



Los Angeles County Employees Retirement Association

Actuarial Valuation of Retirement Benefits

June 30, 2020

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November 25, 2020

Board of Investments
Los Angeles County Employees Retirement Association
300 North Lake Avenue, Suite 820
Pasadena, CA 91101-4199

Re: Los Angeles County Employees Retirement Association

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, 2020 to be used in determining the contribution rates effective July 1, 2021. 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, 2020, and LACERA's Funding Policy that was adopted in December of 2009 and amended as of February 2013. 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. The valuation results were developed using models intended for valuations that use standard actuarial techniques.

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 is outside the scope of our engagement, although for informational purposes we have shown valuation results at +/- 0.5% on the investment return assumption at the end of the Executive Summary.

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 will provide LACERA financial reporting results relevant to GASB Statements No. 67 and 68 in separate reports.

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 retirement 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.

We would like to express our appreciation to members of LACERA 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.

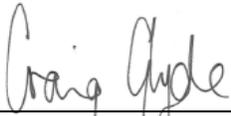
Sincerely,



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Consulting Actuary



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1. Summary of Findings

2020 Valuation Results

	Fiscal Year Beginning	
	July 1, 2021	July 1, 2020
Employer Contribution Rate with phase-in	24.64% ⁽¹⁾	22.59% ⁽²⁾
Funded Ratio	76.3%	77.2%

1. The FYB 2021 employer contribution rate was calculated in the June 30, 2020 valuation. The FYB 2021 employer contribution rate without phase-in is 25.74%.
2. The FYB 2020 employer contribution rate was calculated in the June 30, 2019 valuation.

This report presents the results of the June 30, 2020 actuarial valuation. This valuation determines the member and employer contribution rates payable starting July 1, 2021. Several key points are summarized below:

Funding: The Funded Ratio decreased from 77.2% to 76.3% primarily due to the recognition of current and prior year asset losses which caused a 0.9% decrease, and salary increases greater than assumed which caused a 0.4% decrease. Contributions to amortize the Unfunded Actuarial Accrued Liability (UAAL) partially offset these decreases and caused the Funded Ratio to decrease by 0.5% less than it otherwise would have. On a market-value basis, the Funded Ratio decreased from 77.3% to 74.0%.

The “Analysis of Change” section that follows later in Section 1 provides an analysis of the sources of change in the Funded Ratio since last year.

Investment Returns: For the fiscal year ending in 2020, the fund returned 1.8% on a market-value basis (net of investment expenses). In total, there was an \$2.7 billion loss on market assets relative to the assumed rate of return of 7.00%. Under the actuarial asset method, which recognizes investment gains and losses over a five-year period, the return on actuarial assets was 5.8%, equivalent to a loss of \$701 million relative to the assumed return of 7.00%.

COVID-19 Impact: The ongoing pandemic had a negative impact on investment markets in the first half of 2020. The below-assumption return for the fiscal year is reflected in the valuation results, as discussed in this report. We did not observe any other material impact on the valuation results related to COVID-19, although it is possible this may appear in future valuations. In particular, we did not see any significant deviation from the assumptions in the other areas that we believe are most likely to be affected by the pandemic: mortality rates, salary increases, and payroll increases.

Employer Contribution Rates: The total calculated employer contribution rate increased from the prior valuation by 2.05% (from 22.59% to 24.64%) of payroll. The increase in the employer contribution rate is primarily due to the phase-in recognition of assumption and amortization method changes effective June 30, 2019 and the recognition of current and prior year investment losses.

At the January 2020 Board of Investments (BOI) meeting, the BOI adopted a three-year phase-in of the increase in the employer contribution rate due to the new assumptions and amortization method. Without the phase-in of the increase, the total employer contribution rate would be 25.74% effective July 1, 2021. The remaining 1.10% increase due to the new assumptions and amortization method change (25.74% minus 24.64%) will be phased-in with the employer contributions effective July 1, 2022.

The “Analysis of Change” section provides an analysis of the sources of change in employer contribution rates since last year. In addition, the section “Projected Future Employer Contribution Rates” below shows a 10-year projection of employer contribution rates.

Member Contribution Rates: New member contribution rates are recommended for General Plan G and Safety Plan C effective July 1, 2021. General Plan G and Safety Plan C member rates are required to be equal to 50% of the Gross Normal Cost of the respective plan. The recommended member contribution rates are slightly lower for General Plan G and Safety Plan C. Member contribution rates are discussed in detail in Section 5 of this report.

Member contribution rates for all plans, except General Plans E and G and Safety Plan C, vary based on a member’s entry age to LACERA and the underlying actuarial assumptions. Since no new assumptions were adopted effective with this valuation, there are no recommended changes to member contribution rates for those plans.

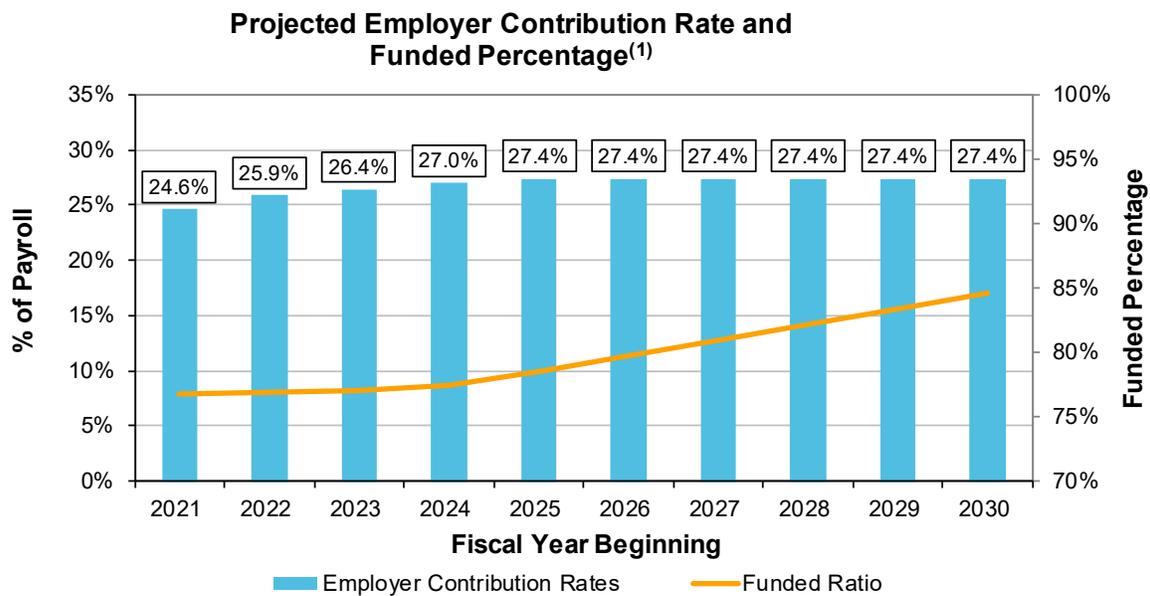
Amortization of the UAAL

LACERA employs a “layered” amortization method to pay off the UAAL. Under this method, the UAAL amount as June 30, 2009 was amortized over a closed 30-year period. Subsequent changes in the UAAL were amortized over new closed 30-year periods. Effective with the June 30, 2019 valuation, all existing layers with more than 22 years remaining were re-amortized over closed 22-year periods. All new UAAL layers are amortized over a 20-year period, beginning with the date the contribution is first expected to be made. Exhibit 12 of this report illustrates in detail the calculation of the total UAAL rate for the fiscal year beginning in 2021.

Projected Future Employer Contribution Rates

The employer contribution rate beginning July 1, 2021 is 24.64% of payroll, which 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 11.

The new calculated employer contribution rate is effective for the fiscal year beginning July 1, 2021. Additional increases are projected in the fiscal year beginning July 1, 2022 as the increase due to assumption and method changes is phased in. Even if all actuarial assumptions are met over the next few years, we project additional changes in the employer contribution rate as deferred asset gains and losses are recognized. To illustrate these impacts, we have performed a 10-year projection of the employer contribution rate and funded ratio that assumes all actuarial assumptions are met, and reflects the phase-in and the projected recognition of the remaining deferred asset gains and losses as of June 30, 2020. This projection is shown in the graph below.



1. Projections assume that all actuarial assumptions are met after June 30, 2020, and reflect the scheduled recognition of asset gains and losses currently being deferred. Actual results will vary.

Analysis of Change

The following table shows an analysis of the primary causes of the change in the employer contribution rate and the Funded Ratio over the last year. The recognition of the 2019 assumption changes was the most significant factor affecting the employer contribution rate, although this was somewhat mitigated by the three-year phase-in of this increase.

Sources of Change	Employer Contribution Rate	Funded Ratio
June 30, 2019 Actuarial Valuation	22.59%	77.2%
Expected Year-to-Year Change ⁽¹⁾	0.16%	0.5%
Assumption and Method Changes	0.00%	0.0%
<u>Recognized Asset Gain/Loss</u>		
From Current Year	0.44%	-0.7%
From Prior Years	0.14%	-0.2%
Combined Asset Gain/Loss	<u>0.58%</u>	<u>-0.9%</u>
Contributions > Assumed	-0.07%	0.1%
Payroll Increase > Assumed	-0.21%	0.0%
<u>Liability Gain / Loss</u>		
Salary Increase > Assumed	0.32%	-0.4%
Retiree COLAs > Assumed	0.04%	0.0%
Other	0.14%	-0.2%
Combined Liability Gain/Loss	<u>0.50%</u>	<u>-0.6%</u>
Recognition of 2019 Assumption Changes	1.09%	0.0%
Total Change	<u>2.05%</u>	<u>-0.9%</u>
June 30, 2020 Actuarial Valuation	24.64%	76.3%

1. Expected increase in employer contribution rate reflects the impact of the phase-in of 2019 assumption changes.

Based on the 2019 valuation, the expected UAAL as of June 30, 2020 was \$17.3 billion. The actual UAAL as of June 30, 2020 is \$18.5 billion. The additional UAAL is primarily due to the recognition of actuarial asset losses from the current and prior years, and salary increases greater than assumed in the prior fiscal year. An analysis of the difference between expected and actual UAAL is shown in Exhibit 8a.

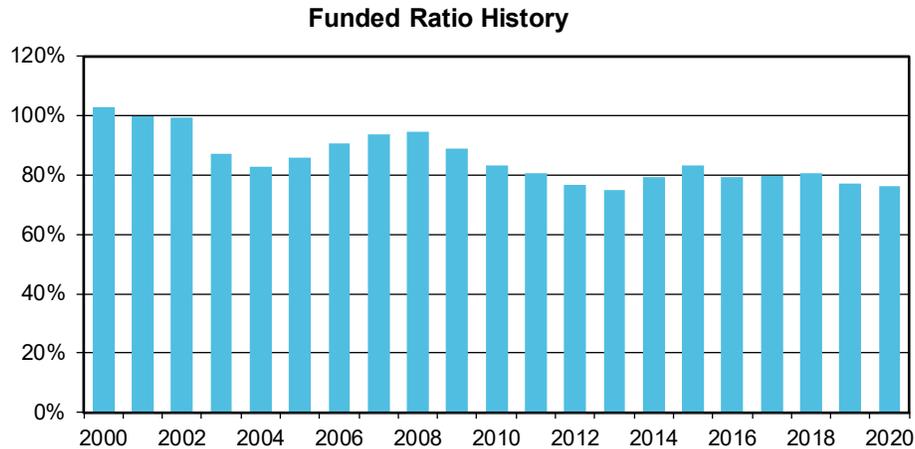
Funding Progress

One measure of the funding adequacy of the system is the Funded Ratio, which compares the Valuation Assets (the actuarial value of assets net of certain non-valuation reserves) to the Actuarial Accrued Liability (AAL). The Funded Ratio shown in this valuation is appropriate for assessing the future contributions needed. However, it is not appropriate for assessing the sufficiency of current system assets to cover the estimated cost of settling the system’s accrued benefit obligations. As shown in Exhibit 1, the Funded Ratio is different depending on whether the Market Assets or Valuation Assets is used.

As shown in the graph that follows, the Funded Ratio was 94.5% as of June 30, 2008, but decreased steadily over the five-year period following the economic downturn to a low of 75.0% as of June 30, 2013 as asset losses were gradually recognized. The Funded Ratio has increased slightly since that time, although this increase has

been slow as the Board has strengthened the actuarial assumptions over the period, thereby increasing the AAL and offsetting some of the increase in the Funded Ratio from other sources.

A historical perspective of the Funded Ratio is shown in the following chart.



Assets

On June 30, 2020, the market value of the fund (including non-valuation reserves) was \$58.5 billion. The actuarial value of assets was \$60.3 billion, split between \$0.6 billion of Non-Valuation Assets and \$59.8 billion of Valuation Assets (values do not sum due to rounding). The actuarial value of assets is approximately 103% of the market value of assets.

On a market-value basis, for the fiscal year ended June 30, 2020, LACERA earned 1.8% net of investment expenses, as reported by LACERA in the June 30, 2020 CAFR. The market value of assets is used in calculating the actuarial value of assets. Under the actuarial asset method, investment gains and losses are recognized (or smoothed in) over a five-year period. Due to the recognition of current and deferred net asset losses, the return on the actuarial valuation of assets is 5.8% net of investment and administrative expenses, and is less than the assumed return for the prior year of 7.00%.

Valuation Assets are used in the calculation of the UAAL contribution rate and Funded Ratio. Valuation Assets are equal to the actuarial value of assets less certain non-valuation reserves. The Valuation Assets of \$59.8 billion are equal to 76.3% of the \$78.3 billion AAL.

The non-valuation reserves are set aside for obligations or contingencies. They are not used to fund the retirement benefits unless explicitly stated. As of June 30, 2020, the non-valuation reserves include only the Contingency Reserve, which is equal to 1% of the market value of assets, or \$585 million. Note that the Contingency Reserve affects the assets used in the actuarial valuation and is not part of the accounting process used in creating the financial statements.

Under LACERA’s Funding 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. 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 employer contribution rate for the fiscal year beginning July 1, 2021 would increase by 0.51% of payroll, and the Funded Ratio would decrease by 0.7% to 75.6%.

Future Impact of Recognition of Deferred Gains/Losses

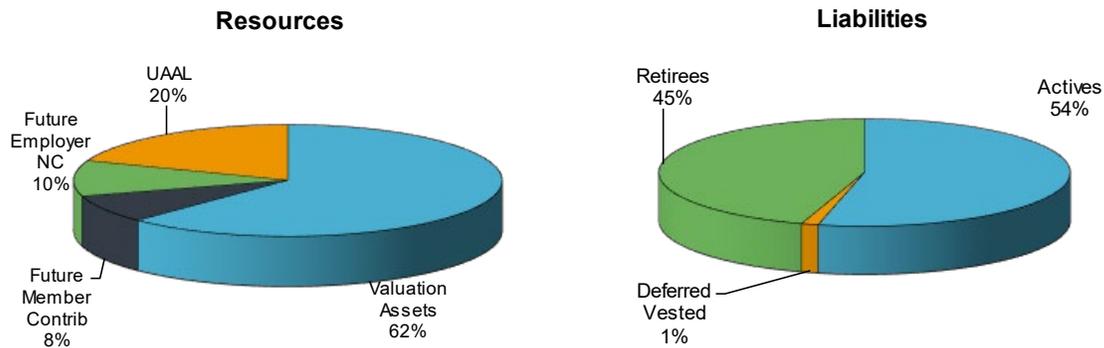
The smoothing method is currently deferring \$1.8 billion in net asset losses. As the currently deferred gains and losses are recognized over upcoming valuations, it is projected there will be fluctuations in the calculated employer contribution rate.

The potential future impact of the recognition of these deferred gains and losses on the projected employer contribution rate is included in the graph on page 3.

Actuarial Balance Sheet

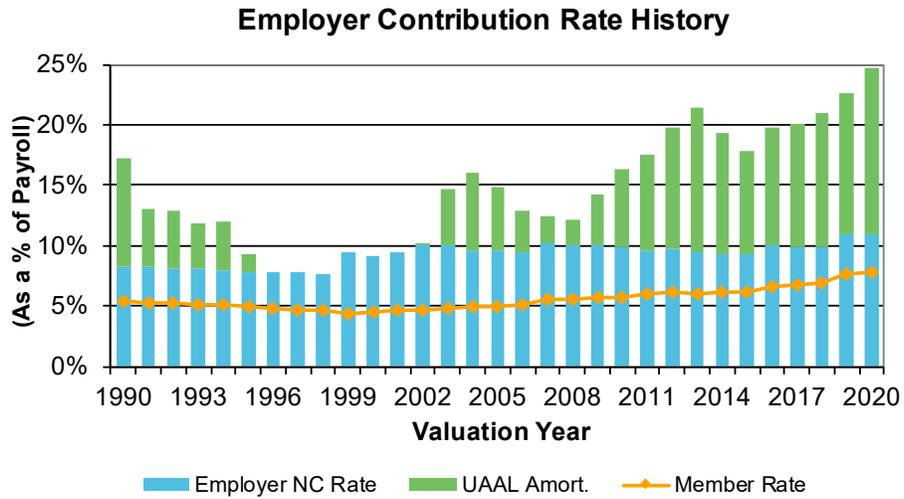
The first step in the valuation process is to compare the total actuarial assets of LACERA with its total liabilities for all plans. In this analysis, assets are those currently on hand at the actuarial value and also include expected future contributions by both the employers and members. Liabilities 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 pie charts below. The AAL is the total of these liabilities less expected future Normal Cost contributions.

The 2020 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.



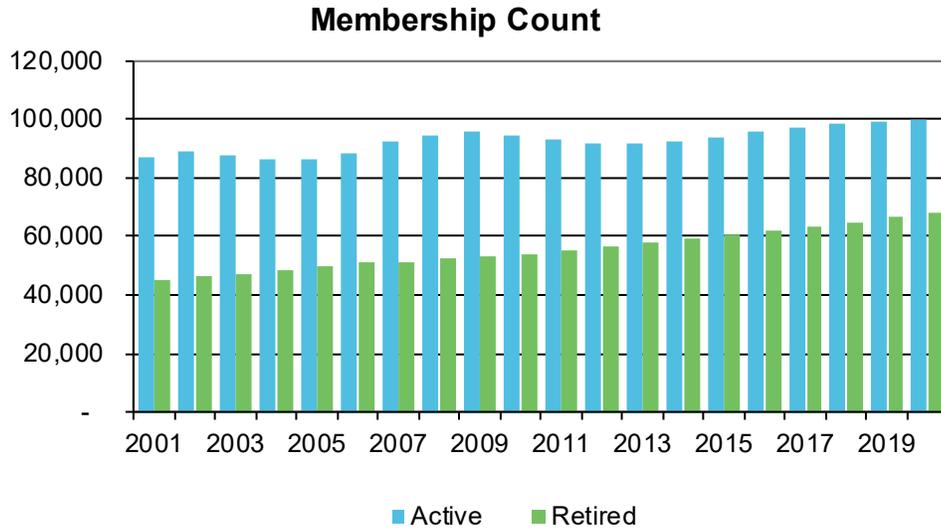
Employer Contribution Rate History

Based on the results of the valuation, the calculated employer contribution rate should increase for the fiscal year beginning in 2021 to a rate of 24.64% of pay. A historical perspective of the employer contribution rates is shown in the following graph.

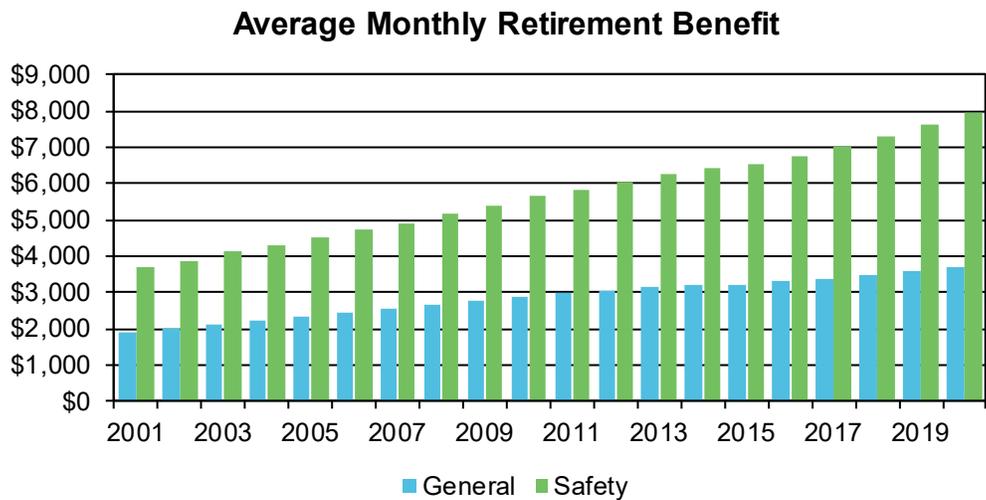


Member Information

Active membership and payroll have each increased since 2019. As of June 30, 2020, the annualized payroll is \$8.8 billion for 100,108 active members. This reflects a 3.7% increase in average member pay and a 0.9% increase in the number of active members.



Retired member counts and average retirement benefit amounts continue to increase steadily. For 2020, there were 68,012 retired members and beneficiaries with an average benefit of \$4,541 per month. This represents a 2.3% increase in count and a 3.6% increase in the average monthly benefit.



Analysis of Change in Member Population

The following table summarizes the year-to-year change in member population.

	Active Members	Inactive Members	Service Retired Members	Disabled Retired Members	Beneficiaries in Pay	Total
As of June 30, 2019	99,186	15,567	47,517	9,891	9,099	181,260
New Members	5,450	128	18		752	6,348
Status Change:						
to Active	136	(136)				-
to Inactive	(1,392)	1,392				-
to Service Retirement	(2,518)	(405)	2,923			-
to Disabled Retirement	(228)	(9)	(244)	481		-
Refunds	(283)	(367)				(650)
Terminated non-vested	(33)					(33)
Benefits Expired			(11)		(17)	(28)
Deaths	(210)	(2)	(1,575)	(267)	(555)	(2,609)
As of June 30, 2020	100,108	16,168	48,628	10,105	9,279	184,288

Note: Inactive Members include 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 Plan will be largely driven by actual investment returns and other experience; the assumptions used in the valuation impact the timing of the contributions over the long term.

	Investment Return Assumption		
	Current 7.00%	+0.5% 7.50%	-0.5% 6.50%
Employer Contribution Rate	24.64%	20.00%	29.53%
Change		-4.64%	4.89%
Funded Ratio	76.3%	81.2%	71.7%
Change		4.9%	-4.6%

Summary Valuation Results

Exhibit 1 on the following page presents a summary of key valuation elements as of June 30, 2020 and June 30, 2019, and shows the relative change 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, 2020	June 30, 2019	Percentage Change
Total Membership			
A. Active Members	100,108	99,186	0.9%
B. Retired Members & Beneficiaries	68,012	66,507	2.3%
C. Vested Former Members ⁽¹⁾	16,168	15,567	3.9%
D. Total	<u>184,288</u>	<u>181,260</u>	1.7%
Pay Rate as of valuation date			
A. Annual Total (\$millions)	\$ 8,819	\$ 8,423	4.7%
B. Monthly Average per Active Member	7,341	7,076	3.7%
Average Monthly Benefit Paid to Current Retirees and Beneficiaries			
A. Service Retirement	4,469	4,334	3.1%
B. Disability Retirement	6,141	5,856	4.9%
C. Surviving Spouse and Dependents	3,176	3,052	4.1%
D. Total	<u>4,541</u>	<u>4,385</u>	3.6%
Actuarial Accrued Liability (\$millions)			
A. Active Members	33,775	32,400	4.2%
B. Retired Members	43,239	41,021	5.4%
C. Vested Former Members	1,261	1,214	3.9%
D. Total	<u>78,275</u>	<u>74,635</u>	4.9%
Assets			
A. Market Value of Fund (\$millions)	58,510	58,295	0.4%
B. Actuarial Value (\$millions)			
1. Valuation Reserves	59,763	57,617	3.7%
2. Non-valuation Reserves	585	583	0.4%
C. Annual Investment Return			
1. Market Basis (Net Return)	1.8%	6.4%	n/a
2. Valuation (Actuarial) Basis	5.8%	6.5%	n/a
Unfunded Actuarial Accrued Liability (\$ millions)	\$ 18,512	\$ 17,018	8.8%
Employer contribution rate for all plans combined as a percent of total payroll			
A. Gross Normal Cost	18.69%	18.54%	0.8%
B. Member Contributions ⁽²⁾	<u>(7.80)%</u>	<u>(7.68)%</u>	1.6%
C. Employer Normal Cost	10.89%	10.86%	0.3%
D. UAAL Amortization	<u>14.85%</u>	<u>13.92%</u>	6.7%
E. Calculated Contribution Rate	25.74%	24.78%	3.9%
F. Deferred Recognition of new assumptions	<u>(1.10)%</u>	<u>(2.19)%</u>	n/a
G. Employer Contribution Rate with phase-in	24.64%	22.59%	9.1%
Funded Ratio	76.3%	77.2%	(1.2)%
Results Based on Market Value (Informational Purposes Only)			
Calculated Contribution Rate	26.15%	22.51%	16.2%
Funded Ratio (excluding non-valuation reserves)	74.0%	77.3%	(4.3)%

1. Includes non-vested former members with contributions on deposit.
2. Includes non-contributory members. The average rate for contributory plans increased from 8.32 % to 9.13%.

2. Scope of the Report

This report presents the actuarial valuation of the Los Angeles County Employees Retirement Association as of June 30, 2020. 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 2020 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 2020. 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.

