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Merced County Employees' Retirement Association

Actuarial Valuation Report as of June 30, 2019

Produced by Cheiron

February 2020

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February 20, 2020

Retirement Board of Merced
County Employees' Retirement Association
3199 M Street
Merced, CA 95348

Dear Members of the Board:

At your request, we have conducted an actuarial valuation of the Merced County Employees' Retirement Association (MCERA, the Fund, the Plan) as of June 30, 2019. This report contains information on the Plan's assets, liabilities, and discloses employer and employee contribution levels. Your attention is called to the Foreword in which we refer to the general approach employed in the preparation of this report.

The purpose of this report is to present the results of the annual actuarial valuation of MCERA. This report is for the use of the Retirement Board of MCERA and its auditors in preparing financial reports in accordance with applicable law and accounting requirements. Any other user of this report is not an intended user and is considered a third party.

This report was prepared for the Retirement Board of MCERA for the purposes described herein and for the use by the plan auditor in completing an audit related to the matters herein. Other users of this valuation report are not intended users as defined in the Actuarial Standards of Practice, and Cheiron assumes no duty or liability to such other users.

This report and its contents have been prepared in accordance with generally recognized and accepted actuarial principles and practices and our understanding of the Code of Professional Conduct and applicable Actuarial Standards of Practice set out by the Actuarial Standards Board as well as applicable laws and regulations. Furthermore, as credentialed actuaries, we meet the Qualification Standards of the American Academy of Actuaries to render the opinion contained in this report. This report does not address any contractual or legal issues. We are not attorneys and our firm does not provide any legal services or advice.

Sincerely,
Cheiron

Graham A. Schmidt, ASA, FCA, MAAA, EA
Consulting Actuary

Anne D. Harper, FSA, MAAA, EA
Principal Consulting Actuary

FOREWORD

Cheiron has performed the actuarial valuation of the Merced County Employees' Retirement Association as of June 30, 2019. The valuation is organized as follows:

- In Section I, the **Executive Summary,** we describe the purpose of an actuarial valuation, summarize the key results found in this valuation, and disclose important trends.

- The **Main Body** of the report presents details on the Plan's
  - Section II – Identification and Assessment of Risks
  - Section III – Assets
  - Section VI – Liabilities
  - Section V – Contributions
  - Section VI – Comprehensive Annual Financial Reporting Information

- In the **Appendices** we conclude our report with detailed information describing plan membership (Appendix A), actuarial assumptions and methods employed in the valuation (Appendix B), a summary of pertinent plan provisions (Appendix C), tables containing member contribution rates (Appendix D), and a glossary of key actuarial terms (Appendix E).

Future results may differ significantly from the current results presented in this valuation report due to such factors as the following: plan experience differing from that anticipated by the assumptions; changes in assumptions; and, changes in plan provisions or applicable law.

In preparing our report, we relied on information (some oral and written) supplied by the MCERA staff. This information includes, but is not limited to, plan provisions, employee data, and financial information. We performed an informal examination of the obvious characteristics of the data for reasonableness and consistency in accordance with Actuarial Standard of Practice No. 23.

SECTION I – EXECUTIVE SUMMARY

The primary purpose of the actuarial valuation and this report is to measure, describe, and identify the following as of the valuation date:

- The financial condition of the Plan,
- Past and expected trends in the financial progress of the Plan,
- Employer and employee contribution rates for Fiscal Year 2021,
- An assessment and disclosure of key risks, and
- Information required by the GFOA for the Comprehensive Annual Financial Report.

In the balance of this Executive Summary, we present (A) the basis upon which this year's valuation was completed, (B) the key findings of this valuation including a summary of all key financial results, (C) an examination of the historical trends, and (D) the projected financial outlook for the Plan.

A. Valuation Basis

This valuation determines the employer contributions for the fiscal year ending June 30, 2021. The Plan's funding policy is to collect contributions from the employers and employees equal to the sum of:

- The normal cost under the Entry Age Normal Cost Method,
- Amortization of the Unfunded Actuarial Liability, and
- The Plan's expected administrative expenses.

The Unfunded Actuarial Liability payment is determined as the amount needed to fund the outstanding Unfunded Actuarial Liability (UAL). The UAL as of June 30, 2013 is amortized over a closed 16-year period. Effective with the June 30, 2014 valuation, any new sources of UAL due to actuarial gains and losses or method changes are amortized over a closed 24-year period, with a five-year ramp up period at the beginning of the period, a four-year ramp down at the end of the period, and 15 years of level payments as a percentage of payroll between the ramping periods. Assumption changes will be amortized over a closed 22-year period, with a three-year ramp up period, two-year ramp down period, and 17 years of level payments as a percentage of payroll. This amortization method is similar to a traditional five or three year asset smoothing and a 20-year amortization period with level payments as a percentage of payroll. The Board also adopted a policy to replace the smoothed Actuarial Value of Assets with the Market Value of Assets for valuation purposes. These amortization and funding policies in conjunction are a type of policy known as direct rate smoothing.

Experience studies are performed every three years. This valuation was performed on the basis of the economic and demographic assumptions and methods that were determined in the Actuarial Experience Study dated February 2020. A summary of the assumptions and methods used in the current valuation is shown in Appendix B.

SECTION I – EXECUTIVE SUMMARY

This valuation was prepared based on the Plan provisions shown in Appendix C. Employee contribution rates are shown in Appendix D. The rates for PEPRA members will be recomputed each year to be one-half of the total normal cost rate.

B. Key Findings of this Valuation

The following discussion summarizes the key results of the June 30, 2019 valuation and how they compare to the results from the June 30, 2018 valuation.

Summary of Key Valuation Results

Table I-1 summarizes the key results of the valuation with respect to assets, liabilities, and contributions.

Table I-1
Merced County Employees' Retirement Association
Summary of Key Valuation Results
(in millions)

Valuation Date Fiscal Year End	June 30, 2019 2021	June 30, 2018 2020
Actuarial Liability	$ 1,370.2	$ 1,301.9
Market Value of Assets	866.5	826.7
Unfunded Actuarial Liability	$ 503.7	$ 475.3
Funded Ratio	63.2%	63.5%
Net Employer Contribution Rate	51.25%	49.15%

More discussion of the factors that affected these results can be found in the remainder of this section, but some key points are as follows:

- The employer contribution rate increased from 49.15% to 51.25%.
- The Unfunded Actuarial Liability (UAL) is the excess of the Plan's Actuarial Liability over the Market Value of Assets. The Plan's UAL increased from $475.3 million to $503.7 million. This increase in UAL was primarily due to investment losses from assets and assumption changes (including a reduction in the discount rate from 7.25% to 7.00%).
- The Plan's funded ratio, the ratio of market assets over Actuarial Liability, decreased from 63.5% last year to 63.2% as of June 30, 2019.

SECTION I – EXECUTIVE SUMMARY

Plan Membership

Table I-2 summarizes Plan membership as of June 30, 2019 and June 30, 2018. More detailed membership statistics are shown in Appendix A.

Table I-2
Membership Total

Item	June 30, 2019	June 30, 2018	% Change
Actives	2,177	2,149	1.3%
Deferred Members	942	850	10.8%
Retired Members	2,373	2,310	2.7%
Total Members	5,492	5,309	3.4%
Active Member Payroll	$ 142,328,413	$ 137,667,629	3.4%
Average Pay per Active	65,378	64,061	2.1%

Some key points are as follows:

- Total Plan membership increased by 3.4%, mostly driven by the increase in deferred members, in particular non-vested members who have left their contributions on account. The active membership count increased by 1.3%, deferred membership increased by 10.8%, and retired membership increased by 2.7%.

- The pay figures reflect the annualized rate as of June 30, plus expected increases for the upcoming year. Total payroll increased by 3.4% compared to the assumed payroll growth of 2.75% while the average pay per active member increased by 2.1%.

Components of UAL Change between June 30, 2018 and June 30, 2019

Table I-3 is a detailed reconciliation of the components that affected the UAL between June 30, 2018 and June 30, 2019.

Table I-3
Change in Unfunded Actuarial Liability

Experience		in millions
Unfunded actuarial liability, 6/30/2018	$	475.3
Expected change in unfunded actuarial liability	$	(21.0)
Unfunded increase due to investment losses		20.2
Unfunded increase due to contributions less than expected		1.5
Unfunded increase due to liability loss		7.0
Unfunded increase due to assumption changes		20.7
Total change in unfunded actuarial liability		28.4
Unfunded actuarial liability, 6/30/2019	$	503.7

The Plan's UAL increased from $475.3 million as of June 30, 2018 to$503.7 million as of June 30, 2019. As shown above, the largest contributing factors were investment losses of $20.2 million and assumption change losses of $20.7 million, offset by UAL contributions which paid off $21.0 million of principal on the UAL. Contributions less than expected increased the UAL by $1.5 million. There were losses on Actuarial Liabilities of $ 7.0 million, most of which was from cost-of-living adjustments for Tier 1 retirees that were higher than assumed.

SECTION I – EXECUTIVE SUMMARY

Employer Contribution Reconciliation

Table I-4 is a detailed reconciliation between the Fiscal Year 2020 and Fiscal Year 2021 employer contribution rates, in total and by component.

Table I-4
Employer Contribution Reconciliation

Item	Total	Normal Cost	Amortization	Expenses
FYE 2020 Net Employer Contribution Rate	49.15%	8.78%	38.93%	1.44%
Expected Change due to phase-in	0.83%	0.00%	0.83%	0.00%
Change due to investment loss	0.23%	0.00%	0.23%	0.00%
Change due to contributions less than expected	0.02%	0.00%	0.02%	0.00%
Change due to PEPRA new hires	-0.23%	-0.23%	0.00%	0.00%
Change due to liability changes	0.17%	0.09%	0.08%	0.00%
Change due to effect of payroll on amort / expense	-0.06%	0.00%	-0.04%	-0.02%
Change due to change in assumptions	1.14%	1.43%	-0.29%	0.00%
Total change	2.10%	1.29%	0.83%	-0.02%
FYE 2021 Net Employer Contribution Rate	51.25%	10.07%	39.76%	1.42%

The employer contribution rate increased from 49.15% for Fiscal Year 2020 to 51.25% for Fiscal Year 2021:

- The phase-in of the net UAL experience from the last four years due to the direct rate smoothing method (based on net gains in FYE 2017 and FYE 2018, and net losses in FYE 2015 and FYE 2016, including assumption changes) increased the contribution rate by 0.83% this year. The expected phase-in for the 2020 valuation from previous years' gains and losses in addition to the new assumption change is 0.76%. However, the impacts of the prior bases on UAL rates are expected to be generally offsetting for the following few years.

- Any increases are expected to be partially offset by reductions in the employer normal cost rates, as more PEPRA members enter the system. For the current valuation, the replacement of legacy members by PEPRA members decreased the employer normal cost rate by about 0.23% of pay.

- The investment loss for the current fiscal year increased the current year contribution rate by 0.23% of pay. The assets of the Plan returned 4.81% (net of investment expenses) on a market basis, which is lower than the assumed rate of 7.25%. The amortization payment for the current year investment losses will continue to be phased-in over the next four years.

SECTION I – EXECUTIVE SUMMARY

- A larger than expected increase in the projected payroll decreased the employer contribution rate by 0.06% of pay, since it results in the Plan's Unfunded Actuarial Liability and administrative expenses being spread over a larger-than-anticipated payroll base.

- Contributions less than expected increased the employer contribution rate by 0.02% of pay, due to actual pensionable compensation being less than expected during FY2018-19.

- Demographic experience resulted in a net increase in cost of about 0.17% of pay, 0.09% of which was for changes in the employer normal cost rates within tiers and 0.08% of which was for changes in the UAL amortization payment. As with the investment losses, the changes in the UAL payment for demographic experience will continue to be phased-in over the next four years.

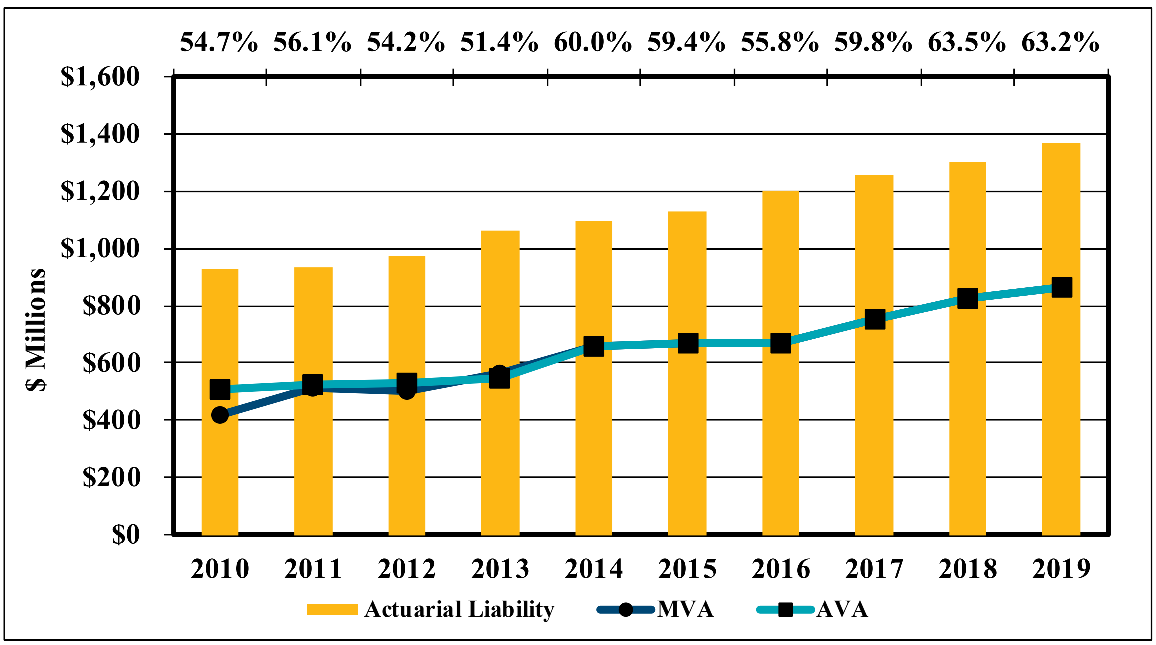
- The assumption changes from the experience study increased the employers' contribution rate by 1.14% of pay, 1.43% of which represented an increase in the employer normal cost rate. This was offset by a reduction in the current UAL rate by 0.29% of pay, driven by the recalculation of the amortization payments established for prior UAL bases under the new economic assumptions resulting in a lower effective interest rate. The UAL payments associated with the $21 million increase in liability resulting from the new assumptions (primarily the lower discount rate) will continue to be phased-in over the next two years.

C. Historical Trends

Despite the fact that for most retirement plans the greatest attention is given to the current valuation results and in particular, the size of the current Unfunded Actuarial Liability and the employer contribution, it is important to remember that each valuation is merely a snapshot in the long-term progress of a pension fund. It is more important to judge a current year's valuation result relative to historical trends, as well as trends expected into the future.

Assets and Liabilities

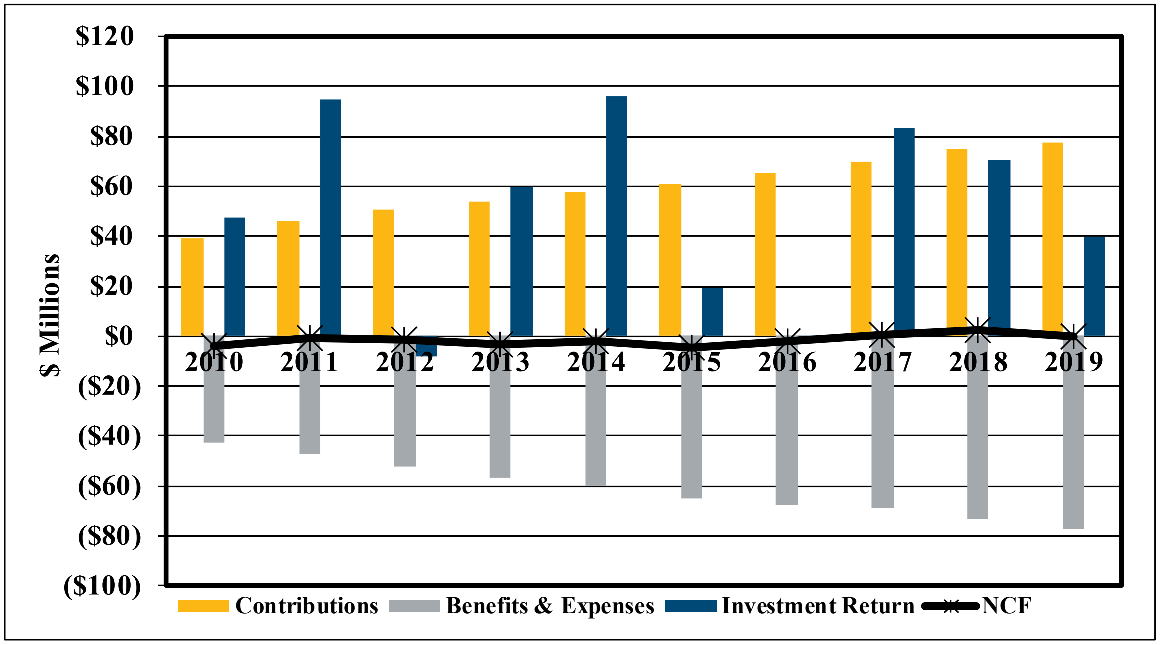
The following chart compares the Market Value of Assets (MVA) and Actuarial Value of Assets (AVA) to the Actuarial Liabilities. The percentage shown at the top of each bar is the ratio of the Actuarial Value of Assets to the Actuarial Liability (the funded ratio). Beginning June 30, 2014, the Actuarial Value of Assets is equal to the market value, and thus the funded ratios shown in 2014 and after are based on the Market Value of Assets. The funded ratio has increased from 54.7% in 2010 to 63.2% as of June 30, 2019.



The extraordinary asset loss of 2008 adversely affected the funded ratio from 2010 to 2013. The 2014 funded ratio increased as a result of asset and liability gains in 2014, and as a result of resetting the Actuarial Value of Assets to the market value. The 2016 funded ratio decreased as a result of investment losses and assumption changes. The 2017 and 2018 funded ratios increased as a result of investment gains and contributions by the members and employers. The 2019 funded ratio remained relatively flat, with investment losses and assumption changes offsetting the progress expected due to contributions.

Cash Flows

The chart shows the Plan's cash flow (contributions less benefit payments). This is a critical measure, as it reflects the ability to have funds available to meet benefit payments without having to make difficult investment decisions, especially during volatile markets.



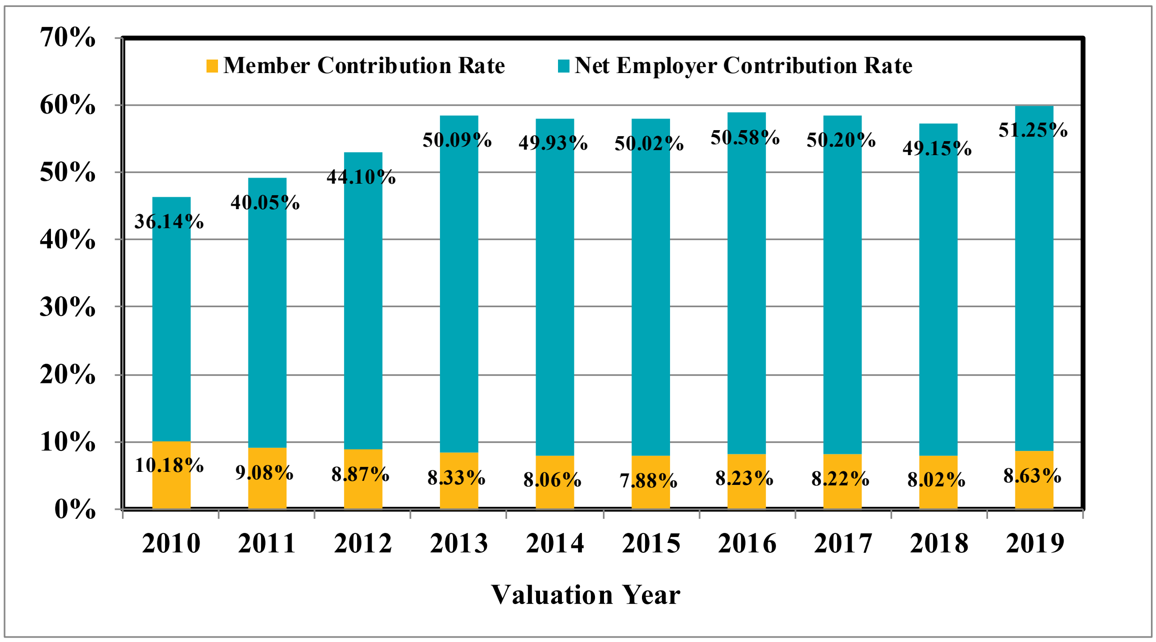
In the chart above, the contributions, outflows (benefit payments and expenses), and investment returns are shown as bars and the Plan's net cash flow (NCF) is shown as a black line. The NCF, which is equal to contributions less benefits and expenses, has been close to zero for the entire period shown. A plan in a significantly negative cash flow position magnifies the losses during a market decline hindering the Plan in its ability to absorb market fluctuations; however, this is not currently the case for MCERA.

