Alameda County Employees' Retirement Association

BOARD OF RETIREMENT

ACTUARIAL COMMITTEE/BOARD MEETING NOTICE and AGENDA

THIS MEETING WILL BE CONDUCTED VIA TELECONFERENCE PER GOV'T CODE § 54953(e)

ACERA MISSION:

To provide ACERA members and employers with flexible, cost-effective, participant-oriented benefits through prudent investment management and superior member services.

Thursday, April 21, 2022
11:00 am

ZOOM INSTRUCTIONS	COMMITTEE MEMBERS	
The public can view the Teleconference and comment via audio during the meeting. To join this Teleconference, please click on the link below. https://zoom.us/join Call-In Number: 1 699 900 6833 Webinar ID: 879 6337 8479 Passcode: 699406 For help joining a Zoom meeting, see:https://support.zoom.us/hc/en-us/articles/201362193	**OPHELIA BASGAL, CHAIR**	**APPOINTED**
	HENRY LEVY, VICE CHAIR	**TREASURER**
	KEITH CARSON	**APPOINTED**
	LIZ KOPPENHAVER	**ELECTED RETIRED**
	GEORGE WOOD	**ELECTED**

This is a meeting of the Actuarial Committee if a quorum of the Actuarial Committee attends and it is a meeting of the Board if a quorum of the Board attends. This is a joint meeting of the Actuarial Committee and the Board if a quorum of each attends..

The order of agenda items is subject to change without notice. Board and Committee agendas and minutes are available online at www.acera.org.

Note regarding public comments: Public comments are limited to four (4) minutes per person in total.

Note regarding accommodations: The Board of Retirement will provide reasonable accommodations for persons with special needs of accessibility who plan to attend Board meetings. Please contact ACERA at (510) 628-3000 to arrange for accommodation.

Any materials required by law to be made available to the public prior to a meeting of the Board of Retirement will be provided upon request.

ACTUARIAL COMMITTEE/BOARD MEETING

Call to Order: 11:00 am

Roll Call

Public Input

Action Items: Matters for Discussion and Possible Motion by the Committee

None

Information Items: These items are not presented for Committee action but consist of status updates and cyclical reports

1. Proposed 2022 Actuarial Committee Work Plan
   -David Nelsen
2. Presentation and discussion of the Actuarial Valuation and Review as of December 31, 2021
   -David Nelsen
   - Andy Yeung, Segal

Trustee Input

Future Discussion Items

May

- Discussion and possible motion to adopt the Actuarial Valuation as of December 31, 2021 (Segal)

June

- Segal presentation of the deterministic projections as part of the Risk Assessment Report based on the Actuarial Valuation and Review as of December 31, 2021

Establishment of Next Meeting Date

May 19, 2022

Adjournment

ACERA

2022 Proposed Actuarial Committee Work Plan

Date	Action Items	Information Items	Staff Items
Feb 17		• Proposed 2022 Actuarial Committee Work Plan	
April 21		• Presentation and discussion of the Actuarial Valuation and Review as of December 31, 2021 (Segal)	• Participating Employers meeting (TBD) with Segal to present: ○ Actuarial Valuation as of December 31, 2021
May 19	• Discussion and possible motion to adopt the Actuarial Valuation as of December 31, 2021 (Segal)		
June 16		• Segal presentation of the deterministic projections as part of the Risk Assessment Report based on the Actuarial Valuation and Review as of December 31, 2021	
July 21		• TBD	
August 18		• TBD	
October 20		• TBD	

Note: This work plan is subject to change without prior notice. Periodic rearrangements of agenda items will be made to the work plan to provide a reasonable length of time for each meeting.

MEMORANDUM TO THE ACTUARIAL COMMITTEE

DATE: April 21, 2022

TO: Members of the Actuarial Committee

FROM: Lisa Johnson, Assistant Chief Executive Officer

SUBJECT: Draft Actuarial Valuation and Review as of December 31, 2021

Executive Summary

The draft Actuarial Valuation and Review as of December 31, 2021, is attached for review and discussion. The funded ratio for the December 31, 2021, on the Valuation Value of Assets (VVA) basis, increased from 76.2% to 86.5%. The increase was primarily the result of additional voluntary County Safety and LARPD General contributions made by the two employers to reduce their UAAL and associated contribution rates, the gain on the VVA from the recognition of past and current years' investment gains after smoothing and the expected increase due to contributions made to pay down the unfunded liability, offset somewhat by the loss due to actual contributions lower than expected, higher than expected cos-of-living adjustment for continuing retirees and higher than expected salary increases for active members.

A summary of the Unfunded Actuarial Accrued Liability (UAAL) and the aggregate employer and employee contribution rates from the 2021 funding valuation report are provided here for quick reference.

The UAAL decreased from $2,500.0 million in 2020 to $1,476.8 million in 2021. This decrease in the UAAL was primarily due to the following factors:

a) Additional voluntary contributions made by two employers, County Safety and LARPD General to reduce their UAAL and associated contribution rates.
b) Higher than expected return on investments (after smoothing); and the expected decrease due to contributions made to pay down the UAAL, offset somewhat by the loss due to actual contributions lower than expected, higher than expected cost-of-living adjustments for continuing retirees and higher than expected salary increases for active members.

The aggregate employer contribution rate[1] has decreased from 31.45% of payroll to 23.41% of payroll. This change was primarily due to:

a) Contribution credit from additional voluntary County Safety and LARPD General contributions made by the two employers to reduce their UAAL and associated contribution rates;
b) Higher than expected return on investments (after smoothing);
c) Amortizing the prior year's UAAL over a larger than expected total projected payroll; and,

[1] For employers with active member payroll.

d) Offset somewhat by actual contributions lower than expected; higher than expected cost-of-living adjustment for continuing retirees; and higher than expected salary increases for active members.

The aggregate member contribution rate increased from 9.98% of payroll to 10.00% of payroll, mainly due to the changes in member demographics.

Next Step: Prior to bringing the finalized 2021 valuation report back to the actuarial committee at the May 19, 2022 meeting, staff will hold a participating employers meeting on April 28, 2022, to review and discuss the results of the study with employer representatives.

***Reporting Methodology for ASOP No. 51 Implementation*:** In February 2019, the Board adopted staff's recommendation to direct Segal to prepare a separate report to identify risks that "may reasonably be anticipated to significantly affect the plan's future financial condition" (ASOP 51). Based on the Actuarial Valuation and Review as of December 31, 2021, Segal will provide the results of its risk report to the Actuarial Committee on June 16, 2022.

Return Assumption Impact

Similar to what Segal disclosed in ACERA's December 31, 2020, valuation report, the 7.0% investment return assumption that the Board approved on October 15, 2020, for determining the liabilities for funding purposes and used for establishing the employer and member contribution rates in this report has continued to be developed without considering the impact of any future 50/50 excess earnings allocation. This is based on Segal's understanding that Article 5.5 of the Statute, which authorizes the allocation of 50% of excess earnings to the SRBR, does not allow for the use of a different investment return for funding than is used for interest crediting. This would appear in effect to preclude the prefunding of the SRBR through the use of an assumption lower than the market earnings assumption rate of 7.00%.

As required by the Actuarial Standard of Practice (ASOP) No. 4 ("Measuring Pension Obligations and Determining Pension Plan Costs or Contributions"), Segal performed a stochastic model, as detailed in the 2016-2019 experience study report, to estimate the impact of the 50% allocation of future excess earnings to the SRBR. The results of this model indicated that the 50/50 allocation of future excess earnings would have about the same impact as an "outflow" (i.e., assets not available to fund the benefits included in this valuation) that would average approximately 0.65% of assets over time. *When the results of the stochastic model are applied to this valuation, it is estimated that the annual outflow would increase the Accrued Actuarial Liability (AAL) measured using a 7.00% investment return assumption from $10.93 billion to $11.81 billion (for a difference of $0.88 billion) and would increase the employer's UAAL contribution rate by about 5% - 6% of payroll.*

Conclusion

Subsequent to review, staff notes no discrepancies in the report and recommends Committee review and future Board adoption.

Attachment:

ACERA's draft Actuarial Valuation and Review as of December 31, 2021

Alameda County Employees' Retirement Association

Actuarial Valuation and Review

As of December 31, 2021

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

Segal

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San Francisco, CA 94105-6147
segalco.com
T 415.263.8200

April 8, 2022

Board of Retirement
Alameda County Employees' Retirement Association
475 14th Street, Suite 1000
Oakland, CA 94612

Dear Board Members:

We are pleased to submit this Actuarial Valuation and Review as of December 31, 2021. It summarizes the actuarial data used in the valuation, analyzes the preceding year's experience, and establishes the funding requirements for fiscal year 2022-2023.

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

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

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

Sincerely,
Segal

Andy Yeung, ASA, EA, MAAA, FCA
Vice President and Actuary

Eva Yum, FSA, EA, MAAA
Vice President and Actuary

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Section 1: Actuarial Valuation Summary

Purpose and Basis

This report was prepared by Segal to present a valuation of the Alameda County Employees' Retirement Association ("the Plan") as of December 31, 2021. The valuation was performed to determine whether the assets and contribution rates are sufficient to provide the prescribed benefits. The measurements shown in this actuarial valuation may not be applicable for other purposes. In particular, the measures herein are not necessarily appropriate for assessing the sufficiency of Plan assets to cover the estimated cost of settling the Plan's benefit obligations.

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; and changes in plan provisions or applicable law.

The contribution requirements presented in this report are based on:

- The benefit provisions of the pension plan, as administered by the Board of Retirement;
- The characteristics of covered active members, inactive vested members, and retired members and beneficiaries as of November 30, 2021, provided by the Retirement Association;[1]
- The assets of the Plan as of December 31, 2021, provided by the Retirement Association;
- Economic assumptions regarding future salary increases and investment earnings adopted by the Board for the December 31, 2021 valuation;
- Other actuarial assumptions regarding employee terminations, retirement, death, etc. adopted by the Board for the December 31, 2021 valuation and
- The funding policy adopted by the Board of Retirement.

[1] It should be noted that we have also reflected the actual COLA granted by the Board on the April 1 immediately after the date of the valuation in calculating the liabilities for nonactive members.

Section 1: Actuarial Valuation Summary

One of the general goals of an actuarial valuation is to establish contributions which fully fund the Association's liabilities, and which, as a percentage of payroll, remain as level as possible for each generation of active members. Annual actuarial valuations measure the progress toward this goal, as well as test the adequacy of the contribution rates.

In preparing this valuation, we have employed generally accepted actuarial methods and assumptions to evaluate the Association's liabilities and future contribution requirements. Our calculations are based upon member data and financial information provided to us by the Association's staff. This information has not been audited by us, but it has been reviewed and found to be consistent, both internally and with prior year's information.

The contribution requirements are determined as a percentage of payroll.[1] The Association's employer rates provide for both Normal Cost and a contribution to amortize any unfunded or overfunded actuarial accrued liabilities. In this valuation, we have applied the funding policy adopted by the Board on September 18, 2014 (and revised by the Board on October 21, 2021). Details of the funding policy are provided in *Section 4, Exhibit 1* starting on page 95.

A schedule of current amortization balances and payments may be found in *Section 3, Exhibit H* starting on page 83. A graphical projection of the Unfunded Actuarial Accrued Liability (UAAL) amortization balances and payments has been included in *Section 3, Exhibit I* starting on page 89.

The rates calculated in this report may be adopted by the Board for the fiscal year that extends from July 1, 2022 through June 30, 2023.

[1] The contribution requirement for an employer with active member payroll is expressed as a level percentage of payroll for that employer. The contribution requirement for the Alameda County Office of Education with no active member payroll is expressed as a level dollar amount.

Valuation Highlights

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1. In the December 31, 2020 valuation, the ratio of the Valuation Value of Assets (VVA) to Actuarial Accrued Liabilities (AAL) was 76.2%. In this December 31, 2021 valuation, the funded ratio has increased to 86.5%. The funded ratio if measured on a Market Value of Assets (MVA) basis increased from 80.0% as of December 31, 2020 to 92.8% as of December 31, 2021. The increase in the funded ratio was the result of additional voluntary County Safety and LARPD General contributions made by the two employers to reduce their UAAL and associated contribution rates, the gain on the Valuation Value of Assets from the recognition of past and current years' investment gains after smoothing and the expected increase due to contributions made to pay down the unfunded liability, offset somewhat by the loss due to actual contributions lower than expected,[1] higher than expected cost-of-living adjustments for continuing retirees and higher than expected salary increases for active members. These measurements are not necessarily appropriate for assessing the sufficiency of Plan assets to cover the estimated cost of settling the Plan's benefit obligation or the need for, or the amount of, future contributions.

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2. The Association's UAAL as of December 31, 2020 was $2,500.0 million. In this year's valuation, the UAAL has decreased to $1,476.8 million. The decrease in the UAAL was due to additional voluntary County Safety and LARPD General contributions made by the two employers to reduce their UAAL and associated contribution rates, higher than expected return on investments after smoothing, and the expected decrease due to contributions made to pay down the UAAL, offset somewhat by the loss due to actual contributions lower than expected, higher than expected cost-of-living adjustments for continuing retirees and higher than expected salary increases for active members. A reconciliation of the Association's UAAL is provided in *Section 2, Subsection E*. A schedule of the current UAAL amortization amounts may be found in *Section 3, Exhibit H*. Note that a graphical projection of the UAAL amortization bases and payments has been included in *Section 3, Exhibit I.*

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3. The County made voluntary County Safety contributions of $800 million on around June 29, 2021 to reduce their Safety UAAL and associated contribution rates. The Livermore Area Recreation and Park District (LARPD) also made voluntary LARPD General contributions of $12.611 million on around June 29, 2021 to reduce their General UAAL and associated contribution rates. ACERA has set up the County Safety UAAL Advance Reserve and the LARPD General UAAL Advance Reserve to track these voluntary UAAL contributions. Based on the Board's funding policy and interest crediting policy, these two UAAL Advance Reserves are subject to a separate 5-year asset smoothing schedule that excludes the allocation of any deferred investment gains or losses accumulated up to June 30, 2021 for interest crediting purposes. The details of the UAAL Advance Reserves has been included in *Section 4, Exhibit 6* and a reconciliation of the contribution credit available from the voluntary UAAL contributions has been included in *Section 4, Exhibit 7*.

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4. The LARPD General cost sharing group has a surplus of $248,000 on a VVA basis. In order to calculate the proper offset available to LARPD from the LARPD General UAAL Advance Reserve, we have reamortized the existing LARPD amortization

[1] Including scheduled lag in implementing contribution rates after the date of the valuation.

layers so that they will have the same amortization period as the LARPD General UAAL Advance Reserve (15.5 years remaining as of December 31, 2021). This reamortization reduced the LARPD General employer rate by 3.22% of payroll and the net UAAL rate for LARPD is 0% as of December 31, 2021.

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5. The average employer rate[1] calculated in this valuation has decreased from 31.45% of payroll to 23.41% of payroll. This change was primarily due to the contribution credit from additional voluntary Safety and LARPD General contributions to reduce their UAAL and associated contribution rates, higher than expected return on investments after smoothing, and the effect of amortizing the prior year's UAAL over a larger than expected total projected payroll, offset somewhat by actual contributions lower than expected, higher than expected cost-of-living adjustments for continuing retirees and higher than expected salary increases for active members. A reconciliation of the Association's average employer rate is provided in *Section 2, Subsection F*.

   A schedule of the projected contributions by each participating employer is provided in *Section 4, Exhibit 4*. Under the Board of Retirement's current actuarial funding policy, the UAAL is paid off by the employers in the General Tiers 1, 2, and 4 combined membership group in proportion to their payroll (with the exception of the Alameda County Office of Education and the Livermore Area Recreation and Parks District, based on the application of the Declining Employer Payroll Policy).

   Employer rates for AHS/Court/First 5 are higher than the County's rates to reflect that only the County has received a reimbursement for the implicit retiree health benefit subsidy paid by the County for 2021 and in the prior years. The $5.7 million transfer (an estimated amount provided by ACERA for the implicit retiree health benefit subsidy paid by the County for 2021) and the unused credit from prior years' transfers (the balance of prior transfers was about $81.8 million[2] as of December 31, 2021) have been recognized over separate 20-year periods.

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6. The average member rate calculated in this valuation increased from 9.98% of payroll as of December 31, 2020 to 10.00% of payroll as of December 31, 2021 mainly due to the change in member demographics. A reconciliation of the Association's average member rate is provided in *Section 2, Subsection F*.

   The individual member rates have been updated to reflect the valuation as of December 31, 2021. The detailed member rates are provided in *Section 4, Exhibit 3* of this report.

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7. As indicated in *Section 2, Subsection B* of this report, the total unrecognized net investment gain as of December 31, 2021 is $1,132.9 million (in the previous valuation, this amount was a $643.3 million net gain). This net investment gain will be recognized in the determination of the Actuarial Value of Assets for funding purposes in the next few years, and will offset any investment losses that may occur after December 31, 2021. This implies that if the Association earns the assumed net rate of investment return of 7.00% per year on a **market value basis**, it will result in investment gains on the Actuarial Value of Assets

[1] For employers with active member payroll.
[2] See *Section 4, Exhibit 5* for a schedule of the outstanding balances of the unused credit.

in the next few years. So, if the actual market return is equal to the assumed 7.00% rate and all other actuarial assumptions are met, the contribution requirements would generally decrease in the next few years.

The net deferred gain of $1,132.9 million represents 9.6% of the Market Value of Assets as of December 31, 2021. Unless offset by future investment losses or other unfavorable experience, the recognition of the $1,132.9 million deferred market gain is expected to have an impact on the Association's future funded percentage and contribution rate requirements. Under an approach which takes into account the size of the valuation and the SRBR reserves,[1] this potential impact may be illustrated as follows:

a. If a proportion of the net deferred gain that is commensurate with the size of the valuation reserves were recognized immediately in the valuation value of assets, the funded percentage would increase from 86.5% to 92.8%.
b. If a proportion of the net deferred gain that is commensurate with the size of the valuation reserves were recognized immediately in the valuation value of assets, the average employer rate[2] would decrease from 23.41% to about 20.0% of payroll.

8. Similar to what we disclosed in our December 31, 2020 valuation report, the 7.00% investment return assumption that the Board approved on October 15, 2020 for determining the liabilities for funding purposes and used for establishing the employer and member contribution rates in this report has continued to be developed without considering the impact of any future 50/50 excess earnings allocation. This is based on our understanding that Article 5.5 of the Statute, which authorizes the allocation of 50% of excess earnings to the SRBR, does not allow for the use of a different investment return for funding than is used for interest crediting. This would appear in effect to preclude the prefunding of the SRBR through the use of an assumption lower than the market earnings assumption of 7.00%.

   As required by the Actuarial Standard of Practice (ASOP) No. 4 ("Measuring Pension Obligations and Determining Pension Plan Costs or Contributions"), we performed a stochastic model, as detailed in our 2016-2019 experience study report, to estimate the impact of the 50% allocation of future excess earnings to the SRBR. The results of our model indicated that the 50/50 allocation of future excess earnings would have about the same impact as an "outflow" (i.e., assets not available to fund the benefits included in this valuation) that would average approximately 0.65%[3] of assets over time. **For informational purposes only**, when we applied the results of our stochastic model to this valuation, we have estimated that such an annual outflow would increase the AAL measured in this valuation using a 7.00% investment return assumption from $10.93 billion to $11.81 billion (for a difference of $0.88 billion) and would increase the employer's UAAL contribution rate by about 5% - 6% of payroll.[2]

[1] The Market Value of Assets as of December 31, 2021 equals the Valuation Value of Assets plus one-half of the deferred market gains after adjustment to include the balance in the Contingency Reserve.
[2] For employers with active member payroll.
[3] In estimating the impact of any future 50/50 excess earnings allocation, we have not included the deferred investment gains/losses available as of the date of the valuation. We believe that the determination of the 0.65% average outflow should provide the stakeholders with information about the long-term effect of the 50/50 excess earnings allocation and therefore should not be unduly affected by the short-term fluctuation in the 50/50 excess earnings allocation due to the actual deferred investment gains/losses available as of the valuation date.

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9. The Actuarial Standards Board approved Actuarial Standard of Practice No. 51 (ASOP 51) regarding risk assessment, which was first effective with ACERA's December 31, 2018 actuarial valuation. ASOP 51 requires actuaries to identify risks that "may reasonably be anticipated to significantly affect the plan's future financial condition". Investment risk, asset/liability mismatch risk, interest rate risk, longevity and other demographic risks and contribution risk are also cited as examples in ASOP 51. The Standard does not require the actuary to evaluate the likelihood of contributing entities to make contributions when due, nor does it require the actuary to assess the likelihood or consequences of future changes in applicable law.

   The actuary's assessment can be qualitative or quantitative (e.g., based on numerical demonstrations). The actuary may use non-numerical methods for assessing risks that might take the form of commentary about potential adverse experience and the likely effect on future results. While the standard does not require that every valuation include a quantitative risk assessment, the actuary may recommend that a more detailed risk assessment be performed. When making that decision, the actuary will take into account such factors as the Plan's design, maturity, size, funded status, asset allocation, cash flow, possible insolvency and current market conditions.

   A copy of the risk assessment report including the analysis recommended by Segal in consultation with ACERA staff will be available later in 2022.

10. Segal strongly recommends an actuarial funding method that targets 100% funding of the actuarial accrued liability. Generally, this implies payments that are ultimately at least enough to cover normal cost, interest on the unfunded actuarial accrued liability and the principal balance. The funding policy adopted by the Board meets this standard.

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11. The net actuarial gain from investment and contribution experience is $184.5 million, or 1.7% of actuarial accrued liability. The net experience loss from sources other than investment and contribution experience is $30.4 million, or 0.3% of the actuarial accrued liability. This loss is primarily due to higher than expected cost-of-living adjustments for continuing retirees and higher than expected individual salary increases for active members.

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12. The rate of return on the market value of assets was 15.95% for the 2021 plan year. The return on the valuation value of assets was 9.50% for the same period due to the recognition of prior years' investment gains and losses. This resulted in an actuarial gain when measured against the assumed rate of return of 7.00% for the 2021 plan year. This actuarial investment gain decreased the average employer contribution rate by 1.23% of payroll. As part of the review of the assumed long-term rate of return on investments and other assumptions in the next triennial experience study, we would examine the low fixed income interest rate environment, and evolving expectations of future investment returns for various asset classes. This will allow us to assist the Board as they continue to monitor anticipated investment returns relative to the assumed long-term rate of return on investments of 7.00%.

13. This report constitutes an actuarial valuation for the purpose of determining the actuarially determined contribution under the Plan's funding policy and measuring the progress of that funding policy. The Net Pension Liability (NPL) and Pension Expense under Governmental Accounting Standards Board (GASB) Statements No. 67 and No. 68, for inclusion in the plan and

employer's financial statements as of December 31, 2021 will be provided separately. The accounting disclosures will utilize different methodologies from those employed in the funding valuation, as required by the GASB. However, the actuarially determined contribution in this valuation is expected to be used as the actuarially determined contribution (ADC) for GASB financial reporting.

14. This actuarial report as of December 31, 2021 is based on financial data as of that date and demographic data as of November 30, 2021. Changes subsequent to that date are not reflected and will affect future actuarial costs of the plan.
15. It is important to note that this actuarial valuation is based on plan assets as of December 31, 2021. Due to the COVID-19 pandemic, market conditions have changed significantly since the onset of the Public Health Emergency. The plan's funded status does not reflect short-term fluctuations of the market, but rather is based on the market values on the last day of the plan year. Moreover, this actuarial valuation does not include any possible short-term or long-term impacts on mortality of the covered population that may emerge after December 31, 2021. While it is impossible to determine how the pandemic will affect market conditions and other demographic experience of the plan in future valuations, Segal is available to prepare projections of potential outcomes upon request.
16. On July 30, 2020, the California Supreme Court issued a decision in the case of Alameda County Deputy Sheriffs' Association et al. v. Alameda County Employees' Retirement Association and Board of Retirement of ACERA. ACERA indicated that they "will await the Trial Court ruling to determine any future changes which should be minor and only impact a few pay items." We understand that as part of the trial court's proceeding, the Board made changes to how much vacation cashout and sell back can be included in "compensation earnable" and eliminated "straddling" for members with retirement date after June 17, 2021. It should be noted that any impact of these changes to the additional cashout assumptions will be reviewed based on actual experience in the next experience study.

Summary of Key Valuation Results

		December 31, 2021		December 31, 2020	
		Total Rate	Estimated Annual Dollar Amount[1] ($ in '000s)	Total Rate[2]	Estimated Annual Dollar Amount[1] ($ in '000s)
Employer Contribution Rates:[3]	**County Only**				
	• General Tier 1	24.75%	$1,212	25.54%	$1,251
	• General Tier 2	23.20	85,131	24.05	88,251
	• General Tier 4	23.01	65,111	23.79	67,319
	• Safety Tier 1	43.64	221	88.95	451
	• Safety Tier 2	23.84	25,311	69.15	73,417
	• Safety Tier 2C	29.18	825	73.87	2,089
	• Safety Tier 2D	24.60	4,281	69.83	12,151
	• Safety Tier 4	21.44	14,287	66.52	44,325
	County Combined	23.15	196,379	34.09	289,254
	AHS, Court & First 5 Only				
	• General Tier 1	25.72	171	26.48	176
	• General Tier 2	24.17	42,349	24.99	43,784
	• General Tier 4	23.98	41,171	24.73	42,458
	Housing Only				
	• General Tier 1	30.93	849	31.72	871
	• General Tier 2	29.38	74	30.23	76
	• General Tier 4	29.19	561	29.97	576
	LARPD Only[4]				
	• General Tier 1	10.97	61	42.96	237
	• General Tier 3	16.41	281	48.02	822
	• General Tier 4	9.23	129	41.21	576
	All Categories Combined	**23.41**	**282,025**	**31.45**	**378,830**

[1] Based on December 31, 2021 projected annual compensation.

[2] Employer rates for County Safety and LARPD General groups were adjusted effective FY 21/22 to reflect the voluntary UAAL contributions made by the County and LARPD, respectively, in June 2021. The adjusted employer rates are as follows:

County	County	County	County	County	LARPD	LARPD	LARPD
Safety Tier 1	Safety Tier 2	Safety Tier 2C	Safety Tier 2D	Safety Tier 4	General Tier 1	General Tier 3	General Tier 4
46.10%	26.30%	31.02%	26.98%	23.67%	14.88%	19.94%	13.13%

[3] For employers with active member payroll. The UAAL contribution for ACOE, expressed as a level dollar amount, is $101 K when made on April 1, 2023.

[4] For LARPD, the combined rate is 12.86% as of December 31, 2021 and 44.64% as of December 31, 2020.

		December 31, 2021		December 31, 2020	
		Total Rate	Estimated Annual Dollar Amount[1] ($ in '000s)	Total Rate[2]	Estimated Annual Dollar Amount[1] ($ in '000s)
Average Member Contribution Rates:	• General Tier 1	9.79%	$868	9.83%	$871
	• General Tier 2	8.17	44,314	8.17	44,314
	• General Tier 3	15.07	258	15.05	258
	• General Tier 4	9.23	42,271	9.21	42,180
	• Safety Tier 1	3.00	15	3.00	15
	• Safety Tier 2	16.91	17,954	16.88	17,922
	• Safety Tier 2C	14.60	413	14.63	414
	• Safety Tier 2D	17.04	2,965	17.02	2,962
	• Safety Tier 4	17.01	11,334	16.93	11,281
	All Categories Combined	**10.00**	**120,392**	**9.98**	**120,217**

[1] Based on December 31, 2021 projected annual compensation.
[2] Average rates have been recalculated by applying the individual entry age based member rates determined in the December 31, 2020 valuation to the Association membership as of December 31, 2021.

Summary of Key Valuation Results (continued)

		December 31, 2021 ($ in '000s)	December 31, 2020 ($ in '000s)
Actuarial Accrued Liability as of December 31:	• Retired members and beneficiaries	$6,726,348	$6,437,400
	• Inactive vested members	325,244	293,106
	• Active members	3,878,343	3,753,674
	• Total Actuarial Accrued Liability[1]	$10,929,935	$10,484,180
	• Normal Cost for plan year beginning December 31	$251,362	$240,762
Assets as of December 31:	• Valuation Value of Assets (VVA)[2]	$9,453,108	$7,984,241
	• Market Value of Assets (MVA)[3]	10,139,166	8,389,373
	• Valuation Value of Assets as a percentage of Market Value of Assets	93.2%	95.2%
Funded status as of December 31:	• Unfunded Actuarial Accrued Liability on Valuation Value of Assets basis	$1,476,827	$2,499,939
	• Funded percentage on VVA basis	86.5%	76.2%
	• Unfunded Actuarial Accrued Liability on Market Value of Assets basis	$790,769	$2,094,807
	• Funded percentage on MVA basis	92.8%	80.0%
	• Amortization period[4]	Varies	Varies
Key assumptions:	• Net investment return	7.00%	7.00%
	• Price Inflation	2.75%	2.75%
	• Payroll growth increase	3.25%	3.25%

1 Excludes liabilities held for SRBR and other non-valuation reserves.
2 Excludes Reserve for Interest Fluctuations (Contingency Reserve) if positive, Supplemental Retirees Benefit Reserve, and 401(h) Reserve.
3 The Market Value of Assets as of December 31, 2021 equals the Valuation Value of Assets plus one-half of the deferred market gains plus Contingency Reserve. The Market Value of Assets as of December 31, 2020 equals the Valuation Value of Assets plus one-half of the deferred market gains after adjustment to include the balance in the Contingency Reserve.
4 New UAAL established on each valuation after December 31, 2011 are amortized as follows: plan amendments are amortized over separate decreasing 15-year periods; early retirement incentive programs (ERIPs) are amortized over separate decreasing 5-year periods; assumption and method changes are amortized over separate decreasing 20-year periods; and experience gains/losses are also amortized over separate decreasing 20-year periods.

Summary of Key Valuation Results (continued)

		December 31, 2021	December 31, 2020	Change From Prior Year
Demographic data as of December 31:	**Active Members:**			
	• Number of members	11,326	11,322	0.0%
	• Average age	47.1	47.1	0.0
	• Average service	11.3	11.3	0.0
	• Total projected compensation	$1,204,499,000	$1,155,697,000	4.2%
	• Average projected compensation	$106,348	$102,075	4.2%
	Retired Members and Beneficiaries:			
	• Number of members:			
	– Service retired	8,264	8,076	2.3%
	– Disability retired	977	971	0.6%
	– Beneficiaries	1,295	1,245	4.0%
	– Total	10,536	10,292	2.4%
	• Average age	72.3	72.1	0.2
	• Average monthly benefit[1]	$4,359	$4,244	2.7%
	Inactive Vested Members:			
	• Number of members[2]	3,265	3,028	7.8%
	• Average Age	47.2	47.4	-0.2
	Total Members:	25,127	24,642	2.0%

1 Excludes monthly benefits payable from the SRBR.
2 Includes inactive members due a refund of member contributions.

Important Information About Actuarial Valuations

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

In order to prepare a valuation, Segal relies on a number of input items. These include:

Plan of benefits	Plan provisions define the rules that will be used to determine benefit payments, and those rules, or the interpretation of them, may change over time. Even where they appear precise, outside factors may change how they operate. It is important to keep Segal informed with respect to plan provisions and administrative procedures, and to review the plan summary included in our report to confirm that Segal has correctly interpreted the plan of benefits.
Participant data	An actuarial valuation for a plan is based on data provided to the actuary by the Association. Segal does not audit such data for completeness or accuracy, other than reviewing it for obvious inconsistencies compared to prior data and other information that appears unreasonable. It is important for Segal to receive the best possible data and to be informed about any known incomplete or inaccurate data.
Assets	The valuation is based on the market value of assets as of the valuation date, as provided by the Association. The Association uses a “valuation value of assets” that differs from market value to gradually reflect six-month changes in the market value of assets in determining the contribution requirements.
Actuarial assumptions	In preparing an actuarial valuation, Segal projects the benefits to be paid to existing plan participants for the rest of their lives and the lives of their beneficiaries. This projection requires actuarial assumptions as to the probability of death, disability, withdrawal, and retirement of each participant for each year. In addition, the benefits projected to be paid for each of those events in each future year reflect actuarial assumptions as to salary increases and cost-of-living adjustments. The projected benefits are then discounted to a present value, based on the assumed rate of return that is expected to be achieved on the plan’s assets. There is a reasonable range for each assumption used in the projection and the results may vary materially based on which assumptions are selected. It is important for any user of an actuarial valuation to understand this concept. Actuarial assumptions are periodically reviewed to ensure that future valuations reflect emerging plan experience. While future changes in actuarial assumptions may have a significant impact on the reported results that does not mean that the previous assumptions were unreasonable.
Models	Segal valuation results are based on proprietary actuarial modeling software. The actuarial valuation models generate a comprehensive set of liability and cost calculations that are presented to meet regulatory, legislative and client requirements. Our Actuarial Technology and Systems unit, comprised of both actuaries and programmers, is responsible for the initial development and maintenance of these models. The models have a modular structure that allows for a high degree of accuracy, flexibility and user control. The client team programs the assumptions and the plan provisions, validates the models, and reviews test lives and results, under the supervision of the responsible actuary.

Section 1: Actuarial Valuation Summary

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

The actuarial valuation is prepared at the request of the Association. Segal is not responsible for the use or misuse of its report, particularly by any other party.

An actuarial valuation is a measurement of the plan's assets and liabilities at a specific date. Accordingly, except where otherwise noted, Segal did not perform an analysis of the potential range of future financial measures. The actual long-term cost of the plan will be determined by the actual benefits and expenses paid and the actual investment experience of the plan. Future contribution requirements may differ from those determined in the valuation because of:

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

Some actuarial results in this report are not rounded, but that does not imply precision.

If the Association is aware of any event or trend that was not considered in this valuation that may materially change the results of the valuation, Segal should be advised, so that we can evaluate it.

Segal does not provide investment, legal, accounting, or tax advice. Segal's valuation is based on our understanding of applicable guidance in these areas and of the plan's provisions, but they may be subject to alternative interpretations. The Association should look to their other advisors for expertise in these areas.

As Segal has no discretionary authority with respect to the management or assets of the Plan, it is not a fiduciary in its capacity as actuaries and consultants with respect to the Plan.