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 Plan. The assets and investment income are presented in Exhibits 2-4. Exhibit 5 develops the actuarial value of assets as of June 30, 2020. 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 rates.

Section 7 discloses supplemental information for use in the Comprehensive Annual Financial Report (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 Plan, including a projection of both contributions and benefit payments.

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, 2020.
- 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.

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, 2020. 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 assets used for funding purposes. In the next section, the actuarial liabilities will be discussed. Section 6 reviews the process for determining required contributions based on the relationship between the valuation assets and the actuarial liabilities.

A historical summary of the Plan's assets is presented below (dollar amounts in billions).

	Market Value of Total Assets	Actuarial Value		
		Non-Valuation Reserves	Valuation Assets	Total Fund Return (%) ⁽¹⁾
2011	\$ 39.5	\$ 0.9	\$ 39.2	20.2
2012	38.3	0.9	39.0	0.0
2013	41.8	0.4	39.9	11.9
2014	47.7	0.5	43.7	16.5
2015	48.8	0.5	47.3	4.1
2016	47.8	0.5	49.4	0.8
2017	52.7	0.5	52.2	12.7
2018	56.3	0.6	55.2	9.0
2019	58.3	0.6	57.6	6.4
2020	58.5	0.6	59.8	1.8

1. As reported in the Investment Section of LACERA's CAFR for the fiscal year ended June 30, 2020. All returns are shown net of investment expenses and calculated on a time-weighted basis.

On June 30, 2020, the total market value of the fund, less current liabilities, was \$58.5 billion. The actuarial value of the fund was determined to be \$60.3 billion, including the non-valuation reserves. The average total fund return for the last 10 years is 8.1% net 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 audited financial statements.

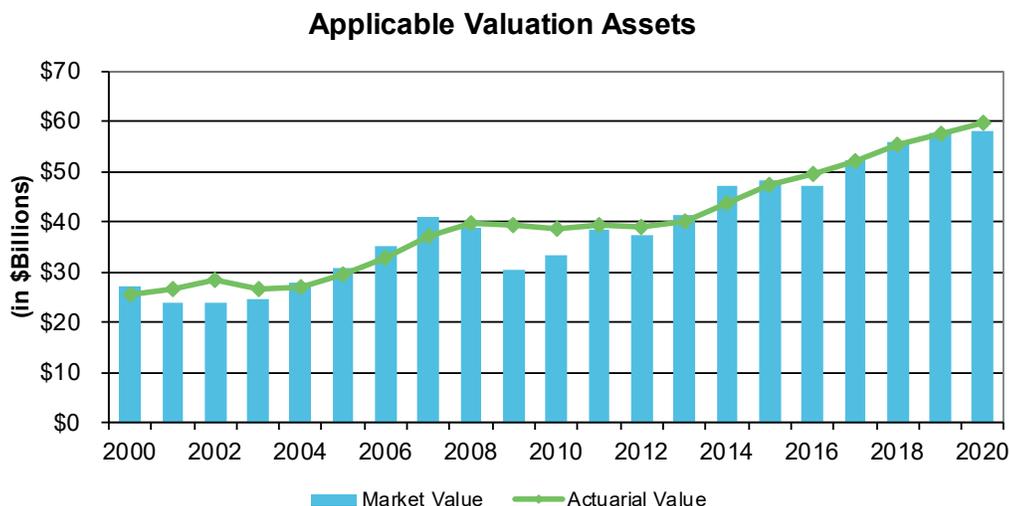
Exhibits 2-4 are taken directly from data furnished to us by LACERA in its annual financial report. We have accepted these tables for use in this report without audit, but we have reviewed them both for the prior year and the current year for reasonableness and consistency with previous reports.

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 7.00%, net of all expenses. The difference between the actual market value and the expected market value is recognized evenly (also referred to as “smoothing”) over a five-year period.

Actuarial Value of Assets

The development of the June 30, 2020 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 loss position. The result is an actuarial value of assets that is more than the June 30, 2020 market value by \$1.8 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. Note that although the allocation of assets used in the actuarial valuation is similar to the process LACERA uses for accounting purposes, there are some differences, including the earnings considered for interest crediting purposes.

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 Non-Valuation Reserves. Non-Valuation Reserves include Contingency Reserves and other reserves that have been set aside for current liabilities and special benefits to be funded outside of the actuarially determined contribution rates. The Contingency Reserve is set at a minimum of 1.0% of the market value of the total assets.

The Funding Policy allows the STAR Reserve to be allocated to the Valuation Assets (subject to periodic review), if needed. The June 30, 2020 STAR Reserve accounting value of \$614 million was included in Valuation Assets and used to determine the employer contribution rates for the fiscal year beginning July 1, 2021. Although the STAR Reserve is included in the 2020 Valuation Assets, there is no liability included in this valuation for STAR benefits that may be granted in the future.

The Non-Valuation Reserves shown in Exhibit 6 for funding purposes are not the same as those shown in the audited financial statements and in Exhibit 4.

Exhibit 2
Statement of Fiduciary Net Position
As of June 30, 2020 and June 30, 2019

	2020	2019
Assets		
Cash and Short-Term Investments	\$ 2,668,514,883	\$ 1,310,026,598
Cash Collateral on Loaned Securities	1,177,374,278	814,829,353
Receivables		
Contributions Receivable	101,730,406	96,481,733
Accounts Receivable - Sale of Investments	697,420,087	1,046,945,184
Accrued Interest and Dividends	133,935,398	102,714,643
Accounts Receivable - Other	7,586,880	8,334,664
Total Receivables	<u>940,672,771</u>	<u>1,254,476,224</u>
Investments at Fair Value		
Equity	23,332,239,318	25,836,066,007
Fixed Income	18,778,182,107	18,028,747,241
Private Equity	7,141,780,830	6,028,264,809
Real Estate	5,128,770,609	6,192,619,038
Hedge Funds	2,193,437,377	1,890,739,586
Total Investments	<u>56,574,410,240</u>	<u>57,976,436,681</u>
Total Assets	<u>61,360,972,171</u>	<u>61,355,768,857</u>
Liabilities		
Accounts Payable - Purchase of Investments	1,598,943,189	2,162,819,244
Retiree Payroll and Other Payables	1,176,761	921,886
Accrued Expenses	34,887,345	44,518,045
Tax Withholding Payable	38,002,636	35,504,456
Obligations under Securities Lending Program	1,177,374,278	814,829,353
Accounts Payable - Other	180,051	2,339,307
Total Liabilities	<u>2,850,564,261</u>	<u>3,060,932,291</u>
Fiduciary Net Position Restricted For Pension Benefits	<u>\$ 58,510,407,911</u>	<u>\$ 58,294,836,565</u>

Exhibit 3
Statement of Changes in Fiduciary Net Position
For the Fiscal Years Ended June 30, 2020 and 2019

	2020	2019
Additions		
Contributions		
Employer	\$ 1,800,137,447	\$ 1,708,121,851
Member ⁽¹⁾	659,295,961	595,444,371
Total Contributions	<u>2,459,433,409</u>	<u>2,303,566,222</u>
Investment Income		
From Investing Activities:		
Net Appreciation/(Depreciation) in Fair Value of Investments	(4,256,243,407)	1,215,624,890
Investment Income/(Loss)	5,906,599,371	2,188,735,905
Total Investing Activity Income	<u>1,650,355,964</u>	<u>3,404,360,796</u>
Less Expenses From Investing Activities	<u>(209,320,451)</u>	<u>(233,125,624)</u>
Net Investing Activity Income	1,441,035,513	3,171,235,172
From Securities Lending Activities:		
Securities Lending Income	15,987,146	26,146,035
Less Expenses From Securities Lending Activities:		
Borrower Rebates	(10,030,889)	(20,545,040)
Management Fees	(1,115,182)	(1,112,831)
Total Expenses from Securities Lending Activities	<u>(11,146,071)</u>	<u>(21,657,871)</u>
Net Securities Lending Income	4,841,076	4,488,164
Total Net Investment Income	<u>1,445,876,588</u>	<u>3,175,723,336</u>
Miscellaneous	<u>2,382,427</u>	<u>5,958,105</u>
Total Additions	<u>3,907,692,424</u>	<u>5,485,247,662</u>
Deductions		
Retiree Payroll	3,578,878,907	3,375,752,179
Administrative Expenses	72,054,032	70,800,052
Investment Expenses	13,329,577	12,105,588
Refunds	25,231,451	28,691,156
Lump Sum Death Benefits	2,230,036	2,711,348
Miscellaneous	397,076	332,945
Total Deductions	<u>3,692,121,078</u>	<u>3,490,393,268</u>
Net Increase/(Decrease)	215,571,346	1,994,854,395
Fiduciary Net Position Restricted For Pension Benefits		
Beginning of Year	58,294,836,565	56,299,982,171
End of Year	<u>\$ 58,510,407,911</u>	<u>\$ 58,294,836,565</u>

1. 2020 member contributions includes employer pick-up contributions.

Exhibit 4
Allocation of Assets by Accounting Reserve Amounts

(Dollars in Thousands)

	June 30, 2020	June 30, 2019
1. Member Reserves		
a. Active Members	\$ 23,481,576	\$ 22,363,377
b. Unclaimed Deposits	<u>-</u>	<u>-</u>
c. Total Member Reserves	23,481,576	22,363,377
2. Employer Reserves		
a. Actual Employer Contributions	25,818,509	22,464,894
b. Advanced Employer Contributions	<u>-</u>	<u>-</u>
c. Total Employer Contributions	25,818,509	22,464,894
3. County Contribution Credit Reserve	-	-
4. STAR Reserve	614,011	614,011
5. Contingency Reserve	<u>-</u>	<u>-</u>
6. Total Reserves at Book Value	49,914,096	45,442,282
7. Unrealized Investment Portfolio Appreciation	<u>8,596,312</u>	<u>12,852,555</u>
8. Total Reserves at Fair Value	<u>\$ 58,510,408</u>	<u>\$ 58,294,837</u>

Note: These amounts were determined by LACERA for accounting purposes and are reported in the CAFR for the fiscal year ended June 30, 2020.

**Exhibit 5
 Five-Year Smoothing of Gains and Losses on Market Value**

(Dollars in Thousands)

June 30, 2020 Valuation					
Plan Year Ending	Contributions	Benefit Payments	Expected Market Value	Actual Market Value	Phase-Out of Gain / (Loss)
06/30/2020	\$ 2,459,433	\$ 3,606,340	\$ 61,189,106	\$ 58,510,408	80.00% x \$ (2,678,698) = \$ (2,142,958)
06/30/2019	2,303,566	3,407,155	59,238,837	58,294,837	60.00% x (944,000) = (566,400)
06/30/2018	2,116,085	3,203,375	55,441,551	56,299,982	40.00% x 858,431 = 343,372
06/30/2017	1,857,938	3,029,633	50,102,154	52,743,651	20.00% x 2,641,497 = 528,299
06/30/2016	1,901,795	2,889,186	51,455,977	47,846,694	0.00% x (3,609,283) = <u>0</u>
					(a) Total Phase-Out of Gain / (Loss) = \$ (1,837,687)
					(b) Total Market Value of Assets = \$ 58,510,408
					(c) Total Actuarial Value of Assets [(b) - (a)] = \$ 60,348,095

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.

Projected Recognition of Actuarial Asset Gains / (Losses) in Future Valuations

	2021 Val	2022 Val	2023 Val	2024 Val	Total
Amount to be Recognized	\$ (24,554)	\$ (552,853)	\$ (724,540)	\$ (535,740)	\$ (1,837,687)

Exhibit 6
Allocation of Valuation and Non-Valuation Assets

(Dollars in Thousands)

	June 30, 2020	June 30, 2019
1. Total Market Value of Assets	\$ 61,360,972	\$ 61,355,769
2. Current Liabilities	2,850,564	3,060,932
3. Net Assets Held in Trust for Pension Benefits	58,510,408	58,294,837
4. Market Stabilization Reserve ⁽¹⁾	(1,837,687)	94,601
5. Actuarial Value of Fund Assets	60,348,095	58,200,236
6. Non-Valuation Reserves ⁽²⁾		
a. Unclaimed Deposits	-	-
b. Contingency Reserve	585,104	582,948
c. Advanced Employer Contributions	-	-
d. County Contribution Credit Reserve	-	-
e. Reserve for STAR Program	-	-
f. Total	585,104	582,948
7. Valuation Assets ⁽²⁾		
a. Member Reserves	23,481,576	22,363,377
b. Employer Reserves for Funding Purposes	36,281,415	35,253,911
c. Total	59,762,991	57,617,288

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 audited financial statements as shown in Exhibit 4.

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, 2020. In this section, the discussion will focus on the commitments of LACERA for retirement benefits, which are referred to as its actuarial liabilities.

Actuarial Balance Sheet – Liabilities

Actuarial liabilities attributable to both past and future benefits are included on the actuarial balance sheet. The difference between the Valuation Assets and the total actuarial liabilities is the amount that needs to be funded by future member and employer contributions. Both the current and future assets (contributions) are included on the actuarial balance sheet and compared to the total actuarial liabilities. The determination of the level of future member and employer contributions needed is discussed in the next section.

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 2019 Investigation of Experience Report. New assumptions were adopted by the Board effective with the June 30, 2020 actuarial valuation. See Appendix A of this report for details.

All liabilities reflect the benefits effective through June 30, 2020. This includes permanent STAR COLAs that have been adopted through the valuation date, but does not include the value of any STAR benefits that may be granted in the future.

Exhibit 7
Actuarial Balance Sheet – June 30, 2020

(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	
LIABILITIES										
Present Value of Benefits - Inactives										
- Retirees and Beneficiaries	\$ 11,223	\$ 480	\$ 282	\$ 9,688	\$ 4,420	\$ 14	\$ 7,197	\$ 9,926	\$ 9	\$ 43,239
- Vested Former	7	1	1	622	448	42	0	136	4	1,261
- Inactive Total	11,230	481	283	10,310	4,868	56	7,197	10,062	13	44,500
Present Value of Benefits - Actives										
- Service Retirement	97	24	30	21,545	6,325	5,882	4	8,812	1,349	44,068
- Transfer Service (prior LACERA plan)	0	0	0	241	439	7	0	13	0	700
- Disability Retirement	1	0	0	919	N/A	434	0	3,260	737	5,351
- Death	1	0	0	376	N/A	135	0	76	24	612
- Termination	0	0	0	181	79	342	0	42	71	715
- Active Total	99	24	30	23,262	6,843	6,800	4	12,203	2,181	51,446
Total Actuarial Liabilities	\$ 11,329	\$ 505	\$ 313	\$ 33,572	\$ 11,711	\$ 6,856	\$ 7,201	\$ 22,265	\$ 2,194	\$ 95,946
ASSETS										
Valuation Assets	(3,462)	365	280	29,658	13,853	2,449	(1,937)	18,064	493	59,763
PV Future Member Contributions	1	1	0	2,897	N/A	2,865	0	1,069	977	7,810
PV Future Employer Normal Cost Contributions	3	0	1	3,320	1,124	2,589	0	1,922	902	9,861
UAAL or (Surplus Funding)	14,787	139	32	(2,303)	(3,266)	(1,047)	9,138	1,210	(178)	18,512
Total Current and Future Assets	\$ 11,329	\$ 505	\$ 313	\$ 33,572	\$ 11,711	\$ 6,856	\$ 7,201	\$ 22,265	\$ 2,194	\$ 95,946

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
- An amount to amortize the UAAL (Unfunded Actuarial Accrued Liability). Note that the UAAL may be negative (representing current assets greater than current actuarial liabilities).

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 calculated and then compared to the value of assets available to fund benefits. The difference is referred to as the UAAL. The results for all LACERA plans in aggregate are summarized below:

(Dollars in millions)	2020	2019	Percent Change
A. Actuarial present value of all future benefits for contributing members, former contributing members, and their survivors	\$ 95,946	\$ 91,283	5.1%
B. Actuarial present value of total future normal costs for current members	17,671	16,648	6.1%
C. Actuarial accrued liability [A-B]	78,275	74,635	4.9%
D. Valuation Assets	59,763	57,617	3.7%
E. UAAL or (Surplus Funding) [C-D]	18,512	17,018	8.8%
F. Funded Ratio [D/C]	76.3%	77.2%	-1.2%

Unfunded Actuarial Accrued Liability

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 Unfunded AAL (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.

Exhibit 7 shows how the UAAL 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.

The Actuarial Balance Sheet for each plan, as well as its UAAL, is based on an estimated allocation of the total LACERA Valuation Assets, as previously shown 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 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. Under LACERA's Funding Policy, a new UAAL "layer" is established each year when the Funded Ratio is less than 100% or greater than or equal to 120%. Effective with the June 30, 2019 valuation, all new UAAL layers are amortized over 20-year periods.

If future experience is significantly more favorable than expected based on the actuarial assumptions, then LACERA's UAAL may be eliminated. 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 retirement plan, is affected by any actuarial gains (decreases in UAAL) or losses (increases in UAAL) arising when the actual experience of the retirement plan varies from the experience anticipated by the actuarial assumptions. 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 2020 actuarial valuation reflects an increase in the UAAL of approximately \$1.5 billion since the prior year. The effect of the gains and losses on the UAAL is shown in Exhibit 8a. A summary of these factors is:

- Investment Returns: Returns on market assets were 1.4% (net of investment expenses) compared to the assumed return of 7.00%. This, combined with recognitions of gains and losses from prior periods, resulted in an actuarial asset loss of \$701 million.
- Active Member Experience (non salary): This includes gains and losses from termination, service retirement, disability retirement, and death different than assumed. This resulted in an actuarial loss of \$91 million.
- Salary Increases: Individual salaries for continuing active members increased at a rate greater than the valuation assumption. This resulted in an actuarial loss of \$388 million.
- Actual CPI versus Assumption: The actual CPI increase was greater than assumed for members of Plan A. This resulted in COLA increases more than the assumption, which generated an actuarial loss of \$43 million.
- Mortality Experience: An actuarial loss due to mortality generally indicates that retired members are living longer than the current assumption predicts. This year, there was an actuarial loss of \$1 million due to mortality.
- Other Experience: Examples of this are gains and losses from retirement and mortality experience of inactive members, reciprocity, and transfers between plans. These factors combined resulted in an actuarial gain of \$36 million.

Change in Unfunded Actuarial Accrued Liability – History

Exhibit 8b shows the sources of change in the UAAL over the past five valuations. The single biggest source of annual change in most years, when there are no changes in the assumptions, is the return on investments being either greater than or less than the assumption.

**Exhibit 8a
 Analysis of Change in Unfunded Actuarial Accrued Liability**

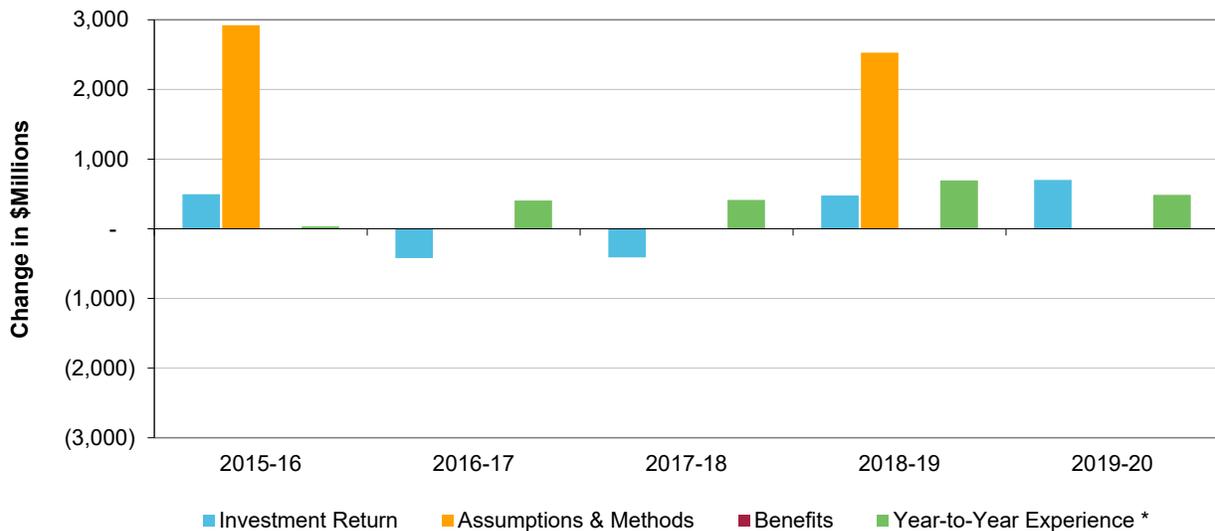
(Dollars in Millions)

	Amount	As a Percent of June 30, 2020 Actuarial Accrued Liability
Unfunded Actuarial Accrued Liability - June 30, 2019	\$ 17,018	21.74%
Interest Accrued	1,212	1.55%
Benefits Accrued (Normal Cost)	1,553	1.98%
<u>Contributions</u>		
Employer - Cash	\$ (1,800)	-2.30%
Employer - Contribution Credit	-	0.00%
Member	(659)	-0.84%
Total	<u>(2,459)</u>	-3.14%
Expected Unfunded Actuarial Accrued Liability - June 30, 2020	\$ 17,324	22.13%
Sources of Change:		
Increase in UAAL due to New Assumptions	-	0.00%
<u>Asset (Gains) and Losses</u>		
(Gain) / Loss due to Investment Income	701	0.90%
<u>Liability (Gains) and Losses</u>		
Active Member Experience (non salary)	\$ 91	0.12%
Salary Increases Greater than Expected	388	0.50%
CPI Greater than Expected	43	0.05%
Mortality Experience	1	0.00%
All Other Experience	(36)	-0.05%
Total	<u>487</u>	0.62%
Total Changes	\$ 1,188	1.52%
Unfunded Actuarial Accrued Liability - June 30, 2020	\$ 18,512	23.65%

Exhibit 8b
History of Changes in Unfunded Actuarial Accrued Liability

(Dollars in Millions)

	2015-16	2016-17	2017-18	2018-19	2019-20	2015-20
Prior Valuation UAAL	\$ 9,491	\$ 12,841	\$ 13,145	\$ 13,294	\$ 17,018	\$ 9,491
Increase in UAAL due to:						
Expected Increase / (Decrease)	(102)	320	146	25	306	695
■ Asset (Gains) and Losses	496	(421)	(411)	477	701	842
■ Changes in Benefits	-	-	-	-	-	-
■ Changes in Assumptions	2,922	-	-	2,528	-	5,450
■ Changes in Methods	-	-	-	-	-	-
■ Salary Increases	162	277	223	486	388	1,536
■ CPI Increases	(191)	(139)	45	44	43	(198)
■ Mortality Experience	(4)	(51)	(20)	(6)	1	(80)
■ All Other Experience	67	318	166	170	55	776
Total Increase / (Decrease)	3,350	304	149	3,724	1,494	9,021
Valuation UAAL	\$ 12,841	\$ 13,145	\$ 13,294	\$ 17,018	\$ 18,512	\$ 18,512
Funded Ratio	79.4%	79.9%	80.6%	77.2%	76.3%	76.3%



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

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.

Since new assumptions were not adopted for the 2020 valuation, we are not recommending changes to the member contribution rates for General Plans A to D and Safety Plans A and B. Member contributions are shown in Appendix D. A sample of these recommended member contribution rates is shown in Exhibit 9.

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 (COLA) contributions is based on Section 31873 of the County Employees’ Retirement Law. This section requires that the cost of the COLA 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.

Since new assumptions were not adopted for the 2020 valuation we are not recommending changes in the member cost-of-living contribution rates. The recommended cost-of-living contribution rates, expressed as a percentage of the normal member contribution rates, are as follows:

Plan	COLA %
General A	84.46%
General B	25.90%
General C	26.81%
General D	25.94%
General E	0.00%
Safety A	87.15%
Safety B	33.03%

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 California 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 2020 valuation.

	General Plan G	Safety Plan C
All Ages: Recommended	9.10%	14.42%
All Ages: Current	9.11%	14.54%
Ratio (Recommended / Current)	99.9%	99.2%

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 the COLA for these plans.

Average Member Rates

The average member contribution rate for only those members in contributory plans at June 30, 2020 is 9.17% of covered payroll. This number compares to 7.80% of covered payroll, which is the average member contribution rate among all members. The 7.80% offsets the gross normal cost to yield the employer normal cost rate. Note that covered payroll does not include pay for PEPRA plan members that is above the PEPRA compensation limit.

**Exhibit 9
 Sample Member Contribution Rates**

Recommended Rates (Based on 2020 Valuation)						
	Entry Age	Normal	Cost of Living	Total as a % of Pay	Current Rate (Total)	Ratio (New / Current)
General Members						
Plan A	25	3.24%	2.74%	5.98%	5.98%	100.0%
	35	3.99%	3.37%	7.36%	7.36%	100.0%
	45	4.83%	4.08%	8.91%	8.91%	100.0%
	55	5.13%	4.33%	9.46%	9.46%	100.0%
Plan B	25	6.47%	1.68%	8.15%	8.15%	100.0%
	35	7.98%	2.07%	10.05%	10.05%	100.0%
	45	9.66%	2.50%	12.16%	12.16%	100.0%
	55	10.25%	2.65%	12.90%	12.90%	100.0%
Plan C	25	5.52%	1.48%	7.00%	7.00%	100.0%
	35	6.80%	1.82%	8.62%	8.62%	100.0%
	45	8.33%	2.23%	10.56%	10.56%	100.0%
	55	9.68%	2.60%	12.28%	12.28%	100.0%
Plan D	25	5.52%	1.43%	6.95%	6.95%	100.0%
	35	6.80%	1.76%	8.56%	8.56%	100.0%
	45	8.33%	2.16%	10.49%	10.49%	100.0%
	55	9.68%	2.51%	12.19%	12.19%	100.0%
Plan G	All Ages	7.34%	1.76%	9.10%	9.11%	99.9%
Safety Members						
Plan A	25	4.74%	4.13%	8.87%	8.87%	100.0%
	35	5.63%	4.91%	10.54%	10.54%	100.0%
	45	6.70%	5.84%	12.54%	12.54%	100.0%
	55	6.70%	5.84%	12.54%	12.54%	100.0%
Plan B	25	9.48%	3.13%	12.61%	12.61%	100.0%
	35	11.27%	3.72%	14.99%	14.99%	100.0%
	45	13.40%	4.43%	17.83%	17.83%	100.0%
	55	13.40%	4.43%	17.83%	17.83%	100.0%
Plan C	All Ages	11.17%	3.25%	14.42%	14.54%	99.2%

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 above are prior to any surcharge payments.

