CHEIRON Classic Values, Innovative Advice

City of San José Federated City Employees' Retirement System

Actuarial Valuation Report as of June 30, 2018

Produced by Cheiron

December 2018

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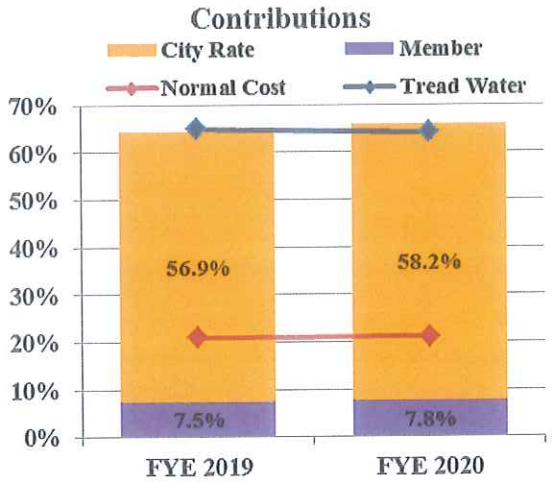
TABLE OF CONTENTS

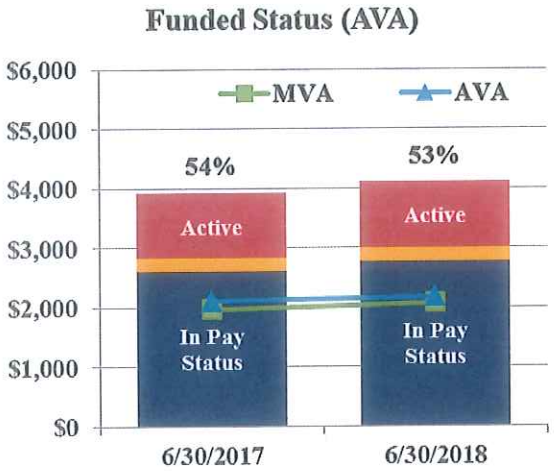
Section		*Page*
Section I	Board Summary	1
Section II	Assessment and Disclosure of Risk	12
Section III	Certification	23
Section IV	Assets	24
Section V	Measures of Liability	28
Section VI	Contributions	31
Section VII	Actuarial Section of the CAFR	37

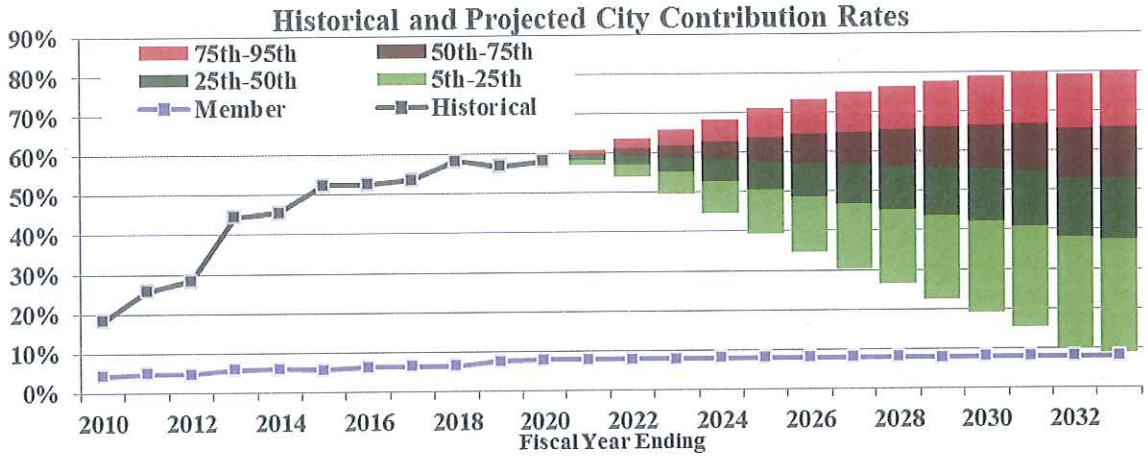
Appendices

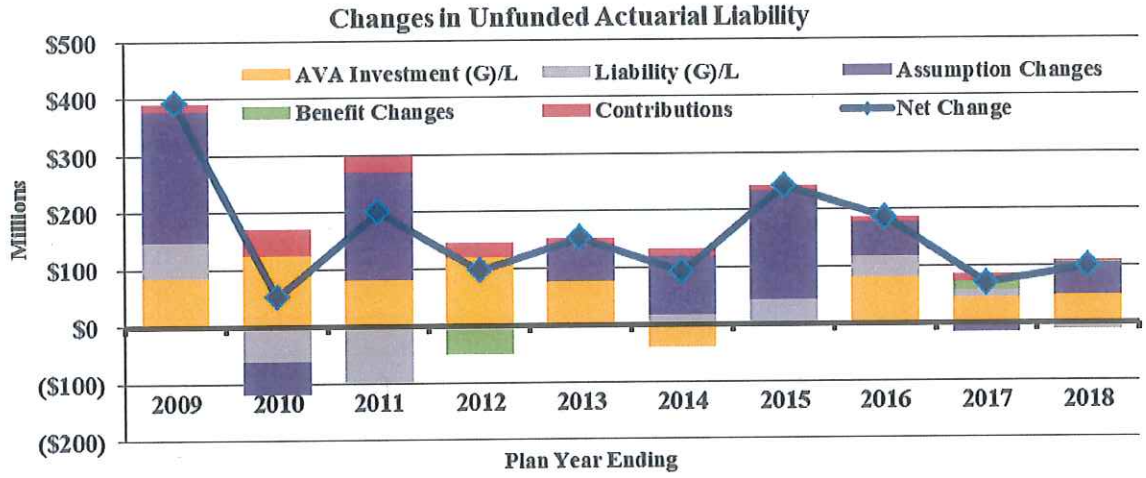
Appendix A	Membership Information	40
Appendix B	Actuarial Assumptions and Methods	51
Appendix C	Summary of Plan Provisions	60
Appendix D	Glossary of Terms	68

SECTION I – BOARD SUMMARY









SECTION I – BOARD SUMMARY

Membership

Underlying the changes in the actuarial valuation from one year to the next are changes in the membership of the System. These changes affect the liability of the System as well as contributions to the System. As shown in Table I-1 below, total membership grew 3.8% from 2017 to 2018. In particular, active membership increased 4.2% and total payroll increased by 4.1%. Approximately 48% of active members are now Tier 2 members.

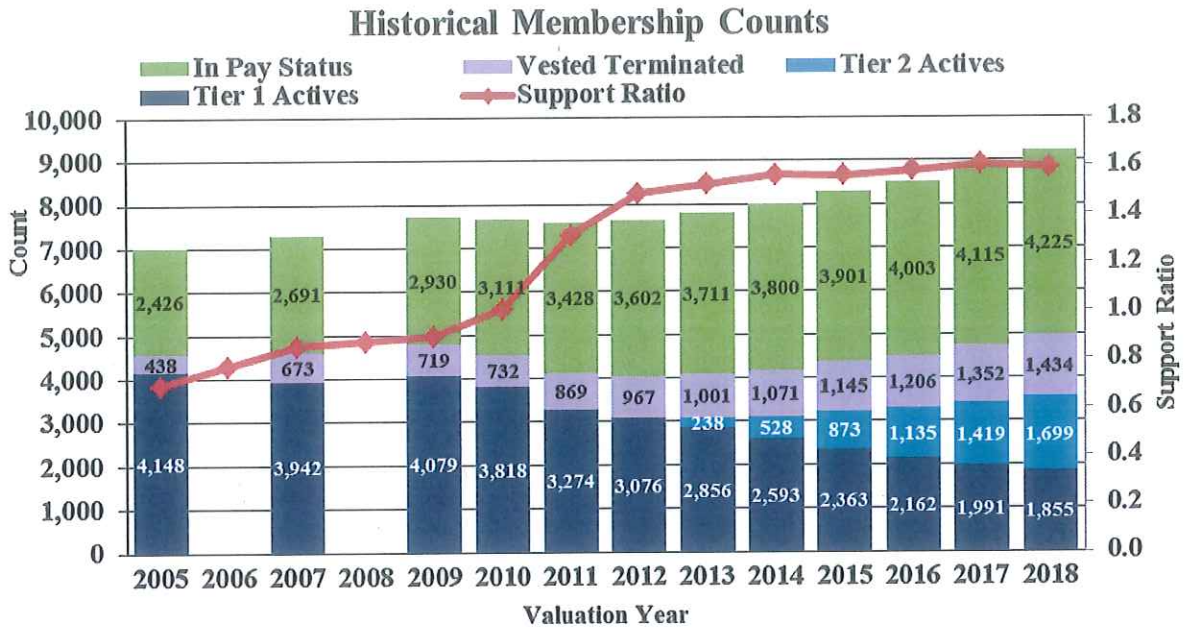
Table I-1

Total Membership	June 30, 2018	June 30, 2017	% Change
Active Members			
Tier 1	1,855	1,991	-6.8%
Tier 2	1,699	1,419	19.7%
Total Actives	3,554	3,410	4.2%
Terminated Vested Members			
Tier 1	1,022	1,037	-1.4%
Tier 2	412	315	30.8%
Total Terminated Vesteds	1,434	1,352	6.1%
Members In Pay Status			
Tier 1	4,222	4,114	2.6%
Tier 2	3	1	200.0%
Total In Pay Status	4,225	4,115	2.7%
Total Membership	9,213	8,877	3.8%
Active Member Payroll			
Tier 1	$ 171,639	$ 181,691	-5.5%
Tier 2	127,347	105,649	20.5%
Total	$ 298,985	$ 287,339	4.1%
Average Pay per Active Member	$ 84.1	$ 84.3	-0.2%

Dollar amounts in thousands

As shown in the chart on the following page, the number of active members declined about 25% from 4,079 in 2009 to 3,076 in 2012. Since then, there has been a gradual increase in the number of active members to 3,554 in 2018. At the same time, the number of members in pay status has increased about 44% from 2,930 in 2009 to 4,225 in 2018. As a result, the support ratio (the ratio of the number of vested terminated and members in pay status to the number of active members) increased from approximately 0.9 in 2009 to 1.5 in 2012 and has remained relatively stable. As

there are fewer actives to support each retiree, contributions tend to become more volatile and sensitive to gains and losses. This type of progression is to be expected for a maturing plan over a long period of time, but the impact of the recession accelerated the trend significantly. Following the recession, the ratio appears to have stabilized, but there is no indication yet of a return to a lower ratio.



Assets and Liabilities

This report measures assets and liabilities for funding purposes only. These measures are not appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations, and there is a separate report for financial reporting. Table I-2 on the next page summarizes the Actuarial Liability, assets, and related ratios for the System as of June 30, 2018 compared to June 30, 2017.

SECTION I – BOARD SUMMARY

Table I-2

Summary of Funded Status and Related Ratios	June 30, 2018	June 30, 2017	% Change
Actuarial Liability			
Actives	$ 1,098,809	$ 1,091,571	0.7%
Deferred Vested	236,216	222,400	6.2%
In Pay Status	2,765,796	2,609,995	6.0%
Total	$ 4,100,821	$ 3,923,966	4.5%
Market Value of Assets (MVA)	$ 2,069,332	$ 1,972,791	4.9%
Unfunded Actuarial Liability - MVA Basis	$ 2,031,489	$ 1,951,175	4.1%
Funding Ratio - MVA Basis	50.5%	50.3%	0.4%
Actuarial Value of Assets (AVA)	$ 2,179,488	$ 2,101,435	3.7%
Unfunded Actuarial Liability - AVA Basis	$ 1,921,333	$ 1,822,531	5.4%
Funding Ratio - AVA Basis	53.1%	53.6%	-0.8%
FYE 2019 Expected Payroll	$ 298,985	$ 287,339	4.1%
Asset Leverage Ratio	6.9	6.9	0.8%
Actuarial Liability Leverage Ratio	13.7	13.7	0.4%
Interest on UAL - MVA Basis	$ 132,719	$ 129,757	2.3%
Interest Cost as Percent of Payroll	44.4%	45.2%	-1.7%

Dollar amounts in thousands

The Actuarial Liability represents the target amount of assets the plan should have in the trust as of the valuation date based on the actuarial cost method. The Actuarial Liability grew 4.5%, reflecting the continued accrual of benefits and the changes in assumptions adopted this year. The Market Value of Assets increased 4.9%. As a result, the Unfunded Actuarial Liability (UAL) measured on the Market Value of Assets increased 4.1% from approximately $1,951.2 million to $2,031.5 million, and the funding ratio on an MVA basis remained relatively level, increasing slightly from 50.3% to 50.5%.

The asset smoothing method deferred 80% of the investment loss while recognizing 20% of the prior four years' gains and losses, resulting in a 3.7% increase in the Actuarial Value of Assets. The UAL measured on the Actuarial Value of Assets increased 5.4% from approximately $1,822.5 million to $1,921.3 million and the funding ratio decreased slightly from 53.6% to 53.1%. The Market Value of Assets is less than the actuarial value, so if assumptions are met in the future, we expect an increase in contribution rates as the deferred asset losses are recognized in the Actuarial Value of Assets.

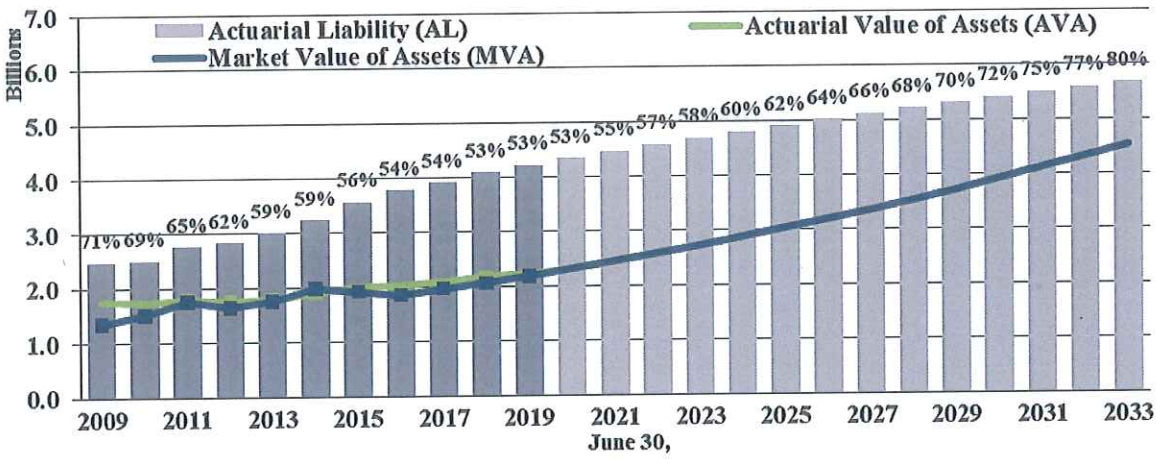
SECTION I – BOARD SUMMARY

The asset leverage ratio (Market Value of Assets divided by payroll) of 6.9 means that if the System experiences a 10% loss on assets compared to the discount rate of 6.75%, the loss would be equivalent to 69% of payroll. Interest payments on such a loss would be approximately 4.7% of payroll.

Interest payments on the current UAL are approximately 43% of payroll, decreasing slightly from 44% of payroll in the prior year. As the System becomes better funded, the asset leverage ratio will increase, and if it was 100% funded, the leverage ratio would be 13.7 (Actuarial Liability divided by payroll). Higher asset leverage ratios indicate that a system is more sensitive to investment gains and losses. That is, the same level of investment gain or loss will have a greater impact on contribution rates for a system with a higher ratio than for a system with a lower ratio.

The chart below shows the historical and projected trends for assets (both market and smoothed actuarial) versus the Actuarial Liability, and also shows the progress of the funded ratios (based on the Actuarial Value of Assets) since 2009. The historical Actuarial Liability is shown in dark gray while the projected Actuarial Liability is shown in a lighter gray. From 2009 to 2018, the funding ratio has declined primarily because the System experienced lower than expected investment returns on the Actuarial Value of Assets and changed assumptions, including reducing its assumption of future investment returns. If all assumptions are met in the future including an expected return of 6.75% each year, the funded status is expected to reach about 80% by 2033.

Historical and Projected Assets and Actuarial Liability



While the funded status is expected to improve, the UAL is dependent on actual investment returns, changes in assumptions and actuarial gains and losses, so there is potentially a wide range for the projected UAL.

More detail on the assets can be found in section IV of this report, and more detail on the measures of liability can be found in section V of this report.

Changes in UAL

The chart at the bottom of the dashboard (page 1) and Table I-3 on the next page summarize the changes in the Unfunded Actuarial Liability over the last 10 years. Five categories of changes are shown: investment gains or losses on the Actuarial Value of Assets, liability gains or losses, assumption changes, benefit changes, and contributions.

Investment losses have contributed significantly to the growth in the UAL with 2014 as the only year in the last 10 in which there was an investment gain on the Actuarial Value of Assets. In sum, investment losses have increased the UAL by about $630 million over the last 10 years.

There have been significant assumption changes as shown by the purple bars in the chart on the dashboard, including reductions in the discount rate in steps from 8.25% in 2007 to 6.75% in 2018 that have increased the measure of the UAL by a sum total of $815 million over the last 10 years.

Actual contributions have consistently been less than the normal cost plus interest on the UAL, resulting in an annual increase in the amount of the UAL as shown by the red bars on the dashboard. In sum, this has added $177 million to the UAL over the last 10 years. This pattern is a result of the prior policy of a 30-year rolling amortization that is being phased out. Contribution rates in the future are expected to exceed normal cost plus interest on the UAL and begin paying down the UAL.

After four consecutive years of losses, this year there was an actuarial gain on the Actuarial Liability. In sum, the gains and losses on the Actuarial Liability have subtracted roughly $10 million from the UAL over the last 10 years. The only benefit changes in the last 10 years that affected the UAL were the elimination of the SRBR in 2012 and the changes under Measure F in 2017 and 2018.

In aggregate, the UAL has increased in every year of the 10-year period for a total increase of approximately $1.6 billion as shown in Table I-3.

