

Meeting Date
10/14/20
Agenda Item
#6

Contra Costa County Employees' Retirement Association

Actuarial Valuation and Review

As of December 31, 2019

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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October 7, 2020

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

Dear Board Members:

We are pleased to submit this Actuarial Valuation and Review as of December 31, 2019. It summarizes the actuarial data used in the valuation, analyzes the preceding year's experience, and establishes the funding requirements for fiscal year 2021-2022.

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, EA, MAAA, FCA
Senior Vice President and Actuary

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

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

EK/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 ("the Plan") as of December 31, 2019. 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 members, inactive vested members, and retired members and beneficiaries as of December 31, 2019, provided by the Retirement Association;
- The assets of the Plan as of December 31, 2019, provided by the Retirement Association;
- Economic assumptions regarding future salary increases and investment earnings adopted by the Board for the December 31, 2019 valuation;
- Other actuarial assumptions regarding employee terminations, retirement, death, etc. adopted by the Board for the December 31, 2019 valuation and
- The funding policy adopted by the Board of Retirement.

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

Section 1: Actuarial Valuation Summary

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

The contribution requirements are determined as a percentage of payroll. 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 May 22, 2019. Details of the funding policy are provided in *Section 4, Exhibit I* starting on page 108.

A schedule of current amortization balances and payments may be found in *Section 3, Exhibit I* starting on page 88. 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 102.

The rates calculated in this report may be adopted by the Board for the fiscal year that extends from July 1, 2021 through June 30, 2022.

Section 1: Actuarial Valuation Summary

Valuation Highlights

- Pg. 44 1. The ratio of the Valuation Value of Assets to the Actuarial Accrued Liability increased from 89.3% to 90.6%. 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 increased from 84.2% to 91.9%. 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, or the amount of, future contributions.
- Pg. 30
Pgs. 88-103 The Association's UAAL (which is based on the Valuation Value of Assets) decreased from \$1,032 million as of December 31, 2018 to \$947 million as of December 31, 2019. The decrease in UAAL is primarily due to contributions paying down a portion of the UAAL, offset to some degree by an investment return on actuarial value (i.e. after asset smoothing) less than the 7.00% assumed rate. 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 H*. A graphical projection of the UAAL amortization bases and payments is provided in *Section 3, Exhibit I*.
- Pg. 24 3. The net actuarial loss from investment and contribution experience is \$56.6 million, or 0.6% of actuarial accrued liability. The net experience gain from sources other than investment and contribution experience was 0.1% of the actuarial accrued liability. This gain was primarily due to other demographic experience gains including actual mortality, retirement, disability and termination experience.
- Pg. 32 4. The average employer rate calculated in this valuation (excluding any employer subvention of member rates or member subvention of employer rates) has decreased slightly from 35.73% of payroll to 35.66% of payroll. This decrease is primarily due to the effect of changes in member demographics on Normal Cost and the other gains, offset by an investment return on actuarial value (i.e. after asset smoothing) less than the 7.00% assumed rate. A complete reconciliation of the Association's aggregate employer rate is provided in *Section 2, Subsection F*.
- Separate employer contribution rates are shown for members with membership dates before January 1, 2013 (non-PEPRA 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. 33 5. The average member rate calculated in this valuation has remained at 11.97% of payroll. 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 III* of this report. They are shown by cost group.
- Pg. 25 6. The rate of return on the Market Value of Assets was 14.39% for the 2019 plan year. The return on the Valuation Value of Assets was 6.24% for the same period after considering the recognition of prior years' investment gains and losses. This resulted in an actuarial loss when measured against the assumed rate of return of 7.00%. This actuarial investment loss increased the average employer contribution rate by 0.54% of pay.

Section 1: Actuarial Valuation Summary

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7. The total unrecognized net investment gain as of December 31, 2019 is about \$112 million as compared to an unrecognized net investment loss of \$517 million in the previous valuation. This deferred net investment gain of \$112 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 gains of \$112 million represent about 1.2% of the Market Value of Assets. Unless offset by future investment losses or other unfavorable experience, the recognition of the \$112 million net market gains 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 gains were recognized immediately in the valuation value of assets, the funded percentage would increase from 90.6% to 91.7%.

For comparison purposes, if all the deferred losses in the December 31, 2018 valuation had been recognized immediately in the December 31, 2018 valuation, the funded percentage would have decreased from 89.3% to 84.0%.

- b. If the net deferred gains were recognized immediately in the valuation value of assets, the average employer contribution rate would decrease from 35.66% to about 34.74% of payroll.

For comparison purposes, if all the deferred losses in the December 31, 2018 valuation had been recognized immediately in the December 31, 2018 valuation, the average employer contribution rate would have increased from 35.73% to 40.15% of payroll.

8. The actuarial valuation report as of December 31, 2019 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.
9. This valuation reflects the \$1,236,000 additional contributions made by San Ramon Valley Fire Department and the \$30,000 additional contributions made by LAFCO towards their respective UAALs. Based on CCCERA's funding policy, each of these amounts has been amortized as a level percent of pay (credit) over a period of eighteen years beginning with the December 31, 2019 valuation to reduce the employer UAAL contributions.
10. Prior to December 31, 2019, Safety members from East Contra Costa Fire Protection District were pooled with Contra Costa Fire Protection District in Cost Group 8. Effective with the December 31, 2019 valuation, the Board took action upon a request made by East Contra Costa Fire Protection District to depool Safety members of the East Contra Costa Fire Protection District from Safety members of the Contra Cost County Fire Protection District. The depooled assets for the two employers were allocated based on their respective actuarial accrued liability as of December 31, 2018. Safety members of the East Contra Costa Fire Protection District are under their own cost group (Cost Group 13).
11. In this valuation, there was a refinement made to the Entry Age actuarial cost method calculation as recommended in the December 31, 2018 actuarial audit. This refinement does not change the present value of future benefits but it does increase the normal cost slightly, with an offsetting decrease in the actuarial accrued liability. These changes result in a net increase in the average employer and member contribution rates of 0.14% and 0.04% of pay, respectively.

Section 1: Actuarial Valuation Summary

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 and Board of Retirement of ACERA. That decision may affect the benefits paid by CCCERA to its members. However, the case has been remanded and is pending with the trial court.

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

Since 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 policy that targets 100% funding of the actuarial accrued liability. Generally, this implies payments that are ultimately at least enough to cover normal cost, interest on the unfunded actuarial accrued liability and the principal balance. The funding policy adopted by the Board meets this standard.
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, 2019, will be provided separately. The accounting disclosures will utilize different methodologies from

Section 1: Actuarial Valuation Summary

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, 2019. Due to the COVID-19 pandemic, market conditions have changed significantly since the valuation date. 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.

Section 1: Actuarial Valuation Summary

Summary of Key Valuation Results

		December 31, 2019		December 31, 2018	
		Total Rate	Estimated Annual Dollar Amount ¹ (\$ in '000s)	Total Rate	Estimated Annual Dollar Amount (\$ in '000s)
Average	General				
Employer	<ul style="list-style-type: none"> Cost Group #1 – County and Small Districts (Tiers 1 and 4) 	32.61%	\$7,953	31.11%	\$7,730
Contribution	<ul style="list-style-type: none"> Cost Group #2 – County and Small Districts (Tiers 3 and 5) 	26.19%	178,442	26.42%	172,333
Rates:¹	<ul style="list-style-type: none"> 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 (Non-Enhanced Tiers 1 and 4) 	50.16%	19,002	49.86%	17,672
		43.11%	2,523	42.22%	2,420
		34.13%	2,170	32.80%	1,885
		15.94%	150	15.60%	147
	Safety				
	<ul style="list-style-type: none"> Cost Group #7 – County (Tiers A and D) Cost Group #8 – Contra Costa Fire Protection District² Cost Group #9 – County (Tiers C and E) Cost Group #10 – Moraga-Orinda Fire District Cost Group #11 – San Ramon Valley Fire District Cost Group #12 – Rodeo-Hercules Fire Protection District Cost Group #13 – East Contra Costa Fire Protection District² 	71.22%	\$40,304	70.32%	\$41,860
		67.06%	27,368	65.26%	24,075
		61.68%	28,573	61.10%	24,607
		70.62%	5,835	70.81%	5,251
		76.62%	17,297	75.79%	16,380
		92.95%	2,112	85.28%	2,073
		68.04%	2,658	111.83%	3,739
	All Categories Combined	35.66%	\$334,386	35.73%	\$320,172

Note: Pages 162 and 163 contain a summary that shows which employers are in each cost group.

¹ Based on projected compensation for each valuation date shown. These rates do not include any employer subvention of member contributions or any member subvention of employer contributions

² The employer rates shown as of December 31, 2018 for Cost Group 8 and Cost Group 13 were developed on a pooled basis and adjusted by the applicable Pension Obligation Bond (POB) credit available only to Contra Costa Fire Protection District.

Section 1: Actuarial Valuation Summary

Summary of Key Valuation Results (continued)

		December 31, 2019		December 31, 2018	
		Total Rate	Estimated Annual Dollar Amount ¹ (\$ in '000s)	Total Rate	Estimated Annual Dollar Amount (\$ in '000s)
Average Member Contribution Rates: ¹	General				
	• Cost Group #1 – County and Small Districts (Tiers 1 and 4)	10.99%	\$2,680	10.82%	\$2,688
	• Cost Group #2 – County and Small Districts (Tiers 3 and 5)	10.69%	72,838	10.70%	69,785
	• Cost Group #3 – Central Contra Costa Sanitary District	11.39%	4,315	11.29%	4,001
	• Cost Group #4 – Contra Costa Housing Authority	11.40%	667	11.54%	661
	• Cost Group #5 – Contra Costa County Fire Protection District	11.76%	748	11.32%	651
	• Cost Group #6 – Small Districts (Non-Enhanced Tiers 1 and 4)	13.44%	127	13.22%	124
	Safety				
	• Cost Group #7 – County (Tiers A and D)	18.02%	\$10,197	17.99%	\$10,709
	• Cost Group #8 – Contra Costa Fire Protection District ²	16.96%	6,921	17.25%	6,363
	• Cost Group #9 – County (Tiers C and E)	16.16%	7,486	16.02%	6,452
	• Cost Group #10 – Moraga-Orinda Fire District	17.29%	1,428	17.30%	1,283
	• Cost Group #11 – San Ramon Valley Fire District	17.00%	3,838	16.99%	3,672
	• Cost Group #12 – Rodeo-Hercules Fire Protection District	13.38%	304	13.39%	326
	• Cost Group #13 – East Contra Costa Fire Protection District ²	17.23%	673	17.25%	577
All Categories Combined		11.97%	\$112,223	11.97%	\$107,291

Note: Pages 162 and 163 contain a summary that shows which employers are in each cost group.

¹ Based on projected compensation for each valuation date shown. These rates do not include any employer subvention of member contributions or any member subvention of employer contributions.

² The member rates shown as of December 31, 2018 for Cost Group 8 and Cost Group 13 were developed on a pooled basis.

Section 1: Actuarial Valuation Summary

Summary of Key Valuation Results (continued)

		December 31, 2019	December 31, 2018
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 	\$6,459,417,019 309,988,352 <u>3,306,316,851</u> \$10,075,722,222 \$260,197,190	\$6,186,518,515 299,877,080 <u>3,195,748,155</u> \$9,682,143,750 \$248,942,638
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 Market Value of Assets • Valuation Value of Assets (VVA) 	\$9,257,012,679 9,144,580,232 98.8% \$9,128,668,718	\$8,149,985,793 8,666,778,056 106.3% \$8,650,178,226
Funded Status as of December 31:	<ul style="list-style-type: none"> • Unfunded Actuarial Accrued Liability on Market Value of Assets basis • Funded percentage on MVA basis • Unfunded Actuarial Accrued Liability on Valuation Value of Assets basis • Funded percentage on VVA basis 	\$818,709,543 91.9% \$947,053,504 90.6%	\$1,532,157,957 84.2% \$1,031,965,524 89.3%
Key Assumptions:	<ul style="list-style-type: none"> • Net investment return • Price Inflation • Payroll growth increase 	7.00% 2.75% 3.25%	7.00% 2.75% 3.25%

¹ Includes inactive members with member contributions on deposit.

² Includes administrative expenses.

Section 1: Actuarial Valuation Summary

Summary of Key Valuation Results (continued)

		December 31, 2019	December 31, 2018	Change From Prior Year
Demographic Data	Active Members:			
as of December 31:	• Number of members	10,075	10,021	0.5%
	• Average age	46.3	46.2	0.1
	• Average service	10.1	9.9	0.2
	• Total projected compensation	\$937,531,264	\$896,390,768	4.6%
	• Average projected compensation	\$93,055	\$89,451	4.0%
	Retired Members and Beneficiaries:			
	• Number of members:			
	– Service retired	7,395	7,214	2.5%
	– Disability retired	907	908	-0.1%
	– Beneficiaries	<u>1,435</u>	<u>1,425</u>	0.7%
	– Total	9,737	9,547	2.0%
	• Average age	70.6	70.4	0.2
	• Average monthly benefit	\$4,116	\$3,986	3.2%
	Inactive Vested Members:			
	• Number of members ¹	3,638	3,477	4.6%
	• Average Age	46.4	46.5	-0.1
	Total Members:	23,450	23,045	1.8%

¹ Includes 1,978 inactive members with member contributions on deposit as of December 31, 2019 and 1,847 as of December 31, 2018.

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. The projected benefits are then discounted to a present value, based on the assumed rate of return that is expected to be achieved on the plan’s assets. There is a reasonable range for each assumption used in the projection and the results may vary materially based on which assumptions are selected. It is important for any user of an actuarial valuation to understand this concept. Actuarial assumptions are periodically reviewed to ensure that future valuations reflect emerging plan experience. While future changes in actuarial assumptions may have a significant impact on the reported results that does not mean that the previous assumptions were unreasonable.

Section 1: Actuarial Valuation Summary

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

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

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

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

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

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

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

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

Section 2: Actuarial Valuation Results

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: 2010 – 2019

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
2010	8,811	2,231	7,559	9,790	1.11	0.86
2011	8,629	2,214	8,085	10,299	1.19	0.94
2012	8,640	2,288	8,517	10,805	1.25	0.99
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

¹ Includes inactive members with member contributions on deposit.

Section 2: Actuarial Valuation Results

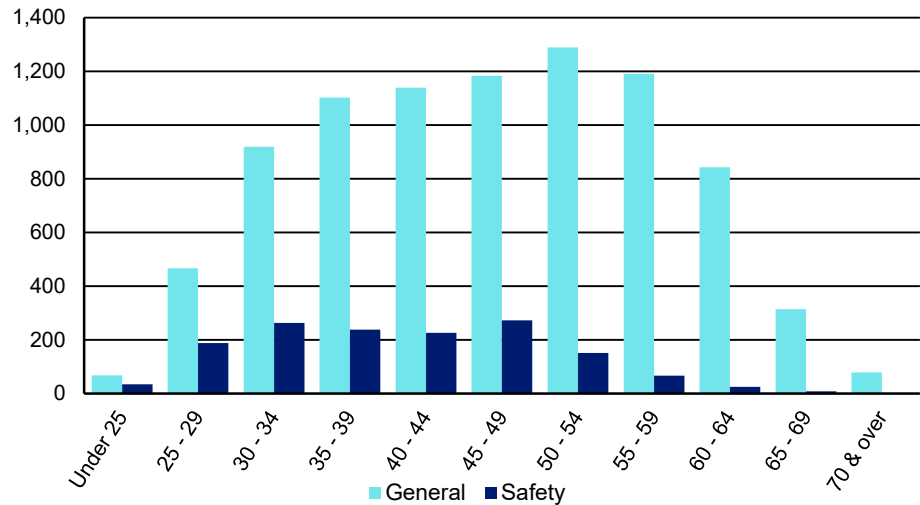
Active Members

Plan costs are affected by the age, years of service and compensation of active members. In this year's valuation, there were 10,075 active members with an average age of 46.3, average years of service of 10.1 years and average compensation of \$93,055. The 10,021 active members in the prior valuation had an average age of 46.2, average service of 9.9 years and average compensation of \$89,451.

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

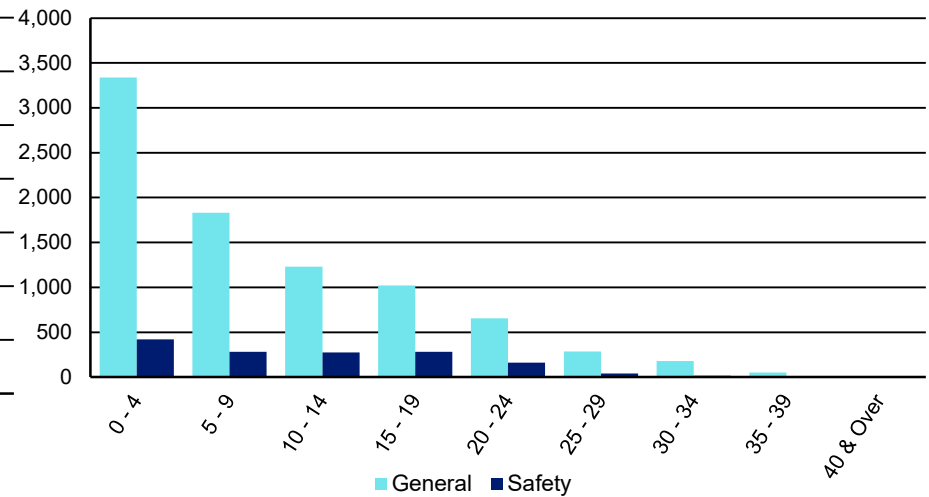
Distribution of Active Members as of December 31, 2019

Actives by Age



Average age	46.3
Prior year average age	<u>46.2</u>
Difference	0.1

Actives by Years of Service



Average years of service	10.1
Prior year average years of service	<u>9.9</u>
Difference	0.2

Inactive Members

In this year's valuation, there were 3,638 members with a vested right to a deferred or immediate vested benefit or entitled to a return of their member contributions versus 3,477 in the prior valuation.

Section 2: Actuarial Valuation Results

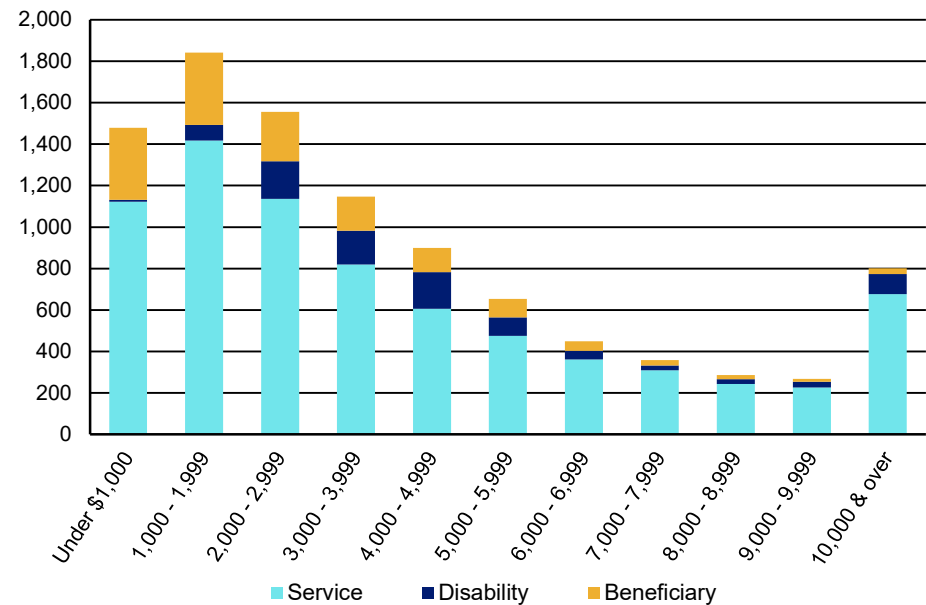
Retired Members and Beneficiaries

As of December 31, 2019, 8,302 retired members and 1,435 beneficiaries were receiving total monthly benefits of \$40,074,456. For comparison, in the previous valuation, there were 8,122 retired members and 1,425 beneficiaries receiving monthly benefits of \$38,057,250.

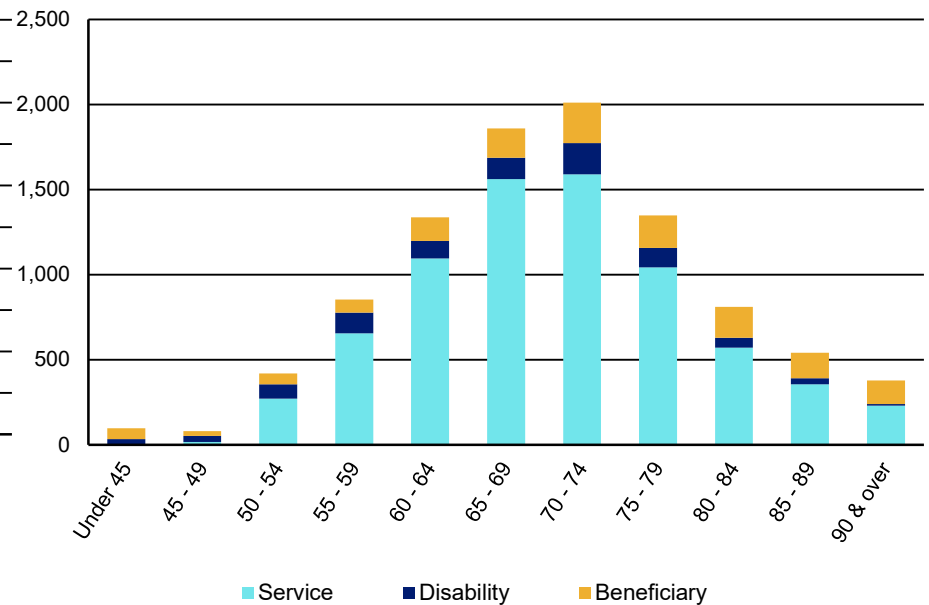
As of December 31, 2019, the average monthly benefit for retired members and beneficiaries is \$4,116, compared to \$3,986 in the previous valuation. The average age for retired members and beneficiaries is 70.6 in the current valuation, compared with 70.4 in the prior valuation.

Distribution of Retired Members and Beneficiaries as of December 31, 2019

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: 2010 – 2019

Year Ended December 31	Active Members			Retired Members and Beneficiaries		
	Count	Average Age	Average Service	Count	Average Age	Average Monthly Amount
2010	8,811	46.6	11.1	7,559	69.3	\$3,248
2011	8,629	46.2	10.7	8,085	69.1	3,381
2012	8,640	45.9	10.2	8,517	69.0	3,518
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

Section 2: Actuarial Valuation Results

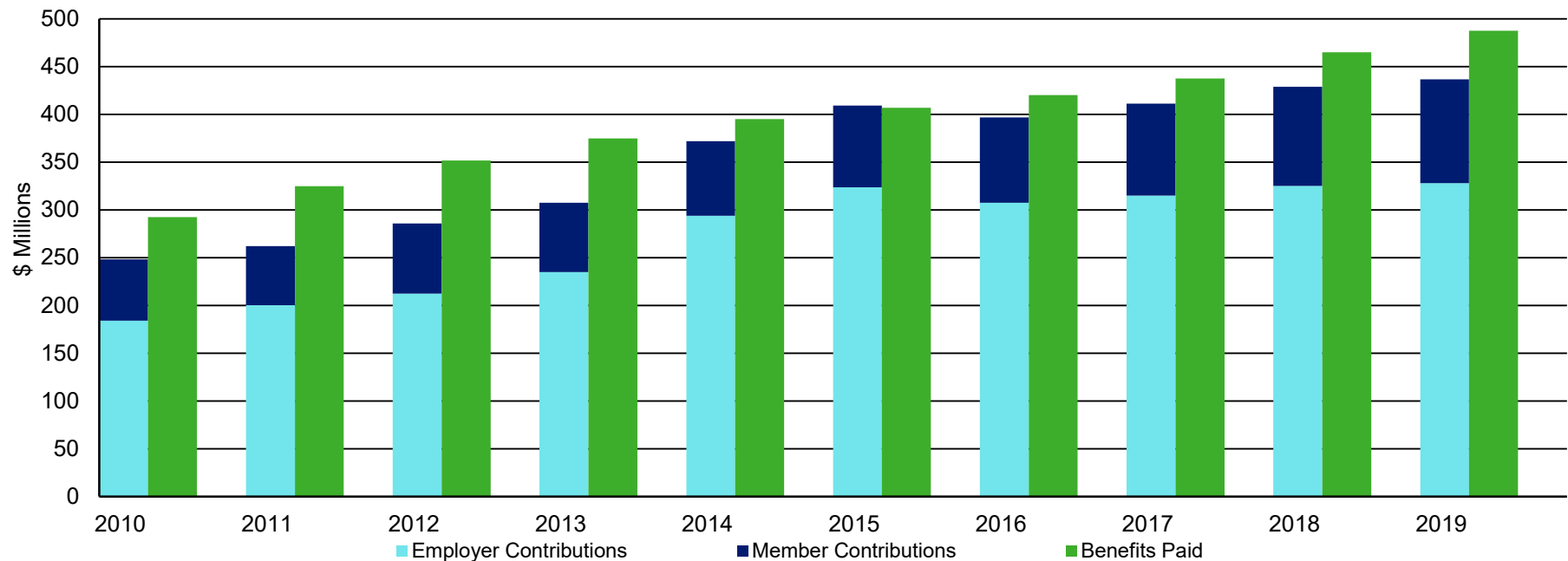
B. Financial Information

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, 2010 – 2019



Section 2: Actuarial Valuation Results

Determination of Actuarial Value of Assets for Year Ended December 31, 2019

1 Market Value of Assets						\$9,257,012,679
		Expected	Actual	Original	Percent	Unrecognized
2 Calculation of unrecognized return		Return	Return¹	Amount	Deferred	Amount
a)	Period ended December 31, 2014	\$241,361,743	\$125,727,585	\$(115,634,158)	0%	\$0
b)	Period ended June 30, 2015	246,283,585	207,439,920	(38,843,665)	0%	0
c)	Period ended December 31, 2015	253,672,471	(142,612,600)	(396,285,071)	10%	(39,628,507)
d)	Period ended June 30, 2016	239,907,822	297,615,324	57,707,502	20%	11,541,500
e)	Period ended December 31, 2016	249,584,567	196,258,919	(53,325,648)	30%	(15,997,694)
f)	Period ended June 30, 2017	255,728,819	488,764,245	233,035,426	40%	93,214,170
g)	Period ended December 31, 2017	271,873,066	498,651,736	226,778,670	50%	113,389,335
h)	Period ended June 30, 2018	288,460,475	63,645,390	(224,815,085)	60%	(134,889,051)
i)	Period ended December 31, 2018	289,889,306	(258,676,279)	(548,565,585)	70%	(383,995,909)
j)	Period ended June 30, 2019	280,075,265	820,000,188	539,924,922	80%	431,939,938
k)	Period ended December 31, 2019	307,217,326	348,171,398	40,954,072	90%	36,858,665
l)	Total unrecognized return ¹					\$112,432,447
3 Actuarial Value of Assets (1) - (2l)						\$9,144,580,232
4	Ratio of Actuarial Value to Market Value					98.8%
5	Non-valuation reserves and designations:					
a)	Post Retirement Death Benefit					\$15,911,514
b)	Statutory Contingency					0
c)	Additional One Percent Contingency					0
d)	Unrestricted Designation					0
e)	Total					\$15,911,514
6 Valuation Value of Assets (3) - (5e)						\$9,128,668,718

Note: Results may be slightly off due to rounding.