Section 2: Actuarial Valuation Results

A. Member Data

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

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

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

Member Population: 2012 – 2021

Year Ended December 31	Active Members	Inactive Vested Members[1]	Retired Members and Beneficiaries	Total Non-Actives	Ratio of Non-Actives to Actives	Ratio of Retired Members and Beneficiaries to Actives
2012	10,800	1,835	8,175	10,010	0.93	0.76
2013	10,877	1,902	8,566	10,468	0.96	0.79
2014	11,025	1,995	8,813	10,808	0.98	0.80
2015	11,071	2,027	8,990	11,017	1.00	0.81
2016	11,111	2,263	9,242	11,505	1.04	0.83
2017	11,323	2,447	9,479	11,926	1.05	0.84
2018	11,349	2,568	9,783	12,351	1.09	0.86
2019	11,336	2,821	10,078	12,899	1.14	0.89
2020	11,322	3,028	10,292	13,320	1.18	0.91
2021	11,326	3,265	10,536	13,801	1.22	0.93

[1] Includes inactive members due a refund of member contributions.

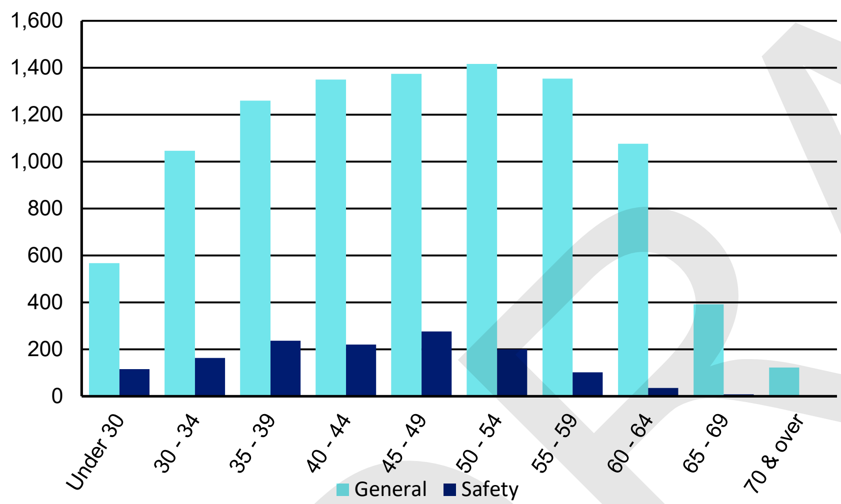
Active Members

Plan costs are affected by the age, years of service and compensation of active members. In this year's valuation, there were 11,326 active members with an average age of 47.1, average years of service of 11.3 and average compensation of $106,348. The 11,322 active members in the prior valuation had an average age of 47.1, average service of 11.3 and average compensation of $102,075.

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

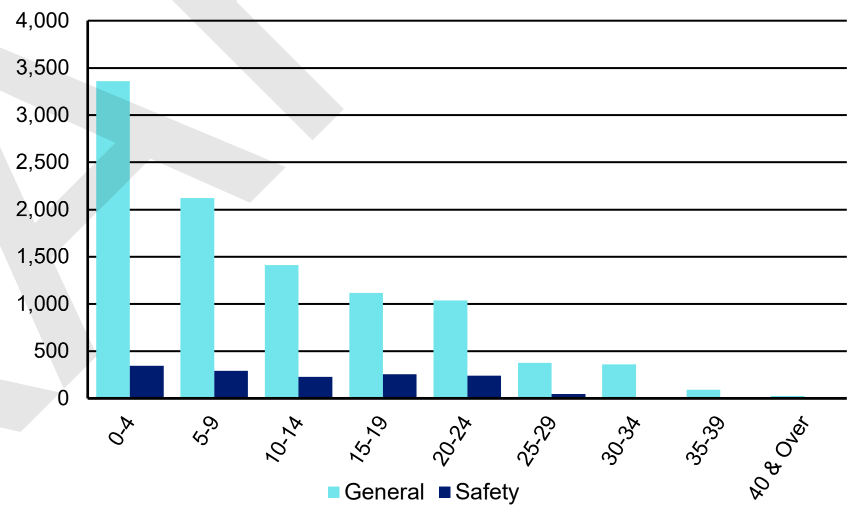
Distribution of Active Members as of December 31, 2021

Actives by Age



Average age	47.1
Prior year average age	47.1
Difference	0.0

Actives by Years of Service



Average years of service	11.3
Prior year average years of service	11.3
Difference	0.0

Inactive Members

In this year's valuation, there were 3,265 members with a vested right to a deferred or immediate vested benefit or entitled to a refund of their member contributions, versus 3,028 members in the prior valuation.

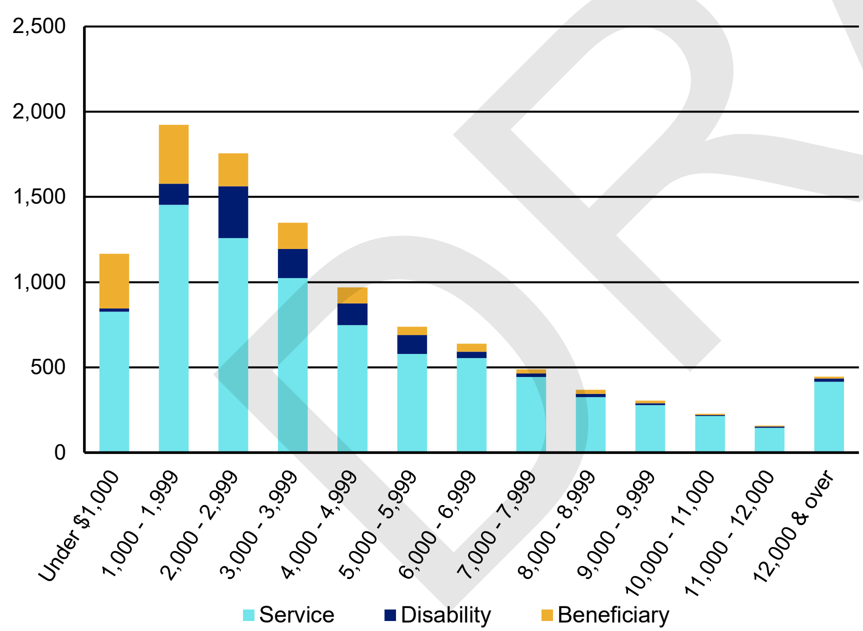
Retired Members and Beneficiaries

As of December 31, 2021, 9,241 retired members and 1,295 beneficiaries were receiving total monthly benefits of $45,924,823. For comparison, in the previous valuation, there were 9,047 retired members and 1,245 beneficiaries receiving monthly benefits of $43,674,712. These monthly benefits exclude supplemental COLA benefits payable from the Supplemental Retirees Benefit Reserve (SRBR).

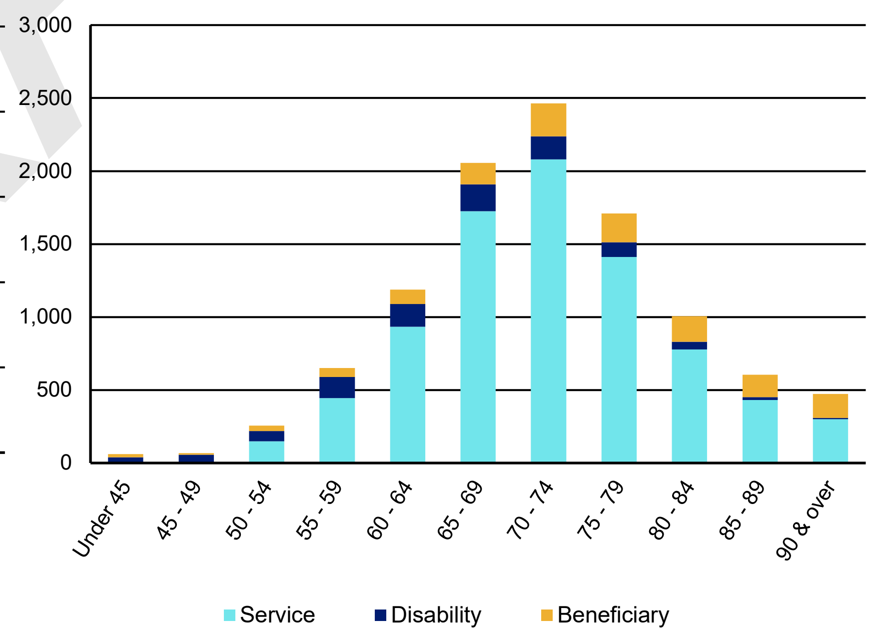
As of December 31, 2021, the average monthly benefit for retired members is $4,591, compared to $4,473 in the previous valuation. The average age for retired members is 71.8 in the current valuation, compared with 71.6 in the prior valuation. For beneficiaries as of December 31, 2021, the average monthly benefit is $2,703, compared to $2,575 in the previous valuation. The average age for beneficiaries is 75.7 in the current valuation, compared with 75.6 in the prior valuation.

Distribution of Retired Members and Beneficiaries as of December 31, 2021

Retired Members and Beneficiaries by Type and Monthly Amount



Retired Members and Beneficiaries by Type and Age



Historical Plan Population

The chart below demonstrates the progression of the active population over the last ten years. The chart also shows the growth among the retired population over the same time period.

Member Data Statistics: 2012 – 2021

	Active Members			Retired Members and Beneficiaries		
Year Ended December 31	Count	Average Age	Average Service	Count	Average Age	Average Monthly Amount
2012	10,800	47.6	11.8	8,175	70.6	$3,332
2013	10,877	47.3	11.5	8,566	70.7	3,442
2014	11,025	47.3	11.5	8,813	70.9	3,549
2015	11,071	47.3	11.6	8,990	71.1	3,648
2016	11,111	47.3	11.6	9,242	71.3	3,757
2017	11,323	47.1	11.4	9,479	71.6	3,880
2018	11,349	47.0	11.4	9,783	71.7	3,983
2019	11,336	47.1	11.3	10,078	71.9	4,111
2020	11,322	47.1	11.3	10,292	72.1	4,244
2021	11,326	47.1	11.3	10,536	72.3	4,359

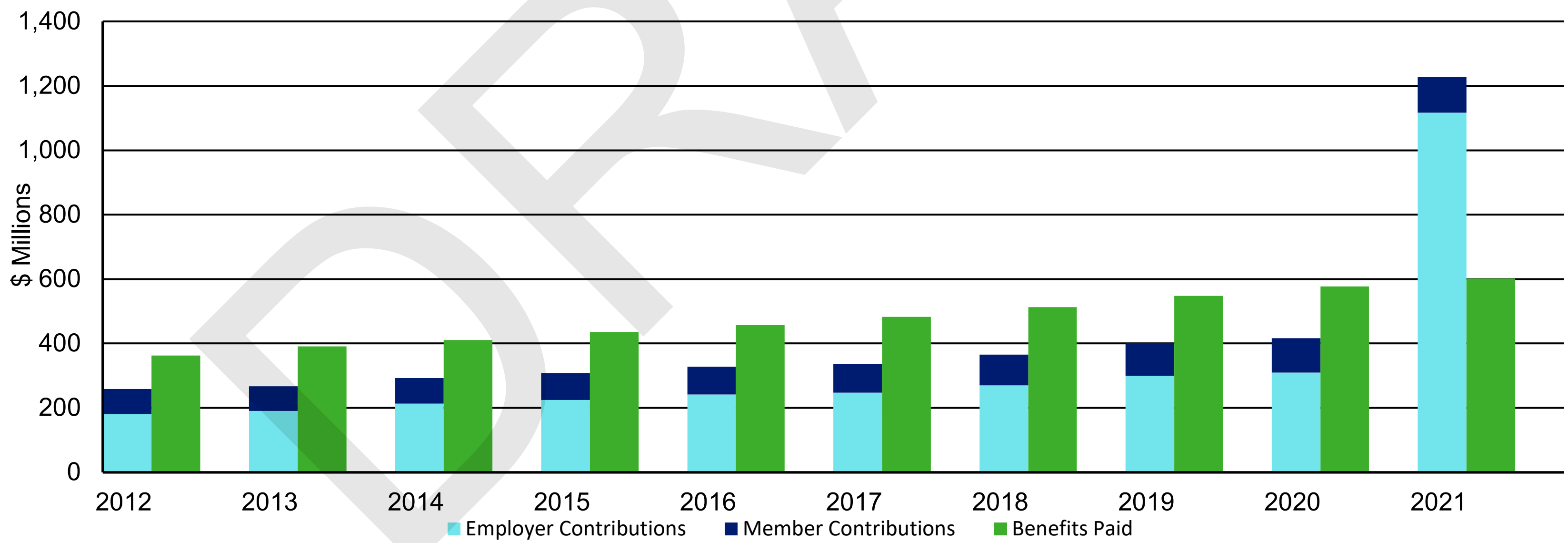
B. Financial information

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

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

It is desirable to have level and predictable plan costs from one year to the next. For this reason, the Board has approved an asset valuation method that gradually adjusts to market value. Under this valuation method, the full value of market fluctuations is not recognized in a single year and, as a result, the asset value and the plan costs are more stable. The amount of the adjustment to recognize market value is treated as income, which may be positive or negative. Realized and unrealized gains and losses are treated equally and, therefore, the sale of assets has no immediate effect on the actuarial value.

Comparison of Contributions Made with Benefits Paid for Years Ended December 31, 2012 – 2021



Note: 2021 contributions include $812,611,250 in additional voluntary Safety and LARPD General contributions to reduce their UAAL.

Determination of Actuarial Value of Assets for Year Ended December 31, 2021

1	**Market value of assets**							**$11,840,862,896**
2	Calculation of unrecognized return							
	Six Month Period		**Actual**	**Expected**	**Investment**	**Percent**	**Deferred**	
	From	**To**	**Return[1]**	**Return[1]**	**Gain (Loss)**	**Deferred**	**Return**	
a.	1/1/2017	6/30/2017	$658,890,554	$263,335,665	$395,554,890	0%	$0	
b.	7/1/2017	12/31/2017	634,431,651	285,557,601	348,874,050	10	34,887,405	
c.	1/1/2018	6/30/2018	86,346,238	306,788,550	(220,442,312)	20	(44,088,462)	
d.	7/1/2018	12/31/2018	(457,457,856)	293,029,561	(750,487,417)	30	(225,146,225)	
e.	1/1/2019	6/30/2019	854,836,642	274,040,816	580,795,826	40	232,318,330	
f.	7/1/2019	12/31/2019	487,958,159	302,301,626	185,656,533	50	92,828,266	
g.	1/1/2020	6/30/2020	(507,044,977)	317,318,139	(824,363,116)	60	(494,617,870)	
h.	7/1/2020	12/31/2020	1,508,460,094	295,971,205	1,212,488,889	70	848,742,223	
i.	1/1/2021	6/30/2021	1,034,858,840	347,663,410	687,195,431	80	549,756,345	
j.	7/1/2021	12/31/2021	550,755,442	397,125,337	153,630,105	90	138,267,094	
k.	Total unrecognized return[2]							$1,132,947,106
3	Calculation of Preliminary Actuarial Value of Assets							
a.	Preliminary Actuarial Value of Assets: **(1) - (2k)**							$10,707,915,790
b.	Preliminary Actuarial Value as a Percentage of Market Value: **(3a) ÷ (1)**							90.4%
4	Adjustment to be within 40% corridor							0
5	**Final Actuarial value of assets: (3a) + (4)**							**$10,707,915,790**
6	Non-valuation reserves and deductions							
a.	Reserve for Interest Fluctuations (Contingency Reserve), but no less than $0							$120,183,593
b.	Supplemental Retirees Benefit Reserve (SRBR)							1,131,048,474
c.	Other Non-Valuation Reserve (401(h) Reserve)							9,229,285
d.	SRBR Transfer to Employer Advance Reserve							-5,652,613
e.	Subtotal							$1,254,808,739
7	**Final Valuation Value of Assets: (5) – (6e)**							**$9,453,107,051**

Note: Results may be slightly off due to rounding.

[1] The actual return on a market value basis is calculated by taking the difference between the ending and beginning Market Value of Assets over the last six month period and adjusting that difference for the non-investment cash flows. Those cash flows include contributions received and benefit payments made during that six month period. The amount subject to smoothing is determined as the actual market return earned during the last six month period that was in excess/below the expected return.

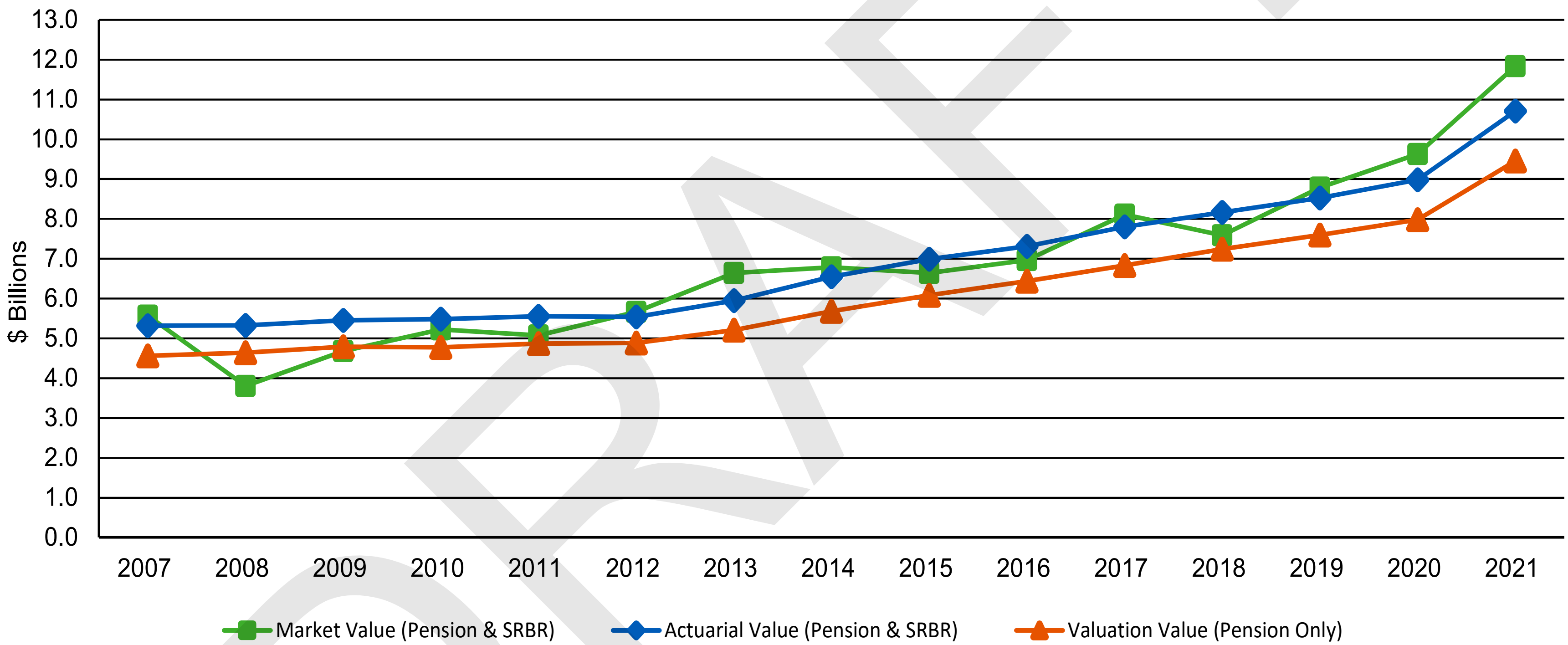
[2] Deferred return as of December 31, 2021 recognized in each of the next five years:

(a)	Amount recognized on December 31, 2022	$239,782,193
(b)	Amount recognized on December 31, 2023	324,031,992
(c)	Amount recognized on December 31, 2024	264,355,915
(d)	Amount recognized on December 31, 2025	289,413,996
(e)	Amount recognized on December 31, 2026	15,363,010
(f)	Total unrecognized return as of December 31, 2021	$1,132,947,106

Section 2: Actuarial Valuation Results

The market value, actuarial value and valuation value of assets are representations of the Plan's financial status. As investment gains and losses are gradually taken into account, the actuarial value of assets tracks the market value of assets. The valuation value of assets is the actuarial value, excluding any non-valuation reserves. The valuation asset value is significant because the Plan's liabilities are compared to these assets to determine what portion, if any, remains unfunded. Amortization of the unfunded actuarial accrued liability is an important element in determining the contribution requirement.

Market Value, Actuarial Value, and Valuation Value of Assets as of December 31, 2007 – 2021



C. Actuarial experience

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

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

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

The total gain is $154.0 million, which includes $208.3 million from investment gains offset partly by a loss of $23.8 million from contribution experience and $30.4 million in losses from all other sources. The net experience variation from individual sources other than investments and contributions was 0.3% of the actuarial accrued liability. A discussion of the major components of the actuarial experience is on the following pages.

Actuarial Experience for Year Ended December 31, 2021

1	Net gain from investments[1]	$208,259,000
2	Net loss from contributions	(23,799,000)
3	Net loss from other experience[2]	(30,424,000)
4	**Net experience gain: 1 + 2 + 3**	**$154,036,000**

[1] Details on next page.
[2] See *Subsection E* for further details. Does not include the effect of plan or assumption changes, if any.

Investment experience

A major component of projected asset growth is the assumed rate of return. The assumed return should represent the expected long-term rate of return, based on the Plan's investment policy. The rate of return on the market value of assets was 15.95% for the year ended December 31, 2021.

For valuation purposes, the assumed rate of return on the valuation value of assets was 7.00% for the 2021 plan year.[1] The actual rate of return on a valuation basis for the 2021 plan year was 9.50%. Because the actual return for the year was greater than the assumed return, the Plan experienced an actuarial gain during the year ended December 31, 2021 with regard to its investments.

Investment Experience for Year Ended December 31, 2021

		Market Value	Actuarial Value	Valuation Value
1	Net investment income	$1,585,614,282	$1,095,952,881	$790,691,601
2	Average value of assets	9,942,507,982	9,299,222,277	8,320,469,390
3	Rate of return: **1 ÷ 2**	15.95%	11.79%	9.50%
4	Assumed rate of return	7.00%	7.00%	7.00%
5	Expected investment income: **2 x 4**	$695,975,559	$650,945,559	$582,432,857
6	**Actuarial gain/(loss): 1 - 5**	**$889,638,723**	**$445,007,322**	**$208,258,744**

[1] Based on the investment return assumption from the December 31, 2020 valuation.

Section 2: Actuarial Valuation Results

Because actuarial planning is long term, it is useful to see how the assumed investment rate of return has followed actual experience over time. The chart below shows the rate of return on an actuarial and valuation basis compared to the actual market value investment return for the last ten years, including averages over select time periods.

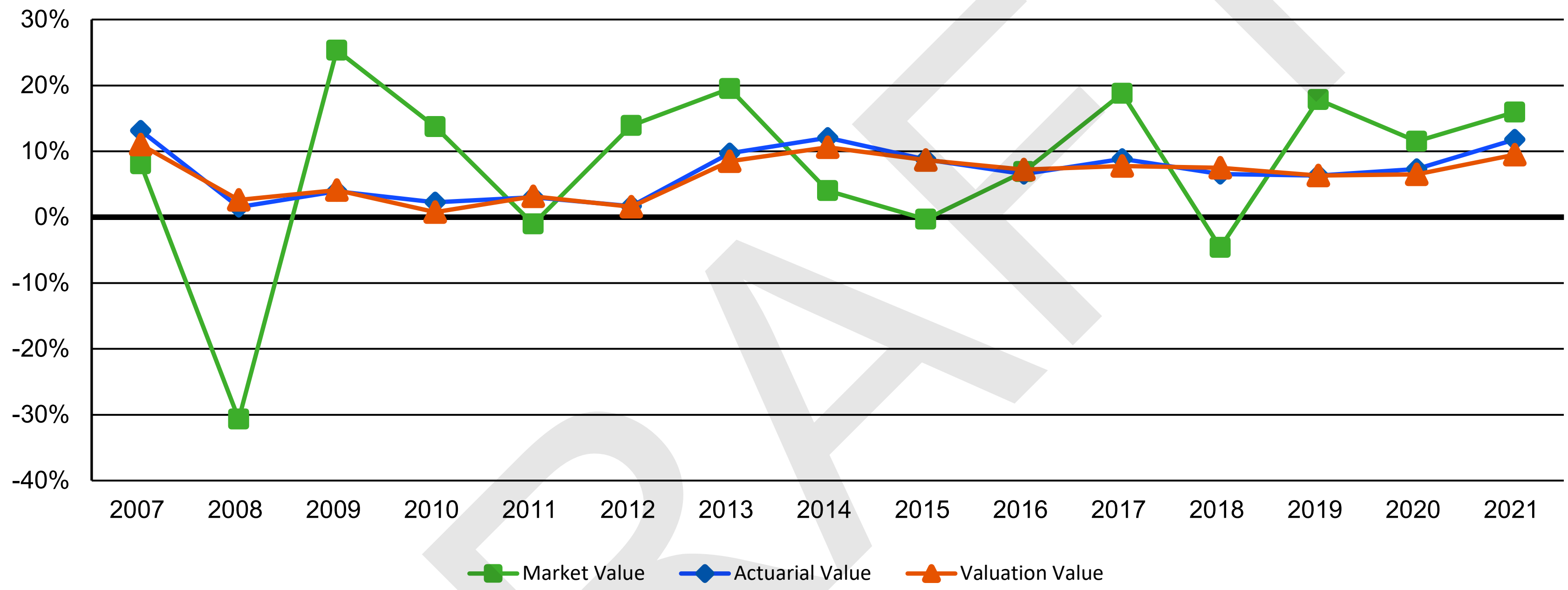
Investment Return – Market Value, Actuarial Value and Valuation Value: 2012 – 2021

Year Ended December 31	Market Value Investment Return[1] Amount	Market Value Investment Return[1] Percent	Actuarial Value Investment Return[1] Amount	Actuarial Value Investment Return[1] Percent	Valuation Value Investment Return[1] Amount	Valuation Value Investment Return[1] Percent
2012	$698,682,557	13.91%	$91,936,980	1.67%	$76,720,113	1.59%
2013	1,095,188,215	19.53%	533,248,385	9.73%	410,409,663	8.48%
2014	266,028,241	4.04%	710,015,277	12.05%	548,585,891	10.61%
2015	(19,960,005)	(0.30)%	569,295,018	8.78%	489,086,474	8.68%
2016	454,641,033	6.91%	452,144,779	6.53%	436,958,056	7.24%
2017	1,293,322,206	18.77%	640,343,891	8.85%	495,891,253	7.77%
2018	(371,111,618)	(4.62)%	507,081,208	6.56%	508,199,399	7.50%
2019	1,342,794,799	17.86%	512,986,851	6.34%	455,280,174	6.33%
2020	1,001,415,117	11.50%	618,817,861	7.32%	490,338,431	6.50%
2021	1,585,614,282	15.95%	1,095,952,881	11.79%	790,691,601	9.50%
Most recent five-year average return		**11.54%**		**8.15%**		**7.51%**
Most recent ten-year average return		**10.05%**		**7.92%**		**7.39%**

[1] Net of administrative and investment expenses.

Subsection B described the actuarial asset valuation method that gradually recognizes fluctuations in the market value rate of return. The goal of this is to stabilize the actuarial rate of return and to produce more level pension plan costs.

Market, Actuarial and Valuation Value Rates of Return for Years Ended December 31, 2007 – 2021



Contributions

Contributions for the year ended December 31, 2021 totaled $415.1 million[1], compared to the projected amount of $437.4 million. This resulted in a loss of $23.8 million for the year, when adjusted for timing.

Non-investment experience

Other experience

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

- the extent of turnover among participants.
- retirement experience (earlier or later than projected),
- mortality (more or fewer deaths than projected),
- the number of disability retirements (more or fewer than projected),
- salary increases (greater or smaller than projected), and
- cost-of-living adjustments (COLAs) higher or lower than anticipated.

The net loss from this other experience for the year ended December 31, 2021 amounted to $30.4 million, which is 0.3% of the actuarial accrued liability. A majority of the loss was due to COLAs higher than anticipated and salary increases greater than expected. See *Subsection E* for a detailed development of the unfunded actuarial accrued liability.

[1] Excluding $812,611,250 in additional voluntary County Safety and LARPD General contributions to reduce their UAAL.

D. Other Changes in the Actuarial Accrued Liability

Actuarial assumptions and methods

As a result of additional voluntary UAAL contributions made by LARPD and other favorable actuarial experience, LARPD has become fully funded in the December 31, 2021 valuation. In order to reflect a net 0% UAAL contribution rate after taking into account the additional UAAL contributions, we have taken the amortization periods for all LARPD General UAAL layers and set them equal to the same remaining 15.5 years used to amortize the credit for the additional UAAL contributions.

There were no changes in actuarial assumptions since the prior valuation.

Details on actuarial assumptions and methods are in *Section 4, Exhibit 1*.

Plan provisions

There were no changes in plan provisions since the prior valuation.

A summary of plan provisions is in *Section 4, Exhibit 2*.

E. Development of Unfunded Actuarial Accrued Liability

Development for Year Ended December 31, 2021
Total Plan

1	**Unfunded actuarial accrued liability at beginning of year**		**$2,499,939,000**
2	Total normal cost at middle of year		240,762,000
3	Expected employer and member contributions		(437,387,000)
4	Voluntary County Safety & LARPD General UAAL contributions		(812,611,000)
5	Interest		140,160,000
6	Expected unfunded actuarial accrued liability		$1,630,863,000
7	Changes due to:		
	a. Investment return greater than expected after "smoothing"	$(208,259,000)	
	b. Actual contributions less than expected[1]	23,799,000	
	c. Individual salary increases higher than expected	24,515,000	
	d. COLA increases higher than expected for continuing retirees	28,165,000	
	e. Mortality higher than expected for continuing retirees	(6,386,000)	
	f. Other experience gains[2]	(15,870,000)	
	Total changes		$(154,036,000)
8	**Unfunded actuarial accrued liability at end of year**		**$1,476,827,000**

Note: The sum of items 6c through 6f equals the "Net loss from other experience" shown in *Section 2, Subsection C.*

[1] Includes impact of scheduled lag in rate implementation (including lag in applying the contribution rate credit from the voluntary UAAL contributions) and difference between Normal Cost and UAAL contributions due to actual payroll different than expected during 2021.
[2] Other differences in actual versus expected experience including (but not limited to) retirement, disability, and termination experience.

E. Development of Unfunded Actuarial Accrued Liability (continued)

Development for Year Ended December 31, 2021
General (Excluding LARPD & Office of Education) Only

1	**Unfunded actuarial accrued liability at beginning of year**		**$1,550,153,000**
2	Total normal cost at middle of year		175,209,000
3	Expected employer and member contributions		(320,384,000)
4	Interest		103,928,000
5	Expected unfunded actuarial accrued liability		$1,508,906,000
6	Changes due to:		
	a. Investment return greater than expected after "smoothing"	$(152,823,000)	
	b. Actual contributions less than expected[1]	27,157,000	
	c. Individual salary increases higher than expected	18,080,000	
	d. COLA increases higher than expected for continuing retirees	19,517,000	
	e. Mortality lower than expected for continuing retirees	322,000	
	f. Other experience gains[2]	(16,228,000)	
	Total changes		$(103,975,000)
7	**Unfunded actuarial accrued liability at end of year**		**$1,404,931,000**

[1] Includes impact of scheduled lag in rate implementation and difference between Normal Cost and UAAL contributions due to actual payroll different than expected during 2021.
[2] Other differences in actual versus expected experience including (but not limited to) retirement, disability, and termination experience.

E. Development of Unfunded Actuarial Accrued Liability (continued)

Development for Year Ended December 31, 2021
General (Office of Education) Only

1	**Unfunded actuarial accrued liability at beginning of year**		**$1,055,000**
2	Total normal cost at middle of year		0
3	Expected employer and member contributions		(88,000)
4	Interest		68,000
5	Expected unfunded actuarial accrued liability		$1,035,000
6	Changes due to:		
	a. Investment return greater than expected after “smoothing”	$(98,000)	
	b. COLA increases higher than expected for continuing retirees	38,000	
	c. Mortality lower than expected for continuing retirees	74,000	
	Total changes		$14,000
7	**Unfunded actuarial accrued liability at end of year**		**$1,049,000**

E. Development of Unfunded Actuarial Accrued Liability (continued)

Development for Year Ended December 31, 2021
General (LARPD) Only

1	**Unfunded actuarial accrued liability at beginning of year**		**$13,275,000**
2	Total normal cost at middle of year		916,000
3	Expected employer and member contributions		(1,579,000)
4	Voluntary LARPD General UAAL contributions		(12,611,000)
5	Interest		465,000
6	Expected unfunded actuarial accrued liability		$466,000
7	Changes due to:		
	a. Investment return greater than expected after “smoothing”	$(1,309,000)	
	b. Actual contributions less than expected[1]	61,000	
	c. Individual salary increases lower than expected	(239,000)	
	d. COLA increases higher than expected for continuing retirees	425,000	
	e. Mortality higher than expected for continuing retirees	(50,000)	
	f. Other experience losses[2]	398,000	
	Total changes		$(714,000)
8	**Unfunded actuarial accrued liability at end of year**		**$(248,000)**

[1] Includes impact of scheduled lag in rate implementation (including lag in applying the contribution rate credit from the voluntary LARPD General UAAL contributions) and difference between Normal Cost and UAAL contributions due to actual payroll different than expected during 2021.

[2] Other differences in actual versus expected experience including (but not limited to) retirement, disability, and termination experience.

E. Development of Unfunded Actuarial Accrued Liability (continued)

Development for Year Ended December 31, 2021
Safety Only

1	**Unfunded actuarial accrued liability at beginning of year**		**$935,456,000**
2	Total normal cost at middle of year		64,637,000
3	Expected employer and member contributions		(115,336,000)
4	Voluntary County Safety UAAL contributions		(800,000,000)
5	Interest		35,699,000
6	Expected unfunded actuarial accrued liability		$120,456,000
7	Changes due to:		
	a. Investment return greater than expected after "smoothing"	$(54,029,000)	
	b. Actual contributions greater than expected[1]	(3,419,000)	
	c. Individual salary increases higher than expected	6,674,000	
	d. COLA increases higher than expected for continuing retirees	8,185,000	
	e. Mortality higher than expected for continuing retirees	(6,732,000)	
	f. Other experience gains[2]	(40,000)	
	Total changes		$(49,361,000)
8	**Unfunded actuarial accrued liability at end of year**		**$71,095,000**

[1] Includes impact of scheduled lag in rate implementation (including lag in applying the contribution rate credit from the voluntary County Safety UAAL contributions) and difference between Normal Cost and UAAL contributions due to actual payroll different than expected during 2021.

[2] Other differences in actual versus expected experience including (but not limited to) retirement, disability, and termination experience.

