CHEIRON *Classic Values, Innovative Advice*

City of San José Federated City Employees' Retirement System

Actuarial Valuation Report as of June 30, 2019

Produced by Cheiron

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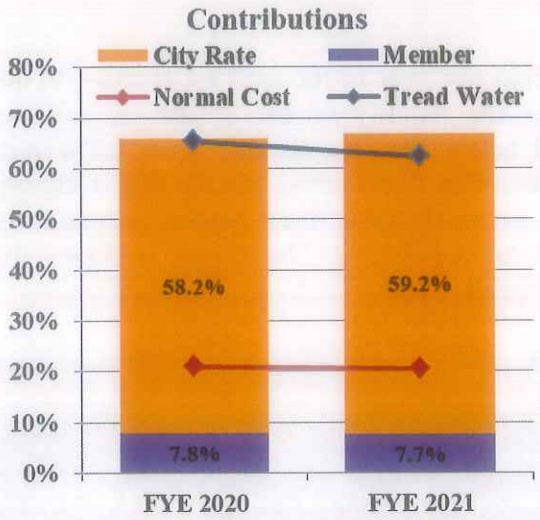
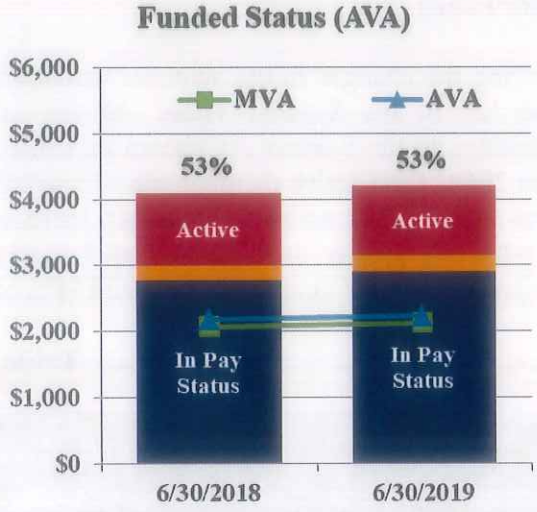
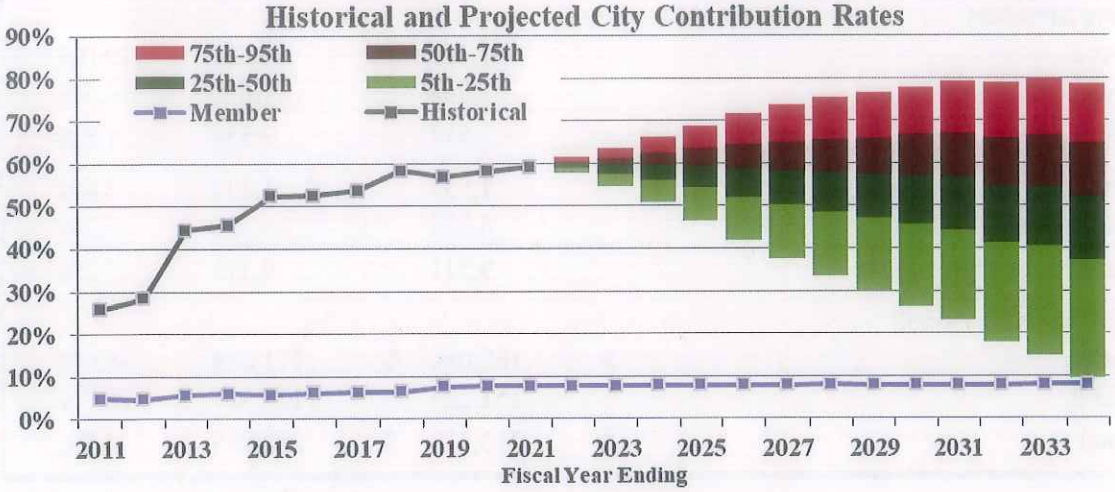
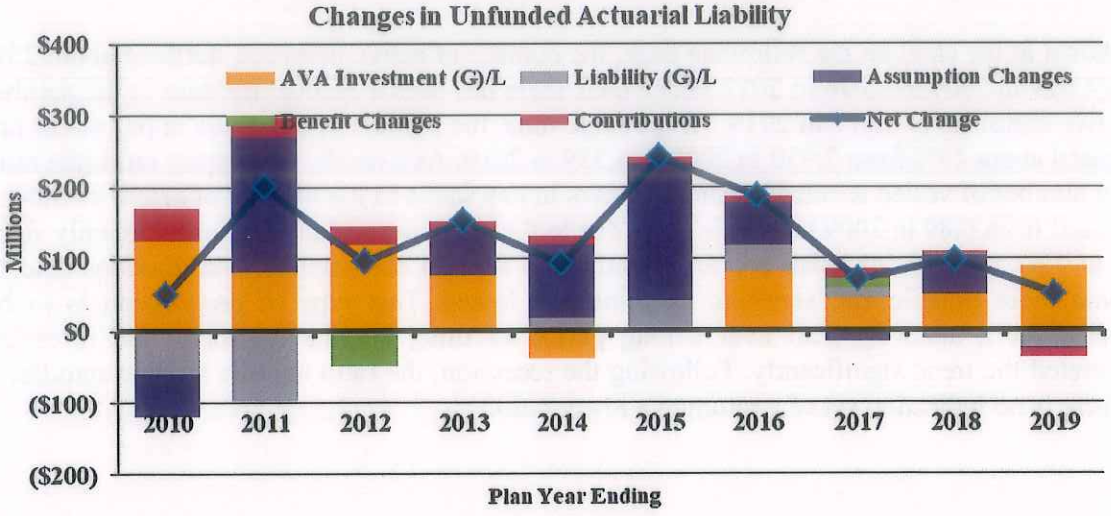








