

Contra Costa County Employees' Retirement Association

Actuarial Valuation and Review

As of December 31, 2022



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

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July 27, 2023

Board of Retirement
Contra Costa County Employees' Retirement Association
1200 Concord Avenue, Suite 300
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Dear Board Members:

We are pleased to submit this Actuarial Valuation and Review as of December 31, 2022. It summarizes the actuarial data used in the valuation, analyzes the preceding year's experience, and establishes the funding requirements for fiscal year 2024-2025.

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

The actuarial calculations were directed under the supervision of 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. Further, in our opinion, the assumptions as approved by the Board are reasonably related to the experience of and the expectations for the Association.

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

Sincerely,

Segal

A handwritten signature in black ink, appearing to read "Paul Angelo", written over a horizontal line.

Paul Angelo, FSA, MAAA, FCA, EA
Senior Vice President and Actuary

A handwritten signature in black ink, appearing to read "Andy Yeung", written over a horizontal line.

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

AW/jl

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Section 1: Actuarial Valuation Summary

Purpose and Basis

This report was prepared by Segal to present a valuation of the Contra Costa County Employees' Retirement Association ("CCCERA" or "the Plan") as of December 31, 2022. The valuation was performed to determine whether the assets and contribution rates are sufficient to provide the prescribed benefits. The measurements shown in this actuarial valuation may not be applicable for other purposes. In particular, the measures herein are not necessarily appropriate for assessing the sufficiency of current Plan assets to cover the estimated cost of settling the Plan's accrued benefit obligations.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements; and changes in plan provisions or applicable law.

The contribution requirements presented in this report are based on:

- The benefit provisions of the Plan, as administered by the Board of Retirement;
- The characteristics of covered active members¹, inactive vested members, and retired members and beneficiaries as of December 31, 2022, provided by the Retirement Association;
- The assets of the Plan as of December 31, 2022, provided by CCCERA;
- Economic assumptions regarding future salary increases and investment earnings adopted by the Board for the December 31, 2022 valuation;
- Other actuarial assumptions regarding employee terminations, retirement, death, etc. adopted by the Board for the December 31, 2022 valuation and
- The funding policy adopted by the Board of Retirement.

¹ Similar to the disclosure we provided in our December 31, 2021 valuation report, the annual information for active members and, in particular, the service credit provided for active members was reported through November 30, 2022 instead of December 31, 2022. 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

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

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

The contribution requirements are determined as a percentage of payroll. The Association's employer rates provide for both Normal Cost and a contribution to amortize any unfunded or overfunded actuarial accrued liabilities. In this valuation, we have applied the funding policy adopted by the Board on February 26, 2014, and most recently amended on October 14, 2020. Details of the funding policy are provided in *Section 4, Exhibit 1* starting on page 110.

A schedule of current amortization balances and payments may be found in *Section 3, Exhibit I* starting on page 89. A graphical projection of the Unfunded Actuarial Accrued Liability (UAAL) amortization balances and payments has been included in *Section 3, Exhibit J* starting on page 104.

The rates calculated in this report may be adopted by the Board for the fiscal year that extends from July 1, 2024 through June 30, 2025.

Section 1: Actuarial Valuation Summary

Valuation Highlights

- Pgs. 89-103
1. As we pointed out in our December 31, 2021 valuation report, the UAAL amortization layers established December 31, 2007 related to the restart of amortization, as well as the Pension Obligation Bonds (POBs) issued by certain employers, have been fully amortized as of December 31, 2022. As information items, we have continued to show those layers in *Section 3, Exhibit I*, but with zero “Outstanding Balance” and “Years Remaining.”

As a result of the full amortization of these layers, there is a decrease in the UAAL contribution rate of about 7.4% of payroll for the plan in total in this December 31, 2022 valuation. However, it is important to note that this impact varies by Cost Group in this valuation. For example, those Cost Groups which had a credit at the restart of amortization, or those which issued POBs larger than their restart amortization experience an increase in their contribution rate as a result of the full amortization of those layers in this valuation.

- Pg. 44
2. The ratio of the Valuation Value of Assets to the Actuarial Accrued Liability decreased from 92.4% to 91.2%. This ratio is one measure of funding status, and its history is a measure of funding progress. The funded ratio measured on a market value basis decreased from 101.3% to 84.3%. These measurements are not necessarily appropriate for assessing the sufficiency of Plan assets to cover the estimated cost of settling the Plan’s benefit obligation or the need for, or the amount of, future contributions.

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Pgs. 89-103
3. The Association’s UAAL (which is based on the Valuation Value of Assets) increased from \$855 million as of December 31, 2021 to \$1,050 million as of December 31, 2022. The increase in UAAL is primarily due to an investment return on valuation value (i.e., after asset smoothing) less than the 6.75% assumed rate used in the December 31, 2021 valuation, individual salary increases greater than expected, and COLA increases greater than expected. A reconciliation of the Association’s UAAL is provided in *Section 2, Exhibit E*. A schedule of the current UAAL amortization amounts is provided in *Section 3, Exhibit I*. A graphical projection of the UAAL amortization bases and payments is provided in *Section 3, Exhibit J*.

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4. The net actuarial loss from investment and contribution experience is \$166.7 million, or 1.4% of actuarial accrued liability. The net experience loss from sources other than investment and contribution experience was \$183.3 million, or 1.5% of the actuarial accrued liability. This loss was primarily due to individual salary increases greater than expected and COLA increases greater than expected.

- Pg. 32
5. The average employer rate calculated in this valuation (excluding any employer subvention of member rates or member subvention of employer rates) has decreased from 35.55% of payroll to 30.01% of payroll. This decrease is primarily due to the net effect of the full amortization of the 2007 restart of amortization and the POBs issued by certain employers. That decrease was offset to some degree by an investment return on valuation value (i.e., after asset smoothing) less than the 6.75% assumed rate used in the December 31, 2021 valuation, individual salary increases greater than expected, and COLA increases greater than expected. A complete reconciliation of the Association’s aggregate employer rate is provided in *Section 2, Subsection F*.

Section 1: Actuarial Valuation Summary

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*.

Pg. 169 A schedule with the recommended employer contribution rates that will be used in preparing the contribution rate packet is provided in *Section 4, Exhibit 7*.

Pg. 33 6. The average member rate calculated in this valuation has increased from 12.17% of payroll to 12.18% of payroll due to changes in active member demographics. A complete reconciliation of the Association’s aggregate member rate is provided in *Section 2, Subsection F*.

The detailed member rates are provided in *Section 4, Exhibit 3* of this report. They are shown by cost group.

Pg. 25 7. The rate of return on the Market Value of Assets was -11.25% for the 2022 plan year. The return on the Valuation Value of Assets was 5.25% for the same period after considering the recognition of prior years’ investment gains and losses, as well as the markedly different returns during the first-half of 2022 (a market loss of -10.81%) and the second-half of 2022 (a market loss of -0.46%). This resulted in an actuarial loss when measured against the assumed rate of return of 6.75% used in the December 31, 2021 valuation. This investment loss after asset smoothing increased the average employer contribution rate by 1.11% of pay.

Pg. 163 8. Starting with the December 31, 2022 valuation, the Valuation Value of Assets for each Cost Group has now been rolled forward based on contributions, benefit payments and returns for each of the two six-month periods from December 31, 2021 to December 31, 2022. This is consistent with how CCCERA calculates interest crediting for the reserves every six months. When compared to the old method (which rolled forward the above amounts for the entire twelve-month period), the biggest difference for any Cost Group when expressed as a percentage of assets is less than 0.05%.

Pg. 22 9. The total unrecognized net investment loss as of December 31, 2022 is about \$825 million as compared to an unrecognized net investment gain of \$1,003 million in the previous valuation. This deferred net investment loss of \$825 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*.

The net deferred losses of \$825 million represent about 8.2% of the Market Value of Assets. Unless offset by future investment gains or other favorable experience, the recognition of the \$825 million net market losses 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 losses were recognized immediately in the valuation value of assets, the funded percentage would decrease from 91.2% to 84.3%.

For comparison purposes, if all the deferred gains in the December 31, 2021 valuation had been recognized immediately in the December 31, 2021 valuation, the funded percentage would have increased from 92.4% to 101.3%.

Section 1: Actuarial Valuation Summary

- b. If the net deferred losses were recognized immediately in the valuation value of assets, the average employer contribution rate would increase from 30.01% to about 35.87% of payroll.

For comparison purposes, if all the deferred gains in the December 31, 2021 valuation had been recognized immediately in the December 31, 2021 valuation, the average employer contribution rate would have decreased from 35.55% to 27.98% of payroll.

- 10. The actuarial valuation report as of December 31, 2022 is based on financial information as of that date. Changes in the value of assets subsequent to that date, to the extent that they exist, are not reflected. Declines in asset values will increase the actuarial cost of the plan, while increases will decrease the actuarial cost of the plan.
- 11. The assets provided for this valuation reflects additional UAAL contributions of \$3,344,437 made by East Contra Costa Fire Protection District (East Fire) as part of the East Fire's annexation into Contra Costa Fire Protection District (Con Fire) on June 30, 2022. As part of the December 31, 2021 valuation, this prepayment has been used to reduce Con Fire's UAAL contribution rates effective July 1, 2022 for Cost Groups #5 and #8. This valuation also reflects the \$279,000 additional contributions made by San Ramon Valley Fire Department towards its UAAL. This amount has been amortized as a level percent of pay (credit) over a period of eighteen years beginning with the December 31, 2022 valuation to reduce the employer UAAL contributions.
- 12. On July 30, 2020, the California Supreme Court issued a decision in the case of Alameda County Deputy Sheriffs' Association et al. v. Alameda County Employees' Retirement Association (ACERA) and Board of Retirement of ACERA. That decision has important implications for CCCERA and its members, in particular, the decision requires pension systems like CCCERA to exclude certain pay items from a legacy member's compensation earnable. It is our understanding that the CCCERA Board of Retirement has taken action to return member contributions that were previously made on certain terminal pay and on-call pay items impacting approximately 6,400 members, as well as to reduce the benefit of 7 retirees that had estoppel included in their retirement calculation (we note that the reduced benefits for the 7 retirees were reported starting with the December 31, 2021 valuation). We further understand that the assets as of December 31, 2022 now reflects the return of those member contributions.

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

The actuary's assessment can be qualitative or quantitative (e.g., based on numerical demonstrations). The actuary may use non-numerical methods for assessing risks that might take the form of commentary about potential adverse experience and the likely effect on future results. While the standard does not require that every valuation include a quantitative risk assessment, the actuary may recommend that a more detailed risk assessment be performed. When making that decision, the actuary will take into account

Section 1: Actuarial Valuation Summary

such factors as the Plan's design, maturity, size, funded status, asset allocation, cash flow, possible insolvency and current market conditions.

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. We have not been engaged to perform a detailed analysis of the potential range of the impact of risk relative to the Association's future financial condition, but have included a brief discussion of key risks that may affect the Association in *Section 2, Subsection J*. A more detailed assessment of the risks tailored to specific interests or concerns of the Board would provide the Board with a better understanding of the inherent risks and is recommended. This assessment would further discuss and highlight information and risks particular to CCCERA such as detailed historical experience and key events, growing plan maturity, heightened contribution sensitivity to asset and liability changes, and projected sensitivity to potential future investment returns through selected scenario or stress test projections.

14. 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 meets this standard.
15. This report constitutes an actuarial valuation for the purpose of determining the actuarially determined contribution under the Plan's funding policy and measuring the progress of that funding policy. The Net Pension Liability (NPL) and Pension Expense under Governmental Accounting Standards Board (GASB) Statements No. 67 and No. 68, for inclusion in the plan and employer's financial statements as of December 31, 2022, will be provided separately. The accounting disclosures will utilize different methodologies from those employed in the funding valuation, as required by the GASB. However, the actuarially determined contribution in this valuation is expected to be used as the actuarially determined contribution (ADC) for GASB financial reporting.
16. It is important to note that this actuarial valuation is based on plan assets as of December 31, 2022. The plan's funded status does not reflect short-term fluctuations of the market, but rather is based on the market values on the last day of the plan year. Moreover, this actuarial valuation does not include any possible short-term or long-term impacts on mortality of the covered population that may emerge after December 31, 2022 due to COVID-19. Segal is available to prepare projections of potential outcomes of market conditions and other demographic experience upon request.

Section 1: Actuarial Valuation Summary

Summary of Key Valuation Results

		December 31, 2022		December 31, 2021	
		Total Rate	Estimated Annual Dollar Amount ¹ (\$ in '000s)	Total Rate	Estimated Annual Dollar Amount ¹ (\$ in '000s)
Average Employer Contribution Rates:³	General				
	• Cost Group #1 – County and Small Districts (Tiers 1 and 4) ²	24.96%	\$5,878	33.98%	\$8,213
	• Cost Group #2 – County and Small Districts (Tiers 3 and 5)	22.35%	174,790	26.90%	198,951
	• Cost Group #3 – Central Contra Costa Sanitary District	16.56%	6,713	15.82%	6,179
	• Cost Group #4 – Contra Costa Housing Authority	28.28%	1,938	42.67%	2,817
	• Cost Group #5 – Contra Costa County Fire Protection District ²	38.80%	3,080	36.18%	2,715
	• Cost Group #6 – Small Districts (Non-Enhanced Tiers 1 and 4)	15.78%	175	16.11%	165
	Safety				
	• Cost Group #7 – County (Tiers A and D)	63.54%	\$31,326	75.47%	\$38,320
	• Cost Group #8 – Contra Costa Fire Protection District ²	66.96%	40,575	68.30%	35,149
	• Cost Group #9 – County (Tiers C and E)	53.35%	34,822	65.29%	39,307
	• Cost Group #10 – Moraga-Orinda Fire District	88.64%	7,982	78.11%	6,831
	• Cost Group #11 – San Ramon Valley Fire District	50.96%	12,851	82.92%	19,893
	• Cost Group #12 – Rodeo-Hercules Fire Protection District	89.35%	2,096	95.72%	2,561
All Categories Combined		30.01%	\$322,227	35.55%	\$361,100

Note: Pages 161 and 162 contain a summary that shows which employers are in each cost group.

¹ Based on projected compensation for each valuation date shown.

² The rates as of December 31, 2021 reflect the annexation of East Contra Costa County Fire Protection District into Contra Costa County Fire Protection District as well as the prepayment of \$3,344,437 towards their UAAL on June 30, 2022. This prepayment has been used to reduce the District's UAAL contribution rate effective July 1, 2022.

³ These rates do not include any employer subvention of member contributions or any member subvention of employer contributions.

Section 1: Actuarial Valuation Summary

Summary of Key Valuation Results (continued)

		December 31, 2022		December 31, 2021	
		Total Rate	Estimated Annual Dollar Amount ¹ (\$ in '000s)	Total Rate	Estimated Annual Dollar Amount ¹ (\$ in '000s)
Average Member Contribution Rates:²	General				
	• Cost Group #1 – County and Small Districts (Tiers 1 and 4)	11.44%	\$2,695	11.32%	\$2,736
	• Cost Group #2 – County and Small Districts (Tiers 3 and 5)	10.76%	84,160	10.79%	79,798
	• Cost Group #3 – Central Contra Costa Sanitary District	11.57%	4,691	11.58%	4,524
	• Cost Group #4 – Contra Costa Housing Authority	11.78%	807	11.82%	780
	• Cost Group #5 – Contra Costa County Fire Protection District	11.91%	946	11.96%	898
	• Cost Group #6 – Small Districts (Non-Enhanced Tiers 1 and 4)	13.75%	153	14.06%	144
	Safety				
	• Cost Group #7 – County (Tiers A and D)	18.83%	\$9,283	18.86%	\$9,576
	• Cost Group #8 – Contra Costa Fire Protection District	17.58%	10,652	17.59%	9,052
	• Cost Group #9 – County (Tiers C and E)	17.03%	11,116	16.91%	10,180
	• Cost Group #10 – Moraga-Orinda Fire District	18.41%	1,658	18.25%	1,596
	• Cost Group #11 – San Ramon Valley Fire District	16.88%	4,257	16.57%	3,975
	• Cost Group #12 – Rodeo-Hercules Fire Protection District	14.83%	348	12.54%	335
All Categories Combined		12.18%	\$130,764	12.17%	\$123,593

Note: Pages 161 and 162 contain a summary that shows which employers are in each cost group.

¹ Based on projected compensation for each valuation date shown.

² These rates do not include any employer subvention of member contributions or any member subvention of employer contributions.

Section 1: Actuarial Valuation Summary

Summary of Key Valuation Results (continued)

		December 31, 2022	December 31, 2021
Actuarial Accrued Liability as of December 31:	<ul style="list-style-type: none"> • Retired members and beneficiaries • Inactive vested members¹ • Active members • Total Actuarial Accrued Liability • Normal Cost for plan year beginning December 31² 	\$7,745,002,318 360,870,317 <u>3,806,356,245</u> \$11,912,228,880 \$296,628,244	\$7,301,323,228 333,053,458 <u>3,654,596,801</u> \$11,288,973,487 \$282,575,725
Assets as of December 31:	<ul style="list-style-type: none"> • Market Value of Assets (MVA) • Actuarial Value of Assets (AVA) • Actuarial Value of Assets as a percentage of MVA • Valuation Value of Assets (VVA) 	\$10,053,668,812 10,878,817,667 108.2% \$10,861,822,062	\$11,453,765,753 10,451,125,236 91.2% \$10,434,412,288
Funded Status as of December 31:	<ul style="list-style-type: none"> • Unfunded Actuarial Accrued Liability on MVA basis³ • Funded percentage on MVA basis⁹ • Unfunded Actuarial Accrued Liability on VVA basis • Funded percentage on VVA basis 	\$1,875,555,673 84.3% \$1,050,406,818 91.2%	\$(148,079,318) 101.3% \$854,561,199 92.4%
Key Assumptions:	<ul style="list-style-type: none"> • Net investment return • Price inflation • Payroll growth increase • Cost of living adjustments <ul style="list-style-type: none"> – Tiers with 3%/4% COLA – Tiers with 2% COLA 	6.75% 2.50% 3.00% 2.75% 2.00%	6.75% 2.50% 3.00% 2.75% 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 \$16,995,605 as of December 31, 2022 and \$16,712,948 as of December 31, 2021.

Section 1: Actuarial Valuation Summary

Summary of Key Valuation Results (continued)

		December 31, 2022	December 31, 2021	Change From Prior Year
Demographic Data	Active Members:			
as of December 31:	• Number of members	10,082	10,005	0.8%
	• Average age	46.1	46.3	-0.2
	• Average service	10.1	10.2	-0.1
	• Total projected compensation	\$1,073,886,785	\$1,015,755,387	5.7%
	• Average projected compensation	\$106,515	\$101,525	4.9%
	Retired Members and Beneficiaries:			
	• Number of members:			
	– Service retired	8,197	7,908	3.7%
	– Disability retired	874	885	-1.2%
	– Beneficiaries	<u>1,490</u>	<u>1,485</u>	0.3%
	– Total	10,561	10,278	2.8%
	• Average age	71.1	70.9	0.2
	• Average monthly benefit	\$4,466	\$4,353	2.6%
	Inactive Vested Members:			
	• Number of members ¹	3,974	3,812	4.2%
	• Average Age	46.5	46.6	-0.1
	Total Members:	24,617	24,095	2.2%

¹ Includes 2,183 inactive non-vested members with member contributions on deposit as of December 31, 2022 and 2,147 as of December 31, 2021.

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:

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

Section 1: Actuarial Valuation Summary

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

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

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

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

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

If 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. Segal's valuation is based on our understanding of applicable guidance in these areas and of the plan's provisions, but they may be subject to alternative interpretations. The Board 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.

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

Section 2: Actuarial Valuation Results

A. Member Data

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

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

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

Member Population: 2013 – 2022

Year Ended December 31	Active Members	Inactive Vested Members ¹	Retired Members and Beneficiaries	Total Non-Actives	Ratio of Non-Actives to Actives	Ratio of Retired Members and Beneficiaries to Actives
2013	9,124	2,345	8,625	10,970	1.20	0.95
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

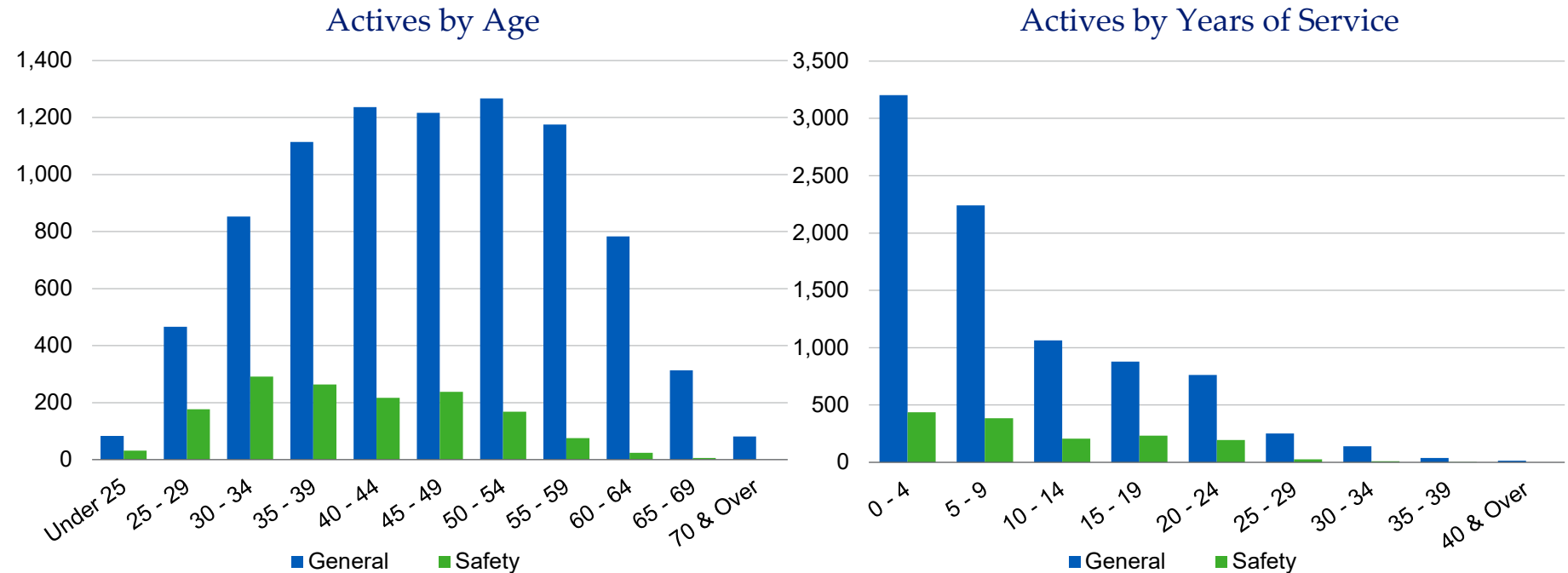
¹ Includes inactive members with member contributions on deposit.

Section 2: Actuarial Valuation Results

Active Members

Plan costs are affected by the age, years of service and compensation of active members. In this year's valuation, there were 10,082 active members with an average age of 46.1, average years of service of 10.1 years and average compensation of \$106,515. The 10,005 active members in the prior valuation had an average age of 46.3, average service of 10.2 years and average compensation of \$101,525.

Distribution of Active Members as of December 31, 2022



Inactive Members

In this year's valuation, there were 3,974 members with a vested right to a deferred or immediate vested benefit or entitled to a return of their member contributions versus 3,812 in the prior valuation.

Section 2: Actuarial Valuation Results

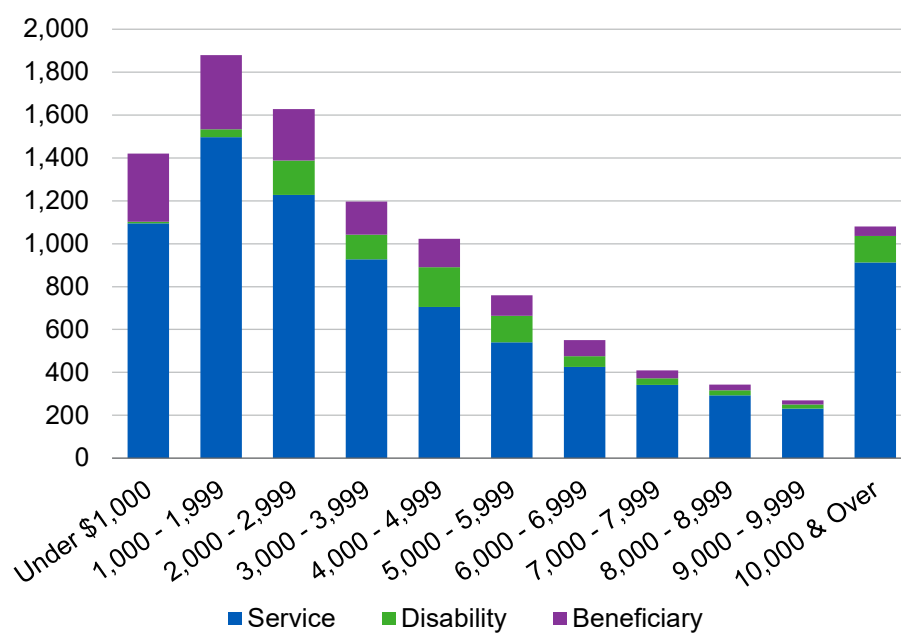
Retired Members and Beneficiaries

As of December 31, 2022, 9,071 retired members and 1,490 beneficiaries were receiving total monthly benefits of \$47,165,238. For comparison, in the previous valuation, there were 8,793 retired members and 1,485 beneficiaries receiving monthly benefits of \$44,743,043.

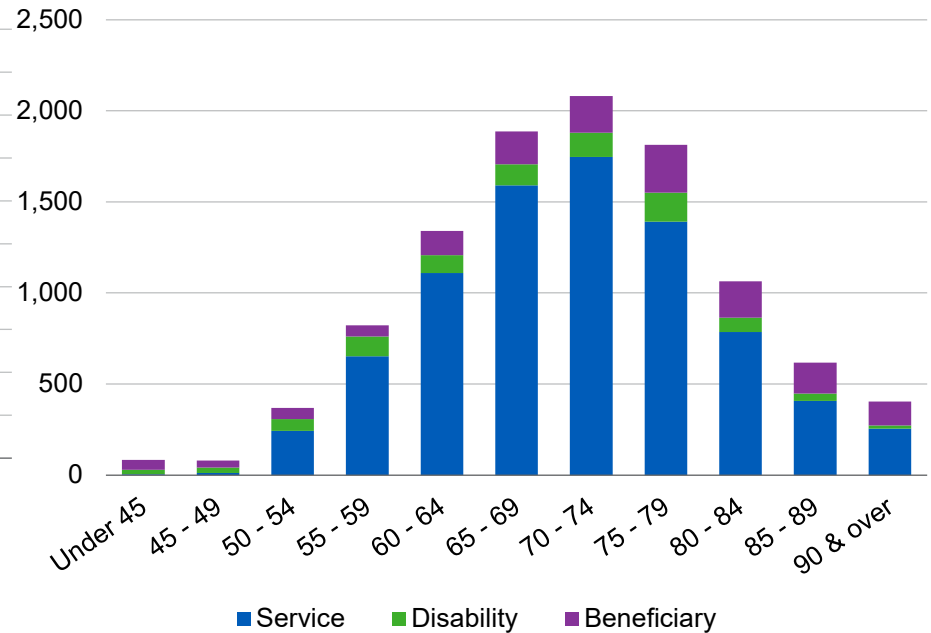
As of December 31, 2022, the average monthly benefit for retired members and beneficiaries is \$4,466, compared to \$4,353 in the previous valuation. The average age for retired members and beneficiaries is 71.1 in the current valuation, compared with 70.9 in the prior valuation.

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

Retired Members and Beneficiaries
by Type and Monthly Amount



Retired Members and Beneficiaries
by Type and Age



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.

Member Data Statistics: 2013 – 2022

Year Ended December 31	Active Members			Retired Members and Beneficiaries		
	Count	Average Age	Average Service	Count	Average Age	Average Monthly Amount
2013	9,124	45.8	10.1	8,625	69.3	\$3,579
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

Section 2: Actuarial Valuation Results

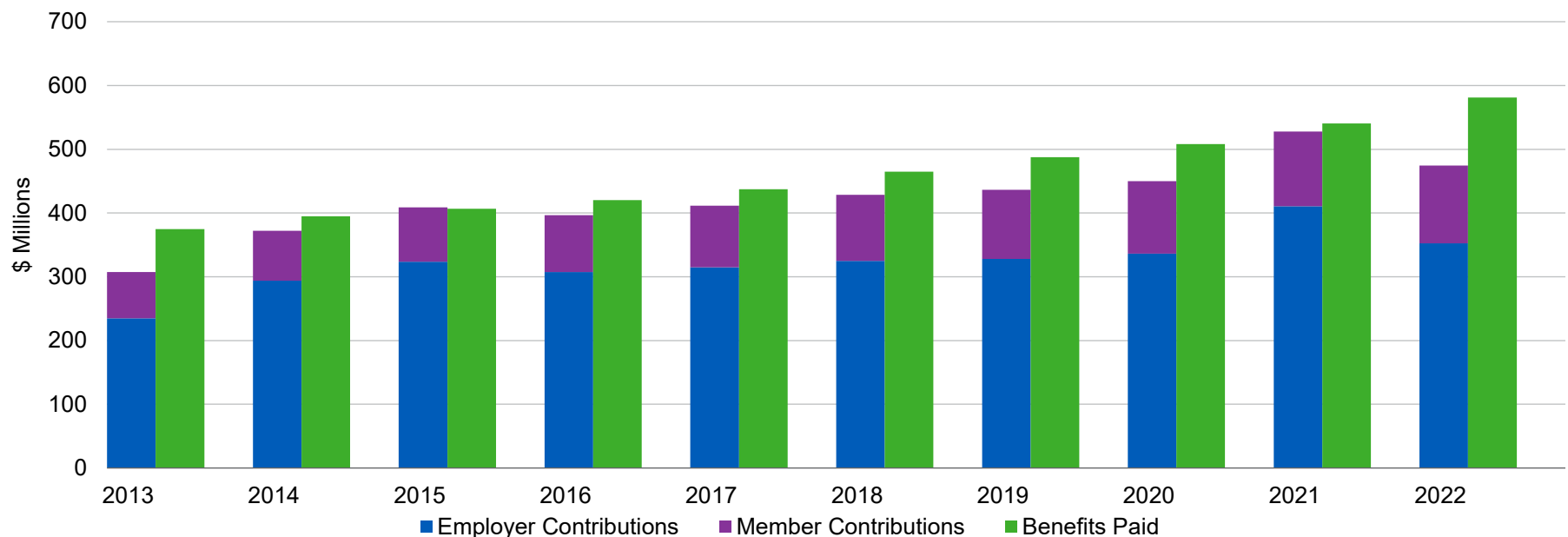
B. Financial Information

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

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

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 for Years Ended December 31, 2013 – 2022



Section 2: Actuarial Valuation Results

Determination of Actuarial Value of Assets for Year Ended December 31, 2022

1 Market Value of Assets						\$10,053,668,812
2		Expected Return	Actual Return¹	Investment Gain/(Loss)	Percent Deferred	Unrecognized Amount
a)	Period ended December 31, 2017	\$271,873,066	\$498,651,736	\$226,778,670	0%	\$0
b)	Period ended June 30, 2018	288,460,475	63,645,390	(224,815,085)	0%	0
c)	Period ended December 31, 2018	289,889,306	(258,676,279)	(548,565,585)	10%	(54,856,558)
d)	Period ended June 30, 2019	280,075,265	820,000,188	539,924,922	20%	107,984,984
e)	Period ended December 31, 2019	307,217,326	348,171,398	40,954,072	30%	12,286,222
f)	Period ended June 30, 2020	318,113,258	(302,015,927)	(620,129,184)	40%	(248,051,674)
g)	Period ended December 31, 2020	306,509,032	1,184,409,986	877,900,954	50%	438,950,477
h)	Period ended June 30, 2021	346,562,358	(254,319,434)	(600,881,792)	60%	(360,529,075)
i)	Period ended December 31, 2021	337,995,697	1,661,663,047	1,323,667,350	70%	926,567,145
j)	Period ended June 30, 2022	393,183,225	(1,235,218,785)	(1,628,402,011)	80%	(1,302,721,608)
k)	Period ended December 31, 2022	336,398,943	(46,688,578)	(383,087,521)	90%	(344,778,768)
l)	Total unrecognized return ¹					\$(825,148,855)
3	Actuarial Value of Assets (1) - (2l)					\$10,878,817,667
4	Ratio of Actuarial Value to Market Value					108.2%
5	Non-valuation reserves and designations:					
a)	Post Retirement Death Benefit					\$16,995,605
b)	Statutory Contingency					0
c)	Additional One Percent Contingency					0
d)	Unrestricted Designation					0
e)	Total					\$16,995,605
6	Valuation Value of Assets (3) - (5e)					\$10,861,822,062

Note: Results may be slightly off due to rounding.

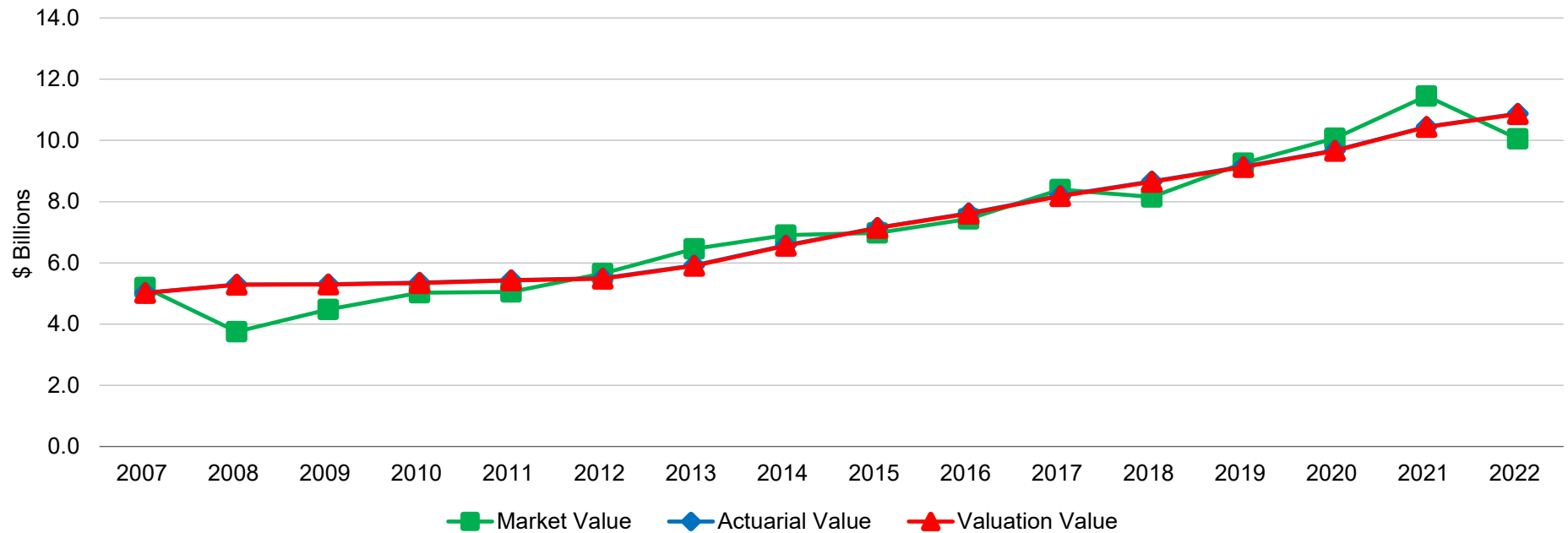
¹ Deferred return as of December 31, 2022 recognized in each of the next five years:

(a)	Amount recognized on December 31, 2023	\$(144,867,200)
(b)	Amount recognized on December 31, 2024	(202,091,033)
(c)	Amount recognized on December 31, 2025	(169,950,699)
(d)	Amount recognized on December 31, 2026	(269,931,171)
(e)	Amount recognized on December 31, 2027	(38,308,752)
(f)	Total unrecognized return as of December 31, 2022	\$(825,148,855)

Section 2: Actuarial Valuation Results

The Market Value, Actuarial Value and Valuation Value of Assets are representations of the Plan's financial status. As investment gains and losses are gradually taken into account, the Actuarial Value of Assets tracks the Market Value of Assets. The Valuation Value of Assets is 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 Valuation¹ Value of Assets as of December 31, 2007 – 2022



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

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 total loss is \$350.0 million, which includes \$155.6 million from investment loss, a loss of \$11.1 million from contribution experience and \$183.3 million in losses from all other sources. The net experience variation from individual sources other than investments and contributions was 1.5% of the Actuarial Accrued Liability. A discussion of the major components of the actuarial experience is on the following pages.

