Alameda County Employees' Retirement Association
BOARD OF RETIREMENT

ACTUARIAL COMMITTEE/BOARD MEETING NOTICE and AGENDA

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 20, 2023
11:00 am

LOCATION AND TELECONFERENCE	COMMITTEE MEMBERS	
ACERA **C.G. "BUD" QUIST BOARD ROOM** **475 14TH STREET, 10TH FLOOR** **OAKLAND, CALIFORNIA 94612-1900** **MAIN LINE: 510.628.3000** **FAX: 510.268.9574** **The public can observe the meeting and offer public comment by using the below Webinar ID and Passcode after clicking on the below link or calling the below call-in number.** 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**
	ROSS CLIPPINGER	**ELECTED SAFETY**
	GEORGE WOOD	**ELECTED GENERAL**

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.

Board and Committee agendas and minutes and all documents distributed to the Board or a Committee in connection with a public meeting (unless exempt from disclosure) are posted online at www.acera.org and also may be inspected at 475 14th Street, 10th Floor, Oakland, CA 94612-1900.

Public comments are limited to four (4) minutes per person in total. The order of the items on the agenda is subject to change without notice.

Note regarding accommodations: If you require a reasonable modification or accommodation for a disability, please contact ACERA between 9:00 a.m. and 5:00 p.m. at least 72 hours prior to the meeting at accommodation@acera.org or at 510-628-3000.

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. Presentation and discussion of the Actuarial Valuation and Review as of December 31, 2022

   -Lisa Johnson

   -Andy Yeung, Segal

   -Eva Yum, Segal

2. Cavanaugh MacDonald Consulting, LLC has been hired to audit Segal's actuarial work

   -Lisa Johnson

Trustee Input

Future Discussion Items

May

- Discussion and possible motion to adopt the Actuarial Valuation as of December 31, 2022 (Segal)

June

- Segal presentation of the deterministic and stochastic projections as part of the Risk Assessment Report based on the Actuarial Valuation and Review as of December 31, 2022

Establishment of Next Meeting Date

May 18, 2023

Adjournment

ACERA

MEMORANDUM TO THE ACTUARIAL COMMITTEE

DATE: April 20, 2023

TO: Members of the Actuarial Committee

FROM: Lisa Johnson, Assistant Chief Executive Officer

SUBJECT: Draft Actuarial Valuation and Review as of December 31, 2022

Executive Summary

The draft Actuarial Valuation and Review as of December 31, 2022, is attached for review and discussion. The funded ratio for the December 31, 2022, on the Valuation Value of Assets (VVA) basis, increased from 86.5% to 86.9%. The increase was the result of contributions made to pay down the Unfunded Actuarial Accrued Liability (UAAL) offset somewhat by the loss due to higher than expected cost-of-living adjustment for continuing retirees, higher than expected salary increases for active members, the loss on the VVA from the recognition of past and current years' investment losses after smoothing, and the loss due to actual contributions lower than expected.

A summary of the UAAL and the aggregate employer and employee contribution rates from the 2022 funding valuation report are provided here for quick reference.

The UAAL increased from $1,476.8 million in 2021 to $1,492.1 million in 2022. This increase in the UAAL was primarily due to the following factors:

a) Higher than expected cost-of-living adjustments for continuing retirees;
b) Higher than expected salary increases for active members;
c) Lower than expected return on investments (after smoothing); and
d) Loss due to actual contributions lower than expected, offset somewhat by the expected decrease due to contributions made to pay down the UAAL.

The aggregate employer contribution rate[1] has increased from 23.39% of payroll to 23.74% of payroll. This change was primarily due to:

a) Higher than expected cost-of-living adjustment for continuing retirees;
b) Higher than expected salary increases for active members;
c) Lower than expected return on investments (after smoothing); and
d) Offset somewhat by the effect of amortizing the prior year's UAAL over a larger than expected total projected payroll.

The aggregate member contribution rate increased from 10.03% of payroll to 10.08% of payroll, mainly due to the changes in member demographics.

Next Step: Prior to bringing the finalized 2022 valuation report back to the actuarial committee at the May 18, 2023 meeting, staff will hold a participating employers meeting on April 26, 2023, to review and discuss the results of the study with employer representatives.

[1] For employers with active member payroll.

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, 2022, Segal will provide the results of its risk report to the Actuarial Committee on June 15, 2023.

Return Assumption Impact

Similar to what Segal disclosed in ACERA's December 31, 2021, 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 $11.42 billion to $12.33 billion (for a difference of $0.91billion) 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, 2022

Alameda County Employees' Retirement Association

Actuarial Valuation and Review

As of December 31, 2022

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 10, 2023

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, 2022. It summarizes the actuarial data used in the valuation, analyzes the preceding year's experience, and establishes the funding requirements for fiscal year 2023-2024.

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, 2022. 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, 2022, provided by the Retirement Association;[1]
- The assets of the Plan as of December 31, 2022, provided by the Retirement Association;
- Economic assumptions regarding future salary increases and investment earnings adopted by the Board for the December 31, 2022 valuation;
- Other actuarial assumptions regarding employee terminations, retirement, death, etc. adopted by the Board for the December 31, 2022 valuation and
- The funding policy adopted by the Board of Retirement.

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.

[1] It should be noted that consistent with last year's valuation, 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

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, 2023 through June 30, 2024.

[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, 2021 valuation, the ratio of the Valuation Value of Assets (VVA) to Actuarial Accrued Liabilities (AAL) was 86.5%. In this December 31, 2022 valuation, the funded ratio has increased to 86.9%. The funded ratio if measured on a Market Value of Assets (MVA) basis decreased from 92.8% as of December 31, 2021 to 80.7% as of December 31, 2022. The increase in the funded ratio measured on a VVA basis was the result of the expected increase due to contributions made to pay down the unfunded liability offset somewhat by the loss due to higher than expected cost-of-living adjustments for continuing retirees, higher than expected salary increases for active members, the loss on the Valuation Value of Assets from the recognition of past and current years' investment losses after smoothing, and the loss due to actual contributions less than expected[1]. 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, 2021 was $1,476.8 million. In this year's valuation, the UAAL has increased to $1,492.1 million. The increase in the UAAL was primarily due to higher than expected cost-of-living adjustments for continuing retirees, higher than expected salary increases for active members, lower than expected return on investments after smoothing, and the loss due to actual contributions less than expected, offset somewhat by the expected decrease due to contributions made to pay down the UAAL. 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. As reported in the December 31, 2021 valuation, 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 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 $829,000 on a VVA basis this year compared to a surplus of $248,000 on a VVA basis last year. In order to calculate the proper offset available to LARPD from the LARPD General UAAL Advance Reserve, we have amortized the new LARPD experience gain layer over 14.5 years so that it will have the same amortization period as the LARPD General UAAL Advance Reserve (14.5 years remaining as of December 31, 2022).

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

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5. The average employer rate[1] calculated in this valuation has increased from 23.39% of payroll to 23.74% of payroll. This change was primarily due to higher than expected cost-of-living adjustments for continuing retirees, higher than expected salary increases for active members, and the lower than expected return on investments after smoothing, offset somewhat by the effect of amortizing the prior year's UAAL over a larger than expected total projected payroll. 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 Alameda Health System (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 2022 and in the prior years. The $8.0 million transfer (an estimated amount provided by ACERA for the implicit retiree health benefit subsidy paid by the County for 2022) and the unused credit from prior years' transfers (the balance of prior transfers was about $84.9 million[2] as of December 31, 2022) have been recognized over separate 20-year periods.

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6. The average member rate calculated in this valuation increased from 10.03% of payroll as of December 31, 2021 to 10.08% of payroll as of December 31, 2022 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, 2022. 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 <u>loss</u> as of December 31, 2022 is $794.1 million (in the previous valuation, this amount was a $1,132.9 million net <u>gain</u>). This net investment loss 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 gains that may occur after December 31, 2022. 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 losses on the Actuarial Value of Assets 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 increase in the next few years.

   The net deferred loss of $794.1 million represents 7.7% of the Market Value of Assets as of December 31, 2022.[3] Unless offset by future investment gains or other favorable experience, the recognition of the $794.1 million deferred market loss is expected

[1] For employers with active member payroll.
[2] See *Section 4, Exhibit 5* for a schedule of the outstanding balances of the unused credit.
[3] Of the $794.1 million in net deferred loss, about $108 million would be allocated to the LARPD General UAAL Advance Reserve and the County Safety UAAL Advance Reserve if the net deferred loss were recognized immediately in the valuation value of assets.

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 loss that is commensurate with the size of the valuation reserves were recognized immediately in the valuation value of assets, the funded percentage would decrease from 86.9% to 80.7%.

b. If a proportion of the net deferred loss 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 increase from 23.74% to about 28.1% of payroll.

8. Similar to what we disclosed in our December 31, 2021 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 $11.42 billion to $12.33 billion (for a difference of $0.91 billion) and would increase the employer's UAAL contribution rate by about 5% - 6% of payroll.[2]

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9. The Actuarial Standard of Practice No. 51 (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.

[1] The Market Value of Assets as of December 31, 2022 equals the Valuation Value of Assets plus the deferred market losses.
[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.

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 2023.

10. Segal strongly recommends an actuarial funding method that targets 100% funding of the actuarial accrued liability. Generally, this implies contributions 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 loss from investment and contribution experience is $5.5 million, or 0.05% of actuarial accrued liability. The net experience loss from sources other than investment and contribution experience is $58.7 million, or 0.5% 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 -11.15% for the 2022 plan year. The return on the valuation value of assets was 6.94% for the same period due to the recognition of prior years' investment gains and losses.[1] This resulted in an actuarial loss when measured against the assumed rate of return of 7.00% for the 2022 plan year. This actuarial investment loss increased the average employer contribution rate by 0.03% 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 current 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, 2022 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

[1] Because the 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, the return on a VVA basis for the UAAL Advance Reserves are lower than that for the other valuation reserves. As a result, there is an actuarial gain from investment (after smoothing) for the General (non-LARPD) and ACOE cost groups and an actuarial loss from investment (after smoothing) for the LARPD and Safety cost groups. The details have been included in *Section 2, Subsection E*.

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, 2022 is based on financial data as of that date and demographic data as of November 30, 2022. 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, 2022. 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, 2022 due to COVID-19. Segal is available to prepare projections of potential outcomes of market conditions and other demographic experience upon request.

Summary of Key Valuation Results

		December 31, 2022		December 31, 2021	
		Total Rate	Estimated Annual Dollar Amount[1] ($ in '000s)	Total Rate	Estimated Annual Dollar Amount[1] ($ in '000s)
Employer Contribution Rates:[2]	**County Only**				
	• General Tier 1	24.77%	$967	24.75%	$966
	• General Tier 2	23.19	82,165	23.20	82,199
	• General Tier 4	23.10	72,737	23.01	72,453
	• Safety Tier 1	42.29	163	43.64	168
	• Safety Tier 2	25.53	25,672	23.84	23,972
	• Safety Tier 2C	30.50	873	29.18	835
	• Safety Tier 2D	26.37	4,861	24.60	4,534
	• Safety Tier 4	23.55	19,515	21.44	17,766
	County Combined	23.57	206,953	23.11	202,893
	AHS, Court & First 5 Only				
	• General Tier 1	25.80	145	25.72	145
	• General Tier 2	24.22	41,211	24.17	41,127
	• General Tier 4	24.13	48,335	23.98	48,035
	Housing Only				
	• General Tier 1	30.95	867	30.93	866
	• General Tier 2	29.37	113	29.38	113
	• General Tier 4	29.28	599	29.19	598
	LARPD Only[3]				
	• General Tier 1	10.97	63	10.97	63
	• General Tier 3	17.15	260	16.41	249
	• General Tier 4	9.30	138	9.23	137
	All Categories Combined	**23.74**	**298,684**	**23.39**	**294,226**

1 Based on December 31, 2022 projected annual compensation.
2 For employers with active member payroll. The UAAL contribution for ACOE, expressed as a level dollar amount, is $110 K when made on April 1, 2024. The UAAL contribution for ACOE determined in the December 31, 2021 valuation was $101 K when made on April 1, 2023.
3 For LARPD, the combined rate is 12.88% as of December 31, 2022 and 12.54% as of December 31, 2021.

Section 1: Actuarial Valuation Summary

		December 31, 2022		December 31, 2021	
		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	10.17%	$798	10.17%	$798
	• General Tier 2	8.14	42,723	8.14	42,723
	• General Tier 3	15.50	235	15.57	236
	• General Tier 4	9.30	48,241	9.23	47,878
	• Safety Tier 1	3.00	12	3.00	12
	• Safety Tier 2	16.88	16,973	16.85	16,943
	• Safety Tier 2C	14.44	413	14.45	413
	• Safety Tier 2D	16.82	3,100	16.80	3,097
	• Safety Tier 4	17.28	14,319	17.01	14,095
	All Categories Combined	**10.08**	**126,814**	**10.03**	**126,195**

[1] Based on December 31, 2022 projected annual compensation.
[2] Average rates have been recalculated by applying the individual entry age based member rates determined in the December 31, 2021 valuation to the Association membership as of December 31, 2022.

Summary of Key Valuation Results (continued)

		December 31, 2022 ($ in '000s)	December 31, 2021 ($ in '000s)
Actuarial Accrued Liability as of December 31:	• Retired members and beneficiaries	$7,058,378	$6,726,348
	• Inactive vested members	355,737	325,244
	• Active members	4,001,005	3,878,343
	• Total Actuarial Accrued Liability[1]	$11,415,120	$10,929,935
	• Normal Cost for plan year beginning December 31	$263,681	$251,362
Assets as of December 31:	• Valuation Value of Assets (VVA)[2]	$9,923,019	$9,453,108
	• Market Value of Assets (MVA)[3]	9,206,534	10,139,166
	• Valuation Value of Assets as a percentage of Market Value of Assets	107.8%	93.2%
Funded status as of December 31:	• Unfunded Actuarial Accrued Liability on Valuation Value of Assets basis	$1,492,101	$1,476,827
	• Funded percentage on VVA basis	86.9%	86.5%
	• Unfunded Actuarial Accrued Liability on Market Value of Assets basis	$2,208,586	$790,769
	• Funded percentage on MVA basis	80.7%	92.8%
	• 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, 2022 equals the Valuation Value of Assets plus the deferred market losses. 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.
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, 2022	December 31, 2021	Change From Prior Year
Demographic data as of December 31:	**Active Members:**			
	• Number of members	11,346	11,326	0.2%
	• Average age	47.0	47.1	-0.1
	• Average service	11.1	11.3	-0.2
	• Total projected compensation	$1,258,029,000[1]	$1,204,499,000	4.4%
	• Average projected compensation	$110,879	$106,348	4.3%
	Retired Members and Beneficiaries:			
	• Number of members:			
	– Service retired	8,479	8,264	2.6%
	– Disability retired	1,006	977	3.0%
	– Beneficiaries	1,313	1,295	1.4%
	– Total	10,798	10,536	2.5%
	• Average age	72.4	72.3	0.1
	• Average monthly benefit[2]	$4,485	$4,359	2.9%
	Inactive Vested Members:			
	• Number of members[3]	3,564	3,265	9.2%
	• Average Age	47.1	47.2	-0.1
	Total Members:	25,708	25,127	2.3%

[1] Total payroll shown above may not total exactly to the amount shown elsewhere in this report when rounded to thousands of dollars due to separate rounding by tiers used elsewhere.

[2] Excludes monthly benefits payable from the SRBR.

[3] 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 provisions	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 information	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.
Financial information	Part of the cost of a plan will be paid from existing assets — the balance will need to come from future contributions and investment income. The valuation is based on the asset values as of the valuation date, typically reported by the Association. A snapshot as of a single date may not be an appropriate value for determining a single year's contribution requirement, especially in volatile markets. Plan sponsors often use an "actuarial value of assets" that differs from market value to gradually reflect year-to-year changes in the market value of assets in determining the contribution requirements.
Actuarial assumptions	In preparing an actuarial valuation, Segal starts by developing a forecast of the benefits to be paid to existing plan participants for the rest of their lives and the lives of their beneficiaries. This requires actuarial assumptions as to the probability of death, disability, withdrawal, and retirement of participants in each year, as well as forecasts of the plan's benefits for each of those events. In addition, the benefits forecasted for each of those events in each future year reflect actuarial assumptions as to salary increases and cost-of-living adjustments. The forecasted benefits are then discounted to a present value, typically based on an estimate of the rate of return that will be achieved on the plan's assets. All of these factors are uncertain and unknowable. Thus, there will be a range of reasonable assumptions, and the results may vary materially based on which assumptions are selected within that range. That is, there is no right answer (except with hindsight). It is important for any user of an actuarial valuation to understand and accept this constraint. The actuarial model may use approximations and estimates that will have an immaterial impact on our results. In addition, the actuarial assumptions may change over time, and while this can have a significant impact on the reported results, it does not mean that the previous assumptions or results were unreasonable or wrong.

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.

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 at a specific date — it is not a prediction of a plan's future financial condition. Accordingly, Segal did not perform an analysis of the potential range of financial measurements, except where otherwise noted.
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.
While Segal maintains extensive quality assurance procedures, an actuarial valuation involves complex computer models and numerous inputs. In the event that an inaccuracy is discovered after presentation of Segal's valuation, Segal may revise that valuation or make an appropriate adjustment in the next valuation.
Segal's report shall be deemed to be final and accepted by the Association upon delivery and review. The Association should notify Segal immediately of any questions or concerns about the final content.

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

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: 2013 – 2022

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
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
2022	11,346	3,564	10,798	14,362	1.27	0.95

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

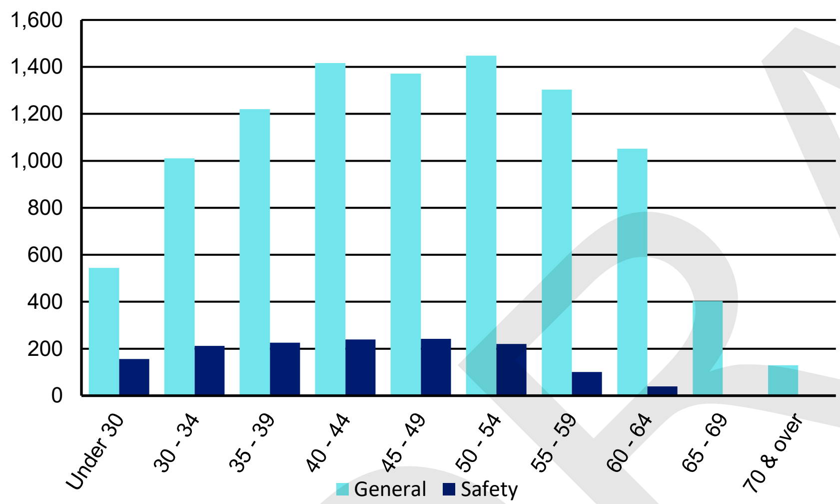
Active Members

Plan costs are affected by the age, years of service and compensation of active members. In this year's valuation, there were 11,346 active members with an average age of 47.0, average years of service of 11.1 and average compensation of $110,879. The 11,326 active members in the prior valuation had an average age of 47.1, average service of 11.3 and average compensation of $106,348.

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

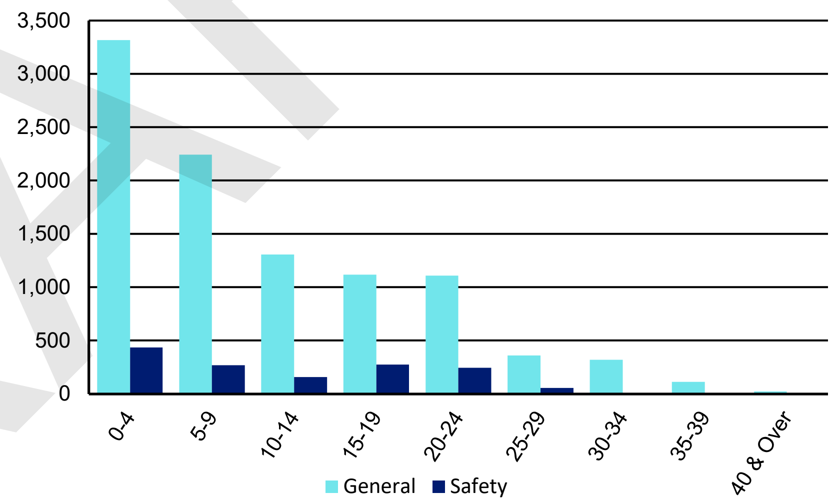
Distribution of Active Members as of December 31, 2022

Actives by Age



Average age	47.0
Prior year average age	47.1
Difference	-0.1

Actives by Years of Service



Average years of service	11.1
Prior year average years of service	11.3
Difference	-0.2

Inactive Members

In this year's valuation, there were 3,564 members with a vested right to a deferred or immediate vested benefit or entitled to a refund of their member contributions, versus 3,265 members in the prior valuation.