F. Recommended Contribution

The recommended contribution is equal to the employer Normal Cost payment and a payment on the Unfunded Actuarial Accrued Liability. As of December 31, 2021, the average recommended employer contribution is 23.41% of compensation.

The Board sets the funding policy used to calculate the recommended contribution based on layered amortization periods. See *Section 4, Exhibit 1* for further details on the funding policy.

The contribution requirement as of December 31, 2021 is based on the data previously described, the actuarial assumptions and Plan provisions described in *Section 4*, including all changes affecting future costs adopted at the time of the actuarial valuation, actuarial gains and losses, and changes in the actuarial assumptions.

Average Recommended Employer Contribution[1] for Year Ended December 31

		2021		2020	
		Amount ($ in '000s)	% of Projected Compensation	Amount ($ in '000s)	% of Projected Compensation
1	Total normal cost	$251,362	20.87%	$240,762	20.83%
2	Expected member normal cost contributions	-120,392	-10.00%	114,901	9.94%
3	Employer normal cost: (1) - (2)	$130,970	10.87%	$125,861	10.89%
4	Actuarial accrued liability	10,929,935		10,484,180	
5	Valuation value of assets	9,453,108		7,984,241	
6	Unfunded actuarial accrued liability (UAAL): (4) - (5)	$1,476,827		$2,499,939	
7	Payment on UAAL	$151,055	12.54%	235,622	20.39%
8	Projected compensation	$1,204,499		1,155,697	
9	**Total average recommended employer contribution: (3) + (7)**	**$282,025**	**23.41%**	**$361,483**	**31.28%**

Note: Contributions are assumed to be paid at the middle of the year.

[1] For employers with active member payroll. The UAAL contribution for ACOE, expressed as a level dollar amount, is $101 K when made on April 1, 2023.

Reconciliation of Average Recommended Employer Contribution Rate

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

Reconciliation from December 31, 2020 to December 31, 2021
Total Plan ($ in '000s)

		Contribution Rate	Estimated Annual Dollar Amount[1]
	Average Recommended Employer Contribution as of December 31, 2020[2] before voluntary UAAL contribution credit	**31.45%**	**$378,830**
	Voluntary County Safety & LARPD General UAAL contribution credit	-6.97%	-$83,953
	Average Recommended Employer Contribution as of December 31, 2020 after voluntary UAAL contribution credit	**24.48%**	**$294,877**
1	Effect of investment return greater than expected after "smoothing"	-1.23%	-$14,823
2	Effect of actual contributions less than expected[3]	0.14%	1,666
3	Effect of individual salary increases higher than expected	0.15%	1,832
4	Effect of COLA increases higher than expected	0.16%	1,919
5	Effect of amortizing prior year's UAAL over a larger than expected total projected payroll	-0.08%	-1,022
6	Effect of mortality higher than expected for continuing retirees	-0.04%	-488
7	Effect of changes in member demographics on Normal Cost	-0.02%	-264
8	Effect of other gains[4]	-0.13%	-1,576
9	Effect of reamortizing LARPD General UAAL layers	-0.01%	-118
10	Effect of floor on net LARPD contribution rate of no less than Normal Cost in compliance with CalPEPRA	0.00%	22
	Total change	-1.07%	-$12,852
	Average Recommended Employer Contribution as of December 31, 2021	**23.41%**	**$282,025**

1 Based on December 31, 2021 projected compensation.
2 Determined by applying the recommended employer contribution rates as of December 31, 2020 to the projected compensation as of December 31, 2021 by cost group, membership class and tier.
3 Includes impact of scheduled lag in rate implementation (including lag in applying the contribution rate credit from the voluntary UAAL contributions) and difference between Normal Cost and UAAL contributions due to actual payroll during 2021 different than expected.
4 Other differences in actual versus expected experience including (but not limited to) retirement, disability and termination experience.

Reconciliation of Average Recommended Employer Contribution Rate (continued)

Reconciliation from December 31, 2020 to December 31, 2021
General (Excluding LARPD & Office of Education) Only ($ in '000s)

	Contribution Rate	Estimated Annual Dollar Amount[1]
Average Recommended Employer Contribution as of December 31, 2020[2]	**24.30%**	**$244,762**
1 Effect of investment return greater than expected after "smoothing"	-1.08%	-$10,879
2 Effect of actual contributions less than expected[3]	0.19%	1,914
3 Effect of individual salary increases higher than expected	0.14%	1,410
4 Effect of COLA increases higher than expected	0.13%	1,309
5 Effect of amortizing prior year's UAAL over a greater than expected total projected payroll	-0.05%	-504
6 Effect of mortality lower than expected for continuing retirees	0.00%	0
7 Effect of changes in member demographics on Normal Cost	-0.02%	-201
8 Effect of other gains[4]	-0.12%	-1,182
Total change	-0.81%	-$8,133
Average Recommended Employer Contribution as of December 31, 2021	**23.49%**	**$236,629**

1 Based on December 31, 2021 projected compensation.
2 Determined by applying the recommended employer contribution rates as of December 31, 2020 to the projected compensation as of December 31, 2021 by cost group, membership class and tier.
3 Includes impact of scheduled lag in rate implementation and difference between Normal Cost and UAAL contributions due to actual payroll during 2021 different than expected.
4 Other differences in actual versus expected experience including (but not limited to) mortality, retirement, disability and termination experience.

Reconciliation of Average Recommended Employer Contribution Rate (continued)

Reconciliation from December 31, 2020 to December 31, 2021
General (LARPD) Only ($ in '000s)

		Contribution Rate	Estimated Annual Dollar Amount[1]
	Average Recommended Employer Contribution as of December 31, 2020[2] before voluntary UAAL contribution credit	**44.66%**	**$1,635**
	Voluntary LARPD General UAAL contribution credit	-28.08%	-$1,028
	Average Recommended Employer Contribution as of December 31, 2020 after voluntary UAAL contribution credit	**16.58%**	**$607**
1	Effect of investment return greater than expected after "smoothing"	-2.55%	-$93
2	Effect of actual contributions less than expected[3]	0.11%	4
3	Effect of individual salary increases lower than expected	-0.63%	-23
4	Effect of COLA increases higher than expected	0.79%	29
5	Effect of amortizing prior year's UAAL over a smaller than expected total projected payroll	0.15%	5
6	Effect of mortality higher than expected for continuing retirees	-0.10%	-4
7	Effect of changes in member demographics on Normal Cost	0.39%	14
8	Effect of other losses[4]	0.74%	28
9	Effect of reamortizing LARPD General UAAL layers[5]	-3.22%	-118
10	Effect of floor on net LARPD contribution rate of no less than Normal Cost in compliance with CalPEPRA[5]	0.60%	22
	Total change	-3.72%	-$136
	Average Recommended Employer Contribution as of December 31, 2021	**12.86%**	**$471**

[1] Based on December 31, 2021 projected compensation.
[2] Determined by applying the recommended employer contribution rates as of December 31, 2020 to the projected compensation as of December 31, 2021 by cost group, membership class and tier.
[3] Includes impact of scheduled lag in rate implementation (including lag in applying the contribution rate credit from the voluntary LARPD General UAAL contributions) and difference between Normal Cost and UAAL contributions due to actual payroll during 2021 different than expected.
[4] Other differences in actual versus expected experience including (but not limited to) retirement, disability and termination experience.
[5] As a result of additional voluntary UAAL contributions made by LARPD and other favorable actuarial experience, LARPD has become fully funded in the December 31, 2021 valuation. In order to reflect a net 0% UAAL contribution rate after taking into account the additional UAAL contributions, we have taken the amortization periods for all LARPD General UAAL layers and set them equal to the same remaining 15.5 years used to amortize the credit for the additional UAAL contributions. Furthermore, the voluntary UAAL contribution credit has been reduced to not exceed the UAAL rate before the credit.

Reconciliation of Average Recommended Employer Contribution Rate (continued)

Reconciliation from December 31, 2020 to December 31, 2021
Safety Only ($ in '000s)

	Contribution Rate	Estimated Annual Dollar Amount[1]
Average Recommended Employer Contribution as of December 31, 2020[2] before voluntary UAAL contribution credit	**68.43%**	**$132,433**
Voluntary County Safety UAAL contribution credit	-42.85%	-$82,925
Average Recommended Employer Contribution as of December 31, 2020 after voluntary UAAL contribution credit	**25.58%**	**$49,508**
1 Effect of investment return greater than expected after "smoothing"	-1.99%	-$3,851
2 Effect of actual contributions greater than expected[3]	-0.13%	-252
3 Effect of individual salary increases higher than expected	0.23%	445
4 Effect of COLA increases higher than expected	0.30%	581
5 Effect of amortizing prior year's UAAL over a larger than expected total projected payroll	-0.27%	-523
6 Effect of mortality higher than expected for continuing retirees	-0.25%	-484
7 Effect of changes in member demographics on Normal Cost	-0.04%	-77
8 Effect of other gains[4]	-0.22%	-422
Total change	-2.37%	-$4,583
Average Recommended Employer Contribution as of December 31, 2021	**23.21%**	**$44,925**

1 Based on December 31, 2021 projected compensation.
2 Determined by applying the recommended employer contribution rates as of December 31, 2020 to the projected compensation as of December 31, 2021 by cost group, membership class and tier.
3 Includes impact of scheduled lag in rate implementation (including lag in applying the contribution rate credit from the voluntary County Safety UAAL contributions) and difference between Normal Cost and UAAL contributions due to actual payroll during 2021 different than expected.
4 Other differences in actual versus expected experience including (but not limited to) retirement, disability and termination experience.

Reconciliation of Average Recommended Member Contribution Rate

The charts below details the changes in the average recommended member contribution rate from the prior valuation to the current year's valuation.

Reconciliation from December 31, 2020 to December 31, 2021

	Contribution Rate	Estimated Annual Dollar Amount[1] ($ in '000s)
Average Recommended Member Contribution as of December 31, 2020	**9.98%**	**$120,217**
• Effect of changes in member demographics	0.02%	$175
Average Recommended Member Contribution as of December 31, 2021	**10.00%**	**$120,392**

By Membership and Tier

	General Tier 1	General Tier 2	General Tier 3	General Tier 4
Average Recommended Member Contribution as of December 31, 2020	**9.83%**	**8.17%**	**15.05%**	**9.21%**
• Effect of changes in member demographics	-0.04%	0.00%	0.02%	0.02%
Average Recommended Member Contribution as of December 31, 2021	**9.79%**	**8.17%**	**15.07%**	**9.23%**

	Safety Tier 1	Safety Tier 2	Safety Tier 2C	Safety Tier 2D	Safety Tier 4
Average Recommended Member Contribution as of December 31, 2020	**3.00%**	**16.88%**	**14.63%**	**17.02%**	**16.93%**
• Effect of changes in member demographics	0.00%	0.03%	-0.03%	0.02%	0.08%
Average Recommended Member Contribution as of December 31, 2021	**3.00%**	**16.91%**	**14.60%**	**17.04%**	**17.01%**

[1] Based on December 31, 2021 projected compensation.

Recommended Employer Contribution Rates[1]

	December 31, 2021 Actuarial Valuation				December 31, 2020 Actuarial Valuation			
County Only	**Basic**	**COLA**	**Total**	**Estimated Annual Dollar Amount[2] ($ in '000s)**	**Basic**	**COLA**	**Total**	**Estimated Annual Dollar Amount[2] ($ in '000s)**
General Tier 1 Members								
Normal Cost	8.10%	2.87%	10.97%	$537	8.17%	2.79%	10.96%	$537
UAAL (Before POB Credit)	14.92%	5.04%	19.96%	978	15.54%	5.22%	20.76%	1,017
Pension Obligation Bond Credit	-3.65%	-1.56%	-5.21%	-255	-3.67%	-1.57%	-5.24%	-257
Implicit Retiree Health Benefit Subsidy	-0.97%	0.00%	-0.97%	-48	-0.94%	0.00%	-0.94%	-46
Total Contributions	**18.40%**	**6.35%**	**24.75%**	**$1,212**	**19.10%**	**6.44%**	**25.54%**	**$1,251**
General Tier 2 Members								
Normal Cost	7.79%	1.63%	9.42%	$34,566	7.83%	1.64%	9.47%	$34,750
UAAL (Before POB Credit)	14.92%	5.04%	19.96%	73,242	15.54%	5.22%	20.76%	76,178
Pension Obligation Bond Credit	-3.65%	-1.56%	-5.21%	-19,118	-3.67%	-1.57%	-5.24%	-19,228
Implicit Retiree Health Benefit Subsidy	-0.97%	0.00%	-0.97%	-3,559	-0.94%	0.00%	-0.94%	-3,449
Total Contributions	**18.09%**	**5.11%**	**23.20%**	**$85,131**	**18.76%**	**5.29%**	**24.05%**	**$88,251**
General Tier 4 Members								
Normal Cost	7.51%	1.72%	9.23%	$26,118	7.47%	1.74%	9.21%	$26,062
UAAL (Before POB Credit)	14.92%	5.04%	19.96%	56,481	15.54%	5.22%	20.76%	58,745
Pension Obligation Bond Credit	-3.65%	-1.56%	-5.21%	-14,743	-3.67%	-1.57%	-5.24%	-14,828
Implicit Retiree Health Benefit Subsidy	-0.97%	0.00%	-0.97%	-2,745	-0.94%	0.00%	-0.94%	-2,660
Total Contributions	**17.81%**	**5.20%**	**23.01%**	**$65,111**	**18.40%**	**5.39%**	**23.79%**	**$67,319**

[1] For employers with active member payroll. The UAAL contribution for ACOE, expressed as a level dollar amount, is $101 K when made on April 1, 2023.

[2] Amounts are based on the December 31, 2021 projected compensation shown on page 48.

Recommended Employer Contribution Rates (continued)

County Only	December 31, 2021 Actuarial Valuation Basic	COLA	Total	Estimated Annual Dollar Amount[2] ($ in '000s)	December 31, 2020 Actuarial Valuation[1] Basic	COLA	Total	Estimated Annual Dollar Amount[2] ($ in '000s)
Safety Tier 1 Members								
Normal Cost	29.59%	12.62%	42.21%	$214	29.74%	12.62%	42.36%	$215
Member Cost Sharing Contributions (Adjusted for Refunds)	-3.00%	0.00%	-3.00%	-15	-3.00%	0.00%	-3.00%	-15
UAAL (Before Credits)	39.67%	12.66%	52.33%	265	41.99%	13.81%	55.80%	283
Voluntary UAAL contribution credit	-31.91%	-9.98%	-41.89%	-212	0.00%	0.00%	0.00%	0
Pension Obligation Bond Credit	-3.34%	-1.70%	-5.04%	-26	-3.28%	-1.99%	-5.27%	-27
Implicit Retiree Health Benefit Subsidy	-0.97%	0.00%	-0.97%	-5	-0.94%	0.00%	-0.94%	-5
Total Contributions	**30.04%**	**13.60%**	**43.64%**	**$221**	**64.51%**	**24.44%**	**88.95%**	**$451**
Safety Tier 2 Members								
Normal Cost	18.59%	3.80%	22.39%	$23,772	18.69%	3.84%	22.53%	$23,920
Member Cost Sharing Contributions (Adjusted for Refunds)	-2.98%	0.00%	-2.98%	-3,164	-2.97%	0.00%	-2.97%	-3,153
UAAL (Before Credits)	39.67%	12.66%	52.33%	55,559	41.99%	13.81%	55.80%	59,243
Voluntary UAAL contribution credit	-31.91%	-9.98%	-41.89%	-44,475	0.00%	0.00%	0.00%	0
Pension Obligation Bond Credit	-3.34%	-1.70%	-5.04%	-5,351	-3.28%	-1.99%	-5.27%	-5,595
Implicit Retiree Health Benefit Subsidy	-0.97%	0.00%	-0.97%	-1,030	-0.94%	0.00%	-0.94%	-998
Total Contributions	**19.06%**	**4.78%**	**23.84%**	**$25,311**	**53.49%**	**15.66%**	**69.15%**	**$73,417**
Safety Tier 2C Members								
Normal Cost	20.47%	4.28%	24.75%	$700	20.02%	4.26%	24.28%	$687
Member Cost Sharing Contributions (Adjusted for Refunds)	0.00%	0.00%	0.00%	0	0.00%	0.00%	0.00%	0
UAAL (Before Credits)	39.67%	12.66%	52.33%	1,480	41.99%	13.81%	55.80%	1,578
Voluntary UAAL contribution credit	-31.91%	-9.98%	-41.89%	-1,185	0.00%	0.00%	0.00%	0
Pension Obligation Bond Credit	-3.34%	-1.70%	-5.04%	-143	-3.28%	-1.99%	-5.27%	-149
Implicit Retiree Health Benefit Subsidy	-0.97%	0.00%	-0.97%	-27	-0.94%	0.00%	-0.94%	-27
Total Contributions	**23.92%**	**5.26%**	**29.18%**	**$825**	**57.79%**	**16.08%**	**73.87%**	**$2,089**

[1] Rates shown are the same as those in our December 31, 2020 valuation report and are before the voluntary UAAL contribution credit.
[2] Amounts are based on the December 31, 2021 projected compensation shown on page 48.

Recommended Employer Contribution Rates (continued)

County Only	December 31, 2021 Actuarial Valuation Basic	COLA	Total	Estimated Annual Dollar Amount[2] ($ in '000s)	December 31, 2020 Actuarial Valuation[1] Basic	COLA	Total	Estimated Annual Dollar Amount[2] ($ in '000s)
Safety Tier 2D Members								
Normal Cost	19.04%	4.04%	23.08%	$4,016	19.10%	4.07%	23.17%	$4,032
Member Cost Sharing Contributions (Adjusted for Refunds)	-2.91%	0.00%	-2.91%	-506	-2.93%	0.00%	-2.93%	-510
UAAL (Before Credits)	39.67%	12.66%	52.33%	9,106	41.99%	13.81%	55.80%	9,710
Voluntary UAAL contribution credit	-31.91%	-9.98%	-41.89%	-7,289	0.00%	0.00%	0.00%	0
Pension Obligation Bond Credit	-3.34%	-1.70%	-5.04%	-877	-3.28%	-1.99%	-5.27%	-917
Implicit Retiree Health Benefit Subsidy	-0.97%	0.00%	-0.97%	-169	-0.94%	0.00%	-0.94%	-164
Total Contributions	**19.58%**	**5.02%**	**24.60%**	**$4,281**	**53.94%**	**15.89%**	**69.83%**	**$12,151**
Safety Tier 4 Members								
Normal Cost	13.28%	3.73%	17.01%	$11,334	13.19%	3.74%	16.93%	$11,281
Member Cost Sharing Contributions (Adjusted for Refunds)	0.00%	0.00%	0.00%	0	0.00%	0.00%	0.00%	0
UAAL (Before Credits)	39.67%	12.66%	52.33%	34,870	41.99%	13.81%	55.80%	37,182
Voluntary UAAL contribution credit	-31.91%	-9.98%	-41.89%	-27,913	0.00%	0.00%	0.00%	0
Pension Obligation Bond Credit	-3.34%	-1.70%	-5.04%	-3,358	-3.28%	-1.99%	-5.27%	-3,512
Implicit Retiree Health Benefit Subsidy	-0.97%	0.00%	-0.97%	-646	-0.94%	0.00%	-0.94%	-626
Total Contributions	**16.73%**	**4.71%**	**21.44%**	**$14,287**	**50.96%**	**15.56%**	**66.52%**	**$44,325**
All County Categories Combined								
Normal Cost	9.77%	2.17%	11.94%	$101,257	9.78%	2.18%	11.96%	$101,484
Member Cost Sharing Contributions (Adjusted for Refunds)	-0.43%	0.00%	-0.43%	-3,685	-0.43%	0.00%	-0.43%	-3,678
UAAL (Before Credits)	20.57%	6.77%	27.34%	231,981	21.57%	7.18%	28.75%	243,936
Voluntary UAAL contribution credit	-7.28%	-2.28%	-9.56%	-81,074	0.00%	0.00%	0.00%	0
Pension Obligation Bond Credit	-3.58%	-1.59%	-5.17%	-43,871	-3.58%	-1.67%	-5.25%	-44,513
Implicit Retiree Health Benefit Subsidy	-0.97%	0.00%	-0.97%	-8,229	-0.94%	0.00%	-0.94%	-7,975
Total Contributions	**18.08%**	**5.07%**	**23.15%**	**$196,379**	**26.40%**	**7.69%**	**34.09%**	**$289,254**

1 Rates shown are the same as those in our December 31, 2020 valuation report and are before the voluntary UAAL contribution credit.
2 Amounts are based on the December 31, 2021 projected compensation shown on page 48.

Recommended Employer Contribution Rates (continued)

AHS, Court & First 5 Only	December 31, 2021 Actuarial Valuation Basic	COLA	Total	Estimated Annual Dollar Amount[1] ($ in '000s)	December 31, 2020 Actuarial Valuation Basic	COLA	Total	Estimated Annual Dollar Amount[1] ($ in '000s)
General Tier 1 Members								
Normal Cost	8.10%	2.87%	10.97%	$73	8.17%	2.79%	10.96%	$73
UAAL (Before POB Credit)	14.92%	5.04%	19.96%	133	15.54%	5.22%	20.76%	138
Pension Obligation Bond Credit	-3.65%	-1.56%	-5.21%	-35	-3.67%	-1.57%	-5.24%	-35
Total Contributions	**19.37%**	**6.35%**	**25.72%**	**$171**	**20.04%**	**6.44%**	**26.48%**	**$176**
General Tier 2 Members								
Normal Cost	7.79%	1.63%	9.42%	$16,505	7.83%	1.64%	9.47%	$16,592
UAAL (Before POB Credit)	14.92%	5.04%	19.96%	34,972	15.54%	5.22%	20.76%	36,373
Pension Obligation Bond Credit	-3.65%	-1.56%	-5.21%	-9,128	-3.67%	-1.57%	-5.24%	-9,181
Total Contributions	**19.06%**	**5.11%**	**24.17%**	**$42,349**	**19.70%**	**5.29%**	**24.99%**	**$43,784**
General Tier 4 Members								
Normal Cost	7.51%	1.72%	9.23%	$15,847	7.47%	1.74%	9.21%	$15,812
UAAL (Before POB Credit)	14.92%	5.04%	19.96%	34,269	15.54%	5.22%	20.76%	35,642
Pension Obligation Bond Credit	-3.65%	-1.56%	-5.21%	-8,945	-3.67%	-1.57%	-5.24%	-8,996
Total Contributions	**18.78%**	**5.20%**	**23.98%**	**$41,171**	**19.34%**	**5.39%**	**24.73%**	**$42,458**

[1] Amounts are based on the December 31, 2021 projected compensation shown on page 48.

Recommended Employer Contribution Rates (continued)

Housing Authority	December 31, 2021 Actuarial Valuation Basic	COLA	Total	Estimated Annual Dollar Amount[1] ($ in '000s)	December 31, 2020 Actuarial Valuation Basic	COLA	Total	Estimated Annual Dollar Amount[1] ($ in '000s)
General Tier 1 Members								
Normal Cost	8.10%	2.87%	10.97%	$301	8.17%	2.79%	10.96%	$301
UAAL	14.92%	5.04%	19.96%	548	15.54%	5.22%	20.76%	570
Total Contributions	**23.02%**	**7.91%**	**30.93%**	**$849**	**23.71%**	**8.01%**	**31.72%**	**$871**
General Tier 2 Members								
Normal Cost	7.79%	1.63%	9.42%	$24	7.83%	1.64%	9.47%	$24
UAAL	14.92%	5.04%	19.96%	50	15.54%	5.22%	20.76%	52
Total Contributions	**22.71%**	**6.67%**	**29.38%**	**$74**	**23.37%**	**6.86%**	**30.23%**	**$76**
General Tier 4 Members								
Normal Cost	7.51%	1.72%	9.23%	$177	7.47%	1.74%	9.21%	$177
UAAL	14.92%	5.04%	19.96%	384	15.54%	5.22%	20.76%	399
Total Contributions	**22.43%**	**6.76%**	**29.19%**	**$561**	**23.01%**	**6.96%**	**29.97%**	**$576**

[1] Amounts are based on the December 31, 2021 projected compensation shown on page 48.

Recommended Employer Contribution Rates (continued)

LARPD	December 31, 2021 Actuarial Valuation Basic	COLA	Total[2]	Estimated Annual Dollar Amount[3] ($ in '000s)	December 31, 2020 Actuarial Valuation[1] Basic	COLA	Total[1]	Estimated Annual Dollar Amount[2] ($ in '000s)
General Tier 1 Members								
Normal Cost	8.10%	2.87%	10.97%	$61	8.17%	2.79%	10.96%	$60
UAAL (Before Credits)	20.23%	8.96%	29.19%	161	22.82%	9.18%	32.00%	177
Voluntary UAAL contribution credit[4]	-20.23%	-8.96%	-29.19%	-161	0.00%	0.00%	0.00%	0
Total Contributions	**8.10%**	**2.87%**	**10.97%**	**$61**	**30.99%**	**11.97%**	**42.96%**	**$237**
General Tier 3 Members								
Normal Cost	12.32%	4.09%	16.41%	$281	12.07%	3.95%	16.02%	$274
UAAL (Before Credits)	20.23%	8.96%	29.19%	500	22.82%	9.18%	32.00%	548
Voluntary UAAL contribution credit[4]	-20.23%	-8.96%	-29.19%	-500	0.00%	0.00%	0.00%	0
Total Contributions	**12.32%**	**4.09%**	**16.41%**	**$281**	**34.89%**	**13.13%**	**48.02%**	**$822**
General Tier 4 Members								
Normal Cost	7.51%	1.72%	9.23%	$129	7.47%	1.74%	9.21%	$129
UAAL (Before Credits)	20.23%	8.96%	29.19%	408	22.82%	9.18%	32.00%	447
Voluntary UAAL contribution credit[4]	-20.23%	-8.96%	-29.19%	-408	0.00%	0.00%	0.00%	0
Total Contributions	**7.51%**	**1.72%**	**9.23%**	**$129**	**30.29%**	**10.92%**	**41.21%**	**$576**

1 Rates shown are the same as those in our December 31, 2020 valuation report and are before the voluntary UAAL contribution credit.
2 For LARPD, the combined rate is 12.86% as of December 31, 2021 and 44.64% as of December 31, 2020. The combined rate as of December 31, 2020 is before reflecting the voluntary UAAL contribution credit.
3 Amounts are based on the December 31, 2021 projected compensation shown on page 48.
4 In compliance with CalPEPRA, the net LARPD contribution rate cannot be less than the Normal Cost. In order to do that, the voluntary UAAL contribution credit has been reduced to not exceed the UAAL rate before the credit. The total voluntary UAAL contribution credit before reduction is equal to 29.79% of payroll.

Recommended Employer Contribution Rates (continued)

All Categories Combined	December 31, 2021 Actuarial Valuation Basic	COLA	Total	Estimated Annual Dollar Amount[1] ($ in '000s)	December 31, 2020 Actuarial Valuation Basic	COLA	Total	Estimated Annual Dollar Amount[1] ($ in '000s)
All Categories Combined								
Normal Cost (Net)	8.84%	2.03%	10.87%	$130,970	8.85%	2.05%	10.90%	$131,248
UAAL (Net)	9.47%	3.07%	12.54%	151,055	15.57%	4.98%	20.55%	247,582
Total Contributions	**18.31%**	**5.10%**	**23.41%**	**$282,025**	**24.42%**	**7.03%**	**31.45%**	**$378,830**

Payroll Breakdown ($ in '000s)

	County Only	AHS, Court, & First 5	Housing Authority	LARPD	Total
General Tier 1	$4,898	$666	$2,748	$552	$8,864
General Tier 2	366,945	175,208	251		542,404
General Tier 3				1,712	1,712
General Tier 4	282,969	171,688	1,923	1,398	457,978
Safety Tier 1	507				507
Safety Tier 2	106,171				106,171
Safety Tier 2C	2,828				2,828
Safety Tier 2D	17,401				17,401
Safety Tier 4	66,634				66,634
Total	**$848,353**	**$347,562**	**$4,922**	**$3,662**	**$1,204,499**

[1] Amounts are based on the December 31, 2021 projected compensation shown above.

Recommended Employer Contribution Rates (continued)

A breakdown of the approximate[1] portion of the employer contribution rate by the various types of benefit is as follows:

	General	Safety
Service and non-service connected disability benefits	7%	34%
Service retirement and other benefits	93%	66%
Total	**100%**	**100%**

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

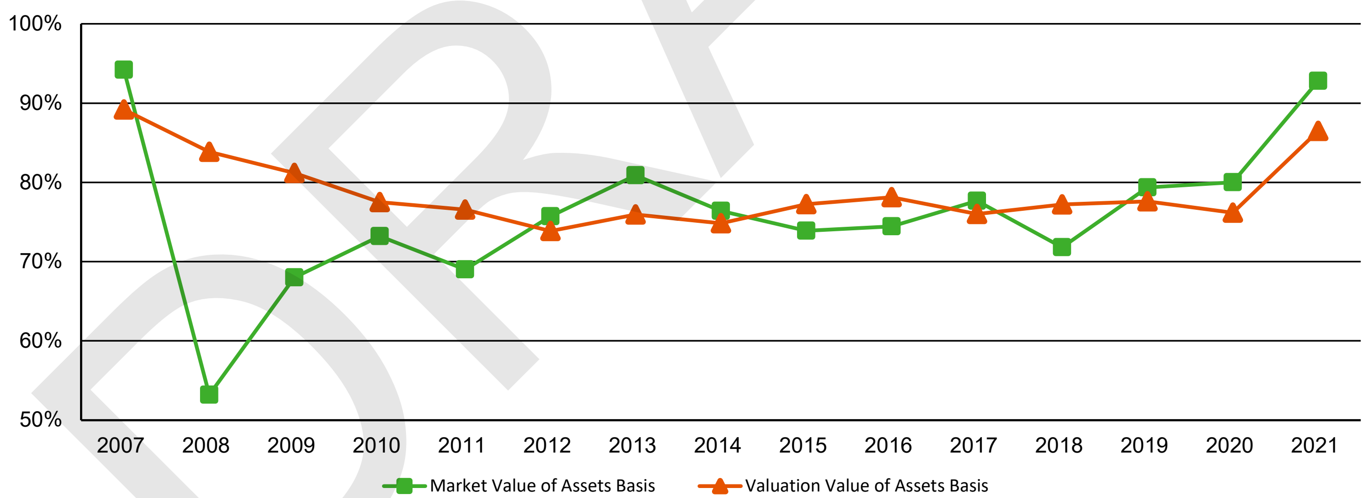
G. Funded Status

A commonly reported piece of information regarding the Plan's financial status is the funded ratio. These ratios compare the Market and Valuation Value of Assets to the Actuarial Accrued Liability of the Plan. High ratios indicate a well-funded plan with assets sufficient to cover the Plan's Actuarial Accrued Liability. Lower ratios may indicate recent changes to benefit structures, funding of the plan below actuarial requirements, poor asset performance, or a variety of other changes.

The chart below depicts a history of the funded ratio for the Plan. The chart on the next page shows the Plan's schedule of funding progress for the last ten years.

The funded status measures shown in this valuation are appropriate for assessing the need for or amount of future contributions. However, they are not necessarily appropriate for assessing the sufficiency of Plan assets to cover the estimated cost of settling the Plan's benefit obligations. As the chart below shows, the measures are different depending on whether the Valuation or Market Value of Assets is used.

Funded Ratio for Years Ended December 31, 2007 – 2021[1]



[1] Prior to the December 31, 2013 valuation, the Funded Ratio on a Market Value basis was calculated using the end-of-year Valuation Value of Assets plus any deferred market gains. Beginning with the December 31, 2013 valuation, the Market Value of Assets for this purpose includes either one-half of any deferred market gains (after adjustment to include the balance in the Contingency Reserve) or a proportion of any deferred investment losses after netting out the Contingency Reserve that is commensurate with the size of the valuation reserves.

Schedule of Funding Progress for Years Ended December 31, 2012 – 2021

Actuarial Valuation Date as of December 31	Valuation Value of Assets[1] (a)	Actuarial Accrued Liability (AAL)[2] (b)	Unfunded AAL (UAAL) (b) - (a)	Funded Ratio (%) (a) / (b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll (%) [(b) - (a)] / (c)
2012	$4,883,872,000	$6,612,929,000	$1,729,057,000	73.9%	$906,500,000	190.7%
2013	5,210,944,000	6,861,687,000	1,650,743,000	75.9%	916,803,000	180.1%
2014	5,681,097,000	7,592,072,000	1,910,975,000	74.8%	948,848,000	201.4%
2015	6,083,536,000	7,875,020,000	1,791,484,000	77.3%	969,534,000	184.8%
2016	6,436,138,000	8,237,715,000	1,801,577,000	78.1%	1,003,651,000	179.5%
2017	6,830,379,000	8,987,061,000	2,156,682,000	76.0%	1,055,661,000	204.3%
2018	7,239,327,000	9,376,397,000	2,137,070,000	77.2%	1,093,735,000	195.4%
2019	7,599,977,000	9,795,019,000	2,195,042,000	77.6%	1,129,175,000	194.4%
2020	7,984,241,000	10,484,180,000	2,499,939,000	76.2%	1,155,697,000	216.3%
2021	9,453,108,000	10,929,935,000	1,476,827,000	86.5%	1,204,499,000	122.6%

[1] Excludes assets for SRBR and other non-valuation reserves, and includes the following (whole dollar) reimbursement amounts of implicit retiree health benefit subsidy paid by the County (amounts beginning with the December 31, 2010 valuation date are estimates provided by ACERA):

Actuarial Valuation Date	Reimbursement Amount	For Year	Actuarial Valuation Date	Reimbursement Amount	For Year
12/31/2009	$5,287,767	2009	12/31/2016	$8,865,275	2016
12/31/2010	4,500,000	2010	12/31/2017	5,830,283	2017
12/31/2011	4,411,206	2011	12/31/2018	6,939,808	2018
12/31/2012	7,370,466	2012	12/31/2019	6,510,876	2019
12/31/2013	6,993,032	2013	12/31/2020	7,548,683	2020
12/31/2014	5,215,355	2014	12/31/2021	5,652,613	2021
12/31/2015	5,324,502	2015			

[2] Excludes liabilities for SRBR and other non-valuation reserves.

H. Actuarial Balance Sheet

An overview of the Plan's funding is given by an Actuarial Balance Sheet. In this approach, first the amount and timing of all future payments that will be made by the Plan for current participants is determined. Then these payments are discounted at the valuation interest rate to the date of the valuation, thereby determining the present value, referred to as the actuarial present value of future benefits of the Plan.