SECTION I – BOARD SUMMARY

Table I-3

Changes in Unfunded Actuarial Liability	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Total
Discount Rate	7.75%	7.95%	7.50%	7.50%	7.25%	7.00%	7.00%	6.88%	6.875%	6.750%	
Source											
AVA (G)/L	$ 86.5	$ 124.1	$ 82.2	$ 119.3	$ 76.5	$ (39.7)	$ 3.6	$ 81.5	$ 44.6	$ 49.9	$ 628.6
Liability (G)/L	62.2	(60.4)	(98.0)	(6.5)	(0.1)	16.9	38.2	36.0	13.7	(11.5)	$ (9.6)
Assumption Changes	228.8	(59.4)	187.5	0.0	63.7	103.4	191.5	60.2	(15.6)	54.4	$ 814.6
Benefit Changes	0.0	0.0	0.0	(43.1)	0.0	0.0	0.0	0.0	13.8	1.9	$ (27.4)
Contributions	14.0	47.0	28.9	26.8	12.4	12.2	8.8	8.8	14.0	4.0	$ 177.0
Total UAL Change	**$ 391.5**	**$ 51.4**	**$ 200.6**	**$ 96.5**	**$ 152.5**	**$ 92.8**	**$ 242.1**	**$ 186.6**	**$ 70.5**	**$ 98.8**	**$ 1,583.2**

Dollar amounts in millions

Table I-4 below breaks out the sources of the changes in UAL for the fiscal year ending June 30, 2018. The UAL increased about $99 million since the prior year. About $50 million was due to investment losses on the Actuarial Value of Assets. The Board adopted a decrease in the discount rate assumption and an update to the most recent mortality improvement projection scale (MP-2018 for this valuation). These assumption changes increased the UAL by approximately $54 million. There were liability gains of about $11 million and reclassifying classic members from Tier 2 to Tier1 increased the UAL about $2 million. Finally, contributions less than normal cost plus interest on the UAL added about $4 million to the UAL during the year.

Table I-4

Changes in Unfunded Actuarial Liability		Amount
Unfunded Actuarial Liability, June 30, 2018	$	1,921,333
Unfunded Actuarial Liability, June 30, 2017		1,822,531
Change in Unfunded Actuarial Liability	**$**	**98,802**
Sources of Changes		
Plan Changes - Measure F Classic Members	$	1,908
Assumption Changes		54,398
Normal Cost and Interest on UAL less Contributions		4,043
Investment (gain) or loss on Actuarial Value of Assets		49,921
Liability (gain) or loss		
Salary experience	$	(9,844)
Retirement experience		6,454
Mortality experience		(2,274)
Other experience		(5,804)
Total Liability (gain) or loss	$	(11,468)
Total Changes	**$**	**98,802**

Dollar amounts in thousands

Contribution Amounts and Rates

As shown in the upper left corner of the dashboard, the total City contribution rate reported in the actuarial valuation increased from 56.9% to 58.2%. The red line is the normal cost (including administrative expenses), representing the benefits attributable to the next year of service. Contributions above the red line are to pay for the UAL. The blue line represents the tread water rate (normal cost plus interest on the Market Value UAL). Contributions equal to the tread water rate are needed to prevent the UAL from growing as a dollar amount if all assumptions are met. The total contribution rate increases from slightly below the tread water rate to slightly above the tread water rate. As a result, the UAL is expected to be reduced slightly if all assumptions are met.

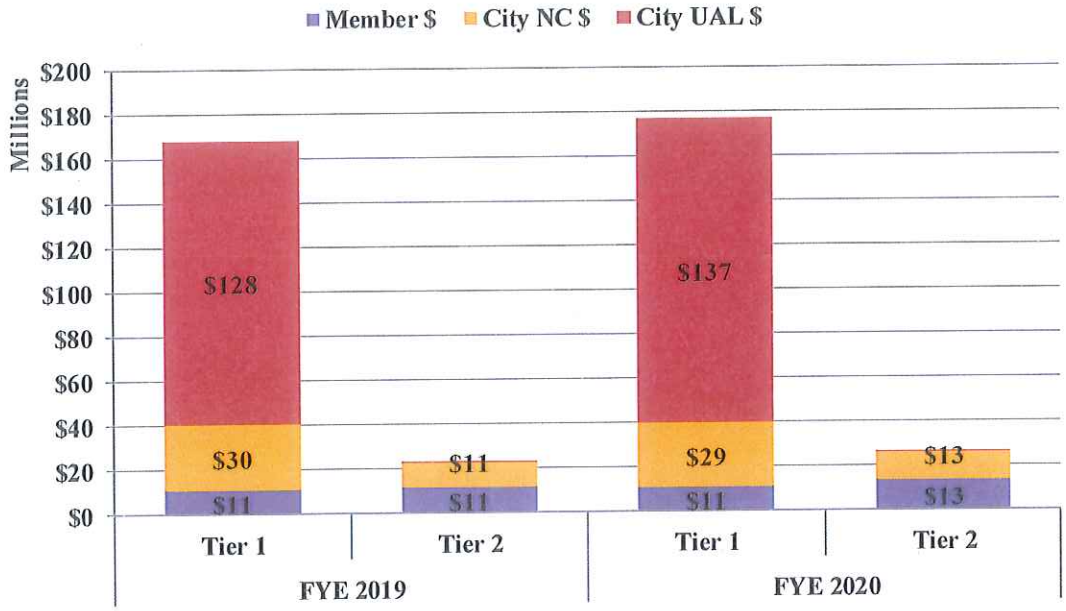
Table I-5 and the chart on the following page summarize the member and City contribution rates and amounts for the fiscal years ending in 2019 and 2020. The Tier 1 UAL payment increased 7.4% from 2019 to 2020, reflecting the investment losses and reduction in discount rate. The Tier 1 normal cost rate increased primarily due to the discount rate reduction, but the Tier 1 normal cost dollar amount decreased due to the decline in Tier 1 active members. The Tier 2 contribution amount increased primarily due to the growing Tier 2 population. In aggregate, The City's contribution amount increased 6.3% while its contribution rate increased 1.24% of payroll.

SECTION I – BOARD SUMMARY

Table I-5

Contribution Rates and Amounts Throughout the Year	FYE 2019	FYE 2020	Change
Member Rates (Excluding Reclassification Payments)			
Tier 1	6.81%	7.06%	0.25%
Tier 2	8.28%	8.33%	0.05%
City Rates and Amounts			
Tier 1 UAL Payment	$ 127,894	$ 137,409	7.4%
Tier 1 Normal Cost/Admin	$ 29,548 18.61%	$ 28,866 19.34%	-2.3% 0.73%
Tier 2 Contribution	$ 11,418 8.28%	$ 13,282 8.33%	16.3% 0.05%
Aggregate Contribution	**$ 168,861 56.92%**	**$ 179,558 58.17%**	**6.3% 1.25%**

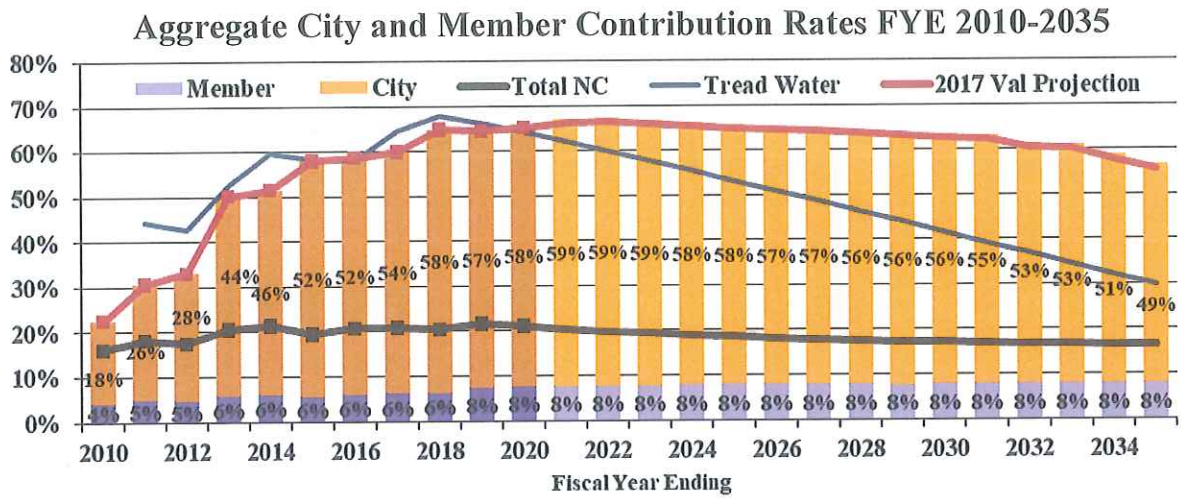
Dollar amounts in thousands



SECTION I – BOARD SUMMARY

By far, the most significant portion of the City's contribution is the Tier 1 UAL payment which is substantially attributable to members who no longer work for the City.

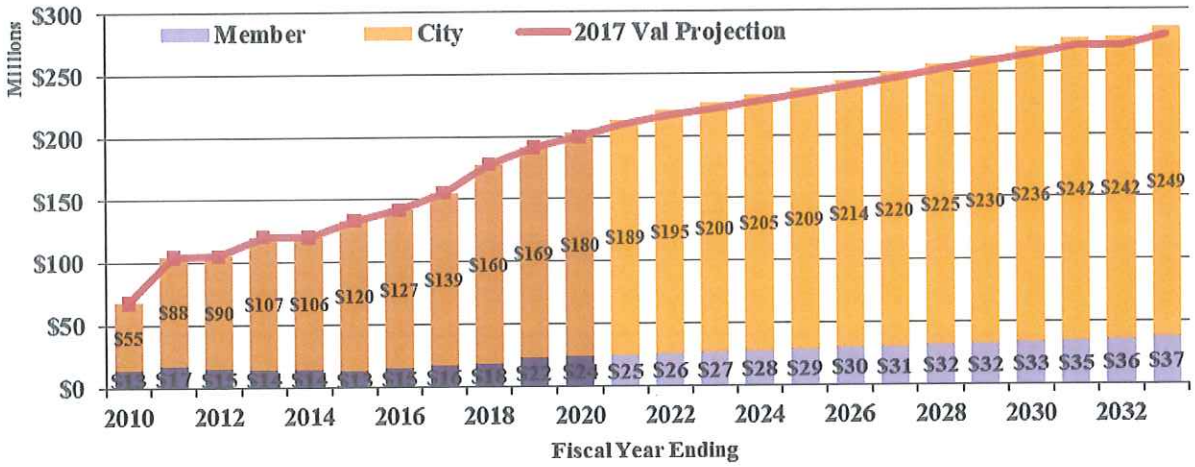
The chart below shows the historical and projected aggregate member contribution rates (purple bars) and City contribution rates (gold bars) compared to the projection of member plus City contributions from the prior valuation, indicated by the red line. These contribution rates assume that all assumptions are met. The black line shows the historical and projected total normal cost rate. The blue line represents the historical and projected tread water rate. Historical rates and rates calculated through the fiscal year ending June 30, 2020 are shown in a darker shade than the projected future contribution rates.



The aggregate City contribution rate has increased dramatically since FYE 2010 primarily due to investment losses, assumption changes, and reductions in payroll that increased the UAL rate. In aggregate, the discount rate over this period has been reduced from 8.25% to 6.75%. Future aggregate City contribution rates are expected to increase slightly in the next few years due to the recognition of recent investment losses, and then gradually decrease over time after that. The gradual decrease in the total rate is driven by the projected gradual decrease in total normal cost rate as Tier 2 becomes a greater proportion of the active membership and the gradual decrease in UAL rate as payroll is expected to grow slightly faster than amortization payments (3.25% vs. 3.00%). After the projection period shown, contribution rates are expected to drop more rapidly as some amortization bases are fully paid off.

The chart on the following page shows historical and projected member (purple bars) and City (gold bars) contribution amounts (assuming contributions throughout the year) compared to the projected amounts shown in the prior valuation. If all actuarial assumptions are exactly met, City contributions are expected to increase at a rate slower than payroll growth from $180 million in FYE 2020 to a peak of approximately $249 million in FYE 2033, before declining as portions of the UAL are paid off.

Historical and Deterministic Projection of Contribution Amounts



Section VI of this report provides additional detail on the contribution rates and the amortization schedules separately by Tier.

SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

Actuarial valuations are based on a set of assumptions about future economic and demographic experience. These assumptions represent a reasonable estimate of future experience, but actual future experience will undoubtedly be different and may be significantly different. This section of the report is intended to identify the primary risks to the plan, provide some background information about those risks, and provide an assessment of those risks.

Identification of Risks

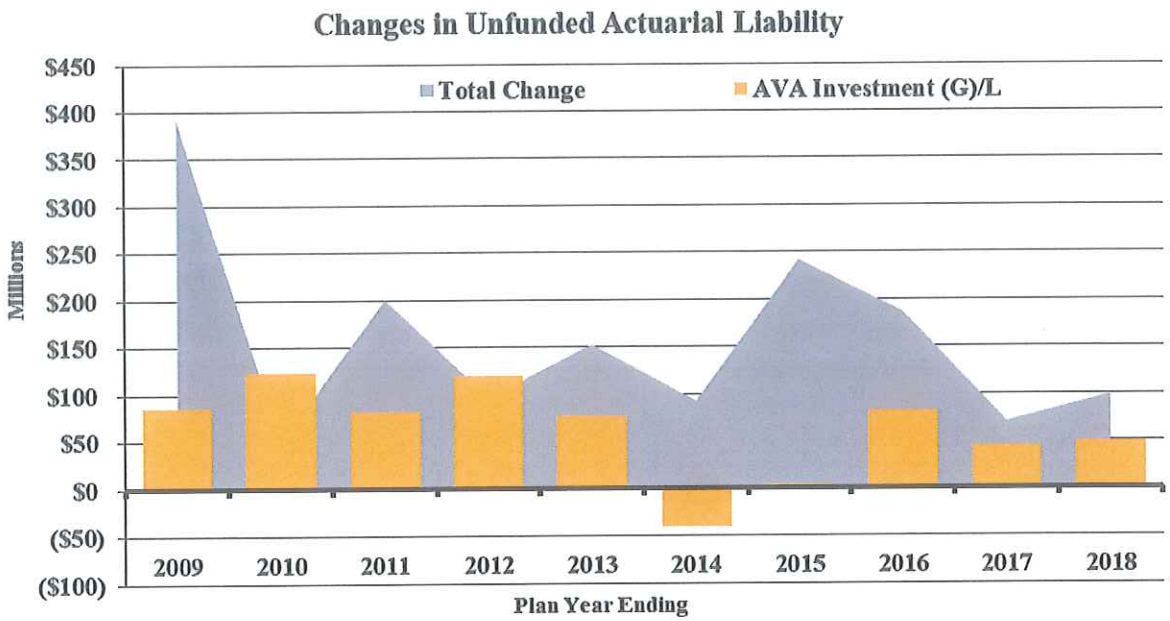
As we have discussed with the Board, the fundamental risk to the System is that the contributions needed to pay the benefits become unaffordable. While there are a number of factors that could lead to contribution amounts becoming unaffordable, we believe the primary risks for this Plan are:

- Investment risk,
- Interest rate risk,
- Longevity and other demographic risks, and
- Assumption change risk.

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

Investment Risk is the potential for investment returns to be different than expected. Lower investment returns than anticipated will increase the Unfunded Actuarial Liability necessitating higher contributions in the future unless there are other gains that offset these investment losses. The potential volatility of future investment returns is determined by the System's asset allocation and the affordability of the investment risk is determined by the amount of assets invested relative to the size of the City.

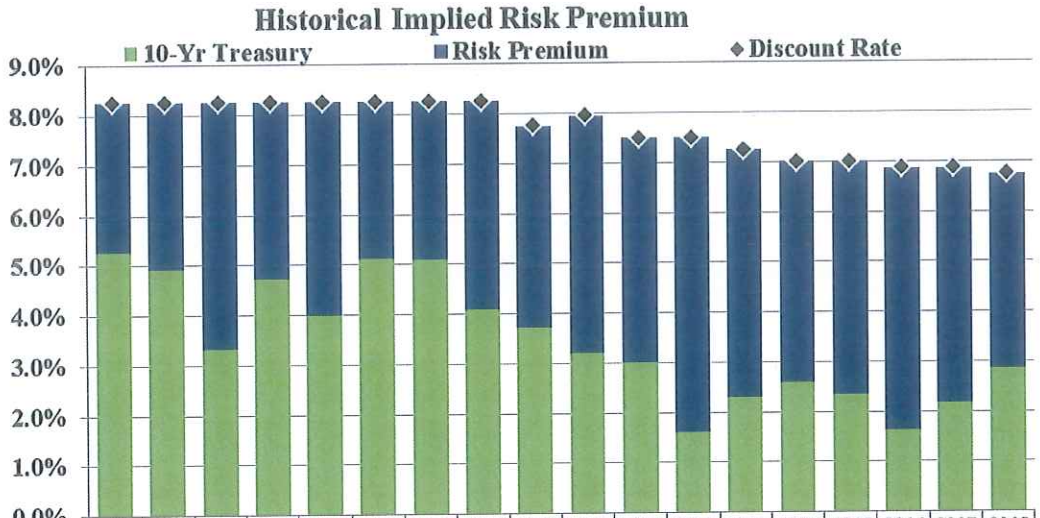
SECTION II – ASSESSMENT AND DISCLOSURE OF RISK



The chart above shows the impact of investment gains and losses on the smoothed Actuarial Value of Assets over the last 10 years compared to the System's total change in UAL. Investment losses have been a significant contributor to the growth in the UAL.