SECTION I – EXECUTIVE SUMMARY

Contributions

The chart below shows the historical member and employer contribution rates. The steady increase in the employer contribution rate from 36.14% to 50.09% during 2010-2013 is a result of the 2008-2009 investment losses that were recognized over a 5-year period. Since 2013, the employer contribution rate has remained relatively stable. There was an increase in 2019 mostly due to assumption changes and the phase-in of the net UAL experience from the last four years due to the direct rate smoothing method.

With the implementation of PEPRA in 2013, the employee rates have gradually decreased since the contribution rates for PEPRA members are generally lower than the Non-PEPRA member rates. There was a slight increase in 2016 as projected mortality improvements increased. There was an increase in 2019 due to assumption changes.



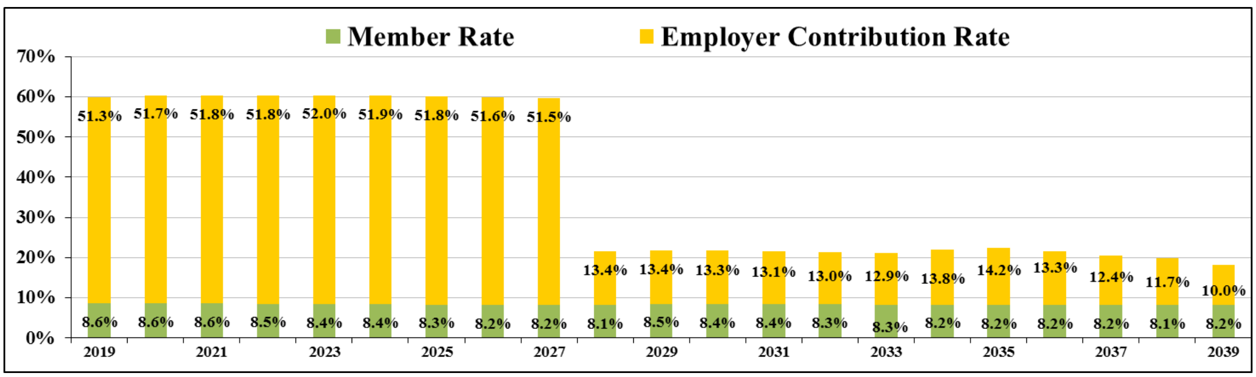
D. Future Expected Financial Trends

The analysis of projected financial trends is perhaps the most important component of this valuation. In this section, we present our assessment of the implications of the June 30, 2019 valuation results in terms of contributions and benefit security (assets compared to liabilities). All the projections in this section are based on the current interest rate assumption of 7.00%. We have assumed increases in future pensionable payroll of 2.75% per year.

Contribution Projections:

The following graph shows the expected employer and member contribution rates based on actually achieving the 7.00% assumption each year for the next 20 years, which is clearly impossible.

Projection of Employer and Member Contributions, 7.00% return each year



The graph above shows employer contributions peaking at 52.0% in the June 30, 2023 valuation (for Fiscal Year 2025), decreasing slightly in the subsequent years, and then dropping off significantly in 2028 once the amortization of the bulk of the Unfunded Actuarial Liability is complete.

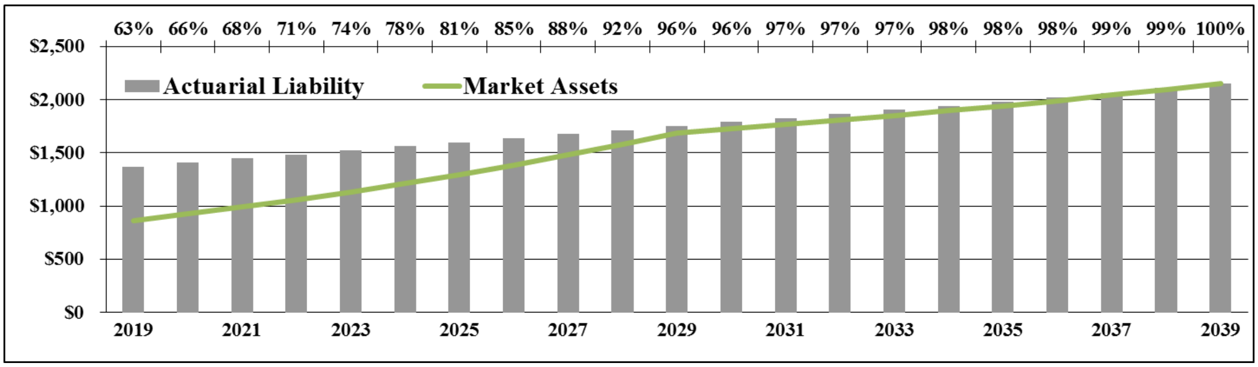
Note that the graph above does not forecast any actuarial gains or losses. Even relatively modest losses relative to the 7.00% assumed return could push the employer contribution rate above even higher in the next few years.

SECTION I – EXECUTIVE SUMMARY

Asset and Liability Projections:

The graph shows the projection of assets and liabilities assuming that assets will earn the 7.00% assumption each year during the projection period. The percentages along the top of the graph represent the funded ratio or status of the System.

Projection of Assets and Liabilities, 7.00% return each year



The graph shows that the projected funded status increases over the next 20 years to 100%, assuming the actuarial assumptions are achieved. However, as noted on the previous page, it is the actual return on plan assets that will determine the future funded status and contribution rates.

SECTION II – DISCLOSURE RELATED TO RISK

Actuarial valuations are based on a set of assumptions about future economic and demographic experience. These assumptions represent a reasonable estimate of future experience, but actual future experience will undoubtedly be different and may vary significantly. A new Actuarial Standard of Practice (ASOP 51) has been issued which requires actuaries to identify and assess risks that "may reasonably be anticipated to significantly affect the plan's future financial condition." This section of the report is intended to identify the primary risks to the Plan, provide some background information about those risks, and provide an assessment of those risks.

Identification of Risks

A fundamental risk to a pension plan is that the contributions needed to pay the benefits become unaffordable. While MCERA cannot determine on its own what contribution level is unaffordable, we can project expected contribution rates and illustrate the potential impact of key sources of risk on those contribution rates so the employers can assess affordability. While there are a number of factors that could lead to contribution amounts becoming unaffordable, we believe the primary risks are:

- Investment risk,
- Assumption change risk, and
- Contribution risk.

Other risks that we have not identified may also turn out to be important.

Investment Risk is the potential for investment returns to be different than expected. Lower investment returns than anticipated will increase the unfunded actuarial liability necessitating higher contributions in the future unless there are other gains that offset these investment losses. The potential volatility of future investment returns is determined by the Plan's asset allocation and the affordability of the investment risk is determined by the amount of assets invested relative to the size of the plan sponsors or other contribution base.

Assumption change risk is the potential for the environment to change such that future valuation assumptions are different than the current assumptions. For example, declines in interest rates over the last three decades resulted in higher investment returns for fixed income investments, but lower expected future returns necessitating either a change in investment policy, a reduction in discount rate, or some combination of the two. Assumption change risk is an extension of the other risks identified, but rather than capturing the risk as it is experienced, it captures the cost of recognizing a change in environment when the current assumption is no longer reasonable.

Contribution risk is the potential for actual future contributions to deviate from expected future contributions. There are different sources of contribution risk such as the sponsor failing to make contributions in accordance with the funding policy or the contribution requirement becoming such a financial strain on the sponsor as a result of material changes in the contribution base (e.g., covered employees, covered payroll) that affects the amount of contributions the Plan can collect.

SECTION II – DISCLOSURE RELATED TO RISK

The chart below shows the components contributing to the Unfunded Actuarial Liability (UAL) from June 30, 2009 through June 30, 2019. Over the last 10 years, the UAL has increased by approximately $177 million. The investment losses (gold bar) of $139 million on the actuarial value of assets (AVA), assumptions changes (purple bar) of $117 and liability losses (gray bar) of $12 million are the primary sources in the UAL growth. Contributions in excess of the "tread water" level (red bar) of $43 million and method changes (green bar) of $48 million have decreased the UAL since June 30, 2009.

Chart II-1

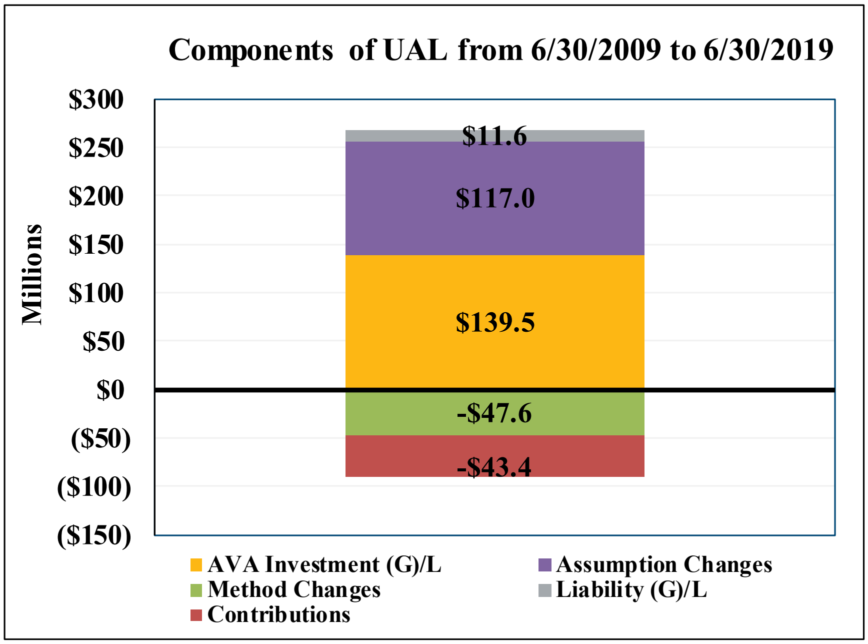
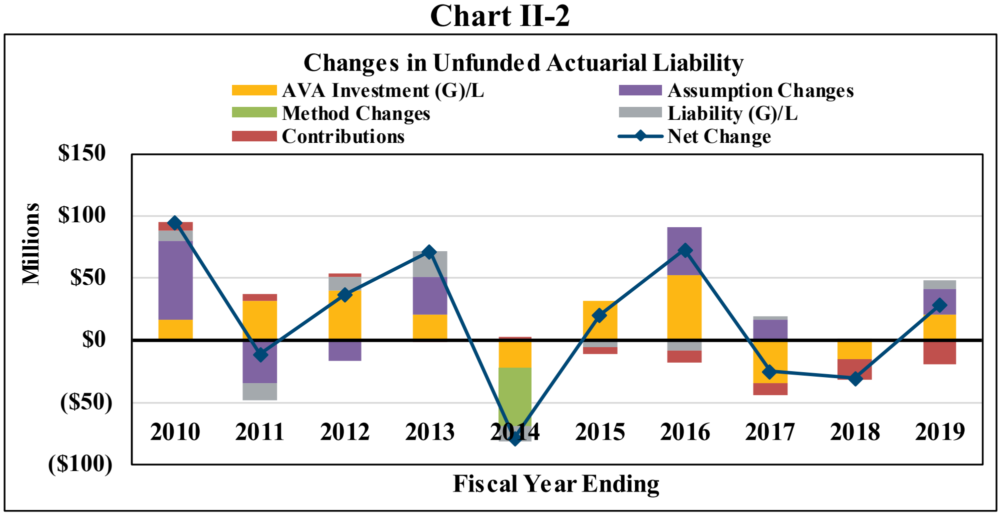


Chart II-2 below details the annual sources of the UAL change (colored bars) for the plan years ending June 30. The net UAL change for each year is represented by the blue diamonds.

Chart II-2



SECTION II – DISCLOSURE RELATED TO RISK

Table II-1

Unfunded Actuarial Liability (UAL) Change by Source
(in millions)

FYE	Investment Experience	Liability Experience	Assumption Changes	Method Changes	Contributions	Total UAL Change
2010	$16.2	$8.1	$63.4	$0.0	$7.1	$94.7
2011	31.0	(13.8)	(34.8)	0.0	6.4	(11.3)
2012	40.1	11.4	(16.1)	0.0	1.6	36.9
2013	20.7	20.9	29.7	0.0	(0.2)	71.2
2014	(22.1)	(12.5)	0.0	(47.6)	3.0	(79.1)
2015	31.5	(5.1)	0.0	0.0	(6.5)	19.9
2016	52.4	(8.3)	38.1	0.0	(9.9)	72.3
2017	(34.5)	2.7	16.0	0.0	(9.4)	(25.2)
2018	(16.0)	1.2	0.0	0.0	(15.9)	(30.7)
2019	20.2	7.0	20.7	0.0	(19.5)	28.4
Total	**$139.5**	**$11.6**	**$117.0**	**($47.6)**	**($43.4)**	**$177.2**

On an actuarial value basis, the average annual geometric return over the 10-year period is 5.4% that has resulted in investment losses on the AVA in seven of the last ten years, increasing the UAL. The recent gains in 2017 and 2018 are still being phased-in under the direct rate smoothing amortization method.

Over the same time period, the assumed rate of return decreased from 8.16% to 7.00%. It is important to note that these changes simply reflect a downward revision to the estimate of future investment earnings and ultimately costs will be determined by actual investment earnings. Based on Meketa's current capital market assumptions (including their inflation assumption of 2.60%) and the Plan's asset allocation, the expected 20-year average annual return is 8.04% compared to the Plan's current assumption of 7.00%.

The impact of all assumption changes is represented by the purple bars and also includes decreases in mortality rates projected in the future which had a significant impact on the measurement of the UAL.

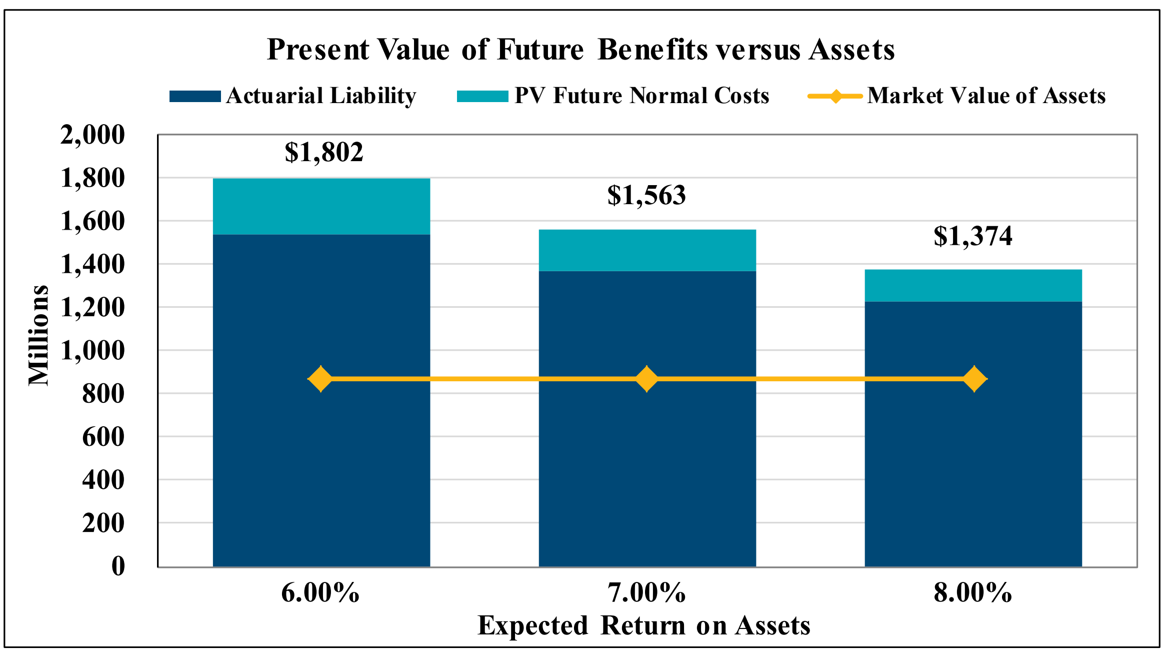
The method change in 2014 represents the impact of changing amortization and asset valuation methods to the direct smoothing method, which set the actuarial value of assets equal to the market value of assets.

Each year the UAL is expected to increase for benefits earned in the current year (the normal cost), administrative expenses, and interest on the UAL. This expected increase is referred to as the tread water level. The difference between actual contributions and the tread water level are shown by the red bars. If contributions are greater than the tread water level, the UAL is expected to decrease. Conversely, if contributions are less than the tread water level, the UAL is expected to increase. The amortization policy (as well as the contribution-timing lag) can impact whether or not the contributions exceed the tread water level. The Board changed the amortization policy in 2014 to amortize new sources of actuarial gains and losses or method changes over a 24-year period, with a five-year ramp up period at the beginning of the period, and a four-year ramp down at the end of the period, and 15 years of level payments as a percentage of payroll. Assumption changes will be amortized over a closed 22-year period, with a three-year ramp up period, two-year ramp down period, and 17 years of level payments as a percentage of payroll. Contributions have been above the tread water level since 2015. The single period equivalent amortization period – i.e., the length of time required to amortize the overall UAL as a level percentage of payroll based on the total current amortization payment – is approximately 11 years.

Assessing Costs and Risks

Sensitivity to Investment Returns

The chart below compares assets to the present value of all projected future benefits discounted at the current expected rate of return and at discount rates 100 basis points above and below the expected rate of return. The present value of future benefits is shown as a bar with the portion attributable to past service in dark blue (Actuarial Liability) and the portion attributable to future service in teal (Present Value of Future Normal Costs). The Market Value of Assets is shown by the gold line.



If investments return 7.00% annually, the Plan would need approximately $1.6 billion in assets today to pay all projected benefits compared to current assets of $0.9 billion. If investment returns are only 6.00%, the Plan would need approximately $1.8 billion in assets today, and if investment returns are 8.00%, the Plan would need approximately $1.4 billion in assets today.

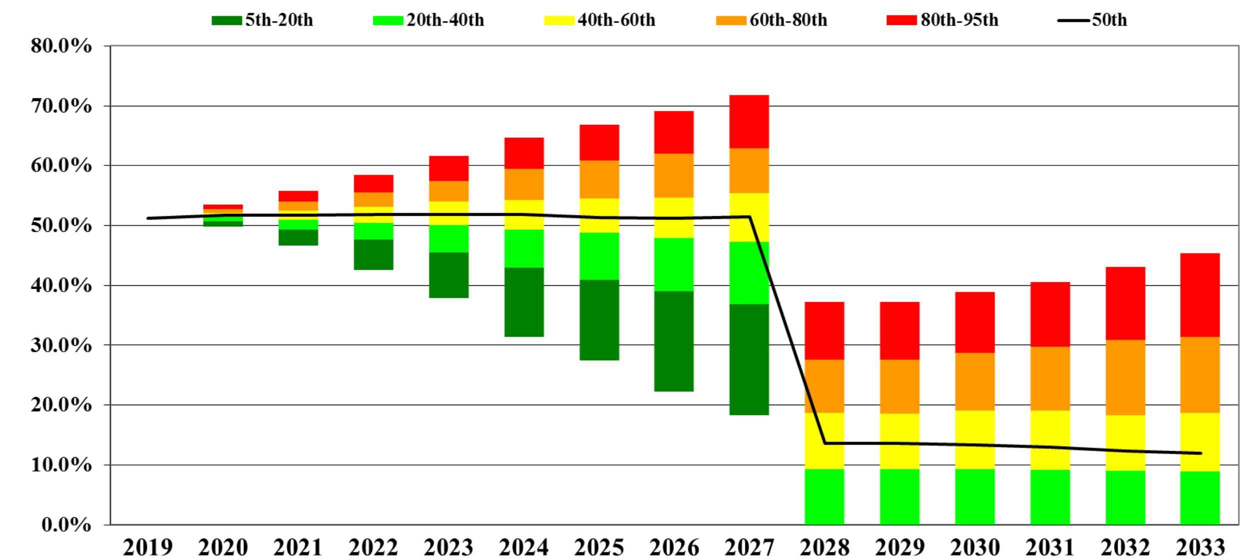
SECTION II – DISCLOSURE RELATED TO RISK

Sensitivity to Investment Returns - Stochastic Projections

Stochastic projections serve to show the range of probable outcomes of various measurements. The graphs below and on the following page show the projected range of the employer contribution rate and the funded ratio on an actuarial value of assets basis. The range in both scenarios is driven by the volatility of investment returns (assumed to be based on a 12.4% standard deviation of annual returns, as indicated in Meketa's current capital market assumptions).

