Classic Values, Innovative Advice

Merced County Employees' Retirement Association

Actuarial Valuation Report as of June 30, 2018

Produced by Cheiron

January 2019

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January 17, 2019

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, 2018. This report contains information on the Plan's assets, liabilities, and discloses employer 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.

To the best of our knowledge, this report and its contents have been prepared in accordance with generally recognized and accepted actuarial principles and practices which are consistent with the Code of Professional Conduct and applicable Actuarial Standards of Practice set out by the Actuarial Standards Board. 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, EA, FCA, MAAA
Consulting Actuary

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

FOREWORD

Cheiron has performed the actuarial valuation of the Merced County Employees' Retirement Association as of June 30, 2018. 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 – Assets
  - Section III – Liabilities
  - Section IV – Contributions
  - Section V – 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 2020, 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, 2020. 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 15, 2017. A summary of the assumptions and methods used in the current valuation is shown in Appendix B.

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, 2018 valuation and how they compare to the results from the June 30, 2017 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, 2018 2020	June 30, 2017 2019
Actuarial Liability	$ 1,301.9	$ 1,259.7
Market Value of Assets	826.7	753.8
Unfunded Actuarial Liability	$ 475.3	$ 505.9
Funded Ratio	63.5%	59.8%
Net Employer Contribution Rate	49.15%	50.20%

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 decreased from 50.20% to 49.15%.
- The Unfunded Actuarial Liability (UAL) is the excess of the Plan's Actuarial Liability over the Market Value of Assets. The Plan's UAL decreased from $505.9 million to $475.3 million. This decrease in UAL was primarily due to investment gains from assets.
- The Plan's funded ratio, the ratio of market assets over Actuarial Liability, increased from 59.8% last year to 63.5% as of June 30, 2018.

Plan Membership

Table I-2 summarizes Plan membership as of June 30, 2018 and June 30, 2017. More detailed membership statistics are shown in Appendix A.

Table I-2
Membership Total

Item	June 30, 2018	June 30, 2017	% Change
Actives	2,149	2,096	2.5%
Deferred Members	850	788	7.9%
Retired Members	2,310	2,263	2.1%
Total Members	5,309	5,147	3.1%
Active Member Payroll	$ 137,667,629	$ 129,624,256	6.2%
Average Pay per Active	64,061	61,844	3.6%

Some key points are as follows:

- Total Plan membership increased by 3.1%, mostly driven by the increase in active and deferred members. The active membership count increased by 2.5% and deferred membership increased by 7.9%.

- The pay figures reflect the annualized rate as of June 30, plus expected increases for the upcoming year. Total payroll increased by 6.2% compared to the assumed payroll growth of 2.75% while the average pay per active member increased by 3.6%.

Components of UAL Change between June 30, 2017 and June 30, 2018

Table I-3 is a detailed reconciliation of the components that affected the UAL between June 30, 2017 and June 30, 2018.

Table I-3
Change in Unfunded Actuarial Liability

Experience	in millions
Unfunded actuarial liability, 6/30/2017	$ 505.9
Expected change in unfunded actuarial liability	$ (16.3)
Unfunded decrease due to investment gains	(16.0)
Unfunded increase due to contributions less than expected (including impact of 12-month rate delay)	0.5
Unfunded increase due to liability loss	1.2
Unfunded increase due to assumption changes	0.0
Total change in unfunded actuarial liability	(30.6)
Unfunded actuarial liability, 6/30/2018	$ 475.3

The Plan's UAL decreased from $505.9 million as of June 30, 2017 to $475.3 million as of June 30, 2018. As shown above, the largest contributing factors were investment gains of $16.0 million and UAL contributions which paid off $16.3 million of principal on the UAL. Contributions less than expected increased the UAL by $0.5 million, largely resulting from the 12-month delay in implementation of the contribution rates offset by more employer and employee contributions due to higher than expected actual payroll. There were losses on Actuarial Liabilities of $1.2 million, most of which was from cost-of-living adjustments for retirees that were slightly higher than assumed.

Employer Contribution Reconciliation

Table I-4 is a detailed reconciliation between the Fiscal Year 2019 and Fiscal Year 2020 employer contribution rates, in total and by component.

Table I-4
Employer Contribution Reconciliation

Item	Total	Normal Cost	Amortization	Expenses
FYE 2019 Net Employer Contribution Rate	50.20%	9.13%	39.58%	1.49%
Expected Change due to phase-in	0.83%	0.00%	0.83%	0.00%
Change due to investment gain	-0.20%	0.00%	-0.20%	0.00%
Change due to contributions less than expected (including impact of 12-month rate delay)	0.01%	0.00%	0.01%	0.00%
Change due to PEPRA new hires	-0.32%	-0.32%	0.00%	0.00%
Change due to liability changes	-0.02%	-0.03%	0.01%	0.00%
Change due to effect of payroll on amort / expense	-1.35%	0.00%	-1.30%	-0.05%
Change due to change in assumptions	0.00%	0.00%	0.00%	0.00%
Total change	-1.05%	-0.35%	-0.65%	-0.05%
FYE 2020 Net Employer Contribution Rate	49.15%	8.78%	38.93%	1.44%

The employer contribution rate decreased from 50.20% for Fiscal Year 2019 to 49.15% for Fiscal Year 2020:

- The phase-in of the net UAL experience from the four years since the adoption of direct rate smoothing (based on a net gain in FYE 2014 and FYE 2017, and a net loss in FYE 2015 and FYE 2016, including assumption changes) increased the contribution rate by 0.83%. These net losses will continue to be phased-in for one more year, resulting in similar increases in the employer UAL contribution rates. However, these increases are expected to be partially offset by reductions in the employer normal cost rates, as more PEPRA members enter the system.

- The investment gain for the current fiscal year decreased the current year contribution rate by 0.20% of pay. The assets of the Plan returned 9.36% (net of investment expenses) on a market basis, which is higher than the assumed rate of 7.25%. The amortization credit (a negative payment, which offsets the employers' contributions) for the current year investment gains will continue to be phased-in over the next four years.

- A larger than expected increase in the projected payroll decreased the employer contribution rate by 1.35% 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 0.01% of pay, largely due to the 12-month delay in implementation of the contribution rates.

- Demographic experience was favorable for a net decrease in cost of about 0.02% of pay, 0.03% of which was for changes in the employer normal cost, offset by 0.01% of which was for changes in the UAL amortization payment. As with the investment losses, the changes in the UAL payment will continue to be phased-in over the next four years. The replacement of legacy members by PEPRA members further decreased the normal cost by about 0.32% of pay.

Plan Risk

Table I-5
Asset to Payroll Ratio as of June 30, 2018

Active Member Payroll	$	137,667,629
Assets (Market Value)		826,653,970
Ratio of Assets to Payroll		6.00
Ratio with 100% Funding		9.46

One of the most important measures of a plan's risk is the ratio of plan assets to payroll. The table above shows MCERA's assets as a percentage of active member payroll. This ratio indicates the sensitivity of the Plan to the returns earned on Plan assets. We note in the table that assets currently are six times covered payroll for the Plan; as funding improves and the Plan reaches 100% funding, the ratio of assets to payroll will increase to over nine times payroll, perhaps higher depending on the Plan's future demographic makeup.

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.

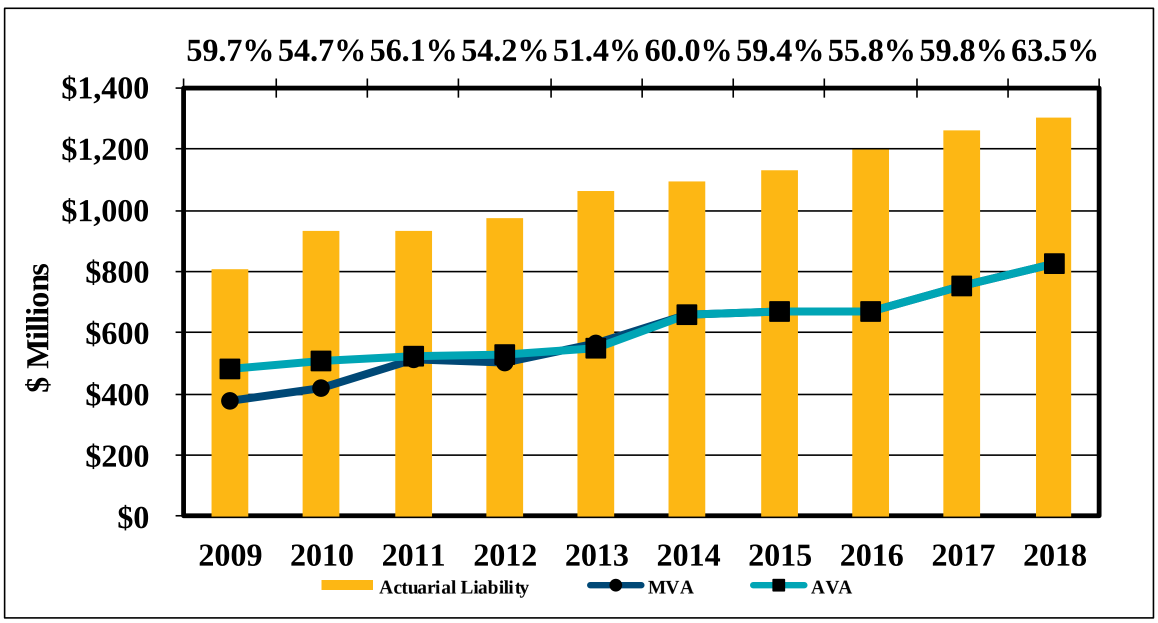
On the other hand, consider the situation for MCERA. Suppose MCERA's assets lose 10% of their value in a year. Since they were assumed to earn 7.25%, there is an actuarial loss of 17.25% of plan assets. Based on the current ratio of assets to payroll (600%), that means the loss in assets is about 103.5% of active payroll (600% of the 17.25% loss). There is only one source of funding to make up for this loss: the employers. 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 in the vicinity of 8.2% of payroll once fully phased-in, if amortized over the Plan's 24-year schedule for gains and losses.