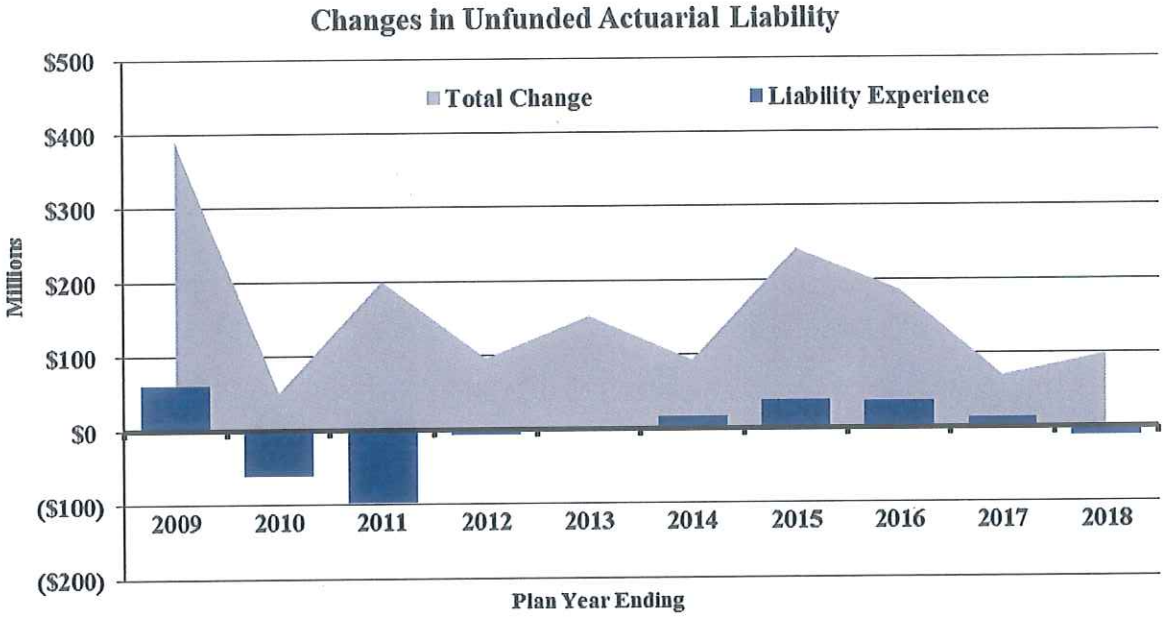
Interest rate risk is the potential for interest rates to be different than expected. For public plans, short-term fluctuations in interest rates have little or no effect as the plan's liability is usually measured based on the expected return on assets. Longer-term trends in interest rates; however, can have a powerful effect. The chart on the following page shows the yield on a 10-year Treasury security compared to the System's assumed rate of return. The difference is a simple measure of the amount of investment risk taken. As interest rates have declined, plans faced a choice: maintain the same level of risk and reduce the expected rate of return; maintain the same expected rate of return and take on more investment risk; or some combination of the two strategies.

SECTION II – ASSESSMENT AND DISCLOSURE OF RISK



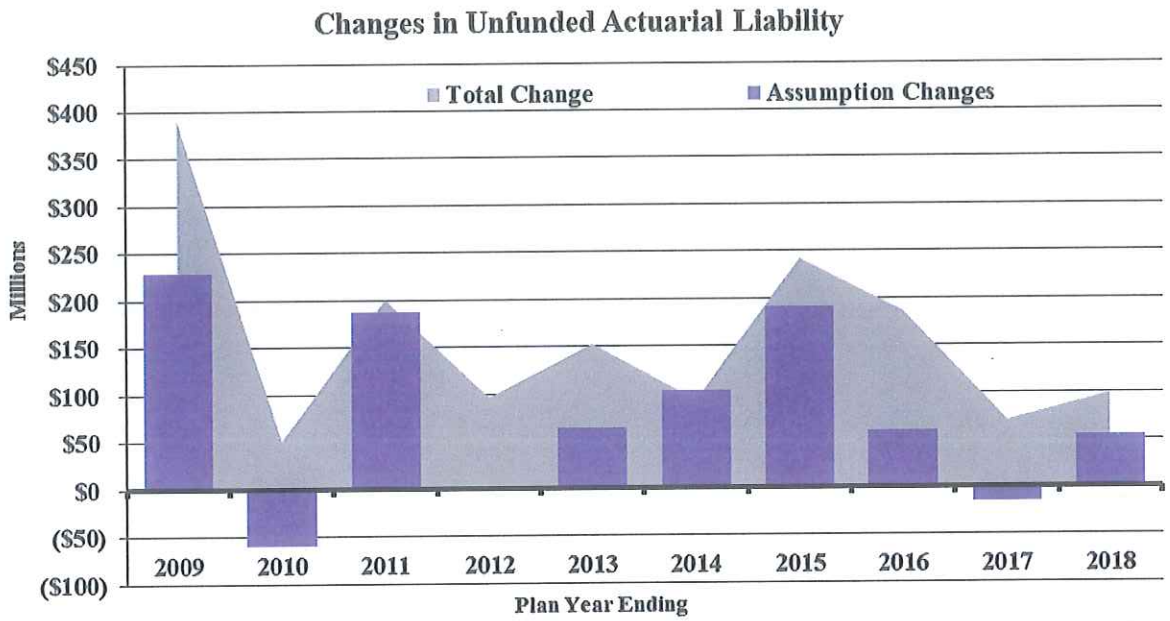
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Risk Premium	3.0%	3.3%	4.9%	3.5%	4.3%	3.1%	3.2%	4.2%	4.0%	4.8%	4.5%	5.9%	5.0%	4.4%	4.6%	5.2%	4.7%	3.9%
10-Yr Treasury	5.3%	4.9%	3.3%	4.7%	4.0%	5.1%	5.1%	4.1%	3.7%	3.2%	3.0%	1.6%	2.3%	2.6%	2.4%	1.6%	2.2%	2.9%
Discount Rate	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	7.8%	8.0%	7.5%	7.5%	7.3%	7.0%	7.0%	6.9%	6.9%	6.8%

Longevity and other demographic risks are the potential for mortality or other demographic experience to be different than expected. Generally, longevity and other demographic risks emerge slowly over time and are often dwarfed by other changes, particularly those due to investment returns. The chart below shows the demographic gains and losses over the last 10 years compared to the total change in the UAL for each year.



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

As shown in the chart below, there have been substantial changes in assumptions increasing the UAL. Most of these changes are due to reducing the discount rate from 8.25% to 6.75% over this period, but it also includes changes to demographic assumptions such as mortality and retirement rates. The reductions in the discount rate largely reflect the impact of declining interest rates on future expected investment returns.



Plan Maturity Measures

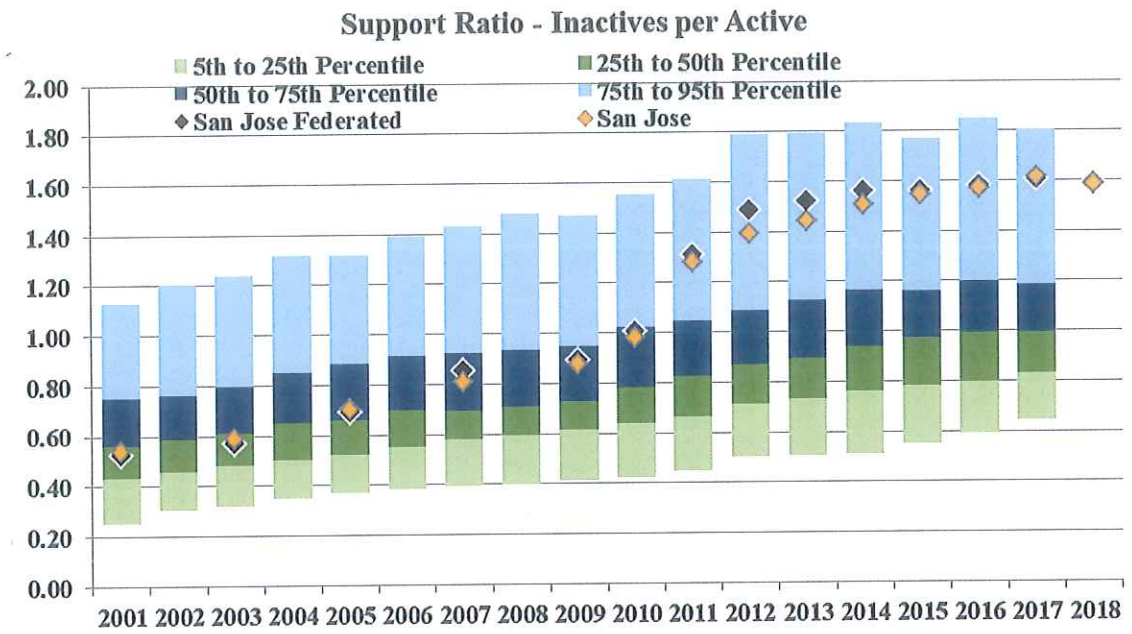
The future financial condition of a mature pension plan is more sensitive to each of the risks identified above than a less mature plan. Before assessing each of these risks, it is important to understand the maturity of the plan compared to other plans and how the maturity has changed over time.

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

SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

Support Ratio (Inactives per Active)

One simple measure of plan maturity is the ratio of the number of inactive members (those receiving benefits or entitled to a deferred benefit) to the number of active members. The revenue base supporting the plan is usually proportional to the number of active members, so a relatively high number of inactives compared to actives indicate a larger plan relative to its revenue base as well.



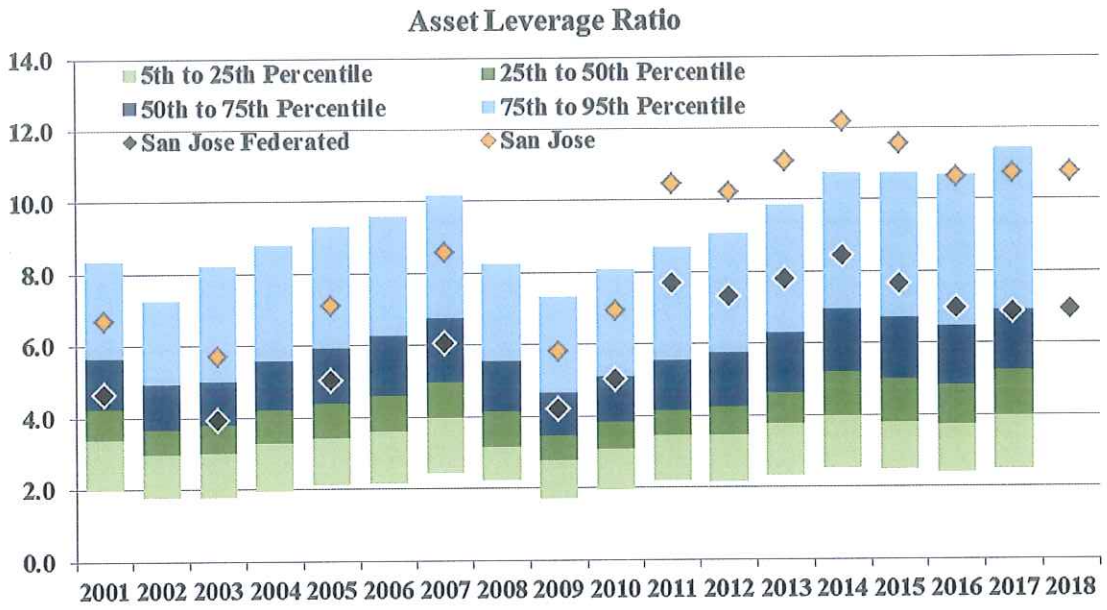
The chart above shows the distribution from the 5th to 95th percentile of support ratios for the plans in the Public Plans Database. The black diamond shows how San José Federated compares, and the gold diamond shows how the combined Federated and Police and Fire plans compare. Through 2007, the System was in the middle of the distribution even as the support ratio increased. However, after the Great Recession, the Plan's support ratio increased dramatically and is now among the highest compared to the plans in the database.

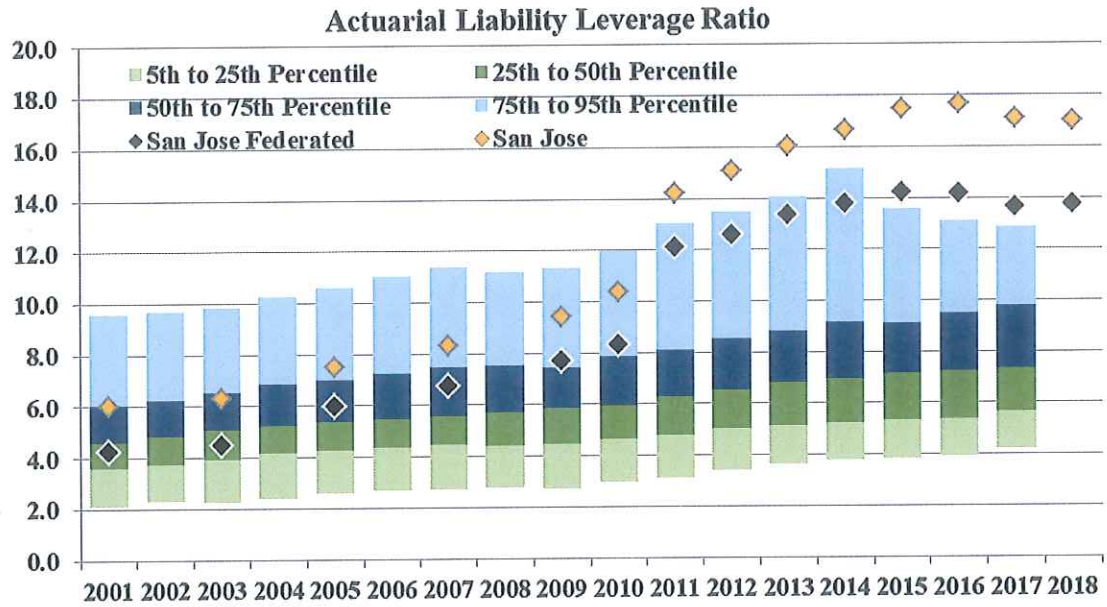
Leverage Ratios

Leverage or volatility ratios measure the size of the plan compared to its revenue base more directly. An asset leverage ratio of 5.0, for example, means that if the System experiences a 10% loss on assets compared to the expected return, the loss would be equivalent to 50% of payroll. The same investment loss for a plan with an asset leverage ratio of 10.0 would be equivalent to 100% of payroll.

As the System becomes better funded, the asset leverage ratio will increase, and if it was 100% funded, the leverage ratio would equal the Actuarial Liability (AL) leverage ratio. The AL

leverage ratio also indicates how sensitive the System is to experience gains and losses or assumption changes. For example, an assumption change that increases the AL by 5% would add a liability equivalent to about 50% of payroll if the AL leverage ratio is 10.0.





The charts above show the distribution from the 5th to 95th percentile of asset and Actuarial Liability leverage ratios for the plans in the Public Plans Database. The black diamond shows how San José Federated compares, and the gold diamond shows how the combined Federated

and Police and Fire plans compare. As we have discussed with the Board for several years and as is shown in the charts on the previous page, the leverage ratios for the Federated System are higher than most plans and are significantly higher when combined with Police and Fire, indicating that San José is much more sensitive to risk than most plan sponsors.

Assessing Costs and Risks

The fundamental risk to the System is that the contributions needed to fund the benefits become unaffordable. Assessing this risk, however, is complex because there is no bright line of what is unaffordable and the contribution amounts themselves are affected not just by the experience of the System, but also by the interaction of that experience and decisions by the Board related to assumptions, asset smoothing methods, and amortization periods.

Point in Time Assessments

To assess the risks of the System independent of the contribution strategy, there are two measures on which to focus: normal cost and interest cost. The normal cost represents the expected cost of the benefits attributable to the next year of service. The interest cost represents the interest on the UAL calculated using the discount rate. Combined, the normal cost plus the interest cost are referred to as the Tread Water Cost. If actual contributions are less than the Tread Water Cost, the UAL would be expected to grow; and if actual contributions are greater than the Tread Water Cost, the UAL would be expected to shrink.

The stacked bars in the chart on the next page show the normal cost and interest cost at the current discount rate compared to a discount rate 100 basis points lower. The black line shows the combined FYE 2020 employee and City contribution rate based on the two discount rates.

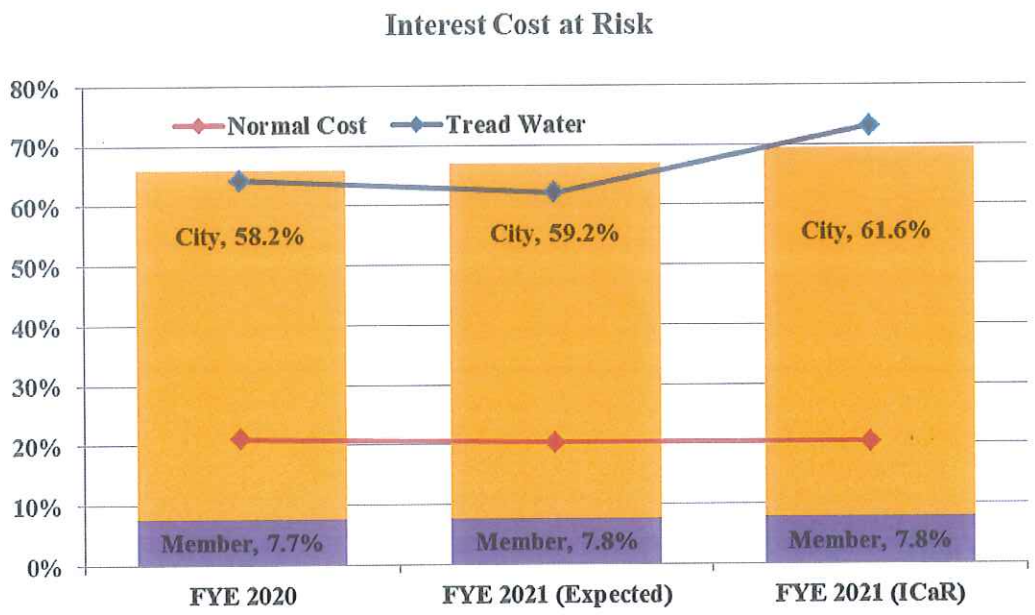
SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

Decreasing the discount rate by 100 basis points would increase the normal cost by over 5% of payroll and the tread water rate by over 10% of payroll. Using the current amortization methods, the total contribution rate would increase by about 18% of payroll to almost 84% of pay.

The recent declines in discount rates have been largely driven by declines in interest rates that affect expectations of future investment returns. If there are further declines in interest rates or if there is a desire or need to reduce investment risk that reduces expected returns, the discount rate may need to be reduced further and the normal cost and interest cost will increase.

Actual investment returns do not affect the normal cost, but they directly affect the interest cost. One simple measure of the risk inherent in the investment policy is the Interest Cost at Risk (ICaR), which is the amount that the interest cost would increase if the investment returns for one year were two standard deviations below the expected return. Based on the capital market assumptions of Meketa over a 10-year horizon, the standard deviation for the current portfolio is 12.3%, making the investment return used to determine ICaR -17.8% (6.75% – 2 x 12.3%).