Stochastic Projection of Employer Contributions as a Percent of Pay

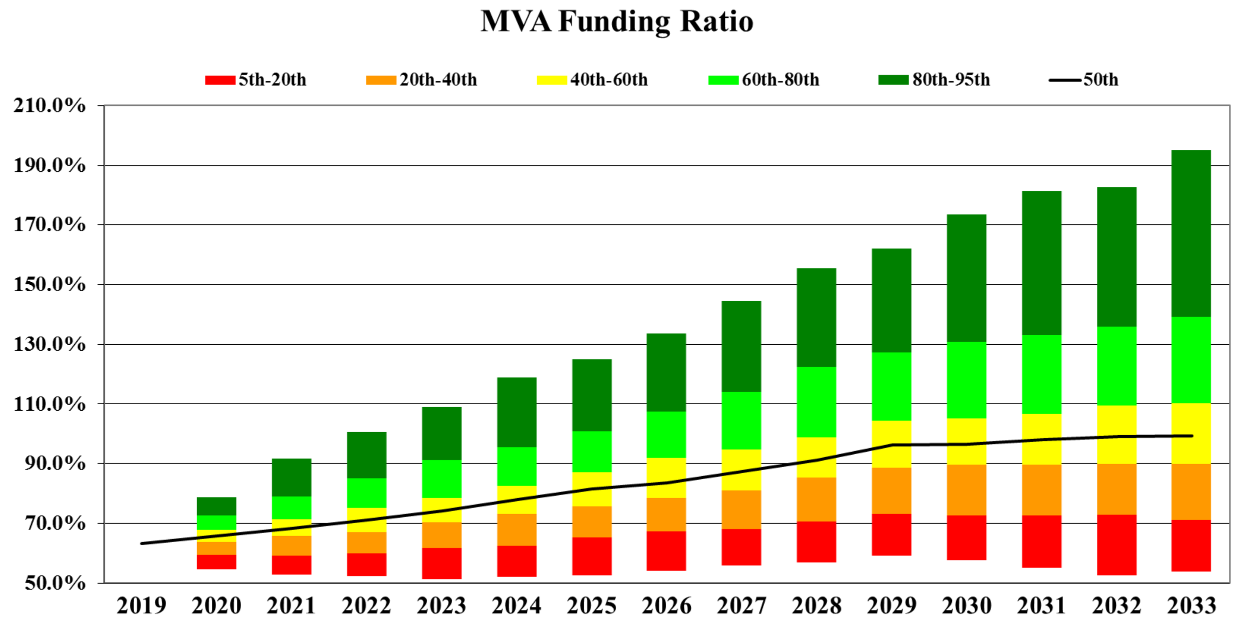
Plan Sponsor Contribution Rate



The stochastic projection of employer contributions as a percent of pay shows the probable range of future contribution rates. The baseline contribution rate (black line), which is based on the median of the simulations using an average return of 7.00%, assumes actual investment returns will equal expected returns of 7.00% each year, aligns with the projections discussed in subsection D of the Executive Summary of this report. In the most pessimistic scenario shown, the 95th percentile, the projected employer contribution rate slightly exceeds 70% of pay in 2027. Conversely, the most optimistic scenario shown, the 5th percentile, the projected employer contribution rate declines to 0% in 2028. We note that these projections allow the employer contribution to drop below the normal cost only if the Plan becomes extremely over-funded (above 120%), as required under PEPRA.

SECTION II – DISCLOSURE RELATED TO RISK

Stochastic Projection of Funded Ratio on a Market Value of Assets Basis



The graph above shows the projection of the funded ratio based on the market value of assets. While the baseline-funded ratio (black line) is projected to be approximately 97% at the end of the 15-year period shown here, there is a wide range of potential outcomes. Good investment returns have the likelihood of bringing the funded ratio well over 100%. Due to the current funding policy of the Plan, even in scenarios with unfavorable investment returns, the Plan is projected to remain over 50% funded as long as the actuarially determined contributions continue to be made.

Contribution Risk

While investment returns are typically the dominant factor in volatility, contribution rates can also be sensitive to future salary increases and the hiring of new members. When member payroll growth stagnates or even declines, the dollar level of contributions made to the Plan also stagnate or decline since contributions are based on payroll levels, though this will generally only present a funding issue if there is an extended pattern of payroll reductions.

There is also a risk of the contribution rate increasing even higher when payroll decreases since the Plan's funding policy amortizes the UAL as a level percentage of pay. This means that the UAL payments increase at the assumed payroll growth rate of 2.75%, so that the payment is expected to remain constant as a percentage of payroll. If payroll growth is less than the expected 2.75% or there is a decline in payroll, the UAL payments are spread over a smaller payroll base and the contribution rate as a percentage of pay increases, making the Plan less affordable.

SECTION II – DISCLOSURE RELATED TO RISK

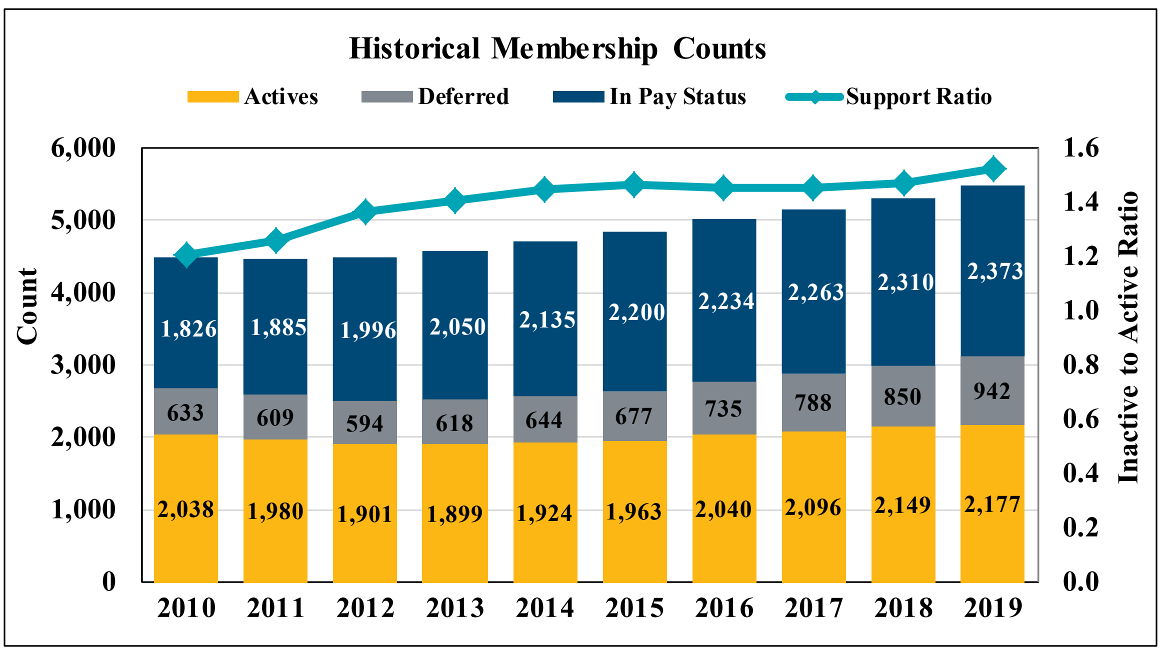
Plan Maturity Measures

The future financial condition of a mature pension plan is more sensitive to each of the risks identified above than a less mature plan. It is important to understand the maturity of the Plan and how the maturity has changed over time.

Plan maturity can be measured in a variety of ways, but they all get at one basic dynamic - the larger the plan is compared to the contribution or revenue base that supports it; the more sensitive the plan will be to risk. The measures below have been selected as the most important in understanding the primary risks identified for the Plan.

Inactives per Active (Support Ratio)

One simple measure of plan maturity is the ratio of the number of inactive members (those receiving benefits or those entitled to a deferred benefit) to the number of active members. The Support Ratio is expected to increase gradually as a plan matures. The chart below shows the growth in the Support Ratio from 2010 to 2019 as the number of retirees increased relative to the number of actives.

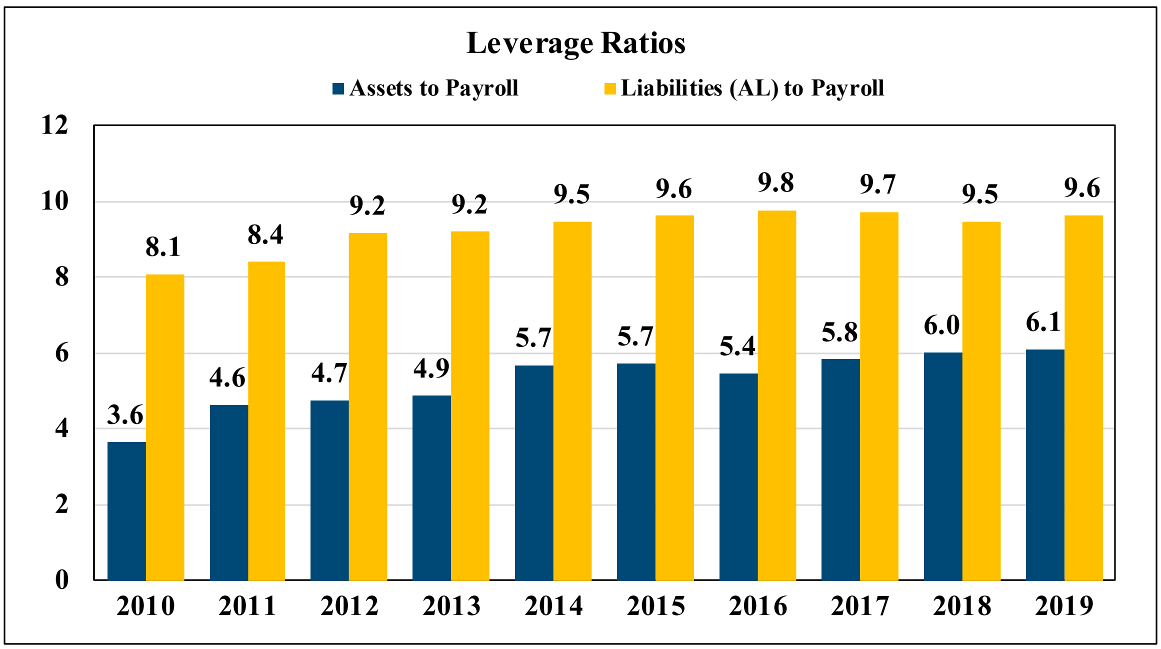


SECTION II – DISCLOSURE RELATED TO RISK

Leverage Ratios

Leverage or volatility ratios measure the size of the plan compared to it's revenue base more directly. The asset leverage ratio is simply the Market Value of Assets to active member payroll and indicates the sensitivity of the Plan to investment returns. The liability leverage ratio is the Plan's Actuarial Liability to active member payroll and indicates the sensitivity of the Plan to assumption changes or demographic experience.

The following chart shows the historical leverage ratios of the Plan. Both leverage ratios have gradually increased since 2010, but the asset to payroll ratio still lags well behind the liability to payroll ratio, due to the low funded status of the Plan. We expect these ratios to converge over time as the Plan becomes better funded. Therefore, the Plan is likely to become more sensitive to market variation in the future than it is today.



To appreciate the impact of the ratio of assets to payroll on contributions rates, consider the situation for a new plan with almost no assets. Even if the assets suffer a bad year of investment returns, the impact on the contribution rate is nil, because the assets are so small.

On the other hand, consider the situation for MCERA. Suppose MCERA's assets lose 10% of their value in a year. Since they were assumed to earn 7.00%, there is an actuarial loss of 17.00% of plan assets. Based on the current ratio of assets to payroll (610%), that means the loss in assets is about 103.7% of active payroll (610% of the 17.00% loss). There is only one source of funding to make up for this loss: contributions. Consequently, barring future offsetting investment gains, the employers must make up the asset loss in future contributions. In this example of a one-year loss of 10%, this shortfall will eventually require an additional amortization payment of approximately 8.5% payroll once fully phased-in, if amortized over the Plan's 24-year schedule for gains and losses.

More Detailed Assessment

While a more detailed assessment is always valuable to enhance the understanding of the risks identified above, we believe the scenarios illustrated above cover the primary risks facing the Plan at this time. We would be happy to provide the Board with a more in-depth analysis at their request.

SECTION III – ASSETS

Pension Plan assets play a key role in the financial operation of the Plan and in the decisions the Board may make with respect to future deployment of those assets. The level of assets, the allocation of assets among asset classes, and the methodology used to measure assets will likely impact benefit levels, employer contributions, and the ultimate security of participants' benefits.

In this section, we present detailed information on Plan assets including:

- **Disclosure** of Plan assets as of June 30, 2018 and June 30, 2019,
- Statement of the **changes** in market values during the year,
- Comparison of the actual and expected investment performance during the year, and
- Historical **investment performance.**

As of June 30, 2014, an Actuarial Value of Assets distinct from the Market Value of Assets, is no longer used in the calculations of the Unfunded Actuarial Liability or funded status due to the implementation of the new funding policy adopted by the Board on January 22, 2015. This policy change was made in conjunction with 24-year (22-year for assumption changes) layered amortization of any unexpected changes in the Unfunded Actuarial Liability starting with the June 30, 2014 valuation. The calculation of the Actuarial Value of Assets is no longer shown in the valuation report, except to show the history of returns on the actuarial assets in Table III-3.

Also in prior valuations, a distinction was made between actuarial assets and valuation assets, with the latter reduced for non-valuation reserves, such as the Contingency Reserve. Since there are no such reserves as of June 30, 2018 and June 30, 2019, the two asset values are equal, and throughout this report we have used the term Market Value of Assets exclusively, except to show the history of returns on the valuation assets in Table III-3.

Disclosure

The market value represents "snap-shot" or "cash-out" values that provide the principal basis for measuring financial performance from one year to the next.

Table III-1 on the next page discloses and compares each asset value as of June 30, 2018 and June 30, 2019.

SECTION III – ASSETS

Table III-1
Statement of Assets at Market Value

Assets		**June 30, 2019**		**June 30, 2018**
Cash and Short-Term Investments:				
Cash invested with Merced County Treasurer	$	5,357,275	$	5,842,004
Cash invested with Northern Trust		12,994,323		10,944,975
Other cash and cash equivalents with Northern Trust		714,829		2,265,078
Total Cash and Short-Term Investments	$	$19,066,427	$	19,052,057
Receivables:				
Bond interest	$	695,557	$	815,971
Dividends		66,725		81,839
Contributions		1,614,362		1,597,575
Distributions		479,675		8,485,104
Securities sold		960,340		0
Other		61,370		67,218
Total Receivables	$	3,878,029	$	11,047,707
Investments at Market Value:				
U.S. government and agency obligations	$	31,156,159	$	72,311,297
Domestic fixed income		176,798,283		95,697,250
Common stocks (domestic)		36,017,951		43,334,808
Common stocks (index funds)		196,606,512		198,239,163
Common stocks (international)		88,893,320		82,837,521
Common stocks (international index funds)		86,579,292		115,367,843
Real estate		59,849,041		62,191,187
Alternative investments		169,514,879		126,076,024
Total Investments at Market Value	$	845,415,437	$	796,055,093
Other Assets:				
Prepaid expense	$	22,598	$	35,470
Capital assets, net of accumulated depreciation of $1,368,129 and $1,110,948 respectively		1,630,517		1,849,495
Total Assets		870,013,008		828,039,822
Liabilities				
Accounts payable	$	625,964	$	715,680
Securities purchased		877,676		577,731
Unclaimed contributions		85,403		112,441
Capital Calls		1,920,681		0
Total Liabilities		3,509,724		1,385,852
Market Value of Assets	**$**	**866,503,284**	**$**	**826,653,970**

SECTION III – ASSETS

Changes in Market Value

The components of asset change are:

- Contributions (employer and employee)
- Benefit payments
- Expenses (investment and administrative)
- Investment income (realized and unrealized)

Table III-2 shows the components of change in the Market Value of Assets during 2018 and 2019.

Table III-2
Changes in Market Values

Additions		**Fiscal Year ending June 30, 2019**		**Fiscal Year ending June 30, 2018**
Contributions:				
Employer	$	66,586,464	$	64,757,288
Plan members		10,695,680		10,441,876
Total Contributions	$	77,282,144	$	75,199,164
Investment Income/(Loss) from Investment Activities:				
Net appreciation/(depreciation) in fair value of investments	$	33,767,403	$	66,985,134
Investment income		9,130,417		6,926,711
Other revenue		85,689		42,618
Less investment expenses		(3,254,559)		(3,265,379)
Total Investment Income/(Loss) from Investment Activities	$	39,728,950	$	70,689,084
Total Additions		117,011,094		145,888,248
Deductions				
Benefits paid	$	74,238,692	$	69,836,223
Refunds of contributions		571,983		883,987
Administrative expense		2,271,779		2,177,186
Actuarial expense		79,326		106,210
Total Deductions		77,161,780		73,003,606
Net Increase/(Decrease)	$	39,849,314	$	72,884,642
Market Value of Assets, Beginning of Year		826,653,970		753,769,328
Market Value of Assets, End of Year	**$**	**866,503,284**	**$**	**826,653,970**

SECTION III – ASSETS

Investment Performance

The following table shows the development of the asset gain/(loss) and investment return.

Table III-3 Development of Asset Return		
Market Value of Assets, Beginning of Year	$	826,653,970
Contributions		77,282,144
Benefit Paid and Refunds of Contributions		(74,810,675)
Administrative Expense		(2,351,105)
Expected Investment Earnings (7.25%)		59,936,700
Expected Market Value of Assets, End of Year	$	886,711,034
Investment Gain / (Loss)		(20,207,750)
Market Value of Assets, End of Year		$866,503,284
Actual Investment Earnings	$	39,728,950
Return		4.81%

SECTION III – ASSETS

The table below shows the historical annual asset returns on a market value and actuarial value basis, as well in the increase in the Consumer Price Index (CPI) since 1995. Beginning June 30, 2014, the Actuarial Value of Assets is equal to the Market Value of Assets, so the net returns are the same for FY 2015 onwards.

Table III-4
Net Return on Assets vs. Increase in Consumer Price Index

Year Ended June 30	Net Return at Market Value	Net Return at Actuarial Value	Increase in Consumer Price Index[1]
2000	9.1%	11.5%	3.7%
2001	-3.6%	8.6%	3.2%
2002	-5.6%	4.9%	1.1%
2003	4.6%	3.3%	2.1%
2004	12.6%	3.3%	3.3%
2005	8.7%	2.5%	2.5%
2006	7.6%	4.7%	4.3%
2007	16.3%	8.9%	2.7%
2008	-6.7%	1.2%	5.0%
2009	-22.1%	-4.9%	-1.4%
2010	12.7%	7.0%	1.1%
2011	22.6%	2.6%	3.6%
2012	-1.6%	0.6%	1.7%
2013	11.8%	3.8%	1.8%
2014	17.1%	11.8%	2.1%
2015	2.9%	2.9%	0.1%
2016	-0.1%	-0.1%	1.0%
2017	12.4%	12.4%	1.6%
2018	9.4%	9.4%	2.9%
2019	4.8%	4.8%	1.6%
15-Year Compound Average	**5.8%**	**4.4%**	**2.0%**
10-Year Compound Average	**9.0%**	**5.4%**	**1.7%**
5-Year Compound Average	**5.8%**	**5.8%**	**1.4%**

[1] *Based on All Urban Consumers - U.S. City Average, June indices.*

SECTION IV – LIABILITIES

In this section, we present detailed information on Plan liabilities including:

- **Disclosure** of Plan liabilities at June 30, 2018 and June 30, 2019, and
- Plan liabilities by **tier** as of June 30, 2019.

Disclosure

Several types of liabilities are calculated and presented in this report. Each type is distinguished by the people ultimately using the figures and the purpose for which they are using them. Note that these liabilities are not applicable for settlement purposes, including the purchase of annuities and the payment of lump sums.

- **Present Value of Future Benefits:** Used for measuring all future Plan obligations, represents the amount of money needed today to fully fund all benefits of the Plan both earned as of the valuation date and those to be earned in the future by current plan participants, under the current Plan provisions.

- **Actuarial Liability:** Used for funding calculations, this liability is calculated taking the Present Value of Future Benefits and subtracting the present value of future Member Contributions and future employer normal costs under an acceptable actuarial funding method. The method used for this Plan is called the **Entry Age Normal** (EAN) funding method.

- **Unfunded Actuarial Liability:** The excess of the Actuarial Liability over the Market Value of Assets.

Table IV-1 on the following page discloses each of these liabilities for the current and prior valuations.