Second, this actuarial present value of future benefits is compared to the assets. The "assets" for this purpose include the net amount of assets already accumulated by the Plan, the present value of future member contributions, the present value of future employer normal cost contributions, and the present value of future employer amortization payments for the unfunded actuarial accrued liability.

Actuarial Balance Sheet for Year Ended December 31, 2021

	Basic ($ in '000s)	COLA ($ in '000s)	Total ($ in '000s)
Actuarial present value of future benefits			
• Present value of benefits for retired members and beneficiaries	$4,191,512	$2,534,836	$6,726,348
• Present value of benefits for inactive vested members	$275,068	$50,176	$325,244
• Present value of benefits for active members	4,673,873	1,121,315	5,795,188
Total actuarial present value of future benefits	**$9,140,453**	**$3,706,327**	**$12,846,780**
Current and future assets			
• Total valuation value of assets	$6,509,562	$2,943,546	$9,453,108
• Present value of future contributions by members	770,982	197,780	968,762
• Present value of future employer contributions for:			
• Entry age normal cost	781,297	166,786	948,083
• Unfunded actuarial accrued liability	1,078,612	398,215	1,476,827
Total of current and future assets	**$9,140,453**	**$3,706,327**	**$12,846,780**

I. Volatility Ratios

Retirement plans are subject to volatility in the level of required contributions. This volatility tends to increase as retirement plans become more mature.

The Asset Volatility Ratio (AVR), which is equal to the market value of assets divided by total payroll, provides an indication of the potential contribution volatility for any given level of investment volatility. A higher AVR indicates that the plan is subject to a greater level of contribution volatility. This is a current measurement because it is based on the current level of assets.

The current AVR is about 8.4. This means that a 1% asset gain or loss (relative to the assumed investment return) translates to about 8.4% of one-year's payroll. Because actuarial gains and losses are amortized over 20 years, there would be a 0.6% of payroll decrease/(increase) in the required contribution for each 1% asset gain or loss.

The Liability Volatility Ratio (LVR), which is equal to the actuarial accrued liability divided by payroll, provides an indication of the longer-term potential for contribution volatility for any given level of investment volatility. This is because, over an extended period of time, the plan's assets should track the plan's liabilities.

The LVR also indicates how volatile contributions will be in response to changes in the actuarial accrued liability due to actual experience or to changes in actuarial assumptions. The current LVR is about 9.1, but is 7.8 for General (non-LARPD) compared to 17.5 for General (LARPD) and 15.8 for Safety. This means that assumption changes will have a greater impact on employer contribution rates for General (LARPD) and Safety than for General (non-LARPD).

The increase in the AVR for LARPD and Safety this year was caused by the additional voluntary contributions to reduce their UAAL. The increase in the LVR for LARPD this year was caused by about an 4% reduction in the payroll for LARPD (relative to the assumption) as reported in the December 31, 2021 valuation.

The chart on the next page shows how the asset and liability volatility ratios have varied over time.

Volatility Ratios for Years Ended 2012 – 2021

	Asset Volatility Ratio[1,2]				Liability Volatility Ratio[2]			
Year Ended December 31	General (non-LARPD)	General (LARPD)	Safety	Total	General (non-LARPD)	General (LARPD)	Safety	Total
2012	5.0	4.9	8.2	5.5	6.3	7.0	12.7	7.3
2013	5.5	5.7	9.1	6.1	6.4	7.4	13.1	7.5
2014	5.5	5.9	9.3	6.1	6.9	7.7	13.9	8.0
2015	5.5	5.7	8.8	6.0	7.0	7.3	13.7	8.1
2016	5.6	6.1	8.9	6.1	7.1	7.7	13.8	8.2
2017	6.0	7.6	9.8	6.6	7.3	9.1	14.6	8.5
2018	5.5	9.0	9.5	6.2	7.3	12.5	15.1	8.6
2019	6.1	11.1	10.8	6.9	7.4	14.1	15.4	8.7
2020	6.4	13.8	11.6	7.3	7.7	16.8	16.2	9.1
2021	6.8	18.8	16.5	8.4	7.8	17.5	15.8	9.1

1 Prior to the December 31, 2013 valuation, the Asset Volatility Ratio was calculated using the end-of-year Valuation Value of Assets plus any deferred market gains. Beginning with the December 31, 2013 valuation, the adjusted Valuation Value of Assets for this purpose includes either one-half of any deferred market gains (after restoring the Contingency Reserve to 1% of total assets, if applicable) or a proportion of any deferred investment losses after netting out the Contingency Reserve that is commensurate with the size of the valuation reserves. For purposes of allocating deferred market gains or losses to General (LARPD) and Safety, the voluntary UAAL contributions are allocated only deferred market gains/losses after June 30, 2021 commensurate with the size of the UAAL Advance Reserves.

2 Prior to the December 31, 2018 valuation, volatility ratios for the General (non-LARPD) group were calculated including assets, liabilities, and payroll attributable to Tier 1 members from the Livermore Area Recreation and Park District (LARPD) and the Alameda County Office of Education (payroll was $0 as of December 31, 2017). Beginning with the December 31, 2018 valuation, the assets, liabilities, and payroll attributable to LARPD Tier 1 members are included in calculating the volatility ratios for the General (LARPD) group, and the assets and liabilities attributable to Office of Education Tier 1 members are excluded from this table.

J. Risk Assessment

Because the actuarial valuation results are dependent on a fixed set of assumptions and data as of a specific date, there is risk that emerging results may differ, perhaps significantly, as actual experience is fluid and will not exactly track current assumptions. This potential divergence may have a significant impact on the future financial condition of the plan.

This report does not contain a detailed analysis of the potential range of future measurements, but does include a concise discussion of some of the primary risks that may affect the Plan's future financial condition. We recommend a more detailed assessment of the risks to provide the Board with a better understanding of the risks inherent in the Plan that can inform both financial preparation and future decision making. This assessment would enable us to work with the Board to highlight and illustrate particular risks or potential future outcomes they may be interested in discussing and could include scenario testing, sensitivity testing, stress testing and stochastic modeling. As noted in the valuation highlights section of this report, a copy of the risk assessment report including the analysis recommended by Segal in consultation with ACERA staff will be available later in 2022.

This section provides descriptions and basic assessments of the primary risks that are likely to have an ongoing influence on the Plan's financial health, as well as a discussion of historical trends and maturity measures:

Risk Assessments

- Asset/Liability Mismatch Risk (the potential that future plan experience does not affect asset and liability values in the same way, causing them to diverge)

  The most significant asset/liability mismatch risk to the Plan is investment risk, as discussed below. In fact, investment risk has the potential to impact asset/liability mismatch in two ways. The first mismatch is evident in annual valuations: when asset values deviate from assumptions they are typically independent from liability changes. The second mismatch can be caused when systemic asset deviations from assumptions may signal the need for an assumption change, which causes liability values and contribution rates to move in the opposite direction from any change in the expected experience of asset growth rates.

  Asset/liability mismatch can also be caused by demographic assumption risk such as longevity, which affects liabilities but have no impact on asset levels. This risk is also discussed below.

- Investment Risk (the risk that investment returns will be different than expected)

  The investment return assumption is a long-term, static assumption for valuation purposes even though in reality market experience can be quite volatile in any given year. That volatility can cause significant changes in the financial condition of the Plan, affecting both funded status and contribution rates. The inherent year-to-year volatility is reduced by smoothing through the Actuarial Value of Assets, however investment experience can still have a sizable impact. As discussed in *Section 2,* *Subsection I, Volatility Ratios*, on page 53, a 1% asset gain or loss (relative to the assumed investment return) translates to about 8.4% of one-year's payroll. Because actuarial gains and losses are amortized over 20 years, there would be a 0.6% of payroll decrease/(increase) in the required contribution for each 1% asset gain/(loss).

The year-by-year market value rate of return over the last 10 years has ranged from a low of -4.62% to a high of 19.53%.

- Longevity Risk (the risk that mortality experience will be different than expected)

  The actuarial valuation includes current life expectancy assumptions and an expectation of future improvement in life expectancy, which are significant assumptions given the relatively long duration of liabilities for pension plans. Emerging plan experience that does not match these expectations will result in increases or decreases in the actuarially determined contribution over time. This risk can be reduced by using tables appropriate for the Plan (public experience tables) that are weighted by benefit levels, and by using generational mortality projections. Effective with the last valuation as of December 31, 2020, the Board has adopted benefit weighted mortality tables with the generational mortality projections.

- Other Risks

  In addition to longevity, the valuation includes a variety of other assumptions that are unlikely to match future experience exactly. One example is projected salary scales over time. As salary is central to the determination of benefits paid in retirement, deviations from the projected salary scales could have a material impact on the benefits anticipated for each member. Examples of demographic assumptions include retirement, termination and disability assumptions, and will likely vary in significance for different groups (for example, disability assumptions are typically more significant for Safety groups).

Some plans also carry significant contribution risk, defined as the potential for actual future contributions deviating from expected future contributions. However, the employer has a proven track-record of making the Actuarially Determined Contributions based on the Board's Actuarial Funding Policy, so contribution risk is minimal.

Evaluation of Historical Trends

Past experience can help demonstrate the sensitivity of key results to the Plan's actual experience. Over the past ten years:

- The funded percentage on the Valuation Value of Assets has increased from 73.9% to 86.5%. This is primarily due to additional voluntary County Safety and LARPD General contributions to reduce their UAAL, and higher than assumed average investment returns over recent years. For a more detailed history see *Section 2, Subsection G, Funded Status* starting on page 50.
- The geometric average investment return on the Actuarial Value of Assets over the last 10 years was 7.92%. (The comparable return for the Valuation Value of Assets was 7.39%.) This includes a high of 12.05% return and a low of 1.67%. The average over the last 5 years was 8.15%. For more details see the Investment Return table in *Section 2, Subsection C* on page 27.

- Beyond investment losses, the primary source of new UAAL was the strengthening of assumptions through multiple assumption changes. For example, the assumption changes in 2014 added $459 million in unfunded liability. The assumption changes in 2017 changed the discount rate from 7.60% to 7.25% (as well as various other changes) adding $396 million in unfunded liability. The assumption changes in 2020 changed the discount rate from 7.25% to 7.00% (as well as various other changes) adding $321.7 million in unfunded liability. For more details on unfunded liability changes see *Section 3, Exhibit H, Table of Amortization Bases* starting on page 83. A graphical representation of historical changes in UAAL by source will be included in the stand-alone risk assessment report.
- The plan's funding policy effectively deals with these unfunded liabilities over time. This can be seen most clearly in the *Section 3, Exhibit I, Projection of UAAL Balances and Payments* provided on pages 89 and 90.

Maturity Measures

In the last 10 years the ratio of members in pay status to active participants has increased from 0.76 to 0.93. An increased ratio indicates that the plan has grown in maturity over time. This is to be expected, but is also informative to understanding plan sensitivity to particular risks. For more details see *Section 2, Subsection A, Member Data* on page 18.

As pension plans mature, the cash needed to fulfill benefit obligations will increase over time. Therefore, cash flow projections and analysis should be performed to assure that the Plan's asset allocation is aligned to meet emerging pension liabilities. For the prior year, benefits paid were $140 million more than contributions received (after excluding the additional voluntary County Safety and LARPD General contributions to reduce their UAAL). Plans with high levels of negative cash flows may have a need for a larger allocation to income generating assets, which can create a drag on investment return. However, the plan currently has a relatively low level of negative cash flow. For more details on historical cash flows see the Comparison of Contributions with Benefits in *Section 2, Subsection B* on page 22.

A further discussion of plan maturity measures and how they relate to changes in assets and liabilities is included in *Section 2, Subsection I, Volatility Ratios* starting on page 53.

Section 3: Supplemental Information

Exhibit A: Table of Plan Coverage

Total Plan

Category	Year Ended December 31: 2021	Year Ended December 31: 2020	Change From Prior Year
Active members in valuation:			
• Number	11,326	11,322	0.0%
• Average age	47.1	47.1	0.0
• Average years of service	11.3	11.3	0.0
• Total projected compensation	$1,204,499,429	$1,155,695,648	4.2%
• Average projected compensation	$106,348	$102,075	4.2%
• Account balances	$1,367,932,470	$1,296,260,411	5.5%
• Total active vested members	7,640	7,645	-0.1%
Inactive vested members:			
• Number[1]	3,265	3,028	7.8%
• Average Age	47.2	47.4	-0.2
Retired members:			
• Number in pay status	8,264	8,076	2.3%
• Average age	72.5	72.4	0.1
• Average monthly benefit[2]	$4,667	$4,553	2.5%
Disabled members:			
• Number in pay status	977	971	0.6%
• Average age	65.4	65.0	0.4
• Average monthly benefit[2]	$3,950	$3,808	3.7%
Beneficiaries:			
• Number in pay status	1,295	1,245	4.0%
• Average age	75.7	75.6	0.1
• Average monthly benefit[2]	$2,703	$2,575	5.0%

Notes: Based on the data provided for the December 31, 2021 actuarial valuation, the average age at retirement for the service retirees and disabled retirees was 60.3 and 49.9, respectively, for all the General and Safety Tiers combined.

[1] Includes inactive members due a refund of member contributions.

[2] Excludes supplemental benefits paid from SRBR.

Exhibit A: Table of Plan Coverage (continued)

General Tier 1

Category	Year Ended December 31 2021	Year Ended December 31 2020	Change From Prior Year
Active members in valuation:			
• Number	86	110	-21.8%
• Average age	61.1	60.9	0.2
• Average years of service	29.9	29.9	0.0
• Total projected compensation	$8,864,324	$10,968,006	-19.2%
• Average projected compensation	$103,074	$99,709	3.4%
• Account balances	$40,083,896	$48,155,989	-16.8%
• Total active vested members	86	110	-21.8%
Inactive vested members:			
• Number[1]	36	39	-7.7%
• Average Age	64.0	64.2	-0.2
Retired members:			
• Number in pay status	2,867	2,983	-3.9%
• Average age	77.7	77.2	0.5
• Average monthly benefit[2]	$5,575	$5,355	4.1%
Disabled members:			
• Number in pay status	130	136	-4.4%
• Average age	75.5	75.0	0.5
• Average monthly benefit[2]	$3,638	$3,477	4.6%
Beneficiaries:			
• Number in pay status	660	654	0.9%
• Average age	80.9	80.5	0.4
• Average monthly benefit[2]	$2,829	$2,653	6.6%

Notes: Based on the data provided for the December 31, 2021 actuarial valuation, the average age at retirement for the General Tier 1 service and disabled retirees was 59.4 and 51.6, respectively.

[1] Includes inactive members due a refund of member contributions.
[2] Excludes supplemental benefits paid from SRBR.

Exhibit A: Table of Plan Coverage (continued)

General Tier 2

Category	Year Ended December 31 2021	Year Ended December 31 2020	Change From Prior Year
Active members in valuation:			
• Number	4,880	5,255	-7.1%
• Average age	53.0	52.5	0.5
• Average years of service	18.0	17.3	0.7
• Total projected compensation	$542,403,584	$559,314,801	-3.0%
• Average projected compensation	$111,148	$106,435	4.4%
• Account balances	$786,128,488	$772,726,111	1.7%
• Total active vested members	4,789	5,143	-6.9%
Inactive vested members:			
• Number[1]	1,776	1,779	-0.2%
• Average Age	51.4	50.9	0.5
Retired members:			
• Number in pay status	4,063	3,817	6.4%
• Average age	70.3	69.9	0.4
• Average monthly benefit[2]	$3,176	$3,023	5.1%
Disabled members:			
• Number in pay status	481	478	0.6%
• Average age	65.8	65.3	0.5
• Average monthly benefit[2]	$2,877	$2,779	3.5%
Beneficiaries:			
• Number in pay status	343	310	10.6%
• Average age	69.6	69.0	0.6
• Average monthly benefit[2]	$1,551	$1,499	3.5%

Notes: Based on the data provided for the December 31, 2021 actuarial valuation, the average age at retirement for the General Tier 2 service and disabled retirees was 62.5 and 50.8, respectively.

[1] Includes inactive members due a refund of member contributions.
[2] Excludes supplemental benefits paid from SRBR.

Exhibit A: Table of Plan Coverage (continued)

General Tier 3

Category	Year Ended December 31: 2021	Year Ended December 31: 2020	Change From Prior Year
Active members in valuation:			
• Number	18	19	-5.3%
• Average age	53.4	53.1	0.3
• Average years of service	14.5	14.8	-0.3
• Total projected compensation	$1,712,190	$1,773,197	-3.4%
• Average projected compensation	$95,122	$93,326	1.9%
• Account balances	$3,495,058	$3,565,562	-2.0%
• Total active vested members	16	16	0.0%
Inactive vested members:			
• Number[1]	12	15	-20.0%
• Average Age	49.4	51.3	-1.9
Retired members:			
• Number in pay status	31	28	10.7%
• Average age	65.3	64.7	0.6
• Average monthly benefit[2]	$4,343	$4,502	-3.5%
Disabled members:			
• Number in pay status	1	1	0.0%
• Average age	68.1	67.1	1.0
• Average monthly benefit[2]	$2,324	$2,256	3.0%
Beneficiaries:			
• Number in pay status	5	4	25.0%
• Average age	65.6	63.6	2.0
• Average monthly benefit[2]	$3,560	$3,288	8.3%

Notes: Based on the data provided for the December 31, 2021 actuarial valuation, the average age at retirement for the General Tier 3 service and disabled retirees was 59.8 and 62.6, respectively.

[1] Includes inactive members due a refund of member contributions.
[2] Excludes supplemental benefits paid from SRBR.

Exhibit A: Table of Plan Coverage (continued)

General Tier 4

Category	Year Ended December 31 2021	2020	Change From Prior Year
Active members in valuation:			
• Number	4,919	4,576	7.5%
• Average age	42.1	41.6	0.5
• Average years of service	4.0	3.6	0.4
• Total projected compensation	$457,977,581[1]	$403,633,536	13.5%
• Average projected compensation	$93,104	$88,207	5.6%
• Account balances	$154,488,116	$118,663,311	30.2%
• Total active vested members	1,674	1,285	30.3%
Inactive vested members:			
• Number[2]	1,242	998	24.4%
• Average Age	41.3	40.9	0.4
Retired members:			
• Number in pay status	53	32	65.6%
• Average age	66.8	66.3	0.5
• Average monthly benefit[3]	$1,192	$1,177	1.3%
Disabled members:			
• Number in pay status	4	2	100.0%
• Average age	64.3	62.3	2.0
• Average monthly benefit[3]	$2,824	$2,057	37.3%
Beneficiaries:			
• Number in pay status	2	0	N/A
• Average age	52.6	N/A	N/A
• Average monthly benefit[3]	$1,550	N/A	N/A

Notes: Based on the data provided for the December 31, 2021 actuarial valuation, the average age at retirement for the General Tier 4 service and disabled retirees was 65.1 and 61.1, respectively.

[1] Projected compensation for 2022 has been limited. It is our understanding that in the determination of pension benefits under the CalPEPRA formulas, the compensation that can be taken into account for 2022 is equal to $134,974. (For an employer that is not enrolled in Social Security, the maximum amount is 120% of $134,974, or $161,969). (reference: Section 7522.10). These amounts should be adjusted for changes to the Consumer Price Index for All Urban Consumers after 2022. (reference: Section 7522.10(d)).

[2] Includes inactive members due a refund of member contributions.

[3] Excludes supplemental benefits paid from SRBR.

Exhibit A: Table of Plan Coverage (continued)

Safety Tier 1

Category	Year Ended December 31 2021	Year Ended December 31 2020	Change From Prior Year
Active members in valuation:			
• Number	2	2	0.0%
• Average age	65.4	64.4	1.0
• Average years of service	37.4	36.4	1.0
• Total projected compensation	$506,754	$490,851	3.2%
• Average projected compensation	$253,377	$245,426	3.2%
• Account balances	$2,771,165	$2,543,899	8.9%
• Total active vested members	2	2	0.0%
Inactive vested members:			
• Number[1]	5	6	-16.7%
• Average Age	63.0	63.7	-0.7
Retired members:			
• Number in pay status	570	592	-3.7%
• Average age	74.7	73.9	0.8
• Average monthly benefit[2]	$9,090	$8,814	3.1%
Disabled members:			
• Number in pay status	90	92	-2.2%
• Average age	72.0	71.2	0.8
• Average monthly benefit[2]	$6,298	$6,065	3.8%
Beneficiaries:			
• Number in pay status	191	193	-1.0%
• Average age	76.1	76.0	0.1
• Average monthly benefit[2]	$4,205	$3,891	8.1%

Notes: Based on the data provided for the December 31, 2021 actuarial valuation, the average age at retirement for the Safety Tier 1 service and disabled retirees was 54.9 and 48.4, respectively.

[1] Includes inactive members due a refund of member contributions.
[2] Excludes supplemental benefits paid from SRBR.

Exhibit A: Table of Plan Coverage (continued)

Safety Tier 2

Category	Year Ended December 31 2021	Year Ended December 31 2020	Change From Prior Year
Active members in valuation:			
• Number	721	780	-7.6%
• Average age	48.2	47.7	0.5
• Average years of service	18.7	17.9	0.8
• Total projected compensation	$106,171,229	$109,793,942	-3.3%
• Average projected compensation	$147,256	$140,761	4.6%
• Account balances	$313,199,255	$301,086,774	4.0%
• Total active vested members	721	780	-7.6%
Inactive vested members:			
• Number[1]	116	125	-7.2%
• Average Age	47.4	47.3	0.1
Retired members:			
• Number in pay status	661	613	7.8%
• Average age	63.5	63.4	0.1
• Average monthly benefit[2]	$6,450	$6,293	2.5%
Disabled members:			
• Number in pay status	260	253	2.8%
• Average age	57.8	57.3	0.5
• Average monthly benefit[2]	$5,284	$5,114	3.3%
Beneficiaries:			
• Number in pay status	93	84	10.7%
• Average age	62.5	61.3	1.2
• Average monthly benefit[2]	$2,960	$2,880	2.8%

Notes: Based on the data provided for the December 31, 2021 actuarial valuation, the average age at retirement for the Safety Tier 2 service and disabled retirees was 55.4 and 47.6, respectively.

[1] Includes inactive members due a refund of member contributions.
[2] Excludes supplemental benefits paid from SRBR.

Exhibit A: Table of Plan Coverage (continued)

Safety Tier 2C

Category	Year Ended December 31 2021	Year Ended December 31 2020	Change From Prior Year
Active members in valuation:			
• Number	22	23	-4.3%
• Average age	46.8	45.6	1.2
• Average years of service	9.9	9.1	0.8
• Total projected compensation	$2,828,060	$2,887,070	-2.0%
• Average projected compensation	$128,548	$125,525	2.4%
• Account balances	$3,121,728	$2,857,209	9.3%
• Total active vested members	19	20	-5.0%
Inactive vested members:			
• Number[1]	10	12	-16.7%
• Average Age	41.1	44.9	-3.8
Retired members:			
• Number in pay status	5	3	66.7%
• Average age	56.9	51.5	5.4
• Average monthly benefit[2]	$1,489	$1,502	-0.9%
Disabled members:			
• Number in pay status	0	0	N/A
• Average age	N/A	N/A	N/A
• Average monthly benefit[2]	N/A	N/A	N/A
Beneficiaries:			
• Number in pay status	1	0	N/A
• Average age	46.7	N/A	N/A
• Average monthly benefit[2]	$1,763	N/A	N/A

Notes: Based on the data provided for the December 31, 2021 actuarial valuation, the average age at retirement for the Safety Tier 2C service retirees was 55.2.

[1] Includes inactive members due a refund of member contributions.
[2] Excludes supplemental benefits paid from SRBR.

Exhibit A: Table of Plan Coverage (continued)

Safety Tier 2D

Category	Year Ended December 31 2021	Year Ended December 31 2020	Change From Prior Year
Active members in valuation:			
• Number	127	126	0.8%
• Average age	42.6	41.7	0.9
• Average years of service	10.6	9.6	1.0
• Total projected compensation	$17,401,236	$16,562,719	5.1%
• Average projected compensation	$137,018	$131,450	4.2%
• Account balances	$22,409,671	$19,056,581	17.6%
• Total active vested members	112	108	3.7%
Inactive vested members:			
• Number[1]	16	15	6.7%
• Average Age	43.9	44.1	-0.2
Retired members:			
• Number in pay status	5	2	150.0%
• Average age	58.5	58.2	0.3
• Average monthly benefit[2]	$2,537	$2,298	10.4%
Disabled members:			
• Number in pay status	7	6	16.7%
• Average age	49.8	50.6	-0.8
• Average monthly benefit[2]	$4,283	$4,063	5.4%
Beneficiaries:			
• Number in pay status	0	0	N/A
• Average age	N/A	N/A	N/A
• Average monthly benefit[2]	N/A	N/A	N/A

Notes: Based on the data provided for the December 31, 2021 actuarial valuation, the average age at retirement for the Safety Tier 2D service and disabled retirees was 56.9 and 46.3, respectively.

[1] Includes inactive members due a refund of member contributions.
[2] Excludes supplemental benefits paid from SRBR.

Exhibit A: Table of Plan Coverage (continued)

Safety Tier 4

Category	Year Ended December 31: 2021	Year Ended December 31: 2020	Change From Prior Year
Active members in valuation:			
• Number	551	431	27.8%
• Average age	36.2	36.1	0.1
• Average years of service	4.0	4.1	-0.1
• Total projected compensation	$66,634,471[1]	$50,271,524	32.5%
• Average projected compensation	$120,934	$116,639	3.7%
• Account balances	$36,757,787	$27,604,976	33.2%
• Total active vested members	221	181	22.1%
Inactive vested members:			
• Number[2]	52	39	33.3%
• Average Age	34.8	34.3	0.5
Retired members:			
• Number in pay status	9	6	50.0%
• Average age	61.0	60.7	0.3
• Average monthly benefit[3]	$1,552	$1,458	6.4%
Disabled members:			
• Number in pay status	4	3	33.3%
• Average age	51.0	51.4	-0.4
• Average monthly benefit[3]	$4,584	$4,741	-3.3%
Beneficiaries:			
• Number in pay status	0	0	N/A
• Average age	N/A	N/A	N/A
• Average monthly benefit[3]	N/A	N/A	N/A

Notes: Based on the data provided for the December 31, 2021 actuarial valuation, the average age at retirement for the Safety Tier 4 service and disabled retirees was 59.0 and 48.8, respectively.

[1] Projected compensation for 2022 has been limited. It is our understanding that in the determination of pension benefits under the CalPEPRA formulas, the compensation that can be taken into account for 2022 is equal to $134,974. (For an employer that is not enrolled in Social Security, the maximum amount is 120% of $134,974, or $161,969). (reference: Section 7522.10). These amounts should be adjusted for changes to the Consumer Price Index for All Urban Consumers after 2022. (reference: Section 7522.10(d)).

[2] Includes inactive members due a refund of member contributions.

[3] Excludes supplemental benefits paid from SRBR.

Exhibit B: Members in Active Service as of December 31, 2021 by Age, Years of Service, and Average Projected Compensation

Total Plan

		Years of Service								
Age	**Total**	**0 – 4**	**5 – 9**	**10 – 14**	**15 – 19**	**20 – 24**	**25 – 29**	**30 – 34**	**35 – 39**	**40 & over**
Under 25	92	92	—	—	—	—	—	—	—	—
	$75,479	$75,479	—	—	—	—	—	—	—	—
25 – 29	593	552	41	—	—	—	—	—	—	—
	88,327	87,330	$101,741	—	—	—	—	—	—	—
30 – 34	1,232	796	411	25	—	—	—	—	—	—
	95,503	92,403	101,072	$102,652	—	—	—	—	—	—
35 – 39	1,463	623	510	267	62	1	—	—	—	—
	103,300	95,694	105,288	114,397	$114,633	$162,973	—	—	—	—
40 – 44	1,599	501	426	366	235	70	1	—	—	—
	110,566	98,427	106,971	119,771	125,039	123,139	$72,621	—	—	—
45 – 49	1,630	395	325	296	301	287	25	1	—	—
	111,882	95,559	109,204	114,904	120,708	122,653	138,408	$124,956	—	—
50 – 54	1,662	318	261	227	307	368	137	43	1	—
	113,426	104,075	107,585	111,697	119,811	118,387	124,991	102,348	$109,905	—
55 – 59	1,421	221	190	204	218	270	132	149	37	—
	109,422	102,001	109,888	111,093	107,805	110,978	116,198	114,045	97,511	—
60 – 64	1,110	142	168	173	164	195	83	133	43	9
	106,716	98,201	105,110	112,995	104,687	106,021	110,789	107,304	113,865	$121,957
65 – 69	388	50	62	57	61	71	33	32	12	10
	104,848	104,942	104,967	100,907	90,059	103,384	102,077	121,801	154,823	121,628
70 & over	136	17	20	21	26	20	10	12	3	7
	103,594	90,777	113,743	88,885	97,399	107,462	130,856	78,556	97,533	168,381
Total	**11,326**	**3,707**	**2,414**	**1,636**	**1,374**	**1,282**	**421**	**370**	**96**	**26**
	$106,348	**$94,889**	**$105,994**	**$113,779**	**$115,213**	**$115,194**	**$118,450**	**$109,812**	**$112,130**	**$134,329**

Notes: Age and years of service were projected from November 30, 2021 to December 31, 2021.

Exhibit B: Members in Active Service as of December 31, 2021 by Age, Years of Service, and Average Projected Compensation (continued)

General Tier 1

		Years of Service								
Age	**Total**	**0 – 4**	**5 – 9**	**10 – 14**	**15 – 19**	**20 – 24**	**25 – 29**	**30 – 34**	**35 – 39**	**40 & over**
Under 25	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
25 – 29	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
30 – 34	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
35 – 39	3	—	—	3	—	—	—	—	—	—
	$73,468	—	—	$73,468	—	—	—	—	—	—
40 – 44	4	—	—	2	2	—	—	—	—	—
	97,946	—	—	74,783	$121,108	—	—	—	—	—
45 – 49	4	—	—	4	—	—	—	—	—	—
	89,039	—	—	89,039	—	—	—	—	—	—
50 – 54	8	—	—	1	6	1	—	—	—	—
	92,801	—	—	64,637	88,945	$144,102	—	—	—	—
55 – 59	13	—	—	2	3	3	1	1	3	—
	79,776	—	—	80,981	82,321	68,673	$68,598	$76,094	$92,482	—
60 – 64	24	—	—	2	2	1	2	3	6	8
	99,220	—	—	74,183	159,596	153,801	77,669	71,080	111,601	$90,218
65 – 69	20	—	—	—	1	2	—	3	4	10
	117,215	—	—	—	103,362	72,257	—	125,964	125,563	121,628
70 & over	10	—	—	1	—	—	1	—	1	7
	139,090	—	—	70,841	—	—	59,311	—	82,084	168,381
Total	**86**	**—**	**—**	**15**	**14**	**7**	**4**	**7**	**14**	**25**
	$103,074	**—**	**—**	**$78,129**	**$103,243**	**$92,634**	**$70,812**	**$95,318**	**$109,385**	**$124,668**

Notes: Age and years of service were projected from November 30, 2021 to December 31, 2021.

Exhibit B: Members in Active Service as of December 31, 2021 by Age, Years of Service, and Average Projected Compensation (continued)

General Tier 2

		Years of Service								
Age	**Total**	**0 – 4**	**5 – 9**	**10 – 14**	**15 – 19**	**20 – 24**	**25 – 29**	**30 – 34**	**35 – 39**	**40 & over**
Under 25	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
25 – 29	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
30 – 34	52	4	33	15	—	—	—	—	—	—
	$90,899	$74,489	$93,574	$89,392	—	—	—	—	—	—
35 – 39	332	15	99	188	30	—	—	—	—	—
	106,125	128,429	110,641	106,208	$79,554	—	—	—	—	—
40 – 44	630	17	122	292	151	47	1	—	—	—
	115,052	133,109	122,655	117,678	109,694	$90,582	$72,621	—	—	—
45 – 49	771	14	87	237	234	184	15	—	—	—
	113,764	132,083	130,513	111,222	114,718	107,675	99,495	—	—	—
50 – 54	990	17	77	199	246	295	114	41	1	—
	114,826	160,418	129,116	108,912	115,882	113,160	115,995	$100,306	$109,905	—
55 – 59	968	13	50	181	190	235	121	145	33	—
	110,466	131,185	121,055	111,152	105,952	108,277	113,343	114,198	97,136	—
60 – 64	785	7	42	152	155	183	80	129	37	—
	108,113	114,144	121,095	112,821	102,258	103,176	111,314	108,307	114,232	—
65 – 69	264	5	17	52	60	65	30	28	7	—
	106,592	133,778	136,011	101,893	89,837	104,193	101,802	121,030	179,291	—
70 & over	88	—	4	19	25	17	9	12	2	—
	98,079	—	131,840	88,930	94,662	96,760	138,805	78,556	105,258	—
Total	**4,880**	**92**	**531**	**1,335**	**1,091**	**1,026**	**370**	**355**	**80**	**—**
	$111,148	**$133,009**	**$121,055**	**$110,831**	**$108,193**	**$107,403**	**$112,733**	**$109,787**	**$112,594**	**—**

Notes: Age and years of service were projected from November 30, 2021 to December 31, 2021.

Exhibit B: Members in Active Service as of December 31, 2021 by Age, Years of Service, and Average Projected Compensation (continued)

General Tier 3

		Years of Service								
Age	Total	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34	35 – 39	40 & over
Under 25	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
25 – 29	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
30 – 34	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
35 – 39	2	1	1	—	—	—	—	—	—	—
	$119,150	$106,129	$132,170	—	—	—	—	—	—	—
40 – 44	2	1	—	—	—	1	—	—	—	—
	91,001	106,129	—	—	—	$75,873	—	—	—	—
45 – 49	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
50 – 54	4	—	2	—	1	1	—	—	—	—
	80,156	—	76,276	—	$75,873	92,198	—	—	—	—
55 – 59	7	—	1	2	2	1	1	—	—	—
	88,769	—	123,928	$102,963	75,051	64,945	$76,477	—	—	—
60 – 64	2	—	—	1	1	—	—	—	—	—
	116,639	—	—	156,802	76,477	—	—	—	—	—
65 – 69	1	—	—	—	—	1	—	—	—	—
	116,605	—	—	—	—	116,605	—	—	—	—
70 & over	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
Total	**18**	**2**	**4**	**3**	**4**	**4**	**1**	**—**	**—**	**—**
	$95,122	**$106,129**	**$102,163**	**$120,910**	**$75,613**	**$87,405**	**$76,477**	**—**	**—**	**—**

Notes: Age and years of service were projected from November 30, 2021 to December 31, 2021.

