

Contra Costa County Employees' Retirement Association

**Actuarial Valuation and Review
as of December 31, 2023**



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July 19, 2024

Board of Retirement
Contra Costa County Employees' Retirement Association
1200 Concord Avenue, Suite 300
Concord, CA 94520

Dear Board Members:

We are pleased to submit this Actuarial Valuation and Review as of December 31, 2023. It summarizes the actuarial data used in the valuation, analyzes the preceding year's experience, and establishes the funding requirements for fiscal year 2025-2026.

This report has been prepared in accordance with generally accepted actuarial principles and practices for the exclusive use and benefit of the Board of Retirement, based upon information provided by the staff of CCCERA.

Segal does not audit the data provided. The accuracy and comprehensiveness of the data is the responsibility of those supplying the data. To the extent we can, however, Segal does review the data for reasonableness and consistency. Based on our review of the data, we have no reason to doubt the substantial accuracy of the information on which we have based this report and we have no reason to believe there are facts or circumstances that would affect the validity of these results.

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

The actuarial calculations were directed under the supervision of Andy Yeung, ASA, MAAA, FCA and 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. The assumptions used in this actuarial valuation were selected by the Board of Retirement based upon our analysis and recommendations. In our opinion, the assumptions are reasonable and take into account the experience of CCCERA and reasonable expectations. In addition, in our opinion, the combined effect of these assumptions is expected to have no significant bias.

Board of Retirement
July 19, 2024

Segal makes no representation or warranty as to the future status of the Plan and does not guarantee any particular result. This document does not constitute legal, tax, accounting or investment advice or create or imply a fiduciary relationship. The Board is encouraged to discuss any issues raised in this report with the Plan's legal, tax and other advisors before taking, or refraining from taking, any action.

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

Sincerely,

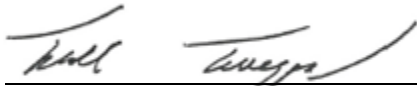
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Section 1: Actuarial Valuation Summary

Purpose and basis

This report has been prepared by Segal to present a valuation of the Contra Costa County Employees' Retirement Association ("the Plan") as of December 31, 2023. The valuation was performed to determine whether the assets and contribution rates are sufficient to provide the prescribed benefits.

The contribution requirements presented in this report are based on:

- The benefit provisions of the Plan, as administered by the Board of Retirement;
- The characteristics of covered active members,¹ inactive members and retired members and beneficiaries as of December 31, 2023, provided by the Retirement Association;
- The assets of the Plan as of December 31, 2023, provided by the Retirement Association;
- Economic assumptions regarding future salary increases and investment earnings adopted by the Board of Retirement for the December 31, 2023 valuation;
- Other actuarial assumptions regarding employee terminations, retirement, death, etc. adopted by the Board of Retirement for the December 31, 2023 valuation; and
- The funding policy adopted by the Board of Retirement.

Certain disclosure information required by Governmental Accounting Standards Board (GASB) Statements No. 67 and 68 as of December 31, 2023 for the Plan is provided in a separate report.

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.

The contribution requirements are determined as a percentage of payroll. The Association's employer rates provide for both normal cost and a contribution to amortize any unfunded or overfunded actuarial accrued liabilities. In this valuation, we have applied the

¹ Similar to the disclosure we provided in our December 31, 2022 valuation report, the annual information for active members and, in particular, the service credit provided for active members was reported through November 30, 2023 instead of December 31, 2023. Based on prior discussions with CCCERA we understand that the Association is going to change its pension administration system so as to report service through December 31. This change will first be reflected in the valuation following the change in the pension administration system, and Segal will reflect the liability for that additional month of service at the same time.

Section 1: Actuarial Valuation Summary

funding policy adopted by the Board on February 26, 2014, updated on October 14, 2020 and September 13, 2023. Details of the funding policy are provided in *Section 4, Exhibit 1* starting on page 107.

The rates calculated in this report may be adopted by the Board of Retirement for the fiscal year that extends from July 1, 2025 through June 30, 2026.

Valuation highlights

Funding measures

1. The funded ratio (the ratio of valuation value of assets to the actuarial accrued liability) decreased slightly from 91.2% to 91.0%. This ratio is one measure of funding status, and its history is a measure of funding progress. Using the market value of assets, the funded ratio increased from 84.3% to 86.8%. 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. A history of the Association's funded ratios is provided in *Section 2, Subsection G* on pages 44 and 45.
2. The unfunded actuarial accrued liability (the difference between the actuarial accrued liability and the valuation value of assets) increased from \$1.05 billion to \$1.12 billion. The increase in unfunded actuarial accrued liability (UAAL) is primarily due to an investment return on the valuation value (i.e., after asset smoothing) less than the assumed rate of 6.75% and individual salary increases greater than expected by the assumptions used in the December 31, 2022 valuation. A reconciliation of the Association's UAAL from the prior year is provided in *Section 2, Subsection E* on page 29.

Schedules of the current UAAL amortization balances and payments may be found in *Section 3, Exhibit H* starting on page 83. As discussed below, those schedules reflect recent Board action to adjust remaining UAAL amortization periods to six years for layers established as of December 31, 2012 through December 31, 2018. A graphical projection of the UAAL amortization balances and payments is provided in *Section 3, Exhibit I* on pages 105 and 106.

Actuarial experience

3. The net actuarial loss of \$154.9 million, or 1.24% of actuarial accrued liability, is due to an investment loss (after smoothing) of \$155.4 million, or 1.25% of actuarial accrued liability, slightly offset by a net gain from sources other than investments of \$0.6 million, or less than 0.01% of the actuarial accrued liability, prior to reflection of assumption changes, if applicable. For more details, see the complete reconciliation of the Association's UAAL from the prior year in *Section 2, Subsection E* on page 29.

Section 1: Actuarial Valuation Summary

4. The rate of return on the market value of assets was 8.69% for the year ending December 31, 2023. The return on the valuation value of assets was 5.31% for the same period due to the recognition of prior years' investment gains and losses. This resulted in an actuarial loss when measured against the assumed rate of return of 6.75% used in the December 31, 2022 valuation. This actuarial investment loss (after asset smoothing) increased the average employer contribution rate by 1.03% of payroll.
5. As further discussed in *Section 2, Subsection D* on page 28, technical changes were made to the application of the Entry Age cost allocation method, which resulted in a decrease in the UAAL of \$5.4 million. The impact of these changes is included in the net experience gain. Those changes include a computation of the normal cost rate reflecting the timing of the decrements (termination, death, disability and retirement) at the beginning of the year and approximating the entry age using years of service at the date of the valuation rounded down.
6. Effective with this December 31, 2023 valuation, we have implemented a process to transfer assets when a member changes from one cost group to another. This is done to ensure that there is no impact on the employer's UAAL contribution rate when such transfers occur. The amount of the asset transfer is equal to the actuarial accrued liability of the transferring members. Details can be found in *Appendix D, line 2* starting on page 173.

Contributions

7. The Board approved an adjustment to the remaining amortization periods for certain amortization layers in order to minimize the contribution rate tail volatility associated with the UAAL layers established as of December 31, 2012 through December 31, 2018. This is done by setting the remaining amortization period for those UAAL layers to six years in the 2023 valuation. The tail volatility adjustment resulted in a decrease in the average employer rate of 1.50% of payroll, before taking into consideration other experience in the December 31, 2023 valuation.
8. The average employer rate calculated in this valuation has decreased from 30.01% to 28.55% of payroll. This decrease is primarily due to the tail volatility adjustments discussed above and amortizing the prior year's UAAL over a larger than projected total payroll, partially offset by the investment return on the valuation value (i.e., after asset smoothing) less than the assumed rate of 6.75% and individual salary increases greater than expected by the assumptions used in the December 31, 2022 valuation. A complete reconciliation of the Association's aggregate employer rate is provided in *Section 2, Subsection F* on page 32.

Separate employer contribution rates are shown for members with membership dates before January 1, 2013 (non-PEPRA or "legacy" members) and on or after January 1, 2013 (PEPRA members). However, the average employer contribution rates shown in *Section 1* are based on all members regardless of their membership date. A detailed schedule of the employer contribution rates is provided in *Section 2, Subsection F* starting on page 34.

Section 1: Actuarial Valuation Summary

A schedule with the recommended employer contribution rates that will be used in preparing the contribution rate packet is provided in *Appendix E* starting on page 176.

9. The average member rate calculated in this valuation has decreased from 12.18% to 12.13% of payroll. A complete reconciliation of the Association's aggregate member rate is provided in *Section 2, Subsection F* on page 33.

The detailed member rates by cost group are provided in *Section 4, Exhibit 3* starting on page 140.

10. This valuation reflects \$288,000 in additional contributions made by San Ramon Valley Fire Department and \$90,015 in additional contributions made by In-Home Supportive Services Authority towards their UAAL. These amounts have been amortized separately as a level percent of pay (a rate credit) over a period of 18 years beginning with the December 31, 2023 valuation to reduce the respective employers' UAAL contributions.
11. Segal strongly recommends an actuarial funding method that targets 100% funding of the actuarial accrued liability. Generally, this implies payments that are ultimately at least enough to cover normal cost, interest on the UAAL and the principal balance. The funding policy adopted by the Board of Retirement meets this standard.

Future expectations

12. The total unrecognized net investment **loss** as of December 31, 2023 is \$532 million as compared to an unrecognized net investment **loss** of \$825 million in the previous valuation. This net deferred loss of \$532 million will be recognized in the determination of the actuarial value of assets for funding purposes in the next few years as shown in *Section 2, Subsection B* on page 22.

The net deferred loss of \$532 million represents about 4.9% of the market value of assets. Unless offset by future investment gains or other favorable experience, the recognition of the \$532 million net market loss is expected to have an impact on the Association's future funded ratio and contribution rate requirements. This potential impact may be illustrated as follows:

- a. If the net deferred loss was recognized immediately in the valuation value of assets, the funded percentage would decrease from 91.0% to 86.8%.

For comparison purposes, if the net deferred loss in the December 31, 2022 valuation had been recognized immediately in the December 31, 2022 valuation, the funded percentage would have decreased from 91.2% to 84.3%.

- b. If the net deferred loss was recognized immediately in the valuation value of assets, the average employer contribution rate would increase from 28.55% to 32.07% of payroll.

For comparison purposes, if the net deferred loss in the December 31, 2022 valuation had been recognized immediately in the December 31, 2022 valuation, the average employer contribution rate would have increased from 30.01% to 35.87% of payroll.

Section 1: Actuarial Valuation Summary

Risk

13. It is important to note that this actuarial valuation is based on plan assets as of December 31, 2023. 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, 2023. Segal is available to prepare projections of potential outcomes of market conditions and other demographic experience upon request.
14. Because the actuarial valuation results are dependent on a given set of assumptions, there is a risk that emerging results may differ significantly as actual experience proves to be different from the assumptions. While we have not been engaged to perform a detailed analysis of the potential range of the impact of risk relative to the Plan's future financial condition, we have included a brief discussion of some risks that may affect the Plan in *Section 2, Subsection I*, beginning on page 47. This discussion of risks is included to satisfy the disclosures required by the Actuarial Standard of Practice No. 51 (ASOP 51).
15. The risk assessment in *Section 2, Subsection I* includes the disclosure of a "Low-Default-Risk Obligation Measure" (LDRM). This disclosure, along with commentary on the significance of the LDRM, is a new requirement under Actuarial Standard of Practice No. 4 (ASOP 4) for all pension funding actuarial valuation reports and can be found starting on page 49.

GASB

16. This report constitutes an actuarial valuation for the purpose of determining a reasonable actuarially determined contribution (ADC) under ASOP 4 and the Plan's funding policy, as well as measuring the progress of that funding policy. The Net Pension Liability and Pension Expense under GASB Statements No. 67 and No. 68, for inclusion in the Plan's and employer's financial statements as of December 31, 2023, 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 ADC in this valuation is expected to be used as the ADC for GASB financial reporting.

Section 1: Actuarial Valuation Summary

Summary of key valuation results

Average Employer Contribution¹ Calculated as of December 31
 (\$ in '000s)

Cost Group and Employer	2023 Total Rate	2023 Estimated Amount ²	2022 Total Rate	2022 Estimated Amount ²
General				
• Cost Group 1 – County and Small Districts (Tiers 1 and 4)	24.00%	\$5,575	24.96%	\$5,878
• Cost Group 2 – County and Small Districts (Tiers 3 and 5)	21.41%	180,406	22.35%	174,790
• Cost Group 3 – Central Contra Costa Sanitary District	17.80%	7,504	16.56%	6,713
• Cost Group 4 – Contra Costa Housing Authority	27.50%	1,888	28.28%	1,938
• Cost Group 5 – Contra Costa County Fire Protection District	39.81%	3,668	38.80%	3,080
• Cost Group 6 – Small Districts (Non-Enhanced Tiers 1 and 4)	15.13%	203	15.78%	175
Safety				
• Cost Group 7 – County (Tiers A and D)	59.75%	\$27,563	63.54%	\$31,326
• Cost Group 8 – Contra Costa Fire Protection District	60.55%	42,800	66.96%	40,575
• Cost Group 9 – County (Tiers C and E)	49.46%	37,202	53.35%	34,822
• Cost Group 10 – Moraga-Orinda Fire District	91.22%	8,292	88.64%	7,982
• Cost Group 11 – San Ramon Valley Fire District	48.58%	12,440	50.96%	12,851
• Cost Group 12 – Rodeo-Hercules Fire Protection District	76.09%	2,247	89.35%	2,096
All Cost Groups combined	28.55%	\$329,788	30.01%	\$322,227

Note: Pages 171 and 172 contain a summary that shows which employers are in each cost group.

¹ These rates **do not** include any employer subvention of member contributions or any member subvention of employer contributions.

² Based on projected compensation for each valuation date shown.

Section 1: Actuarial Valuation Summary

Average Member Contribution¹ Calculated as of December 31 (\$ in '000s)

Cost Group and Employer	2023 Total Rate	2023 Estimated Amount ²	2022 Total Rate	2022 Estimated Amount ²
General				
• Cost Group 1 – County and Small Districts (Tiers 1 and 4)	11.62%	\$2,699	11.44%	\$2,695
• Cost Group 2 – County and Small Districts (Tiers 3 and 5)	10.68%	89,994	10.76%	84,160
• Cost Group 3 – Central Contra Costa Sanitary District	11.55%	4,868	11.57%	4,691
• Cost Group 4 – Contra Costa Housing Authority	11.71%	804	11.78%	807
• Cost Group 5 – Contra Costa County Fire Protection District	11.85%	1,092	11.91%	946
• Cost Group 6 – Small Districts (Non-Enhanced Tiers 1 and 4)	13.23%	178	13.75%	153
Safety				
• Cost Group 7 – County (Tiers A and D)	18.66%	\$8,608	18.83%	\$9,283
• Cost Group 8 – Contra Costa Fire Protection District	17.60%	12,441	17.58%	10,652
• Cost Group 9 – County (Tiers C and E)	17.06%	12,832	17.03%	11,116
• Cost Group 10 – Moraga-Orinda Fire District	18.19%	1,653	18.41%	1,658
• Cost Group 11 – San Ramon Valley Fire District	17.46%	4,471	16.88%	4,257
• Cost Group 12 – Rodeo-Hercules Fire Protection District	16.54%	488	14.83%	348
All Cost Groups combined	12.13%	\$140,130	12.18%	\$130,764

Note: Pages 171 and 172 contain a summary that shows which employers are in each cost group.

¹ These rates **do not** include any employer subvention of member contributions or any member subvention of employer contributions.

² Based on projected compensation for each valuation date shown.

Section 1: Actuarial Valuation Summary

Valuation Results as of December 31

Line Description	2023	2022
Actuarial accrued liability		
• Total actuarial accrued liability	\$12,438,710,062	\$11,912,228,880
– Retired members and beneficiaries	8,100,537,061	7,745,002,318
– Inactive members ¹	369,447,362	360,870,317
– Active members	3,968,725,639	3,806,356,245
• Normal cost for plan year beginning December 31 ²	314,221,323	296,628,244
Assets		
• Market value of assets (MVA)	\$10,808,858,259	\$10,053,668,812
• Actuarial value of assets (AVA)	11,340,825,456	10,878,817,667
• Actuarial value of assets as a percentage of market value of assets	104.9%	108.2%
• Valuation value of assets (VVA)	\$11,323,476,654	\$10,861,822,062
Funded status		
• Unfunded Actuarial Accrued Liability on MVA basis ³	\$1,647,200,605	\$1,875,555,673
• Funded percentage on MVA basis ³	86.8%	84.3%
• Unfunded Actuarial Accrued Liability on VVA basis	\$1,115,233,408	\$1,050,406,818
• Funded percentage on VVA basis	91.0%	91.2%
Key assumptions		
• Net investment return	6.75%	6.75%
• Inflation rate	2.50%	2.50%
• Payroll growth	3.00%	3.00%
• Cost-of-living adjustments		
– Tiers with 3%/4% COLA	2.75%	2.75%
– Tiers with 2% COLA	2.00%	2.00%

¹ Includes inactive members with member contributions on deposit.

² Includes administrative expenses.

³ Both the UAAL and the funded percentage on MVA basis have been calculated by using the MVA reduced by non-valuation reserves in the amount of \$17,348,802 as of 2023 and \$16,995,605 as of 2022.

Section 1: Actuarial Valuation Summary

Demographic Data as of December 31

Demographic Data by Status	2023	2022	Change
Active members			
• Number of members	10,349	10,082	2.6%
• Average age	46.1	46.1	0.0
• Average service	9.9	10.1	(0.2)
• Total projected compensation	\$1,155,129,563	\$1,073,886,785	7.6%
• Average projected compensation	\$111,618	\$106,515	4.8%
Retired members and beneficiaries			
• Number of members	10,805	10,561	2.3%
– Service retired	8,407	8,197	2.6%
– Disability retired	872	874	-0.2%
– Beneficiaries	1,526	1,490	2.4%
• Average age	71.3	71.1	0.2
• Average monthly benefit	\$4,606	\$4,466	3.1%
Inactive members			
• Number of members ¹	4,109	3,974	3.4%
• Average age	46.5	46.5	0.0
Total members	25,263	24,617	2.6%

¹ Includes 1,987 inactive non-vested members due a refund of member contributions as of 2023 and 2,183 as of 2022.

Section 1: Actuarial Valuation Summary

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:

Input Item	Description
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.
Member 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 members 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 members 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 (if applicable). 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.

Section 1: Actuarial Valuation Summary

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

- The actuarial valuation is prepared at the request of the Association. Segal is not responsible for the use or misuse of its report, particularly by any other party.
- An actuarial valuation is a measurement 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 CCCERA 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 and is not acting as a fiduciary to the Plan. This valuation is based on Segal's 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 CCCERA upon delivery and review. CCCERA should notify Segal immediately of any questions or concerns about the final content.

Section 2: Actuarial Valuation Results

A. Member information

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

As of December 31	Active Members	Inactive Members ¹	Retired Members & Beneficiaries (Pay Status)	Total Non-Actives	Ratio of Non-Actives to Actives	Ratio of Pay Status to Actives
2014	9,159	2,647	8,871	11,518	1.26	0.97
2015	9,642	2,790	9,068	11,858	1.23	0.94
2016	9,848	3,089	9,100	12,189	1.24	0.92
2017	10,038	3,327	9,267	12,594	1.25	0.92
2018	10,021	3,477	9,547	13,024	1.30	0.95
2019	10,075	3,638	9,737	13,375	1.33	0.97
2020	10,099	3,591	10,018	13,609	1.35	0.99
2021	10,005	3,812	10,278	14,090	1.41	1.03
2022	10,082	3,974	10,561	14,535	1.44	1.05
2023	10,349	4,109	10,805	14,914	1.44	1.04

¹ Includes inactive members with member contributions on deposit.

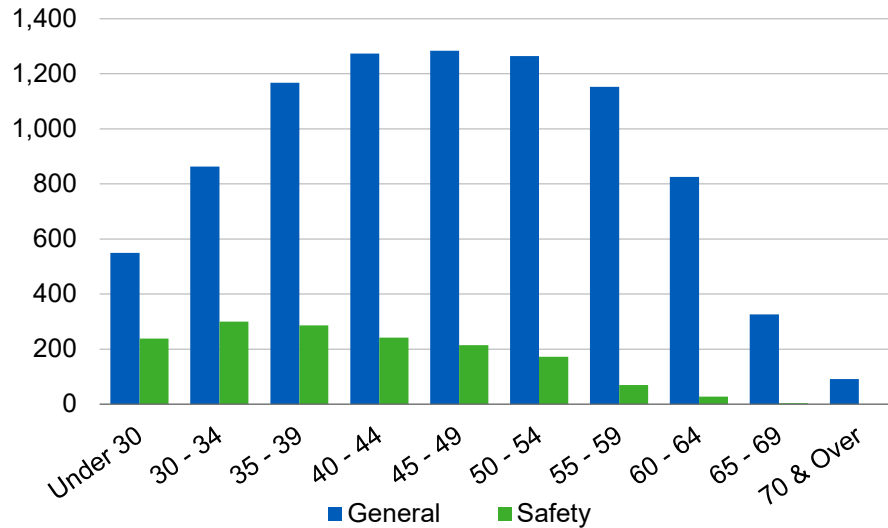
Section 2: Actuarial Valuation Results

Active Members as of December 31

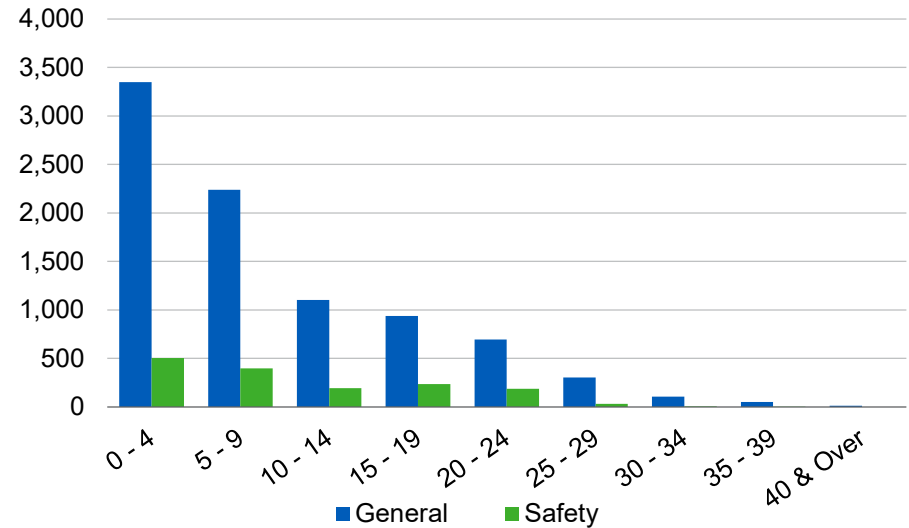
Line Description	2023	2022	Change
Active members	10,349	10,082	2.6%
Average age ¹	46.1	46.1	0.0
Average years of service	9.9	10.1	(0.2)
Average compensation	\$111,618	\$106,515	4.8%

Distribution of Active Members as of December 31, 2023

Actives by Age



Actives by Years of Service



Inactive Members as of December 31

Line Description	2023	2022	Change
Inactive members ²	4,109	3,974	3.4%

¹ Among the active members, there were none with unknown age information.

² Includes inactive members with member contributions on deposit.

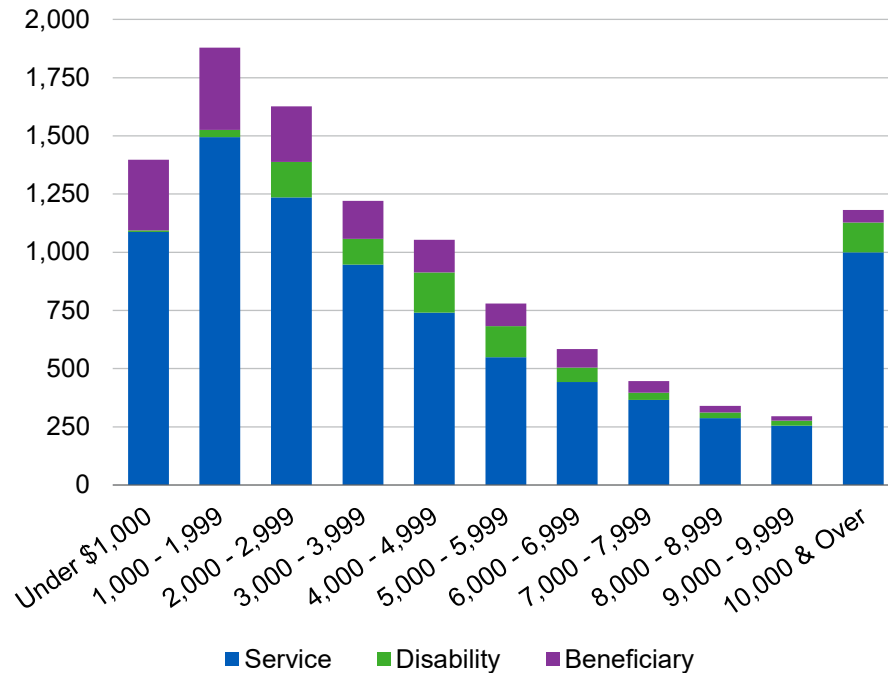
Section 2: Actuarial Valuation Results

Retired Members and Beneficiaries as of December 31

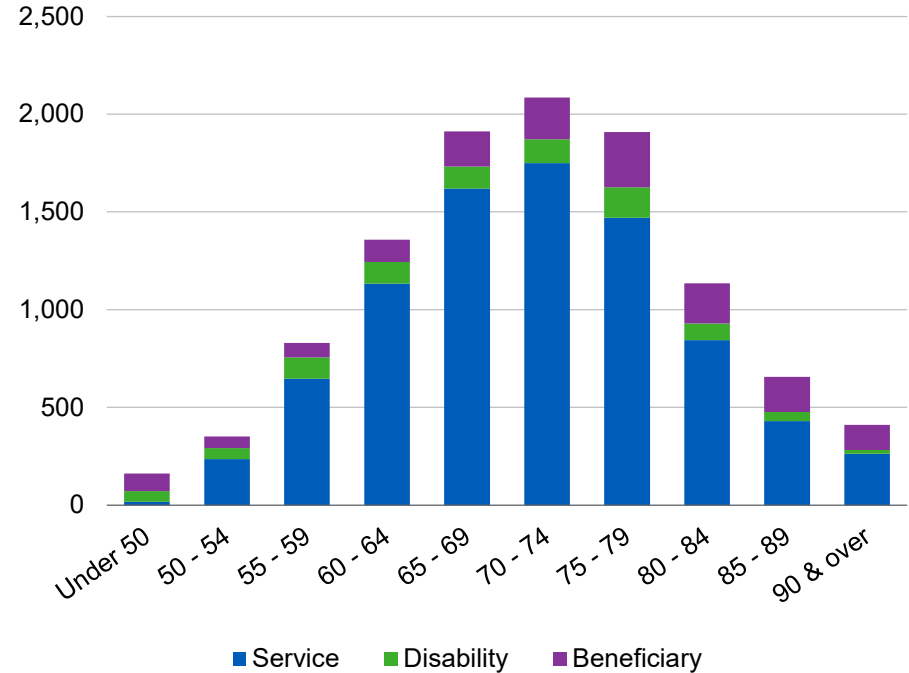
Line Description	2023	2022	Change
Retired members	9,279	9,071	2.3%
Beneficiaries	1,526	1,490	2.4%
Average age	71.3	71.1	0.2
Average monthly amount	\$4,606	\$4,466	3.1%
Total monthly amount	\$49,758,676	\$47,165,238	5.5%

Distribution of Retired Members and Beneficiaries as of December 31, 2023

By Type and Monthly Amount



By Type and Age



Section 2: Actuarial Valuation Results

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.

Historical Member Data

Active Members versus Retired Members and Beneficiaries (Pay Status)

As of December 31	Active Count	Active Average Age	Active Average Service	Pay Status Count	Pay Status Average Age	Pay Status Monthly Amount
2014	9,159	45.8	9.9	8,871	69.4	\$3,669
2015	9,642	45.9	9.9	9,068	69.9	3,706
2016	9,848	45.9	9.9	9,100	70.0	3,799
2017	10,038	46.0	9.8	9,267	70.3	3,892
2018	10,021	46.2	9.9	9,547	70.4	3,986
2019	10,075	46.3	10.1	9,737	70.6	4,116
2020	10,099	46.3	10.2	10,018	70.8	4,219
2021	10,005	46.3	10.2	10,278	70.9	4,353
2022	10,082	46.1	10.1	10,561	71.1	4,466
2023	10,349	46.1	9.9	10,805	71.3	4,606

Section 2: Actuarial Valuation Results

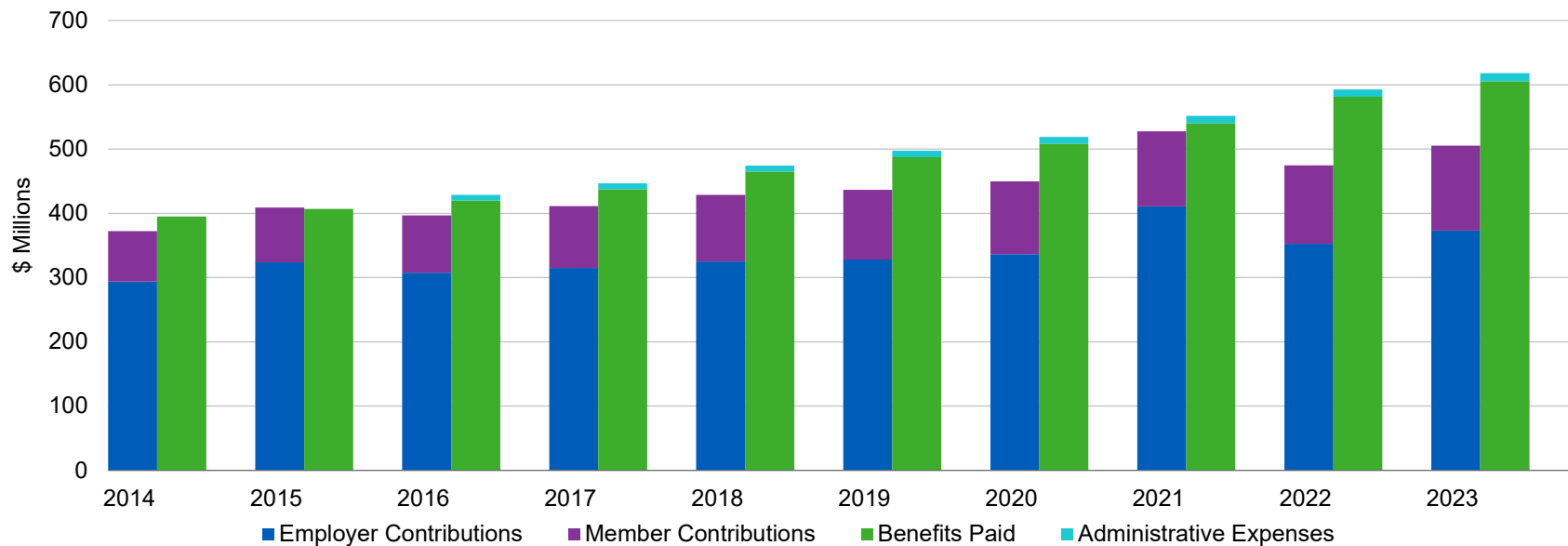
B. Financial information

Retirement plan funding anticipates that, over the long term, both contributions and investment earnings (less investment fees) will be needed to cover benefit payments and administrative expenses. 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 through 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 valuation 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 and Expenses¹ for Years Ended December 31



¹ Prior to 2016, administrative expenses were included as an offset to investment income and are not shown in the graph. Starting in 2016, the employer and member contributions shown in the graph include an administrative expense load.

Section 2: Actuarial Valuation Results

Determination of Actuarial Value and Valuation Value of Assets for Year Ended December 31, 2023

Step	Actual Return	Expected Return	Investment Gain/(Loss)	Percent Deferred	Deferred Amount	Amount
1. Market value of assets						\$10,808,858,259
2. Calculation of deferred return						
a. Period ended December 31, 2018	\$(258,676,279)	\$289,889,306	\$(548,565,585)	0%	\$0	
b. Period ended June 30, 2019	820,000,188	280,075,265	539,924,922	0%	0	
c. Period ended December 31, 2019	348,171,398	307,217,326	40,954,072	10%	4,095,407	
d. Period ended June 30, 2020	(302,015,927)	318,113,258	(620,129,184)	20%	(124,025,837)	
e. Period ended December 31, 2020	1,184,409,986	306,509,032	877,900,954	30%	263,370,286	
f. Period ended June 30, 2021	(254,319,434)	346,562,358	(600,881,792)	40%	(240,352,717)	
g. Period ended December 31, 2021	1,661,663,047	337,995,697	1,323,667,350	50%	661,833,675	
h. Period ended June 30, 2022	(1,235,218,785)	393,183,225	(1,628,402,011)	60%	(977,041,206)	
i. Period ended December 31, 2022	(46,688,578)	336,398,943	(383,087,521)	70%	(268,161,264)	
j. Period ended June 30, 2023	532,635,863	332,783,528	199,852,335	80%	159,881,868	
k. Period ended December 31, 2023	335,615,067	348,467,744	(12,852,677)	90%	(11,567,409)	
l. Total deferred return¹						\$(531,967,197)
3. Actuarial value of assets: 1 – 2l						\$11,340,825,456
4. Ratio of actuarial to market value: 3 ÷ 1						104.9%
5. Non-valuation reserves and designations						
a. Post Retirement Death Benefit						\$17,348,802
b. Statutory Contingency						0
c. Additional One Percent Contingency						0
d. Unrestricted Designation						0
e. Total						\$17,348,802
6. Valuation value of assets: 3 – 5e						\$11,323,476,654

Note: Results may be slightly off due to rounding.