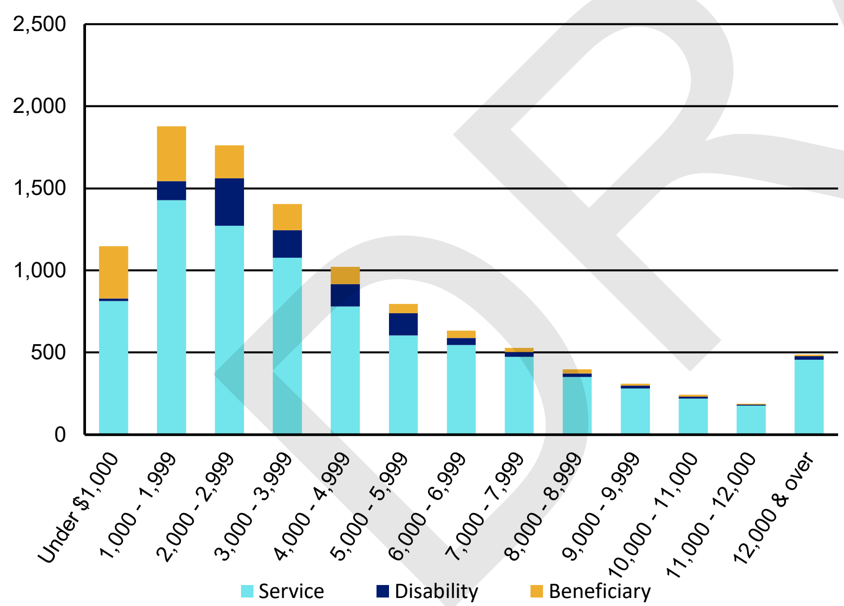
Retired Members and Beneficiaries

As of December 31, 2022, 9,485 retired members and 1,313 beneficiaries were receiving total monthly benefits of $48,433,195. For comparison, in the previous valuation, there were 9,241 retired members and 1,295 beneficiaries receiving monthly benefits of $45,924,823. These monthly benefits exclude supplemental COLA benefits payable from the Supplemental Retirees Benefit Reserve (SRBR).

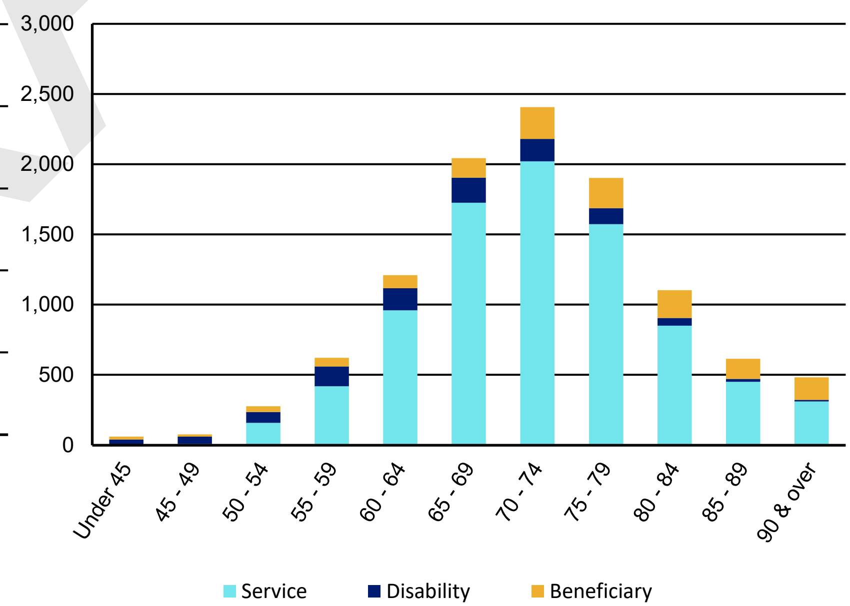
As of December 31, 2022, the average monthly benefit for retired members is $4,718, compared to $4,591 in the previous valuation. The average age for retired members is 71.9 in the current valuation, compared with 71.8 in the prior valuation. For beneficiaries as of December 31, 2022, the average monthly benefit is $2,801, compared to $2,703 in the previous valuation. The average age for beneficiaries is 75.7 in the current valuation, compared with 75.7 in the prior valuation.

Distribution of Retired Members and Beneficiaries as of December 31, 2022

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: 2013 – 2022

	Active Members			Retired Members and Beneficiaries		
Year Ended December 31	**Count**	**Average Age**	**Average Service**	**Count**	**Average Age**	**Average Monthly Amount**
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
2022	11,346	47.0	11.1	10,798	72.4	4,485

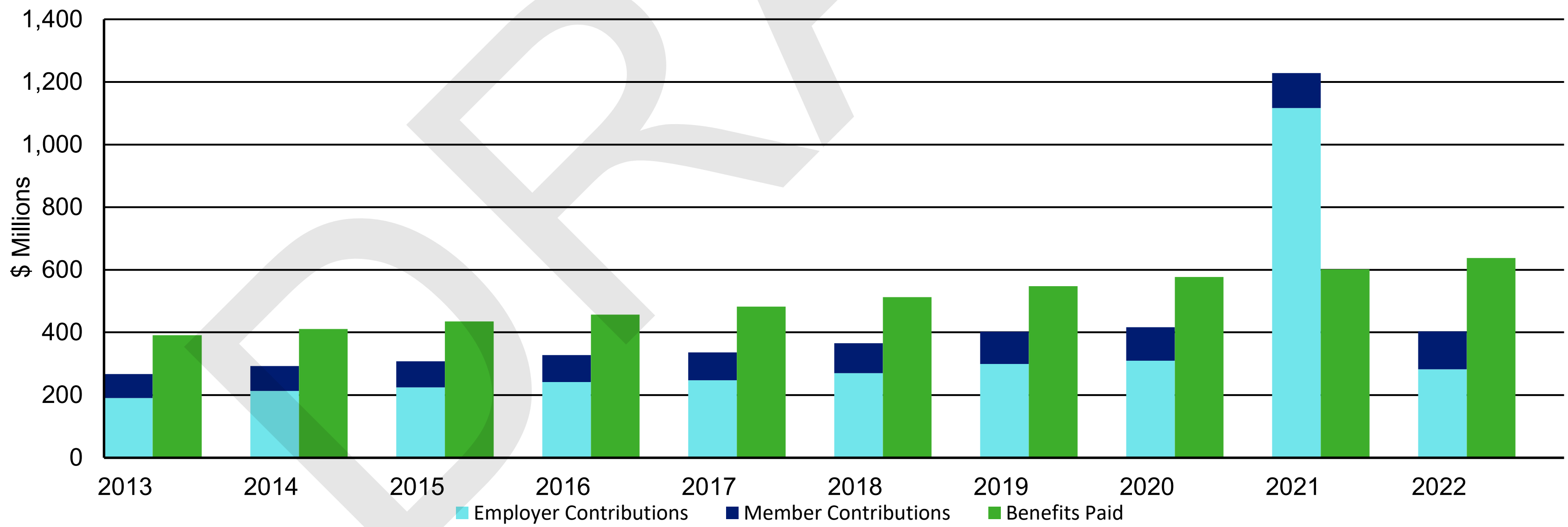
B. Financial information

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, 2013 – 2022



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, 2022

1	**Market value of assets**							**$10,298,512,063**
2	Calculation of unrecognized return							
	Six Month Period		**Actual**	**Expected**	**Investment**	**Percent**		**Deferred**
	From	**To**	**Return[1]**	**Return[1]**	**Gain (Loss)**	**Deferred**		**Return**
a.	1/1/2018	6/30/2018	$86,346,238	$306,788,550	$(220,442,312)	0%		$0
b.	7/1/2018	12/31/2018	(457,457,856)	293,029,561	(750,487,417)	10		(75,048,742)
c.	1/1/2019	6/30/2019	854,836,642	274,040,816	580,795,826	20		116,159,165
d.	7/1/2019	12/31/2019	487,958,159	302,301,626	185,656,533	30		55,696,960
e.	1/1/2020	6/30/2020	(507,044,977)	317,318,139	(824,363,116)	40		(329,745,246)
f.	7/1/2020	12/31/2020	1,508,460,094	295,971,205	1,212,488,889	50		606,244,445
g.	1/1/2021	6/30/2021	1,034,858,840	347,663,410	687,195,431	60		412,317,258
h.	7/1/2021	12/31/2021	550,755,442	397,125,337	153,630,105	70		107,541,073
i.	1/1/2022	6/30/2022	(1,416,848,650)	412,541,243	(1,829,389,893)	80		(1,463,511,914)
j.	7/1/2022	12/31/2022	110,225,365	358,854,722	(248,629,356)	90		(223,766,421)
k.	Total unrecognized return[2]							$(794,113,422)
3	Calculation of Preliminary Actuarial Value of Assets							
a.	Preliminary Actuarial Value of Assets: **(1) - (2k)**							$11,092,625,485
b.	Preliminary Actuarial Value as a Percentage of Market Value: **(3a) ÷ (1)**							107.7%
4	Adjustment to be within 40% corridor							0
5	**Final Actuarial value of assets: (3a) + (4)**							**$11,092,625,485**
6	Non-valuation reserves and deductions							
a.	Reserve for Interest Fluctuations (Contingency Reserve), but no less than $0							$0
b.	Supplemental Retirees Benefit Reserve (SRBR)							1,168,608,503
c.	Other Non-Valuation Reserve (401(h) Reserve)							8,979,234
d.	SRBR Transfer to Employer Advance Reserve							(7,981,476)
e.	Subtotal							$1,169,606,261
7	**Final Valuation Value of Assets: (5) – (6e)**							**$9,923,019,224**

Note: Results may be slightly off due to rounding.

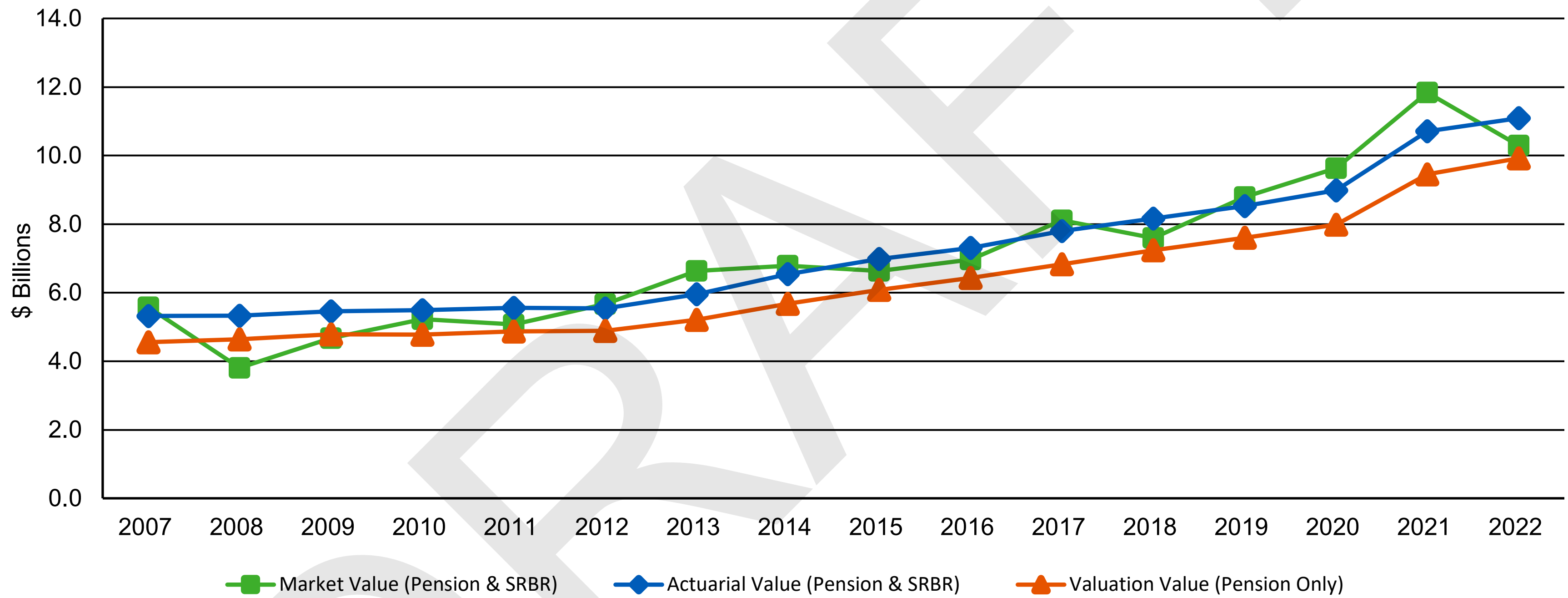
[1] The actual return on a market value basis is calculated by taking the difference between the ending and beginning Market Value of Assets over the last six month period and adjusting that difference for the non-investment cash flows. Those cash flows include contributions received and benefit payments 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, 2022 recognized in each of the next five years:

(a)	Amount recognized on December 31, 2023	$(91,571,858)
(b)	Amount recognized on December 31, 2024	(151,247,935)
(c)	Amount recognized on December 31, 2025	(126,189,854)
(d)	Amount recognized on December 31, 2026	(400,240,839)
(e)	Amount recognized on December 31, 2027	(24,862,936)
(f)	Total unrecognized return as of December 31, 2022	$(794,113,422)

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 – 2022



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 loss is $64.2 million, which includes $5.3 million from investment losses, a loss of $0.2 million from contribution experience and $58.7 million in losses from all other sources. The net experience variation from individual sources other than investments and contributions was 0.5% 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, 2022

1	Net loss from investments[1]	$(5,317,000)
2	Net loss from contributions	(205,000)
3	Net loss from other experience[2]	(58,656,000)
4	**Net experience loss: 1 + 2 + 3**	**$(64,178,000)**

[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 -11.15% for the year ended December 31, 2022.

For valuation purposes, the assumed rate of return on the valuation value of assets was 7.00% for the 2022 plan year.[1] The actual rate of return on a valuation basis for the 2022 plan year was 6.94%. Because the actual return for the year was less than the assumed return, the Plan experienced an actuarial loss during the year ended December 31, 2022 with regard to its investments.

Investment Experience for Year Ended December 31, 2022

		Market Value	Actuarial Value	Valuation Value
1	Net investment income	$(1,306,623,284)	$620,437,244	$649,822,147
2	Average value of assets	11,722,999,122	10,590,052,016	9,359,131,981
3	Rate of return: 1 ÷ 2	-11.15%	5.86%	6.94%
4	Assumed rate of return	7.00%	7.00%	7.00%
5	Expected investment income: 2 x 4	$820,609,939	$741,303,641	$655,139,239
6	**Actuarial gain/(loss): 1 - 5**	**$(2,127,233,223)**	**$(120,866,397)**	**$(5,317,092)**

[1] Based on the investment return assumption from the December 31, 2021 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.

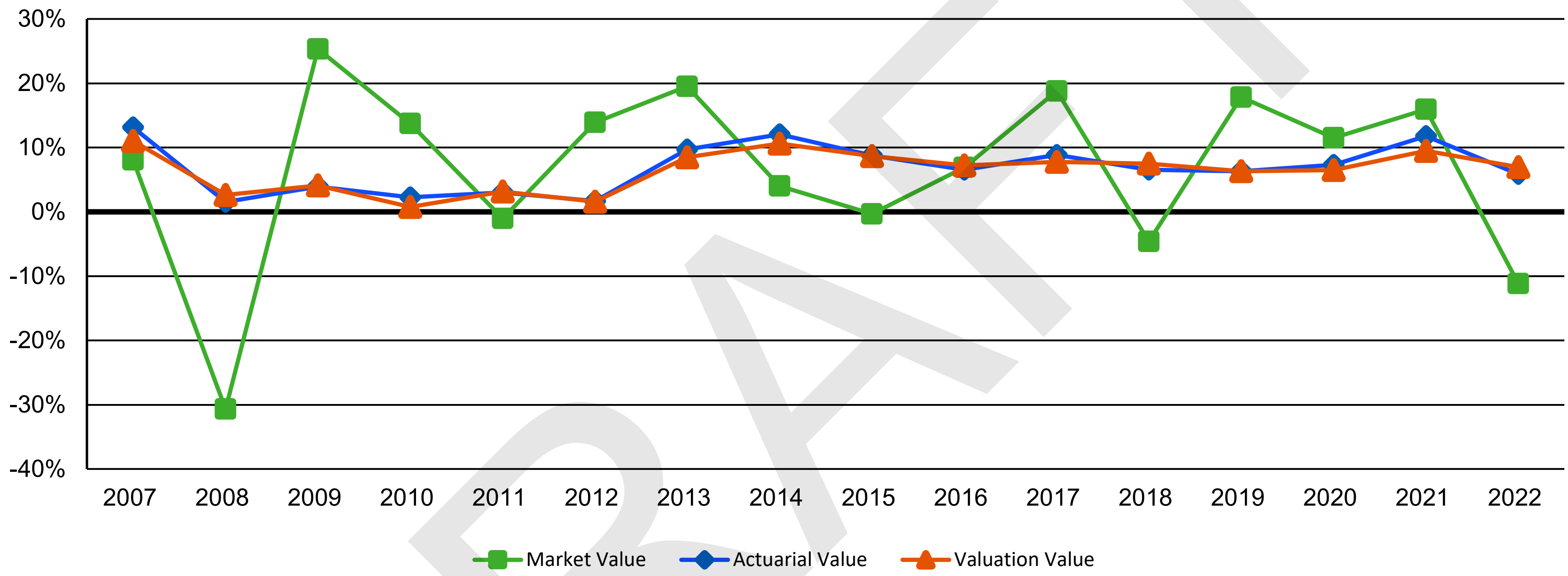
Investment Return – Market Value, Actuarial Value and Valuation Value: 2013 – 2022

	Market Value Investment Return[1]		Actuarial Value Investment Return[1]		Valuation Value Investment Return[1]	
Year Ended December 31	**Amount**	**Percent**	**Amount**	**Percent**	**Amount**	**Percent**
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%
2022	(1,306,623,284)	(11.15)%	620,437,244	5.86%	649,822,147	6.94%
Most recent five-year average return		**5.25%**		**7.55%**		**7.35%**
Most recent ten-year average return		**7.35%**		**8.36%**		**7.95%**

[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 – 2022



Contributions

Contributions for the year ended December 31, 2022 totaled $402.3 million, compared to the projected amount of $402.5 million. This resulted in a loss of $0.2 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, 2022 amounted to $58.7 million, which is 0.5% 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.

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 is fully funded in the December 31, 2021 and 2022 valuations. However, there is an increase in the surplus as of December 31, 2022 due to favorable experience during 2022. In order to reflect a net 0% UAAL contribution rate after taking into account the experience gain, we have taken the amortization period for the new LARPD experience gain layer and set it equal to the same remaining 14.5 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, 2022
Total Plan

1	**Unfunded actuarial accrued liability at beginning of year**		**$1,476,827,000**
2	Total normal cost at middle of year		251,362,000
3	Expected employer and member contributions		(402,516,000)
4	Interest		102,250,000
5	Expected unfunded actuarial accrued liability		$1,427,923,000
6	Changes due to:		
	a. Investment return less than expected after “smoothing”	$5,317,000	
	b. Actual contributions less than expected[1]	205,000	
	c. Individual salary increases higher than expected	60,200,000	
	d. COLA increases higher than expected for continuing retirees	26,366,000	
	e. Mortality lower than expected for continuing retirees	3,431,000	
	f. Other experience gains[2]	(31,341,000)	
	Total changes		$64,178,000
7	**Unfunded actuarial accrued liability at end of year**		**$1,492,101,000**

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 and difference between Normal Cost and UAAL contributions due to actual payroll different than expected during 2022.
[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, 2022
General (Excluding LARPD & Office of Education) Only

1	**Unfunded actuarial accrued liability at beginning of year**		**$1,404,931,000**
2	Total normal cost at middle of year		181,418,000
3	Expected employer and member contributions		(323,899,000)
4	Interest		93,850,000
5	Expected unfunded actuarial accrued liability		$1,356,300,000
6	Changes due to:		
	a. Investment return greater than expected after “smoothing”	$(13,330,000)[1]	
	b. Actual contributions less than expected[2]	4,899,000	
	c. Individual salary increases higher than expected	33,392,000	
	d. COLA increases higher than expected for continuing retirees	17,865,000	
	e. Mortality higher than expected for continuing retirees	(1,088,000)	
	f. Other experience gains[3]	(16,380,000)	
	Total changes		$25,358,000
7	**Unfunded actuarial accrued liability at end of year**		**$1,381,658,000**

[1] The return on the total valuation value of assets was 6.94% after including the smoothed rate at 4.07% on the UAAL Advance Reserves earned by contributions made on or around June 29, 2021. The smoothed return on the valuation reserves excluding the UAAL Advance Reserve was about 7.20% which results in an investment gain for General (Excluding LARPD & Office of Education).

[2] Includes impact of scheduled lag in rate implementation and difference between Normal Cost and UAAL contributions due to actual payroll different than expected during 2022.