6. Employer Contributions

Calculated Employer Contribution Rate

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 Contribution 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. The calculation of the UAAL contribution rate is shown in Exhibit 12. A portion of the Normal Cost contribution is funded by member contributions. The remainder is paid for by the employer.

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 11. 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.

For the fiscal year beginning in 2021, the total calculated employer contribution rate increases to 24.64% (after reflecting the phase in of the employer contribution rate). This is equal to the aggregate employer Normal Cost contribution rate of 10.89% based on the 2020 valuation, plus a layered amortization payment of the UAAL. The UAAL amortization layers are shown in Exhibit 12. Effective with the June 30, 2019 valuation, all new UAAL layers are amortized over a 20-year period, beginning with the date the contribution is first expected to be made.

(All values as a % of Payroll)

Employer Normal Cost Contribution Rate	10.89%
Layered Amortization of UAAL	<u>14.85%</u>
Calculated Employer Contribution Rate (before phase-in)	25.74%
Deferred Recognition of 2019 Assumption Changes	<u>(1.10)%</u>
Calculated Employer Contribution Rate (with phase-in)	24.64%

The 2.05% increase from last year in the calculated employer contribution rate is partially due to the deferred recognition of assumption and method changes adopted by the Board of Investments effective June 30, 2019. These changes resulted in an increase of 3.29% in the employer contribution rate, which are being phased-in over three fiscal years effective with the fiscal year beginning July 1, 2020. This phase-in resulted in an increase of 1.09% in the employer contribution rate effective July 1, 2021. Recognition of investment losses resulted in an increase of 0.67% in the employer contribution rate, and other sources, including salary increases greater than assumed, increased the employer contribution rate by about 0.29%.

Employer Contribution Rate with phase-in

At the January 2020 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, 2019. For the fiscal year beginning July 1, 2022, the impact of the June 30, 2019 assumption changes will be fully phased in.

Section II 1A(4) of the Funding 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." Based on discussion with LACERA staff, it is our understanding that provided the employer contribution rate, including future phased-in increases, is projected to amortize the UAAL 30 years or less, the employer contribution rate is deemed to meet the requirements under Section II 1A(4) of the Funding Policy.

Exhibit 10
Calculated Normal Cost Contribution Rates – June 30, 2020

	General							Safety				Grand Total
	Plan A	Plan B	Plan C	Plan D	Plan E	Plan G	Total	Plan A	Plan B	Plan C	Total	
A. Normal Cost Contribution Rate												
Service Retirement	21.05%	18.14%	13.41%	14.70%	10.13%	15.57%	14.12%	24.57%	18.60%	17.30%	18.31%	14.90%
Disability Retirement	1.08%	1.01%	0.70%	1.15%	0.00%	1.29%	0.98%	11.57%	9.21%	10.24%	9.44%	2.58%
Death	0.30%	0.28%	0.23%	0.38%	0.00%	0.35%	0.30%	0.41%	0.35%	0.32%	0.34%	0.31%
Termination	0.45%	0.41%	0.40%	0.98%	0.61%	0.99%	0.91%	0.82%	0.83%	0.98%	0.86%	0.90%
Total	22.88%	19.84%	14.74%	17.21%	10.74%	18.20%	16.31%	37.37%	28.99%	28.84%	28.95%	18.69%
B. Member Contributions	(5.75)%	(9.43)%	(7.10)%	(8.02)%	0.00%	(9.10)%	(6.86)%	(11.00)%	(11.14)%	(14.42)%	(11.88)%	(7.80)%
C. Net Employer Normal Cost as of June 30, 2020 (A) - (B)	17.13%	10.41%	7.64%	9.19%	10.74%	9.10%	9.45%	26.37%	17.85%	14.42%	17.07%	10.89%
D. Net Employer Normal Cost as of June 30, 2019	17.34%	9.40%	7.99%	9.21%	10.74%	9.11%	9.50%	26.37%	17.27%	14.54%	16.80%	10.86%
E. Increase (Decrease) as a Percentage of Payroll (C) - (D)	(0.21)%	1.01%	(0.35)%	(0.02)%	0.00%	(0.01)%	(0.05)%	0.00%	0.58%	(0.12)%	0.27%	0.03%
F. Estimated Payroll for fiscal year beginning July 1, 2021*	\$ 11	\$ 3	\$ 3	\$ 3,908	\$ 1,373	\$ 2,087	\$ 7,384	\$ 0	\$ 1,335	\$ 386	\$ 1,722	\$ 9,106
G. Estimated Total Normal Cost Contribution in Dollars (A x F)**	\$ 2	\$ -	\$ -	\$ 673	\$ 147	\$ 380	\$ 1,204	\$ -	\$ 387	\$ 111	\$ 498	\$ 1,702

* Estimated Payroll based upon annualized salary rate as of June 30, 2020 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 11
Total Employer Contributions

	General							Safety				All Plans
	Plan A	Plan B	Plan C	Plan D	Plan E	Plan G	Total	Plan A	Plan B	Plan C	Total	
A. Net Employer Normal Cost												
1. Basic Benefits	13.61%	8.38%	6.15%	7.55%	8.88%	7.34%	7.73%	20.51%	14.15%	11.17%	14.20%	8.82%
2. Cost-of-Living Benefits	3.52%	2.03%	1.49%	1.64%	1.86%	1.76%	1.72%	5.86%	3.70%	3.25%	2.87%	2.07%
3. Total June 30, 2020	17.13%	10.41%	7.64%	9.19%	10.74%	9.10%	9.45%	26.37%	17.85%	14.42%	17.07%	10.89%
B. UAAL Contribution Rate	14.85%	14.85%	14.85%	14.85%	14.85%	14.85%	14.85%	14.85%	14.85%	14.85%	14.85%	14.85%
C. Calculated June 30, 2020 Contribution Rate (A) + (B)	31.98%	25.26%	22.49%	24.04%	25.59%	23.95%	24.30%	41.22%	32.70%	29.27%	31.92%	25.74%
D. Deferred Recognition of new assumptions	(1.10)%	(1.10)%	(1.10)%	(1.10)%	(1.10)%	(1.10)%	(1.10)%	(1.10)%	(1.10)%	(1.10)%	(1.10)%	(1.10)%
E. Calculated June 30, 2020 Contribution Rate with phase-in (C) + (D)	30.88%	24.16%	21.39%	22.94%	24.49%	22.85%	23.20%	40.12%	31.60%	28.17%	30.82%	24.64%
F. Total June 30, 2019 Contribution Rate with phase-in	29.07%	21.13%	19.72%	20.94%	22.47%	20.84%	21.23%	38.10%	29.00%	26.27%	28.53%	22.59%
G. Estimated Payroll for fiscal year beginning July 1, 2021*	\$ 11	\$ 3	\$ 3	\$ 3,908	\$ 1,373	\$ 2,087	\$ 7,384	\$ 0	\$ 1,335	\$ 386	\$ 1,722	\$ 9,106
H. Estimated Annual Contribution (E x G)	\$ 3	\$ 1	\$ 1	\$ 897	\$ 336	\$ 477	\$ 1,713	\$ -	\$ 422	\$ 109	\$ 531	\$ 2,244
I. Last Year's Estimated Annual Contribution	\$ 3	\$ 1	\$ 1	\$ 819	\$ 313	\$ 363	\$ 1,500	\$ -	\$ 391	\$ 74	\$ 465	\$ 1,965
J. Increase / (Decrease) in Annual Contribution	\$ -	\$ -	\$ -	\$ 78	\$ 23	\$ 114	\$ 213	\$ -	\$ 31	\$ 35	\$ 66	\$ 279

* Estimated Payroll based upon annualized salary rate as of June 30, 2020 increased by 3.25% wage inflation. Dollar figures in millions.

Exhibit 12
Unfunded Actuarial Accrued Liability Detail

(Dollars in Millions)

Unfunded Actuarial Accrued Liability - Amortization Detail							
Date Established	Description	Balance as of June 30, 2020	Interest on Balance	Amort. Payment on June 30, 2021 ⁽¹⁾	Balance as of June 30, 2021 ⁽²⁾	Remaining Period as of June 30, 2021 ⁽⁵⁾	July 1, 2021 Amortization Payment
June 30, 2009	Initial UAAL	\$ 5,601.6	\$ 392.1	\$ 426.7	\$ 5,567.0	18 Years	\$ 419.8
June 30, 2010	(Gain) / Loss ⁽³⁾	3,058.6	214.1	224.9	3,047.9	19 Years	221.2
June 30, 2011	(Gain) / Loss ⁽³⁾	1,516.4	106.2	107.9	1,514.8	20 Years	106.1
June 30, 2012	(Gain) / Loss ⁽³⁾	2,479.9	173.6	171.0	2,482.5	21 Years	168.2
June 30, 2013	(Gain) / Loss ⁽³⁾	1,402.1	98.1	96.7	1,403.5	21 Years	95.1
June 30, 2014	(Gain) / Loss	(2,596.3)	(181.7)	(179.0)	(2,599.0)	21 Years	(176.1)
June 30, 2015	(Gain) / Loss	(2,028.4)	(142.0)	(139.9)	(2,030.5)	21 Years	(137.6)
June 30, 2016	(Gain) / Loss ⁽³⁾	3,897.4	272.8	268.8	3,901.4	21 Years	264.4
June 30, 2017	(Gain) / Loss	(21.1)	(1.5)	(1.5)	(21.2)	21 Years	(1.4)
June 30, 2018	(Gain) / Loss	61.0	4.3	4.2	61.1	21 Years	4.1
June 30, 2019	(Gain) / Loss ⁽³⁾	3,949.6	276.5	290.4	3,935.8	19 Years	285.7
June 30, 2020	(Gain) / Loss	1,191.2	83.4	(187.2) ⁽⁴⁾	1,461.8	20 Years	102.4
Total Amortization Payment July 1, 2021:							\$ 1,351.9
Projected Payroll July 1, 2021:							\$ 9,105.8
UAAL as of June 30, 2020:		\$ 18,512.0		UAAL Contribution Rate (as a % of Payroll) FYB July 1, 2021:			14.85%

Explanatory Notes:

- Amortization Payments are based on a fixed schedule that increases by the payroll assumption each year.
- The assets and liabilities used in the calculation of the UAAL are as of June 30, 2020, whereas, the contribution rates are not effective until July 1, 2021. Therefore, the UAAL is adjusted to June 30, 2021 based on the actual contribution rate for the period.
- (Gain) / Loss layers include impact of assumption changes in these years.
- The amortization of UAAL does not begin until July 1, 2021; therefore, the UAAL amount is adjusted by one year to reflect the actual July 1, 2020 contribution rate.
- Effective with the June 30, 2019 valuation, all new UAAL layers are amortized over a 20-year period, beginning with the date the contribution is first expected to be made.

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 audited financial statements:

- Exhibit 13: Schedule of Funding Progress
- Exhibit 14: Schedule of Employer Contributions
- Exhibit 15: Solvency Test
- Exhibit 16: Actuarial Analysis of Financial Experience
- Exhibit 17: Retirants and Beneficiaries added to / removed from Retiree Payroll

Exhibit 13, Schedule of Funding Progress, compares actuarial assets and liabilities of the Plan, based on the actuarial funding method used.

Exhibit 14, Schedule of Employer Contributions, 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 16 shows the changes in actual versus expected UAAL from year to year.

Exhibit 17 reconciles the retired members and beneficiaries who have been added to and removed from the retiree payroll.

Exhibit 13
Schedule of Funding Progress

(Dollars in Thousands)

Actuarial Valuation Date	(a) Actuarial Value of Valuation Assets	(b) Actuarial Accrued Liabilities	(b-a) Unfunded Actuarial Accrued Liabilities (UAAL)	(a/b) Funded Ratio	(c) Covered Payroll ⁽¹⁾	[(b-a)/c] UAAL as a Percentage of Covered Payroll
June 30, 2011 ⁽²⁾	\$ 39,193,627	\$ 48,598,166	\$ 9,404,539	80.6%	\$ 6,650,674	141.4%
June 30, 2012 ⁽²⁾	39,039,364	50,809,425	11,770,061	76.8%	6,619,816	177.8%
June 30, 2013 ⁽²⁾	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 ⁽²⁾	49,357,847	62,199,214	12,841,367	79.4%	7,279,777	176.4%
June 30, 2017	52,166,307	65,310,803	13,144,496	79.9%	7,637,032	172.1%
June 30, 2018	55,233,108	68,527,354	13,294,246	80.6%	7,957,981	167.1%
June 30, 2019 ⁽²⁾	57,617,288	74,635,840	17,018,552	77.2%	8,370,050	203.3%
June 30, 2020	59,762,991	78,275,175	18,512,184	76.3%	8,724,151	212.2%

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

(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	
06/30/2011	\$ 944,174	\$ 944,174	\$ -	\$ 944,174	100%
06/30/2012	1,078,929	1,078,929	-	1,078,929	100%
06/30/2013	1,172,014	723,195	448,819	1,172,014	100%
06/30/2014	1,320,442	1,320,442	-	1,320,442	100%
06/30/2015	1,494,975	1,494,975	-	1,494,975	100%
06/30/2016	1,443,130	1,443,130	-	1,443,130	100%
06/30/2017 ⁽¹⁾	1,392,813	1,370,922	21,891	1,392,813	100%
06/30/2018	1,564,284	1,564,284	-	1,564,284	100%
06/30/2019	1,708,122	1,708,122	-	1,708,122	100%
06/30/2020	1,800,137	1,800,137	-	1,800,137	100%

1. The County Contribution Reserve was used to offset the contribution required from the Courts in the fiscal year ended June 30, 2017. Exhibit 14 in the June 30, 2017 actuarial valuation report did not reflect this transfer amount.

**Exhibit 15
 Solvency Test**

(Dollars in Millions)

Actuarial Valuation Date	Actuarial Value of Assets	Actuarial Accrued Liabilities for			Portion of Actuarial Accrued Liabilities Covered by Assets		
		Active Member Contributions (A)	Retirees and Beneficiaries ⁽¹⁾ (B)	Active Members (Employer Financed Portion) (C)	(A)	(B)	(C)
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%
June 30, 2017	52,166	9,482	37,077	18,752	100%	100%	30%
June 30, 2018	55,233	9,882	39,192	19,453	100%	100%	32%
June 30, 2019	57,617	10,210	42,235	22,190	100%	100%	23%
June 30, 2020	59,763	10,650	44,500	23,125	100%	100%	20%

1. Includes vested and non-vested former members.

Exhibit 16
Actuarial Analysis of Financial Experience

(Dollars in Millions)

	Valuation as of June 30						
	2014	2015	2016	2017	2018	2019	2020
Unfunded Actuarial Accrued Liability	\$13,315	\$11,288	\$9,491	\$12,841	\$13,145	\$13,294	\$17,018
Expected Increase/(Decrease) from Prior Valuation	338	(54)	(102)	320	146	25	306
Salary Increases Greater/(Less) than Expected	(291)	79	162	277	223	486	388
CPI Less than Expected	(427)	(570)	(191)	(139)	45	44	43
Change in Assumptions	-	-	2,922	-	-	2,528	-
Asset Return Less/(Greater) than Expected	(1,664)	(1,263)	496	(421)	(411)	477	701
All Other Experience	17	11	63	267	146	164	56
Ending Unfunded Actuarial Accrued Liability	\$11,288	\$9,491	\$12,841	\$13,145	\$13,294	\$17,018	\$18,512

Exhibit 17
Retirants and Beneficiaries added to and removed from Retiree Payroll

(Dollars in Thousands)

Valuation Date	Added to Rolls		Removed from Rolls		Rolls at End of Year		% Increase in Retiree Allowance	Average Annual Allowance
	Member Count	Annual Allowance ⁽¹⁾	Member Count	Annual Allowance ⁽¹⁾	Member Count	Annual Allowance ⁽¹⁾		
June 30, 2011	3,134	\$ 185,204 ⁽²⁾	(1,959)	\$ (62,923)	55,371	\$ 2,342,625	5.51%	\$ 42.3
June 30, 2012	3,194	193,865 ⁽²⁾	(1,795)	(61,588)	56,770 ⁽³⁾	2,474,902	5.65%	43.6
June 30, 2013	3,373	205,659 ⁽²⁾	(2,057)	(69,494)	58,086 ⁽³⁾	2,611,067	5.50%	45.0
June 30, 2014	3,128	172,743 ⁽²⁾	(1,985)	(71,730)	59,229 ⁽³⁾	2,712,080	3.87%	45.8
June 30, 2015	3,501	180,549 ⁽²⁾	(2,124)	(80,028)	60,606 ⁽³⁾	2,812,601	3.71%	46.4
June 30, 2016	3,479	220,632 ⁽²⁾	(2,171)	(80,881)	61,914 ⁽³⁾	2,952,352	4.97%	47.7
June 30, 2017	3,721	245,915 ⁽²⁾	(2,311)	(89,624)	63,324 ⁽³⁾	3,108,643	5.29%	49.1
June 30, 2018	3,826	276,118 ⁽²⁾	(2,270)	(89,033)	64,880 ⁽³⁾	3,295,728	6.02%	50.8
June 30, 2019	3,978	302,022 ⁽²⁾	(2,351)	(97,840)	66,507 ⁽³⁾	3,499,910	6.20%	52.6
June 30, 2020	3,930	311,206 ⁽²⁾	(2,425)	(104,914)	68,012 ⁽³⁾	3,706,202	5.89%	54.5

1. Annual allowance is the monthly benefit allowance annualized for those members counted as of June 30.

2. Includes COLAs that occurred during the fiscal year and therefore were not included in the previous years' Annual Allowance totals.

3. For the actuarial valuation year, Member Count includes retirees who due to timing at year end, are not yet included in the total Retired Members count disclosed in Note A - Plan Description of LACERA's CAFR for the fiscal year ended June 30, 2020.

8. Cash Flow History and Projections

Exhibits 18a and 18b 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 18a shows that net cash outflow has gradually increased over the last five years. In future years, after the phase-in of the rate increase due to assumption changes and methods, the cash flow is expected to become increasingly negative. This is a typical pattern for a mature retirement plan where it is expected that contributions will be less than benefits and that the plan 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 Plan. We are assuming no further transfers, only full cash contributions. In addition, LACERA will receive dividends and interest payments from its investments. These types of payments are not considered for this analysis, which focuses solely on comparing contributions with benefit payments and administrative expenses.

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 22.59% for the first year and 24.64% for the second year; total employer contributions for the remainder of the period reflect the expected recognition of asset gains currently being deferred and the phase-in of the increase due to the assumption and method changes. The aggregate member rate is assumed to stay at the calculated rate for June 30, 2020 of 7.80% of payroll. Expenses are based on the expenses for the year ended June 30, 2020, 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 2020 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 18a
Cash Flow History and Projections – Dollars

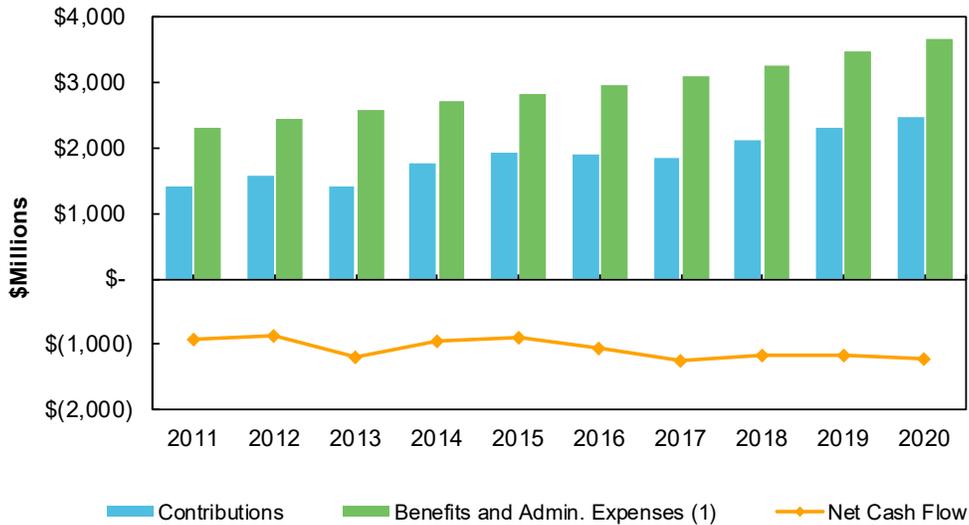
Plan Year Ending	Cash Flow History		
	Total Contributions	Benefits & Administrative Expenses ⁽¹⁾	Net Cash Flow
2011	\$ 1,408	\$ 2,318	\$ (910)
2012	1,586	2,439	(853)
2013	1,403	2,593	(1,190)
2014	1,759	2,719	(960)
2015	1,936	2,829	(893)
2016	1,902	2,954	(1,052)
2017	1,858	3,094	(1,236)
2018	2,116	3,268	(1,152)
2019	2,304	3,475	(1,171)
2020	2,459	3,676	(1,217)

Plan Year Ending	Cash Flow Projections ⁽²⁾		
	Total Contributions	Benefits & Administrative Expenses ⁽¹⁾	Net Cash Flow
2021	\$ 2,713	\$ 4,033	\$ (1,320)
2022	3,002	4,137	(1,135)
2023	3,216	4,335	(1,120)
2024	3,371	4,542	(1,171)
2025	3,542	4,759	(1,216)
2026	3,701	4,983	(1,282)
2027	3,821	5,214	(1,393)
2028	3,945	5,448	(1,504)
2029	4,073	5,687	(1,614)
2030	4,205	5,930	(1,725)

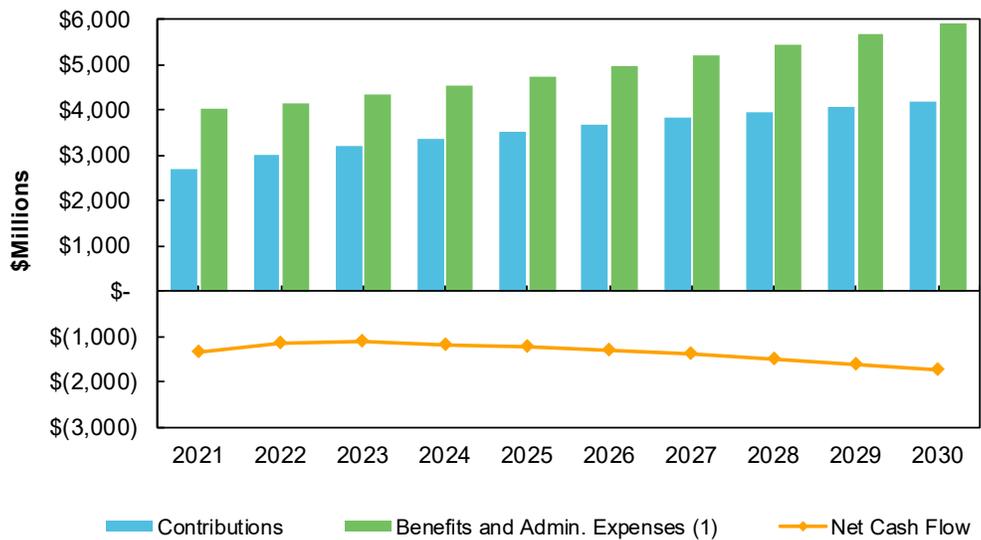
1. Investment expenses are assumed to be covered by investment return.
2. Future contributions reflect the expected impact of asset gains and losses currently being deferred.

Exhibit 18b
Cash Flow History and Projections – Graphs

Cash Flow History



Cash Flow Projections⁽²⁾



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.

9. Risk Discussion

Please refer to the Risk Assessment report dated September 8, 2020 for a detailed analysis of the main risks applicable to LACERA. That report includes detailed identification and assessment of risks.

Overview

The results of any actuarial valuation are based on one set of reasonable assumptions. Although we believe the current assumptions provide a reasonable estimate of future expectations, it is almost certain that future experience will differ from the assumptions to some extent. It is therefore important to consider the potential impacts of these likely differences when making decisions that may affect the future financial health of the Plan, or of the Plan's members.

Actuarial Standard of Practice No. 51 (ASOP 51, Assessment and Disclosure of Risk Associated with Measuring Pension Obligations and Determining Pension Plan Contributions) addresses these issues by providing actuaries with guidance for assessing and disclosing the risk associated with measuring pension liabilities and the determination of pension plan contributions. Specifically, it directs the actuary to:

- Identify risks that may be significant to the Plan.
- Assess the risks identified as significant to the Plan. The assessment does not need to include numerical calculations.
- Disclose plan maturity measures and historical information that are significant to understanding the Plan's risks.

ASOP 51 states that if in the actuary's professional judgment, a more detailed assessment would be significantly beneficial in helping the individuals responsible for the Plan to understand the risks identified by the actuary, then the actuary should recommend that such an assessment be performed. The standard is first effective for certain actuarial work products with a measurement date on or after November 1, 2018; for LACERA it was first effective with the June 30, 2019 actuarial valuation.