SECTION IV – LIABILITIES

Table IV-1
Present Value of Future Benefits and Actuarial Liability
(in thousands)

Item	June 30, 2019	June 30, 2018
Present Value of Future Benefits		
Actives	$ 573,917	$ 535,293
Deferred Members	56,231	51,294
Retirees	808,862	750,337
Disabled	68,686	68,049
Beneficiaries	55,360	52,709
Total MCERA	$ 1,563,057	$ 1,457,682
Actuarial Liability		
Total Present Value of Benefits	$ 1,563,057	$ 1,457,682
Present Value of Future Normal Costs		
Employer Portion	99,555	79,385
Employee Portion	93,307	76,379
Actuarial Liability	$ 1,370,195	$ 1,301,919
Market Value of Assets	$ 866,503	$ 826,654
Unfunded Actuarial Liability/(Surplus)	$ 503,692	$ 475,265

SECTION IV – LIABILITIES

Table IV-2 discloses the liabilities of the Plan as of June 30, 2019, split by tier.

Table IV-2
Liabilities by Group as of June 30, 2019
(in thousands)

Present Value of Future Benefits	General Tier 1	General Tier 2	General Tier 3	General Tier 3R	General Tier 4	General Total	Safety Tier 1	Safety Tier 2	Safety Tier 3	Safety Tier 3R	Safety Tier 4	Safety Total	All Total
Actives	$ 75,193	$ 290,002	$ 8,176	$ 1,947	$ 78,845	$ 454,163	$ 23,598	$ 74,369	$ 1,128	$ 186	$ 20,473	$ 119,754	$ 573,917
Deferred Members	14,606	30,048	252	0	968	45,873	963	9,079	49	0	266	10,358	56,231
Retirees	582,031	95,177	131	0	0	677,339	124,419	7,104	0	0	0	131,523	808,862
Disabled	16,536	6,982	0	0	0	23,519	35,981	9,187	0	0	0	45,168	68,686
Beneficiaries	33,577	2,855	0	0	0	36,432	18,153	776	0	0	0	18,928	55,360
Total	**$ 721,943**	**$ 425,064**	**$ 8,559**	**$ 1,947**	**$ 79,813**	**$ 1,237,327**	**$ 203,114**	**$ 100,514**	**$ 1,177**	**$ 186**	**$ 20,739**	**$ 325,731**	**$ 1,563,057**
Actuarial Liability													
Actives	$ 67,742	$ 211,070	$ 2,855	$ 45	$ 19,068	$ 300,780	$ 22,076	$ 53,197	$ 347	$ 17	$ 4,638	$ 80,275	$ 381,055
Deferred Members	14,606	30,048	252	0	968	45,873	963	9,079	49	0	266	10,358	56,231
Retirees	582,031	95,177	131	0	0	677,339	124,419	7,104	0	0	0	131,523	808,862
Disabled	16,536	6,982	0	0	0	23,519	35,981	9,187	0	0	0	45,168	68,686
Beneficiaries	33,577	2,855	0	0	0	36,432	18,153	776	0	0	0	18,928	55,360
Total	**$ 714,493**	**$ 346,131**	**$ 3,238**	**$ 45**	**$ 20,036**	**$ 1,083,943**	**$ 201,592**	**$ 79,343**	**$ 395**	**$ 17**	**$ 4,905**	**$ 286,252**	**$ 1,370,195**

SECTION V – CONTRIBUTIONS

In the process of evaluating the financial condition of any pension plan, the actuary analyzes the assets and liabilities to determine what level (if any) of contributions is needed to properly maintain the funding status of the Plan. Typically, the actuarial process will use a funding technique that will result in a pattern of contributions that are both stable and predictable.

For this Plan, the actuarial funding method used to determine the normal cost and the Unfunded Actuarial Liability is the **Entry Age Normal (EAN) C**ost Method. There are three primary components to the total contribution: the **normal cost rate** (employee and employer), the **Unfunded Actuarial Liability rate** (UAL rate), and the **administrative expense rate**.

The normal cost rate is determined in the following steps. First, an individual normal cost rate is determined by taking the value, as of entry age into the Plan, of each member's projected future benefits. This value is then divided by the value, also at entry age, of the member's expected future salary producing a normal cost rate that should remain relatively constant over a member's career.

The total normal cost is computed by adding the expected dollar amount of each active member's normal cost for the current year - known as the Individual Entry Age Method. The total normal cost is adjusted with interest to the middle of the year, to reflect the fact that the normal cost contributions are paid throughout the year as member payroll payments are made. Finally, the total normal cost rate, calculated by dividing the total normal cost by expected payroll of the closed group, is reduced by the member contribution rate to produce the employer normal cost rate.

Starting with the June 30, 2014 valuation, the Unfunded Actuarial Liability (UAL) is the difference between the EAN Actuarial Liability and the Market Value of Assets. The Unfunded Actuarial Liability payment is determined as the amount needed to fund the outstanding Unfunded Actuarial Liability as of June 30, 2013 over a closed period of 16 years (with 10 years remaining as of the current valuation), as a level percentage of pay. Any subsequent unexpected change in the Unfunded Actuarial Liability after June 30, 2013 is amortized over 24 years (22 years for assumption changes) that includes a five-year phase-in/four-year phase-out (three-year phase-in/two-year phase-out for assumption changes) of the payments/credits for each annual layer.

The administrative expenses are assumed to be $2.4 million for the current Plan year, and are expected to increase by the inflation rate in future years. The administrative expenses are split between the employees and employers based on each group's share of the normal cost and UAL rates.

SECTION V – CONTRIBUTIONS

The table below and on the next page present the employer contribution rates for the Plan for this valuation.

Table V-1
Development of the Net Employer Contribution Rate as of June 30, 2019 for FYE 2021

	June 30, 2019	June 30, 2018
1. Total Normal Cost Rate	18.46%	16.56%
2. Member Contribution Rate[1]	8.39%	7.78%
3. Employer Normal Cost Rate (1-2)	10.07%	8.78%
4. UAL Amortization Rate	39.76%	38.93%
5. Administrative Expense Rate	1.42%	1.44%
6. Net Employer Contribution Rate (3+4+5)	51.25%	49.15%

[1] *Not including member's share of administrative expenses.*

SECTION V – CONTRIBUTIONS

Table V-2
FYE 2021 Net Employer Contribution Rate by Group

	General Tier 1	General Tier 2	General Tier 3	General Tier 4	General Total	Safety Tier 1	Safety Tier 2	Safety Tier 3	Safety Tier 4	Safety Total	All Total
County											
1. Total Normal Cost Rate	27.50%	19.98%	15.24%	13.47%	17.50%	34.38%	23.61%	22.29%	20.75%	23.24%	18.46%
2. Member Contribution Rate[1]	12.65%	9.27%	6.45%	6.73%	8.28%	12.07%	8.96%	8.69%	10.38%	8.91%	8.39%
3. Employer Normal Cost Rate (1-2)	14.85%	10.71%	8.79%	6.74%	9.22%	22.31%	14.65%	13.60%	10.37%	14.33%	10.07%
4. UAL Amortization Rate	37.62%	37.62%	37.62%	37.62%	37.62%	50.45%	50.45%	50.45%	50.45%	50.45%	39.76%
5. Administrative Expense Rate	1.50%	1.38%	1.32%	1.26%	1.33%	2.07%	1.86%	1.83%	1.73%	1.85%	1.42%
6. Net Employer Contribution Rate (3+4+5)	**53.97%**	**49.71%**	**47.73%**	**45.62%**	**48.17%**	**74.83%**	**66.96%**	**65.88%**	**62.55%**	**66.63%**	**51.25%**
		Courts Tier 2R	**County Tier 3R**					**Tier 3R**			
1. Total Normal Cost Rate		19.77%	17.62%					24.81%			
2. Member Contribution Rate[1]		9.13%	6.69%					10.86%			
3. Employer Normal Cost Rate (1-2)		10.64%	10.93%					13.95%			
4. UAL Amortization Rate		37.62%	37.62%					50.45%			
5. Administrative Expense Rate		1.38%	1.38%					1.84%			
6. Net Employer Contribution Rate (3+4+5)		**49.64%**	**49.93%**					**66.24%**			

[1] *Not including member's share of administrative expenses.*

SECTION V – CONTRIBUTIONS

The assets of the Plan are allocated between the General and Safety groups based on their share of the liability for non-active members. If the assets of the Plan exceed the liabilities of the non-active members, the remaining assets are allocated between the General and Safety groups based on their share of the liabilities for active members.

Table V-3
Allocation of the June 30, 2019 UAL and Development of UAL Amortization Rates for FYE 2021

	General	Safety	Total
1. Market Value of Assets			$ 866,503,284
2. Inactive Actuarial Liability	783,163,345	205,976,681	989,140,026
3. Allocation of Assets for Inactives	79.18%	20.82%	100.00%
4. Total Assets for Inactives	686,064,250	180,439,034	866,503,284
5. Net Assets for Distribution (4 - 2 not less than zero)			$ 0
6. Active Actuarial Liability	$ 300,780,088	$ 80,275,193	$ 381,055,281
7. Allocation of Remaining Assets	78.93%	21.07%	100.00%
8. Total Assets for Actives (7 x 5)	0	0	0
9. Market Value of Assets (4 + 8)	$ 686,064,250	$ 180,439,034	$ 866,503,284
10. Total Actuarial Liability	1,083,943,433	286,251,874	1,370,195,307
11. Unfunded Actuarial Liability (UAL) (10 - 9)	**$ 397,879,183**	**$ 105,812,840**	**$ 503,692,023**
12. UAL Amortization (see table V-4)	44,581,736	12,011,049	56,592,785
13. Total Payroll	118,519,671	23,808,742	142,328,413
14. UAL Amortization Rate (12 divided by 13)	**37.62%**	**50.45%**	**39.76%**

SECTION V – CONTRIBUTIONS

Table V-4 presents the calculation of the UAL payments for the System.

Table V-4
Development of Amortization Payment
For the June 30, 2019 Actuarial Valuation

Type of Base	Date Established	Initial Amount	Initial Amortization Years	June 30, 2019 Outstanding Balance	Remaining Amortization Years	Current Phase In/Out Percentage	Amortization Amount	% of Pay	% of Pay After Phase-In
1. Initial UAL	6/30/2013	$ 518,034,325	16	$ 432,441,279	10	100%	$ 53,319,866	37.46%	37.46%
2. (Gain)/Loss Base	6/30/2014	(71,384,203)	24	(80,443,214)	19	100%	(6,648,767)	-4.67%	-4.67%
3. (Gain)/Loss Base	6/30/2015	34,000,650	24	38,599,622	20	100%	3,067,080	2.15%	2.15%
4. (Gain)/Loss Base	6/30/2016	47,466,429	24	53,294,024	21	80%	3,315,684	2.33%	2.91%
5. (Gain)/Loss Assumption	6/30/2016	38,112,827	22	40,262,079	19	100%	3,195,911	2.25%	2.25%
6. (Gain)/Loss Base	6/30/2017	(29,098,191)	24	(31,923,143)	22	60%	(1,481,587)	-1.04%	-1.73%
7. (Gain)/Loss Assumption	6/30/2017	15,960,129	22	17,001,515	20	100%	1,301,368	0.91%	0.91%
8. (Gain)/Loss Base	6/30/2018	(14,219,151)	24	(15,008,290)	23	40%	(468,967)	-0.33%	-0.82%
9. (Gain)/Loss Base	6/30/2019	28,753,231	24	28,753,231	24	20%	460,566	0.32%	1.62%
10. (Gain)/Loss Assumption	6/30/2019	20,714,918	22	20,714,918	22	33%	531,631	0.37%	1.12%
Total				$ 503,692,023			$ 56,592,785	39.76%	41.20%

The single period equivalent amortization period – i.e., the length of time required to amortize the overall UAL as a level percentage of payroll based on the total current amortization payment – is approximately 11 years.

SECTION VI – COMPREHENSIVE ANNUAL FINANCIAL REPORTING INFORMATION

The GASB adopted Statement Nos. 67 and 68 that replaced GASB Statement Nos. 25 and 27. GASB 67 is effective for periods beginning after June 15, 2013 (first effective for the fiscal year ending June 30, 2014 for the Plan) and GASB 68 is effective for fiscal years beginning after June 15, 2014 (first effective for the fiscal year ending June 30, 2015 for the Employer). The disclosures needed to satisfy the new GASB requirements can be found in the MCERA GASB 67/68 Report as of June 30, 2019.

In accordance with Governmental Finance Officers Association (GFOA) and their recommended checklist for Comprehensive Annual Financial Reports (CAFRSs), we continue to prepare the following disclosures:

Analysis of Financial Experience

This schedule shows the history of gains or losses arising from investment and liability sources, as well as non-recurring items.

Schedule of Funded Liabilities by Type

The schedule of funded liabilities by type (formerly referred to as the solvency test) shows the portion of Actuarial Liabilities for active member contributions, inactive members, and the employer financed portion of the active members that are covered by the Actuarial Value of Assets.

Actuarial Balance Sheet

The actuarial balance sheet shows the components of the Actuarial Liabilities of the Plan and the actuarial assets that are intended to satisfy those liabilities.

SECTION VI – COMPREHENSIVE ANNUAL FINANCIAL REPORTING INFORMATION

Table VI-1
Analysis of Financial Experience
Gain (or Loss) in Actuarial Liability During Years Ended June 30
Resulting from Differences Between Assumed Experience
and Actual Experience
(in thousands)

	Gain (or Loss) for Year Ending June 30									
Type of Activity	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010
Investment Income and Expenses	$ (20,208)	$ 15,963	$ 34,498	$ (52,420)	$ (31,459)	$ 22,058	$ (20,749)	$ (40,054)	$ (30,955)	$ (16,151)
Combined Liability Experience	(7,038)	(1,158)	(2,720)	8,327	5,096	12,533	(4,199)	(11,401)	13,824	(8,100)
Gain (or Loss) During Year from Financial Experience	$ (27,246)	$ 14,805	$ 31,778	$ (44,093)	$ (26,363)	$ 34,591	$ (24,948)	$ (51,455)	$ (17,131)	$ (24,251)
Non-Recurring Gain (or Loss) Items	(22,230)	(576)	(18,639)	(41,488)	(7,636)	36,803	(49,294)	16,069	12,918	(63,410)
Composite Gain (or Loss) During Year	$ (49,476)	$ 14,229	$ 13,139	$ (85,581)	$ (33,999)	$ 71,394	$ (74,242)	$ (35,386)	$ (4,213)	$ (87,661)

SECTION VI – COMPREHENSIVE ANNUAL FINANCIAL REPORTING INFORMATION

Table VI-2
Schedule of Funded Liabilities by Type
(dollars in thousands)

Valuation Date June 30,	(A) Active Member Contributions	(B) Retirees And Beneficiaries	(C) Remaining Active Members' Liabilities[1]	Reported Assets[2]	Portion of Actuarial Liabilities Covered by Reported Assets (A)	(B)	(C)
2019[3]	$ 86,356	$ 932,909	$ 350,930	$ 866,503	100%	84%	0%
2018	86,585	871,095	344,239	826,654	100%	85%	0%
2017	85,150	834,643	339,909	753,769	100%	80%	0%
2016[3]	81,880	804,658	314,657	670,016	100%	73%	0%
2015	78,078	765,738	287,365	672,319	100%	78%	0%
2014	75,582	739,428	281,231	657,325	100%	79%	0%
2013[3]	73,311	694,137	297,850	547,264	100%	68%	0%
2012[4]	66,407	632,319	276,882	528,728	100%	73%	0%
2011[5]	65,723	558,483	309,711	523,980	100%	82%	0%
2010[3]	64,917	532,695	333,220	509,561	100%	83%	0%

[1] *Includes deferred members.*

[2] *Actuarial Value of Assets. As of June 30, 2014, the Market Value of Assets is used.*

[3] *Reflects revised economic and demographic assumptions.*

[4] *Reflects revised demographic assumptions.*

[5] *Reflects revised EAN methodology and economic assumptions.*

Table VI-3
Actuarial Balance Sheet as of June 30, 2019

Assets	
1. Market value of assets	$ 866,503,284
2. Present value of future contributions by members	93,307,225
3. Present value of future employer contributions for normal cost	99,554,920
4. Present value of other future employer contributions (UAL)	503,692,023
5. **Total actuarial assets**	**$ 1,563,057,452**
Liabilities	
6. Present value of retirement allowances payable to retired/disabled members and their survivors	$ 932,909,107
7. Present value of service retirement allowances payable to presently active members and their survivors	484,101,512
8. Present value of allowances payable to current and future vested terminated and their survivors	107,495,830
9. Present value of disability retirement allowances payable to presently active members and their survivors	26,805,871
10. Present value of death benefits payable on behalf of presently active members	4,673,710
11. Present value of members' contributions to be returned upon withdrawal	7,071,422
12. Special Reserves	-
13. **Total actuarial liabilities**	**$ 1,563,057,452**

APPENDIX A – MEMBERSHIP INFORMATION

Summary of Participant Data (By Group) As of June 30, 2019	General	Safety	Total
Active Participants			
Number	1,861	316	2,177
Average Age	43.28	38.59	42.60
Average Service	9.48	10.09	9.57
Average Pay	$59,789	$71,197	$61,445
Service Retired			
Number	1,658	205	1,863
Average Age	70.82	65.67	70.25
Average Annual Total Benefit	$33,766	$47,495	$35,277
Beneficiaries & QDROs			
Number	254	68	322
Average Age	75.28	70.33	74.23
Average Annual Total Benefit	$16,128	$26,983	$18,421
Duty Disabled			
Number	53	89	142
Average Age	69.11	62.31	64.85
Average Annual Total Benefit	$27,474	$34,605	$31,944
Non-Duty Disabled			
Number	43	3	46
Average Age	70.51	64.72	70.14
Average Annual Total Benefit	$16,125	$22,597	$16,548
Total Receiving Benefits			
Number	2,008	365	2,373
Average Age	71.33	65.72	70.47
Average Annual Total Benefit	$30,991	$40,326	$32,427
Terminated Vested			
Number	292	47	339
Average Age	49.11	41.99	48.12
Average Service	10.84	9.74	10.69
Transfers			
Number	192	54	246
Average Age	51.02	44.01	49.48
Average Service	19.53	18.03	19.20
Funds on Account			
Number	314	43	357
Average Age	40.35	32.68	39.42
Average Service	1.53	1.39	1.52
Total Deferred			
Number	798	144	942
Average Age	46.12	39.97	45.18
Average Service	9.27	10.35	9.44

APPENDIX A – MEMBERSHIP INFORMATION

Summary of Participant Data (General) As of June 30, 2019	General Tier 1	General Tier 2	General Tier 3	General Tier 4	General Tier 3R	General Total
Active Participants						
Number	82	811	48	906	14	1,861
Average Age	56.26	48.35	41.48	37.64	44.92	43.28
Average Service	25.82	15.24	10.64	2.77	10.99	9.48
Average Pay	$85,836	$65,126	$75,856	$51,422	$84,455	$59,789
Service Retired						
Number	1,252	401	5	N/A	N/A	1,658
Average Age	72.14	66.80	62	N/A	N/A	70.82
Average Annual Total Benefit	$37,871	$21,346	1,974	N/A	N/A	$33,766
Beneficiaries & QDROs						
Number	222	32	N/A	N/A	N/A	254
Average Age	77.20	61.92	N/A	N/A	N/A	75.28
Average Annual Total Benefit	$17,216	$8,583	N/A	N/A	N/A	$16,128
Duty Disabled						
Number	35	18	N/A	N/A	N/A	53
Average Age	73.76	60.06	N/A	N/A	N/A	69.11
Average Annual Total Benefit	$28,532	$25,419	N/A	N/A	N/A	$27,474
Non-Duty Disabled						
Number	31	12	N/A	N/A	N/A	43
Average Age	74.08	61.30	N/A	N/A	N/A	70.51
Average Annual Total Benefit	$17,987	$11,316	N/A	N/A	N/A	$16,125
Total Receiving Benefits						
Number	1,540	463	5	N/A	N/A	2,008
Average Age	72.95	66.06	62	N/A	N/A	71.33
Average Annual Total Benefit	$34,281	$20,362	1,974	N/A	N/A	$30,991
Terminated Vested						
Number	46	220	16	10	N/A	292
Average Age	58.55	47.81	42.33	45.15	N/A	49.11
Average Service	11.30	10.80	11.35	8.89	N/A	10.84
Transfers						
Number	38	145	0	9	N/A	192
Average Age	57.44	50.11	N/A	38.67	N/A	51.02
Average Service	30.16	17.69	N/A	4.32	N/A	19.53
Funds on Account						
Number	7	87	10	210	N/A	314
Average Age	60.36	46.85	38.08	37.09	N/A	40.35
Average Service	1.88	2.09	3.58	1.20	N/A	1.53
Total Deferred						
Number	91	452	26	229	N/A	798
Average Age	58.23	48.36	40.70	37.50	N/A	46.12
Average Service	18.45	11.33	8.36	1.65	N/A	9.27