¹ Total deferred return is equal to the **sum of 2a through 2k**. The total deferred return as of December 31, 2023 is recognized in each of the next five years as follows:

a. Amount recognized on December 31, 2024	\$(164,691,103)
b. Amount recognized on December 31, 2025	(132,550,767)
c. Amount recognized on December 31, 2026	(232,531,239)
d. Amount recognized on December 31, 2027	(908,820)
e. Amount recognized on December 31, 2028	(1,285,268)

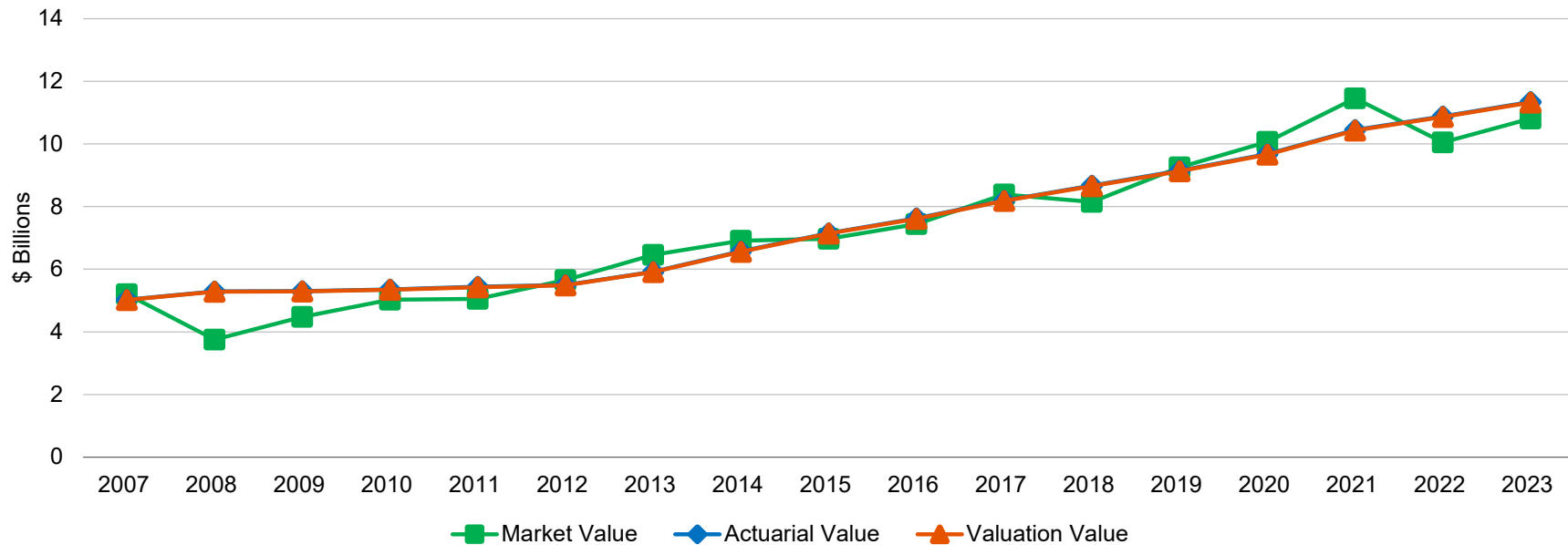
Section 2: Actuarial Valuation Results

Asset history

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 generally the actuarial value, excluding any non-valuation reserves.

The valuation value of assets 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, Actuarial¹ Value, and Valuation Value of Assets as of December 31

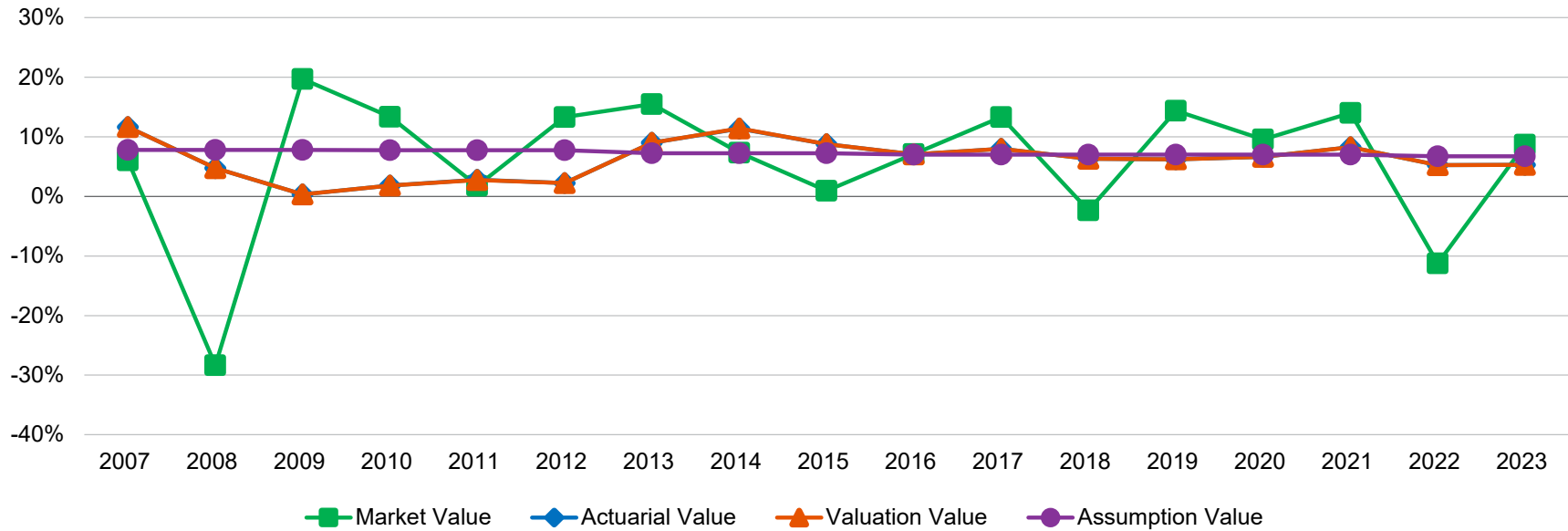


¹ The actuarial value and the valuation value have been substantially the same over the time period shown, differing by no more than \$20 million.

Section 2: Actuarial Valuation Results

Historical investment returns

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



Legend	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Market rate	6.03%	(28.35%)	19.68%	13.35%	1.76%	13.31%	15.50%	7.35%	0.95%	7.10%	13.31%	(2.33%)	14.39%	9.57%	13.99%	(11.25%)	8.69%
Actuarial rate	11.63%	4.73%	0.34%	1.82%	2.78%	2.25%	9.01%	11.39%	8.78%	7.04%	8.00%	6.32%	6.24%	6.62%	8.24%	5.25%	5.31%
Valuation rate	11.64%	4.72%	0.32%	1.80%	2.77%	2.24%	9.02%	11.40%	8.79%	7.04%	8.00%	6.32%	6.24%	6.62%	8.24%	5.25%	5.31%
Assumed rate	7.80%	7.80%	7.80%	7.75%	7.75%	7.75%	7.25%	7.25%	7.25%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	6.75%	6.75%

Average Rates of Return	Market Value	Actuarial Value	Valuation Value
Most recent five-year geometric average return	6.63%	6.33%	6.33%
Most recent 10-year geometric average return	5.88%	7.30%	7.31%
Most recent 15-year geometric average return	8.06%	5.92%	5.92%

Section 2: Actuarial Valuation Results

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. There are no changes in actuarial assumptions reflected in this valuation.

The actuarial experience for the year can be found below and a discussion of the major components can be found on the following pages.

Actuarial Experience for Year Ended December 31, 2023

Source	Amount
1. Net (gain)/loss from investments ¹	\$155,422,512
2. Net (gain)/loss from contribution experience ²	(53,158,609)
3. Net (gain)/loss from other experience ³	52,593,236
4. Net experience (gain)/loss	\$154,857,139

¹ Details on next page.

² See *Section 2, Subsection E* for further details. Includes the contribution gain from additional UAAL contributions made by certain employers.

³ See *Section 2, Subsection E* for further details. Does not include the effect of plan or assumption changes, if any.

Section 2: Actuarial Valuation Results

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.

For valuation purposes, the assumed rate of return on the valuation value of assets is 6.75% based on the December 31, 2022 valuation. The actual rate of return on a valuation basis for the 2023 plan year was 5.31% after considering the recognition of prior years' investment gains and losses. Since the actual return for the year was less than the assumed return, the Plan experienced an actuarial loss during the year ended December 31, 2023 with regard to its investments.

Investment Experience for Year Ended December 31, 2023

Line Description	Market Value	Actuarial Value	Valuation Value
1. Net investment income	\$868,250,929	\$575,069,271	\$573,955,595
2. Average value of assets	9,997,068,096	10,822,216,951	10,805,601,585
3. Rate of return: $1 \div 2$	8.69%	5.31%	5.31%
4. Assumed rate of return	6.75%	6.75%	6.75%
5. Expected investment income: ¹ 2×4	674,802,096	730,499,644	729,378,107
6. Investment gain/(loss): $1 - 5$	\$193,448,833	\$(155,430,373)	\$(155,422,512)

¹ The expected investment returns are based on January 1, 2023 asset values and, with the exception of special contributions, do not take into account the actual timing of cashflows during the year. Instead, normal contributions, benefit payments and expenses are assumed to occur in the middle of the year.

Section 2: Actuarial Valuation Results

Contributions

Contributions (excluding additional UAAL contributions) for the year ended December 31, 2023 totaled \$504.9 million, compared to the projected amount of \$453.8 million. This resulted in a gain of \$52.8 million for the year, when adjusted for timing.

Additional UAAL contributions of \$90,015 were made by In-Home Supportive Services Authority and \$288,000 were made by San Ramon Valley Fire District. These amounts, when adjusted for timing, resulted in a gain of \$93,003 for In-Home Supportive Services Authority and \$295,995 for San Ramon Valley Fire District.

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:

- Mortality experience (more or fewer than expected deaths)
- The extent of turnover among members
- Retirement experience (earlier or later than projected)
- The number of disability retirements (more or fewer than projected)
- Salary increases (greater or smaller than projected)
- Cost-of-living adjustments (COLAs) (higher or lower than assumed)
- Administrative expenses (higher or lower than assumed)

The net loss from this other experience for the year ended December 31, 2023 amounted to \$52.6 million, which is 0.4% of the actuarial accrued liability. See *Section 2, Subsection E* for a detailed development of the unfunded actuarial accrued liability.

Section 2: Actuarial Valuation Results

D. Other changes impacting the actuarial accrued liability

Actuarial assumptions and methods

- The administrative expenses assumption has increased from 1.13% of payroll in last year's valuation to 1.17% of payroll in this year's valuation based on the actual administrative expenses and actual payroll reported by CCCERA.
- This valuation reflects two minor actuarial methodology adjustments in calculating the normal cost rate:
 - Applying beginning of year timing of decrements for exiting from active membership status;
 - Approximating the entry age using the years of service at the date of the valuation rounded down.

The adjustments result in a net decrease in the Plan's UAAL of \$5.4 million, a net decrease of about 0.12% in the average employer rate and a net decrease of about 0.06% in the average member contribution rate.

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*.

Section 2: Actuarial Valuation Results

E. Unfunded actuarial accrued liability

Reconciliation of Unfunded Actuarial Accrued Liability

Line Description	Amount
1. Unfunded actuarial accrued liability as of December 31, 2022	\$1,050,406,818
2. Normal cost ¹ at middle of year	285,889,379
3. Expected administrative expenses	12,511,959
4. Expected employer and member contributions	(453,799,656)
5. Interest to end of year	65,367,769
6. Expected unfunded actuarial accrued liability as of December 31, 2023	\$960,376,269
7. Changes due to:	
a. Investment return lower than expected, after asset smoothing	\$155,422,512
b. Actual contributions greater than expected under funding policy ²	(52,769,611)
c. Gain from additional UAAL contributions for In Home Support Services ³	(93,003)
d. Gain from additional UAAL contributions for San Ramon FD ⁴	(295,995)
e. Individual salary increases greater than expected	66,211,928
f. COLA increases lower than expected for April 1, 2024 ⁵	(8,343,279)
g. Other net experience (gain)/loss ⁶	(5,275,413)
h. Total changes	\$154,857,139
8. Unfunded actuarial accrued liability as of December 31, 2023: 6 + 7h	\$1,115,233,408

Note: The sum of items 7b through 7d equals the “Net (gain)/loss from contribution experience” shown in *Section 2, Subsection C*. The sum of items 7e through 7g equals the “Net (gain)/loss from other experience” shown in *Section 2, Subsection C*.

¹ Excludes administrative expense load.

² The actual employer contributions were greater than expected due to the scheduled 18-month lag in implementing the lower contribution rates calculated in the December 31, 2022 valuation for Fiscal Year 2024-2025, as well as actual covered payroll for 2023 being greater than the projected compensation in the December 31, 2022 valuation.

³ In-Home Supportive Services Authority made additional UAAL contributions of \$90,015, adjusted with \$2,988 in interest to the end of the year.

⁴ San Ramon Valley Fire District made additional UAAL contributions of \$288,000, adjusted with \$7,995 in interest to the end of the year.

⁵ For tiers with a maximum 3% or 4% COLA, the actual COLA increase on April 1, 2024 is 2.5% for those retirees without a COLA bank.

⁶ Includes a decrease in UAAL of \$5.4 million as a result of two minor technical actuarial refinements as discussed on the prior page. Also includes other differences in actual versus expected experience including (but not limited to) mortality, retirement, disability, termination and leave cashout experience.

Section 2: Actuarial Valuation Results

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, 2023, the average recommended employer contribution is 28.55% of payroll.

The Board sets the funding policy used to calculate the recommended contribution based on layered 18-year¹ amortization periods as a level percentage of payroll. See *Section 4, Exhibit 1* for further details on the funding policy. Based on this policy, there is no negative amortization and each amortization layer is fully funded in 18 years. As shown in the graphical projection of the UAAL amortization balances and payments found in *Section 3, Exhibit 1*, before taking into consideration the deferred investment gains and/or losses that will be recognized in the next several valuations, the UAAL of the Plan is expected to be fully amortized by 2041,² assuming all assumptions are realized and contributions are made in accordance with the funding policy.

The current funding policy is intended to fully fund the cost of the benefits and to allocate the cost of benefits reasonably and equitably over time while minimizing the volatility of employer contributions. The recommended contribution is expected to remain level as a percent of payroll, except when any current amortization layer is fully amortized and assuming there are no future actuarial gains or losses. Furthermore, the funded ratio is expected to increase as the UAAL is methodically funded by employer contributions.

¹ Changes in UAAL due to actuarial gains or losses and changes in actuarial assumptions or methods for each valuation are amortized over separate 18-year periods, while changes in UAAL due to plan amendments are amortized over separate 10-year periods.

² Excludes withdrawn employers.

Section 2: Actuarial Valuation Results

Average Recommended Employer Contribution Calculated as of December 31

Line Description	2023 Amount (\$ in '000s)	2023 % of Projected Compensation	2022 Amount (\$ in '000s)	2022 % of Projected Compensation
1. Total normal cost ¹	\$314,222	27.20%	\$296,628	27.63%
2. Expected member contributions ²⁸	140,130	12.13%	130,764	12.18%
3. Employer normal cost: ²⁸ 1 – 2	\$174,092	15.07%	\$165,864	15.45%
4. Actuarial accrued liability	12,438,710		11,912,229	
5. Valuation value of assets	11,323,477		10,861,822	
6. Unfunded actuarial accrued liability: 4 – 5	\$1,115,233		\$1,050,407	
7. Payment on UAAL	155,696	13.48%	156,364	14.56%
8. Average recommended employer contribution: 3 + 7	\$329,788	28.55%	\$322,227	30.01%
9. Projected compensation	\$1,155,130		\$1,073,887	

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

¹ Includes administrative expense load.

Section 2: Actuarial Valuation Results

Reconciliation of Average Recommended Employer Contribution Rate

Line Description	Contribution Rate ¹	Estimated Amount ²
1. Average recommended employer contribution as of December 31, 2022	30.01%	\$322,227,409
2. Changes due to:		
a. Investment return less than expected after asset smoothing	1.03%	11,897,835
b. Actual contributions greater than expected under funding policy ³	(0.33%)	(3,811,928)
c. Additional UAAL contributions for San Ramon FD and IHSS	(0.00%)	(29,825)
d. Individual salary increases greater than expected	0.44%	5,082,570
e. Board action to adjust remaining UAAL amortization periods to six years for layers established as of December 31, 2012 through December 31, 2018	(1.50%)	(17,326,943)
f. Amortizing prior year's UAAL over a larger than expected total payroll	(0.62%)	(7,161,803)
g. COLA increases lower than expected for April 1, 2024 ⁴	(0.05%)	(577,565)
h. Change in active member demographics on normal cost ⁵	(0.31%)	(3,580,902)
i. Change in administrative expense load ⁶	0.02%	231,026
j. Other net experience gain ⁷	(0.14%)	22,865,011
k. Setting contribution rate equal to normal cost for Cost Group 6 ⁸	(0.00%)	(27,377)
l. Total change	(1.46%)	\$7,560,099
3. Average recommended employer contribution as of December 31, 2023: 1 + 2l	28.55%	\$329,787,508

¹ These rates **do not** include any employer subvention of member contributions, or member subvention of employer contributions.

² Based on projected compensation for each valuation date shown.

³ The actual employer contributions were greater than expected due to the scheduled 18-month lag in implementing the lower contribution rates calculated in the December 31, 2022 valuation for Fiscal Year 2024-2025, as well as actual covered payroll for 2023 being greater than the projected compensation in the December 31, 2022 valuation.

⁴ For tiers with a maximum 3% or 4% COLA, the actual COLA increase on April 1, 2024 is 2.5% for those retirees without a COLA bank.

⁵ This is the net impact of: a) reduction in normal cost rate due to the replacement of legacy members by PEPRA members, b) change in entry age and other demographic profiles, and c) the effect of legacy Safety members who for the first time reached 30 years of reported service as of December 31, 2023 and stopped making member basic contributions.

⁶ The calculation and the allocation of the administrative expense between employer and member can be found on page 107.

⁷ Includes a decrease in contribution rate of 0.12%, or \$1.4 million, as a result of two minor technical actuarial refinements as discussed on page 28. Also includes other differences in actual versus expected experience including (but not limited to) mortality, retirement, disability, termination and leave cashout experience. Estimated amount also reflects changes in payroll from prior valuation.

⁸ Cost Group 6 was overfunded as of December 31, 2022 and December 31, 2023. We have applied some of the overfunded amount to offset the net increase in liability for this Cost Group during 2023.

Section 2: Actuarial Valuation Results

Reconciliation of Average Recommended Member Contribution Rate

Line Description	Contribution Rate ¹	Estimated Amount ²
1. Average recommended member contribution as of December 31, 2022	12.18%	\$130,764,381
2. Changes due to:		
a. Change in administrative expense load ³	0.02%	\$231,026
b. Change in active member demographics ⁴	(0.01%)	(115,513)
c. Other net experience gain ⁵	(0.06%)	9,249,738
d. Total change	(0.05%)	\$9,365,251
3. Average recommended member contribution as of December 31, 2023: 1 + 2d	12.13%	\$140,129,632

¹ These rates **do not** include any employer subvention of member contributions, or member subvention of employer contributions.

² Based on projected compensation for each valuation date shown.

³ The calculation and the allocation of the administrative expense between employer and member can be found on page 107.

⁴ This is the net impact of: a) reduction in normal cost rate due to the replacement of legacy members by PEPRA members, b) change in entry age and other demographic profiles, and c) the effect of legacy Safety members who for the first time reached 30 years of reported service as of December 31, 2023 and stopped making member basic contributions.

⁵ Includes a decrease in contribution rate of 0.06%, or \$0.7 million, as a result of two minor technical actuarial refinements as discussed on page 28. Estimated amount also reflects changes in payroll from prior valuation.

Section 2: Actuarial Valuation Results

Recommended employer contribution rate

Cost Group 1 – Recommended Employer Contribution Rates¹ Calculated as of December 31

Component by Plan and Employer	2023 Basic	2023 COLA ²	2023 Total	2023 Estimated Amount	2022 Basic	2022 COLA	2022 Total	2022 Estimated Amount
Tier 1 – Non-LAFCO								
Normal Cost	13.20%	3.68%	16.88%	\$2,279,408	13.36%	3.71%	17.07%	\$2,577,746
UAAL	9.60%	(0.75%)	8.85%	1,195,069	9.34%	0.19%	9.53%	1,439,129
Total Contribution	22.80%	2.93%	25.73%	\$3,474,477	22.70%	3.90%	26.60%	\$4,016,875
Tier 1 – LAFCO³								
Normal Cost	13.20%	3.68%	16.88%	\$34,060	13.36%	3.71%	17.07%	\$32,863
UAAL	4.90%	(0.75%)	4.15%	8,374	3.86%	0.19%	4.05%	7,797
Total Contribution	18.10%	2.93%	21.03%	\$42,434	17.22%	3.90%	21.12%	\$40,660
Tier 4 (3% COLA) – Non-LAFCO								
Normal Cost	9.59%	3.22%	12.81%	\$1,209,315	9.36%	3.15%	12.51%	\$1,033,490
UAAL	9.60%	(0.75%)	8.85%	835,475	9.34%	0.19%	9.53%	787,304
Total Contribution	19.19%	2.47%	21.66%	\$2,044,790	18.70%	3.34%	22.04%	\$1,820,794
Tier 4 (3% COLA) – LAFCO³								
Normal Cost	9.59%	3.22%	12.81%	\$10,046	9.36%	3.15%	12.51%	\$0
UAAL	4.90%	(0.75%)	4.15%	3,255	3.86%	0.19%	4.05%	0
Total Contribution	14.49%	2.47%	16.96%	\$13,301	13.22%	3.34%	16.56%	\$0
Tier 4 (2% COLA)								
Normal Cost	9.09%	2.09%	11.18%	\$0	9.09%	2.09%	11.18%	\$0
UAAL	9.60%	(0.75%)	8.85%	0	9.34%	0.19%	9.53%	0
Total Contribution	18.69%	1.34%	20.03%	\$0	18.43%	2.28%	20.71%	\$0

¹ The Basic normal cost and UAAL rates shown for each tier include an explicit administrative expense load of 0.52% and 0.13% of payroll, respectively for 2023 and 0.50% and 0.13% of payroll, respectively for 2022.

² The COLA rate in the December 31, 2023 valuation has become negative as a result of amortizing the bases established as of December 31, 2012 through December 31, 2018 over six years. While this does not impact the total recommended rate, we are available to discuss various options should CCCERA prefer not to have a negative COLA rate.

³ LAFCO has made several UAAL prepayments in recent years. Those prepayments have been amortized over 18 years from the date they were made and allocated to provide Basic UAAL rate credits.

Section 2: Actuarial Valuation Results

Cost Group 2 — Recommended Employer Contribution Rates¹ Calculated as of December 31

Component by Plan and Employer	2023 Basic	2023 COLA ²	2023 Total	2023 Estimated Amount	2022 Basic	2022 COLA	2022 Total	2022 Estimated Amount
Tier 3 — Non-IHSS								
Normal Cost	11.87%	3.38%	15.25%	\$55,635,754	11.96%	3.40%	15.36%	\$56,875,398
UAAL	9.60%	(0.75%)	8.85%	32,286,978	9.34%	0.19%	9.53%	35,287,926
Total Contribution	21.47%	2.63%	24.10%	\$87,922,732	21.30%	3.59%	24.89%	\$92,163,324
Tier 3 — IHSS³								
Normal Cost	11.87%	3.38%	15.25%	\$76,744	11.96%	3.40%	15.36%	\$84,159
UAAL	9.12%	(0.91%)	8.21%	41,316	9.34%	0.19%	9.53%	52,216
Total Contribution	20.99%	2.47%	23.46%	\$118,060	21.30%	3.59%	24.89%	\$136,375
Tier 5 (3%/4% COLA) — Non-IHSS								
Normal Cost	8.48%	2.81%	11.29%	\$7,205,564	8.58%	2.84%	11.42%	\$6,916,833
UAAL	9.60%	(0.75%)	8.85%	5,648,294	9.34%	0.19%	9.53%	5,772,103
Total Contribution	18.08%	2.06%	20.14%	\$12,853,858	17.92%	3.03%	20.95%	\$12,688,936
Tier 5 (3%/4% COLA) — IHSS³								
Normal Cost	8.48%	2.81%	11.29%	\$8,841	8.58%	2.84%	11.42%	\$8,490
UAAL	9.12%	(0.91%)	8.21%	6,429	9.34%	0.19%	9.53%	7,085
Total Contribution	17.60%	1.90%	19.50%	\$15,270	17.92%	3.03%	20.95%	\$15,575
Tier 5 (2% COLA) — Non-IHSS								
Normal Cost	8.48%	1.90%	10.38%	\$42,858,226	8.47%	1.90%	10.37%	\$36,320,856
UAAL	9.60%	(0.75%)	8.85%	36,540,973	9.34%	0.19%	9.53%	33,378,761
Total Contribution	18.08%	1.15%	19.23%	\$79,399,199	17.81%	2.09%	19.90%	\$69,699,617

¹ The Basic normal cost and UAAL rates shown for each tier include an explicit administrative expense load of 0.52% and 0.13% of payroll, respectively for 2023 and 0.50% and 0.13% of payroll, respectively for 2022.

² The COLA rate in the December 31, 2023 valuation has become negative as a result of amortizing the bases established as of December 31, 2012 through December 31, 2018 over six years. While this does not impact the total recommended rate, we are available to discuss various options should CCCERA prefer not to have a negative COLA rate.

³ IHSS made UAAL prepayments in 2023. Those prepayments have been amortized over 18 years from December 31, 2023 and allocated to provide Basic and UAAL rate credits.

Section 2: Actuarial Valuation Results

Cost Group 2 – Recommended Employer Contribution Rates¹ Calculated as of December 31

Component by Plan and Employer	2023 Basic	2023 COLA ²	2023 Total	2023 Estimated Amount	2022 Basic	2022 COLA	2022 Total	2022 Estimated Amount
Tier 5 (2% COLA) — IHSS³								
Normal Cost	8.48%	1.90%	10.38%	\$54,373	8.47%	1.90%	10.37%	\$44,893
UAAL	9.12%	(0.91%)	8.21%	43,006	9.34%	0.19%	9.53%	41,257
Total Contribution	17.60%	0.99%	18.59%	\$97,379	17.81%	2.09%	19.90%	\$86,150

Cost Group 3 – Recommended Employer Contribution Rates¹ Calculated as of December 31

Component by Plan	2023 Basic	2023 COLA	2023 Total	2023 Estimated Amount	2022 Basic	2022 COLA	2022 Total	2022 Estimated Amount
Tier 1								
Normal Cost	13.49%	3.88%	17.37%	\$4,609,936	13.57%	3.88%	17.45%	\$4,713,467
UAAL	1.17%	1.43%	2.60%	690,031	0.40%	0.66%	1.06%	286,319
Total Contribution	14.66%	5.31%	19.97%	\$5,299,967	13.97%	4.54%	18.51%	\$4,999,786
Tier 4 (3% COLA)								
Normal Cost	8.54%	2.98%	11.52%	\$1,797,876	8.60%	3.00%	11.60%	\$1,569,590
UAAL	1.17%	1.43%	2.60%	405,771	0.40%	0.66%	1.06%	143,428
Total Contribution	9.71%	4.41%	14.12%	\$2,203,647	9.00%	3.66%	12.66%	\$1,713,018

¹ The Basic normal cost and UAAL rates shown for each tier include an explicit administrative expense load of 0.52% and 0.13% of payroll, respectively for 2023 and 0.50% and 0.13% of payroll, respectively for 2022.

² The COLA rate in the December 31, 2023 valuation has become negative as a result of amortizing the bases established as of December 31, 2012 through December 31, 2018 over six years. While this does not impact the total recommended rate, we are available to discuss various options should CCCERA prefer not to have a negative COLA rate.

³ IHSS made UAAL prepayments in 2023. Those prepayments have been amortized over 18 years from December 31, 2023 and allocated to provide Basic and UAAL rate credits.

Section 2: Actuarial Valuation Results

Cost Group 4 – Recommended Employer Contribution Rates¹ Calculated as of December 31

Component by Plan	2023 Basic	2023 COLA	2023 Total	2023 Estimated Amount	2022 Basic	2022 COLA	2022 Total	2022 Estimated Amount
Tier 1								
Normal Cost	12.75%	3.71%	16.46%	\$553,410	13.41%	3.80%	17.21%	\$626,043
UAAL	9.08%	4.11%	13.19%	443,468	8.98%	4.41%	13.39%	487,084
Total Contribution	21.83%	7.82%	29.65%	\$996,878	22.39%	8.21%	30.60%	\$1,113,127
Tier 4 (3% COLA)								
Normal Cost	9.17%	3.07%	12.24%	\$428,735	9.17%	3.10%	12.27%	\$394,422
UAAL	9.08%	4.11%	13.19%	462,010	8.98%	4.41%	13.39%	430,425
Total Contribution	18.25%	7.18%	25.43%	\$890,745	18.15%	7.51%	25.66%	\$824,847

Cost Group 5 – Recommended Employer Contribution Rates¹ Calculated as of December 31

Component by Plan	2023 Basic	2023 COLA	2023 Total	2023 Estimated Amount	2022 Basic	2022 COLA	2022 Total	2022 Estimated Amount
Tier 1								
Normal Cost	15.70%	4.11%	19.81%	\$855,131	14.97%	3.98%	18.95%	\$738,478
UAAL	12.83%	11.08%	23.91%	1,032,114	12.80%	10.30%	23.10%	900,203
Total Contribution	28.53%	15.19%	43.72%	\$1,887,245	27.77%	14.28%	42.05%	\$1,638,681
Tier 4 (3% COLA)								
Normal Cost	11.31%	3.83%	15.14%	\$16,843	11.28%	3.85%	15.13%	\$15,980
UAAL	12.83%	11.08%	23.91%	26,599	12.80%	10.30%	23.10%	24,398
Total Contribution	24.14%	14.91%	39.05%	\$43,442	24.08%	14.15%	38.23%	\$40,378
Tier 4 (2% COLA)								
Normal Cost	10.08%	2.31%	12.39%	\$593,013	10.16%	2.33%	12.49%	\$491,623
UAAL	12.83%	11.08%	23.91%	1,144,386	12.80%	10.30%	23.10%	909,247
Total Contribution	22.91%	13.39%	36.30%	\$1,737,399	22.96%	12.63%	35.59%	\$1,400,870

¹ The Basic normal cost and UAAL rates shown for each tier include an explicit administrative expense load of 0.52% and 0.13% of payroll, respectively for 2023 and 0.50% and 0.13% of payroll, respectively for 2022.

Section 2: Actuarial Valuation Results

Cost Group 6 – Recommended Employer Contribution Rates¹ Calculated as of December 31

Component by Plan	2023 Basic	2023 COLA	2023 Total	2023 Estimated Amount	2022 Basic	2022 COLA	2022 Total	2022 Estimated Amount
Tier 1								
Normal Cost	12.65%	3.79%	16.44%	\$109,461	12.70%	3.80%	16.50%	\$97,339
UAAL	0.13%	0.00%	0.13%	866	0.13%	0.00%	0.13%	767
Total Contribution	12.78%	3.79%	16.57%	\$110,327	12.83%	3.80%	16.63%	\$98,106
Tier 4 (3% COLA)								
Normal Cost	10.18%	3.41%	13.59%	\$91,896	11.01%	3.68%	14.69%	\$76,376
UAAL	0.13%	0.00%	0.13%	879	0.13%	0.00%	0.13%	676
Total Contribution	10.31%	3.41%	13.72%	\$92,775	11.14%	3.68%	14.82%	\$77,052

Cost Group 7 – Recommended Employer Contribution Rates¹ Calculated as of December 31

Component by Plan	2023 Basic	2023 COLA	2023 Total	2023 Estimated Amount	2022 Basic	2022 COLA	2022 Total	2022 Estimated Amount
Tier A								
Normal Cost	23.09%	7.48%	30.57%	\$12,986,468	23.27%	7.55%	30.82%	\$14,040,055
UAAL	9.85%	20.11%	29.96%	12,727,334	13.90%	19.60%	33.50%	15,260,929
Total Contribution	32.94%	27.59%	60.53%	\$25,713,802	37.17%	27.15%	64.32%	\$29,300,984
Tier D								
Normal Cost	14.61%	6.05%	20.66%	\$754,551	14.55%	6.02%	20.57%	\$770,517
UAAL	9.85%	20.11%	29.96%	1,094,209	13.90%	19.60%	33.50%	1,254,853
Total Contribution	24.46%	26.16%	50.62%	\$1,848,760	28.45%	25.62%	54.07%	\$2,025,370

¹ The Basic normal cost and UAAL rates shown for each tier include an explicit administrative expense load of 0.52% and 0.13% of payroll, respectively for 2023 and 0.50% and 0.13% of payroll, respectively for 2022.

Section 2: Actuarial Valuation Results

Cost Group 8 – Recommended Employer Contribution Rates¹ Calculated as of December 31

Component by Plan	2023 Basic	2023 COLA	2023 Total	2023 Estimated Amount	2022 Basic	2022 COLA	2022 Total	2022 Estimated Amount
Tier A								
Normal Cost	24.09%	7.78%	31.87%	\$12,747,115	23.60%	7.78%	31.38%	\$11,876,441
UAAL	7.34%	27.94%	35.28%	14,111,020	12.25%	28.74%	40.99%	15,513,553
Total Contribution	31.43%	35.72%	67.15%	\$26,858,135	35.85%	36.52%	72.37%	\$27,389,994
Tier D								
Normal Cost	12.87%	5.42%	18.29%	\$442,457	12.81%	5.39%	18.20%	\$416,061
UAAL	7.34%	27.94%	35.28%	853,465	12.25%	28.74%	40.99%	937,053
Total Contribution	20.21%	33.36%	53.57%	\$1,295,922	25.06%	34.13%	59.19%	\$1,353,114
Tier E								
Normal Cost	12.91%	3.61%	16.52%	\$4,670,716	13.16%	3.68%	16.84%	\$3,445,302
UAAL	7.34%	27.94%	35.28%	9,974,750	12.25%	28.74%	40.99%	8,386,160
Total Contribution	20.25%	31.55%	51.80%	\$14,645,466	25.41%	32.42%	57.83%	\$11,831,462

¹ The Basic normal cost and UAAL rates shown for each tier include an explicit administrative expense load of 0.52% and 0.13% of payroll, respectively for 2023 and 0.50% and 0.13% of payroll, respectively for 2022.

Section 2: Actuarial Valuation Results

Cost Group 9 – Recommended Employer Contribution Rates¹ Calculated as of December 31

Component by Plan	2023 Basic	2023 COLA	2023 Total	2023 Estimated Amount	2022 Basic	2022 COLA	2022 Total	2022 Estimated Amount
Tier C								
Normal Cost	21.74%	4.71%	26.45%	\$4,391,285	21.91%	4.74%	26.65%	\$4,381,568
UAAL	9.85%	20.11%	29.96%	4,974,022	13.90%	19.60%	33.50%	5,507,787
Total Contribution	31.59%	24.82%	56.41%	\$9,365,307	35.81%	24.34%	60.15%	\$9,889,355
Tier E								
Normal Cost	13.73%	3.80%	17.53%	\$10,275,492	13.74%	3.82%	17.56%	\$8,574,681
UAAL	9.85%	20.11%	29.96%	17,561,537	13.90%	19.60%	33.50%	16,358,303
Total Contribution	23.58%	23.91%	47.49%	\$27,837,029	27.64%	23.42%	51.06%	\$24,932,984

Cost Group 10 – Recommended Employer Contribution Rates⁵⁴ Calculated as of December 31

Component by Plan	2023 Basic	2023 COLA	2023 Total	2023 Estimated Amount	2022 Basic	2022 COLA	2022 Total	2022 Estimated Amount
Tier A								
Normal Cost	21.91%	7.26%	29.17%	\$1,954,502	22.35%	7.36%	29.71%	\$1,997,877
UAAL	15.96%	48.81%	64.77%	4,339,839	19.73%	41.86%	61.59%	4,141,679
Total Contribution	37.87%	56.07%	93.94%	\$6,294,341	42.08%	49.22%	91.30%	\$6,139,556
Tier D								
Normal Cost	13.25%	5.59%	18.84%	\$450,125	13.52%	5.70%	19.22%	\$438,258
UAAL	15.96%	48.81%	64.77%	1,547,484	19.73%	41.86%	61.59%	1,404,385
Total Contribution	29.21%	54.40%	83.61%	\$1,997,609	33.25%	47.56%	80.81%	\$1,842,643

¹ The Basic normal cost and UAAL rates shown for each tier include an explicit administrative expense load of 0.52% and 0.13% of payroll, respectively for 2023 and 0.50% and 0.13% of payroll, respectively for 2022.