SECTION I – BOARD SUMMARY

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 3.2% from 2018 to 2019. Total active membership increased 1.8% with Tier 1 active membership declining by 10% while Tier 2 active membership increased by nearly 15%. Total payroll increased by 4.8% which is greater than the assumed increase rate of 3.25%. Tier 2 now accounts for approximately 54% of active members and 48% of payroll.

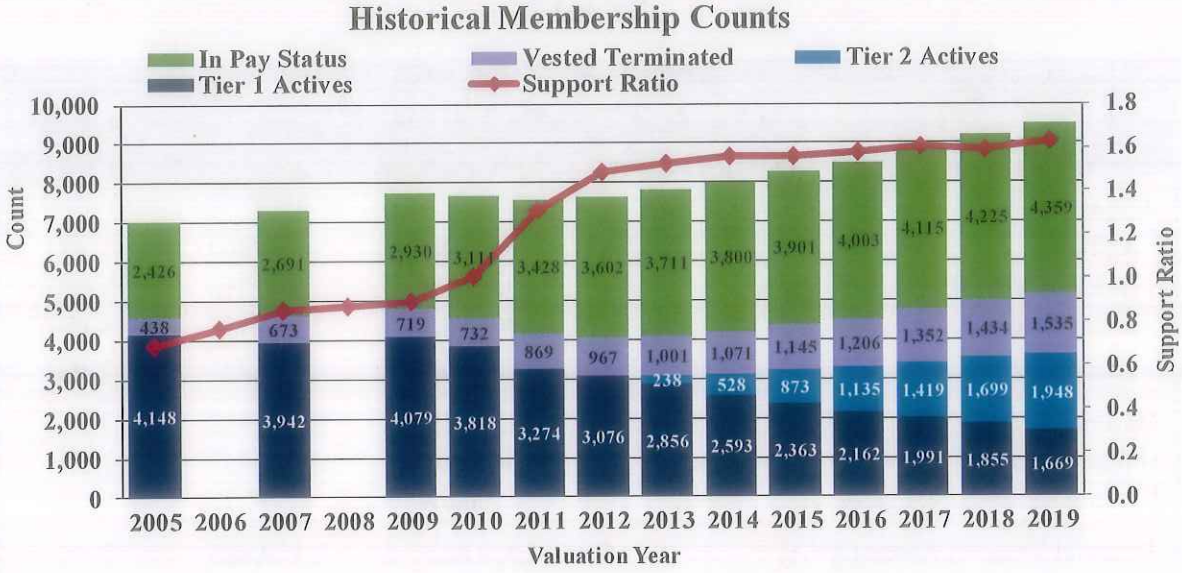
Table I-1

Total Membership	June 30, 2019	June 30, 2018	% Change
Active Members			
Tier 1	1,669	1,855	-10.0%
Tier 2	1,948	1,699	14.7%
Total Actives	3,617	3,554	1.8%
Terminated Vested Members	1,535	1,434	7.0%
Members In Pay Status	4,359	4,225	3.2%
Total Membership	9,511	9,213	3.2%
Active Member Payroll			
Tier 1	$ 162,086	$ 171,639	-5.6%
Tier 2	151,224	127,347	18.7%
Total	$ 313,310	$ 298,985	4.8%

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 3,617 in 2019. At the same time, the number of members in pay status has increased about 49% from 2,930 in 2009 to 4,359 in 2019. 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 0.89 in 2009 to 1.49 in 2012 due to the recession and has increased steadily since then to 1.63 in 2019. 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.

SECTION I – BOARD SUMMARY



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, 2019 compared to June 30, 2018.

SECTION I – BOARD SUMMARY

Table I-2

Summary of Funded Status and Related Ratios	June 30, 2019	June 30, 2018	% Change
Actuarial Liability			
Actives	$ 1,050,036	$ 1,098,809	-4.4%
Deferred Vested	244,741	236,216	3.6%
In Pay Status	2,905,931	2,765,796	5.1%
Total	$ 4,200,708	$ 4,100,821	2.4%
Market Value of Assets (MVA)	$ 2,132,152	$ 2,069,332	3.0%
Unfunded Actuarial Liability - MVA Basis	$ 2,068,556	$ 2,031,489	1.8%
Funding Ratio - MVA Basis	50.8%	50.5%	0.6%
Actuarial Value of Assets (AVA)	$ 2,228,802	$ 2,179,488	2.3%
Unfunded Actuarial Liability - AVA Basis	$ 1,971,906	$ 1,921,333	2.6%
Funding Ratio - AVA Basis	53.1%	53.1%	-0.2%
FYE 2020 Expected Payroll	$ 313,310	$ 298,985	4.8%
Asset Leverage Ratio	6.8	6.9	-1.7%
Actuarial Liability Leverage Ratio	13.4	13.7	-2.2%
Interest on UAL - MVA Basis	$ 135,141	$ 132,719	1.8%
Interest Cost as Percent of Payroll	43.1%	44.4%	-2.8%