APPENDIX A – MEMBERSHIP INFORMATION

Summary of Participant Data (Safety) As of June 30, 2019	Safety Tier 1	Safety Tier 2	Safety Tier 3	Safety Tier 4	Safety Tier 3R	Safety Total
Active Participants						
Number	17	164	6	128	1	316
Average Age	53.42	42.31	35.96	31.97	38.98	38.59
Average Service	25.21	14.18	9.46	2.85	13.47	10.09
Average Pay	$107,084	$76,230	$69,025	$60,023	$78,998	$71,197
Service Retired						
Number	184	21	N/A	N/A	N/A	205
Average Age	66.36	59.65	N/A	N/A	N/A	65.67
Average Annual Total Benefit	$49,736	$27,858	N/A	N/A	N/A	$47,495
Beneficiaries & QDROs						
Number	65	3	N/A	N/A	N/A	68
Average Age	71.34	48.52	N/A	N/A	N/A	70.33
Average Annual Total Benefit	$27,324	$19,589	N/A	N/A	N/A	$26,983
Duty Disabled						
Number	64	25	N/A	N/A	N/A	89
Average Age	66.54	51.50	N/A	N/A	N/A	62.31
Average Annual Total Benefit	$37,563	$27,033	N/A	N/A	N/A	$34,605
Non-Duty Disabled						
Number	2	1	N/A	N/A	N/A	3
Average Age	61.19	71.78	N/A	N/A	N/A	64.72
Average Annual Total Benefit	$24,317	$19,156	N/A	N/A	N/A	$22,597
Total Receiving Benefits						
Number	315	50	N/A	N/A	N/A	365
Average Age	67.39	55.15	N/A	N/A	N/A	65.72
Average Annual Total Benefit	$42,477	$26,775	N/A	N/A	N/A	$40,326
Terminated Vested						
Number	2	43	1	1	N/A	47
Average Age	58.60	41.42	43.89	30.98	N/A	41.99
Average Service	12.67	9.60	11.39	8.26	N/A	9.74
Transfers						
Number	6	45	0	3	N/A	54
Average Age	50.12	43.77	N/A	35.38	N/A	44.01
Average Service	30.12	17.04	N/A	8.80	N/A	18.03
Funds on Account						
Number	0	7	1	35	N/A	43
Average Age	N/A	41.33	30.73	31.00	N/A	32.68
Average Service	N/A	1.58	0.09	1.38	N/A	1.39
Total Deferred						
Number	8	95	2	39	N/A	144
Average Age	52.24	42.53	37.31	31.34	N/A	39.97
Average Service	25.76	12.53	5.74	2.13	N/A	10.35

APPENDIX A – MEMBERSHIP INFORMATION

Change in Plan Membership: Total

	Actives	Transfers	Non-Vested Terminations	Vested Terminations	Non - Duty Disabled	Duty Disabled	Retired	Beneficiaries & QDROs	Total
July 1, 2018	**2,149**	**235**	**308**	**307**	**46**	**139**	**1,808**	**317**	**5,309**
New Entrants	267	0	25	0	0	0	0	0	292
Rehires	10	0	(5)	(4)	0	0	(1)	0	0
Duty Disabilities	(3)	(2)	0	0	0	7	(2)	0	0
Non-Duty Disabilities	0	(1)	0	0	1	0	0	0	0
Retirements	(71)	(10)	0	(16)	0	0	97	0	0
Dual Service Retirements	0	0	0	0	0	0	0	0	0
Vested Terminations	(45)	(2)	(2)	49	0	0	0	0	0
Transfers	(4)	8	(3)	(1)	0	0	0	0	0
Non-Vested Terminations with Funds on Account	(56)	0	56	0	0	0	0	0	0
Withdrawals Paid	(69)	(5)	(22)	(2)	0	0	0	0	(98)
Died, With Beneficiary	0	0	0	0	0	(4)	(20)	24	0
Died, Without Beneficiary	(1)	0	0	0	(1)	(2)	(23)	0	(27)
Beneficiary Deaths	0	0	0	0	0	0	0	(26)	(26)
Domestic Relations Orders	0	0	0	0	0	0	0	6	6
Data Corrections	0	23	0	6	0	2	4	1	36
July 1, 2019	**2,177**	**246**	**357**	**339**	**46**	**142**	**1,863**	**322**	**5,492**

APPENDIX A – MEMBERSHIP INFORMATION

Change in Plan Membership: General

	Actives	Transfers	Non-Vested Terminations	Vested Terminations	Non - Duty Disabled	Duty Disabled	Retired	Beneficiaries & QDROs	Total
July 1, 2018	**1,827**	**186**	**268**	**261**	**43**	**51**	**1,613**	**253**	**4,502**
New Entrants	242	0	22	0	0	0	0	0	264
Rehires	10	0	(5)	(4)	0	0	(1)	0	0
Duty Disabilities	(1)	0	0	0	0	3	(2)	0	0
Non-Duty Disabilities	0	(1)	0	0	1	0	0	0	0
Retirements	(60)	(9)	0	(14)	0	0	83	0	0
Dual Service Retirements	0	0	0	0	0	0	0	0	0
Vested Terminations	(43)	(2)	(2)	47	0	0	0	0	0
Transfers	(3)	5	(2)	0	0	0	0	0	0
Non-Vested Terminations with Funds on Account	(52)	0	52	0	0	0	0	0	0
Withdrawals Paid	(58)	(5)	(20)	(2)	0	0	0	0	(85)
Died, With Beneficiary	0	0	0	0	0	(1)	(18)	19	0
Died, Without Beneficiary	(1)	0	0	0	(1)	(1)	(22)	0	(25)
Beneficiary Deaths	0	0	0	0	0	0	0	(24)	(24)
Domestic Relations Orders	0	0	0	0	0	0	0	5	5
Data Corrections	0	18	1	4	0	1	5	1	30
July 1, 2019	**1,861**	**192**	**314**	**292**	**43**	**53**	**1,658**	**254**	**4,667**

APPENDIX A – MEMBERSHIP INFORMATION

Change in Plan Membership: Safety	Actives	Transfers	Non-Vested Terminations	Vested Terminations	Non - Duty Disabled	Duty Disabled	Retired	Beneficiaries & QDROs	Total
July 1, 2018	**322**	**49**	**40**	**46**	**3**	**88**	**195**	**64**	**807**
New Entrants	25	0	3	0	0	0	0	0	28
Rehires	0	0	0	0	0	0	0	0	0
Duty Disabilities	(2)	(2)	0	0	0	4	0	0	0
Non-Duty Disabilities	0	0	0	0	0	0	0	0	0
Retirements	(11)	(1)	0	(2)	0	0	14	0	0
Dual Service Retirements	0	0	0	0	0	0	0	0	0
Vested Terminations	(2)	0	0	2	0	0	0	0	0
Transfers	(1)	3	(1)	(1)	0	0	0	0	0
Non-Vested Terminations with Funds on Account	(4)	0	4	0	0	0	0	0	0
Withdrawals Paid	(11)	0	(2)	0	0	0	0	0	(13)
Died, With Beneficiary	0	0	0	0	0	(3)	(2)	5	0
Died, Without Beneficiary	0	0	0	0	0	(1)	(1)	0	(2)
Beneficiary Deaths	0	0	0	0	0	0	0	(2)	(2)
Domestic Relations Orders	0	0	0	0	0	0	0	1	1
Data Corrections	0	5	(1)	2	0	1	(1)	0	6
July 1, 2019	**316**	**54**	**43**	**47**	**3**	**89**	**205**	**68**	**825**

APPENDIX A – MEMBERSHIP INFORMATION

Active Member Data by Plan

Valuation at Year End	Plan Type	Member Count	Annual Payroll	Average Annual Salary	Average Salary Increase
2010	General	1,708	$94,915,436	$55,571	3.45%
	Safety	330	$19,692,515	$59,674	5.40%
	Total	**2,038**	**$114,607,951**	**$56,236**	**3.81%**
2011	General	1,659	$94,976,978	$57,250	3.02%
	Safety	321	$19,768,859	$61,585	3.20%
	Total	**1,980**	**$114,745,837**	**$57,952**	**3.05%**
2012	General	1,596	$90,706,280	$56,834	-0.73%
	Safety	305	$19,145,091	$62,771	1.93%
	Total	**1,901**	**$109,851,371**	**$57,786**	**-0.29%**
2013	General	1,604	$91,737,348	$57,193	0.63%
	Safety	295	$18,699,145	$63,387	0.98%
	Total	**1,899**	**$110,436,493**	**$58,155**	**0.64%**
2014	General	1,624	$91,704,083	$56,468	-1.27%
	Safety	300	$18,620,870	$62,070	-2.08%
	Total	**1,924**	**$110,324,953**	**$57,341**	**-1.40%**
2015	General	1,664	$93,938,857	$56,454	-0.03%
	Safety	298	$18,397,233	$61,736	-0.54%
	Total	**1,962**	**$112,336,090**	**$57,256**	**-0.15%**
2016	General	1,729	$97,337,917	$56,297	-0.28%
	Safety	311	$19,394,922	$62,363	1.02%
	Total	**2,040**	**$116,732,839**	**$57,222**	**-0.06%**
2017	General	1,783	$102,498,328	$57,486	2.11%
	Safety	313	$20,136,322	$64,333	3.16%
	Total	**2,096**	**$122,634,651**	**$58,509**	**2.25%**
2018	General	1,827	$108,067,248	$59,150	2.89%
	Safety	322	$22,018,174	$68,379	6.29%
	Total	**2,149**	**$130,085,423**	**$60,533**	**3.46%**
2019	General	1,861	$111,267,187	$59,789	1.08%
	Safety	316	$22,498,224	$71,197	4.12%
	Total	**2,177**	**$133,765,412**	**$61,445**	**1.51%**

Payroll figures represent active members' annualized pay rates on June 30.

APPENDIX A – MEMBERSHIP INFORMATION

Retirants and Beneficiaries Added to and Removed from Retiree Payroll										
Fiscal Year	Beginning of Year	Added During Year	Allowances Added	Removed During Year	Allowances Removed	End of Year	Annual Retirement Payroll (in 000s)	Total Allowance Percentage Increase	Average Annual Allowance	Average Allowance Percentage Increase
2005	1,441	109	2,445,000	49	450,000	1,501	24,867,000	9.16%	16,567	4.80%
2006	1,477	98	2,007,000	53	785,000	1,522	27,297,000	9.77%	16,836	1.62%
2007	1,521	136	4,419,000	38	560,000	1,619	31,823,000	16.58%	17,947	6.60%
2008	1,620	105	2,757,000	67	902,000	1,658	34,603,000	8.74%	19,644	9.46%
2009	1,658	105	3,402,523	52	812,828	1,711	37,747,525	9.09%	22,062	12.31%
2010	1,711	171	6,097,956	56	981,465	1,826	43,653,374	15.65%	23,907	8.36%
2011	1,826	103	2,627,234	44	781,283	1,885	46,116,686	5.64%	24,465	2.34%
2012	1,885	175	6,484,652	64	960,185	1,996	52,887,845	14.68%	26,497	8.31%
2013	1,996	103	3,028,612	49	855,980	2,050	56,048,022	5.98%	27,340	3.18%
2014	2,050	116	3,950,045	31	590,636	2,135	60,297,112	7.58%	28,242	3.30%
2015	2,135	100	2,508,828	35	720,242	2,200	63,254,229	4.90%	28,752	1.80%
2016	2,200	68	1,716,361	34	946,189	2,234	65,505,679	3.56%	29,322	1.98%
2017	2,234	85	2,282,779	56	1,022,708	2,263	68,476,111	4.53%	30,259	3.20%
2018	2,263	120	3,617,034	73	1,671,956	2,310	72,002,829	5.15%	31,170	3.01%
2019	2,310	141	4,908,365	78	1,805,138	2,373	76,948,959	6.87%	32,427	4.03%

APPENDIX A – MEMBERSHIP INFORMATION

GENERAL

Count

	Service										
Age	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up	Total
Under 20	0	0	0	0	0	0	0	0	0	0	0
20 to 25	24	6	0	0	0	0	0	0	0	0	30
25 to 29	53	106	14	0	0	0	0	0	0	0	173
30 to 34	49	140	68	18	0	0	0	0	0	0	275
35 to 39	28	124	74	83	22	1	0	0	0	0	332
40 to 44	21	91	36	71	58	14	0	0	0	0	291
45 to 49	26	38	34	46	43	36	8	1	0	0	232
50 to 54	9	29	15	35	52	44	16	4	0	0	204
55 to 59	9	11	20	28	53	32	19	14	0	0	186
60 to 64	5	11	16	18	28	18	3	2	0	0	101
65 to 69	0	1	7	10	3	8	2	0	1	0	32
70 & up	0	2	1	1	1	0	0	0	0	0	5
Total	224	559	285	310	260	153	48	21	1	0	1,861

Average Compensation

	Service										
Age	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up	Total
Under 20	0	0	0	0	0	0	0	0	0	0	0
20 to 25	37,304	37,270	0	0	0	0	0	0	0	0	37,297
25 to 29	39,782	46,087	56,242	0	0	0	0	0	0	0	44,977
30 to 34	42,451	49,100	60,618	55,301	0	0	0	0	0	0	51,169
35 to 39	48,336	50,602	61,275	68,209	66,646	42,598	0	0	0	0	58,231
40 to 44	51,434	53,680	63,677	67,617	69,593	74,103	0	0	0	0	62,309
45 to 49	43,819	51,361	66,213	74,665	65,610	72,282	63,143	49,550	0	0	63,599
50 to 54	61,791	62,070	67,399	64,247	66,974	74,453	82,743	95,253	0	0	69,016
55 to 59	52,155	61,147	78,620	56,017	68,693	68,302	59,557	82,825	0	0	66,669
60 to 64	71,648	62,356	76,932	62,882	61,592	72,418	102,922	62,144	0	0	68,001
65 to 69	0	239,658	76,456	72,727	42,952	78,775	53,426	0	91,388	0	76,857
70 & up	0	67,652	49,109	32,882	51,769	0	0	0	0	0	53,813
Total	44,823	51,212	64,512	66,456	66,740	72,402	70,339	81,638	91,388	0	59,789

APPENDIX A – MEMBERSHIP INFORMATION

SAFETY

Count

	Service										
Age	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up	Total
Under 20	0	0	0	0	0	0	0	0	0	0	0
20 to 25	10	6	0	0	0	0	0	0	0	0	16
25 to 29	8	38	3	0	0	0	0	0	0	0	49
30 to 34	2	20	15	11	0	0	0	0	0	0	48
35 to 39	2	14	13	38	3	0	0	0	0	0	70
40 to 44	1	3	3	28	19	5	0	0	0	0	59
45 to 49	0	6	1	11	8	6	1	0	0	0	33
50 to 54	0	2	1	5	6	5	6	1	0	0	26
55 to 59	0	2	0	2	1	3	2	2	0	0	12
60 to 64	0	0	0	2	0	0	0	1	0	0	3
65 to 69	0	0	0	0	0	0	0	0	0	0	0
70 & up	0	0	0	0	0	0	0	0	0	0	0
Total	23	91	36	97	37	19	9	4	0	0	316

Average Compensation

	Service										
Age	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up	Total
Under 20	0	0	0	0	0	0	0	0	0	0	0
20 to 25	41,764	44,794	0	0	0	0	0	0	0	0	42,900
25 to 29	57,249	59,424	58,598	0	0	0	0	0	0	0	59,019
30 to 34	51,844	64,263	65,452	80,748	0	0	0	0	0	0	67,895
35 to 39	47,258	58,583	70,648	76,966	69,870	0	0	0	0	0	70,963
40 to 44	78,998	81,945	82,737	71,990	78,967	111,481	0	0	0	0	78,755
45 to 49	0	67,906	59,635	73,445	78,229	88,429	150,042	0	0	0	78,225
50 to 54	0	97,993	59,388	71,698	70,033	83,622	95,541	89,709	0	0	81,351
55 to 59	0	92,938	0	60,105	59,738	91,206	80,687	80,118	0	0	80,088
60 to 64	0	0	0	95,754	0	0	0	197,902	0	0	129,803
65 to 69	0	0	0	0	0	0	0	0	0	0	0
70 & up	0	0	0	0	0	0	0	0	0	0	0
Total	50,123	62,280	67,867	75,327	76,102	93,669	98,296	111,962	0	0	71,197

APPENDIX A – MEMBERSHIP INFORMATION

Service Retired Benefits						
	General		Safety		Total	
Current Age	Number	Annual Average Benefit	Number	Annual Average Benefit	Number	Annual Average Benefit
0-24	0	$0	0	$0	0	$0
25-29	0	$0	0	$0	0	$0
30-34	0	$0	0	$0	0	$0
35-39	0	$0	0	$0	0	$0
40-44	0	$0	0	$0	0	$0
45-49	0	$0	3	$47,384	3	$47,384
50-54	14	$23,635	20	$49,798	34	$39,025
55-59	138	$32,560	39	$51,902	177	$36,822
60-64	286	$36,920	37	$50,905	323	$38,522
65-69	379	$37,888	37	$44,998	416	$38,521
70-74	357	$35,942	39	$45,772	396	$36,910
75-79	240	$30,237	18	$36,199	258	$30,653
80-84	131	$26,974	8	$51,491	139	$28,385
85-89	79	$23,254	2	$45,311	81	$23,798
90-94	21	$25,095	2	$43,245	23	$26,673
95+	13	$19,627	0	$0	13	$19,627
All Ages	1,658	$33,766	205	$47,495	1,863	$35,277

Duty Disabled Benefits						
	General		Safety		Total	
Current Age	Number	Annual Average Benefit	Number	Annual Average Benefit	Number	Annual Average Benefit
0-24	0	$0	0	$0	0	$0
25-29	0	$0	0	$0	0	$0
30-34	0	$0	0	$0	0	$0
35-39	0	$0	5	$19,959	5	$19,959
40-44	1	$27,030	3	$29,208	4	$28,664
45-49	2	$37,166	8	$37,525	10	$37,453
50-54	1	$24,256	7	$40,238	8	$38,240
55-59	4	$33,770	9	$46,109	13	$42,312
60-64	11	$23,123	15	$22,772	26	$22,920
65-69	10	$29,051	17	$30,924	27	$30,230
70-74	10	$25,445	13	$49,513	23	$39,048
75-79	6	$28,963	11	$30,159	17	$29,737
80-84	3	$22,466	1	$52,897	4	$30,074
85-89	3	$17,466	0	$0	3	$17,466
90-94	2	$51,284	0	$0	2	$51,284
95+	0	$0	0	$0	0	$0
All Ages	53	$27,474	89	$34,605	142	$31,944

APPENDIX A – MEMBERSHIP INFORMATION

Non-Duty Disabled Benefits						
	General		Safety		Total	
Current Age	Number	Annual Average Benefit	Number	Annual Average Benefit	Number	Annual Average Benefit
0-24	0	$0	0	$0	0	$0
25-20	0	$0	0	$0	0	$0
30-34	0	$0	0	$0	0	$0
35-39	0	$0	0	$0	0	$0
40-44	0	$0	0	$0	0	$0
45-49	2	$8,194	1	$30,556	3	$15,648
50-54	2	$13,482	0	$0	2	$13,482
55-59	4	$23,657	0	$0	4	$23,657
60-64	4	$14,402	0	$0	4	$14,402
65-69	8	$16,098	0	$0	8	$16,098
70-74	6	$15,447	2	$18,617	8	$16,240
75-79	8	$14,795	0	$0	8	$14,795
80-84	4	$21,064	0	$0	4	$21,064
85-89	4	$18,028	0	$0	4	$18,028
90-94	1	$1,614	0	$0	1	$1,614
95+	0	$0	0	$0	0	$0
All Ages	43	$16,125	3	$22,597	46	$16,548

Surviving Beneficiary & QDRO Benefits						
	General		Safety		Total	
Current Age	Number	Annual Average Benefit	Number	Annual Average Benefit	Number	Annual Average Benefit
0-24	1	$14,577	0	$0	1	$14,577
25-29	0	$0	0	$0	0	$0
30-34	1	$1,430	0	$0	1	$1,430
35-39	2	$19,437	1	$36,028	3	$24,967
40-44	1	$24,229	1	$45,728	2	$34,978
45-49	5	$3,388	3	$6,921	8	$4,713
50-54	7	$6,613	1	$0	8	$5,787
55-59	18	$14,250	8	$16,207	26	$14,852
60-64	19	$12,023	6	$23,520	25	$14,782
65-69	20	$18,271	7	$35,633	27	$22,772
70-74	39	$19,699	19	$30,568	58	$23,259
75-79	35	$16,441	8	$32,780	43	$19,481
80-84	49	$15,457	8	$17,878	57	$15,797
85-89	29	$17,493	5	$39,741	34	$20,765
90-94	19	$20,805	1	$27,346	20	$21,132
95+	9	$11,144	0	$0	9	$11,144
All Ages	254	$16,128	68	$26,983	322	$18,421

APPENDIX B -- STATEMENT OF CURRENT ACTUARIAL ASSUMPTIONS AND METHODS

The assumptions and methods used in the actuarial valuation reflect the results of an experience study performed by Cheiron covering the period from July 1, 2016 through June 30, 2019 and adopted by the Board at their December 12, 2019 meeting. More details on the rationale for the demographic and economic assumptions can be found in the experience analysis dated February 2020.