Exhibit B: Members in Active Service as of December 31, 2021 by Age, Years of Service, and Average Projected Compensation (continued)

General Tier 4

		Years of Service								
Age	Total	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34	35 – 39	40 & over
Under 25	71	71	—	—	—	—	—	—	—	—
	$67,999	$67,999	—	—	—	—	—	—	—	—
25 – 29	472	449	23	—	—	—	—	—	—	—
	83,235	83,397	$80,078	—	—	—	—	—	—	—
30 – 34	985	695	286	4	—	—	—	—	—	—
	90,800	90,042	92,851	$75,939	—	—	—	—	—	—
35 – 39	897	560	330	7	—	—	—	—	—	—
	94,669	93,236	97,233	88,422	—	—	—	—	—	—
40 – 44	734	459	266	8	1	—	—	—	—	—
	95,894	95,687	96,367	93,660	$82,947	—	—	—	—	—
45 – 49	592	371	213	6	2	—	—	—	—	—
	95,048	93,559	97,651	101,845	73,575	—	—	—	—	—
50 – 54	449	269	171	7	2	—	—	—	—	—
	95,825	94,416	97,229	116,291	93,685	—	—	—	—	—
55 – 59	329	198	119	9	3	—	—	—	—	—
	97,572	97,305	97,952	98,922	96,013	—	—	—	—	—
60 – 64	261	131	117	10	1	1	1	—	—	—
	96,197	95,892	96,058	90,192	134,974	$134,974	$134,974	—	—	—
65 – 69	95	45	45	4	—	1	—	—	—	—
	97,071	101,738	93,240	91,167	—	83,009	—	—	—	—
70 & over	34	17	16	1	—	—	—	—	—	—
	99,905	90,777	109,218	106,077	—	—	—	—	—	—
Total	**4,919**	**3,265**	**1,586**	**56**	**9**	**2**	**1**	**—**	**—**	**—**
	$93,104	**$91,590**	**$96,079**	**$95,715**	**$93,387**	**$108,992**	**$134,974**	**—**	**—**	**—**

Notes: Age and years of service were projected from November 30, 2021 to December 31, 2021.

Exhibit B: Members in Active Service as of December 31, 2021 by Age, Years of Service, and Average Projected Compensation (continued)

Safety Tier 1

		Years of Service								
Age	Total	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34	35 – 39	40 & over
Under 25	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
25 – 29	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
30 – 34	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
35 – 39	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
40 – 44	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
45 – 49	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
50 – 54	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
55 – 59	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
60 – 64	1	—	—	—	—	—	—	—	—	1
	$375,869	—	—	—	—	—	—	—	—	$375,869
65 – 69	1	—	—	—	—	—	—	1	—	—
	130,885	—	—	—	—	—	—	$130,885	—	—
70 & over	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
Total	**2**	**—**	**—**	**—**	**—**	**—**	**—**	**1**	**—**	**1**
	$253,377	**—**	**—**	**—**	**—**	**—**	**—**	**$130,885**	**—**	**$375,869**

Notes: Age and years of service were projected from November 30, 2021 to December 31, 2021.

Exhibit B: Members in Active Service as of December 31, 2021 by Age, Years of Service, and Average Projected Compensation (continued)

Safety Tier 2

		Years of Service								
Age	Total	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34	35 – 39	40 & over
Under 25	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
25 – 29	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
30 – 34	3	—	—	3	—	—	—	—	—	—
	$169,960	—	—	$169,960	—	—	—	—	—	—
35 – 39	85	—	—	54	30	1	—	—	—	—
	144,943	—	—	141,773	$150,048	$162,973	—	—	—	—
40 – 44	149	—	—	55	74	20	—	—	—	—
	154,694	—	—	134,215	157,556	200,421	—	—	—	—
45 – 49	216	—	2	42	61	100	10	1	—	—
	147,945	—	$114,765	137,329	144,216	150,688	$196,777	$124,956	—	—
50 – 54	165	—	1	20	50	71	22	1	—	—
	145,779	—	86,881	140,150	145,219	140,108	171,830	174,744	—	—
55 – 59	73	—	2	9	19	31	8	3	1	—
	137,686	—	111,646	130,594	136,125	137,034	166,882	119,336	$124,980	—
60 – 64	19	—	—	3	5	10	—	1	—	—
	149,140	—	—	151,634	157,621	150,411	—	86,548	—	—
65 – 69	7	—	—	1	—	2	3	—	1	—
	103,899	—	—	88,602	—	111,797	104,835	—	100,594	—
70 & over	4	—	—	—	1	3	—	—	—	—
	167,535	—	—	—	165,821	168,106	—	—	—	—
Total	**721**	**—**	**5**	**187**	**240**	**238**	**43**	**6**	**2**	**—**
	$147,256	**—**	**$107,940**	**$138,166**	**$148,996**	**$149,866**	**$172,037**	**$124,043**	**$112,787**	**—**

Notes: Age and years of service were projected from November 30, 2021 to December 31, 2021.

Exhibit B: Members in Active Service as of December 31, 2021 by Age, Years of Service, and Average Projected Compensation (continued)

Safety Tier 2C

		Years of Service								
Age	**Total**	**0 – 4**	**5 – 9**	**10 – 14**	**15 – 19**	**20 – 24**	**25 – 29**	**30 – 34**	**35 – 39**	**40 & over**
Under 25	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
25 – 29	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
30 – 34	2	—	2	—	—	—	—	—	—	—
	$118,430	—	$118,430	—	—	—	—	—	—	—
35 – 39	3	1	—	2	—	—	—	—	—	—
	131,333	$92,736	—	$150,632	—	—	—	—	—	—
40 – 44	6	—	2	3	1	—	—	—	—	—
	120,168	—	113,476	135,836	$86,548	—	—	—	—	—
45 – 49	4	—	3	1	—	—	—	—	—	—
	107,736	—	114,758	86,668	—	—	—	—	—	—
50 – 54	2	1	—	—	—	—	—	1	—	—
	127,109	140,515	—	—	—	—	—	$113,703	—	—
55 – 59	2	—	2	—	—	—	—	—	—	—
	176,709	—	176,709	—	—	—	—	—	—	—
60 – 64	3	1	1	1	—	—	—	—	—	—
	145,871	93,218	165,789	178,606	—	—	—	—	—	—
65 – 69	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
70 & over	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
Total	**22**	**3**	**10**	**7**	**1**	**—**	**—**	**1**	**—**	**—**
	$128,548	**$108,823**	**$132,729**	**$139,150**	**$86,548**	**—**	**—**	**$113,703**	**—**	**—**

Notes: Age and years of service were projected from November 30, 2021 to December 31, 2021.

Exhibit B: Members in Active Service as of December 31, 2021 by Age, Years of Service, and Average Projected Compensation (continued)

Safety Tier 2D

Age	Total	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34	35 – 39	40 & over
		Years of Service								
Under 25	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
25 – 29	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
30 – 34	16	1	12	3	—	—	—	—	—	—
	$134,064	$143,024	$132,518	$137,262	—	—	—	—	—	—
35 – 39	38	3	20	13	2	—	—	—	—	—
	139,368	141,371	143,611	136,957	$109,600	—	—	—	—	—
40 – 44	29	5	10	6	6	2	—	—	—	—
	139,306	173,208	136,029	130,968	124,945	$139,038	—	—	—	—
45 – 49	25	1	11	6	4	3	—	—	—	—
	134,667	146,000	138,667	138,346	136,194	106,827	—	—	—	—
50 – 54	9	3	3	—	2	—	1	—	—	—
	127,948	148,175	123,271	—	108,559	—	$120,074	—	—	—
55 – 59	5	1	1	1	1	—	1	—	—	—
	134,728	152,712	167,266	110,961	99,087	—	143,614	—	—	—
60 – 64	5	1	—	4	—	—	—	—	—	—
	145,701	169,806	—	139,675	—	—	—	—	—	—
65 – 69	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
70 & over	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
Total	**127**	**15**	**57**	**33**	**15**	**5**	**2**	**—**	**—**	**—**
	$137,018	**$156,415**	**$138,336**	**$135,690**	**$121,990**	**$119,711**	**$131,844**	**—**	**—**	**—**

Notes: Age and years of service were projected from November 30, 2021 to December 31, 2021.

Exhibit B: Members in Active Service as of December 31, 2021 by Age, Years of Service, and Average Projected Compensation (continued)

Safety Tier 4

		Years of Service								
Age	**Total**	**0 – 4**	**5 – 9**	**10 – 14**	**15 – 19**	**20 – 24**	**25 – 29**	**30 – 34**	**35 – 39**	**40 & over**
Under 25	21	21	—	—	—	—	—	—	—	—
	$100,770	$100,770	—	—	—	—	—	—	—	—
25 – 29	121	103	18	—	—	—	—	—	—	—
	108,189	104,478	$129,423	—	—	—	—	—	—	—
30 – 34	174	96	78	—	—	—	—	—	—	—
	118,408	109,716	129,106	—	—	—	—	—	—	—
35 – 39	103	43	60	—	—	—	—	—	—	—
	121,441	112,934	127,537	—	—	—	—	—	—	—
40 – 44	45	19	26	—	—	—	—	—	—	—
	123,149	113,517	130,189	—	—	—	—	—	—	—
45 – 49	18	9	9	—	—	—	—	—	—	—
	126,564	115,578	137,549	—	—	—	—	—	—	—
50 – 54	35	28	7	—	—	—	—	—	—	—
	151,092	156,642	128,890	—	—	—	—	—	—	—
55 – 59	24	9	15	—	—	—	—	—	—	—
	154,976	157,515	153,453	—	—	—	—	—	—	—
60 – 64	10	2	8	—	—	—	—	—	—	—
	148,859	160,333	145,990	—	—	—	—	—	—	—
65 – 69	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
70 & over	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
Total	**551**	**330**	**221**	**—**	**—**	**—**	**—**	**—**	**—**	**—**
	$120,934	**$113,902**	**$131,434**	**—**	**—**	**—**	**—**	**—**	**—**	**—**

Notes: Age and years of service were projected from November 30, 2021 to December 31, 2021.

Exhibit C: Reconciliation of Member Data

	Active Members	Inactive Vested Members[1]	Retired Members	Disabled Members	Beneficiaries	Total
Number as of December 31, 2020	**11,322**	**3,028**	**8,076**	**971**	**1,245**	**24,642**
• New members	887	0	0	0	109	996
• Terminations – with vested rights	(393)	393	0	0	0	0
• Contribution refunds	(126)	(102)	0	0	0	(228)
• Retirements	(351)	(95)	446	0	0	0
• New disabilities	(18)	(2)	(11)	31	0	0
• Return to work	30	(30)	0	0	0	0
• Died with or without beneficiary	(22)	(4)	(247)	(25)	(60)	(358)
• Data adjustments[2]	(3)	77	0	0	1	75
Number as of December 31, 2021	**11,326**	**3,265**	**8,264**	**977**	**1,295**	**25,127**

[1] Includes inactive members due a refund of member contributions.
[2] Out of the net 77 data adjustments for inactive vested members: 67 members were hired and terminated employment after November 30, 2020 (i.e. the census data collection date for last year's valuation); 1 member was classified as contribution refund in the December 31, 2020 valuation data and terminated vested in the December 31, 2021 data; 3 deferred ex-spouses (DROs) commenced receiving benefits; and 12 non-member records were added to the terminated vested file.

Exhibit D: Summary Statement of Income and Expenses on a Market Value Basis

	Year Ended December 31, 2021		Year Ended December 31, 2020	
Net assets at market value at the beginning of the year		**$9,629,767,350**		**$8,789,266,993**
Contribution income:				
• Employer contributions	$1,116,575,840		$309,752,998	
• Member contributions	111,091,264		106,104,226	
Net contribution income		*$1,227,667,104*		*$415,857,224*
Investment income:				
• Interest, dividends and other income	$189,755,802		$77,950,984	
• Asset appreciation	1,492,160,781		989,948,648	
• Less investment and administrative fees	(96,302,300)		(66,472,457)	
Net investment income		*$1,585,614,282*		*$1,001,427,176*
Total income available for benefits		**$2,813,281,386**		**$1,417,284,399**
Less benefit payments:				
• Service retirement	$(542,022,349)		$(517,161,770)	
• Death payments	(3,670,804)		(3,300,726)	
• Supplemental cost of living	(932,177)		(1,116,523)	
• Member refunds	(9,643,740)		(9,184,318)	
• Health insurance subsidies	(45,916,769)		(46,020,705)	
Net benefit payments		*$(602,185,840)*		*$(576,784,042)*
Change in net assets at market value		**$2,211,095,546**		**$840,500,357**
Net assets at market value at the end of the year		**$11,840,862,896**		**$9,629,767,350**

Note: Results may be slightly off due to rounding.

Exhibit E: Summary Statement of Plan Assets

	December 31, 2021		December 31, 2020	
Cash		*$1,754,098*		*$3,236,571*
Securities lending collateral		*127,313,079*		*117,170,544*
Accounts receivable:				
• Contributions	$22,026,840		$21,756,333	
• Investment receivables	19,624,427		17,178,702	
• Investments sold	7,652,879		96,399,659	
• Futures contracts	161,229		236,299	
• Foreign exchange contracts	83		5,852,639	
• Others	350,348		196,974	
Total accounts receivable		*$49,815,806*		*$141,620,606*
Prepaid expenses		*802,521*		*755,153*
Investments:				
• Short-term investments	$263,949,698		$182,037,100	
• Equities	6,361,014,500		5,478,883,008	
• Fixed income investments	1,882,269,248		1,442,832,576	
• Real estate	713,786,818		601,145,266	
• Capital assets	6,184,907		4,191,866	
• Leased assets	0		126,648	
• Private equity and alternative investments	2,611,468,651		1,896,947,690	
Total investments at market value		*$11,838,673,822*		*$9,606,164,154*
Total assets		**$12,018,359,326**		**$9,868,947,027**
Accounts payable:				
• Securities lending & investments purchased	$(153,059,322)		$(217,563,607)	
• Investment-related payables	(13,515,964)		(12,191,391)	
• Futures contracts & equity swaps	(589,217)		0	
• Foreign exchange contracts	(912,711)		(76)	
• Accrued administration expense	(2,624,040)		(2,858,128)	
• Members benefits & refunds, and retirement payroll deductions payable	(6,692,726)		(6,421,964)	
• Lease liability	(102,449)		(144,511)	
Total accounts payable		**$(177,496,429)**		**$(239,179,677)**
Net assets at market value		**$11,840,862,896**		**$9,629,767,350**
Net assets at actuarial value		**$10,707,915,790**		**$8,986,481,645**
Net assets at valuation value		**$9,453,107,051**		**$7,984,240,215**

Note: Results may be slightly off due to rounding.

Exhibit F: Summary of Reported Reserve Information as of December 31, 2021

	Reserves
Used in Development of Valuation Value of Assets:	
• Members deposit-basic	1,428,669,366
• Members cost-of-living	323,977,890
• Employer advance (before transfer from SRBR to employer advance)	1,465,340,113
• Pension reserve-current	1,860,699,775
• Pension reserve-prior	6,325,583
• Annuity reserve	1,098,298,542
• Cost-of-living reserve	2,424,735,387
• Survivor death benefit	24,333,634
• SRBR transfer to employer advance[1]	5,652,613
• Reserve for interest fluctuations (contingency reserve), if negative	0
• County-Safety UAAL advance reserve	802,329,252
• LARPD-General UAAL advance reserve	12,744,897
Subtotal	**$9,453,107,051**[2]
Not Used in Development of Valuation Value of Assets:	
• 401(h) account	$9,229,285
• Supplemental retirees benefit reserve (before transfer from SRBR to employer advance)	1,131,048,474
• Reserve for interest fluctuations (contingency reserve), if positive	120,183,593
• Market stabilization reserve	1,132,947,106
• SRBR transfer to employer advance[99]	(5,652,613)
Subtotal	**$2,387,755,845**
Total	**$11,840,862,896**

Note: Results may be slightly off due to rounding.

[1] Estimate provided by ACERA.
[2] A breakdown of this amount between the different cost groups is provided in Section 4, Exhibit 6.

Exhibit G: Development of the Fund through December 31, 2021

Year Ended December 31	Employer Contributions	Member Contributions	Net Investment Return[1]	Benefit Payments	Market Value of Assets at Year-End	Actuarial Value of Assets at Year-End	Actuarial Value as a Percent of Market Value
2012	$179,648,812	$78,608,004	$698,682,556	$363,133,358	$5,668,204,196	$5,543,303,209	97.8%
2013	191,180,146	76,230,024	1,095,188,216	390,507,104	6,640,295,478	5,953,454,661	89.7%
2014	213,254,775	79,714,187	266,028,241	411,279,675	6,788,013,006	6,545,159,225	96.4%
2015	224,607,104	82,948,934	(19,960,005)	434,984,266	6,640,624,773	6,987,026,015	105.2%
2016	241,728,451	85,736,229	454,641,033	457,150,304	6,965,580,182	7,309,485,170	104.9%
2017	247,063,550	89,325,824	1,293,322,206	483,192,206	8,112,099,556	7,803,026,229	96.2%
2018	269,684,809	94,735,673	(371,111,618)	512,821,851	7,592,586,569	8,161,706,068	107.5%
2019	298,526,950	103,117,022	1,342,794,800	547,746,289	8,789,279,051	8,528,590,602	97.0%
2020	309,752,998	106,104,226	1,001,415,117	576,784,042	9,629,767,350	8,986,481,645	93.3%
2021	1,116,575,840	111,091,264	1,585,614,282	602,185,840	11,840,862,896	10,707,915,790	90.4%

[1] On a market basis, net of investment fees and administrative expenses.

Exhibit H: Table of Amortization Bases

General (Excluding LARPD & Office of Education)

Type	Date Established	Initial Amount ($ in '000s)	Initial Period	Outstanding Balance ($ in '000s)	Years Remaining	Annual Payment[1] ($ in '000s)
Combined Bases	December 31, 2011	$885,036	21	$784,349	11	$87,849
Experience Loss	December 31, 2012	165,501	20	145,766	11	16,326
Experience Gain	December 31, 2013	(75,003)	20	(68,145)	12	(7,114)
Experience Gain	December 31, 2014	(156,281)	20	(145,469)	13	(14,251)
Change in Assumptions	December 31, 2014	350,827	20	326,560	13	31,991
Experience Gain	December 31, 2015	(98,619)	20	(93,703)	14	(8,665)
Experience Loss	December 31, 2016	3,655	20	3,526	15	309
Experience Gain	December 31, 2017	(27,249)	20	(26,595)	16	(2,223)
Change in Assumptions	December 31, 2017	260,437	20	254,187	16	21,247
Experience Gain[2]	December 31, 2018	(6,121)	20	(6,036)	17	(483)
Experience Loss	December 31, 2019	74,367	20	73,824	18	5,664
Experience Loss	December 31, 2020	29,771	20	29,666	19	2,191
Change in Assumptions	December 31, 2020	231,791	20	230,976	19	17,057
Experience Gain	December 31, 2021	(103,975)	20	(103,975)	20	(7,411)
Subtotal				**$1,404,931**		**$142,487**

[1] Level percentage of payroll.
[2] Includes the impact of transferring the allocated UAAL for LARPD Tier 1 members to the LARPD cost group and the allocated UAAL for Office of Education Tier 1 members to the Office of Education cost group.

Exhibit H: Table of Amortization Bases (continued)

General (LARPD)[1]

Type	Date Established	Initial Amount ($ in '000s)	Initial Period	Outstanding Balance ($ in '000s)	Years Remaining[2]	Annual Payment[3] ($ in '000s)
Combined Bases	December 31, 2011	$7,060	21	6,257	15.5	536
Experience Loss	December 31, 2012	370	20	326	15.5	28
Experience Gain	December 31, 2013	(534)	20	(486)	15.5	(42)
Experience Gain	December 31, 2014	(1,562)	20	(1,455)	15.5	(125)
Change in Assumptions	December 31, 2014	1,303	20	1,214	15.5	104
Experience Gain[4]	December 31, 2015	(1,506)	20	(1,432)	15.5	(123)
Experience Loss	December 31, 2016	139	20	135	15.5	12
Experience Gain[5]	December 31, 2017	(622)	20	(608)	15.5	(52)
Change in Assumptions	December 31, 2017	1,418	20	1,385	15.5	119
Experience Loss[6]	December 31, 2018	1,058	20	1,040	15.5	89
UAAL for Tier 1 members[7]	December 31, 2018	6,576	20	6,486	15.5	555
Experience Loss[8]	December 31, 2019	980	20	973	15.5	83

[1] When LARPD General Tier 3 was established in 2008, they were classified as a stand-alone group because they were the only employer with the higher 2.5% at 55 benefit (i.e., Section 31676.18), and the cost to upgrade the past service under that formula was only to be paid by LARPD. (reference: Segal's letter dated October 7, 2008). The initial UAAL rate for that group was based on an allocation of assets needed to maintain the total employer rate from the December 31, 2007 valuation before any benefit improvements for General Tier 3. The UAAL rate for LARPD General Tier 3 was then increased to reflect the benefit improvement. When LARPD General Tier 4 was later established in 2013, that tier was combined with LARPD General Tier 3 for purpose of determining their UAAL rate only (as normal cost for LARPD General Tier 4 has continued to be developed on a pooled basis with other General employers offering General Tier 4 benefits), in order to continue with the open-group level percentage of payroll approach for paying off the UAAL amount for General Tier 3 (that is now closed to new entrants because of CalPEPRA). Furthermore, the Board adopted the declining employer payroll policy in 2018 and determined that the policy applies to LARPD Tier 1. As a result, the UAAL (and associated assets) of LARPD Tier 1 was combined with the UAAL for LARPD Tiers 3 and 4.

[2] The LARPD General cost sharing group has a surplus of $248,000 on a VVA basis. In order to calculate the proper offset available to LARPD from the LARPD General UAAL Advance Reserve, we have reamortized the existing LARPD UAAL amortization layers so that they will have the same amortization period as the LARPD General UAAL Advance Reserve (15.5 years remaining as of December 31, 2021).

[3] Level percentage of payroll.

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

[5] There is a liability gain from the death of one of LARPD's Tier 3 retirees.

[6] There is a liability loss mainly from retiree mortality experience for LARPD's Tier 1 and Tier 3 retirees as a result of no actual deaths.

[7] The allocated UAAL for LARPD Tier 1 of $6,167,000 determined as of December 31, 2017 is rolled forward to December 31, 2018 to be amortized starting with the December 31, 2018 valuation.

[8] The loss is primarily due to lower than expected return on investments (after smoothing), actual contributions lower than expected, and higher than expected salary increases for active members.

Exhibit H: Table of Amortization Bases (continued)

General (LARPD) (continued)

Type	Date Established	Initial Amount ($ in '000s)	Initial Period	Outstanding Balance ($ in '000s)	Years Remaining[1]	Annual Payment[2] ($ in '000s)
Experience Gain[3]	December 31, 2020	(2,024)	20	(2,017)	15.5	(173)
Change in Assumptions	December 31, 2020	1,171	20	1,167	15.5	100
Voluntary UAAL Advance Reserve Contributions[4]	June 30, 2021	(12,611)	16	(12,745)	15.5	(1,069)
Experience Gain[5]	December 31, 2021	(488)	15.5	(488)	15.5	(42)
Subtotal				**$(248)**		**$0**

1 The LARPD General cost sharing group has a surplus of $248,000 on a VVA basis. In order to calculate the proper offset available to LARPD from the LARPD General UAAL Advance Reserve, we have reamortized the existing LARPD UAAL amortization layers so that they will have the same amortization period as the LARPD General UAAL Advance Reserve (15.5 years remaining as of December 31, 2021).
2 Level percentage of payroll.
3 The gain is primarily due to higher than expected mortality for continuing retirees, from the death of 4 retirees and 1 beneficiary.
4 LARPD made voluntary LARPD General contributions of $12.611 million on around June 29, 2021 to reduce their UAAL and associated UAAL contribution rates. These contributions are tracked under the LARPD – General UAAL Advance Reserve based on the amount of contribution credit used and the interest credited to that reserve in accordance with the Board's Interest Crediting Policy. The outstanding balance of this reserve is amortized over the remaining 15.5 years (as of December 31, 2021) as a contribution credit. Moreover, this contribution credit has been adjusted to not exceed the UAAL payment determined before including the contribution credit.
5 The gain is primarily due to higher than expected return on investments (after smoothing).

Exhibit H: Table of Amortization Bases (continued)

Safety

Type	Date Established	Initial Amount ($ in '000s)	Initial Period	Outstanding Balance ($ in '000s)	Years Remaining	Annual Payment[1] ($ in '000s)
Combined Bases	December 31, 2011	$598,698	21	$530,589	11	$59,427
Experience Loss	December 31, 2012	63,130	20	55,603	11	6,228
Experience Gain	December 31, 2013	(9,350)	20	(8,497)	12	(887)
Experience Gain	December 31, 2014	(43,238)	20	(40,247)	13	(3,943)
Change in Assumptions	December 31, 2014	107,552	20	100,111	13	9,807
Experience Gain	December 31, 2015	(12,850)	20	(12,210)	14	(1,129)
Experience Loss	December 31, 2016	19,183	20	18,515	15	1,624
Experience Loss	December 31, 2017	6,354	20	6,203	16	518
Change in Assumptions	December 31, 2017	134,184	20	130,963	16	10,947
Experience Loss	December 31, 2018	9,377	20	9,245	17	739
Experience Loss	December 31, 2019	24,143	20	23,966	18	1,839
Experience Loss	December 31, 2020	6,202	20	6,180	19	456
Change in Assumptions	December 31, 2020	88,760	20	88,448	19	6,532
Voluntary UAAL Advance Reserve Contributions[2]	June 30, 2021	(800,000)	13	(802,329)	12.5	(81,072)
Experience Gain	December 31, 2021	(35,445)	20	(35,445)	20	(2,526)
Subtotal				**$71,095**		**$8,560**

[1] Level percentage of payroll.

[2] The County made voluntary County Safety contributions of $800 million on around June 29, 2021 to reduce their UAAL and associated UAAL contribution rates. These contributions are tracked under the County – Safety UAAL Advance Reserve based on the amount of contribution credit used and the interest credited to that reserve in accordance with the Board's Interest Crediting Policy. The outstanding balance of this reserve is amortized over the remaining 12.5 years (as of December 31, 2021) as a contribution credit.

Exhibit H: Table of Amortization Bases (continued)

Total (Excluding Office of Education)

Type	Date Established	Initial Amount ($ in '000s)	Initial Period	Outstanding Balance ($ in '000s)	Years Remaining	Annual Payment ($ in '000s)
Combined Bases	December 31, 2011	1,483,734	21	$1,314,938	11	$147,276
Experience Loss	December 31, 2012	228,631	20	201,369	11	22,554
Experience Gain	December 31, 2013	(84,353)	20	(76,642)	12	(8,001)
Experience Gain	December 31, 2014	(199,519)	20	(185,716)	13	(18,194)
Change in Assumptions	December 31, 2014	458,379	20	426,671	13	41,798
Experience Gain	December 31, 2015	(111,469)	20	(105,913)	14	(9,794)
Experience Loss	December 31, 2016	22,838	20	22,041	15	1,933
Experience Gain	December 31, 2017	(20,895)	20	(20,392)	16	(1,705)
Change in Assumptions	December 31, 2017	394,621	20	385,150	16	32,194
Experience Gain	December 31, 2018	10,951	20	3,209	17	256
Experience Loss	December 31, 2019	99,599	20	97,790	18	7,503
Experience Loss	December 31, 2020	34,055	20	35,846	19	2,647
Change in Assumptions	December 31, 2020	321,740	20	319,424	19	23,589
Voluntary County Safety UAAL Advance Reserve Contributions	June 30, 2021	(800,000)	13	(802,329)	12.5	(81,072)
Experience Gain	December 31, 2021	(139,420) [1]	20	(139,420)	20	(9,937)
Voluntary LARPD General UAAL Advance Reserve Contributions	June 30, 2021	(12,611)	16	(12,745)	15.5	(1,069)
LARPD – other bases	Varies[2]	Varies	Varies	12,497	15.5	1,069
Subtotal				**$1,475,778**		**$151,047**

[1] The experience gain for the total plan of $(154,036,000) shown in Section 2, Subsection E is different from this amount because the experience gain for the total plan also includes experience gains/losses from LARPD and Office of Education as well as experience gains/losses from the Voluntary UAAL Advance Reserves.

[2] This base includes all LARPD UAAL amortization bases combined through the December 31, 2021 valuation except for the Voluntary LARPD General UAAL Advance Reserve Contributions base.

Exhibit H: Table of Amortization Bases (continued)

General (Office of Education)

Type	Date Established	Initial Amount ($ in '000s)	Initial Period	Outstanding Balance ($ in '000s)	Years Remaining	Annual Payment[1] ($ in '000s)
UAAL for Tier 1 Members	December 31, 2017	$1,357	20	657	16	71
Experience Loss	December 31, 2018	61	20	55	17	6
Experience Loss	December 31, 2019	110	20	104	18	11
Experience Loss	December 31, 2020	106	20	104	19	10
Change in Assumptions	December 31, 2020	18	20	17	19	2
Experience Loss	December 31, 2021	13	20	13	20	1
Subtotal				**$950**		**$101**
Credit for Expected UAAL Contribution				99[2]		
Total				**$1,049**		

Note: The equivalent amortization period for the entire Plan is about 12 years.

[1] Level dollar, and reflects timing of payment (i.e., next scheduled on April 1, 2023).
[2] $100,000 (as determined in the December 31, 2020 valuation to be payable April 1, 2022), discounted at 7.00% to December 31, 2021.