The chart on the following page shows the contribution rates for the FYE 2020, determined in this valuation report in the far left bar graph and the expected FYE 2021 contribution rates based on a 6.75% investment rate of return for FYE 2019, in the middle of the chart. The FYE 2021 bar graph on the right shows the impact of a -17.8% return for FYE 2019. The tread water cost would increase by about 11% of pay. The City contribution rate for FYE 2021 in this scenario would be 61.6% of pay and expected to increase in future years as the investment loss is recognized over the 5-year smoothing period.



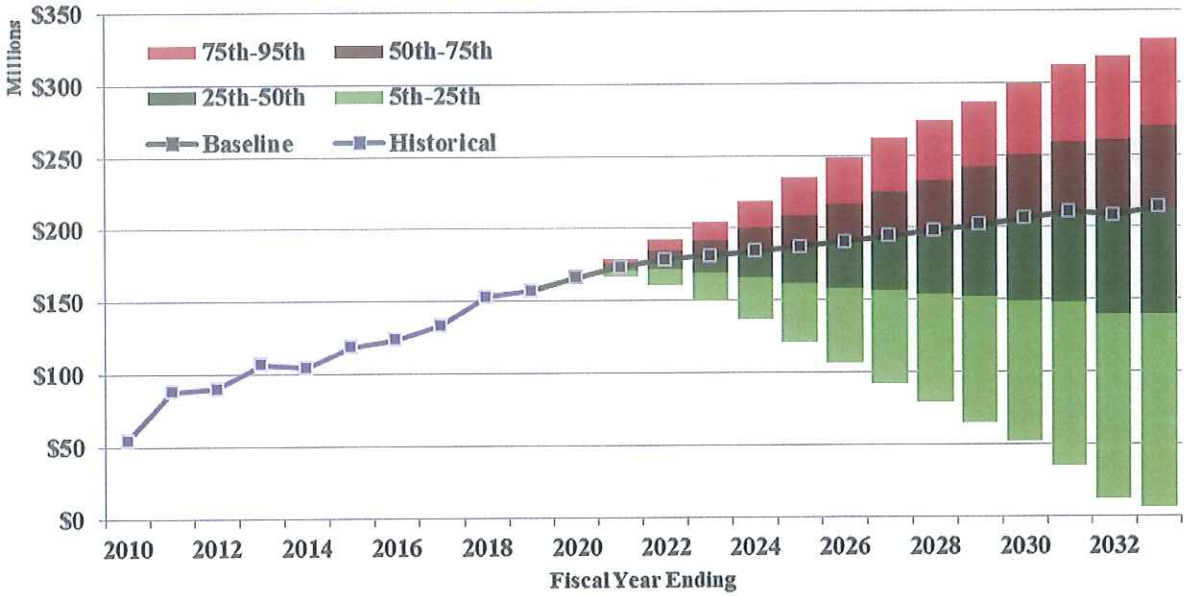
Stochastic Projections

If experience has taught us anything, it is that there is a significant level of uncertainty in projections of the future. The largest source of uncertainty is the projection of investment returns. In order to better understand the potential impact of investment returns on the System, we have included some stochastic projections in the dashboard and in this section of the report. The stochastic projections assume a geometric return of 6.75% and a standard deviation of 12.3% (based on Meketa's capital market assumptions for the System's investment portfolio). Each projection contains 10,000 trials that are 15 years in length.

The chart on the next page shows the historical and stochastically projected City contribution amounts for Tier 1. The purple line represents the amounts paid historically or the amounts already determined by an actuarial valuation, and the black line shows the projected contribution amount for each year if all assumptions are met. The colored ranges represent different percentiles of the 10,000 trials. This range is intended to convey the degree of uncertainty in the projections based on future investment returns.

SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

Historical and Stochastically Projected Tier 1 City Contribution Amounts

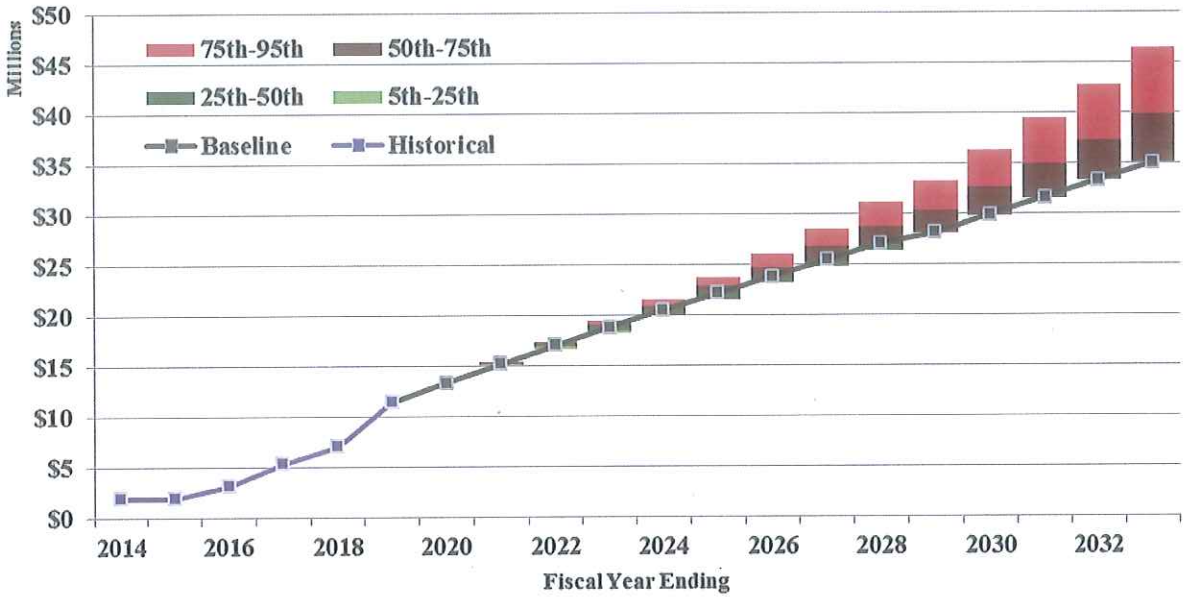


The chart shows a wide range of potential City contribution amounts depending on actual investment returns. The range between the 5th and 95th percentile for FYE 2026 (based on the 2024 actuarial valuation) is from a contribution of $107 million to a contribution of $248 million. This range is largely driven by the standard deviation of the investment portfolio.

The chart on the following page shows the historical and stochastically projected City contribution amounts for Tier 2. The range of contribution amounts is much narrower for Tier 2 than Tier 1. Tier 2 is projected to grow quickly and assets are relatively small right now. As a result, actual investment returns have a limited impact on future contribution amounts while the rate of growth will have a larger impact.

SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

Historical and Stochastically Projected Tier 2 City Contribution Amounts



More Detailed Assessment

A more detailed assessment is always valuable to enhance the understanding of the risks identified above. While more detail would provide some additional value, we don't believe it is necessary to perform an in-depth analysis every year. Consequently, we recommend the Board review the less detailed analysis provided above annually and consider a more detailed analysis periodically and when there is a substantial change in the financial position or maturity of the plan.

SECTION III – CERTIFICATION

The purpose of this report is to present the June 30, 2018 Actuarial Valuation of the City of San José Federated City Employees' Retirement System ("System"). This report is for the use of the System and the City of San José.

In preparing our report, we relied on information, some oral and some written, supplied by the Plan. This information includes, but is not limited to, the 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.

The wage inflation assumption, amortization payment growth rate, and mortality improvement scale were adopted by the Board of Administration with our input at the December 21, 2017 Board meeting. The discount rate assumption was adopted by the Board of Administration with our input at the November 15, 2018 Board meeting. The Tier 2 retirement rates were adopted at the May 4, 2017 Board meeting based on a special analysis presented at that meeting. All other assumptions in this report were adopted at the November 19, 2015 Board meeting based on recommendations from our Experience Study covering plan experience during the period from July 1, 2010 through June 30, 2015. Please refer to the experience study report for an explanation of the rationale for each assumption.

The liability measures and funding ratios in this report are for the purpose of establishing contribution rates. These measures are not appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the System's benefit obligations.

Future actuarial measurements may differ significantly from the current measurements due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; and, changes in plan provisions or applicable law.

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 that 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.

This report was prepared for the City of San José Federated City Employees' Retirement System for the purposes described herein. Other users of this report are not intended users as defined in the Actuarial Standards of Practice, and Cheiron assumes no duty or liability to any other user.

William R. Hallmark, ASA, EA, FCA, MAAA
Consulting Actuary

Steven M. Hastings, FSA, EA, MAAA
Consulting Actuary

SECTION IV – ASSETS

The System uses two different asset measurements: the Market Value and Actuarial Value of Assets. The market value represents the value of the assets if they were liquidated on the valuation date. The actuarial value smooths annual investment returns over five years to reduce the impact of short-term investment volatility on employer contribution rates. The Market Value of Assets is used primarily for reporting and disclosure, and the Actuarial Value of Assets is used primarily to determine contribution rates.

This section shows the changes in the Market Value of Assets and develops the Actuarial Value of Assets.

Statement of Change in Market Value of Assets

Table IV-1 shows the changes in the Market Value of Assets for the current and prior fiscal years for each tier.

Table IV-1

Change in Market Value of Assets	Fiscal Year Ending 2018			Fiscal Year Ending 2017		
	Tier 1	Tier 2	Total	Tier 1	Tier 2	Total
Beginning Market Value	$ 1,945,723	$ 27,068	$ 1,972,791	$ 1,843,157	$ 15,723	$ 1,858,880
Contributions						
Member	11,406	9,095	20,501	11,493	5,735	17,228
City	147,675	9,095	156,770	132,749	5,735	138,484
Total	$ 159,081	$ 18,190	$ 177,271	$ 144,242	$ 11,470	$ 155,712
Net Investment Earnings	115,423	2,069	117,492	144,325	1,684	146,009
Benefit Payments	(192,847)	(553)	(193,400)	(183,060)	(371)	(183,431)
Administrative Expenses	(4,761)	(61)	(4,822)	(4,345)	(34)	(4,379)
Measure F Transfers	1,289	(1,289)	0	1,404	(1,404)	0
Market Value, End of Year	**$ 2,023,908**	**$ 45,424**	**$ 2,069,332**	**$ 1,945,723**	**$ 27,068**	**$ 1,972,791**
Estimated Rate of Return	5.8%	6.0%	5.8%	7.6%	7.9%	7.6%

Dollar amounts in thousands

Under Measure F, certain Tier 2 members who had previous Tier 1 service or prior service with a reciprocal employer were reclassified to Tier 1. The transfers shown above represent the Tier 2 assets for those members that have been reclassified to Tier 1. The amounts in FYE 2017 were for rehires and were transferred as of the end of the year. The amounts in FYE 2018 were for classic members and were transferred as of the beginning of the fiscal year.

The net investment earnings for the year ended June 30, 2018 represent approximately a 5.8% return on the Market Value of Assets compared to an assumed return of 6.875%. This return

produced an investment loss of $22.6 million for the year ending June 30, 2018. For the year ended June 30, 2017, the net investment return was approximately 7.6% (6.875% was assumed), which produced an investment gain of $14.7 million.

Actuarial Value of Assets

To determine on-going contributions, most pension systems utilize an Actuarial Value of Assets that smooths year-to-year market value returns in order to reduce the volatility of contributions.

The Actuarial Value of Assets is calculated by recognizing the deviation of actual investment returns compared to the expected return (6.875% for FYE 2018 and 2017, and 7.00% for FYE 2016 and 2015) over a five-year period. The dollar amount of the expected return on the Market Value of Assets is determined using actual contributions, benefit payments, and administrative expenses during the year. Any difference between this amount and the actual net investment earnings is considered a gain or loss. Table IV-2 on the next page shows the calculation of the Actuarial Value of Assets separately for Tier 1 and Tier 2. For each of the last four years, it shows the actual earnings, the expected earnings, the gain or loss, and the portion of the gain or loss that is not recognized in the current Actuarial Value of Assets. These deferred amounts will be recognized in future years.

SECTION IV – ASSETS

Table IV-2

Development of Actuarial Value of Assets

	Tier 1			Tier 2		
	Basic	COLA	Total	Basic	COLA	Total
Market Value of Assets	$ 1,350,727	$ 673,181	$ 2,023,908	$ 39,746	$ 5,678	$ 45,424
FYE 2018						
Actual Earnings	$ 77,863	$ 37,559	$ 115,423	$ 1,828	$ 242	$ 2,070
Expected Earnings	92,262	45,453	137,715	2,091	276	2,366
Investment Gain or (Loss)	(14,399)	(7,894)	(22,292)	(263)	(34)	(296)
Deferred (80%)	(11,519)	(6,315)	(17,834)	(210)	(27)	(237)
FYE 2017						
Actual Earnings	$ 99,441	$ 44,886	$ 144,327	$ 1,513	$ 171	$ 1,684
Expected Earnings	88,844	41,053	129,897	1,307	148	1,455
Investment Gain or (Loss)	10,597	3,833	14,430	206	23	229
Deferred (60%)	$ 6,358	$ 2,299	$ 8,658	$ 123	$ 14	$ 137
FYE 2016						
Actual Earnings	$ (24,477)	$ (10,310)	$ (34,787)	$ (203)	$ (21)	$ (224)
Expected Earnings	95,959	41,366	137,325	771	78	849
Investment Gain or (Loss)	(120,436)	(51,676)	(172,112)	(974)	(99)	(1,073)
Deferred (40%)	$ (48,174)	$ (20,670)	$ (68,845)	$ (390)	$ (39)	$ (429)
FYE 2015						
Actual Earnings	$ (11,897)	$ (4,691)	$ (16,588)	$ (49)	$ (5)	$ (54)
Expected Earnings	100,386	40,564	140,949	403	37	440
Investment Gain or (Loss)	(112,283)	(45,255)	(157,537)	(452)	(42)	(494)
Deferred (20%)	$ (22,457)	$ (9,051)	$ (31,507)	$ (90)	$ (8)	$ (99)
Total Deferred Gain or (Loss	$ (75,792)	$ (33,737)	$ (109,528)	$ (567)	$ (61)	$ (628)
Actuarial Value of Assets	**$ 1,426,519**	**$ 706,917**	**$ 2,133,436**	**$ 40,313**	**$ 5,739**	**$ 46,052**
Ratio of Actuarial to Market	105.6%	105.0%	105.4%	101.4%	101.1%	101.4%
Estimated Rate of Return	4.5%	4.6%	4.6%	5.9%	6.1%	5.9%

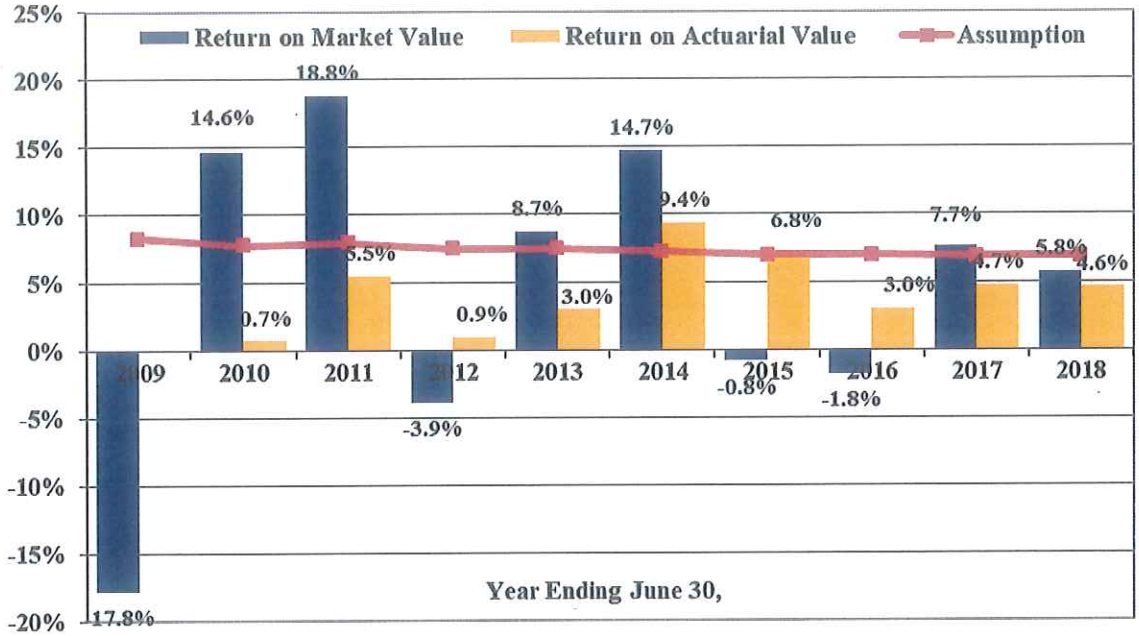
Dollar amounts in thousands

On an Actuarial Value of Assets basis, the aggregate return for the year ending June 30, 2018 was 4.5% for Tier 1 and 5.9% for Tier 2, both less than the assumed return of 6.875% and the return on the Market Value of Assets. This return on the Actuarial Value of Assets produced an investment loss of $49.9 million for the year ending June 30, 2018.

As shown in the chart on the following page, over the last 10 years the investment return on the Market Value of Assets has varied significantly from -17.8% in 2009 to 18.8% in 2011. The geometric average return was 4.9% and 4.1% over the last five and 10 years, respectively. The

return on the Actuarial Value of Assets is more stable than on the market value with a geometric average of 5.7% over the last five years. The return on the Actuarial Value of Assets was not reported prior to 2010 when valuations were performed every two years.

Historical Rates of Return



SECTION V – MEASURES OF LIABILITY

This section presents detailed information on liability measures for the System for funding purposes, including:

- Present value of future benefits,
- Normal cost,
- Actuarial Liability, and
- An analysis of changes in the Unfunded Actuarial Liability during the year.

Present Value of Future Benefits: The present value of future benefits represents the expected amount of money needed today if all assumptions are met to pay for all benefits both earned as of the valuation date and expected to be earned in the future by current plan members under the current plan provisions. Table V-1 below shows the present value of future benefits as of June 30, 2018 and June 30, 2017 separately by Tier.