A. Actuarial Assumptions

1. Rate of Return

Assets are assumed to earn 7.00% net of investment expenses.

2. Administrative Expenses

Administrative expenses are assumed to be $2.369 million for the next year to be allocated between the employer and employees based on each group's share of the non-expense related contributions. Administrative expenses in future years are expected to increase with the Consumer Price Index (CPI).

3. Cost of Living

The cost of living as measured by the Consumer Price Index (CPI) will increase at the rate of 2.50% per year.

4. Post Retirement COLA

Benefits are assumed to increase after retirement at the rate of 2.40% per year for Tier 1 members.

5. Increases in Pay

Wage inflation component: 2.75%
Additional longevity and promotion component:

Years of Service	General	Safety	Years of Service	General	Safety
0	7.00%	8.50%	11	2.50%	1.00%
1	6.50%	7.50%	12	2.25%	1.00%
2	6.00%	6.50%	13	2.00%	1.00%
3	5.50%	5.50%	14	1.85%	1.00%
4	5.00%	4.50%	15	1.70%	1.00%
5	4.50%	3.50%	16	1.55%	1.00%
6	4.00%	3.00%	17	1.40%	1.00%
7	3.50%	2.50%	18	1.25%	1.00%
8	3.25%	2.00%	19	1.10%	1.00%
9	3.00%	1.50%	20+	1.00%	1.00%
10	2.75%	1.00%			

APPENDIX B -- STATEMENT OF CURRENT ACTUARIAL ASSUMPTIONS AND METHODS

6. Final Average Compensation Load

The final average compensation (FAC) for members projected to receive a service retirement benefit has increased based on the assumption that members will have elements of pay included in their FAC which are not included in the annual pay provided to the actuary (Ventura decision pays). The FAC for General Tier 1 members has been increased by 5.50%, the FAC for Safety Tier 1 members has been increased by 8.00%, and the FAC for all Tier 2 and Tier 3 members by 1.50%.

7. Family Composition

55% of female General members, 75% of male General members and 85% of Safety members are assumed to be married at retirement. Male members are assumed to be three years older than their spouses are and female members are assumed to be two years younger than their spouses are.

8. Rates of Mortality

Mortality rates for actives, retirees, disabled members, beneficiaries, terminated vesteds, and reciprocal transfers are based on the sex-distinct employee and annuitant mortality tables as described below. Future mortality improvements are reflected by applying the SOA MP-2019 projection scale on a generational basis from the base year of 2009 for the CalPERS tables and the base year of 2010 for the Below Median Safety member Pub-2010 tables.

Category	Base Mortality Table	
	General	Safety
Healthy Annuitant	CalPERS 2009 Healthy Annuitant Mortality Table	1.05 times the 2010 Public Safety Below Median Mortality Table for Healthy Retirees
Duty Disabled Annuitants	CalPERS 2009 Industrial Disability Mortality Table	CalPERS 2009 Industrial Disability Mortality Table
Non-Duty Disabled Annuitant	CalPERS 2009 Non-Industrial Disability Mortality Table	CalPERS 2009 Non-Industrial Disability Mortality Table
Active Employees	CalPERS 2009 Non-Industrial Employees Mortality Table	2010 Public Safety Below Median Mortality Table for Healthy Employees
Actives, Line of Duty (Safety only)	N/A	CalPERS 2009 Industrial Employees Mortality Table

For determining mortality rates for future disabled members, 50% of future General disabilities are assumed to be duty related and 50% are assumed to be non-duty related. 100% of future Safety disabilities are assumed to be duty related.

APPENDIX B -- STATEMENT OF CURRENT ACTUARIAL ASSUMPTIONS AND METHODS

9. Rates of Termination

Sample rates of termination[1] are shown in the following table.

Years of Service	General Male	General Female	Safety
0	20.0%	20.0%	21.0%
5	8.2%	8.2%	6.5%
10	4.5%	4.5%	4.75%
15	4.5%	3.0%	3.5%
20	4.5%	3.0%	0.0%
25	4.5%	3.0%	0.0%
30	0.0%	0.0%	0.0%

[1] *Termination rates do not apply once a member is eligible for retirement.*

There are three types of terminations: withdrawals, reciprocal transfers, and vested terminations. Rates of withdrawal apply to active Members who terminate their employment and withdraw their member contributions, forfeiting entitlement to future Plan benefits. Rates of reciprocal transfer are for members who leave their member contributions on deposit and engage in employment covered by a pension plan with a reciprocal relationship with MCERA. Finally, rates of vested termination apply to active Members who terminate their employment and leave their member contributions on deposit with the Plan.

The table below shows the percentages of total terminations falling into these categories.

	Years of Service						
	General				Safety		
	0 – 4	5 – 9	10-14	15+	0 – 4	5-9	10+
Withdrawals	92.5%	30.0%	20.0%	5.0%	92.5%	25.0%	15.0%
Transfers	7.5%	35.0%	40.0%	47.5%	7.5%	50.0%	56.7%
Vested Terminations	0.0%	35.0%	40.0%	47.5%	0.0%	25.0%	28.3%

Vested terminated General Members are assumed to begin receiving benefits at age 60; Vested terminated Safety Members are assumed to begin receiving benefits at age 51. Future reciprocal transfer General members are assumed to begin receiving benefits at age 61; future reciprocal transfer Safety members are assumed to begin receiving benefits at age 57. Current reciprocal transfer members are assumed to begin receiving benefits based on the probabilities of retirement applied to the active members.

Future reciprocal transfers' pay growth is assumed to be 3.75% while employed by a reciprocal employer. Current reciprocal transfers' pay growth is assumed to increase according to the assumptions applied to the active members until the assumed retirement age.

APPENDIX B -- STATEMENT OF CURRENT ACTUARIAL ASSUMPTIONS AND METHODS

10. Rates of Retirement

Rates of retirement are based on age and service according to the following table.

General			Safety		
	Years of Service			Years of Service	
Age	10 – 29	30+	Age	10 – 19	20+
50	10.00%	20.00%	40	0.00%	1.50%
51	10.00%	20.00%	41	0.00%	1.50%
52	10.00%	20.00%	42	0.00%	1.50%
53	10.00%	20.00%	43	0.00%	1.50%
54	10.00%	20.00%	44	0.00%	1.50%
55	10.00%	25.00%	45	0.00%	1.50%
56	10.00%	25.00%	46	0.00%	5.00%
57	10.00%	30.00%	47	0.00%	10.00%
58	15.00%	35.00%	48	0.00%	15.00%
59	20.00%	35.00%	49	0.00%	20.00%
60	20.00%	35.00%	50	15.00%	20.00%
61	20.00%	35.00%	51	7.50%	20.00%
62	20.00%	35.00%	52	7.50%	20.00%
63	20.00%	35.00%	53	7.50%	20.00%
64	20.00%	35.00%	54	20.00%	20.00%
65	35.00%	35.00%	55	30.00%	30.00%
66	35.00%	35.00%	56	30.00%	30.00%
67	35.00%	35.00%	57	30.00%	30.00%
68	35.00%	35.00%	58	30.00%	30.00%
69	35.00%	35.00%	59	30.00%	30.00%
70+	100.00%	100.00%	60	100.00%	100.00%

APPENDIX B -- STATEMENT OF CURRENT ACTUARIAL ASSUMPTIONS AND METHODS

11. Rates of Disability

Sample disability rates of active participants are provided in the table.

	General		Safety	
Age	Service-Connected	Non-Service Connected[1]	Service-Connected	Non-Service Connected[1]
20	0.0165%	0.0165%	0.0000%	0.0050%
25	0.0165%	0.0165%	0.0825%	0.0050%
30	0.0190%	0.0190%	0.2380%	0.0100%
35	0.0390%	0.0390%	0.3940%	0.0150%
40	0.0806%	0.0806%	0.5500%	0.0200%
45	0.1447%	0.1447%	0.7060%	0.0250%
50	0.1829%	0.1829%	0.9230%	0.0400%
55	0.1442%	0.1442%	2.3925%	0.0650%
60	0.1196%	0.1196%	3.0120%	0.1000%
65	0.1196%	0.1196%	3.6385%	0.1000%

[1] *Rates are applied once members have at least five years of service*

12. Member Contribution Balance Crediting Rate

5.00% (2.00% less than the assumed rate of return of 7.00%).

13. Changes Since Last Valuation

All demographic and economic assumptions were updated based on the most recent experience study covering the period from July 1, 2016 through June 30, 2019. Please refer to the full experience study report for detail on the specific changes.

APPENDIX B -- STATEMENT OF CURRENT ACTUARIAL ASSUMPTIONS AND METHODS

B. Actuarial Methods

1. Actuarial Funding Method

The Entry Age Normal actuarial funding method was used for active employees, whereby the normal cost is computed as the level annual percentage of pay required to fund the retirement benefits between each Member's date of hire and assumed retirement. The Actuarial Liability is the difference between the Present Value of Future Benefits and the Present Value of Future Normal Cost. The Unfunded Actuarial Liability is the difference between the Actuarial Liability and the Actuarial Value of Assets.

The UAL (or Surplus Funding) is amortized as a percentage of the projected salaries of present and future members of MCERA. Effective with the June 30, 2013 valuation, the UAL as of June 30, 2013 is amortized over a closed 16-year period. Effective with the June 30, 2014 valuation, any new sources of UAL due to actuarial gains and losses or method changes is amortized over a closed 24-year period, with five-year ramp up period at the beginning of the period, a four-year ramp down at the end of the period, and 15 years of level payments as a percentage of payroll. Assumption changes will be amortized over a closed 22-year period, with a three-year ramp up period, two-year ramp down period, and 17 years of level payments as a percentage of payroll. This method is a type of direct rate smoothing method.

2. Asset Valuation Method

As of June 30, 2014, the Market Value of Assets is used to determine the System's UAL.

3. Changes Since Last Valuation

None

APPENDIX C – SUMMARY OF PLAN PROVISIONS

A. Definitions

Compensation: Compensation means the cash remuneration for services paid by the employer. It includes base pay and certain differential, incentive, and special pay allowances defined by the Board of Retirement. Overtime is excluded, with the exception of overtime paid under the Fair Labor Standards Act that is regular and recurring.

PEPRA: For members joining the Plan on and after January 1, 2013 (Tier 4 Members), only pensionable compensation up to the Social Security Taxable Wage Base ($113,700 for 2013) will count for computing Plan benefits and employee contributions and employer contributions for those participating in Social Security. For those not participating in Social Security, the compensation cap is 120% of the Taxable Wage Base ($136,440 for 2013.) In future years, the cap on pensionable compensation will increase with the increase in the CPI-U, rather than the increase in the Taxable Wage Base. In addition, it is possible that some sources of compensation, such as any payments deemed to be terminal or special pays, may be excluded from benefit and contribution computations for Tier 4 Members.

Credited Service: In general, Credited Service is earned for the period during which Member Contributions are paid. One year of service credit is earned for each 2,080 hours worked (not including overtime), not to exceed one year of service per year.

Temporary service for which the Member was not credited, or service for which the Member withdrew his or her Member Contributions, may be purchased by paying or repaying the Member Contributions with interest. The categories of services for which credit may be purchased are listed below:

Prior Part-Time Service: If a Member worked for an employer within the Association on a part-time or 'extra help' basis before his membership in the Retirement Association, the Member may buyback this service.

Intermittent Part-Time Service.

Prior Full-Time Service: Member may buyback full-time service that may have been cashed out upon termination.

Leave of Absence (Including Absence with State Disability or Worker's Compensation): No unpaid leave of absence can be bought back except for absence due to medical reasons up to one year.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

Public Service: Members may purchase service credit for prior service in the following public agencies: Federal Civil Service, Military Service, and some public employers in California. This service is only eligible for purchase when the Board of Supervisors opens the window for purchase.

Military Time: Members who resign or obtain a leave of absence to enter the military may purchase service credit for the period of military service. Members must re-enter employment within one year of terminating military service to be eligible to purchase service.

At retirement, Members have the option to convert 100% of sick leave time into retirement years of service credit. Unrepresented Management and Unit 7 will instead have some or all of their sick leave contributed to the Post Employment Health Plan.

Final Compensation: For Tier 1 Members, Final Compensation means the highest average Compensation earned during any 26 consecutive pay periods of the Member's employment. For Tier 2 and Tier 3 Members, Final Compensation means the highest average Compensation earned during any 78 consecutive pay periods of the Member's employment.

The following compensation may be included in the Final Compensation computation:

- Loyalty Bonus
- Up to 160 hours of vacation payoff
- Sick Leave sold back during 25th pay period
- Vacation sold back during 25th pay period (management only)

The vacation payoff amounts are not included in the Final Compensation computation for members of Tier 3R (Courts Tier 2R) or Tier 4.

For Tier 4 Members, highest average Compensation will be based on the highest 36 consecutive months of the Member's employment.

General Member: Any Member who is not a Safety Member is a General Member.

Public Service: During designated periods of time authorized by the County Board of Supervisors, Members may elect to purchase Public Service for time spent while employed in another recognized public agency. The public agency must have a reciprocal agreement with the Plan or be one of several specified municipalities, counties, special districts, or State and Federal agencies. Public Service cannot be purchased if it is used for eligibility for another pension.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

The cost to purchase Public Service is twice the Member Contributions and interest applicable for the period of time purchased. Public Service is used to compute benefits, but does not count toward eligibility for benefits or vesting.

Safety Member: Any sworn Member engaged in law enforcement or as a probation officer is a Safety Member.

B. Membership

Eligibility: All full-time and variable-shift permanent employees of Merced County and other participating employers become Members on their first date of service. Membership is mandatory; only elected officials and those entering employment at age 60 or older who are not reciprocal members of another system may choose not to participate.

PEPRA: A New Member is any Member joining the Plan for the first time on or after January 1, 2013. Employees who transfer from and are eligible for reciprocity with another public employer will not be Tier 4 Members if their service in the reciprocal system was under a pre-PEPRA tier. Employees who were Members of MCERA prior to January 1, 2013, experienced a break in service of more than six months, and then were re-employed by a *different* MCERA-participating employer on or after January 1, 2013 will be considered Tier 4 Members for all subsequent service.

Member Contributions: Each Member contributes a percentage of Compensation to the Plan through a pre-tax payroll deduction. The percentage contributed depends on the Member's age upon joining the Plan. Complete Rates are shown in Appendix D.

Members covered by Social Security have their contributions reduced by one-third on the first $161.54 of biweekly Compensation. General Members who joined the Plan prior to March 7, 1973, and who have earned 30 years of Credited Service do not contribute; Safety Members do not contribute after earning 30 years of Credited Service.

PEPRA: Tier 4 Members must contribute half of the normal cost of the Plan. Contributions for these Members will be based on the Normal Cost associated with their benefits; General and Safety members will pay different Rates.

Tier 4 Members will pay a single contribution rate, not a rate based on entry age. All Tier 4 Members are expected to continue contributing after earning 30 years of service.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

Interest is credited semi-annually to each Member's accumulated contributions. The crediting rate is set by the Board, and will fluctuate between zero and two percent less than the assumed rate of return (currently 7.00% – 2.00% = 5.00%), based in part on the investment earnings during that period.

C. Service Retirement

Eligibility: Tier 1 General Members are eligible to retire at age 50 if they have earned 10 years of Credited Service. Tier 1 General Members hired prior to December 31, 1978, may retire upon reaching age 65 with no service requirement.

Tier 2 and Tier 3 General Members are eligible to retire at age 55 if they have earned 10 years of Credited Service or upon reaching age 70 with no service requirement.

Alternatively, all Tier 1, 2, and 3 General Members are eligible to retire at any age after having earned 30 years of Credited Service, or upon reaching age 70 with no service requirement.

Safety Members are eligible to retire at age 50 if they have earned 10 years of Credited Service. Alternatively, Safety Members are eligible to retire at any age after having earned 20 years of Credited Service, or upon reaching age 70 with no service requirement. All Tier 1, 2, and 3 Safety Members hired prior to December 31, 1978, may retire upon reaching age 65 with no service requirement.

PEPRA: Tier 4 General Members are eligible to retire upon attaining age 52 and completing five or more years of service. Tier 4 Safety Members are eligible to retire upon attaining age 50 and completing five or more years of service. Tier 4 Members are eligible to retire, regardless of service, after attaining age 70.

Benefit Amount: The Service Retirement Benefit payable to the Member is equal to the Member's Final Compensation multiplied by credited service, the benefit factor from Table 1, and the age factor from Table 2 corresponding to the Member's code section. The appropriate code sections for each group are listed in Table 1. For General Members in the Merced County Cemetery District and those in Deferred Inactive Reciprocity status prior to March 15, 2005, benefits are calculated using the formula in Government Code Section 31676.11 or 31676.1.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

For Tiers 1, 2, and 3, the percentage of Final Compensation may not exceed 100%. For those members integrated with Social Security, Retirement Benefits based on the first $350 of monthly Final Average Compensation are reduced by one-third.

Table 1:

Group	Open or Closed	FAP	Max COLA	Code Section	Description	Top Retirement Factor Age	Benefit Factor
General Tier 1	Closed	1	3	31676.17	3% at 60	60	2.00%
General Tier 2	Closed	3	0	31676.17	3% at 60	60	2.00%
General Tier 2R (Courts)	Open	3	0	31676.17	3% at 60	60	2.00%
General Tier 2 (Cemetery)	Closed	3	0	31676.11	2% at 58 1/2	65	1.67%
General Tier 2R (Cemetery)	Open	3	0	31676.11	2% at 58 1/2	65	1.67%
General Tier 3	Closed	3	0	31676.1	2.43% at 65	65	1.67%
General Tier 3R	Open	3	0	31676.1	2.43% at 65	65	1.67%
General Tier 4	Open	3	0	7522.20(a)	PEPRA	67	1.00%
Safety Tier 1	Closed	1	3	31664.1	3% at 50	50	3.00%
Safety Tier 2	Closed	3	0	31664.1	3% at 50	50	3.00%
Safety Tier 3	Closed	3	0	31664	2% at 50	55	2.00%
Safety Tier 3R	Open	3	0	31664	2% at 50	55	2.00%
Safety Tier 4	Open	3	0	7522.25(d)	PEPRA	57	1.00%

APPENDIX C – SUMMARY OF PLAN PROVISIONS

Table 2:

Age	General 3% @ 60 CERL: 31676.17	General 2% @ 58 1/2 CERL: 31676.11	General 2.43% @ 65 CERL: 31676.1	General PEPRA GC: 7522.20(a)	Safety 3% @ 50 CERL: 31664.1	Safety 2% @ 50 CERL: 31664	Safety PEPRA GC: 7522.25(d)
41	N/A	N/A	N/A	N/A	0.6258	0.6258	N/A
42	N/A	N/A	N/A	N/A	0.6625	0.6625	N/A
43	N/A	N/A	N/A	N/A	0.7004	0.7004	N/A
44	N/A	N/A	N/A	N/A	0.7397	0.7397	N/A
45	N/A	N/A	N/A	N/A	0.7805	0.7805	N/A
46	N/A	N/A	N/A	N/A	0.8226	0.8226	N/A
47	N/A	N/A	N/A	N/A	0.8678	0.8678	N/A
48	N/A	N/A	N/A	N/A	0.9085	0.9085	N/A
49	N/A	N/A	N/A	N/A	0.9522	0.9522	N/A
50	1.0000	0.7454	0.7091	N/A	1.0000	1.0000	2.0000
51	1.0500	0.7882	0.7457	N/A	1.0000	1.0516	2.1000
52	1.1000	0.8346	0.7816	1.0000	1.0000	1.1078	2.2000
53	1.1500	0.8850	0.8181	1.1000	1.0000	1.1692	2.3000
54	1.2000	0.9399	0.8556	1.2000	1.0000	1.2366	2.4000
55	1.2500	1.0000	0.8954	1.3000	1.0000	1.3099	2.5000
56	1.3000	1.0447	0.9382	1.4000	1.0000	1.3099	2.6000
57	1.3500	1.1048	0.9846	1.5000	1.0000	1.3099	2.7000
58	1.4000	1.1686	1.0350	1.6000	1.0000	1.3099	2.7000
59	1.4500	1.2365	1.0899	1.7000	1.0000	1.3099	2.7000
60	1.5000	1.3093	1.1500	1.8000	1.0000	1.3099	2.7000
61	1.5000	1.3608	1.1947	1.9000	1.0000	1.3099	2.7000
62	1.5000	1.4123	1.2548	2.0000	1.0000	1.3099	2.7000
63	1.5000	1.4638	1.3186	2.1000	1.0000	1.3099	2.7000
64	1.5000	1.5153	1.3865	2.2000	1.0000	1.3099	2.7000
65	1.5000	1.5668	1.4593	2.3000	1.0000	1.3099	2.7000
66	1.5000	1.5668	1.4593	2.4000	1.0000	1.3099	2.7000
67	1.5000	1.5668	1.4593	2.5000	1.0000	1.3099	2.7000

Form of Benefit: The Service Retirement Benefit will be paid monthly beginning at retirement and for the life of the Member. If the member selects the unmodified benefit form, in the event of the Member's death 60% of the benefit will continue for the life of the Member's eligible spouse, domestic partner, or to the age of majority of dependent minor children if there is no eligible spouse or domestic partner. To be eligible to receive this benefit, a surviving spouse or domestic partner must be married or state-registered at least one year prior to retirement. In the event there is no eligible surviving spouse, domestic partner, or minor children, any unpaid remainder of the Member's accumulated contributions will be paid to the Member's designated beneficiary.