Section 2: Actuarial Valuation Results

Cost Group 11 – Recommended Employer Contribution Rates¹ Calculated as of December 31

Component by Plan	2023 Basic	2023 COLA	2023 Total	2023 Estimated Amount	2022 Basic	2022 COLA	2022 Total	2022 Estimated Amount
Tier A								
Normal Cost	23.98%	7.90%	31.88%	\$4,272,273	24.79%	8.46%	33.25%	\$5,104,772
UAAL	10.45%	13.57%	24.02%	3,218,946	12.34%	11.81%	24.15%	3,707,677
Total Contribution	34.43%	21.47%	55.90%	\$7,491,219	37.13%	20.27%	57.40%	\$8,812,449
Tier D								
Normal Cost	11.61%	4.91%	16.52%	\$2,016,779	11.81%	4.98%	16.79%	\$1,656,386
UAAL	10.45%	13.57%	24.02%	2,932,388	12.34%	11.81%	24.15%	2,382,473
Total Contribution	22.06%	18.48%	40.54%	\$4,949,167	24.15%	16.79%	40.94%	\$4,038,859

Cost Group 12 – Recommended Employer Contribution Rates¹ Calculated as of December 31

Component by Plan	2023 Basic	2023 COLA	2023 Total	2023 Estimated Amount	2022 Basic	2022 COLA	2022 Total	2022 Estimated Amount
Tier A								
Normal Cost	19.31%	6.95%	26.26%	\$410,211	19.33%	6.99%	26.32%	\$370,283
UAAL ²	27.21%	25.13%	52.34%	817,609	37.21%	28.96%	66.17%	930,914
Total Contribution	46.52%	32.08%	78.60%	\$1,227,820	56.54%	35.95%	92.49%	\$1,301,197
Tier D								
Normal Cost	14.88%	6.05%	20.93%	\$291,085	12.99%	5.49%	18.48%	\$173,616
UAAL ²	27.21%	25.13%	52.34%	727,921	37.21%	28.96%	66.17%	621,655
Total Contribution	42.09%	31.18%	73.27%	\$1,019,006	50.20%	34.45%	84.65%	\$795,271

¹ The Basic normal cost and UAAL rates shown for each tier include an explicit administrative expense load of 0.52% and 0.13% of payroll, respectively for 2023 and 0.50% and 0.13% of payroll, respectively for 2022.

² The reduction in the UAAL rate in the December 31, 2023 valuation is mainly due to amortizing the prior years' UAAL over a larger than expected payroll. The projected payroll for Cost Group 12 increased by about 25% from last year.

Section 2: Actuarial Valuation Results

Total Plan (Average) – Recommended Employer Contribution Rates¹ Calculated as of December 31

Component	2023 Basic	2023 COLA	2023 Total	2023 Estimated Amount	2022 Basic	2022 COLA	2022 Total	2022 Estimated Amount
All Cost Groups Combined								
Normal Cost	11.78%	3.29%	15.07%	\$174,091,691	12.05%	3.40%	15.45%	\$165,863,863
UAAL	9.30%	4.18%	13.48%	155,695,817	9.88%	4.68%	14.56%	156,363,546
Total Contribution	21.08%	7.47%	28.55%	\$329,787,508	21.93%	8.08%	30.01%	\$322,227,409

¹ The Basic normal cost and UAAL rates shown for each tier include an explicit administrative expense load of 0.52% and 0.13% of payroll, respectively for 2023 and 0.50% and 0.13% of payroll, respectively for 2022.

Section 2: Actuarial Valuation Results

The projected compensation for the 2024 calendar year that is used to estimate the annual dollar amount shown on the prior pages as of December 31, 2023 are as follows:

Cost Group and Plan	Projected Compensation
Cost Group 1	
Tier 1 — Non-LAFCO	\$13,503,599
Tier 1 — LAFCO	201,775
Tier 4 (3% COLA) — Non-LAFCO	9,440,395
Tier 4 (3% COLA) — LAFCO	78,427
Tier 4 (2% COLA)	0
Cost Group 2	
Tier 3 — Non-IHSS	\$364,824,614
Tier 3 — IHSS	503,237
Tier 5 (3%/4% COLA) — Non-IHSS	63,822,533
Tier 5 (3%/4% COLA) — IHSS	78,308
Tier 5 (2% COLA) — Non-IHSS	412,892,349
Tier 5 (2% COLA) — IHSS	523,826
Cost Group 3	
Tier 1	\$26,539,643
Tier 4 (3% COLA)	15,606,563
Cost Group 4	
Tier 1	\$3,362,150
Tier 4 (3% COLA)	3,502,733
Cost Group 5	
Tier 1	\$4,316,664
Tier 4 (3% COLA)	111,248
Tier 4 (2% COLA)	4,786,225

Cost Group and Plan	Projected Compensation
Cost Group 6	
Tier 1	\$665,822
Tier 4 (3% COLA)	676,204
Cost Group 7	
Tier A	\$42,481,087
Tier D	3,652,232
Cost Group 8	
Tier A	\$39,997,222
Tier D	2,419,119
Tier E	28,273,100
Cost Group 9	
Tier C	\$16,602,211
Tier E	58,616,611
Cost Group 10	
Tier A	\$6,700,385
Tier D	2,389,199
Cost Group 11	
Tier A	\$13,401,108
Tier D	12,208,108
Cost Group 12	
Tier A	\$1,562,112
Tier D	1,390,755
Total Plan	\$1,155,129,564

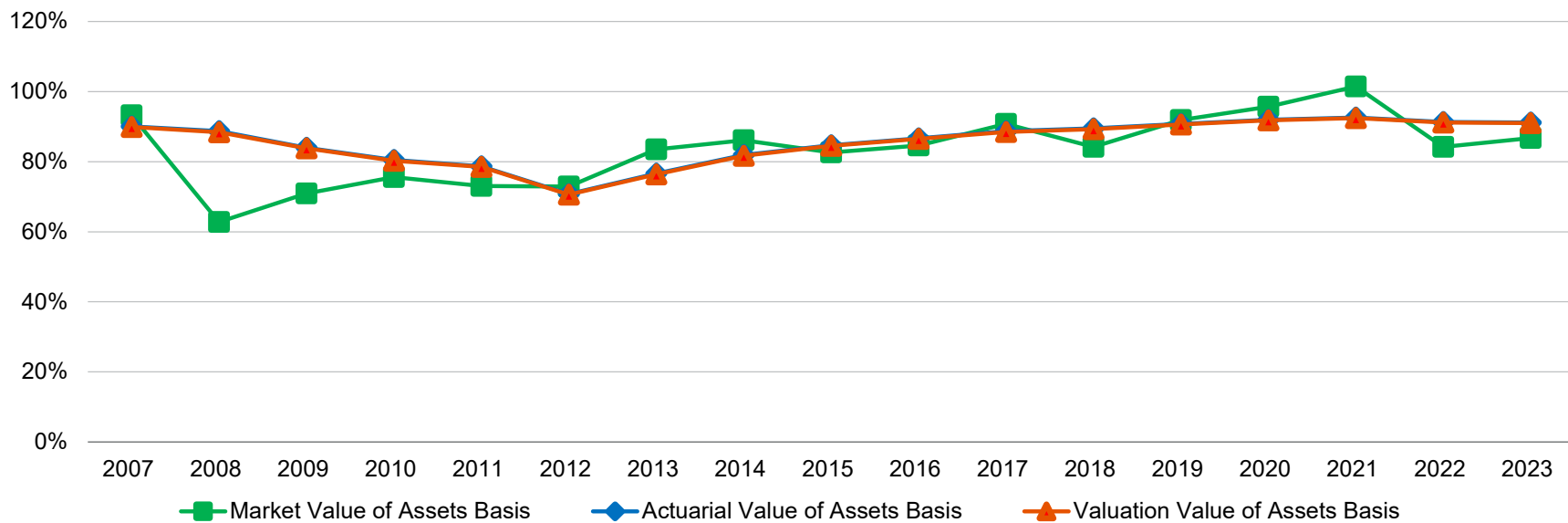
Section 2: Actuarial Valuation Results

G. Funded status

A commonly reported piece of information regarding the Plan's financial status is the funded ratio. These ratios compare the market, actuarial and valuation value of assets to the actuarial accrued liability of the Plan. Higher ratios indicate a relatively well-funded plan while lower ratios may indicate recent changes to actuarial assumptions, funding of the plan below actuarial requirements, poor asset performance, or a variety of other causes.

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 market, actuarial, or valuation value of assets is used.

Funded Ratio as of December 31



Note: The actuarial value of assets and the valuation value of assets have been substantially the same over the time period shown, differing by no more than \$20 million.

Section 2: Actuarial Valuation Results

Schedule of Funding Progress

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)	Projected Compensation (c)	UAAL as a % of Projected Compensation [(b) – (a)] ÷ (c)
2014	\$6,557,496,101	\$8,027,438,213	\$1,469,942,112	81.7%	\$697,831,837	210.6%
2015	7,136,801,380	8,448,624,096	1,311,822,716	84.5%	746,352,663	175.8%
2016	7,606,997,530	8,794,434,139	1,187,436,609	86.5%	784,412,260	151.4%
2017	8,179,891,191	9,239,246,920	1,059,355,729	88.5%	860,624,613	123.1%
2018	8,650,178,226	9,682,143,750	1,031,965,524	89.3%	896,390,768	115.1%
2019	9,128,668,718	10,075,722,222	947,053,504	90.6%	937,531,262	101.0%
2020	9,662,282,926	10,521,628,175	859,345,249	91.8%	990,041,699	86.8%
2021	10,434,412,288	11,288,973,487	854,561,199	92.4%	1,015,755,387	84.1%
2022	10,861,822,062	11,912,228,880	1,050,406,818	91.2%	1,073,886,785	97.8%
2023	11,323,476,654	12,438,710,062	1,115,233,408	91.0%	1,155,129,564	96.5%

¹ Excludes assets for non-valuation reserves.

² Excludes liabilities for non-valuation reserves.

Section 2: Actuarial Valuation Results

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 members 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 “liability” of the Plan.

Second, this liability 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 as of December 31, 2023

Line Description	Basic	COLA	Total
Liabilities			
Present value of benefits for retired members and beneficiaries	\$4,426,625,319	\$3,673,911,742	\$8,100,537,061
Present value of benefits for inactive members ¹	279,691,995	89,755,367	369,447,362
Present value of benefits for active members	4,653,689,066	1,605,071,647	6,258,760,713
Total liabilities	\$9,360,006,380	\$5,368,738,756	\$14,728,745,136
Current and Future Assets			
Total valuation value of assets	\$6,961,328,761	\$4,362,147,893	\$11,323,476,654
Present value of future contributions by members	853,732,396	296,206,960	1,149,939,356
Present value of future employer contributions for:			
• Entry age normal cost	875,045,385	265,050,333	1,140,095,718
• Unfunded actuarial accrued liability	669,899,838	445,333,570	1,115,233,408
Total current and future assets	\$9,360,006,380	\$5,368,738,756	\$14,728,745,136

¹ Includes inactive members with member contributions on deposit.

Section 2: Actuarial Valuation Results

I. Risk

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.

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 is evident in annual valuations; when asset values deviate from assumptions they are typically independent from liability changes. The second 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 has 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 valuation value of assets, however investment experience can still have a sizable impact. As discussed in *Section 2, Subsection J, Volatility Ratios*, on page 51, a 1% asset gain or loss (relative to the assumed investment return) translates to about 9.3% of one-

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year's payroll. Since actuarial gains and losses are amortized over 18 years, there would be a 0.7% 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 -11.25% to a high of 14.39%.

- **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. The Board has adopted mortality tables based on this methodology.

- **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 other 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 employers have 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 basis has increased from 81.7% to 91.0%. This is primarily due to contributions made to amortize the UAAL (i.e., amortizing each layer of UAAL over 18 years as a level percentage of pay). For a more detailed history see *Section 2, Subsection G, Funded status* starting on page 44.
- The average geometric investment return on the valuation value of assets over the last 10 years was 7.31%. This includes a high of 11.40% and a low of 5.25%. The average over the last five years is 6.33%. For more details see *Historical investment returns* in *Section 2, Subsection B*, on page 24.
- Beyond investment experience, the primary source of new UAAL was the strengthening of assumptions through multiple assumption changes. In particular, the assumption changes in 2015 changed the discount rate from 7.25% to 7.00% (as well as

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various other changes) adding \$114 million in unfunded liability. The assumption changes in 2021 changed the discount rate from 7.00% to 6.75% (as well as various other changes) adding \$235 million in unfunded liability. For more details on unfunded liability changes see *Section 3, Exhibit H, Table of amortization bases* starting on page 83.

- The plan's funding policy effectively deals with these unfunded liabilities over time. This can be seen most clearly in *Section 3, Exhibit J, Projection of UAAL balances and payments* starting on page 105.

Maturity measures

In the last 10 years the ratio of members in pay status to active participants has increased from 0.97 to 1.04. An increased ratio indicates that the plan has grown in maturity over time. This is to be expected, but is also informative for understanding plan sensitivity to particular risks. For more details see *Section 2, Subsection A, Member information* on page 17.

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. Over the past year, benefits and expenses paid were \$113 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 low level of negative cash flow and is relatively well funded (at a 91.0% funded ratio). For more details on historical cash flows see *Section 2, Subsection B, Financial information* on page 21.

A further discussion of plan maturity measures and how they relate to changes in assets and liabilities is included in *Section 2, Subsection J, Volatility ratios* on page 51.

Low-Default-Risk Obligation Measure (LDRM)

In December 2021, the Actuarial Standards Board issued a revision of Actuarial Standard of Practice No. 4 (ASOP 4) *Measuring Pension Obligations and Determining Pension Plan Costs or Contributions*. One of the revisions to ASOP 4 requires the disclosure of a Low-Default-Risk Obligation Measure (LDRM) when performing a funding valuation. The LDRM presented in this report is calculated using the same methodology and assumptions used to determine the AAL used for funding, except for the discount rate. The LDRM is required to be calculated using "a discount rate...derived from low-default-risk fixed income securities whose cash flows are reasonably consistent with the pattern of benefits expected to be paid in the future."

The LDRM is a calculation assuming a plan's assets are invested in an all-bond portfolio, generally lowering expected long-term investment returns. The discount rate selected and used for this purpose is the Bond Buyer General Obligation 20-year Municipal Bond Index Rate, published at the end of each week. The last published rate in December of the measurement period, by The Bond Buyer, is 3.26% for use effective December 31, 2023. This is the rate used to determine the discount rate for valuing reported public

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pension plan liabilities in accordance with Governmental Accounting Standards when plan assets are projected to be insufficient to make projected benefit payments, and the 20-year period reasonably approximates the duration of plan liabilities. The LDRM is not used to determine a plan's funded status or actuarially determined contribution rates. The plan's expected return on assets, currently 6.75%, is used for these calculations.

As of December 31, 2023, the LDRM for the Plan is \$20.3 billion. The difference between the Plan's AAL of \$12.4 billion and the LDRM can be thought of as the increase in the AAL if the entire portfolio were invested in low-default-risk securities. Alternatively, this difference could also be viewed as representing the expected savings from investing in the Plan's diversified portfolio compared to investing only in low-default-risk securities.

ASOP 4 requires commentary to help the intended user understand the significance of the LDRM with respect to the funded status of the plan, plan contributions, and the security of member benefits. In general, if plan assets were invested exclusively in low-default-risk securities, the funded status would be lower and the actuarially determined contribution would be higher. While investing in a portfolio with low-default-risk securities may be more likely to reduce investment volatility and the volatility of employer contributions, it also may be more likely to result in higher employer contributions or lower benefits.

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J. 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 projected compensation, 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 since it is based on the current level of assets.

The current AVR is about 9.3. This means that a 1% asset gain or loss (relative to the assumed investment return) translates to about 9.3% of one-year's payroll. Since actuarial gains and losses are amortized over 18 years, there would be a 0.7% of payroll decrease/(increase) in the required contribution for each 1% asset gain/(loss).

The Liability Volatility Ratio (LVR), which is equal to the actuarial accrued liability divided by total projected compensation, provides an indication of the longer-term potential for contribution volatility for any given level of investment volatility. This is because, over an extended period of time, the plan's assets should track the plan's liabilities. For example, if a plan is 50% funded on a market value basis, the liability volatility ratio would be double the asset volatility ratio and the plan sponsor should expect contribution volatility to increase over time as the plan becomes better funded.

The LVR also indicates how volatile contributions will be in response to changes in the actuarial accrued liability due to actual experience or to changes in actuarial assumptions. The current total Plan LVR is about 10.7 but is 8.3 for General compared to 20.6 for Safety. This means, for example, that assumption changes will have a greater impact on employer contribution rates for Safety than for General. The total Plan LVR is about 15% higher than the AVR. Therefore, we would expect that contribution volatility will increase over the long term.

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Volatility Ratios

Asset Volatility Ratio (AVR) versus Liability Volatility Ratio (LVR)

As of December 31	AVR General	AVR Safety	AVR Total	LVR General	LVR Safety	LVR Total
2014	7.5	19.7	9.9	8.6	23.5	11.5
2015	7.1	18.7	9.3	8.4	23.3	11.3
2016	7.2	19.0	9.5	8.3	23.1	11.1
2017	7.4	19.6	9.7	8.0	22.2	10.7
2018	6.9	18.0	9.0	8.1	21.8	10.7
2019	7.5	19.4	9.8	8.1	21.5	10.7
2020	7.8	19.9	10.1	8.1	21.1	10.6
2021	8.7	21.6	11.2	8.4	21.9	11.1
2022	7.3	17.7	9.3	8.5	21.5	11.0
2023	7.3	17.5	9.3	8.3	20.6	10.7

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Exhibit A: Plan demographics

Total Plan – Demographics as of December 31

Demographic Data by Status	2023	2022	Change
Active members			
• Number	10,349	10,082	2.6%
• Average age	46.1	46.1	0.0
• Average years of service	9.9	10.1	(0.2)
• Total projected compensation ¹	\$1,155,129,563	\$1,073,886,785	7.6%
• Average projected compensation	\$111,618	\$106,515	4.8%
• Account balances	\$1,441,357,620	\$1,366,675,181	5.5%
• Total active vested members	6,751	6,661	1.4%
Inactive members²			
• Number	4,109	3,974	3.4%
• Average age	46.5	46.5	0.0
Retired members²			
• Number	8,407	8,197	2.6%
• Average age	71.3	71.1	0.2
• Average monthly benefit	\$4,720	\$4,584	3.0%
Disabled members²			
• Number ³	872	874	(0.2%)
• Average age	68.3	68.0	0.3
• Average monthly benefit	\$5,846	\$5,645	3.6%
Beneficiaries²			
• Number	1,526	1,490	2.4%
• Average age	73.1	72.8	0.3
• Average monthly benefit	\$3,266	\$3,124	4.5%

¹ Calculated by increasing actual calendar year compensation earnable (or pensionable compensation for PEPRA tiers) by the assumed salary scale.

² Includes members from withdrawn employers.

³ For 2023, includes 733 members receiving a service-connected disability and 139 members receiving a non-service-connected disability.

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General Tier 1 (Non-Enhanced and Enhanced) — Demographics as of December 31

Demographic Data by Status	2023	2022	Change
Active members			
• Number	325	357	(9.0%)
• Average age	51.8	51.8	0.0
• Average years of service	20.0	19.8	0.2
• Total projected compensation ¹	\$48,589,653	\$50,429,409	(3.6%)
• Average projected compensation	\$149,507	\$141,259	5.8%
• Account balances	\$74,501,950	\$76,334,921	(2.4%)
• Total active vested members	324	356	(9.0%)
Inactive members²			
• Number	181	189	(4.2%)
• Average age	53.8	53.2	0.6
Retired members²			
• Number	2,102	2,157	(2.5%)
• Average age	76.3	76.1	0.2
• Average monthly benefit	\$5,186	\$4,999	3.7%
Disabled members²			
• Number ³	214	217	(1.4%)
• Average age	75.8	75.0	0.8
• Average monthly benefit	\$3,586	\$3,450	3.9%
Beneficiaries²			
• Number	610	621	(1.8%)
• Average age	78.1	77.9	0.2
• Average monthly benefit	\$3,064	\$2,931	4.5%

¹ Calculated by increasing actual calendar year compensation earnable by the assumed salary scale.

² Includes members from withdrawn employers.

³ For 2023, includes 160 members receiving a service-connected disability and 54 members receiving a non-service-connected disability.

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General Tier 2 – Demographics as of December 31

Demographic Data by Status	2023	2022	Change
Active members			
• Number	0	0	N/A
• Average age	N/A	N/A	N/A
• Average years of service	N/A	N/A	N/A
• Total projected compensation ¹	N/A	N/A	N/A
• Average projected compensation	N/A	N/A	N/A
• Account balances	N/A	N/A	N/A
• Total active vested members	N/A	N/A	N/A
Inactive members²			
• Number	110	130	(15.4%)
• Average age	61.2	61.0	0.2
Retired members²			
• Number	387	393	(1.5%)
• Average age	77.2	77.0	0.2
• Average monthly benefit	\$960	\$949	1.2%
Disabled members²			
• Number ³	29	31	(6.5%)
• Average age	76.0	75.3	0.7
• Average monthly benefit	\$2,438	\$2,489	(2.0%)
Beneficiaries²			
• Number	102	104	(1.9%)
• Average age	72.9	72.4	0.5
• Average monthly benefit	\$1,039	\$1,000	3.9%

¹ Calculated by increasing actual calendar year compensation earnable by the assumed salary scale.

² Includes members from withdrawn employers.

³ For 2023, includes 16 members receiving a service-connected disability and 13 members receiving a non-service-connected disability.

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General Tier 3 – Demographics as of December 31

Demographic Data by Status	2023	2022	Change
Active members			
• Number	2,961	3,184	(7.0%)
• Average age	53.4	52.9	0.5
• Average years of service	18.5	17.7	0.8
• Total projected compensation ¹	\$365,327,851	\$370,830,449	(1.5%)
• Average projected compensation	\$123,380	\$116,467	5.9%
• Account balances	\$627,192,533	\$610,553,860	2.7%
• Total active vested members	2,924	3,143	(7.0%)
Inactive members²			
• Number	1,488	1,547	(3.8%)
• Average age	51.3	50.8	0.5
Retired members²			
• Number	4,248	4,063	4.6%
• Average age	70.1	69.6	0.5
• Average monthly benefit	\$3,528	\$3,377	4.5%
Disabled members²			
• Number ³	78	76	2.6%
• Average age	65.6	65.7	(0.1)
• Average monthly benefit	\$3,008	\$2,822	6.6%
Beneficiaries²			
• Number	323	295	9.5%
• Average age	66.0	64.7	1.3
• Average monthly benefit	\$1,939	\$1,852	4.7%

¹ Calculated by increasing actual calendar year compensation earnable by the assumed salary scale.

² Includes members from withdrawn employers.

³ For 2023, includes 26 members receiving a service-connected disability and 52 members receiving a non-service-connected disability.

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General Tier 4 (2% COLA) – Demographics as of December 31

Demographic Data by Status	2023	2022	Change
Active members			
• Number	52	45	15.6%
• Average age	44.5	44.7	(0.2)
• Average years of service	3.6	3.5	0.1
• Total projected compensation ¹	\$4,786,225	\$3,936,135	21.6%
• Average projected compensation	\$92,043	\$87,470	5.2%
• Account balances	\$1,853,454	\$1,444,229	28.3%
• Total active vested members	17	14	21.4%
Inactive members			
• Number	13	14	(7.1%)
• Average age	43.5	44.7	(1.2)
Retired members			
• Number	3	1	200.0%
• Average age	66.9	70.6	(3.7)
• Average monthly benefit	\$1,106	\$1,384	(20.1%)
Disabled members			
• Number	0	0	N/A
• Average age	N/A	N/A	N/A
• Average monthly benefit	N/A	N/A	N/A
Beneficiaries			
• Number	0	0	N/A
• Average age	N/A	N/A	N/A
• Average monthly benefit	N/A	N/A	N/A

¹ Calculated by increasing actual calendar year pensionable compensation by the assumed salary scale.

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General Tier 4 (3% COLA) – Demographics as of December 31

Demographic Data by Status	2023	2022	Change
Active members			
• Number	271	249	8.8%
• Average age	42.2	41.8	0.4
• Average years of service	4.7	4.2	0.5
• Total projected compensation ¹	\$29,415,571	\$25,632,324	14.8%
• Average projected compensation	\$108,545	\$102,941	5.4%
• Account balances	\$14,055,405	\$11,253,610	24.9%
• Total active vested members	124	103	20.4%
Inactive members			
• Number	78	65	20.0%
• Average age	40.4	40.3	0.1
Retired members			
• Number	5	4	25.0%
• Average age	66.0	66.0	0.0
• Average monthly benefit	\$1,557	\$1,388	12.2%
Disabled members			
• Number	0	0	N/A
• Average age	N/A	N/A	N/A
• Average monthly benefit	N/A	N/A	N/A
Beneficiaries			
• Number	0	0	N/A
• Average age	N/A	N/A	N/A
• Average monthly benefit	N/A	N/A	N/A

¹ Calculated by increasing actual calendar year pensionable compensation by the assumed salary scale.

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General Tier 5 (2% COLA) – Demographics as of December 31

Demographic Data by Status	2023	2022	Change
Active members			
• Number	4,525	4,089	10.7%
• Average age	43.1	42.7	0.4
• Average years of service	3.9	3.6	0.3
• Total projected compensation ¹	\$413,416,175	\$350,682,245	17.9%
• Average projected compensation	\$91,363	\$85,762	6.5%
• Account balances	\$162,382,441	\$126,776,352	28.1%
• Total active vested members	1,698	1374	23.6%
Inactive members			
• Number	1,486	1,290	15.2%
• Average age	41.3	40.8	0.5
Retired members			
• Number	91	63	44.4%
• Average age	66.5	65.6	0.9
• Average monthly benefit	\$787	\$751	4.8%
Disabled members			
• Number	0	0	N/A
• Average age	N/A	N/A	N/A
• Average monthly benefit	N/A	N/A	N/A
Beneficiaries			
• Number	0	0	N/A
• Average age	N/A	N/A	N/A
• Average monthly benefit	N/A	N/A	N/A

¹ Calculated by increasing actual calendar year pensionable compensation by the assumed salary scale.

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General Tier 5 (3% COLA) – Demographics as of December 31

Demographic Data by Status	2023	2022	Change
Active members			
• Number	661	666	(0.8%)
• Average age	46.8	46.4	0.4
• Average years of service	8.0	7.5	0.5
• Total projected compensation ¹	\$63,900,841	\$60,642,057	5.4%
• Average projected compensation	\$96,673	\$91,054	6.2%
• Account balances	\$57,563,723	\$50,911,219	13.1%
• Total active vested members	535	559	(4.3%)
Inactive members			
• Number	362	337	7.4%
• Average age	45.0	44.4	0.6
Retired members			
• Number	67	53	26.4%
• Average age	66.5	66.8	(0.3)
• Average monthly benefit	\$1,104	\$1,029	7.3%
Disabled members			
• Number ²	1	0	N/A
• Average age	41.6	N/A	N/A
• Average monthly benefit	\$3,083	N/A	N/A
Beneficiaries			
• Number	0	0	N/A
• Average age	N/A	N/A	N/A
• Average monthly benefit	N/A	N/A	N/A

¹ Calculated by increasing actual calendar year pensionable compensation by the assumed salary scale.

² For 2023, includes 1 member receiving a service-connected disability.

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Safety Tier A (Non-Enhanced and Enhanced) – Demographics as of December 31

Demographic Data by Status	2023	2022	Change
Active members			
• Number	582	635	(8.3%)
• Average age	47.6	47.3	0.3
• Average years of service	19.3	18.8	0.5
• Total projected compensation ¹	\$104,141,913	\$106,886,325	(2.6%)
• Average projected compensation	\$178,938	\$168,325	6.3%
• Account balances	\$391,827,316	\$399,143,984	(1.8%)
• Total active vested members	582	634	(8.2%)
Inactive members²			
• Number	202	215	(6.0%)
• Average age	48.9	48.3	0.6
Retired members²			
• Number	1,476	1,441	2.4%
• Average age	66.8	66.6	0.2
• Average monthly benefit	\$8,942	\$8,705	2.7%
Disabled members²			
• Number ³	528	533	(0.9%)
• Average age	66.2	65.8	0.4
• Average monthly benefit	\$7,444	\$7,181	3.7%
Beneficiaries²			
• Number	489	468	4.5%
• Average age	71.7	71.4	0.3
• Average monthly benefit	\$4,858	\$4,660	4.2%

¹ Calculated by increasing actual calendar year compensation earnable by the assumed salary scale.

² Includes members from withdrawn employers.

³ For 2023, includes 510 members receiving a service-connected disability and 18 members receiving a non-service-connected disability.

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Safety Tier C – Demographics as of December 31

Demographic Data by Status	2023	2022	Change
Active members			
• Number	108	113	(4.4%)
• Average age	42.5	41.7	0.8
• Average years of service	13.7	12.6	1.1
• Total projected compensation ¹	\$16,602,211	\$16,441,156	1.0%
• Average projected compensation	\$153,724	\$145,497	5.7%
• Account balances	\$29,136,186	\$26,308,093	10.7%
• Total active vested members	108	113	(4.4%)
Inactive members			
• Number	68	71	(4.2%)
• Average age	40.1	39.2	0.9
Retired members			
• Number	13	9	44.4%
• Average age	54.8	57.9	(3.1)
• Average monthly benefit	\$2,541	\$2,497	1.8%
Disabled members			
• Number ²	14	12	16.7%
• Average age	46.9	45.3	1.6
• Average monthly benefit	\$4,164	\$3,847	8.2%
Beneficiaries			
• Number	1	1	0.0%
• Average age	53.1	52.1	1.0
• Average monthly benefit	\$2,144	\$2,102	2.0%

¹ Calculated by increasing actual calendar year compensation earnable by the assumed salary scale.

² For 2023, includes 12 members receiving a service-connected disability and 2 members receiving a non-service-connected disability.

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Safety Tier D – Demographics as of December 31

Demographic Data by Status	2023	2022	Change
Active members			
• Number	157	144	9.0%
• Average age	36.0	35.9	0.1
• Average years of service	6.2	5.9	0.3
• Total projected compensation ¹	\$22,059,412	\$19,116,891	15.4%
• Average projected compensation	\$140,506	\$132,756	5.8%
• Account balances	\$21,975,759	\$18,249,978	20.4%
• Total active vested members	96	93	3.2%
Inactive members			
• Number	31	27	14.8%
• Average age	38.5	37.4	1.1
Retired members			
• Number	3	2	50.0%
• Average age	60.0	61.8	(1.8)
• Average monthly benefit	\$2,185	\$2,290	(4.6%)
Disabled members			
• Number ²	4	3	33.3%
• Average age	49.9	52.8	(2.9)
• Average monthly benefit	\$3,692	\$3,650	1.2%
Beneficiaries			
• Number	0	1	(100.0%)
• Average age	N/A	56.5	N/A
• Average monthly benefit	N/A	\$733	N/A

¹ Calculated by increasing actual calendar year pensionable compensation by the assumed salary scale.

² For 2023, includes 4 members receiving a service-connected disability.

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Safety Tier E – Demographics as of December 31

Demographic Data by Status	2023	2022	Change
Active members			
• Number	707	600	17.8%
• Average age	34.6	34.3	0.3
• Average years of service	5.0	4.6	0.4
• Total projected compensation ¹	\$86,889,711	\$69,289,794	25.4%
• Average projected compensation	\$122,899	\$115,483	6.4%
• Account balances	\$60,868,853	\$45,698,937	33.2%
• Total active vested members	343	272	26.1%
Inactive members			
• Number	90	89	1.1%
• Average age	36.6	35.6	1.0
Retired members			
• Number	12	11	9.1%
• Average age	61.7	60.9	0.8
• Average monthly benefit	\$1,987	\$1,920	3.5%
Disabled members			
• Number ²	4	2	100.0%
• Average age	34.3	35.0	(0.7)
• Average monthly benefit	\$4,460	\$4,433	0.6%
Beneficiaries			
• Number	1	0	N/A
• Average age	35.9	N/A	N/A
• Average monthly benefit	\$4,549	N/A	N/A

¹ Calculated by increasing actual calendar year pensionable compensation by the assumed salary scale.

² For 2023, includes 4 members receiving a service-connected disability.