Exhibit I: Projection of UAAL Balances and Payments

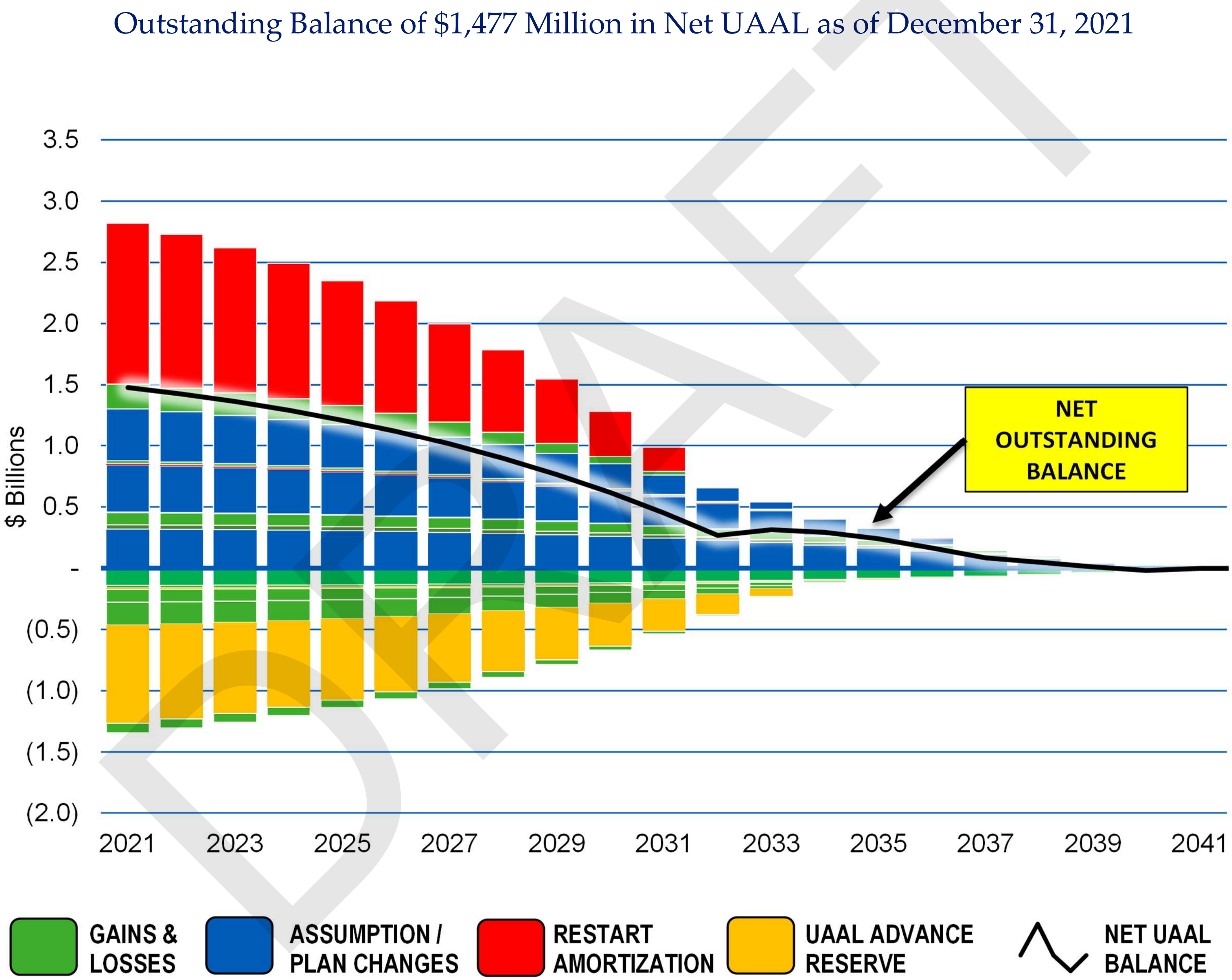


Exhibit I: Projection of UAAL Balances and Payments

Annual Payments Required to Amortize $1,477 Million in Net UAAL as of December 31, 2021

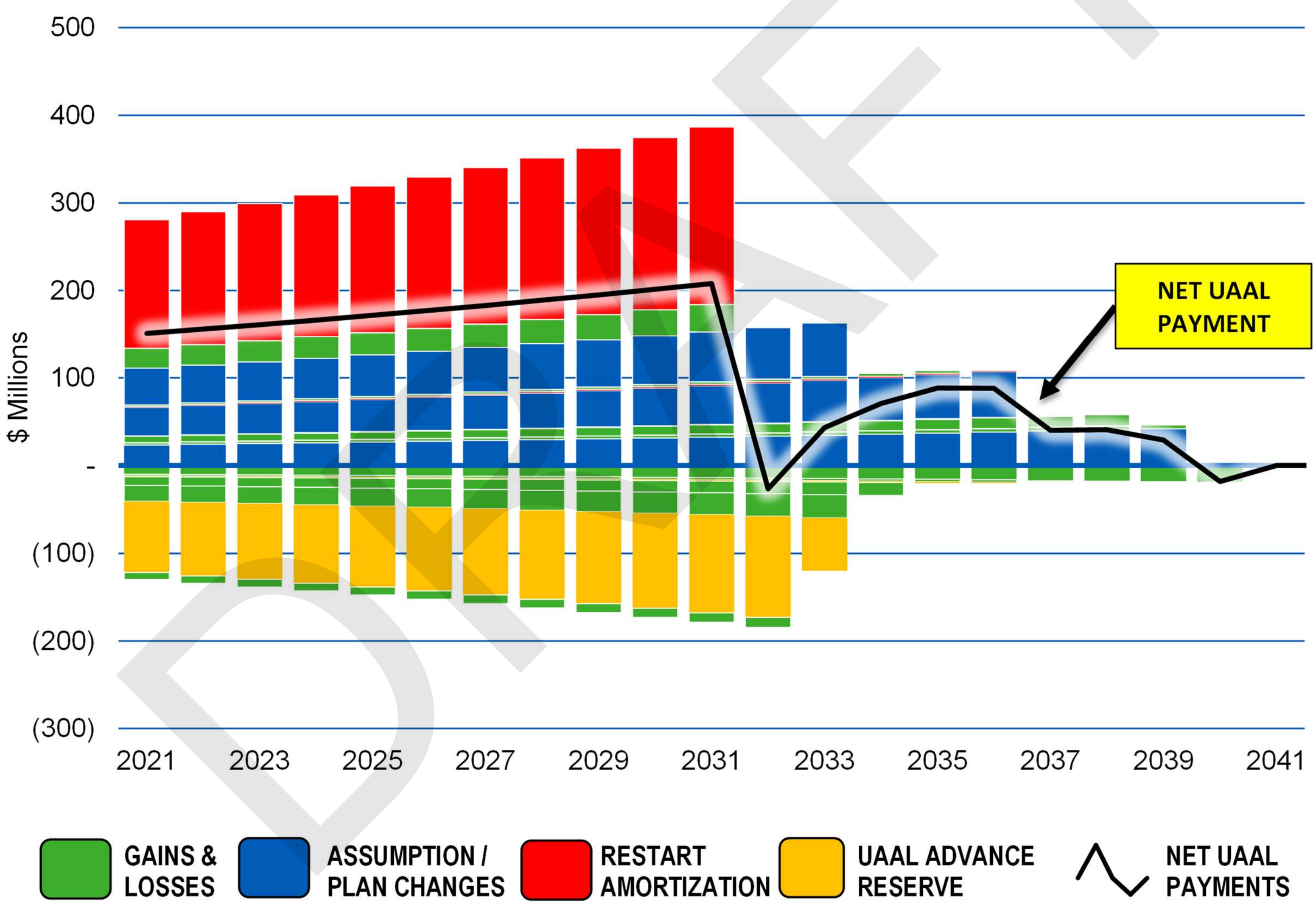


Exhibit J: Definition of Pension Terms

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

Actuarial Accrued Liability for Actives:	The equivalent of the accumulated normal costs allocated to the years before the valuation date.
Actuarial Accrued Liability for Pensioners and Beneficiaries:	The single-sum value of lifetime benefits to existing pensioners and beneficiaries. This sum takes account of life expectancies appropriate to the ages of the annuitants and the interest that the sum is expected to earn before it is entirely paid out in benefits.
Actuarial Cost Method:	A procedure allocating the Actuarial Present Value of Future Benefits to various time periods; a method used to determine the Normal Cost and the Actuarial Accrued Liability that are used to determine the actuarially determined contribution.
Actuarial Gain or Loss:	A measure of the difference between actual experience and that expected based upon a set of Actuarial Assumptions, during the period between two Actuarial Valuation dates. Through the actuarial assumptions, rates of decrements, rates of salary increases, and rates of fund earnings have been forecasted. To the extent that actual experience differs from that assumed, Actuarial Accrued Liabilities emerge which may be the same as forecasted, or may be larger or smaller than projected. Actuarial gains are due to favorable experience, e.g., assets earn more than projected, salary increases are less than assumed, members retire later than assumed, etc. Favorable experience means actual results produce actuarial liabilities not as large as projected by the actuarial assumptions. On the other hand, actuarial losses are the result of unfavorable experience, i.e., actual results yield in actuarial liabilities that are larger than projected. Actuarial gains will shorten the time required for funding of the actuarial balance sheet deficiency while actuarial losses will lengthen the funding period.
Actuarially Equivalent:	Of equal actuarial present value, determined as of a given date and based on a given set of Actuarial Assumptions.
Actuarial Present Value (APV):	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. Each such amount or series of amounts is: Adjusted for the probable financial effect of certain intervening events (such as changes in compensation levels, marital status, etc.) Multiplied by the probability of the occurrence of an event (such as survival, death, disability, withdrawal, etc.) on which the payment is conditioned, and Discounted according to an assumed rate (or rates) of return to reflect the time value of money.
Actuarial Present Value of Future Plan Benefits:	The Actuarial Present Value of benefit amounts 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, anticipated future compensation, and future service credits. The Actuarial Present Value of Future Plan Benefits includes the liabilities for active members, retired members,

	beneficiaries receiving benefits, and inactive members entitled to either a refund or a future retirement benefit. Expressed another way, it is the value that would have to be invested on the valuation date so that the amount invested plus investment earnings would provide sufficient assets to pay all projected benefits and expenses when due.
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 plan. An Actuarial Valuation for a governmental retirement system typically also includes calculations of items needed for compliance with GASB, such as the Actuarially Determined Contribution (ADC) and the Net Pension Liability (NPL).
Actuarial Value of Assets (AVA):	The value of the Fund's assets as of a given date, used by the actuary for valuation purposes. This may be the market or fair value of plan assets, but commonly plans use a smoothed value in order to reduce the year-to-year volatility of calculated results, such as the funded ratio and the ADC.
Actuarially Determined:	Values that have been determined utilizing the principles of actuarial science. An actuarially determined value is derived by application of the appropriate actuarial assumptions to specified values determined by provisions of the law.
Actuarially Determined Contribution (ADC):	The employer's periodic required contributions, expressed as a dollar amount or a percentage of covered plan compensation, determined under the Plan's funding policy. The ADC consists of the Employer Normal Cost and the Amortization Payment.
Amortization Method:	A method for determining the Amortization Payment. The most common methods used are level dollar and level percentage of payroll. Under the Level Dollar method, the Amortization Payment is one of a stream of payments, all equal, whose Actuarial Present Value is equal to the UAAL. Under the Level Percentage of Pay method, the Amortization Payment is one of a stream of increasing payments, whose Actuarial Present Value is equal to the UAAL. Under the Level Percentage of Pay method, the stream of payments increases at the assumed rate at which total covered payroll of all active members will increase.
Amortization Payment:	The portion of the pension plan contribution, or ADC, that is designed to pay interest on and to amortize the Unfunded Actuarial Accrued Liability.
Assumptions or Actuarial Assumptions:	The estimates upon which the cost of the Fund is calculated, including: Investment return - the rate of investment yield that the Fund will earn over the long-term future; Mortality rates - the death rates of employees and pensioners; life expectancy is based on these rates; Retirement rates - the rate or probability of retirement at a given age or service; Disability rates – the probability of disability retirement at a given age; Withdrawal rates - the rates at which employees of various ages are expected to leave employment for reasons other than death, disability, or retirement; Salary increase rates - the rates of salary increase due to inflation and productivity growth.

Closed Amortization Period:	A specific number of years that is counted down by one each year, and therefore declines to zero with the passage of time. For example, if the amortization period is initially set at 30 years, it is 29 years at the end of one year, 28 years at the end of two years, etc. See Open Amortization Period.
Decrements:	Those causes/events due to which a member's status (active-inactive-retiree-beneficiary) changes, that is: death, retirement, disability, or withdrawal.
Defined Benefit Plan:	A retirement plan in which benefits are defined by a formula applied to the member's compensation and/or years of service.
Defined Contribution Plan:	A retirement plan, such as a 401(k) plan, a 403(b) plan, or a 457 plan, in which the contributions to the plan are assigned to an account for each member, the plan's earnings are allocated to each account, and each member's benefits are a direct function of the account balance.
Employer Normal Cost:	The portion of the Normal Cost to be paid by the employer. This is equal to the Normal Cost less expected member contributions.
Experience Study:	A periodic review and analysis of the actual experience of the Fund that may lead to a revision of one or more actuarial assumptions. Actual rates of decrement and salary increases are compared to the actuarially assumed values and modified as deemed appropriate by the Actuary.
Funded Ratio:	The ratio of the valuation value of assets (VVA) to the actuarial accrued liability (AAL). Plans sometimes calculate a market funded ratio, using the market value of assets (MVA), rather than the VVA.
Investment Return:	The rate of earnings of the Fund from its investments, including interest, dividends and capital gain and loss adjustments, computed as a percentage of the average value of the fund. For actuarial purposes, the investment return often reflects a smoothing of the capital gains and losses to avoid significant swings in the value of assets from one year to the next.
Normal Cost:	That portion of the Actuarial Present Value of pension plan benefits allocated to a valuation year by the Actuarial Cost Method. Any payment in respect of an Unfunded Actuarial Accrued Liability is not part of Normal Cost (see Amortization Payment). For pension plan benefits that are provided in part by employee contributions, Normal Cost refers to the total of employee contributions and employer Normal Cost unless otherwise specifically stated.
Open Amortization Period:	An open amortization period is one which is used to determine the Amortization Payment but which does not change over time. If the initial period is set as 30 years, the same 30-year period is used in determining the Amortization Period each year. In theory, if an Open Amortization Period with level percentage of payroll is used to amortize the Unfunded Actuarial Accrued Liability, the UAAL will never decrease, but will become smaller each year, in relation to covered payroll, if the actuarial assumptions are realized.
Unfunded Actuarial Accrued Liability:	The excess of the Actuarial Accrued Liability over the Valuation Value of Assets. This value may be negative, in which case it may be expressed as a negative Unfunded Actuarial Accrued Liability, also called the Funding Surplus.

Section 3: Supplemental Information

Valuation Date or Actuarial Valuation Date:	The date as of which the value of assets is determined and as of which the Actuarial Present Value of Future Plan Benefits is determined. The expected benefits to be paid in the future are discounted to this date.
Valuation Value of Assets:	The Actuarial Value of Assets reduced by the value of non-valuation reserves.

Section 4: Actuarial Valuation Basis

Exhibit 1: Actuarial Assumptions and Methods

Rationale for Assumptions:	The information and analysis used in selecting each assumption that has a significant effect on this actuarial valuation is shown in the December 1, 2016 through November 30, 2019 Actuarial Experience Study report dated September 9, 2020. Unless otherwise noted, all actuarial assumptions and methods shown below apply to all tiers. These assumptions were adopted by the Board.
<u>Economic Assumptions</u>	
Net Investment Return:	7.00%, net of administrative and investment expenses. Based on the Actuarial Experience Study referenced above, expected administrative and investment expenses represent about 0.95% of the Market Value of Assets.
Employee Contribution Crediting Rate:	7.00%, compounded semi-annually.
Consumer Price Index:	Increase of 2.75% per year. Retiree COLA increases due to CPI are subject to a 2.75% maximum change per year for General Tier 1, General Tier 3, and Safety Tier 1, and 2% maximum change per year for General Tier 2, General Tier 4, Safety Tier 2, Safety Tier 2C, Safety Tier 2D, and Safety Tier 4. (For General Tier 1, General Tier 3, and Safety Tier 1 members with a sufficient COLA bank, withdrawals from the bank can be made to increase the retiree COLA up to 3% per year.) The actual COLA granted by ACERA on April 1, 2022 has been reflected in the December 31, 2021 valuation for nonactive members.
Payroll Growth:	Inflation of 2.75% per year plus real "across the board" salary increases of 0.50% per year, used to amortize the Unfunded Actuarial Accrued Liability as a level percentage of payroll.
Increase in Internal Revenue Code Section 401(a)(17) Compensation Limit:	Increase of 2.75% per year from the valuation date.
Increase in Section 7522.10 Compensation Limit:	Increase of 2.75% per year from the valuation date.

Section 4: Actuarial Valuation Basis

Salary Increases:

The annual rate of compensation increase includes:

- Inflation at 2.75%, plus
- "Across the board" salary increases of 0.50% per year, plus
- The following merit and promotion increases:

Years of Service	Rate (%) General	Rate (%) Safety
0-1	5.10	8.00
1-2	5.10	8.00
2-3	4.50	8.00
3-4	2.90	4.90
4-5	2.10	3.70
5-6	1.60	2.10
6-7	1.50	1.30
7-8	1.50	1.20
8-9	1.00	0.90
9-10	0.90	0.90
10-11	0.70	0.80
11 & Over	0.40	0.80

Additional Cashout Assumptions:

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

	Service Retirement	Disability Retirement
General Tier 1	7.5%	6.5%
General Tier 2	3.0%	1.4%
General Tier 3	7.5%	6.5%
General Tier 4	N/A	N/A
Safety Tier 1	7.5%	6.4%
Safety Tier 2	2.5%	1.9%
Safety Tier 2C	2.5%	1.9%
Safety Tier 2D	2.5%	1.9%
Safety Tier 4	N/A	N/A

Demographic Assumptions:	
Post-Retirement Mortality Rates:	*Healthy* • **General Members:** Pub-2010 General Healthy Retiree Amount-Weighted Above-Median Mortality Tables (separate tables for males and females), projected generationally with the two-dimensional mortality improvement scale MP-2019. • **Safety Members:** Pub-2010 Safety Healthy Retiree Amount-Weighted Above-Median Mortality Tables (separate tables for males and females), projected generationally with the two-dimensional mortality improvement scale MP-2019. *Disabled* • **General Members:** Pub-2010 Non-Safety Disabled Retiree Amount-Weighted Mortality Tables (separate tables for males and females) with rates decreased 10% for females, projected generationally with the two-dimensional mortality improvement scale MP-2019. • **Safety Members:** Pub-2010 Safety Disabled Retiree Amount-Weighted Mortality Tables (separate tables for males and females) with rates increased by 5% for males, projected generationally with the two-dimensional mortality improvement scale MP-2019. *Beneficiaries* • **All Beneficiaries:** Pub-2010 General Contingent Survivor Amount-Weighted Above-Median Mortality Tables (separate tables for males and females) with rates increased by 5% for males, projected generationally with the two-dimensional mortality improvement scale MP-2019. The Pub-2010 mortality tables and adjustments as shown above reasonably reflect the mortality experience as of the measurement date. These mortality tables were adjusted to future years using the generational projection to reflect future mortality improvement between the measurement date and those years.

Pre-Retirement Mortality Rates:

- **General Members:** Pub-2010 General Employee Amount-Weighted Above-Median Mortality Tables (separate tables for males and females), projected generationally with the two-dimensional mortality improvement scale MP-2019.
- **Safety Members:** Pub-2010 Safety Employee Amount-Weighted Above-Median Mortality Tables (separate tables for males and females), projected generationally with the two-dimensional mortality improvement scale MP-2019.

	Rate (%)			
	General[1]		Safety[1]	
Age	Male	Female	Male	Female
20	0.04	0.01	0.04	0.02
25	0.02	0.01	0.03	0.02
30	0.04	0.01	0.04	0.02
35	0.04	0.02	0.04	0.03
40	0.06	0.03	0.05	0.04
45	0.09	0.05	0.07	0.06
50	0.13	0.08	0.10	0.08
55	0.19	0.11	0.15	0.11
60	0.28	0.17	0.23	0.15
65	0.41	0.27	0.35	0.20

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

[1] Generational projections beyond the base year (2010) are not reflected in the above mortality rates.

Mortality Rates for Member Contributions:

- **General Members:** Pub-2010 General Healthy Retiree Amount-Weighted Above-Median Mortality Tables (separate tables for males and females), projected 30 years (from 2010) with the two-dimensional mortality improvement scale MP-2019, weighted 30% male and 70% female.
- **Safety Members:** Pub-2010 Safety Healthy Retiree Amount-Weighted Above-Median Mortality Tables (separate tables for males and females), projected 30 years (from 2010) with the two-dimensional mortality improvement scale MP-2019, weighted 75% male and 25% female.

Optional Forms of Benefit:

Service Retirement and All Beneficiaries

- **General Members:** Pub-2010 General Healthy Retiree Amount-Weighted Above-Median Mortality Tables (separate tables for males and females), projected 25 years (from 2010) with the two-dimensional mortality improvement scale MP-2019, weighted 30% male and 70% female.
- **General Beneficiaries:** Pub-2010 General Contingent Survivor Amount-Weighted Above-Median Mortality Tables (separate tables for males and females) with rates increased by 5% for males, projected 25 years (from 2010) with the two-dimensional mortality improvement scale MP-2019, weighted 70% male and 30% female.
- **Safety Members:** Pub-2010 Safety Healthy Retiree Amount-Weighted Above-Median Mortality Tables (separate tables for males and females), projected 25 years (from 2010) with the two-dimensional mortality improvement scale MP-2019, weighted 75% male and 25% female.
- **Safety Beneficiaries:** Pub-2010 General Contingent Survivor Amount-Weighted Above-Median Mortality Tables (separate tables for males and females) with rates increased by 5% for males, projected 25 years (from 2010) with the two-dimensional mortality improvement scale MP-2019, weighted 25% male and 75% female.

Disability Retirement

- **General Members:** Pub-2010 Non-Safety Disabled Retiree Amount-Weighted Mortality Tables (separate tables for males and females) with rates decreased 10% for females, projected 25 years (from 2010) with the two-dimensional mortality improvement scale MP-2019, weighted 30% male and 70% female.
- **Safety Members:** Pub-2010 Safety Disabled Retiree Amount-Weighted Mortality Tables (separate tables for males and females) with rates increased by 5% for males, projected 25 years (from 2010) with the two-dimensional mortality improvement scale MP-2019, weighted 75% male and 25% female.

Disability Incidence:

	Rate (%)	
Age	**General**	**Safety**
20	0.00	0.00
25	0.01	0.03
30	0.03	0.26
35	0.07	0.64
40	0.09	1.22
45	0.16	1.50
50	0.26	2.10
55	0.33	2.65
60	0.38	3.80

65% of General disabilities are assumed to be service connected disabilities. The other 35% are assumed to be non-service connected disabilities.

100% of Safety disabilities are assumed to be service connected disabilities.

Termination:

Years of Service	Rate (%) General	Rate (%) Safety
0-1	12.00	4.00
1-2	9.00	4.00
2-3	8.00	4.00
3-4	6.00	3.50
4-5	6.00	3.00
5-6	6.00	2.00
6-7	5.25	1.80
7-8	4.25	1.70
8-9	3.75	1.60
9-16	3.50	1.50
16-17	3.40	1.40
17-18	3.30	1.30
18-19	3.20	1.20
19-20	3.10	1.10
20 or more	3.00	1.00

For members with less than five years of service, 55% of all terminated members are assumed to choose a refund of contributions and the other 45% are assumed to choose a deferred vested benefit. For members with five or more years of service, 30% of all terminated members are assumed to choose a refund of contributions and the other 70% are assumed to choose a deferred vested benefit.

No termination is assumed after a member is eligible for retirement.

Retirement Rates:

	Rate (%)[1]									
	General					Safety				
		Tier 2[2]					Tier 2, 2D[2]			
Age	Tier 1	< 30	30+	Tier 3	Tier 4	Tier 1[3]	< 30	30+	Tier 2C[3]	Tier 4
49	0.0	0.0	0.0	0.0	0.0	0.0	12.0	18.0	0.0	0.0
50	2.0	2.0	4.0	10.0	0.0	35.0	12.0	18.0	4.0	4.0
51	4.0	2.0	4.0	10.0	0.0	30.0	10.0	24.0	2.0	2.0
52	4.0	2.0	4.0	10.0	4.0	25.0	10.0	24.0	2.0	2.0
53	5.0	2.0	4.0	10.0	2.0	35.0	10.0	25.0	3.0	3.0
54	5.0	2.0	4.0	10.0	2.0	45.0	12.0	27.0	6.0	6.0
55	6.0	2.0	4.0	12.0	5.0	45.0	12.0	29.0	10.0	10.0
56	10.0	2.5	4.5	14.0	2.5	45.0	14.0	32.0	12.0	12.0
57	12.0	4.0	5.0	16.0	3.5	45.0	16.0	32.0	20.0	20.0
58	12.0	4.0	5.0	18.0	3.5	45.0	18.0	30.0	10.0	10.0
59	14.0	4.5	8.0	20.0	4.5	45.0	18.0	30.0	15.0	15.0
60	20.0	8.0	8.5	20.0	5.0	45.0	25.0	30.0	60.0	60.0
61	20.0	9.0	13.5	20.0	5.0	45.0	25.0	30.0	60.0	60.0
62	35.0	15.0	22.5	30.0	18.0	45.0	25.0	30.0	60.0	60.0
63	30.0	15.0	22.5	25.0	15.0	45.0	25.0	30.0	60.0	60.0
64	30.0	18.0	27.0	25.0	17.0	45.0	30.0	30.0	60.0	60.0
65	30.0	25.0	27.5	50.0	25.0	100.0	100.0	100.0	100.0	100.0
66	30.0	30.0	33.0	50.0	30.0	100.0	100.0	100.0	100.0	100.0
67	30.0	30.0	33.0	50.0	30.0	100.0	100.0	100.0	100.0	100.0
68	30.0	30.0	33.0	50.0	30.0	100.0	100.0	100.0	100.0	100.0
69	35.0	35.0	38.5	50.0	35.0	100.0	100.0	100.0	100.0	100.0
70	40.0	40.0	40.0	65.0	25.0	100.0	100.0	100.0	100.0	100.0
71	40.0	40.0	40.0	65.0	25.0	100.0	100.0	100.0	100.0	100.0
72	40.0	40.0	40.0	65.0	25.0	100.0	100.0	100.0	100.0	100.0
73	40.0	40.0	40.0	65.0	25.0	100.0	100.0	100.0	100.0	100.0
74	40.0	40.0	40.0	65.0	25.0	100.0	100.0	100.0	100.0	100.0
75 & Over	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[1] The retirement rates only apply to members that are eligible to retire at the age shown.

[2] Different retirement rates are assumed for General Tier 2 and Safety Tier 2 & 2D members who have accrued less than 30 years of service and those who have accrued at least 30 years of service.

[3] Retirement rate is 100% after a member accrues a benefit of 100% of final average earnings.

Section 4: Actuarial Valuation Basis

Retirement Age and Benefit for Deferred Vested Members:	General Retirement Age: 61 Safety Retirement Age: 55 Future deferred vested members who terminate with less than five years of service and are not vested are assumed to retire at age 70 for both General and Safety if they decide to leave their contributions on deposit. 25% of future General and 50% of future Safety deferred vested members are assumed to continue to work for a reciprocal employer. For reciprocals, 3.65% and 4.05% compensation increases are assumed per annum for General and Safety, respectively.
Future Benefit Accruals:	1.0 year of service per year of employment, plus 0.003 years of additional service for General members and 0.007 years of additional service for Safety members, to anticipate conversion of unused sick leave for each year of employment.
Unknown Data for Members:	Same as those exhibited by members with similar known characteristics. If not specified, members are assumed to be male.
Inclusion of Deferred Vested Members:	All deferred vested members are included in the valuation.
Data Adjustment:	Data as of November 30 has been adjusted to December 31 by adding one month of age and, for active members, one month of service.
Form of Payment:	All active and inactive vested members are assumed to elect the unmodified option at retirement.
Percent Married:	70% of male members; 50% of female members.
Age and Gender of Spouse:	For all active and inactive members, male members are assumed to have a female spouse who is 3 years younger than the member and female members are assumed to have a male spouse who is 2 years older than the member.
<u>**Actuarial Funding Policy**</u>	
Actuarial Cost Method:	Entry Age Actuarial Cost Method. Entry Age is the age on the valuation date minus years of service. Normal Cost and Actuarial Accrued Liability are calculated on an individual basis and are based on costs allocated as a level percentage of compensation, as if the current benefit formula for each individual has always been in effect.
Actuarial Value of Assets:	Market value of assets (MVA) less unrecognized returns in each of the last ten six-month interest crediting periods. Unrecognized returns are equal to the difference between the actual market return and the expected return on the market value, and are recognized semi-annually over a five-year period. The actuarial value of assets (AVA) is limited by a 40% corridor; the AVA cannot be less than 60% of MVA, nor greater than 140% of MVA.
Valuation Value of Assets:	The Actuarial Value of Assets reduced by the value of the non-valuation reserves.

Amortization Policy:	Prior to January 1, 2012, the total UAAL was amortized on a 30-year decreasing period, with 21 years remaining as of December 31, 2011 (and 11 years remaining as of December 31, 2021). On or after January 1, 2012, any new UAAL resulting from plan amendments are amortized over separate decreasing 15-year periods; early retirement incentive programs (ERIPs) are amortized over separate decreasing 5-year periods; assumption and method changes are amortized over separate decreasing 20-year periods; and experience gains/losses are also amortized over separate decreasing 20-year periods. ACOE's UAAL amortization under the declining employer payroll policy is level dollar. The Voluntary County Safety UAAL Contributions are amortized over a 13-year period effective July 1, 2021. The Voluntary LARPD General UAAL Contributions are amortized over a 16-year period effective July 1, 2021. Effective December 31, 2021, the existing LARPD General UAAL layers are amortized over 15.5 years.[1]
Other Actuarial Methods	
Employer Contributions:	Employer contributions consist of two components: *Normal Cost* The annual contribution rate that, if paid annually from a member's first year of membership through the year of retirement, would accumulate to the amount necessary to fully fund the member's retirement-related benefits. Accumulation includes annual crediting of interest at the assumed investment earning rate. The contribution rate is expressed as a level percentage of the member's compensation. *Contribution to the Unfunded Actuarial Accrued Liability (UAAL)* The annual contribution rate that, if paid annually over the UAAL amortization period, would accumulate to the amount necessary to fully fund the UAAL. Accumulation includes annual crediting of interest at the assumed investment earning rate. The contribution (or rate credit in the case of a negative UAAL) is calculated to remain as a level percentage of future active member payroll (including payroll for new members as they enter the Association) assuming a constant number of active members. In order to remain as a level percentage of payroll, amortization payments (credits) are scheduled to increase at the annual rate of 3.25% (i.e., 2.75% inflation plus 0.50% across-the-board salary increase). The amortization policy is described above. Alameda County previously issued pension obligation bonds (POB) and the net bond proceeds were contributed to ACERA. When the POBs were issued, AHS, Court and First 5 were part of the County and, consequently, they share in the proceeds. The net bond proceeds contributed to ACERA allow the Association to provide a "Pension Obligation Bond Credit" to these employers, thereby reducing their employer contribution rate. As of December 31, 2021, the outstanding balances of the POBs were $466.0 million for the General employers (County, AHS, Court, and First 5) and $87.1 million for the Safety employers (County).

[1] The LARPD General cost sharing group has a surplus of $248,000 on a VVA basis. In order to calculate the proper offset available to LARPD from the LARPD General UAAL Advance Reserve, we have reamortized the existing LARPD UAAL amortization layers so that they will have the same amortization period as the LARPD General UAAL Advance Reserve (15.5 years remaining as of December 31, 2021).

Employer Contributions (continued):	For several years, the Board of Retirement has approved transfers from the SRBR to the Employer Advance Reserve to reimburse the County for their payment of the implicit retiree health benefit subsidy. The amortization credits resulting from these transfers have served to reduce the County's employer contribution rates. LARPD General and County Safety made additional voluntary contributions to the UAAL Advance Reserve to reduce their UAAL as of June 30, 2021. The amortization credits from the UAAL Advance Reserve serve to reduce the LARPD General and County Safety employer contribution rates. The recommended employer contributions are provided in *Section 2, Subsection F*. These rates reflect the POB credits for the County, AHS, Court, and First 5; the retiree health benefit subsidy credits for the County; and the UAAL Advance Reserve credits noted above.

Member Contributions:	*Non-Tier 4 Members* Articles 6 and 6.8 of the 1937 Act define the methodology to be used in the calculation of member basic contribution rates for non-Tier 4 General and Safety members, respectively. The basic contribution rate is determined so that the accumulation of a member's basic contributions made in a given year until a certain age will be sufficient to fund an annuity at that age that is equal to 1/100 of Final Average Salary for General Tier 1, General Tier 3, and all Safety non-Tier 4 members and 1/120 of Final Average Salary for General Tier 2 members. That age is 60 for General Tier 1 and Tier 2, 55 for General Tier 3, and 50 for all Safety non-Tier 4 members. It is assumed that contributions are made annually at the same rate, starting at entry age. In addition to the basic contributions, members pay one-half of the total normal cost necessary to fund cost-of-living benefits. As instructed by ACERA, we have also included a 3% cost-sharing contribution that we understand will be paid by Safety Tier 1 and Tier 2 members. For Safety Tier 2C members, there are no cost-sharing contributions. For Safety Tier 2D members, the cost-sharing contribution rate is 5% of salary for the first 5 years of vesting service and 3% of salary for each subsequent year of vesting service. (The 3% cost-sharing contribution for Safety Tiers 1, 2, and 2D (after 5 years of service) will continue even after the member attains 30 years of service.) Accumulation includes semi-annual crediting of interest at the assumed investment earnings rate. Following the procedure established by the Board, basic member rates have been adjusted to anticipate conversion of additional cashout at retirement. *Tier 4 Members* Pursuant to Section 7522.30(a) of the Government Code, Tier 4 members are required to contribute at least 50% of the Normal Cost rate. When previously calculating member rates, there were certain additional requirements that had to be met such as requiring the employee rates be rounded to the nearest one quarter of one percent and requiring the new employees to pay the contribution rate of "similarly situated employees", if it is greater. (reference: Section 7522.30(c)). Furthermore, Section 7522.30(d) indicated that "once established, the employee contribution rate described in subdivision (c) shall not be adjusted on account of a change to the normal cost rate unless the normal cost rate increases or decreases by more than 1 percent of payroll above or below the normal cost rate in effect at the time the employee contribution rate is first established or, if later, the normal cost rate in effect at the time of the last adjustment to the employee contribution rate under this section." However, as we referenced in our letter dated February 26, 2014, Assembly Bill 1380 (AB 1380) was approved by the Governor on September 6, 2013. In particular, Section 31620.5(a) was added to the Government Code to provide the Board with the discretion to not apply the rounding previously required under Section 7522.30(c). We understand that our recommendation in that letter to no longer apply the rounding rule effective with the December 31, 2013 valuation was adopted by the Board, and the results in this valuation reflect that action taken by the Board. Section 31620.5(b) of AB 1380 also stipulates that the "one percent rule" under Section 7522.30(d) "shall not apply to the contribution rates of members of retirement systems established pursuant to this chapter." Therefore, in preparing the Normal Cost rates in this report, we have assumed that exactly 50% of the Normal Cost would be paid by the Tier 4 members. The member contribution rates for all members are provided in *Section 4, Exhibit 3*.

Section 4: Actuarial Valuation Basis

Internal Revenue Code Section 415:	Section 415 of the Internal Revenue Code (IRC) specifies the maximum benefits that may be paid to an individual from a defined benefit plan and the maximum amounts that may be allocated each year to an individual's account in a defined contribution plan. A qualified pension plan may not pay benefits in excess of the Section 415 limits. The ultimate penalty for non-compliance is disqualification: active participants could be taxed on their vested benefits and the IRS may seek to tax the income earned on the plan's assets. In particular, Section 415(b) of the IRC limits the maximum annual benefit payable at the Normal Retirement Age to a dollar limit of $160,000 indexed for inflation. That limit is $230,000 for 2021 and $245,000 for 2022. Normal Retirement Age for these purposes is age 62. These are the limits in simplified terms. They must be adjusted based on each participant's circumstances, for such things as age at retirement, form of benefits chosen and after tax contributions. Non-Tier 4 benefits in excess of the limits may be paid through a qualified governmental excess plan that meets the requirements of Section 415(m). Legal Counsel's review and interpretation of the law and regulations should be sought on any questions in this regard. Non-Tier 4 contribution rates determined in this valuation have not been reduced for the Section 415 limitations. Actual limitations will result in gains as they occur.
Changed Actuarial Assumptions or Methods:	The amortization policy has changed since the prior valuation. The amortization policy in the prior valuation was as follows: Prior to January 1, 2012, the total UAAL was amortized on a 30-year decreasing period, with 21 years remaining as of December 31, 2011 (and 11 years remaining as of December 31, 2021). On or after January 1, 2012, any new UAAL resulting from plan amendments are amortized over separate decreasing 15-year periods; early retirement incentive programs (ERIPs) are amortized over separate decreasing 5-year periods; assumption and method changes are amortized over separate decreasing 20-year periods; and experience gains/losses are also amortized over separate decreasing 20-year periods. ACOE's UAAL amortization under the declining employer payroll policy is level dollar.

Exhibit 2: Summary of Plan Provisions

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

Plan Year:	January 1 through December 31
Membership Eligibility:	Membership with ACERA usually begins with the second pay period following appointment to a full time County or member District position. For Housing Authority and LARPD, membership with ACERA begins on the first day of hire. ACERA members who change from full time to part time will continue to participate at ACERA.
General and Safety Tier 1	All General and Safety members hired on or before June 30, 1983. For Housing Authority General members, the hire date is on or before September 30, 2011 (instead of June 30, 1983). For LARPD General members, the hire date is on or before September 30, 2008 (instead of June 30, 1983).
General and Safety Tier 2	All General and Safety members hired after June 30, 1983, and not in any of the other Tiers listed below. For Housing Authority General members, the hire date is after September 30, 2011 (instead of June 30, 1983).
General Tier 3	Only General LARPD members hired before October 1, 2008 who elected the 2.5% at 55 formula and all General LARPD members hired after that date.
General and Safety Tier 4	All General and Safety members with membership dates on or after January 1, 2013.
Safety Tier 2C	All Safety members in the Sheriff's Department (excluding Probation Officers) hired on or after October 17, 2010 who elected the 2% at 50 formula.
Safety Tier 2D	All Safety members in the Sheriff's Department (excluding Probation Officers) hired on or after October 17, 2010 who elected the 3% at 55 formula.
Final Compensation for Benefit Determination:	
General Tier 1, General Tier 3 and Safety Tier 1	Highest consecutive 12 months of compensation earnable (§31462.1) (FAS1).
General Tier 2, General Tier 4, Safety Tier 2, Safety Tier 2C, Safety Tier 2D, and Safety Tier 4	For non-Tier 4 members, highest consecutive 36 months of compensation earnable (§31462), and for Tier 4 members, highest consecutive 36 months of pensionable compensation (§7522.10(c), §7522.32 and §7522.34) (FAS3).
Compensation Limit:	
Non-Tier 4	For members with membership dates on or after July 1, 1996, compensation earnable is limited by Internal Revenue Code Section 401(a)(17). The limit for 2022 is $305,000. The limit is indexed for inflation on an annual basis.