In addition, the California Actuarial Advisory Panel (CAAP) has adopted a set of model disclosure elements for actuarial valuation reports of public retirement systems in California. Most of these elements are included in other areas of this report. The remaining CAAP-recommended disclosures are as follows:

Disclosure Element	Description	Value
Gross Normal Cost \$ ¹	Normal Cost allocated to valuation year, paid at mid-year.	\$ 1,674.9
Statutory Contribution \$ ¹	Expected Employer Contribution paid at mid-year.	\$ 2,024.4
Asset Smoothing Ratio	Actuarial Value of Assets divided by Market Value of Assets	103.1%
Asset Volatility Ratio	Market Value of Assets divided by Payroll	6.6
Liability Volatility Ratio	Actuarial Accrued Liability divided by Payroll	8.9

1. Amounts shown in millions of dollars

This Section 9 uses the framework of ASOP 51 and the Asset and Liability Volatility Ratios shown above to communicate important information about: significant risks to the Plan, the Plan's maturity, and relevant historical plan data.

Asset and Liability Volatility Ratios

Asset and Liability Volatility Ratios are a measure of the level of assets (or liabilities) to payroll. In general, a higher ratio means that the employer contribution rates (ECR) are more sensitive to changes in levels of assets or liabilities. Historical Asset and Liability Volatility Ratios are shown in Exhibit E-4.

As shown above, in the current valuation LACERA has an Asset Volatility Ratio of 6.6 and a Liability Volatility Ratio of 8.9. As shown in Exhibit E-4, these ratios have increased over time as LACERA has matured.

Factors Affecting Future Results

There are a number of factors that affect future valuation results. To the extent actual experience for these factors varies from the assumptions, this will likely cause either increases or decreases in the plan's future funding level and ECR. The factors that can have the most significant impact on LACERA's valuation results are:

- Investment returns

To the extent that actual investment returns differ from the assumed investment return, the Plan's future assets, ECR, and funded status may differ significantly from those presented in this valuation. Additional discussion of the impact of variance of investment returns is included below.

- Compensation increases

Individual member retirement benefits are linked to that member's compensation. As such, assumptions need to be made as to a member's future compensation increases. Higher future compensation increases will generally result in larger retirement benefits, liabilities, ECRs, and a lower funded status. Conversely, lower compensation increases than assumed will generally result in smaller retirement benefits, liabilities, ECRs, and a higher funded status.

- Payroll variation

In the valuation, an assumption is made for the overall rate of payroll growth of LACERA from year-to-year. To the extent that the overall rate of payroll growth is greater than assumed, the ECR may decrease since the UAAL will be amortized over a larger payroll base. The opposite will occur if the overall rate of payroll growth is lower than assumed.

This effect often will offset somewhat with individual compensation increases, discussed above.

- Longevity and other demographic risks

The liabilities reported in this valuation have been calculated by assuming that members will follow specific patterns of demographic experience (e.g., mortality, retirement, termination, disability) as described in Appendix A. To the extent that actual demographic experience is different than is assumed to occur, future liabilities, ECRs, and funded status may differ from that presented in this valuation.

All of these assumptions are reviewed in detail during the triennial Investigation of Experience study, and are also reviewed annually during the valuation process. Changes in assumptions are generally recommended as part of the triennial Investigation of Experience if actual experience has been materially different than assumed or forecasts have changed significantly. Additionally, changes may be recommended and discussed at each valuation if they are deemed to be appropriate at that time.

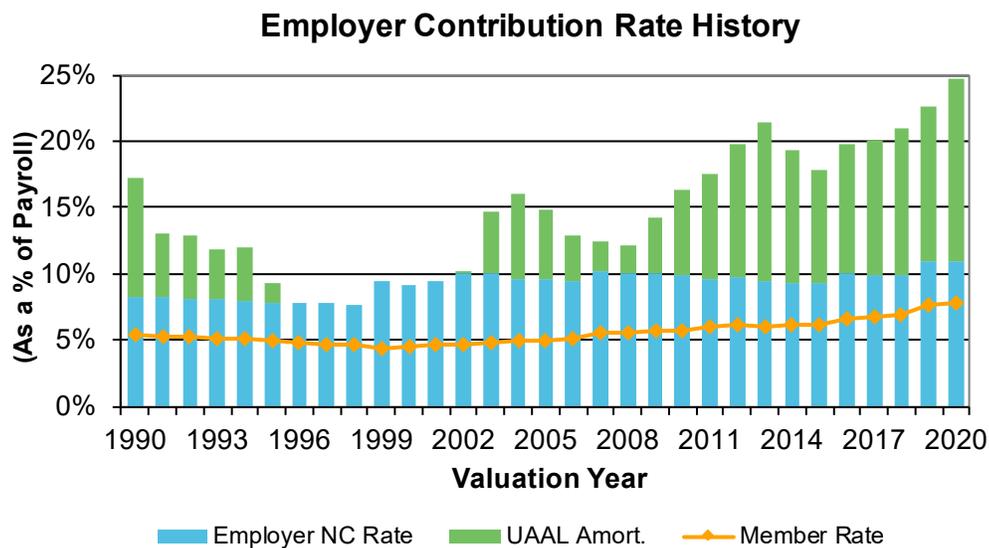
Discussion of Investment Return Risk

Of these factors, we believe the factor with the greatest potential risk to impact future valuation results for LACERA is future investment returns. For example, if actual returns fall short of the current assumption of 7.0% per year, this will cause an increase in the ECR and a decrease in the Funded Ratio, all other things being equal. Conversely, if actual returns exceed the current assumption of 7.0% per year, this will cause a decrease in the ECR and an increase in the Funded Ratio.

The magnitude of the increase or decrease in the ECR is affected by the maturity level, and specifically, the asset volatility ratio. LACERA has accumulated a significant amount of assets relative to its payroll and by several measures is considered a mature plan. Accumulating assets to pay for future benefit obligations is responsible funding, but it does mean that changes in the investment markets can have a significant impact on the ECR.

Historical Variation in Employer Contribution Rate

One way to assess future risks is to look at historical measurements. The following graph shows how the ECR has varied over the last 30 years under various investment return and assumption environments.



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, 2019 actuarial valuation as a result of the 2019 triennial Investigation of Experience Study.

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 probabilities 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 2019 Investigation of Experience Study. These are the probability that a member will leave the System for various reasons.

Actuarial Cost Method

The actuarial valuation is prepared using the entry age actuarial cost method (CERL 31453.5). 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. As of the June 30, 2019 valuation, all amortization layers with periods greater than 22 years as of July 1, 2020 were amortized over a 22-year period. Future gains and losses are amortized over new closed 20-year periods, beginning with the date the contribution is first expected to be made. This is referred to as "layered" amortization.

For General Plan G and Safety Plan C, the normal cost rate is rounded up to the nearest 0.02%.

Records and Data

The data used in this valuation consists of financial information and the age, service, and income 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.

Replacement of Former Members

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.

Growth in Membership

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 or decline in the total number of active members is assumed.

Internal Revenue Code Section 415 Limit

The Internal Revenue Code Section 415 maximum benefit limitation is not reflected in the valuation for funding purposes. Any limitation is reflected in a member's benefit after retirement.

Internal Revenue Code Section 401(a)(17)

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.

Employer Contributions

The employer contribution rate is set by the Board of Investments based on actuarial valuations.

Member Contributions

The member contribution rates vary by entry age (except for PEPRAs) 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.

The individual member rates by entry age, plan, and class are illustrated in Appendix D of the valuation report.

Valuation of Assets

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.

Investment Earnings and Expenses

The future investment earnings of the assets of LACERA are assumed to accrue at an annual rate of 7.00% compounded annually, net of both investment and administrative expenses. This rate was adopted June 30, 2019.

Postretirement Benefit Increases

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 not greater than the expected increase in the Consumer Price Index of 2.75% per year. This rate was adopted June 30, 2016.

Interest on Member Contributions

The annual credited interest rate on member contributions is assumed to be 7.00% compounded semi-annually for an annualized rate of 7.12%. This rate was adopted effective June 30, 2019.

Future Salaries

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 June 30, 2019.

Increases are assumed to occur mid-year (i.e., January 1st) 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.

For plans with a one-year final average compensation period, actual average annual compensation is used. For Plan E, Plan G and Safety Plan C, the monthly rate as of June of the valuation year was annualized. Due to irregular compensation payments now included as pensionable earnings, actual annual pay is preferred over annualizing a single monthly payment amount.

Social Security Wage Base

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 that 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 June 30, 2016.

Note also, 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.

General Plan G and Safety Plan C members have their compensation limited to approximately 120% of the Social Security Wage Base. The limit for 2020 is \$151,549 (after applying the 120% factor) and is projected to increase at the CPI rate of 2.75%. 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. Retirement probabilities vary by age and are shown by plan in Tables A-6 through A-13.

All general members who attain or have attained age 75 in active service and all safety members who attain or 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	59
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 of withdrawing from LACERA due to death, disability or other termination of employment until age 50. After age 50, the member can withdraw due to death, disability, or retirement. Thus, in no year during the member's projected employment would the member be eligible for both a probability of other termination of employment and a probability of retirement.

The retirement probabilities were adopted June 30, 2019.

Disability

The probabilities of disability used in the valuation are also illustrated in Tables A-6 through A-13. These probabilities were adopted June 30, 2019.

Postretirement Mortality – Other Than Disabled Members

The same postretirement mortality probabilities are used in the valuation for members retired for service and beneficiaries. These probabilities are illustrated in Table A-2. Current beneficiary mortality is assumed to be the same as for healthy members of the same sex. Future beneficiaries are assumed to be of the opposite sex and have the same mortality as General members. The amount-weighted Pub-2010 mortality tables are used.

Note that these assumptions include a projection for expected future mortality improvement. These probabilities were adopted June 30, 2019.

Males: General members: PubG-2010 Healthy Retiree Mortality Table for Males, with MP-2014 Ultimate Projection Scale.

Safety members: PubS-2010 Healthy Retiree Mortality Table for Males multiplied by 85%, with MP- 2014 Ultimate Projection Scale.

Females: General members: PubG-2010 Healthy Retiree Mortality Table for Females multiplied by 110%, with MP-2014 Ultimate Projection Scale.

Safety members: PubS-2010 Healthy Retiree Mortality Table for Females, with MP-2014 Ultimate Projection Scale.

Postretirement Mortality – Disabled Members

For members retired for disability, the mortality probabilities used in the valuation are illustrated in Table A-3. The amount-weighted Pub-2010 mortality tables are used.

Note that these assumptions include a projection for expected future mortality improvement. These probabilities were adopted June 30, 2019.

Males: General members: Average of PubG-2010 Healthy Retiree Mortality Table for Males and PubG-2010 Disabled Retiree Mortality Table for Males, both projected with MP-2014 Ultimate Projection Scale.

Safety members: PubS-2010 Healthy Retiree Mortality Table for Males, with MP-2014 Ultimate Projection Scale.

Females: General members: Average of PubG-2010 Healthy Retiree Mortality Table for Females and PubG-2010 Disabled Retiree Mortality Table for Females, both projected with MP-2014 Ultimate Projection Scale.

Safety members: PubS-2010 Healthy Retiree Mortality Table for Females, with MP-2014 Ultimate Projection Scale.

Mortality while in Active Status

For active members, the mortality probabilities used in the valuation are illustrated in Tables A-6 through A-13. The amount-weighted Pub-2010 mortality tables are used. These probabilities were adopted June 30, 2019.

Class	Gender	Proposed Table
General	Male	PubG-2010 (120%) Employee Male ⁽¹⁾
General	Female	PubG-2010 (130%) Employee Female ⁽¹⁾
Safety	Male	PubS-2010 (100%) Employee Male ⁽¹⁾
Safety	Female	PubS-2010 (100%) Employee Female ⁽¹⁾

1. Projected using the MP-2014 Ultimate projection scale.

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

Other Employment Terminations

Tables A-6 to A-13 show, for all ages, the probabilities assumed in this valuation for future termination from active service other than for death, disability, or retirement. These probabilities do not apply to members eligible for service retirement. These probabilities were adopted June 30, 2019.

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. It is assumed that all terminating members will not be rehired in the future.

Table A-4 gives the assumed probabilities that vested members will withdraw their contributions and elect a refund immediately upon termination and the probability that remaining members will elect a deferred vested benefit. All non-vested members are assumed to elect a refund and withdraw their contributions. These probabilities were adopted June 30, 2019.

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 gender 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 benefit 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 for future deferred vested members.

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 2041. For Safety members, it is based on a 85% / 15% blend of the male and female annuity factors determined using the same mortality tables as used for service-retired members.

- 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 7.00%.
- C. The Final Compensation is based on the salary paid in the year prior to attaining the retirement age.
- D. Example: For a General 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.
- E. 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. In these cases the member contribution rate is adjusted so that it is no less than the value for the previous entry age.

Table A-1
Summary of Valuation Assumptions as of June 30, 2020

- I. Economic assumptions
 - A. General wage increases 3.25%
 - B. Investment earnings 7.00%
 - 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⁽¹⁾ Table A-2

Class	Gender	
General	Male	PubG-2010 (100%) Healthy Retiree Male
General	Female	PubG-2010 (110%) Healthy Retiree Female
Safety	Male	PubS-2010 (85%) Healthy Retiree Male
Safety	Female	PubS-2010 (100%) Healthy Retiree Female

- F. Mortality among disabled members⁽¹⁾ Table A-3

Class	Gender	
General	Male	Avg of: PubG-2010 (100%) Healthy Retiree Male PubG-2010 (100%) Disabled Retiree Male
General	Female	Avg of: PubG-2010 (100%) Healthy Retiree Female PubG-2010 (100%) Disabled Retiree Female
Safety	Male	PubS-2010 (100%) Healthy Retiree Male
Safety	Female	PubS-2010 (100%) Healthy Retiree Female

- G. Mortality for beneficiaries⁽¹⁾ Table A-2
 Basis – Beneficiaries are assumed to have the same mortality as a general member of the opposite gender 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

1. All mortality probabilities are projected using the MP-2014 Ultimate projection scale.

Table A-2
Mortality for Members Retired for Service⁽¹⁾

<u>Age</u>	<u>Safety Male</u>	<u>Safety Female</u>	<u>General Male</u>	<u>General Female</u>
20	0.0520%	0.0210%	0.0740%	0.0380%
25	0.0470%	0.0260%	0.0560%	0.0260%
30	0.0520%	0.0350%	0.0720%	0.0440%
35	0.0590%	0.0470%	0.0940%	0.0680%
40	0.0750%	0.0640%	0.1320%	0.1060%
45	0.1037%	0.0870%	0.1960%	0.1650%
50	0.1632%	0.1490%	0.2980%	0.2442%
55	0.2601%	0.2580%	0.4310%	0.3146%
60	0.4318%	0.4460%	0.6150%	0.4224%
65	0.7489%	0.7700%	0.9130%	0.6743%
70	1.3328%	1.3290%	1.5260%	1.1693%
75	2.4021%	2.2950%	2.6710%	2.0713%
80	4.3376%	3.9620%	4.7740%	3.6960%
85	7.7648%	6.8420%	8.5910%	6.8255%
90	13.4810%	11.8150%	14.6720%	12.6357%

<u>Age</u>	<u>All Groups</u>
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 probabilities are those applicable for the fiscal year beginning in 2010. Annual projected improvements are assumed in the following years under the schedule shown. For example, the annual mortality probability for an 85-year old Safety male in fiscal year beginning in 2020 is 7.0223% calculated as follows:

$$\begin{aligned}
 \text{Age 85 probability in 2020} &= \text{Age 85 probability in 2010 with 10 years improvement} \\
 &= 7.7648\% \times (100.0\% - 1.0\%)^{10} \\
 &= 7.0223\%
 \end{aligned}$$

Table A-3
Mortality for Members Retired for Disability⁽¹⁾

Age	Safety Male	Safety Female	General Male	General Female
20	0.0610%	0.0210%	0.2430%	0.1340%
25	0.0550%	0.0260%	0.1670%	0.0940%
30	0.0610%	0.0350%	0.2130%	0.1485%
35	0.0700%	0.0470%	0.2760%	0.2315%
40	0.0880%	0.0640%	0.3885%	0.3625%
45	0.1220%	0.0870%	0.6015%	0.5675%
50	0.1920%	0.1490%	0.9515%	0.8525%
55	0.3060%	0.2580%	1.2725%	1.0140%
60	0.5080%	0.4460%	1.5590%	1.1700%
65	0.8810%	0.7700%	1.9785%	1.4345%
70	1.5680%	1.3290%	2.7135%	1.9625%
75	2.8260%	2.2950%	3.9315%	2.9430%
80	5.1030%	3.9620%	6.0610%	4.6835%
85	9.1350%	6.8420%	9.7030%	7.7680%
90	15.8600%	11.8150%	15.4625%	12.5760%

1. Mortality probabilities are those applicable for the fiscal year beginning in 2010. 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)

Years of Service	General	Safety
0	100%	100%
1	100%	100%
2	100%	100%
3	100%	100%
4	100%	100%
5	32%	30%
6	32%	30%
7	32%	30%
8	32%	28%
9	31%	26%
10	31%	24%
11	30%	22%
12	30%	20%
13	29%	18%
14	28%	16%
15	26%	14%
16	25%	12%
17	24%	10%
18	22%	9%
19	21%	8%
20	19%	7%
21	18%	6%
22	16%	5%
23	14%	4%
24	12%	3%
25	10%	2%
26	8%	2%
27	6%	2%
28	4%	2%
29	2%	2%
30 & Above	0%	0%

Table A-5
Annual Increase in Salary⁽¹⁾

Years of Service	General	Safety
<1	6.00%	9.00%
1	5.25%	8.50%
2	4.75%	8.00%
3	4.10%	6.00%
4	3.50%	4.50%
5	3.00%	3.25%
6	2.50%	2.50%
7	2.00%	2.00%
8	1.60%	1.50%
9	1.30%	1.35%
10	1.15%	1.20%
11	1.00%	1.05%
12	0.85%	0.95%
13	0.75%	0.85%
14	0.70%	0.75%
15	0.65%	0.70%
16	0.60%	0.65%
17	0.55%	0.60%
18	0.50%	0.55%
19	0.45%	2.25%
20	0.40%	0.50%
21	0.35%	0.50%
22	0.30%	0.50%
23	0.25%	0.50%
24	0.25%	3.00%
25	0.25%	0.50%
26	0.25%	0.50%
27	0.25%	0.50%
28	0.25%	0.50%
29	0.25%	3.00%
30 & Above	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 increase. The total result is compounded rather than additive. For example, the total assumed increase for General members for service less than one year is 9.45%.

Appendix A Probabilities 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.
Withdrawal:	Member terminates and elects a refund of member contributions, or a deferred vested retirement benefit.
Service Disability:	Member receives disability retirement; disability is service related.
Ordinary Disability:	Member receives disability retirement; disability is not service related.
Service Death:	Member dies before retirement; death is service related.
Ordinary Death:	Member dies before retirement; death is not service related.

Each of these represents the probability that a member will separate from service at each age due to the particular cause. For example, a probability 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 probabilities needed for each LACERA plan by gender:

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
Probability of Separation from Active Service for General Members
Plans A, B & C – Male

Age	Service Retirement	Other Terminations	Service Disability	Ordinary Disability	Service Death	Ordinary Death
18	0.00000	0.00500	0.00010	0.00010	N/A	0.00043
19	0.00000	0.00500	0.00010	0.00010	N/A	0.00046
20	0.00000	0.00500	0.00010	0.00010	N/A	0.00044
21	0.00000	0.00500	0.00010	0.00010	N/A	0.00043
22	0.00000	0.00500	0.00010	0.00010	N/A	0.00040
23	0.00000	0.00500	0.00010	0.00010	N/A	0.00037
24	0.00000	0.00500	0.00010	0.00010	N/A	0.00035
25	0.00000	0.00500	0.00010	0.00010	N/A	0.00034
26	0.00000	0.00500	0.00010	0.00010	N/A	0.00036
27	0.00000	0.00500	0.00010	0.00010	N/A	0.00037
28	0.00000	0.00500	0.00010	0.00010	N/A	0.00040
29	0.00000	0.00500	0.00010	0.00010	N/A	0.00041
30	0.00000	0.00500	0.00010	0.00020	N/A	0.00043
31	0.00000	0.00500	0.00010	0.00020	N/A	0.00046
32	0.00000	0.00500	0.00010	0.00020	N/A	0.00048
33	0.00000	0.00500	0.00016	0.00020	N/A	0.00050
34	0.00000	0.00500	0.00022	0.00020	N/A	0.00053
35	0.00000	0.00500	0.00028	0.00020	N/A	0.00056
36	0.00000	0.00500	0.00034	0.00020	N/A	0.00060
37	0.00000	0.00500	0.00040	0.00020	N/A	0.00064
38	0.00000	0.00500	0.00048	0.00020	N/A	0.00068
39	0.00000	0.00500	0.00056	0.00020	N/A	0.00073
40	0.03000	0.00500	0.00064	0.00020	N/A	0.00079
41	0.03000	0.00500	0.00072	0.00020	N/A	0.00085
42	0.03000	0.00500	0.00080	0.00020	N/A	0.00092
43	0.03000	0.00500	0.00084	0.00024	N/A	0.00100
44	0.03000	0.00500	0.00088	0.00028	N/A	0.00108
45	0.03000	0.00500	0.00092	0.00032	N/A	0.00118
46	0.03000	0.00500	0.00096	0.00036	N/A	0.00128
47	0.03000	0.00500	0.00100	0.00040	N/A	0.00139
48	0.03000	0.00500	0.00104	0.00044	N/A	0.00152
49	0.03000	0.00500	0.00108	0.00048	N/A	0.00166
50	0.03000	0.00500	0.00112	0.00052	N/A	0.00179
51	0.03000	0.00500	0.00116	0.00056	N/A	0.00194
52	0.03000	0.00500	0.00120	0.00060	N/A	0.00210
53	0.03000	0.00500	0.00156	0.00064	N/A	0.00227
54	0.06000	0.00500	0.00192	0.00068	N/A	0.00244
55	0.10000	0.00500	0.00228	0.00072	N/A	0.00263
56	0.12000	0.00500	0.00264	0.00076	N/A	0.00283
57	0.17000	0.00500	0.00300	0.00080	N/A	0.00306
58	0.26000	0.00500	0.00330	0.00084	N/A	0.00330
59	0.26000	0.00500	0.00360	0.00088	N/A	0.00355
60	0.32000	0.00500	0.00390	0.00092	N/A	0.00383
61	0.32000	0.00500	0.00420	0.00096	N/A	0.00413
62	0.32000	0.00500	0.00450	0.00100	N/A	0.00445
63	0.32000	0.00500	0.00450	0.00104	N/A	0.00481
64	0.32000	0.00500	0.00450	0.00108	N/A	0.00520
65	0.32000	0.00500	0.00450	0.00112	N/A	0.00562
66	0.25000	0.00500	0.00450	0.00116	N/A	0.00607
67	0.24000	0.00500	0.00450	0.00120	N/A	0.00658
68	0.24000	0.00500	0.00450	0.00124	N/A	0.00713
69	0.24000	0.00500	0.00450	0.00128	N/A	0.00775
70	0.24000	0.00500	0.00450	0.00132	N/A	0.00844
71	0.24000	0.00500	0.00450	0.00136	N/A	0.00920
72	0.24000	0.00500	0.00450	0.00140	N/A	0.01004
73	0.24000	0.00500	0.00450	0.00144	N/A	0.01098
74	0.24000	0.00500	0.00450	0.00148	N/A	0.01201
75	1.00000	0.00000	0.00000	0.00000	N/A	0.01315

Table A-7
Probability of Separation from Active Service for General Members
Plans A, B & C – Female