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 2.4% while the Market Value of Assets increased 3.0%. Given the greater size of the Actuarial Liability, however, the Unfunded Actuarial Liability (UAL) measured on the Market Value of Assets increased 1.8% from approximately $2,031 million to $2,069 million. The funding ratio on an MVA basis remained relatively level, increasing slightly from 50.5% to 50.8%.

The asset smoothing method deferred 80% of the investment loss while recognizing 20% of the prior four years' gains and losses, resulting in a 2.3% increase in the Actuarial Value of Assets. The UAL measured on the Actuarial Value of Assets increased 2.6% from approximately $1,921 million to $1,972 million and the funding ratio remained constant at 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.

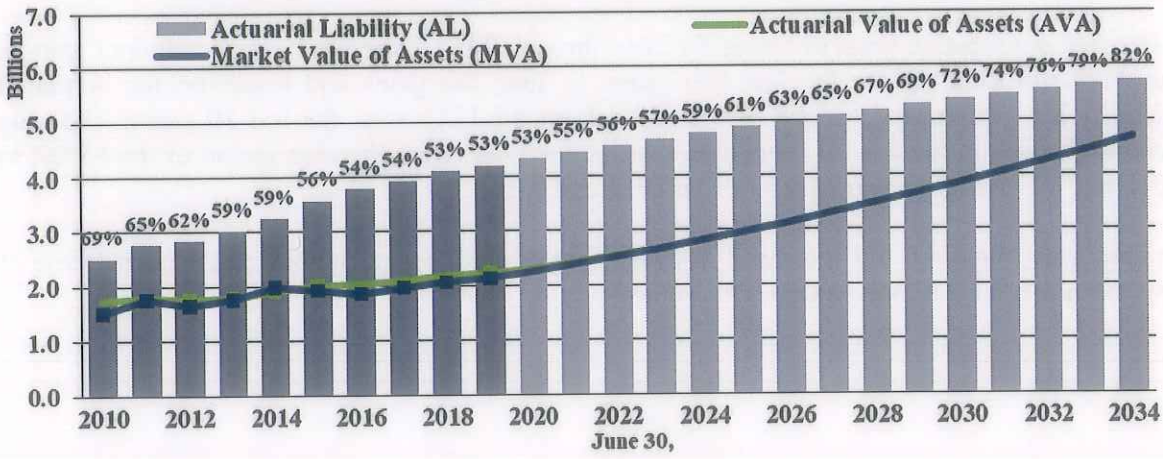
The asset leverage ratio (Market Value of Assets divided by payroll) of 6.8 means that if the System experiences a 10% loss on assets compared to the discount rate of 6.75%, the loss would

be equivalent to 68% of payroll. Interest payments on such a loss would be approximately 4.6% of payroll. Because payroll grew more than assets during the year, the asset leverage ratio declined slightly.

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 13.4 (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 2010. The historical Actuarial Liability is shown in dark gray while the projected Actuarial Liability is shown in a lighter gray. From 2010 to 2019, the funding ratio 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 82% by 2034.

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.

SECTION I – BOARD SUMMARY

Changes in UAL

The chart at the bottom of the dashboard (page 1) and Table I-3 on the following 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 $631 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 7.95% in 2010 to the current rate of 6.75% that have increased the measure of the UAL by a sum total of $583 million over the last 10 years.

Actual contributions have consistently been less than the normal cost plus interest on the UAL until 2019, 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 $151 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 has been phased out. Contribution rates in the future are expected to continue to exceed normal cost plus interest on the UAL and gradually pay down the UAL.

After four consecutive years of losses for 2014 through 2017, there has been an actuarial gain on the Actuarial Liability for the last two years. In sum, the gains and losses on the Actuarial Liability have subtracted roughly $95 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 $1.2 billion as shown in Table I-3.