Actuarial Experience for Year Ended December 31, 2022

1	Net loss from investments ¹	\$155,589,609
2	Net loss from contribution experience ²	11,121,129
3	Net loss from other experience ³	<u>183,265,424</u>
4	Net experience loss: 1 + 2 + 3	\$349,976,162

¹ Details on next page.

² See *Section 2, Subsection E* for further details.

³ See *Section 2, Subsection E* for further details. Does not include the effect of plan, method, 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. The rate of return on the Market Value of Assets was -11.25% for the year ended December 31, 2022.

For valuation purposes, the assumed rate of return on the Valuation Value of Assets is 6.75% based on the December 31, 2021 valuation. The actual rate of return on a valuation basis for the 2022 plan year was 5.25% after considering the recognition of prior years' investment gains and losses and the non-level returns during the first-half of 2022 (a market loss of -10.81%) and the second-half of 2022 (a market loss of -0.46%). 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, 2022 with regard to its investments.

Investment Experience for Year Ended December 31, 2022

	Market Value	Actuarial Value	Valuation Value
1 Net investment income	\$(1,281,907,365)	\$545,882,007	\$544,768,870
2 Average value of assets	11,394,619,393	10,391,978,876	10,375,681,168
3 Rate of return: 1 ÷ 2	(11.25%)	5.25%	5.25%
4 Assumed rate of return	6.75%	6.75%	6.75%
5 Expected investment income: ¹ 2 x 4	769,136,809	701,458,574	700,358,479
6 Actuarial gain/(loss): 1 - 5	\$(2,051,044,174)	\$(155,576,567)	\$(155,589,609)

¹ The expected investment returns are based on January 1, 2022 asset values and do not take into account the actual timing of cashflows (i.e., contributions, benefit payment, expenses, etc.) during the year.

Section 2: Actuarial Valuation Results

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

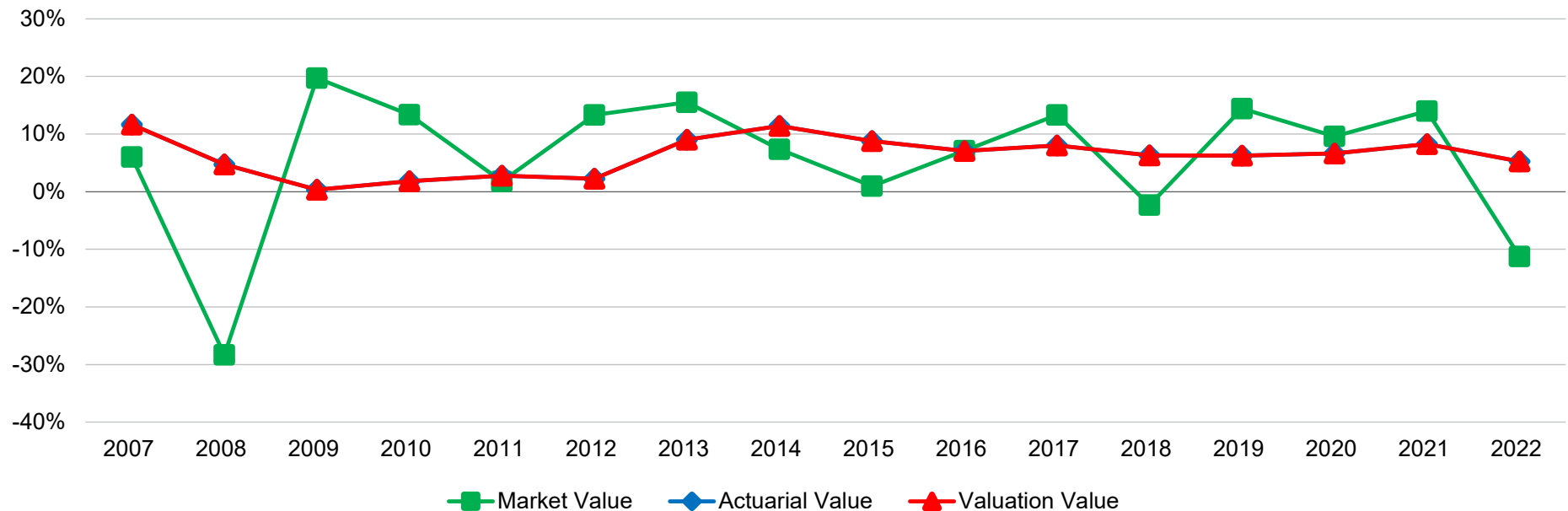
Investment Return – Market Value, Actuarial Value and Valuation Value: 2013 – 2022

Year Ended December 31	Market Value Investment Return		Actuarial Value Investment Return		Valuation Value Investment Return	
	Amount	Percent	Amount	Percent	Amount	Percent
2013	\$870,984,744	15.50%	\$492,503,802	9.01%	\$491,324,308	9.02%
2014	473,522,261	7.35%	673,040,867	11.39%	671,957,212	11.40%
2015	65,495,657	0.95%	577,199,123	8.78%	576,151,245	8.79%
2016	493,874,242	7.10%	502,352,173	7.04%	501,328,149	7.04%
2017	987,415,981	13.31%	608,519,874	8.00%	607,477,597	8.00%
2018	(195,030,888)	(2.33%)	516,825,883	6.32%	515,766,323	6.32%
2019	1,168,171,586	14.39%	538,946,876	6.24%	537,877,737	6.24%
2020	882,394,061	9.57%	603,096,897	6.62%	602,005,689	6.62%
2021	1,407,343,614	13.99%	796,432,706	8.24%	795,314,105	8.24%
2022	(1,281,907,365)	(11.25%)	545,882,007	5.25%	544,768,870	5.25%
Most recent five-year geometric average return		4.37%	6.53%		6.53%	
Most recent ten-year geometric average return		6.52%	7.68%		7.68%	

Section 2: Actuarial Valuation Results

Section 2, Subsection B described the actuarial asset valuation method that gradually recognizes fluctuations in the market value rate of return. The goal of this is to stabilize the actuarial rate of return and to produce more level pension plan costs.

Market, Actuarial¹ and Valuation¹ Rates of Return for Years Ended December 31, 2007 – 2022



¹ The Actuarial and Valuation Rates of Return have been substantially the same over the time period shown, differing by no more than 0.02%.

Section 2: Actuarial Valuation Results

Contributions

Contributions for the year ended December 31, 2022 totaled \$474.7 million, compared to the projected amount of \$485.5 million. This resulted in a loss of \$11.1 million for the year, when adjusted for timing. The \$11.1 million in contribution loss is net of additional UAAL Contributions of \$3,344,437 made by East Fire and \$279,000 made by San Ramon Valley Fire District.

Non-Investment Experience

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

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

The net loss from this other experience for the year ended December 31, 2022 amounted to \$183.3 million, which is 1.5% of the Actuarial Accrued Liability. The loss was primarily due to individual salary increases higher than expected and COLA increases higher than expected. See *Section 2, Subsection E* for a detailed development of the Unfunded Actuarial Accrued Liability.

Section 2: Actuarial Valuation Results

D. Other Changes in the Actuarial Accrued Liability

The Actuarial Accrued Liability as of December 31, 2022 is \$11.9 billion, an increase of \$0.6 billion, or 5.5%, from the Actuarial Accrued Liability as of the prior valuation date. The liability is expected to grow each year with Normal Cost and interest, and to decline due to benefit payments made. Additional fluctuations can occur due to actual experience that differs from expected (as discussed in the previous subsection).

Actuarial Assumptions and Methods

The administrative expenses assumption has decreased from 1.15% of payroll in last year's valuation to 1.13% of payroll in this year's valuation based on the actual administrative expenses and actual payroll reported by CCCERA.

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

Plan Provisions

There are no changes in plan provisions reflected in this report.

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

Section 2: Actuarial Valuation Results

E. Development of Unfunded Actuarial Accrued Liability

Development for Year Ended December 31, 2022

1	Unfunded Actuarial Accrued Liability as of December 31, 2021	\$854,561,199
2	Normal Cost at middle of year ¹	272,418,167
3	Expected administrative expenses	11,681,194
4	Expected employer and member contributions	(485,450,020)
5	Interest	<u>47,220,116</u>
6	Expected Unfunded Actuarial Accrued Liability as of December 31, 2022	\$700,430,656
7	Changes due to:	
	a. Investment return less than expected (after asset smoothing)	\$155,589,609
	b. Actual contributions less than expected in item 4	14,863,444
	c. Gain from additional UAAL contributions for East Fire ²	(3,455,468)
	d. Gain from additional UAAL contributions for San Ramon FD ³	(286,847)
	e. Individual salary increases greater than expected	99,918,077
	f. COLA increases greater than expected in 2023	79,804,487
	g. Other experience loss ⁴	<u>3,542,860</u>
	Total changes	<u>\$349,976,162</u>
8	Unfunded Actuarial Accrued Liability as of December 31, 2022	\$1,050,406,818

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

¹ Excludes administrative expense load.

² \$3,344,437 additional contributions made by East Fire adjusted with \$111,032 in interest to the end of the year.

³ \$279,000 additional contributions made by San Ramon Valley Fire District adjusted with \$7,847 in interest to the end of the year.

⁴ 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, 2022, the average recommended employer contribution is 30.01% of compensation.

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

The contribution requirement as of December 31, 2022 is based on the data previously described, the actuarial assumptions and Plan provisions described in *Section 4*, including all changes affecting future costs adopted at the time of the actuarial valuation, actuarial gains and losses, and changes in the actuarial assumptions, if any.

Average Recommended Employer Contribution

All Tiers Combined	December 31, 2022		December 31, 2021	
	Amount (\$ in '000s)	% of Projected Compensation	Amount (\$ in '000s)	% of Projected Compensation
1 Total Normal Cost	\$296,628	27.63%	\$282,576	27.82%
2 Expected member contributions	<u>130,764</u>	<u>12.18%</u>	<u>123,593</u>	<u>12.17%</u>
3 Employer Normal Cost: 1 – 2	\$165,864	15.45%	\$158,983	15.65%
4 Actuarial Accrued Liability	11,912,229		11,288,973	
5 Valuation Value of Assets	<u>10,861,822</u>		<u>10,434,412</u>	
6 Unfunded Actuarial Accrued Liability: 4 – 5	\$1,050,407		\$854,561	
7 Payment on Unfunded Actuarial Accrued Liability	156,364	14.56%	202,117	19.90% ¹
8 Total average recommended employer contribution: 3 + 7	\$322,227	30.01%	\$361,100	35.55%
9 Projected compensation	\$1,073,887		\$1,015,755	

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

¹ Reflects UAAL prepayment made by East Fire in the amount of \$3,344,437 before annexation into Con Fire on June 30, 2022.

Section 2: Actuarial Valuation Results

Reconciliation of Average Recommended Employer Contribution Rate

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

Reconciliation from December 31, 2021 to December 31, 2022

	Contribution Rate ¹	Estimated Annual Dollar Amount ²
Average Recommended Employer Contribution as of December 31, 2021³	35.55%	\$361,099,855
1 Effect of investment return less than expected (after asset smoothing)	1.11%	11,920,143
2 Effect of actual contributions less than expected	0.13%	1,396,053
3 Effect of additional UAAL contributions for San Ramon FD ³	(0.00%)	(21,993)
4 Effect of individual salary increases greater than expected in 2022	0.71%	7,624,596
5 Effect of amortizing prior year's UAAL over a larger than expected projected total payroll	(0.15%)	(1,610,830)
6 Effect of COLA increases greater than expected in 2023	0.57%	6,121,155
7 Effect of the 2007 UAAL restart charge and POB credit amortization layers being fully amortized	(7.44%)	(79,914,066)
8 Effect of changes in active member demographics on Normal Cost ⁴	(0.20%)	(2,147,774)
9 Effect of change in administrative expense load ⁵	(0.02%)	(214,777)
10 Effect of other gains ⁶	(0.21%)	18,404,602
11 Effect of setting contribution rate equal to Normal Cost for certain Cost Groups ⁷	<u>(0.04%)</u>	<u>(429,555)</u>
Total change	(5.54%)	\$(38,872,446)
Average Recommended Employer Contribution as of December 31, 2022	30.01%	\$322,227,409

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 contribution rate and the annual dollar amount shown as of December 31, 2021 has been calculated to reflect the UAAL prepayment made by East Fire in the amount of \$3,344,437 on June 30, 2022. As a result, there is no additional effect due to UAAL prepayment contribution made by East Fire between the two valuations.

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, 2022 and stopped making member basic contributions.

⁵ The calculation and the allocation of the administrative expense between employer and member can be found on page 110.

⁶ Other differences in actual versus expected experience including (but not limited to) mortality, retirement, disability, termination and leave cashout experience. Estimated annual dollar cost also reflects changes in payroll from prior valuation.

⁷ Cost Groups #3 and #6 were overfunded as of December 31, 2021. We have applied some of the overfunded amount to offset the net increase in liability for these two Cost Groups during 2022. In particular, only Cost Group #6 remains overfunded (and not Cost Group #3) as of December 31, 2022.

Section 2: Actuarial Valuation Results

Reconciliation of Average Recommended Member Contribution Rate

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

Reconciliation from December 31, 2021 to December 31, 2022

	Contribution Rate ¹	Estimated Annual Dollar Amount ²
Average Recommended Member Contribution as of December 31, 2021	12.17%	\$123,592,769
1 Effect of change in administrative expense load ³	0.00%	\$0
2 Effect of changes in active member demographics ⁴	<u>0.01%</u>	<u>7,171,612</u>
Total change	0.01%	\$7,171,612
Average Recommended Member Contribution as of December 31, 2022	12.18%	\$130,764,381

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 110.

⁴ This also includes the effect of legacy Safety members who first reached 30 years of reported service as of December 31, 2022 and stopped making member basic contributions. Estimated annual dollar cost also reflects change in payroll from prior valuation.

Section 2: Actuarial Valuation Results

Recommended Employer Contribution Rate

Cost Group #1 ³	December 31, 2022 Actuarial Valuation ¹ Recommended Rates for FY 2024-2025				December 31, 2021 Actuarial Valuation ² Recommended Rates for FY 2023-2024			
	Basic	COLA	Total	Estimated Annual Dollar Amount	Basic	COLA	Total	Estimated Annual Dollar Amount
County General Tier 1 w/ Courts								
Normal Cost	13.36%	3.71%	17.07%	\$1,244,451	13.31%	3.67%	16.98%	\$1,416,969
UAAL	<u>9.34%</u>	<u>0.19%</u>	<u>9.53%</u>	<u>694,764</u>	<u>12.02%</u>	<u>1.86%</u>	<u>13.88%</u>	<u>1,158,277</u>
Total Contribution	22.70%	3.90%	26.60%	\$1,939,215	25.33%	5.53%	30.86%	\$2,575,246
District General Tier 1 w/o POB								
Normal Cost	13.36%	3.71%	17.07%	\$1,039,112	13.31%	3.67%	16.98%	\$1,213,743
UAAL	<u>9.34%</u>	<u>0.19%</u>	<u>9.53%</u>	<u>580,125</u>	<u>16.94%</u>	<u>5.81%</u>	<u>22.75%</u>	<u>1,626,186</u>
Total Contribution	22.70%	3.90%	26.60%	\$1,619,237	30.25%	9.48%	39.73%	\$2,839,929
District General Tier 1 w/ POB (Moraga)								
Normal Cost	13.36%	3.71%	17.07%	\$58,974	13.31%	3.67%	16.98%	\$55,895
UAAL	<u>9.34%</u>	<u>0.19%</u>	<u>9.53%</u>	<u>32,925</u>	<u>11.17%</u>	<u>2.45%</u>	<u>13.62%</u>	<u>44,834</u>
Total Contribution	22.70%	3.90%	26.60%	\$91,899	24.48%	6.12%	30.60%	\$100,729
District General Tier 1 w/ UAAL Prepayment (First Five)								
Normal Cost	13.36%	3.71%	17.07%	\$235,209	13.31%	3.67%	16.98%	\$242,366
UAAL	<u>9.34%</u>	<u>0.19%</u>	<u>9.53%</u>	<u>131,315</u>	<u>12.29%</u>	<u>2.30%</u>	<u>14.59%</u>	<u>208,252</u>
Total Contribution	22.70%	3.90%	26.60%	\$366,524	25.60%	5.97%	31.57%	\$450,618
District General Tier 1 w/ UAAL Prepayment (LAFCO)								
Normal Cost	13.36%	3.71%	17.07%	\$32,863	13.31%	3.67%	16.98%	\$32,083
UAAL ⁴	<u>3.86%</u>	<u>0.19%</u>	<u>4.05%</u>	<u>7,797</u>	<u>12.95%</u>	<u>4.38%</u>	<u>17.33%</u>	<u>32,745</u>
Total Contribution	17.22%	3.90%	21.12%	\$40,660	26.26%	8.05%	34.31%	\$64,828

¹ The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.50% and 0.13% of payroll, respectively.

² The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.50% and 0.15% of payroll, respectively.

³ Note that in preparing future valuation reports, we will stop distinguishing UAAL contribution rates without POB and with POB.

⁴ LAFCO made several UAAL prepayments in the 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. In this valuation with the restart of UAAL amortization charge layer being fully amortized, we have 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 2: Actuarial Valuation Results

Recommended Employer Contribution Rate (continued)

December 31, 2022 Actuarial Valuation¹
Recommended Rates for FY 2024-2025

December 31, 2021 Actuarial Valuation²
Recommended Rates for FY 2023-2024

Cost Group #1 ³	December 31, 2022 Actuarial Valuation ¹ Recommended Rates for FY 2024-2025				December 31, 2021 Actuarial Valuation ² Recommended Rates for FY 2023-2024			
	Basic	COLA	Total	Estimated Annual Dollar Amount	Basic	COLA	Total	Estimated Annual Dollar Amount
County General Tier 4 (3% COLA) w/ Courts								
Normal Cost	9.36%	3.15%	12.51%	\$0	9.34%	3.13%	12.47%	\$0
UAAL	9.34%	0.19%	9.53%	0	12.02%	1.86%	13.88%	0
Total Contribution	18.70%	3.34%	22.04%	\$0	21.36%	4.99%	26.35%	\$0
District General Tier 4 (3% COLA) w/o POB								
Normal Cost	9.36%	3.15%	12.51%	\$744,885	9.34%	3.13%	12.47%	\$563,174
UAAL	9.34%	0.19%	9.53%	567,447	16.94%	5.81%	22.75%	1,027,442
Total Contribution	18.70%	3.34%	22.04%	\$1,312,332	26.28%	8.94%	35.22%	\$1,590,616
District General Tier 4 (3% COLA) w/ POB (Moraga)								
Normal Cost	9.36%	3.15%	12.51%	\$99,378	9.34%	3.13%	12.47%	\$98,179
UAAL	9.34%	0.19%	9.53%	75,705	11.17%	2.45%	13.62%	107,233
Total Contribution	18.70%	3.34%	22.04%	\$175,083	20.51%	5.58%	26.09%	\$205,412
District General Tier 4 (3% COLA) w/ UAAL Prepayment (First Five)								
Normal Cost	9.36%	3.15%	12.51%	\$189,227	9.34%	3.13%	12.47%	\$177,859
UAAL	9.34%	0.19%	9.53%	144,152	12.29%	2.30%	14.59%	208,096
Total Contribution	18.70%	3.34%	22.04%	\$333,379	21.63%	5.43%	27.06%	\$385,955
District General Tier 4 (3% COLA) w/ UAAL Prepayment (LAFCO)								
Normal Cost	9.36%	3.15%	12.51%	\$0	9.34%	3.13%	12.47%	\$0
UAAL ⁴	3.86%	0.19%	4.05%	0	12.95%	4.38%	17.33%	0
Total Contribution	13.22%	3.34%	16.56%	\$0	22.29%	7.51%	29.80%	\$0
County General Tier 4 (2% COLA) w/ Courts								
Normal Cost	9.09%	2.09%	11.18%	\$0	9.04%	2.07%	11.11%	\$0
UAAL	9.34%	0.19%	9.53%	0	12.02%	1.86%	13.88%	0
Total Contribution	18.43%	2.28%	20.71%	\$0	21.06%	3.93%	24.99%	\$0

¹ The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.50% and 0.13% of payroll, respectively.

² The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.50% and 0.15% of payroll, respectively.

³ Note that in preparing future valuation reports, we will stop distinguishing UAAL contribution rates without POB and with POB.

⁴ LAFCO made several UAAL prepayments in the 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. In this valuation with the restart of UAAL amortization charge layer being fully amortized, we have 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 2: Actuarial Valuation Results

Recommended Employer Contribution Rate (continued)

Cost Group #2 ³	December 31, 2022 Actuarial Valuation ¹ Recommended Rates for FY 2024-2025				December 31, 2021 Actuarial Valuation ² Recommended Rates for FY 2023-2024			
	Basic	COLA	Total	Estimated Annual Dollar Amount	Basic	COLA	Total	Estimated Annual Dollar Amount
County General Tier 3 w/ Courts								
Normal Cost	11.96%	3.40%	15.36%	\$56,576,002	11.95%	3.39%	15.34%	\$57,719,869
UAAL	<u>9.34%</u>	<u>0.19%</u>	<u>9.53%</u>	<u>35,102,168</u>	<u>12.02%</u>	<u>1.86%</u>	<u>13.88%</u>	<u>52,226,322</u>
Total Contribution	21.30%	3.59%	24.89%	\$91,678,170	23.97%	5.25%	29.22%	\$109,946,191
District General Tier 3 w/o POB								
Normal Cost	11.96%	3.40%	15.36%	\$383,555	11.95%	3.39%	15.34%	\$433,252
UAAL	<u>9.34%</u>	<u>0.19%</u>	<u>9.53%</u>	<u>237,974</u>	<u>16.94%</u>	<u>5.81%</u>	<u>22.75%</u>	<u>642,535</u>
Total Contribution	21.30%	3.59%	24.89%	\$621,529	28.89%	9.20%	38.09%	\$1,075,787
County General Tier 5 (3%/4% COLA) w/ Courts								
Normal Cost	8.58%	2.84%	11.42%	\$6,763,962	8.57%	2.83%	11.40%	\$6,725,605
UAAL	<u>9.34%</u>	<u>0.19%</u>	<u>9.53%</u>	<u>5,644,532</u>	<u>12.02%</u>	<u>1.86%</u>	<u>13.88%</u>	<u>8,188,719</u>
Total Contribution	17.92%	3.03%	20.95%	\$12,408,494	20.59%	4.69%	25.28%	\$14,914,324
District General Tier 5 (3%/4% COLA) w/o POB								
Normal Cost	8.58%	2.84%	11.42%	\$161,361	8.57%	2.83%	11.40%	\$136,832
UAAL	<u>9.34%</u>	<u>0.19%</u>	<u>9.53%</u>	<u>134,656</u>	<u>16.94%</u>	<u>5.81%</u>	<u>22.75%</u>	<u>273,063</u>
Total Contribution	17.92%	3.03%	20.95%	\$296,017	25.51%	8.64%	34.15%	\$409,895
County General Tier 5 (2% COLA) w/ Courts								
Normal Cost	8.47%	1.90%	10.37%	\$36,320,856	8.40%	1.89%	10.29%	\$30,860,000
UAAL	<u>9.34%</u>	<u>0.19%</u>	<u>9.53%</u>	<u>33,378,761</u>	<u>12.02%</u>	<u>1.86%</u>	<u>13.88%</u>	<u>41,626,511</u>
Total Contribution	17.81%	2.09%	19.90%	\$69,699,617	20.42%	3.75%	24.17%	\$72,486,511
District General Tier 5 (2% COLA) w/o POB								
Normal Cost	8.47%	1.90%	10.37%	\$44,893	8.40%	1.89%	10.29%	\$36,686
UAAL	<u>9.34%</u>	<u>0.19%</u>	<u>9.53%</u>	<u>41,257</u>	<u>16.94%</u>	<u>5.81%</u>	<u>22.75%</u>	<u>81,109</u>
Total Contribution	17.81%	2.09%	19.90%	\$86,150	25.34%	7.70%	33.04%	\$117,795

¹ The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.50% and 0.13% of payroll, respectively.

² The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.50% and 0.15% of payroll, respectively.

³ Note that in preparing future valuation reports, we will stop distinguishing UAAL contribution rates without POB and with POB.

Section 2: Actuarial Valuation Results

Recommended Employer Contribution Rate (continued)

Cost Group #3	December 31, 2022 Actuarial Valuation ¹ Recommended Rates for FY 2024-2025				December 31, 2021 Actuarial Valuation ² Recommended Rates for FY 2023-2024			
	Basic	COLA	Total	Estimated Annual Dollar Amount	Basic	COLA	Total	Estimated Annual Dollar Amount
CCCSD General Tier 1								
Normal Cost	13.57%	3.88%	17.45%	\$4,713,467	13.49%	3.87%	17.36%	\$4,816,906
UAAL	<u>0.40%</u>	<u>0.66%</u>	<u>1.06%</u>	<u>286,319</u>	<u>0.15%</u>	<u>0.00%</u>	<u>0.15%</u>	<u>41,621</u>
Total Contribution	13.97%	4.54%	18.51%	\$4,999,786	13.64%	3.87%	17.51%	\$4,858,527
CCCSD General Tier 4 (3% COLA)								
Normal Cost	8.60%	3.00%	11.60%	\$1,569,590	8.55%	2.97%	11.52%	\$1,303,604
UAAL	<u>0.40%</u>	<u>0.66%</u>	<u>1.06%</u>	<u>143,428</u>	<u>0.15%</u>	<u>0.00%</u>	<u>0.15%</u>	<u>16,974</u>
Total Contribution	9.00%	3.66%	12.66%	\$1,713,018	8.70%	2.97%	11.67%	\$1,320,578

¹ The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.50% and 0.13% of payroll, respectively.

² The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.50% and 0.15% of payroll, respectively.

Section 2: Actuarial Valuation Results

Recommended Employer Contribution Rate (continued)

Cost Group #4	December 31, 2022 Actuarial Valuation ¹ Recommended Rates for FY 2024-2025				December 31, 2021 Actuarial Valuation ^{2,3} Recommended Rates for FY 2023-2024			
	Basic	COLA	Total	Estimated Annual Dollar Amount	Basic	COLA	Total	Estimated Annual Dollar Amount
Contra Costa Housing Authority General Tier 1								
Normal Cost	13.41%	3.80%	17.21%	\$626,043	13.47%	3.79%	17.26%	\$622,479
UAAL	<u>8.98%</u>	<u>4.41%</u>	<u>13.39%</u>	<u>487,084</u>	<u>16.87%</u>	<u>10.80%</u>	<u>27.67%</u>	<u>997,914</u>
Total Contribution	22.39%	8.21%	30.60%	\$1,113,127	30.34%	14.59%	44.93%	\$1,620,393
Contra Costa Housing Authority General Tier 4 (3% COLA)								
Normal Cost	9.17%	3.10%	12.27%	\$394,422	9.18%	3.09%	12.27%	\$367,561
UAAL	<u>8.98%</u>	<u>4.41%</u>	<u>13.39%</u>	<u>430,425</u>	<u>16.87%</u>	<u>10.80%</u>	<u>27.67%</u>	<u>828,885</u>
Total Contribution	18.15%	7.51%	25.66%	\$824,847	26.05%	13.89%	39.94%	\$1,196,446
Cost Group #5								
CCCFPD General Tier 1								
Normal Cost	14.97%	3.98%	18.95%	\$738,478	15.04%	3.99%	19.03%	\$725,506
UAAL	<u>12.80%</u>	<u>10.30%</u>	<u>23.10%</u>	<u>900,203</u>	<u>10.96%</u>	<u>9.31%</u>	<u>20.27%</u>	<u>772,781</u>
Total Contribution	27.77%	14.28%	42.05%	\$1,638,681	26.00%	13.30%	39.30%	\$1,498,287
CCCFPD General Tier 4 (3% COLA)								
Normal Cost	11.28%	3.85%	15.13%	\$15,980	10.91%	3.74%	14.65%	\$25,042
UAAL	<u>12.80%</u>	<u>10.30%</u>	<u>23.10%</u>	<u>24,398</u>	<u>10.96%</u>	<u>9.31%</u>	<u>20.27%</u>	<u>34,649</u>
Total Contribution	24.08%	14.15%	38.23%	\$40,378	21.87%	13.05%	34.92%	\$59,691
CCCFPD General Tier 4 (2% COLA)								
Normal Cost	10.16%	2.33%	12.49%	\$491,623	10.25%	2.35%	12.60%	\$443,627
UAAL	<u>12.80%</u>	<u>10.30%</u>	<u>23.10%</u>	<u>909,247</u>	<u>10.96%</u>	<u>9.31%</u>	<u>20.27%</u>	<u>713,676</u>
Total Contribution	22.96%	12.63%	35.59%	\$1,400,870	21.21%	11.66%	32.87%	\$1,157,303

¹ The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.50% and 0.13% of payroll, respectively.

² The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.50% and 0.15% of payroll, respectively.

³ The contribution rates and the annual dollar amounts shown for Cost Group #5 as of December 31, 2021 has been calculated to reflect the UAAL prepayment made by East Fire in the amount of \$3,344,437 on June 30, 2022 for the General and Safety groups.

Section 2: Actuarial Valuation Results

Recommended Employer Contribution Rate (continued)

Cost Group #6	December 31, 2022 Actuarial Valuation ¹ Recommended Rates for FY 2024-2025				December 31, 2021 Actuarial Valuation ² Recommended Rates for FY 2023-2024			
	Basic	COLA	Total	Estimated Annual Dollar Amount	Basic	COLA	Total	Estimated Annual Dollar Amount
Non-Enhanced District General Tier 1								
Normal Cost ³	12.70%	3.80%	16.50%	\$97,339	13.21%	4.02%	17.23%	\$101,500
UAAL	<u>0.13%</u>	<u>0.00%</u>	<u>0.13%</u>	<u>767</u>	<u>0.15%</u>	<u>0.00%</u>	<u>0.15%</u>	<u>884</u>
Total Contribution	12.83%	3.80%	16.63%	\$98,106	13.36%	4.02%	17.38%	\$102,384
Non-Enhanced District General Tier 4 (3% COLA)								
Normal Cost	11.01%	3.68%	14.69%	\$76,376	10.66%	3.56%	14.22%	\$61,533
UAAL	<u>0.13%</u>	<u>0.00%</u>	<u>0.13%</u>	<u>676</u>	<u>0.15%</u>	<u>0.00%</u>	<u>0.15%</u>	<u>649</u>
Total Contribution	11.14%	3.68%	14.82%	\$77,052	10.81%	3.56%	14.37%	\$62,182
Cost Group #7								
County Safety Tier A								
Normal Cost	23.27%	7.55%	30.82%	\$14,040,055	23.23%	7.52%	30.75%	\$14,464,350
UAAL	<u>13.90%</u>	<u>19.60%</u>	<u>33.50%</u>	<u>15,260,929</u>	<u>21.92%</u>	<u>23.56%</u>	<u>45.48%</u>	<u>21,393,126</u>
Total Contribution	37.17%	27.15%	64.32%	\$29,300,984	45.15%	31.08%	76.23%	\$35,857,476
County Safety Tier D								
Normal Cost	14.55%	6.02%	20.57%	\$770,517	14.45%	5.98%	20.43%	\$763,443
UAAL	<u>13.90%</u>	<u>19.60%</u>	<u>33.50%</u>	<u>1,254,853</u>	<u>21.92%</u>	<u>23.56%</u>	<u>45.48%</u>	<u>1,699,530</u>
Total Contribution	28.45%	25.62%	54.07%	\$2,025,370	36.37%	29.54%	65.91%	\$2,462,973

¹ The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.50% and 0.13% of payroll, respectively.

² The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.50% and 0.15% of payroll, respectively.

³ The decrease in the employer Normal Cost rate from last year to this year is primarily due to the change in the average entry age from 43.8 in last year's valuation to 40.5 in this year's valuation.

Section 2: Actuarial Valuation Results

Recommended Employer Contribution Rate (continued)

Cost Group #8	December 31, 2022 Actuarial Valuation ¹ Recommended Rates for FY 2024-2025				December 31, 2021 Actuarial Valuation ^{2,3} Recommended Rates for FY 2023-2024			
	Basic	COLA	Total	Estimated Annual Dollar Amount	Basic	COLA	Total	Estimated Annual Dollar Amount
CCCFPD Safety Tier A								
Normal Cost	23.60%	7.78%	31.38%	\$11,876,441	23.57%	7.81%	31.38%	\$11,321,535
UAAL	<u>12.25%</u>	<u>28.74%</u>	<u>40.99%</u>	<u>15,513,553</u>	<u>11.35%</u>	<u>29.90%</u>	<u>41.25%</u>	<u>14,882,515</u>
Total Contribution	35.85%	36.52%	72.37%	\$27,389,994	34.92%	37.71%	72.63%	\$26,204,050
CCCFPD Safety Tier D								
Normal Cost	12.81%	5.39%	18.20%	\$416,061	12.62%	5.32%	17.94%	\$384,961
UAAL	<u>12.25%</u>	<u>28.74%</u>	<u>40.99%</u>	<u>937,053</u>	<u>11.35%</u>	<u>29.90%</u>	<u>41.25%</u>	<u>885,153</u>
Total Contribution	25.06%	34.13%	59.19%	\$1,353,114	23.97%	35.22%	59.19%	\$1,270,114
CCCFPD Safety Tier E								
Normal Cost	13.16%	3.68%	16.84%	\$3,445,302	13.10%	3.64%	16.74%	\$2,215,419
UAAL	<u>12.25%</u>	<u>28.74%</u>	<u>40.99%</u>	<u>8,386,160</u>	<u>11.35%</u>	<u>29.90%</u>	<u>41.25%</u>	<u>5,459,143</u>
Total Contribution	25.41%	32.42%	57.83%	\$11,831,462	24.45%	33.54%	57.99%	\$7,674,562
Cost Group #9								
County Safety Tier C								
Normal Cost	21.91%	4.74%	26.65%	\$4,381,568	21.94%	4.74%	26.68%	\$4,175,779
UAAL	<u>13.90%</u>	<u>19.60%</u>	<u>33.50%</u>	<u>5,507,787</u>	<u>21.92%</u>	<u>23.56%</u>	<u>45.48%</u>	<u>7,118,232</u>
Total Contribution	35.81%	24.34%	60.15%	\$9,889,355	43.86%	28.30%	72.16%	\$11,294,011
County Safety Tier E								
Normal Cost	13.74%	3.82%	17.56%	\$8,574,681	13.63%	3.77%	17.40%	\$7,751,580
UAAL	<u>13.90%</u>	<u>19.60%</u>	<u>33.50%</u>	<u>16,358,303</u>	<u>21.92%</u>	<u>23.56%</u>	<u>45.48%</u>	<u>20,261,025</u>
Total Contribution	27.64%	23.42%	51.06%	\$24,932,984	35.55%	27.33%	62.88%	\$28,012,605

¹ The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.50% and 0.13% of payroll, respectively.