Section 3: Supplemental Information

Exhibit B: Distribution of active members

Total Plan

Active Counts & Average Projected Compensation by Age and Years of Service as of December 31, 2023

Age	Total	0-4 Years	5-9 Years	10-14 Years	15-19 Years	20-24 Years	25-29 Years	30-34 Years	35-39 Years	40 Years and Over
Under 25	137	137	—	—	—	—	—	—	—	—
	\$75,587	\$75,587	—	—	—	—	—	—	—	—
25-29	651	596	55	—	—	—	—	—	—	—
	\$91,631	\$90,036	\$108,920	—	—	—	—	—	—	—
30-34	1,163	761	369	32	1	—	—	—	—	—
	\$100,263	\$94,067	\$111,047	\$123,826	\$81,454	—	—	—	—	—
35-39	1,453	657	529	218	49	—	—	—	—	—
	\$109,460	\$97,889	\$112,220	\$130,962	\$139,136	—	—	—	—	—
40-44	1,515	502	447	263	259	44	—	—	—	—
	\$117,197	\$98,396	\$113,283	\$133,789	\$141,193	\$131,038	—	—	—	—
45-49	1,497	395	357	221	264	233	27	—	—	—
	\$121,251	\$97,502	\$108,463	\$135,418	\$143,455	\$141,686	\$128,371	—	—	—
50-54	1,436	327	339	182	244	239	90	14	1	—
	\$120,861	\$94,772	\$104,448	\$126,191	\$142,019	\$147,912	\$138,126	\$118,844	\$93,290	—
55-59	1,222	252	242	169	176	201	118	48	15	1
	\$113,932	\$94,073	\$100,591	\$121,472	\$122,150	\$131,280	\$127,137	\$121,729	\$122,299	\$81,032
60-64	853	160	191	128	118	123	72	32	22	7
	\$109,515	\$92,333	\$99,402	\$108,882	\$117,508	\$116,257	\$136,868	\$144,896	\$112,558	\$83,984
65-69	330	55	86	63	46	31	22	15	8	4
	\$106,220	\$89,154	\$93,264	\$116,761	\$121,593	\$114,698	\$114,370	\$101,659	\$129,534	\$136,581
70 and over	92	13	20	22	15	10	5	2	4	1
	\$99,506	\$103,720	\$79,250	\$109,907	\$110,224	\$110,547	\$87,229	\$78,753	\$93,891	\$75,146
Total	10,349	3,855	2,635	1,298	1,172	881	334	111	50	13
	\$111,618	\$94,305	\$107,792	\$126,989	\$135,328	\$135,616	\$130,857	\$124,557	\$116,318	\$99,261

Section 3: Supplemental Information

General Tier 1 Non-Enhanced

Active Counts & Average Projected Compensation by Age and Years of Service as of December 31, 2023

Age	Total	0-4 Years	5-9 Years	10-14 Years	15-19 Years	20-24 Years	25-29 Years	30-34 Years	35-39 Years	40 Years and Over
Under 25	—	—	—	—	—	—	—	—	—	—
25-29	—	—	—	—	—	—	—	—	—	—
30-34	—	—	—	—	—	—	—	—	—	—
35-39	—	—	—	—	—	—	—	—	—	—
40-44	1	1	—	—	—	—	—	—	—	—
	\$171,733	\$171,733	—	—	—	—	—	—	—	—
45-49	—	—	—	—	—	—	—	—	—	—
50-54	2	—	—	—	1	1	—	—	—	—
	\$181,185	—	—	—	\$114,673	\$247,697	—	—	—	—
55-59	—	—	—	—	—	—	—	—	—	—
60-64	1	—	—	1	—	—	—	—	—	—
	\$131,719	—	—	\$131,719	—	—	—	—	—	—
65-69	—	—	—	—	—	—	—	—	—	—
70 and over	—	—	—	—	—	—	—	—	—	—
Total	4	1	—	1	1	1	—	—	—	—
	\$166,456	\$171,733	—	\$131,719	\$114,673	\$247,697	—	—	—	—

Section 3: Supplemental Information

General Tier 1 Enhanced

Active Counts & Average Projected Compensation by Age and Years of Service as of December 31, 2023

Age	Total	0-4 Years	5-9 Years	10-14 Years	15-19 Years	20-24 Years	25-29 Years	30-34 Years	35-39 Years	40 Years and Over
Under 25	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
25-29	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
30-34	3	—	—	3	—	—	—	—	—	—
	\$173,951	—	—	\$173,951	—	—	—	—	—	—
35-39	20	2	1	14	3	—	—	—	—	—
	\$145,744	\$124,211	\$152,374	\$147,888	\$147,882	—	—	—	—	—
40-44	51	5	6	17	19	4	—	—	—	—
	\$152,060	\$159,411	\$153,447	\$155,850	\$149,435	\$137,144	—	—	—	—
45-49	68	7	8	16	18	17	2	—	—	—
	\$148,859	\$137,140	\$185,752	\$141,273	\$149,460	\$146,851	\$114,657	—	—	—
50-54	62	5	3	14	10	21	8	1	—	—
	\$155,022	\$115,915	\$159,130	\$159,139	\$156,442	\$165,370	\$135,818	\$202,706	—	—
55-59	61	1	1	6	17	24	7	4	1	—
	\$154,451	\$318,125	\$176,330	\$192,990	\$145,170	\$164,272	\$117,911	\$92,914	\$161,694	—
60-64	39	1	1	6	13	11	2	3	2	—
	\$136,022	\$251,610	\$119,540	\$152,576	\$126,098	\$134,863	\$109,847	\$154,939	\$105,487	—
65-69	13	—	2	3	2	2	2	1	1	—
	\$137,163	—	\$144,414	\$145,001	\$158,323	\$157,453	\$92,713	\$81,032	\$161,275	—
70 and over	4	—	—	—	2	—	—	1	—	1
	\$122,197	—	—	—	\$155,072	—	—	\$103,500	—	\$75,146
Total	321	21	22	79	84	79	21	10	4	1
	\$149,295	\$150,227	\$164,598	\$154,917	\$146,090	\$155,174	\$121,255	\$122,371	\$133,486	\$75,146

Section 3: Supplemental Information

General Tier 3 Enhanced

Active Counts & Average Projected Compensation by Age and Years of Service as of December 31, 2023

Age	Total	0-4 Years	5-9 Years	10-14 Years	15-19 Years	20-24 Years	25-29 Years	30-34 Years	35-39 Years	40 Years and Over
Under 25	—	—	—	—	—	—	—	—	—	—
25-29	—	—	—	—	—	—	—	—	—	—
30-34	8	—	—	8	—	—	—	—	—	—
	\$88,690	—	—	\$88,690	—	—	—	—	—	—
35-39	144	11	25	84	24	—	—	—	—	—
	\$112,957	\$102,030	\$123,298	\$113,489	\$105,332	—	—	—	—	—
40-44	380	20	41	136	156	27	—	—	—	—
	\$129,067	\$136,305	\$143,506	\$134,585	\$124,201	\$102,105	—	—	—	—
45-49	532	19	36	147	181	130	19	—	—	—
	\$129,591	\$138,288	\$139,293	\$138,030	\$130,480	\$118,212	\$106,586	—	—	—
50-54	592	17	33	124	184	154	68	11	1	—
	\$127,916	\$126,910	\$133,926	\$124,659	\$130,725	\$129,484	\$125,752	\$95,727	\$93,290	—
55-59	641	15	30	130	147	160	103	42	13	1
	\$119,436	\$125,991	\$114,975	\$117,986	\$116,163	\$121,966	\$123,913	\$118,372	\$113,471	\$81,032
60-64	446	11	17	90	100	105	68	28	20	7
	\$118,040	\$168,347	\$120,102	\$108,816	\$113,903	\$109,368	\$135,739	\$142,902	\$113,265	\$83,984
65-69	165	3	9	38	43	29	18	14	7	4
	\$120,458	\$161,408	\$106,597	\$134,000	\$119,984	\$111,749	\$115,260	\$103,132	\$125,000	\$136,581
70 and over	53	3	3	14	13	10	5	1	4	—
	\$104,884	\$143,897	\$49,254	\$118,927	\$103,324	\$110,547	\$87,229	\$54,006	\$93,891	—
Total	2,961	99	194	771	848	615	281	96	45	12
	\$123,380	\$134,252	\$128,858	\$124,751	\$123,281	\$119,365	\$124,841	\$120,039	\$112,984	\$101,270

Section 3: Supplemental Information

General Tier 4 (2% COLA)

Active Counts & Average Projected Compensation by Age and Years of Service as of December 31, 2023

Age	Total	0-4 Years	5-9 Years	10-14 Years	15-19 Years	20-24 Years	25-29 Years	30-34 Years	35-39 Years	40 Years and Over
Under 25	2	2	—	—	—	—	—	—	—	—
	\$55,186	\$55,186	—	—	—	—	—	—	—	—
25-29	5	5	—	—	—	—	—	—	—	—
	\$85,889	\$85,889	—	—	—	—	—	—	—	—
30-34	6	5	1	—	—	—	—	—	—	—
	\$84,840	\$87,916	\$69,459	—	—	—	—	—	—	—
35-39	8	5	3	—	—	—	—	—	—	—
	\$82,489	\$75,571	\$94,019	—	—	—	—	—	—	—
40-44	2	1	1	—	—	—	—	—	—	—
	\$86,828	\$95,382	\$78,273	—	—	—	—	—	—	—
45-49	11	8	3	—	—	—	—	—	—	—
	\$97,288	\$108,734	\$66,763	—	—	—	—	—	—	—
50-54	9	6	3	—	—	—	—	—	—	—
	\$115,180	\$110,048	\$125,444	—	—	—	—	—	—	—
55-59	6	3	3	—	—	—	—	—	—	—
	\$91,586	\$99,572	\$83,601	—	—	—	—	—	—	—
60-64	3	2	1	—	—	—	—	—	—	—
	\$82,499	\$87,793	\$71,912	—	—	—	—	—	—	—
65-69	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
70 and over	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
Total	52	37	15	—	—	—	—	—	—	—
	\$92,043	\$93,435	\$88,608	—	—	—	—	—	—	—

Section 3: Supplemental Information

General Tier 4 (3% COLA)

Active Counts & Average Projected Compensation by Age and Years of Service as of December 31, 2023

Age	Total	0-4 Years	5-9 Years	10-14 Years	15-19 Years	20-24 Years	25-29 Years	30-34 Years	35-39 Years	40 Years and Over
Under 25	9	9	—	—	—	—	—	—	—	—
	\$89,366	\$89,366	—	—	—	—	—	—	—	—
25-29	26	25	1	—	—	—	—	—	—	—
	\$92,091	\$90,286	\$137,206	—	—	—	—	—	—	—
30-34	43	27	16	—	—	—	—	—	—	—
	\$97,272	\$85,254	\$117,552	—	—	—	—	—	—	—
35-39	47	28	17	2	—	—	—	—	—	—
	\$114,753	\$107,436	\$124,658	\$133,005	—	—	—	—	—	—
40-44	43	23	20	—	—	—	—	—	—	—
	\$124,902	\$117,748	\$133,129	—	—	—	—	—	—	—
45-49	36	18	18	—	—	—	—	—	—	—
	\$104,425	\$92,718	\$116,133	—	—	—	—	—	—	—
50-54	25	12	13	—	—	—	—	—	—	—
	\$114,803	\$123,171	\$107,079	—	—	—	—	—	—	—
55-59	24	12	9	3	—	—	—	—	—	—
	\$116,199	\$115,463	\$114,452	\$124,385	—	—	—	—	—	—
60-64	12	4	7	1	—	—	—	—	—	—
	\$102,434	\$91,700	\$105,062	\$126,970	—	—	—	—	—	—
65-69	6	3	3	—	—	—	—	—	—	—
	\$103,782	\$117,288	\$90,275	—	—	—	—	—	—	—
70 and over	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
Total	271	161	104	6	—	—	—	—	—	—
	\$108,545	\$101,434	\$118,448	\$127,689	—	—	—	—	—	—

Section 3: Supplemental Information

General Tier 5 (2% COLA)

Active Counts & Average Projected Compensation by Age and Years of Service as of December 31, 2023

Age	Total	0-4 Years	5-9 Years	10-14 Years	15-19 Years	20-24 Years	25-29 Years	30-34 Years	35-39 Years	40 Years and Over
Under 25	82	82	—	—	—	—	—	—	—	—
	\$64,918	\$64,918	—	—	—	—	—	—	—	—
25-29	402	381	21	—	—	—	—	—	—	—
	\$78,943	\$78,800	\$81,544	—	—	—	—	—	—	—
30-34	750	568	182	—	—	—	—	—	—	—
	\$90,068	\$88,277	\$95,657	—	—	—	—	—	—	—
35-39	840	508	325	7	—	—	—	—	—	—
	\$97,425	\$93,535	\$102,562	\$141,181	—	—	—	—	—	—
40-44	659	400	256	3	—	—	—	—	—	—
	\$95,886	\$93,200	\$99,434	\$151,446	—	—	—	—	—	—
45-49	530	308	222	—	—	—	—	—	—	—
	\$94,429	\$92,417	\$97,220	—	—	—	—	—	—	—
50-54	493	258	232	2	1	—	—	—	—	—
	\$92,031	\$87,369	\$96,770	\$114,784	\$150,043	—	—	—	—	—
55-59	362	201	160	1	—	—	—	—	—	—
	\$89,080	\$85,157	\$93,619	\$151,446	—	—	—	—	—	—
60-64	270	135	133	2	—	—	—	—	—	—
	\$89,504	\$83,569	\$95,881	\$66,033	—	—	—	—	—	—
65-69	111	48	61	2	—	—	—	—	—	—
	\$86,542	\$82,179	\$90,262	\$77,788	—	—	—	—	—	—
70 and over	26	10	15	1	—	—	—	—	—	—
	\$90,098	\$91,667	\$84,961	\$151,446	—	—	—	—	—	—
Total	4,525	2,899	1,607	18	1	—	—	—	—	—
	\$91,363	\$87,806	\$97,358	\$125,706	\$150,043	—	—	—	—	—

Section 3: Supplemental Information

General Tier 5 (3% COLA)

Active Counts & Average Projected Compensation by Age and Years of Service as of December 31, 2023

Age	Total	0-4 Years	5-9 Years	10-14 Years	15-19 Years	20-24 Years	25-29 Years	30-34 Years	35-39 Years	40 Years and Over
Under 25	9	9	—	—	—	—	—	—	—	—
	\$57,419	\$57,419	—	—	—	—	—	—	—	—
25-29	15	13	2	—	—	—	—	—	—	—
	\$64,283	\$62,826	\$73,752	—	—	—	—	—	—	—
30-34	53	21	23	8	1	—	—	—	—	—
	\$86,267	\$76,557	\$87,322	\$109,326	\$81,454	—	—	—	—	—
35-39	108	24	53	31	—	—	—	—	—	—
	\$100,150	\$82,529	\$105,994	\$103,800	—	—	—	—	—	—
40-44	137	23	62	52	—	—	—	—	—	—
	\$100,009	\$78,879	\$108,803	\$98,869	—	—	—	—	—	—
45-49	106	18	50	38	—	—	—	—	—	—
	\$103,676	\$83,503	\$109,544	\$105,509	—	—	—	—	—	—
50-54	81	11	42	28	—	—	—	—	—	—
	\$98,873	\$89,957	\$105,965	\$91,738	—	—	—	—	—	—
55-59	58	8	27	23	—	—	—	—	—	—
	\$101,996	\$109,466	\$101,707	\$99,736	—	—	—	—	—	—
60-64	54	5	26	22	1	—	—	—	—	—
	\$93,105	\$114,849	\$92,683	\$89,672	\$70,875	—	—	—	—	—
65-69	31	1	10	20	—	—	—	—	—	—
	\$84,652	\$122,837	\$82,801	\$83,668	—	—	—	—	—	—
70 and over	9	—	2	7	—	—	—	—	—	—
	\$84,928	—	\$81,411	\$85,933	—	—	—	—	—	—
Total	661	133	297	229	2	—	—	—	—	—
	\$96,673	\$81,214	\$103,009	\$97,612	\$76,165	—	—	—	—	—

Section 3: Supplemental Information

Safety Tier A Non-Enhanced

Active Counts & Average Projected Compensation by Age and Years of Service as of December 31, 2023

Age	Total	0-4 Years	5-9 Years	10-14 Years	15-19 Years	20-24 Years	25-29 Years	30-34 Years	35-39 Years	40 Years and Over
Under 25	—	—	—	—	—	—	—	—	—	—
25-29	—	—	—	—	—	—	—	—	—	—
30-34	—	—	—	—	—	—	—	—	—	—
35-39	1	—	1	—	—	—	—	—	—	—
	\$151,206	—	\$151,206	—	—	—	—	—	—	—
40-44	—	—	—	—	—	—	—	—	—	—
45-49	2	—	—	—	—	2	—	—	—	—
	\$190,888	—	—	—	—	\$190,888	—	—	—	—
50-54	2	—	—	—	—	2	—	—	—	—
	\$193,529	—	—	—	—	\$193,529	—	—	—	—
55-59	3	—	—	1	—	—	—	1	1	—
	\$214,024	—	—	\$167,335	—	—	—	\$277,059	\$197,677	—
60-64	—	—	—	—	—	—	—	—	—	—
65-69	—	—	—	—	—	—	—	—	—	—
70 and over	—	—	—	—	—	—	—	—	—	—
Total	8	—	1	1	—	4	—	1	1	—
	\$195,264	—	\$151,206	\$167,335	—	\$192,209	—	\$277,059	\$197,677	—

Section 3: Supplemental Information

Safety Tier A Enhanced

Active Counts & Average Projected Compensation by Age and Years of Service as of December 31, 2023

Age	Total	0-4 Years	5-9 Years	10-14 Years	15-19 Years	20-24 Years	25-29 Years	30-34 Years	35-39 Years	40 Years and Over
Under 25	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
25-29	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
30-34	3	1	1	1	—	—	—	—	—	—
	\$165,341	\$152,449	\$182,583	\$160,991	—	—	—	—	—	—
35-39	71	8	16	33	14	—	—	—	—	—
	\$173,751	\$166,875	\$177,075	\$170,929	\$180,530	—	—	—	—	—
40-44	136	7	14	31	71	13	—	—	—	—
	\$172,455	\$159,322	\$175,848	\$165,549	\$173,021	\$189,250	—	—	—	—
45-49	166	4	4	13	55	84	6	—	—	—
	\$181,015	\$216,633	\$223,408	\$180,713	\$181,099	\$175,798	\$201,927	—	—	—
50-54	135	2	4	7	45	61	14	2	—	—
	\$187,510	\$194,827	\$182,735	\$195,175	\$184,941	\$185,293	\$199,546	\$204,061	—	—
55-59	40	1	1	3	9	17	8	1	—	—
	\$176,179	\$223,794	\$164,119	\$188,471	\$169,686	\$172,365	\$176,722	\$222,687	—	—
60-64	20	1	1	4	4	7	2	1	—	—
	\$175,542	\$100,693	\$119,064	\$154,478	\$191,373	\$190,365	\$202,268	\$170,593	—	—
65-69	3	—	—	—	1	—	2	—	—	—
	\$124,455	—	—	—	\$117,324	—	\$128,021	—	—	—
70 and over	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
Total	574	24	41	92	199	182	32	4	—	—
	\$178,710	\$174,307	\$180,132	\$172,092	\$178,415	\$180,181	\$189,986	\$200,351	—	—

Section 3: Supplemental Information

Safety Tier C

Active Counts & Average Projected Compensation by Age and Years of Service as of December 31, 2023

Age	Total	0-4 Years	5-9 Years	10-14 Years	15-19 Years	20-24 Years	25-29 Years	30-34 Years	35-39 Years	40 Years and Over
Under 25	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
25-29	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
30-34	6	—	—	6	—	—	—	—	—	—
	\$152,970	—	—	\$152,970	—	—	—	—	—	—
35-39	38	1	2	27	8	—	—	—	—	—
	\$152,425	\$131,336	\$151,766	\$149,580	\$164,830	—	—	—	—	—
40-44	34	2	2	17	13	—	—	—	—	—
	\$150,322	\$124,908	\$144,468	\$147,188	\$159,231	—	—	—	—	—
45-49	15	1	—	4	10	—	—	—	—	—
	\$154,792	\$122,788	—	\$148,661	\$160,444	—	—	—	—	—
50-54	9	—	1	5	3	—	—	—	—	—
	\$156,098	—	\$146,615	\$162,108	\$149,241	—	—	—	—	—
55-59	5	—	—	2	3	—	—	—	—	—
	\$181,753	—	—	\$240,648	\$142,489	—	—	—	—	—
60-64	1	—	—	1	—	—	—	—	—	—
	\$145,781	—	—	\$145,781	—	—	—	—	—	—
65-69	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
70 and over	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
Total	108	4	5	62	37	—	—	—	—	—
	\$153,724	\$125,985	\$147,816	\$153,079	\$158,602	—	—	—	—	—

Section 3: Supplemental Information

Safety Tier D

Active Counts & Average Projected Compensation by Age and Years of Service as of December 31, 2023

Age	Total	0-4 Years	5-9 Years	10-14 Years	15-19 Years	20-24 Years	25-29 Years	30-34 Years	35-39 Years	40 Years and Over
Under 25	3	3	—	—	—	—	—	—	—	—
	\$117,100	\$117,100	—	—	—	—	—	—	—	—
25-29	26	25	1	—	—	—	—	—	—	—
	\$135,631	\$136,083	\$124,325	—	—	—	—	—	—	—
30-34	45	26	18	1	—	—	—	—	—	—
	\$145,130	\$140,331	\$153,875	\$112,487	—	—	—	—	—	—
35-39	44	10	24	10	—	—	—	—	—	—
	\$142,162	\$129,879	\$146,135	\$144,910	—	—	—	—	—	—
40-44	25	5	16	4	—	—	—	—	—	—
	\$143,718	\$129,488	\$146,302	\$151,172	—	—	—	—	—	—
45-49	9	—	7	2	—	—	—	—	—	—
	\$124,695	—	\$118,855	\$145,135	—	—	—	—	—	—
50-54	2	—	1	1	—	—	—	—	—	—
	\$142,785	—	\$112,541	\$173,029	—	—	—	—	—	—
55-59	2	1	1	—	—	—	—	—	—	—
	\$147,137	\$181,734	\$112,541	—	—	—	—	—	—	—
60-64	1	—	—	1	—	—	—	—	—	—
	\$100,697	—	—	\$100,697	—	—	—	—	—	—
65-69	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
70 and over	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
Total	157	70	68	19	—	—	—	—	—	—
	\$140,506	\$136,142	\$144,106	\$143,698	—	—	—	—	—	—

Section 3: Supplemental Information

Safety Tier E

Active Counts & Average Projected Compensation by Age and Years of Service as of December 31, 2023

Age	Total	0-4 Years	5-9 Years	10-14 Years	15-19 Years	20-24 Years	25-29 Years	30-34 Years	35-39 Years	40 Years and Over
Under 25	32	32	—	—	—	—	—	—	—	—
	\$101,542	\$101,542	—	—	—	—	—	—	—	—
25-29	177	147	30	—	—	—	—	—	—	—
	\$116,397	\$113,830	\$128,972	—	—	—	—	—	—	—
30-34	246	113	128	5	—	—	—	—	—	—
	\$124,450	\$117,643	\$130,125	\$133,028	—	—	—	—	—	—
35-39	132	60	62	10	—	—	—	—	—	—
	\$125,932	\$121,574	\$128,757	\$134,568	—	—	—	—	—	—
40-44	47	15	29	3	—	—	—	—	—	—
	\$127,423	\$119,326	\$131,032	\$133,028	—	—	—	—	—	—
45-49	22	12	9	1	—	—	—	—	—	—
	\$123,052	\$119,162	\$127,132	\$133,028	—	—	—	—	—	—
50-54	24	16	7	1	—	—	—	—	—	—
	\$132,453	\$137,154	\$121,624	\$133,028	—	—	—	—	—	—
55-59	20	10	10	—	—	—	—	—	—	—
	\$142,553	\$141,627	\$143,478	—	—	—	—	—	—	—
60-64	6	1	5	—	—	—	—	—	—	—
	\$151,121	\$170,678	\$147,210	—	—	—	—	—	—	—
65-69	1	—	1	—	—	—	—	—	—	—
	\$167,644	—	\$167,644	—	—	—	—	—	—	—
70 and over	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
Total	707	406	281	20	—	—	—	—	—	—
	\$122,899	\$117,172	\$130,399	\$133,798	—	—	—	—	—	—

Section 3: Supplemental Information

Exhibit C: Reconciliation of member status

Reconciliation of Member Status

Line Description	Active Members	Inactive Members ¹	Retired Members	Disabled Members	Beneficiaries	Total
Number as of December 31, 2022	10,082	3,974	8,197	874	1,490	24,617
New members	1,071	124	0	0	110	1,305
Terminations with vested rights	(366)	366	0	0	0	0
Contribution refunds	(134)	(200)	0	0	0	(334)
Retirements	(333)	(89)	422	0	0	0
New disabilities	(12)	(3)	(8)	23	0	0
Return to work	50	(48)	(2)	0	0	0
Died with or without beneficiary	(9)	(10)	(206)	(25)	(72)	(322)
Data adjustments	0	(5)	4	0	(2)	(3)
Number as of December 31, 2023	10,349	4,109	8,407	872	1,526	25,263

¹ Includes inactive members with member contributions on deposit.

Section 3: Supplemental Information

Exhibit D: Summary of income and expenses on a market value basis

Income and Expenses for Years Ended December 31

Line Description	2023	2022
Contribution income		
• Employer contributions	\$373,148,067	\$352,383,785
• Member contributions	132,103,613	122,303,823
• Less administrative expenses	(12,839,955)	(11,537,709)
– Net contribution income	\$492,411,725	\$463,149,898
Investment income		
• Investment, dividends and other income	\$195,660,493	\$172,575,489
• Asset appreciation	727,267,405	(1,407,318,252)
• Less investment and other fees	(54,676,968)	(47,164,600)
– Net investment income	\$868,250,930	\$(1,281,907,363)
Total income available for benefits	\$1,360,662,655	\$(818,757,464)
Less benefit payments		
• Benefits paid	\$(591,888,330)	\$(562,830,131)
• Refund of contributions	(10,062,502)	(13,738,069)
• Adjustments, transfers or other expenses	(3,522,376)	(4,771,275)
– Net benefit payments	\$(605,473,208)	\$(581,339,475)
Change in market value of assets	\$755,189,447	\$(1,400,096,939)
Net assets at market value at the beginning of the year	\$10,053,668,812	\$11,453,765,753
Net assets at market value at the end of the year	\$10,808,858,259	\$10,053,668,812

Note: Results may be slightly off due to rounding.

Section 3: Supplemental Information

Exhibit E: Summary of plan assets

Statement of Plan Assets as of December 31

Line Description	2023	2022
Cash equivalents	\$734,330,164	\$735,959,243
Accounts receivable		
• Securities sold	\$7,191,876	\$13,095,410
• Accrued interest and dividends	23,756,052	20,647,573
• Employer contributions	12,769,540	11,459,157
• Other receivable	1,354,961	3,927,768
– Total accounts receivable	\$45,072,429	\$49,129,908
Investments		
• Domestic and international stocks	\$5,340,364,573	\$4,805,529,144
• Domestic and international bonds	2,165,938,729	1,994,157,311
• Real estate	516,925,736	565,387,390
• Alternative investments and real assets	2,496,664,218	2,409,662,472
– Total investments at market value	\$10,519,893,256	\$9,774,736,317
Other assets	\$5,779,870	\$4,727,818
Total assets	\$11,305,075,719	\$10,564,553,286
Accounts payable		
• Investment trades	\$(12,629,837)	\$(16,827,616)
• Securities lending liability	(229,840,189)	(269,029,887)
• Employer contributions unearned	(192,889,114)	(167,823,612)
• Other	(59,668,319)	(56,113,360)
– Total accounts payable	\$(495,027,459)	\$(509,794,475)
Deferred inflows of resources	\$(1,190,000)	\$(1,090,000)
Net assets at market value	\$10,808,858,259	\$10,053,668,812
Net assets at actuarial value	\$11,340,825,456	\$10,878,817,667
Net assets at valuation value	\$11,323,476,654	\$10,861,822,062

Note: Results may be slightly off due to rounding.

Section 3: Supplemental Information

Exhibit F: Summary of reported reserve information

Total Allocated Reserves as of December 31

Line Description	2023	2022
Member		
• Member Deposits ¹	\$1,144,000,073	\$1,077,187,687
• Member Cost of Living ¹	559,479,238	537,732,911
Employer		
• Employer Advance ^{1, 2}	3,523,101,672	2,957,523,538
• Employer Cost of Living ^{1, 2}	1,765,728,521	705,910,721
Retired		
• Retired Members ^{1, 2}	4,266,599,629	4,396,244,276
• Retired Cost of Living ^{1, 2}	3,159,992,858	3,939,921,046
• Dollar Power Cost of Living Supplement Pre-Funding ¹	(2,334,690)	(1,796,005)
• Post Retirement Death Benefit ³	17,348,802	16,995,605
Contingency		
• Statutory Contingency (one percent) ³	0	0
• Additional One Percent Contingency Designation ³	0	0
• Contra Tracking Account ¹	(3,093,090,647)	(2,750,902,112)
Total Allocated Reserves	\$11,340,825,456	\$10,878,817,667
Total Deferred Return	(531,967,197)	(825,148,855)
Net Market Value	\$10,808,858,259	\$10,053,668,812

Note: Results may be slightly off due to rounding.

¹ Included in valuation value of assets.

² Both 2023 and 2022 information reflect a “true-up” of retired reserves as of January 1, 2023 and January 1, 2022, respectively.

³ Not included in valuation value of assets. See reference made on page 139 with respect to the payment of benefits out of the Post Retirement Death Benefit Reserve.

Section 3: Supplemental Information

Exhibit G: Development of the Plan

Development of the Plan through December 31, 2023

Year Ended December 31	Employer Contributions ¹	Member Contributions ¹	Administrative Expenses ²	Net Investment Return ³	Benefit Payments	Market Value of Assets at Year End	Valuation Value of Assets at Year End	Valuation Value as a Percent of Market Value
2014	\$293,760,413	\$78,257,665	N/A	\$473,522,261	\$394,947,705	\$6,908,910,230	\$6,557,496,101	94.9%
2015	323,720,270	85,360,637	N/A	65,495,657	406,904,366	6,976,582,428	7,136,801,380	102.3%
2016	307,457,143	89,240,172	\$8,486,463	493,874,242	420,148,018	7,438,519,504	7,606,997,530	102.3%
2017	314,836,561	96,466,906	9,146,115	987,415,981	437,511,788	8,390,581,049	8,179,891,191	97.5%
2018	325,117,103	103,541,529	9,337,053	(195,030,888)	464,885,947	8,149,985,793	8,650,178,226	106.1%
2019	327,982,796	108,487,711	10,200,473	1,168,171,586	487,414,734	9,257,012,679	9,128,668,718	98.6%
2020	336,356,723	113,494,191	10,749,625	882,394,059	508,270,165	10,070,237,862	9,662,282,926	95.9%
2021	410,759,608	117,016,915	11,237,383	1,407,343,614	540,354,863	11,453,765,753	10,434,412,288	91.1%
2022	352,383,785	122,303,823	11,537,709	(1,281,907,363)	581,339,475	10,053,668,812	10,861,822,062	108.0%
2023	373,148,067	132,103,613	12,839,955	868,250,930	605,473,208	10,808,858,259	11,323,476,654	104.8%

Note: Results may be slightly off due to rounding.

¹ Prior to 2017, employer contributions include “employer subvention of member contributions” and exclude “member subvention of employer contributions”.

² Prior to 2016, administrative expenses were shown as an offset to the net investment return.

³ On a market basis, net of investment fees beginning with the year ended December 31, 2016. Prior to 2016, shown net of both investment fees and administrative expenses.

Section 3: Supplemental Information

Exhibit H: Amortization bases

Total Plan – All Cost Groups Combined

Amortization Base Type	Established December 31	Initial Amount	Initial Period	Outstanding Balance	Years Remaining ¹	Annual Payment ²
Actuarial Loss	2008	\$127,228,371	18	\$46,057,454	3	\$16,476,585
Actuarial Loss	2009	267,892,376	18	122,007,786	4	33,313,438
Assumption Change	2009	60,965,491	18	27,765,869	4	7,581,291
Depooling Implementation	2009	(18,188,149)	18	(8,283,535)	4	(2,261,766)
Actuarial Loss	2010	265,289,245	18	142,544,425	5	31,683,217
Assumption Change ³	2010	4,041,816	18	2,171,737	5	482,710
Actuarial Loss	2011	183,273,836	18	111,543,733	6	21,021,025
Actuarial Loss	2012	231,260,954	18	155,012,292	6	29,212,913
Assumption Change	2012	544,097,665	18	364,704,134	6	68,730,487
Actuarial Gain	2013	(202,325,285)	18	(146,809,463)	6	(27,667,046)
Assumption Change ⁴	2013	(189,066,417)	18	(137,188,682)	6	(25,853,957)
Actuarial Gain	2014	(284,855,905)	18	(220,274,471)	6	(41,511,927)
Assumption Change ⁵	2014	(51,701)	18	(39,979)	6	(7,534)
Actuarial Gain	2015	(202,620,622)	18	(164,928,993)	6	(31,081,769)
Assumption Change	2015	114,345,251	18	93,074,668	6	17,540,429
Actuarial Gain	2016	(46,362,239)	18	(39,538,084)	6	(7,451,168)

¹ Reflects the adjustment to UAAL amortization periods adopted by the Board in 2023 for amortization layers established between December 31, 2012 and December 31, 2018.

² As of middle of year.

³ Effective with the December 31, 2010 valuation, leave cashout (terminal pay) assumptions are now based on cost groups.

⁴ Effective with the December 31, 2013 valuation, the leave cashout assumptions were reduced to reflect AB 197.

⁵ Effective with the December 31, 2014 valuation, leave cashout (terminal pay) assumptions were eliminated for Cost Group 9.

Section 3: Supplemental Information

Amortization Base Type	Established December 31	Initial Amount	Initial Period	Outstanding Balance	Years Remaining ¹	Annual Payment ²
San Ramon UAAL Prepayment	2017	\$(303,806)	18	\$(269,232)	6	\$(50,738)
LAFCO UAAL Prepayment	2017	(30,817)	18	(27,310)	6	(5,147)
Actuarial Gain	2017	(38,341,514)	18	(33,978,165)	6	(6,403,370)
San Ramon UAAL Prepayment	2018	(261,501)	18	(239,168)	6	(45,072)
Actuarial Loss	2018	155,264,736	18	142,004,507	6	26,761,526
Assumption Change	2018	(90,889,139)	18	(83,126,844)	6	(15,665,707)
San Ramon UAAL Prepayment	2019	(1,267,559)	18	(1,189,500)	14	(109,907)
LAFCO UAAL Prepayment	2019	(31,680)	18	(29,729)	14	(2,747)
Actuarial Loss	2019	41,748,029	18	39,177,080	14	3,619,872
Method Change	2019	(17,427,203)	18	(16,353,992)	14	(1,511,071)
San Ramon UAAL Prepayment	2020	(267,529)	18	(256,305)	15	(22,467)
LAFCO UAAL Prepayment	2020	(31,963)	18	(30,622)	15	(2,684)
CCCFPD UAAL Prepayment ³	2020	(3,021,672)	18	(2,894,904)	15	(253,763)
Actuarial Loss	2020	36,503,813	18	34,972,376	15	3,065,634
San Ramon UAAL Prepayment	2021	(270,666)	18	(263,586)	16	(22,016)
LAFCO UAAL Prepayment	2021	(31,804)	18	(30,972)	16	(2,587)
Actuarial Gain	2021	(28,564,305)	18	(27,817,128)	16	(2,323,435)
Assumption Change	2021	223,522,296	18	217,675,465	16	18,181,406
San Ramon UAAL Prepayment	2022	(286,847)	18	(283,547)	17	(22,653)
Actuarial Loss	2022	341,894,603	18	337,960,947	17	26,999,868

¹ Reflects the adjustment to UAAL amortization periods adopted by the Board in 2023 for amortization layers established between December 31, 2012 and December 31, 2018.

² As of middle of year.

³ As part of East Fire's annexation into Con Fire, East Fire made a prepayment of \$3,344,437 on June 30, 2022 towards their December 31, 2020 UAAL balance. As requested by East Fire, the prepayment has been used to reduce Con Fire's UAAL contribution rates effective July 1, 2022. The amount shown as the initial amount of \$3,021,672 is equal to \$3,344,437 discounted with interest from June 30, 2022 to December 31, 2020.

Section 3: Supplemental Information

Amortization Base Type	Established December 31	Initial Amount	Initial Period	Outstanding Balance	Years Remaining ¹	Annual Payment ²
San Ramon UAAL Prepayment	2023	\$(295,995)	18	\$(295,995)	18	\$(22,694)
IHSS UAAL Prepayment	2023	(92,497)	18	(92,497)	18	(7,092)
Actuarial Loss ³	2023	154,058,919	18	154,058,919	18	11,811,880
Cost Group 6 — Actuarial Surplus	2023	(318,537)	N/A	(318,537)	N/A	0
Subtotal — All Cost Groups				\$1,106,170,152		\$154,173,964
Withdrawn Employers ⁴				9,063,256		
Total CCCERA				\$1,115,233,408		

Note: Results may be slightly off due to rounding.