Actuarially equivalent optional benefit forms are also available.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

Annually on April 1, Tier 1 benefits are increased to reflect increases in the CPI for the San Francisco Bay Area. Annual increases may not exceed 3%, but CPI increases in excess of 3% are "banked" and used for future increases when the CPI increases by less than 3%.

A lump sum benefit of $3,000 will be payable upon the death of a retired member.

D. Service-Connected Disability

Eligibility: Members are eligible for Service-Connected Disability Retirement benefits at any age if they are permanently disabled as a result of injuries or illness sustained in the line of duty.

Benefit Amount: The Service-Connected Disability Retirement Benefit payable to Members is equal to the greater of 50% of their Final Compensation or – if the Member is eligible at disability for a Service Retirement Benefit – the Service Retirement Benefit accrued on the date of disability.

Members who return to work at a different position with lower pay may receive a Supplemental Disability Allowance that, when added to their new pay, may bring the Member's total income up to the current pay for his or her position at the time of disability. The Supplemental Disability Allowance may not exceed the Service-Connected Disability Retirement benefit.

Form of Benefit: The Service-Connected Disability Retirement Benefit will be paid monthly beginning at the effective date of disability retirement and for the life of the Member; in the event of the Member's death, 100% of the benefit will continue for the life of the Member's eligible spouse, domestic partner, or to the age of majority of dependent minor children if there is no eligible spouse or domestic partner. In the event there is no eligible surviving spouse, domestic partner, or minor children, any unpaid remainder of the Member's accumulated contributions will be paid to the Member's designated beneficiary.

Actuarially equivalent optional benefit forms are also available.

Annually on April 1, Tier 1 benefits are increased to reflect increases in the CPI for the San Francisco Bay Area. Annual increases may not exceed 3%, but CPI increases in excess of 3% are "banked" and used for future increases when the CPI increases by less than 3%.

A lump sum benefit of $3,000 will be payable upon the death of a retired member.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

E. Non Service-Connected Disability

Eligibility: Members are eligible for Non Service-Connected Disability Retirement benefits if they are permanently disabled at any age after earning five years of Credited Service or after becoming eligible for a deferred vested benefit.

Benefit Amount: The Non Service-Connected Disability Retirement Benefit payable to General Members is equal to the greatest of:

- 1.5% of Final Compensation at disability multiplied by years of Credited Service at disability,
- 1.5% of Final Compensation at disability multiplied by years of Credited Service projected to age 65, but not to exceed one-third of Final Compensation, or
- If the Member is eligible at disability for a Service Retirement Benefit, the Service Retirement Benefit accrued on the date of disability.

The Non Service-Connected Disability Retirement Benefit payable to Safety Members is equal to the greatest of:

- 1.8% of Final Compensation at disability multiplied by years of Credited Service at disability,
- 1.8% of Final Compensation at disability multiplied by years of Credited Service projected to age 55, but not to exceed one-third of Final Compensation, or
- If the Member is eligible at disability for a Service Retirement Benefit, the Service Retirement Benefit accrued on the date of disability.

Members who return to work at a different position with lower pay may receive a Supplemental Disability Allowance that, when added to their new pay, may bring the Member's total income up to the current pay for his or her position at the time of disability. The Supplemental Disability Allowance may not exceed the Non Service-Connected Disability Retirement benefit.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

Form of Benefit: The Non Service-Connected Disability Retirement Benefit will be paid monthly beginning at the effective date of disability retirement, and for the life of the Member; in the event of the Member's death, 60% of the benefit will continue for the life of the Member's eligible spouse, domestic partner, or to the age of majority of dependent minor children if there is no spouse. In the event there is no eligible surviving spouse, domestic partner, or minor children, any unpaid remainder of the Member's accumulated contributions will be paid to the Member's designated beneficiary.

Actuarially equivalent optional benefit forms are also available.

Annually on April 1, Tier 1 benefits are increased to reflect increases in the CPI for the San Francisco Bay Area. Annual increases may not exceed 3%, but CPI increases in excess of 3% are "banked" and used for future increases when the CPI increases by less than 3%.

A lump sum benefit of $3,000 will be payable upon the death of a retired member.

F. Service-Connected Death

Eligibility: A Member's survivors are eligible to receive Service-Connected Death benefits if the Member's death resulted from injury or illness sustained in connection with the Member's duties.

Benefit Amount: The Service-Connected Death benefit payable to an eligible surviving spouse, domestic partner, or minor children will be 50% of the Member's Final Compensation.

Furthermore, for Safety Members only, there will be an additional lump sum benefit of 12 months of pay at the time of death. An additional benefit of 25% of the above basic benefit will be paid for the first minor child, 15% for the second, and 10% for the third.

Form of Benefit: The Service-Connected Death Benefit will be paid monthly beginning at the Member's death and for the life of the eligible surviving spouse, domestic partner, or to the age of majority of dependent minor children if there is no eligible surviving spouse or domestic partner.

Annually on April 1, Tier 1 benefits are increased to reflect increases in the CPI for the San Francisco Bay Area. Annual increases may not exceed 3%, but CPI increases in excess of 3% are "banked" and used for future increases when the CPI increases by less than 3%.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

G. Non Service-Connected Death

Eligibility: A Member's survivors are eligible to receive Non Service-Connected Death benefits if the Member's death arose from causes unrelated to the Member's duties.

Benefit Amount: In the event the Member had earned fewer than five years of Credited Service and has no or insufficient reciprocity service from another system, the Non Service-Connected Death benefit will be a refund of the Member's accumulated contributions with interest plus a payment of one month of Final Compensation for each year of Credited Service, not to exceed six months.

In the event the Member had earned five or more years of Credited Service, the Non Service-Connected Death benefit payable to an eligible surviving spouse, domestic partner, or minor children will be 60% of the amount the Member would have received as a Non Service-Connected Disability Retirement Benefit on the date of death.

Form of Benefit: For Members who had earned fewer than five years of Credited Service at death, the benefit will be paid as a lump sum.

For Members with five or more years of Credited Service, the Non Service-Connected Death Benefit will be paid monthly beginning at the Member's death and for the life of the eligible surviving spouse, domestic partner, or to the age of majority of dependent minor children if there is no eligible spouse or domestic partner.

Annually on April 1, Tier 1 benefits are increased to reflect increases in the CPI for the San Francisco Bay Area. Annual increases may not exceed 3%, but CPI increases in excess of 3% are "banked" and used for future increases when the CPI increases by less than 3%.

H. Withdrawal Benefit

Eligibility: A Member is eligible for a Withdrawal Benefit upon termination of employment.

Benefit Amount: The Withdrawal Benefit is a refund of the Member's accumulated Contributions with interest. Upon receipt of the Withdrawal Benefit, the Member forfeits all Credited Service.

Form of Benefit: The Withdrawal Benefit is paid in a lump sum upon election by the Member.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

I. Deferred Vested Benefit

Eligibility: A Member is eligible for a Deferred Vested Benefit upon termination of employment after earning five years of Credited Service, including reciprocity service from another system. The Member must leave his or her Member Contributions with interest on deposit with the Plan.

Benefit Amount: The Deferred Vested Benefit is computed in the same manner as the Service Retirement Benefit, but it is based on Credited Service and Final Compensation on the date of termination.

Form of Benefit: The Deferred Vested Benefit will be paid monthly beginning at retirement and for the life of the Member; in the event of the Member's death, 60% of the benefit will continue for the life of the Member's eligible surviving spouse, domestic partner, or to the age of majority of dependent minor children if there is no eligible surviving spouse or domestic partner. In the event there is no eligible surviving spouse, domestic partner, or minor children, any unpaid remainder of the Member's accumulated contributions will be paid to the Member's designated beneficiary.

Actuarially equivalent optional benefit forms are also available.

Annually on April 1, Tier 1 benefits are increased to reflect increases in the CPI for the San Francisco Bay Area. Annual increases may not exceed 3%, but CPI increases in excess of 3% are "banked" and used for future increases when the CPI increases by less than 3%.

A lump sum benefit of $3,000 will be payable upon the death of a retired member.

J. Reciprocal Benefit

Eligibility: A Member is eligible for a Reciprocal Benefit upon termination of employment and entry, within a specified period of time, into another retirement system recognized as a reciprocal system by the Plan. In addition, the Member must leave his or her Member Contributions with interest on deposit with the Plan.

Benefit Amount: The Reciprocal Benefit is computed in the same manner as the Service Retirement Benefit, but it is based on Credited Service on the date of termination and Final Compensation on the date of retirement; Final Compensation is based on the highest of the Compensation earned under this Plan or the reciprocal plan.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

Form of Benefit: The Reciprocal Benefit will be paid monthly beginning at retirement and for the life of the Member; in the event of the Member's death, 60% of the benefit will continue for the life of the Member's eligible surviving spouse, domestic partner, or to the age of majority of dependent minor children if there is no eligible surviving spouse or domestic partner. In the event there is no eligible surviving spouse, domestic partner, or minor children, any unpaid remainder of the Member's accumulated contributions will be paid to the Member's designated beneficiary.

Actuarially equivalent optional benefit forms are also available.

Annually on April 1, Tier 1 benefits are increased to reflect increases in the CPI for the San Francisco Bay Area. Annual increases may not exceed 3%, but CPI increases in excess of 3% are "banked" and used for future increases when the CPI increases by less than 3%.

A lump sum benefit may be payable upon the death of a retired Member by the last system under which the Member's service was covered.

K. Changes Since Last Valuation

None

APPENDIX D – MEMBER CONTRIBUTION RATES

Contribution Rates

Employee contribution rates vary by member Group and Tier. For non-PEPRA members, the rates were updated this year, following an experience study covering the period July 1, 2016 – June 30, 2019. For PEPRA members, the Rates were also re-computed, in accordance with the requirement that employees pay half of the total normal cost rate from the actuarial valuation.

Non-PEPRA Members

- The basic rates are determined based on Government Code Section 31621.8 for General Tier 1 and Tier 2 members (31621.1 for Tier 2 members under benefit section 31676.11), 31621 for General Tier 3 members, and Section 31639.25 for Safety members. The COLA Rates for members in Tier 1 are determined based on 50% of the normal cost associated with the expected COLA benefits, including joint and survivor benefits, determined for each individual entry age.
- The rates are determined based on an interest rate of 7.00% per annum, an average salary increase of 2.75% per year (plus service-based increases for merit/longevity and the additional final average compensation load – except for the new County Tier 3R and Court Tier 2R), and the healthy annuitant mortality tables used in the most recent valuation, projected using Projection Scale MP-2019 to 2041. The rates are blended based on a male/female weighting of 30% male / 70% female for General members, and 70% male / 30% female for Safety members.
- Effective with the June 30, 2013 valuation, an administrative expense load was added to the rates. The expense load added is currently 2.86%. This load was determined to account for the employees' share of the assumed administrative expense assumption, assuming the employer and employees would share administrative expenses in proportion to their overall share of the contributions. The load produces an average increase in the employee rates of approximately 0.24% of payroll.

PEPRA Members

- Employee contribution rates are equal to half of the total normal cost rate from the actuarial valuation, determined separately for General and Safety. Due to the passage of SB13, contribution rates for PEPRA members are not rounded, and will be recomputed each year.
- An administrative expenses load of 2.86% was applied to the PEPRA rates.

APPENDIX D – MEMBER CONTRIBUTION RATES

Current Year Contribution Rates (General Non-PEPRA):

	Tier 1						Tier 2		Tier 2R (Courts)		Tier 3		Tier 3R	
	Basic		COLA		Total		Basic		Basic		Basic		Basic	
Entry Age	First $350	Over $350	First $350	Over $350	First $350	Over $350	First $350	Over $350	First $350	Over $350	First $350	Over $350	First $350	Over $350
16	5.44%	8.16%	1.47%	2.20%	6.91%	10.36%	5.04%	7.56%	4.97%	7.45%	3.61%	5.42%	3.56%	5.34%
17	5.44%	8.16%	1.47%	2.20%	6.91%	10.36%	5.04%	7.56%	4.97%	7.45%	3.61%	5.42%	3.56%	5.34%
18	5.44%	8.16%	1.47%	2.20%	6.91%	10.36%	5.04%	7.56%	4.97%	7.45%	3.61%	5.42%	3.56%	5.34%
19	5.44%	8.16%	1.47%	2.20%	6.91%	10.36%	5.04%	7.56%	4.97%	7.45%	3.61%	5.42%	3.56%	5.34%
20	5.44%	8.16%	1.47%	2.20%	6.91%	10.36%	5.04%	7.56%	4.97%	7.45%	3.61%	5.42%	3.56%	5.34%
21	5.54%	8.31%	1.51%	2.27%	7.05%	10.58%	5.14%	7.71%	5.07%	7.60%	3.68%	5.52%	3.63%	5.44%
22	5.66%	8.49%	1.56%	2.35%	7.22%	10.84%	5.25%	7.87%	5.16%	7.75%	3.75%	5.64%	3.70%	5.55%
23	5.77%	8.65%	1.61%	2.42%	7.38%	11.07%	5.35%	8.02%	5.28%	7.91%	3.84%	5.75%	3.77%	5.66%
24	5.88%	8.83%	1.66%	2.49%	7.54%	11.32%	5.46%	8.19%	5.38%	8.06%	3.91%	5.86%	3.85%	5.77%
25	6.00%	9.00%	1.72%	2.57%	7.72%	11.57%	5.56%	8.35%	5.48%	8.23%	3.98%	5.98%	3.93%	5.89%
26	6.12%	9.19%	1.76%	2.64%	7.88%	11.83%	5.68%	8.52%	5.60%	8.39%	4.06%	6.10%	4.00%	6.01%
27	6.24%	9.37%	1.81%	2.72%	8.05%	12.09%	5.79%	8.69%	5.71%	8.57%	4.15%	6.22%	4.08%	6.13%
28	6.38%	9.57%	1.86%	2.79%	8.24%	12.36%	5.91%	8.88%	5.83%	8.74%	4.23%	6.35%	4.17%	6.25%
29	6.51%	9.77%	1.90%	2.86%	8.41%	12.63%	6.04%	9.06%	5.96%	8.93%	4.31%	6.47%	4.25%	6.38%
30	6.66%	9.98%	1.95%	2.93%	8.61%	12.91%	6.16%	9.25%	6.08%	9.11%	4.40%	6.60%	4.33%	6.50%
31	6.79%	10.18%	2.00%	2.99%	8.79%	13.17%	6.30%	9.44%	6.20%	9.31%	4.49%	6.74%	4.42%	6.63%
32	6.94%	10.41%	2.05%	3.08%	8.99%	13.49%	6.43%	9.65%	6.34%	9.50%	4.58%	6.87%	4.52%	6.77%
33	7.09%	10.64%	2.10%	3.15%	9.19%	13.79%	6.57%	9.85%	6.47%	9.71%	4.68%	7.02%	4.61%	6.91%
34	7.25%	10.87%	2.15%	3.23%	9.40%	14.10%	6.72%	10.07%	6.61%	9.92%	4.77%	7.16%	4.70%	7.06%
35	7.41%	11.11%	2.20%	3.30%	9.61%	14.41%	6.85%	10.28%	6.75%	10.12%	4.88%	7.31%	4.80%	7.20%
36	7.56%	11.34%	2.26%	3.39%	9.82%	14.73%	6.98%	10.47%	6.88%	10.32%	4.98%	7.47%	4.91%	7.35%
37	7.70%	11.56%	2.32%	3.49%	10.02%	15.05%	7.11%	10.67%	7.00%	10.51%	5.09%	7.63%	5.01%	7.52%
38	7.86%	11.79%	2.39%	3.58%	10.25%	15.37%	7.23%	10.85%	7.13%	10.70%	5.19%	7.80%	5.12%	7.68%
39	8.00%	12.00%	2.45%	3.67%	10.45%	15.67%	7.35%	11.04%	7.25%	10.87%	5.31%	7.96%	5.23%	7.84%
40	8.14%	12.21%	2.52%	3.77%	10.66%	15.98%	7.48%	11.21%	7.36%	11.05%	5.42%	8.13%	5.34%	8.00%
41	8.28%	12.42%	2.54%	3.82%	10.82%	16.24%	7.58%	11.37%	7.47%	11.20%	5.52%	8.28%	5.44%	8.16%
42	8.40%	12.61%	2.57%	3.86%	10.97%	16.47%	7.68%	11.52%	7.56%	11.35%	5.63%	8.43%	5.54%	8.31%
43	8.52%	12.78%	2.59%	3.89%	11.11%	16.67%	7.77%	11.64%	7.65%	11.48%	5.72%	8.58%	5.64%	8.46%
44	8.63%	12.94%	2.60%	3.91%	11.23%	16.85%	7.85%	11.77%	7.72%	11.59%	5.81%	8.72%	5.73%	8.60%
45	8.71%	13.07%	2.62%	3.93%	11.33%	17.00%	7.91%	11.86%	7.79%	11.68%	5.91%	8.87%	5.82%	8.73%
46	8.80%	13.21%	2.62%	3.93%	11.42%	17.14%	7.96%	11.94%	7.85%	11.77%	6.00%	8.99%	5.90%	8.86%
47	8.88%	13.32%	2.62%	3.94%	11.50%	17.26%	7.99%	11.99%	7.88%	11.82%	6.07%	9.10%	5.98%	8.97%
48	8.93%	13.39%	2.62%	3.93%	11.55%	17.32%	8.00%	12.00%	7.89%	11.83%	6.14%	9.21%	6.05%	9.07%
49	8.95%	13.42%	2.60%	3.90%	11.55%	17.32%	7.98%	11.97%	7.87%	11.80%	6.20%	9.30%	6.11%	9.16%
50	8.94%	13.41%	2.55%	3.83%	11.49%	17.24%	7.94%	11.91%	7.83%	11.74%	6.25%	9.38%	6.16%	9.24%
51	8.90%	13.35%	2.50%	3.75%	11.40%	17.10%	7.87%	11.81%	7.76%	11.63%	6.30%	9.44%	6.20%	9.30%
52	8.84%	13.26%	2.46%	3.68%	11.30%	16.94%	7.79%	11.67%	7.66%	11.50%	6.33%	9.48%	6.22%	9.34%
53	8.75%	13.12%	2.41%	3.61%	11.16%	16.73%	8.03%	12.06%	7.92%	11.88%	6.33%	9.48%	6.23%	9.35%
54	8.63%	12.95%	2.36%	3.54%	10.99%	16.49%	8.30%	12.46%	8.18%	12.27%	6.31%	9.46%	6.22%	9.33%
55	8.55%	12.83%	2.30%	3.46%	10.85%	16.29%	8.23%	12.34%	8.11%	12.16%	6.27%	9.41%	6.18%	9.28%
56	8.47%	12.70%	2.22%	3.33%	10.69%	16.03%	8.15%	12.22%	8.03%	12.04%	6.22%	9.34%	6.13%	9.20%
57	8.38%	12.57%	2.15%	3.22%	10.53%	15.79%	8.06%	12.10%	7.94%	11.91%	6.15%	9.23%	6.06%	9.09%
58	8.29%	12.44%	2.08%	3.12%	10.37%	15.56%	7.97%	11.96%	7.86%	11.79%	6.36%	9.54%	6.26%	9.39%
59+	8.19%	12.28%	2.03%	3.03%	10.22%	15.31%	7.88%	11.82%	7.77%	11.64%	6.56%	9.84%	6.47%	9.70%

APPENDIX D – MEMBER CONTRIBUTION RATES

Current Year Contribution Rates (Safety Non-PEPRA):