<u>Age</u>	<u>Service Retirement</u>	<u>Other Terminations</u>	<u>Service Disability</u>	<u>Ordinary Disability</u>	<u>Service Death</u>	<u>Ordinary Death</u>
18	0.00000	0.00500	0.00015	0.00010	N/A	0.00017
19	0.00000	0.00500	0.00015	0.00010	N/A	0.00017
20	0.00000	0.00500	0.00015	0.00010	N/A	0.00017
21	0.00000	0.00500	0.00015	0.00010	N/A	0.00016
22	0.00000	0.00500	0.00015	0.00010	N/A	0.00014
23	0.00000	0.00500	0.00015	0.00010	N/A	0.00013
24	0.00000	0.00500	0.00015	0.00010	N/A	0.00012
25	0.00000	0.00500	0.00015	0.00010	N/A	0.00012
26	0.00000	0.00500	0.00015	0.00010	N/A	0.00013
27	0.00000	0.00500	0.00015	0.00010	N/A	0.00014
28	0.00000	0.00500	0.00015	0.00010	N/A	0.00016
29	0.00000	0.00500	0.00015	0.00010	N/A	0.00017
30	0.00000	0.00500	0.00015	0.00010	N/A	0.00020
31	0.00000	0.00500	0.00015	0.00010	N/A	0.00021
32	0.00000	0.00500	0.00015	0.00010	N/A	0.00023
33	0.00000	0.00500	0.00020	0.00010	N/A	0.00025
34	0.00000	0.00500	0.00025	0.00010	N/A	0.00027
35	0.00000	0.00500	0.00030	0.00010	N/A	0.00030
36	0.00000	0.00500	0.00035	0.00010	N/A	0.00033
37	0.00000	0.00500	0.00040	0.00010	N/A	0.00036
38	0.00000	0.00500	0.00042	0.00014	N/A	0.00039
39	0.00000	0.00500	0.00044	0.00018	N/A	0.00043
40	0.03000	0.00500	0.00046	0.00022	N/A	0.00047
41	0.03000	0.00500	0.00048	0.00026	N/A	0.00052
42	0.03000	0.00500	0.00050	0.00030	N/A	0.00056
43	0.03000	0.00500	0.00060	0.00032	N/A	0.00061
44	0.03000	0.00500	0.00070	0.00034	N/A	0.00066
45	0.03000	0.00500	0.00080	0.00036	N/A	0.00073
46	0.03000	0.00500	0.00090	0.00038	N/A	0.00079
47	0.03000	0.00500	0.00100	0.00040	N/A	0.00086
48	0.03000	0.00500	0.00110	0.00042	N/A	0.00092
49	0.03000	0.00500	0.00120	0.00044	N/A	0.00100
50	0.03000	0.00500	0.00130	0.00046	N/A	0.00108
51	0.03000	0.00500	0.00140	0.00048	N/A	0.00117
52	0.03000	0.00500	0.00150	0.00050	N/A	0.00126
53	0.03000	0.00500	0.00156	0.00052	N/A	0.00137
54	0.06000	0.00500	0.00162	0.00054	N/A	0.00147
55	0.10000	0.00500	0.00168	0.00056	N/A	0.00160
56	0.12000	0.00500	0.00174	0.00058	N/A	0.00173
57	0.17000	0.00500	0.00180	0.00060	N/A	0.00187
58	0.26000	0.00500	0.00194	0.00064	N/A	0.00203
59	0.26000	0.00500	0.00208	0.00068	N/A	0.00221
60	0.32000	0.00500	0.00222	0.00072	N/A	0.00242
61	0.32000	0.00500	0.00236	0.00076	N/A	0.00264
62	0.32000	0.00500	0.00250	0.00080	N/A	0.00289
63	0.32000	0.00500	0.00250	0.00084	N/A	0.00317
64	0.32000	0.00500	0.00250	0.00088	N/A	0.00350
65	0.32000	0.00500	0.00250	0.00092	N/A	0.00385
66	0.25000	0.00500	0.00250	0.00096	N/A	0.00425
67	0.24000	0.00500	0.00250	0.00100	N/A	0.00471
68	0.24000	0.00500	0.00250	0.00104	N/A	0.00520
69	0.24000	0.00500	0.00250	0.00108	N/A	0.00575
70	0.24000	0.00500	0.00250	0.00112	N/A	0.00636
71	0.24000	0.00500	0.00250	0.00116	N/A	0.00703
72	0.24000	0.00500	0.00250	0.00120	N/A	0.00777
73	0.24000	0.00500	0.00250	0.00124	N/A	0.00859
74	0.24000	0.00500	0.00250	0.00128	N/A	0.00950
75	1.00000	0.00000	0.00000	0.00000	N/A	0.01050

Table A-8
Probability of Separation from Active Service for General Members
Plan D & G – Male

Age	Service Retirement Plan D	Service Retirement Plan G	Service Disability	Ordinary Disability	Service Death	Ordinary Death	Years of Service	Other Terminations
18	0.00000	0.00000	0.00010	0.00010	N/A	0.00043	0	0.07000
19	0.00000	0.00000	0.00010	0.00010	N/A	0.00046	1	0.05500
20	0.00000	0.00000	0.00010	0.00010	N/A	0.00044	2	0.04000
21	0.00000	0.00000	0.00010	0.00010	N/A	0.00043	3	0.03250
22	0.00000	0.00000	0.00010	0.00010	N/A	0.00040	4	0.02500
23	0.00000	0.00000	0.00010	0.00010	N/A	0.00037	5	0.02330
24	0.00000	0.00000	0.00010	0.00010	N/A	0.00035	6	0.02170
25	0.00000	0.00000	0.00010	0.00010	N/A	0.00034	7	0.02000
26	0.00000	0.00000	0.00010	0.00010	N/A	0.00036	8	0.01900
27	0.00000	0.00000	0.00010	0.00010	N/A	0.00037	9	0.01800
28	0.00000	0.00000	0.00010	0.00010	N/A	0.00040	10	0.01700
29	0.00000	0.00000	0.00010	0.00010	N/A	0.00041	11	0.01600
30	0.00000	0.00000	0.00010	0.00020	N/A	0.00043	12	0.01500
31	0.00000	0.00000	0.00010	0.00020	N/A	0.00046	13	0.01400
32	0.00000	0.00000	0.00010	0.00020	N/A	0.00048	14	0.01300
33	0.00000	0.00000	0.00016	0.00020	N/A	0.00050	15	0.01200
34	0.00000	0.00000	0.00022	0.00020	N/A	0.00053	16	0.01100
35	0.00000	0.00000	0.00028	0.00020	N/A	0.00056	17	0.01000
36	0.00000	0.00000	0.00034	0.00020	N/A	0.00060	18	0.00920
37	0.00000	0.00000	0.00040	0.00020	N/A	0.00064	19	0.00840
38	0.00000	0.00000	0.00048	0.00020	N/A	0.00068	20	0.00760
39	0.00000	0.00000	0.00056	0.00020	N/A	0.00073	21	0.00680
40	0.01500	0.00000	0.00064	0.00020	N/A	0.00079	22	0.00600
41	0.01500	0.00000	0.00072	0.00020	N/A	0.00085	23	0.00560
42	0.01500	0.00000	0.00080	0.00020	N/A	0.00092	24	0.00520
43	0.01500	0.00000	0.00084	0.00024	N/A	0.00100	25	0.00480
44	0.01500	0.00000	0.00088	0.00028	N/A	0.00108	26	0.00440
45	0.01500	0.00000	0.00092	0.00032	N/A	0.00118	27	0.00400
46	0.01500	0.00000	0.00096	0.00036	N/A	0.00128	28	0.00400
47	0.01500	0.00000	0.00100	0.00040	N/A	0.00139	29	0.00400
48	0.01500	0.00000	0.00104	0.00044	N/A	0.00152	30 & Above	0.00000
49	0.01500	0.00000	0.00108	0.00048	N/A	0.00166		
50	0.01500	0.01200	0.00112	0.00052	N/A	0.00179		
51	0.01200	0.00960	0.00116	0.00056	N/A	0.00194		
52	0.01200	0.00960	0.00120	0.00060	N/A	0.00210		
53	0.01500	0.01200	0.00156	0.00064	N/A	0.00227		
54	0.02000	0.01600	0.00192	0.00068	N/A	0.00244		
55	0.02500	0.02000	0.00228	0.00072	N/A	0.00263		
56	0.02500	0.02000	0.00264	0.00076	N/A	0.00283		
57	0.03000	0.02400	0.00300	0.00080	N/A	0.00306		
58	0.03500	0.02800	0.00330	0.00084	N/A	0.00330		
59	0.05000	0.04000	0.00360	0.00088	N/A	0.00355		
60	0.07000	0.05600	0.00390	0.00092	N/A	0.00383		
61	0.08000	0.06400	0.00420	0.00096	N/A	0.00413		
62	0.11000	0.11000	0.00450	0.00100	N/A	0.00445		
63	0.11000	0.11000	0.00450	0.00104	N/A	0.00481		
64	0.16000	0.16000	0.00450	0.00108	N/A	0.00520		
65	0.23000	0.18000	0.00450	0.00112	N/A	0.00562		
66	0.20000	0.18000	0.00450	0.00116	N/A	0.00607		
67	0.19000	0.30000	0.00450	0.00120	N/A	0.00658		
68	0.18000	0.18000	0.00450	0.00124	N/A	0.00713		
69	0.20000	0.20000	0.00450	0.00128	N/A	0.00775		
70	0.23000	0.23000	0.00450	0.00132	N/A	0.00844		
71	0.20000	0.20000	0.00450	0.00136	N/A	0.00920		
72	0.20000	0.20000	0.00450	0.00140	N/A	0.01004		
73	0.20000	0.20000	0.00450	0.00144	N/A	0.01098		
74	0.20000	0.20000	0.00450	0.00148	N/A	0.01201		
75	1.00000	1.00000	0.00000	0.00000	N/A	0.01315		

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.

Table A-9
Probability of Separation from Active Service for General Members
Plan D & G – Female

Age	Service Retirement Plan D	Service Retirement Plan G	Service Disability	Ordinary Disability	Service Death	Ordinary Death	Years of Service	Other Terminations
18	0.00000	0.00000	0.00015	0.00010	N/A	0.00017	0	0.07000
19	0.00000	0.00000	0.00015	0.00010	N/A	0.00017	1	0.05500
20	0.00000	0.00000	0.00015	0.00010	N/A	0.00017	2	0.04000
21	0.00000	0.00000	0.00015	0.00010	N/A	0.00016	3	0.03250
22	0.00000	0.00000	0.00015	0.00010	N/A	0.00014	4	0.02500
23	0.00000	0.00000	0.00015	0.00010	N/A	0.00013	5	0.02330
24	0.00000	0.00000	0.00015	0.00010	N/A	0.00012	6	0.02170
25	0.00000	0.00000	0.00015	0.00010	N/A	0.00012	7	0.02000
26	0.00000	0.00000	0.00015	0.00010	N/A	0.00013	8	0.01900
27	0.00000	0.00000	0.00015	0.00010	N/A	0.00014	9	0.01800
28	0.00000	0.00000	0.00015	0.00010	N/A	0.00016	10	0.01700
29	0.00000	0.00000	0.00015	0.00010	N/A	0.00017	11	0.01600
30	0.00000	0.00000	0.00015	0.00010	N/A	0.00020	12	0.01500
31	0.00000	0.00000	0.00015	0.00010	N/A	0.00021	13	0.01400
32	0.00000	0.00000	0.00015	0.00010	N/A	0.00023	14	0.01300
33	0.00000	0.00000	0.00020	0.00010	N/A	0.00025	15	0.01200
34	0.00000	0.00000	0.00025	0.00010	N/A	0.00027	16	0.01100
35	0.00000	0.00000	0.00030	0.00010	N/A	0.00030	17	0.01000
36	0.00000	0.00000	0.00035	0.00010	N/A	0.00033	18	0.00920
37	0.00000	0.00000	0.00040	0.00010	N/A	0.00036	19	0.00840
38	0.00000	0.00000	0.00042	0.00014	N/A	0.00039	20	0.00760
39	0.00000	0.00000	0.00044	0.00018	N/A	0.00043	21	0.00680
40	0.01500	0.00000	0.00046	0.00022	N/A	0.00047	22	0.00600
41	0.01500	0.00000	0.00048	0.00026	N/A	0.00052	23	0.00560
42	0.01500	0.00000	0.00050	0.00030	N/A	0.00056	24	0.00520
43	0.01500	0.00000	0.00060	0.00032	N/A	0.00061	25	0.00480
44	0.01500	0.00000	0.00070	0.00034	N/A	0.00066	26	0.00440
45	0.01500	0.00000	0.00080	0.00036	N/A	0.00073	27	0.00400
46	0.01500	0.00000	0.00090	0.00038	N/A	0.00079	28	0.00400
47	0.01500	0.00000	0.00100	0.00040	N/A	0.00086	29	0.00400
48	0.01500	0.00000	0.00110	0.00042	N/A	0.00092	30 & Above	0.00000
49	0.01500	0.00000	0.00120	0.00044	N/A	0.00100		
50	0.01500	0.01200	0.00130	0.00046	N/A	0.00108		
51	0.01200	0.00960	0.00140	0.00048	N/A	0.00117		
52	0.01200	0.00960	0.00150	0.00050	N/A	0.00126		
53	0.01500	0.01200	0.00156	0.00052	N/A	0.00137		
54	0.02000	0.01600	0.00162	0.00054	N/A	0.00147		
55	0.02500	0.02000	0.00168	0.00056	N/A	0.00160		
56	0.02500	0.02000	0.00174	0.00058	N/A	0.00173		
57	0.03000	0.02400	0.00180	0.00060	N/A	0.00187		
58	0.03500	0.02800	0.00194	0.00064	N/A	0.00203		
59	0.05000	0.04000	0.00208	0.00068	N/A	0.00221		
60	0.07000	0.05600	0.00222	0.00072	N/A	0.00242		
61	0.08000	0.06400	0.00236	0.00076	N/A	0.00264		
62	0.11000	0.11000	0.00250	0.00080	N/A	0.00289		
63	0.11000	0.11000	0.00250	0.00084	N/A	0.00317		
64	0.16000	0.16000	0.00250	0.00088	N/A	0.00350		
65	0.23000	0.18000	0.00250	0.00092	N/A	0.00385		
66	0.20000	0.18000	0.00250	0.00096	N/A	0.00425		
67	0.19000	0.30000	0.00250	0.00100	N/A	0.00471		
68	0.18000	0.18000	0.00250	0.00104	N/A	0.00520		
69	0.20000	0.20000	0.00250	0.00108	N/A	0.00575		
70	0.23000	0.23000	0.00250	0.00112	N/A	0.00636		
71	0.20000	0.20000	0.00250	0.00116	N/A	0.00703		
72	0.20000	0.20000	0.00250	0.00120	N/A	0.00777		
73	0.20000	0.20000	0.00250	0.00124	N/A	0.00859		
74	0.20000	0.20000	0.00250	0.00128	N/A	0.00950		
75	1.00000	1.00000	0.00000	0.00000	N/A	0.01050		

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Table A-10
Probability of Separation from Active Service for General Members
Plan E – Male

Age	Service Retirement	Service Disability	Ordinary Disability	Service Death	Ordinary Death	Years of Service	Other Terminations
18	0.00000	N/A	N/A	N/A	0.00043	0	0.15000
19	0.00000	N/A	N/A	N/A	0.00046	1	0.08000
20	0.00000	N/A	N/A	N/A	0.00044	2	0.06000
21	0.00000	N/A	N/A	N/A	0.00043	3	0.04500
22	0.00000	N/A	N/A	N/A	0.00040	4	0.03500
23	0.00000	N/A	N/A	N/A	0.00037	5	0.03100
24	0.00000	N/A	N/A	N/A	0.00035	6	0.02700
25	0.00000	N/A	N/A	N/A	0.00034	7	0.02300
26	0.00000	N/A	N/A	N/A	0.00036	8	0.02200
27	0.00000	N/A	N/A	N/A	0.00037	9	0.02100
28	0.00000	N/A	N/A	N/A	0.00040	10	0.02000
29	0.00000	N/A	N/A	N/A	0.00041	11	0.01900
30	0.00000	N/A	N/A	N/A	0.00043	12	0.01800
31	0.00000	N/A	N/A	N/A	0.00046	13	0.01680
32	0.00000	N/A	N/A	N/A	0.00048	14	0.01560
33	0.00000	N/A	N/A	N/A	0.00050	15	0.01440
34	0.00000	N/A	N/A	N/A	0.00053	16	0.01320
35	0.00000	N/A	N/A	N/A	0.00056	17	0.01200
36	0.00000	N/A	N/A	N/A	0.00060	18	0.01160
37	0.00000	N/A	N/A	N/A	0.00064	19	0.01120
38	0.00000	N/A	N/A	N/A	0.00068	20	0.01080
39	0.00000	N/A	N/A	N/A	0.00073	21	0.01040
40	0.00000	N/A	N/A	N/A	0.00079	22	0.01000
41	0.00000	N/A	N/A	N/A	0.00085	23	0.01000
42	0.00000	N/A	N/A	N/A	0.00092	24	0.01000
43	0.00000	N/A	N/A	N/A	0.00100	25	0.01000
44	0.00000	N/A	N/A	N/A	0.00108	26	0.01000
45	0.00000	N/A	N/A	N/A	0.00118	27	0.01000
46	0.00000	N/A	N/A	N/A	0.00128	28	0.01000
47	0.00000	N/A	N/A	N/A	0.00139	29	0.01000
48	0.00000	N/A	N/A	N/A	0.00152	30 & Above	0.01000
49	0.00000	N/A	N/A	N/A	0.00166		
50	0.00000	N/A	N/A	N/A	0.00179		
51	0.00000	N/A	N/A	N/A	0.00194		
52	0.00000	N/A	N/A	N/A	0.00210		
53	0.00000	N/A	N/A	N/A	0.00227		
54	0.00000	N/A	N/A	N/A	0.00244		
55	0.02000	N/A	N/A	N/A	0.00263		
56	0.02000	N/A	N/A	N/A	0.00283		
57	0.02500	N/A	N/A	N/A	0.00306		
58	0.02500	N/A	N/A	N/A	0.00330		
59	0.03000	N/A	N/A	N/A	0.00355		
60	0.04000	N/A	N/A	N/A	0.00383		
61	0.06000	N/A	N/A	N/A	0.00413		
62	0.09000	N/A	N/A	N/A	0.00445		
63	0.09000	N/A	N/A	N/A	0.00481		
64	0.20000	N/A	N/A	N/A	0.00520		
65	0.28000	N/A	N/A	N/A	0.00562		
66	0.19000	N/A	N/A	N/A	0.00607		
67	0.19000	N/A	N/A	N/A	0.00658		
68	0.19000	N/A	N/A	N/A	0.00713		
69	0.19000	N/A	N/A	N/A	0.00775		
70	0.19000	N/A	N/A	N/A	0.00844		
71	0.19000	N/A	N/A	N/A	0.00920		
72	0.19000	N/A	N/A	N/A	0.01004		
73	0.19000	N/A	N/A	N/A	0.01098		
74	0.19000	N/A	N/A	N/A	0.01201		
75	1.00000	N/A	N/A	N/A	0.01315		

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Table A-11
Probability of Separation from Active Service for General Members
Plan E – Female

Age	Service Retirement	Service Disability	Ordinary Disability	Service Death	Ordinary Death	Years of Service	Other Terminations
18	0.00000	N/A	N/A	N/A	0.00017	0	0.15000
19	0.00000	N/A	N/A	N/A	0.00017	1	0.08000
20	0.00000	N/A	N/A	N/A	0.00017	2	0.06000
21	0.00000	N/A	N/A	N/A	0.00016	3	0.04500
22	0.00000	N/A	N/A	N/A	0.00014	4	0.03500
23	0.00000	N/A	N/A	N/A	0.00013	5	0.03100
24	0.00000	N/A	N/A	N/A	0.00012	6	0.02700
25	0.00000	N/A	N/A	N/A	0.00012	7	0.02300
26	0.00000	N/A	N/A	N/A	0.00013	8	0.02200
27	0.00000	N/A	N/A	N/A	0.00014	9	0.02100
28	0.00000	N/A	N/A	N/A	0.00016	10	0.02000
29	0.00000	N/A	N/A	N/A	0.00017	11	0.01900
30	0.00000	N/A	N/A	N/A	0.00020	12	0.01800
31	0.00000	N/A	N/A	N/A	0.00021	13	0.01680
32	0.00000	N/A	N/A	N/A	0.00023	14	0.01560
33	0.00000	N/A	N/A	N/A	0.00025	15	0.01440
34	0.00000	N/A	N/A	N/A	0.00027	16	0.01320
35	0.00000	N/A	N/A	N/A	0.00030	17	0.01200
36	0.00000	N/A	N/A	N/A	0.00033	18	0.01160
37	0.00000	N/A	N/A	N/A	0.00036	19	0.01120
38	0.00000	N/A	N/A	N/A	0.00039	20	0.01080
39	0.00000	N/A	N/A	N/A	0.00043	21	0.01040
40	0.00000	N/A	N/A	N/A	0.00047	22	0.01000
41	0.00000	N/A	N/A	N/A	0.00052	23	0.01000
42	0.00000	N/A	N/A	N/A	0.00056	24	0.01000
43	0.00000	N/A	N/A	N/A	0.00061	25	0.01000
44	0.00000	N/A	N/A	N/A	0.00066	26	0.01000
45	0.00000	N/A	N/A	N/A	0.00073	27	0.01000
46	0.00000	N/A	N/A	N/A	0.00079	28	0.01000
47	0.00000	N/A	N/A	N/A	0.00086	29	0.01000
48	0.00000	N/A	N/A	N/A	0.00092	30 & Above	0.01000
49	0.00000	N/A	N/A	N/A	0.00100		
50	0.00000	N/A	N/A	N/A	0.00108		
51	0.00000	N/A	N/A	N/A	0.00117		
52	0.00000	N/A	N/A	N/A	0.00126		
53	0.00000	N/A	N/A	N/A	0.00137		
54	0.00000	N/A	N/A	N/A	0.00147		
55	0.02000	N/A	N/A	N/A	0.00160		
56	0.02000	N/A	N/A	N/A	0.00173		
57	0.02500	N/A	N/A	N/A	0.00187		
58	0.02500	N/A	N/A	N/A	0.00203		
59	0.03000	N/A	N/A	N/A	0.00221		
60	0.04000	N/A	N/A	N/A	0.00242		
61	0.06000	N/A	N/A	N/A	0.00264		
62	0.09000	N/A	N/A	N/A	0.00289		
63	0.09000	N/A	N/A	N/A	0.00317		
64	0.20000	N/A	N/A	N/A	0.00350		
65	0.28000	N/A	N/A	N/A	0.00385		
66	0.19000	N/A	N/A	N/A	0.00425		
67	0.19000	N/A	N/A	N/A	0.00471		
68	0.19000	N/A	N/A	N/A	0.00520		
69	0.19000	N/A	N/A	N/A	0.00575		
70	0.19000	N/A	N/A	N/A	0.00636		
71	0.19000	N/A	N/A	N/A	0.00703		
72	0.19000	N/A	N/A	N/A	0.00777		
73	0.19000	N/A	N/A	N/A	0.00859		
74	0.19000	N/A	N/A	N/A	0.00950		
75	1.00000	N/A	N/A	N/A	0.01050		

Table A-12
Probability of Separation from Active Service for Safety Members
Plan A, B & C – Male

Age	Service Retirement Plans A-B	Service Retirement Plan C	Service Disability	Ordinary Disability	Service Death	Ordinary Death	Years of Service	Other Terminations
18	0.00000	0.00000	0.00200	0.00000	0.00010	0.00037	0	0.03500
19	0.00000	0.00000	0.00200	0.00000	0.00010	0.00040	1	0.02750
20	0.00000	0.00000	0.00200	0.00000	0.00010	0.00041	2	0.02000
21	0.00000	0.00000	0.00200	0.00000	0.00010	0.00041	3	0.01500
22	0.00000	0.00000	0.00200	0.00000	0.00010	0.00040	4	0.01200
23	0.00000	0.00000	0.00200	0.00000	0.00010	0.00039	5	0.01130
24	0.00000	0.00000	0.00200	0.00000	0.00010	0.00038	6	0.01070
25	0.00000	0.00000	0.00200	0.00000	0.00010	0.00037	7	0.01000
26	0.00000	0.00000	0.00200	0.00000	0.00010	0.00038	8	0.00920
27	0.00000	0.00000	0.00200	0.00000	0.00010	0.00039	9	0.00840
28	0.00000	0.00000	0.00200	0.00000	0.00010	0.00040	10	0.00760
29	0.00000	0.00000	0.00200	0.00000	0.00010	0.00041	11	0.00680
30	0.00000	0.00000	0.00200	0.00000	0.00010	0.00041	12	0.00600
31	0.00000	0.00000	0.00200	0.00000	0.00010	0.00042	13	0.00560
32	0.00000	0.00000	0.00200	0.00000	0.00010	0.00043	14	0.00520
33	0.00000	0.00000	0.00210	0.00000	0.00010	0.00044	15	0.00480
34	0.00000	0.00000	0.00220	0.00000	0.00010	0.00045	16	0.00440
35	0.00000	0.00000	0.00230	0.00000	0.00010	0.00047	17	0.00400
36	0.00000	0.00000	0.00240	0.00000	0.00010	0.00049	18	0.00360
37	0.00000	0.00000	0.00250	0.00000	0.00010	0.00050	19	0.00320
38	0.00000	0.00000	0.00260	0.00000	0.00010	0.00053	20	0.00280
39	0.00000	0.00000	0.00270	0.00000	0.00010	0.00056	21	0.00240
40	0.00750	0.00000	0.00280	0.00000	0.00010	0.00059	22	0.00200
41	0.00750	0.00000	0.00290	0.00000	0.00010	0.00062	23	0.00200
42	0.00750	0.00000	0.00300	0.00000	0.00010	0.00067	24	0.00200
43	0.00750	0.00000	0.00310	0.00000	0.00010	0.00071	25	0.00200
44	0.00750	0.00000	0.00320	0.00000	0.00010	0.00076	26	0.00200
45	0.00750	0.00000	0.00330	0.00000	0.00010	0.00082	27	0.00200
46	0.00750	0.00000	0.00340	0.00000	0.00010	0.00088	28	0.00200
47	0.00750	0.00000	0.00350	0.00000	0.00010	0.00095	29	0.00200
48	0.00750	0.00000	0.00400	0.00000	0.00010	0.00102	30 & Above	0.00000
49	0.00750	0.00000	0.00500	0.00000	0.00010	0.00111		
50	0.02000	0.02000	0.00750	0.00000	0.00010	0.00120		
51	0.02000	0.02000	0.00750	0.00000	0.00010	0.00129		
52	0.02000	0.02000	0.00750	0.00000	0.00010	0.00140		
53	0.03000	0.03000	0.02000	0.00000	0.00010	0.00151		
54	0.15000	0.10000	0.02000	0.00000	0.00010	0.00162		
55	0.26000	0.15000	0.07500	0.00000	0.00010	0.00175		
56	0.17000	0.15000	0.07500	0.00000	0.00010	0.00190		
57	0.17000	0.28000	0.10000	0.00000	0.00010	0.00205		
58	0.17000	0.17000	0.10000	0.00000	0.00010	0.00223		
59	0.27000	0.27000	0.10000	0.00000	0.00010	0.00243		
60	0.27000	0.27000	0.10000	0.00000	0.00010	0.00264		
61	0.25000	0.25000	0.05000	0.00000	0.00010	0.00288		
62	0.25000	0.25000	0.05000	0.00000	0.00010	0.00315		
63	0.25000	0.25000	0.05000	0.00000	0.00010	0.00344		
64	0.25000	0.25000	0.05000	0.00000	0.00010	0.00375		
65	1.00000	1.00000	0.00000	0.00000	0.00000	0.00410		