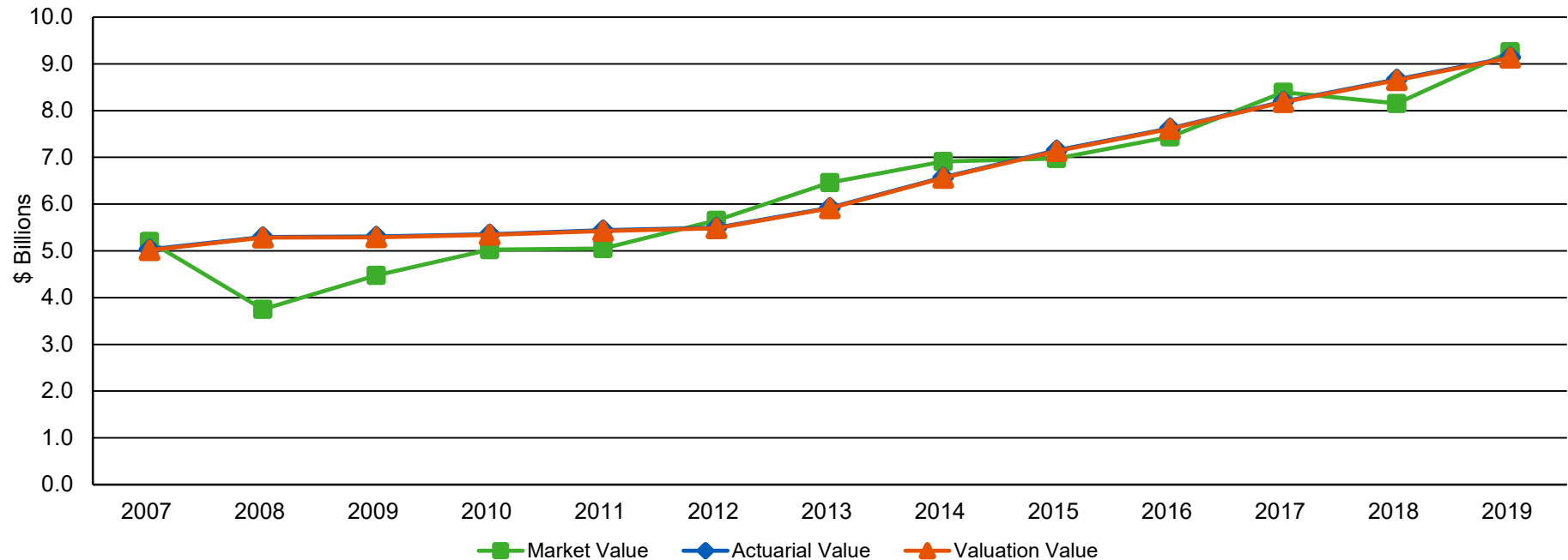
¹ Deferred return as of December 31, 2019 recognized in each of the next five years:

(a)	Amount recognized on December 31, 2020	\$14,710,349
(b)	Amount recognized on December 31, 2021	48,129,920
(c)	Amount recognized on December 31, 2022	(15,822,470)
(d)	Amount recognized on December 31, 2023	61,319,239
(e)	Amount recognized on December 31, 2024	4,095,409
(f)	Total unrecognized return as of December 31, 2019	\$112,432,447

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, Actuarial Value, and Valuation Value of Assets as of December 31, 2007 – 2019



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 \$47.7 million, which includes \$65.6 million from investment losses, a gain of \$9.0 million from contribution experience and \$8.9 million in gains from all other sources. The net experience variation from individual sources other than investments and contributions was 0.1% 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, 2019

1	Net loss from investments ¹	\$65,571,424
2	Net gain from contribution experience	(8,956,644)
3	Net gain from other experience ²	<u>(8,904,160)</u>
4	Net experience loss: 1 + 2 + 3	\$47,710,620

¹ Details on next page.

² 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 14.39% for the year ended December 31, 2019.

For valuation purposes, the assumed rate of return on the Valuation Value of Assets is 7.00%. The actual rate of return on a valuation basis for the 2019 plan year was 6.24%. 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, 2019 with regard to its investments.

Investment Experience for Year Ended December 31, 2019

	Market Value	Actuarial Value	Valuation Value
1 Net investment income	\$1,168,171,586	\$538,946,876	\$537,877,737
2 Average value of assets	8,119,210,178	8,636,002,441	8,620,702,298
3 Rate of return: 1 ÷ 2	14.39%	6.24%	6.24%
4 Assumed rate of return	7.00%	7.00%	7.00%
5 Expected investment income: 2 x 4	568,344,712	604,520,171	603,449,161
6 Actuarial gain/(loss): 1 - 5	\$599,826,874	\$(65,573,295)	\$(65,571,424)

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: 2010 – 2019

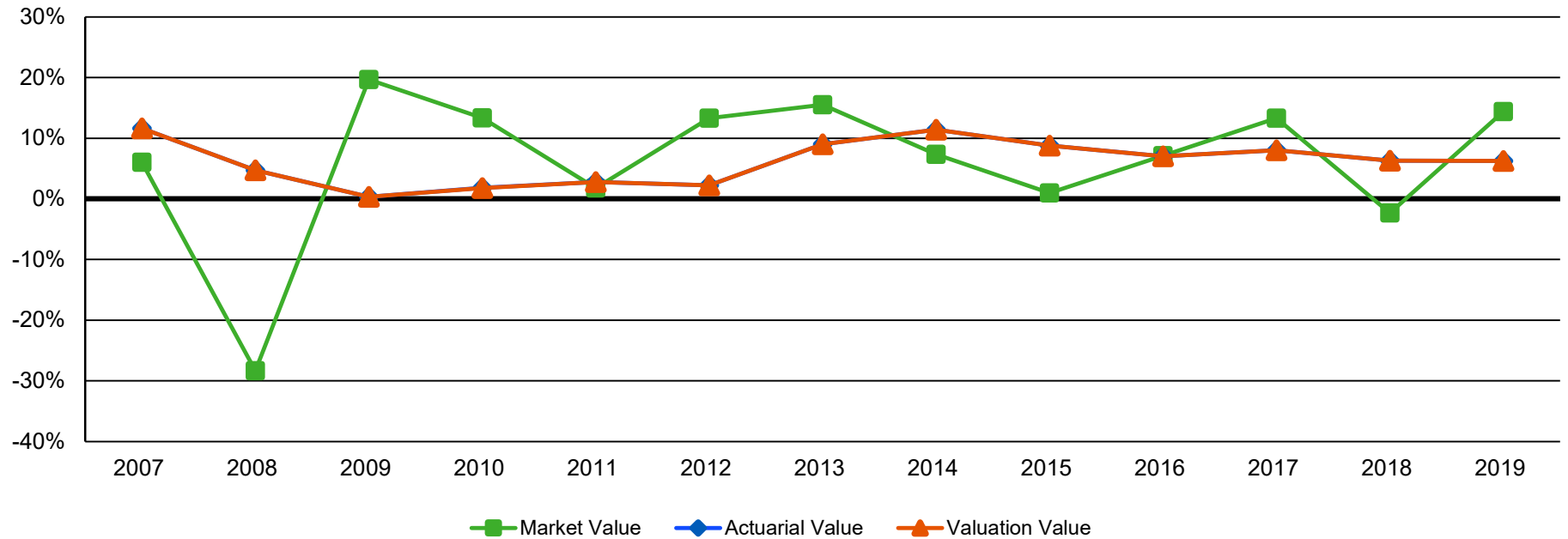
Year Ended December 31	Market Value Investment Return		Actuarial Value Investment Return ¹		Valuation Value Investment Return ¹	
	Amount	Percent	Amount	Percent	Amount	Percent
2010	\$594,637,090	13.35%	\$95,918,913	1.82%	\$94,835,030	1.80%
2011	88,042,268	1.76%	148,058,548	2.78%	146,988,614	2.77%
2012	668,138,997	13.31%	121,921,302	2.25%	120,826,177	2.24%
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%
Most recent five-year geometric average return		6.67%	7.20%		7.20%	
Most recent ten-year geometric average return		8.11%	6.53%		6.52%	

Note: Each year's yield is weighted by the average asset value in that year.

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, Actuarial and Valuation Rates of Return for Years Ended December 31, 2007 – 2019



Section 2: Actuarial Valuation Results

Contributions

Contributions for the year ended December 31, 2019 totaled \$437.3 million, compared to the projected amount of \$428.6 million. This resulted in a gain of \$9.0 million for the year, when adjusted for timing. The \$9.0 million in contribution gain included additional UAAL Contributions of \$1.2 million and \$30,000 made by San Ramon Valley Fire District and LAFCO, respectively.

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 gain from this other experience for the year ended December 31, 2019 amounted to \$8.9 million, which is 0.1% of the Actuarial Accrued Liability. The gain was primarily due to other experience gains such as actual mortality, retirement, disability and termination experience. 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

Actuarial Assumptions

There are no assumption changes reflected in this report.

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

Method Changes

As a result of comments received during the actuarial audit of the December 31, 2018 valuation, we have included a refinement to the entry age cost calculation as of December 31, 2019. In previous valuations, the normal cost was spread over a longer period including the member's service periods with both the reciprocal system and CCCERA. Beginning with this valuation, the normal cost is spread only over the member's service period with CCCERA. This refinement did not change the present value of future benefits, but it slightly increased the normal cost rate and decreased the actuarial accrued liability.

Plan Provisions

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

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

Section 2: Actuarial Valuation Results

E. Development of Unfunded Actuarial Accrued Liability

Development for Year Ended December 31, 2019

1	Unfunded Actuarial Accrued Liability at beginning of year	\$1,031,965,524
2	Normal Cost at middle of year ¹	240,516,567
3	Expected administrative expenses	9,860,300
4	Expected employer and member contributions	(428,643,735)
5	Interest	<u>65,166,733</u>
6	Expected Unfunded Actuarial Accrued Liability at end of year	\$918,865,389
7	Changes due to:	
	a) Investment return less than expected (after asset smoothing)	\$65,571,424
	b) Actual contributions greater than expected	(7,657,405)
	c) Gain from additional UAAL contributions	(1,299,239)
	d) Individual salary increases higher than expected	38,640,728
	e) COLA increases lower than expected	(11,510,960)
	f) Other experience gain ²	(36,033,928)
	g) Method change ³	<u>(19,522,505)</u>
	Total changes	<u>\$28,188,115</u>
8	Unfunded Actuarial Accrued Liability at end of year	\$947,053,504

Note: The sum of items 7d through 7f equals the “Net gain from other experience” shown in *Section 2, Subsection C*.

¹ Excludes administrative expense load.

² Other differences in actual versus expected experience including (but not limited to) mortality, retirement, disability, termination and leave cashout experience. The gain from retirement experience is about \$32 million.

³ As a result of comments received during the actuarial audit of the December 31, 2018 valuation, we have included a refinement to the entry age actuarial cost method calculation as of December 31, 2019. This refinement did not change the present value of future benefits, but it slightly increased the normal cost rate and decreased the actuarial accrued liability.

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, 2019, the average recommended employer contribution is 35.66% of compensation.

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

The contribution requirement as of December 31, 2019 is based on the data previously described, the actuarial assumptions and Plan provisions described in *Section 4*, including all changes affecting future costs adopted at the time of the actuarial valuation, actuarial gains and losses, and changes in the actuarial assumptions.

Average Recommended Employer Contribution for Year Ended December 31

All Tiers Combined	2019		2018	
	Amount (\$ in '000s)	% of Projected Compensation	Amount (\$ in '000s)	% of Projected Compensation
1 Total Normal Cost	\$260,197	27.75%	\$248,942	27.78%
2 Expected member contributions	<u>112,223</u>	<u>11.97%</u>	<u>107,291</u>	<u>11.97%</u>
3 Employer Normal Cost: 1 – 2	\$147,974	15.78%	\$141,651	15.81%
4 Actuarial Accrued Liability	10,075,722		9,682,144	
5 Valuation Value of Assets	<u>9,128,669</u>		<u>8,650,178</u>	
6 Unfunded Actuarial Accrued Liability: 4 – 5	\$947,054		\$1,031,966	
7 Payment on Unfunded Actuarial Accrued Liability	186,412	19.88%	178,521	19.92%
8 Total average recommended employer contribution: 3 + 7	\$334,386	35.66%	\$320,172	35.73%
9 Projected compensation	\$937,531		\$896,391	

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

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, 2018 to December 31, 2019

	Contribution Rate ¹	Estimated Annual Dollar Amount ² (\$ in '000s)
Average Recommended Employer Contribution as of December 31, 2018	35.73%	\$320,172,245
• Effect of investment return less than expected (after asset smoothing)	0.54%	\$5,062,669
• Effect of actual contributions greater than expected	(0.06%)	(562,519)
• Effect of additional UAAL contributions	(0.01%)	(99,678)
• Effect of individual salary increases higher than expected	0.32%	3,000,100
• Effect of amortizing prior year's UAAL over a larger than expected projected total payroll	(0.26%)	5,756,622 ³
• Effect of COLA increases lower than expected	(0.09%)	(843,778)
• Effect of changes in member demographics on Normal Cost	(0.33%)	(3,093,853)
• Effect of change in administrative expense load	0.02%	187,506
• Effect of other gains ⁴	(0.34%)	3,494,271
• Effect of change in method ⁵	<u>0.14%</u>	<u>1,312,544</u>
Total change	(0.07%)	\$14,213,884
Average Recommended Employer Contribution as of December 31, 2019	35.66%	\$334,386,129

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 Represents the dollar increase in UAAL amortization payments for amortization bases established prior to the December 31, 2019 valuation.

⁴ 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. The gain from retirement experience is about 0.26% of compensation.

⁵ As a result of comments received during the actuarial audit of the December 31, 2018 valuation, we have included a refinement to the entry age actuarial cost method calculation as of December 31, 2019. This refinement did not change the present value of future benefits, but it slightly increased the normal cost rate and decreased the actuarial accrued liability.

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, 2018 to December 31, 2019

	Contribution Rate ¹	Estimated Annual Dollar Amount ²
Average Recommended Member Contribution as of December 31, 2018	11.97%	\$107,291,436
• Effect of change in administrative expense load	0.02%	\$187,506
• Effect of changes in member demographics ³	(0.06%)	4,369,159
• Effect of change in method ⁴	<u>0.04%</u>	<u>375,013</u>
Total change	0.00%	\$4,931,678
Average Recommended Member Contribution as of December 31, 2019	11.97%	\$112,223,113

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 Includes changes in demographic profile of active membership. Estimated annual dollar cost also reflects change in payroll from prior valuation.

⁴ As a result of comments received during the actuarial audit of the December 31, 2018 valuation, we have included a refinement to the entry age actuarial cost method calculation as of December 31, 2019. This refinement did not change the present value of future benefits, but it slightly increased the normal cost rate and decreased the actuarial accrued liability.

Section 2: Actuarial Valuation Results

Recommended Employer Contribution Rate

Cost Group #1	December 31, 2019 Actuarial Valuation ¹ Recommended Rates for FY 2021-22				December 31, 2018 Actuarial Valuation ² Recommended Rates for FY 2020-21			
	Basic	COLA	Total	Estimated Annual Dollar Amount	Basic	COLA	Total	Estimated Annual Dollar Amount
County General Tier 1 w/ Courts								
Normal Cost	13.23%	3.65%	16.88%	\$1,736,294	11.55%	3.40%	14.95%	\$1,676,698
UAAL	<u>11.11%</u>	<u>1.79%</u>	<u>12.90%</u>	<u>1,326,907</u>	<u>11.08%</u>	<u>1.95%</u>	<u>13.03%</u>	<u>1,461,363</u>
Total Contribution	24.34%	5.44%	29.78%	\$3,063,201	22.63%	5.35%	27.98%	\$3,138,061
District General Tier 1 w/o POB								
Normal Cost	13.23%	3.65%	16.88%	\$1,166,433	11.55%	3.40%	14.95%	\$1,048,146
UAAL	<u>16.11%</u>	<u>5.80%</u>	<u>21.91%</u>	<u>1,514,014</u>	<u>16.13%</u>	<u>6.00%</u>	<u>22.13%</u>	<u>1,551,537</u>
Total Contribution	29.34%	9.45%	38.79%	\$2,680,447	27.68%	9.40%	37.08%	\$2,599,683
District General Tier 1 w/ POB (Moraga)								
Normal Cost	13.23%	3.65%	16.88%	\$78,570	11.55%	3.40%	14.95%	\$104,439
UAAL	<u>6.88%</u>	<u>0.45%</u>	<u>7.33%</u>	<u>34,118</u>	<u>9.07%</u>	<u>1.91%</u>	<u>10.98%</u>	<u>76,705</u>
Total Contribution	20.11%	4.10%	24.21%	\$112,688	20.62%	5.31%	25.93%	\$181,144
District General Tier 1 w/ UAAL Prepayment (First Five)								
Normal Cost	13.23%	3.65%	16.88%	\$271,413	11.55%	3.40%	14.95%	\$223,366
UAAL	<u>10.96%</u>	<u>1.90%</u>	<u>12.86%</u>	<u>206,776</u>	<u>11.31%</u>	<u>2.35%</u>	<u>13.66%</u>	<u>204,093</u>
Total Contribution	24.19%	5.55%	29.74%	\$478,189	22.86%	5.75%	28.61%	\$427,459
District General Tier 1 w/ UAAL Prepayment (LAFCO)								
Normal Cost	13.23%	3.65%	16.88%	\$28,988	11.55%	3.40%	14.95%	\$35,495
UAAL ³	<u>14.34%</u>	<u>5.14%</u>	<u>19.48%</u>	<u>32,681</u>	<u>15.38%</u>	<u>5.72%</u>	<u>21.10%</u>	<u>50,096</u>
Total Contribution	27.57%	8.79%	36.36%	\$61,669	26.93%	9.12%	36.05%	\$85,591

¹ The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.49% and 0.16% of payroll, respectively.

² The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.47% and 0.16% of payroll, respectively.

³ During 2019, one of the two LAFCO active members retired and there was only one LAFCO active member as of December 31, 2019. We understand that there was a new active member hired since December 31, 2019. The contribution rate credit for the UAAL prepayment reflects the payroll of this new active member hired after December 31, 2019.

Section 2: Actuarial Valuation Results

Recommended Employer Contribution Rate (continued)

Cost Group #1	December 31, 2019 Actuarial Valuation ¹ Recommended Rates for FY 2022-22				December 31, 2018 Actuarial Valuation ² Recommended Rates for FY 2020-21			
	Basic	COLA	Total	Estimated Annual Dollar Amount	Basic	COLA	Total	Estimated Annual Dollar Amount
County General Tier 4 (3% COLA) w/ Courts								
Normal Cost	8.91%	2.99%	11.90%	\$0	8.80%	2.96%	11.76%	\$0
UAAL	<u>11.11%</u>	<u>1.79%</u>	<u>12.90%</u>	<u>0</u>	<u>11.08%</u>	<u>1.95%</u>	<u>13.03%</u>	<u>0</u>
Total Contribution	20.02%	4.78%	24.80%	\$0	19.88%	4.91%	24.79%	\$0
District General Tier 4 (3% COLA) w/o POB								
Normal Cost	8.91%	2.99%	11.90%	\$450,633	8.80%	2.96%	11.76%	\$328,749
UAAL	<u>16.11%</u>	<u>5.80%</u>	<u>21.91%</u>	<u>829,695</u>	<u>16.13%</u>	<u>6.00%</u>	<u>22.13%</u>	<u>618,641</u>
Total Contribution	25.02%	8.79%	33.81%	\$1,280,328	24.93%	8.96%	33.89%	\$947,390
District General Tier 4 (3% COLA) w/ POB (Moraga)								
Normal Cost	8.91%	2.99%	11.90%	\$22,712	8.80%	2.96%	11.76%	\$15,569
UAAL	<u>6.88%</u>	<u>0.45%</u>	<u>7.33%</u>	<u>13,990</u>	<u>9.07%</u>	<u>1.91%</u>	<u>10.98%</u>	<u>14,537</u>
Total Contribution	15.79%	3.44%	19.23%	\$36,702	17.87%	4.87%	22.74%	\$30,106
District General Tier 4 (3% COLA) w/ UAAL Prepayment (First Five)								
Normal Cost	8.91%	2.99%	11.90%	\$115,334	8.80%	2.96%	11.76%	\$148,254
UAAL	<u>10.96%</u>	<u>1.90%</u>	<u>12.86%</u>	<u>124,638</u>	<u>11.31%</u>	<u>2.35%</u>	<u>13.66%</u>	<u>172,206</u>
Total Contribution	19.87%	4.89%	24.76%	\$239,972	20.11%	5.31%	25.42%	\$320,460
District General Tier 4 (3% COLA) w/ UAAL Prepayment (LAFCO)								
Normal Cost	8.91%	2.99%	11.90%	\$0	8.80%	2.96%	11.76%	\$0
UAAL ³	<u>14.34%</u>	<u>5.14%</u>	<u>19.48%</u>	<u>0</u>	<u>15.38%</u>	<u>5.72%</u>	<u>21.10%</u>	<u>0</u>
Total Contribution	23.25%	8.13%	31.38%	\$0	24.18%	8.68%	32.86%	\$0
County General Tier 4 (2% COLA) w/ Courts								
Normal Cost	8.87%	2.02%	10.89%	\$0	8.68%	1.99%	10.67%	\$0
UAAL	<u>11.11%</u>	<u>1.79%</u>	<u>12.90%</u>	<u>0</u>	<u>11.08%</u>	<u>1.95%</u>	<u>13.03%</u>	<u>0</u>
Total Contribution	19.98%	3.81%	23.79%	\$0	19.76%	3.94%	23.70%	\$0

¹ The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.49% and 0.16% of payroll, respectively.

² The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.47% and 0.16% of payroll, respectively.

³ During 2019, one of the two LAFCO active members retired and there was only one LAFCO active member as of December 31, 2019. We understand that there was a new active member hired since December 31, 2019. The contribution rate credit for the UAAL prepayment reflects the payroll of this new active member hired after December 31, 2019.

Section 2: Actuarial Valuation Results

Recommended Employer Contribution Rate (continued)

December 31, 2019 Actuarial Valuation¹
Recommended Rates for FY 2021-22

December 31, 2018 Actuarial Valuation²
Recommended Rates for FY 2020-21

Cost Group #2	December 31, 2019 Actuarial Valuation ¹ Recommended Rates for FY 2021-22				December 31, 2018 Actuarial Valuation ² Recommended Rates for FY 2020-21			
	Basic	COLA	Total	Estimated Annual Dollar Amount	Basic	COLA	Total	Estimated Annual Dollar Amount
County General Tier 3 w/ Courts								
Normal Cost	11.95%	3.35%	15.30%	\$60,549,238	11.84%	3.34%	15.18%	\$61,280,878
UAAL	<u>11.11%</u>	<u>1.79%</u>	<u>12.90%</u>	<u>51,051,318</u>	<u>11.08%</u>	<u>1.95%</u>	<u>13.03%</u>	<u>52,601,439</u>
Total Contribution	23.06%	5.14%	28.20%	\$111,600,556	22.92%	5.29%	28.21%	\$113,882,317
District General Tier 3 w/o POB								
Normal Cost	11.95%	3.35%	15.30%	\$456,052	11.84%	3.34%	15.18%	\$468,789
UAAL	<u>16.11%</u>	<u>5.80%</u>	<u>21.91%</u>	<u>653,079</u>	<u>16.13%</u>	<u>6.00%</u>	<u>22.13%</u>	<u>683,418</u>
Total Contribution	28.06%	9.15%	37.21%	\$1,109,131	27.97%	9.34%	37.31%	\$1,152,207
County General Tier 5 (3%/4% COLA) w/ Courts								
Normal Cost	8.41%	2.76%	11.17%	\$6,448,006	8.39%	2.76%	11.15%	\$6,456,452
UAAL	<u>11.11%</u>	<u>1.79%</u>	<u>12.90%</u>	<u>7,446,668</u>	<u>11.08%</u>	<u>1.95%</u>	<u>13.03%</u>	<u>7,545,073</u>
Total Contribution	19.52%	4.55%	24.07%	\$13,894,674	19.47%	4.71%	24.18%	\$14,001,525
District General Tier 5 (3%/4% COLA) w/o POB								
Normal Cost	8.41%	2.76%	11.17%	\$102,898	8.39%	2.76%	11.15%	\$91,197
UAAL	<u>16.11%</u>	<u>5.80%</u>	<u>21.91%</u>	<u>201,835</u>	<u>16.13%</u>	<u>6.00%</u>	<u>22.13%</u>	<u>181,003</u>
Total Contribution	24.52%	8.56%	33.08%	\$304,733	24.52%	8.76%	33.28%	\$272,200
County General Tier 5 (2% COLA) w/ Courts								
Normal Cost	8.24%	1.85%	10.09%	\$22,560,233	8.16%	1.84%	10.00%	\$18,635,938
UAAL	<u>11.11%</u>	<u>1.79%</u>	<u>12.90%</u>	<u>28,843,113</u>	<u>11.08%</u>	<u>1.95%</u>	<u>13.03%</u>	<u>24,282,627</u>
Total Contribution	19.35%	3.64%	22.99%	\$51,403,346	19.24%	3.79%	23.03%	\$42,918,565
District General Tier 5 (2% COLA) w/o POB								
Normal Cost	8.24%	1.85%	10.09%	\$40,735	8.16%	1.84%	10.00%	\$33,189
UAAL	<u>16.11%</u>	<u>5.80%</u>	<u>21.91%</u>	<u>88,454</u>	<u>16.13%</u>	<u>6.00%</u>	<u>22.13%</u>	<u>73,448</u>
Total Contribution	24.35%	7.65%	32.00%	\$129,189	24.29%	7.84%	32.13%	\$106,637

¹ The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.49% and 0.16% of payroll, respectively.

² The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.47% and 0.16% of payroll, respectively.

Section 2: Actuarial Valuation Results

Recommended Employer Contribution Rate (continued)

Cost Group #3	December 31, 2019 Actuarial Valuation ¹ Recommended Rates for FY 2021-22				December 31, 2018 Actuarial Valuation ² Recommended Rates for FY 2020-21			
	Basic	COLA	Total	Estimated Annual Dollar Amount	Basic	COLA	Total	Estimated Annual Dollar Amount
CCCSD General Tier 1								
Normal Cost	13.18%	3.78%	16.96%	\$4,966,474	12.36%	3.67%	16.03%	\$4,562,037
UAAL	<u>22.87%</u>	<u>11.63%</u>	<u>34.50%</u>	<u>10,102,793</u>	<u>23.23%</u>	<u>11.58%</u>	<u>34.81%</u>	<u>9,906,707</u>
Total Contribution	36.05%	15.41%	51.46%	\$15,069,267	35.59%	15.25%	50.84%	\$14,468,744
CCCSD General Tier 4 (3% COLA)								
Normal Cost	8.37%	2.87%	11.24%	\$966,430	8.23%	2.83%	11.06%	\$772,346
UAAL	<u>22.87%</u>	<u>11.63%</u>	<u>34.50%</u>	<u>2,966,356</u>	<u>23.23%</u>	<u>11.58%</u>	<u>34.81%</u>	<u>2,430,863</u>
Total Contribution	31.24%	14.50%	45.74%	\$3,932,786	31.46%	14.41%	45.87%	\$3,203,209
Cost Group #4								
Contra Costa Housing Authority General Tier 1								
Normal Cost	13.50%	3.74%	17.24%	\$652,952	12.77%	3.65%	16.42%	\$685,017
UAAL	<u>17.04%</u>	<u>10.85%</u>	<u>27.89%</u>	<u>1,056,312</u>	<u>16.44%</u>	<u>10.57%</u>	<u>27.01%</u>	<u>1,126,815</u>
Total Contribution	30.54%	14.59%	45.13%	\$1,709,264	29.21%	14.22%	43.43%	\$1,811,832
Contra Costa Housing Authority General Tier 4 (3% COLA)								
Normal Cost	8.60%	2.92%	11.52%	\$237,763	8.96%	3.02%	11.98%	\$186,734
UAAL	<u>17.04%</u>	<u>10.85%</u>	<u>27.89%</u>	<u>575,627</u>	<u>16.44%</u>	<u>10.57%</u>	<u>27.01%</u>	<u>421,010</u>
Total Contribution	25.64%	13.77%	39.41%	\$813,390	25.40%	13.59%	38.99%	\$607,744

¹ The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.49% and 0.16% of payroll, respectively.

² The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.47% and 0.16% of payroll, respectively.

Section 2: Actuarial Valuation Results

Recommended Employer Contribution Rate (continued)

Cost Group #5	December 31, 2019 Actuarial Valuation ¹ Recommended Rates for FY 2021-22				December 31, 2018 Actuarial Valuation ² Recommended Rates for FY 2020-21			
	Basic	COLA	Total	Estimated Annual Dollar Amount	Basic	COLA	Total	Estimated Annual Dollar Amount
CCCFPD General Tier 1								
Normal Cost	14.19%	3.82%	18.01%	\$646,007	11.75%	3.45%	15.20%	\$584,464
UAAL	<u>10.25%</u>	<u>8.16%</u>	<u>18.41%</u>	<u>660,355</u>	<u>10.53%</u>	<u>7.93%</u>	<u>18.46%</u>	<u>709,817</u>
Total Contribution	24.44%	11.98%	36.42%	\$1,306,362	22.28%	11.38%	33.66%	\$1,294,281
CCCFPD General Tier 4 (3% COLA)								
Normal Cost	11.41%	3.79%	15.20%	\$28,626	11.38%	3.79%	15.17%	\$27,024
UAAL	<u>10.25%</u>	<u>8.16%</u>	<u>18.41%</u>	<u>34,672</u>	<u>10.53%</u>	<u>7.93%</u>	<u>18.46%</u>	<u>32,885</u>
Total Contribution	21.66%	11.95%	33.61%	\$63,298	21.91%	11.72%	33.63%	\$59,909
CCCFPD General Tier 4 (2% COLA)								
Normal Cost	10.28%	2.29%	12.57%	\$324,635	10.07%	2.27%	12.34%	\$212,717
UAAL	<u>10.25%</u>	<u>8.16%</u>	<u>18.41%</u>	<u>475,461</u>	<u>10.53%</u>	<u>7.93%</u>	<u>18.46%</u>	<u>318,213</u>
Total Contribution	20.53%	10.45%	30.98%	\$800,096	20.60%	10.20%	30.80%	\$530,930

¹ The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.49% and 0.16% of payroll, respectively.