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.

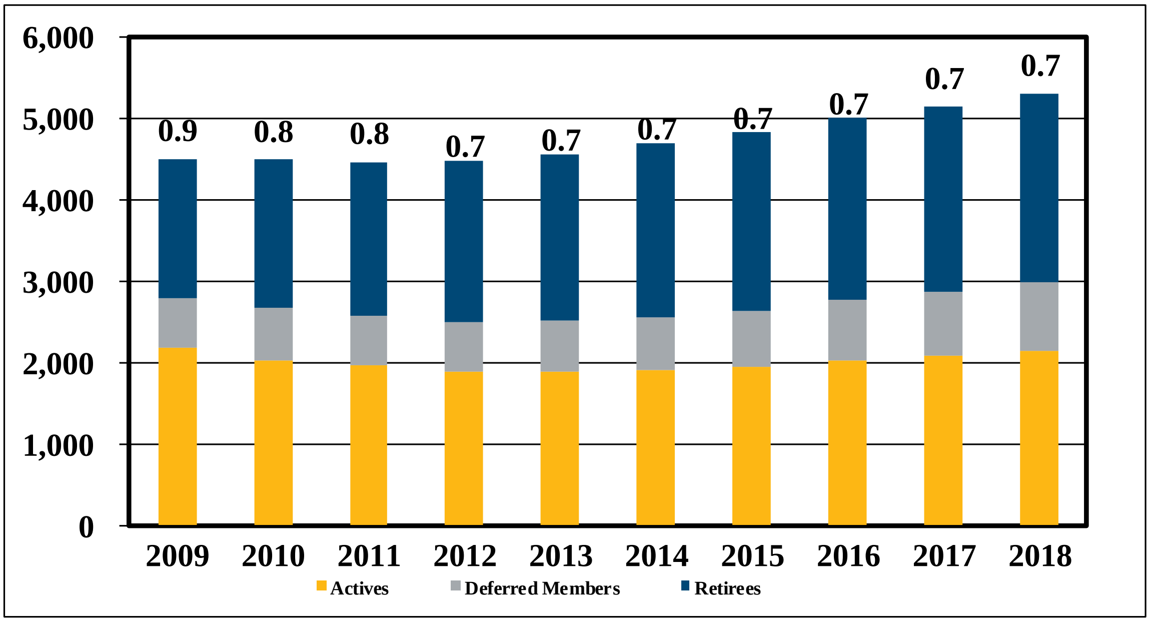
Assets and Liabilities

The chart below 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 59.7% in 2009 to 63.5% as of June 30, 2018.



The extraordinary asset loss of 2008 adversely affected the funded ratio from 2009 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 losses from assumption changes. The 2017 and 2018 funded ratios increased as a result of investment gains and contributions by the members and employers.

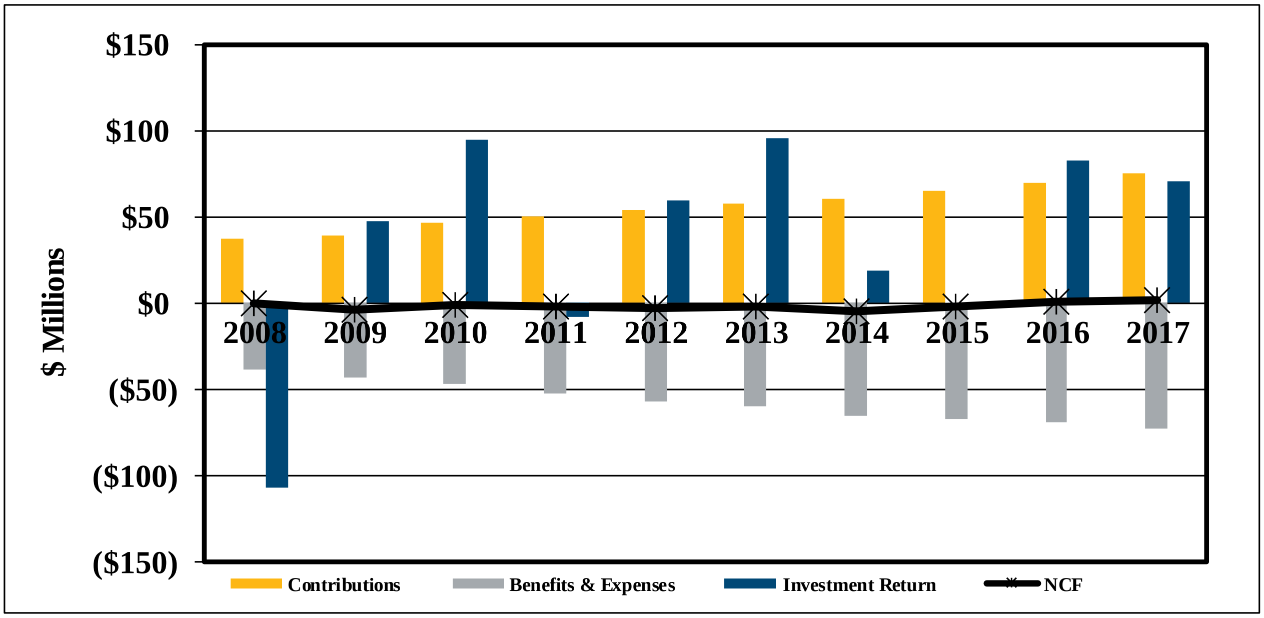
Participant Trends



The chart above provides a measure for Plan maturity by comparing the ratio of active members to inactive members (retirees and deferred members). These ratios are given at the top of each bar. The active-to-inactive ratio has decreased from 2009 to 2018 indicating the ongoing maturation of the Plan. While this is neither good nor bad in itself, it does have implications for the risk profile of the Plan, as discussed under Table I-5 earlier in this section.

Cash Flows

The chart shows the Plan's cash flow (contribution 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.

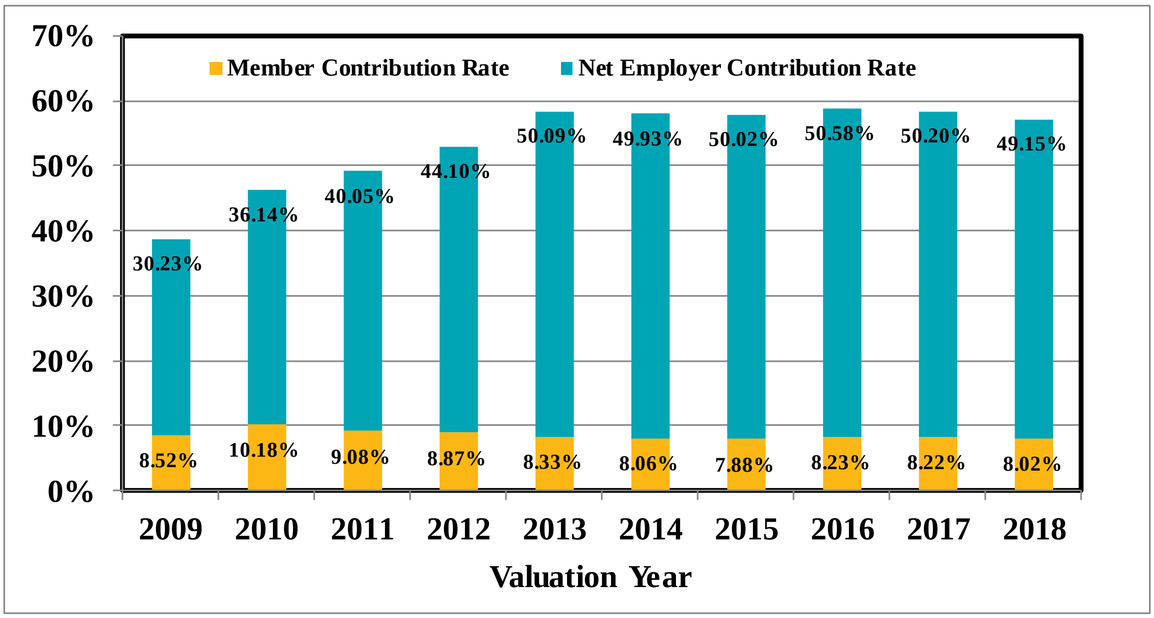


In the chart above, the contributions, outflows (benefit payments and expenses), and investment returns are shown as bars and the Plan's net cash flow (NCF) is shown as a black line. The NCF, which is equal to contributions less benefits and expenses, has been close to zero for the entire period shown. 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.

Contributions

The chart below shows the historical member and employer contribution rates. The employer contribution rate increased significantly from 30.2% to 36.1% with the 2010 valuation due to demographic and economic assumption changes as well as investment losses. The steady increase in the contribution rate from 36.1% to 50.1% 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.

The member rates increased slightly in 2010 due to mortality and economic assumption changes. 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.



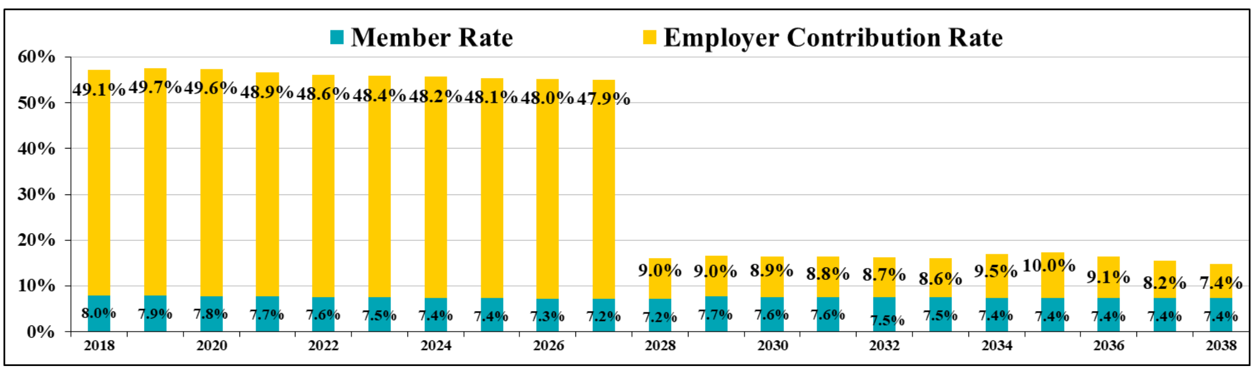
D. Future Expected Financial Trends

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, 2018 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 7.25%. 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 7.25% assumption each year for the next 20 years, which is clearly impossible.