² The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.50% and 0.15% of payroll, respectively.

³ The contribution rates and the annual dollar amounts shown for Cost Group #8 as of December 31, 2021 has been calculated to reflect the UAAL prepayment made by East Fire in the amount of \$3,344,437 on June 30, 2022 for the General and Safety groups.

Section 2: Actuarial Valuation Results

Recommended Employer Contribution Rate (continued)

Cost Group #10	December 31, 2022 Actuarial Valuation ¹ Recommended Rates for FY 2024-2025				December 31, 2021 Actuarial Valuation ² Recommended Rates for FY 2023-2024			
	Basic	COLA	Total	Estimated Annual Dollar Amount	Basic	COLA	Total	Estimated Annual Dollar Amount
Moraga-Orinda FD Safety Tier A								
Normal Cost	22.35%	7.36%	29.71%	\$1,997,877	22.24%	7.34%	29.58%	\$1,945,645
UAAL	<u>19.73%</u>	<u>41.86%</u>	<u>61.59%</u>	<u>4,141,679</u>	<u>13.85%</u>	<u>37.37%</u>	<u>51.22%</u>	<u>3,369,030</u>
Total Contribution	42.08%	49.22%	91.30%	\$6,139,556	36.09%	44.71%	80.80%	\$5,314,675
Moraga-Orinda FD Safety Tier D								
Normal Cost	13.52%	5.70%	19.22%	\$438,258	13.17%	5.55%	18.72%	\$405,748
UAAL	<u>19.73%</u>	<u>41.86%</u>	<u>61.59%</u>	<u>1,404,385</u>	<u>13.85%</u>	<u>37.37%</u>	<u>51.22%</u>	<u>1,110,172</u>
Total Contribution	33.25%	47.56%	80.81%	\$1,842,643	27.02%	42.92%	69.94%	\$1,515,920
Cost Group #11								
San Ramon FD Safety Tier A								
Normal Cost	24.79%	8.46%	33.25%	\$5,104,772	24.69%	8.47%	33.16%	\$5,450,419
UAAL	<u>12.34%</u>	<u>11.81%</u>	<u>24.15%</u>	<u>3,707,677</u>	<u>30.42%</u>	<u>24.56%</u>	<u>54.98%</u>	<u>9,036,913</u>
Total Contribution	37.13%	20.27%	57.40%	\$8,812,449	55.11%	33.03%	88.14%	\$14,487,332
San Ramon FD Safety Tier D								
Normal Cost	11.81%	4.98%	16.79%	\$1,656,386	11.67%	4.92%	16.59%	\$1,253,012
UAAL	<u>12.34%</u>	<u>11.81%</u>	<u>24.15%</u>	<u>2,382,473</u>	<u>30.42%</u>	<u>24.56%</u>	<u>54.98%</u>	<u>4,152,536</u>
Total Contribution	24.15%	16.79%	40.94%	\$4,038,859	42.09%	29.48%	71.57%	\$5,405,548

¹ The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.50% and 0.13% of payroll, respectively.

² The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.50% and 0.15% of payroll, respectively.

Section 2: Actuarial Valuation Results

Recommended Employer Contribution Rate (continued)

Cost Group #12	December 31, 2022 Actuarial Valuation ¹ Recommended Rates for FY 2024-2025				December 31, 2021 Actuarial Valuation ^{2,3} Recommended Rates for FY 2023-2024			
	Basic	COLA	Total	Estimated Annual Dollar Amount	Basic	COLA	Total	Estimated Annual Dollar Amount
Non-Enhanced Rodeo-Hercules FPD Safety Tier A								
Normal Cost	19.33%	6.99%	26.32%	\$370,283	20.64%	7.58%	28.22%	\$541,887
UAAL	<u>37.21%</u>	<u>28.96%</u>	<u>66.17%</u>	<u>930,914</u>	<u>38.70%</u>	<u>31.95%</u>	<u>70.65%</u>	<u>1,356,638</u>
Total Contribution	56.54%	35.95%	92.49%	\$1,301,197	59.34%	39.53%	98.87%	\$1,898,525
Non-Enhanced Rodeo-Hercules FPD Safety Tier D								
Normal Cost ⁴	12.99%	5.49%	18.48%	\$173,616	12.00%	5.07%	17.07%	\$128,908
UAAL ³	<u>37.21%</u>	<u>28.96%</u>	<u>66.17%</u>	<u>621,655</u>	<u>38.70%</u>	<u>31.95%</u>	<u>70.65%</u>	<u>533,529</u>
Total Contribution	50.20%	34.45%	84.65%	\$795,271	50.70%	37.02%	87.72%	\$662,437
Total All Employers Combined (Aggregate)								
Normal Cost	12.05%	3.40%	15.45%	\$165,863,863	12.19%	3.46%	15.65%	\$158,982,956
UAAL	<u>9.88%</u>	<u>4.68%</u>	<u>14.56%</u>	<u>156,363,546</u>	<u>13.22%</u>	<u>6.68%</u>	<u>19.90%</u>	<u>202,116,899</u>
Total Contribution	21.93%	8.08%	30.01%	\$322,227,409	25.41%	10.14%	35.55%	\$361,099,855

¹ The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.50% and 0.13% of payroll, respectively.

² The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.50% and 0.15% of payroll, respectively.

³ The contribution rates and the annual dollar amounts shown for All Employers Combined (Aggregate) as of December 31, 2021 has been calculated to reflect the UAAL prepayment made by East Fire in the amount of \$3,344,437 on June 30, 2022 for the General and Safety groups.

⁴ The decrease in the employer Normal Cost rate from last year to this year is primarily due to the change in the average entry age from 25.9 in last year's valuation to 28.4 in this year's valuation.

Section 2: Actuarial Valuation Results

Recommended Employer Contribution Rate (continued)

The projected compensation for the 2023 calendar year that is used to estimate the annual dollar amount shown on the prior pages as of December 31, 2022 are as follows:

Cost Group #1	Projected Compensation	Cost Group #6	Projected Compensation
County General Tier 1 w/ Courts	\$7,290,282	Non-Enhanced District General Tier 1	\$589,934
District General Tier 1 w/o POB	6,087,356	Non-Enhanced District General Tier 4 (3% COLA)	519,920
District General Tier 1 w/ POB (Moraga)	345,485		
District General Tier 1 w/ UAAL Prepayment (First Five)	1,377,910		
District General Tier 1 w/ UAAL Prepayment (LAFCO)	192,521		
County General Tier 4 (3% COLA) w/ Courts	0		
District General Tier 4 (3% COLA) w/o POB	5,954,320		
District General Tier 4 (3% COLA) w/ POB (Moraga)	794,385		
District General Tier 4 (3% COLA) w/ UAAL Prepayment (First Five)	1,512,608		
District General Tier 4 (3% COLA) w/ UAAL Prepayment (LAFCO)	0		
County General Tier 4 (2% COLA) w/ Courts	0		
Cost Group #2	Projected Compensation	Cost Group #7	Projected Compensation
County General Tier 3 w/ Courts	\$368,333,346	County Safety Tier A	\$45,555,012
District General Tier 3 w/o POB	2,497,103	County Safety Tier D	3,745,831
County General Tier 5 (3%/4% COLA) w/ Courts	59,229,092		
District General Tier 5 (3%/4% COLA) w/o POB	1,412,965		
County General Tier 5 (2% COLA) w/ Courts	350,249,333		
District General Tier 5 (2% COLA) w/o POB	432,912		
Cost Group #3	Projected Compensation	Cost Group #8	Projected Compensation
CCCSA General Tier 1	\$27,011,270	CCCFFPD Safety Tier A	\$37,847,166
CCCSA General Tier 4 (3% COLA)	13,530,945	CCCFFPD Safety Tier D	2,286,052
		CCCFFPD Safety Tier E	20,459,039
Cost Group #4	Projected Compensation	Cost Group #9	Projected Compensation
Contra Costa Housing Authority General Tier 1	\$3,637,670	County Safety Tier C	\$16,441,156
Contra Costa Housing Authority General Tier 4 (3% COLA)	3,214,527	County Safety Tier E	48,830,756
Cost Group #5	Projected Compensation	Cost Group #10	Projected Compensation
CCCFFPD General Tier 1	\$3,896,981	Moraga-Orinda FD Safety Tier A	\$6,724,596
CCCFFPD General Tier 4 (3% COLA)	105,619	Moraga-Orinda FD Safety Tier D	2,280,216
CCCFFPD General Tier 4 (2% COLA)	3,936,135		
		Cost Group #11	Projected Compensation
		San Ramon FD Safety Tier A	\$15,352,698
		San Ramon FD Safety Tier D	9,865,311
		Cost Group #12	Projected Compensation
		Non-Enhanced Rodeo-Hercules FPD Safety Tier A	\$1,406,852
		Non-Enhanced Rodeo-Hercules FPD Safety Tier D	939,481
		Total All Employers Combined (Aggregate)	\$1,073,886,785

Section 2: Actuarial Valuation Results

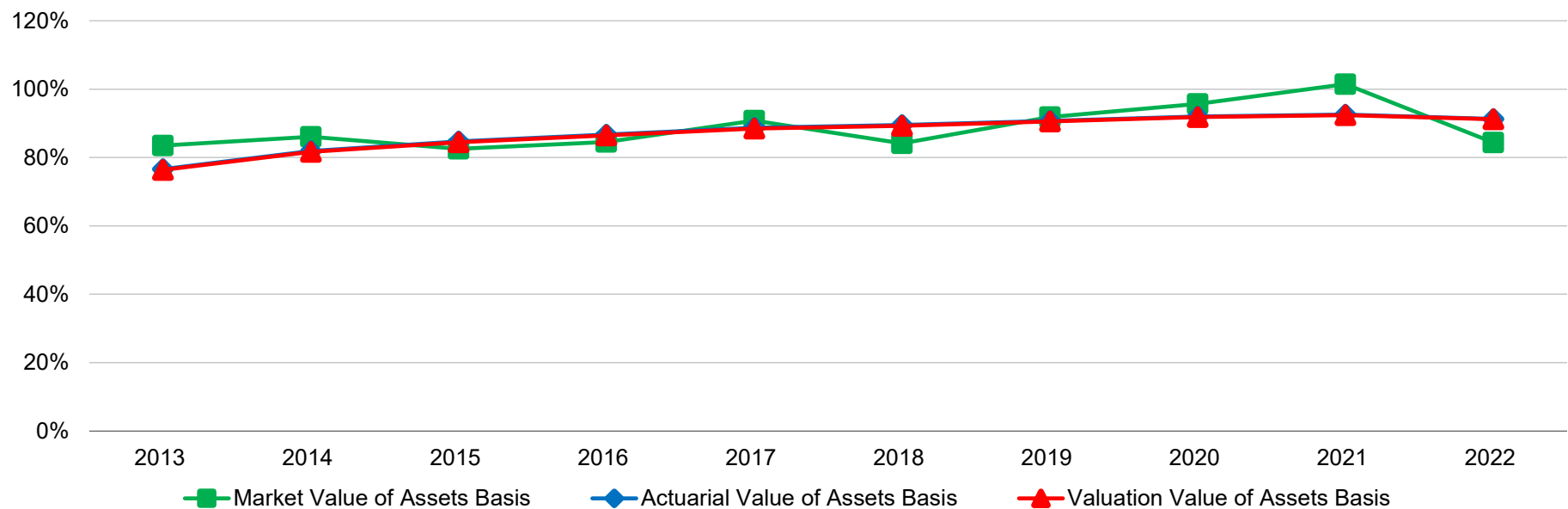
G. Funded Status

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

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

Funded Ratio for Years Ended December 31, 2013 – 2022



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 for Years Ended December 31, 2013 – 2022

Actuarial Valuation Date as of December 31	Valuation Value of Assets ¹ (a)	Actuarial Accrued Liability (AAL) ² (b)	Unfunded AAL (UAAL) (b) - (a)	Funded Ratio (%) (a) / (b)	Projected Covered Payroll (c)	UAAL as a Percentage of Projected Covered Payroll (%) [(b) - (a)] / (c)
2013	\$5,907,416,432	\$7,731,097,407	\$1,823,680,975	76.4%	\$679,428,911	268.4%
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%

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 participants is determined. Then these payments are discounted at the valuation interest rate to the date of the valuation, thereby determining the present value, referred to as the actuarial present value of future benefits of the Plan.

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

Actuarial Balance Sheet for Year Ended December 31, 2022

	Basic	COLA	Total
Actuarial present value of future benefits ¹			
• Present value of benefits for retired members and beneficiaries	\$4,243,507,715	\$3,501,494,603	\$7,745,002,318
• Present value of benefits for inactive vested members ²	271,326,184	89,544,133	360,870,317
• Present value of benefits for active members	<u>4,402,643,406</u>	<u>1,539,209,053</u>	<u>5,941,852,459</u>
Total actuarial present value of future benefits	\$8,917,477,305	\$5,130,247,789	\$14,047,725,094
Current and future assets ¹			
• Total Valuation Value of Assets	\$6,675,802,273	\$4,186,019,789	\$10,861,822,062
• Present value of future contributions by members	736,872,799	270,635,099	1,007,507,898
• Present value of future employer contributions for:			
– Entry age normal cost	867,824,446	260,163,870	1,127,988,316
– Unfunded actuarial accrued liability	<u>636,977,787</u>	<u>413,429,031</u>	<u>1,050,406,818</u>
Total of current and future assets	\$8,917,477,305	\$5,130,247,789	\$14,047,725,094

¹ Excludes administrative expenses.

² Includes inactive members with member contributions on deposit.

Section 2: Actuarial Valuation Results

I. Volatility Ratios

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

The Asset Volatility Ratio (AVR), which is equal to the Market Value of Assets divided by total payroll, provides an indication of the potential contribution volatility for any given level of investment volatility. A higher AVR indicates that the plan is subject to a greater level of contribution volatility. This is a current measurement 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 payroll, provides an indication of the longer-term potential for contribution volatility for any given level of investment volatility. This is because, over an extended period of time, the plan's assets should track the plan's liabilities.

The LVR also indicates how volatile contributions will be in response to changes in the actuarial accrued liability due to actual experience or to changes in actuarial assumptions. The current total Plan LVR is about 11.0, but is 8.5 for General compared to 21.5 for Safety. This means, for example, that assumption changes will have a greater impact on employer contribution rates for Safety than for General.

Volatility Ratios for Years Ended December 31, 2013 – 2022

Year Ended December 31	Asset Volatility Ratio			Liability Volatility Ratio		
	General	Safety	Total	General	Safety	Total
2013	7.3	18.2	9.5	8.6	22.3	11.4
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

Section 2: Actuarial Valuation Results

J. Risk Assessment

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

This report does not contain a detailed analysis of the potential range of future measurements, but does include a concise discussion of some of the primary risks that may affect the Plan's future financial condition. We recommend a more detailed assessment of the risks to provide the Board with a better understanding of the risks inherent in the Plan that can inform both financial preparation and future decision making. This assessment would enable us to work with the Board to highlight and illustrate particular risks or potential future outcomes they may be interested in discussing and could include scenario testing, sensitivity testing, stress testing and stochastic modeling.

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

Risk Assessments

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

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

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

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

The investment return assumption is a long-term, static assumption for valuation purposes even though in reality market experience can be quite volatile in any given year. That volatility can cause significant changes in the financial condition of the Plan, affecting both funded status and contribution rates. The inherent year-to-year volatility is reduced by smoothing through the Actuarial Value of Assets, however investment experience can still have a sizable impact. As discussed in *Section 2, Subsection 1, Volatility Ratios*, on page 47, 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

Section 2: Actuarial Valuation Results

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 15.50%.

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

The actuarial valuation includes current life expectancy assumptions and an expectation of future improvement in life expectancy, which are significant assumptions given the relatively long duration of liabilities for pension plans. Emerging plan experience that does not match these expectations will result in increases or decreases in the actuarially determined contribution over time. This risk can be reduced by using tables appropriate for the Plan (public experience tables) that are weighted by benefit levels, and by using generational mortality projections. Effective with the December 31, 2018 valuation, the Board has adopted amount weighted mortality tables with generational mortality projections.

- Other Risks

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

Some plans also carry significant contribution risk, defined as the potential for actual future contributions deviating from expected future contributions. However, the 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 76.4% to 91.2%. 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 7.68%. This includes a high of 11.40% return and a low of 5.25%. The average over the last 5 years 6.53%. For more details see the Investment Return table in *Section 2, Subsection B* on page 26.

Section 2: Actuarial Valuation Results

- The primary source of new UAAL was the strengthening of assumptions through multiple assumption changes. For example, the assumption change in 2012 changed the discount rate from 7.75% to 7.25% and updated mortality tables, adding \$567 million in unfunded liability. The assumption change in 2015 changed the discount rate from 7.25% to 7.00% and updated mortality tables, adding \$114 million in unfunded liability. The assumption change in 2021 changed the discount rate from 7.00% to 6.75% and updated mortality tables, adding \$235 million in unfunded liability. For more details on the unfunded liability changes see *Section 3, Exhibit I, Table of Amortization Bases* starting on page 89.
- 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* provided on pages 104 and 105.

Maturity Measures

In the last 10 years the ratio of members in pay status to active participants has increased from 0.95 to 1.05. This ratio has fluctuated between 0.92 and 1.05 during the last 10 years. 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 Data* 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 paid were \$107 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 91.2% funded ratio). For more details on historical cash flows see the Comparison of Contributions Made with Benefits in *Section 2, Subsection B* 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 I, Volatility Ratios* on page 47.

Section 3: Supplemental Information

Exhibit A: Table of Plan Coverage

Total Plan

Category	Year Ended December 31		Change From Prior Year
	2022	2021	
Active members in valuation:			
• Number	10,082	10,005	0.8%
• Average age	46.1	46.3	-0.2
• Average years of service	10.1	10.2	-0.1
• Total projected compensation ¹	\$1,073,886,785	\$1,015,755,387	5.7%
• Average projected compensation	\$106,515	\$101,525	4.9%
• Account balances	\$1,366,675,181	\$1,313,264,988	4.1%
• Total active vested members	6,661	6,683	-0.3%
Inactive vested members:²			
• Number	3,974	3,812	4.2%
• Average Age	46.5	46.6	-0.1
Retired members:²			
• Number in pay status	8,197	7,908	3.7%
• Average age	71.1	71.0	0.1
• Average monthly benefit	\$4,584	\$4,487	2.2%
Disabled members:²			
• Number in pay status ³	874	885	-1.2%
• Average age	68.0	67.7	0.3
• Average monthly benefit	\$5,645	\$5,403	4.5%
Beneficiaries:²			
• Number in pay status	1,490	1,485	0.3%
• Average age	72.8	72.8	0.0
• Average monthly benefit	\$3,124	\$3,017	3.5%

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

² Includes members from withdrawn employers.

³ For 2022, includes 735 members receiving a service-connected disability and 139 members receiving a non-service connected disability.

Section 3: Supplemental Information

Exhibit A: Table of Plan Coverage (continued)

General Tier 1 (Non-Enhanced and Enhanced)

Category	Year Ended December 31		Change From Prior Year
	2022	2021	
Active members in valuation:			
• Number	357	397	-10.1%
• Average age	51.8	51.7	0.1
• Average years of service	19.8	19.3	0.5
• Total projected compensation ¹	\$50,429,409	\$53,193,650	-5.2%
• Average projected compensation	\$141,259	\$133,989	5.4%
• Account balances	\$76,334,921	\$78,417,254	-2.7%
• Total active vested members	356	396	-10.1%
Inactive vested members:²			
• Number	189	200	-5.5%
• Average Age	53.2	52.9	0.3
Retired members:²			
• Number in pay status	2,157	2,189	-1.5%
• Average age	76.1	75.8	0.3
• Average monthly benefit	\$4,999	\$4,861	2.8%
Disabled members:²			
• Number in pay status ³	217	226	-4.0%
• Average age	75.0	74.4	0.6
• Average monthly benefit	\$3,450	\$3,333	3.5%
Beneficiaries:²			
• Number in pay status	621	644	-3.6%
• Average age	77.9	78.2	-0.3
• Average monthly benefit	\$2,931	\$2,829	3.6%

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

² Includes members from withdrawn employers.

³ For 2022, includes 162 members receiving a service-connected disability and 55 members receiving a non-service connected disability.

Section 3: Supplemental Information

Exhibit A: Table of Plan Coverage (continued)

General Tier 2

Category	Year Ended December 31		Change From Prior Year
	2022	2021	
Active members in valuation:			
• Number ¹	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	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 vested members:²			
• Number	130	144	-9.7%
• Average Age	61.0	60.1	0.9
Retired members:²			
• Number in pay status	393	403	-2.5%
• Average age	77.0	76.9	0.1
• Average monthly benefit	\$949	\$931	1.9%
Disabled members:²			
• Number in pay status ³	31	35	-11.4%
• Average age	75.3	74.8	0.5
• Average monthly benefit	\$2,489	\$2,542	-2.1%
Beneficiaries:²			
• Number in pay status	104	105	-1.0%
• Average age	72.4	72.0	0.4
• Average monthly benefit	\$1,000	\$949	5.4%

¹ As of the December 31, 2005 valuation, there are no longer any Tier 2 active members as they have all transferred to Tier 3.

² Includes members from withdrawn employers.

³ For 2022, includes 18 members receiving a service-connected disability and 13 members receiving a non-service connected disability.

Section 3: Supplemental Information

Exhibit A: Table of Plan Coverage (continued)

General Tier 3

Category	Year Ended December 31		Change From Prior Year
	2022	2021	
Active members in valuation:			
• Number	3,184	3,506	-9.2%
• Average age	52.9	52.6	0.3
• Average years of service	17.7	17.0	0.7
• Total projected compensation ¹	\$370,830,449	\$379,094,662	-2.2%
• Average projected compensation	\$116,467	\$108,127	7.7%
• Account balances	\$610,553,860	\$609,081,412	0.2%
• Total active vested members	3,143	3,463	-9.2%
Inactive vested members:			
• Number	1,547	1,599	-3.3%
• Average Age	50.8	50.5	0.3
Retired members:			
• Number in pay status	4,063	3,816	6.5%
• Average age	69.6	69.3	0.3
• Average monthly benefit	\$3,377	\$3,237	4.3%
Disabled members:			
• Number in pay status ²	76	78	-2.6%
• Average age	65.7	65.3	0.4
• Average monthly benefit	\$2,822	\$2,726	3.5%
Beneficiaries:			
• Number in pay status	295	273	8.1%
• Average age	64.7	63.5	1.2
• Average monthly benefit	\$1,852	\$1,787	3.6%

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

² For 2022, includes 26 members receiving a service-connected disability and 50 members receiving a non-service connected disability.

Section 3: Supplemental Information

Exhibit A: Table of Plan Coverage (continued)

General Tier 4 – 2% COLA

Category	Year Ended December 31		Change From Prior Year
	2022	2021	
Active members in valuation:			
• Number	45	41	9.8%
• Average age	44.7	44.9	-0.2
• Average years of service	3.5	3.1	0.4
• Total projected compensation ¹	\$3,936,135	\$3,520,850	11.8%
• Average projected compensation	\$87,470	\$85,874	1.9%
• Account balances	\$1,444,229	\$1,093,623	32.1%
• Total active vested members	14	9	55.6%
Inactive vested members:			
• Number	14	13	7.7%
• Average Age	44.7	44.2	0.5
Retired members:			
• Number in pay status	1	1	0.0%
• Average age	70.6	69.6	1.0
• Average monthly benefit	\$1,384	\$1,357	2.0%
Disabled members:			
• Number in pay status	0	0	N/A
• Average age	N/A	N/A	N/A
• Average monthly benefit	N/A	N/A	N/A
Beneficiaries:			
• Number in pay status	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 salaries by the assumed salary scale.

Section 3: Supplemental Information

Exhibit A: Table of Plan Coverage (continued)

General Tier 4 – 3% COLA

Category	Year Ended December 31		Change From Prior Year
	2022	2021	
Active members in valuation:			
• Number	249	219	13.7%
• Average age	41.8	42.0	-0.2
• Average years of service	4.2	3.9	0.3
• Total projected compensation ¹	\$25,632,324	\$21,645,116	18.4%
• Average projected compensation	\$102,941	\$98,836	4.2%
• Account balances	\$11,253,610	\$8,771,267	28.3%
• Total active vested members	103	85	21.2%
Inactive vested members:			
• Number	65	53	22.6%
• Average Age	40.3	39.1	1.2
Retired members:			
• Number in pay status	4	3	33.3%
• Average age	66.0	63.2	2.8
• Average monthly benefit	\$1,388	\$1,419	-2.2%
Disabled members:			
• Number in pay status	0	0	N/A
• Average age	N/A	N/A	N/A
• Average monthly benefit	N/A	N/A	N/A
Beneficiaries:			
• Number in pay status	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 salaries by the assumed salary scale.

Section 3: Supplemental Information

Exhibit A: Table of Plan Coverage (continued)

General Tier 5 – 2% COLA

Category	Year Ended December 31		Change From Prior Year
	2022	2021	
Active members in valuation:			
• Number	4,089	3,683	11.0%
• Average age	42.7	42.3	0.4
• Average years of service	3.6	3.4	0.2
• Total projected compensation ¹	\$350,682,245	\$300,259,338	16.8%
• Average projected compensation	\$85,762	\$81,526	5.2%
• Account balances	\$126,776,352	\$100,488,070	26.2%
• Total active vested members	1,374	1,027	33.8%
Inactive vested members:			
• Number	1,290	1,084	19.0%
• Average Age	40.8	40.5	0.3
Retired members:			
• Number in pay status	63	35	80.0%
• Average age	65.6	65.5	0.1
• Average monthly benefit	\$751	\$646	16.3%
Disabled members:			
• Number in pay status	0	0	N/A
• Average age	N/A	N/A	N/A
• Average monthly benefit	N/A	N/A	N/A
Beneficiaries:			
• Number in pay status	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 salaries by the assumed salary scale.

Section 3: Supplemental Information

Exhibit A: Table of Plan Coverage (continued)

General Tier 5 – 3% COLA

Category	Year Ended December 31		Change From Prior Year
	2022	2021	
Active members in valuation:			
• Number	666	690	-3.5%
• Average age	46.4	46.2	0.2
• Average years of service	7.5	7.0	0.5
• Total projected compensation ¹	\$60,642,057	\$60,196,814	0.7%
• Average projected compensation	\$91,054	\$87,242	4.4%
• Account balances	\$50,911,219	\$46,192,040	10.2%
• Total active vested members	559	592	-5.6%
Inactive vested members:			
• Number	337	314	7.3%
• Average Age	44.4	43.9	0.5
Retired members:			
• Number in pay status	53	32	65.6%
• Average age	66.8	67.4	-0.6
• Average monthly benefit	\$1,029	\$860	19.7%
Disabled members:			
• Number in pay status	0	0	N/A
• Average age	N/A	N/A	N/A
• Average monthly benefit	N/A	N/A	N/A
Beneficiaries:			
• Number in pay status	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 salaries by the assumed salary scale.

Section 3: Supplemental Information

Exhibit A: Table of Plan Coverage (continued)

Safety Tier A (Non-Enhanced and Enhanced)

Category	Year Ended December 31		Change From Prior Year
	2022	2021	
Active members in valuation:			
• Number	635	691	-8.1%
• Average age	47.3	46.7	0.6
• Average years of service	18.8	18.2	0.6
• Total projected compensation ¹	\$106,886,325	\$108,051,877	-1.1%
• Average projected compensation	\$168,325	\$156,370	7.6%
• Account balances	\$399,143,984	\$394,420,760	1.2%
• Total active vested members	634	690	-8.1%
Inactive vested members:²			
• Number	215	234	-8.1%
• Average Age	48.3	47.9	0.4
Retired members:²			
• Number in pay status	1,441	1,415	1.8%
• Average age	66.6	66.6	0.0
• Average monthly benefit	\$8,705	\$8,501	2.4%
Disabled members:²			
• Number in pay status ³	533	532	0.2%
• Average age	65.8	65.3	0.5
• Average monthly benefit	\$7,181	\$6,910	3.9%
Beneficiaries:²			
• Number in pay status	468	461	1.5%
• Average age	71.4	71.0	0.4
• Average monthly benefit	\$4,660	\$4,487	3.9%

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

² Includes members from withdrawn employers.

³ For 2022, includes 514 members receiving a service-connected disability and 19 members receiving a non-service connected disability.

Section 3: Supplemental Information

Exhibit A: Table of Plan Coverage (continued)

Safety Tier C

Category	Year Ended December 31		Change From Prior Year
	2022	2021	
Active members in valuation:			
• Number	113	116	-2.6%
• Average age	41.7	40.9	0.8
• Average years of service	12.6	11.5	1.1
• Total projected compensation ¹	\$16,441,156	\$15,651,345	5.0%
• Average projected compensation	\$145,497	\$134,925	7.8%
• Account balances	\$26,308,093	\$23,794,663	10.6%
• Total active vested members	113	115	-1.7%
Inactive vested members:			
• Number	71	70	1.4%
• Average Age	39.2	38.0	1.2
Retired members:			
• Number in pay status	9	7	28.6%
• Average age	57.9	55.3	2.6
• Average monthly benefit	\$2,497	\$2,271	10.0%
Disabled members:			
• Number in pay status ²	12	12	0.0%
• Average age	45.3	44.3	1.0
• Average monthly benefit	\$3,847	\$3,772	2.0%
Beneficiaries:			
• Number in pay status	1	1	0.0%
• Average age	52.1	51.1	1.0
• Average monthly benefit	\$2,102	\$2,061	2.0%

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

² For 2022, includes 10 members receiving a service-connected disability and 2 members receiving a non-service connected disability.

Section 3: Supplemental Information

Exhibit A: Table of Plan Coverage (continued)

Safety Tier D

Category	Year Ended December 31		Change From Prior Year
	2022	2021	
Active members in valuation:			
• Number	144	130	10.8%
• Average age	35.9	35.7	0.2
• Average years of service	5.9	5.6	0.3
• Total projected compensation ¹	\$19,116,891	\$16,358,143	16.9%
• Average projected compensation	\$132,756	\$125,832	5.5%
• Account balances	\$18,249,978	\$15,016,650	21.5%
• Total active vested members	93	87	6.9%
Inactive vested members:			
• Number	27	32	-15.6%
• Average Age	37.4	36.0	1.4
Retired members:			
• Number in pay status	2	2	0.0%
• Average age	61.8	60.8	1.0
• Average monthly benefit	\$2,290	\$2,224	3.0%
Disabled members:			
• Number in pay status ²	3	2	50.0%
• Average age	52.8	60.7	-7.9
• Average monthly benefit	\$3,650	\$2,821	29.4%
Beneficiaries:			
• Number in pay status	1	1	0.0%
• Average age	56.5	55.5	1.0
• Average monthly benefit	\$733	\$712	2.9%

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

² For 2022, includes 3 members receiving a service-connected disability.

Section 3: Supplemental Information

Exhibit A: Table of Plan Coverage (continued)

Safety Tier E

Category	Year Ended December 31		Change From Prior Year
	2022	2021	
Active members in valuation:			
• Number	600	532	12.8%
• Average age	34.3	34.0	0.3
• Average years of service	4.6	4.2	0.4
• Total projected compensation ¹	\$69,289,794	\$57,783,593	19.9%
• Average projected compensation	\$115,483	\$108,616	6.3%
• Account balances	\$45,698,937	\$35,989,250	27.0%
• Total active vested members	272	219	24.2%
Inactive vested members:			
• Number	89	69	29.0%
• Average Age	35.6	35.2	0.4
Retired members:			
• Number in pay status	11	5	120.0%
• Average age	60.9	59.6	1.3
• Average monthly benefit	\$1,920	\$1,602	19.9%
Disabled members:			
• Number in pay status ²	2	0	N/A
• Average age	35.0	N/A	N/A
• Average monthly benefit	\$4,433	N/A	N/A
Beneficiaries:			
• Number in pay status	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 salaries by the assumed salary scale.

² For 2022, includes 2 members receiving a service-connected disability.