² The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.47% and 0.16% of payroll, respectively.

Section 2: Actuarial Valuation Results

Recommended Employer Contribution Rate (continued)

December 31, 2019 Actuarial Valuation¹
Recommended Rates for FY 2021-22

December 31, 2018 Actuarial Valuation²
Recommended Rates for FY 2020-21

Cost Group #6	Basic	COLA	Total	Estimated Annual Dollar Amount	Basic	COLA	Total	Estimated Annual Dollar Amount
Non-Enhanced District General Tier 1								
Normal Cost	13.25%	3.99%	17.24%	\$113,548	12.58%	3.84%	16.42%	\$114,839
UAAL	<u>0.16%</u>	<u>0.00%</u>	<u>0.16%</u>	<u>1,054</u>	<u>0.16%</u>	<u>0.00%</u>	<u>0.16%</u>	<u>1,119</u>
Total Contribution	13.41%	3.99%	17.40%	\$114,602	12.74%	3.84%	16.58%	\$115,958
Non-Enhanced District General Tier 4 (3% COLA)								
Normal Cost	9.23%	3.15%	12.38%	\$35,153	9.39%	3.21%	12.60%	\$30,355
UAAL	<u>0.16%</u>	<u>0.00%</u>	<u>0.16%</u>	<u>454</u>	<u>0.16%</u>	<u>0.00%</u>	<u>0.16%</u>	<u>385</u>
Total Contribution	9.39%	3.15%	12.54%	\$35,607	9.55%	3.21%	12.76%	\$30,740
Cost Group #7								
County Safety Tier A								
Normal Cost	22.54%	7.10%	29.64%	\$15,701,567	22.36%	7.06%	29.42%	\$16,438,118
UAAL	<u>21.82%</u>	<u>20.36%</u>	<u>42.18%</u>	<u>22,344,538</u>	<u>22.01%</u>	<u>19.47%</u>	<u>41.48%</u>	<u>23,176,517</u>
Total Contribution	44.36%	27.46%	71.82%	\$38,046,105	44.37%	26.53%	70.90%	\$39,614,635
County Safety Tier D								
Normal Cost	14.50%	5.79%	20.29%	\$733,367	14.31%	5.73%	20.04%	\$731,500
UAAL	<u>21.82%</u>	<u>20.36%</u>	<u>42.18%</u>	<u>1,524,565</u>	<u>22.01%</u>	<u>19.47%</u>	<u>41.48%</u>	<u>1,514,104</u>
Total Contribution	36.32%	26.15%	62.47%	\$2,257,932	36.32%	25.20%	61.52%	\$2,245,604

¹ The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.49% and 0.16% of payroll, respectively.

² The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.47% and 0.16% of payroll, respectively.

Section 2: Actuarial Valuation Results

Recommended Employer Contribution Rate (continued)

December 31, 2019 Actuarial Valuation¹
Recommended Rates for FY 2021-22

December 31, 2018 Actuarial Valuation²
Recommended Rates for FY 2020-21

Cost Group #8	December 31, 2019 Actuarial Valuation ¹ Recommended Rates for FY 2021-22				December 31, 2018 Actuarial Valuation ² Recommended Rates for FY 2020-21			
	Basic	COLA	Total	Estimated Annual Dollar Amount	Basic	COLA	Total	Estimated Annual Dollar Amount
CCCFPD Safety Tier A								
Normal Cost	22.62%	7.08%	29.70%	\$9,101,791	21.94%	7.00%	28.94%	\$8,890,908
UAAL	<u>11.59%</u>	<u>29.17%</u>	<u>40.76%</u>	<u>12,491,212</u>	<u>11.91%</u>	<u>26.53%</u>	<u>38.44%</u>	<u>11,809,485</u>
Total Contribution	34.21%	36.25%	70.46%	\$21,593,003	33.85%	33.53%	67.38%	\$20,700,393
CCCFPD Safety Tier D								
Normal Cost	12.33%	5.08%	17.41%	\$314,950	13.05%	5.35%	18.40%	\$330,875
UAAL	<u>11.59%</u>	<u>29.17%</u>	<u>40.76%</u>	<u>737,355</u>	<u>11.91%</u>	<u>26.53%</u>	<u>38.44%</u>	<u>691,242</u>
Total Contribution	23.92%	34.25%	58.17%	\$1,052,305	24.96%	31.88%	56.84%	\$1,022,117
CCCFPD Safety Tier E								
Normal Cost	12.37%	3.39%	15.76%	\$1,316,743	12.09%	3.32%	15.41%	\$673,206
UAAL	<u>11.59%</u>	<u>29.17%</u>	<u>40.76%</u>	<u>3,405,484</u>	<u>11.91%</u>	<u>26.53%</u>	<u>38.44%</u>	<u>1,679,302</u>
Total Contribution	23.96%	32.56%	56.52%	\$4,722,227	24.00%	29.85%	53.85%	\$2,352,508
Cost Group #9								
County Safety Tier C								
Normal Cost	20.83%	4.42%	25.25%	\$3,705,675	20.48%	4.38%	24.86%	\$3,551,798
UAAL	<u>21.82%</u>	<u>20.36%</u>	<u>42.18%</u>	<u>6,190,312</u>	<u>22.01%</u>	<u>19.47%</u>	<u>41.48%</u>	<u>5,926,330</u>
Total Contribution	42.65%	24.78%	67.43%	\$9,895,987	42.49%	23.85%	66.34%	\$9,478,128
County Safety Tier E								
Normal Cost	13.24%	3.59%	16.83%	\$5,326,765	13.17%	3.57%	16.74%	\$4,350,068
UAAL	<u>21.82%</u>	<u>20.36%</u>	<u>42.18%</u>	<u>13,350,146</u>	<u>22.01%</u>	<u>19.47%</u>	<u>41.48%</u>	<u>10,779,022</u>
Total Contribution	35.06%	23.95%	59.01%	\$18,676,911	35.18%	23.04%	58.22%	\$15,129,090

¹ The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.49% and 0.16% of payroll, respectively.

² The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.47% and 0.16% of payroll, respectively.

Section 2: Actuarial Valuation Results

Recommended Employer Contribution Rate (continued)

Cost Group #10	December 31, 2019 Actuarial Valuation ¹ Recommended Rates for FY 2021-22				December 31, 2018 Actuarial Valuation ² Recommended Rates for FY 2020-21			
	Basic	COLA	Total	Estimated Annual Dollar Amount	Basic	COLA	Total	Estimated Annual Dollar Amount
Moraga-Orinda FD Safety Tier A								
Normal Cost	21.21%	6.89%	28.10%	\$1,804,342	20.36%	6.75%	27.11%	\$1,624,580
UAAL	<u>13.62%</u>	<u>31.25%</u>	<u>44.87%</u>	<u>2,881,169</u>	<u>14.05%</u>	<u>31.41%</u>	<u>45.46%</u>	<u>2,724,213</u>
Total Contribution	34.83%	38.14%	72.97%	\$4,685,511	34.41%	38.16%	72.57%	\$4,348,793
Moraga-Orinda FD Safety Tier D								
Normal Cost	12.44%	5.13%	17.57%	\$323,402	12.70%	5.23%	17.93%	\$255,138
UAAL	<u>13.62%</u>	<u>31.25%</u>	<u>44.87%</u>	<u>825,898</u>	<u>14.05%</u>	<u>31.41%</u>	<u>45.46%</u>	<u>646,881</u>
Total Contribution	26.06%	36.38%	62.44%	\$1,149,300	26.75%	36.64%	63.39%	\$902,019
Cost Group #11								
San Ramon FD Safety Tier A								
Normal Cost	22.90%	7.14%	30.04%	\$5,148,480	21.64%	6.92%	28.56%	\$4,960,173
UAAL	<u>29.16%</u>	<u>20.77%</u>	<u>49.93%</u>	<u>8,557,376</u>	<u>29.75%</u>	<u>19.92%</u>	<u>49.67%</u>	<u>8,626,464</u>
Total Contribution	52.06%	27.91%	79.97%	\$13,705,856	51.39%	26.84%	78.23%	\$13,586,637
San Ramon FD Safety Tier D								
Normal Cost	11.42%	4.70%	16.12%	\$876,330	11.44%	4.71%	16.15%	\$685,315
UAAL	<u>29.16%</u>	<u>20.77%</u>	<u>49.93%</u>	<u>2,714,340</u>	<u>29.75%</u>	<u>19.92%</u>	<u>49.67%</u>	<u>2,107,714</u>
Total Contribution	40.58%	25.47%	66.05%	\$3,590,670	41.19%	24.63%	65.82%	\$2,793,029

¹ The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.49% and 0.16% of payroll, respectively.

² The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.47% and 0.16% of payroll, respectively.

Section 2: Actuarial Valuation Results

Recommended Employer Contribution Rate (continued)

Cost Group #12	December 31, 2019 Actuarial Valuation ¹ Recommended Rates for FY 2021-22				December 31, 2018 Actuarial Valuation ² Recommended Rates for FY 2020-21			
	Basic	COLA	Total	Estimated Annual Dollar Amount	Basic	COLA	Total	Estimated Annual Dollar Amount
Non-Enhanced Rodeo-Hercules FPD Safety Tier A								
Normal Cost	18.73%	5.21%	23.94%	\$426,614	17.29%	5.00%	22.29%	\$420,617
UAAL ^{3 4}	<u>39.97%</u>	<u>30.70%</u>	<u>70.67%</u>	<u>1,259,350</u>	<u>37.31%</u>	<u>26.98%</u>	<u>64.29%</u>	<u>1,213,165</u>
Total Contribution	58.70%	35.91%	94.61%	\$1,685,964	54.60%	31.98%	86.58%	\$1,633,782
Non-Enhanced Rodeo-Hercules FPD Safety Tier D								
Normal Cost	11.50%	4.76%	16.26%	\$79,754	11.65%	4.82%	16.47%	\$89,598
UAAL ^{3 4}	<u>39.97%</u>	<u>30.70%</u>	<u>70.67%</u>	<u>346,632</u>	<u>37.31%</u>	<u>26.98%</u>	<u>64.29%</u>	<u>349,743</u>
Total Contribution	51.47%	35.46%	86.93%	\$426,386	48.96%	31.80%	80.76%	\$439,341
Cost Group #13								
East CCCFPD Safety Tier A								
Normal Cost	23.29%	7.14%	30.43%	\$1,017,852	21.94%	7.00%	28.94%	\$854,868
UAAL	<u>25.29%</u>	<u>14.21%</u>	<u>39.50%</u>	<u>1,321,234</u>	<u>37.82%</u>	<u>46.30%</u>	<u>84.12%</u>	<u>2,484,849</u>
Total Contribution	48.58%	21.35%	69.93%	\$2,339,086	59.76%	53.30%	113.06%	\$3,339,717
East CCCFPD Safety Tier D								
Normal Cost	12.25%	5.06%	17.31%	\$97,318	13.05%	5.35%	18.40%	\$71,748
UAAL	<u>25.29%</u>	<u>14.21%</u>	<u>39.50%</u>	<u>222,071</u>	<u>37.82%</u>	<u>46.30%</u>	<u>84.12%</u>	<u>328,012</u>
Total Contribution	37.54%	19.27%	56.81%	\$319,389	50.87%	51.65%	102.52%	\$399,760
Total All Employers Combined (Aggregate)								
Normal Cost	12.32%	3.46%	15.78%	\$147,974,077	12.30%	3.51%	15.81%	\$141,651,202
UAAL	<u>13.46%</u>	<u>6.42%</u>	<u>19.88%</u>	<u>186,412,052</u>	<u>13.56%</u>	<u>6.36%</u>	<u>19.92%</u>	<u>178,521,043</u>
Total Contribution	25.78%	9.88%	35.66%	\$334,386,129	25.86%	9.87%	35.73%	\$320,172,245

¹ The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.49% and 0.16% of payroll, respectively.

² The Basic Normal Cost and UAAL rates shown for each cost group include an explicit administrative expense load of 0.47% and 0.16% of payroll, respectively.

³ The total UAAL dollar contribution for Rodeo-Hercules FPD is \$1,684,906 for FY 2021-22. It is based on the UAAL rate shown above multiplied by estimated payroll for FY 2021-22. The estimated payroll for FY 2021-22 was determined by increasing payroll amounts shown on the following page for 2020 by 18-months of assumed wage inflation.

⁴ The total UAAL dollar contribution for Rodeo-Hercules FPD is \$1,639,716 for FY 2020-21. It is based on the UAAL rate shown above multiplied by estimated payroll for FY 2020-21. The estimated payroll for FY 2020-21 was determined by increasing payroll amounts for 2019 by 18-months of assumed wage inflation.

Section 2: Actuarial Valuation Results

Recommended Employer Contribution Rate (continued)

The projected compensation for the 2020 calendar year that is used to estimate the annual dollar amount shown on the prior pages as of December 31, 2019 are as follows:

Cost Group #1	Projected Compensation	Cost Group #6	Projected Compensation
County General Tier 1 w/ Courts	\$10,286,103	Non-Enhanced District General Tier 1	\$658,629
District General Tier 1 w/o POB	6,910,149	Non-Enhanced District General Tier 4 (3% COLA)	283,947
District General Tier 1 w/ POB (Moraga)	465,460		
District General Tier 1 w/ UAAL Prepayment (First Five)	1,607,897	Cost Group #7	Projected Compensation
District General Tier 1 w/ UAAL Prepayment (LAFCO)	171,732	County Safety Tier A	\$52,974,248
County General Tier 4 (3% COLA) w/ Courts	0	County Safety Tier D	3,614,427
District General Tier 4 (3% COLA) w/o POB	3,786,831		
District General Tier 4 (3% COLA) w/ POB (Moraga)	190,853	Cost Group #8	Projected Compensation
District General Tier 4 (3% COLA) w/ UAAL Prepayment (First Five)	969,193	CCCFPD Safety Tier A	\$30,645,760
District General Tier 4 (3% COLA) w/ UAAL Prepayment (LAFCO)	0	CCCFPD Safety Tier D	1,809,016
County General Tier 4 (2% COLA) w/ Courts	0	CCCFPD Safety Tier E	8,354,966
Cost Group #2	Projected Compensation	Cost Group #9	Projected Compensation
County General Tier 3 w/ Courts	\$395,746,652	County Safety Tier C	\$14,675,942
District General Tier 3 w/o POB	2,980,733	County Safety Tier E	31,650,417
County General Tier 5 (3%/4% COLA) w/ Courts	57,726,110		
District General Tier 5 (3%/4% COLA) w/o POB	921,199	Cost Group #10	Projected Compensation
County General Tier 5 (2% COLA) w/ Courts	223,590,021	Moraga-Orinda FD Safety Tier A	\$6,421,147
District General Tier 5 (2% COLA) w/o POB	403,716	Moraga-Orinda FD Safety Tier D	1,840,647
Cost Group #3	Projected Compensation	Cost Group #11	Projected Compensation
CCCSD General Tier 1	\$29,283,458	San Ramon FD Safety Tier A	\$17,138,747
CCCSD General Tier 4 (3% COLA)	8,598,132	San Ramon FD Safety Tier D	5,436,291
Cost Group #4	Projected Compensation	Cost Group #12	Projected Compensation
Contra Costa Housing Authority General Tier 1	\$3,787,422	Non-Enhanced Rodeo-Hercules FPD Safety Tier A	\$1,782,015
Contra Costa Housing Authority General Tier 4 (3% COLA)	2,063,918	Non-Enhanced Rodeo-Hercules FPD Safety Tier D	490,494
Cost Group #5	Projected Compensation	Cost Group #13	Projected Compensation
CCCFPD General Tier 1	\$3,586,936	East CCCFPD Safety Tier A	\$3,344,897
CCCFPD General Tier 4 (3% COLA)	188,330	East CCCFPD Safety Tier D	562,206
CCCFPD General Tier 4 (2% COLA)	2,582,621	Total All Employers Combined (Aggregate)	\$937,531,262

Section 2: Actuarial Valuation Results

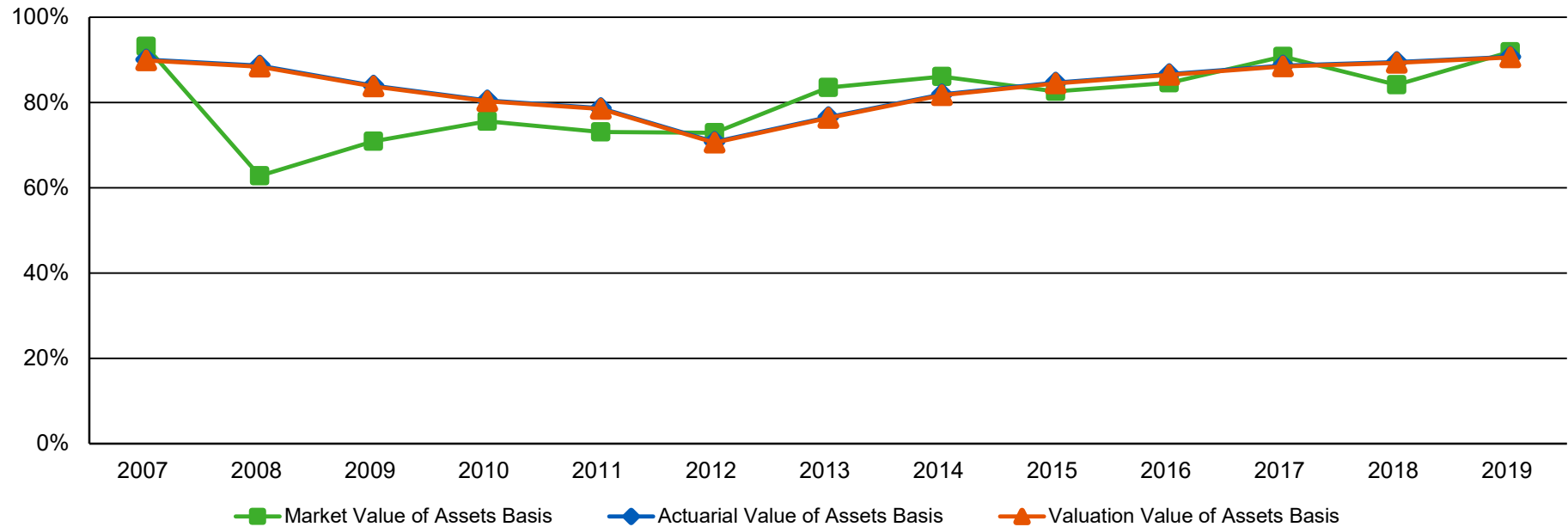
G. Funded Status

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, 2007 – 2019



Section 2: Actuarial Valuation Results

Schedule of Funding Progress for Years Ended December 31, 2010 – 2019

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)
2010	\$5,341,821,711	\$6,654,036,801	\$1,312,215,090	80.3%	\$687,443,206	190.9%
2011	5,426,719,066	6,915,311,649	1,488,592,583	78.5%	666,394,146	223.4%
2012	5,482,257,062	7,761,315,535	2,279,058,473	70.6%	652,312,180	349.4%
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%

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, 2019

	Basic	COLA	Total
Actuarial present value of future benefits ¹			
• Present value of benefits for retired members and beneficiaries	\$3,632,618,627	\$2,826,798,392	\$6,459,417,019
• Present value of benefits for inactive vested members ²	231,078,289	78,910,063	309,988,352
• Present value of benefits for active members	<u>3,773,742,639</u>	<u>1,343,346,973</u>	<u>5,117,089,612</u>
Total actuarial present value of future benefits	\$7,637,439,555	\$4,249,055,428	\$11,886,494,983
Current and future assets ¹			
• Total Valuation Value of Assets	\$5,621,200,864	\$3,507,467,854	\$9,128,668,718
• Present value of future contributions by members	590,002,544	236,411,246	826,413,790
• Present value of future employer contributions for:			
– Entry age normal cost	761,269,434	223,089,537	984,358,971
– Unfunded actuarial accrued liability	<u>664,966,713</u>	<u>282,086,791</u>	<u>947,053,504</u>
Total of current and future assets	\$7,637,439,555	\$4,249,055,428	\$11,886,494,983

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 9.8. This means that a 1% asset gain or loss (relative to the assumed investment return) translates to about 9.8% of one-year's payroll. Since actuarial gains and losses are amortized over 18 years, there would be a 0.8% 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 10.7, but is 8.1 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, 2010 – 2019

Year Ended December 31	Asset Volatility Ratio			Liability Volatility Ratio		
	General	Safety	Total	General	Safety	Total
2010	5.6	13.1	7.3	7.5	17.2	9.7
2011	5.9	13.6	7.6	8.0	18.6	10.4
2012	6.7	16.2	8.7	9.0	22.5	11.9
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

Section 2: Actuarial Valuation Results

J. Risk Assessment

Since 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 9.8% of one-year's payroll. Since actuarial gains

Section 2: Actuarial Valuation Results

and losses are amortized over 18 years, there would be a 0.8% 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 -2.33% 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.

- 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 80.3% to 90.6%. 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) and average investment return over recent years higher than the assumption on a smoothed basis. 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 6.52%. This includes a high of a 11.40% return and a low of 1.80%. The average over the last 5 years 7.20%. For more details see the Investment Return table in *Section 2, Subsection B* on page 26.

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- 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. For more details on the unfunded liability changes see *Section 3, Exhibit I, Table of Amortization Bases* starting on page 88.
- 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 102 and 103.

Maturity Measures

In the last 10 years the ratio of members in pay status to active participants has increased from 0.86 to 0.97. This ratio has fluctuated between 0.86 and 0.99 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 \$51 million more than contributions received. Plans with high levels of negative cash flows may have a need for a larger allocation to income generating assets, which can create a drag on investment return. However, the plan currently has a relatively low level of negative cash flow and is relatively well funded (at a 90.6% 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
	2019	2018	
Active members in valuation:			
• Number	10,075	10,021	0.5%
• Average age	46.3	46.2	0.1
• Average years of service	10.1	9.9	0.2
• Total projected compensation ¹	\$937,531,264	\$896,390,768	4.6%
• Average projected compensation	\$93,055	\$89,451	4.0%
• Account balances	\$1,173,885,852	\$1,104,621,126	6.3%
• Total active vested members	6,334	6,225	1.8%
Inactive vested members:²			
• Number	3,638	3,477	4.6%
• Average Age	46.4	46.5	-0.1
Retired members:²			
• Number in pay status	7,395	7,214	2.5%
• Average age	70.7	70.5	0.2
• Average monthly benefit	\$4,264	\$4,147	2.8%
Disabled members:²			
• Number in pay status ³	907	908	-0.1%
• Average age	66.7	66.3	0.4
• Average monthly benefit	\$5,029	\$4,818	4.4%
Beneficiaries:²			
• Number in pay status	1,435	1,425	0.7%
• Average age	72.7	72.6	0.1
• Average monthly benefit	\$2,773	\$2,645	4.8%

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

² Includes members from terminated employers.

³ For 2019, includes 748 members receiving a service-connected disability and 159 members receiving a non-service connected disability.

Section 3: Supplemental Information

Exhibit A: Table of Plan Coverage (continued)

General Tier 1

Category	Year Ended December 31		Change From Prior Year
	2019	2018	
Active members in valuation:			
• Number	465	504	-7.7%
• Average age	51.3	50.8	0.5
• Average years of service	18.4	17.5	0.9
• Total projected compensation ¹	\$56,757,787	\$57,832,242	-1.9%
• Average projected compensation	\$122,060	\$114,747	6.4%
• Account balances	\$74,913,765	\$71,819,994	4.3%
• Total active vested members	462	497	-7.0%
Inactive vested members:²			
• Number	214	229	-6.6%
• Average Age	52.5	52.5	0.0
Retired members:²			
• Number in pay status	2,298	2,363	-2.8%
• Average age	75.4	75.2	0.2
• Average monthly benefit	\$4,558	\$4,402	3.5%
Disabled members:²			
• Number in pay status ³	239	247	-3.2%
• Average age	73.0	72.5	0.5
• Average monthly benefit	\$3,110	\$2,961	5.0%
Beneficiaries:²			
• Number in pay status	669	683	-2.0%
• Average age	78.1	78.2	-0.1
• Average monthly benefit	\$2,505	\$2,413	3.8%

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

² Includes members from terminated employers.

³ For 2019, includes 177 members receiving a service-connected disability and 62 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
	2019	2018	
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	174	172	1.2%
• Average Age	58.7	58.5	0.2
Retired members:²			
• Number in pay status	414	425	-2.6%
• Average age	75.7	75.3	0.4
• Average monthly benefit	\$883	\$867	1.8%
Disabled members:²			
• Number in pay status ³	39	40	-2.5%
• Average age	73.1	72.2	0.9
• Average monthly benefit	\$2,443	\$2,319	5.3%
Beneficiaries:²			
• Number in pay status	98	101	-3.0%
• Average age	70.0	69.6	0.4
• Average monthly benefit	\$950	\$933	1.8%

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 terminated employers.

³ For 2019, includes 20 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)

General Tier 3

Category	Year Ended December 31		Change From Prior Year
	2019	2018	
Active members in valuation:			
• Number	4,119	4,436	-7.1%
• Average age	51.8	51.2	0.6
• Average years of service	15.6	14.6	1.0
• Total projected compensation ¹	\$398,727,385	\$406,783,049	-2.0%
• Average projected compensation	\$96,802	\$91,700	5.6%
• Account balances	\$580,415,201	\$553,049,509	4.9%
• Total active vested members	4,036	4,304	-6.2%
Inactive vested members:			
• Number	1,694	1,745	-2.9%
• Average Age	49.3	48.7	0.6
Retired members:			
• Number in pay status	3,329	3,124	6.6%
• Average age	68.6	68.1	0.5
• Average monthly benefit	\$2,969	\$2,854	4.0%
Disabled members:			
• Number in pay status ²	82	84	-2.4%
• Average age	63.6	62.5	1.1
• Average monthly benefit	\$2,576	\$2,489	3.5%
Beneficiaries:			
• Number in pay status	232	218	6.4%
• Average age	62.5	62.1	0.4
• Average monthly benefit	\$1,702	\$1,593	6.8%

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

² For 2019, includes 26 members receiving a service-connected disability and 56 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
	2019	2018	
Active members in valuation:			
• Number	34	25	36.0%
• Average age	45.9	45.5	0.4
• Average years of service	2.0	1.9	0.1
• Total projected compensation ¹	\$2,582,621	\$1,723,800	49.8%
• Average projected compensation	\$75,959	\$68,952	10.2%
• Account balances	\$494,895	\$302,280	63.7%
• Total active vested members	1	1	0.0%
Inactive vested members:			
• Number	9	4	125.0%
• Average Age	41.7	44.8	-3.1
Retired 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
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
	2019	2018	
Active members in valuation:			
• Number	176	148	18.9%
• Average age	41.1	40.9	0.2
• Average years of service	3	2.6	0.4
• Total projected compensation ¹	\$16,081,204	\$13,149,543	22.3%
• Average projected compensation	\$91,370	\$88,848	2.8%
• Account balances	\$4,781,957	\$3,308,530	44.5%
• Total active vested members	34	15	126.7%
Inactive vested members:			
• Number	31	19	63.2%
• Average Age	38.2	39.2	-1.0
Retired 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
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
	2019	2018	
Active members in valuation:			
• Number	3,070	2,679	14.6%
• Average age	41.4	40.7	0.7
• Average years of service	2.5	2.0	0.5
• Total projected compensation ¹	\$223,993,737	\$186,691,270	20.0%
• Average projected compensation	\$72,962	\$69,687	4.7%
• Account balances	\$53,115,835	\$34,572,429	53.6%
• Total active vested members	225	30	650.0%
Inactive vested members:			
• Number	744	591	25.9%
• Average Age	39.6	39.6	0.0
Retired members:			
• Number in pay status	6	3	100.0%
• Average age	69.1	67.9	1.2
• Average monthly benefit	\$399	\$279	43.0%
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 5 – 3% COLA

Category	Year Ended December 31		Change From Prior Year
	2019	2018	
Active members in valuation:			
• Number	735	770	-4.5%
• Average age	44.8	44.0	0.8
• Average years of service	5.3	4.5	0.8
• Total projected compensation ¹	\$58,647,309	\$58,723,304	-0.1%
• Average projected compensation	\$79,792	\$76,264	4.6%
• Account balances	\$32,047,563	\$26,327,954	21.7%
• Total active vested members	520	334	55.7%
Inactive vested members:			
• Number	329	286	15.0%
• Average Age	42.9	42.4	0.5
Retired members:			
• Number in pay status	14	8	75.0%
• Average age	65.4	62.8	2.6
• Average monthly benefit	\$667	\$422	58.1%
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

Category	Year Ended December 31		Change From Prior Year
	2019	2018	
Active members in valuation:			
• Number	808	874	-7.6%
• Average age	45.9	45.6	0.3
• Average years of service	16.9	16.2	0.7
• Total projected compensation ¹	\$112,306,815	\$114,796,876	-2.2%
• Average projected compensation	\$138,994	\$131,347	5.8%
• Account balances	\$382,520,855	\$380,680,946	0.5%
• Total active vested members	805	865	-6.9%
Inactive vested members:²			
• Number	281	297	-5.4%
• Average Age	46.5	45.9	0.6
Retired members:²			
• Number in pay status	1,329	1,289	3.1%
• Average age	66.4	66.4	0.0
• Average monthly benefit	\$8,117	\$7,929	2.4%
Disabled members:²			
• Number in pay status ³	537	528	1.7%
• Average age	64.3	64.0	0.3
• Average monthly benefit	\$6,475	\$6,268	3.3%
Beneficiaries:²			
• Number in pay status	436	423	3.1%
• Average age	70.3	69.7	0.6
• Average monthly benefit	\$4,164	\$3,969	4.9%

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

² Includes members from terminated employers.