Projection of Employer and Member Contributions, 7.25% return each year



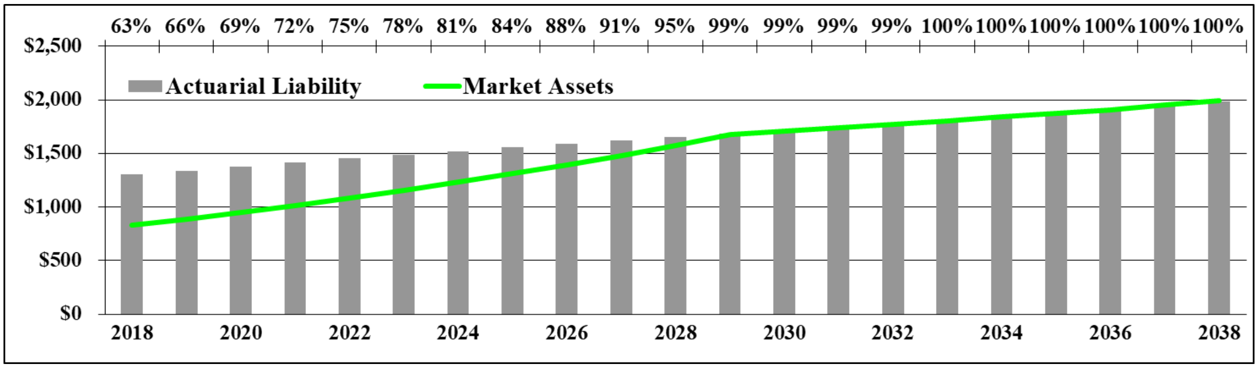
The graph above shows employer contributions peaking at 49.7% in the June 30, 2019 valuation (for Fiscal Year 2021), decreasing slightly in the subsequent years, and then dropping off significantly in 2028 once the amortization of the bulk of the Unfunded Actuarial Liability is complete.

Note that the graph above does not forecast any actuarial gains or losses. Even relatively modest losses relative to the 7.25% assumed return could push the employer contribution rate above 50% in the next few years.

Asset and Liability Projections:

The graph shows the projection of assets and liabilities assuming that assets will earn the 7.25% 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, 7.25% return each year



The graph shows that the projected funded status increases over the next 15 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 – 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, 2017 and June 30, 2018,
- 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 II-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, 2017 and June 30, 2018, 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 II-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 II-1 on the next page discloses and compares each asset value as of June 30, 2017 and June 30, 2018.

SECTION II – ASSETS

Table II-1
Statement of Assets at Market Value

Assets		**June 30, 2018**		**June 30, 2017**
Cash and Short-Term Investments:				
Cash invested with Merced County Treasurer	$	5,842,004	$	3,853,727
Cash invested with BNY Mellon		0		5,292,717
Other cash and cash equivalents with BNY Mellon		0		1,742,959
Cash invested with Northern Trust		10,944,975		0
Other cash and cash equivalents with Northern Trust		2,265,078		0
Securities lending collateral		0		0
Total Cash and Short-Term Investments	$	$19,052,057	$	10,889,403
Receivables:				
Bond interest	$	815,971	$	704,271
Dividends		81,839		108,303
Contributions		1,597,575		1,512,670
Distributions		8,485,104		431,815
Securities sold		0		0
Other		67,218		5,124
Total Receivables	$	11,047,707	$	2,762,183
Investments at Market Value:				
U.S. government and agency obligations	$	72,311,297	$	67,194,200
Domestic fixed income		95,697,250		90,688,858
Common stocks (domestic)		43,334,808		40,925,272
Common stocks (index funds)		198,239,163		189,256,179
Common stocks (international)		82,837,521		82,898,638
Common stocks (international index funds)		115,367,843		107,338,378
Real estate		62,191,187		54,991,688
Alternative investments		126,076,024		105,322,608
Total Investments at Market Value	$	796,055,093	$	738,615,821
Other Assets:				
Prepaid expense	$	35,470	$	113,692
Capital assets, net of accumulated depreciation of $855,247 and $610,802 respectively		1,849,495		2,095,256
Total Assets		828,039,822		754,476,355
Liabilities				
Accounts payable	$	715,680	$	621,624
Securities lending obligation		0		0
Securities purchased		577,731		0
Unclaimed contributions		112,441		85,403
Total Liabilities		1,385,852		707,027
Market Value of Assets	**$**	**826,653,970**	**$**	**753,769,328**

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 II-2 shows the components of change in the Market Value of Assets during 2017 and 2018.

Table II-2
Changes in Market Values

Additions		**Fiscal Year ending June 30, 2018**		**Fiscal Year ending June 30, 2017**
Contributions:				
Employer	$	64,757,288	$	60,349,189
Plan members		10,441,876		9,384,621
Total Contributions	$	75,199,164	$	69,733,810
Investment Income/(Loss) from Investment Activities:				
Net appreciation/(depreciation) in fair value of investments	$	66,985,134	$	79,215,883
Investment income		6,926,711		6,482,887
Other revenue		42,618		22,243
Less investment expenses		(3,265,379)		(2,631,692)
Total Investment Income/(Loss) from Investment Activities	$	70,689,084	$	83,089,321
Securities Lending Income:				
Securities lending income	$	0	$	(4,743)
Securities lending rebates		0		12,838
Total Securities Lending Income	$	0	$	8,095
Total Investment Income/(Loss)	$	70,689,084	$	83,097,416
Total Additions		145,888,248		152,831,226
Deductions				
Benefits paid	$	69,836,223	$	66,116,108
Refunds of contributions		883,987		788,207
Administrative expense		2,177,186		1,966,898
Actuarial expense		106,210		206,509
Total Deductions		73,003,606		69,077,722
Net Increase/(Decrease)	$	72,884,642	$	83,753,504
Market Value of Assets, Beginning of Year		753,769,328		670,015,824
Market Value of Assets, End of Year	**$**	**826,653,970**	**$**	**753,769,328**

Investment Performance

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

Table II-3
Development of Asset Return

Market Value of Assets, Beginning of Year	$	753,769,328
Contributions		75,199,164
Benefit Paid and Refunds of Contributions		(70,720,210)
Administrative Expense		(2,283,396)
Expected Investment Earnings (7.25%)		54,726,473
Expected Market Value of Assets, End of Year	$	810,691,359
Investment Gain / (Loss)		15,962,611
Market Value of Assets, End of Year		$826,653,970
Actual Investment Earnings	$	70,689,084
Return		9.36%

SECTION II – 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 II-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	Net Return at Valuation Assets	Increase in Consumer Price Index[1]
1995		4.4%		3.0%
1996	9.8%	9.8%		2.8%
1997	16.7%	11.6%		2.3%
1998	13.9%	12.7%		1.7%
1999	10.0%	12.3%		2.0%
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%	2.7%	-1.4%
2010	12.7%	7.0%	6.0%	1.1%
2011	22.6%	2.6%	2.7%	3.6%
2012	-1.6%	0.6%	1.0%	1.7%
2013	11.8%	3.8%	3.8%	1.8%
2014	17.1%	11.8%	11.8%	2.1%
2015	2.9%	2.9%	2.9%	0.1%
2016	-0.1%	-0.1%	-0.1%	1.0%
2017	12.4%	12.4%	12.4%	1.6%
2018	9.4%	9.4%	9.4%	2.9%
15-Year Compound Average	**6.3%**	**4.3%**	**N/A**	**2.1%**
10-Year Compound Average	**5.8%**	**4.4%**	**5.2%**	**1.4%**
5-Year Compound Average	**8.2%**	**7.2%**	**7.2%**	**1.5%**

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

SECTION III – LIABILITIES

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

- **Disclosure** of Plan liabilities at June 30, 2017 and June 30, 2018, and
- Plan liabilities by **tier** as of June 30, 2018.

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

SECTION III – LIABILITIES

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

Item	June 30, 2018	June 30, 2017
Present Value of Future Benefits		
Actives	$ 535,293	$ 526,050
Deferred Members	51,294	48,546
Retirees	750,337	716,455
Disabled	68,049	65,928
Beneficiaries	52,709	52,260
Total MCERA	$ 1,457,682	$ 1,409,240
Actuarial Liability		
Total Present Value of Benefits	$ 1,457,682	$ 1,409,240
Present Value of Future Normal Costs		
Employer Portion	79,385	76,670
Employee Portion	76,379	72,868
Actuarial Liability	$ 1,301,919	$ 1,259,702
Market Value of Assets	$ 826,654	$ 753,769
Unfunded Actuarial Liability/(Surplus)	$ 475,265	$ 505,933

SECTION III – LIABILITIES

Table III-2 discloses the liabilities of the Plan as of June 30, 2018, split by tier.