Tier 4	Pensionable compensation is limited to $134,974 for 2022 for an employer that is enrolled in Social Security. For an employer that is not enrolled in Social Security, the maximum amount for 2022 is 120% of $134,974, or $161,969. (reference: Section 7522.10). These amounts should be adjusted for changes to the Consumer Price Index for All Urban Consumers after 2022. (reference: Section 7522.10(d)).
Service:	Years of service (Yrs) are generally based on a member's employment during a period of time for which deductions are made from their compensation.
Service Retirement Eligibility:	
General	
Non-Tier 4	Age 50 with 5 years of service and a total of 10 years of qualifying membership, or age 70 regardless of service, or after 30 years of service regardless of age (§31672).
Tier 4	Age 52 with 5 years of service (§7522.20(a)) or age 70 regardless of service (§31672.3).
Safety	
Non-Tier 4	Age 50 with 5 years of service and a total of 10 years of qualifying membership, or age 70 regardless of service, or after 20 years of service regardless of age (§31663.25).
Tier 4	Age 50 with 5 years of service (§7522.25(d)) or age 70 regardless of service (§31672.3).

Benefit Formula:		
General Tier 1 (§31676.12)	**Retirement Age**	**Benefit Formula**
	50	1.34% x (FAS1 – $1,400) x Yrs
	55	1.77% x (FAS1 – $1,400) x Yrs
	60	2.34% x (FAS1 – $1,400) x Yrs
	62 and over	2.62% x (FAS1 – $1,400) x Yrs
General Tier 2 (§31676.1)	**Retirement Age**	**Benefit Formula**
	50	1.18% x (FAS3 – $1,400) x Yrs
	55	1.49% x (FAS3 – $1,400) x Yrs
	60	1.92% x (FAS3 – $1,400) x Yrs
	62	2.09% x (FAS3 – $1,400) x Yrs
	65 and over	2.43% x (FAS3 – $1,400) x Yrs
General Tier 3 (§31676.18)	**Retirement Age**	**Benefit Formula**
	50	2.00% x FAS1 x Yrs
	55 and over	2.50% x FAS1 x Yrs
General Tier 4 (§7522.20(a))	**Retirement Age**	**Benefit Formula**
	52	1.00% x FAS3 x Yrs
	55	1.30% x FAS3 x Yrs
	60	1.80% x FAS3 x Yrs
	62	2.00% x FAS3 x Yrs
	65	2.30% x FAS3 x Yrs
	67 and over	2.50% x FAS3 x Yrs
Safety Tier 1 (Non-Integrated) (§31664.1)	**Retirement Age**	**Benefit Formula**
	50 and over	3.00% x FAS1 x Yrs
Safety Tier 2 (Non-Integrated) (§31664.1)	**Retirement Age**	**Benefit Formula**
	50 and over	3.00% x FAS3 x Yrs

Safety Tier 2C (Non-Integrated) (§31664)	**Retirement Age**	**Benefit Formula**
	50	2.00% x FAS3 x Yrs
	55 and over	2.62% x FAS3 x Yrs
Safety Tier 2D (Non-Integrated) (§31664.2)	**Retirement Age**	**Benefit Formula**
	50	2.29% x FAS3 x Yrs
	55 and over	3.00% x FAS3 x Yrs
Safety Tier 4 (Non-Integrated) (§7522.25(d))	**Retirement Age**	**Benefit Formula**
	50	2.00% x FAS3 x Yrs
	55	2.50% x FAS3 x Yrs
	57 and over	2.70% x FAS3 x Yrs

Maximum Benefit:	
Non-Tier 4	100% of Highest Average Compensation (§31676.1, §31676.12, §31676.18, §31664, §31664.1, and §31664.2).
Tier 4	None.
Non-Service Connected Disability:	
General Tier 1, Tier 2, Tier 3, and Tier 4	
Eligibility	Five years of service (§31720).
Benefit Formula	1.8% of Final Compensation per year of service for General Tier 1 and Tier 3 and 1.5% of Final Compensation per year of service for General Tier 2 and Tier 4. If the benefit does not exceed one-third of Final Compensation, the service is projected to 62 for General Tier 1 and Tier 3, and to age 65 for General Tier 2 and Tier 4, but the total benefit cannot be more than one-third of Final Compensation (§31727.1 and §31727).
Safety Tier 1, Tier 2, Tier 2C, Tier 2D and Tier 4	
Eligibility	Five years of service (§31720).
Benefit Formula	1.8% of Final Compensation per year of service. If the benefit does not exceed one-third of Final Compensation, the service is projected to 55, but the total benefit cannot be more than one-third of Final Compensation (§31727.2).

Service Connected Disability:	
All Members	
Eligibility	No age or service requirements (§31720).
Benefit Formula	50% of the Final Compensation or 100% of Service Retirement benefit, if greater (§31727.4).
Pre-Retirement Death:	
All Members	
Eligibility	None.
Basic Lump Sum Benefit	Refund of employee contributions with interest, plus one month's compensation for each year of service, to a maximum of six month's compensation (§31781).
Service Connected Death	50% of Final Compensation or 100% of Service Retirement benefit, if greater, payable to spouse or minor children (§31787).
	OR
Vested Members	
Eligibility	Five years of service.
Basic Benefit	60% of the greater of Service or Non-Service Connected Disability Retirement benefit payable to surviving eligible spouse (§31765.1, §31781.1), in lieu of the basic lump sum benefit above.
Service Connected Death	50% of Final Compensation or 100% of Service Retirement benefit, if greater, payable to spouse or minor children (§31787).
Death After Retirement:	
All Members	
Service Retirement or Non-Service Connected Disability Retirement	Unless another option was selected at retirement, 60% of member's unmodified allowance continues to eligible spouse (§31760.1) and lump sum death burial benefit payable to member's beneficiary (§31789.3). An eligible spouse is a surviving spouse who was married to the member at least one year prior to the date of retirement (§31760.1). Based on action taken by the Board in February 2014, we are continuing to exclude the death burial benefit from the pension valuation.
Service Connected Disability	Unless another option was selected at retirement, 100% of member's allowance continued to eligible spouse (§31786).

Withdrawal Benefits:	
Less than Five Years of Service	Refund of accumulated employee contributions with interest, or benefit at age 70 (§31628). Effective January 1, 2003, a member may also elect to leave contributions on deposit in the retirement fund (§31629.5).
Five or More Years of Service	If contributions left on deposit, entitled to earned benefits commencing at any time after eligible to retire (§31700).
Post-retirement Cost-of-Living Benefits:	
General Tier 1, General Tier 3 and Safety Tier 1	Annual adjustment based on Consumer Price Index to a maximum of 3% per year; excess "banked" (§31870.1).
General Tier 2, General Tier 4 Safety Tier 2, Safety Tier 2C, Safety Tier 2D, and Safety Tier 4	Annual adjustment based on Consumer Price Index to a maximum of 2% per year; excess "banked" (§31870).
Supplemental Benefit:	Non-vested supplemental COLA and medical benefits are also paid from the Supplemental Retirees Benefit Reserve to eligible retirees and survivors. These benefits have been excluded from this valuation.
Member Contributions:	Please refer to *Section 4, Exhibit 3* for specific rates.
General Tier 1	
Basic	Entry-age based rates that provide for an average annuity at age 60 equal to 1/100 of FAS1 (§31621.2).
Cost-of-Living	Entry-age based rates that provide for one-half of future Cost-of-Living costs.
General Tier 2	
Basic	Entry-age based rates that provide for an average annuity at age 60 equal to 1/120 of FAS3 (§31621).
Cost-of-Living	Entry-age based rates that provide for one-half of future Cost-of-Living costs.
General Tier 3	
Basic	Entry-age based rates that provide for an average annuity at age 55 equal to 1/100 of FAS1 (§31621.8).
Cost-of-Living	Entry-age based rates that provide for one-half of future Cost-of-Living costs.
General Tier 4	50% of the total Normal Cost rate.

Safety Non-Tier 4	
Basic	Entry-age based rates that provide for an average annuity at age 50 equal to 1/100 of FAS1 (FAS3 for Tier 2, Tier 2C, and Tier 2D) (§31639.25). As instructed by ACERA, we have also included a 3% cost-sharing contribution that we understand will be paid by Safety Tier 1 and Tier 2 members. For Safety Tier 2C members, there are no cost-sharing contributions. For Safety Tier 2D members, the cost-sharing contribution rate is 5% of salary for the first 5 years of vesting service and 3% of salary for each subsequent year of vesting service. (The 3% cost-sharing contribution for Safety Tiers 1, 2, and 2D (after 5 years of service) will continue even after the member attains 30 years of service.)
Cost-of-Living	Entry-age based rates that provide for one-half of future Cost-of-Living costs.
Safety Tier 4	50% of the total Normal Cost rate.
Other Information:	Except for the 3% cost-sharing contribution described above, non-Tier 4 Safety members are exempt from paying member contributions after 30 or more years of service. This exemption also applies for General members hired on or before March 7, 1973.
Changes in Plan Provisions:	There have been no changes in plan provisions since the last valuation.

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

Exhibit 3: Member Contribution Rates

Comparison of Total Member Rate[1] from December 31, 2021 (New) and December 31, 2020 (Current) Valuations:

General Tier 1

Entry Age	Current	New	Change
25	9.58%	9.54%	**-0.04%**
35	11.59%	11.54%	**-0.05%**
45	14.04%	13.99%	**-0.05%**

General Tier 2

Entry Age	Current	New	Change
25	6.91%	6.90%	**-0.01%**
35	8.35%	8.35%	**0.00%**
45	10.12%	10.11%	**-0.01%**

General Tier 3

Entry Age	Current	New	Change
25	11.90%	11.90%	**0.00%**
35	14.39%	14.39%	**0.00%**
45	17.49%	17.50%	**0.01%**

General Tier 4

Entry Age[2]	Current	New	Change
Any	9.21%	9.23%	**0.02%**

Safety Tier 1

Entry Age	Current	New	Change[3]
25	18.16%	16.75%	**-1.41%**
30	19.49%	17.95%	**-1.54%**
35	20.99%	19.31%	**-1.68%**

Safety Tier 2

Entry Age	Current	New	Change
25	16.13%	16.15%	**0.02%**
30	17.27%	17.30%	**0.03%**
35	18.56%	18.59%	**0.03%**

Safety Tier 2C

Entry Age	Current	New	Change
25	12.74%	12.73%	**-0.01%**
30	13.85%	13.84%	**-0.01%**
35	15.11%	15.09%	**-0.02%**

Safety Tier 2D (with less than 5 years of vesting service)

Entry Age	Current	New	Change
25	18.04%	18.06%	**0.02%**
30	19.17%	19.19%	**0.02%**
35	20.46%	20.48%	**0.02%**

Safety Tier 2D (with 5 or more years of vesting service)

Entry Age	Current	New	Change
25	16.04%	16.06%	**0.02%**
30	17.17%	17.19%	**0.02%**
35	18.46%	18.48%	**0.02%**

Safety Tier 4

Entry Age[2]	Current	New	Change
Any	16.93%	17.01%	**0.08%**

[1] For the non-CalPEPRA tiers, contributions for the first $161 of biweekly payroll are based on 2/3 of the above rates for integrated members.
[2] Tier 4 member rates are independent of entry age.
[3] There are two Safety Tier 1 members that remain in the December 31, 2021 valuation who were expected to retire immediately after December 31, 2020 using assumptions included in the last valuation. The delay in their retirement resulted in a reduction in the value of the COLA benefit which in turn reduces the member COLA contribution rates from the last valuation to the current valuation.

Exhibit 3: Member Contribution Rates (continued)

Breakdown of member rate between basic and COLA calculated in the December 31, 2021 and December 31, 2020 valuations:

	December 31, 2021 Actuarial Valuation								December 31, 2020 Actuarial Valuation[1]							
	BASIC		COLA		COST SHARING CONTRIBUTIONS[2]		TOTAL		BASIC		COLA		COST SHARING CONTRIBUTIONS[2]		TOTAL	
	Rate	Estimated Annual Amount[3]	Rate	Estimated Annual Amount[3]	Rate	Estimated Annual Amount[3]	Rate	Estimated Annual Amount[3]	Rate	Estimated Annual Amount[3]	Rate	Estimated Annual Amount[3]	Rate	Estimated Annual Amount[3]	Rate	Estimated Annual Amount[3]
General Tier 1	7.33%	$650	2.46%	$218			9.79%	$868	7.33%	$650	2.50%	$221			9.83%	$871
General Tier 2	6.51%	35,311	1.66%	9,003			8.17%	44,314	6.51%	35,311	1.66%	9,003			8.17%	44,314
General Tier 3	10.46%	179	4.61%	79			15.07%	258	10.46%	179	4.59%	79			15.05%	258
General Tier 4	7.51%	34,394	1.72%	7,877			9.23%	42,271	7.47%	34,211	1.74%	7,969			9.21%	42,180
Safety Tier 1	0.00%	0	0.00%	0	3.00%	$15	3.00%	15	0.00%	0	0.00%	0	3.00%	$15	3.00%	15
Safety Tier 2	9.64%	10,235	4.27%	4,534	3.00%	3,185	16.91%	17,954	9.64%	10,235	4.24%	4,502	3.00%	3,185	16.88%	17,922
Safety Tier 2C	10.47%	296	4.13%	117	0.00%	0	14.60%	413	10.47%	296	4.16%	118	0.00%	0	14.63%	414
Safety Tier 2D	9.79%	1,704	4.23%	735	3.02%	526	17.04%	2,965	9.79%	1,704	4.21%	732	3.02%	526	17.02%	2,962
Safety Tier 4	13.28%	8,849	3.73%	2,485	0.00%	0	17.01%	11,334	13.19%	8,789	3.74%	2,492	0.00%	0	16.93%	11,281
All Tiers Combined	**7.61%**	**$91,618**	**2.08%**	**$25,048**	**0.31%**	**$3,726**	**10.00%**	**$120,392**	**7.59%**	**$91,375**	**2.08%**	**$25,116**	**0.31%**	**$3,726**	**9.98%**	**$120,217**

[1] These rates have been re-calculated by applying the individual entry age based member rates determined in December 31, 2020 valuation to the Association membership as of December 31, 2021.

[2] Cost sharing contributions for Safety Tier 2D members are determined based on proportion of members contributing 5.00% (with less than 5 years of vesting service) and 3.00% (with 5 or more years of vesting service).

[3] Amounts are in thousands and are based on December 31, 2021 annual payroll (also in thousands):

	County	AHS, Court & First 5	Housing Authority	LARPD	Total
General Tier 1	$4,898	$666	$2,748	$552	$8,864
General Tier 2	366,945	175,208	251		542,404
General Tier 3				1,712	1,712
General Tier 4	282,969	171,688	1,923	1,398	457,978
Safety Tier 1	507				507
Safety Tier 2	106,171				106,171
Safety Tier 2C	2,828				2,828
Safety Tier 2D	17,401				17,401
Safety Tier 4	66,634				66,634
Total	$848,353	$347,562	$4,922	$3,662	$1,204,499

Exhibit 3: Member Contribution Rates (continued)

General Tier 1 Members' Contribution Rates Based on the December 31, 2021 Actuarial Valuation (as a % of biweekly payroll)

	General Tier 1					
	Basic		COLA		Total	
Entry Age	First $161	Over $161[1]	First $161	Over $161[1]	First $161	Over $161[1]
16 & Under	3.99%	5.99%	1.34%	2.01%	5.33%	8.00%
17	4.07%	6.11%	1.37%	2.05%	5.44%	8.16%
18	4.15%	6.23%	1.39%	2.09%	5.54%	8.32%
19	4.24%	6.35%	1.42%	2.13%	5.66%	8.48%
20	4.32%	6.48%	1.45%	2.18%	5.77%	8.66%
21	4.40%	6.61%	1.48%	2.22%	5.88%	8.83%
22	4.49%	6.74%	1.51%	2.26%	6.00%	9.00%
23	4.58%	6.87%	1.54%	2.31%	6.12%	9.18%
24	4.67%	7.00%	1.57%	2.35%	6.24%	9.35%
25	4.76%	7.14%	1.60%	2.40%	6.36%	9.54%
26	4.85%	7.28%	1.63%	2.44%	6.48%	9.72%
27	4.95%	7.42%	1.66%	2.49%	6.61%	9.91%
28	5.04%	7.56%	1.69%	2.54%	6.73%	10.10%
29	5.14%	7.71%	1.73%	2.59%	6.87%	10.30%
30	5.24%	7.86%	1.76%	2.64%	7.00%	10.50%
31	5.34%	8.01%	1.79%	2.69%	7.13%	10.70%
32	5.44%	8.16%	1.83%	2.74%	7.27%	10.90%
33	5.54%	8.32%	1.86%	2.79%	7.40%	11.11%
34	5.65%	8.48%	1.90%	2.85%	7.55%	11.33%
35	5.76%	8.64%	1.93%	2.90%	7.69%	11.54%
36	5.87%	8.80%	1.97%	2.96%	7.84%	11.76%
37	5.98%	8.97%	2.01%	3.01%	7.99%	11.98%
38	6.09%	9.14%	2.05%	3.07%	8.14%	12.21%
39	6.21%	9.32%	2.09%	3.13%	8.30%	12.45%

[1] Use these rates for non-integrated members .

Exhibit 3: Member Contribution Rates (continued)

General Tier 1						
	Basic		COLA		Total	
Entry Age	First $161	Over $161[1]	First $161	Over $161[1]	First $161	Over $161[1]
40	6.33%	9.50%	2.13%	3.19%	8.46%	12.69%
41	6.45%	9.68%	2.17%	3.25%	8.62%	12.93%
42	6.58%	9.87%	2.21%	3.31%	8.79%	13.18%
43	6.71%	10.06%	2.25%	3.38%	8.96%	13.44%
44	6.84%	10.26%	2.30%	3.45%	9.14%	13.71%
45	6.98%	10.47%	2.35%	3.52%	9.33%	13.99%
46	7.12%	10.68%	2.39%	3.59%	9.51%	14.27%
47	7.27%	10.90%	2.44%	3.66%	9.71%	14.56%
48	7.42%	11.13%	2.49%	3.74%	9.91%	14.87%
49	7.56%	11.34%	2.54%	3.81%	10.10%	15.15%
50	7.69%	11.54%	2.59%	3.88%	10.28%	15.42%
51	7.83%	11.74%	2.63%	3.94%	10.46%	15.68%
52	7.93%	11.90%	2.67%	4.00%	10.60%	15.90%
53	8.05%	12.07%	2.71%	4.06%	10.76%	16.13%
54	8.16%	12.25%	2.74%	4.11%	10.90%	16.36%
55	8.26%	12.38%	2.77%	4.16%	11.03%	16.54%
56	8.30%	12.45%	2.79%	4.18%	11.09%	16.63%
57	8.23%	12.35%	2.77%	4.15%	11.00%	16.50%
58	8.08%	12.13%	2.71%	4.07%	10.79%	16.20%
59 & Over	7.75%	11.63%	2.61%	3.91%	10.36%	15.54%

Interest:	7.00% per annum
COLA:	2.75%
Mortality:	See *Section 4, Exhibit 1*
Salary Increase:	Inflation (2.75%) + Across-the-Board Increase (0.50%) + Merit (See *Section 4, Exhibit 1*)
COLA Loading Factor:	33.59%
Additional Cashout:	7.50%

[1] Use these rates for non-integrated members.

Exhibit 3: Member Contribution Rates (continued)

General Tier 2 Members' Contribution Rates Based on the December 31, 2021 Actuarial Valuation
(as a % of biweekly payroll)

	General Tier 2					
	Basic		COLA		Total	
Entry Age	First $161	Over $161[1]	First $161	Over $161[1]	First $161	Over $161[1]
16 & Under	3.08%	4.62%	0.79%	1.18%	3.87%	5.80%
17	3.14%	4.71%	0.80%	1.20%	3.94%	5.91%
18	3.20%	4.80%	0.81%	1.22%	4.01%	6.02%
19	3.26%	4.90%	0.83%	1.25%	4.09%	6.15%
20	3.33%	4.99%	0.85%	1.27%	4.18%	6.26%
21	3.39%	5.09%	0.87%	1.30%	4.26%	6.39%
22	3.46%	5.19%	0.88%	1.32%	4.34%	6.51%
23	3.53%	5.29%	0.90%	1.35%	4.43%	6.64%
24	3.60%	5.40%	0.92%	1.38%	4.52%	6.78%
25	3.67%	5.50%	0.93%	1.40%	4.60%	6.90%
26	3.74%	5.61%	0.95%	1.43%	4.69%	7.04%
27	3.81%	5.72%	0.97%	1.46%	4.78%	7.18%
28	3.88%	5.83%	0.99%	1.48%	4.87%	7.31%
29	3.96%	5.94%	1.01%	1.51%	4.97%	7.45%
30	4.03%	6.05%	1.03%	1.54%	5.06%	7.59%
31	4.11%	6.17%	1.05%	1.57%	5.16%	7.74%
32	4.19%	6.29%	1.07%	1.60%	5.26%	7.89%
33	4.27%	6.41%	1.09%	1.63%	5.36%	8.04%
34	4.35%	6.53%	1.11%	1.66%	5.46%	8.19%
35	4.44%	6.65%	1.13%	1.70%	5.57%	8.35%
36	4.52%	6.78%	1.15%	1.73%	5.67%	8.51%
37	4.61%	6.91%	1.17%	1.76%	5.78%	8.67%
38	4.69%	7.04%	1.19%	1.79%	5.88%	8.83%
39	4.78%	7.18%	1.22%	1.83%	6.00%	9.01%

[1] Use these rates for non-integrated members .

Exhibit 3: Member Contribution Rates (continued)

	General Tier 2					
	Basic		COLA		Total	
Entry Age	First $161	Over $161[1]	First $161	Over $161[1]	First $161	Over $161[1]
40	4.88%	7.31%	1.24%	1.86%	6.12%	9.17%
41	4.97%	7.45%	1.27%	1.90%	6.24%	9.35%
42	5.07%	7.60%	1.29%	1.94%	6.36%	9.54%
43	5.17%	7.75%	1.31%	1.97%	6.48%	9.72%
44	5.27%	7.90%	1.34%	2.01%	6.61%	9.91%
45	5.37%	8.06%	1.37%	2.05%	6.74%	10.11%
46	5.48%	8.22%	1.40%	2.10%	6.88%	10.32%
47	5.59%	8.38%	1.43%	2.14%	7.02%	10.52%
48	5.69%	8.54%	1.45%	2.18%	7.14%	10.72%
49	5.79%	8.68%	1.47%	2.21%	7.26%	10.89%
50	5.88%	8.82%	1.50%	2.25%	7.38%	11.07%
51	5.96%	8.94%	1.52%	2.28%	7.48%	11.22%
52	6.04%	9.06%	1.54%	2.31%	7.58%	11.37%
53	6.11%	9.17%	1.56%	2.34%	7.67%	11.51%
54	6.16%	9.24%	1.57%	2.36%	7.73%	11.60%
55	6.17%	9.25%	1.57%	2.36%	7.74%	11.61%
56	6.13%	9.20%	1.56%	2.34%	7.69%	11.54%
57	6.05%	9.08%	1.54%	2.31%	7.59%	11.39%
58	6.25%	9.38%	1.59%	2.39%	7.84%	11.77%
59 & Over	6.46%	9.69%	1.65%	2.47%	8.11%	12.16%

Interest:	7.00% per annum
COLA:	2.00%
Mortality:	See *Section 4, Exhibit 1*
Salary Increase:	Inflation (2.75%) + Across-the-Board Increase (0.50%) + Merit (See *Section 4, Exhibit 1*)
COLA Loading Factor:	25.49%
Additional Cashout:	3.0%

[1] Use these rates for non-integrated members.

Exhibit 3: Member Contribution Rates (continued)

General Tier 3 Members' Contribution Rates Based on the December 31, 2021 Actuarial Valuation (as a % of biweekly payroll)

General Tier 3						
	Basic		COLA		Total	
Entry Age	First $161	Over $161[1]	First $161	Over $161[1]	First $161	Over $161[1]
16 & Under	4.64%	6.96%	2.04%	3.06%	6.68%	10.02%
17	4.73%	7.10%	2.08%	3.12%	6.81%	10.22%
18	4.82%	7.23%	2.12%	3.18%	6.94%	10.41%
19	4.92%	7.38%	2.16%	3.24%	7.08%	10.62%
20	5.01%	7.52%	2.20%	3.30%	7.21%	10.82%
21	5.11%	7.67%	2.25%	3.37%	7.36%	11.04%
22	5.21%	7.81%	2.29%	3.43%	7.50%	11.24%
23	5.31%	7.96%	2.33%	3.50%	7.64%	11.46%
24	5.41%	8.12%	2.37%	3.56%	7.78%	11.68%
25	5.52%	8.27%	2.42%	3.63%	7.94%	11.90%
26	5.62%	8.43%	2.47%	3.70%	8.09%	12.13%
27	5.73%	8.59%	2.51%	3.77%	8.24%	12.36%
28	5.84%	8.76%	2.57%	3.85%	8.41%	12.61%
29	5.95%	8.93%	2.61%	3.92%	8.56%	12.85%
30	6.07%	9.10%	2.66%	3.99%	8.73%	13.09%
31	6.18%	9.27%	2.71%	4.07%	8.89%	13.34%
32	6.30%	9.45%	2.77%	4.15%	9.07%	13.60%
33	6.42%	9.63%	2.82%	4.23%	9.24%	13.86%
34	6.54%	9.81%	2.87%	4.31%	9.41%	14.12%
35	6.67%	10.00%	2.93%	4.39%	9.60%	14.39%
36	6.80%	10.20%	2.99%	4.48%	9.79%	14.68%
37	6.93%	10.39%	3.04%	4.56%	9.97%	14.95%
38	7.07%	10.60%	3.10%	4.65%	10.17%	15.25%
39	7.20%	10.81%	3.17%	4.75%	10.37%	15.56%

[1] Use these rates for non-integrated members .

Exhibit 3: Member Contribution Rates (continued)

	General Tier 3					
	Basic		COLA		Total	
Entry Age	First \$161	Over \$161[1]	First \$161	Over \$161[1]	First \$161	Over \$161[1]
40	7.35%	11.02%	3.23%	4.84%	10.58%	15.86%
41	7.50%	11.25%	3.29%	4.94%	10.79%	16.19%
42	7.65%	11.48%	3.36%	5.04%	11.01%	16.52%
43	7.82%	11.72%	3.43%	5.15%	11.25%	16.87%
44	7.96%	11.95%	3.50%	5.25%	11.46%	17.20%
45	8.10%	12.16%	3.56%	5.34%	11.66%	17.50%
46	8.25%	12.37%	3.62%	5.43%	11.87%	17.80%
47	8.36%	12.54%	3.67%	5.51%	12.03%	18.05%
48	8.48%	12.72%	3.72%	5.58%	12.20%	18.30%
49	8.60%	12.90%	3.77%	5.66%	12.37%	18.56%
50	8.70%	13.04%	3.82%	5.73%	12.52%	18.77%
51	8.74%	13.12%	3.84%	5.76%	12.58%	18.88%
52	8.67%	13.01%	3.81%	5.71%	12.48%	18.72%
53	8.51%	12.77%	3.74%	5.61%	12.25%	18.38%
54 & Over	8.17%	12.25%	3.59%	5.38%	11.76%	17.63%

Interest: 7.00% per annum
COLA: 2.75%
Mortality: See *Section 4, Exhibit 1*
Salary Increase: Inflation (2.75%) + Across-the-Board Increase (0.50%) + Merit (See *Section 4, Exhibit 1*)
COLA Loading Factor: 43.91%
Additional Cashout: 7.5%

[1] Use these rates for non-integrated members.

Exhibit 3: Member Contribution Rates (continued)

General Tier 4 Members' Contribution Rates Based on the December 31, 2021 Actuarial Valuation (as a % of biweekly eligible payroll)[1]

	General Tier 4		
	Basic	COLA	Total
Entry Age	Eligible Pay	Eligible Pay	Eligible Pay
All Ages	7.51%	1.72%	9.23%

Interest:	7.00% per annum
COLA:	2.00%
Mortality:	See *Section 4, Exhibit 1*
Salary Increase:	Inflation (2.75%) + Across-the-Board Increase (0.50%) + Merit (See *Section 4, Exhibit 1*)
COLA Loading Factor:	22.90%
Additional Cashout:	0.0%

[1] It is our understanding that in the determination of pension benefits under the CalPEPRA formulas, the compensation that can be taken into account for 2022 is equal to $134,974. (For an employer that is not enrolled in Social Security, the maximum amount is 120% of $134,974, or $161,969). (reference: Section 7522.10). These amounts should be adjusted for changes to the Consumer Price Index for All Urban Consumers after 2022. (reference: Section 7522.10(d)).

Exhibit 3: Member Contribution Rates (continued)

Safety Tier 1 Members' Contribution Rates Based on the December 31, 2021 Actuarial Valuation
(as a % of biweekly payroll)

Safety Tier 1								
	Basic		Cost Sharing Contributions		COLA		Total	
Entry Age	First $161	Over $161[1]	First $161	Over $161[1]	First $161	Over $161[1]	First $161	Over $161[1]
16 & Under	5.71%	8.56%	3.00%	3.00%	2.19%	3.28%	10.90%	14.84%
17	5.80%	8.71%	3.00%	3.00%	2.23%	3.34%	11.03%	15.05%
18	5.90%	8.85%	3.00%	3.00%	2.26%	3.39%	11.16%	15.24%
19	6.00%	9.00%	3.00%	3.00%	2.30%	3.45%	11.30%	15.45%
20	6.10%	9.15%	3.00%	3.00%	2.34%	3.51%	11.44%	15.66%
21	6.20%	9.30%	3.00%	3.00%	2.38%	3.57%	11.58%	15.87%
22	6.31%	9.46%	3.00%	3.00%	2.42%	3.63%	11.73%	16.09%
23	6.41%	9.62%	3.00%	3.00%	2.46%	3.69%	11.87%	16.31%
24	6.52%	9.78%	3.00%	3.00%	2.50%	3.75%	12.02%	16.53%
25	6.63%	9.94%	3.00%	3.00%	2.54%	3.81%	12.17%	16.75%
26	6.74%	10.11%	3.00%	3.00%	2.59%	3.88%	12.33%	16.99%
27	6.85%	10.28%	3.00%	3.00%	2.63%	3.94%	12.48%	17.22%
28	6.97%	10.46%	3.00%	3.00%	2.67%	4.01%	12.64%	17.47%
29	7.09%	10.63%	3.00%	3.00%	2.72%	4.08%	12.81%	17.71%
30	7.21%	10.81%	3.00%	3.00%	2.76%	4.14%	12.97%	17.95%
31	7.33%	11.00%	3.00%	3.00%	2.81%	4.22%	13.14%	18.22%
32	7.46%	11.19%	3.00%	3.00%	2.86%	4.29%	13.32%	18.48%
33	7.59%	11.38%	3.00%	3.00%	2.91%	4.36%	13.50%	18.74%
34	7.72%	11.59%	3.00%	3.00%	2.96%	4.44%	13.68%	19.03%
35	7.86%	11.79%	3.00%	3.00%	3.01%	4.52%	13.87%	19.31%
36	8.01%	12.01%	3.00%	3.00%	3.07%	4.60%	14.08%	19.61%
37	8.16%	12.24%	3.00%	3.00%	3.13%	4.69%	14.29%	19.93%
38	8.32%	12.47%	3.00%	3.00%	3.19%	4.78%	14.51%	20.25%
39	8.48%	12.73%	3.00%	3.00%	3.25%	4.88%	14.73%	20.61%

[1] Use these rates for non-integrated members.

Exhibit 3: Member Contribution Rates (continued)

	Safety Tier 1							
	Basic		Cost Sharing Contributions		COLA		Total	
Entry Age	First $161	Over $161[1]	First $161	Over $161[1]	First $161	Over $161[1]	First $161	Over $161[1]
40	8.66%	12.98%	3.00%	3.00%	3.32%	4.98%	14.98%	20.96%
41	8.84%	13.27%	3.00%	3.00%	3.39%	5.08%	15.23%	21.35%
42	9.03%	13.54%	3.00%	3.00%	3.46%	5.19%	15.49%	21.73%
43	9.22%	13.84%	3.00%	3.00%	3.53%	5.30%	15.75%	22.14%
44	9.39%	14.08%	3.00%	3.00%	3.60%	5.40%	15.99%	22.48%
45	9.45%	14.18%	3.00%	3.00%	3.63%	5.44%	16.08%	22.62%
46	9.45%	14.17%	3.00%	3.00%	3.62%	5.43%	16.07%	22.60%
47	9.21%	13.82%	3.00%	3.00%	3.53%	5.30%	15.74%	22.12%
48	8.93%	13.40%	3.00%	3.00%	3.43%	5.14%	15.36%	21.54%
49 & Over	8.46%	12.69%	3.00%	3.00%	3.25%	4.87%	14.71%	20.56%

Interest:	7.00% per annum
COLA:	2.75%
Mortality:	See *Section 4, Exhibit 1*
Salary Increase:	Inflation (2.75%) + Across-the-Board Increase (0.50%) + Merit (See *Section 4, Exhibit 1*)
COLA Loading Factor:	38.33%
Additional Cashout:	7.5%

[1] Use these rates for non-integrated members.