³ For 2019, includes 517 members receiving a service-connected disability and 20 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
	2019	2018	
Active members in valuation:			
• Number	122	127	-3.9%
• Average age	39.1	38.2	0.9
• Average years of service	9.7	8.7	1.0
• Total projected compensation ¹	\$14,675,942	\$14,287,199	2.7%
• Average projected compensation	\$120,295	\$112,498	6.9%
• Account balances	\$17,921,809	\$15,289,277	17.2%
• Total active vested members	120	124	-3.2%
Inactive vested members:			
• Number	73	72	1.4%
• Average Age	36.4	35.2	1.2
Retired members:			
• Number in pay status	3	2	50.0%
• Average age	61.2	63.1	-1.9
• Average monthly benefit	\$1,815	\$1,902	-4.6%
Disabled members:			
• Number in pay status ²	9	8	12.5%
• Average age	43.4	42.9	0.5
• Average monthly benefit	\$3,617	\$3,665	-1.3%
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 2019, includes 7 members receiving a service-connected disability and 2 member 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
	2019	2018	
Active members in valuation:			
• Number	130	122	6.6%
• Average age	34.4	34.2	0.2
• Average years of service	4.1	3.6	0.5
• Total projected compensation ¹	\$13,753,081	\$12,048,783	14.1%
• Average projected compensation	\$105,793	\$98,761	7.1%
• Account balances	\$9,172,851	\$7,062,683	29.9%
• Total active vested members	63	26	142.3%
Inactive vested members:			
• Number	29	22	31.8%
• Average Age	35.8	35.3	0.5
Retired members:			
• Number in pay status	1	0	N/A
• Average age	56.3	N/A	N/A
• Average monthly benefit	\$1,776	N/A	N/A
Disabled members:			
• Number in pay status ²	1	1	0.0%
• Average age	57.2	56.2	1.0
• Average monthly benefit	\$2,225	\$2,160	3.0%
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 2019, includes 1 member 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
	2019	2018	
Active members in valuation:			
• Number	416	336	23.8%
• Average age	32.9	32.6	0.3
• Average years of service	3.1	2.7	0.4
• Total projected compensation ¹	\$40,005,384	\$30,354,703	31.8%
• Average projected compensation	\$96,167	\$90,341	6.4%
• Account balances	\$18,501,120	\$12,207,525	51.6%
• Total active vested members	68	29	134.5%
Inactive vested members:			
• Number	60	40	50.0%
• Average Age	32.9	31.5	1.4
Retired members:			
• Number in pay status	1	0	N/A
• Average age	61.2	N/A	N/A
• Average monthly benefit	\$1,037	N/A	N/A
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 B: Members in Active Service as of December 31, 2019 by Age, Years of Service, and Average Projected Compensation

Total Plan

Age	Years of Service									
	Total	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34	35 – 39	40 & over
Under 25	103	103	--	--	--	--	--	--	--	--
	\$64,881	\$64,881	--	--	--	--	--	--	--	--
25 - 29	655	601	54	--	--	--	--	--	--	--
	\$74,259	\$73,230	\$85,712	--	--	--	--	--	--	--
30 - 34	1,182	823	325	34	--	--	--	--	--	--
	\$83,456	\$78,742	\$92,388	\$112,181	--	--	--	--	--	--
35 - 39	1,341	635	396	269	41	--	--	--	--	--
	\$93,614	\$81,897	\$100,576	\$109,348	\$104,599	--	--	--	--	--
40 - 44	1,367	479	322	301	226	39	--	--	--	--
	\$97,207	\$80,571	\$97,933	\$112,439	\$110,409	\$101,475	--	--	--	--
45 - 49	1,457	428	256	276	307	169	21	--	--	--
	\$101,509	\$80,467	\$92,525	\$109,085	\$119,305	\$119,233	\$137,547	--	--	--
50 - 54	1,441	345	246	224	271	229	83	43	--	--
	\$98,442	\$78,493	\$93,322	\$97,368	\$108,213	\$114,041	\$120,270	\$106,585	--	--
55 - 59	1,258	268	224	183	232	169	95	65	21	1
	\$95,632	\$78,958	\$86,410	\$96,588	\$102,225	\$103,657	\$118,134	\$118,349	\$89,629	\$81,027
60 - 64	868	187	180	123	134	100	67	49	24	4
	\$90,233	\$73,814	\$85,648	\$93,732	\$93,919	\$95,279	\$108,701	\$113,984	\$92,237	\$94,572
65 - 69	324	47	85	57	44	43	27	14	4	3
	\$93,357	\$80,979	\$82,983	\$94,295	\$100,615	\$95,706	\$114,059	\$117,784	\$92,539	\$123,996
70 & over	79	15	22	21	16	2	--	3	--	--
	\$82,500	\$69,103	\$81,005	\$89,442	\$87,572	\$94,022	--	\$77,129	--	--
Total	10,075	3,931	2,110	1,488	1,271	751	293	174	49	8
	\$93,055	\$78,205	\$93,018	\$104,468	\$108,043	\$108,619	\$117,598	\$113,456	\$91,144	\$103,913

Section 3: Supplemental Information

Exhibit B: Members in Active Service as of December 31, 2019 by Age, Years of Service, and Average Projected Compensation (continued)

General Tier 1 Non-Enhanced

Age	Years of 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	--	--	--	--	--	--	--	--	--	--
45 - 49	--	--	--	--	--	--	--	--	--	--
50 - 54	2	--	--	1	1	--	--	--	--	--
	\$149,849	--	--	\$90,791	\$208,907	--	--	--	--	--
55 - 59	3	--	2	1	--	--	--	--	--	--
	\$89,970	--	\$81,990	\$105,929	--	--	--	--	--	--
60 - 64	1	--	1	--	--	--	--	--	--	--
	\$89,022	--	\$89,022	--	--	--	--	--	--	--
65 - 69	--	--	--	--	--	--	--	--	--	--
70 & over	--	--	--	--	--	--	--	--	--	--
Total	6	--	3	2	1	--	--	--	--	--
	\$109,771	--	\$84,334	\$98,360	\$208,907	--	--	--	--	--

Section 3: Supplemental Information

Exhibit B: Members in Active Service as of December 31, 2019 by Age, Years of Service, and Average Projected Compensation (continued)

General Tier 1 Enhanced

Age	Years of Service									
	Total	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34	35 – 39	40 & over
Under 25	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
25 - 29	2	--	2	--	--	--	--	--	--	--
	\$137,170	--	\$137,170	--	--	--	--	--	--	--
30 - 34	18	--	15	3	--	--	--	--	--	--
	\$120,850	--	\$123,055	\$109,823	--	--	--	--	--	--
35 - 39	48	8	15	22	3	--	--	--	--	--
	\$130,869	\$124,886	\$124,765	\$137,221	\$130,766	--	--	--	--	--
40 - 44	52	8	12	13	16	3	--	--	--	--
	\$117,459	\$127,245	\$119,656	\$119,295	\$114,683	\$89,431	--	--	--	--
45 - 49	71	5	14	15	28	8	1	--	--	--
	\$124,756	\$132,769	\$119,176	\$127,889	\$123,269	\$120,551	\$191,046	--	--	--
50 - 54	103	2	9	19	32	26	8	7	--	--
	\$124,260	\$148,620	\$150,144	\$116,574	\$122,982	\$122,996	\$110,584	\$131,047	--	--
55 - 59	79	3	8	17	18	13	8	9	3	--
	\$123,931	\$153,557	\$154,964	\$117,767	\$112,912	\$129,716	\$125,269	\$129,056	\$68,574	--
60 - 64	64	3	11	10	13	8	8	8	--	3
	\$111,873	\$103,076	\$114,857	\$111,381	\$121,916	\$91,825	\$116,849	\$125,373	--	\$72,047
65 - 69	18	--	2	3	6	1	3	--	--	3
	\$128,160	--	\$115,291	\$148,874	\$144,682	\$94,868	\$98,241	--	--	\$123,996
70 & over	4	--	1	2	1	--	--	--	--	--
	\$86,547	--	\$63,428	\$71,862	\$139,034	--	--	--	--	--
Total	459	29	89	104	117	59	28	24	3	6
	\$122,220	\$129,243	\$126,342	\$122,487	\$121,698	\$117,735	\$118,121	\$128,409	\$68,574	\$98,022

Section 3: Supplemental Information

Exhibit B: Members in Active Service as of December 31, 2019 by Age, Years of Service, and Average Projected Compensation (continued)

General Tier 3 Enhanced

Age	Years of 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	--	--	--	--	--	--	--
	\$62,164	--	\$62,164	--	--	--	--	--	--	--
30 - 34	113	14	88	11	--	--	--	--	--	--
	\$79,513	\$85,128	\$79,409	\$73,203	--	--	--	--	--	--
35 - 39	367	23	155	161	28	--	--	--	--	--
	\$97,452	\$104,621	\$102,451	\$93,521	\$86,493	--	--	--	--	--
40 - 44	554	34	162	211	120	27	--	--	--	--
	\$99,720	\$104,025	\$103,605	\$103,667	\$89,233	\$86,758	--	--	--	--
45 - 49	643	29	130	206	171	97	10	--	--	--
	\$100,112	\$101,595	\$90,963	\$102,029	\$104,956	\$99,499	\$98,382	--	--	--
50 - 54	818	28	160	186	195	161	58	30	--	--
	\$97,444	\$100,251	\$92,782	\$92,793	\$97,979	\$103,615	\$108,380	\$90,784	--	--
55 - 59	788	16	125	160	189	145	82	52	18	1
	\$97,327	\$81,760	\$85,994	\$93,039	\$97,714	\$97,852	\$115,651	\$112,543	\$93,138	\$81,027
60 - 64	542	10	98	109	117	88	56	40	23	1
	\$94,139	\$97,736	\$89,654	\$91,655	\$90,024	\$93,739	\$103,631	\$110,299	\$91,761	\$162,147
65 - 69	226	4	54	49	36	42	24	13	4	--
	\$94,334	\$107,246	\$84,785	\$90,297	\$88,777	\$95,726	\$116,036	\$116,622	\$92,539	--
70 & over	61	4	18	19	15	2	--	3	--	--
	\$84,911	\$78,415	\$80,544	\$91,293	\$84,141	\$94,022	--	\$77,129	--	--
Total	4,119	162	997	1,112	871	562	230	138	45	2
	\$96,802	\$98,249	\$92,599	\$96,267	\$96,030	\$98,438	\$110,180	\$106,777	\$92,381	\$121,587

Section 3: Supplemental Information

Exhibit B: Members in Active Service as of December 31, 2019 by Age, Years of Service, and Average Projected Compensation (continued)

General Tier 4 – 2% COLA

Age	Years of Service									
	Total	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34	35 – 39	40 & over
Under 25	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
25 - 29	4	4	--	--	--	--	--	--	--	--
	\$53,553	\$53,553	--	--	--	--	--	--	--	--
30 - 34	3	3	--	--	--	--	--	--	--	--
	\$64,478	\$64,478	--	--	--	--	--	--	--	--
35 - 39	4	4	--	--	--	--	--	--	--	--
	\$75,841	\$75,841	--	--	--	--	--	--	--	--
40 - 44	4	4	--	--	--	--	--	--	--	--
	\$73,636	\$73,636	--	--	--	--	--	--	--	--
45 - 49	3	3	--	--	--	--	--	--	--	--
	\$101,956	\$101,956	--	--	--	--	--	--	--	--
50 - 54	8	8	--	--	--	--	--	--	--	--
	\$81,837	\$81,837	--	--	--	--	--	--	--	--
55 - 59	5	5	--	--	--	--	--	--	--	--
	\$61,213	\$61,213	--	--	--	--	--	--	--	--
60 - 64	1	1	--	--	--	--	--	--	--	--
	\$103,462	\$103,462	--	--	--	--	--	--	--	--
65 - 69	2	2	--	--	--	--	--	--	--	--
	\$103,490	\$103,490	--	--	--	--	--	--	--	--
70 & over	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
Total	34	34	--	--	--	--	--	--	--	--
	\$75,959	\$75,959	--	--	--	--	--	--	--	--

Section 3: Supplemental Information

Exhibit B: Members in Active Service as of December 31, 2019 by Age, Years of Service, and Average Projected Compensation (continued)

General Tier 4 – 3% COLA

Age	Years of Service									
	Total	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34	35 – 39	40 & over
Under 25	4	4	--	--	--	--	--	--	--	--
	\$63,836	\$63,836	--	--	--	--	--	--	--	--
25 - 29	21	18	3	--	--	--	--	--	--	--
	\$74,578	\$72,300	\$88,249	--	--	--	--	--	--	--
30 - 34	33	31	2	--	--	--	--	--	--	--
	\$90,747	\$91,010	\$86,676	--	--	--	--	--	--	--
35 - 39	32	23	9	--	--	--	--	--	--	--
	\$98,561	\$98,651	\$98,331	--	--	--	--	--	--	--
40 - 44	28	26	2	--	--	--	--	--	--	--
	\$98,205	\$101,203	\$59,229	--	--	--	--	--	--	--
45 - 49	21	17	4	--	--	--	--	--	--	--
	\$91,052	\$82,315	\$128,184	--	--	--	--	--	--	--
50 - 54	14	10	4	--	--	--	--	--	--	--
	\$96,875	\$94,462	\$102,906	--	--	--	--	--	--	--
55 - 59	16	11	5	--	--	--	--	--	--	--
	\$89,728	\$78,534	\$114,356	--	--	--	--	--	--	--
60 - 64	6	5	1	--	--	--	--	--	--	--
	\$94,681	\$92,126	\$107,458	--	--	--	--	--	--	--
65 - 69	1	1	--	--	--	--	--	--	--	--
	\$89,287	\$89,287	--	--	--	--	--	--	--	--
70 & over	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
Total	176	146	30	--	--	--	--	--	--	--
	\$91,370	\$89,288	\$101,505	--	--	--	--	--	--	--

Section 3: Supplemental Information

Exhibit B: Members in Active Service as of December 31, 2019 by Age, Years of Service, and Average Projected Compensation (continued)

General Tier 5 – 2% COLA

Age	Years of Service									
	Total	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34	35 – 39	40 & over
Under 25	61	61	--	--	--	--	--	--	--	--
	\$53,537	\$53,537	--	--	--	--	--	--	--	--
25 - 29	402	390	12	--	--	--	--	--	--	--
	\$65,130	\$64,859	\$73,913	--	--	--	--	--	--	--
30 - 34	639	602	37	--	--	--	--	--	--	--
	\$74,470	\$73,427	\$91,452	--	--	--	--	--	--	--
35 - 39	503	464	39	--	--	--	--	--	--	--
	\$76,660	\$75,181	\$94,261	--	--	--	--	--	--	--
40 - 44	380	356	24	--	--	--	--	--	--	--
	\$74,642	\$73,961	\$84,747	--	--	--	--	--	--	--
45 - 49	358	336	21	1	--	--	--	--	--	--
	\$75,328	\$74,934	\$79,754	\$114,961	--	--	--	--	--	--
50 - 54	273	259	14	--	--	--	--	--	--	--
	\$72,460	\$72,207	\$77,145	--	--	--	--	--	--	--
55 - 59	227	210	16	--	1	--	--	--	--	--
	\$76,197	\$76,163	\$73,510	--	\$126,291	--	--	--	--	--
60 - 64	171	156	15	--	--	--	--	--	--	--
	\$69,757	\$69,604	\$71,353	--	--	--	--	--	--	--
65 - 69	46	36	10	--	--	--	--	--	--	--
	\$73,104	\$74,482	\$68,142	--	--	--	--	--	--	--
70 & over	10	10	--	--	--	--	--	--	--	--
	\$69,757	\$69,757	--	--	--	--	--	--	--	--
Total	3,070	2,880	188	1	1	--	--	--	--	--
	\$72,962	\$72,253	\$83,317	\$114,961	\$126,291	--	--	--	--	--

Section 3: Supplemental Information

Exhibit B: Members in Active Service as of December 31, 2019 by Age, Years of Service, and Average Projected Compensation (continued)

General Tier 5 – 3% COLA

Age	Years of Service									
	Total	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34	35 – 39	40 & over
Under 25	3	3	--	--	--	--	--	--	--	--
	\$59,138	\$59,138	--	--	--	--	--	--	--	--
25 - 29	31	18	13	--	--	--	--	--	--	--
	\$65,888	\$62,650	\$70,370	--	--	--	--	--	--	--
30 - 34	113	34	78	1	--	--	--	--	--	--
	\$76,033	\$79,340	\$74,790	\$60,534	--	--	--	--	--	--
35 - 39	149	54	95	--	--	--	--	--	--	--
	\$84,820	\$92,443	\$80,488	--	--	--	--	--	--	--
40 - 44	122	35	87	--	--	--	--	--	--	--
	\$83,527	\$91,427	\$80,348	--	--	--	--	--	--	--
45 - 49	88	23	64	1	--	--	--	--	--	--
	\$83,005	\$91,184	\$80,054	\$83,747	--	--	--	--	--	--
50 - 54	72	23	49	--	--	--	--	--	--	--
	\$81,020	\$82,678	\$80,242	--	--	--	--	--	--	--
55 - 59	73	15	58	--	--	--	--	--	--	--
	\$77,078	\$83,095	\$75,522	--	--	--	--	--	--	--
60 - 64	58	8	49	1	--	--	--	--	--	--
	\$70,723	\$72,813	\$70,573	\$61,310	--	--	--	--	--	--
65 - 69	22	4	18	--	--	--	--	--	--	--
	\$83,933	\$99,858	\$80,394	--	--	--	--	--	--	--
70 & over	4	1	3	--	--	--	--	--	--	--
	\$73,551	\$25,316	\$89,629	--	--	--	--	--	--	--
Total	735	218	514	3	--	--	--	--	--	--
	\$79,792	\$84,619	\$77,811	\$68,530	--	--	--	--	--	--

Section 3: Supplemental Information

Exhibit B: Members in Active Service as of December 31, 2019 by Age, Years of Service, and Average Projected Compensation (continued)

Safety Tier A Non-Enhanced

Age	Years of 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	4	--	2	--	2	--	--	--	--	--
	\$137,537	--	\$135,086	--	\$139,988	--	--	--	--	--
45 - 49	1	--	--	--	1	--	--	--	--	--
	\$147,804	--	--	--	\$147,804	--	--	--	--	--
50 - 54	6	--	1	--	1	--	--	4	--	--
	\$145,889	--	\$132,697	--	\$147,809	--	--	\$148,707	--	--
55 - 59	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
60 - 64	1	--	--	--	--	--	1	--	--	--
	\$208,728	--	--	--	--	--	\$208,728	--	--	--
65 - 69	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
70 & over	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
Total	12	--	3	--	4	--	1	4	--	--
	\$148,501	--	\$134,290	--	\$143,897	--	\$208,728	\$148,707	--	--

Section 3: Supplemental Information

Exhibit B: Members in Active Service as of December 31, 2019 by Age, Years of Service, and Average Projected Compensation (continued)

Safety Tier A Enhanced

Age	Years of Service									
	Total	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34	35 – 39	40 & over
Under 25	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
25 - 29	1	--	1	--	--	--	--	--	--	--
	\$127,494	--	\$127,494	--	--	--	--	--	--	--
30 - 34	49	14	23	12	--	--	--	--	--	--
	\$127,301	\$120,394	\$121,136	\$147,173	--	--	--	--	--	--
35 - 39	130	10	37	73	10	--	--	--	--	--
	\$131,601	\$125,820	\$124,240	\$133,954	\$147,447	--	--	--	--	--
40 - 44	174	1	15	62	87	9	--	--	--	--
	\$137,805	\$152,211	\$127,319	\$138,098	\$138,014	\$149,642	--	--	--	--
45 - 49	242	5	10	46	107	64	10	--	--	--
	\$143,966	\$175,636	\$141,476	\$135,195	\$140,932	\$148,978	\$171,361	--	--	--
50 - 54	121	1	2	15	42	42	17	2	--	--
	\$145,637	\$141,127	\$140,135	\$125,219	\$141,138	\$148,464	\$165,391	\$173,731	--	--
55 - 59	53	--	5	4	24	11	5	4	--	--
	\$136,978	--	\$109,649	\$140,670	\$128,734	\$149,372	\$147,443	\$169,744	--	--
60 - 64	17	1	1	3	4	4	2	1	1	--
	\$131,533	\$92,887	\$158,300	\$121,185	\$116,874	\$136,056	\$168,073	\$170,255	\$103,190	--
65 - 69	9	--	1	5	2	--	--	1	--	--
	\$123,951	--	\$116,047	\$100,730	\$181,492	--	--	\$132,879	--	--
70 & over	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
Total	796	32	95	220	276	130	34	8	1	--
	\$138,850	\$131,504	\$125,662	\$134,700	\$139,164	\$148,493	\$164,665	\$166,196	\$103,190	--

Section 3: Supplemental Information

Exhibit B: Members in Active Service as of December 31, 2019 by Age, Years of Service, and Average Projected Compensation (continued)

Safety Tier C

Age	Years of Service									
	Total	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34	35 – 39	40 & over
Under 25	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
25 - 29	3	--	3	--	--	--	--	--	--	--
	\$118,900	--	\$118,900	--	--	--	--	--	--	--
30 - 34	41	1	33	7	--	--	--	--	--	--
	\$118,992	\$106,893	\$118,756	\$121,834	--	--	--	--	--	--
35 - 39	32	--	19	13	--	--	--	--	--	--
	\$119,129	--	\$118,526	\$120,011	--	--	--	--	--	--
40 - 44	24	--	8	15	1	--	--	--	--	--
	\$121,513	--	\$117,086	\$123,824	\$122,256	--	--	--	--	--
45 - 49	12	--	5	7	--	--	--	--	--	--
	\$113,178	--	\$120,927	\$107,644	--	--	--	--	--	--
50 - 54	6	--	3	3	--	--	--	--	--	--
	\$148,169	--	\$174,011	\$122,327	--	--	--	--	--	--
55 - 59	2	--	1	1	--	--	--	--	--	--
	\$116,507	--	\$114,338	\$118,675	--	--	--	--	--	--
60 - 64	2	1	1	--	--	--	--	--	--	--
	\$115,982	\$115,806	\$116,158	--	--	--	--	--	--	--
65 - 69	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
70 & over	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
Total	122	2	73	46	1	--	--	--	--	--
	\$120,295	\$111,350	\$120,842	\$119,772	\$122,256	--	--	--	--	--

Section 3: Supplemental Information

Exhibit B: Members in Active Service as of December 31, 2019 by Age, Years of Service, and Average Projected Compensation (continued)

Safety Tier D

Age	Years of Service									
	Total	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34	35 – 39	40 & over
Under 25	4	4	--	--	--	--	--	--	--	--
	\$88,694	\$88,694	--	--	--	--	--	--	--	--
25 - 29	32	30	2	--	--	--	--	--	--	--
	\$104,311	\$104,491	\$101,607	--	--	--	--	--	--	--
30 - 34	46	26	20	--	--	--	--	--	--	--
	\$102,833	\$104,698	\$100,410	--	--	--	--	--	--	--
35 - 39	29	13	16	--	--	--	--	--	--	--
	\$113,842	\$112,584	\$114,864	--	--	--	--	--	--	--
40 - 44	8	2	6	--	--	--	--	--	--	--
	\$102,981	\$98,528	\$104,465	--	--	--	--	--	--	--
45 - 49	5	1	4	--	--	--	--	--	--	--
	\$103,845	\$85,635	\$108,398	--	--	--	--	--	--	--
50 - 54	3	1	2	--	--	--	--	--	--	--
	\$121,729	\$151,549	\$106,820	--	--	--	--	--	--	--
55 - 59	1	--	1	--	--	--	--	--	--	--
	\$85,815	--	\$85,815	--	--	--	--	--	--	--
60 - 64	2	--	2	--	--	--	--	--	--	--
	\$117,264	--	\$117,264	--	--	--	--	--	--	--
65 - 69	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
70 & over	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
Total	130	77	53	--	--	--	--	--	--	--
	\$105,793	\$105,318	\$106,483	--	--	--	--	--	--	--

Section 3: Supplemental Information

Exhibit B: Members in Active Service as of December 31, 2019 by Age, Years of Service, and Average Projected Compensation (continued)

Safety Tier E

Age	Years of Service									
	Total	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34	35 – 39	40 & over
Under 25	31	31	--	--	--	--	--	--	--	--
	\$84,819	\$84,819	--	--	--	--	--	--	--	--
25 - 29	152	141	11	--	--	--	--	--	--	--
	\$92,784	\$91,759	\$105,913	--	--	--	--	--	--	--
30 - 34	127	98	29	--	--	--	--	--	--	--
	\$96,623	\$93,702	\$106,492	--	--	--	--	--	--	--
35 - 39	47	36	11	--	--	--	--	--	--	--
	\$98,125	\$95,262	\$107,498	--	--	--	--	--	--	--
40 - 44	17	13	4	--	--	--	--	--	--	--
	\$97,764	\$94,882	\$107,130	--	--	--	--	--	--	--
45 - 49	13	9	4	--	--	--	--	--	--	--
	\$101,125	\$98,438	\$107,172	--	--	--	--	--	--	--
50 - 54	15	13	2	--	--	--	--	--	--	--
	\$111,288	\$113,901	\$94,306	--	--	--	--	--	--	--
55 - 59	11	8	3	--	--	--	--	--	--	--
	\$118,878	\$122,665	\$108,780	--	--	--	--	--	--	--
60 - 64	3	2	1	--	--	--	--	--	--	--
	\$145,443	\$151,549	\$133,230	--	--	--	--	--	--	--
65 - 69	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
70 & over	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
Total	416	351	65	--	--	--	--	--	--	--
	\$96,167	\$94,200	\$106,787	--	--	--	--	--	--	--

Section 3: Supplemental Information

Exhibit C: Retired Members and Beneficiaries as of December 31, 2019 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	16	--	9	1	4	1	1	--	--	--
	\$758	--	\$342	\$1,915	\$1,321	\$296	\$1,556	--	--	--
30 - 34	15	1	9	--	3	--	2	--	--	--
	\$1,184	\$849	\$1,218	--	\$1,676	--	\$461	--	--	--
35 - 39	20	6	5	2	1	4	2	--	--	--
	\$2,023	\$3,271	\$1,987	\$1,653	\$1,774	\$1,013	\$885	--	--	--
40 - 44	46	11	14	9	2	4	5	--	1	--
	\$2,916	\$3,890	\$3,959	\$2,710	\$1,303	\$706	\$1,006	--	\$1,082	--
45 - 49	81	33	11	11	18	4	4	--	--	--
	\$3,430	\$3,789	\$3,077	\$4,623	\$3,362	\$723	\$1,174	--	--	--
50 - 54	419	310	52	20	16	11	10	--	--	--
	\$4,772	\$5,000	\$5,460	\$3,847	\$2,927	\$2,606	\$1,333	--	--	--
55 - 59	854	376	376	36	29	22	12	3	--	--
	\$4,400	\$3,191	\$5,776	\$4,648	\$3,266	\$3,543	\$3,092	\$3,081	--	--
60 - 64	1,337	418	551	260	45	31	20	8	3	1
	\$4,122	\$3,020	\$4,637	\$5,183	\$3,289	\$3,442	\$2,781	\$3,974	\$1,377	\$424
65 - 69	1,859	416	641	463	227	53	27	18	5	9
	\$4,275	\$2,893	\$4,555	\$5,408	\$4,254	\$3,308	\$3,692	\$2,880	\$2,527	\$1,606
70 - 74	2,012	169	512	544	474	180	63	32	22	16
	\$4,369	\$2,220	\$3,869	\$5,012	\$5,801	\$2,981	\$3,341	\$3,065	\$3,070	\$2,897
75 - 79	1,348	21	148	344	382	257	116	43	21	16
	\$4,039	\$1,589	\$2,779	\$3,791	\$4,628	\$5,085	\$3,249	\$2,944	\$3,124	\$3,229
80 - 84	811	5	20	73	189	236	145	92	31	20
	\$3,783	\$3,156	\$2,105	\$3,035	\$3,571	\$4,269	\$4,699	\$2,815	\$3,028	\$3,593
85 - 89	541	--	4	13	41	121	149	103	72	38
	\$3,416	--	\$1,818	\$2,324	\$2,615	\$3,852	\$4,262	\$2,938	\$2,437	\$3,261
90 & Over	378	--	1	1	3	15	76	94	110	78
	\$3,241	--	\$999	\$3,080	\$2,756	\$2,350	\$3,570	\$3,644	\$2,934	\$3,089
Total	9,737	1,766	2,353	1,777	1,434	939	632	393	265	178
	\$4,116	\$3,300	\$4,457	\$4,762	\$4,629	\$3,995	\$3,789	\$3,109	\$2,804	\$3,088

Note: Total retired benefit \$40,074,456, average age 70.6, and average years of retirement 14.2. Includes members from terminated employers.