Section 3: Supplemental Information

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

Total Plan

Age	Years of Benefit Service									
	Total	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34	35 – 39	40 & over
Under 25	115	115	—	—	—	—	—	—	—	—
	\$71,064	\$71,064	—	—	—	—	—	—	—	—
25 - 29	643	577	66	—	—	—	—	—	—	—
	\$85,840	\$84,170	\$100,442	—	—	—	—	—	—	—
30 - 34	1,144	719	387	37	1	—	—	—	—	—
	\$95,704	\$89,237	\$104,833	\$126,401	\$77,296	—	—	—	—	—
35 - 39	1,378	598	527	202	49	2	—	—	—	—
	\$105,674	\$95,053	\$105,692	\$131,779	\$127,223	\$112,071	—	—	—	—
40 - 44	1,454	487	427	251	247	42	—	—	—	—
	\$110,909	\$92,058	\$104,060	\$134,803	\$133,671	\$122,463	—	—	—	—
45 - 49	1,455	359	355	211	258	253	19	—	—	—
	\$116,052	\$91,831	\$103,877	\$127,941	\$136,008	\$136,096	\$131,233	—	—	—
50 - 54	1,435	336	309	207	214	263	81	24	1	—
	\$115,361	\$92,669	\$98,362	\$124,627	\$132,036	\$137,773	\$133,497	\$117,650	\$87,932	—
55 - 59	1,251	247	255	171	178	222	99	65	14	—
	\$108,055	\$88,168	\$97,147	\$108,552	\$114,846	\$121,143	\$122,060	\$139,863	\$110,899	—
60 - 64	807	140	189	123	111	118	62	41	16	7
	\$103,172	\$82,960	\$87,590	\$110,429	\$111,406	\$112,499	\$134,956	\$127,374	\$104,213	\$87,204
65 - 69	319	48	88	55	39	46	15	16	7	5
	\$102,530	\$93,447	\$83,349	\$113,938	\$121,985	\$102,278	\$115,984	\$123,023	\$127,235	\$111,899
70 & over	81	13	22	14	13	10	3	4	1	1
	\$106,300	\$102,189	\$84,859	\$133,796	\$110,000	\$103,752	\$81,436	\$109,049	\$113,304	\$280,489
Total	10,082	3,639	2,625	1,271	1,110	956	279	150	39	13
	\$106,515	\$89,553	\$101,003	\$124,477	\$127,631	\$127,558	\$128,107	\$130,277	\$110,561	\$111,570

Section 3: Supplemental Information

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

General Tier 1 Non-Enhanced

Age	Years of Benefit Service									
	Total	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34	35 – 39	40 & over
Under 25	—	—	—	—	—	—	—	—	—	—
25 - 29	—	—	—	—	—	—	—	—	—	—
30 - 34	—	—	—	—	—	—	—	—	—	—
35 - 39	—	—	—	—	—	—	—	—	—	—
40 - 44	1	1	—	—	—	—	—	—	—	—
	\$156,525	\$156,525	—	—	—	—	—	—	—	—
45 - 49	—	—	—	—	—	—	—	—	—	—
50 - 54	2	—	—	—	2	—	—	—	—	—
	\$161,052	—	—	—	\$161,052	—	—	—	—	—
55 - 59	—	—	—	—	—	—	—	—	—	—
60 - 64	1	—	—	1	—	—	—	—	—	—
	\$111,306	—	—	\$111,306	—	—	—	—	—	—
65 - 69	—	—	—	—	—	—	—	—	—	—
70 & over	—	—	—	—	—	—	—	—	—	—
Total	4	1	—	1	2	—	—	—	—	—
	\$147,484	\$156,525	—	\$111,306	\$161,052	—	—	—	—	—

Section 3: Supplemental Information

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

General Tier 1 Enhanced

Age	Years of Benefit Service									
	Total	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34	35 – 39	40 & over
Under 25	—	—	—	—	—	—	—	—	—	—
25 - 29	—	—	—	—	—	—	—	—	—	—
30 - 34	5	—	—	5	—	—	—	—	—	—
	\$169,650	—	—	\$169,650	—	—	—	—	—	—
35 - 39	23	4	5	12	2	—	—	—	—	—
	\$135,404	\$137,840	\$114,176	\$149,741	\$97,583	—	—	—	—	—
40 - 44	55	6	7	21	16	5	—	—	—	—
	\$145,288	\$158,225	\$146,917	\$142,841	\$143,370	\$143,900	—	—	—	—
45 - 49	66	6	8	14	18	17	3	—	—	—
	\$137,547	\$116,054	\$157,180	\$144,706	\$132,089	\$142,469	\$99,616	—	—	—
50 - 54	72	4	7	16	11	24	9	1	—	—
	\$143,850	\$111,991	\$153,552	\$153,834	\$110,740	\$160,273	\$122,247	\$208,068	—	—
55 - 59	73	1	2	9	24	23	6	7	1	—
	\$147,159	\$222,559	\$282,407	\$153,518	\$137,349	\$148,675	\$136,114	\$122,791	\$181,477	—
60 - 64	36	—	2	8	4	11	5	5	1	—
	\$130,333	—	\$107,434	\$122,419	\$126,871	\$145,761	\$109,802	\$139,870	\$138,555	—
65 - 69	16	—	2	3	3	4	1	1	—	2
	\$120,909	—	\$173,443	\$130,093	\$137,519	\$119,600	\$80,021	\$77,587	—	\$74,407
70 & over	7	—	—	1	3	1	—	1	—	1
	\$154,521	—	—	\$297,048	\$111,371	\$71,982	—	\$98,014	—	\$280,489
Total	353	21	33	89	81	85	24	15	2	3
	\$141,188	\$136,550	\$153,278	\$148,094	\$131,301	\$147,780	\$118,533	\$129,504	\$160,016	\$143,101

Section 3: Supplemental Information

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

General Tier 3 Enhanced

Age	Years of Benefit Service									
	Total	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34	35 – 39	40 & over
Under 25	—	—	—	—	—	—	—	—	—	—
25 - 29	—	—	—	—	—	—	—	—	—	—
30 - 34	22	3	2	17	—	—	—	—	—	—
	\$97,401	\$111,364	\$78,219	\$97,194	—	—	—	—	—	—
35 - 39	194	17	40	108	27	2	—	—	—	—
	\$112,737	\$113,799	\$121,266	\$113,739	\$95,471	\$112,071	—	—	—	—
40 - 44	415	16	45	171	155	28	—	—	—	—
	\$121,841	\$116,912	\$130,814	\$128,290	\$117,001	\$97,639	—	—	—	—
45 - 49	554	18	49	174	160	142	11	—	—	—
	\$120,527	\$138,113	\$125,498	\$122,188	\$121,338	\$114,970	\$103,284	—	—	—
50 - 54	656	24	45	167	161	179	60	19	1	—
	\$120,732	\$124,918	\$120,114	\$118,363	\$121,860	\$123,156	\$124,429	\$95,392	\$87,932	—
55 - 59	670	10	39	149	142	178	87	53	12	—
	\$111,529	\$152,601	\$112,425	\$101,090	\$107,942	\$111,783	\$116,104	\$136,005	\$101,402	—
60 - 64	453	9	27	103	104	97	55	36	15	7
	\$112,716	\$145,367	\$99,241	\$109,745	\$109,225	\$105,857	\$135,981	\$125,639	\$101,924	\$87,204
65 - 69	173	2	8	51	34	42	12	14	7	3
	\$112,329	\$165,967	\$93,962	\$113,727	\$121,510	\$100,628	\$108,604	\$113,351	\$127,235	\$136,894
70 & over	47	2	6	13	10	9	3	3	1	—
	\$107,723	\$153,700	\$70,380	\$121,238	\$109,589	\$107,282	\$81,436	\$112,728	\$113,304	—
Total	3,184	101	261	953	793	677	228	125	36	10
	\$116,467	\$129,673	\$117,572	\$116,100	\$115,587	\$113,273	\$121,620	\$123,751	\$106,599	\$102,111

Section 3: Supplemental Information

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

General Tier 4 – 2% COLA

Age	Years of Benefit Service									
	Total	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34	35 – 39	40 & over
Under 25	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
25 - 29	7	7	—	—	—	—	—	—	—	—
	\$73,053	\$73,053	—	—	—	—	—	—	—	—
30 - 34	5	5	—	—	—	—	—	—	—	—
	\$84,160	\$84,160	—	—	—	—	—	—	—	—
35 - 39	5	2	3	—	—	—	—	—	—	—
	\$74,693	\$54,431	\$88,202	—	—	—	—	—	—	—
40 - 44	3	2	1	—	—	—	—	—	—	—
	\$86,098	\$92,772	\$72,750	—	—	—	—	—	—	—
45 - 49	8	7	1	—	—	—	—	—	—	—
	\$83,096	\$88,003	\$48,747	—	—	—	—	—	—	—
50 - 54	8	5	3	—	—	—	—	—	—	—
	\$113,194	\$125,267	\$93,071	—	—	—	—	—	—	—
55 - 59	7	4	3	—	—	—	—	—	—	—
	\$89,546	\$102,829	\$71,836	—	—	—	—	—	—	—
60 - 64	1	1	—	—	—	—	—	—	—	—
	\$65,502	\$65,502	—	—	—	—	—	—	—	—
65 - 69	1	1	—	—	—	—	—	—	—	—
	\$109,562	\$109,562	—	—	—	—	—	—	—	—
70 & over	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
Total	45	34	11	—	—	—	—	—	—	—
	\$87,470	\$89,862	\$80,075	—	—	—	—	—	—	—

Section 3: Supplemental Information

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

General Tier 4 – 3% COLA

Age	Years of Benefit Service									
	Total	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34	35 – 39	40 & over
Under 25	10	10	—	—	—	—	—	—	—	—
	\$78,521	\$78,521	—	—	—	—	—	—	—	—
25 - 29	23	22	1	—	—	—	—	—	—	—
	\$83,884	\$82,237	\$120,100	—	—	—	—	—	—	—
30 - 34	39	23	16	—	—	—	—	—	—	—
	\$97,337	\$83,417	\$117,346	—	—	—	—	—	—	—
35 - 39	45	31	14	—	—	—	—	—	—	—
	\$107,829	\$105,708	\$112,526	—	—	—	—	—	—	—
40 - 44	40	25	15	—	—	—	—	—	—	—
	\$115,526	\$107,359	\$129,138	—	—	—	—	—	—	—
45 - 49	33	15	18	—	—	—	—	—	—	—
	\$106,459	\$98,263	\$113,288	—	—	—	—	—	—	—
50 - 54	23	13	10	—	—	—	—	—	—	—
	\$107,536	\$103,792	\$112,403	—	—	—	—	—	—	—
55 - 59	24	10	14	—	—	—	—	—	—	—
	\$107,720	\$103,910	\$110,441	—	—	—	—	—	—	—
60 - 64	9	5	4	—	—	—	—	—	—	—
	\$81,101	\$73,172	\$91,012	—	—	—	—	—	—	—
65 - 69	3	2	1	—	—	—	—	—	—	—
	\$115,554	\$130,701	\$85,262	—	—	—	—	—	—	—
70 & over	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
Total	249	156	93	—	—	—	—	—	—	—
	\$102,941	\$95,920	\$114,718	—	—	—	—	—	—	—

Section 3: Supplemental Information

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

General Tier 5 – 2% COLA

Age	Years of Benefit Service									
	Total	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34	35 – 39	40 & over
Under 25	67	67	—	—	—	—	—	—	—	—
	\$57,959	\$57,959	—	—	—	—	—	—	—	—
25 - 29	420	388	32	—	—	—	—	—	—	—
	\$75,462	\$75,174	\$78,949	—	—	—	—	—	—	—
30 - 34	721	543	178	—	—	—	—	—	—	—
	\$85,590	\$84,078	\$90,203	—	—	—	—	—	—	—
35 - 39	722	459	260	3	—	—	—	—	—	—
	\$92,366	\$90,587	\$95,135	\$124,690	—	—	—	—	—	—
40 - 44	595	394	199	2	—	—	—	—	—	—
	\$89,048	\$88,036	\$90,530	\$140,845	—	—	—	—	—	—
45 - 49	455	289	166	—	—	—	—	—	—	—
	\$88,387	\$85,838	\$92,826	—	—	—	—	—	—	—
50 - 54	426	259	166	—	1	—	—	—	—	—
	\$87,148	\$86,181	\$88,328	—	\$141,723	—	—	—	—	—
55 - 59	346	205	140	1	—	—	—	—	—	—
	\$83,375	\$79,902	\$88,052	\$140,778	—	—	—	—	—	—
60 - 64	221	117	101	3	—	—	—	—	—	—
	\$80,681	\$77,076	\$85,644	\$54,153	—	—	—	—	—	—
65 - 69	95	42	53	—	—	—	—	—	—	—
	\$81,256	\$87,326	\$76,446	—	—	—	—	—	—	—
70 & over	21	11	10	—	—	—	—	—	—	—
	\$94,471	\$92,823	\$96,283	—	—	—	—	—	—	—
Total	4,089	2,774	1,305	9	1	—	—	—	—	—
	\$85,762	\$83,700	\$89,959	\$106,555	\$141,723	—	—	—	—	—

Section 3: Supplemental Information

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

General Tier 5 – 3% COLA

Age	Years of Benefit Service									
	Total	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34	35 – 39	40 & over
Under 25	6	6	—	—	—	—	—	—	—	—
	\$57,923	\$57,923	—	—	—	—	—	—	—	—
25 - 29	16	13	3	—	—	—	—	—	—	—
	\$66,813	\$64,761	\$75,702	—	—	—	—	—	—	—
30 - 34	61	21	39	—	1	—	—	—	—	—
	\$80,221	\$70,842	\$85,347	—	\$77,296	—	—	—	—	—
35 - 39	125	19	105	1	—	—	—	—	—	—
	\$95,102	\$81,310	\$97,528	\$102,410	—	—	—	—	—	—
40 - 44	128	18	110	—	—	—	—	—	—	—
	\$94,427	\$77,401	\$97,213	—	—	—	—	—	—	—
45 - 49	101	12	89	—	—	—	—	—	—	—
	\$97,595	\$90,010	\$98,617	—	—	—	—	—	—	—
50 - 54	80	13	63	4	—	—	—	—	—	—
	\$91,291	\$91,001	\$90,930	\$97,923	—	—	—	—	—	—
55 - 59	56	7	47	2	—	—	—	—	—	—
	\$94,574	\$107,296	\$91,373	\$125,271	—	—	—	—	—	—
60 - 64	62	5	53	4	—	—	—	—	—	—
	\$84,985	\$87,499	\$83,081	\$107,069	—	—	—	—	—	—
65 - 69	25	1	23	1	—	—	—	—	—	—
	\$86,009	\$114,880	\$85,180	\$76,221	—	—	—	—	—	—
70 & over	6	—	6	—	—	—	—	—	—	—
	\$80,297	—	\$80,297	—	—	—	—	—	—	—
Total	666	115	538	12	1	—	—	—	—	—
	\$91,054	\$79,842	\$93,186	\$104,095	\$77,296	—	—	—	—	—

Section 3: Supplemental Information

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

Safety Tier A Non-Enhanced

Age	Years of Benefit Service									
	Total	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34	35 – 39	40 & over
Under 25	—	—	—	—	—	—	—	—	—	—
25 - 29	—	—	—	—	—	—	—	—	—	—
30 - 34	—	—	—	—	—	—	—	—	—	—
35 - 39	1	—	1	—	—	—	—	—	—	—
	\$137,571	—	\$137,571	—	—	—	—	—	—	—
40 - 44	—	—	—	—	—	—	—	—	—	—
45 - 49	3	—	—	—	—	3	—	—	—	—
	\$172,780	—	—	—	—	\$172,780	—	—	—	—
50 - 54	1	—	—	—	—	1	—	—	—	—
	\$178,511	—	—	—	—	\$178,511	—	—	—	—
55 - 59	3	—	1	—	—	—	—	2	—	—
	\$190,810	—	\$155,387	—	—	—	—	\$208,521	—	—
60 - 64	—	—	—	—	—	—	—	—	—	—
65 - 69	—	—	—	—	—	—	—	—	—	—
70 & over	—	—	—	—	—	—	—	—	—	—
Total	8	—	2	—	—	4	—	2	—	—
	\$175,857	—	\$146,479	—	—	\$174,213	—	\$208,521	—	—

Section 3: Supplemental Information

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

Safety Tier A Enhanced

Age	Years of Benefit Service									
	Total	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34	35 – 39	40 & over
Under 25	—	—	—	—	—	—	—	—	—	—
25 - 29	—	—	—	—	—	—	—	—	—	—
30 - 34	10	1	5	4	—	—	—	—	—	—
	\$154,264	\$133,801	\$164,039	\$147,162	—	—	—	—	—	—
35 - 39	81	9	14	43	15	—	—	—	—	—
	\$166,061	\$160,517	\$165,251	\$162,547	\$180,215	—	—	—	—	—
40 - 44	138	6	12	38	73	9	—	—	—	—
	\$162,072	\$144,786	\$150,388	\$155,132	\$165,856	\$187,783	—	—	—	—
45 - 49	193	4	5	14	74	91	5	—	—	—
	\$170,473	\$215,302	\$193,239	\$171,880	\$168,145	\$166,663	\$211,692	—	—	—
50 - 54	131	1	3	14	38	59	12	4	—	—
	\$175,662	\$170,008	\$186,364	\$161,464	\$179,147	\$172,275	\$187,273	\$200,772	—	—
55 - 59	49	—	1	5	12	21	6	3	1	—
	\$171,009	—	\$160,544	\$179,387	\$151,542	\$170,318	\$194,372	\$202,074	\$154,290	—
60 - 64	20	—	1	4	3	10	2	—	—	—
	\$147,684	—	\$114,094	\$149,396	\$166,417	\$140,343	\$169,665	—	—	—
65 - 69	5	—	—	—	2	—	2	1	—	—
	\$174,772	—	—	—	\$106,753	—	\$178,242	\$303,871	—	—
70 & over	—	—	—	—	—	—	—	—	—	—
Total	627	21	41	122	217	190	27	8	1	—
	\$168,229	\$165,637	\$164,348	\$160,939	\$168,628	\$168,425	\$191,400	\$214,147	\$154,290	—

Section 3: Supplemental Information

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

Safety Tier C

Age	Years of Benefit Service									
	Total	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34	35 – 39	40 & over
Under 25	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
25 - 29	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
30 - 34	13	—	2	11	—	—	—	—	—	—
	\$143,685	—	\$140,121	\$144,333	—	—	—	—	—	—
35 - 39	46	1	5	35	5	—	—	—	—	—
	\$144,731	\$123,726	\$140,679	\$144,933	\$151,568	—	—	—	—	—
40 - 44	25	2	1	19	3	—	—	—	—	—
	\$143,237	\$118,647	\$141,773	\$143,242	\$160,086	—	—	—	—	—
45 - 49	15	—	—	9	6	—	—	—	—	—
	\$143,895	—	—	\$144,747	\$142,616	—	—	—	—	—
50 - 54	8	—	1	6	1	—	—	—	—	—
	\$150,753	—	\$141,638	\$152,943	\$146,725	—	—	—	—	—
55 - 59	5	—	—	5	—	—	—	—	—	—
	\$166,033	—	—	\$166,033	—	—	—	—	—	—
60 - 64	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
65 - 69	1	—	1	—	—	—	—	—	—	—
	\$140,103	—	\$140,103	—	—	—	—	—	—	—
70 & over	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
Total	113	3	10	85	15	—	—	—	—	—
	\$145,497	\$120,340	\$140,715	\$146,264	\$149,368	—	—	—	—	—

Section 3: Supplemental Information

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

Safety Tier D

Age	Years of Benefit Service									
	Total	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34	35 – 39	40 & over
Under 25	2	2	—	—	—	—	—	—	—	—
	\$86,882	\$86,882	—	—	—	—	—	—	—	—
25 - 29	27	23	4	—	—	—	—	—	—	—
	\$129,729	\$129,322	\$132,074	—	—	—	—	—	—	—
30 - 34	42	22	20	—	—	—	—	—	—	—
	\$135,615	\$137,957	\$133,039	—	—	—	—	—	—	—
35 - 39	44	8	36	—	—	—	—	—	—	—
	\$136,018	\$129,468	\$137,473	—	—	—	—	—	—	—
40 - 44	14	2	12	—	—	—	—	—	—	—
	\$136,260	\$115,497	\$139,721	—	—	—	—	—	—	—
45 - 49	9	1	8	—	—	—	—	—	—	—
	\$119,269	\$146,402	\$115,878	—	—	—	—	—	—	—
50 - 54	3	—	3	—	—	—	—	—	—	—
	\$134,065	—	\$134,065	—	—	—	—	—	—	—
55 - 59	3	—	3	—	—	—	—	—	—	—
	\$125,522	—	\$125,522	—	—	—	—	—	—	—
60 - 64	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
65 - 69	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
70 & over	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
Total	144	58	86	—	—	—	—	—	—	—
	\$132,756	\$130,972	\$133,960	—	—	—	—	—	—	—

Section 3: Supplemental Information

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

Safety Tier E

Age	Years of Benefit Service									
	Total	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34	35 – 39	40 & over
Under 25	30	30	—	—	—	—	—	—	—	—
	\$99,419	\$99,419	—	—	—	—	—	—	—	—
25 - 29	150	124	26	—	—	—	—	—	—	—
	\$109,926	\$106,948	\$124,128	—	—	—	—	—	—	—
30 - 34	226	101	125	—	—	—	—	—	—	—
	\$117,555	\$110,662	\$123,125	—	—	—	—	—	—	—
35 - 39	92	48	44	—	—	—	—	—	—	—
	\$115,225	\$109,204	\$121,794	—	—	—	—	—	—	—
40 - 44	40	15	25	—	—	—	—	—	—	—
	\$118,670	\$104,666	\$127,072	—	—	—	—	—	—	—
45 - 49	18	7	11	—	—	—	—	—	—	—
	\$116,807	\$114,317	\$118,392	—	—	—	—	—	—	—
50 - 54	25	17	8	—	—	—	—	—	—	—
	\$122,320	\$120,083	\$127,072	—	—	—	—	—	—	—
55 - 59	15	10	5	—	—	—	—	—	—	—
	\$146,319	\$144,752	\$149,454	—	—	—	—	—	—	—
60 - 64	4	3	1	—	—	—	—	—	—	—
	\$136,977	\$139,778	\$128,574	—	—	—	—	—	—	—
65 - 69	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
70 & over	—	—	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—
Total	600	355	245	—	—	—	—	—	—	—
	\$115,483	\$109,694	\$123,871	—	—	—	—	—	—	—

Section 3: Supplemental Information

Exhibit C: Retired Members and Beneficiaries as of December 31, 2022 by Age, Years of Retirement, and Average Monthly Benefit

Total Plan

Age	Years of Retirement									
	Total	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34	35 – 39	40 & over
Under 30	17	4	4	5	3	—	1	—	—	—
	\$726	\$230	\$186	\$1,079	\$1,652	—	\$324	—	—	—
30 - 34	9	2	2	3	—	1	1	—	—	—
	\$1,717	\$4,705	\$186	\$1,448	—	\$817	\$504	—	—	—
35 - 39	29	7	9	4	2	4	3	—	—	—
	\$2,265	\$3,923	\$2,361	\$1,423	\$1,486	\$1,599	\$639	—	—	—
40 - 44	29	12	5	4	5	—	1	2	—	—
	\$3,216	\$4,533	\$3,131	\$3,882	\$652	—	\$1,584	\$1,429	—	—
45 - 49	80	26	17	15	10	1	7	3	1	—
	\$3,408	\$3,937	\$4,111	\$3,087	\$4,134	\$1,585	\$879	\$1,289	\$1,182	—
50 - 54	368	257	47	17	19	14	9	5	—	—
	\$4,637	\$4,998	\$4,846	\$3,561	\$4,259	\$2,540	\$1,453	\$832	—	—
55 - 59	823	413	293	57	26	18	11	5	—	—
	\$4,855	\$4,503	\$5,172	\$7,004	\$4,253	\$3,768	\$2,966	\$2,048	—	—
60 - 64	1,340	495	366	371	41	33	18	11	5	—
	\$4,519	\$4,039	\$3,630	\$6,231	\$3,998	\$4,091	\$3,474	\$3,980	\$2,180	—
65 - 69	1,886	521	429	551	254	64	34	18	10	5
	\$4,485	\$3,637	\$3,346	\$5,628	\$6,136	\$3,944	\$3,042	\$3,618	\$3,517	\$2,615
70 - 74	2,081	238	390	655	483	204	51	34	17	9
	\$4,538	\$3,236	\$3,027	\$5,175	\$5,731	\$4,772	\$3,362	\$3,251	\$3,583	\$2,172
75 - 79	1,814	45	119	439	510	424	156	46	42	33
	\$4,679	\$2,754	\$2,467	\$4,308	\$5,405	\$5,940	\$3,001	\$3,879	\$3,573	\$3,253
80 - 84	1,064	9	18	119	260	297	182	108	36	35
	\$4,353	\$1,588	\$1,764	\$3,140	\$3,810	\$5,340	\$5,212	\$4,032	\$3,395	\$3,685
85 - 89	617	1	4	16	52	142	151	133	78	40
	\$4,043	\$7,808	\$1,830	\$3,001	\$2,698	\$4,115	\$4,616	\$4,773	\$2,927	\$3,662
90 & Over	404	—	—	2	8	19	68	93	105	109
	\$3,542	—	—	\$986	\$2,642	\$2,617	\$4,195	\$4,175	\$3,484	\$2,923
Total	10,561	2,030	1,703	2,258	1,673	1,221	693	458	294	231
	\$4,466	\$4,015	\$3,599	\$5,161	\$5,166	\$5,087	\$4,030	\$4,099	\$3,315	\$3,178

Note: Total retired benefit \$47,165,238, average age 71.1, and average years of retirement 14.4. Includes members from withdrawn employers.

Section 3: Supplemental Information

Exhibit C: Retired Members and Beneficiaries as of December 31, 2022 by Age, Years of Retirement, and Average Monthly Benefit (continued)

General Tier 1 (Non-Enhanced and Enhanced)

Age	Years of Retirement									
	Total	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34	35 – 39	40 & over
Under 30	2	—	—	2	—	—	—	—	—	—
	\$135	—	—	\$135	—	—	—	—	—	—
30 - 34	2	—	—	1	—	—	1	—	—	—
	\$847	—	—	\$1,191	—	—	\$504	—	—	—
35 - 39	6	1	1	2	—	—	2	—	—	—
	\$946	\$928	\$1,360	\$1,191	—	—	\$504	—	—	—
40 - 44	2	—	—	1	—	—	1	—	—	—
	\$1,823	—	—	\$2,062	—	—	\$1,584	—	—	—
45 - 49	10	1	1	2	—	—	4	1	1	—
	\$1,258	\$928	\$1,494	\$2,062	—	—	\$916	\$1,185	\$1,182	—
50 - 54	23	15	—	1	1	2	3	1	—	—
	\$2,262	\$2,388	—	\$4,472	\$2,835	\$1,877	\$1,320	\$1,193	—	—
55 - 59	93	56	23	3	4	3	3	1	—	—
	\$3,684	\$4,483	\$2,295	\$4,298	\$3,792	\$1,225	\$1,515	\$2,457	—	—
60 - 64	173	65	50	37	8	3	3	3	4	—
	\$3,568	\$4,546	\$3,634	\$2,684	\$1,846	\$2,343	\$1,505	\$2,828	\$1,516	—
65 - 69	382	55	84	154	44	19	10	8	5	3
	\$4,349	\$4,192	\$3,870	\$5,617	\$2,779	\$2,757	\$2,902	\$2,690	\$2,042	\$1,696
70 - 74	587	18	53	213	176	78	17	20	5	7
	\$4,899	\$3,640	\$3,283	\$6,431	\$5,173	\$2,935	\$2,842	\$2,802	\$2,391	\$1,516
75 - 79	621	3	14	77	218	186	75	20	13	15
	\$5,014	\$3,210	\$2,665	\$6,023	\$6,329	\$4,830	\$2,631	\$2,660	\$3,124	\$2,241
80 - 84	442	—	1	12	65	161	103	62	20	18
	\$4,687	—	\$3,746	\$6,466	\$6,156	\$5,983	\$3,623	\$2,454	\$2,533	\$2,820
85 - 89	358	—	1	1	12	69	108	84	59	24
	\$4,328	—	\$395	\$298	\$4,833	\$6,208	\$5,254	\$3,447	\$2,207	\$3,140
90 & Over	294	—	—	—	2	8	36	78	93	77
	\$3,553	—	—	—	\$6,205	\$4,452	\$5,650	\$4,485	\$2,956	\$2,188
Total	2,995	214	228	506	530	529	366	278	200	144
	\$4,458	\$4,159	\$3,412	\$5,738	\$5,501	\$4,956	\$3,930	\$3,366	\$2,629	\$2,389

Note: Total retired benefit \$13,352,079, average age 76.4, and average years of retirement 20.4. Includes members from withdrawn employers.

Section 3: Supplemental Information

Exhibit C: Retired Members and Beneficiaries as of December 31, 2022 by Age, Years of Retirement, and Average Monthly Benefit (continued)

General Tier 2

Age	Years of Retirement									
	Total	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34	35 – 39	40 & over
Under 30	—	—	—	—	—	—	—	—	—	—
30 - 34	—	—	—	—	—	—	—	—	—	—
35 - 39	2	—	—	—	—	2	—	—	—	—
40 - 44	\$968	—	—	—	—	\$968	—	—	—	—
45 - 49	6	—	—	—	—	1	3	2	—	—
50 - 54	\$1,126	—	—	—	—	\$1,585	\$830	\$1,340	—	—
55 - 59	12	1	—	—	—	1	6	4	—	—
60 - 64	\$1,028	\$25	—	—	—	\$228	\$1,520	\$742	—	—
65 - 69	14	6	4	—	1	—	2	1	—	—
70 - 74	\$672	\$438	\$185	—	\$753	—	\$1,481	\$2,324	—	—
75 - 79	42	13	14	9	—	1	5	—	—	—
80 - 84	\$555	\$502	\$391	\$343	—	\$890	\$1,464	—	—	—
85 - 89	65	11	13	8	15	7	10	1	—	—
90 & Over	\$981	\$1,001	\$513	\$589	\$802	\$1,767	\$1,362	\$3,340	—	—
Total	69	3	8	12	21	18	4	3	—	—
	\$997	\$353	\$992	\$808	\$883	\$1,005	\$1,759	\$2,151	—	—
	119	1	3	13	23	37	35	5	2	—
	\$1,068	\$224	\$1,083	\$983	\$727	\$1,097	\$1,180	\$1,799	\$1,608	—
	74	—	1	2	14	28	23	6	—	—
	\$1,000	—	\$31	\$302	\$915	\$1,198	\$960	\$824	—	—
	79	—	—	2	2	36	28	10	1	—
	\$1,306	—	—	\$692	\$1,926	\$1,437	\$1,096	\$1,457	\$940	—
	46	—	—	—	—	11	23	10	1	1
	\$1,377	—	—	—	—	\$1,283	\$1,490	\$1,383	\$671	\$474
Total	528	35	43	46	76	142	139	42	4	1
	\$1,049	\$614	\$560	\$701	\$852	\$1,233	\$1,230	\$1,431	\$1,207	\$474

Note: Total retired benefit \$553,949, average age 76.0, and average years of retirement 20.0. Includes members from withdrawn employers.

Section 3: Supplemental Information

Exhibit C: Retired Members and Beneficiaries as of December 31, 2022 by Age, Years of Retirement, and Average Monthly Benefit (continued)

General Tier 3

Age	Years of Retirement									
	Total	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34	35 – 39	40 & over
Under 30	11	4	4	3	—	—	—	—	—	—
	\$617	\$230	\$186	\$1,709	—	—	—	—	—	—
30 - 34	5	—	2	2	—	1	—	—	—	—
	\$869	—	\$186	\$1,577	—	\$817	—	—	—	—
35 - 39	11	1	4	2	1	2	1	—	—	—
	\$1,233	\$125	\$705	\$1,655	\$1,938	\$2,230	\$909	—	—	—
40 - 44	6	—	1	—	5	—	—	—	—	—
	\$639	—	\$578	—	\$652	—	—	—	—	—
45 - 49	16	3	5	5	3	—	—	—	—	—
	\$1,814	\$891	\$2,569	\$1,916	\$1,310	—	—	—	—	—
50 - 54	92	72	9	3	4	4	—	—	—	—
	\$1,888	\$1,938	\$2,198	\$2,038	\$887	\$1,182	—	—	—	—
55 - 59	339	229	93	7	7	3	—	—	—	—
	\$2,963	\$3,385	\$2,030	\$2,834	\$2,224	\$1,647	—	—	—	—
60 - 64	702	345	241	109	4	3	—	—	—	—
	\$3,282	\$4,014	\$2,859	\$1,985	\$3,069	\$485	—	—	—	—
65 - 69	1,024	377	311	263	64	9	—	—	—	—
	\$3,555	\$3,901	\$3,219	\$3,787	\$2,250	\$3,145	—	—	—	—
70 - 74	1,073	192	316	380	155	30	—	—	—	—
	\$3,415	\$3,390	\$2,961	\$4,111	\$3,040	\$1,490	—	—	—	—
75 - 79	715	38	97	330	200	49	1	—	—	—
	\$3,460	\$2,918	\$2,526	\$3,882	\$3,646	\$2,148	\$2,478	—	—	—
80 - 84	346	6	15	101	168	55	—	1	—	—
	\$2,743	\$2,088	\$1,759	\$2,764	\$3,094	\$1,992	—	\$1,761	—	—
85 - 89	86	1	3	11	38	33	—	—	—	—
	\$2,352	\$7,808	\$2,309	\$3,331	\$2,065	\$2,195	—	—	—	—
90 & Over	8	—	—	2	6	—	—	—	—	—
	\$1,338	—	—	\$986	\$1,455	—	—	—	—	—
Total	4,434	1,268	1,101	1,218	655	189	2	1	—	—
	\$3,266	\$3,593	\$2,843	\$3,629	\$3,041	\$1,993	\$1,694	\$1,761	—	—

Note: Total retired benefit \$14,480,744, average age 69.2, and average years of retirement 9.0.

Section 3: Supplemental Information

Exhibit C: Retired Members and Beneficiaries as of December 31, 2022 by Age, Years of Retirement, and Average Monthly Benefit (continued)

General Tier 4

Age	Years of Retirement									
	Total	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34	35 – 39	40 & over
Under 30	—	—	—	—	—	—	—	—	—	—
30 - 34	—	—	—	—	—	—	—	—	—	—
35 - 39	—	—	—	—	—	—	—	—	—	—
40 - 44	—	—	—	—	—	—	—	—	—	—
45 - 49	—	—	—	—	—	—	—	—	—	—
50 - 54	—	—	—	—	—	—	—	—	—	—
55 - 59	—	—	—	—	—	—	—	—	—	—
60 - 64	1	1	—	—	—	—	—	—	—	—
	\$1,331	\$1,331	—	—	—	—	—	—	—	—
65 - 69	2	2	—	—	—	—	—	—	—	—
	\$1,527	\$1,527	—	—	—	—	—	—	—	—
70 - 74	2	2	—	—	—	—	—	—	—	—
	\$1,275	\$1,275	—	—	—	—	—	—	—	—
75 - 79	—	—	—	—	—	—	—	—	—	—
80 - 84	—	—	—	—	—	—	—	—	—	—
85 - 89	—	—	—	—	—	—	—	—	—	—
90 & Over	—	—	—	—	—	—	—	—	—	—
Total	5	5	—	—	—	—	—	—	—	—
	\$1,387	\$1,387	—	—	—	—	—	—	—	—

Note: Total retired benefit \$6,934, average age 66.9, and average years of retirement 1.2.

Section 3: Supplemental Information

Exhibit C: Retired Members and Beneficiaries as of December 31, 2022 by Age, Years of Retirement, and Average Monthly Benefit (continued)

General Tier 5

Age	Years of Retirement									
	Total	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34	35 – 39	40 & over
Under 30	—	—	—	—	—	—	—	—	—	—
30 - 34	—	—	—	—	—	—	—	—	—	—
35 - 39	—	—	—	—	—	—	—	—	—	—
40 - 44	—	—	—	—	—	—	—	—	—	—
45 - 49	—	—	—	—	—	—	—	—	—	—
50 - 54	1	1	—	—	—	—	—	—	—	—
	\$579	\$579	—	—	—	—	—	—	—	—
55 - 59	15	14	1	—	—	—	—	—	—	—
	\$564	\$566	\$529	—	—	—	—	—	—	—
60 - 64	25	24	1	—	—	—	—	—	—	—
	\$850	\$876	\$234	—	—	—	—	—	—	—
65 - 69	49	49	—	—	—	—	—	—	—	—
	\$931	\$931	—	—	—	—	—	—	—	—
70 - 74	18	17	1	—	—	—	—	—	—	—
	\$1,126	\$1,163	\$496	—	—	—	—	—	—	—
75 - 79	5	3	2	—	—	—	—	—	—	—
	\$787	\$1,068	\$365	—	—	—	—	—	—	—
80 - 84	3	3	—	—	—	—	—	—	—	—
	\$588	\$588	—	—	—	—	—	—	—	—
85 - 89	—	—	—	—	—	—	—	—	—	—
90 & Over	—	—	—	—	—	—	—	—	—	—
Total	116	111	5	—	—	—	—	—	—	—
	\$878	\$900	\$398	—	—	—	—	—	—	—

Note: Total retired benefit \$101,850, average age 66.2, and average years of retirement 1.7.