SECTION I – BOARD SUMMARY

Table I-3

Changes in Unfunded Actuarial Liability

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total
Discount Rate	7.95%	7.50%	7.50%	7.25%	7.00%	7.00%	6.875%	6.875%	6.75%	6.75%	
Source											
AVA (G)/L	$ 124.1	$ 82.2	$ 119.3	$ 76.5	$ (39.7)	$ 3.6	$ 81.5	$ 44.6	$ 49.9	$ 88.8	$ 631.0
Liability (G)/L	(60.4)	(98.0)	(6.5)	(0.1)	16.9	38.2	36.0	13.7	(11.5)	(23.2)	$ (95.0)
Assumption Changes	(59.4)	187.5	0.0	63.7	103.4	191.5	60.2	(15.6)	54.4	(2.9)	$ 582.9
Benefit Changes	0.0	0.0	(43.1)	0.0	0.0	0.0	0.0	13.8	1.9	0.0	$ (27.4)
Contributions	47.0	28.9	26.8	12.4	12.2	8.8	8.8	14.0	4.0	(12.1)	$ 150.9
Total UAL Change	$ 51.4	$ 200.6	$ 96.5	$ 152.5	$ 92.8	$ 242.1	$ 186.6	$ 70.5	$ 98.8	$ 50.6	$ 1,242.3

Dollar amounts in millions

Table I-4 on the next page breaks out the sources of the changes in UAL for the fiscal year ending June 30, 2019. The UAL increased about $51 million since the prior year. About $89 million was due to investment losses on the Actuarial Value of Assets. There were data corrections reducing the number of reported beneficiaries that reduced the liability by approximately $36 million. The Board adopted economic and demographic assumption changes for this valuation. These assumption changes decreased the UAL by approximately $3 million. There were liability gains of about $23 million. Finally, contributions greater than normal cost plus interest on the UAL subtracted about $12 million from the UAL during the year.

SECTION I – BOARD SUMMARY

Table I-4

Sources of FYE 2019 Change in UAL		Amount	% of AL
Unfunded Actuarial Liability, June 30, 2019	$	1,971,906	102.6%
Unfunded Actuarial Liability, June 30, 2018		1,921,333	100.0%
Change in Unfunded Actuarial Liability	**$**	**50,573**	2.6%
Sources of Changes			
Plan Changes	$	0	0.0%
Assumption Changes		(2,935)	-0.2%
Normal Cost and Interest on UAL less Contributions		(12,105)	-0.6%
Investment (gain) or loss on Actuarial Value of Assets		88,845	4.6%
Liability (gain) or loss			
Salary experience	$	9,573	0.5%
Retirement experience		5,626	0.3%
Data corrections		(36,094)	-1.9%
Other experience		(2,337)	-0.1%
Total Liability (gain) or loss	$	(23,232)	-1.2%
Total Changes	**$**	**50,573**	2.6%

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 58.2% to 59.2%. 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 0.5% above the tread water rate to 4.5% 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 2020 and 2021. The Tier 1 UAL payment increased $11.1 million from 2020 to 2021, reflecting the expected increase in UAL payments and the investment losses. The Tier 1 normal cost rate increased primarily due to the administrative expense assumption change, 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 about $11.4 million while its contribution rate increased 1.00% of payroll.

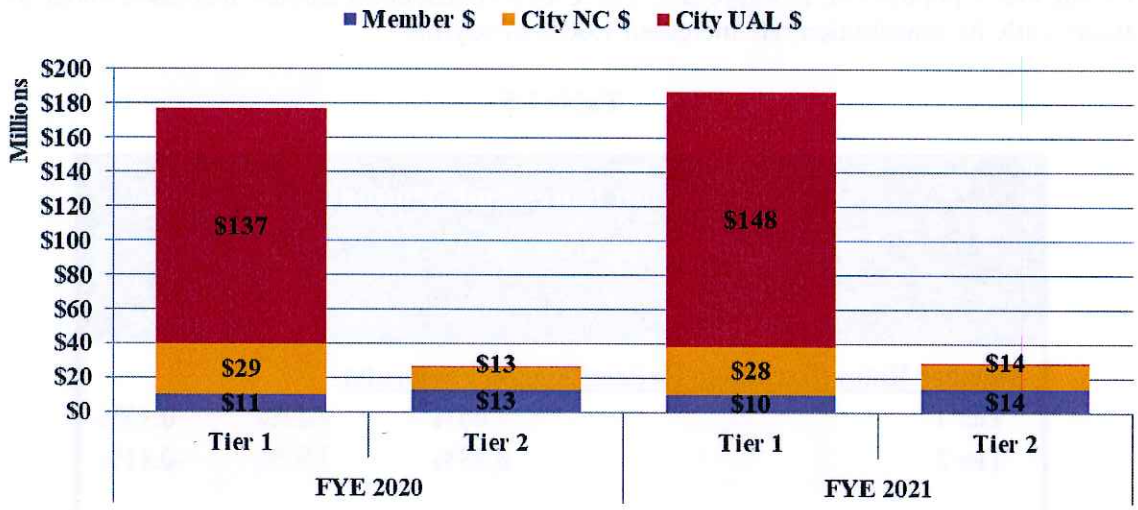
Table I-5

Contribution Rates and Amounts Throughout the Year

	FYE 2020	FYE 2021	Change
Member Rates (Excluding Reclassification Payments)			
Tier 1	7.06%	7.22%	0.16%
Tier 2	8.33%	7.92%	-0.41%
City Contributions			
Tier 1 UAL Payment	$ 137,409	$ 148,460	$ 11,050
Tier 1 Normal Cost (Including Administrative Expenses)	$ 28,866 19.34%	$ 28,160 19.82%	$ (706) 0.48%
Tier 2 Contribution	$ 13,282 8.33%	$ 14,306 7.92%	$ 1,024 -0.41%
Aggregate Contribution	**$ 179,558 58.17%**	**$ 190,926 59.16%**	**$ 11,368 0.99%**