Table III-2
Liabilities by Group as of June 30, 2018
(in thousands)

Present Value of Future Benefits	General						Safety					All
	Tier 1	Tier 2	Tier 3	Tier 3R	Tier 4	Total	Tier 1	Tier 2	Tier 3	Tier 4	Total	Total
Actives	$ 93,326	$ 264,744	$ 6,131	$ 259	$ 55,768	$ 420,229	$ 26,975	$ 70,870	$ 804	$ 16,415	$ 115,064	$ 535,293
Deferred Members	12,956	28,381	269	0	502	42,107	1,266	7,661	50	211	9,187	51,294
Retirees	549,151	78,646	56	0	0	627,854	118,177	4,307	0	0	122,483	750,337
Disabled	17,212	5,973	0	0	0	23,185	37,402	7,463	0	0	44,864	68,049
Beneficiaries	32,480	2,383	0	0	0	34,863	17,086	761	0	0	17,847	52,709
Total	**$ 705,125**	**$ 380,127**	**$ 6,456**	**$ 259**	**$ 56,270**	**$ 1,148,236**	**$ 200,905**	**$ 91,061**	**$ 854**	**$ 16,626**	**$ 309,446**	**$ 1,457,682**
Actuarial Liability												
Actives	$ 85,986	$ 200,553	$ 1,935	$ 0	$ 11,871	$ 300,346	$ 25,586	$ 50,659	$ 225	$ 2,714	$ 79,183	$ 379,529
Deferred Members	12,956	28,381	269	0	502	42,107	1,266	7,661	50	211	9,187	51,294
Retirees	549,151	78,646	56	0	0	627,854	118,177	4,307	0	0	122,483	750,337
Disabled	17,212	5,973	0	0	0	23,185	37,402	7,463	0	0	44,864	68,049
Beneficiaries	32,480	2,383	0	0	0	34,863	17,086	761	0	0	17,847	52,709
Total	**$ 697,785**	**$ 315,936**	**$ 2,259**	**$ 0**	**$ 12,373**	**$ 1,028,353**	**$ 199,516**	**$ 70,850**	**$ 275**	**$ 2,925**	**$ 273,565**	**$ 1,301,919**

SECTION IV – 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 11 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 $2.3 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 IV – CONTRIBUTIONS

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

Table IV-1
Development of the Net Employer Contribution Rate as of June 30, 2018 for FYE 2020

	June 30, 2018	June 30, 2017
1. Total Normal Cost Rate	16.56%	17.11%
2. Member Contribution Rate[1]	7.78%	7.98%
3. Employer Normal Cost Rate (1-2)	8.78%	9.13%
4. UAL Amortization Rate	38.93%	39.58%
5. Administrative Expense Rate	1.44%	1.49%
6. Net Employer Contribution Rate (3+4+5)	49.15%	50.20%

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

SECTION IV – CONTRIBUTIONS

Table IV-2
FYE 2020 Net Employer Contribution Rate by Group

	General					Safety					All
	Tier 1	Tier 2	Tier 3	Tier 4	Total	Tier 1	Tier 2	Tier 3	Tier 4	Total	Total
County											
1. Total Normal Cost Rate	22.89%	17.29%	13.14%	11.53%	15.42%	30.53%	22.37%	21.49%	19.95%	22.19%	16.56%
2. Member Contribution Rate[1]	11.02%	8.42%	5.60%	5.77%	7.53%	10.63%	8.34%	8.00%	9.98%	9.03%	7.78%
3. Employer Normal Cost Rate (1-2)	11.87%	8.87%	7.54%	5.76%	7.89%	19.90%	14.03%	13.49%	9.97%	13.16%	8.78%
4. UAL Amortization Rate	37.04%	37.04%	37.04%	37.04%	37.04%	48.23%	48.23%	48.23%	48.23%	48.23%	38.93%
5. Administrative Expense Rate	1.48%	1.39%	1.35%	1.29%	1.36%	2.06%	1.88%	1.86%	1.76%	1.85%	1.44%
6. Net Employer Contribution Rate (3+4+5)	**50.39%**	**47.30%**	**45.93%**	**44.09%**	**46.29%**	**70.19%**	**64.14%**	**63.58%**	**59.96%**	**63.24%**	**49.15%**

	Cemetery Tier 2	Cemetery Tier 2R	County Tier 3R	Courts Tier 2R	Tier 3R
1. Total Normal Cost Rate	14.17%	13.92%	15.46%	16.97%	21.13%
2. Member Contribution Rate[1]	7.65%	7.48%	5.83%	8.23%	7.82%
3. Employer Normal Cost Rate (1-2)	6.52%	6.44%	9.63%	8.74%	13.31%
4. UAL Amortization Rate	37.04%	37.04%	37.04%	37.04%	48.23%
5. Administrative Expense Rate	1.32%	1.31%	1.41%	1.38%	1.86%
6. Net Employer Contribution Rate (3+4+5)	**44.88%**	**44.79%**	**48.08%**	**47.16%**	**63.40%**

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

SECTION IV – 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 IV-3
Allocation of the June 30, 2018 UAL and Development of UAL Amortization Rates for FYE 2020

		General	Safety	Total
1.	Market Value of Assets			$ 826,653,970
2.	Inactive Actuarial Liability	728,007,774	194,381,812	922,389,586
3.	Allocation of Assets for Inactives	78.93%	21.07%	100.00%
4.	Total Assets for Inactives	652,447,215	174,206,755	826,653,970
5.	Net Assets for Distribution (4 - 2 not less than zero)			$ 0
6.	Active Actuarial Liability	$ 300,345,723	$ 79,183,264	$ 379,528,987
7.	Allocation of Remaining Assets	79.14%	20.86%	100.00%
8.	Total Assets for Actives (7 x 5)	0	0	0
9.	Market Value of Assets (4 + 8)	$ 652,447,215	$ 174,206,755	$ 826,653,970
10.	Total Actuarial Liability	1,028,353,497	273,565,076	1,301,918,573
11.	**Unfunded Actuarial Liability (UAL) (10 - 9)**	**$ 375,906,282**	**$ 99,358,321**	**$ 475,264,603**
12.	UAL Amortization (see table IV-4)	42,385,587	11,203,220	53,588,807
13.	Total Payroll	114,441,255	23,226,374	137,667,629
14.	**UAL Amortization Rate (2 divided by 3)**	**37.04%**	**48.23%**	**38.93%**

SECTION IV – CONTRIBUTIONS

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

Table IV-4
Development of Amortization Payment
For the June 30, 2018 Actuarial Valuation

Type of Base	Date Established	Initial Amount	Initial Amortization Years	June 30, 2018 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	$ 453,864,379	11	100%	$ 52,459,869	38.11%	38.11%
2. (Gain)/Loss Base	6/30/2014	(71,384,203)	24	(81,364,411)	20	100%	(6,585,568)	-4.78%	-4.78%
3. (Gain)/Loss Base	6/30/2015	34,000,650	24	38,339,152	21	80%	2,432,484	1.77%	2.21%
4. (Gain)/Loss Base	6/30/2016	47,466,429	24	52,074,632	22	60%	2,468,115	1.79%	2.99%
5. (Gain)/Loss Assumption	6/30/2016	38,112,827	22	40,599,659	20	100%	3,168,217	2.30%	2.30%
6. (Gain)/Loss Base	6/30/2017	(29,098,191)	24	(30,713,091)	23	40%	(981,684)	-0.71%	-1.78%
7. (Gain)/Loss Assumption	6/30/2017	15,960,129	22	16,683,434	21	67%	860,810	0.63%	0.94%
8. (Gain)/Loss Base	6/30/2018	(14,219,151)	24	(14,219,151)	24	20%	(233,436)	-0.17%	-0.85%
Total				$ 475,264,603			$ 53,588,807	38.93%	39.13%

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 V – COMPREHENSIVE ANNUAL FINANCIAL REPORTING INFORMATION

The GASB adopted Statement Nos. 67 and 68 which 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, 2018.

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 V – COMPREHENSIVE ANNUAL FINANCIAL REPORTING INFORMATION

Table V-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	**2018**	**2017**	**2016**	**2015**	**2014**	**2013**	**2012**	**2011**	**2010**	**2009**
Investment Income and Expenses	$ 15,963	$ 34,498	$ (52,420)	$ (31,459)	$ 22,058	$ (20,749)	$ (40,054)	$ (30,955)	$ (16,151)	$ (66,987)
Combined Liability Experience	(1,158)	(2,720)	8,327	5,096	12,533	(4,199)	(11,401)	13,824	(8,100)	(23,892)
Gain (or Loss) During Year from Financial Experience	$ 14,805	$ 31,778	$ (44,093)	$ (26,363)	$ 34,591	$ (24,948)	$ (51,455)	$ (17,131)	$ (24,251)	$ (90,879)
Non-Recurring Gain (or Loss) Items	(576)	(18,639)	(41,488)	(7,636)	36,803	(49,294)	16,069	12,918	(63,410)	-
Composite Gain (or Loss) During Year	$ 14,229	$ 13,139	$ (85,581)	$ (33,999)	$ 71,394	$ (74,242)	$ (35,386)	$ (4,213)	$ (87,661)	$ (90,879)

SECTION V – COMPREHENSIVE ANNUAL FINANCIAL REPORTING INFORMATION

Table V-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)
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 [4]	73,311	694,137	297,850	547,264	100%	68%	0%
2012 [5]	66,407	632,319	276,882	528,728	100%	73%	0%
2011 [6]	65,723	558,483	309,711	523,980	100%	82%	0%
2010 [7]	64,917	532,695	333,220	509,561	100%	83%	0%
2009	65,126	448,231	296,324	483,145	100%	93%	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 economic and demographic assumptions.*

[5] *Reflects revised demographic assumptions.*

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

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

SECTION V – COMPREHENSIVE ANNUAL FINANCIAL REPORTING INFORMATION

Table V-3 Actuarial Balance Sheet as of June 30, 2018		
Assets		
1. Market value of assets	$	826,653,970
2. Present value of future contributions by members		76,378,527
3. Present value of future employer contributions for normal cost		79,385,039
4. Present value of other future employer contributions (UAL)		475,264,603
5. **Total actuarial assets**	**$**	**1,457,682,139**
Liabilities		
6. Present value of retirement allowances payable to retired/disabled members and their survivors	$	871,095,160
7. Present value of service retirement allowances payable to presently active members and their survivors		468,621,168
8. Present value of allowances payable to current and future vested terminated and their survivors		86,607,139
9. Present value of disability retirement allowances payable to presently active members and their survivor		19,197,597
10. Present value of death benefits payable on behalf of presently active members		3,683,733
11. Present value of members' contributions to be returned upon withdrawal		8,477,342
12. Special Reserves		-
13. **Total actuarial liabilities**	**$**	**1,457,682,139**