[3] 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, 2022
General (Office of Education) Only

1	**Unfunded actuarial accrued liability at beginning of year**		**$1,049,000**
2	Total normal cost at middle of year		0
3	Expected employer and member contributions		(99,000)
4	Interest		65,000
5	Expected unfunded actuarial accrued liability		$1,015,000
6	Changes due to:		
	a. Investment return greater than expected after "smoothing"	$(13,000)[1]	
	b. COLA increases higher than expected for continuing retirees	32,000	
	c. Mortality lower than expected for continuing retirees	89,000	
	Total changes		$108,000
7	**Unfunded actuarial accrued liability at end of year**		**$1,123,000**

[1] The return on the total valuation value of assets was 6.94% after including the smoothed rate at 4.07% on the UAAL Advance Reserves earned by contributions made on or around June 29, 2021. The smoothed return on the valuation reserves excluding the UAAL Advance Reserve was about 7.20% which results in an investment gain for Office of Education.

E. Development of Unfunded Actuarial Accrued Liability (continued)

Development for Year Ended December 31, 2022
General (LARPD) Only

1	**Unfunded actuarial accrued liability at beginning of year**		**$(248,000)**
2	Total normal cost at middle of year		912,000
3	Expected employer and member contributions		(912,000)
4	Interest		(81,000)
5	Expected unfunded actuarial accrued liability		$(329,000)
6	Changes due to:		
	a. Investment return less than expected after "smoothing"	$240,000[1]	
	b. Actual contributions greater than expected[2]	(53,000)	
	c. Individual salary increases higher than expected	326,000	
	d. COLA increases higher than expected for continuing retirees	456,000	
	e. Mortality higher than expected for continuing retirees	(554,000)	
	f. Other experience gains[3]	(915,000)	
	Total changes		$(500,000)
7	**Unfunded actuarial accrued liability at end of year**		**$(829,000)**

[1] The return on the total valuation value of assets was 6.94%. However, because the 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, the return on a VVA basis for the UAAL Advance Reserves is about 4.07% while the return on the valuation reserves excluding the UAAL Advance Reserve was about 7.20%. The smoothed return on the combined LARPD valuation reserves and LARPD General UAAL Advance Reserve was about 6.62% which results in an investment loss for LARPD.

[2] Includes impact of scheduled lag in rate implementation and difference between Normal Cost and UAAL contributions due to actual payroll different than expected during 2022.

[3] 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, 2022
Safety Only

1	**Unfunded actuarial accrued liability at beginning of year**		**$71,095,000**
2	Total normal cost at middle of year		69,032,000
3	Expected employer and member contributions		(77,606,000)
4	Interest		8,416,000
5	Expected unfunded actuarial accrued liability		$70,937,000
6	Changes due to:		
	a. Investment return less than expected after “smoothing”	$18,421,000[1]	
	b. Actual contributions greater than expected[2]	(4,642,000)	
	c. Individual salary increases higher than expected	26,482,000	
	d. COLA increases higher than expected for continuing retirees	8,013,000	
	e. Mortality lower than expected for continuing retirees	4,988,000	
	f. Other experience gains[3]	(14,050,000)	
	Total changes		$39,212,000
7	**Unfunded actuarial accrued liability at end of year**		**$110,149,000**

[1] The return on the total valuation value of assets was 6.94%. However, because the 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, the return on a VVA basis for the UAAL Advance Reserves is about 4.07% while the return on the valuation reserves excluding the UAAL Advance Reserve was about 7.20%. The smoothed return on the combined Safety valuation reserves and Safety UAAL Advance Reserve was about 6.37% which results in an investment loss for Safety.

[2] Includes impact of scheduled lag in rate implementation and difference between Normal Cost and UAAL contributions due to actual payroll different than expected during 2022.

[3] 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, 2022, the average recommended employer contribution is 23.74% 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, 2022 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

		2022		2021	
		Amount ($ in '000s)	% of Projected Compensation	Amount ($ in '000s)	% of Projected Compensation
1	Total normal cost	$263,681	20.96%	$251,362	20.87%
2	Expected member normal cost contributions	-126,814	-10.08%	-120,392	-10.00%
3	Employer normal cost: (1) - (2)	$136,867	10.88%	$130,970	10.87%
4	Actuarial accrued liability	11,415,120		10,929,935	
5	Valuation value of assets	9,923,019		9,453,108	
6	Unfunded actuarial accrued liability (UAAL): (4) - (5)	$1,492,101		$1,476,827	
7	Payment on UAAL	$161,817	12.86%	$151,055	12.54%
8	Projected compensation	$1,258,026		$1,204,499	
9	**Total average recommended employer contribution: (3) + (7)**	**$298,684**	**23.74%**	**$282,025**	**23.41%**

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 $110 K when made on April 1, 2024.

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, 2021 to December 31, 2022
Total Plan ($ in '000s)

	Contribution Rate	Estimated Annual Dollar Amount[1]
Average Recommended Employer Contribution as of December 31, 2021	**23.39%**	**$294,226**
1 Effect of investment return less than expected after "smoothing"	0.03%	$386
2 Effect of actual contributions less than expected[2]	0.00%	14
3 Effect of individual salary increases higher than expected	0.37%	4,700
4 Effect of COLA increases higher than expected	0.15%	1,846
5 Effect of amortizing prior year's UAAL over a larger than expected total projected payroll	(0.08%)	(957)
6 Effect of mortality lower than expected for continuing retirees	0.02%	205
7 Effect of changes in member demographics on Normal Cost	0.00%	32
8 Effect of other gains[3]	(0.14%)	(1,822)
9 Effect of floor on net LARPD contribution rate of no less than Normal Cost in compliance with CalPEPRA	0.00%	54
Total change	0.35%	$4,458
Average Recommended Employer Contribution as of December 31, 2022	**23.74%**	**$298,684**

[1] Based on December 31, 2022 projected compensation.
[2] Includes impact of scheduled lag in rate implementation and difference between Normal Cost and UAAL contributions due to actual payroll during 2022 different than expected.
[3] 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, 2021 to December 31, 2022
General (Excluding LARPD & Office of Education) Only ($ in '000s)

	Contribution Rate	Estimated Annual Dollar Amount[1]
Average Recommended Employer Contribution as of December 31, 2021[2]	**23.49%**	**$246,502**
1 Effect of investment return greater than expected after "smoothing"[3]	(0.09%)	$(944)
2 Effect of actual contributions less than expected[4]	0.03%	349
3 Effect of individual salary increases higher than expected	0.25%	2,623
4 Effect of COLA increases higher than expected	0.12%	1,259
5 Effect of amortizing prior year's UAAL over a greater than expected total projected payroll	(0.10%)	(1,049)
6 Effect of mortality higher than expected for continuing retirees	(0.01%)	(105)
7 Effect of changes in member demographics on Normal Cost	0.01%	105
8 Effect of other gains[5]	(0.15%)	(1,601)
Total change	0.06%	$637
Average Recommended Employer Contribution as of December 31, 2022	**23.55%**	**$247,139**

[1] Based on December 31, 2022 projected compensation.
[2] Determined by applying the recommended employer contribution rates as of December 31, 2021 to the projected compensation as of December 31, 2022 by cost group, membership class and tier.
[3] The return on the total valuation value of assets was 6.94%. However, because the 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, the return on a VVA basis for the UAAL Advance Reserves is lower than that for the other valuation reserves. The return on the valuation reserves (excluding the UAAL Advance Reserve) was about 7.20% which results in an investment gain (after smoothing) for General (Excluding LARPD & Office of Education).
[4] Includes impact of scheduled lag in rate implementation and difference between Normal Cost and UAAL contributions due to actual payroll during 2022 different than expected.
[5] 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, 2021 to December 31, 2022
General (LARPD) Only ($ in '000s)

	Contribution Rate	Estimated Annual Dollar Amount[1]
Average Recommended Employer Contribution as of December 31, 2021	**12.54%**	**$449**
1 Effect of investment return less than expected after "smoothing"[2]	0.48%	$17
2 Effect of actual contributions greater than expected[3]	(0.11%)	(4)
3 Effect of individual salary increases higher than expected	0.74%	26
4 Effect of COLA increases higher than expected	0.91%	33
5 Effect of amortizing prior year's UAAL over a larger than expected total projected payroll	(1.45%)	(52)
6 Effect of mortality higher than expected for continuing retirees	(1.10%)	(39)
7 Effect of changes in member demographics on Normal Cost	0.25%	9
8 Effect of other gains[4]	(0.87%)	(32)
9 Effect of floor on net LARPD contribution rate of no less than Normal Cost in compliance with CalPEPRA[5]	1.49%	54
Total change	0.34%	$12
Average Recommended Employer Contribution as of December 31, 2022	**12.88%**	**$461**

[1] Based on December 31, 2022 projected compensation.

[2] The return on the total valuation value of assets was 6.94%. However, because the 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, the return on a VVA basis for the UAAL Advance Reserves is about 4.07% while the return on the valuation reserves excluding the UAAL Advance Reserve was about 7.20%. The smoothed return on the combined LARPD valuation reserves and LARPD General UAAL Advance Reserve was about 6.62% which results in an investment loss for LARPD.

[3] Includes impact of scheduled lag in rate implementation and difference between Normal Cost and UAAL contributions due to actual payroll during 2022 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 is fully funded in the December 31, 2022 valuation. In order to reflect a net 0% UAAL contribution rate after taking into account the additional UAAL contributions, we have taken the amortization period for the new LARPD experience gain layer and set it equal to the same remaining 14.5 years used to amortize the credit for the additional UAAL contributions. Furthermore, the voluntary UAAL contribution credit has been reduced by 2.09% of payroll to not exceed the UAAL rate before the credit. In the December 31, 2021 valuation, the voluntary UAAL contribution credit was reduced by 0.60% of payroll to not exceed the UAAL rate before the credit. The net effect of the Normal Cost floor from December 31, 2021 to December 31, 2022 is equal to 2.09% - 0.60% = 1.49% of payroll.

Reconciliation of Average Recommended Employer Contribution Rate (continued)

Reconciliation from December 31, 2021 to December 31, 2022
Safety Only ($ in '000s)

	Contribution Rate	Estimated Annual Dollar Amount[1]
Average Recommended Employer Contribution as of December 31, 2021	**23.05%**	**$47,275**
1 Effect of investment return less than expected after "smoothing"[2]	0.64%	$1,313
2 Effect of actual contributions greater than expected[3]	(0.16%)	(331)
3 Effect of individual salary increases higher than expected	1.00%	2,051
4 Effect of COLA increases higher than expected	0.27%	554
5 Effect of amortizing prior year's UAAL over a smaller than expected total projected payroll	0.07%	144
6 Effect of mortality lower than expected for continuing retirees	0.17%	349
7 Effect of changes in member demographics on Normal Cost	(0.04%)	(82)
8 Effect of other gains[4]	(0.09%)	(189)
Total change	1.86%	$3,809
Average Recommended Employer Contribution as of December 31, 2022	**24.91%**	**$51,084**

[1] Based on December 31, 2022 projected compensation.

[2] The return on the total valuation value of assets was 6.94%. However, because the 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, the return on a VVA basis for the UAAL Advance Reserves is about 4.07% while the return on the valuation reserves excluding the UAAL Advance Reserve was about 7.20%. The smoothed return on the combined Safety valuation reserves and Safety UAAL Advance Reserve was about 6.37% which results in an investment loss for Safety.

[3] Includes impact of scheduled lag in rate implementation and difference between Normal Cost and UAAL contributions due to actual payroll during 2022 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, 2021 to December 31, 2022

	Contribution Rate	Estimated Annual Dollar Amount[1] ($ in '000s)
Average Recommended Member Contribution as of December 31, 2021	**10.03%**	**$126,195**
• Effect of changes in member demographics	0.05%	$619
Average Recommended Member Contribution as of December 31, 2022	**10.08%**	**$126,814**

By Membership and Tier

	General Tier 1	General Tier 2	General Tier 3	General Tier 4
Average Recommended Member Contribution as of December 31, 2021	**10.17%**	**8.14%**	**15.57%**	**9.23%**
• Effect of changes in member demographics	0.00%	0.00%	(0.07%)	0.07%
Average Recommended Member Contribution as of December 31, 2022	**10.17%**	**8.14%**	**15.50%**	**9.30%**

	Safety Tier 1	Safety Tier 2	Safety Tier 2C	Safety Tier 2D	Safety Tier 4
Average Recommended Member Contribution as of December 31, 2021	**3.00%**	**16.85%**	**14.45%**	**16.80%**	**17.01%**
• Effect of changes in member demographics	0.00%	0.03%	(0.01%)	0.02%	0.27%
Average Recommended Member Contribution as of December 31, 2022	**3.00%**	**16.88%**	**14.44%**	**16.82%**	**17.28%**

[1] Based on December 31, 2022 projected compensation.

Recommended Employer Contribution Rates[1]

County Only	December 31, 2022 Actuarial Valuation Basic	COLA	Total	Estimated Annual Dollar Amount[2] ($ in '000s)	December 31, 2021 Actuarial Valuation Basic	COLA	Total	Estimated Annual Dollar Amount[2] ($ in '000s)
General Tier 1 Members								
Normal Cost	8.05%	2.92%	10.97%	$428	8.10%	2.87%	10.97%	$428
UAAL (Before POB Credit)	14.86%	5.12%	19.98%	780	14.92%	5.04%	19.96%	779
Pension Obligation Bond Credit	(3.61%)	(1.54%)	(5.15%)	(201)	(3.65%)	(1.56%)	(5.21%)	(203)
Implicit Retiree Health Benefit Subsidy	(1.03%)	0.00%	(1.03%)	(40)	(0.97%)	0.00%	(0.97%)	(38)
Total Contributions	**18.27%**	**6.50%**	**24.77%**	**$967**	**18.40%**	**6.35%**	**24.75%**	**$966**
General Tier 2 Members								
Normal Cost	7.76%	1.63%	9.39%	$33,270	7.79%	1.63%	9.42%	$33,376
UAAL (Before POB Credit)	14.86%	5.12%	19.98%	70,791	14.92%	5.04%	19.96%	70,720
Pension Obligation Bond Credit	(3.61%)	(1.54%)	(5.15%)	(18,247)	(3.65%)	(1.56%)	(5.21%)	(18,460)
Implicit Retiree Health Benefit Subsidy	(1.03%)	0.00%	(1.03%)	(3,649)	(0.97%)	0.00%	(0.97%)	(3,437)
Total Contributions	**17.98%**	**5.21%**	**23.19%**	**$82,165**	**18.09%**	**5.11%**	**23.20%**	**$82,199**
General Tier 4 Members								
Normal Cost	7.56%	1.74%	9.30%	$29,284	7.51%	1.72%	9.23%	$29,063
UAAL (Before POB Credit)	14.86%	5.12%	19.98%	62,912	14.92%	5.04%	19.96%	62,849
Pension Obligation Bond Credit	(3.61%)	(1.54%)	(5.15%)	(16,216)	(3.65%)	(1.56%)	(5.21%)	(16,405)
Implicit Retiree Health Benefit Subsidy	(1.03%)	0.00%	(1.03%)	(3,243)	(0.97%)	0.00%	(0.97%)	(3,054)
Total Contributions	**17.78%**	**5.32%**	**23.10%**	**$72,737**	**17.81%**	**5.20%**	**23.01%**	**$72,453**

1 For employers with active member payroll. The UAAL contribution for ACOE, expressed as a level dollar amount, is $110 K when made on April 1, 2024.

2 Amounts are based on the December 31, 2022 projected compensation shown on page 48.

Recommended Employer Contribution Rates (continued)

County Only	December 31, 2022 Actuarial Valuation				December 31, 2021 Actuarial Valuation			
	Basic	COLA	Total	Estimated Annual Dollar Amount[1] ($ in ‘000s)	Basic	COLA	Total	Estimated Annual Dollar Amount[1] ($ in ‘000s)
Safety Tier 1 Members								
Normal Cost	26.87%	12.15%	39.02%	$151	29.59%	12.62%	42.21%	$163
Member Cost Sharing Contributions (Adjusted for Refunds)	(3.00%)	0.00%	(3.00%)	(12)	(3.00%)	0.00%	(3.00%)	(12)
UAAL (Before Credits)	38.98%	12.66%	51.64%	200	39.67%	12.66%	52.33%	203
Voluntary UAAL contribution credit	(30.05%)	(9.40%)	(39.45%)	(153)	(31.91%)	(9.98%)	(41.89%)	(162)
Pension Obligation Bond Credit	(3.23%)	(1.66%)	(4.89%)	(19)	(3.34%)	(1.70%)	(5.04%)	(20)
Implicit Retiree Health Benefit Subsidy	(1.03%)	0.00%	(1.03%)	(4)	(0.97%)	0.00%	(0.97%)	(4)
Total Contributions	**28.54%**	**13.75%**	**42.29%**	**$163**	**30.04%**	**13.60%**	**43.64%**	**$168**
Safety Tier 2 Members								
Normal Cost	18.49%	3.75%	22.24%	$22,363	18.59%	3.80%	22.39%	$22,514
Member Cost Sharing Contributions (Adjusted for Refunds)	(2.98%)	0.00%	(2.98%)	(2,996)	(2.98%)	0.00%	(2.98%)	(2,996)
UAAL (Before Credits)	38.98%	12.66%	51.64%	51,926	39.67%	12.66%	52.33%	52,619
Voluntary UAAL contribution credit	(30.05%)	(9.40%)	(39.45%)	(39,668)	(31.91%)	(9.98%)	(41.89%)	(42,122)
Pension Obligation Bond Credit	(3.23%)	(1.66%)	(4.89%)	(4,917)	(3.34%)	(1.70%)	(5.04%)	(5,068)
Implicit Retiree Health Benefit Subsidy	(1.03%)	0.00%	(1.03%)	(1,036)	(0.97%)	0.00%	(0.97%)	(975)
Total Contributions	**20.18%**	**5.35%**	**25.53%**	**$25,672**	**19.06%**	**4.78%**	**23.84%**	**$23,972**
Safety Tier 2C Members								
Normal Cost	20.00%	4.23%	24.23%	$693	20.47%	4.28%	24.75%	$708
Member Cost Sharing Contributions (Adjusted for Refunds)	0.00%	0.00%	0.00%	0	0.00%	0.00%	0.00%	0
UAAL (Before Credits)	38.98%	12.66%	51.64%	1,477	39.67%	12.66%	52.33%	1,497
Voluntary UAAL contribution credit	(30.05%)	(9.40%)	(39.45%)	(1,128)	(31.91%)	(9.98%)	(41.89%)	(1,198)
Pension Obligation Bond Credit	(3.23%)	(1.66%)	(4.89%)	(140)	(3.34%)	(1.70%)	(5.04%)	(144)
Implicit Retiree Health Benefit Subsidy	(1.03%)	0.00%	(1.03%)	(29)	(0.97%)	0.00%	(0.97%)	(28)
Total Contributions	**24.67%**	**5.83%**	**30.50%**	**$873**	**23.92%**	**5.26%**	**29.18%**	**$835**

[1] Amounts are based on the December 31, 2022 projected compensation shown on page 48.

Recommended Employer Contribution Rates (continued)

County Only	December 31, 2022 Actuarial Valuation Basic	COLA	Total	Estimated Annual Dollar Amount[1] ($ in '000s)	December 31, 2021 Actuarial Valuation Basic	COLA	Total	Estimated Annual Dollar Amount[1] ($ in '000s)
Safety Tier 2D Members								
Normal Cost	19.00%	4.04%	23.04%	$4,247	19.04%	4.04%	23.08%	$4,254
Member Cost Sharing Contributions (Adjusted for Refunds)	(2.94%)	0.00%	(2.94%)	(542)	(2.91%)	0.00%	(2.91%)	(536)
UAAL (Before Credits)	38.98%	12.66%	51.64%	9,519	39.67%	12.66%	52.33%	9,646
Voluntary UAAL contribution credit	(30.05%)	(9.40%)	(39.45%)	(7,272)	(31.91%)	(9.98%)	(41.89%)	(7,722)
Pension Obligation Bond Credit	(3.23%)	(1.66%)	(4.89%)	(901)	(3.34%)	(1.70%)	(5.04%)	(929)
Implicit Retiree Health Benefit Subsidy	(1.03%)	0.00%	(1.03%)	(190)	(0.97%)	0.00%	(0.97%)	(179)
Total Contributions	**20.73%**	**5.64%**	**26.37%**	**$4,861**	**19.58%**	**5.02%**	**24.60%**	**$4,534**
Safety Tier 4 Members								
Normal Cost	13.48%	3.80%	17.28%	$14,319	13.28%	3.73%	17.01%	$14,095
Member Cost Sharing Contributions (Adjusted for Refunds)	0.00%	0.00%	0.00%	0	0.00%	0.00%	0.00%	0
UAAL (Before Credits)	38.98%	12.66%	51.64%	42,790	39.67%	12.66%	52.33%	43,362
Voluntary UAAL contribution credit	(30.05%)	(9.40%)	(39.45%)	(32,689)	(31.91%)	(9.98%)	(41.89%)	(34,711)
Pension Obligation Bond Credit	(3.23%)	(1.66%)	(4.89%)	(4,052)	(3.34%)	(1.70%)	(5.04%)	(4,176)
Implicit Retiree Health Benefit Subsidy	(1.03%)	0.00%	(1.03%)	(853)	(0.97%)	0.00%	(0.97%)	(804)
Total Contributions	**18.15%**	**5.40%**	**23.55%**	**$19,515**	**16.73%**	**4.71%**	**21.44%**	**$17,766**
All County Categories Combined								
Normal Cost	9.74%	2.19%	11.93%	$104,755	9.73%	2.18%	11.91%	$104,601
Member Cost Sharing Contributions (Adjusted for Refunds)	(0.40%)	0.00%	(0.40%)	(3,550)	(0.40%)	0.00%	(0.40%)	(3,544)
UAAL (Before Credits)	20.49%	6.88%	27.37%	240,395	20.70%	6.82%	27.52%	241,675
Voluntary UAAL contribution credit	(7.02%)	(2.19%)	(9.21%)	(80,910)	(7.45%)	(2.33%)	(9.78%)	(85,915)
Pension Obligation Bond Credit	(3.52%)	(1.57%)	(5.09%)	(44,693)	(3.58%)	(1.59%)	(5.17%)	(45,405)
Implicit Retiree Health Benefit Subsidy	(1.03%)	0.00%	(1.03%)	(9,044)	(0.97%)	0.00%	(0.97%)	(8,519)
Total Contributions	**18.26%**	**5.31%**	**23.57%**	**$206,953**	**18.03%**	**5.08%**	**23.11%**	**$202,893**

[1] Amounts are based on the December 31, 2022 projected compensation shown on page 48.