	Tier 1 Basic		Tier 1 COLA		Tier 1 Total		Tiers 2 and 3 Basic		Tier 3R Basic	
Entry Age	First $350	Over $350	First $350	Over $350	First $350	Over $350	First $350	Over $350	First $350	Over $350
20	5.94%	8.90%	2.30%	3.46%	8.24%	12.36%	5.38%	8.06%	5.30%	7.95%
21	6.05%	9.07%	2.37%	3.55%	8.42%	12.62%	5.48%	8.22%	5.40%	8.10%
22	6.16%	9.24%	2.44%	3.65%	8.60%	12.89%	5.59%	8.37%	5.50%	8.25%
23	6.27%	9.41%	2.50%	3.74%	8.77%	13.15%	5.69%	8.53%	5.61%	8.40%
24	6.40%	9.60%	2.56%	3.85%	8.96%	13.45%	5.79%	8.69%	5.71%	8.57%
25	6.52%	9.78%	2.62%	3.94%	9.14%	13.72%	5.90%	8.86%	5.82%	8.73%
26	6.64%	9.97%	2.68%	4.03%	9.32%	14.00%	6.02%	9.03%	5.94%	8.90%
27	6.77%	10.15%	2.75%	4.12%	9.52%	14.27%	6.14%	9.21%	6.04%	9.06%
28	6.90%	10.35%	2.80%	4.20%	9.70%	14.55%	6.25%	9.38%	6.16%	9.24%
29	7.04%	10.55%	2.83%	4.25%	9.87%	14.80%	6.38%	9.57%	6.28%	9.42%
30	7.17%	10.76%	2.85%	4.27%	10.02%	15.03%	6.50%	9.75%	6.41%	9.61%
31	7.31%	10.98%	2.90%	4.35%	10.21%	15.33%	6.63%	9.95%	6.53%	9.79%
32	7.46%	11.19%	2.94%	4.41%	10.40%	15.60%	6.76%	10.14%	6.66%	9.99%
33	7.62%	11.43%	2.99%	4.48%	10.61%	15.91%	6.90%	10.35%	6.80%	10.19%
34	7.78%	11.66%	3.04%	4.57%	10.82%	16.23%	7.05%	10.56%	6.94%	10.41%
35	7.94%	11.91%	3.13%	4.69%	11.07%	16.60%	7.19%	10.79%	7.09%	10.63%
36	8.12%	12.17%	3.21%	4.81%	11.33%	16.98%	7.35%	11.03%	7.24%	10.86%
37	8.30%	12.45%	3.30%	4.95%	11.60%	17.40%	7.52%	11.27%	7.41%	11.11%
38	8.50%	12.74%	3.38%	5.08%	11.88%	17.82%	7.68%	11.53%	7.57%	11.36%
39	8.71%	13.06%	3.48%	5.22%	12.19%	18.28%	7.84%	11.76%	7.72%	11.58%
40	8.90%	13.35%	3.57%	5.36%	12.47%	18.71%	7.97%	11.96%	7.86%	11.79%
41	9.06%	13.60%	3.58%	5.37%	12.64%	18.97%	8.08%	12.13%	7.97%	11.95%
42	9.21%	13.81%	3.63%	5.44%	12.84%	19.25%	8.18%	12.26%	8.05%	12.09%
43	9.33%	14.00%	3.69%	5.53%	13.02%	19.53%	8.24%	12.35%	8.12%	12.17%
44	9.43%	14.15%	3.75%	5.63%	13.18%	19.78%	8.25%	12.37%	8.13%	12.19%
45	9.47%	14.22%	3.79%	5.68%	13.26%	19.90%	8.22%	12.32%	8.10%	12.14%
46	9.46%	14.19%	3.81%	5.71%	13.27%	19.90%	8.13%	12.19%	8.01%	12.01%
47	9.39%	14.08%	3.84%	5.76%	13.23%	19.84%	7.99%	11.99%	7.87%	11.81%
48	9.26%	13.89%	3.90%	5.85%	13.16%	19.74%	8.25%	12.37%	8.14%	12.20%
49+	9.07%	13.61%	3.99%	5.99%	13.06%	19.60%	8.53%	12.79%	8.40%	12.60%

APPENDIX D – MEMBER CONTRIBUTION RATES

Prior Year Contribution Rates (General Non-PEPRA):

	Tier 1						Tier 2		Tier 2 (Cemetery)		Tier 2R (Cemetery)		Tier 2R (Courts)		Tier 3		Tier 3R	
	Basic		COLA		Total		Basic		Basic		Basic		Basic		Basic		Basic	
Entry Age	First $350	Over $350	First $350	Over $350	First $350	Over $350	First $350	Over $350	First $350	Over $350	First $350	Over $350	First $350	Over $350	First $350	Over $350	First $350	Over $350
16	4.63%	6.94%	1.09%	1.64%	5.72%	8.58%	4.29%	6.43%	3.58%	5.36%	3.50%	5.24%	4.20%	6.29%	3.00%	4.50%	2.94%	4.40%
17	4.63%	6.94%	1.09%	1.64%	5.72%	8.58%	4.29%	6.43%	3.58%	5.36%	3.50%	5.24%	4.20%	6.29%	3.00%	4.50%	2.94%	4.40%
18	4.63%	6.94%	1.09%	1.64%	5.72%	8.58%	4.29%	6.43%	3.58%	5.36%	3.50%	5.24%	4.20%	6.29%	3.00%	4.50%	2.94%	4.40%
19	4.63%	6.94%	1.09%	1.64%	5.72%	8.58%	4.29%	6.43%	3.58%	5.36%	3.50%	5.24%	4.20%	6.29%	3.00%	4.50%	2.94%	4.40%
20	4.63%	6.94%	1.09%	1.64%	5.72%	8.58%	4.29%	6.43%	3.58%	5.36%	3.50%	5.24%	4.20%	6.29%	3.00%	4.50%	2.94%	4.40%
21	4.73%	7.10%	1.14%	1.71%	5.87%	8.81%	4.39%	6.59%	3.66%	5.49%	3.58%	5.37%	4.30%	6.44%	3.08%	4.62%	3.01%	4.51%
22	4.86%	7.28%	1.19%	1.78%	6.05%	9.06%	4.50%	6.75%	3.75%	5.63%	3.67%	5.50%	4.40%	6.60%	3.15%	4.73%	3.08%	4.63%
23	4.98%	7.46%	1.24%	1.86%	6.22%	9.32%	4.61%	6.92%	3.84%	5.77%	3.75%	5.63%	4.50%	6.76%	3.23%	4.84%	3.16%	4.74%
24	5.10%	7.65%	1.29%	1.93%	6.39%	9.58%	4.73%	7.09%	3.94%	5.91%	3.85%	5.78%	4.62%	6.93%	3.31%	4.97%	3.24%	4.86%
25	5.23%	7.83%	1.33%	2.00%	6.56%	9.83%	4.84%	7.27%	4.03%	6.06%	3.94%	5.92%	4.73%	7.10%	3.39%	5.09%	3.32%	4.98%
26	5.35%	8.03%	1.38%	2.07%	6.73%	10.10%	4.96%	7.44%	4.13%	6.20%	4.05%	6.07%	4.86%	7.28%	3.47%	5.22%	3.40%	5.10%
27	5.48%	8.23%	1.43%	2.15%	6.91%	10.38%	5.08%	7.63%	4.23%	6.36%	4.14%	6.21%	4.97%	7.45%	3.57%	5.35%	3.48%	5.23%
28	5.62%	8.43%	1.49%	2.24%	7.11%	10.67%	5.22%	7.82%	4.35%	6.52%	4.24%	6.37%	5.09%	7.64%	3.65%	5.47%	3.57%	5.35%
29	5.76%	8.65%	1.55%	2.32%	7.31%	10.97%	5.35%	8.02%	4.46%	6.68%	4.36%	6.53%	5.23%	7.83%	3.74%	5.62%	3.66%	5.48%
30	5.91%	8.86%	1.60%	2.40%	7.51%	11.26%	5.47%	8.22%	4.56%	6.85%	4.46%	6.69%	5.35%	8.03%	3.83%	5.75%	3.74%	5.62%
31	6.06%	9.09%	1.66%	2.48%	7.72%	11.57%	5.62%	8.42%	4.68%	7.02%	4.58%	6.87%	5.49%	8.24%	3.93%	5.90%	3.84%	5.76%
32	6.22%	9.32%	1.71%	2.57%	7.93%	11.89%	5.76%	8.64%	4.80%	7.20%	4.69%	7.03%	5.63%	8.44%	4.03%	6.04%	3.94%	5.91%
33	6.38%	9.57%	1.76%	2.65%	8.14%	12.22%	5.90%	8.84%	4.92%	7.37%	4.80%	7.21%	5.76%	8.65%	4.13%	6.20%	4.03%	6.05%
34	6.55%	9.81%	1.82%	2.73%	8.37%	12.54%	6.03%	9.05%	5.03%	7.54%	4.92%	7.37%	5.90%	8.84%	4.24%	6.35%	4.13%	6.21%
35	6.68%	10.02%	1.88%	2.81%	8.56%	12.83%	6.16%	9.25%	5.13%	7.71%	5.02%	7.53%	6.02%	9.03%	4.34%	6.50%	4.24%	6.36%
36	6.82%	10.24%	1.94%	2.91%	8.76%	13.15%	6.30%	9.44%	5.25%	7.87%	5.13%	7.69%	6.15%	9.23%	4.44%	6.67%	4.35%	6.52%
37	6.98%	10.46%	2.00%	3.00%	8.98%	13.46%	6.43%	9.65%	5.36%	8.04%	5.24%	7.86%	6.29%	9.43%	4.57%	6.84%	4.46%	6.69%
38	7.12%	10.69%	2.06%	3.09%	9.18%	13.78%	6.57%	9.84%	5.48%	8.20%	5.35%	8.03%	6.42%	9.63%	4.67%	7.01%	4.57%	6.85%
39	7.29%	10.94%	2.11%	3.17%	9.40%	14.11%	6.69%	10.04%	5.58%	8.37%	5.46%	8.18%	6.55%	9.81%	4.77%	7.16%	4.67%	7.01%
40	7.42%	11.13%	2.16%	3.25%	9.58%	14.38%	6.81%	10.23%	5.68%	8.53%	5.55%	8.33%	6.66%	9.99%	4.88%	7.32%	4.77%	7.15%
41	7.56%	11.34%	2.19%	3.28%	9.75%	14.62%	6.94%	10.41%	5.78%	8.68%	5.66%	8.48%	6.79%	10.18%	4.99%	7.48%	4.88%	7.31%
42	7.71%	11.57%	2.21%	3.31%	9.92%	14.88%	7.08%	10.62%	5.90%	8.85%	5.77%	8.64%	6.92%	10.37%	5.09%	7.64%	4.98%	7.47%
43	7.87%	11.79%	2.23%	3.34%	10.10%	15.13%	7.21%	10.80%	6.01%	9.00%	5.87%	8.81%	7.04%	10.57%	5.21%	7.80%	5.08%	7.63%
44	8.02%	12.03%	2.25%	3.37%	10.27%	15.40%	7.33%	11.00%	6.11%	9.17%	5.97%	8.96%	7.16%	10.75%	5.30%	7.95%	5.18%	7.77%
45	8.15%	12.24%	2.27%	3.40%	10.42%	15.64%	7.45%	11.18%	6.21%	9.32%	6.08%	9.11%	7.29%	10.93%	5.40%	8.10%	5.28%	7.92%
46	8.30%	12.45%	2.28%	3.41%	10.58%	15.86%	7.59%	11.38%	6.33%	9.48%	6.18%	9.27%	7.41%	11.12%	5.49%	8.25%	5.37%	8.06%
47	8.46%	12.70%	2.29%	3.43%	10.75%	16.13%	7.71%	11.57%	6.43%	9.64%	6.28%	9.43%	7.54%	11.31%	5.61%	8.41%	5.47%	8.22%
48	8.65%	12.97%	2.30%	3.45%	10.95%	16.42%	7.78%	11.67%	6.48%	9.73%	6.34%	9.51%	7.61%	11.41%	5.70%	8.56%	5.58%	8.37%
49	8.77%	13.16%	2.32%	3.47%	11.09%	16.63%	7.80%	11.70%	6.50%	9.75%	6.35%	9.53%	7.62%	11.43%	5.80%	8.71%	5.68%	8.51%
50	8.77%	13.15%	2.32%	3.48%	11.09%	16.63%	7.79%	11.69%	6.49%	9.74%	6.35%	9.52%	7.62%	11.42%	5.91%	8.85%	5.77%	8.66%
51	8.77%	13.15%	2.30%	3.45%	11.07%	16.60%	7.74%	11.62%	6.45%	9.68%	6.32%	9.47%	7.58%	11.36%	6.01%	9.01%	5.88%	8.81%
52	8.78%	13.17%	2.26%	3.39%	11.04%	16.56%	7.67%	11.50%	6.39%	9.58%	6.24%	9.37%	7.49%	11.24%	6.11%	9.16%	5.97%	8.96%
53	8.67%	13.01%	2.22%	3.32%	10.89%	16.33%	7.93%	11.89%	6.61%	9.91%	6.45%	9.68%	7.74%	11.62%	6.16%	9.25%	6.02%	9.03%
54	8.57%	12.85%	2.16%	3.25%	10.73%	16.10%	8.19%	12.30%	6.83%	10.25%	6.68%	10.02%	8.01%	12.02%	6.17%	9.27%	6.04%	9.06%
55	8.49%	12.74%	2.12%	3.19%	10.61%	15.93%	8.13%	12.19%	6.78%	10.16%	6.63%	9.93%	7.95%	11.92%	6.17%	9.26%	6.03%	9.05%
56	8.41%	12.62%	2.05%	3.08%	10.46%	15.70%	8.05%	12.08%	6.71%	10.07%	6.56%	9.83%	7.87%	11.80%	6.13%	9.21%	6.00%	9.00%
57	8.33%	12.49%	1.99%	2.99%	10.32%	15.48%	7.97%	11.96%	6.64%	9.97%	6.49%	9.74%	7.79%	11.69%	6.07%	9.11%	5.94%	8.91%
58	8.24%	12.36%	1.93%	2.90%	10.17%	15.26%	7.89%	11.82%	6.58%	9.85%	6.42%	9.63%	7.70%	11.56%	6.28%	9.41%	6.13%	9.21%
59+	8.14%	12.21%	1.88%	2.81%	10.02%	15.02%	7.79%	11.69%	6.49%	9.74%	6.35%	9.52%	7.62%	11.42%	6.49%	9.74%	6.35%	9.52%

APPENDIX D – MEMBER CONTRIBUTION RATES

Prior Year Contribution Rates (Safety Non-PEPRA):

	Tier 1						Tiers 2 and 3		Tier 3R	
	Basic		COLA		Total		Basic		Basic	
Entry Age	First $350	Over $350	First $350	Over $350	First $350	Over $350	First $350	Over $350	First $350	Over $350
20	5.22%	7.82%	2.09%	3.13%	7.31%	10.95%	4.83%	7.25%	4.72%	7.08%
21	5.34%	8.01%	2.15%	3.24%	7.49%	11.25%	4.95%	7.42%	4.83%	7.26%
22	5.47%	8.21%	2.24%	3.35%	7.71%	11.56%	5.07%	7.61%	4.96%	7.43%
23	5.60%	8.40%	2.30%	3.45%	7.90%	11.85%	5.20%	7.79%	5.08%	7.62%
24	5.74%	8.61%	2.38%	3.57%	8.12%	12.18%	5.32%	7.98%	5.20%	7.79%
25	5.88%	8.81%	2.44%	3.67%	8.32%	12.48%	5.45%	8.17%	5.33%	7.99%
26	6.02%	9.03%	2.52%	3.77%	8.54%	12.80%	5.58%	8.37%	5.45%	8.18%
27	6.17%	9.26%	2.58%	3.87%	8.75%	13.13%	5.72%	8.58%	5.59%	8.38%
28	6.32%	9.48%	2.64%	3.96%	8.96%	13.44%	5.84%	8.77%	5.72%	8.58%
29	6.48%	9.72%	2.70%	4.05%	9.18%	13.77%	5.98%	8.97%	5.84%	8.76%
30	6.61%	9.92%	2.75%	4.13%	9.36%	14.05%	6.09%	9.14%	5.96%	8.94%
31	6.74%	10.11%	2.79%	4.19%	9.53%	14.30%	6.22%	9.33%	6.08%	9.12%
32	6.88%	10.32%	2.82%	4.24%	9.70%	14.56%	6.34%	9.51%	6.20%	9.30%
33	7.02%	10.52%	2.87%	4.30%	9.89%	14.82%	6.47%	9.71%	6.33%	9.49%
34	7.16%	10.74%	2.92%	4.38%	10.08%	15.12%	6.61%	9.92%	6.46%	9.69%
35	7.31%	10.97%	2.98%	4.47%	10.29%	15.44%	6.75%	10.12%	6.59%	9.89%
36	7.47%	11.20%	3.07%	4.61%	10.54%	15.81%	6.89%	10.33%	6.73%	10.10%
37	7.63%	11.44%	3.16%	4.74%	10.79%	16.18%	7.04%	10.56%	6.88%	10.32%
38	7.80%	11.70%	3.26%	4.89%	11.06%	16.59%	7.18%	10.77%	7.02%	10.53%
39	7.98%	11.97%	3.36%	5.04%	11.34%	17.01%	7.33%	10.99%	7.16%	10.74%
40	8.13%	12.19%	3.47%	5.21%	11.60%	17.40%	7.46%	11.19%	7.29%	10.94%
41	8.29%	12.43%	3.48%	5.23%	11.77%	17.66%	7.61%	11.41%	7.43%	11.15%
42	8.46%	12.70%	3.52%	5.27%	11.98%	17.97%	7.77%	11.66%	7.60%	11.39%
43	8.66%	12.99%	3.56%	5.34%	12.22%	18.33%	7.91%	11.86%	7.73%	11.60%
44	8.88%	13.32%	3.62%	5.42%	12.50%	18.74%	7.99%	11.99%	7.81%	11.72%
45	9.02%	13.53%	3.68%	5.51%	12.70%	19.04%	8.01%	12.02%	7.83%	11.75%
46	9.02%	13.53%	3.72%	5.58%	12.74%	19.11%	7.97%	11.95%	7.78%	11.67%
47	9.05%	13.58%	3.76%	5.65%	12.81%	19.23%	7.87%	11.80%	7.69%	11.53%
48	8.92%	13.38%	3.84%	5.76%	12.76%	19.14%	8.13%	12.19%	7.95%	11.93%
49+	8.79%	13.18%	3.94%	5.91%	12.73%	19.09%	8.41%	12.62%	8.23%	12.34%

APPENDIX D – MEMBER CONTRIBUTION RATES

Current Year Contribution Rates (PEPRA):

PEPRA Rates		
	General	**Safety**
	6.92%	10.68%
Assumptions:		
Interest	7.00%	
Salary	2019 Valuation Scale (service-based, includes inflation at 2.5%)	
Mortality	CalPERS 2009 / PubS(B) 2010 tables, projected with MP-2019	
Other	Same as June 30, 2019 valuation (see Appendix B)	

Prior Year Contribution Rates (PEPRA):

PEPRA Rates		
	General	**Safety**
	5.95%	10.29%
Assumptions:		
Interest	7.25%	
Salary	2018 Valuation Scale (service-based, includes inflation at 2.5%)	
Mortality	CalPERS 2009 tables, projected with MP-2016	
Other	Same as June 30, 2018 valuation (see Appendix B)	

APPENDIX E – GLOSSARY

1. Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs such as mortality, withdrawal, disability, retirement, changes in compensation, and rates of investment return.

2. Actuarial Cost Method

A procedure for determining the Actuarial Present Value of Pension Plan Benefits and expenses and for developing an allocation of such value to each year of service, usually in the form of a normal cost and an Actuarial Liability.

3. Actuarial Gain (Loss)

The difference between actual experience and that expected based upon a set of actuarial assumptions during the period between two actuarial valuation dates, as determined in accordance with a particular actuarial cost method.

4. Actuarial Liability

The portion of the Actuarial Present Value of Projected Benefits which will not be paid by future normal costs. It represents the value of the past normal costs with interest to the valuation date.

5. Actuarial Present Value (Present Value)

The value as of a given date of a future amount or series of payments. The actuarial present value discounts the payments to the given date at the assumed investment return and includes the probability of the payment being made.

6. Actuarial Valuation

The determination, as of a specified date, of the normal cost, Actuarial Liability, Actuarial Value of Assets, and related actuarial present values for a pension plan.

7. Actuarial Value of Assets

The value of cash, investments, and other property belonging to a pension plan as used by the actuary for the purpose of an actuarial valuation. The purpose of an Actuarial Value of Assets is to smooth out fluctuations in market values. No longer applicable as of the June 30, 2014 actuarial valuation.

APPENDIX E – GLOSSARY

8. Actuarially Equivalent

Of equal actuarial present value, determined as of a given date, with each value based on the same set of actuarial assumptions.

9. Amortization Payment

The portion of the pension plan contribution that is designed to pay interest and principal on the Unfunded Actuarial Liability in order to pay for that liability in a given number of years.

10. Entry Age Normal Actuarial Cost Method

A method under which the Actuarial Present Value of the Projected Benefits of each individual included in an actuarial valuation is allocated on a level basis over the earnings of the individual between entry age and assumed exit ages.

11. Funded Ratio

The ratio of the Market Value of Assets to the Actuarial Liabilities.

12. Normal Cost

That portion of the Actuarial Present Value of Pension Plan Benefits and expenses, which is allocated to a valuation year by the actuarial cost method.

13. Projected Benefits

Those pension plan benefit amounts which are expected to be paid in the future under a particular set of actuarial assumptions, taking into account such items as increases in future compensation and service credits.

14. Unfunded Actuarial Liability

The excess of the Actuarial Liability over the Market Value of Assets.

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