Dollar amounts in thousands

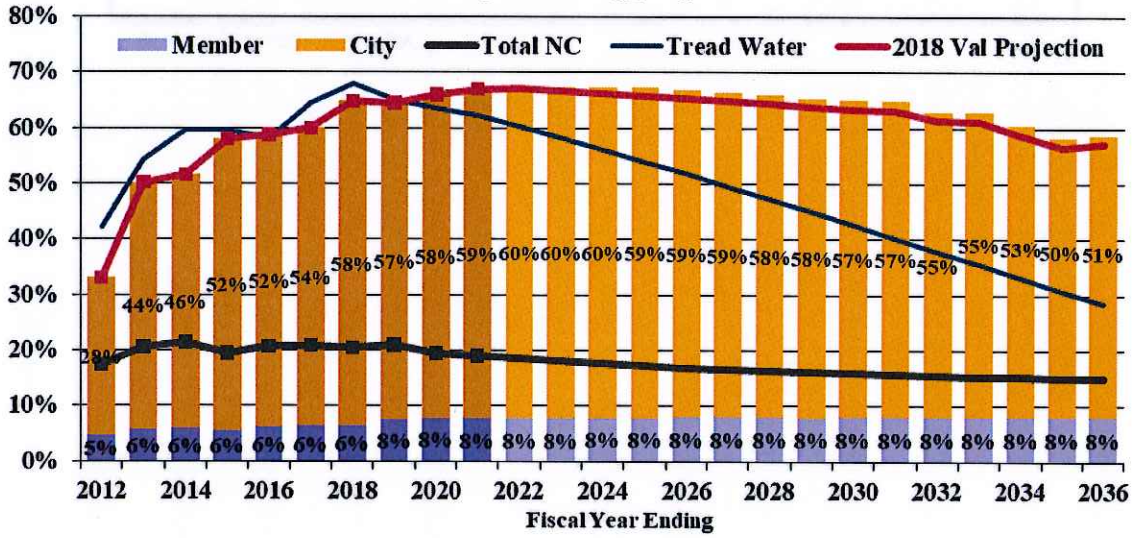
SECTION I – BOARD SUMMARY



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, 2021 are shown in a darker shade than the projected future contribution rates.

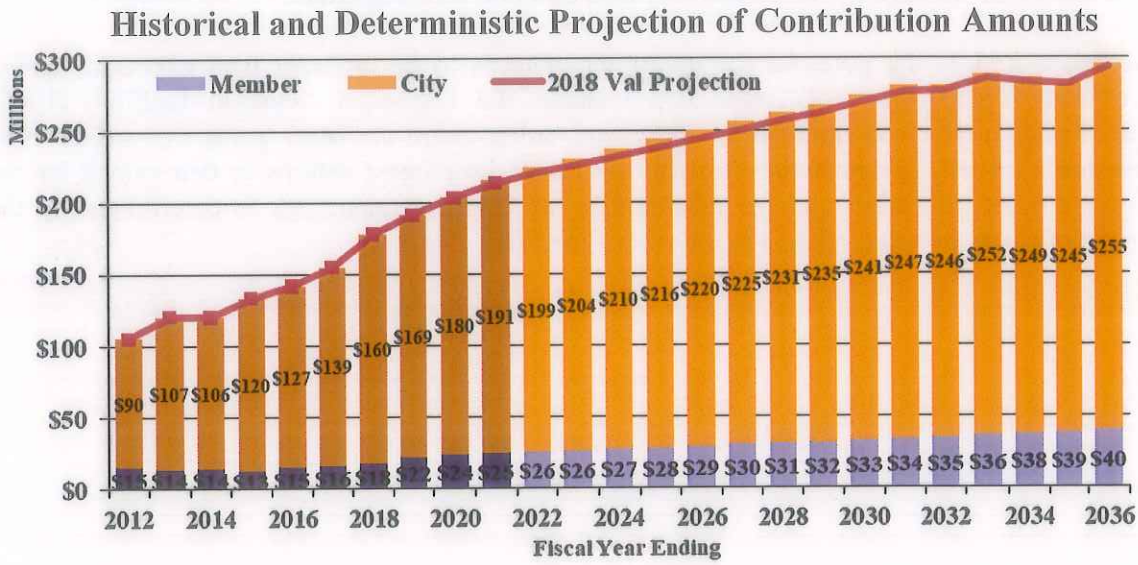
Historical and Projected Aggregate Contribution Rates



SECTION I – BOARD SUMMARY

The aggregate City contribution rate has increased dramatically since FYE 2011 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 (3.00% vs. 2.75%). After the projection period shown, contribution rates are expected to drop more rapidly as some amortization bases are fully paid off.

The following chart 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 $191 million in FYE 2021 to a peak of approximately $253 million in FYE 2036, before declining as portions of the UAL are paid off.