Table A-13
Probability of Separation from Active Service for Safety Members
Plan A, B & C – Female

Age	Service Retirement Plans A-B	Service Retirement Plan C	Service Disability	Ordinary Disability	Service Death	Ordinary Death	Years of Service	Other Terminations
18	0.00000	0.00000	0.00300	0.00000	0.00010	0.00014	0	0.03500
19	0.00000	0.00000	0.00300	0.00000	0.00010	0.00015	1	0.02750
20	0.00000	0.00000	0.00300	0.00000	0.00010	0.00016	2	0.02000
21	0.00000	0.00000	0.00300	0.00000	0.00010	0.00017	3	0.01500
22	0.00000	0.00000	0.00300	0.00000	0.00010	0.00017	4	0.01200
23	0.00000	0.00000	0.00300	0.00000	0.00010	0.00018	5	0.01130
24	0.00000	0.00000	0.00300	0.00000	0.00010	0.00019	6	0.01070
25	0.00000	0.00000	0.00300	0.00000	0.00010	0.00020	7	0.01000
26	0.00000	0.00000	0.00300	0.00000	0.00010	0.00021	8	0.00920
27	0.00000	0.00000	0.00300	0.00000	0.00010	0.00022	9	0.00840
28	0.00000	0.00000	0.00340	0.00000	0.00010	0.00024	10	0.00760
29	0.00000	0.00000	0.00380	0.00000	0.00010	0.00025	11	0.00680
30	0.00000	0.00000	0.00420	0.00000	0.00010	0.00027	12	0.00600
31	0.00000	0.00000	0.00460	0.00000	0.00010	0.00028	13	0.00560
32	0.00000	0.00000	0.00500	0.00000	0.00010	0.00030	14	0.00520
33	0.00000	0.00000	0.00560	0.00000	0.00010	0.00032	15	0.00480
34	0.00000	0.00000	0.00620	0.00000	0.00010	0.00034	16	0.00440
35	0.00000	0.00000	0.00680	0.00000	0.00010	0.00036	17	0.00400
36	0.00000	0.00000	0.00740	0.00000	0.00010	0.00038	18	0.00360
37	0.00000	0.00000	0.00800	0.00000	0.00010	0.00041	19	0.00320
38	0.00000	0.00000	0.00840	0.00000	0.00010	0.00043	20	0.00280
39	0.00000	0.00000	0.00880	0.00000	0.00010	0.00046	21	0.00240
40	0.00750	0.00000	0.00920	0.00000	0.00010	0.00049	22	0.00200
41	0.00750	0.00000	0.00960	0.00000	0.00010	0.00052	23	0.00200
42	0.00750	0.00000	0.01000	0.00000	0.00010	0.00056	24	0.00200
43	0.00750	0.00000	0.01040	0.00000	0.00010	0.00059	25	0.00200
44	0.00750	0.00000	0.01080	0.00000	0.00010	0.00063	26	0.00200
45	0.00750	0.00000	0.01120	0.00000	0.00010	0.00067	27	0.00200
46	0.00750	0.00000	0.01160	0.00000	0.00010	0.00071	28	0.00200
47	0.00750	0.00000	0.01200	0.00000	0.00010	0.00076	29	0.00200
48	0.00750	0.00000	0.01300	0.00000	0.00010	0.00080	30 & Above	0.00000
49	0.00750	0.00000	0.01500	0.00000	0.00010	0.00085		
50	0.02000	0.02000	0.01800	0.00000	0.00010	0.00091		
51	0.02000	0.02000	0.02000	0.00000	0.00010	0.00097		
52	0.02000	0.02000	0.02400	0.00000	0.00010	0.00103		
53	0.03000	0.03000	0.02800	0.00000	0.00010	0.00109		
54	0.15000	0.10000	0.03200	0.00000	0.00010	0.00116		
55	0.26000	0.15000	0.11000	0.00000	0.00010	0.00123		
56	0.17000	0.15000	0.06000	0.00000	0.00010	0.00131		
57	0.17000	0.28000	0.06000	0.00000	0.00010	0.00140		
58	0.17000	0.17000	0.06000	0.00000	0.00010	0.00148		
59	0.27000	0.27000	0.06000	0.00000	0.00010	0.00158		
60	0.27000	0.27000	0.06000	0.00000	0.00010	0.00168		
61	0.25000	0.25000	0.06000	0.00000	0.00010	0.00178		
62	0.25000	0.25000	0.06000	0.00000	0.00010	0.00190		
63	0.25000	0.25000	0.06000	0.00000	0.00010	0.00202		
64	0.25000	0.25000	0.06000	0.00000	0.00010	0.00215		
65	1.00000	1.00000	0.00000	0.00000	0.00000	0.00228		

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 Reform Act of 2013 (PEPRA). The benefit and contribution provisions of this law are summarized briefly below, along with corresponding references to the Government Code Section. This summary does not attempt to cover all the detailed provisions of the law.

MEMBERSHIP	Government Code Section
Permanent employees of Los Angeles County (County) and participating districts who work $\frac{3}{4}$ 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, 31493.5, 31493.6, 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.	(31494.1, 31494.3)

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:

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:** February 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 plan 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 and actively employed, regardless of service.
- Plan C: Safety members** (7522.25(d))
 Age 50 with 5 years of service.
- Plan E: General members** (31491, 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

- General Plans A-D and Safety Plans A-B** (31462.3)
 Average of the member's highest monthly pensionable earnings during any 12-consecutive-month period.
- Plan E:** Average of the member's highest monthly pensionable earnings during any three 12-consecutive month periods. (31488)
- 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 \$151,549 for 2020. The amount of compensation taken into account shall be adjusted based on changes in the Consumer Price Index for All Urban Consumers: U.S. City Average. Adjustments shall be effective annually on January 1. (7522.10)

SERVICE RETIREMENT ALLOWANCE (continued)

Monthly Allowance

Plans A-B:	Safety members 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)
Plans A-D:	General members 1/60 x Final Compensation x a Plan specific age factor x years of service. (The General Plan C and General D age factors are the same.)	(31676.1) (31676.11) (31676.14) (7522.25(d))
Plan C:	Safety members Final Compensation x Safety Plan percentage x Years of service.	
Plan E:	General members [(a)+(b)-(c)] x d where: (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) Early Retirement Adjustment 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 Early Retirement Adjustment Factor.	(31491, 31491.3 (b)&(c))
Plan G:	General members Final Compensation x General Plan percentage x Years of Service.	(7522.20(a))
 Social Security Integration		
Plans A-C:	General Members 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)
Plan D:	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	0.8850	1.1686	1.4638	1.5668	(31676.14)
General B	0.7454	1.0000	1.3093	1.5668	(31676.11)
General C&D	0.7091	0.8954	1.1500	1.4593	(31676.1)
General E	N/A	0.3748	0.6009	1.0000	(31491.3(a))
Safety A&B	1.0000	1.3099	1.3099	1.3099	(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-D, G:	Allowance may not exceed 100% of final compensation.	(31676.1, 31676.11, 31676.14)
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)

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).	(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 beneficiary having an insurable interest in the life of the member. (31762)

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

Option 4: Other % of member's reduced allowance is payable to a 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 (31452.7, 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

Plans A-D, G:	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)
Plan E:	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). (31786)

NONSERVICE-CONNECTED DISABILITY RETIREMENT ALLOWANCE

Eligibility

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

Monthly Allowance

The monthly allowance is equal to a service retirement allowance if a General member is age 65 or a Safety member is age 55; otherwise the monthly allowance is the greater of that to which the member would be entitled as service retirement or the sum of (a) or (b) where: (31726, 31726.5)

General Members:	(a) 90% of 1/60 of Final Compensation x years of service, if member must rely on service in another retirement plan 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))
Safety Members:	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). (31760.1, 31760.12, 31785, 31785.4)

SERVICE-CONNECTED PRE-RETIREMENT DEATH BENEFITS

Eligibility

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

Monthly Allowance (31787)

A monthly allowance payable to an eligible survivor (or eligible children) equal to the retirement allowance the deceased member would have received under a service-connected disability retirement.

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

Plans A-D, G:	Active members who die while in service or while physically or mentally incapacitated for the performance of duty.	(31780)
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 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. (31765.1, 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 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. Member contributions must be left on deposit. (31700)

Safety Plan C: Age 50 with 5 years of service. (7522.25(d))

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

Plan G: Age 52 with 5 years of service. (7522.20(a))

DEFERRED RETIREMENT ALLOWANCE (continued)

Monthly Allowance

Plans A-D, G:	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)
Plan E:	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)
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RECIPROCITY

All Plans:	Reciprocal benefits are may be granted to members who are entitled to retirement benefits from two or more retirement plans established under the CERL or from a County retirement plan 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 plan, if greater.	(31835)
	Vested former members are eligible for disability and death benefits from LACERA, if disabled while a member of CalPERS or another County retirement plan, but combined benefits are limited.	(31837, 31838, 31838.5, 31839)

TRANSFER FROM CALPERS

Whenever firefighting or law enforcement functions performed by a public agency or 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. (31870.1)

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

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, 2020 for active members. Similar information is shown in Exhibit C-2 Retired for retired members and C-2 Former for vested former members.

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, the monthly rate of pay at June 2020 is shown.

Additional statistical data on both active and retired members is shown in the following tables. Additional detailed summaries are supplied to LACERA 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, 2020 was supplied to us by LACERA 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, 2020

	Sex	Vested	NonVested	Total Number	Annual Salary	Average Age	Average Monthly Salary	Average Service
General Members								
Plan A	M	32	-	32	\$ 4,463,292	74.0	\$ 11,623	42.4
	F	60	-	60	5,465,364	70.7	7,591	39.7
Plan B	M	5	-	5	502,884	68.6	8,381	33.5
	F	17	-	17	1,848,120	66.2	9,059	37.0
Plan C	M	6	-	6	481,992	65.3	6,694	40.7
	F	25	-	25	2,385,960	66.4	7,953	39.5
Plan D	M	12,889	102	12,991	1,295,254,908	51.1	8,309	19.0
	F	26,830	177	27,007	2,439,863,640	50.7	7,528	19.1
Plan E	M	4,910	276	5,186	479,045,364	55.3	7,698	22.5
	F	10,722	442	11,164	850,452,048	55.3	6,348	23.5
Plan G	M	2,803	7,368	10,171	749,779,716	38.9	6,143	3.5
	F	5,297	14,969	20,266	1,356,559,104	38.0	5,578	3.4
Total		63,596	23,334	86,930	\$ 7,186,102,392	47.3	\$ 6,889	14.4
Safety Members								
Plan A	M	2	-	2	\$ 301,068	65.5	\$ 12,545	33.3
	F	-	-	-	-	N/A	N/A	N/A
Plan B	M	7,762	66	7,828	1,043,456,160	46.2	11,108	19.6
	F	1,343	11	1,354	172,150,896	44.1	10,595	17.6
Plan C	M	632	2,798	3,430	320,921,580	31.2	7,797	3.0
	F	138	426	564	53,720,244	30.5	7,937	3.1
Total		9,877	3,301	13,178	\$ 1,590,549,948	41.4	\$ 10,058	14.4
Grand Total		73,473	26,635	100,108	\$ 8,776,652,340	46.5	\$ 7,306	14.4

Exhibit C-2
Retired LACERA Membership – Retired Members as of June 30, 2020

	Sex	Number	Annual Allowance	Average Age	Average Monthly Benefit
General Members					
Plan A	M	7,270	\$ 515,906,207	80.2	\$ 5,914
	F	12,917	657,810,337	80.0	4,244
Plan B	M	223	15,162,273	74.9	5,666
	F	524	27,708,828	74.8	4,407
Plan C	M	151	8,273,105	73.8	4,566
	F	344	15,891,333	74.3	3,850
Plan D	M	6,434	292,765,582	68.8	3,792
	F	11,947	478,198,582	68.8	3,336
Plan E	M	4,765	154,001,822	72.5	2,693
	F	10,052	269,373,900	72.2	2,233
Plan G	M	30	659,229	67.4	1,831
	F	36	436,336	63.1	1,010
Total		54,693	\$ 2,436,187,534	74.0	\$ 3,712
Safety Members					
Plan A	M	4,616	\$ 487,488,772	76.9	\$ 8,801
	F	2,025	147,861,702	78.4	6,085
Plan B	M	5,462	546,492,063	60.7	8,338
	F	1,207	87,505,008	58.0	6,041
Plan C	M	7	597,044	57.0	7,108
	F	2	70,228	38.5	2,926
Total		13,319	\$ 1,270,014,817	68.8	\$ 7,946
Grand Total		68,012	\$ 3,706,202,351	73.0	\$ 4,541

Exhibit C-2
Former LACERA Membership – Vested Former Members as of June 30, 2020⁽¹⁾
Subtotaled by Plan and Retirement Type

	Sex	Number	Average Age
General Members			
Plan A	M	20	73.9
	F	38	72.3
Plan B	M	3	72.3
	F	9	70.6
Plan C	M	5	67.0
	F	11	65.2
Plan D	M	2,534	49.4
	F	5,316	48.6
Plan E	M	1,017	57.2
	F	2,215	57.0
Plan G	M	1,199	37.9
	F	2,760	37.2
Total		15,127	47.7
Safety Members			
Plan A	M	4	68.0
	F	-	-
Plan B	M	682	44.3
	F	129	44.5
Plan C	M	199	31.9
	F	27	31.1
Total		1,041	41.7
Grand Total		16,168	47.3

1. Includes non-vested former members who still have member contributions with LACERA

Exhibit C-2a
LACERA Membership – Retired Members as of June 30, 2020
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>
General Plans:				
Plan A				
	Healthy	14,384	\$ 950,852	\$ 5,509
	Disabled	1,431	60,612	3,530
	Beneficiaries	<u>4,372</u>	<u>162,253</u>	<u>3,093</u>
	Total	20,187	\$ 1,173,717	\$ 4,845
Plan B				
	Healthy	621	\$ 38,314	\$ 5,141
	Disabled	57	2,121	3,101
	Beneficiaries	<u>69</u>	<u>2,436</u>	<u>2,942</u>
	Total	747	\$ 42,871	\$ 4,783
Plan C				
	Healthy	376	\$ 20,598	\$ 4,565
	Disabled	49	1,674	2,847
	Beneficiaries	<u>70</u>	<u>1,893</u>	<u>2,253</u>
	Total	495	\$ 24,165	\$ 4,068
Plan D				
	Healthy	14,668	\$ 658,871	\$ 3,743
	Disabled	2,155	75,801	2,931
	Beneficiaries	<u>1,558</u>	<u>36,292</u>	<u>1,941</u>
	Total	18,381	\$ 770,964	\$ 3,495
Plan E				
	Healthy	13,536	\$ 404,773	\$ 2,492
	Disabled	N/A	N/A	N/A
	Beneficiaries	<u>1,281</u>	<u>18,603</u>	<u>1,210</u>
	Total	14,817	\$ 423,376	\$ 2,381
Plan G				
	Healthy	57	\$ 935	\$ 1,367
	Disabled	3	104	2,890
	Beneficiaries	<u>6</u>	<u>56</u>	<u>782</u>
	Total	66	\$ 1,095	\$ 1,383
Safety Plans:				
Plan A				
	Healthy	2,146	\$ 237,932	\$ 9,239
	Disabled	2,888	285,300	8,232
	Beneficiaries	<u>1,607</u>	<u>112,118</u>	<u>5,814</u>
	Total	6,641	\$ 635,350	\$ 7,973
Plan B				
	Healthy	2,834	\$ 295,033	\$ 8,675
	Disabled	3,519	318,946	7,553
	Beneficiaries	<u>316</u>	<u>20,018</u>	<u>5,279</u>
	Total	6,669	\$ 633,997	\$ 7,922
Plan C				
	Healthy	6	\$ 562	\$ 7,809
	Disabled	3	105	2,917
	Beneficiaries	<u>0</u>	<u>0</u>	<u>N/A</u>
	Total	9	\$ 667	\$ 6,178
Grand Totals		68,012	3,706,202	4,541

Exhibit C-2b
LACERA Membership – Retired Members as of June 30, 2020
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>
Healthy Retirees				
	General A	14,384	\$ 950,852	\$ 5,509
	General B	621	38,314	5,141
	General C	376	20,598	4,565
	General D	14,668	658,871	3,743
	General E	13,536	404,773	2,492
	General G	57	935	1,367
	Safety A	2,146	237,932	9,239
	Safety B	2,834	295,033	8,675
	Safety C	6	562	7,809
	Total	48,628	\$ 2,607,870	\$ 4,469
Disabled Retirees				
	General A	1,431	\$ 60,612	\$ 3,530
	General B	57	2,121	3,101
	General C	49	1,674	2,847
	General D	2,155	75,801	2,931
	General E	N/A	N/A	N/A
	General G	3	104	2,890
	Safety A	2,888	285,300	8,232
	Safety B	3,519	318,946	7,553
	Safety C	3	105	2,917
	Total	10,105	\$ 744,663	\$ 6,141
Beneficiaries				
	General A	4,372	\$ 162,253	\$ 3,093
	General B	69	2,436	2,942
	General C	70	1,893	2,253
	General D	1,558	36,292	1,941
	General E	1,281	18,603	1,210
	General G	6	56	782
	Safety A	1,607	112,118	5,814
	Safety B	316	20,018	5,279
	Safety C	0	0	N/A
	Total	9,279	\$ 353,669	\$ 3,176
Grand Totals		68,012	\$ 3,706,202	\$ 4,541

**Exhibit C-3
 Age Distribution of Active Members as of June 30, 2020**

	Age Groups						Total
	0-29	30-39	40-49	50-59	60-69	70+	
General Plans:							
Plan A							
Male	-	-	-	-	8	24	32
Female	-	-	-	-	33	27	60
Plan B							
Male	-	-	-	-	3	2	5
Female	-	-	-	-	14	3	17
Plan C							
Male	-	-	-	-	6	-	6
Female	-	-	-	1	18	6	25
Plan D							
Male	15	1,536	4,118	4,738	2,291	293	12,991
Female	9	3,287	9,015	9,712	4,482	502	27,007
Plan E							
Male	-	343	1,129	1,836	1,559	319	5,186
Female	2	652	2,185	4,388	3,458	479	11,164
Plan G							
Male	1,624	4,613	2,274	1,183	447	30	10,171
Female	3,487	9,675	4,215	2,192	664	33	20,266
Safety Plans:							
Plan A							
Male	-	-	-	-	2	-	2
Female	-	-	-	-	-	-	-
Plan B							
Male	34	1,721	3,029	2,872	169	3	7,828
Female	8	395	597	340	13	1	1,354
Plan C							
Male	1,548	1,574	244	58	6	-	3,430
Female	290	232	34	8	-	-	564
Grand Totals:	<u>7,017</u>	<u>24,028</u>	<u>26,840</u>	<u>27,328</u>	<u>13,173</u>	<u>1,722</u>	<u>100,108</u>

**Exhibit C-4
 Age and Service Distribution of Active Members by Count
 and Average Compensation as of June 30, 2020
 All Plans**

Count													
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	531	252	114	50	15	1	-	-	-	-	-	-	963
25-29	1,517	1,302	1,153	944	618	514	6	-	-	-	-	-	6,054
30-34	1,317	1,361	1,346	1,542	1,403	3,344	846	15	-	-	-	-	11,174
35-39	805	831	976	978	1,044	3,313	4,125	739	43	-	-	-	12,854
40-44	485	521	624	643	578	2,082	4,180	2,905	1,148	73	1	-	13,240
45-49	337	359	377	437	444	1,464	2,875	2,919	3,330	946	108	4	13,600
50-54	252	256	303	300	300	1,043	2,125	2,305	3,010	2,935	1,691	159	14,679
55-59	142	152	198	217	203	878	1,623	1,680	1,941	2,179	2,510	926	12,649
60-64	72	94	109	103	133	561	1,228	1,281	1,387	1,270	1,519	1,433	9,190
65 & Over	25	28	33	51	43	321	863	923	1,060	779	675	904	5,705
Total Count	5,483	5,156	5,233	5,265	4,781	13,521	17,871	12,767	11,919	8,182	6,504	3,426	100,108

Compensation													
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	58,113	61,957	63,532	66,090	65,992	48,312	-	-	-	-	-	-	60,287
25-29	58,814	62,140	65,876	70,115	71,464	74,892	78,390	-	-	-	-	-	65,312
30-34	65,286	66,651	67,179	71,643	71,247	78,960	84,390	82,506	-	-	-	-	72,867
35-39	69,780	73,997	74,107	75,843	75,335	87,104	91,527	90,712	103,576	-	-	-	84,054
40-44	64,358	73,802	73,384	75,299	80,911	90,249	92,691	94,478	99,587	117,288	113,820	-	89,384
45-49	65,120	68,681	71,449	74,939	79,201	87,143	91,492	97,172	103,209	109,992	113,315	142,887	93,843
50-54	65,694	67,002	74,316	74,159	73,743	83,123	87,012	96,853	101,971	112,085	115,502	114,533	98,431
55-59	61,486	74,103	71,247	73,032	77,502	83,568	80,370	86,954	92,924	103,911	108,204	108,945	94,461
60-64	68,859	69,374	68,640	76,854	75,822	83,346	78,565	84,041	88,785	96,541	104,866	100,955	91,139
65 & Over	90,499	86,984	82,328	121,636	100,157	86,695	76,885	82,690	80,320	84,604	95,546	96,894	86,163
Avg. Annual Compensation	\$ 63,451	\$ 67,728	\$ 69,845	\$ 73,603	\$ 74,867	\$ 84,409	\$ 88,304	\$ 92,401	\$ 97,160	\$ 104,684	\$ 108,094	\$ 102,722	\$ 87,672

Exhibit C-4a
Age and Service Distribution of Active Members by Count
and Average Compensation as of June 30, 2020
General Plan A

Count													
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	-	-	-	-	-	-	-	-	-	-	-	-	-
25-29	-	-	-	-	-	-	-	-	-	-	-	-	-
30-34	-	-	-	-	-	-	-	-	-	-	-	-	-
35-39	-	-	-	-	-	-	-	-	-	-	-	-	-
40-44	-	-	-	-	-	-	-	-	-	-	-	-	-
45-49	-	-	-	-	-	-	-	-	-	-	-	-	-
50-54	-	-	-	-	-	-	-	-	-	-	-	-	-
55-59	-	-	-	-	-	-	-	-	-	-	-	-	-
60-64	-	-	-	-	-	-	-	-	-	-	-	3	3
65 & Over	-	-	-	-	-	-	1	4	10	7	5	62	89
Total Count	-	-	-	-	-	-	1	4	10	7	5	65	92

Compensation													
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	-	-	-	-	-	-	-	-	-	-	-	-	-
60-64	-	-	-	-	-	-	-	-	-	-	-	63,192	63,192
65 & Over	-	-	-	-	-	-	110,880	92,007	119,719	77,595	83,885	114,522	109,428
Avg. Annual Compensation	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 110,880	\$ 92,007	\$ 119,719	\$ 77,595	\$ 83,885	\$ 112,153	\$ 107,920

**Exhibit C-4b
 Age and Service Distribution of Active Members by Count
 and Average Compensation as of June 30, 2020
 General Plan B**

Count													
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	-	-	-	-	-	-	-	-	-	-	-	-	-
25-29	-	-	-	-	-	-	-	-	-	-	-	-	-
30-34	-	-	-	-	-	-	-	-	-	-	-	-	-
35-39	-	-	-	-	-	-	-	-	-	-	-	-	-
40-44	-	-	-	-	-	-	-	-	-	-	-	-	-
45-49	-	-	-	-	-	-	-	-	-	-	-	-	-
50-54	-	-	-	-	-	-	-	-	-	-	-	-	-
55-59	-	-	-	-	-	-	-	-	-	-	-	-	-
60-64	-	-	-	-	-	-	-	-	1	-	-	7	8
65 & Over	-	-	-	-	-	-	-	2	1	2	1	8	14
Total Count	-	-	-	-	-	-	-	2	2	2	1	15	22

Compensation													
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	-	-	-	-	-	-	-	-	-	-	-	-	-
60-64	-	-	-	-	-	-	-	-	58,932	-	-	104,643	98,930
65 & Over	-	-	-	-	-	-	-	137,850	60,132	126,420	135,408	104,436	111,398
Avg. Annual Compensation	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 137,850	\$ 59,532	\$ 126,420	\$ 135,408	\$ 104,533	\$ 106,864

**Exhibit C-4c
 Age and Service Distribution of Active Members by Count
 and Average Compensation as of June 30, 2020
 General Plan C**

Count													
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	-	-	-	-	-	-	-	-	-	-	-	-	-
25-29	-	-	-	-	-	-	-	-	-	-	-	-	-
30-34	-	-	-	-	-	-	-	-	-	-	-	-	-
35-39	-	-	-	-	-	-	-	-	-	-	-	-	-
40-44	-	-	-	-	-	-	-	-	-	-	-	-	-
45-49	-	-	-	-	-	-	-	-	-	-	-	-	-
50-54	-	-	-	-	-	-	-	-	-	-	-	-	-
55-59	-	-	-	-	-	-	-	-	-	-	-	1	1
60-64	-	-	-	-	-	-	-	-	-	1	1	12	14
65 & Over	-	-	-	-	-	-	-	-	-	-	-	16	16
Total Count	-	-	-	-	-	-	-	-	-	1	1	29	31