APPENDIX A – MEMBERSHIP INFORMATION

Summary of Participant Data (By Group) as of June 30, 2018	General	Safety	Total
Active Participants			
Number	1,827	322	2,149
Average Age	43.42	38.78	42.72
Average Service	9.72	10.05	9.77
Average Pay	$59,150	$68,379	$60,533
Service Retired			
Number	1,613	195	1,808
Average Age	70.59	65.77	70.07
Average Annual Total Benefit	$32,408	$45,849	$33,858
Beneficiaries & QDROs			
Number	253	64	317
Average Age	75.59	70.14	74.49
Average Annual Total Benefit	$15,575	$26,077	$17,695
Duty Disabled			
Number	51	88	139
Average Age	69.67	62.66	65.23
Average Annual Total Benefit	$26,968	$34,564	$31,777
Non-Duty Disabled			
Number	43	3	46
Average Age	69.73	63.72	69.34
Average Annual Total Benefit	$16,167	$22,125	$16,555
Total Receiving Benefits			
Number	1,960	350	2,310
Average Age	71.19	65.77	70.37
Average Annual Total Benefit	$29,737	$39,193	$31,170
Terminated Vested			
Number	261	46	307
Average Age	49.59	40.96	48.30
Average Service	10.66	9.82	10.53
Transfers			
Number	186	49	235
Average Age	51.05	43.33	49.44
Average Service	18.83	18.02	18.66
Funds on Account			
Number	268	40	308
Average Age	40.46	33.24	39.52
Average Service	1.43	1.76	1.47
Total Deferred			
Number	715	135	850
Average Age	46.55	39.53	45.43
Average Service	9.33	10.41	9.50

APPENDIX A – MEMBERSHIP INFORMATION

Summary of Participant Data (General) as of June 30, 2018	General Tier 1	General Tier 2	General Tier 3	General Tier 4	General Tier 3R	General Total
Active Participants						
Number	106	876	53	789	3	1,827
Average Age	55.74	47.89	40.60	36.97	45.09	43.42
Average Service	25.78	14.37	9.65	2.42	5.81	9.72
Average Pay	$84,991	$63,384	$68,796	$50,315	$63,183	$59,150
Service Retired						
Number	1,246	363	4	N/A	N/A	1,613
Average Age	71.82	66.48	62	N/A	N/A	70.59
Average Annual Total Benefit	$36,205	$19,721	1,021	N/A	N/A	$32,408
Beneficiaries & QDROs						
Number	229	24	N/A	N/A	N/A	253
Average Age	77.38	58.44	N/A	N/A	N/A	75.59
Average Annual Total Benefit	$16,261	$9,034	N/A	N/A	N/A	$15,575
Duty Disabled						
Number	37	14	N/A	N/A	N/A	51
Average Age	73.11	60.57	N/A	N/A	N/A	69.67
Average Annual Total Benefit	$27,410	$25,802	N/A	N/A	N/A	$26,968
Non-Duty Disabled						
Number	31	12	N/A	N/A	N/A	43
Average Age	73.08	61.08	N/A	N/A	N/A	69.73
Average Annual Total Benefit	$17,463	$12,817	N/A	N/A	N/A	$16,167
Total Receiving Benefits						
Number	1,543	413	4	N/A	N/A	1,960
Average Age	72.70	65.65	62	N/A	N/A	71.19
Average Annual Total Benefit	$32,658	$19,105	1,021	N/A	N/A	$29,737
Terminated Vested						
Number	54	190	13	4	N/A	261
Average Age	58.35	47.42	43.21	55.30	N/A	49.59
Average Service	10.80	10.44	13.13	11.48	N/A	10.66
Transfers						
Number	39	136	1	10	N/A	186
Average Age	58.33	49.75	50	40.41	N/A	51.05
Average Service	30.38	16.77	4	3.27	N/A	18.83
Funds on Account						
Number	7	93	8	160	N/A	268
Average Age	59.36	45.86	34.09	36.81	N/A	40.46
Average Service	1.88	2.07	1.86	1.01	N/A	1.43
Total Deferred						
Number	100	419	22	174	N/A	715
Average Age	58.41	47.83	40.20	37.45	N/A	46.55
Average Service	17.81	10.64	8.64	1.38	N/A	9.33

APPENDIX A – MEMBERSHIP INFORMATION

Summary of Participant Data (Safety) as of June 30, 2018	Safety Tier 1	Safety Tier 2	Safety Tier 3	Safety Tier 4	Safety Total
Active Participants					
Number	22	176	5	119	322
Average Age	52.21	41.69	35.97	32.11	38.78
Average Service	25.40	13.45	8.84	2.23	10.05
Average Pay	$96,671	$72,876	$66,921	$56,560	$68,379
Service Retired					
Number	179	16	N/A	N/A	195
Average Age	66.17	61.32	N/A	N/A	65.77
Average Annual Total Benefit	$47,918	$22,708	N/A	N/A	$45,849
Beneficiaries & QDROs					
Number	61	3	N/A	N/A	64
Average Age	71.25	47.52	N/A	N/A	70.14
Average Annual Total Benefit	$26,396	$19,589	N/A	N/A	$26,077
Duty Disabled					
Number	67	21	N/A	N/A	88
Average Age	66.01	51.96	N/A	N/A	62.66
Average Annual Total Benefit	$37,030	$26,697	N/A	N/A	$34,564
Non-Duty Disabled					
Number	2	1	N/A	N/A	3
Average Age	60.19	70.78	N/A	N/A	63.72
Average Annual Total Benefit	$23,609	$19,156	N/A	N/A	$22,125
Total Receiving Benefits					
Number	309	41	N/A	N/A	350
Average Age	67.10	55.75	N/A	N/A	65.77
Average Annual Total Benefit	$41,151	$24,437	N/A	N/A	$39,193
Terminated Vested					
Number	1	43	1	1	46
Average Age	52.07	40.92	42.89	29.98	40.96
Average Service	7.83	9.86	11.39	8.26	9.82
Transfers					
Number	8	38	N/A	3	49
Average Age	52.08	42.66	N/A	28.52	43.33
Average Service	29.11	16.92	N/A	2.49	18.02
Funds on Account					
Number	1	8	2	29	40
Average Age	63.14	39.41	29.60	30.75	33.24
Average Service	17.51	1.46	0.39	1.39	1.76
Total Deferred					
Number	10	89	3	33	135
Average Age	53.18	41.52	34.03	30.53	39.53
Average Service	25.82	12.12	4.06	1.70	10.41

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, 2017	**2,096**	**235**	**264**	**289**	**48**	**135**	**1,760**	**320**	**5,147**
New Entrants	275	0	33	0	0	0	0	0	308
Rehires	10	0	(6)	(4)	0	0	0	0	0
Duty Disabilities	(5)	(1)	0	0	0	6	0	0	0
Non-Duty Disabilities	0	0	0	0	0	0	0	0	0
Retirements	(66)	(8)	(1)	(16)	0	0	91	0	0
Dual Service Retirements	0	0	0	0	0	0	0	0	0
Vested Terminations	(44)	0	0	44	0	0	0	0	0
Transfers	(13)	13	0	0	0	0	0	0	0
Non-Vested Terminations with Funds on Account	(45)	(1)	46	0	0	0	0	0	0
Withdrawals Paid	(58)	(1)	(28)	(7)	0	0	0	0	(94)
Died, With Beneficiary	(1)	0	0	0	0	(2)	(13)	16	0
Died, Without Beneficiary	(1)	0	0	(1)	(2)	(1)	(31)	0	(36)
Beneficiary Deaths	0	0	0	0	0	0	0	(24)	(24)
Domestic Relations Orders	0	0	0	0	0	0	0	4	4
Data Corrections	1	(2)	0	2	0	1	1	1	4
July 1, 2018	**2,149**	**235**	**308**	**307**	**46**	**139**	**1,808**	**317**	**5,309**

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, 2017	**1,783**	**185**	**226**	**245**	**45**	**51**	**1,570**	**253**	**4,358**
New Entrants	235	0	33	0	0	0	0	0	268
Rehires	9	0	(6)	(3)	0	0	0	0	0
Duty Disabilities	0	0	0	0	0	0	0	0	0
Non-Duty Disabilities	0	0	0	0	0	0	0	0	0
Retirements	(59)	(7)	(1)	(16)	0	0	83	0	0
Dual Service Retirements	0	0	0	0	0	0	0	0	0
Vested Terminations	(38)		0	38	0	0	0	0	0
Transfers	(11)	11	0	0	0	0	0	0	0
Non-Vested Terminations with Funds on Account	(40)	(1)	41	0	0	0	0	0	0
Withdrawals Paid	(50)	(1)	(24)	(5)	0	0	0	0	(80)
Died, With Beneficiary	(1)	0	0	0	0	0	(12)	13	0
Died, Without Beneficiary	(1)	0	0	(1)	(2)	0	(30)	0	(34)
Beneficiary Deaths	0	0	0	0	0	0	0	(18)	(18)
Domestic Relations Orders	0	0	0	0	0	0	0	4	4
Data Corrections	0	(1)	(1)	3	0	0	2	1	4
July 1, 2018	**1,827**	**186**	**268**	**261**	**43**	**51**	**1,613**	**253**	**4,502**