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

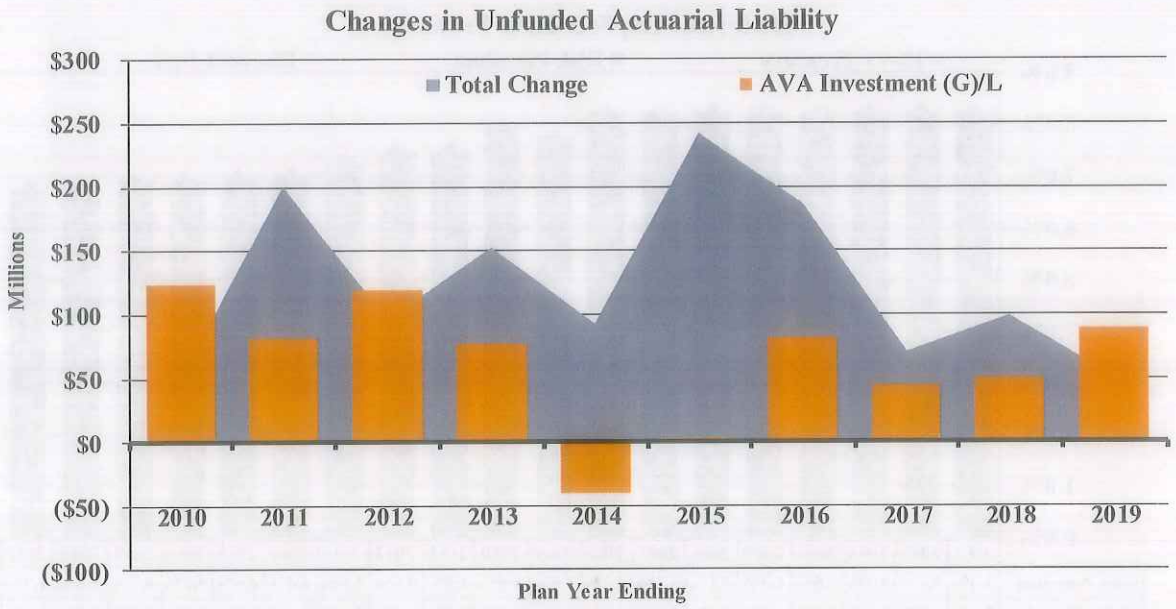
As we have discussed with the Board, the fundamental risk to the System is that the contributions needed to pay the benefits become unaffordable. While there are a number of factors that could lead to contribution amounts becoming unaffordable, we believe the primary risks for this Plan are:

- Investment risk,
- Interest rate risk, 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 (UAL) 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.