Recommended Employer Contribution Rates (continued)

AHS, Court & First 5 Only	December 31, 2022 Actuarial Valuation Basic	COLA	Total	Estimated Annual Dollar Amount[1] ($ in '000s)	December 31, 2021 Actuarial Valuation Basic	COLA	Total	Estimated Annual Dollar Amount[1] ($ in '000s)
General Tier 1 Members								
Normal Cost	8.05%	2.92%	10.97%	$62	8.10%	2.87%	10.97%	$62
UAAL (Before POB Credit)	14.86%	5.12%	19.98%	112	14.92%	5.04%	19.96%	112
Pension Obligation Bond Credit	(3.61%)	(1.54%)	(5.15%)	(29)	(3.65%)	(1.56%)	(5.21%)	(29)
Total Contributions	**19.30%**	**6.50%**	**25.80%**	**$145**	**19.37%**	**6.35%**	**25.72%**	**$145**
General Tier 2 Members								
Normal Cost	7.76%	1.63%	9.39%	$15,977	7.79%	1.63%	9.42%	$16,029
UAAL (Before POB Credit)	14.86%	5.12%	19.98%	33,997	14.92%	5.04%	19.96%	33,963
Pension Obligation Bond Credit	(3.61%)	(1.54%)	(5.15%)	(8,763)	(3.65%)	(1.56%)	(5.21%)	(8,865)
Total Contributions	**19.01%**	**5.21%**	**24.22%**	**$41,211**	**19.06%**	**5.11%**	**24.17%**	**$41,127**
General Tier 4 Members								
Normal Cost	7.56%	1.74%	9.30%	$18,629	7.51%	1.72%	9.23%	$18,489
UAAL (Before POB Credit)	14.86%	5.12%	19.98%	40,022	14.92%	5.04%	19.96%	39,982
Pension Obligation Bond Credit	(3.61%)	(1.54%)	(5.15%)	(10,316)	(3.65%)	(1.56%)	(5.21%)	(10,436)
Total Contributions	**18.81%**	**5.32%**	**24.13%**	**$48,335**	**18.78%**	**5.20%**	**23.98%**	**$48,035**

[1] Amounts are based on the December 31, 2022 projected compensation shown on page 48.

Recommended Employer Contribution Rates (continued)

Housing Authority	December 31, 2022 Actuarial Valuation Basic	COLA	Total	Estimated Annual Dollar Amount[1] ($ in '000s)	December 31, 2021 Actuarial Valuation Basic	COLA	Total	Estimated Annual Dollar Amount[1] ($ in '000s)
General Tier 1 Members								
Normal Cost	8.05%	2.92%	10.97%	$307	8.10%	2.87%	10.97%	$307
UAAL	14.86%	5.12%	19.98%	560	14.92%	5.04%	19.96%	559
Total Contributions	**22.91%**	**8.04%**	**30.95%**	**$867**	**23.02%**	**7.91%**	**30.93%**	**$866**
General Tier 2 Members								
Normal Cost	7.76%	1.63%	9.39%	$36	7.79%	1.63%	9.42%	$36
UAAL	14.86%	5.12%	19.98%	77	14.92%	5.04%	19.96%	77
Total Contributions	**22.62%**	**6.75%**	**29.37%**	**$113**	**22.71%**	**6.67%**	**29.38%**	**$113**
General Tier 4 Members								
Normal Cost	7.56%	1.74%	9.30%	$190	7.51%	1.72%	9.23%	$189
UAAL	14.86%	5.12%	19.98%	409	14.92%	5.04%	19.96%	409
Total Contributions	**22.42%**	**6.86%**	**29.28%**	**$599**	**22.43%**	**6.76%**	**29.19%**	**$598**

[1] Amounts are based on the December 31, 2022 projected compensation shown on page 48.

Recommended Employer Contribution Rates (continued)

LARPD	December 31, 2022 Actuarial Valuation Basic	COLA	Total[1]	Estimated Annual Dollar Amount[2] ($ in '000s)	December 31, 2021 Actuarial Valuation Basic	COLA	Total[2]	Estimated Annual Dollar Amount[2] ($ in '000s)
General Tier 1 Members								
Normal Cost	8.05%	2.92%	10.97%	$63	8.10%	2.87%	10.97%	$63
UAAL (Before Credits)	19.47%	9.19%	28.66%	165	20.23%	8.96%	29.19%	168
Voluntary UAAL contribution credit[3]	(19.47%)	(9.19%)	(28.66%)	(165)	(20.23%)	(8.96%)	(29.19%)	(168)
Total Contributions	**8.05%**	**2.92%**	**10.97%**	**$63**	**8.10%**	**2.87%**	**10.97%**	**$63**
General Tier 3 Members								
Normal Cost	12.93%	4.22%	17.15%	$260	12.32%	4.09%	16.41%	$249
UAAL (Before Credits)	19.47%	9.19%	28.66%	434	20.23%	8.96%	29.19%	443
Voluntary UAAL contribution credit[3]	(19.47%)	(9.19%)	(28.66%)	(434)	(20.23%)	(8.96%)	(29.19%)	(443)
Total Contributions	**12.93%**	**4.22%**	**17.15%**	**$260**	**12.32%**	**4.09%**	**16.41%**	**$249**
General Tier 4 Members								
Normal Cost	7.56%	1.74%	9.30%	$138	7.51%	1.72%	9.23%	$137
UAAL (Before Credits)	19.47%	9.19%	28.66%	426	20.23%	8.96%	29.19%	434
Voluntary UAAL contribution credit[3]	(19.47%)	(9.19%)	(28.66%)	(426)	(20.23%)	(8.96%)	(29.19%)	(434)
Total Contributions	**7.56%**	**1.74%**	**9.30%**	**$138**	**7.51%**	**1.72%**	**9.23%**	**$137**

1 For LARPD, the combined rate is 12.88% as of December 31, 2022 and 12.54% as of December 31, 2021.
2 Amounts are based on the December 31, 2022 projected compensation shown on page 48.
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. The total voluntary UAAL contribution credit before reduction is equal to 30.75% of payroll.

Recommended Employer Contribution Rates (continued)

All Categories Combined	December 31, 2022 Actuarial Valuation Basic	COLA	Total	Estimated Annual Dollar Amount[1] ($ in '000s)	December 31, 2021 Actuarial Valuation Basic	COLA	Total	Estimated Annual Dollar Amount[1] ($ in '000s)
All Categories Combined								
Normal Cost (Net)	8.84%	2.04%	10.88%	$136,867	8.83%	2.03%	10.86%	$136,618
UAAL (Net)	9.61%	3.25%	12.86%	161,817	9.46%	3.07%	12.53%	157,608
Total Contributions	**18.45%**	**5.29%**	**23.74%**	**$298,684**	**18.29%**	**5.10%**	**23.39%**	**$294,226**

Payroll Breakdown ($ in '000s)

	County Only	AHS, Court, & First 5	Housing Authority	LARPD	Total
General Tier 1	$3,905	$561	$2,801	$576	$7,843
General Tier 2	354,310	170,154	385		524,849
General Tier 3				1,516	1,516
General Tier 4	314,877	200,310	2,047	1,488	518,722
Safety Tier 1	387				387
Safety Tier 2	100,553				100,553
Safety Tier 2C	2,860				2,860
Safety Tier 2D	18,433				18,433
Safety Tier 4	82,863				82,863
Total	**$878,188**	**$371,025**	**$5,233**	**$3,580**	**$1,258,026**

[1] Amounts are based on the December 31, 2022 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.

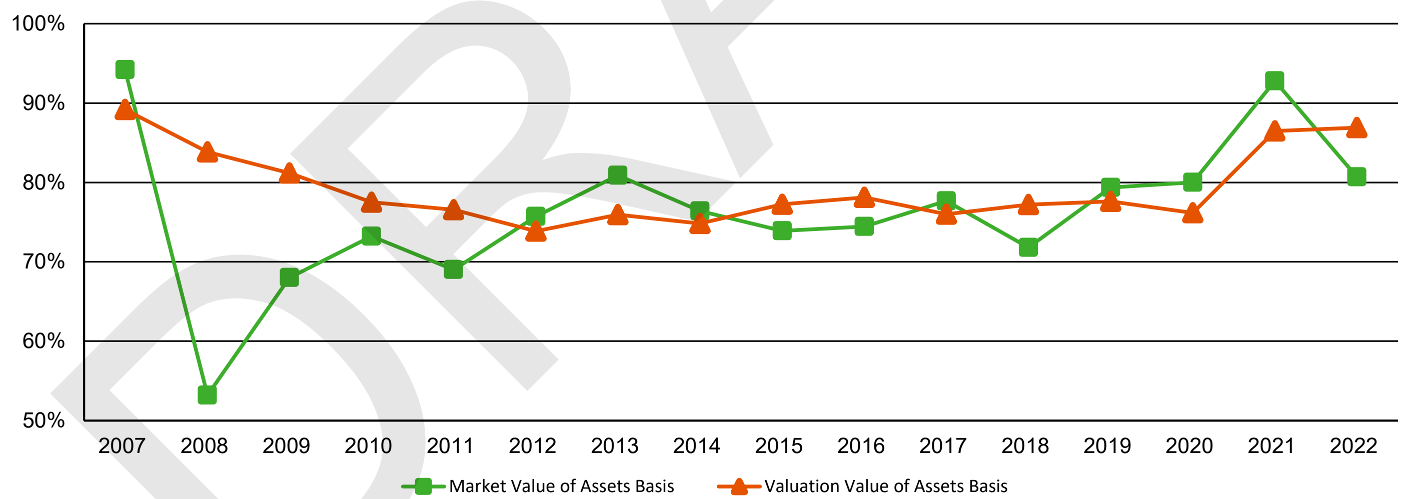
G. Funded Status

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 – 2022[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, 2013 – 2022

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)
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%
2022	9,923,019,000	11,415,120,000	1,492,101,000	86.9%	1,258,026,000	118.6%

[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 are estimates provided by ACERA):

Actuarial Valuation Date	Reimbursement Amount	For Year	Actuarial Valuation Date	Reimbursement Amount	For Year
12/31/2013	$6,993,032	2013	12/31/2018	$6,939,808	2018
12/31/2014	5,215,355	2014	12/31/2019	6,510,876	2019
12/31/2015	5,324,502	2015	12/31/2020	7,548,683	2020
12/31/2016	8,865,275	2016	12/31/2021	5,652,613	2021
12/31/2017	5,830,283	2017	12/31/2022	7,981,476	2022

[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, 2022

	Basic ($ in '000s)	COLA ($ in '000s)	Total ($ in '000s)
Actuarial present value of future benefits			
• Present value of benefits for retired members and beneficiaries	$4,384,825	$2,673,553	$7,058,378
• Present value of benefits for inactive vested members	301,422	54,315	355,737
• Present value of benefits for active members	4,860,507	1,164,578	6,025,085
Total actuarial present value of future benefits	**$9,546,754**	**$3,892,446**	**$13,439,200**
Current and future assets			
• Total valuation value of assets	$6,837,940	$3,085,079	$9,923,019
• Present value of future contributions by members	820,855	209,962	1,030,817
• Present value of future employer contributions for:			
• Entry age normal cost	818,915	174,348	993,263
• Unfunded actuarial accrued liability	1,069,044	423,057	1,492,101
Total of current and future assets	**$9,546,754**	**$3,892,446**	**$13,439,200**

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 7.3. This means that a 1% asset gain or loss (relative to the assumed investment return) translates to about 7.3% of one-year's payroll. Because actuarial gains and losses are amortized over 20 years, there would be a 0.5% 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 18.2 for General (LARPD) and 15.6 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 decrease in the AVR this year was caused by the -11.15% return on the market value of assets. The increase in the LVR for LARPD this year was caused by about a 5% reduction in the payroll for LARPD (relative to the assumption) as reported in the December 31, 2022 valuation.

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

Volatility Ratios for Years Ended 2013 – 2022

	Asset Volatility Ratio[1]				Liability Volatility Ratio[1]			
Year Ended December 31	General (non-LARPD)	General (LARPD)	Safety	Total	General (non-LARPD)	General (LARPD)	Safety	Total
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
2022	6.0	17.1	14.0	7.3	7.8	18.2	15.6	9.1

[1] 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 2023.

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 7.3% of one-year's payroll. Because actuarial gains and losses are amortized over 20 years, there would be a 0.5% 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 -11.15% 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 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 75.9% to 86.9%. This is primarily due to: (i) UAAL contributions made by all the employers, (ii) additional voluntary County Safety and LARPD General contributions to reduce their UAAL, and (iii) 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 8.36%. (The comparable return for the Valuation Value of Assets was 7.95%.) This includes a high of 12.05% return and a low of 5.86%. The average over the last 5 years was 7.55%. 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 0.79 to 0.95. 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 $236 million more than contributions received. 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: 2022	Year Ended December 31: 2021	Change From Prior Year
Active members in valuation:			
• Number	11,346	11,326	0.2%
• Average age	47.0	47.1	-0.1
• Average years of service	11.1	11.3	-0.2
• Total projected compensation	$1,258,029,259[1]	$1,204,499,429	4.4%
• Average projected compensation	$110,879	$106,348	4.3%
• Account balances	$1,420,115,654	$1,362,455,163	4.2%
• Total active vested members	7,608	7,640	-0.4%
Inactive vested members:			
• Number[2]	3,564	3,265	9.2%
• Average Age	47.1	47.2	-0.1
Retired members:			
• Number in pay status	8,479	8,264	2.6%
• Average age	72.7	72.5	0.2
• Average monthly benefit[3]	$4,786	$4,667	2.5%
Disabled members:			
• Number in pay status	1,006	977	3.0%
• Average age	65.5	65.4	0.1
• Average monthly benefit[2]	$4,149	$3,950	5.0%
Beneficiaries:			
• Number in pay status	1,313	1,295	1.4%
• Average age	75.7	75.7	0.0
• Average monthly benefit[2]	$2,801	$2,703	3.6%

Notes: Based on the data provided for the December 31, 2022 actuarial valuation, the average age at retirement for the service retirees and disabled retirees was 60.4 and 49.7, respectively, for all the General and Safety Tiers combined.

[1] Total payroll shown above may not total exactly to the amount shown elsewhere in this report when rounded to thousands of dollars due to separate rounding by tiers used elsewhere.
[2] Includes inactive members due a refund of member contributions.
[3] Excludes supplemental benefits paid from SRBR.

Exhibit A: Table of Plan Coverage (continued)

General Tier 1

Category	Year Ended December 31 2022	Year Ended December 31 2021	Change From Prior Year
Active members in valuation:			
• Number	74	86	-14.0%
• Average age	60.9	61.1	-0.2
• Average years of service	29.1	29.9	-0.8
• Total projected compensation	$7,843,589	$8,864,324	-11.5%
• Average projected compensation	$105,994	$103,074	2.8%
• Account balances	$34,612,512	$40,083,896	-13.6%
• Total active vested members	74	86	-14.0%
Inactive vested members:			
• Number[1]	33	36	-8.3%
• Average Age	65.2	64.0	1.2
Retired members:			
• Number in pay status	2,759	2,867	-3.8%
• Average age	78.2	77.7	0.5
• Average monthly benefit[2]	$5,816	$5,575	4.3%
Disabled members:			
• Number in pay status	127	130	-2.3%
• Average age	76.3	75.5	0.8
• Average monthly benefit[2]	$3,767	$3,638	3.5%
Beneficiaries:			
• Number in pay status	631	660	-4.4%
• Average age	81.0	80.9	0.1
• Average monthly benefit[2]	$2,997	$2,829	5.9%

Notes: Based on the data provided for the December 31, 2022 actuarial valuation, the average age at retirement for the General Tier 1 service and disabled retirees was 59.4 and 51.4, 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)

General Tier 2

Category	Year Ended December 31 2022	Year Ended December 31 2021	Change From Prior Year
Active members in valuation:			
• Number	4,496	4,880	-7.9%
• Average age	53.5	53.0	0.5
• Average years of service	18.7	18.0	0.7
• Total projected compensation	$524,849,488	$542,403,584	-3.2%
• Average projected compensation	$116,737	$111,148	5.0%
• Account balances	$797,089,493	$786,128,488	1.4%
• Total active vested members	4,418	4,789	-7.7%
Inactive vested members:			
• Number[1]	1,762	1,776	-0.8%
• Average Age	51.8	51.4	0.4
Retired members:			
• Number in pay status	4,334	4,063	6.7%
• Average age	70.5	70.3	0.2
• Average monthly benefit[2]	$3,322	$3,176	4.6%
Disabled members:			
• Number in pay status	479	481	-0.4%
• Average age	66.3	65.8	0.5
• Average monthly benefit[2]	$2,956	$2,877	2.7%
Beneficiaries:			
• Number in pay status	371	343	8.2%
• Average age	70.2	69.6	0.6
• Average monthly benefit[2]	$1,596	$1,551	2.9%

Notes: Based on the data provided for the December 31, 2022 actuarial valuation, the average age at retirement for the General Tier 2 service and disabled retirees was 62.5 and 50.6, 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 3

Category	Year Ended December 31 2022	Year Ended December 31 2021	Change From Prior Year
Active members in valuation:			
• Number	15	18	-16.7%
• Average age	55.6	53.4	2.2
• Average years of service	15.5	14.5	1.0
• Total projected compensation	$1,516,322	$1,712,190	-11.4%
• Average projected compensation	$101,088	$95,122	6.3%
• Account balances	$3,404,350	$3,495,058	-2.6%
• Total active vested members	13	16	-18.8%
Inactive vested members:			
• Number[1]	14	12	16.7%
• Average Age	49.6	49.4	0.2
Retired members:			
• Number in pay status	32	31	3.2%
• Average age	66.0	65.3	0.7
• Average monthly benefit[2]	$4,411	$4,343	1.6%
Disabled members:			
• Number in pay status	1	1	0.0%
• Average age	69.1	68.1	1.0
• Average monthly benefit[2]	$2,394	$2,324	3.0%
Beneficiaries:			
• Number in pay status	5	5	0.0%
• Average age	66.6	65.6	1.0
• Average monthly benefit[2]	$3,667	$3,560	3.0%

Notes: Based on the data provided for the December 31, 2022 actuarial valuation, the average age at retirement for the General Tier 3 service and disabled retirees was 59.6 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 2022	Year Ended December 31 2021	Change From Prior Year
Active members in valuation:			
• Number	5,316	4,919	8.1%
• Average age	42.6	42.1	0.5
• Average years of service	4.3	4.0	0.3
• Total projected compensation[1]	$518,722,632	$457,977,581	13.3%
• Average projected compensation	$97,578	$93,104	4.8%
• Account balances	$194,129,238	$154,488,116	25.7%
• Total active vested members	2,094	1,674	25.1%
Inactive vested members:			
• Number[2]	1,522	1,242	22.5%
• Average Age	41.7	41.3	0.4
Retired members:			
• Number in pay status	80	53	50.9%
• Average age	67.2	66.8	0.4
• Average monthly benefit[3]	$1,238	$1,192	3.9%
Disabled members:			
• Number in pay status	7	4	75.0%
• Average age	65.0	64.3	0.7
• Average monthly benefit[3]	$2,617	$2,824	-7.3%
Beneficiaries:			
• Number in pay status	3	2	50.0%
• Average age	57.9	52.6	5.3
• Average monthly benefit[3]	$1,350	$1,550	-12.9%

Notes: Based on the data provided for the December 31, 2022 actuarial valuation, the average age at retirement for the General Tier 4 service and disabled retirees was 65.2 and 61.7, respectively.

