. Defined terms are capitalized throughout this Appendix.

<b>Accrued Benefit</b>	The amount of an individual's benefit (whether or not vested) as of a specific date, determined in accordance with the terms of a pension plan and based on compensation and service to that date.
<b>Actuarial Accrued Liability</b>	That portion, as determined by a particular Actuarial Cost Method, of the Actuarial Present Value of pension plan benefits and expenses which is not provided for by future Normal Costs.
<b>Actuarial Assumptions</b>	Assumptions as to the occurrence of future events affecting pension costs, such as: mortality, withdrawal, disability, and retirement; changes in compensation; rates of investment earnings and asset appreciation or depreciation; procedures used to determine the Actuarial Value of Assets; and other relevant items.
<b>Actuarial Gain (Loss)</b>	A measure of the difference between actual experience and that expected based on a set of Actuarial Assumptions during the period between two Actuarial Valuation dates, as determined in accordance with a particular Actuarial Cost Method.
<b>Actuarial Present Value</b>	The value of an amount or series of amounts payable or receivable at various times, determined as of a given date by the application of a particular set of Actuarial Assumptions.
<b>Actuarial Valuation</b>	The determination, as of a valuation date, of the Normal Cost, Actuarial Accrued Liability, Actuarial Value of Assets, and related Actuarial Present Values for a pension plan.
<b>Actuarial Value of Assets</b>	The value of cash, investments and other property belonging to a pension plan, as used by the actuary for the purpose of an Actuarial Valuation.
<b>Actuarially Equivalent</b>	Of equal Actuarial Present Value, determined as of a given date with each value based on the same set of Actuarial Assumptions.
<b>Amortization Payment</b>	That portion of the pension plan contribution which is designed to pay interest on and to amortize the Unfunded Actuarial Accrued Liability.
<b>Contingency Reserve</b>	Reserves accumulated for future earning deficiencies, investment losses, and other contingencies. Additions include investment income and other revenues; deductions include investment expense, administrative expense, interest allocated to other reserves, funding the STAR Reserve, and distributions to the Contribution Credit Reserve. The Contingency Reserve is used to satisfy the California Government Code requirement for (31592 and 31592.2) LACERA to reserve 1% of the assets against earning deficiencies, investment losses, and other contingencies.

<b>County Contribution Credit Reserve</b>	The accumulated balance of the County's proportionate share of excess earnings as stipulated in the Retirement System Funding Agreement between LACERA and the County. Additions include distributions from excess earning during the fiscal years ending 1994 through 1998 and related earnings. Deductions include payments, as the County authorizes, for future employer contributions due LACERA and for funding a portion of the Retiree Healthcare Program under the provisions of Internal Revenue Code 401(h).
<b>Employer Reserve</b>	The accumulation of employer contributions for future retirement benefit payments. Additions include contributions from employers and related earnings. Deductions include annuity payments to retired members and survivors, lump sum death benefit payments to member survivors, and supplemental disability payments.
<b>Entry Age Actuarial Cost Method</b>	A method under which the Actuarial Present Value of the Projected Benefits of each individual included in an Actuarial Valuation is allocated on a level basis over the earnings or service of the individual between entry age and assumed exit ages. The portion of this Actuarial Present Value allocated to a valuation year is called the Normal Cost. The portion of this Actuarial Present Value not provided for at a valuation date by the Actuarial Present Value of future Normal Costs is called the Actuarial Accrued Liability.
<b>Funded Ratio</b>	A measurement of the funded status of the system. The Funded Ratio is calculated by dividing the Valuation Assets by the Actuarial Accrued Liability. For example, a Funded Ratio of 90% indicates assets are 10% less than liabilities.
<b>Funding Goal</b>	The Funding Goal is the funded status the Board of Investments would like LACERA to achieve. The main goal is to provide benefit security for its members as well as to achieve and maintain stable employer contributions that are as low as possible. A Funded Ratio equal to 100% is the Funding Goal.
<b>Layered Amortization Period</b>	Payment of each year's change in the Unfunded Actuarial Accrued Liability (UAAL) is amortized over separate closed periods. For LACERA, the original UAAL as of June 30, 2009 is being amortized over a closed 30-year period, while each year's subsequent gain or loss on the UAAL is amortized over a new closed 30-year period starting with that date. The amortization payments are based on a level percent of pay.
<b>Member Reserve</b>	The accumulation of member contributions. Additions include member contributions and related earnings. Deductions include annuity payments to retirees and refunds to members.
<b>Non-Valuation Reserves</b>	Reserves excluded from the calculation of contribution rates, including the Contingency Reserve, the STAR Reserve, the County Contribution Credit Reserve, and any other reserves specifically excluded by the Board of Investments.
<b>Normal Cost</b>	That portion of the Actuarial Present Value of pension plan benefits and expenses which is allocated to a valuation year by the Actuarial Cost Method.
<b>Plan Year</b>	A 12-month period beginning July 1 and ending June 30.

---

<b>Projected Benefits</b>	Those pension plan benefit amounts which are expected to be paid at various future times under a particular set of Actuarial Assumptions, taking into account such items as the effect of advancement in age and past and anticipated future compensation and service credits.
<b>STAR Reserve</b>	Reserves accumulated for the payment of cost-of-living benefits as defined in California Government Code Section 31874.3.
<b>Supplemental Targeted Adjustment for Retirees (STAR) Benefits</b>	Supplemental cost-of-living payments to retired members to restore purchasing power at a specified percentage level, as described in California Government Code Section 31874.3.
<b>Surplus Funding</b>	The excess, if any, of the Actuarial Value of Assets over the Actuarial Accrued Liability. Standard actuarial terminology defines this as the "Funding Excess." LACERA uses the term "Surplus Funding."
<b>Unfunded Actuarial Accrued Liability</b>	The excess, if any, of the Actuarial Accrued Liability over the Actuarial Value of Assets.
<b>Valuation Date</b>	The date upon which the Normal Cost, Actuarial Accrued Liability, and Actuarial Value of Assets are determined. Generally, the Valuation Date will coincide with the ending of a Plan Year.
<b>Valuation Reserves</b>	All reserves excluding the Non-Valuation Reserves.