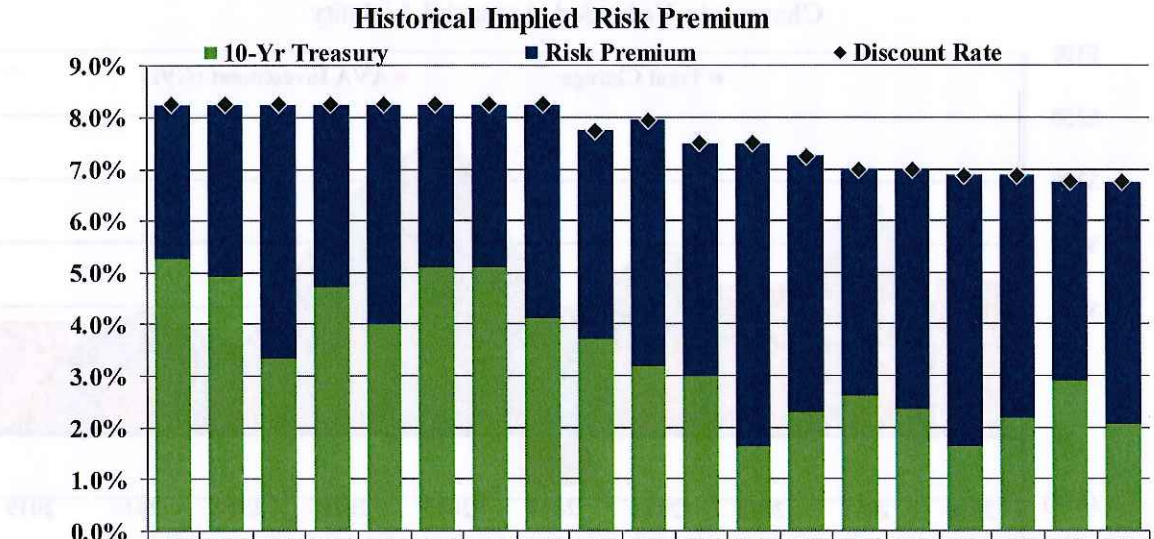
SECTION II – ASSESSMENT AND DISCLOSURE OF RISK



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

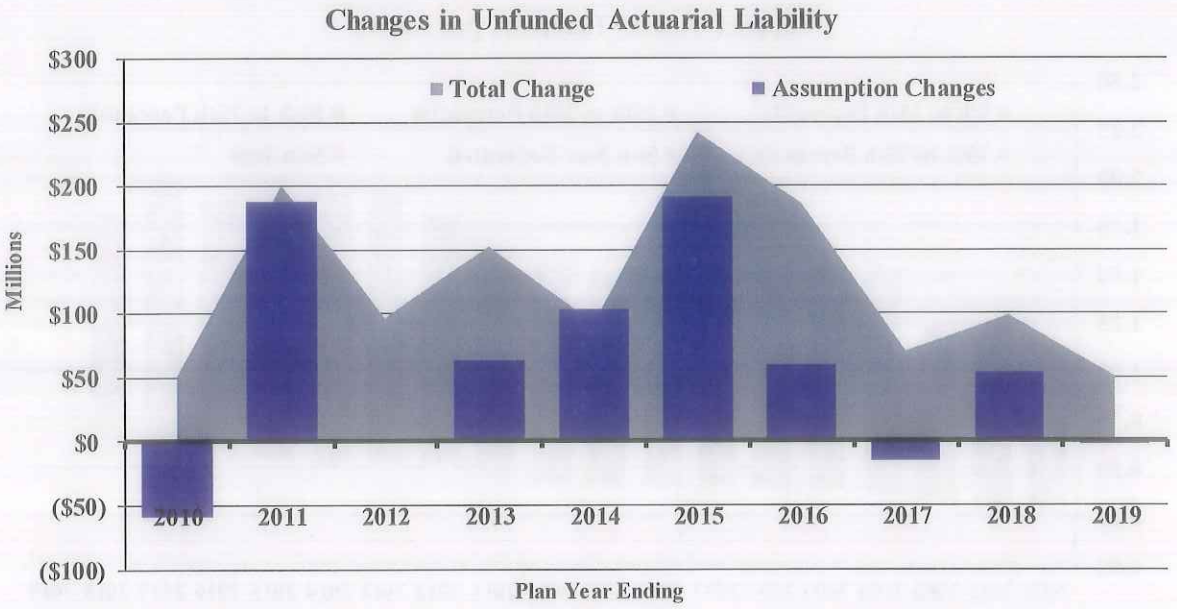


	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Risk Premium	3.0%	3.3%	4.9%	3.5%	4.3%	3.1%	3.2%	4.2%	4.0%	4.8%	4.5%	5.9%	5.0%	4.4%	4.6%	5.2%	4.7%	3.8%	4.7%
10-Yr Treasury	5.3%	4.9%	3.3%	4.7%	4.0%	5.1%	5.1%	4.1%	3.7%	3.2%	3.0%	1.6%	2.3%	2.6%	2.4%	1.6%	2.2%	2.9%	2.1%
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%	6.8%

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 on the following page, there have been substantial changes in assumptions increasing the UAL. Most of these changes are due to reducing the discount rate from 7.95% 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.

SECTION II – ASSESSMENT AND DISCLOSURE OF RISK



Plan Maturity Measures

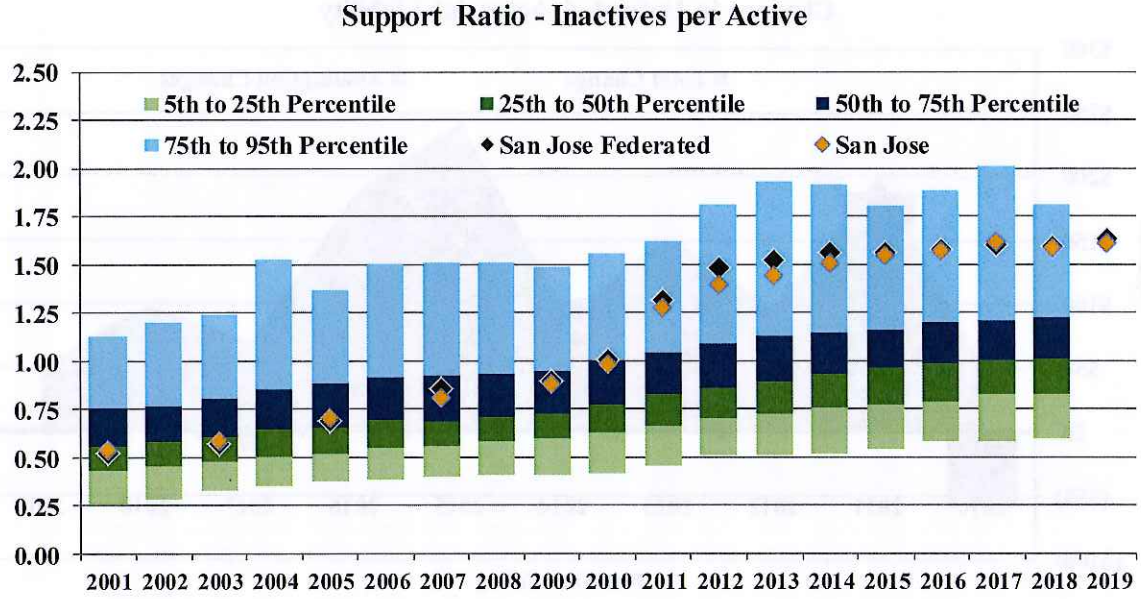
The future financial condition of a mature pension plan is more sensitive to each of the risks identified above than a less mature plan. Before assessing each of these risks, it is important to understand the maturity of the plan compared to other plans and how the maturity has changed over time.