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, 2017	**313**	**50**	**38**	**44**	**3**	**84**	**190**	**67**	**789**
New Entrants	40	0	0	0	0	0	0	0	40
Rehires	1	0	0	(1)	0	0	0	0	0
Duty Disabilities	(5)	(1)	0	0	0	6	0	0	0
Non-Duty Disabilities	0	0	0	0	0	0	0	0	0
Retirements	(7)	(1)	0	0	0	0	8	0	0
Dual Service Retirements	0	0	0	0	0	0	0	0	0
Vested Terminations	(6)	0	0	6	0	0	0	0	0
Transfers	(2)	2	0	0	0	0	0	0	0
Non-Vested Terminations with Funds on Account	(5)	0	5	0	0	0	0	0	0
Withdrawals Paid	(8)	0	(4)	(2)	0	0	0	0	(14)
Died, With Beneficiary	0	0	0	0	0	(2)	(1)	3	0
Died, Without Beneficiary	0	0	0	0	0	(1)	(1)	0	(2)
Beneficiary Deaths	0	0	0	0	0	0	0	(6)	(6)
Domestic Relations Orders	0	0	0	0	0	0	0	0	0
Data Corrections	1	(1)	1	(1)	0	1	(1)	0	0
July 1, 2018	**322**	**49**	**40**	**46**	**3**	**88**	**195**	**64**	**807**

APPENDIX A – MEMBERSHIP INFORMATION

Valuation at Year End	Plan Type	Member Count	Annual Payroll	Average Annual Salary	Average Salary Increase
			Active Member Data by Plan		
2009	General	1,848	$99,266,589	$53,716	12.02%
	Safety	342	$19,363,697	$56,619	12.00%
	Total	**2,190**	**$118,630,286**	**$54,169**	**12.05%**
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%**

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%

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	16	6	0	0	0	0	0	0	0	0	22
25 to 29	46	119	14	1	0	0	0	0	0	0	180
30 to 34	50	142	55	18	1	0	0	0	0	0	266
35 to 39	41	118	50	93	31	0	0	0	0	0	333
40 to 44	21	70	37	63	58	18	0	0	0	0	267
45 to 49	15	34	25	47	50	33	10	0	0	0	214
50 to 54	11	27	17	37	60	31	16	6	0	0	205
55 to 59	5	14	24	34	66	25	27	12	1	0	208
60 to 64	1	14	8	25	35	13	5	2	1	0	104
65 to 69	0	2	5	4	5	4	4	0	0	0	24
70 & up	0	0	2	0	0	1	1	0	0	0	4
Total	206	546	237	322	306	125	63	20	2	0	1,827

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	38,640	40,514	0	0	0	0	0	0	0	0	39,151
25 to 29	41,941	45,187	60,650	63,980	0	0	0	0	0	0	45,664
30 to 34	41,836	49,898	57,051	51,732	78,801	0	0	0	0	0	50,094
35 to 39	48,127	50,593	58,899	64,093	64,336	0	0	0	0	0	56,586
40 to 44	55,948	48,109	59,614	65,935	66,144	66,000	0	0	0	0	59,650
45 to 49	54,192	54,381	61,633	72,571	68,410	70,840	61,798	0	0	0	65,372
50 to 54	61,313	58,920	55,869	59,285	60,051	74,520	76,830	81,295	0	0	63,604
55 to 59	66,506	57,464	74,819	56,354	69,593	68,573	74,715	73,561	55,494	0	67,845
60 to 64	223,621	80,733	65,012	59,927	65,845	74,823	147,378	117,241	57,189	0	73,827
65 to 69	0	45,738	100,837	79,180	52,374	96,166	69,977	0	0	0	76,617
70 & up	0	0	38,852	0	0	50,825	106,015	0	0	0	58,636
Total	47,723	50,384	61,290	63,494	65,662	71,667	79,165	80,249	56,342	0	59,150

APPENDIX A – MEMBERSHIP INFORMATION

SAFETY

Count

Age	Service 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	8	5	0	0	0	0	0	0	0	0	13
25 to 29	10	36	1	0	0	0	0	0	0	0	47
30 to 34	7	20	12	15	0	0	0	0	0	0	54
35 to 39	3	17	12	34	8	0	0	0	0	0	74
40 to 44	1	3	3	28	16	1	0	0	0	0	52
45 to 49	2	3	5	6	13	10	4	0	0	0	43
50 to 54	1	1	2	4	6	7	4	0	0	0	25
55 to 59	0	2	1	2	2	2	1	3	0	0	13
60 to 64	0	0	1	0	0	0	0	0	0	0	1
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	32	87	37	89	45	20	9	3	0	0	322

Compensation

Age	Service 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	41,896	48,154	0	0	0	0	0	0	0	0	44,303
25 to 29	55,713	56,062	49,354	0	0	0	0	0	0	0	55,845
30 to 34	43,419	59,315	71,669	72,286	0	0	0	0	0	0	63,602
35 to 39	59,557	58,560	70,645	70,896	69,639	0	0	0	0	0	67,426
40 to 44	76,690	70,867	78,737	71,389	83,586	97,201	0	0	0	0	76,134
45 to 49	61,183	56,630	67,871	67,791	73,406	82,685	93,232	0	0	0	74,242
50 to 54	82,555	93,344	58,791	71,918	77,013	80,813	99,834	0	0	0	80,330
55 to 59	0	86,011	59,294	92,619	74,514	88,879	71,453	119,291	0	0	90,205
60 to 64	0	0	61,147	0	0	0	0	0	0	0	61,147
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	51,766	58,491	69,479	71,610	76,886	83,375	93,746	119,291	0	0	68,379

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	1	$52,362	1	$52,362
50-54	20	$27,795	25	$56,305	45	$43,634
55-59	131	$28,797	30	$40,833	161	$31,040
60-64	289	$35,280	34	$49,383	323	$36,765
65-69	388	$38,559	44	$44,418	432	$39,156
70-74	341	$32,478	34	$44,725	375	$33,588
75-79	214	$28,794	16	$36,098	230	$29,302
80-84	121	$25,825	6	$51,390	127	$27,033
85-89	70	$22,900	3	$37,332	73	$23,493
90-94	28	$21,445	2	$51,854	30	$23,473
95+	11	$20,362	0	$0	11	$20,362
All Ages	1,613	$32,408	195	$45,849	1,808	$33,858

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	4	$22,777	4	$22,777
40-44	0	$0	4	$22,063	4	$22,063
45-49	3	$32,422	6	$46,663	9	$41,916
50-54	1	$51,973	7	$34,750	8	$36,903
55-59	7	$23,630	9	$42,159	16	$34,053
60-64	4	$25,147	17	$31,162	21	$30,016
65-69	13	$27,990	16	$26,327	29	$27,072
70-74	8	$24,317	16	$42,855	24	$36,676
75-79	6	$28,137	9	$35,882	15	$32,784
80-84	4	$20,618	0	$0	4	$20,618
85-89	3	$16,958	0	$0	3	$16,958
90-94	2	$49,790	0	$0	2	$49,790
95+	0	$0	0	$0	0	$0
All Ages	51	$26,968	88	$34,564	139	$31,777

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	1	$15,437	1	$29,666	2	$22,551
50-54	3	$15,937	0	$0	3	$15,937
55-59	5	$20,356	0	$0	5	$20,356
60-64	6	$16,097	0	$0	6	$16,097
65-69	7	$15,339	0	$0	7	$15,339
70-74	7	$14,556	2	$18,354	9	$15,400
75-79	6	$14,616	0	$0	6	$14,616
80-84	3	$21,671	0	$0	3	$21,671
85-89	4	$17,503	0	$0	4	$17,503
90-94	1	$1,567	0	$0	1	$1,567
95+	0	$0	0	$0	0	$0
All Ages	43	$16,167	3	$22,125	46	$16,555

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	1	$1,389	0	$0	1	$1,389
30-34	0	$0	0	$0	0	$0
35-39	2	$19,058	1	$36,028	3	$24,714
40-44	3	$8,350	1	$44,396	4	$17,362
45-49	5	$5,817	2	$10,200	7	$7,070
50-54	7	$8,427	1	$0	8	$7,374
55-59	16	$15,192	8	$15,787	24	$15,390
60-64	19	$10,198	6	$22,835	25	$13,231
65-69	25	$25,881	7	$27,965	32	$26,337
70-74	28	$17,598	17	$31,269	45	$22,763
75-79	32	$13,855	8	$29,732	40	$17,031
80-84	49	$14,423	7	$21,142	56	$15,263
85-89	31	$14,426	5	$33,013	36	$17,007
90-94	26	$19,467	1	$26,550	27	$19,729
95+	8	$11,661	0	$0	8	$11,661
All Ages	253	$15,575	64	$26,077	317	$17,695

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, 2013 through June 30, 2016 and adopted by the Board. More details on the rationale for the demographic and economic assumptions can be found in the experience analysis dated February 15, 2017.

A. Actuarial Assumptions

1. Rate of Return

Assets are assumed to earn 7.25% net of investment expenses.

2. Administrative Expenses

Administrative expenses are assumed to be $2.311 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
0-1	7.00%	7.50%
2-3	5.00%	5.00%
4	5.00%	3.00%
5	3.00%	1.50%
6-9	2.00%	1.50%
10-14	1.50%	1.00%
15-19	1.00%	1.00%
20+	0.50%	0.50%

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 Tier 1 members has been increased by 6.92% and the FAC for Tier 2 and Tier 3 members by 2.31%.

7. Family Composition

50% of female General members, 70% of male General members, and 90% of Safety members are assumed to be married at retirement. Male members are assumed to be three years older than their spouses and female members are assumed to be two years younger than their spouses.

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 CalPERS mortality tables as described below. Future mortality improvements are reflected by applying the SOA MP-2016 projection scale on a generational basis from the base year of 2009.