[1] Projected compensation 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 2023 is equal to $146,042. (For an employer that is not enrolled in Social Security, the maximum amount is 120% of $146,042, or $175,250). (reference: Section 7522.10). These amounts should be adjusted for changes to the Consumer Price Index for All Urban Consumers after 2023. (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 2022	Year Ended December 31 2021	Change From Prior Year
Active members in valuation:			
• Number	1	2	-50.0%
• Average age	65.3	65.4	-0.1
• Average years of service	42.9	37.4	5.5
• Total projected compensation	$387,137	$506,754	-23.6%
• Average projected compensation	$387,137	$253,377	52.8%
• Account balances	$1,889,702	$2,771,165	-31.8%
• Total active vested members	1	2	-50.0%
Inactive vested members:			
• Number[1]	5	5	0.0%
• Average Age	64.0	63.0	1.0
Retired members:			
• Number in pay status	549	570	-3.7%
• Average age	75.4	74.7	0.7
• Average monthly benefit[2]	$9,454	$9,090	4.0%
Disabled members:			
• Number in pay status	90	90	0.0%
• Average age	73.0	72.0	1.0
• Average monthly benefit[2]	$6,446	$6,298	2.3%
Beneficiaries:			
• Number in pay status	194	191	1.6%
• Average age	76.4	76.1	0.3
• Average monthly benefit[2]	$4,361	$4,205	3.7%

Notes: Based on the data provided for the December 31, 2022 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 2022	Year Ended December 31 2021	Change From Prior Year
Active members in valuation:			
• Number	638	721	-11.5%
• Average age	48.7	48.2	0.5
• Average years of service	19.4	18.7	0.7
• Total projected compensation	$100,553,460	$106,171,229	-5.3%
• Average projected compensation	$157,607	$147,256	7.0%
• Account balances	$311,551,644	$313,199,255	-0.5%
• Total active vested members	638	721	-11.5%
Inactive vested members:			
• Number[1]	120	116	3.4%
• Average Age	48.0	47.4	0.6
Retired members:			
• Number in pay status	696	661	5.3%
• Average age	63.8	63.5	0.3
• Average monthly benefit[2]	$6,676	$6,450	3.5%
Disabled members:			
• Number in pay status	285	260	9.6%
• Average age	57.8	57.8	0.0
• Average monthly benefit[2]	$5,599	$5,284	6.0%
Beneficiaries:			
• Number in pay status	107	93	15.1%
• Average age	63.3	62.5	0.8
• Average monthly benefit[2]	$3,032	$2,960	2.4%

Notes: Based on the data provided for the December 31, 2022 actuarial valuation, the average age at retirement for the Safety Tier 2 service and disabled retirees was 55.3 and 47.7, 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 2022	Year Ended December 31 2021	Change From Prior Year
Active members in valuation:			
• Number	21	22	-4.5%
• Average age	47.0	46.8	0.2
• Average years of service	10.7	9.9	0.8
• Total projected compensation	$2,860,100	$2,828,060	1.1%
• Average projected compensation	$136,195	$128,548	5.9%
• Account balances	$3,375,954	$3,121,728	8.1%
• Total active vested members	19	19	0.0%
Inactive vested members:			
• Number[1]	9	10	-10.0%
• Average Age	42.9	41.1	1.8
Retired members:			
• Number in pay status	5	5	0.0%
• Average age	57.9	56.9	1.0
• Average monthly benefit[2]	$1,513	$1,489	1.6%
Disabled members:			
• Number in pay status	1	0	N/A
• Average age	63.2	N/A	N/A
• Average monthly benefit[2]	$7,334	N/A	N/A
Beneficiaries:			
• Number in pay status	2	1	100.0%
• Average age	52.5	46.7	5.8
• Average monthly benefit[2]	$1,269	$1,763	-28.0%

Notes: Based on the data provided for the December 31, 2022 actuarial valuation, the average age at retirement for the Safety Tier 2C service and disabled retirees was 55.2 and 62.3, 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 2D

Category	Year Ended December 31 2022	Year Ended December 31 2021	Change From Prior Year
Active members in valuation:			
• Number	126	127	-0.8%
• Average age	43.1	42.6	0.5
• Average years of service	11.4	10.6	0.8
• Total projected compensation	$18,433,073	$17,401,236	5.9%
• Average projected compensation	$146,294	$137,018	6.8%
• Account balances	$25,702,331	$22,409,671	14.7%
• Total active vested members	109	112	-2.7%
Inactive vested members:			
• Number[1]	15	16	-6.3%
• Average Age	43.9	43.9	0.0
Retired members:			
• Number in pay status	9	5	80.0%
• Average age	61.3	58.5	2.8
• Average monthly benefit[2]	$2,910	$2,537	14.7%
Disabled members:			
• Number in pay status	10	7	42.9%
• Average age	48.6	49.8	-1.2
• Average monthly benefit[2]	$4,708	$4,283	9.9%
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, 2022 actuarial valuation, the average age at retirement for the Safety Tier 2D service and disabled retirees was 59.5 and 45.0, 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 2022	Year Ended December 31 2021	Change From Prior Year
Active members in valuation:			
• Number	659	551	19.6%
• Average age	36.4	36.2	0.2
• Average years of service	4.1	4.0	0.1
• Total projected compensation[1]	$82,863,456	$66,634,471	24.4%
• Average projected compensation	$125,741	$120,934	4.0%
• Account balances	$48,360,429	$36,757,787	31.6%
• Total active vested members	242	221	9.5%
Inactive vested members:			
• Number[2]	84	52	61.5%
• Average Age	35.9	34.8	1.1
Retired members:			
• Number in pay status	15	9	66.7%
• Average age	61.2	61.0	0.2
• Average monthly benefit[3]	$1,850	$1,552	19.2%
Disabled members:			
• Number in pay status	6	4	50.0%
• Average age	49.8	51.0	-1.2
• Average monthly benefit[3]	$4,831	$4,584	5.4%
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, 2022 actuarial valuation, the average age at retirement for the Safety Tier 4 service and disabled retirees was 59.1 and 47.1, respectively.

[1] Projected compensation 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 2023 is equal to $146,042. (For an employer that is not enrolled in Social Security, the maximum amount is 120% of $146,042, or $175,250). (reference: Section 7522.10). These amounts should be adjusted for changes to the Consumer Price Index for All Urban Consumers after 2023. (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, 2022 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	102	102	—	—	—	—	—	—	—	—
	$77,909	$77,909	—	—	—	—	—	—	—	—
25 – 29	600	552	48	—	—	—	—	—	—	—
	90,542	89,737	$99,795	—	—	—	—	—	—	—
30 – 34	1,224	767	423	32	2	—	—	—	—	—
	99,948	96,749	104,395	$116,971	$114,335	—	—	—	—	—
35 – 39	1,447	623	533	217	74	—	—	—	—	—
	107,135	101,783	105,297	121,148	124,340	—	—	—	—	—
40 – 44	1,657	545	442	322	281	67	—	—	—	—
	113,682	102,249	109,552	123,590	128,117	$125,758	—	—	—	—
45 – 49	1,613	385	343	274	289	294	27	1	—	—
	118,920	102,680	111,702	125,135	131,849	128,193	$139,568	$124,452	—	—
50 – 54	1,668	331	273	215	287	406	124	32	—	—
	117,851	108,841	109,332	119,448	122,785	122,633	137,136	93,344	—	—
55 – 59	1,405	241	190	175	203	284	142	136	33	1
	115,050	104,385	112,159	121,304	114,611	118,196	126,867	114,487	$104,397	$86,428
60 – 64	1,091	138	172	134	171	212	84	118	56	6
	111,136	100,558	104,112	123,769	112,808	105,425	115,472	122,767	115,484	97,685
65 – 69	407	56	59	82	56	74	26	30	13	11
	109,591	103,852	101,736	114,199	107,339	110,837	97,539	108,705	141,644	142,688
70 & over	132	11	26	14	29	14	14	9	10	5
	107,081	102,173	105,457	98,617	87,810	96,419	125,893	99,900	139,051	187,966
Total	11,346	3,751	2,509	1,465	1,392	1,351	417	326	112	23
	$110,879	$99,268	$107,460	$121,744	$122,046	$119,447	$126,586	$114,505	$117,358	$138,345

Notes: Age and years of service were projected from November 30, 2022 to December 31, 2022.

Exhibit B: Members in Active Service as of December 31, 2022 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	2	—	—	2	—	—	—	—	—	—
	$74,187	—	—	$74,187	—	—	—	—	—	—
40 – 44	4	—	—	2	2	—	—	—	—	—
	109,682	—	—	73,611	$145,753	—	—	—	—	—
45 – 49	5	—	—	5	—	—	—	—	—	—
	90,713	—	—	90,713	—	—	—	—	—	—
50 – 54	7	—	—	1	3	3	—	—	—	—
	98,297	—	—	68,084	76,056	$130,609	—	—	—	—
55 – 59	12	—	—	1	4	4	1	—	1	1
	79,893	—	—	87,315	80,046	77,067	$69,690	—	$86,834	$86,428
60 – 64	14	—	—	1	1	—	2	2	2	6
	98,590	—	—	89,885	77,148	—	131,623	$76,891	105,041	97,685
65 – 69	22	—	—	1	2	1	2	3	4	9
	117,516	—	—	60,251	176,829	69,621	70,487	75,807	165,639	118,985
70 & over	8	—	—	—	1	—	—	—	2	5
	148,815	—	—	—	71,974	—	—	—	89,360	187,966
Total	**74**	**—**	**—**	**13**	**13**	**8**	**5**	**5**	**9**	**21**
	$105,994	**—**	**—**	**$81,131**	**$103,280**	**$96,215**	**$94,782**	**$76,241**	**$126,466**	**$127,773**

Notes: Age and years of service were projected from November 30, 2022 to December 31, 2022.

Exhibit B: Members in Active Service as of December 31, 2022 by Age, Years of Service, and Average Projected Compensation (continued)

General Tier 2

Age	Total	Years of Service 0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34	35 – 39	40 & over
Under 25	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
25 – 29	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
30 – 34	28	2	12	13	1	—	—	—	—	—
	$95,136	$83,388	$88,033	$104,773	$78,594	—	—	—	—	—
35 – 39	251	11	46	158	36	—	—	—	—	—
	109,131	112,966	112,485	111,443	93,525	—	—	—	—	—
40 – 44	555	14	57	264	175	45	—	—	—	—
	118,113	135,849	136,996	122,063	110,354	$95,672	—	—	—	—
45 – 49	721	12	42	234	222	195	15	1	—	—
	121,585	130,407	141,586	122,868	126,344	111,156	$103,474	$124,452	—	—
50 – 54	928	15	38	189	239	323	94	30	—	—
	119,242	148,365	147,366	120,331	118,524	115,699	123,760	91,905	—	—
55 – 59	911	12	28	156	177	243	132	132	31	—
	117,335	145,729	129,330	121,777	113,761	114,201	124,273	113,706	$104,030	—
60 – 64	747	7	15	121	155	201	80	114	54	—
	114,020	126,949	107,373	126,694	110,482	103,200	114,111	123,592	115,871	—
65 – 69	268	5	9	73	52	71	22	27	9	—
	111,939	88,324	133,430	117,532	105,595	111,579	97,810	112,360	130,980	—
70 & over	87	1	2	14	28	14	11	9	8	—
	101,810	106,254	106,842	98,617	88,375	96,419	111,057	99,900	151,474	—
Total	**4,496**	**79**	**249**	**1,222**	**1,085**	**1,092**	**354**	**313**	**102**	**—**
	$116,737	**$130,214**	**$129,447**	**$120,275**	**$114,617**	**$110,914**	**$118,904**	**$114,739**	**$116,398**	**—**

Notes: Age and years of service were projected from November 30, 2022 to December 31, 2022.

Exhibit B: Members in Active Service as of December 31, 2022 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	1	1	—	—	—	—	—	—	—	—
	$115,943	$115,943	—	—	—	—	—	—	—	—
40 – 44	1	1	—	—	—	—	—	—	—	—
	114,995	114,995	—	—	—	—	—	—	—	—
45 – 49	1	—	—	—	—	1	—	—	—	—
	77,751	—	—	—	—	$77,751	—	—	—	—
50 – 54	2	—	1	1	—	—	—	—	—	—
	78,051	—	$78,126	$77,976	—	—	—	—	—	—
55 – 59	6	—	1	2	2	—	1	—	—	—
	99,153	—	134,412	109,593	$81,783	—	$77,751	—	—	—
60 – 64	3	—	—	—	1	2	—	—	—	—
	110,823	—	—	—	170,981	80,744	—	—	—	—
65 – 69	1	—	—	—	—	1	—	—	—	—
	124,146	—	—	—	—	124,146	—	—	—	—
70 & over	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
Total	**15**	**2**	**2**	**3**	**3**	**4**	**1**	**—**	**—**	**—**
	$101,088	**$115,469**	**$106,269**	**$99,054**	**$111,516**	**$90,846**	**$77,751**	**—**	**—**	**—**

Notes: Age and years of service were projected from November 30, 2022 to December 31, 2022.

Exhibit B: Members in Active Service as of December 31, 2022 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	77	77	—	—	—	—	—	—	—	—
	$71,291	$71,291	—	—	—	—	—	—	—	—
25 – 29	468	429	39	—	—	—	—	—	—	—
	85,249	84,646	$91,890	—	—	—	—	—	—	—
30 – 34	983	648	327	8	—	—	—	—	—	—
	94,416	92,958	97,259	$96,314	—	—	—	—	—	—
35 – 39	967	546	413	8	—	—	—	—	—	—
	99,699	99,525	99,443	124,858	—	—	—	—	—	—
40 – 44	857	492	351	11	3	—	—	—	—	—
	100,258	98,868	102,459	91,717	$102,042	—	—	—	—	—
45 – 49	644	357	276	6	4	1	—	—	—	—
	102,024	100,731	104,271	96,539	73,479	$90,634	—	—	—	—
50 – 54	511	277	222	10	1	1	—	—	—	—
	100,857	99,307	101,892	111,748	146,042	146,042	—	—	—	—
55 – 59	375	216	147	8	4	—	—	—	—	—
	100,651	98,941	103,348	100,316	94,523	—	—	—	—	—
60 – 64	288	131	142	10	4	1	—	—	—	—
	98,828	99,147	98,244	88,529	123,044	146,042	—	—	—	—
65 – 69	112	51	50	8	1	1	1	—	—	—
	100,011	105,374	96,031	90,530	69,202	86,058	$146,042	—	—	—
70 & over	34	10	24	—	—	—	—	—	—	—
	104,290	101,765	105,342	—	—	—	—	—	—	—
Total	**5,316**	**3,234**	**1,991**	**69**	**17**	**4**	**1**	**—**	**—**	**—**
	$97,578	**$95,623**	**$100,599**	**$99,812**	**$99,150**	**$117,194**	**$146,042**	**—**	**—**	**—**

Notes: Age and years of service were projected from November 30, 2022 to December 31, 2022.

Exhibit B: Members in Active Service as of December 31, 2022 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	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
65 – 69	1	—	—	—	—	—	—	—	—	1
	$387,137	—	—	—	—	—	—	—	—	$387,137
70 & over	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
Total	**1**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**1**
	$387,137	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**—**	**$387,137**

Notes: Age and years of service were projected from November 30, 2022 to December 31, 2022.

Exhibit B: Members in Active Service as of December 31, 2022 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	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
35 – 39	56	—	—	20	36	—	—	—	—	—
	$156,507	—	—	$158,191	$155,571	—	—	—	—	—
40 – 44	138	—	—	26	93	19	—	—	—	—
	162,565	—	—	142,559	161,948	$192,965	—	—	—	—
45 – 49	184	—	—	19	60	93	12	—	—	—
	162,301	—	—	154,626	156,264	164,875	$184,685	—	—	—
50 – 54	160	—	1	12	40	78	29	—	—	—
	154,094	—	$93,286	119,331	153,207	150,811	180,630	—	—	—
55 – 59	71	—	—	6	15	37	8	4	1	—
	149,500	—	—	131,908	143,764	148,880	182,960	$140,256	$133,315	—
60 – 64	23	—	1	—	10	8	2	2	—	—
	146,754	—	100,138	—	142,507	162,422	153,754	121,622	—	—
65 – 69	3	—	—	—	1	—	1	—	—	1
	101,974	—	—	—	97,182	—	97,182	—	—	$111,558
70 & over	3	—	—	—	—	—	3	—	—	—
	180,292	—	—	—	—	—	180,292	—	—	—
Total	**638**	**—**	**2**	**83**	**255**	**235**	**55**	**6**	**1**	**1**
	$157,607	**—**	**$96,712**	**$144,960**	**$156,253**	**$159,876**	**$179,341**	**$134,045**	**$133,315**	**$111,558**

Notes: Age and years of service were projected from November 30, 2022 to December 31, 2022.

Exhibit B: Members in Active Service as of December 31, 2022 by Age, Years of Service, and Average Projected Compensation (continued)

Safety Tier 2C

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	1	—	—	1	—	—	—	—	—	—
	$156,583	—	—	$156,583	—	—	—	—	—	—
35 – 39	4	1	—	3	—	—	—	—	—	—
	128,660	$104,231	—	136,803	—	—	—	—	—	—
40 – 44	6	—	1	4	1	—	—	—	—	—
	128,930	—	$138,377	135,613	$92,753	—	—	—	—	—
45 – 49	3	—	2	1	—	—	—	—	—	—
	123,260	—	138,501	92,777	—	—	—	—	—	—
50 – 54	3	1	—	1	—	—	—	1	—	—
	131,127	172,936	—	98,897	—	—	—	$121,547	—	—
55 – 59	2	—	1	1	—	—	—	—	—	—
	190,518	—	173,123	207,912	—	—	—	—	—	—
60 – 64	2	—	1	1	—	—	—	—	—	—
	135,550	—	98,144	172,956	—	—	—	—	—	—
65 – 69	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
70 & over	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
Total	**21**	**2**	**5**	**12**	**1**	**—**	**—**	**1**	**—**	**—**
	$136,195	**$138,583**	**$137,329**	**$140,166**	**$92,753**	**—**	**—**	**$121,547**	**—**	**—**

Notes: Age and years of service were projected from November 30, 2022 to December 31, 2022.

Exhibit B: Members in Active Service as of December 31, 2022 by Age, Years of Service, and Average Projected Compensation (continued)

Safety Tier 2D

		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	14	2	1	10	1	—	—	—	—	—
	$144,875	$138,288	$147,691	$145,391	$150,076	—	—	—	—	—
35 – 39	33	2	3	26	2	—	—	—	—	—
	147,156	131,097	133,543	152,294	116,853	—	—	—	—	—
40 – 44	34	7	2	15	7	3	—	—	—	—
	151,896	184,213	158,595	144,403	133,941	$151,387	—	—	—	—
45 – 49	24	1	7	9	3	4	—	—	—	—
	147,607	155,748	145,265	163,599	128,701	127,870	—	—	—	—
50 – 54	15	4	3	1	4	1	1	1	—	—
	131,558	167,003	131,036	144,321	102,395	116,913	$133,138	$108,297	—	—
55 – 59	4	1	1	1	1	—	—	—	—	—
	146,548	177,777	173,788	122,611	112,017	—	—	—	—	—
60 – 64	2	—	1	1	—	—	—	—	—	—
	141,026	—	175,117	106,935	—	—	—	—	—	—
65 – 69	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
70 & over	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
Total	**126**	**17**	**18**	**63**	**18**	**8**	**1**	**1**	**—**	**—**
	$146,294	**$166,459**	**$145,799**	**$149,617**	**$123,837**	**$135,319**	**$133,138**	**$108,297**	**—**	**—**

Notes: Age and years of service were projected from November 30, 2022 to December 31, 2022.

Exhibit B: Members in Active Service as of December 31, 2022 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	25	25	—	—	—	—	—	—	—	—
	$98,290	$98,290	—	—	—	—	—	—	—	—
25 – 29	132	123	9	—	—	—	—	—	—	—
	109,306	107,496	$134,050	—	—	—	—	—	—	—
30 – 34	198	115	83	—	—	—	—	—	—	—
	124,632	117,616	134,352	—	—	—	—	—	—	—
35 – 39	133	62	71	—	—	—	—	—	—	—
	126,491	118,470	133,495	—	—	—	—	—	—	—
40 – 44	62	31	31	—	—	—	—	—	—	—
	128,568	121,820	135,315	—	—	—	—	—	—	—
45 – 49	31	15	16	—	—	—	—	—	—	—
	133,688	123,327	143,401	—	—	—	—	—	—	—
50 – 54	42	34	8	—	—	—	—	—	—	—
	155,117	160,347	132,888	—	—	—	—	—	—	—
55 – 59	24	12	12	—	—	—	—	—	—	—
	161,431	154,907	167,955	—	—	—	—	—	—	—
60 – 64	12	—	12	—	—	—	—	—	—	—
	164,390	—	164,390	—	—	—	—	—	—	—
65 – 69	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
70 & over	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
Total	**659**	**417**	**242**	**—**	**—**	**—**	**—**	**—**	**—**	**—**
	$125,741	**$118,674**	**$137,918**	**—**	**—**	**—**	**—**	**—**	**—**	**—**

Notes: Age and years of service were projected from November 30, 2022 to December 31, 2022.