Section 3: Supplemental Information

Exhibit C: Retired Members and Beneficiaries as of December 31, 2022 by Age, Years of Retirement, and Average Monthly Benefit (continued)

Safety Tier A (Non-Enhanced and Enhanced) and Tier C

Age	Years of Retirement									
	Total	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34	35 – 39	40 & over
Under 30	4	—	—	—	3	—	1	—	—	—
	\$1,320	—	—	—	\$1,652	—	\$324	—	—	—
30 - 34	1	1	—	—	—	—	—	—	—	—
	\$4,765	\$4,765	—	—	—	—	—	—	—	—
35 - 39	8	3	4	—	1	—	—	—	—	—
	\$4,393	\$5,683	\$4,266	—	\$1,033	—	—	—	—	—
40 - 44	21	12	4	3	—	—	—	2	—	—
	\$4,085	\$4,533	\$3,769	\$4,488	—	—	—	\$1,429	—	—
45 - 49	48	22	11	8	7	—	—	—	—	—
	\$4,673	\$4,489	\$5,050	\$4,075	\$5,344	—	—	—	—	—
50 - 54	240	168	38	13	14	7	—	—	—	—
	\$6,116	\$6,598	\$5,474	\$3,843	\$5,324	\$3,836	—	—	—	—
55 - 59	356	102	172	47	14	12	6	3	—	—
	\$7,366	\$7,984	\$7,399	\$7,798	\$5,650	\$4,934	\$4,186	\$1,819	—	—
60 - 64	388	39	59	216	29	26	10	8	1	—
	\$7,908	\$6,980	\$7,624	\$9,226	\$4,720	\$4,832	\$5,070	\$4,412	\$4,837	—
65 - 69	363	26	21	126	131	29	14	9	5	2
	\$8,380	\$5,034	\$4,883	\$9,802	\$9,773	\$5,495	\$4,342	\$4,473	\$4,992	\$3,993
70 - 74	332	6	12	50	131	78	30	11	12	2
	\$8,471	\$5,086	\$5,177	\$8,957	\$10,444	\$8,739	\$3,871	\$4,366	\$4,080	\$4,469
75 - 79	354	—	3	19	69	152	45	21	27	18
	\$7,822	—	\$2,407	\$7,025	\$9,139	\$9,700	\$5,045	\$5,534	\$3,934	\$4,095
80 - 84	199	—	1	4	13	53	56	39	16	17
	\$7,712	—	\$1,595	\$4,057	\$4,445	\$9,048	\$9,879	\$7,092	\$4,471	\$4,601
85 - 89	94	—	—	2	—	4	15	39	18	16
	\$6,803	—	—	\$4,843	—	\$7,948	\$6,597	\$8,481	\$5,396	\$4,445
90 & Over	56	—	—	—	—	—	9	5	11	31
	\$5,574	—	—	—	—	—	\$5,288	\$4,922	\$8,208	\$4,827
Total	2,464	379	325	488	412	361	186	137	90	86
	\$7,558	\$6,679	\$6,743	\$8,807	\$8,909	\$8,417	\$6,344	\$6,424	\$4,932	\$4,530

Note: Total retired benefit \$18,623,433, average age 67.2, and average years of retirement 16.2. Includes members from withdrawn employers.

Section 3: Supplemental Information

Exhibit C: Retired Members and Beneficiaries as of December 31, 2022 by Age, Years of Retirement, and Average Monthly Benefit (continued)

Safety Tier D and Tier E

Age	Years of Retirement									
	Total	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34	35 – 39	40 & over
Under 30	—	—	—	—	—	—	—	—	—	—
30 - 34	1	1	—	—	—	—	—	—	—	—
	\$4,645	\$4,645	—	—	—	—	—	—	—	—
35 - 39	2	2	—	—	—	—	—	—	—	—
	\$4,681	\$4,681	—	—	—	—	—	—	—	—
40 - 44	—	—	—	—	—	—	—	—	—	—
45 - 49	—	—	—	—	—	—	—	—	—	—
50 - 54	—	—	—	—	—	—	—	—	—	—
55 - 59	6	6	—	—	—	—	—	—	—	—
	\$1,449	\$1,449	—	—	—	—	—	—	—	—
60 - 64	9	8	1	—	—	—	—	—	—	—
	\$2,255	\$2,233	\$2,431	—	—	—	—	—	—	—
65 - 69	1	1	—	—	—	—	—	—	—	—
	\$3,254	\$3,254	—	—	—	—	—	—	—	—
70 - 74	—	—	—	—	—	—	—	—	—	—
75 - 79	—	—	—	—	—	—	—	—	—	—
80 - 84	—	—	—	—	—	—	—	—	—	—
85 - 89	—	—	—	—	—	—	—	—	—	—
90 & Over	—	—	—	—	—	—	—	—	—	—
Total	19	18	1	—	—	—	—	—	—	—
	\$2,434	\$2,434	\$2,431	—	—	—	—	—	—	—

Note: Total retired benefit \$46,249, average age 56.7, and average years of retirement 1.6.

Section 3: Supplemental Information

Exhibit D: Reconciliation of Member Data

	Active Members	Inactive Vested Members ¹	Retired Members	Disabled Members	Beneficiaries	Total
Number as of December 31, 2021	10,005	3,812	7,908	885	1,485	24,095
• New members	1,059	124	0	0	69	1,252
• Terminations – with vested rights	(442)	442	0	0	0	0
• Contribution refunds	(160)	(245)	0	0	0	(405)
• Retirements	(396)	(93)	489	0	0	0
• New disabilities	(15)	0	(1)	16	0	0
• Return to work	49	(46)	(3)	0	0	0
• Died with or without beneficiary	(18)	(11)	(196)	(27)	(71)	(323)
• Data adjustments	<u>0</u>	<u>(9)</u>	<u>0</u>	<u>0</u>	<u>7</u>	<u>(2)</u>
Number as of December 31, 2022	10,082	3,974	8,197	874	1,490	24,617

¹ Includes inactive members with member contributions on deposit.

Section 3: Supplemental Information

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

	Year Ended December 31, 2022	Year Ended December 31, 2021
Net assets at market value at the beginning of the year	\$11,453,765,753	\$10,070,237,862
Contribution income:		
• Employer contributions	\$352,383,785	\$410,759,608
• Member contributions	122,303,823	117,016,915
• Less administrative expenses	<u>(11,537,709)</u>	<u>(11,237,383)</u>
<i>Net contribution income</i>	<i>\$463,149,898</i>	<i>\$516,539,140</i>
Investment income:		
• Interest, dividends and other income	\$172,575,489	\$154,751,676
• Asset appreciation	(1,407,318,252)	1,301,941,286
• Less investment and administrative fees	<u>(47,164,600)</u>	<u>(49,349,348)</u>
<i>Net investment income</i>	<i><u>\$(1,281,907,363)</u></i>	<i><u>\$1,407,343,614</u></i>
Total income available for benefits	\$(818,757,464)	\$1,923,882,754
Less benefit payments:		
• Benefits paid	\$(562,830,131)	\$(532,116,595) ¹
• Refunds of contributions	(13,738,069)	(5,883,885) ¹
• Adjustments, transfers or other expenses	<u>(4,771,275)</u>	<u>(2,354,383)</u>
<i>Net benefit payments</i>	<i><u>\$(581,339,475)</u></i>	<i><u>\$(540,354,863)</u></i>
Change in net assets at market value	\$(1,400,096,939)	\$1,383,527,891
Net assets at market value at the end of the year	\$10,053,668,812	\$11,453,765,753

Note: Results may be slightly off due to rounding.

¹ We have reallocated the benefit payments with regards to the refund for active member death to match CCCERA's financial statements.

Section 3: Supplemental Information

Exhibit F: Summary Statement of Plan Assets

	December 31, 2022	December 31, 2021
<i>Cash equivalents</i>	\$735,959,243	\$1,237,796,371
Accounts receivable:		
• Investment trades	\$13,095,410	\$14,987,409
• Investment income	20,647,573	17,821,719
• Employer and member contributions	11,459,157	10,773,593
• Additional contributions	<u>3,927,768</u>	<u>6,245,892</u>
<i>Total accounts receivable</i>	\$49,129,908	\$49,828,613
Investments:		
• Stocks	\$4,805,529,144	\$5,648,984,567
• Bonds	1,994,157,311	2,219,364,324
• Real estate	565,387,390	601,655,645
• Alternative investments and real assets	<u>2,409,662,472</u>	<u>2,338,181,666</u>
<i>Total investments at market value</i>	\$9,774,736,317	\$10,808,186,202
<i>Other assets</i>	<u>4,727,818</u>	<u>3,359,519</u>
Total assets	\$10,564,553,286	\$12,099,170,705
Accounts payable:		
• Investment trades	\$(16,827,616)	\$(31,033,062)
• Security lending	(269,029,887)	(409,048,701)
• Employer contributions unearned	(167,823,612)	(151,108,057)
• Other	<u>(56,113,360)</u>	<u>(53,217,133)</u>
Total accounts payable	\$(509,794,475)	\$(644,406,953)
Deferred inflows of resources	<u>(1,090,000)</u>	<u>(998,000)</u>
Net assets at market value	\$10,053,668,812	\$11,453,765,753
Net assets at actuarial value	\$10,878,817,667	\$10,451,125,236
Net assets at valuation value	\$10,861,822,062	\$10,434,412,288

Note: Results may be slightly off due to rounding.

Section 3: Supplemental Information

Exhibit G: Summary of Total Allocated Reserves

	December 31, 2022	December 31, 2021
• Member Deposits ¹	\$1,077,187,687	\$1,029,847,720
• Member Cost of Living ¹	537,732,911	522,964,111
• Employer Advance ^{1, 2}	2,957,523,538	3,139,040,709
• Employer Cost of Living ^{1, 2}	705,910,721	2,190,242,717
• Retired Members ^{1, 2}	4,396,244,276	3,797,564,502
• Retired Cost of Living ^{1, 2}	3,939,921,046	2,179,759,742
• Dollar Power Cost of Living Supplement Pre-Funding ¹	(1,796,005)	(820,020)
• Post Retirement Death Benefit ³	16,995,605	16,712,948
• Statutory Contingency (one percent) ³	0	0
• Additional One Percent Contingency Designation ³	0	0
• Contra Tracking Account ¹	(2,750,902,112)	(2,424,187,193)
Total Allocated Reserves	\$10,878,817,667	\$10,451,125,236
Total Deferred Return	(825,148,855)	1,002,640,517
Net Market Value	\$10,053,668,812	\$11,453,765,753

Note: Results may be slightly off due to rounding.

¹ Included in valuation value of assets.

² Both December 31, 2022 and December 31, 2021 information reflect a “true-up” of retired reserves as of January 1, 2022 and January 1, 2021, respectively.

³ Not included in valuation value of assets. See reference made on page 133 with respect to the payment of benefits out of the Post Retirement Death Benefit Reserve.

Section 3: Supplemental Information

Exhibit H: Development of the Fund Through December 31, 2022

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
2013	\$235,017,452	\$72,373,254	N/A	\$870,984,744	\$374,638,978	\$6,458,317,596	\$5,907,416,432	91.5%
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%

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 investment fees and administrative expenses.

Section 3: Supplemental Information

Exhibit I: Table of Amortization Bases

Cost Groups #1 and #2 – General County and Small Districts

Type	Date Established	Initial Amount ¹	Initial Period	Outstanding Balance	Years Remaining	Annual Payment ²
Restart of Amortization	December 31, 2007	\$784,550,613	15	\$0	0	\$0
Actuarial Loss	December 31, 2008	79,980,337	18	36,829,627	4	10,056,092
Actuarial Loss	December 31, 2009	164,932,313	18	89,587,739	5	19,912,584
Assumption Change	December 31, 2009	39,537,694	18	21,476,038	5	4,773,459
Depooling Implementation	December 31, 2009	(74,652,572)	18	(40,549,696)	5	(9,012,943)
Actuarial Loss	December 31, 2010	152,969,439	18	94,117,059	6	17,736,874
Actuarial Loss	December 31, 2011	94,687,495	18	64,162,626	7	10,544,084
Actuarial Loss	December 31, 2012	116,951,818	18	85,508,028	8	12,507,206
Assumption Change	December 31, 2012	288,612,127	18	211,015,566	8	30,865,114
Actuarial Gain	December 31, 2013	(134,721,070)	18	(104,974,103)	9	(13,882,113)
Assumption Change ³	December 31, 2013	(107,482,250)	18	(83,749,727)	9	(11,075,333)
Actuarial Gain	December 31, 2014	(171,785,272)	18	(140,902,481)	10	(17,055,366)
Actuarial Gain	December 31, 2015	(104,934,178)	18	(89,702,652)	11	(10,037,730)
Assumption Change	December 31, 2015	39,788,586	18	34,013,148	11	3,806,073
Actuarial Gain	December 31, 2016	(28,560,150)	18	(25,370,467)	12	(2,646,091)
Actuarial Gain	December 31, 2017	(17,925,791)	18	(16,434,070)	13	(1,608,600)
Actuarial Loss	December 31, 2018	75,214,335	18	70,751,303	14	6,537,257
Assumption Change	December 31, 2018	(6,017,706)	18	(5,660,630)	14	(523,029)
Actuarial Loss	December 31, 2019	8,869,944	18	8,518,158	15	746,691
Method Change	December 31, 2019	(9,431,611)	18	(9,057,550)	15	(793,973)
Actuarial Loss	December 31, 2020	34,716,218	18	33,889,035	16	2,830,592
Actuarial Gain	December 31, 2021	(29,835,340)	18	(29,492,071)	17	(2,356,136)
Assumption Change	December 31, 2021	114,962,352	18	113,639,657	17	9,078,729
Actuarial Loss	December 31, 2022	200,508,908	18	200,508,908	18	15,373,256
Subtotal – Cost Groups #1 and #2				\$518,123,446		\$75,776,697

Note: Results may be slightly off due to rounding.

¹ Effective with the December 31, 2021 valuation, East Fire was annexed into Con Fire. A portion of all amortization bases from Cost Groups #1 & #2 established before December 31, 2021 were allocated to East Fire and moved into Cost Group #5.

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

Section 3: Supplemental Information

Exhibit I: Table of Amortization Bases (continued)

Cost Group #3 – Central Contra Costa Sanitary District

Type	Date Established	Initial Amount	Initial Period	Outstanding Balance	Years Remaining	Annual Payment ¹
Actuarial Loss ²	December 31, 2022	\$4,915,384	18	\$4,915,384	18	\$376,868
Subtotal – Cost Group #3				\$4,915,384		\$376,868

¹ As of middle of year.

² Cost Group #3 has gone from having a surplus as of December 31, 2021 (about \$5.8 million) to a UAAL due to investment return less than expected (about \$7.1 million), COLA increase greater than expected (about \$2.7 million) and other experience losses.

Section 3: Supplemental Information

Exhibit I: Table of Amortization Bases (continued)

Cost Group #4 – Contra Costa Housing Authority

Type	Date Established	Initial Amount	Initial Period	Outstanding Balance	Years Remaining	Annual Payment ¹
Restart of Amortization	December 31, 2007	\$7,770,000	15	\$0	0	\$0
Actuarial Loss	December 31, 2008	1,573,513	18	724,577	4	197,841
Actuarial Loss	December 31, 2009	1,277,079	18	693,682	5	154,184
Assumption Change	December 31, 2009	425,000	18	230,851	5	51,311
Depooling Implementation	December 31, 2009	(189,275)	18	(102,810)	5	(22,852)
Actuarial Loss	December 31, 2010	619,697	18	381,279	6	71,854
Assumption Change ²	December 31, 2010	(920,656)	18	(566,449)	6	(106,750)
Actuarial Loss	December 31, 2011	1,059,328	18	717,828	7	117,963
Actuarial Loss	December 31, 2012	1,912,999	18	1,398,668	8	204,582
Assumption Change	December 31, 2012	3,722,862	18	2,721,929	8	398,135
Actuarial Gain	December 31, 2013	(2,220,704)	18	(1,730,363)	9	(228,829)
Assumption Change ²	December 31, 2013	(1,077,289)	18	(839,419)	9	(111,007)
Actuarial Gain	December 31, 2014	(1,360,021)	18	(1,115,522)	10	(135,027)
Actuarial Gain	December 31, 2015	(875,294)	18	(748,242)	11	(83,728)
Assumption Change	December 31, 2015	432,801	18	369,979	11	41,401
Actuarial Gain	December 31, 2016	(297,092)	18	(263,912)	12	(27,525)
Actuarial Loss	December 31, 2017	53,895	18	49,410	13	4,836
Actuarial Loss	December 31, 2018	527,741	18	496,426	14	45,869
Assumption Change	December 31, 2018	86,577	18	81,440	14	7,525
Actuarial Loss	December 31, 2019	544,467	18	522,873	15	45,834
Method Change	December 31, 2019	(103,353)	18	(99,254)	15	(8,700)
Actuarial Loss	December 31, 2020	80,685	18	78,763	16	6,579
Actuarial Gain	December 31, 2021	(439,350)	18	(434,296)	17	(34,696)
Assumption Change	December 31, 2021	1,519,858	18	1,502,371	17	120,025
Actuarial Loss	December 31, 2022	2,604,379	18	2,604,379	18	199,681
Subtotal – Cost Group #4				\$6,674,187		\$908,506

Note: Results may be slightly off due to rounding.

¹ As of middle of year.

² Effective with the December 31, 2010 valuation, leave cashout (terminal pay) assumptions are now based on cost groups. Effective with the December 31, 2013 valuation, the leave cashout assumptions were reduced to reflect AB 197.

Section 3: Supplemental Information

Exhibit I: Table of Amortization Bases (continued)

Cost Groups #5 – Contra Costa County Fire Protection District

Type	Date Established	Initial Amount ¹	Initial Period	Outstanding Balance	Years Remaining	Annual Payment ²
Restart of Amortization	December 31, 2007	\$(492,460)	15	\$0	0	\$0
Actuarial Loss	December 31, 2008	98,825	18	45,507	4	12,425
Actuarial Loss	December 31, 2009	1,723,190	18	936,000	5	208,044
Assumption Change	December 31, 2009	362,132	18	196,702	5	43,721
Depooling Implementation	December 31, 2009	2,093,197	18	1,136,980	5	252,716
Actuarial Loss	December 31, 2010	2,823,409	18	1,737,151	6	327,376
Actuarial Loss	December 31, 2011	1,413,203	18	957,622	7	157,370
Actuarial Loss	December 31, 2012	1,864,724	18	1,363,372	8	199,420
Assumption Change	December 31, 2012	3,374,927	18	2,467,540	8	360,926
Actuarial Gain	December 31, 2013	(2,589,708)	18	(2,017,889)	9	(266,852)
Assumption Change ³	December 31, 2013	(1,056,692)	18	(823,370)	9	(108,885)
Actuarial Gain	December 31, 2014	(2,329,297)	18	(1,910,547)	10	(231,260)
Actuarial Gain	December 31, 2015	(825,906)	18	(706,023)	11	(79,004)
Assumption Change	December 31, 2015	382,244	18	326,760	11	36,564
Actuarial Loss	December 31, 2016	1,572,498	18	1,396,877	12	145,692
Actuarial Loss	December 31, 2017	1,464,466	18	1,342,598	13	131,416
Actuarial Loss	December 31, 2018	1,545,142	18	1,453,458	14	134,296
Assumption Change	December 31, 2018	602,943	18	567,166	14	52,405
Actuarial Loss	December 31, 2019	1,838,915	18	1,765,983	15	154,804
Method Change	December 31, 2019	(872,975)	18	(838,352)	15	(73,489)
UAAL Prepayment	December 31, 2020	(181,746)	18	(177,416)	16	(14,819)
Actuarial Loss	December 31, 2020	2,595,831	18	2,533,981	16	211,651
Actuarial Gain	December 31, 2021	(1,811,591)	18	(1,790,748)	17	(143,064)
Assumption Change	December 31, 2021	1,486,425	18	1,469,323	17	117,385
Actuarial Loss	December 31, 2022	2,541,827	18	2,541,827	18	194,885
Subtotal – Cost Group #5				\$13,974,502		\$1,823,723

Note: Results may be slightly off due to rounding.

¹ Effective with the December 31, 2021 valuation, East Fire was annexed into Con Fire. A portion of all amortization bases from Cost Groups #1 & #2 established before December 31, 2021 were allocated to East Fire and moved into Cost Group #5.

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

Section 3: Supplemental Information

Exhibit I: Table of Amortization Bases (continued)

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

Type	Date Established	Initial Amount	Initial Period	Outstanding Balance	Years Remaining	Annual Payment ¹
Actuarial Surplus ²	December 31, 2022	\$(634,577)		\$(634,577)	N/A	\$0
Subtotal – Cost Group #6				\$(634,577)		\$0

Note: Results may be slightly off due to rounding.

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

Exhibit I: Table of Amortization Bases (continued)

Cost Groups #7 and #9 – County Safety

Type	Date Established	Initial Amount	Initial Period	Outstanding Balance	Years Remaining	Annual Payment ¹
Restart of Amortization	December 31, 2007	\$127,662,439	15	\$0	0	\$0
Actuarial Loss	December 31, 2008	25,619,265	18	11,797,249	4	3,221,163
Actuarial Loss	December 31, 2009	55,134,940	18	29,948,132	5	6,656,543
Assumption Change	December 31, 2009	11,076,665	18	6,016,610	5	1,337,306
Depooling Implementation	December 31, 2009	23,852,078	18	12,955,943	5	2,879,706
Actuarial Loss	December 31, 2010	57,287,975	18	35,247,405	6	6,642,566
Actuarial Loss	December 31, 2011	45,209,350	18	30,634,991	7	5,034,362
Actuarial Loss	December 31, 2012	53,258,503	18	38,939,366	8	5,695,637
Assumption Change	December 31, 2012	138,353,562	18	101,155,677	8	14,795,977
Actuarial Gain	December 31, 2013	(35,024,912)	18	(27,291,268)	9	(3,609,085)
Assumption Change ²	December 31, 2013	(43,771,706)	18	(34,106,733)	9	(4,510,384)
Actuarial Gain	December 31, 2014	(61,815,393)	18	(50,702,496)	10	(6,137,221)
Assumption Change ³	December 31, 2014	(51,701)	18	(42,406)	10	(5,133)
Actuarial Gain	December 31, 2015	(58,489,966)	18	(49,999,963)	11	(5,594,998)
Assumption Change	December 31, 2015	39,291,409	18	33,588,137	11	3,758,514
Actuarial Gain	December 31, 2016	(13,557,811)	18	(12,043,634)	12	(1,256,128)
Actuarial Gain	December 31, 2017	(8,178,240)	18	(7,497,677)	13	(733,888)
Actuarial Loss	December 31, 2018	41,037,406	18	38,602,348	14	3,566,768
Assumption Change	December 31, 2018	(47,713,599)	18	(44,882,392)	14	(4,147,029)
Actuarial Loss	December 31, 2019	10,313,187	18	9,904,162	15	868,186
Method Change	December 31, 2019	(1,626,137)	18	(1,561,644)	15	(136,892)
Actuarial Loss	December 31, 2020	5,352,140	18	5,224,614	16	436,387
Actuarial Gain	December 31, 2021	(9,006,255)	18	(8,902,634)	17	(711,236)
Assumption Change	December 31, 2021	58,980,022	18	58,301,430	17	4,657,730
Actuarial Loss	December 31, 2022	72,120,444	18	72,120,444	18	5,529,560
Subtotal – Cost Groups #7 and #9				\$247,405,661		\$38,238,411

Note: Results may be slightly off due to rounding.

¹ As of middle of year.

² Effective with the December 31, 2010 valuation, leave cashout (terminal pay) assumptions are now based on cost groups. Effective with the December 31, 2013 valuation, the leave cashout assumptions were reduced to reflect AB 197.

³ Effective with the December 31, 2014 valuation, leave cashout (terminal pay) assumptions were eliminated for Cost Group #9.

Section 3: Supplemental Information

Exhibit I: Table of Amortization Bases (continued)

Cost Group #8 – Contra Costa Fire Protection District

Type	Date Established	Initial Amount ¹	Initial Period	Outstanding Balance	Years Remaining	Annual Payment ²
Restart of Amortization	December 31, 2007	\$124,138,710	15	\$0	0	\$0
CCCFPD Safety POBs	December 31, 2007	(127,509,711)	15	0	0	0
Actuarial Loss	December 31, 2008	6,780,436	18	3,122,279	4	852,518
Actuarial Loss	December 31, 2009	27,018,706	18	14,675,989	5	3,262,018
Assumption Change	December 31, 2009	4,945,000	18	2,686,019	5	597,019
Depooling Implementation	December 31, 2009	47,818,666	18	25,974,087	5	5,773,236
Actuarial Loss	December 31, 2010	38,165,445	18	23,481,941	6	4,425,300
Assumption Change ³	December 31, 2010	(1,599,051)	18	(983,843)	6	(185,411)
Actuarial Loss	December 31, 2011	26,533,166	18	17,979,540	7	2,954,645
Actuarial Loss	December 31, 2012	31,501,440	18	23,031,929	8	3,368,866
Assumption Change	December 31, 2012	68,193,356	18	49,858,818	8	7,292,818
Actuarial Gain	December 31, 2013	(22,661,640)	18	(17,657,857)	9	(2,335,132)
Assumption Change ³	December 31, 2013	(17,910,676)	18	(13,955,925)	9	(1,845,576)
Actuarial Gain	December 31, 2014	(29,217,962)	18	(23,965,287)	10	(2,900,848)
Actuarial Gain	December 31, 2015	(19,005,510)	18	(16,246,800)	11	(1,818,018)
Assumption Change	December 31, 2015	24,296,846	18	20,770,082	11	2,324,173
Actuarial Gain	December 31, 2016	(8,297,685)	18	(7,370,975)	12	(768,778)
Actuarial Gain	December 31, 2017	(10,658,502)	18	(9,771,540)	13	(956,458)
Actuarial Loss	December 31, 2018	19,301,243	18	18,155,955	14	1,677,568
Assumption Change	December 31, 2018	(23,503,820)	18	(22,109,162)	14	(2,042,836)
Actuarial Loss	December 31, 2019	11,258,256	18	10,811,750	15	947,744
Method Change	December 31, 2019	(3,057,179)	18	(2,935,930)	15	(257,360)

¹ Prior to December 31, 2019, Con Fire was pooled with East Fire in Cost Group #8. Effective with the December 31, 2019 valuation, East Fire was depooled into Cost Group #13. 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 As of middle of year.

³ Effective with the December 31, 2010 valuation, leave cashout (terminal pay) assumptions are now based on cost groups. Effective with the December 31, 2013 valuation, the leave cashout assumptions were reduced to reflect AB 197.

Section 3: Supplemental Information

Exhibit I: Table of Amortization Bases (continued)

Cost Group #8 – Contra Costa Fire Protection District (continued)

Type	Date Established	Initial Amount	Initial Period	Outstanding Balance	Years Remaining	Annual Payment ¹
Actuarial Gain	December 31, 2020	\$(5,495,306)	18	\$(5,364,370)	16	\$(448,061)
UAAL Prepayment	December 31, 2020	(2,839,926)	18	(2,772,259)	16	(231,554)
Actuarial Loss	December 31, 2021	7,016,144	18	6,935,420	17	554,074
Assumption Change	December 31, 2021	25,946,537	18	25,648,010	17	2,049,032
Actuarial Loss	December 31, 2022	32,208,479	18	32,208,479	18	2,469,462
Subtotal – Cost Group #8				\$152,206,352		\$24,758,441

Note: Results may be slightly off due to rounding.

¹ As of middle of year.

Section 3: Supplemental Information

Exhibit I: Table of Amortization Bases (continued)

Cost Groups #10 – Moraga-Orinda Fire District

Type	Date Established	Initial Amount	Initial Period	Outstanding Balance	Years Remaining	Annual Payment ¹
Restart of Amortization	December 31, 2007	\$(2,591,000)	15	\$0	0	\$0
Actuarial Loss	December 31, 2008	2,002,150	18	921,957	4	251,734
Actuarial Loss	December 31, 2009	5,671,684	18	3,080,739	5	684,753
Assumption Change	December 31, 2009	1,012,000	18	549,697	5	122,181
Depooling Implementation	December 31, 2009	4,873,631	18	2,647,253	5	588,402
Actuarial Loss	December 31, 2010	5,334,964	18	3,282,428	6	618,591
Assumption Change ²	December 31, 2010	806,018	18	495,916	6	93,458
Actuarial Loss	December 31, 2011	6,791,005	18	4,601,756	7	756,224
Actuarial Loss	December 31, 2012	8,924,598	18	6,525,121	8	954,425
Assumption Change	December 31, 2012	12,149,892	18	8,883,259	8	1,299,349
Actuarial Gain	December 31, 2013	(1,027,440)	18	(800,577)	9	(105,871)
Assumption Change ²	December 31, 2013	(3,613,981)	18	(2,815,999)	9	(372,397)
Actuarial Gain	December 31, 2014	(4,813,045)	18	(3,947,777)	10	(477,854)
Actuarial Gain	December 31, 2015	(8,490,806)	18	(7,258,339)	11	(812,208)
Assumption Change	December 31, 2015	3,844,347	18	3,286,328	11	367,740
Actuarial Loss	December 31, 2016	1,028,690	18	913,802	12	95,308
Actuarial Gain	December 31, 2017	(422,995)	18	(387,795)	13	(37,958)
Actuarial Loss	December 31, 2018	6,029,055	18	5,671,306	14	524,016
Assumption Change	December 31, 2018	(4,116,542)	18	(3,872,277)	14	(357,789)
Actuarial Loss	December 31, 2019	3,411,399	18	3,276,101	15	287,179
Method Change	December 31, 2019	(471,164)	18	(452,477)	15	(39,664)
Actuarial Gain	December 31, 2020	(864,383)	18	(843,788)	16	(70,478)
Actuarial Loss	December 31, 2021	2,537,586	18	2,508,390	17	200,397
Assumption Change	December 31, 2021	5,301,507	18	5,240,511	17	418,667
Actuarial Loss	December 31, 2022	7,121,589	18	7,121,589	18	546,021
Subtotal – Cost Group #10				\$38,627,125		\$5,534,226

Note: Results may be slightly off due to rounding.

¹ As of middle of year.

² Effective with the December 31, 2010 valuation, leave cashout (terminal pay) assumptions are now based on cost groups. Effective with the December 31, 2013 valuation, the leave cashout assumptions were reduced to reflect AB 197.

Section 3: Supplemental Information

Exhibit I: Table of Amortization Bases (continued)

Cost Group #11 – San Ramon Valley Fire District

Type	Date Established	Initial Amount	Initial Period	Outstanding Balance	Years Remaining	Annual Payment ¹
Restart of Amortization	December 31, 2007	\$58,766,000	15	\$0	0	\$0
Actuarial Loss	December 31, 2008	10,216,694	18	4,704,619	4	1,284,566
Actuarial Loss	December 31, 2009	9,262,105	18	5,030,979	5	1,118,231
Assumption Change	December 31, 2009	2,453,000	18	1,332,418	5	296,155
Depooling Implementation	December 31, 2009	(20,174,500)	18	(10,958,361)	5	(2,435,705)
Actuarial Loss	December 31, 2010	6,585,812	18	4,052,033	6	763,628
Assumption Change ²	December 31, 2010	5,093,420	18	3,133,814	6	590,584
Actuarial Loss	December 31, 2011	5,513,071	18	3,735,795	7	613,917
Actuarial Loss	December 31, 2012	14,600,741	18	10,675,171	8	1,561,450
Assumption Change	December 31, 2012	26,672,143	18	19,501,042	8	2,852,405
Actuarial Gain	December 31, 2013	(4,492,900)	18	(3,500,849)	9	(462,964)
Assumption Change ²	December 31, 2013	(12,984,002)	18	(10,117,081)	9	(1,337,915)
Actuarial Gain	December 31, 2014	(13,850,852)	18	(11,360,808)	10	(1,375,155)
Actuarial Gain	December 31, 2015	(9,008,582)	18	(7,700,958)	11	(861,738)
Assumption Change	December 31, 2015	5,533,144	18	4,729,991	11	529,286
Actuarial Loss	December 31, 2016	2,020,042	18	1,794,438	12	187,156
UAAL Prepayment	December 31, 2017	(303,806)	18	(278,524)	13	(27,263)
Actuarial Gain	December 31, 2017	(1,837,378)	18	(1,684,478)	13	(164,880)
UAAL Prepayment	December 31, 2018	(261,501)	18	(245,984)	14	(22,728)
Actuarial Loss	December 31, 2018	11,681,729	18	10,988,564	14	1,015,318
Assumption Change	December 31, 2018	(9,240,163)	18	(8,691,875)	14	(803,109)
UAAL Prepayment	December 31, 2019	(1,267,559)	18	(1,217,287)	15	(106,706)
Actuarial Loss	December 31, 2019	5,365,395	18	5,152,602	15	451,670
Method Change	December 31, 2019	(1,623,299)	18	(1,558,918)	15	(136,653)

¹ As of middle of year.

² Effective with the December 31, 2010 valuation, leave cashout (terminal pay) assumptions are now based on cost groups. Effective with the December 31, 2013 valuation, the leave cashout assumptions were reduced to reflect AB 197.

Section 3: Supplemental Information

Exhibit I: Table of Amortization Bases (continued)

Cost Group #11 – San Ramon Valley Fire District (continued)

Type	Date Established	Initial Amount	Initial Period	Outstanding Balance	Years Remaining	Annual Payment ¹
UAAL Prepayment	December 31, 2020	\$(267,529)	18	\$(261,155)	16	\$(21,813)
Actuarial Gain	December 31, 2020	(60,980)	18	(59,527)	16	(4,972)
UAAL Prepayment	December 31, 2021	(270,666)	18	(267,552)	17	(21,375)
Actuarial Loss	December 31, 2021	2,230,205	18	2,204,545	17	176,122
Assumption Change	December 31, 2021	13,908,945	18	13,748,916	17	1,098,408
UAAL Prepayment	December 31, 2022	(286,847)	18	(286,847)	18	(21,993)
Actuarial Loss	December 31, 2022	17,272,835	18	17,272,835	18	1,324,329
Subtotal – Cost Group #11				\$49,867,559		\$6,058,256

Note: Results may be slightly off due to rounding.

¹ As of middle of year.