Section 3: Supplemental Information

Exhibit C: Retired Members and Beneficiaries as of December 31, 2019 by Age, Years of Retirement, and Average Monthly Benefit (continued)

General Tier 1

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	--	--	--	--	--	--	--
	\$124	--	\$124	--	--	--	--	--	--	--
30 - 34	6	1	3	--	--	--	2	--	--	--
	\$866	\$849	\$1,141	--	--	--	\$461	--	--	--
35 - 39	3	--	1	--	--	1	1	--	--	--
	\$1,000	--	\$1,090	--	--	\$1,449	\$461	--	--	--
40 - 44	6	--	1	--	--	2	2	--	1	--
	\$918	--	\$1,367	--	--	\$633	\$896	--	\$1,082	--
45 - 49	4	1	--	--	1	--	2	--	--	--
	\$1,421	\$849	--	--	\$2,595	--	\$1,121	--	--	--
50 - 54	29	20	3	--	1	3	2	--	--	--
	\$2,112	\$2,249	\$2,202	--	\$1,738	\$1,529	\$1,670	--	--	--
55 - 59	103	53	29	6	5	5	4	1	--	--
	\$2,871	\$3,732	\$2,195	\$1,664	\$1,404	\$1,628	\$2,066	\$933	--	--
60 - 64	279	62	140	43	10	7	10	3	3	1
	\$3,538	\$2,861	\$4,494	\$2,456	\$2,472	\$2,262	\$2,317	\$2,220	\$1,377	\$424
65 - 69	502	50	185	151	74	14	9	9	4	6
	\$4,470	\$3,192	\$5,874	\$4,620	\$2,672	\$3,073	\$2,637	\$2,162	\$2,219	\$1,167
70 - 74	671	23	100	204	197	89	30	10	9	9
	\$4,634	\$2,204	\$5,726	\$5,729	\$4,903	\$2,367	\$2,471	\$2,984	\$2,145	\$2,013
75 - 79	524	--	14	89	202	112	65	22	13	7
	\$4,480	--	\$4,543	\$5,702	\$5,413	\$3,877	\$2,198	\$2,436	\$2,900	\$2,080
80 - 84	432	2	1	14	85	151	83	66	17	13
	\$3,954	\$1,895	\$272	\$4,266	\$5,793	\$4,675	\$2,942	\$1,923	\$2,006	\$3,147
85 - 89	343	--	--	--	11	75	105	82	50	20
	\$3,560	--	--	--	\$5,161	\$4,731	\$4,395	\$2,549	\$1,899	\$2,204
90 & Over	302	--	--	--	1	10	59	83	94	55
	\$2,979	--	--	--	\$1,343	\$3,162	\$4,139	\$3,260	\$2,378	\$2,335
Total	3,206	212	479	507	587	469	374	276	191	111
	\$4,022	\$2,999	\$5,070	\$5,028	\$4,844	\$3,863	\$3,291	\$2,598	\$2,218	\$2,284

Note: Total retired benefit \$12,893,739, average age 75.8, and average years of retirement 19.7. Includes members from terminated employers.

Section 3: Supplemental Information

Exhibit C: Retired Members and Beneficiaries as of December 31, 2019 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	\$886	--	--	--	--	\$886	--	--	--	--
45 - 49	3	--	--	--	--	2	1	--	--	--
50 - 54	\$688	--	--	--	--	\$779	\$506	--	--	--
55 - 59	8	--	--	--	2	4	2	--	--	--
60 - 64	\$876	--	--	--	\$830	\$723	\$1,226	--	--	--
65 - 69	11	1	--	1	--	4	5	--	--	--
70 - 74	\$1,321	\$519	--	\$689	--	\$1,725	\$1,284	--	--	--
75 - 79	23	13	8	--	--	1	1	--	--	--
80 - 84	\$507	\$306	\$284	--	--	\$3,616	\$1,783	--	--	--
85 - 89	51	17	11	12	2	7	2	--	--	--
90 & Over	\$785	\$415	\$343	\$853	\$1,549	\$1,817	\$1,572	--	--	--
Total	63	9	5	19	19	10	--	1	--	--
	\$964	\$901	\$241	\$877	\$870	\$1,574	--	\$2,514	--	--
	105	3	12	20	35	28	5	2	--	--
	\$973	\$1,013	\$653	\$854	\$873	\$1,070	\$2,113	\$1,586	--	--
	108	--	5	14	31	46	10	2	--	--
	\$1,038	--	\$473	\$563	\$1,516	\$900	\$1,130	\$1,081	--	--
	80	--	--	2	31	36	9	2	--	--
	\$1,195	--	--	\$1,654	\$984	\$1,349	\$1,000	\$2,119	--	--
	75	--	1	--	10	35	22	4	3	--
	\$1,194	--	\$1,002	--	\$763	\$1,599	\$855	\$844	\$930	--
	22	--	--	--	1	5	14	1	1	--
	\$755	--	--	--	\$64	\$726	\$863	\$217	\$614	--
Total	551	43	42	68	131	180	71	12	4	--
	\$1,005	\$528	\$439	\$822	\$1,046	\$1,248	\$1,071	\$1,307	\$851	--

Note: Total retired benefit \$553,928, average age 74.5, and average years of retirement 18.2. Includes members from terminated employers.

Section 3: Supplemental Information

Exhibit C: Retired Members and Beneficiaries as of December 31, 2019 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	9	--	7	1	1	--	--	--	--	--
	\$610	--	\$404	\$1,915	\$748	--	--	--	--	--
30 - 34	7	--	5	--	2	--	--	--	--	--
	\$1,113	--	\$743	--	\$2,041	--	--	--	--	--
35 - 39	5	--	2	1	1	1	--	--	--	--
	\$803	--	\$350	\$711	\$1,774	\$832	--	--	--	--
40 - 44	10	1	3	4	2	--	--	--	--	--
	\$1,863	\$1,846	\$3,046	\$1,260	\$1,303	--	--	--	--	--
45 - 49	13	6	3	2	2	--	--	--	--	--
	\$1,377	\$1,182	\$1,910	\$1,137	\$1,402	--	--	--	--	--
50 - 54	103	85	5	7	6	--	--	--	--	--
	\$1,741	\$1,805	\$1,712	\$1,640	\$977	--	--	--	--	--
55 - 59	374	246	117	6	4	1	--	--	--	--
	\$2,458	\$2,682	\$1,999	\$2,694	\$1,845	\$2,071	--	--	--	--
60 - 64	668	306	273	76	13	--	--	--	--	--
	\$2,977	\$3,043	\$3,177	\$2,068	\$2,540	--	--	--	--	--
65 - 69	945	336	402	160	45	1	--	--	--	1
	\$3,143	\$2,869	\$3,595	\$3,076	\$1,453	\$2,489	--	--	--	\$145
70 - 74	842	139	382	240	76	4	1	--	--	--
	\$3,168	\$2,300	\$3,442	\$3,453	\$2,589	\$1,215	\$2,268	--	--	--
75 - 79	470	19	125	221	91	13	1	--	--	--
	\$2,721	\$1,686	\$2,639	\$3,135	\$2,181	\$1,864	\$1,611	--	--	--
80 - 84	158	2	17	54	70	15	--	--	--	--
	\$2,275	\$4,311	\$1,930	\$2,802	\$1,968	\$1,938	--	--	--	--
85 - 89	36	--	3	13	19	1	--	--	--	--
	\$1,780	--	\$2,090	\$2,324	\$1,405	\$927	--	--	--	--
90 & Over	3	--	1	1	1	--	--	--	--	--
	\$3,647	--	\$999	\$3,080	\$6,862	--	--	--	--	--
Total	3,643	1,140	1,345	786	333	36	2	--	--	1
	\$2,880	\$2,699	\$3,169	\$3,045	\$2,073	\$1,791	\$1,940	--	--	\$145

Note: Total retired benefit \$10,491,368, average age 68.1, and average years of retirement 8.0.

Section 3: Supplemental Information

Exhibit C: Retired Members and Beneficiaries as of December 31, 2019 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	--	--	--	--	--	--	--	--
	\$484	\$484	--	--	--	--	--	--	--	--
55 - 59	2	2	--	--	--	--	--	--	--	--
	\$285	\$285	--	--	--	--	--	--	--	--
60 - 64	4	4	--	--	--	--	--	--	--	--
	\$418	\$418	--	--	--	--	--	--	--	--
65 - 69	8	8	--	--	--	--	--	--	--	--
	\$816	\$816	--	--	--	--	--	--	--	--
70 - 74	3	3	--	--	--	--	--	--	--	--
	\$380	\$380	--	--	--	--	--	--	--	--
75 - 79	2	2	--	--	--	--	--	--	--	--
	\$668	\$668	--	--	--	--	--	--	--	--
80 - 84	--	--	--	--	--	--	--	--	--	--
85 - 89	--	--	--	--	--	--	--	--	--	--
90 & Over	--	--	--	--	--	--	--	--	--	--
Total	20	20	--	--	--	--	--	--	--	--
	\$586	\$586	--	--	--	--	--	--	--	--

Note: Total retired benefit \$11,730, average age 66.5, and average years of retirement 1.1.

Section 3: Supplemental Information

Exhibit C: Retired Members and Beneficiaries as of December 31, 2019 by Age, Years of Retirement, and Average Monthly Benefit (continued)

Safety Tier A 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	5	--	--	--	3	1	1	--	--	--
	\$1,277	--	--	--	\$1,512	\$296	\$1,556	--	--	--
30 - 34	2	--	1	--	1	--	--	--	--	--
	\$2,385	--	\$3,825	--	\$946	--	--	--	--	--
35 - 39	10	6	2	1	--	--	1	--	--	--
	\$3,167	\$3,271	\$4,073	\$2,594	--	--	\$1,308	--	--	--
40 - 44	27	10	10	5	--	--	2	--	--	--
	\$3,998	\$4,095	\$4,492	\$3,870	--	--	\$1,366	--	--	--
45 - 49	56	26	8	9	13	--	--	--	--	--
	\$4,415	\$4,504	\$3,514	\$5,398	\$4,112	--	--	--	--	--
50 - 54	275	203	44	12	9	4	3	--	--	--
	\$6,342	\$6,653	\$6,108	\$5,398	\$4,359	\$4,295	\$1,190	--	--	--
55 - 59	350	60	222	24	20	15	7	2	--	--
	\$7,219	\$5,559	\$8,432	\$5,883	\$4,015	\$4,275	\$3,866	\$4,154	--	--
60 - 64	334	28	127	129	20	17	8	5	--	--
	\$7,465	\$5,149	\$8,304	\$8,331	\$4,359	\$4,598	\$3,663	\$5,027	--	--
65 - 69	341	13	49	133	89	28	18	8	1	2
	\$7,819	\$5,017	\$7,895	\$9,754	\$7,709	\$4,074	\$4,220	\$3,733	\$3,759	\$3,654
70 - 74	391	1	18	80	166	59	27	20	13	7
	\$7,445	\$672	\$4,755	\$8,898	\$9,377	\$4,934	\$4,574	\$3,253	\$3,710	\$4,034
75 - 79	244	--	4	20	58	86	40	19	8	9
	\$6,984	--	\$3,836	\$4,796	\$7,396	\$9,383	\$5,527	\$3,729	\$3,489	\$4,122
80 - 84	141	1	2	3	3	34	53	24	14	7
	\$6,415	\$3,366	\$4,510	\$2,399	\$4,787	\$6,586	\$8,078	\$5,324	\$4,269	\$4,420
85 - 89	87	--	--	--	1	10	22	17	19	18
	\$5,437	--	--	--	\$16,128	\$5,440	\$7,035	\$5,306	\$4,089	\$4,435
90 & Over	51	--	--	--	--	--	3	10	15	23
	\$5,842	--	--	--	--	--	\$5,017	\$7,173	\$6,575	\$4,893
Total	2,314	348	487	416	383	254	185	105	70	66
	\$6,966	\$5,963	\$7,756	\$8,326	\$7,749	\$6,497	\$5,860	\$4,656	\$4,514	\$4,484

Note: Total retired benefit \$16,118,654, average age 66.6, and average years of retirement 15.6. Includes members from terminated employers.

Section 3: Supplemental Information

Exhibit C: Retired Members and Beneficiaries as of December 31, 2019 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	--	--	--	--	--	--	--	--	--	--
35 - 39	--	--	--	--	--	--	--	--	--	--
40 - 44	--	--	--	--	--	--	--	--	--	--
45 - 49	--	--	--	--	--	--	--	--	--	--
50 - 54	--	--	--	--	--	--	--	--	--	--
55 - 59	2	2	--	--	--	--	--	--	--	--
60 - 64	\$2,000	\$2,000	--	--	--	--	--	--	--	--
65 - 69	1	1	--	--	--	--	--	--	--	--
70 - 74	\$1,037	\$1,037	--	--	--	--	--	--	--	--
75 - 79	--	--	--	--	--	--	--	--	--	--
80 - 84	--	--	--	--	--	--	--	--	--	--
85 - 89	--	--	--	--	--	--	--	--	--	--
90 & Over	--	--	--	--	--	--	--	--	--	--
Total	3	3	--	--	--	--	--	--	--	--
	\$1,679	\$1,679	--	--	--	--	--	--	--	--

Note: Total retired benefit \$5,037, average age 58.2, and average years of retirement 1.3.

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, 2018	10,021	3,477	7,214	908	1,425	23,045
• New members	894	137	0	0	86	1,117
• Terminations – with vested rights	(381)	381	0	0	0	0
• Contribution refunds	(167)	(193)	0	0	0	(360)
• Retirements	(309)	(70)	379	0	0	0
• New disabilities	(17)	(1)	(8)	26	0	0
• Return to work	48	(47)	(1)	0	0	0
• Died with or without beneficiary	(12)	(42)	(186)	(26)	(76)	(342)
• Data adjustments	<u>(2)</u>	<u>(4)</u>	<u>(3)</u>	<u>(1)</u>	<u>0</u>	<u>(10)</u>
Number as of December 31, 2019	10,075	3,638	7,395	907	1,435	23,450

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, 2019	Year Ended December 31, 2018
Net assets at market value at the beginning of the year	\$8,149,985,793	\$8,390,581,049
Contribution income:		
• Employer contributions	\$327,982,796	\$325,117,103
• Member contributions	108,487,711	103,541,529
• Less administrative expenses	<u>(10,200,473)</u>	<u>(9,337,053)</u>
<i>Net contribution income</i>	<i>\$426,270,034</i>	<i>\$419,321,579</i>
Investment income:		
• Interest, dividends and other income	\$175,593,436	\$122,028,712
• Asset appreciation	1,040,680,672	(271,910,965)
• Less investment and administrative fees	<u>(48,102,522)</u>	<u>(45,148,635)</u>
<i>Net investment income</i>	<i><u>\$1,168,171,586</u></i>	<i><u>\$(195,030,888)</u></i>
Total income available for benefits	\$1,594,441,620	\$224,290,691
Less benefit payments:		
• Benefits paid	\$(477,410,838)	\$(451,371,645)
• Refunds of contributions	(7,966,324)	(9,232,894)
• Adjustments, transfers or other expenses	<u>(2,037,572)</u>	<u>(4,281,407)</u>
<i>Net benefit payments</i>	<i><u>\$(487,414,734)</u></i>	<i><u>\$(464,885,947)</u></i>
Change in net assets at market value	\$1,107,026,886	\$(240,595,256)
Net assets at market value at the end of the year	\$9,257,012,679	\$8,149,985,793

Note: Results may be slightly off due to rounding.

Section 3: Supplemental Information

Exhibit F: Summary Statement of Plan Assets

	December 31, 2019	December 31, 2018
<i>Cash equivalents</i>	\$796,020,581	\$653,279,987
Accounts receivable:		
• Investment trades	\$20,892,694	\$16,983,472
• Investment income	3,319,093	20,229,623
• Employer and member contributions	11,114,037	9,982,077
• Additional contributions	<u>10,458,780</u>	<u>12,317,664</u>
<i>Total accounts receivable</i>	\$45,784,604	\$59,512,836
Investments:		
• Stocks	\$3,933,057,088	\$3,202,523,490
• Bonds	2,512,385,535	2,611,979,915
• Real estate	633,352,458	644,587,626
• Alternative investments and real assets	<u>1,812,805,921</u>	<u>1,440,993,833</u>
<i>Total investments at market value</i>	\$8,891,601,002	\$7,900,084,864
<i>Other assets</i>	<u>1,550,773</u>	<u>500,284</u>
Total assets	\$9,734,956,960	\$8,613,377,971
Accounts payable:		
• Investment trades	\$(21,286,088)	\$(20,576,922)
• Security lending	(250,497,084)	(243,358,031)
• Employer contributions unearned	(153,205,417)	(151,748,113)
• Other	<u>(52,955,694)</u>	<u>(47,709,112)</u>
Total accounts payable	<u>\$(477,944,283)</u>	<u>\$(463,392,178)</u>
Net assets at market value	\$9,257,012,679	\$8,149,985,793
Net assets at actuarial value	\$9,144,580,232	\$8,666,778,056
Net assets at valuation value	\$9,128,668,718	\$8,650,178,226

Note: Results may be slightly off due to rounding.

Section 3: Supplemental Information

Exhibit G: Summary of Total Allocated Reserves

	December 31, 2019	December 31, 2018
• Member Deposits ¹	\$901,226,206	\$852,464,738
• Member Cost of Living ¹	471,545,778	449,161,645
• Employer Advance ^{1, 2}	2,507,971,167	2,295,152,786
• Employer Cost of Living ^{1, 2}	1,134,372,856	1,032,587,045
• Retired Members ^{1, 2}	3,621,507,748	3,468,067,211
• Retired Cost of Living ^{1, 2}	2,704,580,218	2,565,742,215
• Dollar Power Cost of Living Supplement Pre-Funding ¹	1,430,969	2,649,181
• Post Retirement Death Benefit ³	15,911,514	15,757,910
• Statutory Contingency (one percent) ³	0	0
• Additional One Percent Contingency Designation ³	0	0
• Contra Tracking Account ¹	<u>(2,213,966,222)</u>	<u>(2,014,804,675)</u>
Total Allocated Reserves	\$9,144,580,232	\$8,666,778,056
Total Deferred Return	<u>112,432,447</u>	<u>(516,792,263)</u>
Net Market Value	\$9,257,012,679	\$8,149,985,793

Note: Results may be slightly off due to rounding.

¹ Included in valuation value of assets.

² Both December 31, 2019 and December 31, 2018 information reflect a “true-up” of retired reserves.

³ Not included in valuation value of assets. See reference made on page 132 with respect to the payment of benefits out of this reserve.

Section 3: Supplemental Information

Exhibit H: Development of the Fund Through December 31, 2019

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
2010	\$183,950,930	\$64,330,484	N/A	\$594,637,090	\$292,490,835	\$5,027,157,199	\$5,341,821,711	106.3%
2011	200,388,994	61,575,376	N/A	88,042,268	324,874,379	5,052,289,458	5,426,719,066	107.4%
2012	212,321,325	73,361,712	N/A	668,138,997	351,530,368	5,654,581,124	5,482,257,062	97.0%
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%

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	Initial Period	Outstanding Balance	Years Remaining	Annual Payment ¹
Restart of Amortization	December 31, 2007	\$785,069,153	15	\$299,076,675	3	\$107,118,410
Actuarial Loss	December 31, 2008	80,033,199	18	55,770,742	7	9,174,406
Actuarial Loss	December 31, 2009	165,041,323	18	124,073,116	8	18,165,991
Assumption Change	December 31, 2009	39,563,826	18	29,742,898	8	4,354,765
Depooling Implementation	December 31, 2009	(74,701,913)	18	(56,158,657)	8	(8,222,391)
Actuarial Loss	December 31, 2010	153,070,543	18	122,238,132	9	16,180,484
Actuarial Loss	December 31, 2011	94,750,078	18	79,390,590	10	9,618,480
Actuarial Loss	December 31, 2012	117,029,116	18	101,866,695	11	11,408,835
Assumption Change	December 31, 2012	288,802,882	18	251,385,264	11	28,154,569
Actuarial Gain	December 31, 2013	(134,810,112)	18	(121,305,658)	12	(12,662,521)
Assumption Change ²	December 31, 2013	(107,553,289)	18	(96,779,257)	12	(10,102,327)
Actuarial Gain	December 31, 2014	(171,898,812)	18	(158,803,284)	13	(15,556,414)
Actuarial Gain	December 31, 2015	(105,003,533)	18	(99,009,134)	14	(9,155,204)
Assumption Change	December 31, 2015	39,814,884	18	37,541,948	14	3,471,439
Actuarial Gain	December 31, 2016	(28,579,026)	18	(27,511,231)	15	(2,413,356)
Actuarial Gain	December 31, 2017	(17,937,638)	18	(17,552,138)	16	(1,467,065)
Actuarial Loss	December 31, 2018	75,264,047	18	74,576,158	17	5,961,856
Assumption Change	December 31, 2018	(6,021,683)	18	(5,966,647)	17	(476,993)
Actuarial Loss	December 31, 2019	8,875,806	18	8,875,806	18	680,944
Method Change	December 31, 2019	(9,437,845)	18	(9,437,845)	18	(724,064)
Subtotal – Cost Groups #1 and #2				\$592,014,174		\$153,509,844

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 #3 – Central Contra Costa Sanitary District

Type	Date Established	Initial Amount	Initial Period	Outstanding Balance	Years Remaining	Annual Payment ¹
Restart of Amortization	December 31, 2007	\$36,185,000	15	\$13,784,887	3	\$4,937,246
Actuarial Loss	December 31, 2008	3,709,835	18	2,585,180	7	425,268
Actuarial Loss	December 31, 2009	10,118,261	18	7,606,605	8	1,113,710
Assumption Change	December 31, 2009	2,003,000	18	1,505,795	8	220,469
Depooling Implementation	December 31, 2009	20,037,235	18	15,063,392	8	2,205,485
Actuarial Loss	December 31, 2010	18,178,489	18	14,516,866	9	1,921,577
Assumption Change ²	December 31, 2010	11,479,648	18	9,167,347	9	1,213,468
Actuarial Loss	December 31, 2011	10,514,535	18	8,810,073	10	1,067,375
Actuarial Loss	December 31, 2012	12,564,241	18	10,936,404	11	1,224,852
Assumption Change	December 31, 2012	22,455,342	18	19,546,003	11	2,189,107
UAAL Prepayment	December 31, 2012	(4,666,477)	18	(4,061,883)	11	(454,922)
Actuarial Loss	December 31, 2013	582,962	18	524,564	12	54,757
Assumption Change ²	December 31, 2013	(14,950,866)	18	(13,453,179)	12	(1,404,314)
UAAL Prepayment	December 31, 2013	(4,662,899)	18	(4,195,798)	12	(437,979)
Actuarial Gain	December 31, 2014	(11,848,823)	18	(10,946,161)	13	(1,072,289)
UAAL Prepayment	December 31, 2014	(2,331,896)	18	(2,154,248)	13	(211,031)
Actuarial Gain	December 31, 2015	(6,504,510)	18	(6,133,183)	14	(567,125)
Assumption Change	December 31, 2015	44,220	18	41,696	14	3,856
Actuarial Gain	December 31, 2016	(1,522,932)	18	(1,466,031)	15	(128,604)
Actuarial Gain	December 31, 2017	(1,621,926)	18	(1,587,069)	16	(132,652)
Actuarial Loss	December 31, 2018	5,331,336	18	5,282,610	17	422,309
Assumption Change	December 31, 2018	1,129,709	18	1,119,384	17	89,487
Actuarial Loss	December 31, 2019	6,365,718	18	6,365,718	18	488,373
Method Change	December 31, 2019	(2,095,302)	18	(2,095,302)	18	(160,750)
Subtotal – Cost Group #3				\$70,763,669		\$13,007,673

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 #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	\$2,960,027	3	\$1,060,174
Actuarial Loss	December 31, 2008	1,573,513	18	1,096,495	7	180,376
Actuarial Loss	December 31, 2009	1,277,079	18	960,070	8	140,567
Assumption Change	December 31, 2009	425,000	18	319,502	8	46,779
Depooling Implementation	December 31, 2009	(189,275)	18	(142,291)	8	(20,833)
Actuarial Loss	December 31, 2010	619,697	18	494,874	9	65,506
Assumption Change ²	December 31, 2010	(920,656)	18	(735,212)	9	(97,319)
Actuarial Loss	December 31, 2011	1,059,328	18	887,606	10	107,537
Actuarial Loss	December 31, 2012	1,912,999	18	1,665,149	11	186,493
Assumption Change	December 31, 2012	3,722,862	18	3,240,524	11	362,931
Actuarial Gain	December 31, 2013	(2,220,704)	18	(1,998,247)	12	(208,588)
Assumption Change ²	December 31, 2013	(1,077,289)	18	(969,373)	12	(101,188)
Actuarial Gain	December 31, 2014	(1,360,021)	18	(1,256,412)	13	(123,078)
Actuarial Gain	December 31, 2015	(875,294)	18	(825,326)	14	(76,316)
Assumption Change	December 31, 2015	432,801	18	408,093	14	37,736
Actuarial Gain	December 31, 2016	(297,092)	18	(285,992)	15	(25,088)
Actuarial Loss	December 31, 2017	53,895	18	52,737	16	4,408
Actuarial Loss	December 31, 2018	527,741	18	522,917	17	41,804
Assumption Change	December 31, 2018	86,577	18	85,786	17	6,858
Actuarial Loss	December 31, 2019	544,467	18	544,467	18	41,771
Method Change	December 31, 2019	(103,353)	18	(103,353)	18	(7,929)
Subtotal – Cost Group #4				\$6,922,040		\$1,622,601