Category	Base Mortality Table
Healthy Annuitant	CalPERS 2009 Healthy Annuitant Mortality Table
Disabled Annuitant	CalPERS 2009 Industrial Disability Mortality Table
Healthy Non-Annuitant	CalPERS 2009 Non-Industrial Employees Mortality Table
Actives, Line of Duty (Safety only)	CalPERS 2009 Industrial Employees Mortality Table

9. Rates of Termination

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

Years of Service	General Male	General Female	Safety
0	22.5%	12.0%	20.8%
5	8.2%	7.5%	4.6%
10	4.5%	3.6%	4.6%
15	4.5%	3.0%	2.5%
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 – 14	15+	0 – 4	5+
Withdrawals	90.0%	40.0%	10.0%	90.0%	30.0%
Transfers	10.0%	10.0%	10.0%	10.0%	25.0%
Vested Terminations	0.0%	50.0%	80.0%	0%	45.0%

Vested terminated General Members are assumed to begin receiving benefits at age 59; vested terminated Safety Members are assumed to begin receiving benefits at age 53. 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 55. 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 3.25% 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 Service-Connected Disability

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

	Safety	General	
Age	All	Male	Female
20	0.0000%	0.0027%	0.0040%
25	0.0825%	0.0053%	0.0075%
30	0.2380%	0.0133%	0.0115%
35	0.3940%	0.0240%	0.0150%
40	0.5500%	0.0320%	0.0190%
45	0.7060%	0.0480%	0.0340%
50	0.9230%	0.0640%	0.0600%
55	2.3925%	0.0800%	0.1050%
60	3.0120%	0.1120%	0.1575%
65	3.6385%	0.0000%	0.0000%

11. Rates of Non Service-Connected Disability

Sample non service-connected disability rates of active participants are provided in the table. Rates are applied once members have at least five years of service.

	Safety	General	
Age	All	Male	Female
20	0.0050%	0.0000%	0.0000%
25	0.0050%	0.0267%	0.0033%
30	0.0100%	0.0533%	0.0067%
35	0.0150%	0.0533%	0.0100%
40	0.0200%	0.0867%	0.0133%
45	0.0250%	0.1267%	0.0300%
50	0.0400%	0.1600%	0.0600%
55	0.0650%	0.2133%	0.0933%
60	0.1000%	0.2800%	0.1533%
65	0.1000%	0.0000%	0.0000%

APPENDIX B -- STATEMENT OF CURRENT ACTUARIAL ASSUMPTIONS AND METHODS

12. Rates of Retirement

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

	General Male			General Female			Safety		
	Years of Service			Years of Service				Years of Service	
Age	10 – 19	20 – 29	30+	10 – 19	20 – 29	30+	Age	10 – 19	20+
50	5.00%	10.00%	7.50%	2.50%	7.50%	25.00%	40	0.00%	3.10%
51	5.00%	10.00%	7.50%	2.50%	7.50%	25.00%	41	0.00%	3.10%
52	5.00%	10.00%	15.00%	5.00%	12.50%	25.00%	42	0.00%	3.10%
53	5.00%	10.00%	15.00%	5.00%	12.50%	25.00%	43	0.00%	3.10%
54	5.00%	10.00%	15.00%	5.00%	12.50%	25.00%	44	0.00%	3.10%
55	10.00%	12.50%	27.00%	12.00%	25.00%	35.00%	45	0.00%	7.60%
56	10.00%	12.50%	22.50%	8.50%	25.00%	35.00%	46	0.00%	7.60%
57	10.00%	12.50%	22.50%	8.50%	25.00%	35.00%	47	0.00%	7.60%
58	10.00%	12.50%	22.50%	8.50%	25.00%	35.00%	48	0.00%	7.60%
59	10.00%	12.50%	22.50%	10.00%	30.00%	35.00%	49	0.00%	7.60%
60	20.00%	25.00%	37.50%	15.00%	30.00%	35.00%	50	15.00%	32.90%
61	20.00%	25.00%	37.50%	27.50%	40.00%	45.00%	51	12.80%	32.90%
62	20.00%	25.00%	37.50%	27.50%	40.00%	45.00%	52	12.80%	32.90%
63	20.00%	25.00%	37.50%	27.50%	40.00%	45.00%	53	12.80%	32.90%
64	20.00%	25.00%	37.50%	27.50%	40.00%	45.00%	54	12.80%	32.90%
65	35.00%	50.00%	40.00%	40.00%	50.00%	50.00%	55	25.00%	32.90%
66	35.00%	50.00%	45.00%	45.00%	50.00%	50.00%	56	25.00%	32.90%
67	35.00%	50.00%	50.00%	50.00%	50.00%	50.00%	57	25.00%	32.90%
68	35.00%	50.00%	60.00%	60.00%	60.00%	60.00%	58	25.00%	32.90%
69	35.00%	50.00%	80.00%	80.00%	80.00%	80.00%	59	25.00%	32.90%
70+	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	60	100.00%	100.00%

13. Changes Since Last Valuation

The assumed administrative expenses increased from $2.255 million to $2.311 million.

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.

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.

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 7.25% – 2.00% = 5.25%), 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.

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.

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.

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%.

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.

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.

Contribution Rates

Employee contribution rates vary by member Group and Tier. For non-PEPRA members, the rates were updated in 2016, following an experience study covering the period July 1, 2013 – June 30, 2016. In 2017, the rates were updated to reflect the reinstatement of the final average compensation load and the updated administrative expense load. For 2018, the rates were re-computed for PEPRA members only, in accordance with the requirement that employees pay half of the total normal cost rate from the most recent 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 7.25% 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 CalPERS 2009 Healthy Annuitants & Employees, projected using Projection Scale MP-2016 to 2037. 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 3.1%. 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 3.1% was applied to the PEPRA rates.