¹ Reflects the adjustment to UAAL amortization periods adopted by the Board in 2023 for amortization layers established between December 31, 2012 and December 31, 2018.

² As of middle of year.

³ Excludes the actuarial loss for Cost Group 6. Cost Group 6 was in surplus for both the December 31, 2022 and December 31, 2023 valuations.

⁴ Effective with the December 31, 2016 valuation, the three withdrawn employers (i.e., Diablo Water District, Delta Diablo Sanitation District and City of Pittsburg) have been moved from Cost Groups 1, 2 and 7 into their own Withdrawn Employers Cost Group.

Section 3: Supplemental Information

Cost Groups 1 and 2 – General County and Small Districts

Amortization Base Type	Established December 31	Initial Amount ¹	Initial Period	Outstanding Balance	Years Remaining ²	Annual Payment ³
Actuarial Loss	2008	\$79,980,337	18	\$28,953,375	3	\$10,357,774
Actuarial Loss	2009	164,932,313	18	75,116,084	4	20,509,961
Assumption Change	2009	39,537,694	18	18,006,882	4	4,916,663
Depooling Implementation	2009	(74,652,572)	18	(33,999,456)	4	(9,283,332)
Actuarial Loss	2010	152,969,439	18	82,193,082	5	18,268,980
Actuarial Loss	2011	94,687,495	18	57,628,503	6	10,860,406
Actuarial Loss	2012	116,951,818	18	78,391,830	6	14,773,369
Assumption Change	2012	288,612,127	18	193,454,306	6	36,457,521
Actuarial Gain	2013	(134,721,070)	18	(97,755,097)	6	(18,422,482)
Assumption Change ⁴	2013	(107,482,250)	18	(77,990,308)	6	(14,697,700)
Actuarial Gain	2014	(171,785,272)	18	(132,838,777)	6	(25,034,193)
Actuarial Gain	2015	(104,934,178)	18	(85,414,250)	6	(16,096,782)
Assumption Change	2015	39,788,586	18	32,387,086	6	6,103,523
Actuarial Gain	2016	(28,560,150)	18	(24,356,322)	6	(4,590,082)
Actuarial Gain	2017	(17,925,791)	18	(15,885,796)	6	(2,993,765)
Actuarial Loss	2018	75,214,335	18	68,790,730	6	12,963,989
Assumption Change	2018	(6,017,706)	18	(5,503,770)	6	(1,037,215)
Actuarial Loss	2019	8,869,944	18	8,323,710	14	769,092
Method Change	2019	(9,431,611)	18	(8,850,789)	14	(817,792)

¹ Effective with the December 31, 2021 valuation, portions of all amortization bases from Cost Groups 1 and 2 established before December 31, 2021 were allocated to East Fire and moved into Cost Group 5 in conjunction with the annexation.

² Reflects the adjustment to UAAL amortization periods adopted by the Board in 2023 for amortization layers established between December 31, 2012 and December 31, 2018.

³ As of middle of year.

⁴ Effective with the December 31, 2013 valuation, the leave cashout assumptions were reduced to reflect AB 197.

Section 3: Supplemental Information

Amortization Base Type	Established December 31	Initial Amount ¹	Initial Period	Outstanding Balance	Years Remaining ²	Annual Payment ³
Actuarial Loss	2020	\$34,716,218	18	\$33,259,775	15	\$2,915,509
Actuarial Gain	2021	(29,835,340)	18	(29,054,916)	16	(2,426,820)
Assumption Change	2021	114,962,352	18	111,955,200	16	9,351,091
Actuarial Loss	2022	200,508,908	18	198,201,960	17	15,834,454
Actuarial Loss	2023	88,646,768	18	88,646,768	18	6,796,653
Subtotal – Cost Groups 1 and 2				\$563,659,811		\$75,478,822

Note: Results may be slightly off due to rounding.

¹ Effective with the December 31, 2021 valuation, portions of all amortization bases from Cost Groups 1 and 2 established before December 31, 2021 were allocated to East Fire and moved into Cost Group 5 in conjunction with the annexation.

² Reflects the adjustment to UAAL amortization periods adopted by the Board in 2023 for amortization layers established between December 31, 2012 and December 31, 2018.

³ As of middle of year.

Section 3: Supplemental Information

Cost Group 3 – Central Contra Costa Sanitary District

Amortization Base Type	Established December 31	Initial Amount	Initial Period	Outstanding Balance	Years Remaining	Annual Payment ¹
Actuarial Loss	2022	\$4,915,384	18	\$4,858,830	17	\$388,174
Actuarial Loss ²	2023	8,520,321	18	8,520,321	18	653,263
Subtotal – Cost Group 3				\$13,379,151		\$1,041,437

¹ As of middle of year.

² The actuarial loss is primarily due to an investment return on the valuation value of assets (i.e. after asset smoothing) less than the 6.75% assumed rate for a loss of about \$7 million and individual salary increases greater than expected for a loss of about \$2 million.

Section 3: Supplemental Information

Cost Group 4 – Contra Costa Housing Authority

Amortization Base Type	Established December 31	Initial Amount	Initial Period	Outstanding Balance	Years Remaining ¹	Annual Payment ²
Actuarial Loss	2008	\$1,573,513	18	\$569,621	3	\$203,776
Actuarial Loss	2009	1,277,079	18	581,627	4	158,810
Assumption Change	2009	425,000	18	193,560	4	52,850
Depooling Implementation	2009	(189,275)	18	(86,203)	4	(23,537)
Actuarial Loss	2010	619,697	18	332,974	5	74,010
Assumption Change ³	2010	(920,656)	18	(494,684)	5	(109,953)
Actuarial Loss	2011	1,059,328	18	644,726	6	121,502
Actuarial Loss	2012	1,912,999	18	1,282,267	6	241,650
Assumption Change	2012	3,722,862	18	2,495,403	6	470,272
Actuarial Gain	2013	(2,220,704)	18	(1,611,367)	6	(303,671)
Assumption Change ⁴	2013	(1,077,289)	18	(781,693)	6	(147,314)
Actuarial Gain	2014	(1,360,021)	18	(1,051,682)	6	(198,195)
Actuarial Gain	2015	(875,294)	18	(712,471)	6	(134,269)
Assumption Change	2015	432,801	18	352,291	6	66,391
Actuarial Gain	2016	(297,092)	18	(253,362)	6	(47,748)
Actuarial Loss	2017	53,895	18	47,762	6	9,001
Actuarial Loss	2018	527,741	18	482,670	6	90,962
Assumption Change	2018	86,577	18	79,183	6	14,922
Actuarial Loss	2019	544,467	18	510,937	14	47,209
Method Change	2019	(103,353)	18	(96,988)	14	(8,961)

¹ Reflects the adjustment to UAAL amortization periods adopted by the Board in 2023 for amortization layers established between December 31, 2012 and December 31, 2018.

² As of middle of year.

³ Effective with the December 31, 2010 valuation, leave cashout (terminal pay) assumptions are now based on cost groups.

⁴ Effective with the December 31, 2013 valuation, the leave cashout assumptions were reduced to reflect AB 197.

Section 3: Supplemental Information

Amortization Base Type	Established December 31	Initial Amount	Initial Period	Outstanding Balance	Years Remaining ¹	Annual Payment ²
Actuarial Loss	2020	\$80,685	18	\$77,300	15	\$6,776
Actuarial Gain	2021	(439,350)	18	(427,858)	16	(35,737)
Assumption Change	2021	1,519,858	18	1,480,102	16	123,626
Actuarial Loss	2022	2,604,379	18	2,574,415	17	205,671
Actuarial Loss	2023	237,770	18	237,770	18	18,230
Subtotal – Cost Group 4				\$6,426,300		\$896,273

Note: Results may be slightly off due to rounding.

¹ Reflects the adjustment to UAAL amortization periods adopted by the Board in 2023 for amortization layers established between December 31, 2012 and December 31, 2018.

² As of middle of year.

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Cost Group 5 – Contra Costa County Fire Protection District

Amortization Base Type	Established December 31	Initial Amount ¹	Initial Period	Outstanding Balance	Years Remaining ²	Annual Payment ³
Actuarial Loss	2008	\$98,825	18	\$35,775	3	\$12,798
Actuarial Loss	2009	1,723,190	18	784,802	4	214,285
Assumption Change	2009	362,132	18	164,928	4	45,032
Depooling Implementation	2009	2,093,197	18	953,317	4	260,297
Actuarial Loss	2010	2,823,409	18	1,517,066	5	337,197
Actuarial Loss	2011	1,413,203	18	860,100	6	162,091
Actuarial Loss	2012	1,864,724	18	1,249,909	6	235,552
Assumption Change	2012	3,374,927	18	2,262,185	6	426,321
Actuarial Gain	2013	(2,589,708)	18	(1,879,120)	6	(354,131)
Assumption Change ⁴	2013	(1,056,692)	18	(766,747)	6	(144,498)
Actuarial Gain	2014	(2,329,297)	18	(1,801,208)	6	(339,447)
Actuarial Gain	2015	(825,906)	18	(672,270)	6	(126,693)
Assumption Change	2015	382,244	18	311,139	6	58,636
Actuarial Loss	2016	1,572,498	18	1,341,039	6	252,726
Actuarial Loss	2017	1,464,466	18	1,297,806	6	244,579
Actuarial Loss	2018	1,545,142	18	1,413,181	6	266,322
Assumption Change	2018	602,943	18	551,449	6	103,924
Actuarial Loss	2019	1,838,915	18	1,725,670	14	159,448
Method Change	2019	(872,975)	18	(819,215)	14	(75,694)

¹ Effective with the December 31, 2021 valuation, portions of all amortization bases from Cost Groups 1 and 2 established before December 31, 2021 were allocated to East Fire and moved into Cost Group 5 in conjunction with the annexation.

² Reflects the adjustment to UAAL amortization periods adopted by the Board in 2023 for amortization layers established between December 31, 2012 and December 31, 2018.

³ As of middle of year.

⁴ Effective with the December 31, 2013 valuation, the leave cashout assumptions were reduced to reflect AB 197.

Section 3: Supplemental Information

Amortization Base Type	Established December 31	Initial Amount ¹	Initial Period	Outstanding Balance	Years Remaining ²	Annual Payment ³
UAAL Prepayment	2020	\$(181,746)	18	\$(174,121)	15	\$(15,263)
Actuarial Loss	2020	2,595,831	18	2,486,929	15	218,001
Actuarial Gain	2021	(1,811,591)	18	(1,764,204)	16	(147,356)
Assumption Change	2021	1,486,425	18	1,447,544	16	120,906
Actuarial Loss	2022	2,541,827	18	2,512,582	17	200,731
Actuarial Loss	2023	988,814	18	988,814	18	75,814
Subtotal – Cost Group 5				\$14,027,349		\$2,191,578

Note: Results may be slightly off due to rounding.

¹ Effective with the December 31, 2021 valuation, portions of all amortization bases from Cost Groups 1 and 2 established before December 31, 2021 were allocated to East Fire and moved into Cost Group 5 in conjunction with the annexation.

² Reflects the adjustment to UAAL amortization periods adopted by the Board in 2023 for amortization layers established between December 31, 2012 and December 31, 2018.

³ As of middle of year.

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Cost Group 6 – Small Districts (General Non-Enhanced)

Amortization Base Type	Established December 31	Initial Amount	Initial Period	Outstanding Balance	Years Remaining	Annual Payment ¹
Actuarial Surplus ²	2023	\$(318,537)		\$(318,537)	N/A	\$0
Subtotal – Cost Group 6				\$(318,537)		\$0

¹ As of middle of year.

² Consistent with CCCERA's Actuarial Funding Policy, all prior UAAL layers are considered fully amortized due to surplus.

Section 3: Supplemental Information

Cost Groups 7 and 9 – County Safety

Amortization Base Type	Established December 31	Initial Amount	Initial Period	Outstanding Balance	Years Remaining ¹	Annual Payment ²
Actuarial Loss	2008	\$25,619,265	18	\$9,274,332	3	\$3,317,798
Actuarial Loss	2009	55,134,940	18	25,110,427	4	6,856,240
Assumption Change	2009	11,076,665	18	5,044,710	4	1,377,426
Depooling Implementation	2009	23,852,078	18	10,863,091	4	2,966,097
Actuarial Loss	2010	57,287,975	18	30,781,804	5	6,841,843
Actuarial Loss	2011	45,209,350	18	27,515,219	6	5,185,393
Actuarial Loss	2012	53,258,503	18	35,698,731	6	6,727,621
Assumption Change	2012	138,353,562	18	92,737,241	6	17,476,840
Actuarial Gain	2013	(35,024,912)	18	(25,414,464)	6	(4,789,495)
Assumption Change ³	2013	(43,771,706)	18	(31,761,234)	6	(5,985,578)
Actuarial Gain	2014	(61,815,393)	18	(47,800,845)	6	(9,008,330)
Assumption Change ⁴	2014	(51,701)	18	(39,979)	6	(7,534)
Actuarial Gain	2015	(58,489,966)	18	(47,609,622)	6	(8,972,293)
Assumption Change	2015	39,291,409	18	31,982,394	6	6,027,257
Actuarial Gain	2016	(13,557,811)	18	(11,562,209)	6	(2,178,961)
Actuarial Gain	2017	(8,178,240)	18	(7,247,539)	6	(1,365,838)
Actuarial Loss	2018	41,037,406	18	37,532,647	6	7,073,232
Assumption Change	2018	(47,713,599)	18	(43,638,667)	6	(8,223,945)
Actuarial Loss	2019	10,313,187	18	9,678,075	14	894,232
Method Change	2019	(1,626,137)	18	(1,525,995)	14	(140,998)

¹ Reflects the adjustment to UAAL amortization periods adopted by the Board in 2023 for amortization layers established between December 31, 2012 and December 31, 2018.

² As of middle of year.

³ Effective with the December 31, 2013 valuation, the leave cashout assumptions were reduced to reflect AB 197.

⁴ Effective with the December 31, 2014 valuation, leave cashout (terminal pay) assumptions were eliminated for Cost Group 9.

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Amortization Base Type	Established December 31	Initial Amount	Initial Period	Outstanding Balance	Years Remaining ¹	Annual Payment ²
Actuarial Loss	2020	\$5,352,140	18	\$5,127,602	15	\$449,479
Actuarial Gain	2021	(9,006,255)	18	(8,770,672)	16	(732,573)
Assumption Change	2021	58,980,022	18	57,437,240	16	4,797,462
Actuarial Loss	2022	72,120,444	18	71,290,665	17	5,695,447
Actuarial Loss	2023	25,063,417	18	25,063,417	18	1,921,642
Subtotal – Cost Groups 7 and 9				\$249,766,369		\$36,202,464

Note: Results may be slightly off due to rounding.

¹ Reflects the adjustment to UAAL amortization periods adopted by the Board in 2023 for amortization layers established between December 31, 2012 and December 31, 2018.

² As of middle of year.

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Cost Group 8 – Contra Costa Fire Protection District

Amortization Base Type	Established December 31	Initial Amount ¹	Initial Period	Outstanding Balance	Years Remaining ²	Annual Payment ³
Actuarial Loss	2008	\$6,780,436	18	\$2,454,560	3	\$878,094
Actuarial Loss	2009	27,018,706	18	12,305,287	4	3,359,879
Assumption Change	2009	4,945,000	18	2,252,130	4	614,930
Depooling Implementation	2009	47,818,666	18	21,778,334	4	5,946,433
Actuarial Loss	2010	38,165,445	18	20,506,943	5	4,558,059
Assumption Change ⁴	2010	(1,599,051)	18	(859,197)	5	(190,973)
Actuarial Loss	2011	26,533,166	18	16,148,559	6	3,043,284
Actuarial Loss	2012	31,501,440	18	21,115,153	6	3,979,266
Assumption Change	2012	68,193,356	18	45,709,439	6	8,614,193
Actuarial Gain	2013	(22,661,640)	18	(16,443,537)	6	(3,098,874)
Assumption Change ⁵	2013	(17,910,676)	18	(12,996,184)	6	(2,449,202)
Actuarial Gain	2014	(29,217,962)	18	(22,593,778)	6	(4,257,921)
Actuarial Gain	2015	(19,005,510)	18	(15,470,092)	6	(2,915,423)
Assumption Change	2015	24,296,846	18	19,777,130	6	3,727,108
Actuarial Gain	2016	(8,297,685)	18	(7,076,332)	6	(1,333,573)
Actuarial Gain	2017	(10,658,502)	18	(9,445,541)	6	(1,780,064)
Actuarial Loss	2018	19,301,243	18	17,652,840	6	3,326,774
Assumption Change	2018	(23,503,820)	18	(21,496,500)	6	(4,051,133)

¹ Effective with the December 31, 2019 valuation, East Fire was depooled into Cost Group 13, previously East Fire was pooled with Con Fire in Cost Group 8. All amortization bases established on or before December 31, 2018 were split between the two employers based on the ratios of actuarial accrued liability as of December 31, 2018.

Effective with the December 31, 2021 valuation, East Fire was annexed into Con Fire, and all amortization bases from Cost Group 13 established before December 31, 2021 were moved into Cost Group 8.

² Reflects the adjustment to UAAL amortization periods adopted by the Board in 2023 for amortization layers established between December 31, 2012 and December 31, 2018.

³ As of middle of year.

⁴ Effective with the December 31, 2010 valuation, leave cashout (terminal pay) assumptions are now based on cost groups.

⁵ Effective with the December 31, 2013 valuation, the leave cashout assumptions were reduced to reflect AB 197.

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Amortization Base Type	Established December 31	Initial Amount ¹	Initial Period	Outstanding Balance	Years Remaining ²	Annual Payment ³
Actuarial Loss	2019	\$11,258,256	18	\$10,564,944	14	\$976,176
Method Change	2019	(3,057,179)	18	(2,868,910)	14	(265,081)
Actuarial Gain	2020	(5,495,306)	18	(5,264,763)	15	(461,502)
UAAL Prepayment	2020	(2,839,926)	18	(2,720,783)	15	(238,500)
Actuarial Loss	2021	7,016,144	18	6,832,618	16	570,696
Assumption Change	2021	25,946,537	18	25,267,835	16	2,110,503
Actuarial Loss	2022	32,208,479	18	31,837,906	17	2,543,546
Actuarial Loss	2023	21,411,096	18	21,411,096	18	1,641,614
Subtotal – Cost Group 8				\$158,379,155		\$24,848,309

Note: Results may be slightly off due to rounding.

¹ Effective with the December 31, 2019 valuation, East Fire was depooled into Cost Group 13, previously East Fire was pooled with Con Fire in Cost Group 8. All amortization bases established on or before December 31, 2018 were split between the two employers based on the ratios of actuarial accrued liability as of December 31, 2018.

Effective with the December 31, 2021 valuation, East Fire was annexed into Con Fire, and all amortization bases from Cost Group 13 established before December 31, 2021 were moved into Cost Group 8.

² Reflects the adjustment to UAAL amortization periods adopted by the Board in 2023 for amortization layers established between December 31, 2012 and December 31, 2018.

³ As of middle of year.

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Cost Group 10 – Moraga-Orinda Fire District

Amortization Base Type	Established December 31	Initial Amount	Initial Period	Outstanding Balance	Years Remaining ¹	Annual Payment ²
Actuarial Loss	2008	\$2,002,150	18	\$724,791	3	\$259,287
Actuarial Loss	2009	5,671,684	18	2,583,088	4	705,296
Assumption Change	2009	1,012,000	18	460,901	4	125,846
Depooling Implementation	2009	4,873,631	18	2,219,626	4	606,055
Actuarial Loss	2010	5,334,964	18	2,866,567	5	637,149
Assumption Change ³	2010	806,018	18	433,087	5	96,262
Actuarial Loss	2011	6,791,005	18	4,133,127	6	778,910
Actuarial Loss	2012	8,924,598	18	5,982,084	6	1,127,356
Assumption Change	2012	12,149,892	18	8,143,971	6	1,534,776
Actuarial Gain	2013	(1,027,440)	18	(745,522)	6	(140,498)
Assumption Change ⁴	2013	(3,613,981)	18	(2,622,345)	6	(494,195)
Actuarial Gain	2014	(4,813,045)	18	(3,721,850)	6	(701,403)
Actuarial Gain	2015	(8,490,806)	18	(6,911,340)	6	(1,302,480)
Assumption Change	2015	3,844,347	18	3,129,219	6	589,718
Actuarial Loss	2016	1,028,690	18	877,275	6	165,327
Actuarial Gain	2017	(422,995)	18	(374,857)	6	(70,644)
Actuarial Loss	2018	6,029,055	18	5,514,150	6	1,039,172
Assumption Change	2018	(4,116,542)	18	(3,764,973)	6	(709,530)
Actuarial Loss	2019	3,411,399	18	3,201,316	14	295,794
Method Change	2019	(471,164)	18	(442,149)	14	(40,854)

¹ Reflects the adjustment to UAAL amortization periods adopted by the Board in 2023 for amortization layers established between December 31, 2012 and December 31, 2018.

² As of middle of year.

³ Effective with the December 31, 2010 valuation, leave cashout (terminal pay) assumptions are now based on cost groups.

⁴ Effective with the December 31, 2013 valuation, the leave cashout assumptions were reduced to reflect AB 197.

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Amortization Base Type	Established December 31	Initial Amount	Initial Period	Outstanding Balance	Years Remaining ¹	Annual Payment ²
Actuarial Gain	2020	\$(864,383)	18	\$(828,120)	15	\$(72,592)
Actuarial Loss	2021	2,537,586	18	2,471,208	16	206,408
Assumption Change	2021	5,301,507	18	5,162,832	16	431,227
Actuarial Loss	2022	7,121,589	18	7,039,652	17	562,401
Actuarial Loss	2023	3,220,166	18	3,220,166	18	246,894
Subtotal – Cost Group 10				\$38,751,905		\$5,875,682

Note: Results may be slightly off due to rounding.

¹ Reflects the adjustment to UAAL amortization periods adopted by the Board in 2023 for amortization layers established between December 31, 2012 and December 31, 2018.

² As of middle of year.

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Cost Group 11 – San Ramon Valley Fire District

Amortization Base Type	Established December 31	Initial Amount	Initial Period	Outstanding Balance	Years Remaining ¹	Annual Payment ²
Actuarial Loss	2008	\$10,216,694	18	\$3,698,506	3	\$1,323,103
Actuarial Loss	2009	9,262,105	18	4,218,294	4	1,151,778
Assumption Change	2009	2,453,000	18	1,117,184	4	305,040
Depooling Implementation	2009	(20,174,500)	18	(9,188,190)	4	(2,508,776)
Actuarial Loss	2010	6,585,812	18	3,538,669	5	786,537
Assumption Change ³	2010	5,093,420	18	2,736,781	5	608,302
Actuarial Loss	2011	5,513,071	18	3,355,354	6	632,335
Actuarial Loss	2012	14,600,741	18	9,786,755	6	1,844,368
Assumption Change	2012	26,672,143	18	17,878,115	6	3,369,229
Actuarial Gain	2013	(4,492,900)	18	(3,260,098)	6	(614,383)
Assumption Change ⁴	2013	(12,984,002)	18	(9,421,335)	6	(1,775,502)
Actuarial Gain	2014	(13,850,852)	18	(10,710,640)	6	(2,018,479)
Actuarial Gain	2015	(9,008,582)	18	(7,332,799)	6	(1,381,906)
Assumption Change	2015	5,533,144	18	4,503,865	6	848,778
Actuarial Loss	2016	2,020,042	18	1,722,708	6	324,654
UAAL Prepayment	2017	(303,806)	18	(269,232)	6	(50,738)
Actuarial Gain	2017	(1,837,378)	18	(1,628,280)	6	(306,858)
UAAL Prepayment	2018	(261,501)	18	(239,168)	6	(45,072)
Actuarial Loss	2018	11,681,729	18	10,684,062	6	2,013,470
Assumption Change	2018	(9,240,163)	18	(8,451,016)	6	(1,592,640)

¹ Reflects the adjustment to UAAL amortization periods adopted by the Board in 2023 for amortization layers established between December 31, 2012 and December 31, 2018.

² As of middle of year.

³ Effective with the December 31, 2010 valuation, leave cashout (terminal pay) assumptions are now based on cost groups.

⁴ Effective with the December 31, 2013 valuation, the leave cashout assumptions were reduced to reflect AB 197.

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Amortization Base Type	Established December 31	Initial Amount	Initial Period	Outstanding Balance	Years Remaining ¹	Annual Payment ²
UAAL Prepayment	2019	\$(1,267,559)	18	\$(1,189,500)	14	\$(109,907)
Actuarial Loss	2019	5,365,395	18	5,034,981	14	465,221
Method Change	2019	(1,623,299)	18	(1,523,332)	14	(140,752)
UAAL Prepayment	2020	(267,529)	18	(256,305)	15	(22,467)
Actuarial Gain	2020	(60,980)	18	(58,421)	15	(5,121)
UAAL Prepayment	2021	(270,666)	18	(263,586)	16	(22,016)
Actuarial Loss	2021	2,230,205	18	2,171,868	16	181,406
Assumption Change	2021	13,908,945	18	13,545,119	16	1,131,360
UAAL Prepayment	2022	(286,847)	18	(283,547)	17	(22,653)
Actuarial Loss	2022	17,272,835	18	17,074,103	17	1,364,059
UAAL Prepayment	2023	(295,995)	18	(295,995)	18	(22,694)
Actuarial Loss	2023	5,325,133	18	5,325,133	18	408,284
Subtotal – Cost Group 11				\$52,020,053		\$6,117,960

Note: Results may be slightly off due to rounding.

¹ Reflects the adjustment to UAAL amortization periods adopted by the Board in 2023 for amortization layers established between December 31, 2012 and December 31, 2018.

² As of middle of year.

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Cost Group 12 – Rodeo-Hercules Fire Protection District

Amortization Base Type	Established December 31	Initial Amount	Initial Period	Outstanding Balance	Years Remaining ¹	Annual Payment ²
Actuarial Loss	2008	\$957,150	18	\$346,494	3	\$123,955
Actuarial Loss	2009	2,872,360	18	1,308,176	4	357,189
Assumption Change	2009	1,154,000	18	525,573	4	143,504
Depooling Implementation	2009	(1,809,374)	18	(824,054)	4	(225,003)
Actuarial Loss	2010	1,502,503	18	807,321	5	179,442
Assumption Change ³	2010	662,085	18	355,750	5	79,072
Actuarial Loss	2011	2,067,217	18	1,258,145	6	237,104
Actuarial Loss	2012	2,246,131	18	1,505,563	6	283,731
Assumption Change	2012	3,018,796	18	2,023,474	6	381,335
Actuarial Loss	2013	413,088	18	299,741	6	56,488
Assumption Change ⁴	2013	(1,169,821)	18	(848,835)	6	(159,968)
Actuarial Loss	2014	315,937	18	244,309	6	46,041
Actuarial Gain	2015	(990,379)	18	(806,148)	6	(151,923)
Assumption Change	2015	775,874	18	631,545	6	119,018
Actuarial Gain	2016	(270,731)	18	(230,882)	6	(43,511)
Actuarial Gain	2017	(836,969)	18	(741,720)	6	(139,781)
Actuarial Gain	2018	(71,915)	18	(65,773)	6	(12,395)
Assumption Change	2018	(986,829)	18	(902,550)	6	(170,090)
Actuarial Loss	2019	146,468	18	137,448	14	12,700
Method Change	2019	(241,485)	18	(226,614)	14	(20,939)

¹ Reflects the adjustment to UAAL amortization periods adopted by the Board in 2023 for amortization layers established between December 31, 2012 and December 31, 2018.

² As of middle of year.

³ Effective with the December 31, 2010 valuation, leave cashout (terminal pay) assumptions are now based on cost groups.

⁴ Effective with the December 31, 2013 valuation, the leave cashout assumptions were reduced to reflect AB 197.

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Amortization Base Type	Established December 31	Initial Amount	Initial Period	Outstanding Balance	Years Remaining ¹	Annual Payment ²
Actuarial Loss	2020	\$179,608	18	\$172,073	15	\$15,084
Actuarial Loss	2021	744,297	18	724,828	16	60,541
Assumption Change	2021	1,416,650	18	1,379,594	16	115,231
Actuarial Loss	2022	2,600,757	18	2,570,834	17	205,385
Actuarial Loss	2023	645,435	18	645,435	18	49,486
Subtotal – Cost Group 12				\$10,289,726		\$1,541,696

Note: Results may be slightly off due to rounding.

¹ Reflects the adjustment to UAAL amortization periods adopted by the Board in 2023 for amortization layers established between December 31, 2012 and December 31, 2018.

² As of middle of year.

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Special Adjustments

Amortization Base Type	Established December 31	Initial Amount	Initial Period	Outstanding Balance	Years Remaining ¹	Annual Payment ²
LAFCO UAAL Prepayment	2017	\$(30,817)	18	\$(27,310)	6	\$(5,147)
LAFCO UAAL Prepayment	2019	(31,680)	18	(29,729)	14	(2,747)
LAFCO UAAL Prepayment	2020	(31,963)	18	(30,622)	15	(2,684)
LAFCO UAAL Prepayment	2021	(31,804)	18	(30,972)	16	(2,587)
IHSS UAAL Prepayment	2023	(92,497)	18	(92,497)	18	(7,092)
Subtotal – Special Adjustments				\$(211,130)		\$(20,257)

Note: Results may be slightly off due to rounding.

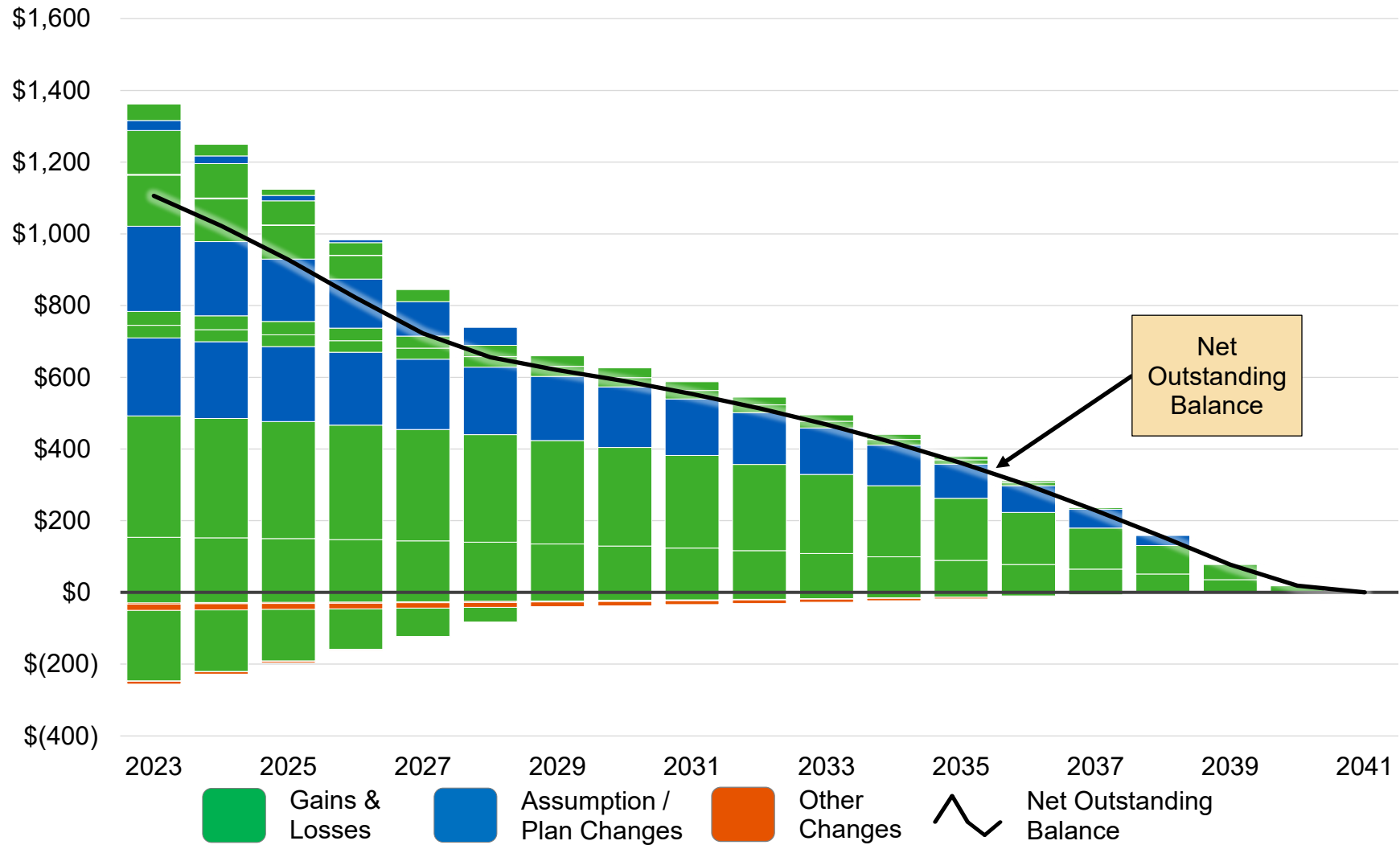
¹ Reflects the adjustment to UAAL amortization periods adopted by the Board in 2023 for amortization layers established between December 31, 2012 and December 31, 2018.

² As of middle of year. The annual payment amounts shown for the Special Adjustments represent the credit allocated to the employer to reflect special contributions. These adjustments serve to reduce the UAAL contribution rate for these employers.