Section 3: Supplemental Information

Exhibit I: Table of Amortization Bases (continued)

Cost Group #12 – Rodeo-Hercules Fire Protection District

Type	Date Established	Initial Amount	Initial Period	Outstanding Balance	Years Remaining	Annual Payment ¹
Restart of Amortization	December 31, 2007	\$3,960,000	15	\$0	0	\$0
Actuarial Loss	December 31, 2008	957,150	18	440,752	4	120,344
Actuarial Loss	December 31, 2009	2,872,360	18	1,560,205	5	346,785
Assumption Change	December 31, 2009	1,154,000	18	626,828	5	139,325
Depooling Implementation	December 31, 2009	(1,809,374)	18	(982,814)	5	(218,449)
Actuarial Loss	December 31, 2010	1,502,503	18	924,441	6	174,216
Assumption Change ²	December 31, 2010	662,085	18	407,359	6	76,769
Actuarial Loss	December 31, 2011	2,067,217	18	1,400,798	7	230,198
Actuarial Loss	December 31, 2012	2,246,131	18	1,642,233	8	240,208
Assumption Change	December 31, 2012	3,018,796	18	2,207,159	8	322,840
Actuarial Loss	December 31, 2013	413,088	18	321,877	9	42,566
Assumption Change ²	December 31, 2013	(1,169,821)	18	(911,520)	9	(120,542)
Actuarial Loss	December 31, 2014	315,937	18	259,139	10	31,367
Actuarial Gain	December 31, 2015	(990,379)	18	(846,623)	11	(94,737)
Assumption Change	December 31, 2015	775,874	18	663,253	11	74,218
Actuarial Gain	December 31, 2016	(270,731)	18	(240,495)	12	(25,083)
Actuarial Gain	December 31, 2017	(836,969)	18	(767,319)	13	(75,107)
Actuarial Gain	December 31, 2018	(71,915)	18	(67,648)	14	(6,251)
Assumption Change	December 31, 2018	(985,876)	18	(928,273)	14	(85,770)
Actuarial Loss	December 31, 2019	146,468	18	140,659	15	12,330
Method Change	December 31, 2019	(241,485)	18	(231,908)	15	(20,329)
Actuarial Loss	December 31, 2020	179,608	18	175,328	16	14,644
Actuarial Loss	December 31, 2021	744,297	18	735,734	17	58,778
Assumption Change	December 31, 2021	1,416,650	18	1,400,351	17	111,875
Actuarial Loss	December 31, 2022	2,600,757	18	2,600,757	18	199,403
Subtotal – Cost Group #12				\$10,530,275		\$1,549,598

Note: Results may be slightly off due to rounding.

¹ As of middle of year.

² Effective with the December 31, 2010 valuation, leave cashout (terminal pay) assumptions are now based on cost groups. Effective with the December 31, 2013 valuation, the leave cashout assumptions were reduced to reflect AB 197.

Section 3: Supplemental Information

Exhibit I: Table of Amortization Bases (continued)

Special Adjustments

Type	Date Established	Initial Amount	Initial Period	Outstanding Balance	Years Remaining	Annual Payment ¹
County General POBs	December 31, 2007	\$(453,973,319)	15	\$0	0	\$0
Moraga General POBs	December 31, 2007	(701,412)	15	0	0	0
First Five UAAL Prepayment	December 31, 2011	(1,794,205)	11	0	0	0
LAFCO UAAL Prepayment	December 31, 2017	(30,817)	18	(28,253)	13	(2,765)
LAFCO UAAL Prepayment	December 31, 2019	(31,680)	18	(30,424)	15	(2,667)
LAFCO UAAL Prepayment	December 31, 2020	(31,963)	18	(31,201)	16	(2,606)
LAFCO UAAL Prepayment	December 31, 2021	(31,804)	18	(31,438)	17	(2,512)
Subtotal – Special Adjustments				\$(121,316)		\$(10,550)

Note: Results may be slightly off due to rounding.

¹ As of middle of year. The annual payment amounts shown for the Special Adjustments represent the credit allocated to the employer to reflect the receipt of the proceeds for Pension Obligation Bonds (POBs) or any other special contributions. These adjustments serve to reduce the UAAL contribution rate for these employers. The cost of debt service associated with the POBs is not reflected in this report.

Section 3: Supplemental Information

Exhibit I: Table of Amortization Bases (continued)

All Cost Groups Combined

Type	Date Established	Initial Amount	Initial Period	Outstanding Balance	Years Remaining	Annual Payment ¹
Restart of Amortization	December 31, 2007	\$1,103,764,302	15	\$0	0	\$0
County General POBs ²	December 31, 2007	(453,973,319)	15	0	0	0
Moraga General POBs ²	December 31, 2007	(701,412)	15	0	0	0
CCCFPD Safety POBs ²	December 31, 2007	(127,509,711)	15	0	0	0
Actuarial Loss	December 31, 2008	127,228,371	18	58,586,568	4	15,996,683
Actuarial Loss	December 31, 2009	267,892,376	18	145,513,465	5	32,343,142
Assumption Change	December 31, 2009	60,965,491	18	33,115,164	5	7,360,477
Depooling Implementation	December 31, 2009	(18,188,149)	18	(9,879,417)	5	(2,195,889)
Actuarial Loss	December 31, 2010	265,289,245	18	163,223,737	6	30,760,405
Assumption Change ³	December 31, 2010	4,041,816	18	2,486,796	6	468,650
Actuarial Loss	December 31, 2011	183,273,836	18	124,190,957	7	20,408,763
First Five UAAL Prepayment ²	December 31, 2011	(1,794,205)	11	0	0	0
Actuarial Loss	December 31, 2012	231,260,954	18	169,083,889	8	24,731,794
Assumption Change	December 31, 2012	544,097,665	18	397,810,992	8	58,187,564
Actuarial Gain	December 31, 2013	(202,325,285)	18	(157,651,030)	9	(20,848,280)
Assumption Change ³	December 31, 2013	(189,066,417)	18	(147,319,774)	9	(19,482,039)
Actuarial Gain	December 31, 2014	(284,855,905)	18	(233,645,779)	10	(28,281,364)
Assumption Change ⁴	December 31, 2014	(51,701)	18	(42,406)	10	(5,133)
Actuarial Gain	December 31, 2015	(202,620,622)	18	(173,209,601)	11	(19,382,161)
Assumption Change	December 31, 2015	114,345,251	18	97,747,678	11	10,937,969
Actuarial Gain	December 31, 2016	(46,362,239)	18	(41,184,365)	12	(4,295,449)
San Ramon UAAL Prepayment	December 31, 2017	(303,806)	18	(278,524)	13	(27,263)
LAFCO UAAL Prepayment ⁵	December 31, 2017	(30,817)	18	(28,253)	13	(2,765)

¹ As of middle of year. The annual payment amounts shown for the Special Adjustments represent the credit allocated to the employer to reflect the receipt of the proceeds for Pension Obligation Bonds (POBs) or any other special contributions. These adjustments serve to reduce the UAAL contribution rate for these employers. The cost of debt service associated with the POBs is not reflected in this report.

² Includes remaining balance of POBs and any other special contributions made by the County (including Courts), First 5 – Children & Families Commission, Local Agency Formation Commission, or Moraga-Orinda Fire District that have been allocated to the County General cost groups or for Con Fire that have been allocated to their Safety cost group.

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

⁵ Includes remaining balance of POBs and any other special contributions made by the County (including Courts), First 5 – Children & Families Commission, LAFCO, or Moraga-Orinda Fire District that have been allocated to the County General cost groups or for Con Fire that have been allocated to their Safety cost group.

Section 3: Supplemental Information

Exhibit I: Table of Amortization Bases (continued)

All Cost Groups Combined (continued)

Type	Date Established	Initial Amount	Initial Period	Outstanding Balance	Years Remaining	Annual Payment ¹
Actuarial Gain	December 31, 2017	\$(38,341,514)	18	\$(35,150,870)	13	\$(3,440,639)
San Ramon UAAL Prepayment	December 31, 2018	(261,501)	18	(245,984)	14	(22,728)
Actuarial Loss	December 31, 2018	155,264,736	18	146,051,712	14	13,494,841
Assumption Change	December 31, 2018	(90,889,139)	18	(85,496,003)	14	(7,899,632)
San Ramon UAAL Prepayment	December 31, 2019	(1,267,559)	18	(1,217,287)	15	(106,706)
LAFCO UAAL Prepayment	December 31, 2019	(31,680)	18	(30,424)	15	(2,667)
Actuarial Loss	December 31, 2019	41,748,029	18	40,092,287	15	3,514,438
Method Change	December 31, 2019	(17,427,203)	18	(16,736,034)	15	(1,467,060)
San Ramon UAAL Prepayment	December 31, 2020	(267,529)	18	(261,155)	16	(21,813)
LAFCO UAAL Prepayment	December 31, 2020	(31,963)	18	(31,201)	16	(2,606)
CCCFPD UAAL Prepayment ²	December 31, 2020	(3,021,672)	18	(2,949,675)	16	(246,373)
Actuarial Loss	December 31, 2020	36,503,813	18	35,634,037	16	2,976,342
San Ramon UAAL Prepayment	December 31, 2021	(270,666)	18	(267,552)	17	(21,375)
LAFCO UAAL Prepayment	December 31, 2021	(31,804)	18	(31,438)	17	(2,512)
Actuarial Gain	December 31, 2021	(28,564,305)	18	(28,235,659)	17	(2,255,761)
Assumption Change	December 31, 2021	223,522,296	18	220,950,569	17	17,651,851
San Ramon UAAL Prepayment	December 31, 2022	(286,847)	18	(286,847)	18	(21,993)
Actuarial Loss ³	December 31, 2022	341,894,603	18	341,894,603	18	26,213,465
CG#6 - Actuarial Surplus	December 31, 2022	(634,577)	N/A	(634,577)	N/A	0
Subtotal – All Cost Groups				\$1,041,568,598		\$155,014,176
Withdrawn Employers ⁴				8,838,220		
Total CCCERA				\$1,050,406,818		

Note: Results may be slightly off due to rounding.

¹ As of middle of year. The annual payment amounts shown for the Special Adjustments represent the credit allocated to the employer to reflect the receipt of the proceeds for Pension Obligation Bonds (POBs) or any other special contributions. These adjustments serve to reduce the UAAL contribution rate for these employers. The cost of debt service associated with the POBs is not reflected in this report.

² 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.

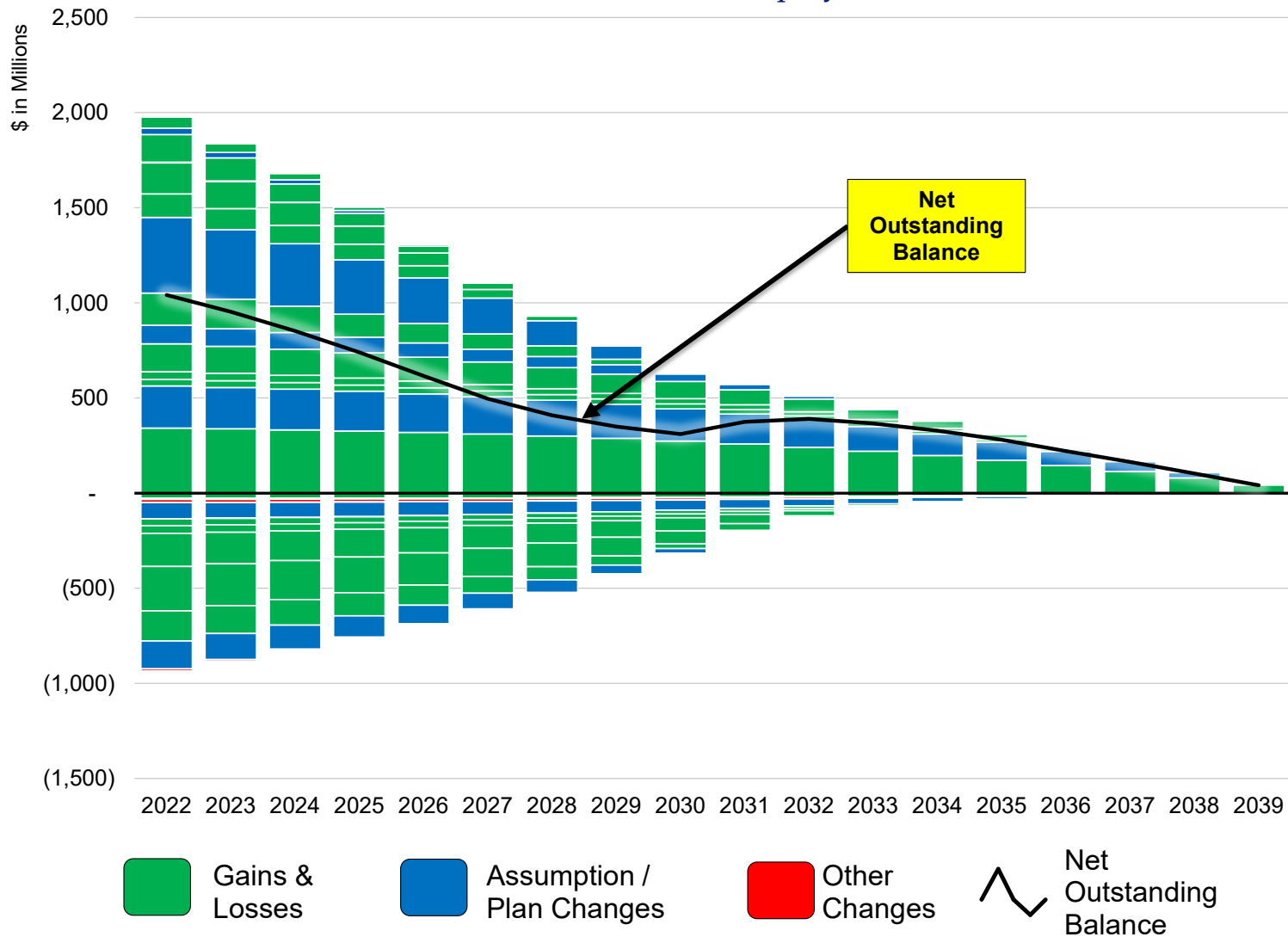
³ Excludes the actuarial loss for Cost Group #6 and only includes a partial of the actuarial loss for Cost Group #3. Cost Group #6 has surplus in both December 31, 2021 and December 31, 2022 valuations and Cost Group #3 has gone from having a surplus as of December 31, 2021 valuation to a UAAL as of December 31, 2022.

⁴ Starting 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 to their own Withdrawn Employers Cost Group.

Section 3: Supplemental Information

Exhibit J: Projection of UAAL Balances and Payments

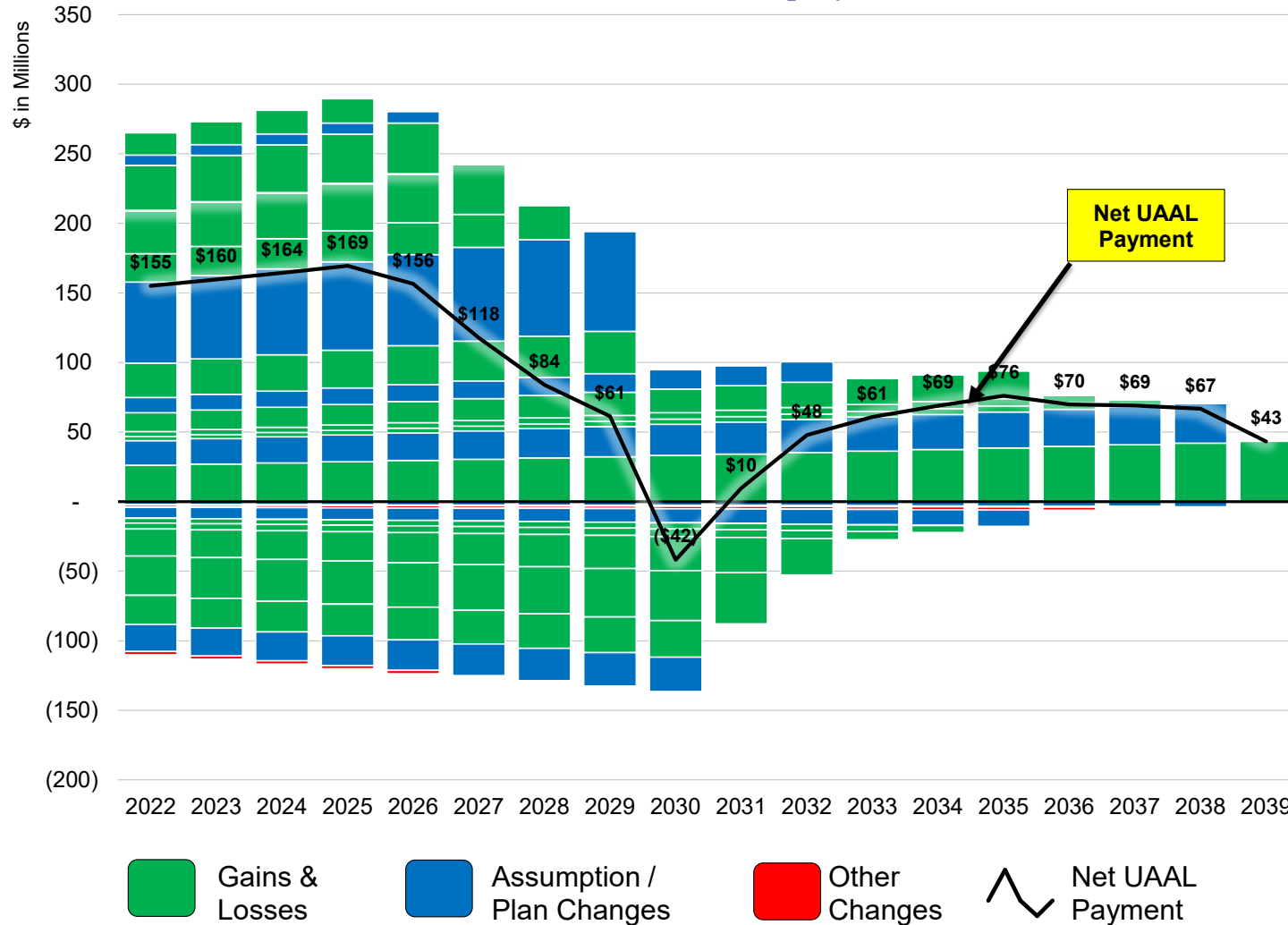
Outstanding Balance of \$1,042 Million in Net UAAL as of December 31, 2022
Excludes Withdrawn Employers



Section 3: Supplemental Information

Exhibit J: Projection of UAAL Balances and Payments (continued)

Annual Payments Required to Amortize \$1,042 Million in Net UAAL as of December 31, 2022
Excludes Withdrawn Employers



Note: The net UAAL amortization credits shown above for year 2030 and 2031 are before applying any tail volatility management that may be recommended by Segal to the Board in the future.

Section 3: Supplemental Information

Exhibit K: Definition of Pension Terms

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

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

Section 3: Supplemental Information

Actuarial Present Value of Future Plan Benefits:	The Actuarial Present Value of benefit amounts expected to be paid at various future times under a particular set of Actuarial Assumptions, taking into account such items as the effect of advancement in age, anticipated future compensation, and future service credits. The Actuarial Present Value of Future Plan Benefits includes the liabilities for active members, retired members, beneficiaries receiving benefits, and inactive members entitled to either a refund or a future retirement benefit. Expressed another way, it is the value that would have to be invested on the valuation date so that the amount invested plus investment earnings would provide sufficient assets to pay all projected benefits and expenses when due.
Actuarial Valuation:	The determination, as of a valuation date, of the Normal Cost, Actuarial Accrued Liability, Actuarial Value of Assets, and related Actuarial Present Values for a plan. An Actuarial Valuation for a governmental retirement system typically also includes calculations of items needed for compliance with GASB, such as the Actuarially Determined Contribution (ADC) and the Net Pension Liability (NPL).
Actuarial Value of Assets (AVA):	The value of the Fund's assets as of a given date, used by the actuary for valuation purposes. This may be the market or fair value of plan assets, but commonly plans use a smoothed value in order to reduce the year-to-year volatility of calculated results, such as the funded ratio and the ADC.
Actuarially Determined:	Values that have been determined utilizing the principles of actuarial science. An actuarially determined value is derived by application of the appropriate actuarial assumptions to specified values determined by provisions of the law.
Actuarially Determined Contribution (ADC):	The employer's periodic required contributions, expressed as a dollar amount or a percentage of covered plan compensation, determined under the Plan's funding policy. The ADC consists of the Employer Normal Cost and the Amortization Payment.
Amortization Method:	A method for determining the Amortization Payment. The most common methods used are level dollar and level percentage of payroll. Under the Level Dollar method, the Amortization Payment is one of a stream of payments, all equal, whose Actuarial Present Value is equal to the UAAL. Under the Level Percentage of Pay method, the Amortization Payment is one of a stream of increasing payments, whose Actuarial Present Value is equal to the UAAL. Under the Level Percentage of Pay method, the stream of payments increases at the assumed rate at which total covered payroll of all active members will increase.
Amortization Payment:	The portion of the pension plan contribution, or ADC, that is designed to pay interest on and to amortize the Unfunded Actuarial Accrued Liability.

Section 3: Supplemental Information

Assumptions or Actuarial Assumptions:	<p>The estimates upon which the cost of the Fund is calculated, including:</p> <p><u>Investment return</u> - the rate of investment yield that the Fund will earn over the long-term future;</p> <p><u>Mortality rates</u> - the death rates of employees and pensioners; life expectancy is based on these rates;</p> <p><u>Retirement rates</u> - the rate or probability of retirement at a given age or service;</p> <p><u>Disability rates</u> - the probability of disability retirement at a given age;</p> <p><u>Termination rates</u> - the rates at which employees of various ages are expected to leave employment for reasons other than death, disability, or retirement;</p> <p><u>Salary increase rates</u> - the rates of salary increase due to inflation and productivity growth.</p>
Closed Amortization Period:	<p>A specific number of years that is counted down by one each year, and therefore declines to zero with the passage of time. For example, if the amortization period is initially set at 30 years, it is 29 years at the end of one year, 28 years at the end of two years, etc. See Open Amortization Period.</p>
Decrements:	<p>Those causes/events due to which a member's status (active-inactive-retiree-beneficiary) changes, that is: death, retirement, disability, or withdrawal.</p>
Defined Benefit Plan:	<p>A retirement plan in which benefits are defined by a formula applied to the member's compensation and/or years of service.</p>
Defined Contribution Plan:	<p>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.</p>
Employer Normal Cost:	<p>The portion of the Normal Cost to be paid by the employer. This is equal to the Normal Cost less expected member contributions.</p>
Experience Study:	<p>A periodic review and analysis of the actual experience of the Fund that may lead to a revision of one or more actuarial assumptions. Actual rates of decrement and salary increases are compared to the actuarially assumed values and modified as deemed appropriate by the Actuary.</p>
Funded Ratio:	<p>The ratio of the Actuarial Value of Assets (AVA) to the actuarial accrued liability (AAL). Plans sometimes calculate a market funded ratio, using the Market Value of Assets (MVA), rather than the AVA.</p>
Investment Return:	<p>The rate of earnings of the Fund from its investments, including interest, dividends and capital gain and loss adjustments, computed as a percentage of the average value of the fund. For actuarial purposes, the investment return often reflects a smoothing of the capital gains and losses to avoid significant swings in the value of assets from one year to the next.</p>

Section 3: Supplemental Information

Normal Cost:	That portion of the Actuarial Present Value of pension plan benefits and expenses allocated to a valuation year by the Actuarial Cost Method. Any payment in respect of an Unfunded Actuarial Accrued Liability is not part of Normal Cost (see Amortization Payment). For pension plan benefits that are provided in part by employee contributions, Normal Cost refers to the total of employee contributions and employer Normal Cost unless otherwise specifically stated.
Open Amortization Period:	An open amortization period is one which is used to determine the Amortization Payment but which does not change over time. If the initial period is set as 30 years, the same 30-year period is used in determining the Amortization Period each year. In theory, if an Open Amortization Period with level percentage of payroll is used to amortize the Unfunded Actuarial Accrued Liability, the UAAL will never decrease, but will become smaller each year, in relation to covered payroll, if the actuarial assumptions are realized.
Unfunded Actuarial Accrued Liability:	The excess of the Actuarial Accrued Liability over the Actuarial Value of Assets. This value may be negative, in which case it may be expressed as a negative Unfunded Actuarial Accrued Liability, also called the Funding Surplus.
Valuation Date or Actuarial Valuation Date:	The date as of which the value of assets is determined and as of which the Actuarial Present Value of Future Plan Benefits is determined. The expected benefits to be paid in the future are discounted to this date.
Valuation Value of Assets:	The Actuarial Value of Assets reduced by the value of non-valuation reserves.

Section 4: Actuarial Valuation Basis

Exhibit 1: Actuarial Assumptions and Methods

Rationale for Assumptions:

The information and analysis used in selecting each assumption that has a significant effect on this actuarial valuation is shown in the 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.

Economic Assumptions

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:

1.13% of payroll allocated to both the employer and the member based on normal cost (before expenses) for the employer and member. This assumption changes each year based on the actual administrative expenses as a percent of actual compensation during the calendar year leading up to the valuation date.

For the 2022 calendar year, actual administrative expenses were \$11,537,709 and actual payroll was \$1,023,662,811. This results in the administrative expense assumption of 1.13% of payroll, allocated between employers and members as shown below:

Average Normal Cost Rate			
	Before Administrative Expense	Weighting	Total
Employer	14.95%	56.14%	0.63%
Member	11.68%	43.86%	0.50%
Total	26.63%	100.00%	1.13%

The employer Normal Cost rate is then increased by the same percent of payroll as the basic member rate with the remaining employer loading allocated to the employer UAAL rate. This is done 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 as a % of Payroll	
Addition to Employer Basic Normal Cost Rate	0.50%
Addition to Employer Basic UAAL Rate	0.13%
Addition to Member Basic Rate	0.50%
Total Addition to Contribution Rates	1.13%

Section 4: Actuarial Valuation Basis

Employee Contribution Crediting Rate:	6.75%, compounded semi-annually.
Inflation Rate:	Increases of 2.50% per year.
Cost of Living Adjustment (COLA):	<p>Increases of 2.75% per year.</p> <p>Benefits for General Tier 1, Tier 3 (non-disability), Tier 4 and Tier 5 (non-disability) and Safety Tier A and Tier D are subject to a 3.00% maximum COLA increase due to CPI per year (valued as a 2.75% increase).</p> <p>Benefits for General Tier 2, Tier 3 (disability) and Tier 5 (disability) are subject to a 4.00% maximum change per year (valued as a 2.75% increase).</p> <p>Benefits for General Tier 4 and Tier 5 members covered under certain memoranda of understanding and Safety Tier C and Tier E are subject to a 2.00% maximum change per year (valued as a 2.00% increase).</p> <p>For members that have COLA banks, they are reflected in projected future COLAs.</p> <p>The actual COLA granted by CCCERA on April 1, 2023 has been reflected for non-active members in the December 31, 2022 valuation.</p>
Payroll Growth:	Inflation of 2.50% per year plus “across-the-board” real salary increases of 0.50% per year, used to amortize the Unfunded Actuarial Accrued Liability as a level percentage of payroll.
Increase in Internal Revenue Code Section 401(a)(17) Compensation Limit:	Increase of 2.50% 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” real salary increases of 0.50% per year, plus
- The following merit and promotion increases:

Years of Service	Rate (%)	
	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 & Over	0.50	1.00

The average total assumed salary increase for active members in the December 31, 2022 actuarial valuation is 4.8%.

Section 4: Actuarial Valuation Basis

Demographic Assumptions

Post-Retirement Mortality Rates:

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.
- **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.

The Pub-2010 mortality tables and adjustments as shown above reasonably reflect the mortality experience as of the measurement date. These mortality tables were adjusted to future years using the generational projection to reflect future mortality improvement between the measurement date and those years.

Section 4: Actuarial Valuation Basis

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.

Age	Rate (%)			
	General		Safety	
	Male	Female	Male	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

Note that generational projections beyond the base year (2010) are not reflected in the above mortality rates. All pre-retirement deaths are assumed to be non-service connected related.

Mortality Rates for Member Contributions:

- **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.

Section 4: Actuarial Valuation Basis

Disability Incidence:

Age	Rate (%)		
	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

65% of General Tier 1 and Tier 4 disabilities are assumed to be service connected disabilities. The other 35% are assumed to be non-service connected disabilities.

25% of General Tier 3 and Tier 5 disabilities are assumed to be service connected disabilities. The other 75% are assumed to be non-service connected disabilities.

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

Section 4: Actuarial Valuation Basis

Termination:

Years of Service	Rate (%)	
	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 & Over	1.50	0.50

The member is assumed to receive the greater of the member's contribution balance or a deferred retirement benefit.

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

Section 4: Actuarial Valuation Basis

Retirement Rates (General):

Age	Rate (%)					
	Tier 1 Enhanced		Tier 3 Enhanced		Tier 1 Non-Enhanced	PEPRA Tier 4 and Tier 5
	Less than 30 Years of Service	Over 30 Years of Service	Less than 30 Years of Service	Over 30 Years of Service		
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 & Over	100.00	100.00	100.00	100.00	100.00	100.00

Section 4: Actuarial Valuation Basis

Retirement Rates (Safety):	Rate (%)			
	Tier A Enhanced			Tier A Non-Enhanced and PEPRA Tier D and Tier E
	Age	Less than 30 Years of Service	Over 30 Years of Service	
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 & Over	100.00	100.00	100.00	100.00

Retirement Age and Benefit for Deferred Vested Members:	For current and future deferred vested members, retirement age assumptions are as follows: General: 60 Safety with Reciprocity: 53 Safety without Reciprocity: 51 40% of future General and 70% of future Safety deferred vested members are assumed to continue to work for a reciprocal employer. For reciprocals, 3.50% and 4.00% compensation increases are assumed per annum for General and Safety, respectively.
Future Benefit Accruals:	1.0 year of service per year for full-time employees. Continuation of current partial service accrual for part-time employees.

Section 4: Actuarial Valuation Basis

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.																										
Percent Married:	For all active and inactive members, 65% of male members and 50% of female members are assumed to be married at pre-retirement death or retirement.																										
Age and Gender of Spouse:	For all active and inactive members, male members are assumed to have a female spouse who is 3 years younger than the member and female members are assumed to have a male spouse who is 2 years older than the member.																										
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 PEPRA Tier 5 to offset the Plan's disability benefits with other Plans of the employer. We have not assumed any offsets in this valuation.																										
Leave Cashout Assumptions:	<p>The following assumptions for leave cashouts as a percentage of final average pay are used:</p> <p><i>General Tiers 1, 2 and 3 & Safety Tiers A and C</i></p> <table> <tr> <td>Cost Group 1</td> <td>1.00%</td> </tr> <tr> <td>Cost Group 2</td> <td>0.50% for Tier 2 0.75% for Tier 3</td> </tr> <tr> <td>Cost Group 3</td> <td>5.25%</td> </tr> <tr> <td>Cost Group 4</td> <td>1.00%</td> </tr> <tr> <td>Cost Group 5</td> <td>1.00%</td> </tr> <tr> <td>Cost Group 6</td> <td>0.00%</td> </tr> <tr> <td>Cost Group 7</td> <td>0.50%</td> </tr> <tr> <td>Cost Group 8</td> <td>0.25%</td> </tr> <tr> <td>Cost Group 9</td> <td>0.00%</td> </tr> <tr> <td>Cost Group 10</td> <td>0.25%</td> </tr> <tr> <td>Cost Group 11</td> <td>3.00%</td> </tr> <tr> <td>Cost Group 12</td> <td>1.75%</td> </tr> <tr> <td>Withdrawn Employers</td> <td>0.00%</td> </tr> </table> <p><i>General PEPRA Tiers 4 and 5 & Safety PEPRA Tiers D and E</i></p> <p>None</p>	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%
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%																										

Section 4: Actuarial Valuation Basis

Service from Accumulated Sick Leave Conversion:

The following assumptions for additional service converted from accumulated sick leave as a percentage of service at retirement are used:

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.

Changed Actuarial Assumptions

The following assumptions have been changed since the prior valuation. Previously these assumptions were as follows:

Administrative Expenses:

1.15% of payroll allocated to both the employer and the member based on normal cost (before expenses) for the employer and member. This assumption changes each year based on the actual administrative expenses as a percent of actual compensation during the calendar year leading up to the valuation date.

Actuarial Funding Policy

Actuarial Cost Method:

Entry Age Actuarial Cost Method. Entry Age is the age on the valuation date minus years of service. Normal Cost and Actuarial Accrued Liability are calculated on an individual basis and are based on costs allocated as a level percentage of compensation, as if the current benefit formula for each individual has always been in effect (i.e., "replacement life within a tier").

Actuarial Value of Assets:

Market value of assets (MVA) 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.

Amortization Policy:

The UAAL as of December 31, 2014 will continue to be 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.

Any new UAAL as a result of change in actuarial assumptions or methods will be amortized over a period of 18 years.

Section 4: Actuarial Valuation Basis

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 assumption for general payroll increase (i.e., payroll growth).

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.

Other Actuarial Methods

Employer Contributions:

Employer contributions consist of two components:

Normal Cost

The annual contribution rate that, if paid annually from a member’s first year of membership through the year of retirement, would accumulate to the amount necessary to fully fund the member’s retirement-related benefits. Accumulation includes annual crediting of interest at the assumed investment earning rate. The contribution rate is expressed as a level percentage of the member’s compensation.

Contribution to the Unfunded Actuarial Accrued Liability (UAAL)

The annual contribution rate that, if paid annually over the UAAL amortization period, would accumulate to the amount necessary to fully fund the UAAL. Accumulation includes annual crediting of interest at the assumed investment earning rate. The contribution (or rate credit in the case of a negative UAAL) is calculated to remain as a level percentage of future active member payroll (including payroll for new members as they enter the Association) assuming a constant number of active members. In order to remain as a level percentage of

Section 4: Actuarial Valuation Basis

payroll, amortization payments (credits) are scheduled to increase at the annual payroll growth rate of 3.00% (i.e., 2.50% inflation plus 0.50% “across-the-board” salary increase).

The amortization policy is described on the previous page.

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

General Tier 4 (2% COLA)

The General Tier 4 (2% COLA) in Cost Group #1 continues to not have any actual members as of December 31, 2022. The contribution rates for this cost group have been developed based on generally the same methodology used to estimate contribution rates for all of the PEPRA tiers in the December 31, 2012 valuation. We have assumed in this valuation 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.

Member Contributions:

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

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. Members also pay 50% of the cost-of-living benefit. 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.

Effective July 1, 2022, East Contra Costa Fire Protection District was annexed into Contra Costa Fire Protection District. Consistent with the annexation, starting with the December 31, 2021 valuation, the prior General and Safety members from the East Contra Costa Fire Protection District have become General and Safety members of 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. UAAL costs are also pooled for Cost Groups #7 and #9 which are Safety County tiers.

Section 4: Actuarial Valuation Basis

Additional Contribution Rate Adjustments:

Adjustments are made to some UAAL amounts for the County, the Moraga-Orinda Fire District (Moraga), First 5 – Children & Families Commission (First Five) and Local Agency Formation Commission (LAFCO) to account for Pension Obligation Bonds (POBs) and any other special contributions that they previously made. These adjustments serve to reduce the UAAL contribution rate for these employers. The outstanding balances of these adjustments as of December 31, 2022 are as follows:

	County General	Moraga General	First Five General	LAFCO General ¹
Basic	\$0	\$0	\$0	\$121,316
COL	0	0	0	0

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 \$265,000 for 2023. Normal Retirement Age for these purposes is age 62. These are the limits in simplified terms. They must be adjusted based on each participant's circumstances, for such things as age at retirement, form of benefits chosen and after tax contributions.