Exhibit 3: Member Contribution Rates (continued)

Safety Tier 2 Members' Contribution Rates Based on the December 31, 2021 Actuarial Valuation (as a % of biweekly payroll)

	Safety Tier 2							
	Basic		Cost Sharing Contributions		COLA		Total	
Entry Age	First $161	Over $161[1]	First $161	Over $161[1]	First $161	Over $161[1]	First $161	Over $161[1]
16 & Under	5.23%	7.85%	3.00%	3.00%	2.31%	3.47%	10.54%	14.32%
17	5.32%	7.98%	3.00%	3.00%	2.35%	3.53%	10.67%	14.51%
18	5.41%	8.12%	3.00%	3.00%	2.39%	3.59%	10.80%	14.71%
19	5.50%	8.25%	3.00%	3.00%	2.43%	3.65%	10.93%	14.90%
20	5.59%	8.39%	3.00%	3.00%	2.47%	3.71%	11.06%	15.10%
21	5.69%	8.53%	3.00%	3.00%	2.51%	3.77%	11.20%	15.30%
22	5.78%	8.67%	3.00%	3.00%	2.56%	3.84%	11.34%	15.51%
23	5.88%	8.82%	3.00%	3.00%	2.60%	3.90%	11.48%	15.72%
24	5.98%	8.97%	3.00%	3.00%	2.65%	3.97%	11.63%	15.94%
25	6.08%	9.12%	3.00%	3.00%	2.69%	4.03%	11.77%	16.15%
26	6.18%	9.27%	3.00%	3.00%	2.73%	4.10%	11.91%	16.37%
27	6.28%	9.43%	3.00%	3.00%	2.78%	4.17%	12.06%	16.60%
28	6.39%	9.59%	3.00%	3.00%	2.83%	4.24%	12.22%	16.83%
29	6.50%	9.75%	3.00%	3.00%	2.87%	4.31%	12.37%	17.06%
30	6.61%	9.91%	3.00%	3.00%	2.93%	4.39%	12.54%	17.30%
31	6.72%	10.08%	3.00%	3.00%	2.97%	4.46%	12.69%	17.54%
32	6.84%	10.26%	3.00%	3.00%	3.03%	4.54%	12.87%	17.80%
33	6.96%	10.44%	3.00%	3.00%	3.08%	4.62%	13.04%	18.06%
34	7.08%	10.62%	3.00%	3.00%	3.13%	4.70%	13.21%	18.32%
35	7.21%	10.81%	3.00%	3.00%	3.19%	4.78%	13.40%	18.59%
36	7.34%	11.01%	3.00%	3.00%	3.25%	4.87%	13.59%	18.88%
37	7.48%	11.22%	3.00%	3.00%	3.31%	4.96%	13.79%	19.18%
38	7.62%	11.43%	3.00%	3.00%	3.37%	5.06%	13.99%	19.49%
39	7.77%	11.66%	3.00%	3.00%	3.44%	5.16%	14.21%	19.82%

[1] Use these rates for non-integrated members.

Exhibit 3: Member Contribution Rates (continued)

Safety Tier 2								
	Basic		Cost Sharing Contributions		COLA		Total	
Entry Age	First $161	Over $161[1]	First $161	Over $161[1]	First $161	Over $161[1]	First $161	Over $161[1]
40	7.92%	11.88%	3.00%	3.00%	3.51%	5.26%	14.43%	20.14%
41	8.07%	12.11%	3.00%	3.00%	3.57%	5.36%	14.64%	20.47%
42	8.22%	12.32%	3.00%	3.00%	3.63%	5.45%	14.85%	20.77%
43	8.32%	12.47%	3.00%	3.00%	3.68%	5.52%	15.00%	20.99%
44	8.35%	12.53%	3.00%	3.00%	3.70%	5.55%	15.05%	21.08%
45	8.28%	12.42%	3.00%	3.00%	3.67%	5.50%	14.95%	20.92%
46	8.13%	12.20%	3.00%	3.00%	3.60%	5.40%	14.73%	20.60%
47	7.94%	11.90%	3.00%	3.00%	3.51%	5.27%	14.45%	20.17%
48	8.19%	12.29%	3.00%	3.00%	3.63%	5.44%	14.82%	20.73%
49 & Over	8.46%	12.69%	3.00%	3.00%	3.75%	5.62%	15.21%	21.31%

Interest:	7.00% per annum
COLA:	2.00%
Mortality:	See *Section 4, Exhibit 1*
Salary Increase:	Inflation (2.75%) + Across-the-Board Increase (0.50%) + Merit (See *Section 4, Exhibit 1*)
COLA Loading Factor:	44.25%
Additional Cashout:	2.5%

[1] Use these rates for non-integrated members.

Exhibit 3: Member Contribution Rates (continued)

Safety Tier 2C Members' Contribution Rates Based on the December 31, 2021 Actuarial Valuation (as a % of biweekly payroll)

Safety Tier 2C						
	Basic		COLA		Total	
Entry Age	First $161	Over $161[1]	First $161	Over $161[1]	First $161	Over $161[1]
16 & Under	5.23%	7.85%	2.07%	3.11%	7.30%	10.96%
17	5.32%	7.98%	2.11%	3.16%	7.43%	11.14%
18	5.41%	8.12%	2.15%	3.22%	7.56%	11.34%
19	5.50%	8.25%	2.18%	3.27%	7.68%	11.52%
20	5.59%	8.39%	2.22%	3.33%	7.81%	11.72%
21	5.69%	8.53%	2.25%	3.38%	7.94%	11.91%
22	5.78%	8.67%	2.29%	3.44%	8.07%	12.11%
23	5.88%	8.82%	2.33%	3.49%	8.21%	12.31%
24	5.98%	8.97%	2.37%	3.55%	8.35%	12.52%
25	6.08%	9.12%	2.41%	3.61%	8.49%	12.73%
26	6.18%	9.27%	2.45%	3.67%	8.63%	12.94%
27	6.28%	9.43%	2.49%	3.74%	8.77%	13.17%
28	6.39%	9.59%	2.53%	3.80%	8.92%	13.39%
29	6.50%	9.75%	2.57%	3.86%	9.07%	13.61%
30	6.61%	9.91%	2.62%	3.93%	9.23%	13.84%
31	6.72%	10.08%	2.67%	4.00%	9.39%	14.08%
32	6.84%	10.26%	2.71%	4.07%	9.55%	14.33%
33	6.96%	10.44%	2.76%	4.14%	9.72%	14.58%
34	7.08%	10.62%	2.81%	4.21%	9.89%	14.83%
35	7.21%	10.81%	2.85%	4.28%	10.06%	15.09%
36	7.34%	11.01%	2.91%	4.36%	10.25%	15.37%
37	7.48%	11.22%	2.97%	4.45%	10.45%	15.67%
38	7.62%	11.43%	3.02%	4.53%	10.64%	15.96%
39	7.77%	11.66%	3.08%	4.62%	10.85%	16.28%

[1] Use these rates for non-integrated members .

Exhibit 3: Member Contribution Rates (continued)

Safety Tier 2C						
	Basic		COLA		Total	
Entry Age	First $161	Over $161[1]	First $161	Over $161[1]	First $161	Over $161[1]
40	7.92%	11.88%	3.14%	4.71%	11.06%	16.59%
41	8.07%	12.11%	3.20%	4.80%	11.27%	16.91%
42	8.22%	12.32%	3.25%	4.88%	11.47%	17.20%
43	8.32%	12.47%	3.29%	4.94%	11.61%	17.41%
44	8.35%	12.53%	3.31%	4.97%	11.66%	17.50%
45	8.28%	12.42%	3.28%	4.92%	11.56%	17.34%
46	8.13%	12.20%	3.23%	4.84%	11.36%	17.04%
47	7.94%	11.90%	3.15%	4.72%	11.09%	16.62%
48	8.19%	12.29%	3.25%	4.87%	11.44%	17.16%
49 & Over	8.46%	12.69%	3.35%	5.03%	11.81%	17.72%

Interest:	7.00% per annum
COLA:	2.00%
Mortality:	See *Section 4, Exhibit 1*
Salary Increase:	Inflation (2.75%) + Across-the-Board Increase (0.50%) + Merit (See *Section 4, Exhibit 1*)
COLA Loading Factor:	39.63%
Additional Cashout:	2.5%

[1] Use these rates for non-integrated members.

Exhibit 3: Member Contribution Rates (continued)

Safety Tier 2D Members' Contribution Rates for Members with Less than 5 Years of Vesting Service Based on the December 31, 2021 Actuarial Valuation (as a % of biweekly payroll)

Safety Tier 2D Members with Less than 5 Years of Vesting Service

	Basic		Cost Sharing Contributions		COLA		Total	
Entry Age	First $161	Over $161[1]	First $161	Over $161[1]	First $161	Over $161[1]	First $161	Over $161[1]
16 & Under	5.23%	7.85%	5.00%	5.00%	2.26%	3.39%	12.49%	16.24%
17	5.32%	7.98%	5.00%	5.00%	2.30%	3.45%	12.62%	16.43%
18	5.41%	8.12%	5.00%	5.00%	2.34%	3.51%	12.75%	16.63%
19	5.50%	8.25%	5.00%	5.00%	2.38%	3.57%	12.88%	16.82%
20	5.59%	8.39%	5.00%	5.00%	2.42%	3.63%	13.01%	17.02%
21	5.69%	8.53%	5.00%	5.00%	2.46%	3.69%	13.15%	17.22%
22	5.78%	8.67%	5.00%	5.00%	2.50%	3.75%	13.28%	17.42%
23	5.88%	8.82%	5.00%	5.00%	2.54%	3.81%	13.42%	17.63%
24	5.98%	8.97%	5.00%	5.00%	2.58%	3.87%	13.56%	17.84%
25	6.08%	9.12%	5.00%	5.00%	2.63%	3.94%	13.71%	18.06%
26	6.18%	9.27%	5.00%	5.00%	2.67%	4.01%	13.85%	18.28%
27	6.28%	9.43%	5.00%	5.00%	2.71%	4.07%	13.99%	18.50%
28	6.39%	9.59%	5.00%	5.00%	2.76%	4.14%	14.15%	18.73%
29	6.50%	9.75%	5.00%	5.00%	2.81%	4.21%	14.31%	18.96%
30	6.61%	9.91%	5.00%	5.00%	2.85%	4.28%	14.46%	19.19%
31	6.72%	10.08%	5.00%	5.00%	2.91%	4.36%	14.63%	19.44%
32	6.84%	10.26%	5.00%	5.00%	2.95%	4.43%	14.79%	19.69%
33	6.96%	10.44%	5.00%	5.00%	3.01%	4.51%	14.97%	19.95%
34	7.08%	10.62%	5.00%	5.00%	3.06%	4.59%	15.14%	20.21%
35	7.21%	10.81%	5.00%	5.00%	3.11%	4.67%	15.32%	20.48%
36	7.34%	11.01%	5.00%	5.00%	3.17%	4.76%	15.51%	20.77%
37	7.48%	11.22%	5.00%	5.00%	3.23%	4.85%	15.71%	21.07%
38	7.62%	11.43%	5.00%	5.00%	3.29%	4.94%	15.91%	21.37%
39	7.77%	11.66%	5.00%	5.00%	3.36%	5.04%	16.13%	21.70%

[1] Use these rates for non-integrated members.

Exhibit 3: Member Contribution Rates (continued)

Safety Tier 2D Members with Less than 5 Years of Vesting Service

	Basic		Cost Sharing Contributions		COLA		Total	
Entry Age	**First $161**	**Over $161[1]**	**First $161**	**Over $161[1]**	**First $161**	**Over $161[1]**	**First $161**	**Over $161[1]**
40	7.92%	11.88%	5.00%	5.00%	3.42%	5.13%	16.34%	22.01%
41	8.07%	12.11%	5.00%	5.00%	3.49%	5.23%	16.56%	22.34%
42	8.22%	12.32%	5.00%	5.00%	3.55%	5.32%	16.77%	22.64%
43	8.32%	12.47%	5.00%	5.00%	3.59%	5.39%	16.91%	22.86%
44	8.35%	12.53%	5.00%	5.00%	3.61%	5.42%	16.96%	22.95%
45	8.28%	12.42%	5.00%	5.00%	3.58%	5.37%	16.86%	22.79%
46	8.13%	12.20%	5.00%	5.00%	3.51%	5.27%	16.64%	22.47%
47	7.94%	11.90%	5.00%	5.00%	3.43%	5.14%	16.37%	22.04%
48	8.19%	12.29%	5.00%	5.00%	3.54%	5.31%	16.73%	22.60%
49 & Over	8.46%	12.69%	5.00%	5.00%	3.66%	5.49%	17.12%	23.18%

Interest:	7.00% per annum
COLA:	2.00%
Mortality:	See *Section 4, Exhibit 1*
Salary Increase:	Inflation (2.75%) + Across-the-Board Increase (0.50%) + Merit (See *Section 4, Exhibit 1*)
COLA Loading Factor:	43.21%
Additional Cashout:	2.5%

[1] Use these rates for non-integrated members.

Exhibit 3: Member Contribution Rates (continued)

Safety Tier 2D Members with 5 or More Years of Vesting Service
Based on the December 31, 2021 Actuarial Valuation (as a % of biweekly payroll)

Safety Tier 2D Members with 5 or More Years of Vesting Service

	Basic		Cost Sharing Contributions		COLA		Total	
Entry Age	First $161	Over $161[1]	First $161	Over $161[1]	First $161	Over $161[1]	First $161	Over $161[1]
16 & Under	5.23%	7.85%	3.00%	3.00%	2.26%	3.39%	10.49%	14.24%
17	5.32%	7.98%	3.00%	3.00%	2.30%	3.45%	10.62%	14.43%
18	5.41%	8.12%	3.00%	3.00%	2.34%	3.51%	10.75%	14.63%
19	5.50%	8.25%	3.00%	3.00%	2.38%	3.57%	10.88%	14.82%
20	5.59%	8.39%	3.00%	3.00%	2.42%	3.63%	11.01%	15.02%
21	5.69%	8.53%	3.00%	3.00%	2.46%	3.69%	11.15%	15.22%
22	5.78%	8.67%	3.00%	3.00%	2.50%	3.75%	11.28%	15.42%
23	5.88%	8.82%	3.00%	3.00%	2.54%	3.81%	11.42%	15.63%
24	5.98%	8.97%	3.00%	3.00%	2.58%	3.87%	11.56%	15.84%
25	6.08%	9.12%	3.00%	3.00%	2.63%	3.94%	11.71%	16.06%
26	6.18%	9.27%	3.00%	3.00%	2.67%	4.01%	11.85%	16.28%
27	6.28%	9.43%	3.00%	3.00%	2.71%	4.07%	11.99%	16.50%
28	6.39%	9.59%	3.00%	3.00%	2.76%	4.14%	12.15%	16.73%
29	6.50%	9.75%	3.00%	3.00%	2.81%	4.21%	12.31%	16.96%
30	6.61%	9.91%	3.00%	3.00%	2.85%	4.28%	12.46%	17.19%
31	6.72%	10.08%	3.00%	3.00%	2.91%	4.36%	12.63%	17.44%
32	6.84%	10.26%	3.00%	3.00%	2.95%	4.43%	12.79%	17.69%
33	6.96%	10.44%	3.00%	3.00%	3.01%	4.51%	12.97%	17.95%
34	7.08%	10.62%	3.00%	3.00%	3.06%	4.59%	13.14%	18.21%
35	7.21%	10.81%	3.00%	3.00%	3.11%	4.67%	13.32%	18.48%
36	7.34%	11.01%	3.00%	3.00%	3.17%	4.76%	13.51%	18.77%
37	7.48%	11.22%	3.00%	3.00%	3.23%	4.85%	13.71%	19.07%
38	7.62%	11.43%	3.00%	3.00%	3.29%	4.94%	13.91%	19.37%
39	7.77%	11.66%	3.00%	3.00%	3.36%	5.04%	14.13%	19.70%

[1] Use these rates for non-integrated members.

Exhibit 3: Member Contribution Rates (continued)

Safety Tier 2D Members with 5 or More Years of Vesting Service

	Basic		Cost Sharing Contributions		COLA		Total	
Entry Age	**First $161**	**Over $161[1]**	**First $161**	**Over $161[1]**	**First $161**	**Over $161[1]**	**First $161**	**Over $161[1]**
40	7.92%	11.88%	3.00%	3.00%	3.42%	5.13%	14.34%	20.01%
41	8.07%	12.11%	3.00%	3.00%	3.49%	5.23%	14.56%	20.34%
42	8.22%	12.32%	3.00%	3.00%	3.55%	5.32%	14.77%	20.64%
43	8.32%	12.47%	3.00%	3.00%	3.59%	5.39%	14.91%	20.86%
44	8.35%	12.53%	3.00%	3.00%	3.61%	5.42%	14.96%	20.95%
45	8.28%	12.42%	3.00%	3.00%	3.58%	5.37%	14.86%	20.79%
46	8.13%	12.20%	3.00%	3.00%	3.51%	5.27%	14.64%	20.47%
47	7.94%	11.90%	3.00%	3.00%	3.43%	5.14%	14.37%	20.04%
48	8.19%	12.29%	3.00%	3.00%	3.54%	5.31%	14.73%	20.60%
49 & Over	8.46%	12.69%	3.00%	3.00%	3.66%	5.49%	15.12%	21.18%

Interest:	7.00% per annum
COLA:	2.00%
Mortality:	See *Section 4, Exhibit 1*
Salary Increase:	Inflation (2.75%) + Across-the-Board Increase (0.50%) + Merit (See *Section 4, Exhibit 1*)
COLA Loading Factor:	43.21%
Additional Cashout:	2.5%

[1] Use these rates for non-integrated members.

Exhibit 3: Member Contribution Rates (continued)

Safety Tier 4 Members' Contribution Rates Based on the December 31, 2021 Actuarial Valuation (as a % of biweekly eligible payroll)[1]

	Safety Tier 4		
	Basic	COLA	Total
Entry Age	Eligible Pay	Eligible Pay	Eligible Pay
All Ages	13.28%	3.73%	17.01%

Interest:	7.00% per annum
COLA:	2.00%
Mortality:	See *Section 4, Exhibit 1*
Salary Increase:	Inflation (2.75%) + Across-the-Board Increase (0.50%) + Merit (See *Section 4, Exhibit 1*)
COLA Loading Factor:	28.09%
Additional Cashout:	0.0%

[1] It is our understanding that in the determination of pension benefits under the CalPEPRA formulas, the compensation that can be taken into account for 2022 is equal to $134,974. (For an employer that is not enrolled in Social Security, the maximum amount is 120% of $134,974, or $161,969). (reference: Section 7522.10). These amounts should be adjusted for changes to the Consumer Price Index for All Urban Consumers after 2022. (reference: Section 7522.10(d)).

Exhibit 4: Projected Employer Contributions by Each Participating Employer

Estimated Employer Contribution Requirement for Each Participating Employer in ACERA ($000s)
Calculated Based on Projected Employer Compensation Used in the December 31, 2021 Actuarial Valuation

Dollar Contribution[1,3] – Based on December 31, 2021 Valuation

	General				Safety					
Employer Name (Code)	**Tier 1**	**Tier 2**	**Tier 3**	**Tier 4**	**Tier 1**	**Tier 2**	**Tier 2C**	**Tier 2D**	**Tier 4**	**Total**
Alameda County (101)	$1,212	$85,131		$65,111	$221	$25,311	$825	$4,281	$14,287	$196,379
Health System (106)	76	33,660		35,204						68,940
Superior Court (632)	95	8,026		4,933						13,054
First 5 (714)		663		1,034						1,697
Housing Authority (103)	849	74		561						1,484
LARPD (104)	61		$281	129						471
Total	**$2,293**	**$127,554**	**$281**	**$106,972**	**$221**	**$25,311**	**$825**	**$4,281**	**$14,287**	**$282,025**

Dollar Contribution[2,3] – Based on December 31, 2020 Valuation

	General				Safety					
Employer Name (Code)	**Tier 1**	**Tier 2**	**Tier 3**	**Tier 4**	**Tier 1**	**Tier 2**	**Tier 2C**	**Tier 2D**	**Tier 4**	**Total**
Alameda County (101)	$1,251	$88,251		$67,319	$451	$73,417	$2,089	$12,151	$44,325	$289,254
Health System (106)	78	34,800		36,304						71,182
Superior Court (632)	98	8,298		5,087						13,483
First 5 (714)		686		1,067						1,753
Housing Authority (103)	871	76		576						1,523
LARPD (104)	237		$822	576						1,635
Total	**$2,535**	**$132,111**	**$822**	**$110,929**	**$451**	**$73,417**	**$2,089**	**$12,151**	**$44,325**	**$378,830**

[1] Includes contributions only for those employers with active member payroll. The UAAL contribution for ACOE, expressed as a level dollar amount, is $101 K when made on April 1, 2023.
[2] Includes contributions only for those employers with active member payroll. The UAAL contribution for ACOE, expressed as a level dollar amount, is $100 K when made on April 1, 2022. Also, contributions for County Safety and LARPD General are before reflecting the contribution credit from the Voluntary County Safety and Voluntary LARPD General UAAL contributions.
[3] Contribution calculated using projected compensation provided on the next page for the December 31, 2021 valuation:

Exhibit 4: Projected Employer Contributions by Each Participating Employer (continued)

	December 31, 2021 Projected Total Compensation ($000s)									
	General				Safety					
Employer Name (Code)	Tier 1	Tier 2	Tier 3	Tier 4	Tier 1	Tier 2	Tier 2C	Tier 2D	Tier 4	Total
Alameda County (101)	$4,898	$366,945		$282,969	$507	$106,171	$2,828	$17,401	$66,634	$848,353
Health System (106)	295	139,258		146,804						286,357
Superior Court (632)	371	33,206		20,570						54,147
First 5 (714)		2,744		4,314						7,058
Housing Authority (103)	2,748	251		1,923						4,922
LARPD (104)	552		$1,712	1,398						3,662
Total	**$8,864**	**$542,404**	**$1,712**	**$457,978**	**$507**	**$106,171**	**$2,828**	**$17,401**	**$66,634**	**$1,204,499**

Exhibit 5: Schedule of Outstanding Balances of Prior Implicit Retiree Health Benefit Subsidy Transfers

For Year(s)	Initial Years	Initial Amount ($ in '000s)[1]	Outstanding Balance ($ in '000s)	Years Remaining	Annual Payment ($ in '000s)[2]
Prior to 2013	[3]	[3]	$31,339	11	$3,494
2013	20	$6,993	6,156	12	640
2014	20	5,215	4,736	13	462
2015	20	5,325	4,944	14	455
2016	20	8,865	8,445	15	738
2017	20	5,830	5,524	16	460
2018	20	6,940	6,761	17	538
2019	20	6,511	6,423	18	491
2020	20	7,549	7,476	19	550
2021	20	5,653	5,653	20	401
Total			**$87,457**		**$8,229**

[1] For years 2013 and later, these amounts are estimates provided by ACERA.
[2] Level percentage of payroll.
[3] Various initial years and amounts prior to 2013.

Exhibit 6: Allocation of the Valuation Value of Assets as of December 31, 2021

The allocation of the Valuation Value of Assets is determined based on a roll-forward of the prior year allocation using employer contributions, member contributions, benefit payments, and calculated interest credits as provided by ACERA. The allocation is determined separately for each 6-month period, consistent with ACERA's interest crediting cycle.

	(1) General (Excluding LARPD and Office of Education)	(2) General (Office of Education)	(3) General (LARPD)	(4) Safety	(5) LARPD General UAAL Advance Reserve[1]	(6) County Safety UAAL Advance Reserve[1]	(7) Total
A. Preliminary Valuation Value of Assets at Beginning-of-Year							
Basic Only	$4,157,742,589	$2,317,366	$31,563,253	$1,235,441,477	$0	$0	$5,427,064,685
COLA Only	1,779,233,041	1,296,168	17,089,008	752,008,630	0	0	2,549,626,847
Total	$5,936,975,630	$3,613,534	$48,652,261	$1,987,450,107	$0	$0	$7,976,691,532 [2]
B. Estimated SRBR Transfer							
Basic Only	$5,874,747	$0	$0	$1,673,936	$0	$0	$7,548,683 [2]
C. Adjustment for the difference between the Actual SRBR Transfer and the Estimated SRBR Transfer used in Prior Valuation							
Basic Only	$(50,020)	$0	$0	$(14,252)	$0	$0	$(64,272)
D. Employer Contributions (January 1 – June 30)							
Basic Only	$82,661,771	$89,000	$484,585	$43,471,615	$0	$0	$126,706,971
COLA Only	22,785,422	0	209,767	12,334,347	0	0	35,329,536
Total	$105,447,193	$89,000	$694,351	$55,805,962	$0	$0	$162,036,507
E. Employee Contributions (January 1 – June 30)							
Basic Only	$32,210,125	$0	$170,593	$10,850,223	$0	$0	$43,230,941
COLA Only	7,505,905	0	53,453	3,203,280	0	0	10,762,639
Total	$39,716,031	$0	$224,046	$14,053,503	$0	$0	$53,993,580
F. Benefit Payments (January 1 – June 30)							
Basic Only	$148,724,075	$137,595	$1,468,327	$54,381,656	$0	$0	$204,711,652
COLA Only	48,213,969	65,423	348,085	19,798,059	0	0	68,425,536
Total	$196,938,043	$203,019	$1,816,412	$74,179,715	$0	$0	$273,137,188
G. Return on Valuation Value of Assets: Total Column (G) / Total Column (A) x Cost Group Column (A)							
Basic Only	$190,380,405	$106,111	$1,445,261	$56,570,084	$0	$0	$248,501,862
COLA Only	81,434,331	59,325	782,153	34,418,942	0	0	116,694,751
Total	$271,814,736	$165,435	$2,227,414	$90,989,027	$0	$0	$365,196,613
H. Manual Adjustments (including adjustment to align with total Basic and COLA reserves maintained by ACERA)							
Basic Only	$36,935	$22	$303	$12,364	$0	$0	$49,625
COLA Only	(36,935)	(22)	(303)	(12,364)	0	0	(49,625)
I. Preliminary Valuation Value of Assets at June 30 Provided by ACERA: (A) + (B) + (C) + (D) + (E) – (F) + (G) + (H)							
Basic Only	$4,320,132,479	$2,374,904	$32,195,668	$1,293,623,791	$0	$0	$5,648,326,842
COLA Only	1,842,707,795	1,290,047	17,785,993	782,154,776	0	0	2,643,938,611
Total	$6,162,840,274	$3,664,951	$49,981,661	$2,075,778,567	$0	$0	$8,292,265,453
J. UAAL Advance Reserve[3]							
Basic Only	$0	$0	$0	$0	$8,991,354	$609,381,564	$618,372,918
COLA Only	0	0	0	0	3,619,896	190,618,436	194,238,332
Total	$0	$0	$0	$0	$12,611,250	$800,000,000	$812,611,250
K. Valuation Value of Assets at June 30: (I) + (J)							
Basic Only	$4,320,132,479	$2,374,904	$32,195,668	$1,293,623,791	$8,991,354	$609,381,564	$6,266,699,760
COLA Only	1,842,707,795	1,290,047	17,785,993	782,154,776	3,619,896	190,618,436	2,838,176,943
Total	$6,162,840,274	$3,664,951	$49,981,661	$2,075,778,567	$12,611,250	$800,000,000	$9,104,876,703

Exhibit 6: Allocation of the Valuation Value of Assets as of December 31, 2021 (continued)

	(1) General (Excluding LARPD and Office of Education)	(2) General (Office of Education)	(3) General (LARPD)	(4) Safety	(5) LARPD General UAAL Advance Reserve	(6) County Safety UAAL Advance Reserve	(7) Total
L. Employer Contributions (July 1 – December 31)							
Basic Only	$84,297,318	$0	$283,372	$26,288,031	$0	$0	$110,868,720
COLA Only	23,654,716	0	103,356	7,301,291	0	0	31,059,363
Total	$107,952,034	$0	$386,728	$33,589,322	$0	$0	$141,928,083
M. Employee Contributions (July 1 – December 31)							
Basic Only	$33,166,211	$0	$165,870	$12,173,669	$0	$0	$45,505,750
COLA Only	7,806,158	0	58,470	3,727,305	0	0	11,591,934
Total	$40,972,369	$0	$224,340	$15,900,975	$0	$0	$57,097,684
N. Benefit Payments (July 1 – December 31)							
Basic Only	$154,176,777	$137,432	$1,342,223	$55,454,128	$0	$0	$211,110,560
COLA Only	49,964,678	68,246	373,689	20,425,849	0	0	70,832,462
Total	$204,141,455	$205,678	$1,715,912	$75,879,977	$0	$0	$281,943,022
O. Transfer from UAAL Advance Reserve to Employer Advance Reserve and COLA Reserve							
Basic Only	$0	$0	$246,325	$21,378,123	$(246,325)	$(21,378,123)	$0
COLA Only	0	0	99,170	6,687,212	(99,170)	(6,687,212)	0
Total	$0	$0	$345,495	$28,065,335	$(345,495)	$(28,065,335)	$0
P. Return on Valuation Value of Assets:[4]							
Basic Only	$205,316,301	$112,868	$1,530,114	$61,480,071	$341,611	$23,152,376	$291,933,341
COLA Only	87,943,185	61,567	848,836	37,328,318	137,531	7,242,211	133,561,648
Total	$293,259,485	$174,436	$2,378,950	$98,808,389	$479,142	$30,394,587	$425,494,989
Q. Manual Adjustments (including adjustment to align with total Basic and COLA reserves maintained by ACERA)							
Basic Only	$9,258	$6	$75	$3,118	$0	$0	$12,457
COLA Only	(9,258)	(6)	(75)	(3,118)	0	0	(12,457)
R. Preliminary Valuation Value of Assets at June 30 Provided by ACERA: (K) + (L) + (M) – (N) + (O) + (P) + (Q)							
Basic Only	$4,488,744,790	$2,350,346	$33,079,201	$1,359,492,675	$9,086,640	$611,155,817	$6,503,909,469
COLA Only	1,912,137,918	1,283,363	18,522,061	816,769,935	3,658,257	191,173,435	2,943,544,969
Total	$6,400,882,708	$3,633,709	$51,601,262	$2,176,262,610	$12,744,897	$802,329,252	$9,447,454,438
S. Estimated SRBR Transfer and other Asset Transfer							
Basic Only	$4,363,041	$0	$0	$1,289,572	$0	$0	$5,652,613
COLA Only	0	0	0	0	0	0	0
Total	$4,363,041	$0	$0	$1,289,572	$0	$0	$5,652,613
T. Valuation Value of Assets at June 30: (R) + (S)							
Basic Only	**$4,493,107,831**	**$2,350,346**	**$33,079,201**	**$1,360,782,247**	**$9,086,640**	**$611,155,817**	**$6,509,562,082**
COLA Only	**1,912,137,918**	**1,283,363**	**18,522,061**	**816,769,935**	**3,658,257**	**191,173,435**	**2,943,544,969**
Total	**$6,405,245,749**	**$3,633,709**	**$51,601,262**	**$2,177,552,182**	**$12,744,897**	**$802,329,252**	**$9,453,107,051**

Results may be slightly off due to rounding.

Exhibit 6: Allocation of the Valuation Value of Assets as of December 31, 2021 (continued)

Notes for Exhibit 6

1. The County made voluntary County Safety contributions of $800 million on around June 29, 2021 to reduce their Safety UAAL and associated contribution rates. The Livermore Area Recreation and Park District (LARPD) also made voluntary LARPD General contributions of $12.611 million on around June 29, 2021 to reduce their General UAAL and associated contribution rates. ACERA has set up the County Safety UAAL Advance Reserve and the LARPD General UAAL Advance Reserve to track these voluntary UAAL contributions. Based on the Board's funding policy and interest crediting policy, these two UAAL Advance Reserves are subject to a separate 5-year asset smoothing schedule that excludes the allocation of any deferred investment gains or losses accumulated up to June 30, 2021 for interest crediting purposes.
2. The final Valuation Value of Assets as of December 31, 2020 is $7,984,240,215 *((A) + (B))*.
3. For purposes of determining the Basic and COLA voluntary UAAL contribution credit, we tracked internally the UAAL Advance Reserve by Basic and COLA based on the proportion of Basic and COLA voluntary contribution credits provided in our June 4, 2021 letter for County Safety and in our June 10, 2021 letter for LARPD General. ACERA continues to maintain the UAAL Advance Reserves with no Basic and COLA split.
4. The return for LARPD General UAAL Advance Reserve and County Safety UAAL Advance Reserve are determined based on a separate 5-year asset smoothing schedule that excludes any deferred investment gains or losses accumulated up to June 30, 2021. The total return minus the returns for the UAAL Advance Reserve is allocated to the cost groups based on the cost group's Valuation Value of Assets at June 30 using the following formula:
   (Column (7) of (P) - Column (5) of (P) - Column (6) of (P))/(Column (7) of (K) - Column (5) of (K) - Column (6) of (K)) x Cost Group Column (K)

Exhibit 7: Reconciliation of Voluntary UAAL Contribution Rate Credit as of December 31, 2021

The County made voluntary County Safety UAAL contributions of $800 million on around June 29, 2021 to reduce their UAAL and associated UAAL contribution rates. These contributions are tracked under the County – Safety UAAL Advance Reserve based on the amount of contribution credit used and the interest credited to that reserve in accordance with the Board's Interest Crediting Policy.[1] The outstanding balance of this reserve is amortized over the remaining 12.5 years (as of December 31, 2021) as a contribution credit.

Reconciliation from July 1, 2021 to December 31, 2021
Safety Only

	Contribution Rate
County – Safety Voluntary UAAL contribution credit as of July 1, 2021	**42.85%**
1 Effect of investment return greater than expected after "smoothing"	0.13%
2 Effect of less actual contribution credit required or applied than expected[2]	0.64%
3 Effect of amortizing the UAAL Advance Reserve balance over a larger than expected projected payroll	-1.73%
Total change	-0.96%
County – Safety Voluntary UAAL contribution credit as of December 31, 2021	**41.89%**

[1] Details may be found in *Section 4, Exhibit 6*.
[2] Includes impact of scheduled lag in applying the contribution rate credit from the voluntary UAAL contributions and difference due to actual payroll during 2021 different than expected.

Exhibit 7: Reconciliation of Voluntary UAAL Contribution Rate Credit as of December 31, 2021 (continued)

LARPD made voluntary LARPD General UAAL contributions of $12.611 million on around June 29, 2021 to reduce their UAAL and associated UAAL contribution rates. These contributions are tracked under the LARPD – General UAAL Advance Reserve based on the amount of contribution credit used and the interest credited to that reserve in accordance with the Board's Interest Crediting Policy.[1] The outstanding balance of this reserve is amortized over the remaining 15.5 years (as of December 31, 2021) as a contribution credit.

Reconciliation from July 1, 2021 to December 31, 2021
LARPD Only

	Contribution Rate
LARPD – General Voluntary UAAL contribution credit as of July 1, 2021	**28.08%**
1 Effect of investment return greater than expected after "smoothing"	0.08%
2 Effect of less actual contribution credit required or applied than expected[2]	0.44%
3 Effect of amortizing the UAAL Advance Reserve balance over a smaller than expected projected payroll	1.19%
4 Effect of floor on net LARPD rate of no less than Normal Cost in compliance with CalPEPRA[3]	-0.60%
Total change	1.11%
LARPD – General Voluntary UAAL contribution credit as of December 31, 2021	**29.19%**

[1] Details may be found in *Section 4, Exhibit 6*.
[2] Includes impact of scheduled lag in applying the contribution rate credit from the voluntary UAAL contributions and difference due to actual payroll during 2021 different than expected.
[3] In compliance with CalPEPRA, the net LARPD contribution rate cannot be less than the Normal Cost. In order to do that, the voluntary UAAL contribution credit has been reduced to not exceed the UAAL rate before the credit.