Section 3: Supplemental Information

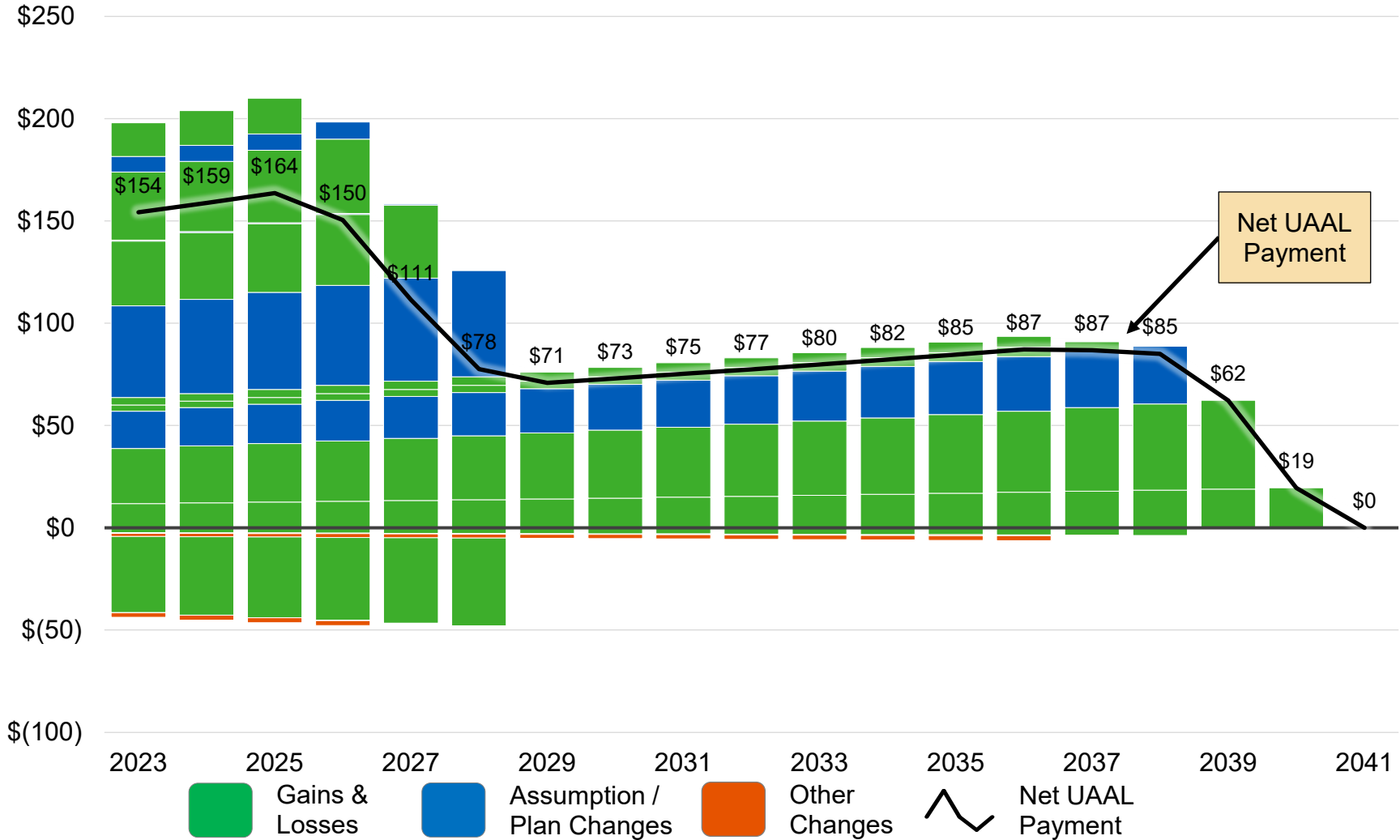
Exhibit I: Projection of UAAL balances and payments

Outstanding Balance of \$1,106 Million in Net UAAL as of December 31, 2023
 (Excludes Withdrawn Employers, \$ in Millions)



Section 3: Supplemental Information

Annual Payments Required to Amortize \$1,106 Million in Net UAAL as of December 31, 2023
 (Excludes Withdrawn Employers, \$ in Millions)



Section 4: Actuarial Valuation Basis

Exhibit 1: Actuarial assumptions, methods and models

Rationale for assumptions

The information and analysis used in selecting each assumption that has a significant effect on this actuarial valuation is shown in the January 1, 2018 through December 31, 2020 Actuarial Experience Study report dated April 5, 2022. Unless otherwise noted, all actuarial assumptions and methods shown below apply to all tiers. These assumptions were adopted by the Board.

Net investment return

6.75%; net of investment expenses.

Based on the Actuarial Experience Study referenced above, expected investment expenses represent about 0.60% of the actuarial value of assets.

Administrative expenses

1.17% of payroll allocated between the employer and member based on normal cost (before expenses) for the employer and member. This assumption is subject to change each year based on the actual administrative expenses as a percent of actual covered payroll during the calendar year ending on the valuation date.

For the 2023 calendar year, actual administrative expenses were \$12,839,955 and actual covered payroll was \$1,093,972,642. This results in an administrative expense assumption of 1.17% of payroll, allocated between the employer and member as shown below:

Allocation of Administrative Expense Load Between Employer and Member

Line Description	Average Normal Cost Before Expenses	Weighting for Administrative Expense	Administrative Expense Load
Employer	14.55%	55.62%	0.65%
Member	11.61%	44.38%	0.52%
Total	26.16%	100.00%	1.17%

Section 4: Actuarial Valuation Basis

The basic member rate is increased by the administrative expense allocated to the member. The employer normal cost rate is increased by the same percent of payroll as the basic member rate, while the remaining administrative expense allocated to the employer is used to increase the employer UAAL rate. This methodology is used to maintain a 50:50 sharing of normal cost for those in the PEPRA tiers. The table below shows this allocation.

Allocation of Administrative Expense Load to Contribution Rate Components (% of Payroll)

Contribution Rate Component	Administrative Expense Load
Employer basic normal cost rate	0.52%
Employer basic UAAL rate	0.13%
Member basic rate	0.52%
Total administrative expense load	1.17%

Member contribution crediting rate

6.75%, compounded semi-annually.

Inflation rate

Increases of 2.50% per year.

Cost of Living Adjustment (COLA)

Increases of 2.75% per year.

- The actual COLA granted by CCCERA on April 1, 2024 has been reflected for non-active members in the December 31, 2023 valuation.
- For members that have COLA banks, the COLA banks have been reflected in projected future COLAs.
- Benefits are subject to a maximum COLA per year, which varies based on the member's tier and retirement type.

Section 4: Actuarial Valuation Basis

Maximum COLA

General Membership Tier	Safety Membership Tier	Maximum COLA Per Year	COLA Valued (Before Application of COLA Banks)
<ul style="list-style-type: none"> • Tier 1 • Tier 3 (non-disability) • Tier 4 • Tier 5 (non-disability) 	<ul style="list-style-type: none"> • Tier A • Tier D 	3.00%	2.75%
<ul style="list-style-type: none"> • Tier 2 • Tier 3 (disability) • Tier 5 (disability) 	<ul style="list-style-type: none"> • N/A 	4.00%	2.75%
<ul style="list-style-type: none"> • Tier 4 and Tier 5 members covered under certain MOUs 	<ul style="list-style-type: none"> • Tier C • Tier E 	2.00%	2.00%

Payroll growth

Inflation of 2.50% per year plus “across-the-board” salary increase of 0.50% per year.

The payroll growth assumption is 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 2.50% per year from the valuation date.

Increase in Section 7522.10 compensation limit

Increase of 2.50% per year from the valuation date.

Section 4: Actuarial Valuation Basis

Salary increases

The annual rate of compensation increase includes:

- Inflation at 2.50%, plus
- “Across-the-board” salary increase of 0.50% per year, plus
- Merit and promotion increase based on years of service:

Merit and Promotion Increases (%)

Years of Service	General	Safety
Less than 1	11.00	12.00
1–2	6.50	8.50
2–3	4.75	5.50
3–4	3.50	5.00
4–5	2.50	4.00
5–6	2.00	3.00
6–7	1.75	2.25
7–8	1.65	1.75
8–9	1.45	1.50
9–10	1.35	1.45
10–11	1.30	1.40
11–12	1.10	1.35
12–13	1.00	1.30
13–14	0.90	1.25
14–15	0.80	1.25
15–16	0.75	1.25
16–17	0.70	1.25
17–18	0.65	1.25
18–19	0.60	1.25
19–20	0.55	1.25
20 and over	0.50	1.00

The average total assumed salary increase for active members in the December 31, 2023 actuarial valuation is 4.6%.

Section 4: Actuarial Valuation Basis

Post-retirement mortality rates

The Pub-2010 mortality tables and adjustments as shown below 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.

Healthy

- **General members**
 - Pub-2010 General Healthy Retiree Amount-Weighted Above-Median Mortality Table (separate tables for males and females), projected generationally with the two-dimensional mortality improvement scale MP-2021.
- **Safety members**
 - Pub-2010 Safety Healthy Retiree Amount-Weighted Above-Median Mortality Table (separate tables for males and females) increased by 5% for males and decreased by 5% for females, projected generationally with the two-dimensional mortality improvement scale MP-2021.

Disabled

- **General members**
 - Pub-2010 Non-Safety Disabled Retiree Amount-Weighted Mortality Table (separate tables for males and females) increased by 5% for males and unadjusted for females, projected generationally with the two-dimensional mortality improvement scale MP-2021.
- **Safety members**
 - Pub-2010 Safety Disabled Retiree Amount-Weighted Mortality Table (separate tables for males and females) increased by 5% for males and unadjusted for females, projected generationally with the two-dimensional mortality improvement scale MP-2021.

Beneficiary

- **Beneficiaries not currently in pay status**
 - Pub-2010 General Healthy Retiree Amount-Weighted Above-Median Mortality Table (separate tables for males and females), projected generationally with the two-dimensional mortality improvement scale MP-2021.

Section 4: Actuarial Valuation Basis

- **Beneficiaries in pay status**

- Pub-2010 Contingent Survivor Amount-Weighted Above-Median Mortality Table (separate tables for males and females) increased by 5% for males and females, projected generationally with the two-dimensional mortality improvement scale MP-2021.

Pre-retirement mortality rates

- **General members**

- Pub-2010 General Employee Amount-Weighted Above-Median Mortality Table (separate tables for males and females), projected generationally with the two-dimensional mortality improvement scale MP-2021.

- **Safety members**

- Pub-2010 Safety Employee Amount-Weighted Above-Median Mortality Table (separate tables for males and females), projected generationally with the two-dimensional mortality improvement scale MP-2021.

Pre-Retirement Mortality Rates (%) – Before Generational Projection from 2010

Age	General Male	General Female	Safety Male	Safety Female
20	0.04	0.01	0.04	0.02
25	0.02	0.01	0.03	0.02
30	0.03	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	0.14
65	0.41	0.27	0.35	0.20
70	0.61	0.44	0.66	0.39

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

Section 4: Actuarial Valuation Basis

Mortality rates for member contributions¹

- **General Members**

- Pub-2010 General Healthy Retiree Amount-Weighted Above-Median Mortality Table (separate tables for males and females), projected 30 years with the two-dimensional mortality improvement scale MP-2021, weighted 30% male and 70% female.

- **Safety Members**

- Pub-2010 Safety Healthy Retiree Amount-Weighted Above-Median Mortality Table (separate tables for males and females) increased by 5% for males and decreased by 5% for females, projected 30 years with the two-dimensional mortality improvement scale MP-2021, weighted 85% male and 15% female.

Disability

Disability Incidence Rates (%)

Age	General Tier 1 and Tier 4	General Tier 3 and Tier 5	Safety
20	0.01	0.01	0.06
25	0.02	0.02	0.16
30	0.04	0.03	0.32
35	0.08	0.05	0.46
40	0.22	0.07	0.56
45	0.36	0.09	0.96
50	0.52	0.12	2.88
55	0.60	0.16	4.00
60	0.60	0.18	4.30
65	0.60	0.18	4.50
70	0.60	0.18	4.50

¹ These mortality rates are used for calculating the member basic contribution rates for General Tier 1, Tier 2 and Tier 3, as well as Safety Tier A and Tier C.

Section 4: Actuarial Valuation Basis

Assumed Percentage of Future Disabled Members Receiving a Service-Connected or Non-Service-Connected Disability

Membership Tier	Service-Connected Disabilities	Non-Service-Connected Disabilities
General Tier 1 and Tier 4	65%	35%
General Tier 3 and Tier 5	25%	75%
Safety	100%	0%

Section 4: Actuarial Valuation Basis

Termination

Termination Rates (%)

Years of Service	General	Safety
Less than 1	14.00	11.00
1–2	9.50	9.00
2–3	9.00	7.00
3–4	6.25	5.00
4–5	6.25	4.00
5–6	5.00	3.50
6–7	4.50	3.00
7–8	4.00	2.50
8–9	3.75	2.50
9–10	3.75	2.00
10–11	3.50	2.00
11–12	3.25	2.00
12–13	2.75	2.00
13–14	2.50	1.80
14–15	2.50	1.60
15–16	2.25	1.50
16–17	2.25	1.40
17–18	2.00	1.30
18–19	2.00	1.20
19–20	1.50	1.00
20 and over	1.50	0.50

The member is assumed to receive the greater of a refund of member contributions or the present value of a deferred retirement benefit.

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

Section 4: Actuarial Valuation Basis

Retirement rates

Retirement Rates (%) – General

Age	Tier 1 Enhanced: Less than 30 Years of Service	Tier 1 Enhanced: 30 or More Years of Service	Tier 3 Enhanced: Less than 30 Years of Service	Tier 3 Enhanced: 30 or More Years of Service	Tier 1 Non-Enhanced	Tier 4 and Tier 5
49	0.00	0.00	0.00	25.00	0.00	0.00
50	4.00	10.00	4.00	10.00	3.00	0.00
51	4.00	10.00	3.00	5.00	3.00	0.00
52	4.00	10.00	3.00	5.00	3.00	2.00
53	4.00	10.00	4.00	5.00	3.00	3.00
54	10.00	16.00	6.00	11.00	3.00	3.00
55	15.00	24.00	8.00	15.00	10.00	4.00
56	15.00	24.00	8.00	10.00	10.00	5.00
57	15.00	24.00	8.00	10.00	10.00	6.00
58	15.00	22.00	9.00	15.00	10.00	6.00
59	18.00	22.00	10.00	15.00	10.00	8.00
60	20.00	20.00	12.00	15.00	25.00	8.00
61	20.00	20.00	16.00	20.00	15.00	12.00
62	25.00	30.00	20.00	25.00	40.00	15.00
63	25.00	30.00	20.00	25.00	35.00	17.00
64	25.00	30.00	25.00	28.00	30.00	20.00
65	35.00	35.00	30.00	32.00	40.00	25.00
66	40.00	40.00	32.00	32.00	35.00	25.00
67	40.00	40.00	30.00	30.00	35.00	25.00
68	40.00	40.00	30.00	30.00	35.00	25.00
69	40.00	40.00	30.00	30.00	35.00	25.00
70	40.00	40.00	35.00	35.00	40.00	35.00
71	35.00	35.00	35.00	35.00	40.00	35.00
72	35.00	35.00	35.00	35.00	40.00	35.00
73	35.00	35.00	35.00	35.00	50.00	35.00
74	35.00	35.00	35.00	35.00	50.00	35.00
75 and over	100.00	100.00	100.00	100.00	100.00	100.00

Section 4: Actuarial Valuation Basis

Retirement Rates (%) – Safety

Age	Tier A Enhanced: Less than 30 Years of Service	Tier A Enhanced: 30 or More Years of Service	Tier C Enhanced	Tier A Non- Enhanced and Tier D and Tier E
45	7.00	7.00	2.00	0.00
46	5.00	5.00	1.00	0.00
47	7.00	7.00	4.00	0.00
48	10.00	30.00	4.00	0.00
49	22.00	30.00	12.00	0.00
50	22.00	30.00	20.00	5.00
51	22.00	22.00	18.00	4.00
52	16.00	20.00	15.00	4.00
53	16.00	22.00	15.00	5.00
54	16.00	24.00	18.00	6.00
55	16.00	30.00	18.00	15.00
56	18.00	30.00	15.00	15.00
57	18.00	30.00	15.00	15.00
58	20.00	35.00	25.00	15.00
59	20.00	35.00	25.00	20.00
60	20.00	35.00	25.00	20.00
61	20.00	35.00	25.00	20.00
62	20.00	35.00	25.00	20.00
63	25.00	35.00	30.00	20.00
64	35.00	35.00	35.00	25.00
65 and over	100.00	100.00	100.00	100.00

Section 4: Actuarial Valuation Basis

Inactive members

Current and Future Inactive Member Assumptions

Category	% of Future ¹ Deferred Vested Members	Annual Salary Increases from Separation Date	Retirement Age
General with reciprocity	40%	3.50%	60
General without reciprocity	60%	N/A	60
Safety with reciprocity	70%	4.00%	53
Safety without reciprocity	30%	N/A	51

Future benefit accruals

1.0 year of service per year for full-time employees. Continuation of current partial service accrual for part-time employees.

Unknown data for members

- Same as those exhibited by members with similar known characteristics.
- If not specified, members are assumed to be male.

Definition of active members

All active members of CCCERA as of the valuation date.

Form of payment

- All active and inactive members are assumed to elect the unmodified option at retirement.
- There is no explicit assumption for children's benefits.

¹ CCCERA provides the reciprocity status for current deferred vested members in the valuation census data.

Section 4: Actuarial Valuation Basis

Spousal assumptions

Current Active and Inactive Member Spousal Assumptions

Member Gender	% with Spouse at Retirement or Pre-Retirement Death	Spouse Age	Spouse Gender
Male member	65%	3 years younger than member	Female
Female member	50%	2 years older than member	Male

Offsets by other plans of the employer for disability benefits

The Plan requires members who retire because of disability from General Tier 3 and General Tier 5 to offset the Plan's disability benefits with other Plans of the employer. We have not assumed any offsets in this valuation.

Section 4: Actuarial Valuation Basis

Leave cashout

General Tier 1, Tier 2 and Tier 3 & Safety Tier A and Tier C

Leave Cashout as Percentage of Final Average Pay

Cost Group	Leave Cashout
Cost Group 1	1.00%
Cost Group 2	0.50% for Tier 2 0.75% for Tier 3
Cost Group 3	5.25%
Cost Group 4	1.00%
Cost Group 5	1.00%
Cost Group 6	0.00%
Cost Group 7	0.50%
Cost Group 8	0.25%
Cost Group 9	0.00%
Cost Group 10	0.25%
Cost Group 11	3.00%
Cost Group 12	1.75%
Withdrawn Employers	0.00%

General Tier 4 and Tier 5 & Safety Tier D and Tier E

None.

Section 4: Actuarial Valuation Basis

Service from accumulated sick leave

Additional Service Converted from Accumulated Sick Leave

Retirement Type and Membership Group	Converted Sick Leave as % of Service at Retirement
Service Retirements	
General	1.00%
Safety	1.70%
Disability Retirements	
General	0.06%
Safety	1.00%

Pursuant to Section 31641.01, the cost of this benefit for the non-PEPRA tiers will be charged only to employers and will not affect member contribution rates.

Actuarial cost method

Entry Age Actuarial Cost Method.

Entry age is the age on the valuation date minus the lesser of years of employment or benefit 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 (i.e., “replacement life within a tier”).

Actuarial value of assets

Market value of assets less unrecognized returns in each of the last nine semi-annual accounting 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.

Valuation value of assets

The actuarial value of assets reduced by the value of the non-valuation reserves and designations.

Section 4: Actuarial Valuation Basis

Amortization policy

The UAAL as of December 31, 2014 is amortized over separate amortization layers based on the valuations during which each separate layer was previously established.

- Any new UAAL as a result of actuarial gains or losses identified in the annual valuation as of December 31 will be amortized over a period of 18 years.¹
- Any new UAAL as a result of change in actuarial assumptions or methods will be amortized over a period of 18 years.
- Unless the Board adopts an alternative amortization period after receiving an actuarial analysis:
 - With the exception noted below, the increase in UAAL as a result of any plan amendments will be amortized over a period of 10 years;
 - The entire increase in UAAL resulting from a temporary retirement incentive will be funded in full upon adoption of the incentive. If the increase in UAAL is due to the impact of benefits resulting from additional service permitted in Section 31641.04 of the 1937 CERL (Golden Handshake), the entire increase in UAAL will be funded in full upon adoption of the Golden Handshake.

The UAAL will be amortized over “closed” amortization periods so that the amortization period for each layer decreases by one year with each actuarial valuation.

The UAAL will be amortized as a level percentage of payroll so that the amortization amount in each year during the amortization period shall be expected to be a level percentage of covered payroll, taking into consideration the current payroll growth assumption.

If an overfunding or “surplus” exists (i.e., the VVA exceeds the AAL, so that the total of all UAAL amortization layers becomes negative), any prior UAAL amortization layers will be considered fully amortized, and any subsequent UAAL will be amortized as the first of a new series of amortization layers, using the above amortization periods.

If the surplus exceeds 20% of the AAL per Section 7522.52 of the Government Code, then the amount of surplus in excess of 20% of the AAL (and any subsequent surpluses in excess of that amount) will be amortized over an “open” amortization period of 30 years, but only if the other conditions of Section 7522.52 have also been met. If those conditions are not met, then the surplus will not be amortized and the full normal cost will be contributed.

These amortization policy components will generally apply separately to each of CCCERA’s UAAL cost groups with the exception that the conditions of Section 7522.52 apply to the total plan.

¹ Starting with the December 31, 2023 valuation, the Board approved an adjustment to the remaining amortization periods for certain amortization layers in order to minimize the contribution rate tail volatility associated with the UAAL layers established as of December 31, 2012 through December 31, 2018. This is done by setting the remaining amortization period for those UAAL layers to six years in the 2023 valuation.

Section 4: Actuarial Valuation Basis

Employer contributions

The recommended employer contributions are provided in *Section 2, Subsection F*.

Employer contributions consist of two components:

1. 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.

2. 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 (or credits) are scheduled to increase at the current payroll growth assumption.

The amortization policy is described under the "Amortization policy" noted above.

General Tier 4 (2% COLA)

The General Tier 4 (2% COLA) membership tier in Cost Group 1 continues to not have any actual members as of December 31, 2023. The contribution rates for this cost group have been developed in this valuation assuming that the demographic profiles (e.g., entry age, composition of male versus female, etc.) for this cost group can be approximated by the data profiles of current active members within the PEPRA tiers.

Section 4: Actuarial Valuation Basis

Member contributions

The member contribution rates for all members are provided in *Section 4, Exhibit 3*.

Non-PEPRA 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-PEPRA General and Safety members, respectively. The member's basic contribution rate is determined so that, if paid annually from a member's first year of membership through the prescribed retirement age, would accumulate to the amount necessary to fund an annuity that is equal to:

- 1/120 of one year Final Average Salary per year of service at age 55 for General Tier 1 and Tier 3 Non-Enhanced members
- 1/100 of one year Final Average Salary per year of service at age 50 for Safety Tier A Non-Enhanced members
- 1/120 of one year Final Average Salary per year of service at age 60 for General Tier 1 and Tier 3 Enhanced members
- 1/100 of one year Final Average Salary per year of service at age 50 for Safety Tier A Enhanced members
- 1/100 of three year Final Average Salary per year of service at age 50 for Safety Tier C Enhanced members

Members also pay 50% of the cost-of-living benefit and all member contributions are accumulated at an annual interest rate adopted annually by the Board.

- Note that recently negotiated MOU's for County General members no longer include the 50% employer subvention of the members' basic contributions.
- Districts pay varying portions of the members' basic contributions on a nonrefundable basis.
- For most Safety Tier A employers, Safety members also subvent a portion of the employer rate, currently up to 9% of compensation (depending on their MOU).

Effective with the December 31, 2014 valuation, for determining the cost of the total benefit (i.e., basic and COLA components), the leave cashout assumptions are recognized in the valuation as an employer and member cost. Prior to the December 31, 2014 valuation, for determining the cost of the basic benefit (i.e., non-COLA component), the leave cashout assumptions were recognized in the valuation only as an employer cost and did not affect member contribution rates. In other words, the leave cashout assumptions were only used in establishing COLA member contribution rates.

Section 4: Actuarial Valuation Basis

As a result of including the leave cashout assumptions in the basic member rates for the members of each specific cost group, the COLA member rates are no longer pooled across all members of the same tier. This results in twelve different sets of member contribution rates for each specific cost group.

PEPRA Members

Pursuant to Section 7522.30(a) of the Government Code, PEPRA members are required to contribute at least 50% of the normal cost rate. We have assumed that exactly 50% of the normal cost would be paid by PEPRA members. In addition, we have calculated the total normal cost rate for the PEPRA tiers to the nearest one fiftieth of one percent (i.e., the nearest even one-hundredth) as that will allow the normal cost rate to be shared exactly 50:50 without going beyond two decimal places.

The member contribution rates for all members are provided in *Section 4, Exhibit 3*.

Cost sharing adjustments

Starting with the December 31, 2009 Actuarial Valuation, the Board took action to depool CCCERA's assets, liabilities and normal cost by employer when determining employer contribution rates. The Board action included a review of experience back to December 31, 2002. This did not involve recalculation of any employer rates prior to December 31, 2009. However, it did involve reflecting the separate experience of the employers in each individual cost group back from December 31, 2002 through December 31, 2009. The cost groups are detailed in *Section 4, Exhibit 5*. In addition, the Board action called for a discontinuation of certain cost sharing adjustments for both member and employer contribution rates for General Tier 1 and Safety Tier A. Even under the depooling structure, there are a few remaining cost sharing arrangements. Here is a summary of the cost sharing arrangements that were implemented in the December 31, 2009 Actuarial Valuation:

- Smaller employers (less than 50 active members as of December 31, 2009) were pooled with the applicable County tier.
 - For the December 31, 2009 through December 31, 2018 valuations, Safety members from the East Contra Costa Fire Protection District were pooled with Safety members of the Contra Costa County Fire Protection District.
 - Starting with the December 31, 2019 valuation the Safety members from the East Contra Costa Fire Protection District were depooled from the Safety members of the Contra Costa Fire Protection District based on AAL.
 - Starting with the December 31, 2021 valuation the General and Safety members from the East Contra Costa Fire Protection District have become General and Safety members of Contra Costa Fire Protection District, effective with the July 1, 2022 annexation of East Contra Costa Fire Protection District into Contra Costa Fire Protection District.
- Due to a statutory requirement, the Superior Court was pooled with the County regardless of how many members the Court has.
- UAAL costs are pooled between Cost Group 1 and Cost Group 2 which represent General County and Small Districts.

Section 4: Actuarial Valuation Basis

- UAAL costs are pooled between Cost Group 7 and Cost Group 9 which represent Safety County.

Additional contribution rate adjustments

Adjustments are made to the UAAL amounts for Local Agency Formation Commission (LAFCO) and In-Home Supportive Services Authority (IHSS) to account for special contributions that have previously been made. These adjustments serve to reduce the UAAL contribution rate for these employers.

The outstanding balances of these adjustments as of December 31, 2023 are as follows:

Contribution Component	LAFCO General ¹	IHSS General
Basic	\$118,633	\$69,373
COLA	0	23,124

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 \$275,000 for 2024. 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-PEPRA benefits in excess of the limits may be paid through a qualified governmental excess plan that meets the requirements of Section 415(m).

¹ LAFCO made several UAAL prepayments in past valuations. Those prepayments have been amortized over 18 years from the date they were made and allocated to provide Basic and COLA rate credits based on the then current Basic and COLA UAAL rates before the prepayments. Effective with the December 31, 2022 valuation, we re-allocated the outstanding balance of those prepayment credits so that the COLA UAAL rate for LAFCO would be the same as the other employers in Cost Group 1.

Section 4: Actuarial Valuation Basis

Legal Counsel's review and interpretation of the law and regulations should be sought on any questions in this regard.

Contribution rates determined in this valuation have not been reduced for the Section 415 limitations. However, it is anticipated that PEPRA members will not be limited in the future due to the PEPRA compensation limit applied in the determination of their benefit. Actual limitations will result in actuarial gains as they occur.

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.

Justification for change in actuarial assumptions, methods or models

The following assumption has changed since the prior valuation. Previously this assumption was as follows:

Administrative expense (prior assumption)

1.13% of payroll allocated between the employer and member based on normal cost (before expenses) for the employer and member. This assumption is subject to change each year based on the actual administrative expenses as a percent of actual covered payroll during the calendar year ending on the valuation date.

Section 4: Actuarial Valuation Basis

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. 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.

Plan year

January 1 through December 31

Membership eligibility

- **General Tier 1**
 - General members hired before July 1, 1980 who elected not to transfer to Tier 2.
 - Certain General members with membership dates before January 1, 2013 hired by specific employers who did not adopt Tier 2 are placed in Tier 1.
- **General Tier 2**
 - Most General members hired on or after August 1, 1980 and all General members hired before July 1, 1980 and elected to transfer to Tier 2.
 - Effective October 1, 2002, for the County, Tier 2 was eliminated and all County employees (excluding CNA employees) in Tier 2 were placed in Tier 3.
 - Effective January 1, 2005, all CNA employees in Tier 2 were placed in Tier 3.
- **General Tier 3**
 - General members with membership dates before January 1, 2013 who were not placed in Tier 1 are placed in Tier 3.
- **General Tier 4 and Tier 5**
 - General members with membership dates on or after January 1, 2013 hired by specific employers who did not adopt Tier 2 are placed in Tier 4.
 - All other General members with membership dates on or after January 1, 2013 are placed in Tier 5.
 - These members are designated as PEPPRA members and are subject to the provisions of California Government Code 7522 et. seq.

Section 4: Actuarial Valuation Basis

- **Safety Tier A and Tier C**

- Safety members with membership dates before January 1, 2013.
- County Sheriff's Department Safety members hired on or after January 1, 2007, but before January 1, 2013 are placed in Safety Tier C Enhanced.

- **Safety Tier D and Tier E**

- Safety members with membership dates on or after January 1, 2013.
- Safety members from certain bargaining units are placed in Safety Tier E.
- These members are designated as PEPRAs and are subject to the provisions of California Government Code 7522 et. seq.

Final compensation for benefit determination

- **General Tier 1 and Tier 3 (non-disability) & Safety Tier A**

- Highest consecutive 12 months of compensation earnable. (§31462.1) (FAS1)

- **General Tier 2 and Tier 3 (disability) & Safety Tier C**

- Highest consecutive 36 months of compensation earnable. (§31462) (FAS3)

- **General Tier 4 and Tier 5 & Safety Tier D and Tier E**

- Highest consecutive 36 months of pensionable compensation. (§7522.10(c), §7522.32 and §7522.34) (FAS3)

Compensation Limit

- **General Tier 1, Tier 2 and Tier 3 & Safety Tier A and Tier C**

- For members with membership dates on or after January 1, 1996, compensation earnable is limited to Internal Revenue Code Section 401(a)(17).
- The limit is \$345,000 for calendar year 2024 and is indexed for inflation on an annual basis.

- **General Tier 4 and Tier 5 & Safety Tier D and Tier E**

- For members with membership dates on or after January 1, 2013, pensionable compensation is limited to California Government Code 7522.10(c).
- The limit is \$151,466 for calendar year 2024 (\$181,734, if not enrolled in Social Security) and is indexed for inflation on an annual basis.

Section 4: Actuarial Valuation Basis

Social Security primary insurance amount

- **General Tier 2**
 - Estimated Social Security award at age 62 assuming level future earnings. (PIA)

Service

Years of service are generally based on a member's employment during a period of time for which deductions are made from their compensation. Includes accumulated sick leave as of the date of retirement. (§31641.01) (Yrs)

A maximum of 30 years of service (Yrs30) is used in the Social Security offset portion of the General Tier 2 benefit formula.

Service retirement

Eligibility

- **General Tier 1, Tier 2, and Tier 3**
 - Age 50 with 10 years of service, or age 70 regardless of service or after 30 years of service regardless of age. (§31672)
- **General Tier 4 and Tier 5**
 - Age 52 with 5 years of service or age 70 regardless of service. (§7522.20(a) and §31672.3)
- **Safety Tier A and Tier C**
 - Age 50 with 10 years of service, or age 70 regardless of service or after 20 years of service regardless of age. (§31663.25)
- **Safety Tier D and Tier E**
 - Age 50 with 5 years of service or age 70 regardless of service. (§7522.25(a)) and §31672.3)

Section 4: Actuarial Valuation Basis

Benefit amount

The offsets shown in all benefit formulas only apply to members integrated with Social Security.

General Tier 1 and Tier 3 (Non-Enhanced) (§31676.11)

Retirement Age	Benefit Formula
50	$1.24\% \times (\text{FAS1} - \$1,400) \times \text{Yrs}$
55	$1.67\% \times (\text{FAS1} - \$1,400) \times \text{Yrs}$
60	$2.18\% \times (\text{FAS1} - \$1,400) \times \text{Yrs}$
62	$2.35\% \times (\text{FAS1} - \$1,400) \times \text{Yrs}$
65 and over	$2.61\% \times (\text{FAS1} - \$1,400) \times \text{Yrs}$

General Tier 1 and Tier 3 (Enhanced) (§31676.16)

Retirement Age	Benefit Formula ¹
50	$1.43\% \times (\text{FAS1} - \$1,400) \times \text{Yrs}$
55	$2.00\% \times (\text{FAS1} - \$1,400) \times \text{Yrs}$
60	$2.26\% \times (\text{FAS1} - \$1,400) \times \text{Yrs}$
62	$2.37\% \times (\text{FAS1} - \$1,400) \times \text{Yrs}$
65 and over	$2.42\% \times (\text{FAS1} - \$1,400) \times \text{Yrs}$

General Tier 2 (§31752)

Retirement Age	Benefit Formula
50	$0.83\% \times \text{FAS3} \times \text{Yrs} - 0.57\% \times \text{Yrs30} \times \text{PIA}$
55	$1.13\% \times \text{FAS3} \times \text{Yrs} - 0.87\% \times \text{Yrs30} \times \text{PIA}$
60	$1.43\% \times \text{FAS3} \times \text{Yrs} - 1.37\% \times \text{Yrs30} \times \text{PIA}$
62	$1.55\% \times \text{FAS3} \times \text{Yrs} - 1.67\% \times \text{Yrs30} \times \text{PIA}$
65 and over	$1.73\% \times \text{FAS3} \times \text{Yrs} - 1.67\% \times \text{Yrs30} \times \text{PIA}$

¹ For members previously covered under the non-enhanced §31676.11 formula, they are entitled to at least the benefits they could have received under §31676.11.

Section 4: Actuarial Valuation Basis

General Tier 4 and Tier 5 (§7522.20(a))

Retirement Age	Benefit Formula
52	$1.00\% \times \text{FAS3} \times \text{Yrs}$
55	$1.30\% \times \text{FAS3} \times \text{Yrs}$
60	$1.80\% \times \text{FAS3} \times \text{Yrs}$
62	$2.00\% \times \text{FAS3} \times \text{Yrs}$
65	$2.30\% \times \text{FAS3} \times \text{Yrs}$
67 and over	$2.50\% \times \text{FAS3} \times \text{Yrs}$

Safety Tier A (Non-Enhanced) (§31664)

Retirement Age	Benefit Formula
50	$2.00\% \times \text{FAS1} \times \text{Yrs}$
55 and over	$2.62\% \times \text{FAS1} \times \text{Yrs}$

Safety Tier A (Enhanced) (§31664.1)

Retirement Age	Benefit Formula
50 and over	$3.00\% \times \text{FAS1} \times \text{Yrs}$

Safety Tier C (Enhanced) (§31664.1)

Retirement Age	Benefit Formula
50 and over	$3.00\% \times \text{FAS3} \times \text{Yrs}$

Safety Tier D and Tier E (§7522.25(d))

Retirement Age	Benefit Formula
50	$2.00\% \times \text{FAS3} \times \text{Yrs}$
55	$2.50\% \times \text{FAS3} \times \text{Yrs}$
57 and over	$2.70\% \times \text{FAS3} \times \text{Yrs}$

Section 4: Actuarial Valuation Basis

Maximum benefit

- **General Tier 1 and Tier 3 & Safety Tier A and Tier C**
 - 100% of final compensation. (§31676.11, §31676.16, §31664, §31664.1)
- **General Tier 2, Tier 4 and Tier 5 & Safety Tier D and Tier E**
 - None.