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	Initial Period	Outstanding Balance	Years Remaining	Annual Payment ¹
Restart of Amortization	December 31, 2007	\$(1,011,000)	15	\$(385,146)	3	\$(137,945)
Actuarial Loss	December 31, 2008	45,963	18	32,029	7	5,269
Actuarial Loss	December 31, 2009	1,614,180	18	1,213,492	8	177,672
Assumption Change	December 31, 2009	336,000	18	252,595	8	36,983
Depooling Implementation	December 31, 2009	2,142,538	18	1,610,696	8	235,828
Actuarial Loss	December 31, 2010	2,722,306	18	2,173,962	9	287,764
Actuarial Loss	December 31, 2011	1,350,620	18	1,131,677	10	137,107
Actuarial Loss	December 31, 2012	1,787,426	18	1,555,845	11	174,251
Assumption Change	December 31, 2012	3,184,172	18	2,771,627	11	310,416
Actuarial Gain	December 31, 2013	(2,500,665)	18	(2,250,164)	12	(234,884)
Assumption Change ²	December 31, 2013	(985,653)	18	(886,916)	12	(92,581)
Actuarial Gain	December 31, 2014	(2,215,758)	18	(2,046,958)	13	(200,521)
Actuarial Gain	December 31, 2015	(756,551)	18	(713,361)	14	(65,963)
Assumption Change	December 31, 2015	355,946	18	335,626	14	31,035
Actuarial Loss	December 31, 2016	1,591,375	18	1,531,917	15	134,384
Actuarial Loss	December 31, 2017	1,476,313	18	1,444,586	16	120,743
Actuarial Loss	December 31, 2018	1,495,430	18	1,481,763	17	118,457
Assumption Change	December 31, 2018	606,920	18	601,373	17	48,076
Actuarial Loss	December 31, 2019	1,833,052	18	1,833,052	18	140,630
Method Change	December 31, 2019	(866,741)	18	(866,741)	18	(66,496)
Subtotal – Cost Group #5				\$10,820,953		\$1,160,225

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 #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, 2019	\$(980,693)		\$(980,693)	N/A	\$0
Subtotal – Cost Group #6				\$(980,693)		\$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	\$48,633,751	3	\$17,418,844
Actuarial Loss	December 31, 2008	25,619,265	18	17,852,659	7	2,936,801
Actuarial Loss	December 31, 2009	55,134,940	18	41,448,794	8	6,068,667
Assumption Change	December 31, 2009	11,076,665	18	8,327,105	8	1,219,201
Depooling Implementation	December 31, 2009	23,852,078	18	17,931,276	8	2,625,383
Actuarial Loss	December 31, 2010	57,287,975	18	45,748,679	9	6,055,686
Actuarial Loss	December 31, 2011	45,209,350	18	37,880,675	10	4,589,392
Actuarial Loss	December 31, 2012	53,258,503	18	46,358,273	11	5,192,020
Assumption Change	December 31, 2012	138,353,562	18	120,428,323	11	13,487,694
Actuarial Gain	December 31, 2013	(35,024,912)	18	(31,516,331)	12	(3,289,840)
Assumption Change ²	December 31, 2013	(43,771,706)	18	(39,386,923)	12	(4,111,414)
Actuarial Gain	December 31, 2014	(61,815,393)	18	(57,106,196)	13	(5,594,139)
Assumption Change ³	December 31, 2014	(51,701)	18	(47,762)	13	(4,679)
Actuarial Gain	December 31, 2015	(58,489,966)	18	(55,150,914)	14	(5,099,710)
Assumption Change	December 31, 2015	39,291,409	18	37,048,357	14	3,425,798
Actuarial Gain	December 31, 2016	(13,557,811)	18	(13,051,252)	15	(1,144,890)
Actuarial Gain	December 31, 2017	(8,178,240)	18	(8,002,480)	16	(668,873)
Actuarial Loss	December 31, 2018	41,037,406	18	40,662,337	17	3,250,677
Assumption Change	December 31, 2018	(47,713,599)	18	(47,277,512)	17	(3,779,515)
Actuarial Loss	December 31, 2019	10,313,187	18	10,313,187	18	791,219
Method Change	December 31, 2019	(1,626,137)	18	(1,626,137)	18	(124,756)
Subtotal – Cost Groups #7 and #9				\$219,467,908		\$43,243,566

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	\$118,472,530	15	\$45,132,802	3	\$16,164,931
CCCFPD Safety POBs	December 31, 2007	(127,509,711)	15	(48,575,404)	3	(17,397,947)
Actuarial Loss	December 31, 2008	6,470,951	18	4,509,250	7	741,781
Actuarial Loss	December 31, 2009	25,785,466	18	19,384,740	8	2,838,189
Assumption Change	December 31, 2009	4,719,291	18	3,547,821	8	519,449
Depooling Implementation	December 31, 2009	45,636,034	18	34,307,801	8	5,023,128
Actuarial Loss	December 31, 2010	36,423,423	18	29,086,793	9	3,850,177
Assumption Change ³	December 31, 2010	(1,526,064)	18	(1,218,675)	9	(161,314)
Actuarial Loss	December 31, 2011	25,322,088	18	21,217,244	10	2,570,552
Actuarial Loss	December 31, 2012	30,063,590	18	26,168,518	11	2,930,814
Assumption Change	December 31, 2012	65,080,742	18	56,648,810	11	6,344,536
Actuarial Gain	December 31, 2013	(21,627,274)	18	(19,460,785)	12	(2,031,419)
Assumption Change ³	December 31, 2013	(17,093,162)	18	(15,380,873)	12	(1,605,536)
Actuarial Gain	December 31, 2014	(27,884,339)	18	(25,760,065)	13	(2,523,463)
Actuarial Gain	December 31, 2015	(18,138,024)	18	(17,102,567)	14	(1,581,445)
Assumption Change	December 31, 2015	23,187,842	18	21,864,104	14	2,021,736
Actuarial Gain	December 31, 2016	(7,918,946)	18	(7,623,071)	15	(668,716)
Actuarial Gain	December 31, 2017	(10,172,006)	18	(9,953,398)	16	(831,937)
Actuarial Loss	December 31, 2018	18,420,258	18	18,251,903	17	1,459,115
Assumption Change	December 31, 2018	(22,431,013)	18	(22,226,001)	17	(1,776,817)
Actuarial Loss	December 31, 2019	11,904,323	18	11,904,323	18	913,290
Method Change	December 31, 2019	(2,989,978)	18	(2,989,978)	18	(229,389)
Subtotal – Cost Group #8				\$121,733,292		\$16,569,715

Note: Results may be slightly off due to rounding.

¹ Prior to December 31, 2019, Contra Costa Fire Protection District was pooled with East Contra Costa Fire Protection District in Cost Group 8. Effective with the December 31, 2019 valuation, East Contra Costa Fire Protection District 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.

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 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	\$(987,057)	3	\$(353,528)
Actuarial Loss	December 31, 2008	2,002,150	18	1,395,189	7	229,512
Actuarial Loss	December 31, 2009	5,671,684	18	4,263,802	8	624,279
Assumption Change	December 31, 2009	1,012,000	18	760,791	8	111,390
Depooling Implementation	December 31, 2009	4,873,631	18	3,663,850	8	536,437
Actuarial Loss	December 31, 2010	5,334,964	18	4,260,363	9	563,938
Assumption Change ²	December 31, 2010	806,018	18	643,665	9	85,201
Actuarial Loss	December 31, 2011	6,791,005	18	5,690,147	10	689,384
Actuarial Loss	December 31, 2012	8,924,598	18	7,768,318	11	870,034
Assumption Change	December 31, 2012	12,149,892	18	10,575,739	11	1,184,458
Actuarial Gain	December 31, 2013	(1,027,440)	18	(924,517)	12	(96,506)
Assumption Change ²	December 31, 2013	(3,613,981)	18	(3,251,954)	12	(339,456)
Actuarial Gain	December 31, 2014	(4,813,045)	18	(4,446,379)	13	(435,569)
Actuarial Gain	December 31, 2015	(8,490,806)	18	(8,006,086)	14	(740,309)
Assumption Change	December 31, 2015	3,844,347	18	3,624,882	14	335,187
Actuarial Loss	December 31, 2016	1,028,690	18	990,255	15	86,868
Actuarial Gain	December 31, 2017	(422,995)	18	(413,904)	16	(34,595)
Actuarial Loss	December 31, 2018	6,029,055	18	5,973,952	17	477,577
Assumption Change	December 31, 2018	(4,116,542)	18	(4,078,918)	17	(326,082)
Actuarial Loss	December 31, 2019	3,411,399	18	3,411,399	18	261,720
Method Change	December 31, 2019	(471,164)	18	(471,164)	18	(36,147)
Subtotal – Cost Group #10				\$30,442,370		\$3,693,793

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	\$22,387,251	3	\$8,018,301
Actuarial Loss	December 31, 2008	10,216,694	18	7,119,453	7	1,171,165
Actuarial Loss	December 31, 2009	9,262,105	18	6,962,973	8	1,019,474
Assumption Change	December 31, 2009	2,453,000	18	1,844,092	8	270,000
Depooling Implementation	December 31, 2009	(20,174,500)	18	(15,166,584)	8	(2,220,594)
Actuarial Loss	December 31, 2010	6,585,812	18	5,259,257	9	696,160
Assumption Change ²	December 31, 2010	5,093,420	18	4,067,472	9	538,405
Actuarial Loss	December 31, 2011	5,513,071	18	4,619,373	10	559,655
Actuarial Loss	December 31, 2012	14,600,741	18	12,709,053	11	1,423,385
Assumption Change	December 31, 2012	26,672,143	18	23,216,471	11	2,600,191
Actuarial Gain	December 31, 2013	(4,492,900)	18	(4,042,828)	12	(422,012)
Assumption Change ²	December 31, 2013	(12,984,002)	18	(11,683,344)	12	(1,219,569)
Actuarial Gain	December 31, 2014	(13,850,852)	18	(12,795,672)	13	(1,253,468)
Actuarial Gain	December 31, 2015	(9,008,582)	18	(8,494,304)	14	(785,454)
Assumption Change	December 31, 2015	5,533,144	18	5,217,270	14	482,432
Actuarial Loss	December 31, 2016	2,020,042	18	1,944,567	15	170,582
UAAL Prepayment	December 31, 2017	(303,806)	18	(297,277)	16	(24,847)
Actuarial Gain	December 31, 2017	(1,837,378)	18	(1,797,890)	16	(150,274)
UAAL Prepayment	December 31, 2018	(261,501)	18	(259,111)	17	(20,714)
Actuarial Loss	December 31, 2018	11,681,729	18	11,574,962	17	925,339
Assumption Change	December 31, 2018	(9,240,163)	18	(9,155,711)	17	(731,937)
UAAL Prepayment	December 31, 2019	(1,267,559)	18	(1,267,559)	18	(97,246)
Actuarial Loss	December 31, 2019	5,365,395	18	5,365,395	18	411,629
Method Change	December 31, 2019	(1,623,299)	18	(1,623,299)	18	(124,538)
Subtotal – Cost Group #11				\$45,704,010		\$11,236,065

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 #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	\$1,508,585	3	\$540,320
Actuarial Loss	December 31, 2008	957,150	18	666,985	7	109,720
Actuarial Loss	December 31, 2009	2,872,360	18	2,159,354	8	316,159
Assumption Change	December 31, 2009	1,154,000	18	867,543	8	127,020
Depooling Implementation	December 31, 2009	(1,809,374)	18	(1,360,233)	8	(199,157)
Actuarial Loss	December 31, 2010	1,502,503	18	1,199,860	9	158,824
Assumption Change ²	December 31, 2010	662,085	18	528,724	9	69,986
Actuarial Loss	December 31, 2011	2,067,217	18	1,732,110	10	209,852
Actuarial Loss	December 31, 2012	2,246,131	18	1,955,119	11	218,969
Assumption Change	December 31, 2012	3,018,796	18	2,627,677	11	294,294
Actuarial Loss	December 31, 2013	413,088	18	371,707	12	38,801
Assumption Change ²	December 31, 2013	(1,169,821)	18	(1,052,635)	12	(109,880)
Actuarial Loss	December 31, 2014	315,937	18	291,868	13	28,591
Actuarial Gain	December 31, 2015	(990,379)	18	(933,841)	14	(86,351)
Assumption Change	December 31, 2015	775,874	18	731,581	14	67,648
Actuarial Gain	December 31, 2016	(270,731)	18	(260,616)	15	(22,862)
Actuarial Gain	December 31, 2017	(836,969)	18	(818,981)	16	(68,453)
Actuarial Gain	December 31, 2018	(71,915)	18	(71,258)	17	(5,697)
Assumption Change	December 31, 2018	(985,876)	18	(977,810)	17	(78,169)
Actuarial Loss	December 31, 2019	146,468	18	146,468	18	11,237
Method Change	December 31, 2019	(241,485)	18	(241,485)	18	(18,527)
Subtotal – Cost Group #12				\$9,070,723		\$1,602,325

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 #13 – East 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	\$5,666,180	15	\$2,158,564	3	\$773,119
Actuarial Loss	December 31, 2008	309,486	18	215,664	7	35,477
Actuarial Loss	December 31, 2009	1,233,240	18	927,113	8	135,742
Assumption Change	December 31, 2009	225,709	18	169,681	8	24,844
Depooling Implementation	December 31, 2009	2,182,632	18	1,640,838	8	240,241
Actuarial Loss	December 31, 2010	1,742,021	18	1,391,133	9	184,142
Assumption Change ³	December 31, 2010	(72,987)	18	(58,286)	9	(7,715)
Actuarial Loss	December 31, 2011	1,211,078	18	1,014,756	10	122,942
Actuarial Loss	December 31, 2012	1,437,850	18	1,251,560	11	140,172
Assumption Change	December 31, 2012	3,112,614	18	2,709,340	11	303,440
Actuarial Gain	December 31, 2013	(1,034,367)	18	(930,750)	12	(97,157)
Assumption Change ³	December 31, 2013	(817,514)	18	(735,620)	12	(76,788)
Actuarial Gain	December 31, 2014	(1,333,623)	18	(1,232,025)	13	(120,690)
Actuarial Gain	December 31, 2015	(867,486)	18	(817,964)	14	(75,636)
Assumption Change	December 31, 2015	1,109,004	18	1,045,693	14	96,693
Actuarial Gain	December 31, 2016	(378,739)	18	(364,588)	15	(31,983)
Actuarial Gain	December 31, 2017	(486,496)	18	(476,041)	16	(39,789)
Actuarial Loss	December 31, 2018	880,985	18	872,933	17	69,785
Assumption Change	December 31, 2018	(1,072,807)	18	(1,063,002)	17	(84,980)
Actuarial Gain	December 31, 2019	(646,067)	18	(646,067)	18	(49,566)
Method Change	December 31, 2019	(67,201)	18	(67,201)	18	(5,156)
Subtotal – Cost Group #13				\$7,005,732		\$1,537,137

Note: Results may be slightly off due to rounding.

¹ Prior to December 31, 2019, East Contra Costa Fire Protection District was pooled with Contra Costa Fire Protection District in Cost Group 8. Effective with the December 31, 2019 valuation, East Contra Costa Fire Protection District 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.

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)

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	\$(172,943,198)	3	\$(61,941,977)
Moraga General POBs	December 31, 2007	(701,412)	15	(267,206)	3	(95,703)
First Five UAAL Prepayment	December 31, 2011	(1,794,205)	11	(631,360)	3	(233,191)
LAFCO UAAL Prepayment	December 31, 2017	(30,817)	18	(30,155)	16	(2,520)
LAFCO UAAL Prepayment	December 31, 2019	(31,680)	18	(31,680)	18	(2,430)
Subtotal – Special Adjustments				\$(173,903,599)		\$(62,275,821)

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	\$1,139,949,302	15	\$434,270,338	3	\$155,539,872
County General POBs ²	December 31, 2007	(453,973,319)	15	(172,943,198)	3	(61,941,977)
Moraga General POBs ²	December 31, 2007	(701,412)	15	(267,206)	3	(95,703)
CCCFPD Safety POBs ²	December 31, 2007	(127,509,711)	15	(48,575,404)	3	(17,397,947)
Actuarial Loss	December 31, 2008	130,938,206	18	91,243,645	7	15,009,775
Actuarial Loss	December 31, 2009	278,010,637	18	209,000,059	8	30,600,450
Assumption Change	December 31, 2009	62,968,491	18	47,337,823	8	6,930,900
Depooling Implementation	December 31, 2009	1,849,086	18	1,390,087	8	203,527
Actuarial Loss	December 31, 2010	283,467,735	18	226,369,920	9	29,964,258
Assumption Change ³	December 31, 2010	15,521,464	18	12,395,035	9	1,640,712
Actuarial Loss	December 31, 2011	193,788,371	18	162,374,253	10	19,672,276
First Five UAAL Prepayment ²	December 31, 2011	(1,794,205)	11	(631,360)	3	(233,191)
Actuarial Loss	December 31, 2012	243,825,195	18	212,234,935	11	23,769,825
Assumption Change	December 31, 2012	566,553,007	18	493,149,778	11	55,231,636
Sanitary UAAL Prepayment	December 31, 2012	(4,666,477)	18	(4,061,883)	11	(454,922)
Actuarial Gain	December 31, 2013	(201,742,323)	18	(181,533,009)	12	(18,949,369)
Assumption Change ³	December 31, 2013	(204,017,283)	18	(183,580,076)	12	(19,163,053)
Sanitary UAAL Prepayment	December 31, 2013	(4,662,899)	18	(4,195,798)	12	(437,979)
Actuarial Gain	December 31, 2014	(296,704,729)	18	(274,101,286)	13	(26,851,040)
Assumption Change ⁴	December 31, 2014	(51,701)	18	(47,762)	13	(4,679)
Sanitary UAAL Prepayment	December 31, 2014	(2,331,896)	18	(2,154,248)	13	(211,031)

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 Contra Costa Fire Protection District 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.

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, 2015	\$(209,125,132)	18	\$(197,186,680)	14	\$(18,233,513)
Assumption Change	December 31, 2015	114,389,471	18	107,859,251	14	9,973,560
Actuarial Gain	December 31, 2016	(47,885,171)	18	(46,096,042)	15	(4,043,665)
San Ramon UAAL Prepayment	December 31, 2017	(303,806)	18	(297,277)	16	(24,847)
LAFCO UAAL Prepayment ²	December 31, 2017	(30,817)	18	(30,155)	16	(2,520)
Actuarial Gain	December 31, 2017	(39,963,440)	18	(39,104,579)	16	(3,268,487)
San Ramon UAAL Prepayment	December 31, 2018	(261,501)	18	(259,111)	17	(20,714)
Actuarial Loss	December 31, 2018	160,596,072	18	159,128,275	17	12,721,222
Assumption Change	December 31, 2018	(89,758,477)	18	(88,939,058)	17	(7,110,072)
San Ramon UAAL Prepayment	December 31, 2019	(1,267,559)	18	(1,267,559)	18	(97,246)
LAFCO UAAL Prepayment	December 31, 2019	(31,680)	18	(31,680)	18	(2,430)
Actuarial Loss	December 31, 2019	48,113,747	18	48,113,747	18	3,691,247
Method Change	December 31, 2019	(19,522,505)	18	(19,522,505)	18	(1,497,752)
CG#6 - Actuarial Surplus	December 31, 2019	(980,693)	N/A	(980,693)	N/A	0
Subtotal – All Cost Groups				\$939,060,578		\$184,907,123
Terminated Employers ³				7,992,926		
Total CCCERA				\$947,053,504		

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.

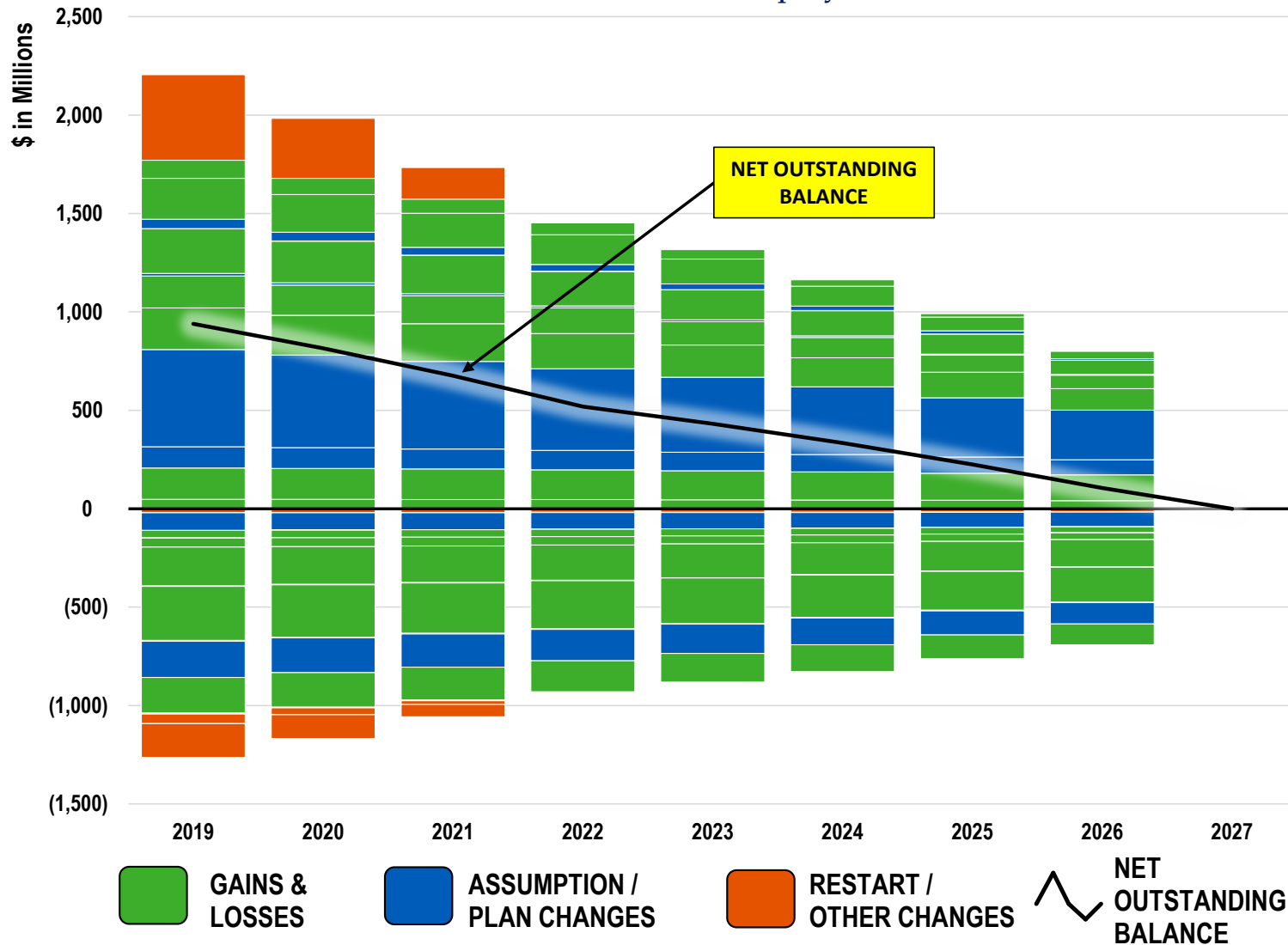
² Includes remaining balance of POBs and any other special contributions made by the County (including Courts), First 5 – Children & Families Commission, Local Agency Formation Commission, or Moraga-Orinda Fire District that have been allocated to the County General cost groups or for Contra Costa Fire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

³ Starting with the December 31, 2016 valuation, the three terminated 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 Terminated Employers Cost Group.

Section 3: Supplemental Information

Exhibit J: Projection of UAAL Balances and Payments

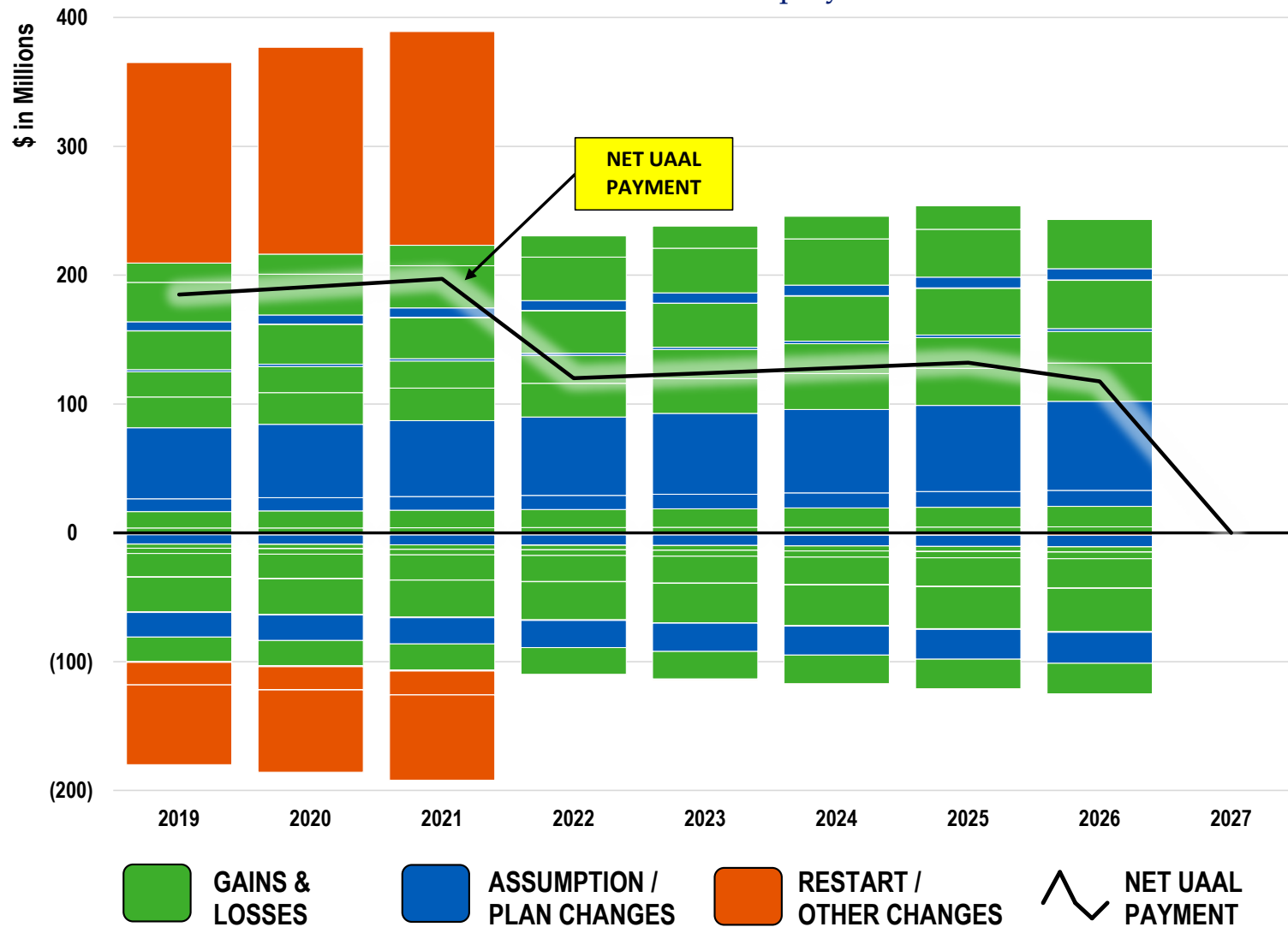
Outstanding Balance of \$939 Million in Net UAAL as of December 31, 2019
Excludes Terminated Employers



Section 3: Supplemental Information

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

Annual Payments Required to Amortize \$939 Million in Net UAAL as of December 31, 2019
Excludes Terminated Employers



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):	<p>The value of an amount or series of amounts payable or receivable at various times, determined as of a given date by the application of a particular set of Actuarial Assumptions. Each such amount or series of amounts is:</p> <p>Adjusted for the probable financial effect of certain intervening events (such as changes in compensation levels, marital status, etc.)</p> <p>Multiplied by the probability of the occurrence of an event (such as survival, death, disability, withdrawal, etc.) on which the payment is conditioned, and</p> <p>Discounted according to an assumed rate (or rates) of return to reflect the time value of money.</p>

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>Withdrawal 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 I: 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, 2015 through December 31, 2017 Actuarial Experience Study report dated April 23, 2019. Unless otherwise noted, all actuarial assumptions and methods shown below apply to all tiers. These assumptions were adopted by the Board.

Economic Assumptions

Net Investment Return:

7.00%; net of investment expenses.

Based on the Actuarial Experience Study referenced above, expected investment expenses represent about 0.65% of the Actuarial Value of Assets.

Administrative Expenses:

1.14% 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 2019 calendar year, actual administrative expenses were \$10,200,473 and actual payroll was \$892,379,335. This results in the administrative expense assumption of 1.14% of payroll, allocated between employers and members as shown below:

	Average Normal Cost Rate Before Administrative Expense	Weighting	Total
Employer	15.29%	57.12%	0.65%
Member	11.48%	42.88%	0.49%
Total		100.00%	1.14%

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 PEPR tiers. The table below shows this allocation.