Exhibit C: Reconciliation of Member Data

	Active Members	Inactive Vested Members[1]	Retired Members	Disabled Members	Beneficiaries	Total
Number as of December 31, 2021	**11,326**	**3,265**	**8,264**	**977**	**1,295**	**25,127**
• New members	989	0	0	0	87	1,076
• Terminations – with vested rights	(448)	448	0	0	0	0
• Contribution refunds	(124)	(99)	0	0	0	(223)
• Retirements	(386)	(76)	462	0	0	0
• New disabilities	(34)	(3)	(12)	49	0	0
• Return to work	42	(42)	0	0	0	0
• Died with or without beneficiary	(18)	(9)	(237)	(19)	(67)	(350)
• Data adjustments[2]	(1)	80	2	(1)	(2)	78
Number as of December 31, 2022	**11,346**	**3,564**	**8,479**	**1,006**	**1,313**	**25,708**

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

[2] Out of the net 80 data adjustments for inactive vested members: 74 members were hired and terminated employment after November 30, 2021 (i.e. the census data collection date for last year's valuation); 1 member was classified as contribution refund in the December 31, 2021 valuation data and terminated vested in the December 31, 2022 data; 1 deferred ex-spouse (DRO) commenced receiving benefits; and 6 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, 2022		Year Ended December 31, 2021	
Net assets at market value at the beginning of the year		**$11,840,862,896**		**$9,629,767,350**
Contribution income:				
• Employer contributions	$281,646,702		$1,116,575,840	
• Member contributions	120,673,520		111,091,264	
Net contribution income		*$402,320,222*		*$1,227,667,104*
Investment income:				
• Interest, dividends and other income	$160,271,535		$189,755,802	
• Asset appreciation	(1,407,721,214)		1,492,160,781	
• Less investment and administrative fees	(59,173,605)		(96,302,300)	
Net investment income		*$(1,306,623,284)*		*$1,585,614,282*
Total income available for benefits		**$(904,303,062)**		**$2,813,281,386**
Less benefit payments:				
• Service retirement	$(573,319,962)		$(542,022,349)	
• Death payments	(3,360,373)		(3,670,804)	
• Supplemental cost of living	(943,290)		(932,177)	
• Member refunds	(13,713,029)		(9,643,740)	
• Health insurance subsidies	(46,711,117)		(45,916,769)	
Net benefit payments		*$(638,047,771)*		*$(602,185,840)*
Change in net assets at market value		**$(1,542,350,833)**		**$2,211,095,546**
Net assets at market value at the end of the year		**$10,298,512,063**		**$11,840,862,896**

Note: Results may be slightly off due to rounding.

Exhibit E: Summary Statement of Plan Assets

	December 31, 2022		December 31, 2021	
Cash		*$6,915,492*		*$1,754,098*
Securities lending collateral		*133,698,608*		*127,313,079*
Accounts receivable:				
• Contributions	$23,161,972		$22,026,840	
• Investment receivables	21,207,515		19,624,427	
• Investments sold	3,240,137		7,652,879	
• Futures contracts	40,501		161,229	
• Foreign exchange contracts	2,476,715		83	
• Others	226,568		350,348	
Total accounts receivable		*$50,353,408*		*$49,815,806*
Prepaid expenses		*805,022*		*802,521*
Investments:				
• Short-term investments	$220,267,913		$263,949,698	
• Equities	5,009,392,612		6,361,014,500	
• Fixed income investments	1,487,334,528		1,882,269,248	
• Real estate	836,238,352		713,786,818	
• Capital assets	7,583,582		6,184,907	
• Leased assets	0		0	
• Private equity and alternative investments	2,725,887,049		2,611,468,651	
Total investments at market value		*$10,286,704,036*		*$11,838,673,822*
Total assets		**$10,478,476,565**		**$12,018,359,326**
Accounts payable:				
• Securities lending & investments purchased	$(156,206,293)		$(153,059,322)	
• Investment-related payables	(12,107,349)		(13,515,964)	
• Futures contracts & equity swaps	(1,041,432)		(589,217)	
• Foreign exchange contracts	(393)		(912,711)	
• Accrued administration expense	(2,932,899)		(2,624,040)	
• Members benefits & refunds, and retirement payroll deductions payable	(7,622,340)		(6,692,726)	
• Lease liability	(53,798)		(102,449)	
Total accounts payable		**$(179,964,503)**		**$(177,496,429)**
Net assets at market value		**$10,298,512,063**		**$11,840,862,896**
Net assets at actuarial value		**$11,092,625,485**		**$10,707,915,790**
Net assets at valuation value		**$9,923,019,224**		**$9,453,107,051**

Note: Results may be slightly off due to rounding.

Exhibit F: Summary of Reported Reserve Information as of December 31, 2022

	Reserves
Used in Development of Valuation Value of Assets:	
• Members deposit-basic	1,483,588,952
• Members cost-of-living	338,926,926
• Employer advance (before transfer from SRBR to employer advance)	1,643,115,584
• Pension reserve-current	1,943,302,577
• Pension reserve-prior	6,770,845
• Annuity reserve	1,147,595,455
• Cost-of-living reserve	2,564,196,469
• Survivor death benefit	26,376,342
• SRBR transfer to employer advance[1]	7,981,476
• Reserve for interest fluctuations (contingency reserve), if negative	0
• County-Safety UAAL advance reserve	748,928,975
• LARPD-General UAAL advance reserve	12,235,622
Subtotal	**$9,923,019,224**[2]
Not Used in Development of Valuation Value of Assets:	
• 401(h) account	$8,979,234
• Supplemental retirees benefit reserve (before transfer from SRBR to employer advance)	1,168,608,503
• Reserve for interest fluctuations (contingency reserve), if positive	0
• Market stabilization reserve	(794,113,422)
• SRBR transfer to employer advance[2]	(7,981,476)
Subtotal	**$375,492,839**
Total	**$10,298,512,063**

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, 2022

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
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%
2022	281,646,702	120,673,520	(1,306,623,284)	638,047,771	10,298,512,063	11,092,625,485	107.7%

[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	$748,637	10	$90,704
Experience Loss	December 31, 2012	165,501	20	139,129	10	16,857
Experience Gain	December 31, 2013	(75,003)	20	(65,577)	11	(7,345)
Experience Gain	December 31, 2014	(156,281)	20	(140,952)	12	(14,714)
Change in Assumptions	December 31, 2014	350,827	20	316,420	12	33,031
Experience Gain	December 31, 2015	(98,619)	20	(91,324)	13	(8,947)
Experience Loss	December 31, 2016	3,655	20	3,454	14	319
Experience Gain	December 31, 2017	(27,249)	20	(26,164)	15	(2,295)
Change in Assumptions	December 31, 2017	260,437	20	250,064	15	21,937
Experience Gain[2]	December 31, 2018	(6,121)	20	(5,960)	16	(498)
Experience Loss	December 31, 2019	74,367	20	73,149	17	5,848
Experience Loss	December 31, 2020	29,771	20	29,483	18	2,262
Change in Assumptions	December 31, 2020	231,791	20	229,550	18	17,612
Experience Gain	December 31, 2021	(103,975)	20	(103,609)	19	(7,651)
Experience Loss	December 31, 2022	25,358	20	25,358	20	1,807
Subtotal				**1,381,658**		**148,927**

[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	Annual Payment[2] ($ in '000s)
Combined Bases	December 31, 2011	$7,060	21	6,142	14.5	553
Experience Loss	December 31, 2012	370	20	320	14.5	29
Experience Gain	December 31, 2013	(534)	20	(477)	14.5	(43)
Experience Gain	December 31, 2014	(1,562)	20	(1,428)	14.5	(129)
Change in Assumptions	December 31, 2014	1,303	20	1,192	14.5	107
Experience Gain[3]	December 31, 2015	(1,506)	20	(1,405)	14.5	(126)
Experience Loss	December 31, 2016	139	20	132	14.5	12
Experience Gain[4]	December 31, 2017	(622)	20	(597)	14.5	(54)
Change in Assumptions	December 31, 2017	1,418	20	1,359	14.5	122
Experience Loss[5]	December 31, 2018	1,058	20	1,021	14.5	92
UAAL for Tier 1 members[6]	December 31, 2018	6,576	20	6,368	14.5	573
Experience Loss[7]	December 31, 2019	980	20	955	14.5	86
Experience Gain[8]	December 31, 2020	(2,024)	20	(1,980)	14.5	(178)
Change in Assumptions	December 31, 2020	1,171	20	1,146	14.5	103

[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] Level percentage of payroll.

[3] 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.

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

[5] 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.

[6] 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.

[7] 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.

[8] The gain is primarily due to higher than expected mortality for continuing retirees, from the death of 4 retirees and 1 beneficiary.

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)
Voluntary UAAL Advance Reserve Contributions[3]	June 30, 2021	(12,611)	16	(12,236)	14.5	(1,026)
Experience Gain[4]	December 31, 2021	(488)	15.5	(479)	14.5	(43)
Experience Gain[5]	December 31, 2022	(862)	14.5	(862)	14.5	(78)
Subtotal				**$(829)**		**$0**

[1] The LARPD General cost sharing group has a surplus of $829,000 on a VVA basis. In order to calculate the proper offset available to LARPD from the LARPD General UAAL Advance Reserve, we have amortized the new LARPD experience gain layer over 14.5 years so that it will have the same amortization period as the LARPD General UAAL Advance Reserve (14.5 years remaining as of December 31, 2022).

[2] Level percentage of payroll.

[3] 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 and that balance is $12.236 million. The outstanding balance of this reserve is amortized over the remaining 14.5 years (as of December 31, 2022) as a contribution credit. Moreover, this contribution credit has been adjusted to not exceed the UAAL payment determined before including the contribution credit.

[4] The gain is primarily due to higher than expected return on investments (after smoothing).

[5] The gain is primarily due to higher than expected mortality for continuing retirees, from the death of 2 retirees and 1 beneficiary, and higher than expected termination for active members. There is an additional loss due to investment experience related to the voluntary UAAL Advance Reserve contributions of $362,000 that we have used in updating the balance of $12,236 million.

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	$506,431	10	$61,359
Experience Loss	December 31, 2012	63,130	20	53,071	10	6,430
Experience Gain	December 31, 2013	(9,350)	20	(8,177)	11	(916)
Experience Gain	December 31, 2014	(43,238)	20	(38,997)	12	(4,071)
Change in Assumptions	December 31, 2014	107,552	20	97,003	12	10,126
Experience Gain	December 31, 2015	(12,850)	20	(11,900)	13	(1,166)
Experience Loss	December 31, 2016	19,183	20	18,136	14	1,677
Experience Loss	December 31, 2017	6,354	20	6,103	15	535
Change in Assumptions	December 31, 2017	134,184	20	128,839	15	11,303
Experience Loss	December 31, 2018	9,377	20	9,130	16	763
Experience Loss	December 31, 2019	24,143	20	23,747	17	1,898
Experience Loss	December 31, 2020	6,202	20	6,142	18	471
Change in Assumptions	December 31, 2020	88,760	20	87,902	18	6,744
Voluntary UAAL Advance Reserve Contributions[2]	June 30, 2021	(800,000)	13	(748,929)	11.5	(80,905)
Experience Gain	December 31, 2021	(35,445)	20	(35,321)	19	(2,608)
Experience Loss[3]	December 31, 2022	16,969	20	16,969	20	1,209
Subtotal				**$110,149**		**$12,849**

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 and that balance is $748.929 million. The outstanding balance of this reserve is amortized over the remaining 11.5 years (as of December 31, 2022) as a contribution credit.
3 There is an additional loss due to investment experience related to the voluntary UAAL Advance Reserve contributions of $22.243 million that we have used in updating the balance of $748.929 million.

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	$1,255,068	10	$152,063
Experience Loss	December 31, 2012	228,631	20	192,200	10	23,287
Experience Gain	December 31, 2013	(84,353)	20	(73,754)	11	(8,261)
Experience Gain	December 31, 2014	(199,519)	20	(179,949)	12	(18,785)
Change in Assumptions	December 31, 2014	458,379	20	413,423	12	43,157
Experience Gain	December 31, 2015	(111,469)	20	(103,224)	13	(10,113)
Experience Loss	December 31, 2016	22,838	20	21,590	14	1,996
Experience Gain	December 31, 2017	(20,895)	20	(20,061)	15	(1,760)
Change in Assumptions	December 31, 2017	394,621	20	378,903	15	33,240
Experience Gain	December 31, 2018	10,951	20	3,170	16	265
Experience Loss	December 31, 2019	99,599	20	96,896	17	7,746
Experience Loss	December 31, 2020	34,055	20	35,625	18	2,733
Change in Assumptions	December 31, 2020	321,740	20	317,452	18	24,356
Voluntary County Safety UAAL Advance Reserve Contributions	June 30, 2021	(800,000)	13	(748,929)	11.5	(80,905)
Experience Gain	December 31, 2021	(139,420)	20	(138,930)	19	(10,259)
Voluntary LARPD General UAAL Advance Reserve Contributions	June 30, 2021	(12,611)	16	(12,236)	14.5	(1,026)
LARPD – other bases	Varies[1]	Varies	Varies	11,407	14.5	1,026
Experience Loss	December 31, 2022	42,327[2]	20	42,327	20	3,016
Subtotal				**$1,490,978**		**$161,776**

[1] This base includes all LARPD UAAL amortization bases combined through the December 31, 2022 valuation except for the Voluntary LARPD General UAAL Advance Reserve Contributions base.

[2] The experience loss for the total plan of $64,178,000 shown in Section 2, Subsection E is different from this amount because the experience loss 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.

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	633	15	71
Experience Loss	December 31, 2018	61	20	53	16	6
Experience Loss	December 31, 2019	110	20	100	17	10
Experience Loss	December 31, 2020	106	20	101	18	10
Change in Assumptions	December 31, 2020	18	20	16	18	2
Experience Loss	December 31, 2021	13	20	13	19	1
Experience Loss	December 31, 2022	108	20	108	20	10
Subtotal				**$1,024**		**$110**
Credit for Expected UAAL Contribution				99[2]		
Total				**$1,123**		

Note: The equivalent amortization period for the entire Plan is about 11 years.

1 Level dollar, and reflects timing of payment (i.e., next scheduled on April 1, 2024).
2 $101,000 (as determined in the December 31, 2021 valuation to be payable April 1, 2023), discounted at 7.00% to December 31, 2022.

Exhibit I: Projection of UAAL Balances and Payments

Outstanding Balance of $1,492 Million in Net UAAL as of December 31, 2022

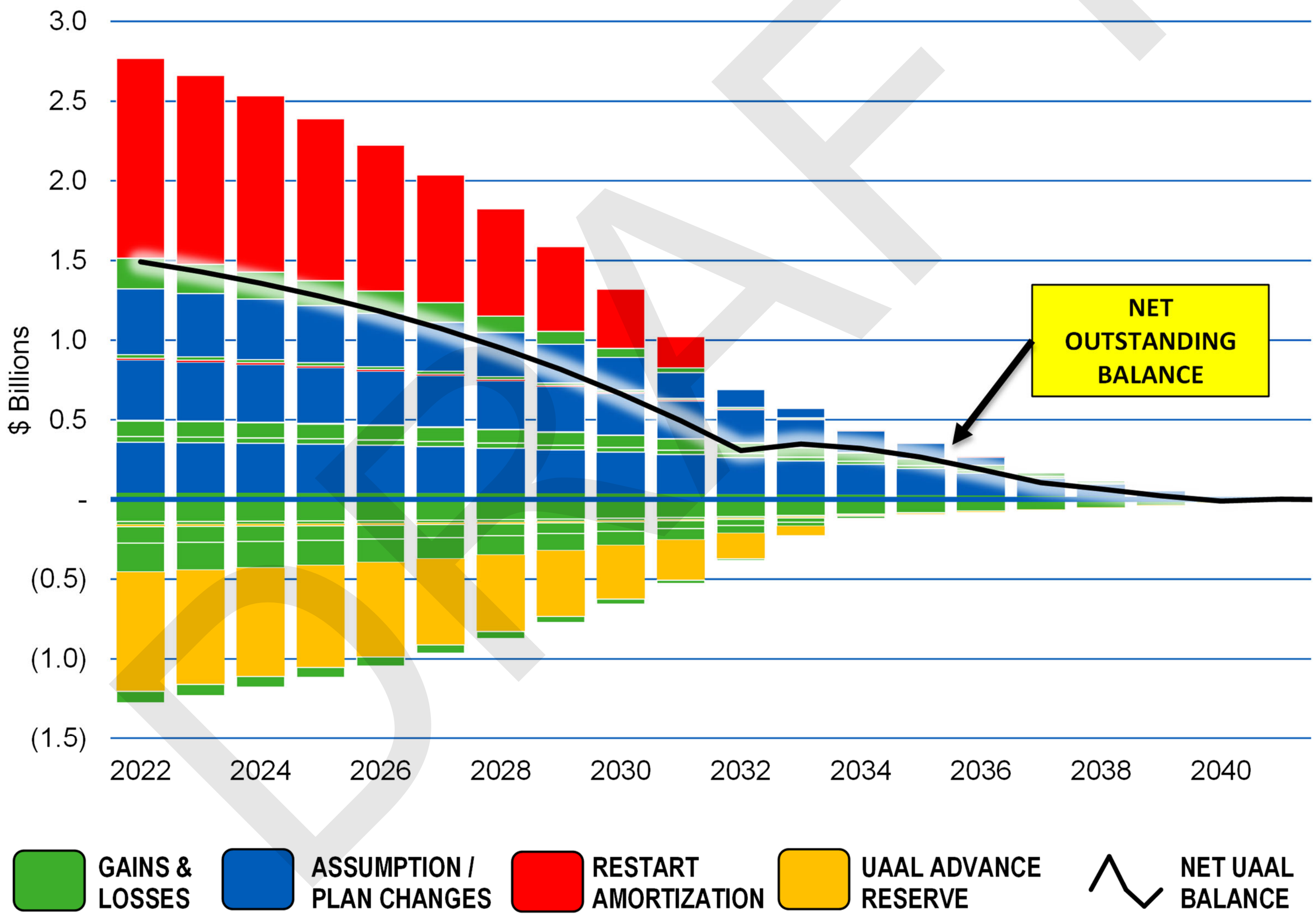


Exhibit I: Projection of UAAL Balances and Payments

Annual Payments Required to Amortize $1,492 Million in Net UAAL as of December 31, 2022

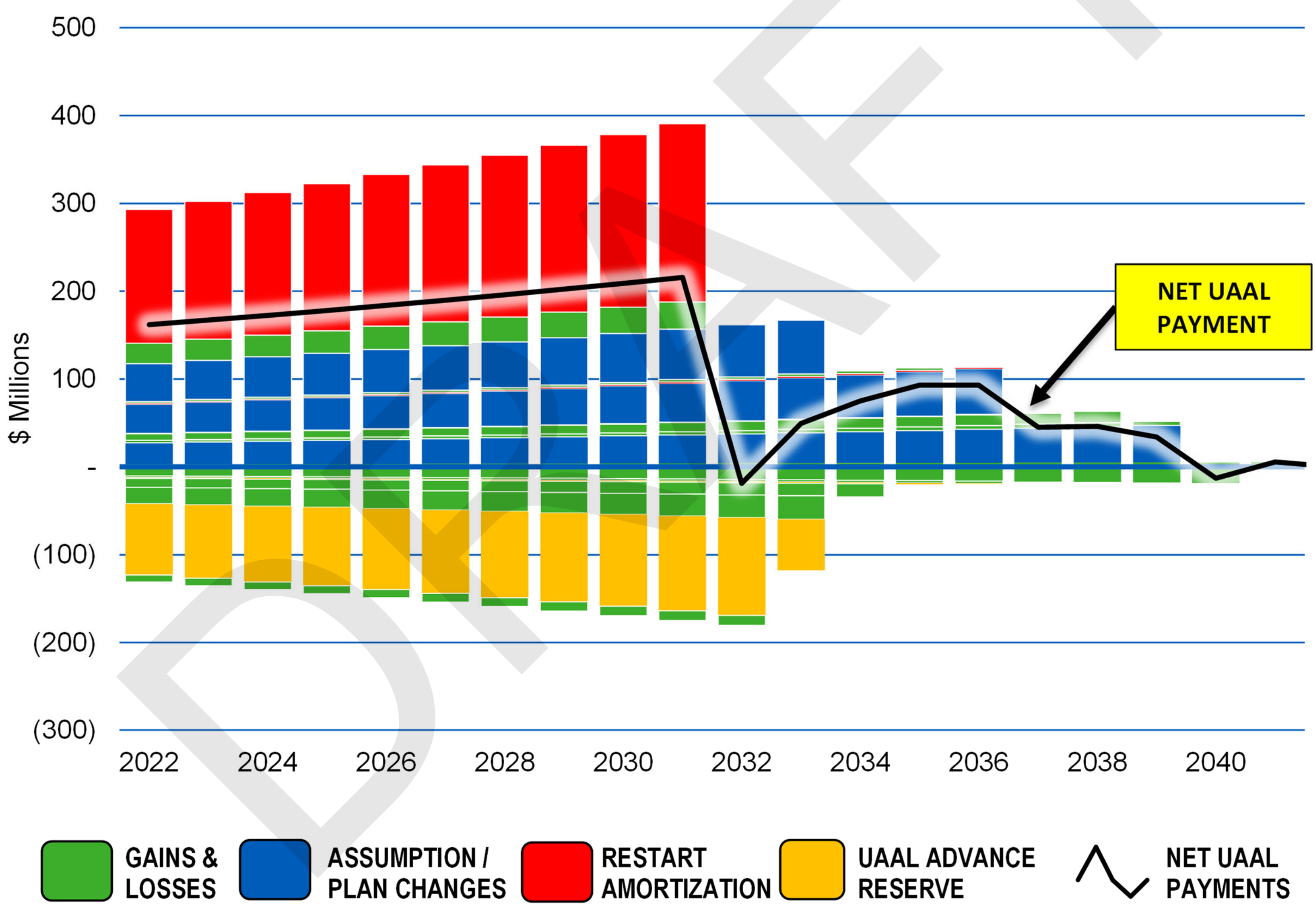


Exhibit J: Definition of Pension Terms

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.