Table V-1

Present Value of Future Benefits

	June 30, 2018			June 30, 2017	
	Basic	COLA	Total	Total	% Change
Tier 1					
Actives	$ 917,736	$ 377,520	$ 1,295,256	$ 1,311,384	-1.2%
Deferred Vested	163,387	69,121	232,508	220,155	5.6%
In Pay Status	1,562,379	1,203,231	2,765,610	2,609,988	6.0%
Tier 1 Total	**$ 2,643,502**	**$ 1,649,872**	**$ 4,293,374**	**$ 4,141,527**	**3.7%**
Tier 2					
Actives	$ 192,006	$ 33,754	$ 225,760	$ 174,005	29.7%
Deferred Vested	3,532	176	3,708	2,245	65.2%
In Pay Status	160	25	185	7	2542.9%
Tier 2 Total	**$ 195,698**	**$ 33,955**	**$ 229,653**	**$ 176,257**	**30.3%**
Total	**$ 2,839,200**	**$ 1,683,827**	**$ 4,523,027**	**$ 4,317,784**	**4.8%**

Dollar amounts in thousands

SECTION V – MEASURES OF LIABILITY

Normal Cost

Under the Entry Age (EA) actuarial cost method, the present value of future benefits for each individual is spread over the individual's expected working career under the System as a level percentage of the individual's expected pay. The normal cost rate is determined as the value, as of entry age into the System, of each member's projected future benefits divided by the value, also at entry age, of the each member's expected future salary. The normal cost rate is multiplied by current salary to determine each member's normal cost. The normal cost of the System is the sum of the normal costs for each individual. The normal cost represents the expected amount of money needed to fund the benefits attributed to the next year of service under the Entry Age actuarial cost method. In addition, administrative expenses are added to the EA normal cost rate to get the total normal cost rate. Table V-2 below shows the EA normal cost and Total normal cost rates as of June 30, 2018 and June 30, 2017 separately by Tier. The increase in normal cost rate for each Tier is primarily attributable to the reduction of the discount rate from 6.875% to 6.75%.

Table V-2

Normal Cost	June 30, 2018			June 30, 2017	
	Basic	COLA	Total	Total	% Change
Tier 1					
Retirement	$ 19,583	$ 8,036	$ 27,619	$ 27,962	-1.2%
Termination	7,035	2,184	9,219	9,458	-2.5%
Death	559	232	791	797	-0.8%
Disability	915	404	1,319	1,344	-1.9%
Reciprocity	549	236	785	789	-0.5%
Total	**$ 28,641**	**$ 11,092**	**$ 39,733**	**$ 40,350**	**-1.5%**
PV of Annual Payroll	$ 156,433	$ 156,433	$ 156,433	$ 165,215	-5.3%
Normal Cost Rate	18.31%	7.09%	25.40%	24.42%	4.0%
Admin Expense	0.67%	0.33%	1.00%	1.00%	0.0%
Total Rate	**18.98%**	**7.42%**	**26.40%**	**25.42%**	**3.9%**
Tier 2					
Retirement	$ 10,797	$ 1,956	$ 12,753	$ 10,480	21.7%
Termination	3,178	376	3,554	2,763	28.6%
Death	479	77	556	429	29.6%
Disability	554	99	653	537	21.6%
Total	**$ 15,008**	**$ 2,508**	**$ 17,516**	**$ 14,209**	**23.3%**
PV of Annual Payroll	$ 115,893	$ 115,893	$ 115,893	$ 95,615	21.2%
Normal Cost Rate	12.95%	2.16%	15.11%	14.86%	1.7%
Admin Expense	0.88%	0.12%	1.00%	1.00%	0.0%
Total Rate	**13.83%**	**2.28%**	**16.11%**	**15.86%**	**1.6%**

Dollar amounts in thousands

SECTION V – MEASURES OF LIABILITY

Actuarial Liability

The Actuarial Liability represents the expected amount of money needed today if all assumptions are met to pay for benefits attributed to service prior to the valuation date under the Entry Age actuarial cost method. As such, it is the amount of assets targeted by the actuarial cost method for the System to hold as of the valuation date. It is not the amount necessary to settle the obligation. Table V-3 below shows the Actuarial Liability as of June 30, 2018 and June 30, 2017 separately by Tier.

Table V-3

Actuarial Liability	June 30, 2018			June 30, 2017	
	Basic	COLA	Total	Total	% Change
Tier 1					
Actives					
Retirement	$ 691,846	$ 282,546	$ 974,392	$ 980,773	-0.7%
Termination	35,834	20,678	56,512	58,811	-3.9%
Death	6,162	2,340	8,502	8,493	0.1%
Disability	7,273	2,889	10,162	10,547	-3.7%
Total Actives	$ 741,115	$ 308,453	$ 1,049,568	$ 1,058,624	-0.9%
Deferred Vested	$ 163,387	$ 69,121	$ 232,508	$ 220,155	5.6%
In Pay Status					
Retirees	$ 1,439,073	$ 1,076,761	$ 2,515,834	$ 2,370,257	6.1%
Beneficiaries	78,306	82,592	160,898	153,241	5.0%
Disabled	45,000	43,878	88,878	86,490	2.8%
Total In Pay Status	$ 1,562,379	$ 1,203,231	$ 2,765,610	$ 2,609,988	6.0%
Tier 1 Total	**$ 2,466,881**	**$ 1,580,805**	**$ 4,047,686**	**$ 3,888,767**	**4.1%**
Tier 2					
Actives					
Retirement	$ 34,559	$ 6,332	$ 40,891	$ 27,311	49.7%
Termination	4,058	1,256	5,314	3,666	45.0%
Death	1,431	249	1,680	1,056	59.1%
Disability	1,145	212	1,357	912	48.8%
Total Actives	$ 41,193	$ 8,049	$ 49,242	$ 32,945	49.5%
Deferred Vested	3,532	176	3,708	2,245	65.2%
In Pay Status					
Retirees	$ 160	$ 25	$ 185	$ 7	2542.9%
Beneficiaries	0	0	0	0	
Disabled	0	0	0	0	
Total In Pay Status	$ 160	$ 25	$ 185	$ 7	2542.9%
Tier 2 Total	**$ 44,885**	**$ 8,250**	**$ 53,135**	**$ 35,197**	**51.0%**
System Total	**$ 2,511,766**	**$ 1,589,055**	**$ 4,100,821**	**$ 3,923,964**	**4.5%**

Dollar amounts in thousands

SECTION VI – CONTRIBUTIONS

Amortization of the Unfunded Actuarial Liability

Under the contribution allocation procedure employed by the System, there are two components to the contribution: the normal cost (including administrative expenses) and an amortization payment on the Unfunded Actuarial Liability (UAL). The normal cost rate was developed in Section V. This section develops the UAL contribution rate.

The difference between the Actuarial Liability and the Actuarial Value of Assets is the Unfunded Actuarial Liability. The UAL is made up of the unamortized UAL as of June 30, 2017 plus the impact of the 2018 experience and assumption changes, and the 2017 UAL payment that is made by the City on July 1, 2018.

Table VI-1 on the following page provides the payment schedule to amortize the Tier 1 UAL as of June 30, 2009 originally over 30 years, and any additional actuarial gains/(losses) or method changes after June 30, 2009 over 20 years and assumption changes over 25 years from the valuation in which they are first recognized. For members who were reclassified under Measure F from Tier 2 to Tier 1, a portion of the increase in liability for the reclassification is to be paid by members. The outstanding amount owed by members is shown in the table along with the aggregate payment amount based on a 20-year amortization.

SECTION VI – CONTRIBUTIONS

Table VI-1

UAL Amortization - Tier 1	Outstanding Balance			Remaining	Payment		
	Basic	COLA	Total	Period	Basic	COLA	Total
Members - Measure F							
EE Rehire UAL Pmt	$ 567	$ 416	$ 982	20	$ 42	$ 31	$ 72
Classic UAL Pmt	560	394	954	20	41	29	70
Total	$ 1,126	$ 810	$ 1,936		$ 83	$ 59	$ 142
City UAL							
Golden Handshake	$ 17,060	$ 4,148	$ 21,208	21	$ 1,211	$ 295	$ 1,506
2009 UAL	611,255	149,688	760,943	21	43,405	10,629	54,035
2010 (Gain) or Loss	41,806	3,047	44,852	12	4,493	327	4,820
2010 Assumption Change	(34,341)	(19,064)	(53,405)	17	(2,827)	(1,569)	(4,396)
2011 (Gain) or Loss	8,446	(11,151)	(2,705)	13	852	(1,125)	(273)
2011 Assumption Changes	107,535	64,814	172,349	18	8,496	5,121	13,616
2012 (Gain) or Loss	(177,628)	285,894	108,266	14	(16,912)	27,220	10,308
SRBR Elimination	(39,786)		(39,786)	14	(3,788)		(3,788)
2013 (Gain) or Loss	48,781	20,390	69,171	15	4,406	1,842	6,248
2013 Assumption Changes	30,696	30,096	60,793	20	2,253	2,209	4,462
2014 (Gain) or Loss	(22,161)	(2,264)	(24,425)	16	(1,907)	(195)	(2,102)
2014 Assumption Changes	57,765	42,730	100,495	21	4,102	3,034	7,136
2015 (Gain) or Loss	27,786	19,703	47,489	17	2,287	1,622	3,909
2015 Assumption Changes	96,360	106,898	203,259	22	6,634	7,360	13,994
2016 (Gain) or Loss	76,500	33,995	110,495	18	6,044	2,686	8,730
2016 Assumption Changes	32,131	27,417	59,549	23	2,149	1,834	3,983
2017 (Gain) or Loss	41,292	17,611	58,903	19	3,140	1,339	4,479
Measure F	4,041	2,992	7,033	20	349	258	607
2017 Assumption Changes	(12,647)	(4,713)	(17,360)	24	(823)	(307)	(1,130)
2018 (Gain) or Loss	32,991	15,518	48,508	20	2,421	1,139	3,560
2018 Assumption Change	28,962	24,005	52,967	25	1,838	1,523	3,361
7/1/2018 Payment	62,393	61,323	123,716				
Total	$ 1,039,236	$ 873,078	$ 1,912,314		$ 67,824	$ 65,243	$133,066
Grand Total	**$ 1,040,362**	**$ 873,888**	**$ 1,914,250**		**$ 67,906**	**$ 65,302**	**$133,208**

Dollar amounts in thousands

Table VI-2 on the following page provides the payment schedule to amortize the Tier 2 UAL as of June 30, 2018 over 10 years. The amortization payment for the 2015 assumption changes was phased in over a 3-year period such that the payment in the first year was one third of the regular amortization payment. With this valuation, the phase-in period is complete. The amortization payments increase 3.00% each year while payroll is expected to increase 3.25% each year. As a result, payments are expected to become a slightly smaller percentage of combined Tier 1 and Tier 2 payroll each year.

SECTION VI – CONTRIBUTIONS

Table VI-2

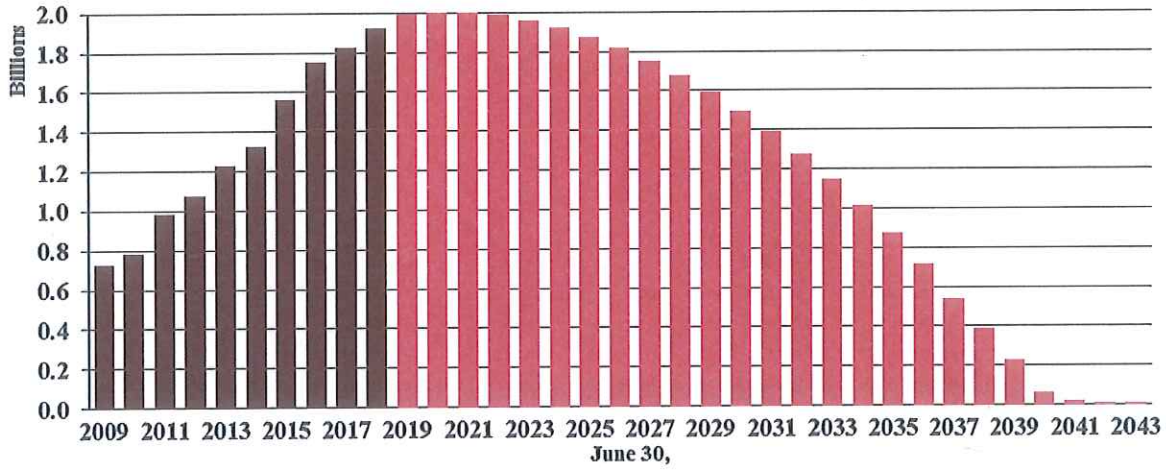
Table V-2
UAL Amortization - Tier 2

	Outstanding Balance			Remaining	Payment		
	Basic	COLA	Total	Period	Basic	COLA	Total
2013 (Gain) or Loss	$ 37	$ 9	$ 46	9	$ 5	$ 1	$ 6
2013 Assumption Changes	1	(1)	0	9	0	(0)	0
2014 (Gain) or Loss	(578)	1	(577)	9	(79)	0	(79)
2014 Assumption Changes	88	18	105	9	12	2	14
2015 (Gain) or Loss	671	162	833	9	91	22	113
2015 Assumption Changes	317	87	404	9	43	12	55
2016 (Gain) or Loss	(694)	150	(544)	9	(95)	20	(74)
2016 Assumption Changes	364	79	443	9	50	11	60
2017 (Gain) or Loss	(691)	(24)	(715)	9	(94)	(3)	(97)
Measure F	3,627	1,823	5,450	9	494	248	743
2017 Assumption Changes	1,264	341	1,605	9	172	46	219
2018 (Gain) or Loss	(1,549)	(786)	(2,335)	10	(193)	(98)	(291)
2018 Assumption Changes	1,130	301	1,430	10	141	38	178
7/1/2018 Payment	586	352	938				
Total	**$ 4,571**	**$ 2,512**	**$ 7,083**		**$ 548**	**$ 300**	**$ 848**

Dollar amounts in thousands

The chart below shows the historical UAL and its projected decline if all assumptions are met as unrecognized investment gains and losses from the asset smoothing method are recognized over the next four years and as payments are made on the amortization schedules over the next 25 years.

Historical and Deterministic Projected Unfunded Actuarial Liability



This amortization structure results in a total UAL rate of 44.7% of payroll for FYE 2020, which is slightly more than the amount needed to pay the interest on the UAL based on the Market Value of Assets (44.4% of payroll). As a result, the dollar amount of the UAL is expected to start decreasing after FYE 2020.

Contribution Rates and Amounts

Tier 1 members pay 3/11ths of the EA normal cost (including administrative expenses, but excluding reciprocity normal cost). Tier 1 members who were rehired into Tier 2 and then returned to Tier 1 under Measure F also pay half of the increased cost attributable to their Tier 2 service. For Tier 1, the City pays 8/11ths of the EA normal cost (including administrative expenses, but excluding reciprocity normal cost) plus the reciprocity normal cost and the UAL payments shown above. The total contribution cannot be less than the normal cost.

For Tier 2, members and the City each pay half of the EA normal cost, half of administrative expenses, and half of the UAL payments. However, the member's UAL contribution rate cannot increase by more than 0.33% of pay each year. The City contributes any amounts in excess of this cap that would otherwise be contributed by the member. The member and City contribution rates each cannot be less than 50% of the normal cost rate.

Table VI-3 shows the components of the member contribution rates for FYE 2020 and 2019.

Table VI-3

Member Contribution Rates	Fiscal Year Ending 2020			Fiscal Year Ending 2019		
	Basic	COLA	Total	Basic	COLA	Total
Tier 1						
Normal Cost Rate	4.90%	1.89%	6.79%	4.74%	1.79%	6.53%
Admin Expense Rate	0.18%	0.09%	0.27%	0.19%	0.09%	0.28%
Regular Member Rate	**5.08%**	**1.98%**	**7.06%**	**4.93%**	**1.88%**	**6.81%**
Measure F UAL Rate	0.06%	0.04%	0.10%	0.03%	0.01%	0.04%
Average Member Rate	**5.14%**	**2.02%**	**7.16%**	**4.96%**	**1.89%**	**6.85%**
Tier 2						
Normal Cost Rate	6.48%	1.08%	7.56%	6.30%	1.13%	7.43%
Admin Expense Rate	0.44%	0.06%	0.50%	0.45%	0.05%	0.50%
UAL Rate	0.18%	0.09%	0.27%	0.22%	0.13%	0.35%
Member Rate	**7.10%**	**1.23%**	**8.33%**	**6.97%**	**1.31%**	**8.28%**

SECTION VI – CONTRIBUTIONS

Table VI-4 shows the City's contribution rates and dollar amounts for FYE 2020 and 2019 assuming contributions are made at the beginning of the fiscal year. The UAL rate is calculated as the payment shown in Tables VI-1 and VI-2 increased with one-half year of interest and divided by the projected payroll for the fiscal year. For FYE 2020, the projected payroll is $149.3 million for Tier 1 and $159.4 million for Tier 2.

Table VI-4

City Contribution Rates and Amounts Throughout the Year

	Fiscal Year Ending 2020			Fiscal Year Ending 2019		
	Basic	COLA	Total	Basic	COLA	Total
Tier 1 UAL Payment	$ 70,032	$ 67,377	$ 137,409	$ 64,495	$ 63,399	$ 127,894
Tier 1 Normal Cost	$ 20,015 13.41%	$ 7,762 5.20%	$ 27,777 18.61%	$ 20,577 12.96%	$ 7,828 4.93%	$ 28,405 17.89%
Tier 1 Admin Expenses	$ 731 0.49%	$ 359 0.24%	$ 1,090 0.73%	$ 778 0.49%	$ 365 0.23%	$ 1,143 0.72%
Tier 2 Contribution	$ 11,321 7.10%	$ 1,961 1.23%	$ 13,282 8.33%	$ 9,612 6.97%	$ 1,806 1.31%	$ 11,418 8.28%
Aggregate Contribution	**$ 102,100 33.07%**	**$ 77,458 25.10%**	**$ 179,558 58.17%**	**$ 95,462 32.18%**	**$ 73,399 24.74%**	**$ 168,861 56.92%**

Dollar amounts in thousands

The City normally makes its Tier 1 contribution as a lump sum at the beginning of the fiscal year. In accordance with the Board's policy, City contributions made at the beginning of FYE 2020 are discounted for one-half year of interest at 55% of the valuation discount rate. To the extent contributions are made after the beginning of the fiscal year, the amounts should be adjusted for interest. Table VI-5 shows the City contribution amounts for Tier 1 as of the beginning of the fiscal year.