Allocation of Administrative Expense Load as a % of Payroll	
Addition to Employer Basic Normal Cost Rate	0.49%
Addition to Employer Basic UAAL Rate	0.16%
Addition to Member Basic Rate	0.49%
Total Addition to Contribution Rates	1.14%

Section 4: Actuarial Valuation Basis

Employee Contribution Crediting Rate:	7.00%, compounded semi-annually.
Consumer Price Index:	<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, 2020 has been reflected for non-active members in the December 31, 2019 valuation.</p>
Payroll Growth:	Inflation of 2.75% 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 2.75% per year from the valuation date.
Increase in Section 7522.10 Compensation Limit:	Increase of 2.75% per year from the valuation date.

Section 4: Actuarial Valuation Basis

Salary Increases:

The annual rate of compensation increase includes:

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

Years of Service	Rate (%)	
	General	Safety
Less than 1	12.00	13.00
1 – 2	7.00	8.00
2 – 3	5.25	5.75
3 – 4	3.75	4.75
4 – 5	2.75	2.75
5 – 6	2.25	2.00
6 – 7	1.75	1.75
7 – 8	1.50	1.50
8 – 9	1.40	1.40
9 – 10	1.30	1.30
10 – 11	1.20	1.25
11 – 12	1.10	1.20
12 – 13	1.00	1.15
13 – 14	0.90	1.10
14 – 15	0.80	1.05
15 – 16	0.75	1.00
16 – 17	0.70	1.00
17 – 18	0.65	1.00
18 – 19	0.60	1.00
19 – 20	0.55	1.00
20 & Over	0.50	1.00

The average total assumed salary increase for active members in the December 31, 2019 actuarial valuation is 5.0%.

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-2018.
- **Safety Members:** Pub-2010 Safety Healthy Retiree Amount-Weighted Above-Median Mortality Table (separate tables for males and females) multiplied by 105% for males and 100% for females, projected generationally with the two-dimensional mortality improvement scale MP-2018.
- **All Beneficiaries:** Pub-2010 Contingent Survivor Amount-Weighted Above-Median Mortality Table (separate tables for males and females) multiplied by 105% for males and females, projected generationally with the two-dimensional mortality improvement scale MP-2018.

Disabled

- **General Members:** Pub-2010 Non-Safety Disabled Retiree Amount-Weighted Mortality Table (separate tables for males and females) multiplied by 105% for males and 100% for females, projected generationally with the two-dimensional mortality improvement scale MP-2018.
- **Safety Members:** Pub-2010 Safety Disabled Retiree Amount-Weighted Mortality Table (separate tables for males and females) multiplied by 105% for males and 100% for females, projected generationally with the two-dimensional mortality improvement scale MP-2018.

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-2018.
- **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-2018.

Age	Rate (%)			
	General ¹		Safety ¹	
	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

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

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

Mortality Rates for Member Contributions:

- **General Members:** Pub-2010 General Healthy Retiree Amount-Weighted Above-Median Mortality Table (separate tables for males and females), projected 30 years with the two-dimensional mortality improvement scale MP-2018, 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) multiplied by 105% for males and 100% for females, projected 30 years with the two-dimensional mortality improvement scale MP-2018, 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	0.02
25	0.02	0.02	0.16
30	0.04	0.03	0.32
35	0.08	0.05	0.46
40	0.22	0.08	0.56
45	0.36	0.11	0.90
50	0.52	0.13	2.54
55	0.60	0.16	3.80
60	0.60	0.22	4.30
65	0.60	0.25	4.50
70	0.60	0.25	4.50

60% of General Tier 1 and Tier 4 disabilities are assumed to be service connected disabilities. The other 40% are assumed to be non-service connected disabilities.

30% of General Tier 3 and Tier 5 disabilities are assumed to be service connected disabilities. The other 70% 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	12.50
1 – 2	9.50	10.00
2 – 3	9.25	8.25
3 – 4	6.50	5.75
4 – 5	5.25	5.00
5 – 6	5.00	4.25
6 – 7	4.50	3.50
7 – 8	4.25	3.25
8 – 9	3.75	3.00
9 – 10	3.50	2.50
10 – 11	3.25	2.25
11 – 12	3.00	2.10
12 – 13	2.75	2.00
13 – 14	2.50	1.90
14 – 15	2.50	1.80
15 – 16	2.25	1.70
16 – 17	2.25	1.60
17 – 18	2.00	1.50
18 – 19	2.00	1.25
19 – 20	1.75	1.00
20 & Over	1.25	0.75

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		
50	5.00	9.00	4.00	7.20	3.00	0.00
51	4.00	7.20	3.00	5.40	3.00	0.00
52	4.00	7.20	3.00	5.40	3.00	2.00
53	4.00	7.20	4.00	7.20	3.00	3.00
54	12.00	21.60	6.00	10.80	3.00	3.00
55	15.00	27.00	8.00	14.40	10.00	5.00
56	17.00	30.60	8.00	9.60	10.00	5.00
57	17.00	30.60	9.00	10.80	10.00	6.00
58	17.00	30.60	10.00	12.00	10.00	6.00
59	22.00	26.40	12.00	14.40	10.00	8.00
60	25.00	30.00	13.00	15.60	25.00	8.00
61	30.00	36.00	18.00	21.60	15.00	12.00
62	30.00	36.00	22.00	26.40	40.00	18.00
63	25.00	30.00	22.00	26.40	35.00	18.00
64	25.00	30.00	25.00	30.00	30.00	20.00
65	35.00	35.00	32.00	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	35.00	35.00	35.00	35.00	40.00	40.00
71	35.00	35.00	35.00	35.00	40.00	40.00
72	35.00	35.00	35.00	35.00	40.00	40.00
73	35.00	35.00	35.00	35.00	50.00	40.00
74	35.00	35.00	35.00	35.00	50.00	40.00
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	8.75	2.00	0.00
46	3.00	3.75	1.00	0.00
47	10.00	12.50	4.00	0.00
48	10.00	12.50	4.00	0.00
49	25.00	31.25	12.00	0.00
50	25.00	31.25	18.00	5.00
51	25.00	31.25	18.00	4.00
52	18.00	22.50	15.00	4.00
53	18.00	22.50	15.00	5.00
54	18.00	22.50	15.00	6.00
55	20.00	30.00	18.00	10.00
56	20.00	30.00	15.00	10.00
57	22.00	33.00	15.00	18.00
58	22.00	33.00	25.00	18.00
59	22.00	33.00	25.00	18.00
60	25.00	37.50	25.00	18.00
61	25.00	37.50	25.00	20.00
62	25.00	37.50	25.00	20.00
63	30.00	45.00	30.00	20.00
64	40.00	60.00	35.00	25.00
65 & Over	100.00	100.00	100.00	100.00

Retirement Age and Benefit for Deferred Vested Members:	General: 59
	Safety with Reciprocity: 53
	Safety without Reciprocity: 50
	40% of future General and 70% of future Safety deferred vested members are assumed to continue to work for a reciprocal employer. For reciprocals, 3.75% and 4.25% 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.
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Unknown Data for Members:	Same as those exhibited by members with similar known characteristics. If not specified, members are assumed to be male.
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Section 4: Actuarial Valuation Basis

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>4.75%</td> </tr> <tr> <td>Cost Group 4</td> <td>0.50%</td> </tr> <tr> <td>Cost Group 5</td> <td>1.25%</td> </tr> <tr> <td>Cost Group 6</td> <td>0.25%</td> </tr> <tr> <td>Cost Group 7</td> <td>0.75%</td> </tr> <tr> <td>Cost Group 8</td> <td>0.50%</td> </tr> <tr> <td>Cost Group 9</td> <td>0.00%</td> </tr> <tr> <td>Cost Group 10</td> <td>0.50%</td> </tr> <tr> <td>Cost Group 11</td> <td>2.50%</td> </tr> <tr> <td>Cost Group 12</td> <td>2.00%</td> </tr> <tr> <td>Cost Group 13</td> <td>0.50%</td> </tr> <tr> <td>Terminated 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	4.75%	Cost Group 4	0.50%	Cost Group 5	1.25%	Cost Group 6	0.25%	Cost Group 7	0.75%	Cost Group 8	0.50%	Cost Group 9	0.00%	Cost Group 10	0.50%	Cost Group 11	2.50%	Cost Group 12	2.00%	Cost Group 13	0.50%	Terminated Employers	0.00%
Cost Group 1	1.00%																												
Cost Group 2	0.50% for Tier 2 0.75% for Tier 3																												
Cost Group 3	4.75%																												
Cost Group 4	0.50%																												
Cost Group 5	1.25%																												
Cost Group 6	0.25%																												
Cost Group 7	0.75%																												
Cost Group 8	0.50%																												
Cost Group 9	0.00%																												
Cost Group 10	0.50%																												
Cost Group 11	2.50%																												
Cost Group 12	2.00%																												
Cost Group 13	0.50%																												
Terminated 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: 1.10%

Safety: 1.80%

Disability Retirements:

General: 0.06%

Safety: 1.20%

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

Actuarial 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.

Unless the Board adopts an alternative amortization period after receiving an actuarial analysis:

- With the exception noted in ii., 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.

Section 4: Actuarial Valuation Basis

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., wage inflation).

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 payroll, amortization payments (credits) are scheduled to increase at the annual rate of 3.25% (i.e., 2.75% inflation plus 0.50% “across the board” salary increase).

The amortization policy is described on the previous page.

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

Section 4: Actuarial Valuation Basis

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, 2019. 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 with membership dates on and after January 1, 2011.

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.

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 thirteen 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

Section 4: Actuarial Valuation Basis

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 III*.

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 V. 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.

- 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.

Additional Contribution Rate Adjustments:

Adjustments are made to some UAAL amounts for the County, the Contra Costa County Fire Protection District (CCCFPD), 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, 2019 are as follows:

	County General	Moraga General	First Five General	LAFCO General
Basic	\$96,009,677	\$169,076	\$359,458	\$45,015
COL	\$76,933,521	\$98,130	\$271,901	\$16,819

Section 4: Actuarial Valuation Basis

Internal Revenue Code Section 415:

Section 415 of the Internal Revenue Code (IRC) specifies the maximum benefits that may be paid to an individual from a defined benefit plan and the maximum amounts that may be allocated each year to an individual's account in a defined contribution plan.

A qualified pension plan may not pay benefits in excess of the Section 415 limits. The ultimate penalty for non-compliance is disqualification: active participants could be taxed on their vested benefits and the IRS may seek to tax the income earned on the plan's assets.

In particular, Section 415(b) of the IRC limits the maximum annual benefit payable at the Normal Retirement Age to a dollar limit of \$160,000 indexed for inflation. That limit is \$230,000 for 2020. 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 Assumptions

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

<i>Administrative Expenses:</i>	1.10% 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.
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Changed Actuarial Methods

The following method has been changed since the prior valuation. Previously, this method was as follows:

<i>Cost Sharing Adjustments:</i>	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 V. In addition, the Board action called for a discontinuation of certain cost sharing
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Section 4: Actuarial Valuation Basis

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. Safety members from the East Contra Costa Fire Protection District were pooled with Safety members of the Contra Costa County 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

Exhibit II: 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 \$285,000 for calendar year 2020. 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 \$126,291 for 2020 (\$151,549, 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	3.00% x FAS3 x Yrs
	55	2.00% x FAS3 x Yrs
	57 & Over	2.50% x FAS3 x Yrs
<hr/>		
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 III</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.
Changes in Plan Provisions:	There have been no changes in plan provisions since the last valuation.

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

Section 4: Actuarial Valuation Basis

Exhibit III: 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	3.71%	5.32%	1.80%	2.70%	5.51%	8.02%
16	3.77%	5.41%	1.83%	2.75%	5.60%	8.16%
17	3.84%	5.51%	1.87%	2.81%	5.71%	8.32%
18	3.90%	5.61%	1.91%	2.86%	5.81%	8.47%
19	3.97%	5.71%	1.95%	2.92%	5.92%	8.63%
20	4.04%	5.81%	1.98%	2.97%	6.02%	8.78%
21	4.10%	5.91%	2.02%	3.03%	6.12%	8.94%
22	4.17%	6.01%	2.06%	3.09%	6.23%	9.10%
23	4.24%	6.12%	2.10%	3.15%	6.34%	9.27%
24	4.32%	6.23%	2.14%	3.21%	6.46%	9.44%
25	4.39%	6.34%	2.18%	3.27%	6.57%	9.61%
26	4.46%	6.45%	2.22%	3.33%	6.68%	9.78%
27	4.54%	6.57%	2.27%	3.40%	6.81%	9.97%
28	4.62%	6.68%	2.31%	3.46%	6.93%	10.14%
29	4.70%	6.80%	2.35%	3.53%	7.05%	10.33%
30	4.78%	6.92%	2.39%	3.59%	7.17%	10.51%
31	4.86%	7.05%	2.45%	3.67%	7.31%	10.72%
32	4.94%	7.17%	2.49%	3.73%	7.43%	10.90%
33	5.03%	7.30%	2.54%	3.81%	7.57%	11.11%
34	5.12%	7.44%	2.59%	3.89%	7.71%	11.33%
35	5.21%	7.57%	2.64%	3.96%	7.85%	11.53%
36	5.30%	7.71%	2.69%	4.04%	7.99%	11.75%
37	5.40%	7.85%	2.74%	4.11%	8.14%	11.96%
38	5.49%	7.99%	2.79%	4.19%	8.28%	12.18%
39	5.59%	8.14%	2.85%	4.28%	8.44%	12.42%

Section 4: Actuarial Valuation Basis

Exhibit III: 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	5.69%	8.29%	2.91%	4.36%	8.60%	12.65%
41	5.80%	8.45%	2.97%	4.45%	8.77%	12.90%
42	5.90%	8.60%	3.02%	4.53%	8.92%	13.13%
43	6.00%	8.75%	3.08%	4.62%	9.08%	13.37%
44	6.10%	8.90%	3.13%	4.70%	9.23%	13.60%
45	6.20%	9.06%	3.19%	4.79%	9.39%	13.85%
46	6.31%	9.22%	3.25%	4.88%	9.56%	14.10%
47	6.42%	9.38%	3.31%	4.97%	9.73%	14.35%
48	6.52%	9.53%	3.37%	5.05%	9.89%	14.58%
49	6.62%	9.68%	3.43%	5.14%	10.05%	14.82%
50	6.72%	9.84%	3.49%	5.23%	10.21%	15.07%
51	6.83%	10.00%	3.55%	5.32%	10.38%	15.32%
52	6.94%	10.16%	3.61%	5.41%	10.55%	15.57%
53	7.04%	10.32%	3.66%	5.49%	10.70%	15.81%
54	7.15%	10.48%	3.72%	5.58%	10.87%	16.06%
55	7.25%	10.63%	3.78%	5.67%	11.03%	16.30%
56	7.30%	10.70%	3.81%	5.71%	11.11%	16.41%
57	7.28%	10.67%	3.79%	5.69%	11.07%	16.36%
58	7.26%	10.64%	3.78%	5.67%	11.04%	16.31%
59 & Over	7.05%	10.33%	3.67%	5.50%	10.72%	15.83%

Interest: 7.00% per annum
Mortality: See Section 4, Exhibit I
Salary Increase: Inflation (2.75%) + Across-the-Board Increase (0.50%) + Merit (See Section 4, Exhibit I)
Administrative Expense: 0.49% of payroll added to Basic rates
Leave Cashout: 1.00%
COLA Loading Factor: 55.90%, applied to Basic rates prior to adjustment for administrative expenses.

Section 4: Actuarial Valuation Basis

Exhibit III: 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	3.70%	5.31%	1.57%	2.35%	5.27%	7.66%
16	3.76%	5.40%	1.60%	2.40%	5.36%	7.80%
17	3.83%	5.50%	1.63%	2.44%	5.46%	7.94%
18	3.89%	5.59%	1.66%	2.49%	5.55%	8.08%
19	3.96%	5.69%	1.69%	2.54%	5.65%	8.23%
20	4.02%	5.79%	1.73%	2.59%	5.75%	8.38%
21	4.10%	5.90%	1.76%	2.64%	5.86%	8.54%
22	4.16%	6.00%	1.79%	2.69%	5.95%	8.69%
23	4.24%	6.11%	1.83%	2.74%	6.07%	8.85%
24	4.31%	6.22%	1.87%	2.80%	6.18%	9.02%
25	4.38%	6.33%	1.90%	2.85%	6.28%	9.18%
26	4.46%	6.44%	1.93%	2.90%	6.39%	9.34%
27	4.53%	6.55%	1.97%	2.96%	6.50%	9.51%
28	4.61%	6.67%	2.01%	3.02%	6.62%	9.69%
29	4.69%	6.79%	2.05%	3.07%	6.74%	9.86%
30	4.77%	6.91%	2.09%	3.13%	6.86%	10.04%
31	4.85%	7.03%	2.13%	3.19%	6.98%	10.22%
32	4.94%	7.16%	2.17%	3.25%	7.11%	10.41%
33	5.02%	7.29%	2.21%	3.32%	7.23%	10.61%
34	5.11%	7.42%	2.25%	3.38%	7.36%	10.80%
35	5.20%	7.55%	2.30%	3.45%	7.50%	11.00%
36	5.29%	7.69%	2.34%	3.51%	7.63%	11.20%
37	5.38%	7.83%	2.39%	3.58%	7.77%	11.41%
38	5.48%	7.98%	2.44%	3.66%	7.92%	11.64%
39	5.58%	8.13%	2.49%	3.73%	8.07%	11.86%

Section 4: Actuarial Valuation Basis

Exhibit III: 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	5.68%	8.27%	2.53%	3.80%	8.21%	12.07%
41	5.78%	8.42%	2.58%	3.87%	8.36%	12.29%
42	5.88%	8.58%	2.63%	3.95%	8.51%	12.53%
43	5.98%	8.73%	2.68%	4.02%	8.66%	12.75%
44	6.08%	8.88%	2.73%	4.09%	8.81%	12.97%
45	6.19%	9.04%	2.78%	4.17%	8.97%	13.21%
46	6.30%	9.20%	2.83%	4.25%	9.13%	13.45%
47	6.40%	9.36%	2.89%	4.33%	9.29%	13.69%
48	6.50%	9.50%	2.93%	4.40%	9.43%	13.90%
49	6.61%	9.67%	2.99%	4.48%	9.60%	14.15%
50	6.71%	9.82%	3.03%	4.55%	9.74%	14.37%
51	6.82%	9.98%	3.09%	4.63%	9.91%	14.61%
52	6.92%	10.14%	3.14%	4.71%	10.06%	14.85%
53	7.05%	10.33%	3.20%	4.80%	10.25%	15.13%
54	7.13%	10.45%	3.24%	4.86%	10.37%	15.31%
55	7.22%	10.59%	3.29%	4.93%	10.51%	15.52%
56	7.30%	10.70%	3.32%	4.98%	10.62%	15.68%
57	7.28%	10.68%	3.31%	4.97%	10.59%	15.65%
58	7.27%	10.66%	3.31%	4.96%	10.58%	15.62%
59 & Over	6.86%	10.05%	3.11%	4.67%	9.97%	14.72%

Interest: 7.00% per annum
Mortality: See *Section 4, Exhibit I*
Salary Increase: Inflation (2.75%) + Across-the-Board Increase (0.50%) + Merit (See *Section 4, Exhibit I*)
Administrative Expense: 0.49% of payroll added to Basic rates
Leave Cashout: 0.75%
COLA Loading Factor: 48.80%, applied to Basic rates prior to adjustment for administrative expenses.

Section 4: Actuarial Valuation Basis

Exhibit III: 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	5.50%	2.72%	8.22%
16	5.59%	2.77%	8.36%
17	5.69%	2.83%	8.52%
18	5.79%	2.88%	8.67%
19	5.90%	2.94%	8.84%
20	6.00%	2.99%	8.99%
21	6.11%	3.05%	9.16%
22	6.22%	3.11%	9.33%
23	6.33%	3.17%	9.50%
24	6.44%	3.23%	9.67%
25	6.55%	3.29%	9.84%
26	6.67%	3.36%	10.03%
27	6.79%	3.42%	10.21%
28	6.91%	3.49%	10.40%
29	7.03%	3.55%	10.58%
30	7.16%	3.62%	10.78%
31	7.29%	3.69%	10.98%
32	7.42%	3.77%	11.19%
33	7.55%	3.84%	11.39%
34	7.68%	3.91%	11.59%
35	7.82%	3.98%	11.80%
36	7.97%	4.06%	12.03%
37	8.11%	4.14%	12.25%
38	8.26%	4.22%	12.48%
39	8.42%	4.31%	12.73%

Section 4: Actuarial Valuation Basis

Exhibit III: 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	8.57%	4.39%	12.96%
41	8.73%	4.48%	13.21%
42	8.88%	4.56%	13.44%
43	9.04%	4.65%	13.69%
44	9.20%	4.73%	13.93%
45	9.37%	4.82%	14.19%
46	9.52%	4.91%	14.43%
47	9.68%	4.99%	14.67%
48	9.84%	5.08%	14.92%
49	10.00%	5.17%	15.17%
50	10.16%	5.25%	15.41%
51	10.32%	5.34%	15.66%
52	10.49%	5.43%	15.92%
53	10.65%	5.52%	16.17%
54	10.79%	5.60%	16.39%
55	10.89%	5.65%	16.54%
56	11.00%	5.71%	16.71%
57	10.96%	5.69%	16.65%
58	10.72%	5.56%	16.28%
59 & Over	10.28%	5.32%	15.60%

Interest: 7.00% per annum
Mortality: See *Section 4, Exhibit I*
Salary Increase: Inflation (2.75%) + Across-the-Board Increase (0.50%) + Merit (See *Section 4, Exhibit I*)
Administrative Expense: 0.49% of payroll added to Basic rates
Leave Cashout: 4.75%
COLA Loading Factor: 54.33%, applied to Basic rates prior to adjustment for administrative expenses.

Section 4: Actuarial Valuation Basis

Exhibit III: 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	3.69%	5.29%	1.74%	2.61%	5.43%	7.90%
16	3.76%	5.39%	1.77%	2.66%	5.53%	8.05%
17	3.82%	5.48%	1.81%	2.71%	5.63%	8.19%
18	3.88%	5.58%	1.85%	2.77%	5.73%	8.35%
19	3.95%	5.68%	1.88%	2.82%	5.83%	8.50%
20	4.02%	5.78%	1.91%	2.87%	5.93%	8.65%
21	4.08%	5.88%	1.95%	2.93%	6.03%	8.81%
22	4.16%	5.99%	1.99%	2.99%	6.15%	8.98%
23	4.22%	6.09%	2.03%	3.04%	6.25%	9.13%
24	4.30%	6.20%	2.07%	3.10%	6.37%	9.30%
25	4.37%	6.31%	2.11%	3.16%	6.48%	9.47%
26	4.44%	6.42%	2.15%	3.22%	6.59%	9.64%
27	4.52%	6.54%	2.19%	3.29%	6.71%	9.83%
28	4.60%	6.65%	2.23%	3.35%	6.83%	10.00%
29	4.68%	6.77%	2.27%	3.41%	6.95%	10.18%
30	4.76%	6.89%	2.32%	3.48%	7.08%	10.37%
31	4.84%	7.02%	2.37%	3.55%	7.21%	10.57%
32	4.92%	7.14%	2.41%	3.61%	7.33%	10.75%
33	5.01%	7.27%	2.45%	3.68%	7.46%	10.95%
34	5.10%	7.40%	2.50%	3.75%	7.60%	11.15%
35	5.19%	7.54%	2.55%	3.83%	7.74%	11.37%
36	5.28%	7.67%	2.60%	3.90%	7.88%	11.57%
37	5.37%	7.81%	2.65%	3.98%	8.02%	11.79%
38	5.47%	7.96%	2.71%	4.06%	8.18%	12.02%
39	5.57%	8.11%	2.76%	4.14%	8.33%	12.25%

Section 4: Actuarial Valuation Basis

Exhibit III: 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	5.67%	8.26%	2.81%	4.22%	8.48%	12.48%
41	5.77%	8.41%	2.87%	4.30%	8.64%	12.71%
42	5.87%	8.56%	2.92%	4.38%	8.79%	12.94%
43	5.97%	8.71%	2.98%	4.47%	8.95%	13.18%
44	6.07%	8.86%	3.03%	4.55%	9.10%	13.41%
45	6.18%	9.03%	3.09%	4.64%	9.27%	13.67%
46	6.28%	9.18%	3.15%	4.72%	9.43%	13.90%
47	6.38%	9.33%	3.20%	4.80%	9.58%	14.13%
48	6.48%	9.48%	3.25%	4.88%	9.73%	14.36%
49	6.60%	9.65%	3.32%	4.98%	9.92%	14.63%
50	6.69%	9.79%	3.37%	5.05%	10.06%	14.84%
51	6.80%	9.96%	3.43%	5.15%	10.23%	15.11%
52	6.91%	10.12%	3.49%	5.23%	10.40%	15.35%
53	7.03%	10.30%	3.55%	5.33%	10.58%	15.63%
54	7.13%	10.45%	3.61%	5.41%	10.74%	15.86%
55	7.22%	10.59%	3.66%	5.49%	10.88%	16.08%
56	7.26%	10.65%	3.68%	5.52%	10.94%	16.17%
57	7.29%	10.69%	3.69%	5.54%	10.98%	16.23%
58	7.18%	10.53%	3.63%	5.45%	10.81%	15.98%
59 & Over	6.88%	10.07%	3.47%	5.20%	10.35%	15.27%

Interest: 7.00% per annum

Mortality: See *Section 4, Exhibit I*

Salary Increase: Inflation (2.75%) + Across-the-Board Increase (0.50%) + Merit (See *Section 4, Exhibit I*)

Administrative Expense: 0.49% of payroll added to Basic rates

Leave Cashout: 0.50%

COLA Loading Factor: 54.33%, applied to Basic rates prior to adjustment for administrative expenses.

Section 4: Actuarial Valuation Basis

Exhibit III: 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	5.33%	2.79%	8.12%
16	5.42%	2.84%	8.26%
17	5.52%	2.90%	8.42%
18	5.62%	2.96%	8.58%
19	5.72%	3.01%	8.73%
20	5.82%	3.07%	8.89%
21	5.92%	3.13%	9.05%
22	6.03%	3.19%	9.22%
23	6.13%	3.25%	9.38%
24	6.24%	3.31%	9.55%
25	6.35%	3.38%	9.73%
26	6.47%	3.45%	9.92%
27	6.58%	3.51%	10.09%
28	6.70%	3.58%	10.28%
29	6.82%	3.65%	10.47%
30	6.94%	3.72%	10.66%
31	7.06%	3.79%	10.85%
32	7.19%	3.86%	11.05%
33	7.32%	3.94%	11.26%
34	7.45%	4.01%	11.46%
35	7.59%	4.09%	11.68%
36	7.72%	4.17%	11.89%
37	7.87%	4.25%	12.12%
38	8.01%	4.33%	12.34%
39	8.16%	4.42%	12.58%

Section 4: Actuarial Valuation Basis

Exhibit III: 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	8.31%	4.51%	12.82%
41	8.47%	4.60%	13.07%
42	8.62%	4.68%	13.30%
43	8.77%	4.77%	13.54%
44	8.92%	4.86%	13.78%
45	9.08%	4.95%	14.03%
46	9.24%	5.04%	14.28%
47	9.40%	5.13%	14.53%
48	9.55%	5.22%	14.77%
49	9.71%	5.31%	15.02%
50	9.87%	5.40%	15.27%
51	10.03%	5.50%	15.53%
52	10.18%	5.58%	15.76%
53	10.35%	5.68%	16.03%
54	10.51%	5.77%	16.28%
55	10.62%	5.84%	16.46%
56	10.69%	5.88%	16.57%
57	10.75%	5.91%	16.66%
58	10.63%	5.84%	16.47%
59 & Over	10.31%	5.66%	15.97%

Interest: 7.00% per annum
Mortality: See *Section 4, Exhibit I*
Salary Increase: Inflation (2.75%) + Across-the-Board Increase (0.50%) + Merit (See *Section 4, Exhibit I*)
Administrative Expense: 0.49% of payroll added to Basic rates
Leave Cashout: 1.25%
COLA Loading Factor: 57.62%, applied to Basic rates prior to adjustment for administrative expenses.