Non-PEPRA benefits in excess of the limits may be paid through a qualified governmental excess plan that meets the requirements of Section 415(m).

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

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.

Changed Actuarial Methods

There have been no changes in actuarial methods since the prior valuation.

¹ LAFCO made several UAAL prepayments in the 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. In this valuation with the restart of UAAL amortization charge layer being fully amortized, we have 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

Exhibit 2: Summary of Plan Provisions

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

Plan Year:	January 1 through December 31
Membership Eligibility:	
<i>General Tier 1</i>	General members hired before July 1, 1980 and electing not to transfer to Tier 2 Plan. 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.
<i>General Tier 2</i>	Most General members hired on or after August 1, 1980 and all General members hired before July 1, 1980 electing to transfer to the Tier 2 Plan. 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.
<i>General Tier 3</i>	General members with membership dates before January 1, 2013 who are not placed in Tier 1 are placed in Tier 3.
<i>General PEPPRA Tier 4</i>	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.
<i>General PEPPRA Tier 5</i>	General members with membership dates on or after January 1, 2013 who are not placed in Tier 4 are placed in Tier 5.
<i>Safety Tier A and Tier C</i>	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.
<i>Safety PEPPRA Tier D and Tier E</i>	Safety members with membership dates on or after January 1, 2013. Safety members from certain bargaining units are placed in Safety Tier E.

Section 4: Actuarial Valuation Basis

Final Compensation for Benefit Determination:	
<i>General Tier 1 and Tier 3 (non-disability), Safety Tier A</i>	Highest consecutive 12 months of compensation earnable. (§31462.1) (FAS1)
<i>General Tier 2 and Tier 3 (disability), Safety Tier C</i>	Highest consecutive 36 months of compensation earnable. (§31462) (FAS3)
<i>General Tier 4 and Tier 5, Safety Tier D and Tier E</i>	Highest consecutive 36 months of pensionable compensation. (§7522.10(c), §7522.32 and §7522.34) (FAS3)
Compensation Limit:	
<i>General Tier 1, Tier 2 and Tier 3, Safety Tier A and Tier C</i>	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 \$330,000 for calendar year 2023. The limit is indexed for inflation on an annual basis.
<i>General Tier 4 and Tier 5, Safety Tier D and Tier E</i>	Pensionable Compensation is limited to \$146,042 for 2023 (\$175,250, if not enrolled in Social Security). The limit is indexed for inflation on an annual basis.
Social Security Primary Insurance Amount:	
<i>General Tier 2</i>	Estimated Social Security award at age 62 assuming level future earnings. (PIA)
Service:	
<i>All Tiers</i>	Years of service (Yrs) are generally based on a member's employment during a period of time for which deductions are made from their compensation. Includes accumulated sick leave as of the date of retirement. (§31641.01)
<i>General Tier 2</i>	Maximum of 30 years (Yrs30).
Service Retirement Eligibility:	
<i>General Tier 1, Tier 2, and Tier 3</i>	Age 50 with 10 years of service, or age 70 regardless of service, or after 30 years of service regardless of age. (§31672)
<i>General Tier 4 and Tier 5</i>	Age 52 with 5 years of service or age 70 regardless of service. (§7522.20(a) and §31672.3)
<i>Safety Tier A and Tier C</i>	Age 50 with 10 years of service, or age 70 regardless of service, or after 20 years of service regardless of age. (§31663.25)
<i>Safety Tier D and Tier E</i>	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 Formula:

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% x (FAS1 – \$1,400) x Yrs
55	1.67% x (FAS1 – \$1,400) x Yrs
60	2.18% x (FAS1 – \$1,400) x Yrs
62	2.35% x (FAS1 – \$1,400) x Yrs
65 & Over	2.61% x (FAS1 – \$1,400) x Yrs

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

Retirement Age	Benefit Formula
50	1.43% x (FAS1 – \$1,400) x Yrs
55	2.00% x (FAS1 – \$1,400) x Yrs
60	2.26% x (FAS1 – \$1,400) x Yrs
62	2.37% x (FAS1 – \$1,400) x Yrs
65 & Over	2.42% x (FAS1 – \$1,400) x Yrs

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.

General Tier 2 (§31752)

Retirement Age	Benefit Formula
50	0.83% x FAS3 x Yrs – 0.57% x Yrs30 x PIA
55	1.13% x FAS3 x Yrs – 0.87% x Yrs30 x PIA
60	1.43% x FAS3 x Yrs – 1.37% x Yrs30 x PIA
62	1.55% x FAS3 x Yrs – 1.67% x Yrs30 x PIA
65 & Over	1.73% x FAS3 x Yrs – 1.67% x Yrs30 x PIA

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

Retirement Age	Benefit Formula
52	1.00% x FAS3 x Yrs
55	1.30% x FAS3 x Yrs
60	1.80% x FAS3 x Yrs
62	2.00% x FAS3 x Yrs
65	2.30% x FAS3 x Yrs
67 & Over	2.50% x FAS3 x Yrs

Section 4: Actuarial Valuation Basis

Benefit Formula (continued):		
<i>Safety Tier A (Non-Enhanced)</i> (§31664)	Retirement Age	Benefit Formula
	50	2.00% x FAS1 x Yrs
<i>Safety Tier A (Enhanced)</i> (§31664.1)	Retirement Age	Benefit Formula
	55 & Over	2.62% x FAS1 x Yrs
<i>Safety Tier C (Enhanced)</i> (§31664.1)	Retirement Age	Benefit Formula
	50 & Over	3.00% x FAS1 x Yrs
<i>Safety Tier D and Tier E</i> (§7522.25(d))	Retirement Age	Benefit Formula
	50	2.00% x FAS3 x Yrs
	55	2.50% x FAS3 x Yrs
	57 & Over	2.70% x FAS3 x Yrs
Maximum Benefit:		
<i>General Tier 1 and Tier 3, Safety Tier 1 and Tier C</i>	100% of Final Compensation. (§31676.11, §31676.16, §31664, §31664.1)	
<i>General Tier 2, Tier 4 and Tier 5, Safety Tier D and Tier E</i>	None.	

Section 4: Actuarial Valuation Basis

Non-Service Connected Disability:

General Tier 1 and Tier 4

<i>Eligibility</i>	Five years of service. (§31720)
<i>Benefit Formula</i>	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)

General Tier 2, Tier 3 and Tier 5

<i>Eligibility</i>	Ten years of service. (§31720.1)
<i>Benefit Formula</i>	40% of Final Compensation plus 10% of Final Compensation used in the benefit determination for each minor child (maximum of three). (§31727.01)
<i>Offset</i>	Disability benefits are offset by other plans of the employer except Workers Compensation and Social Security.

Safety

<i>Eligibility</i>	Five years of service (§31720).
<i>Benefit Formula</i>	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)

Service Connected Disability:

General Tier 1 and Tier 4, Safety

<i>Eligibility</i>	No age or service requirements. (§31720)
<i>Benefit Formula</i>	50% of the Final Compensation. (§31727.4)

General Tier 2, Tier 3, and Tier 5

<i>Eligibility</i>	No age or service requirements. (§31720)
<i>Benefit Formula</i>	40% of Final Compensation plus 10% of Final Compensation for each minor child (maximum of three). (§31727.01)
<i>Offset</i>	Disability benefits are offset by other plans of the Employer except Workers Compensation and Social Security.

Section 4: Actuarial Valuation Basis

Pre-Retirement Death:

General Tier 1, Tier 3, Tier 4, and Tier 5, Safety

Eligibility – A

None.

Benefit – A

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).

Eligibility – B

Five years of service (Ten years for General Tier 3 and Tier 5).

Benefit – B

Option 2 (100% continuation) of Service Retirement or Non-Service Connected Disability benefit payable to designated beneficiary.

Death in line of duty

50% of Final Compensation payable to spouse. (§31787)

General Tier 2

Eligibility – A

None.

Benefit – A

Refund of employee contributions with interest, plus \$2,000 lump sum benefit offset by any Social Security payment. (§31781.01);

Eligibility – B

Ten years of service.

Benefit – B

Option 2 (100% continuation) of Service Retirement or Non-Service Connected Disability benefit payable to designated beneficiary.

Death in line of duty

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. Minimum family benefit is 60% of the member's allowance. Maximum family benefit is 100% of member's allowance.

Section 4: Actuarial Valuation Basis

Death After Retirement:

General Tier 1, Tier 3, Tier 4, and Tier 5, Safety

Service Retirement or Non Service Connected Disability Retirement

Unless another option was selected at retirement, 60% of member's unmodified allowance continues to eligible spouse. 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)

Service Connected Disability

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

Service Retirement or Non Service Connected Disability Retirement

Unless another option was selected at retirement, 60% of member's unmodified allowance continues to eligible spouse 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.

Withdrawal Benefits:

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 Benefits:

General Tier 1, Tier 3 (non-disability), Tier 4, and Tier 5, 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 <i>Section 4, Exhibit 3</i> for specific rates.
<i>General Tier 1 and Tier 3 (Non Enhanced)</i>	
<i>Basic</i>	Entry-age based rates that provide for one-half of the \$31676.11 benefit payable at age 55.
<i>Cost-of-Living</i>	Entry-age based rates that provide for one-half of future Cost-of-Living costs.
<i>General Tier 1 and Tier 3 (Enhanced)</i>	
<i>Basic</i>	Entry-age based rates that provide for an annuity at age 60 equal to 1/120 of FAS1.
<i>Cost-of-Living</i>	Entry-age based rates that provide for one-half of future Cost-of-Living costs.
<i>General Tier 4 and Tier 5</i>	50% of the total Normal Cost rate.
<i>Safety Tier A (Non Enhanced)</i>	
<i>Basic</i>	Entry-age based rates that provide for one-half of the \$31664 benefit payable at age 50.
<i>Cost-of-Living</i>	Entry-age based rates that provide for one-half of future Cost-of-Living costs.
<i>Safety Tier A (Enhanced)</i>	
<i>Basic</i>	Entry-age based rates that provide for an annuity at age 50 equal to 1/100 of FAS1.
<i>Cost-of-Living</i>	Entry-age based rates that provide for one-half of future Cost-of-Living costs.
<i>Safety Tier C (Enhanced)</i>	
<i>Basic</i>	Entry-age based rates that provide for an annuity at age 50 equal to 1/100 of FAS3.
<i>Cost-of-Living</i>	Entry-age based rates that provide for one-half of future Cost-of-Living costs.
<i>Safety Tier D and Tier E</i>	50% of the total Normal Cost rate.
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 maximum is 4% only for the credit under Tier 2. Transferred Tier 2 members keep the five-year requirement for nonservice-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.

Section 4: Actuarial Valuation Basis

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.
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Changed Plan Provisions

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

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

Section 4: Actuarial Valuation Basis

Exhibit 3: Member Contribution Rates

General Cost Group #1 Members' Contribution Rates (as a % of Monthly Payroll)
Members with Membership Dates before January 1, 2013

Entry Age	Basic		COLA		Total	
	First \$350	Over \$350	First \$350	Over \$350	First \$350	Over \$350
15	3.79%	5.43%	1.87%	2.80%	5.66%	8.23%
16	3.85%	5.53%	1.91%	2.86%	5.76%	8.39%
17	3.92%	5.63%	1.94%	2.91%	5.86%	8.54%
18	3.99%	5.73%	1.98%	2.97%	5.97%	8.70%
19	4.05%	5.83%	2.02%	3.03%	6.07%	8.86%
20	4.12%	5.93%	2.05%	3.08%	6.17%	9.01%
21	4.19%	6.04%	2.10%	3.15%	6.29%	9.19%
22	4.27%	6.15%	2.14%	3.21%	6.41%	9.36%
23	4.33%	6.25%	2.18%	3.27%	6.51%	9.52%
24	4.41%	6.37%	2.22%	3.33%	6.63%	9.70%
25	4.49%	6.48%	2.27%	3.40%	6.76%	9.88%
26	4.56%	6.59%	2.31%	3.46%	6.87%	10.05%
27	4.64%	6.71%	2.35%	3.53%	6.99%	10.24%
28	4.72%	6.83%	2.40%	3.60%	7.12%	10.43%
29	4.80%	6.95%	2.44%	3.66%	7.24%	10.61%
30	4.89%	7.08%	2.49%	3.74%	7.38%	10.82%
31	4.97%	7.20%	2.54%	3.81%	7.51%	11.01%
32	5.05%	7.33%	2.59%	3.88%	7.64%	11.21%
33	5.14%	7.46%	2.63%	3.95%	7.77%	11.41%
34	5.23%	7.60%	2.69%	4.03%	7.92%	11.63%
35	5.33%	7.74%	2.74%	4.11%	8.07%	11.85%
36	5.42%	7.88%	2.79%	4.19%	8.21%	12.07%
37	5.51%	8.02%	2.85%	4.27%	8.36%	12.29%
38	5.61%	8.17%	2.91%	4.36%	8.52%	12.53%
39	5.72%	8.33%	2.97%	4.45%	8.69%	12.78%

Section 4: Actuarial Valuation Basis

Exhibit 3: Member Contribution Rates (continued)

General Cost Group #1 Members' Contribution Rates (as a % of Monthly Payroll)
Members with Membership Dates before January 1, 2013 (continued)

Entry Age	Basic		COLA		Total	
	First \$350	Over \$350	First \$350	Over \$350	First \$350	Over \$350
40	5.82%	8.48%	3.02%	4.53%	8.84%	13.01%
41	5.92%	8.63%	3.08%	4.62%	9.00%	13.25%
42	6.03%	8.79%	3.14%	4.71%	9.17%	13.50%
43	6.13%	8.94%	3.19%	4.79%	9.32%	13.73%
44	6.23%	9.10%	3.25%	4.88%	9.48%	13.98%
45	6.34%	9.26%	3.32%	4.98%	9.66%	14.24%
46	6.45%	9.42%	3.38%	5.07%	9.83%	14.49%
47	6.55%	9.58%	3.44%	5.16%	9.99%	14.74%
48	6.66%	9.74%	3.50%	5.25%	10.16%	14.99%
49	6.75%	9.88%	3.55%	5.33%	10.30%	15.21%
50	6.85%	10.03%	3.61%	5.41%	10.46%	15.44%
51	6.96%	10.19%	3.67%	5.50%	10.63%	15.69%
52	7.07%	10.35%	3.73%	5.59%	10.80%	15.94%
53	7.17%	10.51%	3.79%	5.69%	10.96%	16.20%
54	7.27%	10.65%	3.85%	5.77%	11.12%	16.42%
55	7.36%	10.79%	3.89%	5.84%	11.25%	16.63%
56	7.43%	10.90%	3.94%	5.91%	11.37%	16.81%
57	7.43%	10.89%	3.93%	5.90%	11.36%	16.79%
58	7.39%	10.83%	3.91%	5.87%	11.30%	16.70%
59 & Over	7.23%	10.59%	3.82%	5.73%	11.05%	16.32%

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:	0.50% of payroll added to Basic rates
Leave Cashout:	1.00%
COLA Loading Factor:	56.80%, applied to Basic rates prior to adjustment for administrative expenses, based on 2.75% assumed COLA.

Section 4: Actuarial Valuation Basis

Exhibit 3: Member Contribution Rates (continued)

General Cost Group #2 Members' Contribution Rates (as a % of Monthly Payroll)
Members with Membership Dates before January 1, 2013

Entry Age	Basic		COLA		Total	
	First \$350	Over \$350	First \$350	Over \$350	First \$350	Over \$350
15	3.78%	5.42%	1.62%	2.43%	5.40%	7.85%
16	3.85%	5.52%	1.65%	2.48%	5.50%	8.00%
17	3.91%	5.62%	1.69%	2.53%	5.60%	8.15%
18	3.98%	5.72%	1.72%	2.58%	5.70%	8.30%
19	4.05%	5.82%	1.75%	2.63%	5.80%	8.45%
20	4.11%	5.92%	1.78%	2.67%	5.89%	8.59%
21	4.19%	6.03%	1.82%	2.73%	6.01%	8.76%
22	4.25%	6.13%	1.85%	2.78%	6.10%	8.91%
23	4.33%	6.24%	1.89%	2.83%	6.22%	9.07%
24	4.40%	6.35%	1.93%	2.89%	6.33%	9.24%
25	4.47%	6.46%	1.96%	2.94%	6.43%	9.40%
26	4.55%	6.58%	2.00%	3.00%	6.55%	9.58%
27	4.63%	6.70%	2.04%	3.06%	6.67%	9.76%
28	4.71%	6.82%	2.08%	3.12%	6.79%	9.94%
29	4.79%	6.94%	2.12%	3.18%	6.91%	10.12%
30	4.87%	7.06%	2.16%	3.24%	7.03%	10.30%
31	4.96%	7.19%	2.20%	3.30%	7.16%	10.49%
32	5.05%	7.32%	2.25%	3.37%	7.30%	10.69%
33	5.13%	7.45%	2.29%	3.43%	7.42%	10.88%
34	5.22%	7.58%	2.33%	3.49%	7.55%	11.07%
35	5.31%	7.72%	2.37%	3.56%	7.68%	11.28%
36	5.41%	7.86%	2.42%	3.63%	7.83%	11.49%
37	5.51%	8.01%	2.47%	3.71%	7.98%	11.72%
38	5.60%	8.15%	2.52%	3.78%	8.12%	11.93%
39	5.70%	8.30%	2.57%	3.85%	8.27%	12.15%

Section 4: Actuarial Valuation Basis

Exhibit 3: Member Contribution Rates (continued)

General Cost Group #2 Members' Contribution Rates (as a % of Monthly Payroll)
Members with Membership Dates before January 1, 2013 (continued)

Entry Age	Basic		COLA		Total	
	First \$350	Over \$350	First \$350	Over \$350	First \$350	Over \$350
40	5.81%	8.46%	2.62%	3.93%	8.43%	12.39%
41	5.91%	8.61%	2.67%	4.00%	8.58%	12.61%
42	6.01%	8.77%	2.72%	4.08%	8.73%	12.85%
43	6.11%	8.92%	2.77%	4.16%	8.88%	13.08%
44	6.22%	9.08%	2.82%	4.23%	9.04%	13.31%
45	6.33%	9.24%	2.87%	4.31%	9.20%	13.55%
46	6.43%	9.40%	2.93%	4.39%	9.36%	13.79%
47	6.54%	9.56%	2.98%	4.47%	9.52%	14.03%
48	6.64%	9.71%	3.03%	4.55%	9.67%	14.26%
49	6.75%	9.87%	3.08%	4.62%	9.83%	14.49%
50	6.84%	10.01%	3.13%	4.69%	9.97%	14.70%
51	6.95%	10.17%	3.18%	4.77%	10.13%	14.94%
52	7.05%	10.33%	3.23%	4.85%	10.28%	15.18%
53	7.15%	10.48%	3.29%	4.93%	10.44%	15.41%
54	7.25%	10.62%	3.33%	4.99%	10.58%	15.61%
55	7.33%	10.75%	3.37%	5.06%	10.70%	15.81%
56	7.39%	10.84%	3.40%	5.10%	10.79%	15.94%
57	7.43%	10.89%	3.42%	5.13%	10.85%	16.02%
58	7.39%	10.84%	3.40%	5.10%	10.79%	15.94%
59 & Over	7.03%	10.30%	3.23%	4.84%	10.26%	15.14%

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: 0.50% of payroll added to Basic rates

Leave Cashout: 0.75%

COLA Loading Factor: 49.35%, applied to Basic rates prior to adjustment for administrative expenses, based on 2.75% assumed COLA.

Section 4: Actuarial Valuation Basis

Exhibit 3: Member Contribution Rates (continued)

General Cost Group #3 Members' Contribution Rates (as a % of Monthly Payroll)
Members with Membership Dates before January 1, 2013

Entry Age	Basic	COLA	Total
15	5.64%	2.86%	8.50%
16	5.74%	2.92%	8.66%
17	5.84%	2.97%	8.81%
18	5.95%	3.03%	8.98%
19	6.05%	3.09%	9.14%
20	6.16%	3.15%	9.31%
21	6.27%	3.21%	9.48%
22	6.38%	3.27%	9.65%
23	6.49%	3.33%	9.82%
24	6.61%	3.40%	10.01%
25	6.73%	3.47%	10.20%
26	6.85%	3.54%	10.39%
27	6.97%	3.60%	10.57%
28	7.09%	3.67%	10.76%
29	7.22%	3.74%	10.96%
30	7.35%	3.81%	11.16%
31	7.48%	3.89%	11.37%
32	7.61%	3.96%	11.57%
33	7.75%	4.04%	11.79%
34	7.89%	4.11%	12.00%
35	8.03%	4.19%	12.22%
36	8.18%	4.28%	12.46%
37	8.33%	4.36%	12.69%
38	8.48%	4.44%	12.92%
39	8.64%	4.53%	13.17%

Section 4: Actuarial Valuation Basis

Exhibit 3: Member Contribution Rates (continued)

General Cost Group #3 Members' Contribution Rates (as a % of Monthly Payroll)
Members with Membership Dates before January 1, 2013 (continued)

Entry Age	Basic	COLA	Total
40	8.80%	4.62%	13.42%
41	8.96%	4.71%	13.67%
42	9.12%	4.80%	13.92%
43	9.28%	4.89%	14.17%
44	9.44%	4.98%	14.42%
45	9.60%	5.07%	14.67%
46	9.77%	5.16%	14.93%
47	9.93%	5.25%	15.18%
48	10.09%	5.34%	15.43%
49	10.24%	5.42%	15.66%
50	10.40%	5.51%	15.91%
51	10.55%	5.59%	16.14%
52	10.69%	5.67%	16.36%
53	10.85%	5.76%	16.61%
54	11.00%	5.85%	16.85%
55	11.16%	5.93%	17.09%
56	11.21%	5.96%	17.17%
57	11.17%	5.94%	17.11%
58	11.03%	5.86%	16.89%
59 & Over	10.48%	5.56%	16.04%

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: 0.50% of payroll added to Basic rates

Leave Cashout: 5.25%

COLA Loading Factor: 55.67%, applied to Basic rates prior to adjustment for administrative expenses, based on 2.75% assumed COLA.

Section 4: Actuarial Valuation Basis

Exhibit 3: Member Contribution Rates (continued)

General Cost Group #4 Members' Contribution Rates (as a % of Monthly Payroll)
Members with Membership Dates before January 1, 2013

Entry Age	Basic		COLA		Total	
	First \$350	Over \$350	First \$350	Over \$350	First \$350	Over \$350
15	3.79%	5.43%	1.83%	2.74%	5.62%	8.17%
16	3.85%	5.53%	1.87%	2.80%	5.72%	8.33%
17	3.92%	5.63%	1.90%	2.85%	5.82%	8.48%
18	3.99%	5.73%	1.94%	2.91%	5.93%	8.64%
19	4.05%	5.83%	1.97%	2.96%	6.02%	8.79%
20	4.12%	5.93%	2.01%	3.02%	6.13%	8.95%
21	4.19%	6.04%	2.05%	3.08%	6.24%	9.12%
22	4.27%	6.15%	2.09%	3.14%	6.36%	9.29%
23	4.33%	6.25%	2.13%	3.20%	6.46%	9.45%
24	4.41%	6.37%	2.17%	3.26%	6.58%	9.63%
25	4.49%	6.48%	2.22%	3.33%	6.71%	9.81%
26	4.56%	6.59%	2.26%	3.39%	6.82%	9.98%
27	4.64%	6.71%	2.30%	3.45%	6.94%	10.16%
28	4.72%	6.83%	2.35%	3.52%	7.07%	10.35%
29	4.80%	6.95%	2.39%	3.59%	7.19%	10.54%
30	4.89%	7.08%	2.44%	3.66%	7.33%	10.74%
31	4.97%	7.20%	2.49%	3.73%	7.46%	10.93%
32	5.05%	7.33%	2.53%	3.80%	7.58%	11.13%
33	5.14%	7.46%	2.58%	3.87%	7.72%	11.33%
34	5.23%	7.60%	2.63%	3.95%	7.86%	11.55%
35	5.33%	7.74%	2.69%	4.03%	8.02%	11.77%
36	5.42%	7.88%	2.73%	4.10%	8.15%	11.98%
37	5.51%	8.02%	2.79%	4.18%	8.30%	12.20%
38	5.61%	8.17%	2.85%	4.27%	8.46%	12.44%
39	5.72%	8.33%	2.91%	4.36%	8.63%	12.69%

Section 4: Actuarial Valuation Basis

Exhibit 3: Member Contribution Rates (continued)

General Cost Group #4 Members' Contribution Rates (as a % of Monthly Payroll)
Members with Membership Dates before January 1, 2013 (continued)

Entry Age	Basic		COLA		Total	
	First \$350	Over \$350	First \$350	Over \$350	First \$350	Over \$350
40	5.82%	8.48%	2.96%	4.44%	8.78%	12.92%
41	5.92%	8.63%	3.01%	4.52%	8.93%	13.15%
42	6.03%	8.79%	3.07%	4.61%	9.10%	13.40%
43	6.13%	8.94%	3.13%	4.69%	9.26%	13.63%
44	6.23%	9.10%	3.19%	4.78%	9.42%	13.88%
45	6.34%	9.26%	3.25%	4.87%	9.59%	14.13%
46	6.45%	9.42%	3.31%	4.96%	9.76%	14.38%
47	6.55%	9.58%	3.37%	5.05%	9.92%	14.63%
48	6.66%	9.74%	3.43%	5.14%	10.09%	14.88%
49	6.75%	9.88%	3.48%	5.22%	10.23%	15.10%
50	6.85%	10.03%	3.53%	5.30%	10.38%	15.33%
51	6.96%	10.19%	3.59%	5.39%	10.55%	15.58%
52	7.07%	10.35%	3.65%	5.48%	10.72%	15.83%
53	7.17%	10.51%	3.71%	5.57%	10.88%	16.08%
54	7.27%	10.65%	3.77%	5.65%	11.04%	16.30%
55	7.36%	10.79%	3.81%	5.72%	11.17%	16.51%
56	7.43%	10.90%	3.85%	5.78%	11.28%	16.68%
57	7.43%	10.89%	3.85%	5.78%	11.28%	16.67%
58	7.39%	10.83%	3.83%	5.75%	11.22%	16.58%
59 & Over	7.23%	10.59%	3.74%	5.61%	10.97%	16.20%

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: 0.50% of payroll added to Basic rates

Leave Cashout: 1.00%

COLA Loading Factor: 55.62%, applied to Basic rates prior to adjustment for administrative expenses, based on 2.75% assumed COLA.

Section 4: Actuarial Valuation Basis

Exhibit 3: Member Contribution Rates (continued)

General Cost Group #5 Members' Contribution Rates (as a % of Monthly Payroll)
Members with Membership Dates before January 1, 2013

Entry Age	Basic	COLA	Total
15	5.43%	2.93%	8.36%
16	5.53%	2.99%	8.52%
17	5.63%	3.05%	8.68%
18	5.73%	3.11%	8.84%
19	5.83%	3.17%	9.00%
20	5.93%	3.23%	9.16%
21	6.04%	3.29%	9.33%
22	6.15%	3.36%	9.51%
23	6.25%	3.42%	9.67%
24	6.37%	3.49%	9.86%
25	6.48%	3.55%	10.03%
26	6.59%	3.62%	10.21%
27	6.71%	3.69%	10.40%
28	6.83%	3.76%	10.59%
29	6.95%	3.83%	10.78%
30	7.08%	3.91%	10.99%
31	7.20%	3.98%	11.18%
32	7.33%	4.06%	11.39%
33	7.46%	4.14%	11.60%
34	7.60%	4.22%	11.82%
35	7.74%	4.30%	12.04%
36	7.88%	4.39%	12.27%
37	8.02%	4.47%	12.49%
38	8.17%	4.56%	12.73%
39	8.33%	4.65%	12.98%

Section 4: Actuarial Valuation Basis

Exhibit 3: Member Contribution Rates (continued)

General Cost General Cost Group #5 Members' Contribution Rates (as a % of Monthly Payroll)
Members with Membership Dates before January 1, 2013 (continued)

Entry Age	Basic	COLA	Total
40	8.48%	4.74%	13.22%
41	8.63%	4.83%	13.46%
42	8.79%	4.93%	13.72%
43	8.94%	5.02%	13.96%
44	9.10%	5.11%	14.21%
45	9.26%	5.21%	14.47%
46	9.42%	5.30%	14.72%
47	9.58%	5.40%	14.98%
48	9.74%	5.49%	15.23%
49	9.88%	5.58%	15.46%
50	10.03%	5.66%	15.69%
51	10.19%	5.76%	15.95%
52	10.35%	5.85%	16.20%
53	10.51%	5.95%	16.46%
54	10.65%	6.03%	16.68%
55	10.79%	6.12%	16.91%
56	10.90%	6.18%	17.08%
57	10.89%	6.18%	17.07%
58	10.83%	6.14%	16.97%
59 & Over	10.59%	6.00%	16.59%

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: 0.50% of payroll added to Basic rates

Leave Cashout: 1.00%

COLA Loading Factor: 59.44%, applied to Basic rates prior to adjustment for administrative expenses, based on 2.75% assumed COLA.

Section 4: Actuarial Valuation Basis

Exhibit 3: Member Contribution Rates (continued)

General Cost Group #6 Members' Contribution Rates (as a % of Monthly Payroll)
Members with Membership Dates before January 1, 2013

Entry Age	Basic		COLA		Total	
	First \$350	Over \$350	First \$350	Over \$350	First \$350	Over \$350
15	4.29%	6.18%	1.72%	2.58%	6.01%	8.76%
16	4.36%	6.29%	1.75%	2.63%	6.11%	8.92%
17	4.43%	6.40%	1.79%	2.68%	6.22%	9.08%
18	4.51%	6.52%	1.82%	2.73%	6.33%	9.25%
19	4.59%	6.63%	1.85%	2.78%	6.44%	9.41%
20	4.67%	6.75%	1.89%	2.83%	6.56%	9.58%
21	4.75%	6.87%	1.93%	2.89%	6.68%	9.76%
22	4.83%	6.99%	1.96%	2.94%	6.79%	9.93%
23	4.91%	7.12%	2.00%	3.00%	6.91%	10.12%
24	5.00%	7.25%	2.04%	3.06%	7.04%	10.31%
25	5.09%	7.38%	2.08%	3.12%	7.17%	10.50%
26	5.17%	7.51%	2.12%	3.18%	7.29%	10.69%
27	5.26%	7.64%	2.16%	3.24%	7.42%	10.88%
28	5.35%	7.78%	2.20%	3.30%	7.55%	11.08%
29	5.45%	7.92%	2.24%	3.36%	7.69%	11.28%
30	5.55%	8.07%	2.29%	3.43%	7.84%	11.50%
31	5.65%	8.22%	2.33%	3.50%	7.98%	11.72%
32	5.75%	8.37%	2.38%	3.57%	8.13%	11.94%
33	5.85%	8.52%	2.43%	3.64%	8.28%	12.16%
34	5.95%	8.68%	2.47%	3.71%	8.42%	12.39%
35	6.06%	8.84%	2.52%	3.78%	8.58%	12.62%
36	6.17%	9.01%	2.57%	3.86%	8.74%	12.87%
37	6.27%	9.16%	2.62%	3.93%	8.89%	13.09%
38	6.39%	9.33%	2.67%	4.00%	9.06%	13.33%
39	6.49%	9.49%	2.72%	4.08%	9.21%	13.57%

Section 4: Actuarial Valuation Basis

Exhibit 3: Member Contribution Rates (continued)

General Cost Group #6 Members' Contribution Rates (as a % of Monthly Payroll)
Members with Membership Dates before January 1, 2013 (continued)

Entry Age	Basic		COLA		Total	
	First \$350	Over \$350	First \$350	Over \$350	First \$350	Over \$350
40	6.61%	9.67%	2.77%	4.16%	9.38%	13.83%
41	6.72%	9.83%	2.82%	4.23%	9.54%	14.06%
42	6.83%	9.99%	2.87%	4.30%	9.70%	14.29%
43	6.95%	10.17%	2.93%	4.39%	9.88%	14.56%
44	7.05%	10.32%	2.97%	4.45%	10.02%	14.77%
45	7.15%	10.48%	3.02%	4.53%	10.17%	15.01%
46	7.25%	10.63%	3.06%	4.59%	10.31%	15.22%
47	7.37%	10.81%	3.12%	4.68%	10.49%	15.49%
48	7.47%	10.96%	3.16%	4.74%	10.63%	15.70%
49	7.58%	11.12%	3.21%	4.82%	10.79%	15.94%
50	7.69%	11.29%	3.26%	4.89%	10.95%	16.18%
51	7.75%	11.37%	3.29%	4.93%	11.04%	16.30%
52	7.77%	11.41%	3.30%	4.95%	11.07%	16.36%
53	7.71%	11.31%	3.27%	4.90%	10.98%	16.21%
54 & Over	7.45%	10.92%	3.15%	4.73%	10.60%	15.65%

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: 0.50% of payroll added to Basic rates

Leave Cashout: 0.00%

COLA Loading Factor: 45.35%, applied to Basic rates prior to adjustment for administrative expenses, based on 2.75% assumed COLA.

Section 4: Actuarial Valuation Basis

Exhibit 3: Member Contribution Rates (continued)

Safety Cost Group #7 Members' Contribution Rates (as a % of Monthly Payroll)
Members with Membership Dates before January 1, 2013

Entry Age	Basic	COLA	Total
15	9.90%	6.64%	16.54%
16	9.90%	6.64%	16.54%
17	9.90%	6.64%	16.54%
18	9.90%	6.64%	16.54%
19	9.90%	6.64%	16.54%
20	9.90%	6.64%	16.54%
21	9.90%	6.64%	16.54%
22	10.06%	6.75%	16.81%
23	10.21%	6.86%	17.07%
24	10.37%	6.97%	17.34%
25	10.53%	7.09%	17.62%
26	10.70%	7.21%	17.91%
27	10.87%	7.33%	18.20%
28	11.05%	7.45%	18.50%
29	11.23%	7.58%	18.81%
30	11.39%	7.69%	19.08%
31	11.55%	7.81%	19.36%
32	11.71%	7.92%	19.63%
33	11.89%	8.05%	19.94%
34	12.07%	8.17%	20.24%
35	12.25%	8.30%	20.55%
36	12.44%	8.43%	20.87%
37	12.65%	8.58%	21.23%
38	12.85%	8.72%	21.57%
39	13.06%	8.87%	21.93%

Section 4: Actuarial Valuation Basis

Exhibit 3: Member Contribution Rates (continued)

Safety Cost Group #7 Members' Contribution Rates (as a % of Monthly Payroll)
Members with Membership Dates before January 1, 2013 (continued)

Entry Age	Basic	COLA	Total
40	13.29%	9.03%	22.32%
41	13.53%	9.20%	22.73%
42	13.78%	9.38%	23.16%
43	14.00%	9.54%	23.54%
44	14.17%	9.66%	23.83%
45	14.24%	9.71%	23.95%
46	14.28%	9.73%	24.01%
47	14.27%	9.73%	24.00%
48	14.09%	9.60%	23.69%
49 & Over	13.63%	9.28%	22.91%

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: 0.50% of payroll added to Basic rates

Leave Cashout: 0.50%

COLA Loading Factor: 70.64%, applied to Basic rates prior to adjustment for administrative expenses, based on 2.75% assumed COLA.