Non-service-connected disability

Eligibility

- **General Tier 1 and Tier 4 & Safety**
 - Five years of service. (§31720)
- **General Tier 2, Tier 3 and Tier 5**
 - Ten years of service. (§31720.1)

Benefit amount

- **General Tier 1 and Tier 4**
 - 1.5% per year of service.
 - If the benefit does not exceed one-third of final compensation, the service is projected to age 65, but the total projected benefit cannot be more than one-third of final compensation. (§31727)
 - If the member is eligible to receive a service retirement benefit, 100% of the service retirement benefit will be paid if greater than the above.
- **General Tier 2, Tier 3 and Tier 5**
 - 40% of final compensation plus 10% of final compensation used in the benefit determination for each minor child (maximum of three). (§31727.01)
 - If the member is eligible to receive a service retirement benefit, 100% of the service retirement benefit will be paid if greater than the above.

Section 4: Actuarial Valuation Basis

- **Safety**

- 1.8% per year of service.
- If the benefit does not exceed one-third of final compensation, the service is projected to age 55, but the total projected benefit cannot be more than one-third of final compensation. (§31727.2)
- If the member is eligible to receive a service retirement benefit, 100% of the service retirement benefit will be paid if greater than the above.

Offset

- **General Tier 1 and Tier 4 & Safety**

- None.

- **General Tier 2, Tier 3 and Tier 5**

- Disability benefits are offset by other plans of the employer except Workers Compensation and Social Security.

Service-connected disability

Eligibility

No age or service requirements. (§31720)

Benefit amount

- **General Tier 1 and Tier 4 & Safety**

- 50% of the final compensation. (§31727.4)
- If the member is eligible to receive a service retirement benefit, 100% of the service retirement benefit will be paid if greater than the above.

- **General Tier 2, Tier 3 and Tier 5**

- 40% of final compensation plus 10% of final compensation for each minor child (maximum of three). (§31727.01)
- If the member is eligible to receive a service retirement benefit, 100% of the service retirement benefit will be paid if greater than the above.

Section 4: Actuarial Valuation Basis

Offset

- **General Tier 1 and Tier 4 & Safety**
 - None.
- **General Tier 2, Tier 3 and Tier 5**
 - Disability benefits are offset by other plans of the Employer except Workers Compensation and Social Security.

Pre-retirement death

Basic death benefit

Eligibility

None.

Benefit amount

- **General Tier 1, Tier 3, Tier 4 and Tier 5 & Safety**
 - 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)
- **General Tier 2**
 - Refund of employee contributions with interest, plus \$2,000 lump sum benefit offset by any Social Security payment. (§31781.01)

Optional death allowance

Eligibility

- **General Tier 1 and Tier 4 & Safety**
 - Five years of service.
- **General Tier 2, Tier 3 and Tier 5**
 - Ten years of service.

Section 4: Actuarial Valuation Basis

Benefit amount (non-service connected death)

Option 2 (100% continuance) of non-service connected disability benefit (or service retirement benefit, if eligible) payable to designated beneficiary.

Benefit amount (service-connected death)

- **General Tier 1, Tier 3, Tier 4 and Tier 5 & Safety**

- 50% of final compensation payable to spouse. (§31787)
- If the member is eligible to receive a service retirement benefit, 100% of the service retirement benefit will be paid if greater than the above.

- **General Tier 2**

- 60% of service or disability retirement benefit (minimum benefit is 24% of final compensation) plus, for each minor child, 10% of the allowance otherwise paid to the member.
- Family benefit has a minimum of 60% of the member's allowance and a maximum of 100% of member's allowance.

Post-retirement death

Service retirement or non-service connected disability retirement

- **General Tier 1, Tier 3, Tier 4 and Tier 5 & Safety**

- Unless another option was selected at retirement, 60% of member's unmodified allowance continues to eligible spouse.
 - An eligible spouse is a surviving spouse who was married to the member at least one year prior to the member's retirement or at least two years prior to the date of death and has attained age 55 on or prior to the date of death. (§31760.2)
 - An additional lump sum benefit of \$5,000 is payable to the member's beneficiary. (§31789.5)

- **General Tier 2**

- Unless another option was selected at retirement, 60% of member's unmodified allowance continues to eligible spouse plus 20% of allowance to each minor child. (§31789.11)
 - Maximum benefit is 100% of allowance.
 - An additional lump sum benefit of \$5,000 (§31789.5) plus \$2,000 less any Social Security lump sum payment (§31789.01) are payable to the member's beneficiary.

Section 4: Actuarial Valuation Basis

Service-connected disability

- **General Tier 1, Tier 3, Tier 4 and Tier 5 & Safety**

- Unless another option was selected at retirement, 100% of member's allowance continued to eligible spouse. (§31786)
 - An additional lump sum benefit of \$5,000 is payable to the member's beneficiary. (§31789.5)

- **General Tier 2**

- Unless another option was selected at retirement, 60% of member's unmodified allowance continues to eligible spouse plus 20% of allowance to each minor child. (§31789.11)
 - Maximum benefit is 100% of allowance.
 - An additional lump sum benefit of \$5,000 (§31789.5) plus \$2,000 less any Social Security lump sum payment (§31789.01) are payable to the member's beneficiary.

Leaving before retirement

- **Less than five years of service**

- Refund of accumulated employee contributions with interest or earned benefit at age 70. (§31628)

- **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 adjustments

- **General Tier 1, Tier 3 (non-disability), Tier 4 and Tier 5 (non-disability) & Safety Tier A and Tier D**

- Future changes based on Consumer Price Index to a maximum of 3% per year, excess "banked".

- **General Tier 2, Tier 3 (disability) and Tier 5 (disability)**

- Future changes based on Consumer Price Index to a maximum of 4% per year, excess "banked".

- **General Tier 4 and Tier 5 (under certain MOUs) & Safety Tier C and Tier E**

- Future changes based on Consumer Price Index to a maximum of 2% per year, excess "banked".

Section 4: Actuarial Valuation Basis

Member contributions

Please refer to *Section 4, Exhibit 3* for specific rates.

- **General Tier 1 and Tier 3 (Non-Enhanced)**
 - **Basic:** Entry-age based rates that provide for one-half of the \$31676.11 benefit payable at age 55.
 - **Cost-of-Living:** Entry-age based rates that provide for one-half of future cost-of-living costs.
- **General Tier 1 and Tier 3 (Enhanced)**
 - **Basic:** Entry-age based rates that provide for an annuity at age 60 equal to 1/120 of FAS1.
 - **Cost-of-Living:** Entry-age based rates that provide for one-half of future cost-of-living costs.
- **General Tier 4 and Tier 5**
 - 50% of the total normal cost rate.
- **Safety Tier A (Non-Enhanced)**
 - **Basic:** Entry-age based rates that provide for one-half of the \$31664 benefit payable at age 50.
 - **Cost-of-Living:** Entry-age based rates that provide for one-half of future cost-of-living costs.
- **Safety Tier A (Enhanced)**
 - **Basic:** Entry-age based rates that provide for an annuity at age 50 equal to 1/100 of FAS1.
 - **Cost-of-Living:** Entry-age based rates that provide for one-half of future cost-of-living costs.
- **Safety Tier C (Enhanced)**
 - **Basic:** Entry-age based rates that provide for an annuity at age 50 equal to 1/100 of FAS3.
 - **Cost-of-Living:** Entry-age based rates that provide for one-half of future cost-of-living costs.
- **Safety Tier D and Tier E**
 - 50% of the total normal cost rate.

Section 4: Actuarial Valuation Basis

Other information

- Transfers from Tier 1 to Tier 2 were made on an individual voluntary irrevocable basis.
 - Credit is given under Tier 2 for future service only.
 - The cost-of-living adjustment maximum is 4% only for the credit under Tier 2.
 - Transferred Tier 2 members keep the five-year requirement for non-service connected disability.
- Those who were members on or before March 7, 1973 and Safety members with membership dates on or before January 1, 2013 will be exempt from paying member contributions after 30 years of service.

Plan provisions not valued

- Additional \$5,000 lump sum post-retirement death benefit (except for \$2,000 for General Tier 2 members paid out of the valuation value of assets) payable to a member's beneficiary.
 - This benefit is paid from a reserve that is not included in the valuation value of assets and is subject at all times to the availability of funds.

Changes in Plan provisions

There have been no changes in Plan provisions since the prior valuation.

Section 4: Actuarial Valuation Basis

Exhibit 3: Member contribution rates

Cost Group 1 (General) – Member Contribution Rates (Membership before January 1, 2013)
 (% of Monthly Payroll)

Entry Age	Basic First \$350	Basic Over \$350	COLA First \$350	COLA Over \$350	Total First \$350	Total Over \$350
15	3.81%	5.45%	1.87%	2.81%	5.68%	8.26%
16	3.87%	5.55%	1.91%	2.87%	5.78%	8.42%
17	3.94%	5.65%	1.95%	2.93%	5.89%	8.58%
18	4.01%	5.75%	1.99%	2.98%	6.00%	8.73%
19	4.07%	5.85%	2.03%	3.04%	6.10%	8.89%
20	4.14%	5.95%	2.07%	3.10%	6.21%	9.05%
21	4.21%	6.06%	2.11%	3.16%	6.32%	9.22%
22	4.29%	6.17%	2.15%	3.22%	6.44%	9.39%
23	4.35%	6.27%	2.19%	3.28%	6.54%	9.55%
24	4.43%	6.39%	2.23%	3.35%	6.66%	9.74%
25	4.51%	6.50%	2.27%	3.41%	6.78%	9.91%
26	4.58%	6.61%	2.31%	3.47%	6.89%	10.08%
27	4.66%	6.73%	2.36%	3.54%	7.02%	10.27%
28	4.74%	6.85%	2.41%	3.61%	7.15%	10.46%
29	4.82%	6.97%	2.45%	3.68%	7.27%	10.65%
30	4.91%	7.10%	2.50%	3.75%	7.41%	10.85%
31	4.99%	7.22%	2.55%	3.82%	7.54%	11.04%
32	5.07%	7.35%	2.59%	3.89%	7.66%	11.24%
33	5.16%	7.48%	2.65%	3.97%	7.81%	11.45%
34	5.25%	7.62%	2.70%	4.05%	7.95%	11.67%
35	5.35%	7.76%	2.75%	4.13%	8.10%	11.89%
36	5.44%	7.90%	2.81%	4.21%	8.25%	12.11%
37	5.53%	8.04%	2.86%	4.29%	8.39%	12.33%
38	5.63%	8.19%	2.91%	4.37%	8.54%	12.56%
39	5.74%	8.35%	2.97%	4.46%	8.71%	12.81%
40	5.84%	8.50%	3.03%	4.55%	8.87%	13.05%

Section 4: Actuarial Valuation Basis

Entry Age	Basic First \$350	Basic Over \$350	COLA First \$350	COLA Over \$350	Total First \$350	Total Over \$350
41	5.94%	8.65%	3.09%	4.64%	9.03%	13.29%
42	6.05%	8.81%	3.15%	4.73%	9.20%	13.54%
43	6.15%	8.96%	3.21%	4.81%	9.36%	13.77%
44	6.25%	9.12%	3.27%	4.90%	9.52%	14.02%
45	6.36%	9.28%	3.33%	4.99%	9.69%	14.27%
46	6.47%	9.44%	3.39%	5.09%	9.86%	14.53%
47	6.57%	9.60%	3.45%	5.18%	10.02%	14.78%
48	6.68%	9.76%	3.51%	5.27%	10.19%	15.03%
49	6.77%	9.90%	3.57%	5.35%	10.34%	15.25%
50	6.87%	10.05%	3.62%	5.43%	10.49%	15.48%
51	6.98%	10.21%	3.69%	5.53%	10.67%	15.74%
52	7.09%	10.37%	3.75%	5.62%	10.84%	15.99%
53	7.19%	10.53%	3.81%	5.71%	11.00%	16.24%
54	7.29%	10.67%	3.86%	5.79%	11.15%	16.46%
55	7.38%	10.81%	3.91%	5.87%	11.29%	16.68%
56	7.45%	10.92%	3.95%	5.93%	11.40%	16.85%
57	7.45%	10.91%	3.95%	5.92%	11.40%	16.83%
58	7.41%	10.85%	3.93%	5.89%	11.34%	16.74%
59 and over	7.25%	10.61%	3.83%	5.75%	11.08%	16.36%

Interest: 6.75% per annum

Mortality: See *Section 4, Exhibit 1*

Salary increase: Inflation (2.50%) + Across-the-Board Increase (0.50%) + Merit (See *Section 4, Exhibit 1*)

Administrative expense: 0.52% of payroll added to Basic rates

Leave cashout: 1.00%

COLA loading factor: 57.02%, applied to Basic rates prior to adjustment for administrative expenses, based on 2.75% assumed COLA.

Section 4: Actuarial Valuation Basis

Cost Group 2 (General) – Member Contribution Rates (Membership before January 1, 2013) (% of Monthly Payroll)

Entry Age	Basic First \$350	Basic Over \$350	COLA First \$350	COLA Over \$350	Total First \$350	Total Over \$350
15	3.80%	5.44%	1.63%	2.45%	5.43%	7.89%
16	3.87%	5.54%	1.67%	2.50%	5.54%	8.04%
17	3.93%	5.64%	1.70%	2.55%	5.63%	8.19%
18	4.00%	5.74%	1.73%	2.60%	5.73%	8.34%
19	4.07%	5.84%	1.77%	2.65%	5.84%	8.49%
20	4.13%	5.94%	1.80%	2.70%	5.93%	8.64%
21	4.21%	6.05%	1.83%	2.75%	6.04%	8.80%
22	4.27%	6.15%	1.87%	2.80%	6.14%	8.95%
23	4.35%	6.26%	1.91%	2.86%	6.26%	9.12%
24	4.42%	6.37%	1.94%	2.91%	6.36%	9.28%
25	4.49%	6.48%	1.98%	2.97%	6.47%	9.45%
26	4.57%	6.60%	2.02%	3.03%	6.59%	9.63%
27	4.65%	6.72%	2.06%	3.09%	6.71%	9.81%
28	4.73%	6.84%	2.10%	3.15%	6.83%	9.99%
29	4.81%	6.96%	2.14%	3.21%	6.95%	10.17%
30	4.89%	7.08%	2.17%	3.26%	7.06%	10.34%
31	4.98%	7.21%	2.22%	3.33%	7.20%	10.54%
32	5.07%	7.34%	2.26%	3.39%	7.33%	10.73%
33	5.15%	7.47%	2.31%	3.46%	7.46%	10.93%
34	5.24%	7.60%	2.35%	3.52%	7.59%	11.12%
35	5.33%	7.74%	2.39%	3.59%	7.72%	11.33%
36	5.43%	7.88%	2.44%	3.66%	7.87%	11.54%
37	5.53%	8.03%	2.49%	3.74%	8.02%	11.77%
38	5.62%	8.17%	2.54%	3.81%	8.16%	11.98%
39	5.72%	8.32%	2.59%	3.88%	8.31%	12.20%
40	5.83%	8.48%	2.64%	3.96%	8.47%	12.44%

Section 4: Actuarial Valuation Basis

Entry Age	Basic First \$350	Basic Over \$350	COLA First \$350	COLA Over \$350	Total First \$350	Total Over \$350
41	5.93%	8.63%	2.69%	4.04%	8.62%	12.67%
42	6.03%	8.79%	2.75%	4.12%	8.78%	12.91%
43	6.13%	8.94%	2.79%	4.19%	8.92%	13.13%
44	6.24%	9.10%	2.85%	4.27%	9.09%	13.37%
45	6.35%	9.26%	2.90%	4.35%	9.25%	13.61%
46	6.45%	9.42%	2.95%	4.43%	9.40%	13.85%
47	6.56%	9.58%	3.01%	4.51%	9.57%	14.09%
48	6.66%	9.73%	3.05%	4.58%	9.71%	14.31%
49	6.77%	9.89%	3.11%	4.66%	9.88%	14.55%
50	6.86%	10.03%	3.15%	4.73%	10.01%	14.76%
51	6.97%	10.19%	3.21%	4.81%	10.18%	15.00%
52	7.07%	10.35%	3.26%	4.89%	10.33%	15.24%
53	7.17%	10.50%	3.31%	4.97%	10.48%	15.47%
54	7.27%	10.64%	3.36%	5.04%	10.63%	15.68%
55	7.35%	10.77%	3.40%	5.10%	10.75%	15.87%
56	7.41%	10.86%	3.43%	5.15%	10.84%	16.01%
57	7.45%	10.91%	3.45%	5.17%	10.90%	16.08%
58	7.41%	10.86%	3.43%	5.15%	10.84%	16.01%
59 and over	7.05%	10.32%	3.25%	4.88%	10.30%	15.20%

Interest:	6.75% per annum
Mortality:	See <i>Section 4, Exhibit 1</i>
Salary increase:	Inflation (2.50%) + Across-the-Board Increase (0.50%) + Merit (See <i>Section 4, Exhibit 1</i>)
Administrative expense:	0.52% of payroll added to Basic rates
Leave cashout:	0.75%
COLA loading factor:	49.77%, applied to Basic rates prior to adjustment for administrative expenses, based on 2.75% assumed COLA.

Section 4: Actuarial Valuation Basis

Cost Group 3 (General) — Member Contribution Rates (Membership before January 1, 2013) (% of Monthly Payroll)

Entry Age	Basic	COLA	Total
15	5.66%	2.87%	8.53%
16	5.76%	2.92%	8.68%
17	5.86%	2.98%	8.84%
18	5.97%	3.04%	9.01%
19	6.07%	3.10%	9.17%
20	6.18%	3.16%	9.34%
21	6.29%	3.22%	9.51%
22	6.40%	3.28%	9.68%
23	6.51%	3.34%	9.85%
24	6.63%	3.41%	10.04%
25	6.75%	3.48%	10.23%
26	6.87%	3.54%	10.41%
27	6.99%	3.61%	10.60%
28	7.11%	3.68%	10.79%
29	7.24%	3.75%	10.99%
30	7.37%	3.82%	11.19%
31	7.50%	3.89%	11.39%
32	7.63%	3.97%	11.60%
33	7.77%	4.04%	11.81%
34	7.91%	4.12%	12.03%
35	8.05%	4.20%	12.25%
36	8.20%	4.28%	12.48%
37	8.35%	4.37%	12.72%
38	8.50%	4.45%	12.95%
39	8.66%	4.54%	13.20%
40	8.82%	4.63%	13.45%

Section 4: Actuarial Valuation Basis

Entry Age	Basic	COLA	Total
41	8.98%	4.72%	13.70%
42	9.14%	4.81%	13.95%
43	9.30%	4.90%	14.20%
44	9.46%	4.99%	14.45%
45	9.62%	5.08%	14.70%
46	9.79%	5.17%	14.96%
47	9.95%	5.26%	15.21%
48	10.11%	5.35%	15.46%
49	10.26%	5.43%	15.69%
50	10.42%	5.52%	15.94%
51	10.57%	5.61%	16.18%
52	10.71%	5.68%	16.39%
53	10.87%	5.77%	16.64%
54	11.02%	5.86%	16.88%
55	11.18%	5.95%	17.13%
56	11.23%	5.97%	17.20%
57	11.19%	5.95%	17.14%
58	11.05%	5.87%	16.92%
59 and over	10.50%	5.57%	16.07%

Interest:	6.75% per annum
Mortality:	See <i>Section 4, Exhibit 1</i>
Salary increase:	Inflation (2.50%) + Across-the-Board Increase (0.50%) + Merit (See <i>Section 4, Exhibit 1</i>)
Administrative expense:	0.50% of payroll added to Basic rates
Leave cashout:	5.25%
COLA loading factor:	55.78%, applied to Basic rates prior to adjustment for administrative expenses, based on 2.75% assumed COLA.

Section 4: Actuarial Valuation Basis

Cost Group 4 (General) – Member Contribution Rates (Membership before January 1, 2013) (% of Monthly Payroll)

Entry Age	Basic First \$350	Basic Over \$350	COLA First \$350	COLA Over \$350	Total First \$350	Total Over \$350
15	3.81%	5.45%	1.82%	2.73%	5.63%	8.18%
16	3.87%	5.55%	1.86%	2.79%	5.73%	8.34%
17	3.94%	5.65%	1.89%	2.84%	5.83%	8.49%
18	4.01%	5.75%	1.93%	2.90%	5.94%	8.65%
19	4.07%	5.85%	1.97%	2.95%	6.04%	8.80%
20	4.14%	5.95%	2.01%	3.01%	6.15%	8.96%
21	4.21%	6.06%	2.05%	3.07%	6.26%	9.13%
22	4.29%	6.17%	2.09%	3.13%	6.38%	9.30%
23	4.35%	6.27%	2.13%	3.19%	6.48%	9.46%
24	4.43%	6.39%	2.17%	3.25%	6.60%	9.64%
25	4.51%	6.50%	2.21%	3.31%	6.72%	9.81%
26	4.58%	6.61%	2.25%	3.38%	6.83%	9.99%
27	4.66%	6.73%	2.29%	3.44%	6.95%	10.17%
28	4.74%	6.85%	2.34%	3.51%	7.08%	10.36%
29	4.82%	6.97%	2.38%	3.57%	7.20%	10.54%
30	4.91%	7.10%	2.43%	3.65%	7.34%	10.75%
31	4.99%	7.22%	2.47%	3.71%	7.46%	10.93%
32	5.07%	7.35%	2.53%	3.79%	7.60%	11.14%
33	5.16%	7.48%	2.57%	3.86%	7.73%	11.34%
34	5.25%	7.62%	2.62%	3.93%	7.87%	11.55%
35	5.35%	7.76%	2.67%	4.01%	8.02%	11.77%
36	5.44%	7.90%	2.73%	4.09%	8.17%	11.99%
37	5.53%	8.04%	2.78%	4.17%	8.31%	12.21%
38	5.63%	8.19%	2.83%	4.25%	8.46%	12.44%
39	5.74%	8.35%	2.89%	4.34%	8.63%	12.69%
40	5.84%	8.50%	2.95%	4.42%	8.79%	12.92%

Section 4: Actuarial Valuation Basis

Entry Age	Basic First \$350	Basic Over \$350	COLA First \$350	COLA Over \$350	Total First \$350	Total Over \$350
41	5.94%	8.65%	3.01%	4.51%	8.95%	13.16%
42	6.05%	8.81%	3.06%	4.59%	9.11%	13.40%
43	6.15%	8.96%	3.12%	4.68%	9.27%	13.64%
44	6.25%	9.12%	3.18%	4.77%	9.43%	13.89%
45	6.36%	9.28%	3.23%	4.85%	9.59%	14.13%
46	6.47%	9.44%	3.29%	4.94%	9.76%	14.38%
47	6.57%	9.60%	3.35%	5.03%	9.92%	14.63%
48	6.68%	9.76%	3.41%	5.12%	10.09%	14.88%
49	6.77%	9.90%	3.47%	5.20%	10.24%	15.10%
50	6.87%	10.05%	3.52%	5.28%	10.39%	15.33%
51	6.98%	10.21%	3.58%	5.37%	10.56%	15.58%
52	7.09%	10.37%	3.64%	5.46%	10.73%	15.83%
53	7.19%	10.53%	3.70%	5.55%	10.89%	16.08%
54	7.29%	10.67%	3.75%	5.63%	11.04%	16.30%
55	7.38%	10.81%	3.80%	5.70%	11.18%	16.51%
56	7.45%	10.92%	3.84%	5.76%	11.29%	16.68%
57	7.45%	10.91%	3.84%	5.76%	11.29%	16.67%
58	7.41%	10.85%	3.81%	5.72%	11.22%	16.57%
59 and over	7.25%	10.61%	3.73%	5.59%	10.98%	16.20%

Interest:	6.75% per annum
Mortality:	See <i>Section 4, Exhibit 1</i>
Salary increase:	Inflation (2.50%) + Across-the-Board Increase (0.50%) + Merit (See <i>Section 4, Exhibit 1</i>)
Administrative expense:	0.52% of payroll added to Basic rates
Leave cashout:	1.00%
COLA loading factor:	55.42%, applied to Basic rates prior to adjustment for administrative expenses, based on 2.75% assumed COLA.

Section 4: Actuarial Valuation Basis

Cost Group 5 (General) — Member Contribution Rates (Membership before January 1, 2013) (% of Monthly Payroll)

Entry Age	Basic	COLA	Total
15	5.45%	3.10%	8.55%
16	5.55%	3.16%	8.71%
17	5.65%	3.22%	8.87%
18	5.75%	3.29%	9.04%
19	5.85%	3.35%	9.20%
20	5.95%	3.41%	9.36%
21	6.06%	3.48%	9.54%
22	6.17%	3.55%	9.72%
23	6.27%	3.61%	9.88%
24	6.39%	3.69%	10.08%
25	6.50%	3.76%	10.26%
26	6.61%	3.83%	10.44%
27	6.73%	3.90%	10.63%
28	6.85%	3.98%	10.83%
29	6.97%	4.05%	11.02%
30	7.10%	4.13%	11.23%
31	7.22%	4.21%	11.43%
32	7.35%	4.29%	11.64%
33	7.48%	4.37%	11.85%
34	7.62%	4.46%	12.08%
35	7.76%	4.55%	12.31%
36	7.90%	4.64%	12.54%
37	8.04%	4.73%	12.77%
38	8.19%	4.82%	13.01%
39	8.35%	4.92%	13.27%
40	8.50%	5.01%	13.51%

Section 4: Actuarial Valuation Basis

Entry Age	Basic	COLA	Total
41	8.65%	5.11%	13.76%
42	8.81%	5.21%	14.02%
43	8.96%	5.30%	14.26%
44	9.12%	5.40%	14.52%
45	9.28%	5.50%	14.78%
46	9.44%	5.61%	15.05%
47	9.60%	5.71%	15.31%
48	9.76%	5.81%	15.57%
49	9.90%	5.89%	15.79%
50	10.05%	5.99%	16.04%
51	10.21%	6.09%	16.30%
52	10.37%	6.19%	16.56%
53	10.53%	6.29%	16.82%
54	10.67%	6.38%	17.05%
55	10.81%	6.47%	17.28%
56	10.92%	6.54%	17.46%
57	10.91%	6.53%	17.44%
58	10.85%	6.49%	17.34%
59 and over	10.61%	6.34%	16.95%

Interest:	6.75% per annum
Mortality:	See <i>Section 4, Exhibit 1</i>
Salary increase:	Inflation (2.50%) + Across-the-Board Increase (0.50%) + Merit (See <i>Section 4, Exhibit 1</i>)
Administrative expense:	0.52% of payroll added to Basic rates
Leave cashout:	1.00%
COLA loading factor:	62.84%, applied to Basic rates prior to adjustment for administrative expenses, based on 2.75% assumed COLA.

Section 4: Actuarial Valuation Basis

Cost Group 6 (General) – Member Contribution Rates (Membership before January 1, 2013) (% of Monthly Payroll)

Entry Age	Basic First \$350	Basic Over \$350	COLA First \$350	COLA Over \$350	Total First \$350	Total Over \$350
15	4.31%	6.20%	1.73%	2.59%	6.04%	8.79%
16	4.38%	6.31%	1.76%	2.64%	6.14%	8.95%
17	4.45%	6.42%	1.79%	2.69%	6.24%	9.11%
18	4.53%	6.54%	1.83%	2.74%	6.36%	9.28%
19	4.61%	6.65%	1.86%	2.79%	6.47%	9.44%
20	4.69%	6.77%	1.90%	2.85%	6.59%	9.62%
21	4.77%	6.89%	1.93%	2.90%	6.70%	9.79%
22	4.85%	7.01%	1.97%	2.96%	6.82%	9.97%
23	4.93%	7.14%	2.01%	3.02%	6.94%	10.16%
24	5.02%	7.27%	2.05%	3.08%	7.07%	10.35%
25	5.11%	7.40%	2.09%	3.14%	7.20%	10.54%
26	5.19%	7.53%	2.13%	3.20%	7.32%	10.73%
27	5.28%	7.66%	2.17%	3.25%	7.45%	10.91%
28	5.37%	7.80%	2.21%	3.32%	7.58%	11.12%
29	5.47%	7.94%	2.25%	3.38%	7.72%	11.32%
30	5.57%	8.09%	2.30%	3.45%	7.87%	11.54%
31	5.67%	8.24%	2.35%	3.52%	8.02%	11.76%
32	5.77%	8.39%	2.39%	3.59%	8.16%	11.98%
33	5.87%	8.54%	2.44%	3.66%	8.31%	12.20%
34	5.97%	8.70%	2.49%	3.73%	8.46%	12.43%
35	6.08%	8.86%	2.53%	3.80%	8.61%	12.66%
36	6.19%	9.03%	2.59%	3.88%	8.78%	12.91%
37	6.29%	9.18%	2.63%	3.95%	8.92%	13.13%
38	6.41%	9.35%	2.68%	4.02%	9.09%	13.37%
39	6.51%	9.51%	2.73%	4.10%	9.24%	13.61%
40	6.63%	9.69%	2.79%	4.18%	9.42%	13.87%

Section 4: Actuarial Valuation Basis

Entry Age	Basic First \$350	Basic Over \$350	COLA First \$350	COLA Over \$350	Total First \$350	Total Over \$350
41	6.74%	9.85%	2.83%	4.25%	9.57%	14.10%
42	6.85%	10.01%	2.89%	4.33%	9.74%	14.34%
43	6.97%	10.19%	2.94%	4.41%	9.91%	14.60%
44	7.07%	10.34%	2.99%	4.48%	10.06%	14.82%
45	7.17%	10.50%	3.03%	4.55%	10.20%	15.05%
46	7.27%	10.65%	3.08%	4.62%	10.35%	15.27%
47	7.39%	10.83%	3.13%	4.70%	10.52%	15.53%
48	7.49%	10.98%	3.18%	4.77%	10.67%	15.75%
49	7.60%	11.14%	3.23%	4.84%	10.83%	15.98%
50	7.71%	11.31%	3.28%	4.92%	10.99%	16.23%
51	7.77%	11.39%	3.30%	4.95%	11.07%	16.34%
52	7.79%	11.43%	3.31%	4.97%	11.10%	16.40%
53	7.73%	11.33%	3.29%	4.93%	11.02%	16.26%
54 and over	7.47%	10.94%	3.17%	4.75%	10.64%	15.69%

Interest:	6.75% per annum
Mortality:	See <i>Section 4, Exhibit 1</i>
Salary increase:	Inflation (2.50%) + Across-the-Board Increase (0.50%) + Merit (See <i>Section 4, Exhibit 1</i>)
Administrative expense:	0.52% of payroll added to Basic rates
Leave cashout:	0.00%
COLA loading factor:	45.58%, applied to Basic rates prior to adjustment for administrative expenses, based on 2.75% assumed COLA.

Section 4: Actuarial Valuation Basis

Cost Group 7 (Safety) – Member Contribution Rates (Membership before January 1, 2013) (% of Monthly Payroll)

Entry Age	Basic	COLA	Total
15	9.92%	6.66%	16.58%
16	9.92%	6.66%	16.58%
17	9.92%	6.66%	16.58%
18	9.92%	6.66%	16.58%
19	9.92%	6.66%	16.58%
20	9.92%	6.66%	16.58%
21	9.92%	6.66%	16.58%
22	10.08%	6.78%	16.86%
23	10.23%	6.88%	17.11%
24	10.39%	7.00%	17.39%
25	10.55%	7.11%	17.66%
26	10.72%	7.23%	17.95%
27	10.89%	7.35%	18.24%
28	11.07%	7.48%	18.55%
29	11.25%	7.61%	18.86%
30	11.41%	7.72%	19.13%
31	11.57%	7.83%	19.40%
32	11.73%	7.95%	19.68%
33	11.91%	8.08%	19.99%
34	12.09%	8.20%	20.29%
35	12.27%	8.33%	20.60%
36	12.46%	8.47%	20.93%
37	12.67%	8.61%	21.28%
38	12.87%	8.76%	21.63%
39	13.08%	8.91%	21.99%
40	13.31%	9.07%	22.38%

Section 4: Actuarial Valuation Basis

Entry Age	Basic	COLA	Total
41	13.55%	9.24%	22.79%
42	13.80%	9.42%	23.22%
43	14.02%	9.57%	23.59%
44	14.19%	9.69%	23.88%
45	14.26%	9.74%	24.00%
46	14.30%	9.77%	24.07%
47	14.29%	9.76%	24.05%
48	14.11%	9.64%	23.75%
49 and over	13.65%	9.31%	22.96%

Interest: 6.75 % per annum

Mortality: See *Section 4, Exhibit 1*

Salary increase: Inflation (2.50%) + Across-the-Board Increase (0.50%) + Merit (See *Section 4, Exhibit 1*)

Administrative expense: 0.52% of payroll added to Basic rates

Leave cashout: 0.50%

COLA loading factor: 70.90%, applied to Basic rates prior to adjustment for administrative expenses, based on 2.75% assumed COLA.

Section 4: Actuarial Valuation Basis

Cost Group 8 (Safety) — Member Contribution Rates (Membership before January 1, 2013) (% of Monthly Payroll)

Entry Age	Basic	COLA	Total
15	9.90%	6.84%	16.74%
16	9.90%	6.84%	16.74%
17	9.90%	6.84%	16.74%
18	9.90%	6.84%	16.74%
19	9.90%	6.84%	16.74%
20	9.90%	6.84%	16.74%
21	9.90%	6.84%	16.74%
22	10.06%	6.96%	17.02%
23	10.21%	7.07%	17.28%
24	10.37%	7.19%	17.56%
25	10.53%	7.30%	17.83%
26	10.70%	7.43%	18.13%
27	10.87%	7.55%	18.42%
28	11.04%	7.68%	18.72%
29	11.22%	7.81%	19.03%
30	11.38%	7.92%	19.30%
31	11.54%	8.04%	19.58%
32	11.71%	8.17%	19.88%
33	11.88%	8.29%	20.17%
34	12.06%	8.42%	20.48%
35	12.25%	8.56%	20.81%
36	12.44%	8.70%	21.14%
37	12.64%	8.84%	21.48%
38	12.85%	9.00%	21.85%
39	13.06%	9.15%	22.21%
40	13.28%	9.31%	22.59%

Section 4: Actuarial Valuation Basis

Entry Age	Basic	COLA	Total
41	13.53%	9.49%	23.02%
42	13.76%	9.66%	23.42%
43	13.97%	9.81%	23.78%
44	14.16%	9.95%	24.11%
45	14.22%	10.00%	24.22%
46	14.24%	10.01%	24.25%
47	14.31%	10.06%	24.37%
48	13.97%	9.81%	23.78%
49 and over	13.68%	9.60%	23.28%

Interest:	6.75% per annum
Mortality:	See <i>Section 4, Exhibit 1</i>
Salary increase:	Inflation (2.50%) + Across-the-Board Increase (0.50%) + Merit (See <i>Section 4, Exhibit 1</i>)
Administrative expense:	0.52% of payroll added to Basic rates
Leave cashout:	0.25%
COLA loading factor:	72.97%, applied to Basic rates prior to adjustment for administrative expenses, based on 2.75% assumed COLA.