Section 4: Actuarial Valuation Basis

Exhibit III: 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	4.20%	6.05%	1.64%	2.46%	5.84%	8.51%
16	4.27%	6.16%	1.67%	2.51%	5.94%	8.67%
17	4.34%	6.26%	1.70%	2.55%	6.04%	8.81%
18	4.42%	6.38%	1.74%	2.61%	6.16%	8.99%
19	4.49%	6.49%	1.77%	2.66%	6.26%	9.15%
20	4.57%	6.61%	1.81%	2.71%	6.38%	9.32%
21	4.64%	6.72%	1.84%	2.76%	6.48%	9.48%
22	4.72%	6.84%	1.87%	2.81%	6.59%	9.65%
23	4.80%	6.96%	1.91%	2.86%	6.71%	9.82%
24	4.89%	7.09%	1.95%	2.92%	6.84%	10.01%
25	4.98%	7.22%	1.99%	2.98%	6.97%	10.20%
26	5.06%	7.35%	2.03%	3.04%	7.09%	10.39%
27	5.15%	7.48%	2.06%	3.09%	7.21%	10.57%
28	5.24%	7.61%	2.10%	3.15%	7.34%	10.76%
29	5.33%	7.75%	2.14%	3.21%	7.47%	10.96%
30	5.42%	7.89%	2.18%	3.27%	7.60%	11.16%
31	5.52%	8.03%	2.23%	3.34%	7.75%	11.37%
32	5.62%	8.19%	2.27%	3.41%	7.89%	11.60%
33	5.72%	8.33%	2.31%	3.47%	8.03%	11.80%
34	5.82%	8.49%	2.36%	3.54%	8.18%	12.03%
35	5.93%	8.65%	2.41%	3.61%	8.34%	12.26%
36	6.04%	8.81%	2.45%	3.68%	8.49%	12.49%
37	6.14%	8.97%	2.50%	3.75%	8.64%	12.72%
38	6.25%	9.13%	2.55%	3.82%	8.80%	12.95%
39	6.36%	9.29%	2.59%	3.89%	8.95%	13.18%

Section 4: Actuarial Valuation Basis

Exhibit III: 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	6.47%	9.46%	2.65%	3.97%	9.12%	13.43%
41	6.58%	9.62%	2.69%	4.04%	9.27%	13.66%
42	6.68%	9.78%	2.74%	4.11%	9.42%	13.89%
43	6.80%	9.95%	2.79%	4.19%	9.59%	14.14%
44	6.90%	10.11%	2.84%	4.26%	9.74%	14.37%
45	7.01%	10.27%	2.89%	4.33%	9.90%	14.60%
46	7.13%	10.45%	2.94%	4.41%	10.07%	14.86%
47	7.24%	10.61%	2.99%	4.48%	10.23%	15.09%
48	7.36%	10.80%	3.04%	4.56%	10.40%	15.36%
49	7.46%	10.95%	3.09%	4.63%	10.55%	15.58%
50	7.56%	11.09%	3.13%	4.69%	10.69%	15.78%
51	7.63%	11.20%	3.16%	4.74%	10.79%	15.94%
52	7.60%	11.15%	3.15%	4.72%	10.75%	15.87%
53	7.54%	11.07%	3.12%	4.68%	10.66%	15.75%
54 & Over	7.24%	10.61%	2.99%	4.48%	10.23%	15.09%

Interest: 7.00% per annum

Mortality: See *Section 4, Exhibit I*

Salary Increase: Inflation (2.75%) + Across-the-Board Increase (0.50%) + Merit (See *Section 4, Exhibit I*)

Administrative Expense: 0.49% of payroll added to Basic rates

Leave Cashout: 0.25%

COLA Loading Factor: 44.25%, applied to Basic rates prior to adjustment for administrative expenses.

Section 4: Actuarial Valuation Basis

Exhibit III: 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	9.48%	6.31%	15.79%
16	9.48%	6.31%	15.79%
17	9.48%	6.31%	15.79%
18	9.48%	6.31%	15.79%
19	9.48%	6.31%	15.79%
20	9.48%	6.31%	15.79%
21	9.48%	6.31%	15.79%
22	9.62%	6.40%	16.02%
23	9.76%	6.50%	16.26%
24	9.91%	6.61%	16.52%
25	10.06%	6.71%	16.77%
26	10.21%	6.82%	17.03%
27	10.37%	6.93%	17.30%
28	10.52%	7.04%	17.56%
29	10.68%	7.15%	17.83%
30	10.85%	7.27%	18.12%
31	11.02%	7.39%	18.41%
32	11.19%	7.51%	18.70%
33	11.37%	7.63%	19.00%
34	11.55%	7.76%	19.31%
35	11.74%	7.89%	19.63%
36	11.93%	8.03%	19.96%
37	12.12%	8.16%	20.28%
38	12.31%	8.29%	20.60%
39	12.52%	8.44%	20.96%

Section 4: Actuarial Valuation Basis

Exhibit III: 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	12.74%	8.59%	21.33%
41	12.95%	8.74%	21.69%
42	13.18%	8.90%	22.08%
43	13.41%	9.06%	22.47%
44	13.67%	9.25%	22.92%
45	13.89%	9.40%	23.29%
46	13.91%	9.41%	23.32%
47	13.94%	9.44%	23.38%
48	13.75%	9.30%	23.05%
49 & Over	13.23%	8.94%	22.17%

Interest: 7.00% per annum
Mortality: See *Section 4, Exhibit I*
Salary Increase: Inflation (2.75%) + Across-the-Board Increase (0.50%) + Merit (See *Section 4, Exhibit I*)
Administrative Expense: 0.49% of payroll added to Basic rates
Leave Cashout: 0.75%
COLA Loading Factor: 70.15%, applied to Basic rates prior to adjustment for administrative expenses.

Section 4: Actuarial Valuation Basis

Exhibit III: 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	9.46%	6.59%	16.05%
16	9.46%	6.59%	16.05%
17	9.46%	6.59%	16.05%
18	9.46%	6.59%	16.05%
19	9.46%	6.59%	16.05%
20	9.46%	6.59%	16.05%
21	9.46%	6.59%	16.05%
22	9.60%	6.69%	16.29%
23	9.74%	6.80%	16.54%
24	9.89%	6.91%	16.80%
25	10.04%	7.02%	17.06%
26	10.19%	7.13%	17.32%
27	10.34%	7.24%	17.58%
28	10.50%	7.36%	17.86%
29	10.66%	7.47%	18.13%
30	10.82%	7.59%	18.41%
31	10.99%	7.72%	18.71%
32	11.17%	7.85%	19.02%
33	11.34%	7.97%	19.31%
34	11.53%	8.11%	19.64%
35	11.72%	8.25%	19.97%
36	11.90%	8.39%	20.29%
37	12.10%	8.53%	20.63%
38	12.29%	8.67%	20.96%
39	12.49%	8.82%	21.31%

Section 4: Actuarial Valuation Basis

Exhibit III: 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	12.71%	8.98%	21.69%
41	12.93%	9.14%	22.07%
42	13.16%	9.31%	22.47%
43	13.39%	9.48%	22.87%
44	13.64%	9.66%	23.30%
45	13.85%	9.82%	23.67%
46	13.92%	9.87%	23.79%
47	13.86%	9.83%	23.69%
48	13.77%	9.76%	23.53%
49 & Over	13.26%	9.38%	22.64%

Interest: 7.00% per annum
Mortality: See *Section 4, Exhibit I*
Salary Increase: Inflation (2.75%) + Across-the-Board Increase (0.50%) + Merit (See *Section 4, Exhibit I*)
Administrative Expense: 0.49% of payroll added to Basic rates
Leave Cashout: 0.50%
COLA Loading Factor: 73.49%, applied to Basic rates prior to adjustment for administrative expenses.

Section 4: Actuarial Valuation Basis

Exhibit III: 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	9.06%	3.90%	12.96%
16	9.06%	3.90%	12.96%
17	9.06%	3.90%	12.96%
18	9.06%	3.90%	12.96%
19	9.06%	3.90%	12.96%
20	9.06%	3.90%	12.96%
21	9.06%	3.90%	12.96%
22	9.19%	3.96%	13.15%
23	9.33%	4.02%	13.35%
24	9.47%	4.09%	13.56%
25	9.61%	4.15%	13.76%
26	9.75%	4.21%	13.96%
27	9.90%	4.28%	14.18%
28	10.05%	4.35%	14.40%
29	10.20%	4.42%	14.62%
30	10.36%	4.49%	14.85%
31	10.52%	4.56%	15.08%
32	10.69%	4.64%	15.33%
33	10.86%	4.72%	15.58%
34	11.03%	4.80%	15.83%
35	11.20%	4.87%	16.07%
36	11.38%	4.95%	16.33%
37	11.56%	5.04%	16.60%
38	11.73%	5.11%	16.84%
39	11.93%	5.21%	17.14%

Section 4: Actuarial Valuation Basis

Exhibit III: 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	12.12%	5.29%	17.41%
41	12.31%	5.38%	17.69%
42	12.51%	5.47%	17.98%
43	12.68%	5.55%	18.23%
44	12.78%	5.59%	18.37%
45	12.79%	5.60%	18.39%
46	12.67%	5.54%	18.21%
47	12.41%	5.42%	17.83%
48	12.74%	5.57%	18.31%
49 & Over	13.32%	5.84%	19.16%

Interest: 7.00% per annum
Mortality: See *Section 4, Exhibit I*
Salary Increase: Inflation (2.75%) + Across-the-Board Increase (0.50%) + Merit (See *Section 4, Exhibit I*)
Administrative Expense: 0.49% of payroll added to Basic rates
Leave Cashout: 0.00%
COLA Loading Factor: 45.50%, applied to Basic rates prior to adjustment for administrative expenses.

Section 4: Actuarial Valuation Basis

Exhibit III: 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	9.46%	6.33%	15.79%
16	9.46%	6.33%	15.79%
17	9.46%	6.33%	15.79%
18	9.46%	6.33%	15.79%
19	9.46%	6.33%	15.79%
20	9.46%	6.33%	15.79%
21	9.46%	6.33%	15.79%
22	9.60%	6.43%	16.03%
23	9.74%	6.52%	16.26%
24	9.89%	6.63%	16.52%
25	10.04%	6.74%	16.78%
26	10.19%	6.84%	17.03%
27	10.34%	6.95%	17.29%
28	10.50%	7.06%	17.56%
29	10.66%	7.17%	17.83%
30	10.82%	7.29%	18.11%
31	10.99%	7.41%	18.40%
32	11.17%	7.53%	18.70%
33	11.34%	7.65%	18.99%
34	11.53%	7.79%	19.32%
35	11.72%	7.92%	19.64%
36	11.90%	8.05%	19.95%
37	12.10%	8.19%	20.29%
38	12.29%	8.32%	20.61%
39	12.49%	8.46%	20.95%

Section 4: Actuarial Valuation Basis

Exhibit III: 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	12.71%	8.62%	21.33%
41	12.93%	8.77%	21.70%
42	13.16%	8.94%	22.10%
43	13.39%	9.10%	22.49%
44	13.64%	9.27%	22.91%
45	13.85%	9.42%	23.27%
46	13.92%	9.47%	23.39%
47	13.86%	9.43%	23.29%
48	13.77%	9.37%	23.14%
49 & Over	13.26%	9.01%	22.27%

Interest: 7.00% per annum
Mortality: See *Section 4, Exhibit I*
Salary Increase: Inflation (2.75%) + Across-the-Board Increase (0.50%) + Merit (See *Section 4, Exhibit I*)
Administrative Expense: 0.49% of payroll added to Basic rates
Leave Cashout: 0.50%
COLA Loading Factor: 70.53%, applied to Basic rates prior to adjustment for administrative expenses.

Section 4: Actuarial Valuation Basis

Exhibit III: 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	9.63%	6.78%	16.41%
16	9.63%	6.78%	16.41%
17	9.63%	6.78%	16.41%
18	9.63%	6.78%	16.41%
19	9.63%	6.78%	16.41%
20	9.63%	6.78%	16.41%
21	9.63%	6.78%	16.41%
22	9.78%	6.89%	16.67%
23	9.92%	6.99%	16.91%
24	10.07%	7.10%	17.17%
25	10.22%	7.21%	17.43%
26	10.38%	7.33%	17.71%
27	10.53%	7.44%	17.97%
28	10.69%	7.56%	18.25%
29	10.85%	7.68%	18.53%
30	11.02%	7.81%	18.83%
31	11.19%	7.93%	19.12%
32	11.37%	8.07%	19.44%
33	11.55%	8.20%	19.75%
34	11.74%	8.34%	20.08%
35	11.92%	8.47%	20.39%
36	12.11%	8.62%	20.73%
37	12.31%	8.76%	21.07%
38	12.51%	8.91%	21.42%
39	12.71%	9.06%	21.77%

Section 4: Actuarial Valuation Basis

Exhibit III: 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	12.92%	9.22%	22.14%
41	13.14%	9.38%	22.52%
42	13.37%	9.55%	22.92%
43	13.61%	9.73%	23.34%
44	13.84%	9.90%	23.74%
45	14.07%	10.07%	24.14%
46	14.10%	10.09%	24.19%
47	14.04%	10.05%	24.09%
48	13.78%	9.85%	23.63%
49 & Over	13.01%	9.28%	22.29%

Interest: 7.00% per annum
Mortality: See *Section 4, Exhibit I*
Salary Increase: Inflation (2.75%) + Across-the-Board Increase (0.50%) + Merit (See *Section 4, Exhibit I*)
Administrative Expense: 0.49% of payroll added to Basic rates
Leave Cashout: 2.50%
COLA Loading Factor: 74.14%, applied to Basic rates prior to adjustment for administrative expenses.

Section 4: Actuarial Valuation Basis

Exhibit III: 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	9.59%	6.98%	16.57%
16	9.59%	6.98%	16.57%
17	9.59%	6.98%	16.57%
18	9.59%	6.98%	16.57%
19	9.59%	6.98%	16.57%
20	9.59%	6.98%	16.57%
21	9.59%	6.98%	16.57%
22	9.73%	7.09%	16.82%
23	9.88%	7.21%	17.09%
24	10.02%	7.31%	17.33%
25	10.18%	7.44%	17.62%
26	10.33%	7.55%	17.88%
27	10.48%	7.67%	18.15%
28	10.64%	7.79%	18.43%
29	10.80%	7.91%	18.71%
30	10.97%	8.04%	19.01%
31	11.14%	8.17%	19.31%
32	11.32%	8.31%	19.63%
33	11.49%	8.44%	19.93%
34	11.68%	8.59%	20.27%
35	11.88%	8.74%	20.62%
36	12.06%	8.88%	20.94%
37	12.25%	9.03%	21.28%
38	12.45%	9.18%	21.63%
39	12.66%	9.34%	22.00%

Section 4: Actuarial Valuation Basis

Exhibit III: 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	12.88%	9.51%	22.39%
41	13.09%	9.67%	22.76%
42	13.33%	9.85%	23.18%
43	13.56%	10.03%	23.59%
44	13.78%	10.20%	23.98%
45	13.99%	10.36%	24.35%
46	14.05%	10.41%	24.46%
47	13.97%	10.35%	24.32%
48	13.81%	10.22%	24.03%
49 & Over	13.07%	9.66%	22.73%

Interest: 7.00% per annum
Mortality: See Section 4, Exhibit I
Salary Increase: Inflation (2.75%) + Across-the-Board Increase (0.50%) + Merit (See Section 4, Exhibit I)
Administrative Expense: 0.49% of payroll added to Basic rates
Leave Cashout: 2.00%
COLA Loading Factor: 76.75%, applied to Basic rates prior to adjustment for administrative expenses.

Section 4: Actuarial Valuation Basis

Exhibit III: Member Contribution Rates (continued)

Safety Cost Group #13 Members' Contribution Rates (as a % of Monthly Payroll)
Members with Membership Dates before January 1, 2013

Entry Age	Basic	COLA	Total
15	9.46%	6.85%	16.31%
16	9.46%	6.85%	16.31%
17	9.46%	6.85%	16.31%
18	9.46%	6.85%	16.31%
19	9.46%	6.85%	16.31%
20	9.46%	6.85%	16.31%
21	9.46%	6.85%	16.31%
22	9.60%	6.96%	16.56%
23	9.74%	7.07%	16.81%
24	9.89%	7.18%	17.07%
25	10.04%	7.30%	17.34%
26	10.19%	7.41%	17.60%
27	10.34%	7.53%	17.87%
28	10.50%	7.65%	18.15%
29	10.66%	7.77%	18.43%
30	10.82%	7.89%	18.71%
31	10.99%	8.02%	19.01%
32	11.17%	8.16%	19.33%
33	11.34%	8.29%	19.63%
34	11.53%	8.44%	19.97%
35	11.72%	8.58%	20.30%
36	11.90%	8.72%	20.62%
37	12.10%	8.87%	20.97%
38	12.29%	9.02%	21.31%
39	12.49%	9.17%	21.66%

Section 4: Actuarial Valuation Basis

Exhibit III: Member Contribution Rates (continued)

Safety Cost Group #13 Members' Contribution Rates (as a % of Monthly Payroll)
Members with Membership Dates before January 1, 2013 (continued)

Entry Age	Basic	COLA	Total
40	12.71%	9.34%	22.05%
41	12.93%	9.51%	22.44%
42	13.16%	9.68%	22.84%
43	13.39%	9.86%	23.25%
44	13.64%	10.05%	23.69%
45	13.85%	10.21%	24.06%
46	13.92%	10.26%	24.18%
47	13.86%	10.22%	24.08%
48	13.77%	10.15%	23.92%
49 & Over	13.26%	9.76%	23.02%

Interest: 7.00% per annum
Mortality: See *Section 4, Exhibit I*
Salary Increase: Inflation (2.75%) + Across-the-Board Increase (0.50%) + Merit (See *Section 4, Exhibit I*)
Administrative Expense: 0.49% of payroll added to Basic rates
Leave Cashout: 0.50%
COLA Loading Factor: 76.42%, applied to Basic rates prior to adjustment for administrative expenses.

Section 4: Actuarial Valuation Basis

Exhibit III: 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)	8.87%	2.02%	10.89%
Cost Group #1 – PEPRA Tier 4 (3% COLA)	8.91%	2.99%	11.90%
Cost Group #2 - PEPRA Tier 5 (2% COLA)	8.24%	1.85%	10.09%
Cost Group #2 - PEPRA Tier 5 (3%/4% COLA)	8.41%	2.76%	11.17%
Cost Group #3 - PEPRA Tier 4 (3% COLA)	8.37%	2.87%	11.24%
Cost Group #4 - PEPRA Tier 4 (3% COLA)	8.60%	2.92%	11.52%
Cost Group #5 - PEPRA Tier 4 (2% COLA)	10.28%	2.29%	12.57%
Cost Group #5 - PEPRA Tier 4 (3% COLA)	11.41%	3.79%	15.20%
Cost Group #6 - PEPRA Tier 4 (3% COLA)	9.23%	3.15%	12.38%

The PEPRA member contribution rates are 50% of the Normal Cost rate. The Basic rates shown above also include an administrative expense load of 0.49% 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 2020 is equal to \$126,291; for an employer that is not enrolled in Social Security, the maximum amount is \$151,549. (§7522.10) These amounts should be adjusted for changes to the Consumer Price Index for All Urban Consumers after 2020. (§7522.10(d))

Section 4: Actuarial Valuation Basis

Exhibit III: 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	14.50%	5.79%	20.29%
Cost Group #8 - PEPRA Tier D	12.33%	5.08%	17.41%
Cost Group #8 - PEPRA Tier E	12.37%	3.39%	15.76%
Cost Group #9 - PEPRA Tier E	13.24%	3.59%	16.83%
Cost Group #10 - PEPRA Tier D	12.44%	5.13%	17.57%
Cost Group #11 - PEPRA Tier D	11.42%	4.70%	16.12%
Cost Group #12 - PEPRA Tier D	11.50%	4.76%	16.26%
Cost Group #13 - PEPRA Tier D	12.25%	5.06%	17.31%

The PEPRA member contribution rates are 50% of the Normal Cost rate. The Basic rates shown above also include an administrative expense load of 0.49% 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 2020 is equal to \$126,291; for an employer that is not enrolled in Social Security, the maximum amount is \$151,549. (§7522.10) These amounts should be adjusted for changes to the Consumer Price Index for All Urban Consumers after 2020. (§7522.10(d))

Section 4: Actuarial Valuation Basis

Exhibit IV: Refundability Factors

		December 31, 2019		December 31, 2018	
		Legacy Tiers	PEPRA Tiers	Legacy Tiers	PEPRA Tiers
General					
Cost Group #1 –	County and Small Districts (Tier 1)	0.9682		0.9577	
	PEPRA Tier 4 (2% COLA)		0.9587		0.9574
	PEPRA Tier 4 (3% COLA)		0.9609		0.9582
Cost Group #2 –	County and Small Districts (Tier 3)	0.9561		0.9540	
	PEPRA Tier 5 (2% COLA)		0.9582		0.9580
	PEPRA Tier 5 (3%/4% COLA)		0.9607		0.9604
Cost Group #3 –	Central Contra Costa Sanitary District	0.9609	0.9667	0.9560	0.9661
Cost Group #4 –	Contra Costa Housing Authority	0.9609	0.9662	0.9536	0.9643
Cost Group #5 –	Contra Costa County Fire Protection District	0.9752		0.9563	
	PEPRA Tier 4 (2% COLA)		0.9541		0.9568
	PEPRA Tier 4 (3% COLA)		0.9581		0.9585
Cost Group #6 –	Small Districts (Non-Enhanced Tier 1 and 4)	0.9496	0.9651	0.9512	0.9647
Safety					
Cost Group #7 –	County (Tier A and D)	0.9621	0.9711	0.9599	0.9716
Cost Group #8 –	Contra Costa Fire Protection District	0.9674		0.9606	
	PEPRA Tier D (3% COLA)		0.9755		0.9732
	PEPRA Tier E (2% COLA)		0.9706		0.9719
Cost Group #9 –	County (Tier C and E)	0.9628	0.9698	0.9613	0.9703
Cost Group #10 –	Moraga-Orinda Fire District	0.9654	0.9721	0.9639	0.9733
Cost Group #11 –	San Ramon Valley Fire District	0.9682	0.9747	0.9618	0.9735
Cost Group #12 –	Rodeo-Hercules Fire Protection District	0.9651	0.9771	0.9533	0.9769
Cost Group #13 –	East Contra Costa Fire Protection District	0.9561	0.9763	0.9606	0.9732

Section 4: Actuarial Valuation Basis

Exhibit V: 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
	East Contra Costa Fire Protection District (Non-Integrated)	Tier 1 Enhanced/PEPRA Tier 4	
	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)	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 121.

Section 4: Actuarial Valuation Basis

Exhibit V: 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	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	
13	East Contra Costa Fire Protection District	Tier A 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 121.

Section 4: Actuarial Valuation Basis

Exhibit VI: Allocation of Valuation Value of Assets as of December 31, 2019

	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	\$4,858,186,282	\$338,258,416	\$56,454,727	\$50,533,869	\$7,192,361
2 Adjustment for Pre-Paid Contributions	0	0	0	0	0
3 Contributions: ¹					
a. Total Member Contributions	\$72,835,724	\$4,089,891	\$636,890	\$649,230	\$129,336
b. Employer Contributions - Excludes POB and other Special Contributions	180,094,855	18,046,778	2,297,649	1,855,960	214,871
c. Employer Contributions - Special (POB, Termination, etc.)	<u>30,000</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
d. Total Contributions	\$252,960,579	\$22,136,669	\$2,934,539	\$2,505,190	\$344,207
4 Total Payments Excluding Post-Retirement Death	266,314,814	20,717,699	3,394,373	3,307,683	296,791
5 Administrative Expenses ²	<u>8,542,668</u>	<u>447,201</u>	<u>72,306</u>	<u>72,515</u>	<u>11,864</u>
6 Subtotal (1 + 2 + 3d - 4 - 5)	\$4,836,289,379	\$339,230,185	\$55,922,587	\$49,658,861	\$7,227,913
7 Weighted Average Fund Balance	4,847,237,829	338,744,301	56,188,657	50,096,365	7,210,137
8 Earnings Allocated in Proportion to (7)	<u>302,437,229</u>	<u>21,135,519</u>	<u>3,505,820</u>	<u>3,125,699</u>	<u>449,867</u>
9 Allocated Valuation Value of Assets as of End of Year (6 + 8)	\$5,138,726,608	\$360,365,704	\$59,428,407	\$52,784,560	\$7,677,780

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 VI: Allocation of Valuation Value of Assets as of December 31, 2019 (continued)

	Cost Groups #7 & 9 Safety County	Cost Group #8 ¹ 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	\$1,779,771,605	\$874,985,218	\$166,368,284	\$388,827,041
2 Adjustment for Pre-Paid Contributions	0	0	0	0
3 Contributions: ²				
a. Total Member Contributions	\$17,891,005	\$6,641,270	\$1,332,716	\$3,401,788
b. Employer Contributions - Excludes POB and other Special Contributions	68,681,879	27,059,031	5,370,317	16,397,599
c. Employer Contributions - Special (POB, Termination, etc.)	<u>0</u>	<u>0</u>	<u>0</u>	<u>1,236,000</u>
d. Total Contributions	\$86,572,884	\$33,700,301	\$6,703,033	\$21,035,387
4 Total Payments Excluding Post-Retirement Death	94,533,210	57,975,314	11,316,364	18,853,824
5 Administrative Expenses ³	<u>1,259,206</u>	<u>465,448</u>	<u>93,566</u>	<u>272,679</u>
6 Subtotal (1 + 2 + 3d – 4 – 5)	\$1,770,552,073	\$850,244,757	\$161,661,387	\$390,735,925
7 Weighted Average Fund Balance	1,775,161,839	862,614,988	164,014,836	389,781,483
8 Earnings Allocated in Proportion to (7)	<u>110,758,961</u>	<u>53,821,763</u>	<u>10,233,497</u>	<u>24,319,919</u>
9 Allocated Valuation Value of Assets as of End of Year (6 + 8)	\$1,881,311,034	\$904,066,520	\$171,894,884	\$415,055,844

Note: Results may be slightly off due to rounding.

¹ Allocated Valuation Value of Asset as of beginning of year reflects depooling of East Contra Costa Fire Protection District from Cost Group #8 into its own Cost Group #13. The Valuation Value of Assets was allocated based on the Actuarial Accrued Liability of Contra Costa Fire Protection District and East Contra Costa Fire Protection District respectively as of December 31, 2018.

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

³ Allocated based on expected administrative expenses from the prior valuation.

Section 4: Actuarial Valuation Basis

Exhibit VI: Allocation of Valuation Value of Assets as of December 31, 2019 (continued)

	Cost Group #12 Rodeo-Hercules Fire Protection District	Cost Group #13 ¹ East Contra Costa Fire Protection District	Terminated Employers	Total
1 Allocated Valuation Value of Assets as of Beginning of Year	\$34,986,338	\$38,899,709	\$55,714,376	\$8,650,178,226
2 Adjustment for Pre-Paid Contributions ²	841,920	0	0	841,920
3 Contributions: ³				
a. Total Member Contributions	\$255,443	\$623,942	\$476	\$108,487,711
b. Employer Contributions - Excludes POB and other Special Contributions	1,276,962	4,240,841	0	325,536,742
c. Employer Contributions - Special (POB, Termination, etc.)	<u>0</u>	<u>0</u>	<u>1,180,054</u>	<u>2,446,054</u>
d. Total Contributions	\$1,532,405	\$4,864,783	\$1,180,530	\$436,470,507
4 Total Payments Excluding Post-Retirement Death	2,008,499	1,243,560	5,427,222	485,389,353
5 Administrative Expenses ⁴	<u>30,674</u>	<u>42,192</u>	<u>0</u>	<u>11,310,319</u>
6 Subtotal (1 + 2 + 3d – 4 – 5)	\$35,321,490	\$42,478,740	\$51,467,684	\$8,590,790,981
7 Weighted Average Fund Balance	35,574,874	40,689,225	53,387,764	8,620,702,298
8 Earnings Allocated in Proportion to (7)	<u>2,219,649</u>	<u>2,538,752</u>	<u>3,331,062</u>	<u>537,877,737</u>
9 Allocated Valuation Value of Assets as of End of Year (6 + 8)	\$37,541,139	\$45,017,492	\$54,798,746	\$9,128,668,718

Note: Results may be slightly off due to rounding.

¹ Allocated Valuation Value of Asset as of beginning of year reflects depooling of East Contra Costa Fire Protection District from Cost Group #8 into its own Cost Group #13. The Valuation Value of Assets was allocated based on the Actuarial Accrued Liability of Contra Costa Fire Protection District and East Contra Costa Fire Protection District respectively as of December 31, 2018.

² This adjustment is to include 6 months of contributions made by Rodeo-Hercules Fire Protection District during the 2018 calendar year that were pre-paid for the 2019 calendar year. These contributions are reflected for the first time in this valuation.

³ Employer contributions include “member subvention of employer contributions” and exclude “employer subvention of member contributions”.

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