Table VI-5

Estimated Tier 1 City Contribution Amounts - Beginning of Year

	Fiscal Year Ending 2020			Fiscal Year Ending 2019		
	Basic	COLA	Total	Basic	COLA	Total
Tier 1						
Normal Cost/Admin	$ 20,372	$ 7,973	$ 28,345	$ 20,963	$ 8,042	$ 29,005
UAL	68,768	66,160	134,928	63,309	62,234	125,543
Total	**$ 89,140**	**$ 74,133**	**$ 163,273**	**$ 84,272**	**$ 70,276**	**$ 154,548**

Dollar amounts in thousands

SECTION VI – CONTRIBUTIONS

Table VI-6 reconciles the change in the Tier 1 and Tier 2 member and City contributions from the contribution rates and amounts calculated in the prior valuation. The increase in the contribution rate that was not expected in the prior valuation is primarily due to the assumption changes.

Table VI-6

Reconciliation of Changes in Contribution Rates and Amounts

	Member Rate		City Aggregate				
	Tier 1	Tier 2	Normal Cost	UAL Rate	Total Rate	Projected Payroll	City Amount
FYE 2019 Contribution	6.85%	8.28%	13.65%	43.27%	56.92%	$ 296,678	$ 168,861
Expected FYE 2020 Contribution	6.85%	8.28%	13.65%	43.88%	57.53%	306,320	176,236
Changes Due to:							
Asset experience	0.00%	-0.09%	0.00%	0.19%	0.19%	306,320	582
Demographic experience	0.02%	-0.07%	-0.50%	-0.13%	-0.63%	306,320	(1,930)
Payroll Change	0.00%	0.00%	0.00%	0.07%	0.07%	308,702	1,589
Assumption Change	0.29%	0.25%	0.36%	0.69%	1.05%	308,702	3,241
Subtotal	0.31%	0.10%	-0.14%	0.82%	0.68%	308,702	$ 3,482
FYE 2019 Contribution	**7.16%**	**8.33%**	**13.51%**	**44.68%**	**58.19%**	**$ 308,702**	**$ 179,558**

Dollar amounts in thousands

SECTION VII – ACTUARIAL SECTION OF THE CAFR

The Government Finance Officers Association (GFOA) maintains a checklist of items to be included in the System's Comprehensive Annual Financial Report (CAFR) in order to receive recognition for excellence in financial reporting. The schedules in this section are listed by the GFOA for inclusion in the Actuarial Section of the System's CAFR. All amounts prior to June 30, 2010 were calculated by the prior actuary.

Table VII-1

Schedule of Funding Progress

Actuarial Valuation Date	Actuarial Value of Assets	Actuarial Liability (AL)	Unfunded AL	Funded Ratio	Covered Payroll	Unfunded AL as a % of Covered Payroll
6/30/2018 [10]	$ 2,179,488	$ 4,100,821	$ 1,921,333	53%	$ 298,985	643%
6/30/2017 [9]	2,101,435	3,923,966	1,822,531	54%	287,339	634%
6/30/2016 [8]	2,034,741	3,786,730	1,751,989	54%	266,823	657%
6/30/2015 [7]	2,004,481	3,569,898	1,565,417	56%	251,430	623%
6/30/2014 [6]	1,911,773	3,235,065	1,323,292	59%	234,677	564%
6/30/2013 [5]	1,783,270	3,013,763	1,230,493	59%	225,779	545%
6/30/2012 [4]	1,762,973	2,841,000	1,078,027	62%	225,859	477%
6/30/2011 [3]	1,788,660	2,770,227	981,567	65%	228,936	429%
6/30/2010 [2]	1,729,413	2,510,358	780,945	69%	300,811	260%
6/30/2009 [1]	1,756,558	2,486,155	729,597	71%	323,020	226%

Dollar amounts in thousands

[1] *Demographic and economic assumption changes, including reducing the discount rate from 8.25% to 7.75% increased the AL by $229 million*

[2] *Increasing the discount rate from 7.75% to 7.95% decreased the AL by $59 million.*

[3] *Demographic and economic assumption changes, including reducing the discount rate from 7.95% to 7.5% increased the AL by $188 million*

[4] *Elimination of the Supplemental Retirement Benefit Reserve reduced the AL by $43 million*

[5] *Reducing the discount rate from 7.5% to 7.25% and wage inflation to 2% for five years and 2.85% thereafter increased the AL by $64 million*

[6] *Reducing the discount rate from 7.25% to 7.0% and eliminating the temporary 2% wage inflation increased the AL by $103 million*

[7] *Demographic and economic assumption changes decreased the AL by $192 million.*

[8] *Reducing the discount rate from 7.00% to 6.875% increased the AL by $60 million.*

[9] *Measure F implimentation increased the AL by $14 million and assumption changes decreased the AL by $16 million*

[10] *Assumption changes increased the AL by $54 million*

SECTION VII – ACTUARIAL SECTION OF THE CAFR

Table VII-2

Schedule of Funded Liabilities by Type

Valuation Date	Actuarial Liability For (A) Active Member Contributions	(B) Retirees, Beneficiaries and Other Inactives	(C) Remaining Active Members' Liabilities	Reported Assets*	Portion of Actuarial Liability Covered by Reported Assets (A)	(B)	(C)
6/30/2018	$ 230,282	$ 3,002,012	$ 868,527	$ 2,179,488	100%	65%	0%
6/30/2017	236,819	2,830,143	857,004	2,101,435	100%	66%	0%
6/30/2016	240,872	2,722,224	823,634	2,034,741	100%	66%	0%
6/30/2015	243,828	2,553,892	772,178	2,004,481	100%	69%	0%
6/30/2014	233,289	2,331,656	670,120	1,911,773	100%	72%	0%
6/30/2013	234,217	2,164,153	615,393	1,783,270	100%	72%	0%
6/30/2012	234,619	2,001,498	604,883	1,762,973	100%	76%	0%
6/30/2011	234,574	1,848,254	687,400	1,788,660	100%	84%	0%
6/30/2010	242,944	1,504,698	762,716	1,729,413	100%	99%	0%
6/30/2009	228,967	1,393,114	864,074	1,756,558	100%	100%	16%

** Actuarial Value of Assets*

Dollar amounts in thousands

Table VII-3

Analysis of Financial Experience

Actuarial Valuation Date	Gain or (Loss) for Year Ending on Valuation Date Due To: Investment Income	Combined Liability Experience	Total Financial Experience	Non-Recurring Items	Total Experience
6/30/2018	$ (49,921)	$ 4,702	$ (45,219)	$ (56,306)	$ (101,525)
6/30/2017	(44,650)	(13,819)	(58,468)	1,813	(56,655)
6/30/2016	(81,539)	(29,989)	(111,528)	(60,233)	(171,761)
6/30/2015	(3,641)	(45,998)	(49,639)	(191,527)	(241,167)
6/30/2014	39,675	(13,600)	26,075	(103,404)	(77,329)
6/30/2013	(76,502)	2,899	(73,603)	(63,668)	(137,271)
6/30/2012	(119,331)	2,023	(117,308)	43,109	(74,199)
6/30/2011	(82,166)	83,403	1,237	(187,548)	(186,311)
6/30/2010	(124,137)	45,785	(78,352)	(18,467)	(96,819)

Dollar amounts in thousands

SECTION VII – ACTUARIAL SECTION OF THE CAFR

Table VII-4

Schedule of Active Member Data

Valuation Date	Active Count	Annual Payroll	Average Annual Pay	Percent Change in Average Pay*
2018	3,554	$ 298,985,000	$ 84,126	-0.2%
2017	3,410	287,339,000	84,264	4.1%
2016	3,297	266,823,000	80,929	4.2%
2015	3,236	251,430,000	77,698	3.3%
2014	3,121	234,677,000	75,193	3.0%
2013	3,094	225,779,000	72,973	-0.6%
2012	3,076	225,859,000	73,426	5.0%
2011	3,274	228,936,000	69,925	-11.2%
2010	3,818	300,811,000	78,788	-0.5%
2009	4,079	323,020,000	79,191	7.1%

** 2009 is an increase over a two-year period, not an annual increase*

Table VII-5

Schedule Of Retirees And Beneficiaries Added To And Removed From Rolls

	Beginning of Period		Added to Rolls		Removed from Rolls		End of Period			
Period	Count	Annual Allowances	Count	Annual Allowances	Count	Annual Allowances	Count	Annual Allowances	% Increase in Annual Allowances*	Average Annual Allowances
2017-2018	4,115	$ 187,714	223	$ 9,133	113	$ 3,994	4,225	$ 198,157	5.6%	$ 47
2016-2017	4,003	177,751	225	8,843	113	3,894	4,115	187,714	5.6%	$ 46
2015-2016	3,901	168,917	212	7,907	110	3,904	4,003	177,751	5.2%	$ 44
2014-2015	3,800	159,124	200	8,266	99	3,122	3,901	168,917	6.2%	$ 43
2013-2014	3,711	150,934	194	7,274	105	3,405	3,800	159,124	5.4%	$ 42
2012-2013	3,602	142,063	198	7,036	89	2,360	3,711	150,934	6.2%	$ 41
2011-2012	3,428	129,869	250	14,158	76	1,964	3,602	142,063	9.4%	$ 39
2010-2011	3,111	112,660	398	19,615	81	2,406	3,428	129,869	15.3%	$ 38
2009-2010	2,930	101,194	206	10,700	79	2,204	3,111	112,660	11.3%	$ 36
2007-2009	2,691	84,723	376	14,890	137	3,450	2,930	101,194	19.4%	$ 35

** Years prior to 2009-2010 are increases over a two-year period, not an annual increase*

Dollar amounts in thousands

APPENDIX A – MEMBERSHIP INFORMATION

Data Assumptions and Methods

In preparing our data, we relied on information supplied by the San José Department of Retirement Services. This information includes, but is not limited to, plan provisions, employee data, and financial information. Our methodology for obtaining the data used for the valuation is based upon the following assumptions and practices:

- Records on the "Active" data file are considered to be Active if they do not have a reason for termination.
- Records on any of the data files are considered to be Inactive if they have a reason for termination of deferred vested or leave of absence/inactive.
- Records on the "Retiree" and "Beneficiary/QDRO" files are considered in pay status if they do not have a date of death, are not inactive, and have not withdrawn from the plan.
- All active employees are assumed to accrue a full year of service in all future years.
- Service for inactives that have no service amount is calculated to be the time from date of hire to date of termination.
- The most recent annual salary for full-time actives that accrued one year of service is set to be "earnable income." If "earnable income" was not provided, then the most recent annual salary is calculated to be "compensation rate 2" multiplied by 26.
- The annual salary for full-time actives that accrued less than one year of service is calculated to be "compensation rate 2" multiplied by 26.
- The annual salary for part-time actives is set to be "pensionable compensation" divided by the increase in service. If "pensionable compensation" was not provided, then the annual salary is calculated to be "compensation rate 2" multiplied by 26.
- The Tier 1 annual benefit for inactives is set to be the accrued benefit provided. If an accrued benefit is not provided, then the annual benefit is calculated to be 2.5% of final compensation per year of service in Tier 1, up to a maximum of 75% of final compensation. Members who terminated prior to June 30, 2001 have their final compensation adjusted for a three-year average rather than a 12-month average.
- The Tier 2 annual benefit for inactives is set to be the accrued benefit provided. If an accrued benefit is not provided, then the annual benefit is calculated to be 2.0% of final compensation per year of service in Tier 2, up to a maximum of 65% of final compensation. The final compensation is adjusted for a three-year average.
- We assume any member found in last year's "Retiree" file and not in this year's file is deceased without a beneficiary and should be removed from the valuation data.
- We assume all deceased members with payments continuing to a beneficiary have already been accounted for in the "Retiree" file.

APPENDIX A – MEMBERSHIP INFORMATION

Table A-1
Active Member Data

	June 30, 2018	June 30, 2017	% Change
Tier 1			
Count	1,855	1,991	-6.8%
Average Current Age	49.7	49.4	0.6%
Average Eligibility Service	16.7	16.1	3.7%
Average Benefit Service	16.2	15.9	1.9%
Annual Expected Pensionable Earnings	$ 171,638,553	$ 181,690,635	-5.5%
Average Expected Pensionable Earnings	$ 92,528	$ 91,256	1.4%
Tier 2			
Count	1,699	1,419	19.7%
Average Current Age	37.6	37.6	0.0%
Average Eligibility Service	2.4	2.0	20.0%
Average Benefit Service	2.3	1.9	21.1%
Annual Expected Pensionable Earnings	$ 127,346,594	$ 105,648,788	20.5%
Average Expected Pensionable Earnings	$ 74,954	$ 74,453	0.7%
Total			
Count	3,554	3,410	4.2%
Average Current Age	43.9	44.5	-1.3%
Average Eligibility Service	9.9	10.3	-3.9%
Average Benefit Service	9.5	10.0	-5.0%
Annual Expected Pensionable Earnings	$ 298,985,147	$ 287,339,423	4.1%
Average Expected Pensionable Earnings	$ 84,126	$ 84,264	-0.2%

APPENDIX A – MEMBERSHIP INFORMATION

Table A-2
Payee Member Data

	June 30, 2018	June 30, 2017	%Change
Retired & Disabled			
Count	3,705	3,605	2.8%
Average Age	69.2	69.0	0.3%
Total Annual Benefit	$ 184,214,584	$ 174,543,180	5.5%
Average Annual Benefit	$ 49,721	$ 48,417	2.7%
Beneficiaries & SADROs			
Count	520	510	2.0%
Average Age	74.8	74.3	0.7%
Total Annual Benefit	$ 13,942,316	$ 13,170,699	5.9%
Average Annual Benefit	$ 26,812	$ 25,825	3.8%
Total			
Count	4,225	4,115	2.7%
Average Age	69.9	69.7	0.3%
Total Annual Benefit	$ 198,156,900	$ 187,713,879	5.6%
Average Annual Benefit	$ 46,901	$ 45,617	2.8%

Benefits provided in June 30 valuation data.

APPENDIX A – MEMBERSHIP INFORMATION

Table A-3
Inactive Member Data

	Count		
	June 30, 2018	June 30, 2017	%Change
Tier 1			
Vested			
Count	769	780	-1.4%
Average Age	47.7	47.7	0.0%
Total Annual Benefit	$ 16,774,260	$ 16,457,049	1.9%
Average Annual Benefit	$ 21,813	$ 21,099	3.4%
Total Contribution Balance with Interest	$ 58,338,287	$ 56,644,199	3.0%
Average Contribution Balance with Interest	$ 75,863	$ 72,621	4.5%
Non-Vested			
Count	253	257	-1.6%
Average Age	45.9	45.1	1.8%
Total Annual Benefit	$ 1,004,800	$ 1,041,482	-3.5%
Average Annual Benefit	$ 3,972	$ 4,052	-2.0%
Total Contribution Balance with Interest	$ 4,237,445	$ 4,216,294	0.5%
Average Contribution Balance with Interest	$ 16,749	$ 16,406	2.1%
Total			
Count	1,022	1,037	-1.4%
Average Age	47.3	47.0	0.6%
Total Annual Benefit	$ 17,779,060	$ 17,498,532	1.6%
Average Annual Benefit	$ 17,396	$ 16,874	3.1%
Total Contribution Balance with Interest	$ 62,575,732	$ 60,860,493	2.8%
Average Contribution Balance with Interest	$ 61,229	$ 58,689	4.3%

For Inactives, benefit is calculated on the data assumptions and methods outlined in Appendix A if not provided in the June 30 valuation data.

APPENDIX A – MEMBERSHIP INFORMATION

Table A-3 (continued)
Inactive Member Data

	Count		
	June 30, 2018	June 30, 2017	%Change
Tier 2			
Vested			
Count	22	5	340.0%
Average Age	40.7	40.2	1.2%
Total Annual Benefit	$ 129,965	19,985	550.3%
Average Annual Benefit	$ 5,908	3,997	47.8%
Total Contribution Balance with Interest	$ 510,064	75,866	572.3%
Average Contribution Balance with Interest	$ 23,185	15,173	52.8%
Non-Vested			
Count	390	310	25.8%
Average Age	38.0	37.9	0.3%
Total Annual Benefit	$ 729,860	$ 528,843	38.0%
Average Annual Benefit	$ 1,871	$ 1,706	9.7%
Total Contribution Balance with Interest	$ 2,772,155	$ 2,025,560	36.9%
Average Contribution Balance with Interest	$ 7,108	$ 6,534	8.8%
Total			
Count	412	315	30.8%
Average Age	38.2	37.9	0.6%
Total Annual Benefit	$ 859,825	$ 548,828	56.7%
Average Annual Benefit	$ 2,087	$ 1,742	19.8%
Total Contribution Balance with Interest	$ 3,282,218	$ 2,101,426	56.2%
Average Contribution Balance with Interest	$ 7,967	$ 6,671	19.4%
Total			
Count	1,434	1,352	6.1%
Average Age	44.6	44.9	-0.7%
Total Annual Benefit	$ 18,638,885	$ 18,047,360	3.3%
Average Annual Benefit	$ 12,998	$ 13,349	-2.6%
Total Contribution Balance with Interest	$ 65,857,950	$ 62,961,919	4.6%
Average Contribution Balance with Interest	$ 45,926	$ 46,569	-1.4%

For Inactives, benefit is calculated on the data assumptions and methods outlined in Appendix A if not provided in the June 30 valuation data.