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.
Economic Assumptions	
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, 2023 has been reflected in the December 31, 2022 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.

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.

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.
Actuarial Funding Policy	
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 10 years remaining as of December 31, 2022). 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, 2022, the existing LARPD General UAAL layers are amortized over 14.5 years. [1]
<u>Other Actuarial Methods</u>	
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, 2022, the outstanding balances of the POBs were $443.5 million for the General employers (County, AHS, Court, and First 5) and $82.8 million for the Safety employers (County).

[1] The LARPD General cost sharing group has a surplus of $829,000 on a VVA basis. In order to calculate the proper offset available to LARPD from the LARPD General UAAL Advance Reserve, we have amortized the new LARPD experience gain layer over 14.5 years so that it will have the same amortization period as the LARPD General UAAL Advance Reserve (14.5 years remaining as of December 31, 2022).

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*.

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 $245,000 for 2022 and $265,000 for 2023. 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.
Justification for Change in Actuarial Assumptions:	There have been no changes in actuarial assumptions since the last valuation.

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 2023 is $330,000. The limit is indexed for inflation on an annual basis.

Tier 4	Pensionable compensation is limited to $146,042 for 2023 for an employer that is enrolled in Social Security. For an employer that is not enrolled in Social Security, the maximum amount for 2023 is 120% of $146,042, or $175,250. (reference: Section 7522.10). These amounts should be adjusted for changes to the Consumer Price Index for All Urban Consumers after 2023. (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, 2022 (New) and December 31, 2021 (Current) Valuations:

General Tier 1

Entry Age	Current	New	Change
25	9.54%	9.54%	**0.00%**
35	11.54%	11.54%	**0.00%**
45	13.99%	13.98%	**-0.01%**

General Tier 2

Entry Age	Current	New	Change
25	6.90%	6.90%	**0.00%**
35	8.35%	8.34%	**-0.01%**
45	10.11%	10.11%	**0.00%**

General Tier 3

Entry Age	Current	New	Change
25	11.90%	11.84%	**-0.06%**
35	14.39%	14.32%	**-0.07%**
45	17.50%	17.41%	**-0.09%**

General Tier 4

Entry Age[2]	Current	New	Change
Any	9.23%	9.30%	**0.07%**

Safety Tier 1

Entry Age	Current	New	Change[3]
25	16.75%	18.27%	**1.52%**
30	17.95%	19.60%	**1.65%**
35	19.31%	21.11%	**1.80%**

Safety Tier 2

Entry Age	Current	New	Change
25	16.15%	16.19%	**0.04%**
30	17.30%	17.33%	**0.03%**
35	18.59%	18.64%	**0.05%**

Safety Tier 2C

Entry Age	Current	New	Change
25	12.73%	12.73%	**0.00%**
30	13.84%	13.83%	**-0.01%**
35	15.09%	15.09%	**0.00%**

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

Entry Age	Current	New	Change
25	18.06%	18.07%	**0.01%**
30	19.19%	19.21%	**0.02%**
35	20.48%	20.49%	**0.01%**

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

Entry Age	Current	New	Change
25	16.06%	16.07%	**0.01%**
30	17.19%	17.21%	**0.02%**
35	18.48%	18.49%	**0.01%**

Safety Tier 4

Entry Age[2]	Current	New	Change
Any	17.01%	17.28%	**0.27%**

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 is one Safety Tier 1 member that remains in the December 31, 2022 valuation compared to two such members in the December 31, 2021 valuation. There is an increase in the value of the COLA benefit due to changes in the demographics which in turn increases the member COLA contribution rates from the last valuation to the current valuation. However, we note that the remaining active member has over 30 years of service and is not required to make any member contributions other than the cost-sharing contributions.

Exhibit 3: Member Contribution Rates (continued)

Breakdown of member rate between basic and COLA calculated in the December 31, 2022 and December 31, 2021 valuations:

	December 31, 2022 Actuarial Valuation								December 31, 2021 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	7.61%	$597	2.56%	$201			10.17%	$798	7.61%	$597	2.56%	$201			10.17%	$798
General Tier 2	6.49%	34,063	1.65%	8,660			8.14%	42,723	6.49%	34,063	1.65%	8,660			8.14%	42,723
General Tier 3	10.82%	164	4.68%	71			15.50%	235	10.82%	164	4.75%	72			15.57%	236
General Tier 4	7.56%	39,215	1.74%	9,026			9.30%	48,241	7.51%	38,956	1.72%	8,922			9.23%	47,878
Safety Tier 1	0.00%	0	0.00%	0	3.00%	$12	3.00%	12	0.00%	0	0.00%	0	3.00%	$12	3.00%	12
Safety Tier 2	9.60%	9,653	4.28%	4,303	3.00%	3,017	16.88%	16,973	9.60%	9,653	4.25%	4,273	3.00%	3,017	16.85%	16,943
Safety Tier 2C	10.35%	296	4.09%	117	0.00%	0	14.44%	413	10.35%	296	4.10%	117	0.00%	0	14.45%	413
Safety Tier 2D	9.61%	1,771	4.17%	769	3.04%	560	16.82%	3,100	9.61%	1,771	4.15%	766	3.04%	560	16.80%	3,097
Safety Tier 4	13.48%	11,170	3.80%	3,149	0.00%	0	17.28%	14,319	13.28%	11,004	3.73%	3,091	0.00%	0	17.01%	14,095
All Tiers Combined	**7.70%**	**$96,929**	**2.09%**	**$26,296**	**0.29%**	**$3,589**	**10.08%**	**$126,814**	**7.67%**	**$96,504**	**2.07%**	**$26,102**	**0.29%**	**$3,589**	**10.03%**	**$126,195**

[1] These rates have been re-calculated by applying the individual entry age based member rates determined in December 31, 2021 valuation to the Association membership as of December 31, 2022.

[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, 2022 annual payroll (also in thousands):

	County	AHS, Court & First 5	Housing Authority	LARPD	Total
General Tier 1	$3,905	$561	$2,801	$576	$7,843
General Tier 2	354,310	170,154	385		524,849
General Tier 3				1,516	1,516
General Tier 4	314,877	200,310	2,047	1,488	518,722
Safety Tier 1	387				387
Safety Tier 2	100,553				100,553
Safety Tier 2C	2,860				2,860
Safety Tier 2D	18,433				18,433
Safety Tier 4	82,863				82,863
Total	$878,188	$371,025	$5,233	$3,580	$1,258,026

Exhibit 3: Member Contribution Rates (continued)

General Tier 1 Members' Contribution Rates Based on the December 31, 2022 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%	2.17%	5.77%	8.65%
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%	1.89%	2.84%	7.54%	11.32%
35	5.76%	8.64%	1.93%	2.90%	7.69%	11.54%
36	5.87%	8.80%	1.97%	2.95%	7.84%	11.75%
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%	2.29%	3.44%	9.13%	13.70%
45	6.98%	10.47%	2.34%	3.51%	9.32%	13.98%
46	7.12%	10.68%	2.39%	3.58%	9.51%	14.26%
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%	2.58%	3.87%	10.27%	15.41%
51	7.83%	11.74%	2.63%	3.94%	10.46%	15.68%
52	7.93%	11.90%	2.66%	3.99%	10.59%	15.89%
53	8.05%	12.07%	2.70%	4.05%	10.75%	16.12%
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%	2.76%	4.14%	10.99%	16.49%
58	8.08%	12.13%	2.71%	4.07%	10.79%	16.20%
59 & Over	7.75%	11.63%	2.60%	3.90%	10.35%	15.53%

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:	33.56%
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, 2022 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%	0.78%	1.17%	3.86%	5.79%
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%	1.24%	4.09%	6.14%
20	3.33%	4.99%	0.85%	1.27%	4.18%	6.26%
21	3.39%	5.09%	0.86%	1.29%	4.25%	6.38%
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%	0.91%	1.37%	4.51%	6.77%
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%	1.45%	4.78%	7.17%
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%	1.69%	5.57%	8.34%
36	4.52%	6.78%	1.15%	1.72%	5.67%	8.50%
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%	1.21%	1.82%	5.99%	9.00%

[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%	1.93%	6.36%	9.53%
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%	1.39%	2.09%	6.87%	10.31%
47	5.59%	8.38%	1.42%	2.13%	7.01%	10.51%
48	5.69%	8.54%	1.45%	2.17%	7.14%	10.71%
49	5.79%	8.68%	1.47%	2.21%	7.26%	10.89%
50	5.88%	8.82%	1.49%	2.24%	7.37%	11.06%
51	5.96%	8.94%	1.51%	2.27%	7.47%	11.21%
52	6.04%	9.06%	1.53%	2.30%	7.57%	11.36%
53	6.11%	9.17%	1.55%	2.33%	7.66%	11.50%
54	6.16%	9.24%	1.57%	2.35%	7.73%	11.59%
55	6.17%	9.25%	1.57%	2.35%	7.74%	11.60%
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%	2.38%	7.84%	11.76%
59 & Over	6.46%	9.69%	1.64%	2.46%	8.10%	12.15%

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:	25.42%
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, 2022 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%	2.00%	3.00%	6.64%	9.96%
17	4.73%	7.10%	2.04%	3.06%	6.77%	10.16%
18	4.82%	7.23%	2.08%	3.12%	6.90%	10.35%
19	4.92%	7.38%	2.12%	3.18%	7.04%	10.56%
20	5.01%	7.52%	2.17%	3.25%	7.18%	10.77%
21	5.11%	7.67%	2.21%	3.31%	7.32%	10.98%
22	5.21%	7.81%	2.25%	3.37%	7.46%	11.18%
23	5.31%	7.96%	2.29%	3.44%	7.60%	11.40%
24	5.41%	8.12%	2.33%	3.50%	7.74%	11.62%
25	5.52%	8.27%	2.38%	3.57%	7.90%	11.84%
26	5.62%	8.43%	2.43%	3.64%	8.05%	12.07%
27	5.73%	8.59%	2.47%	3.71%	8.20%	12.30%
28	5.84%	8.76%	2.52%	3.78%	8.36%	12.54%
29	5.95%	8.93%	2.57%	3.85%	8.52%	12.78%
30	6.07%	9.10%	2.62%	3.93%	8.69%	13.03%
31	6.18%	9.27%	2.67%	4.00%	8.85%	13.27%
32	6.30%	9.45%	2.72%	4.08%	9.02%	13.53%
33	6.42%	9.63%	2.77%	4.16%	9.19%	13.79%
34	6.54%	9.81%	2.83%	4.24%	9.37%	14.05%
35	6.67%	10.00%	2.88%	4.32%	9.55%	14.32%
36	6.80%	10.20%	2.93%	4.40%	9.73%	14.60%
37	6.93%	10.39%	2.99%	4.49%	9.92%	14.88%
38	7.07%	10.60%	3.05%	4.57%	10.12%	15.17%
39	7.20%	10.81%	3.11%	4.66%	10.31%	15.47%

[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%	3.17%	4.76%	10.52%	15.78%
41	7.50%	11.25%	3.23%	4.85%	10.73%	16.10%
42	7.65%	11.48%	3.30%	4.95%	10.95%	16.43%
43	7.82%	11.72%	3.37%	5.06%	11.19%	16.78%
44	7.96%	11.95%	3.44%	5.16%	11.40%	17.11%
45	8.10%	12.16%	3.50%	5.25%	11.60%	17.41%
46	8.25%	12.37%	3.56%	5.34%	11.81%	17.71%
47	8.36%	12.54%	3.61%	5.41%	11.97%	17.95%
48	8.48%	12.72%	3.66%	5.49%	12.14%	18.21%
49	8.60%	12.90%	3.71%	5.57%	12.31%	18.47%
50	8.70%	13.04%	3.75%	5.63%	12.45%	18.67%
51	8.74%	13.12%	3.77%	5.66%	12.51%	18.78%
52	8.67%	13.01%	3.74%	5.61%	12.41%	18.62%
53	8.51%	12.77%	3.67%	5.51%	12.18%	18.28%
54 & Over	8.17%	12.25%	3.53%	5.29%	11.70%	17.54%

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:	43.16%
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, 2022 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	7.56%	1.74%	9.30%

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:	23.02%
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 2023 is equal to $146,042. (For an employer that is not enrolled in Social Security, the maximum amount is 120% of $146,042, or $175,250). (reference: Section 7522.10). These amounts should be adjusted for changes to the Consumer Price Index for All Urban Consumers after 2023. (reference: Section 7522.10(d)).

Exhibit 3: Member Contribution Rates (continued)

Safety Tier 1 Members' Contribution Rates Based on the December 31, 2022 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%	3.06%	4.59%	11.77%	16.15%
17	5.80%	8.71%	3.00%	3.00%	3.11%	4.67%	11.91%	16.38%
18	5.90%	8.85%	3.00%	3.00%	3.16%	4.74%	12.06%	16.59%
19	6.00%	9.00%	3.00%	3.00%	3.21%	4.82%	12.21%	16.82%
20	6.10%	9.15%	3.00%	3.00%	3.27%	4.90%	12.37%	17.05%
21	6.20%	9.30%	3.00%	3.00%	3.33%	4.99%	12.53%	17.29%
22	6.31%	9.46%	3.00%	3.00%	3.38%	5.07%	12.69%	17.53%
23	6.41%	9.62%	3.00%	3.00%	3.43%	5.15%	12.84%	17.77%
24	6.52%	9.78%	3.00%	3.00%	3.49%	5.24%	13.01%	18.02%
25	6.63%	9.94%	3.00%	3.00%	3.55%	5.33%	13.18%	18.27%
26	6.74%	10.11%	3.00%	3.00%	3.61%	5.42%	13.35%	18.53%
27	6.85%	10.28%	3.00%	3.00%	3.67%	5.51%	13.52%	18.79%
28	6.97%	10.46%	3.00%	3.00%	3.73%	5.60%	13.70%	19.06%
29	7.09%	10.63%	3.00%	3.00%	3.80%	5.70%	13.89%	19.33%
30	7.21%	10.81%	3.00%	3.00%	3.86%	5.79%	14.07%	19.60%
31	7.33%	11.00%	3.00%	3.00%	3.93%	5.89%	14.26%	19.89%
32	7.46%	11.19%	3.00%	3.00%	4.00%	6.00%	14.46%	20.19%
33	7.59%	11.38%	3.00%	3.00%	4.07%	6.10%	14.66%	20.48%
34	7.72%	11.59%	3.00%	3.00%	4.14%	6.21%	14.86%	20.80%
35	7.86%	11.79%	3.00%	3.00%	4.21%	6.32%	15.07%	21.11%
36	8.01%	12.01%	3.00%	3.00%	4.29%	6.44%	15.30%	21.45%
37	8.16%	12.24%	3.00%	3.00%	4.37%	6.56%	15.53%	21.80%
38	8.32%	12.47%	3.00%	3.00%	4.45%	6.68%	15.77%	22.15%
39	8.48%	12.73%	3.00%	3.00%	4.55%	6.82%	16.03%	22.55%

[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%	4.64%	6.96%	16.30%	22.94%
41	8.84%	13.27%	3.00%	3.00%	4.74%	7.11%	16.58%	23.38%
42	9.03%	13.54%	3.00%	3.00%	4.84%	7.26%	16.87%	23.80%
43	9.22%	13.84%	3.00%	3.00%	4.95%	7.42%	17.17%	24.26%
44	9.39%	14.08%	3.00%	3.00%	5.03%	7.55%	17.42%	24.63%
45	9.45%	14.18%	3.00%	3.00%	5.07%	7.60%	17.52%	24.78%
46	9.45%	14.17%	3.00%	3.00%	5.06%	7.59%	17.51%	24.76%
47	9.21%	13.82%	3.00%	3.00%	4.94%	7.41%	17.15%	24.23%
48	8.93%	13.40%	3.00%	3.00%	4.79%	7.18%	16.72%	23.58%
49 & Over	8.46%	12.69%	3.00%	3.00%	4.53%	6.80%	15.99%	22.49%

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:	53.59%[2]
Additional Cashout:	7.5%

[1] Use these rates for non-integrated members.
[2] There is one Safety Tier 1 member that remains in the December 31, 2022 valuation compared to two such members in the December 31, 2021 valuation. There is an increase in the value of the COLA benefit due to changes in the demographics which in turn increases the member COLA contribution rates from the last valuation to the current valuation. However, we note that the remaining active member has over 30 years of service and is not required to make any member contributions other than the cost-sharing contributions.

Exhibit 3: Member Contribution Rates (continued)

Safety Tier 2 Members' Contribution Rates Based on the December 31, 2022 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%	2.33%	3.50%	10.56%	14.35%
17	5.32%	7.98%	3.00%	3.00%	2.37%	3.56%	10.69%	14.54%
18	5.41%	8.12%	3.00%	3.00%	2.41%	3.62%	10.82%	14.74%
19	5.50%	8.25%	3.00%	3.00%	2.45%	3.68%	10.95%	14.93%
20	5.59%	8.39%	3.00%	3.00%	2.49%	3.74%	11.08%	15.13%
21	5.69%	8.53%	3.00%	3.00%	2.54%	3.81%	11.23%	15.34%
22	5.78%	8.67%	3.00%	3.00%	2.58%	3.87%	11.36%	15.54%
23	5.88%	8.82%	3.00%	3.00%	2.63%	3.94%	11.51%	15.76%
24	5.98%	8.97%	3.00%	3.00%	2.67%	4.00%	11.65%	15.97%
25	6.08%	9.12%	3.00%	3.00%	2.71%	4.07%	11.79%	16.19%
26	6.18%	9.27%	3.00%	3.00%	2.76%	4.14%	11.94%	16.41%
27	6.28%	9.43%	3.00%	3.00%	2.81%	4.21%	12.09%	16.64%
28	6.39%	9.59%	3.00%	3.00%	2.85%	4.28%	12.24%	16.87%
29	6.50%	9.75%	3.00%	3.00%	2.90%	4.35%	12.40%	17.10%
30	6.61%	9.91%	3.00%	3.00%	2.95%	4.42%	12.56%	17.33%
31	6.72%	10.08%	3.00%	3.00%	3.00%	4.50%	12.72%	17.58%
32	6.84%	10.26%	3.00%	3.00%	3.05%	4.58%	12.89%	17.84%
33	6.96%	10.44%	3.00%	3.00%	3.11%	4.66%	13.07%	18.10%
34	7.08%	10.62%	3.00%	3.00%	3.16%	4.74%	13.24%	18.36%
35	7.21%	10.81%	3.00%	3.00%	3.22%	4.83%	13.43%	18.64%
36	7.34%	11.01%	3.00%	3.00%	3.27%	4.91%	13.61%	18.92%
37	7.48%	11.22%	3.00%	3.00%	3.34%	5.01%	13.82%	19.23%
38	7.62%	11.43%	3.00%	3.00%	3.40%	5.10%	14.02%	19.53%
39	7.77%	11.66%	3.00%	3.00%	3.47%	5.20%	14.24%	19.86%

[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%	3.53%	5.30%	14.45%	20.18%
41	8.07%	12.11%	3.00%	3.00%	3.61%	5.41%	14.68%	20.52%
42	8.22%	12.32%	3.00%	3.00%	3.67%	5.50%	14.89%	20.82%
43	8.32%	12.47%	3.00%	3.00%	3.71%	5.57%	15.03%	21.04%
44	8.35%	12.53%	3.00%	3.00%	3.73%	5.59%	15.08%	21.12%
45	8.28%	12.42%	3.00%	3.00%	3.70%	5.55%	14.98%	20.97%
46	8.13%	12.20%	3.00%	3.00%	3.63%	5.45%	14.76%	20.65%
47	7.94%	11.90%	3.00%	3.00%	3.54%	5.31%	14.48%	20.21%
48	8.19%	12.29%	3.00%	3.00%	3.65%	5.48%	14.84%	20.77%
49 & Over	8.46%	12.69%	3.00%	3.00%	3.78%	5.67%	15.24%	21.36%