Section 4: Actuarial Valuation Basis

Exhibit 3: Member Contribution Rates (continued)

Safety Cost Group #8 Members' Contribution Rates (as a % of Monthly Payroll)
Members with Membership Dates before January 1, 2013

Entry Age	Basic	COLA	Total
15	9.88%	6.70%	16.58%
16	9.88%	6.70%	16.58%
17	9.88%	6.70%	16.58%
18	9.88%	6.70%	16.58%
19	9.88%	6.70%	16.58%
20	9.88%	6.70%	16.58%
21	9.88%	6.70%	16.58%
22	10.04%	6.81%	16.85%
23	10.19%	6.92%	17.11%
24	10.35%	7.03%	17.38%
25	10.51%	7.15%	17.66%
26	10.68%	7.27%	17.95%
27	10.85%	7.39%	18.24%
28	11.02%	7.51%	18.53%
29	11.20%	7.64%	18.84%
30	11.36%	7.76%	19.12%
31	11.52%	7.87%	19.39%
32	11.69%	7.99%	19.68%
33	11.86%	8.11%	19.97%
34	12.04%	8.24%	20.28%
35	12.23%	8.38%	20.61%
36	12.42%	8.51%	20.93%
37	12.62%	8.66%	21.28%
38	12.83%	8.81%	21.64%
39	13.04%	8.96%	22.00%

Section 4: Actuarial Valuation Basis

Exhibit 3: Member Contribution Rates (continued)

Safety Cost Group #8 Members' Contribution Rates (as a % of Monthly Payroll)
Members with Membership Dates before January 1, 2013 (continued)

Entry Age	Basic	COLA	Total
40	13.26%	9.11%	22.37%
41	13.51%	9.29%	22.80%
42	13.74%	9.46%	23.20%
43	13.95%	9.61%	23.56%
44	14.14%	9.74%	23.88%
45	14.20%	9.78%	23.98%
46	14.22%	9.80%	24.02%
47	14.29%	9.85%	24.14%
48	13.95%	9.61%	23.56%
49 & Over	13.66%	9.40%	23.06%

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: 0.50% of payroll added to Basic rates
Leave Cashout: 0.25%
COLA Loading Factor: 71.42%, applied to Basic rates prior to adjustment for administrative expenses, based on 2.75% assumed COLA.

Section 4: Actuarial Valuation Basis

Exhibit 3: Member Contribution Rates (continued)

Safety Cost Group #9 Members' Contribution Rates (as a % of Monthly Payroll)
Members with Membership Dates before January 1, 2013

Entry Age	Basic	COLA	Total
15	9.50%	4.19%	13.69%
16	9.50%	4.19%	13.69%
17	9.50%	4.19%	13.69%
18	9.50%	4.19%	13.69%
19	9.50%	4.19%	13.69%
20	9.50%	4.19%	13.69%
21	9.50%	4.19%	13.69%
22	9.65%	4.26%	13.91%
23	9.80%	4.33%	14.13%
24	9.95%	4.40%	14.35%
25	10.11%	4.47%	14.58%
26	10.27%	4.54%	14.81%
27	10.43%	4.62%	15.05%
28	10.59%	4.69%	15.28%
29	10.75%	4.77%	15.52%
30	10.90%	4.84%	15.74%
31	11.05%	4.91%	15.96%
32	11.21%	4.98%	16.19%
33	11.38%	5.06%	16.44%
34	11.55%	5.14%	16.69%
35	11.72%	5.22%	16.94%
36	11.90%	5.30%	17.20%
37	12.09%	5.39%	17.48%
38	12.28%	5.48%	17.76%
39	12.48%	5.57%	18.05%

Section 4: Actuarial Valuation Basis

Exhibit 3: Member Contribution Rates (continued)

Safety Cost Group #9 Members' Contribution Rates (as a % of Monthly Payroll)
Members with Membership Dates before January 1, 2013 (continued)

Entry Age	Basic	COLA	Total
40	12.68%	5.66%	18.34%
41	12.88%	5.76%	18.64%
42	13.05%	5.84%	18.89%
43	13.14%	5.88%	19.02%
44	13.21%	5.91%	19.12%
45	13.18%	5.90%	19.08%
46	13.05%	5.84%	18.89%
47	12.78%	5.71%	18.49%
48	13.19%	5.90%	19.09%
49 & Over	13.70%	6.14%	19.84%

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: 0.50% of payroll added to Basic rates
Leave Cashout: 0.00%
COLA Loading Factor: 46.51%, applied to Basic rates prior to adjustment for administrative expenses, based on 2.00% assumed COLA.

Section 4: Actuarial Valuation Basis

Exhibit 3: Member Contribution Rates (continued)

Safety Cost Group #10 Members' Contribution Rates (as a % of Monthly Payroll)
Members with Membership Dates before January 1, 2013

Entry Age	Basic	COLA	Total
15	9.88%	6.71%	16.59%
16	9.88%	6.71%	16.59%
17	9.88%	6.71%	16.59%
18	9.88%	6.71%	16.59%
19	9.88%	6.71%	16.59%
20	9.88%	6.71%	16.59%
21	9.88%	6.71%	16.59%
22	10.04%	6.83%	16.87%
23	10.19%	6.94%	17.13%
24	10.35%	7.05%	17.40%
25	10.51%	7.17%	17.68%
26	10.68%	7.29%	17.97%
27	10.85%	7.41%	18.26%
28	11.02%	7.53%	18.55%
29	11.20%	7.66%	18.86%
30	11.36%	7.77%	19.13%
31	11.52%	7.89%	19.41%
32	11.69%	8.01%	19.70%
33	11.86%	8.13%	19.99%
34	12.04%	8.26%	20.30%
35	12.23%	8.40%	20.63%
36	12.42%	8.53%	20.95%
37	12.62%	8.68%	21.30%
38	12.83%	8.83%	21.66%
39	13.04%	8.98%	22.02%

Section 4: Actuarial Valuation Basis

Exhibit 3: Member Contribution Rates (continued)

Safety Cost Group #10 Members' Contribution Rates (as a % of Monthly Payroll)
Members with Membership Dates before January 1, 2013 (continued)

Entry Age	Basic	COLA	Total
40	13.26%	9.13%	22.39%
41	13.51%	9.31%	22.82%
42	13.74%	9.48%	23.22%
43	13.95%	9.63%	23.58%
44	14.14%	9.76%	23.90%
45	14.20%	9.81%	24.01%
46	14.22%	9.82%	24.04%
47	14.29%	9.87%	24.16%
48	13.95%	9.63%	23.58%
49 & Over	13.66%	9.42%	23.08%

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: 0.50% of payroll added to Basic rates
Leave Cashout: 0.25%
COLA Loading Factor: 71.58%, applied to Basic rates prior to adjustment for administrative expenses, based on 2.75% assumed COLA.

Section 4: Actuarial Valuation Basis

Exhibit 3: Member Contribution Rates (continued)

Safety Cost Group #11 Members' Contribution Rates (as a % of Monthly Payroll)
Members with Membership Dates before January 1, 2013

Entry Age	Basic	COLA	Total
15	10.13%	6.91%	17.04%
16	10.13%	6.91%	17.04%
17	10.13%	6.91%	17.04%
18	10.13%	6.91%	17.04%
19	10.13%	6.91%	17.04%
20	10.13%	6.91%	17.04%
21	10.13%	6.91%	17.04%
22	10.29%	7.02%	17.31%
23	10.45%	7.14%	17.59%
24	10.61%	7.25%	17.86%
25	10.78%	7.37%	18.15%
26	10.95%	7.49%	18.44%
27	11.12%	7.62%	18.74%
28	11.30%	7.74%	19.04%
29	11.48%	7.87%	19.35%
30	11.64%	7.99%	19.63%
31	11.81%	8.11%	19.92%
32	11.98%	8.23%	20.21%
33	12.16%	8.36%	20.52%
34	12.34%	8.49%	20.83%
35	12.52%	8.62%	21.14%
36	12.72%	8.76%	21.48%
37	12.93%	8.91%	21.84%
38	13.13%	9.06%	22.19%
39	13.35%	9.21%	22.56%

Section 4: Actuarial Valuation Basis

Exhibit 3: Member Contribution Rates (continued)

Safety Cost Group #11 Members' Contribution Rates (as a % of Monthly Payroll)
Members with Membership Dates before January 1, 2013 (continued)

Entry Age	Basic	COLA	Total
40	13.57%	9.37%	22.94%
41	13.82%	9.55%	23.37%
42	14.06%	9.72%	23.78%
43	14.28%	9.88%	24.16%
44	14.45%	10.00%	24.45%
45	14.51%	10.05%	24.56%
46	14.51%	10.05%	24.56%
47	14.53%	10.06%	24.59%
48	14.23%	9.85%	24.08%
49 & Over	13.65%	9.43%	23.08%

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: 0.50% of payroll added to Basic rates
Leave Cashout: 3.00%
COLA Loading Factor: 71.71%, applied to Basic rates prior to adjustment for administrative expenses, based on 2.75% assumed COLA.

Section 4: Actuarial Valuation Basis

Exhibit 3: Member Contribution Rates (continued)

Safety Cost Group #12 Members' Contribution Rates (as a % of Monthly Payroll)
Members with Membership Dates before January 1, 2013

Entry Age	Basic	COLA	Total
15	10.02%	5.29%	15.31%
16	10.02%	5.29%	15.31%
17	10.02%	5.29%	15.31%
18	10.02%	5.29%	15.31%
19	10.02%	5.29%	15.31%
20	10.02%	5.29%	15.31%
21	10.02%	5.29%	15.31%
22	10.17%	5.38%	15.55%
23	10.33%	5.47%	15.80%
24	10.49%	5.55%	16.04%
25	10.66%	5.65%	16.31%
26	10.82%	5.74%	16.56%
27	11.00%	5.84%	16.84%
28	11.17%	5.93%	17.10%
29	11.35%	6.03%	17.38%
30	11.52%	6.13%	17.65%
31	11.68%	6.22%	17.90%
32	11.85%	6.31%	18.16%
33	12.03%	6.41%	18.44%
34	12.20%	6.51%	18.71%
35	12.39%	6.61%	19.00%
36	12.59%	6.72%	19.31%
37	12.79%	6.83%	19.62%
38	12.99%	6.94%	19.93%
39	13.21%	7.07%	20.28%

Section 4: Actuarial Valuation Basis

Exhibit 3: Member Contribution Rates (continued)

Safety Cost Group #12 Members' Contribution Rates (as a % of Monthly Payroll)
Members with Membership Dates before January 1, 2013 (continued)

Entry Age	Basic	COLA	Total
40	13.43%	7.19%	20.62%
41	13.67%	7.32%	20.99%
42	13.93%	7.47%	21.40%
43	14.13%	7.58%	21.71%
44	14.29%	7.67%	21.96%
45	14.40%	7.73%	22.13%
46	14.36%	7.71%	22.07%
47	14.40%	7.73%	22.13%
48	14.16%	7.59%	21.75%
49 & Over	13.47%	7.21%	20.68%

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: 0.50% of payroll added to Basic rates
Leave Cashout: 1.75%
COLA Loading Factor: 55.60%, applied to Basic rates prior to adjustment for administrative expenses, based on 2.75% assumed COLA.

Section 4: Actuarial Valuation Basis

Exhibit 3: Member Contribution Rates (continued)

General Members' Contribution Rates (as a % of Monthly Payroll)
Members with Membership Dates On or After January 1, 2013

	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)	9.36%	3.15%	12.51%
Cost Group #2 - PEPRA Tier 5 (2% COLA)	8.47%	1.90%	10.37%
Cost Group #2 - PEPRA Tier 5 (3%/4% COLA)	8.58%	2.84%	11.42%
Cost Group #3 - PEPRA Tier 4 (3% COLA)	8.60%	3.00%	11.60%
Cost Group #4 - PEPRA Tier 4 (3% COLA)	9.17%	3.10%	12.27%
Cost Group #5 - PEPRA Tier 4 (2% COLA)	10.16%	2.33%	12.49%
Cost Group #5 - PEPRA Tier 4 (3% COLA)	11.28%	3.85%	15.13%
Cost Group #6 - PEPRA Tier 4 (3% COLA)	11.01%	3.68%	14.69%

The PEPRA member contribution rates are 50% of the Normal Cost rate. The Basic rates shown above also include an administrative expense load of 0.50% 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 for 2023 is equal to \$146,042; for an employer that is not enrolled in Social Security, the maximum amount is \$175,250. (§7522.10) These amounts should be adjusted for changes to the Consumer Price Index for All Urban Consumers after 2023. (§7522.10(d))

Section 4: Actuarial Valuation Basis

Exhibit 3: Member Contribution Rates (continued)

Safety Members' Contribution Rates (as a % of Monthly Payroll)
Members with Membership Dates On or After January 1, 2013

	Basic	COLA	Total
Cost Group #7 - PEPRA Tier D	14.55%	6.02%	20.57%
Cost Group #8 - PEPRA Tier D	12.81%	5.39%	18.20%
Cost Group #8 - PEPRA Tier E	13.16%	3.68%	16.84%
Cost Group #9 - PEPRA Tier E	13.74%	3.82%	17.56%
Cost Group #10 - PEPRA Tier D	13.52%	5.70%	19.22%
Cost Group #11 - PEPRA Tier D	11.81%	4.98%	16.79%
Cost Group #12 - PEPRA Tier D	12.99%	5.49%	18.48%

The PEPRA member contribution rates are 50% of the Normal Cost rate. The Basic rates shown above also include an administrative expense load of 0.50% 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 for 2023 is equal to \$146,042; for an employer that is not enrolled in Social Security, the maximum amount is \$175,250. (§7522.10) These amounts should be adjusted for changes to the Consumer Price Index for All Urban Consumers after 2023. (§7522.10(d))

Section 4: Actuarial Valuation Basis

Exhibit 4: Non-Refundability Factors

		December 31, 2022		December 31, 2021	
		Legacy Tiers	PEPRA Tiers	Legacy Tiers	PEPRA Tiers
General					
Cost Group #1 –	County and Small Districts (Tier 1)	0.9676		0.9668	
	PEPRA Tier 4 (2% COLA)		0.9567		0.9561
	PEPRA Tier 4 (3% COLA)		0.9611		0.9604
Cost Group #2 –	County and Small Districts (Tier 3)	0.9559		0.9552	
	PEPRA Tier 5 (2% COLA)		0.9569		0.9564
	PEPRA Tier 5 (3%/4% COLA)		0.9610		0.9602
Cost Group #3 –	Central Contra Costa Sanitary District	0.9628	0.9685	0.9614	0.9669
Cost Group #4 –	Contra Costa Housing Authority	0.9620	0.9633	0.9601	0.9626
Cost Group #5 –	Contra Costa County Fire Protection District	0.9773		0.9773	
	PEPRA Tier 4 (2% COLA)		0.9588		0.9583
	PEPRA Tier 4 (3% COLA)		0.9621		0.9631
Cost Group #6 –	Small Districts (Non-Enhanced Tier 1 and 4)	0.9625	0.9508	0.9475	0.9484
Safety					
Cost Group #7 –	County (Tier A and D)	0.9710	0.9783	0.9712	0.9782
Cost Group #8 –	Contra Costa Fire Protection District	0.9762		0.9755	
	PEPRA Tier D (3% COLA)		0.9803		0.9800
	PEPRA Tier E (2% COLA)		0.9785		0.9762
Cost Group #9 –	County (Tier C and E)	0.9712	0.9761	0.9697	0.9756
Cost Group #10 –	Moraga-Orinda Fire District	0.9732	0.9781	0.9730	0.9779
Cost Group #11 –	San Ramon Valley Fire District	0.9769	0.9804	0.9770	0.9790
Cost Group #12 –	Rodeo-Hercules Fire Protection District	0.9824	0.9803	0.9865	0.9820

Section 4: Actuarial Valuation Basis

Exhibit 5: Summary of Cost Groups and Employers

General			
Cost Group	Employer Name	Benefit Structure	Special Adjustment
1	County General	Tier 1 Enhanced/PEPRA Tier 4	Yes
	Local Agency Formation Commission	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	Yes
	Contra Costa County Employees' Retirement Association	Tier 1 Enhanced/PEPRA Tier 4	
	Superior Court	Tier 1 Enhanced/PEPRA Tier 4	Yes
	Moraga-Orinda Fire District (Non-Integrated)	Tier 1 Enhanced/PEPRA Tier 4	Yes
	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	Yes
	In-Home Supportive Services Authority	Tier 3 Enhanced/PEPRA Tier 5	
	Contra Costa Mosquito and Vector Control District	Tier 3 Enhanced/PEPRA Tier 5	
	Superior Court	Tier 3 Enhanced/PEPRA Tier 5	Yes
3	Central Contra Costa Sanitary District (Non-Integrated)	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) ¹	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	

Note: A special adjustment is made for employers that have a remaining balance of a Pension Obligation Bond or any other special contributions as described on page 124.

¹ Effective with the December 31, 2021 valuation, East Fire was annexed into Con Fire.

Section 4: Actuarial Valuation Basis

Exhibit 5: Summary of Cost Groups and Employers (continued)

Safety			
Cost Group	Employer Name	Benefit Structure	Special Adjustment
7	County Safety	Tier A Enhanced/PEPRA Tier D	
8	Contra Costa County Fire Protection District ¹	Tier A Enhanced/PEPRA Tier D/E	
9	County Safety	Tier C Enhanced/PEPRA Tier E (Members hired on or after January 1, 2007)	
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 a Pension Obligation Bond or any other special contributions as described on page 124.

¹ Effective with the December 31, 2021 valuation, East Fire was annexed into Con Fire.

Section 4: Actuarial Valuation Basis

Exhibit 6: Allocation of Valuation Value of Assets as of December 31, 2022

Cashflow for the First Six-Month Period	Cost Groups #1 and #2 General County and Small Districts	Cost Group #3 Central Contra Costa Sanitary District	Cost Group #4 Contra Costa Housing Authority	Cost Group #5 Contra Costa County Fire Protection District	Cost Group #6 Small Districts (General Non-Enhanced)
1 Allocated Valuation Value of Assets as of Beginning of Year	\$5,865,218,228	\$482,428,228	\$67,820,635	\$60,366,214	\$8,535,850
2 Contributions: ¹					
a. Total Member Contributions	39,918,828	2,158,156	350,332	388,698	65,630
b. Employer Contributions - Excludes POB and other Special Contributions	97,688,363	2,924,953	1,344,749	1,126,923	119,205
c. Employer Contributions - Special (POB, Termination, etc.)	<u>0</u>	<u>0</u>	<u>0</u>	<u>201,159</u>	<u>0</u>
d. Total Contributions	\$137,607,191	\$5,083,109	\$1,695,081	\$1,716,781	\$184,835
3 Total Payments Excluding Post-Retirement Death	130,035,255	10,148,785	1,611,724	1,651,268	160,809
4 Administrative Expenses ²	<u>4,893,183</u>	<u>250,280</u>	<u>42,428</u>	<u>48,079</u>	<u>6,546</u>
5 Subtotal 1 + 2d – 3 – 4	\$5,867,896,982	\$477,112,272	\$67,861,564	\$60,383,647	\$8,553,330
6 Earnings Allocated in Proportion to 1	<u>189,894,654</u>	<u>15,619,289</u>	<u>2,195,788</u>	<u>1,954,441</u>	<u>276,360</u>
7 Allocated Valuation Value of Assets as of Middle of Year 5 + 6	\$6,057,791,636	\$492,731,561	\$70,057,352	\$62,338,088	\$8,829,690

Note: Results may be slightly off due to rounding.

¹ Employer contributions include “member subvention of employer contributions” and exclude “employer subvention of member contributions”.

² Allocated based on expected administrative expenses from the prior valuation.

Section 4: Actuarial Valuation Basis

Exhibit 6: Allocation of Valuation Value of Assets as of December 31, 2022 (continued)

Cashflow for the Second Six-Month Period		Cost Groups #1 and #2 General County and Small Districts	Cost Group #3 Central Contra Costa Sanitary District	Cost Group #4 Contra Costa Housing Authority	Cost Group #5 Contra Costa County Fire Protection District	Cost Group #6 Small Districts (General Non- Enhanced)
7	Allocated Valuation Value of Assets as of Middle of Year	\$6,057,791,636	\$492,731,561	\$70,057,352	\$62,338,088	\$8,829,690
8	Contributions: ¹					
a.	Total Member Contributions	41,167,729	2,384,169	381,182	566,769	69,463
b.	Employer Contributions - Excludes POB and other Special Contributions	101,552,697	3,875,062	1,404,296	1,366,814	81,713
c.	Employer Contributions - Special (POB, Termination, etc.)	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
d.	Total Contributions	\$142,720,425	\$6,259,231	\$1,785,477	\$1,933,583	\$151,177
9	Total Payments Excluding Post-Retirement Death	188,278,191	14,522,955	2,226,036	2,374,108	230,895
10	Administrative Expenses ²	<u>6,578,561</u>	<u>336,484</u>	<u>57,042</u>	<u>64,640</u>	<u>8,802</u>
11	Subtotal 7 + 8d – 9 – 10	\$6,005,655,308	\$484,131,353	\$69,559,752	\$61,832,924	\$8,741,170
12	Earnings Allocated in Proportion to 7	<u>116,516,998</u>	<u>9,477,316</u>	<u>1,347,500</u>	<u>1,199,026</u>	<u>169,832</u>
13	Allocated Valuation Value of Assets as of End of Year 11 + 12	\$6,122,172,306	\$493,608,669	\$70,907,252	\$63,031,950	\$8,911,002

Note: Results may be slightly off due to rounding.

¹ Employer contributions include “member subvention of employer contributions” and exclude “employer subvention of member contributions”.

² Allocated based on expected administrative expenses from the prior valuation.

Section 4: Actuarial Valuation Basis

Exhibit 6: Allocation of Valuation Value of Assets as of December 31, 2022 (continued)

Cashflow for the First Six-Month Period	Cost Groups #7 & 9 Safety County	Cost Group #8 Contra Costa Fire Protection District	Cost Group #10 Moraga-Orinda Fire District	Cost Group #11 San Ramon Valley Fire District
1 Allocated Valuation Value of Assets as of Beginning of Year	\$2,136,286,241	\$1,047,652,352	\$189,300,977	\$479,058,810
2 Contributions: ¹				
a. Total Member Contributions	9,572,692	4,454,360	717,845	1,990,552
b. Employer Contributions - Excludes POB and other Special Contributions	35,353,275	17,287,731	2,931,634	9,204,209
c. Employer Contributions - Special (POB, Termination, etc.)	<u>0</u>	<u>3,143,278</u>	<u>0</u>	<u>0</u>
d. Total Contributions	\$44,925,967	\$24,885,368	\$3,649,479	\$11,194,760
3 Total Payments Excluding Post-Retirement Death	46,471,348	27,313,425	6,104,672	9,934,372
4 Administrative Expenses ²	<u>711,028</u>	<u>329,699</u>	<u>56,030</u>	<u>153,701</u>
5 Subtotal 1 + 2d – 3 – 4	\$2,134,029,832	\$1,044,894,596	\$186,789,754	\$480,165,498
6 Earnings Allocated in Proportion to 1	<u>69,165,259</u>	<u>33,919,212</u>	<u>6,128,884</u>	<u>15,510,200</u>
7 Allocated Valuation Value of Assets as of Middle of Year 5 + 6	\$2,203,195,091	\$1,078,813,808	\$192,918,638	\$495,675,698

Note: Results may be slightly off due to rounding.

¹ Employer contributions include “member subvention of employer contributions” and exclude “employer subvention of member contributions”.

² Allocated based on expected administrative expenses from the prior valuation.

Section 4: Actuarial Valuation Basis

Exhibit 6: Allocation of Valuation Value of Assets as of December 31, 2022 (continued)

Cashflow for the Second Six-Month Period	Cost Groups #7 & 9 Safety County	Cost Group #8 Contra Costa Fire Protection District	Cost Group #10 Moraga-Orinda Fire District	Cost Group #11 San Ramon Valley Fire District
7 Allocated Valuation Value of Assets as of Middle of Year	\$2,203,195,091	\$1,078,813,808	\$192,918,638	\$495,675,698
8 Contributions: ¹				
a. Total Member Contributions	9,896,669	5,102,137	781,556	2,017,441
b. Employer Contributions - Excludes POB and other Special Contributions	37,855,075	18,924,455	3,076,640	9,728,881
c. Employer Contributions - Special (POB, Termination, etc.)	<u>0</u>	<u>0</u>	<u>0</u>	<u>279,000</u>
d. Total Contributions	\$47,751,744	\$24,026,592	\$3,858,196	\$12,025,322
9 Total Payments Excluding Post-Retirement Death	68,203,671	37,984,683	7,044,913	14,480,678
10 Administrative Expenses ²	<u>955,931</u>	<u>443,259</u>	<u>75,328</u>	<u>206,642</u>
11 Subtotal 7 + 8d – 9 – 10	\$2,181,787,233	\$1,064,412,458	\$189,656,593	\$493,013,700
12 Earnings Allocated in Proportion to 7	<u>42,376,777</u>	<u>20,750,161</u>	<u>3,710,643</u>	<u>9,533,944</u>
13 Allocated Valuation Value of Assets as of End of Year 11 + 12	\$2,224,164,010	\$1,085,162,619	\$193,367,236	\$502,547,644

Note: Results may be slightly off due to rounding.

¹ Employer contributions include “member subvention of employer contributions” and exclude “employer subvention of member contributions”.

² Allocated based on expected administrative expenses from the prior valuation.

Section 4: Actuarial Valuation Basis

Exhibit 6: Allocation of Valuation Value of Assets as of December 31, 2022 (continued)

Cashflow for the First Six-Month Period	Cost Group #12 Rodeo-Hercules Fire Protection District	Withdrawn Employers	Total
1 Allocated Valuation Value of Assets as of Beginning of Year	\$43,889,686	\$53,855,067	\$10,434,412,288
2 Contributions: ¹			
a. Total Member Contributions	157,721	0	59,774,813
b. Employer Contributions - Excludes POB and other Special Contributions	1,081,378	0	169,062,420
c. Employer Contributions - Special (POB, Termination, etc.)	<u>0</u>	<u>0</u>	<u>3,344,437</u>
d. Total Contributions	\$1,239,099	\$0	\$232,181,670
3 Total Payments Excluding Post-Retirement Death	1,063,167	2,230,996	236,725,820
4 Administrative Expenses ²	<u>17,141</u>	<u>0</u>	<u>6,508,115</u>
5 Subtotal 1 + 2d – 3 – 4	\$44,048,477	\$51,624,071	\$10,423,360,023
6 Earnings Allocated in Proportion to 1	<u>1,420,990</u>	<u>1,743,633</u>	<u>337,828,710</u>
7 Allocated Valuation Value of Assets as of Middle of Year 5 + 6	\$45,469,467	\$53,367,704	\$10,761,188,733

Note: Results may be slightly off due to rounding.

¹ Employer contributions include “member subvention of employer contributions” and exclude “employer subvention of member contributions”.

² Allocated based on expected administrative expenses from the prior valuation.

Section 4: Actuarial Valuation Basis

Exhibit 6: Allocation of Valuation Value of Assets as of December 31, 2022 (continued)

	Cashflow for the Second Six-Month Period	Cost Group #12 Rodeo-Hercules Fire Protection District	Withdrawn Employers	Total
7	Allocated Valuation Value of Assets as of Middle of Year	\$45,469,467	\$53,367,704	\$10,761,188,733
8	Contributions: ¹			
a.	Total Member Contributions	161,896	0	62,529,010
b.	Employer Contributions - Excludes POB and other Special Contributions	1,074,899	0	178,940,532
c.	Employer Contributions - Special (POB, Termination, etc.)	0	757,396	1,036,396
d.	Total Contributions	\$1,236,795	\$757,396	\$242,505,938
9	Total Payments Excluding Post-Retirement Death	1,602,347	3,114,559	340,063,036
10	Administrative Expenses ²	23,045	0	8,749,734
11	Subtotal 7 + 8d – 9 – 10	\$45,080,869	\$51,010,541	\$10,654,881,901
12	Earnings Allocated in Proportion to 7	874,571	983,393	206,940,161
13	Allocated Valuation Value of Assets as of End of Year 11 + 12	\$45,955,440	\$51,993,934	\$10,861,822,062

Note: Results may be slightly off due to rounding.

¹ Employer contributions include “member subvention of employer contributions” and exclude “employer subvention of member contributions”.

² Allocated based on expected administrative expenses from the prior valuation.

Section 4: Actuarial Valuation Basis

Exhibit 7: Recommended Employer Contribution Rates – For Use in Preparing Contribution Rate Packet

The recommended employer contribution rates found on pages 34 through 42 have been shown on an aggregate basis. Within this Exhibit we have included the recommended legacy tier employer contribution rates as of December 31, 2022 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.

Cost Group # ¹	Basic			COLA			Total			All Aggregate Pay
	First \$350 Monthly ²	Excess of \$350 Monthly ²	All Eligible Pay ³	First \$350 Monthly ²	Excess of \$350 Monthly ²	All Eligible Pay ³	First \$350 Monthly ²	Excess of \$350 Monthly ²	All Eligible Pay ³	
Tier 1 Non-LAFCO (in Social Security)	15.30%	22.95%	N/A	2.64%	3.95%	N/A	17.94%	26.90%	N/A	26.60%
Tier 1 Non-LAFCO (not in Social Security)	N/A	N/A	22.70%	N/A	N/A	3.90%	N/A	N/A	26.60%	26.60%
Tier 1 LAFCO	11.60%	17.40%	N/A	2.63%	3.94%	N/A	14.23%	21.34%	N/A	21.12%
Tier 4 (3% COLA) Non-LAFCO	N/A	N/A	18.70%	N/A	N/A	3.34%	N/A	N/A	22.04%	22.04%
Tier 4 (3% COLA) LAFCO	N/A	N/A	13.22%	N/A	N/A	3.34%	N/A	N/A	16.56%	16.56%
Tier 4 (2% COLA)	N/A	N/A	18.43%	N/A	N/A	2.28%	N/A	N/A	20.71%	20.71%
Cost Group #2¹										
Tier 3	14.37%	21.56%	N/A	2.43%	3.64%	N/A	16.80%	25.20%	N/A	24.89%
Tier 5 (3%/4% COLA)	N/A	N/A	17.92%	N/A	N/A	3.03%	N/A	N/A	20.95%	20.95%
Tier 5 (2% COLA)	N/A	N/A	17.81%	N/A	N/A	2.09%	N/A	N/A	19.90%	19.90%

¹ We have simplified the contribution rates for Cost Groups #1 and #2 because the POBs issued by certain employers have been fully amortized as of December 31, 2022.

² If employer is in Social Security.

³ For legacy tier, applies to employer who is not in Social Security. For PEPRA tier, applies to all employers.

Section 4: Actuarial Valuation Basis

Exhibit 7: Recommended Employer Contribution Rates (continued)

Cost Group #3	Basic			COLA			Total			All Aggregate Pay
	First \$350 Monthly ¹	Excess of \$350 Monthly ¹	All Eligible Pay ²	First \$350 Monthly ¹	Excess of \$350 Monthly ¹	All Eligible Pay ²	First \$350 Monthly ¹	Excess of \$350 Monthly ¹	All Eligible Pay ²	
CCCSD Tier 1	N/A	N/A	13.97%	N/A	N/A	4.54%	N/A	N/A	18.51%	18.51%
CCCSD Tier 4 (3% COLA)	N/A	N/A	9.00%	N/A	N/A	3.66%	N/A	N/A	12.66%	12.66%
Cost Group #4										
Contra Costa Housing Authority Tier 1	15.14%	22.72%	N/A	5.57%	8.34%	N/A	20.71%	31.06%	N/A	30.60%
Contra Costa Housing Authority Tier 4 (3% COLA)	N/A	N/A	18.15%	N/A	N/A	7.51%	N/A	N/A	25.66%	25.66%
Cost Group #5										
CCCYPD Tier 1	N/A	N/A	27.77%	N/A	N/A	14.28%	N/A	N/A	42.05%	42.05%
CCCYPD Tier 4 (3% COLA)	N/A	N/A	24.08%	N/A	N/A	14.15%	N/A	N/A	38.23%	38.23%
CCCYPD Tier 4 (2% COLA)	N/A	N/A	22.96%	N/A	N/A	12.63%	N/A	N/A	35.59%	35.59%
Cost Group #6										
Non-Enhanced District Tier 1	8.64%	12.95%	N/A	2.56%	3.84%	N/A	11.20%	16.79%	N/A	16.63%
Non-Enhanced District Tier 4 (3% COLA)	N/A	N/A	11.14%	N/A	N/A	3.68%	N/A	N/A	14.82%	14.82%
Cost Group #7										
County Tier A	N/A	N/A	37.17%	N/A	N/A	27.15%	N/A	N/A	64.32%	64.32%
County Tier D	N/A	N/A	28.45%	N/A	N/A	25.62%	N/A	N/A	54.07%	54.07%
Cost Group #8										
CCCYPD Tier A	N/A	N/A	35.85%	N/A	N/A	36.52%	N/A	N/A	72.37%	72.37%
CCCYPD Tier D	N/A	N/A	25.06%	N/A	N/A	34.13%	N/A	N/A	59.19%	59.19%
CCCYPD Safety Tier E	N/A	N/A	25.41%	N/A	N/A	32.42%	N/A	N/A	57.83%	57.83%

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.

Section 4: Actuarial Valuation Basis

Exhibit 7: Recommended Employer Contribution Rates (continued)

Cost Group #9	Basic			COLA			Total			All Aggregate Pay
	First \$350 Monthly ¹	Excess of \$350 Monthly ¹	All Eligible Pay ²	First \$350 Monthly ¹	Excess of \$350 Monthly ¹	All Eligible Pay ²	First \$350 Monthly ¹	Excess of \$350 Monthly ¹	All Eligible Pay ²	
County Tier C	N/A	N/A	35.81%	N/A	N/A	24.34%	N/A	N/A	60.15%	60.15%
County Tier E	N/A	N/A	27.64%	N/A	N/A	23.42%	N/A	N/A	51.06%	51.06%
Cost Group #10										
Moraga-Orinda FD Tier A	N/A	N/A	42.08%	N/A	N/A	49.22%	N/A	N/A	91.30%	91.30%
Moraga-Orinda FD Tier D	N/A	N/A	33.25%	N/A	N/A	47.56%	N/A	N/A	80.81%	80.81%
Cost Group #11										
San Ramon FD Tier A	N/A	N/A	37.13%	N/A	N/A	20.27%	N/A	N/A	57.40%	57.40%
San Ramon FD Tier D	N/A	N/A	24.15%	N/A	N/A	16.79%	N/A	N/A	40.94%	40.94%
Cost Group #12										
Rodeo-Hercules FPD Tier A	N/A	N/A	56.54%	N/A	N/A	35.95%	N/A	N/A	92.49%	92.49%
Rodeo-Hercules FPD Tier D	N/A	N/A	50.20%	N/A	N/A	34.45%	N/A	N/A	84.65%	84.65%

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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.