Section 4: Actuarial Valuation Basis

Cost Group 9 (Safety) – Member Contribution Rates (Membership before January 1, 2013) (% of Monthly Payroll)

Entry Age	Basic	COLA	Total
15	9.52%	4.19%	13.71%
16	9.52%	4.19%	13.71%
17	9.52%	4.19%	13.71%
18	9.52%	4.19%	13.71%
19	9.52%	4.19%	13.71%
20	9.52%	4.19%	13.71%
21	9.52%	4.19%	13.71%
22	9.67%	4.26%	13.93%
23	9.82%	4.33%	14.15%
24	9.97%	4.40%	14.37%
25	10.13%	4.48%	14.61%
26	10.29%	4.55%	14.84%
27	10.45%	4.63%	15.08%
28	10.61%	4.70%	15.31%
29	10.77%	4.77%	15.54%
30	10.92%	4.84%	15.76%
31	11.07%	4.91%	15.98%
32	11.23%	4.99%	16.22%
33	11.40%	5.07%	16.47%
34	11.57%	5.15%	16.72%
35	11.74%	5.23%	16.97%
36	11.92%	5.31%	17.23%
37	12.11%	5.40%	17.51%
38	12.30%	5.49%	17.79%
39	12.50%	5.58%	18.08%
40	12.70%	5.67%	18.37%

Section 4: Actuarial Valuation Basis

Entry Age	Basic	COLA	Total
41	12.90%	5.77%	18.67%
42	13.07%	5.85%	18.92%
43	13.16%	5.89%	19.05%
44	13.23%	5.92%	19.15%
45	13.20%	5.91%	19.11%
46	13.07%	5.85%	18.92%
47	12.80%	5.72%	18.52%
48	13.21%	5.91%	19.12%
49 and over	13.72%	6.15%	19.87%

Interest: 6.75% per annum

Mortality: See *Section 4, Exhibit 1*

Salary increase: Inflation (2.50%) + Across-the-Board Increase (0.50%) + Merit (See *Section 4, Exhibit 1*)

Administrative expense: 0.52% of payroll added to Basic rates

Leave cashout: 0.00%

COLA loading factor: 46.58%, applied to Basic rates prior to adjustment for administrative expenses, based on 2.00% assumed COLA.

Section 4: Actuarial Valuation Basis

Cost Group 10 (Safety) – Member Contribution Rates (Membership before January 1, 2013) (% of Monthly Payroll)

Entry Age	Basic	COLA	Total
15	9.90%	6.68%	16.58%
16	9.90%	6.68%	16.58%
17	9.90%	6.68%	16.58%
18	9.90%	6.68%	16.58%
19	9.90%	6.68%	16.58%
20	9.90%	6.68%	16.58%
21	9.90%	6.68%	16.58%
22	10.06%	6.79%	16.85%
23	10.21%	6.90%	17.11%
24	10.37%	7.01%	17.38%
25	10.53%	7.12%	17.65%
26	10.70%	7.25%	17.95%
27	10.87%	7.37%	18.24%
28	11.04%	7.49%	18.53%
29	11.22%	7.62%	18.84%
30	11.38%	7.73%	19.11%
31	11.54%	7.84%	19.38%
32	11.71%	7.96%	19.67%
33	11.88%	8.08%	19.96%
34	12.06%	8.21%	20.27%
35	12.25%	8.35%	20.60%
36	12.44%	8.48%	20.92%
37	12.64%	8.63%	21.27%
38	12.85%	8.78%	21.63%
39	13.06%	8.92%	21.98%
40	13.28%	9.08%	22.36%

Section 4: Actuarial Valuation Basis

Entry Age	Basic	COLA	Total
41	13.53%	9.26%	22.79%
42	13.76%	9.42%	23.18%
43	13.97%	9.57%	23.54%
44	14.16%	9.71%	23.87%
45	14.22%	9.75%	23.97%
46	14.24%	9.76%	24.00%
47	14.31%	9.81%	24.12%
48	13.97%	9.57%	23.54%
49 and over	13.68%	9.37%	23.05%

Interest:	6.75% per annum
Mortality:	See <i>Section 4, Exhibit 1</i>
Salary increase:	Inflation (2.50%) + Across-the-Board Increase (0.50%) + Merit (See <i>Section 4, Exhibit 1</i>)
Administrative expense:	0.52% of payroll added to Basic rates
Leave cashout:	0.25%
COLA loading factor:	71.17%, applied to Basic rates prior to adjustment for administrative expenses, based on 2.75% assumed COLA.

Section 4: Actuarial Valuation Basis

Cost Group 11 (Safety) – Member Contribution Rates (Membership before January 1, 2013) (% of Monthly Payroll)

Entry Age	Basic	COLA	Total
15	10.15%	6.94%	17.09%
16	10.15%	6.94%	17.09%
17	10.15%	6.94%	17.09%
18	10.15%	6.94%	17.09%
19	10.15%	6.94%	17.09%
20	10.15%	6.94%	17.09%
21	10.15%	6.94%	17.09%
22	10.31%	7.06%	17.37%
23	10.47%	7.17%	17.64%
24	10.63%	7.29%	17.92%
25	10.80%	7.41%	18.21%
26	10.97%	7.54%	18.51%
27	11.14%	7.66%	18.80%
28	11.32%	7.79%	19.11%
29	11.50%	7.92%	19.42%
30	11.66%	8.03%	19.69%
31	11.83%	8.16%	19.99%
32	12.00%	8.28%	20.28%
33	12.18%	8.41%	20.59%
34	12.36%	8.54%	20.90%
35	12.54%	8.67%	21.21%
36	12.74%	8.81%	21.55%
37	12.95%	8.96%	21.91%
38	13.15%	9.11%	22.26%
39	13.37%	9.27%	22.64%
40	13.59%	9.42%	23.01%

Section 4: Actuarial Valuation Basis

Entry Age	Basic	COLA	Total
41	13.84%	9.61%	23.45%
42	14.08%	9.78%	23.86%
43	14.30%	9.94%	24.24%
44	14.47%	10.06%	24.53%
45	14.53%	10.10%	24.63%
46	14.53%	10.10%	24.63%
47	14.55%	10.12%	24.67%
48	14.25%	9.90%	24.15%
49 and over	13.67%	9.48%	23.15%

Interest: 6.75% per annum

Mortality: See *Section 4, Exhibit 1*

Salary increase: Inflation (2.50%) + Across-the-Board Increase (0.50%) + Merit (See *Section 4, Exhibit 1*)

Administrative expense: 0.52% of payroll added to Basic rates

Leave cashout: 3.00%

COLA loading factor: 72.11%, applied to Basic rates prior to adjustment for administrative expenses, based on 2.75% assumed COLA.

Section 4: Actuarial Valuation Basis

Cost Group 12 (Safety) – Member Contribution Rates (Membership before January 1, 2013) (% of Monthly Payroll)

Entry Age	Basic	COLA	Total
15	10.04%	5.33%	15.37%
16	10.04%	5.33%	15.37%
17	10.04%	5.33%	15.37%
18	10.04%	5.33%	15.37%
19	10.04%	5.33%	15.37%
20	10.04%	5.33%	15.37%
21	10.04%	5.33%	15.37%
22	10.19%	5.42%	15.61%
23	10.35%	5.50%	15.85%
24	10.51%	5.59%	16.10%
25	10.68%	5.69%	16.37%
26	10.84%	5.78%	16.62%
27	11.02%	5.88%	16.90%
28	11.19%	5.98%	17.17%
29	11.37%	6.08%	17.45%
30	11.54%	6.17%	17.71%
31	11.70%	6.26%	17.96%
32	11.87%	6.36%	18.23%
33	12.05%	6.46%	18.51%
34	12.22%	6.55%	18.77%
35	12.41%	6.66%	19.07%
36	12.61%	6.77%	19.38%
37	12.81%	6.88%	19.69%
38	13.01%	6.99%	20.00%
39	13.23%	7.12%	20.35%
40	13.45%	7.24%	20.69%

Section 4: Actuarial Valuation Basis

Entry Age	Basic	COLA	Total
41	13.69%	7.38%	21.07%
42	13.95%	7.52%	21.47%
43	14.15%	7.63%	21.78%
44	14.31%	7.72%	22.03%
45	14.42%	7.78%	22.20%
46	14.38%	7.76%	22.14%
47	14.42%	7.78%	22.20%
48	14.18%	7.65%	21.83%
49 and over	13.49%	7.26%	20.75%

Interest: 6.75% per annum

Mortality: See *Section 4, Exhibit 1*

Salary increase: Inflation (2.50%) + Across-the-Board Increase (0.50%) + Merit (See *Section 4, Exhibit 1*)

Administrative expense: 0.52% of payroll added to Basic rates

Leave cashout: 1.75%

COLA loading factor: 56.00%, applied to Basic rates prior to adjustment for administrative expenses, based on 2.75% assumed COLA.

Section 4: Actuarial Valuation Basis

Cost Groups 1 through 6 (General) — Member Contribution Rates (Membership on or After January 1, 2013) (% of Monthly Payroll)

Cost Group	Basic	COLA	Total
Cost Group 1 — PEPRA Tier 4 (2% COLA)	9.09%	2.09%	11.18%
Cost Group 1 — PEPRA Tier 4 (3% COLA)	9.59%	3.22%	12.81%
Cost Group 2 — PEPRA Tier 5 (2% COLA)	8.48%	1.90%	10.38%
Cost Group 2 — PEPRA Tier 5 (3%/4% COLA)	8.48%	2.81%	11.29%
Cost Group 3 — PEPRA Tier 4 (3% COLA)	8.54%	2.98%	11.52%
Cost Group 4 — PEPRA Tier 4 (3% COLA)	9.17%	3.07%	12.24%
Cost Group 5 — PEPRA Tier 4 (2% COLA)	10.08%	2.31%	12.39%
Cost Group 5 — PEPRA Tier 4 (3% COLA)	11.31%	3.83%	15.14%
Cost Group 6 — PEPRA Tier 4 (3% COLA)	10.18%	3.41%	13.59%

The PEPRA member contribution rates are 50% of the normal cost rate. The Basic rates shown above include an administrative expense load of 0.52% of payroll.

Note: It is our understanding that in the determination of pension benefits under the PEPRA formulas, the maximum compensation that can be taken into account should be limited by the compensation limit as noted in *Section 4, Exhibit 2* on page 129 (§7522.10). These amounts should be adjusted for changes to the Consumer Price Index for All Urban Consumers for future years (§7522.10(d)).

Section 4: Actuarial Valuation Basis

Cost Groups 7 through 12 (Safety) — Member Contribution Rates (Membership on or After January 1, 2013) (% of Monthly Payroll)

Cost Group	Basic	COLA	Total
Cost Group 7 — PEPRA Tier D	14.61%	6.05%	20.66%
Cost Group 8 — PEPRA Tier D	12.87%	5.42%	18.29%
Cost Group 8 — PEPRA Tier E	12.91%	3.61%	16.52%
Cost Group 9 — PEPRA Tier E	13.73%	3.80%	17.53%
Cost Group 10 — PEPRA Tier D	13.25%	5.59%	18.84%
Cost Group 11 — PEPRA Tier D	11.61%	4.91%	16.52%
Cost Group 12 — PEPRA Tier D	14.88%	6.05%	20.93%

The PEPRA member contribution rates are 50% of the normal cost rate. The Basic rates shown above include an administrative expense load of 0.52% of payroll.

Note: It is our understanding that in the determination of pension benefits under the PEPRA formulas, the maximum compensation that can be taken into account should be limited by the compensation limit as noted in *Section 4, Exhibit 2* on page 129 (§7522.10). These amounts should be adjusted for changes to the Consumer Price Index for All Urban Consumers for future years (§7522.10(d)).

Appendix A: Definition of Pension Terms

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

Term	Definition
Actuarial accrued liability for actives	The equivalent of the accumulated normal costs allocated to the years before the valuation date.
Actuarial accrued liability for retirees and beneficiaries	Actuarial present value of lifetime benefits to existing retirees 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. 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 actuarial liabilities that are larger than projected.
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	<p>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:</p> <p>Adjusted for the probable financial effect of certain intervening events (such as changes in compensation levels, marital status, etc.)</p> <p>Multiplied by the probability of the occurrence of an event (such as survival, death, disability, withdrawal, etc.) on which the payment is conditioned, and</p> <p>Discounted according to an assumed rate (or rates) of return to reflect the time value of money.</p>

Appendix A: Definition of Pension Terms

Term	Definition
Actuarial present value of future 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 benefits includes the liabilities for active members, retired members, beneficiaries receiving benefits, and inactive members entitled to either a refund of member contributions 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, as well as actuarially determined contributions.
Actuarial value of assets	The value of the Plan'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 actuarially determined contribution.
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 Plan.
Actuarially determined contribution	The employer's contributions, expressed as a dollar amount or a percentage of covered plan compensation, determined under the Plan's funding policy. The actuarially determined contribution 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 unfunded actuarial accrued liability. 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 unfunded actuarial accrued liability. 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 actuarially determined contribution, that is intended to pay off the unfunded actuarial accrued liability.

Appendix A: Definition of Pension Terms

Term	Definition
Assumptions or actuarial assumptions	The estimates upon which the cost of the Plan is calculated, including: Investment return — the rate of investment yield that the Plan will earn over the long-term future; Mortality rates — the rate or probability of death at a given age for employees and retirees; Retirement rates — the rate or probability of retirement at a given age or service; Disability rates — the rate or probability of disability retirement at a given age; Withdrawal rates — the rate or probability 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, real wage growth and merit and promotion increases.
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 20 years, it is 19 years at the end of one year, 18 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 based on the member’s compensation, age 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 Plan 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 based on recommendations from the Actuary.
Funded ratio	The ratio of the valuation value of assets to the actuarial accrued liability. Plans sometimes also calculate a market funded ratio, using the market value of assets, rather than the valuation value of assets.
GASB 67 and GASB 68	Governmental Accounting Standards Board (GASB) Statements No. 67 and No. 68. These are the governmental accounting standards that set the accounting rules for public retirement systems and the employers that sponsor or contribute to them. Statement No. 68 sets the accounting rules for the employers that sponsor or contribute to public retirement systems, while Statement No. 67 sets the rules for the systems themselves.

Appendix A: Definition of Pension Terms

Term	Definition
Investment return	The rate of earnings of the Plan from its investments, including interest, dividends and capital gain and loss adjustments, computed as a percentage of the average value of the fund. For actuarial purposes, the investment return often reflects a smoothing of the capital gains and losses to avoid significant swings in the value of assets from one year to the next.
Negative amortization	Negative amortization is a result of an increase in the unfunded actuarial accrued liability when the amortization payment is less than the interest accrued on the unfunded actuarial accrued liability.
Net pension liability	The net pension liability is equal to the total pension liability minus the plan fiduciary net position.
Normal cost	The portion of the actuarial present value of future benefits and expenses, if applicable, allocated to a valuation year by the actuarial cost method. Any payment with respect to an unfunded actuarial accrued liability is not part of the normal cost (see “amortization payment”). For pension plan benefits that are provided in part by employee contributions, normal cost refers to the total of member 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 each future year in determining the amortization period.
Plan fiduciary net position	Market value of assets.
Service costs	The portions of the actuarial present value of projected benefit payments that are attributed to valuation years.
Total pension liability	The actuarial accrued liability under the entry age normal cost method and based on the blended discount rate as described in GASB 67 and 68.
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 or an overfunded actuarial accrued liability.
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 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.

Appendix B: Non-Refundability Factors

Non-Refundability Factors as of December 31

Cost Group and Plan	2023 Legacy Tiers	2023 PEPRA Tiers	2022 Legacy Tiers	2022 PEPRA Tiers
General				
Cost Group 1 – County and Small Districts (Tier 1)	0.9680		0.9676	
• PEPRA Tier 4 (2% COLA)		0.9558		0.9567
• PEPRA Tier 4 (3% COLA)		0.9610		0.9611
Cost Group 2 – County and Small Districts (Tier 3)	0.9558		0.9559	
• PEPRA Tier 5 (2% COLA)		0.9558		0.9569
• PEPRA Tier 5 (3%/4% COLA)		0.9605		0.9610
Cost Group 3 – Central Contra Costa Sanitary District	0.9631	0.9678	0.9628	0.9685
Cost Group 4 – Contra Costa Housing Authority	0.9605	0.9614	0.9620	0.9633
Cost Group 5 – Contra Costa County Fire Protection District	0.9834		0.9773	
• PEPRA Tier 4 (2% COLA)		0.9581		0.9588
• PEPRA Tier 4 (3% COLA)		0.9582		0.9621
Cost Group 6 – Small Districts (Non-Enhanced Tiers 1 and 4)	0.9624	0.9532	0.9625	0.9508
Safety				
Cost Group 7 – County (Tiers A and D)	0.9717	0.9773	0.9710	0.9783
Cost Group 8 – Contra Costa Fire Protection District	0.9774		0.9762	
• PEPRA Tier D (3% COLA)		0.9793		0.9803
• PEPRA Tier E (2% COLA)		0.9799		0.9785
Cost Group 9 – County (Tiers C and E)	0.9712	0.9753	0.9712	0.9761
Cost Group 10 – Moraga-Orinda Fire District	0.9726	0.9780	0.9732	0.9781
Cost Group 11 – San Ramon Valley Fire District	0.9774	0.9808	0.9769	0.9804
Cost Group 12 – Rodeo-Hercules Fire Protection District	0.9809	0.9741	0.9824	0.9803

Appendix C: Summary of Cost Groups

General Cost Groups and Employers

Cost Group	Employer Name	Benefit Structure	Special Adjustment
1	County General	Tier 1 Enhanced/PEPRA Tier 4	
	Local Agency Formation Commission (LAFCO)	Tier 1 Enhanced/PEPRA Tier 4	Yes
	Contra Costa Mosquito and Vector Control District	Tier 1 Enhanced/PEPRA Tier 4	
	Bethel Island Municipal District (Non-Integrated)	Tier 1 Enhanced/PEPRA Tier 4	
	First 5-Children & Families Commission	Tier 1 Enhanced/PEPRA Tier 4	
	Contra Costa County Employees' Retirement Association	Tier 1 Enhanced/PEPRA Tier 4	
	Superior Court	Tier 1 Enhanced/PEPRA Tier 4	
	Moraga-Orinda Fire District (Non-Integrated)	Tier 1 Enhanced/PEPRA Tier 4	
	Rodeo-Hercules Fire Protection District (Non-Integrated)	Tier 1 Enhanced/PEPRA Tier 4	
	San Ramon Valley Fire District (Non-Integrated)	Tier 1 Enhanced/PEPRA Tier 4	
2	County General	Tier 3 Enhanced/PEPRA Tier 5	
	In-Home Supportive Services Authority (IHSS)	Tier 3 Enhanced/PEPRA Tier 5	Yes
	Contra Costa Mosquito and Vector Control District	Tier 3 Enhanced/PEPRA Tier 5	
	Superior Court	Tier 3 Enhanced/PEPRA Tier 5	
3	Central Contra Costa Sanitary District (Non-Integrated) (CCCSD)	Tier 1 Enhanced/PEPRA Tier 4	
4	Contra Costa Housing Authority	Tier 1 Enhanced/PEPRA Tier 4	
5	Contra Costa County Fire Protection District (Non-Integrated) (CCCFPD)	Tier 1 Enhanced/PEPRA Tier 4	
6	Rodeo Sanitary District	Tier 1 Non-Enhanced/PEPRA Tier 4	
	Byron Brentwood Cemetery	Tier 1 Non-Enhanced/PEPRA Tier 4	

Appendix C: Summary of Cost Groups

Safety Cost Groups and Employers

Cost Group	Employer Name	Benefit Structure	Special Adjustment
7	County Safety	Tier A Enhanced/PEPRA Tier D	
8	Contra Costa County Fire Protection District (CCCFPD)	Tier A Enhanced/PEPRA Tier D/E	
9	County Safety ¹	Tier C Enhanced/PEPRA Tier E	
10	Moraga-Orinda Fire District	Tier A Enhanced/PEPRA Tier D	
11	San Ramon Valley Fire District	Tier A Enhanced/PEPRA Tier D	
12	Rodeo-Hercules Fire Protection District	Tier A Non-Enhanced/PEPRA Tier D	

Note: A special adjustment is made for employers that have a remaining balance of special contributions as described on page 126.

¹ Members hired on or after January 1, 2007.

Appendix D: Allocation of Valuation Assets

Cost Groups 1 through 5 – Cashflow for January 1, 2023 to December 31, 2023

Line Description	Cost Groups 1 & 2	Cost Group 3	Cost Group 4	Cost Group 5
1. Allocated VVA as of beginning of year	\$6,122,172,306	\$493,608,669	\$70,907,252	\$63,031,950
2. Asset transfer ¹	(1,996,529)	174,259	0	(524,739)
3. Allocated VVA after asset transfer 1 + 2	\$6,120,175,777	\$493,782,928	\$70,907,252	\$62,507,211
4. Total contributions ² January – June	146,370,598	4,294,082	1,777,619	1,964,911
<i>a. Member contributions</i>	43,383,380	2,109,190	384,021	495,250
<i>b. Employer normal contributions</i>	102,987,219	2,184,892	1,393,598	1,469,661
<i>c. Employer special contributions</i>	0	0	0	0
5. Total benefit payments ³ January – June	166,618,439	12,575,905	1,989,484	2,116,999
6. Administrative expenses ⁴ January – June	5,339,173	268,660	45,407	52,607
7. Subtotal 3 + 4 – 5 – 6	\$6,094,588,764	\$485,232,445	\$70,649,980	\$62,302,516
8. Earnings allocated in proportion to 3	146,202,260	11,795,769	1,693,873	1,493,208
9. Allocated VVA as of middle of year 7 + 8	\$6,240,791,024	\$497,028,214	\$72,343,853	\$63,795,724
10. Total contributions ² July – December	154,610,453	6,009,736	1,813,773	2,154,561
<i>a. Member contributions</i>	44,213,242	2,577,956	389,819	535,709
<i>b. Employer normal contributions</i>	110,307,196	3,431,780	1,423,954	1,618,853
<i>c. Employer special contributions</i>	90,015	0	0	0
11. Total benefit payments ³ July – December	167,878,402	12,783,787	2,122,520	2,153,332
12. Administrative expenses ⁴ July – December	4,996,849	251,435	42,496	49,234
13. Subtotal 9 + 10 – 11 – 12	\$6,222,526,226	\$490,002,728	\$71,992,610	\$63,747,720
14. Earnings allocated in proportion to 9	177,687,431	14,151,358	2,059,770	1,816,388
15. Allocated VVA as of end of year 13 + 14	\$6,400,213,657	\$504,154,086	\$74,052,380	\$65,564,108

Note: Results may be slightly off due to rounding.

¹ Starting with the December 31, 2023 valuation, an asset amount equal to the actuarial accrued liability has been transferred for members who have moved between cost groups.

² Employer contributions include “member subvention of employer contributions” and exclude “employer subvention of member contributions”.

³ Excludes post-retirement death benefits.

⁴ Allocated based on expected administrative expenses from the prior valuation.

Appendix D: Allocation of Valuation Assets

Cost Groups 6 through 10 – Cashflow for January 1, 2023 to December 31, 2023

Line Description	Cost Group 6	Cost Groups 7 & 9	Cost Group 8	Cost Group 10
1. Allocated VVA as of beginning of year	\$8,911,002	\$2,224,164,010	\$1,085,162,619	\$193,367,236
2. Asset transfer ¹	0	1,808,641	847,837	0
3. Allocated VVA after asset transfer 1 + 2	\$8,911,002	\$2,225,972,651	\$1,086,010,456	\$193,367,236
4. Total contributions ² January – June	170,533	45,229,506	24,399,268	3,631,838
a. Member contributions	78,217	9,624,412	5,171,755	740,034
b. Employer normal contributions	92,316	35,605,094	19,227,514	2,891,804
c. Employer special contributions	0	0	0	0
5. Total benefit payments ³ January – June	204,418	59,361,762	33,104,572	6,893,808
6. Administrative expenses ⁴ January – June	7,355	759,236	401,525	59,672
7. Subtotal 3 + 4 – 5 – 6	\$8,869,761	\$2,211,081,159	\$1,076,903,627	\$190,045,594
8. Earnings allocated in proportion to 3	212,871	53,175,308	25,943,239	4,619,267
9. Allocated VVA as of middle of year 7 + 8	\$9,082,632	\$2,264,256,467	\$1,102,846,866	\$194,664,861
10. Total contributions ² July – December	239,626	51,874,391	29,256,604	4,431,641
a. Member contributions	106,610	10,824,869	6,098,665	838,016
b. Employer normal contributions	133,016	41,049,522	23,157,939	3,593,624
c. Employer special contributions	0	0	0	0
11. Total benefit payments ³ July – December	207,439	60,456,313	33,810,235	6,053,305
12. Administrative expenses ⁴ July – December	6,883	710,557	375,781	55,846
13. Subtotal 9 + 10 – 11 – 12	\$9,107,935	\$2,254,963,988	\$1,097,917,454	\$192,987,351
14. Earnings allocated in proportion to 9	258,600	64,467,775	31,400,190	5,542,486
15. Allocated VVA as of end of year 13 + 14	\$9,366,535	\$2,319,431,763	\$1,129,317,644	\$198,529,837

Note: Results may be slightly off due to rounding.

¹ Starting with the December 31, 2023 valuation, an asset amount equal to the actuarial accrued liability has been transferred for members who have moved between cost groups.

² Employer contributions include “member subvention of employer contributions” and exclude “employer subvention of member contributions”.

³ Excludes post-retirement death benefits.

⁴ Allocated based on expected administrative expenses from the prior valuation.

Appendix D: Allocation of Valuation Assets

Cost Groups 11 and 12, Withdrawn Employers and Total Plan – Cashflow for January 1, 2023 to December 31, 2023

Line Description	Cost Group 11	Cost Group 12	Withdrawn Employers	Total Plan
1. Allocated VVA as of beginning of year	\$502,547,644	\$45,955,440	\$51,993,934	\$10,861,822,062
2. Asset transfer ¹	42,401	(351,870)	0	0
3. Allocated VVA after asset transfer 1 + 2	\$502,590,045	\$45,603,570	\$51,993,934	\$10,861,822,062
4. Total contributions ² January – June	10,985,619	1,297,985	711,103	240,833,062
<i>a. Member contributions</i>	2,025,400	171,461	0	64,183,119
<i>b. Employer normal contributions</i>	8,960,219	1,126,524	0	175,938,840
<i>c. Employer special contributions</i>	0	0	711,103	711,103
5. Total benefit payments ³ January – June	13,354,902	1,370,645	2,576,695	300,167,629
6. Administrative expenses ⁴ January – June	167,111	15,549	0	7,116,295
7. Subtotal 3 + 4 – 5 – 6	\$500,053,651	\$45,515,361	\$50,128,342	\$10,795,371,200
8. Earnings allocated in proportion to 3	12,006,159	1,089,404	1,242,061	259,473,419
9. Allocated VVA as of middle of year 7 + 8	\$512,059,810	\$46,604,765	\$51,370,403	\$11,054,844,619
10. Total contributions ² July – December	12,342,774	1,588,296	96,763	264,418,618
<i>a. Member contributions</i>	2,121,876	213,734	0	67,920,494
<i>b. Employer normal contributions</i>	9,932,899	1,374,563	0	196,023,346
<i>c. Employer special contributions</i>	288,000	0	96,763	474,778
11. Total benefit payments ³ July – December	14,186,117	1,391,122	2,566,160	303,608,731
12. Administrative expenses ⁴ July – December	156,397	14,551	0	6,660,029
13. Subtotal 9 + 10 – 11 – 12	\$510,060,070	\$46,787,389	\$48,901,006	\$11,008,994,477
14. Earnings allocated in proportion to 9	14,579,336	1,326,928	1,191,915	314,482,177
15. Allocated VVA as of end of year 13 + 14	\$524,639,406	\$48,114,317	\$50,092,921	\$11,323,476,654

Note: Results may be slightly off due to rounding.

¹ Starting with the December 31, 2023 valuation, an asset amount equal to the actuarial accrued liability has been transferred for members who have moved between cost groups.

² Employer contributions include “member subvention of employer contributions” and exclude “employer subvention of member contributions”.

³ Excludes post-retirement death benefits.

⁴ Allocated based on expected administrative expenses from the prior valuation.

Appendix E: Recommended Employer Rates

The recommended employer contribution rates found on pages 34 through 42 have been shown on an aggregate basis. For purposes of preparing the contribution rate packet, we have included in this Appendix the recommended legacy tier employer contribution rates as of December 31, 2023 for employers who are in Social Security and for employers who are not in Social Security. For completeness, we have also included the PEPRA tier employer contribution rates.

Recommended Employer Contribution Rates – For use in Preparing the Contribution Rate Packet

Cost Group and Tier	Basic First \$350 Monthly ¹	Basic Excess of \$350 Monthly ¹	Basic All Eligible Pay ²	COLA First \$350 Monthly ¹	COLA Excess of \$350 Monthly ¹	COLA All Eligible Pay ²	Total First \$350 Monthly ¹	Total Excess of \$350 Monthly ¹	Total All Eligible Pay ²	All Aggregate Pay
Cost Group 1										
Tier 1 Non-LAFCO	15.36%	23.04%	22.80%	1.97%	2.96%	2.93%	17.33%	26.00%	25.73%	25.73%
Tier 1 LAFCO	12.18%	18.27%	N/A	1.98%	2.97%	N/A	14.16%	21.24%	N/A	21.03%
Tier 4 (3% COLA) Non-LAFCO	N/A	N/A	19.19%	N/A	N/A	2.47%	N/A	N/A	21.66%	21.66%
Tier 4 (3% COLA) LAFCO	N/A	N/A	14.49%	N/A	N/A	2.47%	N/A	N/A	16.96%	16.96%
Tier 4 (2% COLA)	N/A	N/A	18.69%	N/A	N/A	1.34%	N/A	N/A	20.03%	20.03%
Cost Group 2										
Tier 3 Non-IHSS	14.48%	21.72%	N/A	1.78%	2.66%	N/A	16.26%	24.38%	N/A	24.10%
Tier 3 IHSS	14.18%	21.26%	N/A	1.66%	2.50%	N/A	15.84%	23.76%	N/A	23.46%
Tier 5 (3%/4% COLA) Non-IHSS	N/A	N/A	18.08%	N/A	N/A	2.06%	N/A	N/A	20.14%	20.14%
Tier 5 (3%/4% COLA) IHSS	N/A	N/A	17.60%	N/A	N/A	1.90%	N/A	N/A	19.50%	19.50%
Tier 5 (2% COLA) Non-IHSS	N/A	N/A	18.08%	N/A	N/A	1.15%	N/A	N/A	19.23%	19.23%
Tier 5 (2% COLA) IHSS	N/A	N/A	17.60%	N/A	N/A	0.99%	N/A	N/A	18.59%	18.59%

¹ If employer is in Social Security.

² For legacy tier, applies to employer who is not in Social Security. For PEPRA tier, applies to all employers.

Appendix E: Recommended Employer Rates

Cost Group and Tier	Basic First \$350 Monthly ¹	Basic Excess of \$350 Monthly ¹	Basic All Eligible Pay ²	COLA First \$350 Monthly ¹	COLA Excess of \$350 Monthly ¹	COLA All Eligible Pay ²	Total First \$350 Monthly ¹	Total Excess of \$350 Monthly ¹	Total All Eligible Pay ²	All Aggregate Pay
Cost Group 3										
CCCSD Tier 1	N/A	N/A	14.66%	N/A	N/A	5.31%	N/A	N/A	19.97%	19.97%
CCCSD Tier 4 (3% COLA)	N/A	N/A	9.71%	N/A	N/A	4.41%	N/A	N/A	14.12%	14.12%
Cost Group 4										
Contra Costa Housing Authority Tier 1	14.76%	22.14%	N/A	5.29%	7.94%	N/A	20.05%	30.08%	N/A	29.65%
Contra Costa Housing Authority Tier 4 (3% COLA)	N/A	N/A	18.25%	N/A	N/A	7.18%	N/A	N/A	25.43%	25.43%
Cost Group 5										
CCCYPD Tier 1	N/A	N/A	28.53%	N/A	N/A	15.19%	N/A	N/A	43.72%	43.72%
CCCYPD Tier 4 (3% COLA)	N/A	N/A	24.14%	N/A	N/A	14.91%	N/A	N/A	39.05%	39.05%
CCCYPD Tier 4 (2% COLA)	N/A	N/A	22.91%	N/A	N/A	13.39%	N/A	N/A	36.30%	36.30%
Cost Group 6										
Non-Enhanced District Tier 1	8.60%	12.89%	N/A	2.54%	3.82%	N/A	11.14%	16.71%	N/A	16.57%
Non-Enhanced District Tier 4 (3% COLA)	N/A	N/A	10.31%	N/A	N/A	3.41%	N/A	N/A	13.72%	13.72%
Cost Group 7										
County Tier A	N/A	N/A	32.94%	N/A	N/A	27.59%	N/A	N/A	60.53%	60.53%
County Tier D	N/A	N/A	24.46%	N/A	N/A	26.16%	N/A	N/A	50.62%	50.62%
Cost Group 8										
CCCYPD Tier A	N/A	N/A	31.43%	N/A	N/A	35.72%	N/A	N/A	67.15%	67.15%
CCCYPD Tier D	N/A	N/A	20.21%	N/A	N/A	33.36%	N/A	N/A	53.57%	53.57%
CCCYPD Tier E	N/A	N/A	20.25%	N/A	N/A	31.55%	N/A	N/A	51.80%	51.80%

¹ If employer is in Social Security.

² For legacy tier, applies to employer who is not in Social Security. For PEPRA tier, applies to all employers.

Appendix E: Recommended Employer Rates

Cost Group and Tier	Basic First \$350 Monthly ¹	Basic Excess of \$350 Monthly ¹	Basic All Eligible Pay ²	COLA First \$350 Monthly ¹	COLA Excess of \$350 Monthly ¹	COLA All Eligible Pay ²	Total First \$350 Monthly ¹	Total Excess of \$350 Monthly ¹	Total All Eligible Pay ²	All Aggregate Pay
Cost Group 9										
County Tier C	N/A	N/A	31.59%	N/A	N/A	24.82%	N/A	N/A	56.41%	56.41%
County Tier E	N/A	N/A	23.58%	N/A	N/A	23.91%	N/A	N/A	47.49%	47.49%
Cost Group 10										
Moraga-Orinda FD Tier A	N/A	N/A	37.87%	N/A	N/A	56.07%	N/A	N/A	93.94%	93.94%
Moraga-Orinda FD Tier D	N/A	N/A	29.21%	N/A	N/A	54.40%	N/A	N/A	83.61%	83.61%
Cost Group 11										
San Ramon FD Tier A	N/A	N/A	34.43%	N/A	N/A	21.47%	N/A	N/A	55.90%	55.90%
San Ramon FD Tier D	N/A	N/A	22.06%	N/A	N/A	18.48%	N/A	N/A	40.54%	40.54%
Cost Group 12										
Rodeo-Hercules FPD Tier A	N/A	N/A	46.52%	N/A	N/A	32.08%	N/A	N/A	78.60%	78.60%
Rodeo-Hercules FPD Tier D	N/A	N/A	42.09%	N/A	N/A	31.18%	N/A	N/A	73.27%	73.27%

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¹ If employer is in Social Security.

² For legacy tier, applies to employer who is not in Social Security. For PEPRA tier, applies to all employers.