APPENDIX A – MEMBERSHIP INFORMATION

Table A-4
Distribution of Active Members as of June 30, 2018

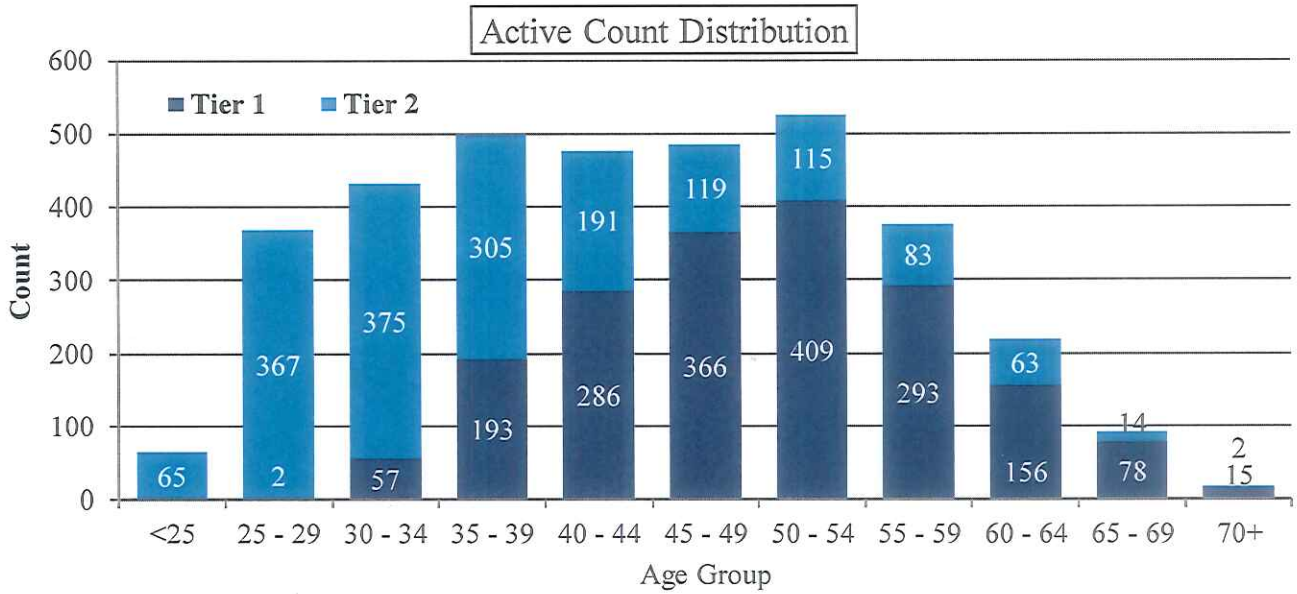
	Years of Service										
Age	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 and up	Total
Under 25	45	20	0	0	0	0	0	0	0	0	65
25 to 29	116	246	7	0	0	0	0	0	0	0	369
30 to 34	97	256	64	15	0	0	0	0	0	0	432
35 to 39	64	232	95	77	30	0	0	0	0	0	498
40 to 44	45	145	52	103	119	13	0	0	0	0	477
45 to 49	29	89	40	82	161	59	25	0	0	0	485
50 to 54	23	86	33	73	127	92	89	1	0	0	524
55 to 59	21	58	34	60	90	47	60	6	0	0	376
60 to 64	13	47	23	45	49	19	20	1	2	0	219
65 to 69	2	9	14	18	25	13	7	3	0	1	92
70 and up	0	3	0	6	5	3	0	0	0	0	17
Total Count	455	1,191	362	479	606	246	201	11	2	1	3,554

Table A-5
Distribution of Active Members as of June 30, 2018

	Average Expected Salary Years of 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 and up	Total
Under 25	$ 54,455	$ 54,462	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 54,457
25 to 29	60,372	67,060	82,825	0	0	0	0	0	0	0	65,256
30 to 34	65,875	73,080	81,260	83,065	0	0	0	0	0	0	73,021
35 to 39	73,924	77,854	87,661	87,142	85,056	0	0	0	0	0	81,090
40 to 44	79,143	83,487	89,721	86,858	86,661	90,260	0	0	0	0	85,461
45 to 49	94,559	87,326	92,544	88,197	93,356	95,830	92,467	0	0	0	91,637
50 to 54	74,605	85,402	89,345	94,595	93,391	93,674	101,648	53,256	0	0	92,544
55 to 59	90,219	84,473	85,486	91,641	95,366	94,363	99,467	78,332	0	0	92,168
60 to 64	95,065	89,782	98,041	87,312	100,420	99,264	98,037	73,024	121,899	0	94,629
65 to 69	83,280	86,570	97,238	93,406	96,184	102,718	79,258	142,640	0	54,016	95,272
70 and up	0	96,209	0	84,133	90,937	114,839	0	0	0	0	93,684
Avg. Salary	$ 70,091	$ 77,049	$ 88,250	$ 89,047	$ 92,604	$ 95,310	$ 98,716	$ 93,108	$ 121,899	$ 54,016	$ 84,126

APPENDIX A – MEMBERSHIP INFORMATION

Chart A-1



APPENDIX A – MEMBERSHIP INFORMATION

Table A-6
Retirees and Disabled by Attained Age and Benefit Effective Date
as of June 30, 2018

Benefit Effective Fiscal Year End	Age										
	Under 50	50 to 54	55 to 59	60 to 64	65 to 69	70 to 74	75 to 79	80 to 84	85 to 89	90 and up	Total
Prior to 1995	0	2	2	4	9	9	72	128	119	109	454
1996	0	2	0	1	1	0	16	6	6	0	32
1997	0	0	1	0	1	3	34	9	7	1	56
1998	0	0	1	1	2	2	29	9	5	0	49
1999	0	0	0	1	5	12	40	4	9	0	71
2000	0	0	0	0	3	41	23	11	3	1	82
2001	0	0	1	0	4	35	23	13	1	1	78
2002	0	0	2	1	6	75	25	17	1	0	127
2003	0	1	0	2	12	65	23	7	3	1	114
2004	1	1	2	3	30	66	16	7	0	0	126
2005	0	0	1	5	58	54	29	8	4	0	159
2006	2	1	4	12	62	39	24	4	0	0	148
2007	0	1	0	13	73	38	16	4	3	1	149
2008	0	1	3	14	84	39	15	3	0	0	159
2009	0	3	3	33	64	31	7	0	0	0	141
2010	0	0	8	83	61	46	8	2	1	0	209
2011	1	1	17	118	121	59	19	3	1	0	340
2012	0	0	15	99	56	32	11	2	0	0	215
2013	0	0	9	93	23	17	0	1	0	0	143
2014	2	4	38	72	23	11	2	0	0	0	152
2015	0	7	89	35	26	9	1	1	0	0	168
2016	0	9	96	21	35	9	0	0	1	0	171
2017	0	13	98	41	24	6	1	0	0	0	183
2018	1	7	102	34	20	11	3	1	0	0	179
Total	7	53	492	686	803	709	437	240	164	114	3,705

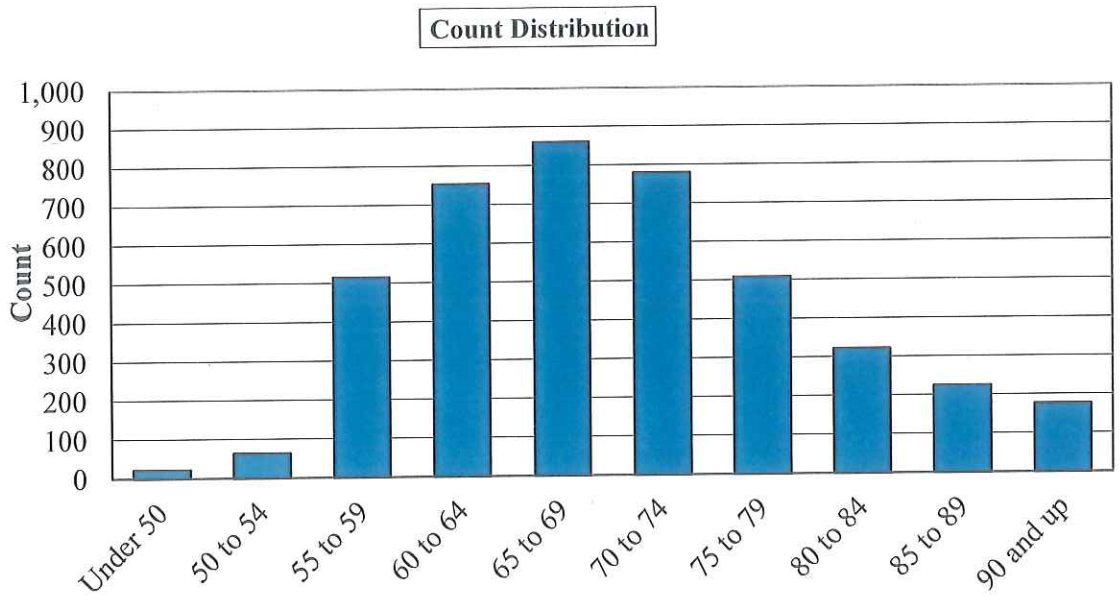
Average Age at Retirement/Disability	57.5
Average Current Age	69.2
Average Annual Pension	$ 49,721

APPENDIX A – MEMBERSHIP INFORMATION

Table A-7
Distribution of Retirees, Disabled Members, and Beneficiaries as of June 30, 2018

Age	Count	Annual Benefit
Under 50	20	$ 530,680
50 to 54	63	3,331,230
55 to 59	515	25,231,412
60 to 64	753	37,683,849
65 to 69	860	44,293,121
70 to 74	781	38,482,403
75 to 79	508	23,091,247
80 to 84	323	12,510,211
85 to 89	224	7,927,735
90 and up	178	5,075,012
Total	4,225	**$ 198,156,900**

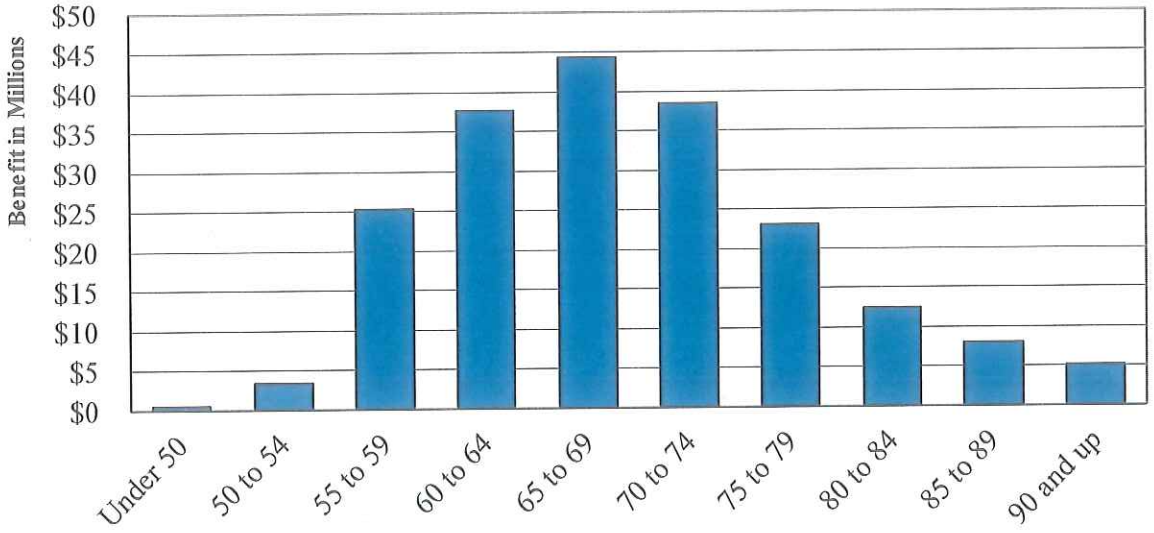
Chart A-2



APPENDIX A – MEMBERSHIP INFORMATION

Chart A-3

Benefit Distribution



APPENDIX A – MEMBERSHIP INFORMATION

Table A-8
Change in Plan Membership

TIER 1	Actives	Vested Terminations*	Service Disabilities	Non-Service Disabilities	Retirees	Beneficiaries/ SADRO	Total
June 30, 2017	**1,991**	**1,037**	**123**	**74**	**3,407**	**510**	**7,142**
New Entrants	16	0	0	0	0	0	16
Rehires	8	(8)	0	0	0	0	0
Vested Terminations	(58)	58	0	0	0	0	0
Return of Contributions	(4)	(5)	0	0	0	0	(9)
Service Disabilities	(2)	(1)	4	0	(1)	0	0
Non-Service Disabilities	(1)	0	0	1	0	0	0
Retirements	(125)	(57)	0	0	182	0	0
Deaths	(3)	(1)	(5)	(1)	(81)	32	(59)
Beneficiary Deaths	0	0	0	0	0	(25)	(25)
Benefit Ceased	0	0	0	0	0	0	0
Tier Adjustment	32	(3)	0	0	0	0	29
Miscellaneous Adjustments	1	2	0	0	(1)	3	5
June 30, 2018	**1,855**	**1,022**	**122**	**74**	**3,506**	**520**	**7,099**

TIER 2	Actives	Vested Terminations*	Service Disabilities	Non-Service Disabilities	Retirees	Beneficiaries/ SADRO	Total
June 30, 2017	**1,419**	**315**	**0**	**0**	**1**	**0**	**1,735**
New Entrants	447	37	0	0	0	0	484
Rehires	15	(14)	0	0	0	0	1
Vested Terminations	(103)	103	0	0	0	0	0
Return of Contributions	(45)	(32)	0	0	0	0	(77)
Service Disabilities	0	0	0	0	0	0	0
Non-Service Disabilities	0	0	0	0	0	0	0
Retirements	(2)	0	0	0	2	0	0
Deaths	0	0	0	0	0	0	0
Beneficiary Deaths	0	0	0	0	0	0	0
Benefit Ceased	0	0	0	0	0	0	0
Tier Adjustment	(32)	3	0	0	0	0	(29)
Miscellaneous Adjustments	0	0	0	0	0	0	0
June 30, 2018	**1,699**	**412**	**0**	**0**	**3**	**0**	**2,114**

TOTAL	Actives	Vested Terminations*	Service Disabilities	Non-Service Disabilities	Retirees	Beneficiaries/ SADRO	Total
June 30, 2017	**3,410**	**1,352**	**123**	**74**	**3,408**	**510**	**8,877**
New Entrants	463	37	0	0	0	0	500
Rehires	23	(22)	0	0	0	0	1
Vested Terminations	(161)	161	0	0	0	0	0
Return of Contributions	(49)	(37)	0	0	0	0	(86)
Service Disabilities	(2)	(1)	4	0	(1)	0	0
Non-Service Disabilities	(1)	0	0	1	0	0	0
Retirements	(127)	(57)	0	0	184	0	0
Deaths	(3)	(1)	(5)	(1)	(81)	32	(59)
Beneficiary Deaths	0	0	0	0	0	(25)	(25)
Benefit Ceased	0	0	0	0	0	0	0
Tier Adjustment	0	0	0	0	0	0	0
Miscellaneous Adjustments	1	2	0	0	(1)	3	5
June 30, 2018	**3,554**	**1,434**	**122**	**74**	**3,509**	**520**	**9,213**

** Vested terminations includes non-vested and reciprocal terms that are still due a refund or benefit.*

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

Actuarial Assumptions

The wage inflation assumption, amortization payment growth rate, and mortality improvement scale were adopted by the Board of Administration with our input at the December 21, 2017 Board meeting. The discount rate assumption was adopted by the Board of Administration with our input at the November 15, 2018 Board meeting. The Tier 2 retirement rates were adopted at the May 4, 2017 Board meeting based on a special analysis presented at that meeting. All other assumptions were adopted at the November 19, 2015 Board meeting based on recommendations from our Experience Study covering plan experience during the period from July 1, 2010 through June 30, 2015. Please refer to the full experience study report for details, including the rationale for each assumption.

1. **Discount Rate**

   6.75%. The Board expects a long-term rate of return of 7.3% based on Meketa's 20-year capital market assumptions and the System's current investment policy. A margin for adverse deviation was used to improve the probability of achieving the discount rate.

2. **Wage Inflation and Payroll Growth**

   3.25%, compounded annually.

3. **Amortization Payment Growth**

   3.00%, compounded annually.

4. **Price Inflation**

   2.50%, compounded annually.

5. **Administrative Expenses**

   1.0% of payroll is added to the normal cost of the system for expected administrative expenses.

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

6. Salary Increase Rate

In addition to the wage inflation component of 3.25% shown above, the following merit component is added based on an individual member's years of service:

Table B-1
Salary Merit Increases

Years of Service	Merit/ Longevity
0	4.50%
1	3.50
2	2.50
3	1.85
4	1.40
5	1.15
6	0.95
7	0.75
8	0.60
9	0.50
10	0.45
11	0.40
12	0.35
13	0.30
14	0.25
15+	0.25

7. Family Composition

Percentage married is shown in the following Table B-2. Male retirees are assumed to be three years older than their partner, and female retirees are assumed to be two years younger than their partner.

Table B-2
Percentage Married

Gender	Percentage
Males	80%
Females	60%

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

8. Rates of Termination

Sample rates of termination are shown in the following Table B-3.

Table B-3
Rates of Termination

Age	0 Years of Service	1-4 Years of Service	5 or more Years of Service
20	18.00%	17.50%	9.00%
25	18.00	15.50	9.00
30	18.00	13.50	7.00
35	18.00	11.50	5.50
40	18.00	9.50	4.50
45	18.00	8.00	3.50
50	18.00	7.00	3.00
55	18.00	6.00	3.00
60	18.00	5.00	0.00
65	0.00	0.00	0.00

*Withdrawal/termination rates do not apply once a member is eligible for retirement

9. Rate of Reciprocity

25% of terminating employees are assumed to subsequently work for a reciprocal employer and receive 3.25% pay increases per year.

10. Rates of Refund

Tier 1:
Sample rates of vested terminated and reciprocal employees electing a refund of contributions are shown in the following Table B-4.

Table B-4
Rates of Refund

Age	Refund
20	40.00%
25	40.00
30	27.50
35	17.00
40	8.00
45	3.00
50	1.00
55	0.00

Tier 2:
Vested terminated and reciprocal employees are expected to take a refund if it exceeds the actuarial present value of their deferred benefit payment.

11. Rates of Disability

Sample disability rates of active members are provided in Table B-5.

Table B-5
Rates of Disability at Selected Ages

Age	Disability
20	0.014%
25	0.014
30	0.021
35	0.063
40	0.136
45	0.201
50	0.218
55	0.200
60	0.181
65	0.167
70	0.149

40% of disabilities are assumed to be duty related, and 60% are assumed to be non-duty.

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

12. Rates of Mortality

Mortality rates for actives, retirees, beneficiaries, terminated vested, and reciprocals are based on the sex-distinct employee and annuitant CalPERS mortality tables as described below. The CalPERS tables are from their 2014 experience study with a central experience year of 2009 and prior to the 20-year projection of those rates using Scale BB. Future mortality improvements are reflected by applying the most recent projection scale issued by the Society of Actuaries on a generational basis from the base year of 2009. The projection scale used for this valuation is MP-2018.