APPENDIX D – MEMBER CONTRIBUTION RATES

Current and 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%	6.93%	1.09%	1.64%	5.72%	8.57%	4.29%	6.43%	3.58%	5.36%	3.49%	5.23%	4.19%	6.28%	3.00%	4.50%	2.94%	4.40%
17	4.63%	6.93%	1.09%	1.64%	5.72%	8.57%	4.29%	6.43%	3.58%	5.36%	3.49%	5.23%	4.19%	6.28%	3.00%	4.50%	2.94%	4.40%
18	4.63%	6.93%	1.09%	1.64%	5.72%	8.57%	4.29%	6.43%	3.58%	5.36%	3.49%	5.23%	4.19%	6.28%	3.00%	4.50%	2.94%	4.40%
19	4.63%	6.93%	1.09%	1.64%	5.72%	8.57%	4.29%	6.43%	3.58%	5.36%	3.49%	5.23%	4.19%	6.28%	3.00%	4.50%	2.94%	4.40%
20	4.63%	6.93%	1.09%	1.64%	5.72%	8.57%	4.29%	6.43%	3.58%	5.36%	3.49%	5.23%	4.19%	6.28%	3.00%	4.50%	2.94%	4.40%
21	4.73%	7.10%	1.14%	1.71%	5.87%	8.81%	4.39%	6.58%	3.66%	5.48%	3.58%	5.37%	4.30%	6.44%	3.08%	4.61%	3.01%	4.51%
22	4.85%	7.27%	1.18%	1.78%	6.03%	9.05%	4.50%	6.75%	3.75%	5.63%	3.67%	5.49%	4.40%	6.59%	3.15%	4.73%	3.08%	4.63%
23	4.98%	7.46%	1.24%	1.85%	6.22%	9.31%	4.60%	6.91%	3.83%	5.76%	3.75%	5.63%	4.50%	6.76%	3.22%	4.84%	3.16%	4.74%
24	5.10%	7.64%	1.29%	1.93%	6.39%	9.57%	4.73%	7.09%	3.94%	5.91%	3.84%	5.77%	4.61%	6.92%	3.31%	4.97%	3.23%	4.85%
25	5.22%	7.83%	1.33%	2.00%	6.55%	9.83%	4.84%	7.26%	4.03%	6.05%	3.94%	5.92%	4.73%	7.10%	3.39%	5.09%	3.32%	4.98%
26	5.35%	8.02%	1.38%	2.07%	6.73%	10.09%	4.95%	7.44%	4.13%	6.20%	4.04%	6.06%	4.85%	7.27%	3.47%	5.21%	3.40%	5.10%
27	5.48%	8.22%	1.43%	2.15%	6.91%	10.37%	5.08%	7.62%	4.23%	6.35%	4.14%	6.21%	4.97%	7.45%	3.56%	5.35%	3.48%	5.22%
28	5.61%	8.43%	1.49%	2.24%	7.10%	10.67%	5.21%	7.82%	4.34%	6.52%	4.24%	6.36%	5.09%	7.63%	3.65%	5.47%	3.56%	5.35%
29	5.76%	8.64%	1.55%	2.32%	7.31%	10.96%	5.35%	8.01%	4.46%	6.68%	4.35%	6.53%	5.22%	7.83%	3.74%	5.61%	3.66%	5.48%
30	5.90%	8.86%	1.60%	2.40%	7.50%	11.26%	5.47%	8.21%	4.56%	6.84%	4.46%	6.68%	5.35%	8.02%	3.83%	5.75%	3.74%	5.61%
31	6.06%	9.09%	1.66%	2.48%	7.72%	11.57%	5.61%	8.42%	4.68%	7.02%	4.58%	6.86%	5.49%	8.23%	3.92%	5.89%	3.84%	5.76%
32	6.21%	9.31%	1.71%	2.56%	7.92%	11.87%	5.76%	8.63%	4.80%	7.19%	4.68%	7.03%	5.62%	8.44%	4.03%	6.04%	3.93%	5.90%
33	6.38%	9.56%	1.76%	2.65%	8.14%	12.21%	5.89%	8.84%	4.91%	7.37%	4.80%	7.20%	5.76%	8.64%	4.13%	6.19%	4.03%	6.05%
34	6.54%	9.81%	1.82%	2.73%	8.36%	12.54%	6.03%	9.04%	5.03%	7.53%	4.91%	7.37%	5.89%	8.84%	4.23%	6.35%	4.13%	6.20%
35	6.68%	10.01%	1.87%	2.81%	8.55%	12.82%	6.16%	9.24%	5.13%	7.70%	5.02%	7.52%	6.02%	9.02%	4.34%	6.50%	4.23%	6.36%
36	6.82%	10.23%	1.94%	2.90%	8.76%	13.13%	6.29%	9.44%	5.24%	7.87%	5.13%	7.68%	6.15%	9.22%	4.44%	6.66%	4.35%	6.52%
37	6.97%	10.46%	2.00%	3.00%	8.97%	13.46%	6.43%	9.64%	5.36%	8.03%	5.23%	7.86%	6.28%	9.43%	4.56%	6.84%	4.46%	6.69%
38	7.12%	10.68%	2.06%	3.09%	9.18%	13.77%	6.56%	9.84%	5.47%	8.20%	5.35%	8.02%	6.42%	9.62%	4.67%	7.00%	4.56%	6.85%
39	7.28%	10.93%	2.11%	3.17%	9.39%	14.10%	6.69%	10.03%	5.58%	8.36%	5.45%	8.18%	6.54%	9.81%	4.77%	7.16%	4.67%	7.00%
40	7.42%	11.13%	2.16%	3.24%	9.58%	14.37%	6.81%	10.22%	5.68%	8.52%	5.54%	8.32%	6.65%	9.98%	4.87%	7.31%	4.77%	7.15%
41	7.55%	11.33%	2.18%	3.28%	9.73%	14.61%	6.93%	10.40%	5.78%	8.67%	5.66%	8.48%	6.79%	10.18%	4.99%	7.48%	4.87%	7.30%
42	7.71%	11.56%	2.20%	3.31%	9.91%	14.87%	7.08%	10.61%	5.90%	8.84%	5.76%	8.63%	6.91%	10.36%	5.09%	7.63%	4.98%	7.47%
43	7.86%	11.78%	2.23%	3.34%	10.09%	15.12%	7.20%	10.80%	6.00%	9.00%	5.87%	8.80%	7.04%	10.56%	5.20%	7.80%	5.08%	7.62%
44	8.01%	12.02%	2.25%	3.37%	10.26%	15.39%	7.32%	10.99%	6.10%	9.16%	5.97%	8.95%	7.16%	10.74%	5.29%	7.94%	5.18%	7.77%
45	8.15%	12.23%	2.27%	3.40%	10.42%	15.63%	7.45%	11.18%	6.21%	9.32%	6.07%	9.10%	7.28%	10.92%	5.40%	8.10%	5.27%	7.91%
46	8.29%	12.44%	2.28%	3.41%	10.57%	15.85%	7.58%	11.37%	6.32%	9.48%	6.18%	9.26%	7.41%	11.11%	5.49%	8.24%	5.37%	8.06%
47	8.46%	12.69%	2.29%	3.43%	10.75%	16.12%	7.71%	11.56%	6.43%	9.63%	6.28%	9.42%	7.53%	11.30%	5.60%	8.41%	5.47%	8.21%
48	8.64%	12.96%	2.30%	3.45%	10.94%	16.41%	7.78%	11.66%	6.48%	9.72%	6.33%	9.50%	7.60%	11.40%	5.70%	8.55%	5.57%	8.36%
49	8.77%	13.15%	2.32%	3.47%	11.09%	16.62%	7.80%	11.69%	6.50%	9.74%	6.34%	9.52%	7.61%	11.42%	5.80%	8.70%	5.68%	8.51%
50	8.77%	13.14%	2.32%	3.48%	11.09%	16.62%	7.79%	11.68%	6.49%	9.73%	6.34%	9.51%	7.61%	11.41%	5.90%	8.85%	5.77%	8.65%
51	8.77%	13.14%	2.30%	3.45%	11.07%	16.59%	7.74%	11.61%	6.45%	9.68%	6.31%	9.46%	7.57%	11.35%	6.01%	9.00%	5.87%	8.81%
52	8.78%	13.16%	2.26%	3.39%	11.04%	16.55%	7.66%	11.50%	6.38%	9.58%	6.24%	9.36%	7.49%	11.23%	6.11%	9.16%	5.96%	8.95%
53	8.66%	13.00%	2.21%	3.32%	10.87%	16.32%	7.92%	11.88%	6.60%	9.90%	6.45%	9.68%	7.74%	11.61%	6.16%	9.24%	6.02%	9.02%
54	8.56%	12.85%	2.16%	3.24%	10.72%	16.09%	8.19%	12.29%	6.83%	10.24%	6.67%	10.01%	8.00%	12.01%	6.17%	9.26%	6.04%	9.05%
55	8.49%	12.73%	2.12%	3.18%	10.61%	15.91%	8.13%	12.19%	6.78%	10.16%	6.62%	9.93%	7.94%	11.91%	6.17%	9.25%	6.03%	9.04%
56	8.41%	12.61%	2.05%	3.08%	10.46%	15.69%	8.05%	12.07%	6.71%	10.06%	6.55%	9.83%	7.86%	11.79%	6.13%	9.20%	6.00%	8.99%
57	8.32%	12.48%	1.99%	2.99%	10.31%	15.47%	7.96%	11.95%	6.63%	9.96%	6.49%	9.73%	7.79%	11.68%	6.07%	9.11%	5.93%	8.90%
58	8.23%	12.35%	1.93%	2.89%	10.16%	15.24%	7.88%	11.82%	6.57%	9.85%	6.41%	9.63%	7.69%	11.55%	6.27%	9.40%	6.13%	9.20%
59+	8.14%	12.21%	1.87%	2.81%	10.01%	15.02%	7.79%	11.68%	6.49%	9.73%	6.34%	9.51%	7.61%	11.41%	6.49%	9.73%	6.35%	9.52%

APPENDIX D – MEMBER CONTRIBUTION RATES

Current and 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	5.21%	7.82%	2.09%	3.13%	7.30%	10.95%	4.83%	7.24%	4.72%	7.08%
21	5.34%	8.00%	2.15%	3.23%	7.49%	11.23%	4.94%	7.42%	4.83%	7.25%
22	5.47%	8.20%	2.24%	3.35%	7.71%	11.55%	5.07%	7.60%	4.95%	7.43%
23	5.59%	8.40%	2.30%	3.45%	7.89%	11.85%	5.19%	7.79%	5.08%	7.61%
24	5.74%	8.60%	2.38%	3.56%	8.12%	12.16%	5.32%	7.97%	5.19%	7.79%
25	5.87%	8.81%	2.44%	3.67%	8.31%	12.48%	5.45%	8.17%	5.33%	7.98%
26	6.02%	9.02%	2.51%	3.77%	8.53%	12.79%	5.57%	8.36%	5.45%	8.18%
27	6.17%	9.25%	2.58%	3.86%	8.75%	13.11%	5.72%	8.57%	5.58%	8.37%
28	6.31%	9.48%	2.64%	3.96%	8.95%	13.44%	5.84%	8.77%	5.72%	8.57%
29	6.48%	9.71%	2.70%	4.05%	9.18%	13.76%	5.97%	8.96%	5.84%	8.76%
30	6.60%	9.91%	2.75%	4.13%	9.35%	14.04%	6.09%	9.14%	5.95%	8.93%
31	6.74%	10.11%	2.79%	4.18%	9.53%	14.29%	6.21%	9.32%	6.08%	9.12%
32	6.87%	10.31%	2.82%	4.23%	9.69%	14.54%	6.34%	9.51%	6.19%	9.29%
33	7.01%	10.52%	2.86%	4.30%	9.87%	14.82%	6.47%	9.70%	6.32%	9.49%
34	7.16%	10.73%	2.92%	4.38%	10.08%	15.11%	6.60%	9.91%	6.46%	9.68%
35	7.30%	10.96%	2.98%	4.47%	10.28%	15.43%	6.75%	10.12%	6.58%	9.88%
36	7.47%	11.20%	3.07%	4.60%	10.54%	15.80%	6.88%	10.32%	6.73%	10.09%
37	7.62%	11.43%	3.16%	4.74%	10.78%	16.17%	7.04%	10.55%	6.87%	10.31%
38	7.80%	11.69%	3.26%	4.88%	11.06%	16.57%	7.18%	10.76%	7.01%	10.53%
39	7.97%	11.96%	3.36%	5.04%	11.33%	17.00%	7.32%	10.98%	7.16%	10.73%
40	8.13%	12.19%	3.47%	5.20%	11.60%	17.39%	7.46%	11.19%	7.28%	10.93%
41	8.28%	12.42%	3.48%	5.22%	11.76%	17.64%	7.60%	11.40%	7.43%	11.15%
42	8.46%	12.69%	3.51%	5.26%	11.97%	17.95%	7.77%	11.65%	7.59%	11.38%
43	8.65%	12.98%	3.55%	5.34%	12.20%	18.32%	7.90%	11.86%	7.73%	11.59%
44	8.87%	13.31%	3.62%	5.42%	12.49%	18.73%	7.98%	11.98%	7.81%	11.71%
45	9.01%	13.53%	3.68%	5.51%	12.69%	19.04%	8.00%	12.01%	7.83%	11.74%
46	9.01%	13.53%	3.72%	5.57%	12.73%	19.10%	7.96%	11.94%	7.78%	11.66%
47	9.04%	13.57%	3.76%	5.64%	12.80%	19.21%	7.86%	11.79%	7.68%	11.53%
48	8.91%	13.37%	3.84%	5.76%	12.75%	19.13%	8.13%	12.19%	7.94%	11.92%
49+	8.79%	13.17%	3.93%	5.90%	12.72%	19.07%	8.41%	12.61%	8.22%	12.33%

APPENDIX D – MEMBER CONTRIBUTION RATES

Current 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)	

Prior Year Contribution Rates (PEPRA):

	PEPRA Rates	
	General	**Safety**
	5.89%	9.98%
Assumptions:		
Interest	7.25%	
Salary	2017 Valuation Scale (service-based, includes inflation at 2.5%)	
Mortality	CalPERS 2009 tables, projected with MP-2016	
Other	Same as June 30, 2017 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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