Compensation													
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	-	-	-	-	-	-	-	-	-	-	-	192,036	192,036
60-64	-	-	-	-	-	-	-	-	-	65,208	68,028	74,256	73,165
65 & Over	-	-	-	-	-	-	-	-	-	-	-	103,226	103,226
Avg. Annual Compensation	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 65,208	\$ 68,028	\$ 94,301	\$ 92,515

Exhibit C-4d
Age and Service Distribution of Active Members by Count
and Average Compensation as of June 30, 2020
General Plan D

Count													
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	-	-	-	-	-	-	-	-	-	-	-	-	-
25-29	-	-	1	-	-	20	3	-	-	-	-	-	24
30-34	1	8	9	5	3	465	402	9	-	-	-	-	902
35-39	2	15	15	15	20	893	2,486	443	32	-	-	-	3,921
40-44	1	6	11	18	16	663	2,812	1,889	666	50	1	-	6,133
45-49	1	9	9	17	8	483	2,013	1,896	1,923	564	74	3	7,000
50-54	2	7	12	13	11	312	1,524	1,494	1,823	1,506	736	123	7,563
55-59	-	2	3	9	6	262	1,149	1,142	1,278	1,245	1,249	542	6,887
60-64	2	3	4	6	4	157	864	860	888	781	725	565	4,859
65 & Over	-	1	2	1	1	99	558	577	613	395	281	181	2,709
Total Count	9	51	66	84	69	3,354	11,811	8,310	7,223	4,541	3,066	1,414	39,998

Compensation													
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	-	-	78,276	-	-	55,910	54,488	-	-	-	-	-	56,664
30-34	47,580	66,722	76,759	74,738	65,552	78,478	70,775	66,308	-	-	-	-	74,704
35-39	107,538	86,906	85,991	86,826	95,285	92,275	84,145	84,452	97,397	-	-	-	86,236
40-44	194,760	125,454	89,174	84,619	106,624	96,973	88,906	91,380	91,607	110,971	113,820	-	91,105
45-49	131,784	107,476	77,735	107,352	93,624	97,986	90,483	94,940	96,584	101,601	108,664	127,556	95,044
50-54	105,648	168,537	144,905	106,680	120,886	89,421	86,806	96,477	98,464	103,982	100,344	113,523	97,063
55-59	-	250,530	131,576	86,629	137,568	90,828	82,413	89,822	94,538	102,606	106,728	112,174	96,738
60-64	107,256	124,284	94,173	84,086	143,331	87,596	81,003	88,593	95,425	101,155	109,545	109,847	96,150
65 & Over	-	36,684	88,266	48,492	76,236	87,545	77,428	86,024	81,750	87,848	101,627	118,578	87,367
Avg. Annual Compensation	\$ 112,779	\$ 110,740	\$ 97,368	\$ 92,187	\$ 106,696	\$ 91,159	\$ 85,524	\$ 91,838	\$ 94,840	\$ 101,496	\$ 105,443	\$ 112,214	\$ 93,383

Exhibit C-4e
Age and Service Distribution of Active Members by Count
and Average Compensation as of June 30, 2020
General Plan E

Count													
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	-	-	-	-	-	-	-	-	-	-	-	-	-
25-29	-	-	-	-	-	2	-	-	-	-	-	-	2
30-34	-	-	-	-	1	87	125	2	-	-	-	-	215
35-39	-	-	-	-	-	136	524	118	2	-	-	-	780
40-44	-	-	-	-	-	100	601	502	184	4	-	-	1,391
45-49	-	-	-	-	-	106	488	563	616	140	10	-	1,923
50-54	-	-	-	-	-	73	422	502	641	709	428	22	2,797
55-59	-	-	-	-	-	85	419	448	504	686	969	316	3,427
60-64	-	-	-	-	-	74	350	399	476	459	752	812	3,322
65 & Over	-	-	-	-	-	54	292	336	432	368	382	629	2,493
Total Count	-	-	-	-	1	717	3,221	2,870	2,855	2,366	2,541	1,779	16,350

Compensation													
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	-	-	-	-	-	54,060	-	-	-	-	-	-	54,060
30-34	-	-	-	-	61,668	72,108	60,784	79,332	-	-	-	-	65,543
35-39	-	-	-	-	-	77,774	71,747	70,056	57,810	-	-	-	72,506
40-44	-	-	-	-	-	82,014	77,065	74,200	74,773	87,528	-	-	76,114
45-49	-	-	-	-	-	88,734	76,089	78,942	81,072	78,230	74,058	-	79,363
50-54	-	-	-	-	-	85,607	75,340	75,749	82,100	87,298	80,395	87,563	81,131
55-59	-	-	-	-	-	84,328	68,779	71,501	76,136	90,283	91,907	86,704	83,100
60-64	-	-	-	-	-	90,616	71,663	71,999	74,367	85,886	97,239	91,870	85,207
65 & Over	-	-	-	-	-	105,663	74,168	76,261	76,882	79,893	90,493	87,951	82,427
Avg. Annual Compensation	\$ -	\$ -	\$ -	\$ -	\$ 61,668	\$ 84,232	\$ 73,267	\$ 74,748	\$ 78,257	\$ 86,202	\$ 91,263	\$ 89,514	\$ 81,315

Exhibit C-4f
Age and Service Distribution of Active Members by Count
and Average Compensation as of June 30, 2020
General Plan G

Count													
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	306	158	68	27	9	1	-	-	-	-	-	-	569
25-29	1,161	1,030	879	694	449	329	-	-	-	-	-	-	4,542
30-34	1,143	1,219	1,152	1,295	1,221	2,202	15	-	-	-	-	-	8,247
35-39	729	773	887	856	918	1,864	13	1	-	-	-	-	6,041
40-44	453	494	578	582	524	1,158	16	1	-	-	-	-	3,806
45-49	325	346	357	405	420	816	12	1	1	-	-	-	2,683
50-54	239	245	283	284	285	631	9	2	-	1	-	-	1,979
55-59	137	148	192	207	194	505	9	4	-	-	-	-	1,396
60-64	69	90	105	97	129	324	7	3	-	-	-	-	824
65 & Over	25	27	31	50	42	165	9	1	-	-	-	-	350
Total Count	4,587	4,530	4,532	4,497	4,191	7,995	90	13	1	1	-	-	30,437

Compensation													
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	45,057	47,898	49,302	50,196	47,587	48,312	-	-	-	-	-	-	46,643
25-29	52,310	55,327	57,921	60,407	60,667	61,117	-	-	-	-	-	-	56,781
30-34	62,785	64,491	62,982	66,751	66,779	71,505	71,534	-	-	-	-	-	66,623
35-39	68,302	72,950	72,265	72,721	71,692	79,810	79,329	71,316	-	-	-	-	74,195
40-44	62,807	72,399	71,791	73,163	78,450	84,034	143,093	143,412	-	-	-	-	75,971
45-49	64,433	67,451	70,418	72,546	77,809	78,809	120,026	67,224	41,040	-	-	-	73,550
50-54	63,949	63,521	69,967	72,259	71,417	78,529	107,431	299,760	-	38,700	-	-	72,097
55-59	60,306	71,280	69,125	72,180	73,754	77,356	171,955	107,679	-	-	-	-	73,335
60-64	67,518	66,604	67,667	76,407	73,729	78,708	85,370	92,996	-	-	-	-	74,100
65 & Over	90,499	88,847	81,945	123,099	100,727	79,165	106,504	44,904	-	-	-	-	90,437
Avg. Annual Compensation	\$ 60,156	\$ 64,717	\$ 66,256	\$ 69,593	\$ 70,916	\$ 76,945	\$ 110,052	\$ 125,852	\$ 41,040	\$ 38,700	\$ -	\$ -	\$ 69,203

Exhibit C-4g
Age and Service Distribution of Active Members by Count
and Average Compensation as of June 30, 2020
Safety Plan A

Count													
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	-	-	-	-	-	-	-	-	-	-	-	-	-
25-29	-	-	-	-	-	-	-	-	-	-	-	-	-
30-34	-	-	-	-	-	-	-	-	-	-	-	-	-
35-39	-	-	-	-	-	-	-	-	-	-	-	-	-
40-44	-	-	-	-	-	-	-	-	-	-	-	-	-
45-49	-	-	-	-	-	-	-	-	-	-	-	-	-
50-54	-	-	-	-	-	-	-	-	-	-	-	-	-
55-59	-	-	-	-	-	-	-	-	-	-	-	-	-
60-64	-	-	-	-	-	-	-	-	-	1	-	-	1
65 & Over	-	-	-	-	-	-	-	-	-	-	-	1	1
Total Count	-	-	-	-	-	-	-	-	-	1	-	1	2

Compensation													
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	-	-	-	-	-	-	-	-	-	-	-	-	-
60-64	-	-	-	-	-	-	-	-	-	166,344	-	-	166,344
65 & Over	-	-	-	-	-	-	-	-	-	-	-	134,724	134,724
Avg. Annual Compensation	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 166,344	\$ -	\$ 134,724	\$ 150,534

**Exhibit C-4h
 Age and Service Distribution of Active Members by Count
 and Average Compensation as of June 30, 2020
 Safety Plan B**

Count													
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	-	-	-	-	-	-	-	-	-	-	-	-	-
25-29	-	-	-	1	-	38	3	-	-	-	-	-	42
30-34	1	1	5	7	-	250	302	4	-	-	-	-	570
35-39	3	5	4	4	8	240	1,096	177	9	-	-	-	1,546
40-44	2	4	4	8	7	103	748	512	298	19	-	-	1,705
45-49	-	-	2	2	2	39	362	457	790	242	24	1	1,921
50-54	-	-	4	-	-	16	170	305	546	719	527	14	2,301
55-59	1	-	2	-	-	10	46	86	159	248	292	67	911
60-64	-	-	-	-	-	3	7	19	22	28	41	34	154
65 & Over	-	-	-	-	-	2	3	3	4	7	6	7	32
Total Count	7	10	21	22	17	701	2,737	1,563	1,828	1,263	890	123	9,182

Compensation													
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	-	-	-	104,748	-	108,426	102,292	-	-	-	-	-	107,901
30-34	84,636	91,896	102,744	103,233	-	110,954	112,632	120,537	-	-	-	-	111,664
35-39	92,620	103,814	91,467	103,341	106,607	114,228	117,775	120,263	135,719	-	-	-	117,357
40-44	89,028	112,812	115,143	103,022	111,242	114,484	118,347	125,697	132,745	140,176	-	-	122,925
45-49	-	-	105,594	114,852	101,100	113,118	116,922	128,943	136,675	147,921	144,013	188,880	132,078
50-54	-	-	145,020	-	-	108,247	116,750	132,009	137,006	153,603	165,183	165,784	146,476
55-59	115,416	-	147,936	-	-	119,441	117,023	128,401	133,170	148,159	168,599	186,472	151,123
60-64	-	-	-	-	-	136,112	115,951	129,471	134,091	141,151	162,909	182,169	152,307
65 & Over	-	-	-	-	-	127,176	140,124	125,056	139,014	144,276	135,510	155,210	141,107
Avg. Annual Compensation	\$ 93,710	\$ 106,222	\$ 115,586	\$ 104,301	\$ 107,867	\$ 112,790	\$ 117,178	\$ 127,443	\$ 135,798	\$ 150,915	\$ 165,428	\$ 181,169	\$ 132,390

Exhibit C-4i
Age and Service Distribution of Active Members by Count
and Average Compensation as of June 30, 2020
Safety Plan C

Count													
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	225	94	46	23	6	-	-	-	-	-	-	-	394
25-29	356	272	273	249	169	125	-	-	-	-	-	-	1,444
30-34	172	133	180	235	178	340	2	-	-	-	-	-	1,240
35-39	71	38	70	103	98	180	6	-	-	-	-	-	566
40-44	29	17	31	35	31	58	3	1	-	-	-	-	205
45-49	11	4	9	13	14	20	-	2	-	-	-	-	73
50-54	11	4	4	3	4	11	-	2	-	-	-	-	39
55-59	4	2	1	1	3	16	-	-	-	-	-	-	27
60-64	1	1	-	-	-	3	-	-	-	-	-	-	5
65 & Over	-	-	-	-	-	1	-	-	-	-	-	-	1
Total Count	880	565	614	662	503	754	11	5	-	-	-	-	3,994

Compensation													
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	75,870	85,587	84,567	84,748	93,600	-	-	-	-	-	-	-	79,992
25-29	80,025	87,942	91,445	97,035	100,148	104,324	-	-	-	-	-	-	91,067
30-34	81,898	86,261	92,570	97,594	102,040	106,129	128,250	-	-	-	-	-	96,500
35-39	82,934	86,281	93,910	99,124	102,831	107,855	109,550	-	-	-	-	-	99,115
40-44	82,387	87,162	92,109	99,700	102,382	108,620	105,060	93,588	-	-	-	-	98,041
45-49	79,357	87,780	98,468	100,961	109,593	106,249	-	100,146	-	-	-	-	99,758
50-54	96,334	102,537	99,528	113,040	109,827	115,012	-	110,094	-	-	-	-	105,941
55-59	88,416	106,524	144,288	127,032	199,764	134,290	-	-	-	-	-	-	132,813
60-64	84,636	153,960	-	-	-	129,636	-	-	-	-	-	-	125,501
65 & Over	-	-	-	-	-	139,716	-	-	-	-	-	-	139,716
Avg. Annual Compensation	\$ 79,880	\$ 87,304	\$ 91,816	\$ 97,468	\$ 102,334	\$ 107,302	\$ 111,725	\$ 102,814	\$ -	\$ -	\$ -	\$ -	\$ 93,801

Exhibit C-5
Distribution of Retired Members by Age and Retirement Year
as of June 30, 2020
All Plans

Age	Retirement Year											Total Count	Average Monthly Benefit
	Pre-1975	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04	2005-09	2010-14	2015-19	2020-24		
Under 35	-	-	-	-	-	1	1	10	11	99	13	135	\$ 1,072
35-39	-	-	-	-	-	-	2	4	15	73	3	97	2,513
40-44	-	-	-	-	-	1	2	18	65	120	13	219	3,056
45-49	-	-	-	-	-	2	41	59	93	159	13	367	3,090
50-54	-	-	-	1	16	71	119	107	176	639	133	1,262	3,517
55-59	-	-	-	5	70	139	155	159	536	2,345	478	3,887	5,580
60-64	-	-	11	45	107	138	173	441	1,860	3,426	523	6,724	5,184
65-69	-	11	58	84	101	157	461	1,806	3,241	5,323	631	11,873	4,656
70-74	7	94	180	146	181	640	2,152	3,382	4,309	3,191	271	14,553	4,630
75-79	20	140	185	212	591	1,655	2,803	2,550	1,905	1,386	127	11,574	4,689
80-84	57	109	153	452	1,199	1,588	1,691	1,041	660	1,049	89	8,088	4,203
85-89	77	105	340	684	1,238	915	546	314	275	749	76	5,319	3,996
90-94	61	167	382	452	564	242	158	154	158	407	19	2,764	3,608
95-99	33	115	194	193	119	59	59	49	57	117	6	1,001	3,073
100 & Over	20	34	29	13	11	10	9	7	11	4	1	149	2,947
Total Count	275	775	1,532	2,287	4,197	5,618	8,372	10,101	13,372	19,087	2,396	68,012	
Avg Monthly Benefit	\$ 2,310	\$ 2,973	\$ 3,122	\$ 3,558	\$ 4,526	\$ 4,449	\$ 5,167	\$ 4,478	\$ 4,537	\$ 4,569	\$ 5,277		\$ 4,541

Exhibit C-5a
Distribution of Retired Members by Age
and Retirement Year as of June 30, 2020
General Plan A

Age	Retirement Year											Total Count	Average Monthly Benefit
	Pre-1975	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04	2005-09	2010-14	2015-19	2020-24		
Under 35	-	-	-	-	-	-	-	2	2	7	-	11	\$ 357
35-39	-	-	-	-	-	-	-	2	1	3	1	7	1,267
40-44	-	-	-	-	-	-	1	5	6	1	1	14	2,069
45-49	-	-	-	-	-	-	-	3	4	4	-	11	2,498
50-54	-	-	-	1	1	1	3	1	2	8	1	18	2,481
55-59	-	-	-	-	-	4	2	7	4	13	2	32	3,382
60-64	-	-	1	5	-	7	9	25	46	90	6	189	4,340
65-69	-	5	22	16	8	21	150	333	684	256	14	1,509	5,377
70-74	2	47	61	43	48	336	763	1,407	724	300	35	3,766	5,723
75-79	12	62	73	70	384	775	1,539	808	261	432	35	4,451	5,503
80-84	34	65	69	336	775	962	822	219	151	540	38	4,011	4,739
85-89	42	70	257	477	957	566	186	94	95	470	44	3,258	4,173
90-94	42	126	297	376	451	125	70	75	85	300	13	1,960	3,634
95-99	28	102	176	172	85	40	38	39	39	94	5	818	3,032
100 & Over	17	34	29	13	6	8	7	6	9	2	1	132	3,064
Total Count	177	511	985	1,509	2,715	2,845	3,590	3,026	2,113	2,520	196	20,187	
Avg Monthly Benefit	\$ 1,778	\$ 2,421	\$ 2,520	\$ 3,051	\$ 4,378	\$ 4,515	\$ 6,123	\$ 6,241	\$ 6,224	\$ 3,865	\$ 3,497		\$ 4,845

Exhibit C-5b
Distribution of Retired Members by Age and Retirement Year
as of June 30, 2020
General Plan B

Age	Retirement Year											Total Count	Average Monthly Benefit	
	Pre-1975	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04	2005-09	2010-14	2015-19	2020-24			
Under 35	-	-	-	-	-	-	-	-	-	-	-	-	-	\$ -
35-39	-	-	-	-	-	-	-	-	-	-	-	-	-	-
40-44	-	-	-	-	-	-	-	-	-	-	-	-	-	-
45-49	-	-	-	-	-	-	-	-	-	1	-	1	2,738	
50-54	-	-	-	-	-	-	-	-	-	-	-	-	-	
55-59	-	-	-	-	-	-	-	-	-	1	1	2	4,215	
60-64	-	-	-	-	1	1	-	11	7	31	5	56	5,335	
65-69	-	-	-	-	-	1	7	19	74	59	1	161	6,055	
70-74	-	-	1	5	3	7	21	59	73	25	1	195	5,360	
75-79	-	-	2	3	5	13	38	31	23	7	1	123	4,403	
80-84	-	-	-	3	4	17	35	20	11	5	-	95	4,065	
85-89	-	-	1	3	10	27	6	7	3	7	-	64	3,326	
90-94	-	-	3	3	13	8	3	3	-	7	-	40	1,964	
95-99	-	-	-	3	3	-	1	-	-	2	-	9	2,154	
100 & Over	-	-	-	-	1	-	-	-	-	-	-	1	4,071	
Total Count	-	-	7	20	40	74	111	150	191	145	9	747		
Avg Monthly Benefit	\$ -	\$ -	\$ 1,338	\$ 1,418	\$ 2,025	\$ 2,492	\$ 3,684	\$ 4,716	\$ 6,332	\$ 6,130	\$ 6,098		\$ 4,783	

Exhibit C-5c
Distribution of Retired Members by Age and Retirement Year
as of June 30, 2020
General Plan C

Age	Retirement Year											Total Count	Average Monthly Benefit
	Pre-1975	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04	2005-09	2010-14	2015-19	2020-24		
Under 35	-	-	-	-	-	-	-	-	-	2	-	2	\$ 5,003
35-39	-	-	-	-	-	-	-	-	-	-	-	-	-
40-44	-	-	-	-	-	-	-	-	1	-	-	1	1,623
45-49	-	-	-	-	-	-	-	-	2	-	-	2	1,475
50-54	-	-	-	-	-	-	-	-	-	1	-	1	1,284
55-59	-	-	-	-	-	-	1	-	-	1	1	3	4,127
60-64	-	-	-	1	-	1	-	3	7	26	4	42	4,455
65-69	-	1	2	4	1	2	7	13	39	39	3	111	5,876
70-74	-	-	3	2	1	2	16	23	44	25	3	119	5,012
75-79	-	-	1	3	8	9	11	28	14	3	-	77	2,990
80-84	-	-	-	7	9	13	19	6	6	5	1	66	2,641
85-89	-	-	-	3	6	12	10	7	1	6	-	45	2,265
90-94	-	-	1	2	8	1	2	1	1	5	-	21	1,811
95-99	-	-	-	1	3	-	-	-	-	-	-	4	881
100 & Over	-	-	-	-	-	-	-	-	-	1	-	1	1,648
Total Count	-	1	7	23	36	40	66	81	115	114	12	495	
Avg Monthly Benefit	\$ -	\$ 1,844	\$ 1,301	\$ 1,016	\$ 1,369	\$ 2,119	\$ 2,879	\$ 3,361	\$ 5,846	\$ 5,418	\$ 7,764		\$ 4,068

Exhibit C-5d
Distribution of Retired Members by Age and Retirement Year
as of June 30, 2020
General Plan D

Age	Retirement Year										Total Count	Average Monthly Benefit	
	Pre-1975	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04	2005-09	2010-14	2015-19			2020-24
Under 35	-	-	-	-	-	-	-	2	6	45	7	60	\$ 880
35-39	-	-	-	-	-	-	1	1	3	28	1	34	1,679
40-44	-	-	-	-	-	1	-	5	28	30	6	70	2,057
45-49	-	-	-	-	-	2	12	14	34	71	4	137	2,269
50-54	-	-	-	-	3	5	19	30	74	375	75	581	2,106
55-59	-	-	-	-	9	29	46	60	343	875	151	1,513	2,740
60-64	-	-	2	5	16	38	60	251	603	1,634	342	2,951	3,733
65-69	-	1	3	12	24	45	172	466	1,085	2,469	315	4,592	4,168
70-74	-	-	-	13	31	120	281	609	1,518	1,381	123	4,076	3,717
75-79	-	-	4	11	41	136	291	675	723	402	31	2,314	3,322
80-84	-	-	4	13	45	123	332	363	234	170	17	1,301	2,717
85-89	-	-	-	10	26	118	146	85	66	65	11	527	2,551
90-94	-	-	2	3	27	46	29	26	12	37	2	184	2,030
95-99	-	-	-	4	11	8	7	2	1	6	-	39	1,679
100 & Over	-	-	-	-	1	-	-	-	-	1	-	2	690
Total Count	-	1	15	71	234	671	1,396	2,589	4,730	7,589	1,085	18,381	
Avg Monthly Benefit	\$ -	\$ 2,872	\$ 1,635	\$ 1,620	\$ 1,769	\$ 2,035	\$ 2,381	\$ 2,796	\$ 3,540	\$ 3,954	\$ 4,622		\$ 3,495

Exhibit C-5e
Distribution of Retired Members by Age and Retirement Year
as of June 30, 2020
General Plan E

Age	Retirement Year											Total Count	Average Monthly Benefit
	Pre-1975	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04	2005-09	2010-14	2015-19	2020-24		
Under 35	-	-	-	-	-	1	-	3	1	19	-	24	\$ 696
35-39	-	-	-	-	-	-	1	1	5	10	-	17	1,012
40-44	-	-	-	-	-	-	-	2	4	17	3	26	1,194
45-49	-	-	-	-	-	-	-	1	12	18	1	32	1,191
50-54	-	-	-	-	-	-	2	5	17	24	3	51	1,082
55-59	-	-	-	-	-	-	2	5	14	300	56	377	1,036
60-64	-	-	-	-	-	-	2	6	366	695	109	1,178	1,752
65-69	-	-	-	-	-	4	8	434	733	2,244	265	3,688	2,909
70-74	-	-	-	-	-	5	337	715	1,809	1,300	88	4,254	2,699
75-79	-	-	-	-	2	182	363	938	839	375	40	2,739	2,332
80-84	-	-	-	-	57	196	429	409	223	166	16	1,496	1,867
85-89	-	-	-	21	71	163	172	94	77	74	10	682	1,475
90-94	-	-	-	10	48	51	28	25	20	14	1	197	1,161
95-99	-	-	1	10	13	8	5	1	7	4	1	50	830
100 & Over	-	-	-	-	3	2	-	1	-	-	-	6	438
Total Count	-	-	1	41	194	612	1,349	2,640	4,127	5,260	593	14,817	
Avg Monthly Benefit	\$ -	\$ -	\$ 81	\$ 297	\$ 555	\$ 815	\$ 1,275	\$ 1,696	\$ 2,596	\$ 3,002	\$ 3,305		\$ 2,381

Exhibit C-5f
Distribution of Retired Members by Age and Retirement Year
as of June 30, 2020
General Plan G

Age	Retirement Year											Total Count	Average Monthly Benefit	
	Pre-1975	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04	2005-09	2010-14	2015-19	2020-24			
Under 35	-	-	-	-	-	-	-	-	-	-	1	-	1	\$ 2,430
35-39	-	-	-	-	-	-	-	-	-	-	1	-	1	1,289
40-44	-	-	-	-	-	-	-	-	-	-	1	-	1	2,361
45-49	-	-	-	-	-	-	-	-	-	-	2	-	2	1,024
50-54	-	-	-	-	-	-	-	-	-	-	1	1	2	247
55-59	-	-	-	-	-	-	-	-	-	-	1	5	6	680
60-64	-	-	-	-	-	-	-	-	-	-	7	2	9	742
65-69	-	-	-	-	-	-	-	-	-	-	15	7	22	1,029
70-74	-	-	-	-	-	-	-	-	-	-	10	5	15	2,269
75-79	-	-	-	-	-	-	-	-	-	-	5	-	5	2,364
80-84	-	-	-	-	-	-	-	-	-	-	2	-	2	1,715
85-89	-	-	-	-	-	-	-	-	-	-	-	-	-	-
90-94	-	-	-	-	-	-	-	-	-	-	-	-	-	-
95-99	-	-	-	-	-	-	-	-	-	-	-	-	-	-
100 & Over	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Count	-	-	-	-	-	-	-	-	-	-	46	20	66	
Avg Monthly Benefit	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,568	\$ 959		\$ 1,383