Base Mortality Tables		
Category	**Male**	**Female**
Healthy Annuitant	0.952 times the CalPERS 2009 Healthy Annuitant Mortality Table (Male)	0.921 times the CalPERS 2009 Healthy Annuitant Mortality Table (Female)
Healthy Non-Annuitant	0.919 times the CalPERS 2009 Employee Mortality Table (Male)	0.918 times the CalPERS 2009 Employee Mortality Table (Female)
Disabled Annuitant	1.051 times the CalPERS 2009 Ordinary Disability Mortality Table (Male)	1.002 times the CalPERS 2009 Ordinary Disability Mortality Table (Female)

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

13. Rates of Retirement for Tier 1 Members

Rates of retirement for Tier 1 members are based on age according to the following Table B-6 – Tier 1.

Table B-6 – Tier 1
Rates of Retirement by Age and Service

Age	Less than 15 Years of Service	15 or more Years of Service and less than 30 Years of Service	30 or more Years of Service
50	0.0%	0.0%	70.0%
51	0.0	0.0	70.0
52	0.0	0.0	70.0
53	0.0	0.0	70.0
54	0.0	0.0	70.0
55	8.0	35.0	50.0
56	8.0	22.5	50.0
57	8.0	22.5	50.0
58	8.0	22.5	50.0
59	8.0	22.5	50.0
60	8.0	22.5	45.0
61	8.0	30.0	45.0
62	9.0	30.0	45.0
63	10.0	30.0	45.0
64	15.0	35.0	45.0
65	20.0	40.0	45.0
66	20.0	40.0	45.0
67	20.0	40.0	45.0
68	20.0	40.0	45.0
69	20.0	40.0	45.0
70 & over	100.0	100.0	100.0

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

14. Rates of Retirement for Tier 2 Members

Rates of retirement for Tier 2 members are based on age and service according to the following Table B-6 – Tier 2.

Table B-6 – Tier 2
Tier 2 Rates of Retirement by Age and Service

	Years of Service				
Age	5 – 10	11 – 20	21 – 25	26 – 34	35 +
55	3.0%	5.0%	7.0%	10.0%	15.0%
56	2.0%	3.5%	4.0%	7.0%	10.5%
57	2.5%	4.5%	5.0%	8.5%	12.75%
58	3.0%	5.5%	7.0%	11.0%	16.5%
59	3.5%	7.0%	9.0%	13.5%	20.25%
60 – 61	4.0%	8.5%	10.0%	14.5%	21.75%
62	7.5%	12.5%	17.5%	25.0%	100.0%
63 – 69	5.0%	10.0%	15.0%	25.0%	100.0%
70 & over	100.0%	100.0%	100.0%	100.0%	100.0%

15. Deferred Member Benefit

The benefit was estimated based on information provided by the Department of Retirement Services. The data used to value the estimated deferred benefit were credited service, date of termination, and last pay rate. Based on the data provided, the highest average salary was estimated.

Tier 1 terminated vested members are assumed to retire at age 57 and Tier 2 terminated vested members are assumed to retire at age 62.

16. Changes Since the Last Valuation

The discount rate was reduced from 6.875% to 6.75%.

The mortality improvement table was updated from MP-2017 to MP-2018.

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

Contribution Allocation Procedure

The contribution allocation procedure primarily consists of an actuarial cost method, an asset smoothing method, and an amortization method as described below. All components of the contribution allocation procedure were established prior to the June 30, 2010 actuarial valuation except as specifically noted below.

1. Actuarial Cost Method

The Entry Age actuarial cost method was used for active employees, whereby the normal cost is computed as the level annual percentage of pay required to fund all benefits between each member's date of hire and last assumed date of employment. The Actuarial Liability is the difference between the present value of future benefits and the present value of future normal costs. Or, equivalently, it is the accumulation of normal costs for all periods prior to the valuation date. The normal cost and Actuarial Liability are calculated on an individual basis. The sum of the individual amounts is the normal cost and Actuarial Liability for the System. The Actuarial Liability for the System represents the target amount of assets the System should have as of the valuation date according to the actuarial cost method.

2. Asset Valuation Method

For the purpose of determining contribution rates and amounts, an Actuarial Value of Assets is used that dampens the volatility in the Market Value of Assets, resulting in a smoother pattern of contribution rates.

The Actuarial Value of Assets is calculated by recognizing 20% of the difference in each of the prior four years of actual investment returns compared to the expected return on the Market Value of Assets.

3. Amortization Method

The Unfunded Actuarial Liability is the difference between the Actuarial Liability and the Actuarial Value of Assets.

The Tier 1 Unfunded Actuarial Liability as of June 30, 2009 is amortized as a level percentage of Tier 1 pay over a closed 30-year period commencing June 30, 2009. Tier 1 actuarial gains and losses and plan changes are amortized over 20-year periods and Tier 1 assumption changes are amortized over 25-year periods beginning with the valuation date in which they first arise. Effective June 30, 2017, all prior assumption amortization base periods were increased by 5 years so they have the same remaining period as if they had originally been amortized over 25 years. Amortization payments are scheduled to increase 3.00% each year while aggregate payroll is expected to grow 3.25% each year.

The Tier 2 Unfunded Actuarial Liability as of June 30, 2017 is amortized over a closed 10-year period. Future Tier 2 actuarial gains and losses, assumption changes, and plan

changes will be amortized over 10-year periods beginning with the valuation date in which they first arise. Amortization payments are scheduled to increase 3.00% each year while aggregate payroll is expected to grow 3.25% each year.

The amortization payment for the 2015 assumption changes was phased in over a 3-year period. The phase-in was calculated by multiplying the first year amortization payment by one third. For the second year, the amortization schedule is recalculated reflecting the one-third payment in the first year and the remaining 19-year period, and the calculated amortization payment is then multiplied by two-thirds. For the third year, the amortization schedule is again recalculated reflecting the prior payments and the remaining 18-year period. With this valuation, the phase-in period is complete.

4. Contributions

The Board adopted a policy in 2010 and modified it in 2015 setting the City's contribution to be the UAL contribution amount reported in the actuarial valuation plus the greater of the normal cost dollar amount reported in the actuarial valuation (adjusted for interest based on the time of the contribution) and the dollar amount determined by applying the normal cost as a percent of payroll reported in the actuarial valuation to the actual payroll for the fiscal year. The City and Member contributions determined by a valuation become effective for the fiscal year commencing one year after the valuation date. For Tier 1, City contributions are normally made on the first day of the fiscal year. All other contributions are made on a payroll-by-payroll basis.

The total contribution rate is the sum of the normal cost rate, assumed administrative expenses, and the UAL rate. Under Measure F, the total contribution rate cannot be less than the normal cost rate. The normal cost rate is determined by dividing the total normal cost determined under the actuarial cost method by the payroll expected for members active on the valuation date. The UAL payments are adjusted for interest from the valuation date to the date of expected payment in the following fiscal year. The UAL rate is determined by dividing the UAL payments by the total expected payroll for the year (including members active on the valuation date and new entrants expected to replace active members who are expected to leave employment).

For Tier 1, members contribute 3/11ths of the normal cost rate (including administrative expenses, but excluding reciprocity), and the City pays the remainder of the total contribution rate. Tier 1 members who were rehired into Tier 2 and then returned to Tier 1 under Measure F also pay half of the increased cost attributable to their Tier 2 service.

For Tier 2, the members and the City each pay half of the total contribution rate. However, the member's UAL contribution rate cannot increase by more than 0.33% of pay each year. The City contributes any amounts in excess of this cap that would otherwise be contributed by the member.

5. Changes Since the Last Valuation

None.

APPENDIX C – SUMMARY OF PLAN PROVISIONS
TIER 1

1. Membership Requirement

Participation in the Plan is immediate upon the first day of full-time employment for members hired before September 30, 2012, including members that are rehired after September 30, 2012 and had prior service under Tier 1 and did not take a return of contributions. In addition, any person accepting employment on or after September 30, 2012 who is otherwise eligible for this plan and who was a "classic" member in another California public retirement system with which this plan has reciprocity, and who has a break in service of less than six months from that covered employment and employment with the City, shall be a Tier 1 member of this plan.

2. Final Compensation

Members who separated from city service prior to June 30, 2001

The highest average annual compensation earnable during any period of three consecutive years.

Members who separated from city service on or after June 30, 2001

The highest average annual compensation earnable during any period of twelve consecutive months.

3. Credited Service

One year of service credit is given for 1,739 or more hours of Federated city service rendered in any calendar year. A partial year (fraction with the numerator equal to the hours worked, and the denominator equal to 1,739) is given for each calendar year with less than 1,739 hours worked.

4. Member Contributions

Member

The amount needed to fund 3/11ths of benefits accruing for the current year. These contributions are credited with interest at 3.0% per year, compounded annually.

Employer

The Employer contributes the remaining amounts necessary to maintain the soundness of the Retirement System.

APPENDIX C – SUMMARY OF PLAN PROVISIONS
TIER 1

5. Service Retirement

Eligibility

Age 55 with five years of service, or any age with 30 years of service.

Benefit – Member

2.5% of Final Compensation for each year of credited service, subject to a maximum of 75% of Final Compensation.

Benefit – Survivor

50% of the service retirement benefit paid to a qualified survivor.

6. Service-Connected Disability Retirement

Eligibility

No age or service requirement.

Benefit – Member

2.5% of Final Compensation for each year of credited service, subject to a minimum of 40% and a maximum of 75% of Final Compensation. Workers' Compensation benefits are generally offset from the service-connected benefits under this system.

Benefit – Survivor

50% of the disability retirement benefit paid to a qualified survivor.

7. Non-Service Connected Disability Retirement

Eligibility

Five years of service.

Benefit – Member

Members who were hired prior to September 1, 1998:
The amount of the service-connected benefit reduced by 0.5% for each year that the disability age preceded 55.

APPENDIX C – SUMMARY OF PLAN PROVISIONS
TIER 1

Members who were hired on or after September 1, 1998:
20% of Final Compensation, plus 2% of Final Compensation for each year of credited service between six and 16 years, plus 2.5% of Final Compensation for each year of credited service in excess of 16 years, subject to a maximum of 75% of Final Compensation.

Benefit – Survivor

50% of the disability retirement benefit paid to a qualified survivor.

8. Death While an Active Employee

Less than five Years of Service, or No Qualified Survivor

Lump sum benefit equal to the accumulated refund of all employee contributions with interest, plus one month of salary for each year of service, up to a maximum of six years.

Five or more Years of Service

2.5% of Final Compensation for each year of credited service, subject to a minimum of 40% and a maximum of 75% of Final Compensation. The benefit is payable until the spouse or registered domestic partner marries or establishes a domestic partnership. If the member was age 55 with 20 years of service at death, the benefit is payable for the lifetime of the member's spouse or registered domestic partner.

9. Withdrawal Benefits

Less than five Years of Service

Lump sum benefit equal to the accumulated employee contributions with interest.

Five or more years of credited service

The amount of the service retirement benefit, payable at age 55.

10. Additional Post-retirement Death Benefit

A death benefit payable as a lump sum equal to $500 will be paid to a qualified survivor upon the member's death.

11. Post-retirement Cost-of-Living Benefit

Benefits are increased every April 1 by 3.0%, regardless of actual inflation.

APPENDIX C – SUMMARY OF PLAN PROVISIONS
TIER 1

12. Changes Since the Last Valuation

None.

APPENDIX C – SUMMARY OF PLAN PROVISIONS
TIER 2

1. Membership Requirement

Any person who is hired, rehired or reinstated by the City on or after September 30, 2012 except those who elect to participate in a defined contribution plan, had prior service under Tier 1 and did not take a return of contributions, or had prior service as a "classic" member in a reciprocal system with less than a six month break in service.

2. Final Compensation

The average annual compensation earnable during the highest three consecutive years of service. Final compensation only includes base pay, excluding premium pay and any other additional compensation.

3. Credited Service

One year of service credit is given for 2,080 or more hours of Federated city service rendered in any calendar year. A partial year (fraction with the numerator equal to the hours worked, and the denominator equal to 2,080) is given for each calendar year with less than 2,080 hours worked.

4. Member Contributions

50% of total Tier 2 contributions to the pension plan, including, but not limited to administrative expenses, normal cost, and Unfunded Actuarial Liability. However, the member's UAL contribution rate cannot increase by more than 0.33% of pay each year. The City contributes any amounts in excess of this cap that would otherwise be contributed by the member.

The member contribution rate cannot be less than 50% of the normal cost rate.

5. City Contributions

50% of total Tier 2 contributions to the pension plan, including, but not limited to administrative expenses, normal cost, and Unfunded Actuarial Liability. In addition, the City contributes any UAL amounts in excess of the member UAL cap until the member rate covers 50% of the UAL rate.

The City contribution rate cannot be less than 50% of the normal cost rate.

APPENDIX C – SUMMARY OF PLAN PROVISIONS
TIER 2

6. Unreduced Service Retirement

Eligibility

Age 62 with five years of service.

Benefit – Member

2.0% of Final Compensation for each year of credited service attributable to Tier 2, subject to a maximum of 70% of Final Compensation.

Benefit – Survivor

50% of the service retirement benefit paid to a qualified survivor.

7. Early Service Retirement

Eligibility

Age 55 with five years of service.

Benefit – Member

Benefit reduced by a factor of 5% for each year the member retires before age 62.

The early retirement reduction is applied to the benefit after the application of the maximum of 70% of final compensation.

8. Service-Connected Disability Retirement

Eligibility

No age or service requirement.

Benefit – Member

2.0% of Final Compensation for each year of credited service, subject to a minimum of 40% of Final Compensation and a maximum of 70% of Final compensation, less the amounts specified in Section 3.28.1330 and Section 3.28.1340.

APPENDIX C – SUMMARY OF PLAN PROVISIONS
TIER 2

9. Non-Service Connected Disability Retirement

Eligibility

Five years of service.

Benefit – Member

2.0% of Final Compensation for each year of credited service attributable to Tier 2, subject to a minimum of 20% of Final Compensation and a maximum of 70% of Final Compensation less the amounts specified in Section 3.28.1330 and Section 3.28.1340.

10. Death Before Retirement

Less than five Years of Service, or No Qualified Survivor

Lump sum benefit equal to the accumulated refund of all employee contributions with interest, plus one month of salary for each year of service, up to a maximum of six years.

Five or more Years of Service

2.5% of Final Compensation for each year of credited service, subject to a minimum of 40% and a maximum of 70% of Final Compensation. The benefit is payable until the spouse or registered domestic partner marries or establishes a domestic partnership. If the member was age 55 with 20 years of service at death, the benefit is payable for the lifetime of the member's spouse or registered domestic partner.

11. Withdrawal Benefits

Less than five years of credited service

Lump sum benefit equal to the accumulated employee contributions with interest.

Five or more years of credited service

The amount of the service retirement benefit reduced for early retirement, and payable when retirement eligibility is reached.

12. Benefit Forms

Annuity benefits are paid in the form of a 50% joint and survivor annuity or an actuarially equivalent annuity with 75% or 100% continuance to a survivor.

APPENDIX C – SUMMARY OF PLAN PROVISIONS
TIER 2

13. Post-retirement Cost-of-Living Benefit

Benefits are increased every April 1 by the change in the December CPI-U for San José-San Francisco-Oakland, subject to a cap based on years of service as shown in the table below.

Years of Service	Maximum COLA
At least 1, but less than 11	1.25%*
At least 11, but less than 21	1.50%
At least 21, but less than 26	1.75%
At least 26	2.00%

*1.5% for members hired before Measure F effective date

The first COLA after retirement shall be prorated based on the number of months retired.

14. Changes Since the Last Valuation

None.

Note: The summary of major plan provisions is designed to outline principal plan benefits. If the Department of Retirement Services should find the plan summary not in accordance with the actual provisions, the actuary should immediately be alerted so the proper provisions are valued.

APPENDIX D – GLOSSARY OF TERMS

1. Actuarial Liability

The Actuarial Liability is the difference between the present value of future benefits and the present value of total future normal costs. This is also referred to as the "accrued liability" or "actuarial accrued liability." The Actuarial Liability represents the targeted amount of assets a plan should have as of a valuation date according to the actuarial cost method.

2. Actuarial Assumptions

Estimates of future experience with respect to rates of mortality, disability, turnover, retirement rate or rates of investment income, and salary increases. Demographic actuarial assumptions (rates of mortality, disability, turnover, and retirement) are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (price inflation, wage inflation, and investment income) are generally based on expectations for the future that may differ from the Plan's past experience.

3. Actuarial Cost Method

A mathematical budgeting procedure for allocating the dollar amount of the present value of future benefits between future normal cost and Actuarial Liability.

4. Actuarial Gain (Loss)

The difference between actual experience and the anticipated experience based on the actuarial assumptions during the period between two actuarial valuation dates.

5. Actuarial Present Value

The amount of funds currently required to provide a payment or series of payments in the future. It is determined by discounting future payments at the discount rate and by probabilities of payment.

6. Actuarially Determined Contribution

The payment to the System as determined by the actuary using a contribution allocation procedure. It may or may not be the actual amount contributed to the System.

7. Amortization Method

A method for determining the amount, timing, and pattern of payments of the Unfunded Actuarial Liability.

APPENDIX D – GLOSSARY OF TERMS

8. Asset Valuation Method

The method used to develop the Actuarial Value of Assets from the Market Value of Assets typically by smoothing investment returns above or below the assumed rate of return over a period of time.

9. Contribution Allocation Procedure

A procedure typically using an actuarial cost method, an asset valuation method, and an amortization method to develop the Actuarially Determined Contribution.

10. Discount Rate

The rate of interest used to discount future benefit payments to determine the actuarial present value. For purposes of determining an Actuarially Determined Contribution, the discount rate is typically based on the long-term expected return on assets.

11. Funded Status or Funding Ratio

The Market or Actuarial Value of assets divided by the Actuarial Liability. For purposes of this report, the Funded Status represents the proportion of the actual assets compared to the target established by the actuarial cost method as of the valuation date. These measures are for contribution budgeting purposes and are not appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations.

12. Normal Cost

The portion of the present value of future benefits allocated to the current year by the actuarial cost method.

13. Present Value of Future Benefits

The actuarial present value of all benefits both earned as of the valuation date and expected to be earned in the future by current plan members based on current plan provisions and actuarial assumptions.

14. Unfunded Actuarial Liability (UAL)

The Unfunded Actuarial Liability is the difference between Actuarial Liability and either the Market or the Actuarial Value of Assets. This value is sometimes referred to as "unfunded actuarial accrued liability." It represents the difference between the actual assets and the amount of assets expected by the actuarial cost method as of the valuation date.

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