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:	44.63%
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, 2022 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%	3.10%	7.30%	10.95%
17	5.32%	7.98%	2.11%	3.16%	7.43%	11.14%
18	5.41%	8.12%	2.14%	3.21%	7.55%	11.33%
19	5.50%	8.25%	2.17%	3.26%	7.67%	11.51%
20	5.59%	8.39%	2.21%	3.32%	7.80%	11.71%
21	5.69%	8.53%	2.25%	3.37%	7.94%	11.90%
22	5.78%	8.67%	2.29%	3.43%	8.07%	12.10%
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%	3.73%	8.77%	13.16%
28	6.39%	9.59%	2.53%	3.79%	8.92%	13.38%
29	6.50%	9.75%	2.57%	3.86%	9.07%	13.61%
30	6.61%	9.91%	2.61%	3.92%	9.22%	13.83%
31	6.72%	10.08%	2.66%	3.99%	9.38%	14.07%
32	6.84%	10.26%	2.71%	4.06%	9.55%	14.32%
33	6.96%	10.44%	2.75%	4.13%	9.71%	14.57%
34	7.08%	10.62%	2.80%	4.20%	9.88%	14.82%
35	7.21%	10.81%	2.85%	4.28%	10.06%	15.09%
36	7.34%	11.01%	2.90%	4.35%	10.24%	15.36%
37	7.48%	11.22%	2.96%	4.44%	10.44%	15.66%
38	7.62%	11.43%	3.01%	4.52%	10.63%	15.95%
39	7.77%	11.66%	3.07%	4.61%	10.84%	16.27%

[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%	3.13%	4.70%	11.05%	16.58%
41	8.07%	12.11%	3.19%	4.79%	11.26%	16.90%
42	8.22%	12.32%	3.25%	4.87%	11.47%	17.19%
43	8.32%	12.47%	3.29%	4.93%	11.61%	17.40%
44	8.35%	12.53%	3.31%	4.96%	11.66%	17.49%
45	8.28%	12.42%	3.27%	4.91%	11.55%	17.33%
46	8.13%	12.20%	3.22%	4.83%	11.35%	17.03%
47	7.94%	11.90%	3.14%	4.71%	11.08%	16.61%
48	8.19%	12.29%	3.24%	4.86%	11.43%	17.15%
49 & Over	8.46%	12.69%	3.35%	5.02%	11.81%	17.71%

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:	39.55%
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, 2022 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%	2.27%	3.40%	12.50%	16.25%
17	5.32%	7.98%	5.00%	5.00%	2.31%	3.46%	12.63%	16.44%
18	5.41%	8.12%	5.00%	5.00%	2.35%	3.52%	12.76%	16.64%
19	5.50%	8.25%	5.00%	5.00%	2.39%	3.58%	12.89%	16.83%
20	5.59%	8.39%	5.00%	5.00%	2.43%	3.64%	13.02%	17.03%
21	5.69%	8.53%	5.00%	5.00%	2.47%	3.70%	13.16%	17.23%
22	5.78%	8.67%	5.00%	5.00%	2.51%	3.76%	13.29%	17.43%
23	5.88%	8.82%	5.00%	5.00%	2.55%	3.82%	13.43%	17.64%
24	5.98%	8.97%	5.00%	5.00%	2.59%	3.89%	13.57%	17.86%
25	6.08%	9.12%	5.00%	5.00%	2.63%	3.95%	13.71%	18.07%
26	6.18%	9.27%	5.00%	5.00%	2.68%	4.02%	13.86%	18.29%
27	6.28%	9.43%	5.00%	5.00%	2.72%	4.08%	14.00%	18.51%
28	6.39%	9.59%	5.00%	5.00%	2.77%	4.15%	14.16%	18.74%
29	6.50%	9.75%	5.00%	5.00%	2.81%	4.22%	14.31%	18.97%
30	6.61%	9.91%	5.00%	5.00%	2.87%	4.30%	14.48%	19.21%
31	6.72%	10.08%	5.00%	5.00%	2.91%	4.37%	14.63%	19.45%
32	6.84%	10.26%	5.00%	5.00%	2.96%	4.44%	14.80%	19.70%
33	6.96%	10.44%	5.00%	5.00%	3.01%	4.52%	14.97%	19.96%
34	7.08%	10.62%	5.00%	5.00%	3.07%	4.60%	15.15%	20.22%
35	7.21%	10.81%	5.00%	5.00%	3.12%	4.68%	15.33%	20.49%
36	7.34%	11.01%	5.00%	5.00%	3.18%	4.77%	15.52%	20.78%
37	7.48%	11.22%	5.00%	5.00%	3.24%	4.86%	15.72%	21.08%
38	7.62%	11.43%	5.00%	5.00%	3.30%	4.95%	15.92%	21.38%
39	7.77%	11.66%	5.00%	5.00%	3.37%	5.05%	16.14%	21.71%

[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%	3.43%	5.15%	16.35%	22.03%
41	8.07%	12.11%	5.00%	5.00%	3.50%	5.25%	16.57%	22.36%
42	8.22%	12.32%	5.00%	5.00%	3.56%	5.34%	16.78%	22.66%
43	8.32%	12.47%	5.00%	5.00%	3.61%	5.41%	16.93%	22.88%
44	8.35%	12.53%	5.00%	5.00%	3.62%	5.43%	16.97%	22.96%
45	8.28%	12.42%	5.00%	5.00%	3.59%	5.38%	16.87%	22.80%
46	8.13%	12.20%	5.00%	5.00%	3.53%	5.29%	16.66%	22.49%
47	7.94%	11.90%	5.00%	5.00%	3.44%	5.16%	16.38%	22.06%
48	8.19%	12.29%	5.00%	5.00%	3.55%	5.32%	16.74%	22.61%
49 & Over	8.46%	12.69%	5.00%	5.00%	3.67%	5.50%	17.13%	23.19%

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:	43.33%
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, 2022 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%	2.27%	3.40%	10.50%	14.25%
17	5.32%	7.98%	3.00%	3.00%	2.31%	3.46%	10.63%	14.44%
18	5.41%	8.12%	3.00%	3.00%	2.35%	3.52%	10.76%	14.64%
19	5.50%	8.25%	3.00%	3.00%	2.39%	3.58%	10.89%	14.83%
20	5.59%	8.39%	3.00%	3.00%	2.43%	3.64%	11.02%	15.03%
21	5.69%	8.53%	3.00%	3.00%	2.47%	3.70%	11.16%	15.23%
22	5.78%	8.67%	3.00%	3.00%	2.51%	3.76%	11.29%	15.43%
23	5.88%	8.82%	3.00%	3.00%	2.55%	3.82%	11.43%	15.64%
24	5.98%	8.97%	3.00%	3.00%	2.59%	3.89%	11.57%	15.86%
25	6.08%	9.12%	3.00%	3.00%	2.63%	3.95%	11.71%	16.07%
26	6.18%	9.27%	3.00%	3.00%	2.68%	4.02%	11.86%	16.29%
27	6.28%	9.43%	3.00%	3.00%	2.72%	4.08%	12.00%	16.51%
28	6.39%	9.59%	3.00%	3.00%	2.77%	4.15%	12.16%	16.74%
29	6.50%	9.75%	3.00%	3.00%	2.81%	4.22%	12.31%	16.97%
30	6.61%	9.91%	3.00%	3.00%	2.87%	4.30%	12.48%	17.21%
31	6.72%	10.08%	3.00%	3.00%	2.91%	4.37%	12.63%	17.45%
32	6.84%	10.26%	3.00%	3.00%	2.96%	4.44%	12.80%	17.70%
33	6.96%	10.44%	3.00%	3.00%	3.01%	4.52%	12.97%	17.96%
34	7.08%	10.62%	3.00%	3.00%	3.07%	4.60%	13.15%	18.22%
35	7.21%	10.81%	3.00%	3.00%	3.12%	4.68%	13.33%	18.49%
36	7.34%	11.01%	3.00%	3.00%	3.18%	4.77%	13.52%	18.78%
37	7.48%	11.22%	3.00%	3.00%	3.24%	4.86%	13.72%	19.08%
38	7.62%	11.43%	3.00%	3.00%	3.30%	4.95%	13.92%	19.38%
39	7.77%	11.66%	3.00%	3.00%	3.37%	5.05%	14.14%	19.71%

[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%	3.43%	5.15%	14.35%	20.03%
41	8.07%	12.11%	3.00%	3.00%	3.50%	5.25%	14.57%	20.36%
42	8.22%	12.32%	3.00%	3.00%	3.56%	5.34%	14.78%	20.66%
43	8.32%	12.47%	3.00%	3.00%	3.61%	5.41%	14.93%	20.88%
44	8.35%	12.53%	3.00%	3.00%	3.62%	5.43%	14.97%	20.96%
45	8.28%	12.42%	3.00%	3.00%	3.59%	5.38%	14.87%	20.80%
46	8.13%	12.20%	3.00%	3.00%	3.53%	5.29%	14.66%	20.49%
47	7.94%	11.90%	3.00%	3.00%	3.44%	5.16%	14.38%	20.06%
48	8.19%	12.29%	3.00%	3.00%	3.55%	5.32%	14.74%	20.61%
49 & Over	8.46%	12.69%	3.00%	3.00%	3.67%	5.50%	15.13%	21.19%

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:	43.33%
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, 2022 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	13.48%	3.80%	17.28%

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:	28.19%
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 2023 is equal to $146,042. (For an employer that is not enrolled in Social Security, the maximum amount is 120% of $146,042, or $175,250). (reference: Section 7522.10). These amounts should be adjusted for changes to the Consumer Price Index for All Urban Consumers after 2023. (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, 2022 Actuarial Valuation

Dollar Contribution[1,3] – Based on December 31, 2022 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)	$967	$82,165		$72,737	$163	$25,672	$873	$4,861	$19,515	$206,953
Health System (106)	77	32,844		40,945						73,866
Superior Court (632)	68	7,767		6,253						14,088
First 5 (714)		600		1,137						1,737
Housing Authority (103)	867	113		599						1,579
LARPD (104)	63		260	138						461
Total	**$2,042**	**$123,489**	**$260**	**$121,809**	**$163**	**$25,672**	**$873**	**$4,861**	**$19,515**	**$298,684**

Dollar Contribution[2,3] – 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)	$966	$82,199		$72,453	$168	$23,972	$835	$4,534	$17,766	$202,893
Health System (106)	77	32,777		40,691						73,545
Superior Court (632)	68	7,751		6,214						14,033
First 5 (714)		599		1,130						1,729
Housing Authority (103)	866	113		598						1,577
LARPD (104)	63		249	137						449
Total	**$2,040**	**$123,439**	**$249**	**$121,223**	**$168**	**$23,972**	**$835**	**$4,534**	**$17,766**	**$294,226**

[1] Includes contributions only for those employers with active member payroll. The UAAL contribution for ACOE, expressed as a level dollar amount, is $110 K when made on April 1, 2024.
[2] 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.
[3] Contribution calculated using projected compensation provided on the next page for the December 31, 2022 valuation:

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

	December 31, 2022 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)	$3,905	$354,310		$314,877	$387	$100,553	$2,860	$18,433	$82,863	$878,188
Health System (106)	297	135,608		169,684						305,589
Superior Court (632)	264	32,067		25,912						58,243
First 5 (714)		2,479		4,714						7,193
Housing Authority (103)	2,801	385		2,047						5,233
LARPD (104)	576		$1,516	1,488						3,580
Total	**$7,843**	**$524,849**	**$1,516**	**$518,722**	**$387**	**$100,553**	**$2,860**	**$18,433**	**$82,863**	**$1,258,026**

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]	$29,869	10	$3,619
2013	20	$6,993	5,872	11	658
2014	20	5,215	4,621	12	482
2015	20	5,325	4,843	13	474
2016	20	8,865	8,232	14	761
2017	20	5,830	5,464	15	479
2018	20	6,940	6,698	16	560
2019	20	6,511	6,337	17	507
2020	20	7,549	7,374	18	566
2021	20	5,653	5,602	19	414
2022	20	7,981	7,981	20	569
Total			**$92,893**		**$9,088**

Note: Results may be slightly off due to rounding.

[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, 2022

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	$4,488,744,790	$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 [2]
B. Estimated SRBR Transfer							
Basic Only	$4,363,041	$0	$0	$1,289,572	$0	$0	$5,652,613 [2]
C. Adjustment for the difference between the Actual SRBR Transfer and the Estimated SRBR Transfer used in Prior Valuation							
Basic Only	$(45,301)	$0	$0	$(13,390)	$0	$0	$(58,691)
D. Manual Adjustments at Beginning-of-Year[3]							
Basic Only	$44,545	$0	$0	$(44,545)	$0	$0	$0
COLA Only	13,008	0	0	(13,008)	0	0	0
Total	$57,553	$0	$0	$(57,553)	$0	$0	$0
E. Employer Contributions (January 1 – June 30)							
Basic Only	$92,195,159	$100,000	$213,753	$19,277,408	$0	$0	$111,786,319
COLA Only	26,071,041	0	68,694	5,243,132	0	0	31,382,867
Total	$118,266,199	$100,000	$282,447	$24,520,540	$0	$0	$143,169,187
F. Employee Contributions (January 1 – June 30)							
Basic Only	$35,260,265	$0	$163,632	$12,576,321	$0	$0	$48,000,219
COLA Only	8,292,976	0	56,174	3,890,036	0	0	12,239,186
Total	$43,553,241	$0	$219,806	$16,466,357	$0	$0	$60,239,404
G. Benefit Payments (January 1 – June 30)							
Basic Only	$158,197,205	$137,635	$1,322,697	$58,123,410	$0	$0	$217,780,947
COLA Only	51,576,640	71,571	393,882	21,289,631	0	0	73,331,724
Total	$209,773,845	$209,206	$1,716,579	$79,413,041	$0	$0	$291,112,671
H. Transfer from UAAL Advance Reserve to Employer Advance Reserve and COLA Reserve							
Basic Only	$0	$0	$354,655	$31,991,339	$(354,655)	$(31,991,339)	$0
COLA Only	0	0	142,781	10,007,095	(142,781)	(10,007,095)	0
Total	$0	$0	$497,436	$41,998,434	$(497,436)	$(41,998,434)	$0
I. Return on Valuation Value of Assets:[4]							
Basic Only	$162,032,786	$84,841	$1,194,067	$49,072,289	$214,996	$14,460,385	$227,059,364
COLA Only	69,284,048	46,501	671,120	29,594,017	86,557	4,523,301	104,205,544
Total	$231,316,834	$131,342	$1,865,187	$78,666,306	$301,553	$18,983,686	$331,264,908
J. Valuation Value of Assets at June 30 Provided by ACERA: (A) + (B) + (C) + (D) + (E) + (F) – (G) + (H) + (I)							
Basic Only	$4,624,398,079	$2,397,552	$33,682,611	$1,415,518,260	$8,946,981	$593,624,863	$6,678,568,346
COLA Only	1,964,222,350	1,258,293	19,066,949	844,201,576	3,602,033	185,689,641	3,018,040,842
Total	$6,588,620,429	$3,655,845	$52,749,560	$2,259,719,836	$12,549,014	$779,314,504	$9,696,609,188

Exhibit 6: Allocation of the Valuation Value of Assets as of December 31, 2022 (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
K. Employer Contributions (July 1 – December 31)							
Basic Only	$89,213,743	$0	$181,291	$18,848,100	$0	$0	$108,243,133
COLA Only	25,178,709	0	55,654	5,000,019	0	0	30,234,382
Total	$114,392,452	$0	$236,945	$23,848,119	$0	$0	$138,477,515
L. Employee Contributions (July 1 – December 31)							
Basic Only	$34,752,729	$0	$166,636	$13,185,592	$0	$0	$48,104,957
COLA Only	8,200,831	0	57,751	4,070,576	0	0	12,329,159
Total	$42,953,560	$0	$224,387	$17,256,169	$0	$0	$60,434,116
M. Benefit Payments (July 1 – December 31)							
Basic Only	$161,942,330	$142,647	$1,372,921	$59,536,826	$0	$0	$222,994,724
COLA Only	53,422,052	74,663	408,478	22,140,393	0	0	76,045,586
Total	$215,364,382	$217,310	$1,781,399	$81,677,220	$0	$0	$299,040,310
N. Transfer from UAAL Advance Reserve to Employer Advance Reserve and COLA Reserve							
Basic Only	$0	$0	$354,005	$32,274,395	$(354,005)	$(32,274,395)	$0
COLA Only	0	0	152,349	10,094,477	(152,349)	(10,094,477)	0
Total	$0	$0	$506,355	$42,368,872	$(506,355)	$(42,368,872)	$0
O. Return on Valuation Value of Assets:[4]							
Basic Only	$158,894,506	$82,380	$1,157,336	$48,637,265	$137,575	$9,128,034	$218,037,097
COLA Only	67,777,892	43,419	657,928	29,130,207	55,388	2,855,308	100,520,141
Total	$226,672,398	$125,799	$1,815,264	$77,767,472	$192,963	$11,983,342	$318,557,238
P. Preliminary Valuation Value of Assets at December 31 Provided by ACERA: (J) + (K) + (L) – (M) + (N) + (O)							
Basic Only	$4,745,316,726	$2,337,285	$34,168,959	$1,468,926,786	$8,730,551	$570,478,503	$6,829,958,810
COLA Only	2,011,957,731	1,227,049	19,582,153	870,356,462	3,505,071	178,450,472	3,085,078,938
Total	$6,757,274,457	$3,564,334	$53,751,112	$2,339,283,248	$12,235,622	$748,928,975	$9,915,037,748
Q. Estimated SRBR Transfer and other Asset Transfer							
Basic Only	$6,117,446	$0	$0	$1,864,030	$0	$0	$7,981,476
COLA Only	0	0	0	0	0	0	0
Total	$6,117,446	$0	$0	$1,864,030	$0	$0	$7,981,476
R. Valuation Value of Assets at December 31: (P) + (Q)							
Basic Only	**$4,751,434,172**	**$2,337,285**	**$34,168,959**	**$1,470,790,816**	**$8,730,551**	**$570,478,503**	**$6,837,940,286**
COLA Only	**2,011,957,731**	**1,227,049**	**19,582,153**	**870,356,462**	**3,505,071**	**178,450,472**	**3,085,078,938**
Total	**$6,763,391,903**	**$3,564,334**	**$53,751,112**	**$2,341,147,278**	**$12,235,622**	**$748,928,975**	**$9,923,019,224**

Results may be slightly off due to rounding.

Exhibit 6: Allocation of the Valuation Value of Assets as of December 31, 2022 (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. 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.
2. The final Valuation Value of Assets as of December 31, 2021 is $9,453,107,051 *((A) + (B))*.
3. In preparing the December 31, 2021 funding valuation report, we applied the breakdown of General and Safety employer and employee contributions provided by ACERA before reflecting manual adjustments that increased the County's General employer and General employee contributions by $57,553 but decreased the County's Safety employer and Safety employee contributions by the same amount, as agreed to by ACERA. We are reflecting the adjustments in this year's valuation value of assets allocation by including the adjustments as of January 1, 2022.
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 beginning of period using the following formulas:
   (Column (7) of (I) - Column (5) of (I) - Column (6) of (I))/(Column (7) of ((A) + (D)) - Column (5) of ((A) + (D)) - Column (6) of ((A) + (D))) x Cost Group Column ((A) + (D))
   (Column (7) of (O) - Column (5) of (O) - Column (6) of (O))/(Column (7) of (J) - Column (5) of (J) - Column (6) of (J)) x Cost Group Column (J)

Exhibit 7: Reconciliation of Voluntary UAAL Contribution Rate Credit as of December 31, 2022

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 11.5 years (as of December 31, 2022) as a contribution credit.

Reconciliation from December 31, 2021 to December 31, 2022
Safety Only

	Contribution Rate
County – Safety Voluntary UAAL contribution credit as of December 31, 2021	**41.89%**
1 Effect of investment return less than expected after "smoothing"	(1.20%)
2 Effect of more actual contribution credit required or applied than expected[2]	(0.20%)
3 Effect of amortizing the UAAL Advance Reserve balance over a larger than expected projected payroll	(1.04%)
Total change	(2.44%)
County – Safety Voluntary UAAL contribution credit as of December 31, 2022	**39.45%**

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 2022 different than expected.

Exhibit 7: Reconciliation of Voluntary UAAL Contribution Rate Credit as of December 31, 2022 (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 14.5 years (as of December 31, 2022) as a contribution credit.

Reconciliation from December 31, 2021 to December 31, 2022
LARPD Only

	Contribution Rate
LARPD – General Voluntary UAAL contribution credit as of December 31, 2021	**29.19%**
1 Effect of investment return less than expected after "smoothing"	(0.86%)
2 Effect of less actual contribution credit required or applied than expected[2]	0.20%
3 Effect of amortizing the UAAL Advance Reserve balance over a smaller than expected projected payroll	1.62%
4 Effect of floor on net LARPD rate of no less than Normal Cost in compliance with CalPEPRA[3]	(1.49%)
Total change	(0.53%)
LARPD – General Voluntary UAAL contribution credit as of December 31, 2022	**28.66%**

[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 2022 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 by 2.09% of payroll to not exceed the UAAL rate before the credit. In the December 31, 2021 valuation, the voluntary UAAL contribution credit was reduced by 0.60% of payroll to not exceed the UAAL rate before the credit. The net effect of the Normal Cost floor from December 31, 2021 to December 31, 2022 is equal to 2.09% - 0.60% = 1.49% of payroll.