Exhibit C-5g
Distribution of Retired Members by Age and Retirement Year
as of June 30, 2020
Safety Plan A

Age	Retirement Year											Total Count	Average Monthly Benefit
	Pre-1975	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04	2005-09	2010-14	2015-19	2020-24		
Under 35	-	-	-	-	-	-	-	-	2	2	4	8	\$ -
35-39	-	-	-	-	-	-	-	-	-	-	-	-	-
40-44	-	-	-	-	-	-	-	-	1	1	-	2	6,667
45-49	-	-	-	-	-	-	-	-	-	1	-	1	5,134
50-54	-	-	-	-	-	-	3	-	1	2	-	6	5,867
55-59	-	-	-	-	2	-	1	-	2	13	1	19	5,296
60-64	-	-	1	1	1	1	3	6	47	20	6	86	10,117
65-69	-	4	21	24	21	41	43	282	160	74	15	685	9,653
70-74	5	47	109	67	82	144	679	412	68	122	16	1,751	8,602
75-79	8	78	102	125	143	530	533	63	36	157	19	1,794	8,135
80-84	23	44	80	92	308	275	53	22	34	160	17	1,108	7,268
85-89	35	35	81	169	167	28	25	27	32	124	10	733	6,792
90-94	19	41	79	58	16	11	26	24	40	43	3	360	5,919
95-99	5	13	17	3	4	3	8	7	10	11	-	81	5,761
100 & Over	3	-	-	-	-	-	2	-	2	-	-	7	3,567
Total Count	98	262	490	539	744	1,033	1,376	843	435	730	91	6,641	
Avg Monthly Benefit	\$ 3,272	\$ 4,054	\$ 4,473	\$ 5,815	\$ 7,580	\$ 8,422	\$ 9,868	\$ 10,357	\$ 9,249	\$ 6,793	\$ 6,659		\$ 7,973

Exhibit C-5h
Distribution of Retired Members by Age and Retirement Year
as of June 30, 2020
Safety Plan B

Age	Retirement Year											Total Count	Average Monthly Benefit
	Pre-1975	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04	2005-09	2010-14	2015-19	2020-24		
Under 35	-	-	-	-	-	-	1	3	-	21	2	27	\$ 1,964
35-39	-	-	-	-	-	-	-	-	6	31	1	38	4,194
40-44	-	-	-	-	-	-	1	6	25	69	3	104	4,278
45-49	-	-	-	-	-	-	29	41	41	62	8	181	4,115
50-54	-	-	-	-	12	65	92	71	82	228	53	603	5,104
55-59	-	-	-	5	59	106	103	87	173	1,138	260	1,931	8,761
60-64	-	-	7	33	89	90	99	139	784	923	49	2,213	8,853
65-69	-	-	10	28	47	43	74	259	466	166	11	1,104	8,166
70-74	-	-	6	16	16	26	55	157	72	28	-	376	6,504
75-79	-	-	3	-	8	10	28	7	9	5	1	71	4,553
80-84	-	-	-	1	1	2	1	2	1	1	-	9	4,488
85-89	-	-	1	1	1	1	1	-	1	3	1	10	1,797
90-94	-	-	-	-	1	-	-	-	-	1	-	2	1,069
95-99	-	-	-	-	-	-	-	-	-	-	-	-	-
100 & Over	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Count	-	-	27	84	234	343	484	772	1,660	2,676	389	6,669	
Avg Monthly Benefit	\$ -	\$ -	\$ 2,418	\$ 2,614	\$ 3,489	\$ 3,831	\$ 4,242	\$ 6,370	\$ 8,517	\$ 9,380	\$ 10,819		\$ 7,922

Exhibit C-5i
Distribution of Retired Members and Beneficiaries by Age and Retirement Year
as of June 30, 2020
Safety Plan C

Age	Retirement Year											Total Count	Average Monthly Benefit
	Pre-1975	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04	2005-09	2010-14	2015-19	2020-24		
Under 35	-	-	-	-	-	-	-	-	-	2	-	2	\$ 2,887
35-39	-	-	-	-	-	-	-	-	-	-	-	-	-
40-44	-	-	-	-	-	-	-	-	-	1	-	1	2,976
45-49	-	-	-	-	-	-	-	-	-	-	-	-	-
50-54	-	-	-	-	-	-	-	-	-	-	-	-	-
55-59	-	-	-	-	-	-	-	-	-	3	1	4	1,217
60-64	-	-	-	-	-	-	-	-	-	-	-	-	-
65-69	-	-	-	-	-	-	-	-	-	1	-	1	23,607
70-74	-	-	-	-	-	-	-	-	1	-	-	1	18,381
75-79	-	-	-	-	-	-	-	-	-	-	-	-	-
80-84	-	-	-	-	-	-	-	-	-	-	-	-	-
85-89	-	-	-	-	-	-	-	-	-	-	-	-	-
90-94	-	-	-	-	-	-	-	-	-	-	-	-	-
95-99	-	-	-	-	-	-	-	-	-	-	-	-	-
100 & Over	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Count	-	-	-	-	-	-	-	-	1	7	1	9	
Avg Monthly Benefit	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 18,381	\$ 5,162	\$ 1,090		\$ 6,178

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	2.68%	5.36%	4.57%	4.57%	7.34%	4.17%	8.34%	11.17%
17	2.74%	5.48%	4.66%	4.66%	7.34%	4.17%	8.34%	11.17%
18	2.80%	5.59%	4.76%	4.76%	7.34%	4.17%	8.34%	11.17%
19	2.86%	5.71%	4.87%	4.87%	7.34%	4.25%	8.50%	11.17%
20	2.92%	5.83%	4.97%	4.97%	7.34%	4.34%	8.67%	11.17%
21	2.98%	5.95%	5.07%	5.07%	7.34%	4.42%	8.85%	11.17%
22	3.04%	6.08%	5.18%	5.18%	7.34%	4.51%	9.03%	11.17%
23	3.10%	6.21%	5.29%	5.29%	7.34%	4.61%	9.21%	11.17%
24	3.17%	6.34%	5.40%	5.40%	7.34%	4.70%	9.40%	11.17%
25	3.24%	6.47%	5.52%	5.52%	7.34%	4.74%	9.48%	11.17%
26	3.30%	6.61%	5.63%	5.63%	7.34%	4.78%	9.55%	11.17%
27	3.37%	6.75%	5.75%	5.75%	7.34%	4.87%	9.75%	11.17%
28	3.45%	6.89%	5.87%	5.87%	7.34%	4.97%	9.95%	11.17%
29	3.52%	7.04%	6.00%	6.00%	7.34%	5.08%	10.15%	11.17%
30	3.59%	7.19%	6.12%	6.12%	7.34%	5.14%	10.28%	11.17%
31	3.67%	7.34%	6.25%	6.25%	7.34%	5.20%	10.40%	11.17%
32	3.75%	7.50%	6.38%	6.38%	7.34%	5.31%	10.61%	11.17%
33	3.83%	7.66%	6.52%	6.52%	7.34%	5.41%	10.83%	11.17%
34	3.91%	7.82%	6.66%	6.66%	7.34%	5.52%	11.04%	11.17%
35	3.99%	7.98%	6.80%	6.80%	7.34%	5.63%	11.27%	11.17%
36	4.07%	8.14%	6.95%	6.95%	7.34%	5.75%	11.49%	11.17%
37	4.15%	8.30%	7.10%	7.10%	7.34%	5.86%	11.72%	11.17%
38	4.23%	8.47%	7.25%	7.25%	7.34%	5.98%	11.95%	11.17%
39	4.32%	8.63%	7.40%	7.40%	7.34%	6.09%	12.19%	11.17%
40	4.40%	8.80%	7.55%	7.55%	7.34%	6.21%	12.43%	11.17%
41	4.49%	8.97%	7.70%	7.70%	7.34%	6.34%	12.67%	11.17%
42	4.57%	9.15%	7.85%	7.85%	7.34%	6.45%	12.91%	11.17%
43	4.66%	9.32%	8.01%	8.01%	7.34%	6.56%	13.12%	11.17%
44	4.75%	9.49%	8.17%	8.17%	7.34%	6.65%	13.30%	11.17%
45	4.83%	9.66%	8.33%	8.33%	7.34%	6.70%	13.40%	11.17%
46	4.91%	9.83%	8.49%	8.49%	7.34%	6.70%	13.40%	11.17%
47	4.99%	9.97%	8.66%	8.66%	7.34%	6.70%	13.40%	11.17%
48	5.04%	10.09%	8.82%	8.82%	7.34%	6.70%	13.40%	11.17%
49	5.09%	10.18%	8.98%	8.98%	7.34%	6.70%	13.40%	11.17%
50	5.12%	10.23%	9.14%	9.14%	7.34%	6.70%	13.40%	11.17%
51	5.13%	10.25%	9.30%	9.30%	7.34%	6.70%	13.40%	11.17%
52	5.13%	10.25%	9.43%	9.43%	7.34%	6.70%	13.40%	11.17%
53	5.13%	10.25%	9.54%	9.54%	7.34%	6.70%	13.40%	11.17%
54	5.13%	10.25%	9.63%	9.63%	7.34%	6.70%	13.40%	11.17%
55	5.13%	10.25%	9.68%	9.68%	7.34%	6.70%	13.40%	11.17%
56	5.13%	10.25%	9.70%	9.70%	7.34%	6.70%	13.40%	11.17%
57	5.13%	10.25%	9.70%	9.70%	7.34%	6.70%	13.40%	11.17%
58	5.13%	10.25%	9.70%	9.70%	7.34%	6.70%	13.40%	11.17%
59	5.13%	10.25%	9.70%	9.70%	7.34%	6.70%	13.40%	11.17%
60	5.13%	10.25%	9.70%	9.70%	7.34%	6.70%	13.40%	11.17%

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	4.94%	6.75%	5.80%	5.76%	9.10%	7.80%	11.09%	14.42%
17	5.05%	6.90%	5.91%	5.87%	9.10%	7.80%	11.09%	14.42%
18	5.16%	7.04%	6.04%	5.99%	9.10%	7.80%	11.09%	14.42%
19	5.28%	7.19%	6.18%	6.13%	9.10%	7.95%	11.31%	14.42%
20	5.39%	7.34%	6.30%	6.26%	9.10%	8.12%	11.53%	14.42%
21	5.50%	7.49%	6.43%	6.39%	9.10%	8.27%	11.77%	14.42%
22	5.61%	7.65%	6.57%	6.52%	9.10%	8.44%	12.01%	14.42%
23	5.72%	7.82%	6.71%	6.66%	9.10%	8.63%	12.25%	14.42%
24	5.85%	7.98%	6.85%	6.80%	9.10%	8.80%	12.50%	14.42%
25	5.98%	8.15%	7.00%	6.95%	9.10%	8.87%	12.61%	14.42%
26	6.09%	8.32%	7.14%	7.09%	9.10%	8.95%	12.70%	14.42%
27	6.22%	8.50%	7.29%	7.24%	9.10%	9.11%	12.97%	14.42%
28	6.36%	8.67%	7.44%	7.39%	9.10%	9.30%	13.24%	14.42%
29	6.49%	8.86%	7.61%	7.56%	9.10%	9.51%	13.50%	14.42%
30	6.62%	9.05%	7.76%	7.71%	9.10%	9.62%	13.68%	14.42%
31	6.77%	9.24%	7.93%	7.87%	9.10%	9.73%	13.84%	14.42%
32	6.92%	9.44%	8.09%	8.03%	9.10%	9.94%	14.11%	14.42%
33	7.06%	9.64%	8.27%	8.21%	9.10%	10.12%	14.41%	14.42%
34	7.21%	9.85%	8.45%	8.39%	9.10%	10.33%	14.69%	14.42%
35	7.36%	10.05%	8.62%	8.56%	9.10%	10.54%	14.99%	14.42%
36	7.51%	10.25%	8.81%	8.75%	9.10%	10.76%	15.29%	14.42%
37	7.66%	10.45%	9.00%	8.94%	9.10%	10.97%	15.59%	14.42%
38	7.80%	10.66%	9.19%	9.13%	9.10%	11.19%	15.90%	14.42%
39	7.97%	10.87%	9.38%	9.32%	9.10%	11.40%	16.22%	14.42%
40	8.12%	11.08%	9.57%	9.51%	9.10%	11.62%	16.54%	14.42%
41	8.28%	11.29%	9.76%	9.70%	9.10%	11.87%	16.85%	14.42%
42	8.43%	11.52%	9.95%	9.89%	9.10%	12.07%	17.17%	14.42%
43	8.60%	11.73%	10.16%	10.09%	9.10%	12.28%	17.45%	14.42%
44	8.76%	11.95%	10.36%	10.29%	9.10%	12.45%	17.69%	14.42%
45	8.91%	12.16%	10.56%	10.49%	9.10%	12.54%	17.83%	14.42%
46	9.06%	12.38%	10.77%	10.69%	9.10%	12.54%	17.83%	14.42%
47	9.20%	12.55%	10.98%	10.91%	9.10%	12.54%	17.83%	14.42%
48	9.30%	12.70%	11.18%	11.11%	9.10%	12.54%	17.83%	14.42%
49	9.39%	12.82%	11.39%	11.31%	9.10%	12.54%	17.83%	14.42%
50	9.44%	12.88%	11.59%	11.51%	9.10%	12.54%	17.83%	14.42%
51	9.46%	12.90%	11.79%	11.71%	9.10%	12.54%	17.83%	14.42%
52	9.46%	12.90%	11.96%	11.88%	9.10%	12.54%	17.83%	14.42%
53	9.46%	12.90%	12.10%	12.01%	9.10%	12.54%	17.83%	14.42%
54	9.46%	12.90%	12.21%	12.13%	9.10%	12.54%	17.83%	14.42%
55	9.46%	12.90%	12.28%	12.19%	9.10%	12.54%	17.83%	14.42%
56	9.46%	12.90%	12.30%	12.22%	9.10%	12.54%	17.83%	14.42%
57	9.46%	12.90%	12.30%	12.22%	9.10%	12.54%	17.83%	14.42%
58	9.46%	12.90%	12.30%	12.22%	9.10%	12.54%	17.83%	14.42%
59	9.46%	12.90%	12.30%	12.22%	9.10%	12.54%	17.83%	14.42%
60	9.46%	12.90%	12.30%	12.22%	9.10%	12.54%	17.83%	14.42%

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 Service	Average Monthly Salary	Number	Annual Salary (in millions)	Average Age	Average Service	Average Monthly Salary	Number	Annual Salary (in millions)	Average Age	Average 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
2017	84,513	\$ 6,290	47.3	14.5	\$ 6,202	12,698	\$ 1,388	42.5	15.6	\$ 9,110	97,211	\$ 7,678	46.7	14.6	\$ 6,582
2018	85,703	\$ 6,610	47.2	14.4	\$ 6,428	12,771	\$ 1,452	42.2	15.3	\$ 9,471	98,474	\$ 8,062	46.6	14.5	\$ 6,822
2019	86,392	\$ 6,816	47.3	14.4	\$ 6,574	12,794	\$ 1,540	42.0	15.1	\$ 10,032	99,186	\$ 8,356	46.6	14.5	\$ 7,020
2020	86,930	\$ 7,186	47.3	14.4	\$ 6,889	13,178	\$ 1,591	41.4	14.4	\$ 10,058	100,108	\$ 8,777	46.5	14.4	\$ 7,306

**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
2017	51,083	\$ 2,079	73.8	\$ 3,391	12,241	\$ 1,030	68.4	\$ 7,012	63,324	\$ 3,109	72.7	\$ 4,091
2018	52,292	\$ 2,192	73.9	\$ 3,493	12,588	\$ 1,104	68.5	\$ 7,308	64,880	\$ 3,296	72.8	\$ 4,233
2019	53,560	\$ 2,316	73.9	\$ 3,603	12,947	\$ 1,184	68.6	\$ 7,620	66,507	\$ 3,500	72.9	\$ 4,385
2020	54,693	\$ 2,436	74.0	\$ 3,712	13,319	\$ 1,270	68.8	\$ 7,946	68,012	\$ 3,706	73.0	\$ 4,541

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%
2017	14.62%	5.87%	8.75%	10.10%	18.85%	25.69%	10.56%	15.13%	10.10%	25.23%	16.70%	6.76%	9.94%	10.10%	20.04%
2018	14.77%	6.04%	8.73%	10.99%	19.72%	25.70%	10.59%	15.11%	10.99%	26.10%	16.80%	6.88%	9.92%	10.99%	20.91%
2019	16.24%	6.74%	9.50%	11.73%	21.23%	28.58%	11.78%	16.80%	11.73%	28.53%	18.54%	7.68%	10.86%	11.73%	22.59%
2020	16.31%	6.86%	9.45%	13.75%	23.20%	28.95%	11.88%	17.07%	13.75%	30.82%	18.69%	7.80%	10.89%	13.75%	24.64%

**Exhibit E-4
Funded Status History**

Valuation Year	Actuarial Liability (AAL)	Market Value Basis			Actuarial Value Basis			Annual Total Payroll	Asset Smoothing Ratio (AVA / MVA)	Asset Volatility Ratio (MVA / Payroll)	Liability Volatility Ratio (AAL / Payroll)
		Market Value of Assets (MVA) ¹	Unfunded AAL (UAAL)/Surplus MVA Basis	Funded Ratio MVA Basis	Actuarial Value of Assets (AVA) ¹	Unfunded AAL (UAAL)/Surplus AVA Basis	Funded Ratio AVA Basis				
1996 ²	17,300	18,600	1,300	107.5%	17,700	400	102.3%	3,356	95.2%	5.5	5.2
1997 ²	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
2017	65,311	52,217	(13,094)	80.0%	52,166	(13,145)	79.9%	7,749	99.9%	6.7	8.4
2018	68,527	55,737	(12,790)	81.3%	55,233	(13,294)	80.6%	8,079	99.1%	6.9	8.5
2019	74,635	57,712	(16,923)	77.3%	57,617	(17,018)	77.2%	8,423	99.8%	6.9	8.9
2020	78,275	57,925	(20,350)	74.0%	59,763	(18,512)	76.3%	8,819	103.2%	6.6	8.9

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

Valuation Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Prior Year UAAL	7,807	9,405	11,770	13,315	11,288	9,491	12,841	13,145	13,294	17,018
Normal Cost	1,200	1,237	1,430	1,163	1,068	1,118	1,246	1,243	1,352	1,553
Contributions	(1,461)	(1,646)	(1,455)	(1,824)	(1,936)	(1,902)	(1,880)	(2,116)	(2,303)	(2,459)
Interest	605	724	895	999	814	682	954	968	976	1,212
Changes in Assumptions/Methodology	221	457	511	-	-	2,922	-	-	2,528	-
Changes in Benefit Provisions	-	-	-	-	-	-	-	-	-	-
Expected Current Year UAAL	8,372	10,177	13,151	13,653	11,234	12,311	13,161	13,240	15,847	17,324
Actual Current Year UAAL	9,405	11,770	13,315	11,288	9,491	12,841	13,145	13,294	17,018	18,512
Total (Gain)/Loss on UAAL	1,033	1,593	164	(2,365)	(1,743)	530	(16)	54	1,171	1,188
Asset (Gains)/Losses	1,761	2,337	893	(1,664)	(1,263)	496	(421)	(411)	477	701
Salary Increases	(579)	(629)	(563)	(291)	79	162	277	223	486	388
All Other Actuarial (Gains)/Losses	(149)	(115)	(166)	(410)	(559)	(128)	128	242	208	99

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 ¹	N/A ¹	N/A ¹	N/A ¹	N/A ¹	N/A ¹	16.01%
2005	16.01%	N/A ¹	N/A ¹	N/A ¹	N/A ¹	N/A ¹	N/A ¹	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%
2017	21.21%	0.00%	0.00%	0.05%	0.00%	-0.32%	0.06%	21.00%
2018	21.00%	0.00%	0.00%	0.04%	0.00%	-0.30%	0.17%	20.91%
2019	20.91%	0.00%	1.10%	0.20%	0.00%	0.42%	-0.04%	22.59%
2020	22.59%	0.00%	1.09%	0.04%	0.00%	0.58%	0.34%	24.64%

1. Data not available.

**Exhibit E-7
 Funding Policy History**

	Description of changes, if any	Effective Date	Impact on Contribution Rate	Impact on Funded Ratio	Rationale
2009	Changed from 3-year to 5-year asset smoothing. Included STAR reserve as a valuation asset. Adopted 30-year layered amortization period.	June 30, 2009	-1.68% ¹	4.40%	See June 30, 2009 valuation report.
2010	Included STAR reserve as a valuation asset.	June 30, 2010	-0.52% ¹	1.40%	See June 30, 2010 valuation report.
2011	Included STAR reserve as a valuation asset.	June 30, 2011	-0.52% ¹	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% ¹	1.20%	See June 30, 2012 valuation report.
2019	Adopted 20-year layered amortization period for new layers. Existing layers are set to be no greater than 22 years, so they are fully amortized no later than 2042.	June 30, 2019	0.30%	0.00%	See June 30, 2019 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

Valuation Year	Price Inflation	Wage Inflation	Real Wage Inflation ¹	Investment Return Assumption	Real Investment Return ²	Effective Date	Change in Contribution Rate	Change in Funded Ratio
2004	3.50%	3.75%	0.25%	7.75%	4.25%	July 1, 2004	1.65%	N/A ³
2007	3.50%	4.00%	0.50%	7.75%	4.25%	July 1, 2007	0.66%	-1.3%
2011	3.45%	3.95%	0.50%	7.70%	4.25%	July 1, 2011	0.25%	-0.3%
2012	3.35%	3.85%	0.50%	7.60%	4.25%	July 1, 2012	0.54%	-0.7%
2013	3.00%	3.50%	0.50%	7.50%	4.50%	July 1, 2013	0.37%	-0.1%
2016	2.75%	3.25%	0.50%	7.25%	4.50%	July 1, 2016	1.14%	-1.4%
2019	2.75%	3.25%	0.50%	7.00%	4.25%	July 1, 2019	2.20%	-2.3%

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

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

	Demographic Assumption Revisions	Effective Date	Change in Contribution Rate	Change in Funded Ratio	Rationale
2004	Mortality, merit salary scale, retirement, termination, probability of refund, probability of eligible survivor revised.	July 1, 2004	-0.63%	N/A ¹	Refer to the 2004 Investigation of Experience Report.
2007	Mortality, retirement, termination, probability of refund, merit salary scale for Safety members revised.	July 1, 2007	0.68%	N/A ¹	Refer to the 2007 Investigation of Experience Report.
2010	Mortality, retirement, termination, probability of refund, assumed benefit commencement age revised.	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.
2019	Mortality, retirement, termination, probability of refund, merit salary scale, assumed benefit commencement age.	July 1, 2019	0.80%	-0.4%	2019 Investigation of Experience.

1. Information not available.

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.

Accrued Benefit

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.

Actuarial Accrued Liability

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.

Actuarial Assumptions

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.

Actuarial Gain (Loss)

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.

Actuarial Present Value

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.

Actuarial Valuation

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.

Actuarial Value of Assets

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.

Actuarially Equivalent

Of equal Actuarial Present Value, determined as of a given date with each value based on the same set of Actuarial Assumptions.

Amortization Payment

That portion of the pension plan contribution which is designed to pay interest on and to amortize the Unfunded Actuarial Accrued Liability.

Contingency Reserve

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. Amounts are allocated to the Contingency Reserve to the extent there are positive recognized earnings to allocate. The California Government Code (Sections 31592 and 31592.2) requires the Contingency Reserve to be set at a minimum of 1.0% of the market value of total assets.

County Contribution Credit Reserve

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).

Employer Reserve

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.

Entry Age Actuarial Cost Method

A method under which the Actuarial Present Value of the Projected Benefits of each individual included in an Actuarial Valuation is allocated on a level basis over the earnings or service of the individual between entry age and assumed exit 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.

Funded Ratio

A measurement of the funded status of the Plan. 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.

Funding Goal

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.

Layered Amortization Period

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. Subsequent changes in the UAAL were amortized over new closed 30-year periods. Effective with the June 30, 2019 valuation all existing layers with more than 22 years remaining as of June 30, 2020 were re-amortized over closed 22-year periods. All new UAAL layers thereafter are amortized over closed 20-year periods beginning with the date the contribution is first expected to be made. All amortization payments are based on a level percent of pay.

Member Reserve

The accumulation of member contributions. Additions include member contributions and related earnings. Deductions include annuity payments to retirees and refunds to members.

Non-Valuation Reserves

Reserves excluded from the calculation of contribution rates, including the Contingency Reserve, the County Contribution Credit Reserve, and any other reserves specifically excluded by the Board of Investments.

Normal Cost

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.

Plan Year

A 12-month period beginning July 1 and ending June 30.

Projected Benefits

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.

STAR Reserve

Reserves accumulated for the payment of cost-of-living benefits as defined in California Government Code Section 31874.3.

Supplemental Targeted Adjustment for Retirees (STAR) Benefits 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.

Surplus Funding

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."

Unfunded Actuarial Accrued Liability

The excess, if any, of the Actuarial Accrued Liability over the Actuarial Value of Assets.

Valuation Date

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.

Valuation Reserves

All reserves excluding the Non-Valuation Reserves.