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.

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.

SECTION II – ASSESSMENT AND DISCLOSURE OF RISK



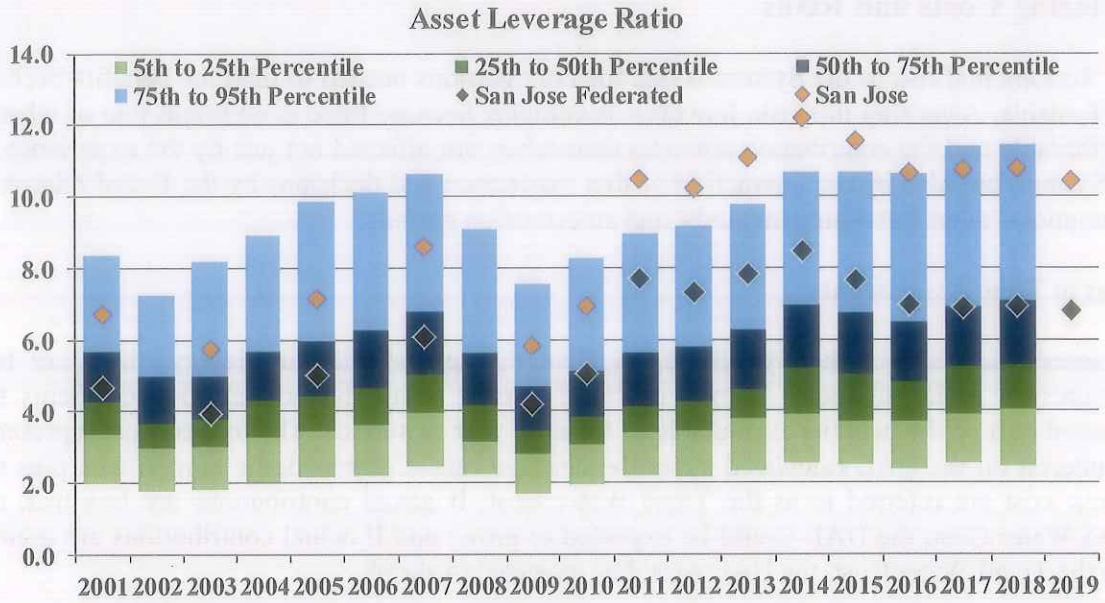
The chart above shows the distribution from the 5th to 95th percentile of support ratios for the plans in the Public Plans Database. The black diamond shows how San José Federated compares, and the gold diamond shows how the combined Federated and Police and Fire plans compare. Through 2007, the System 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.

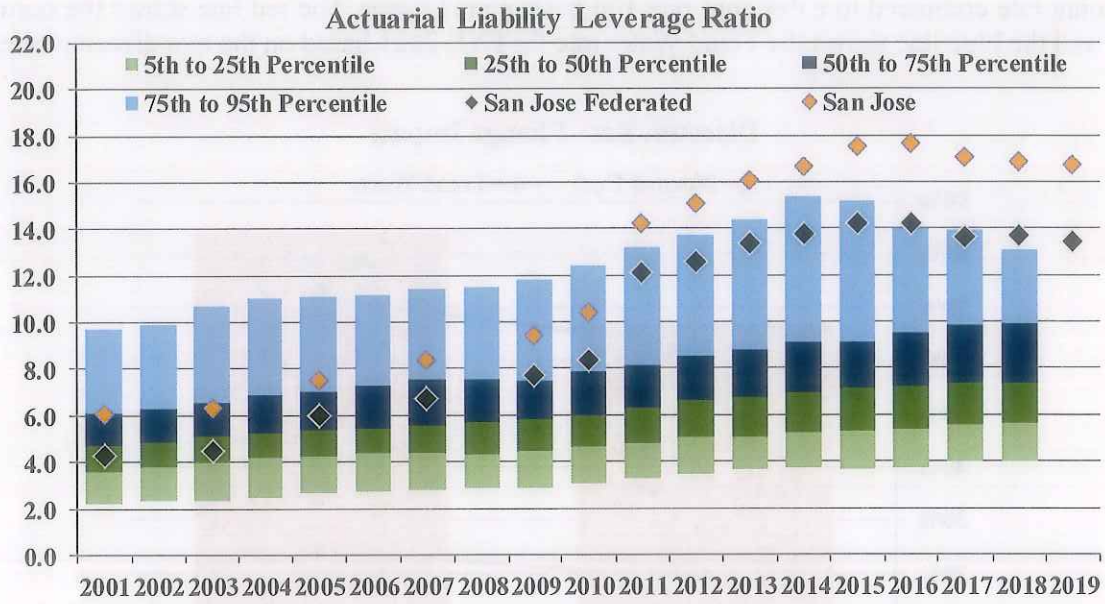
Leverage Ratios

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.

SECTION II – ASSESSMENT AND DISCLOSURE OF RISK





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 above, 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.

SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

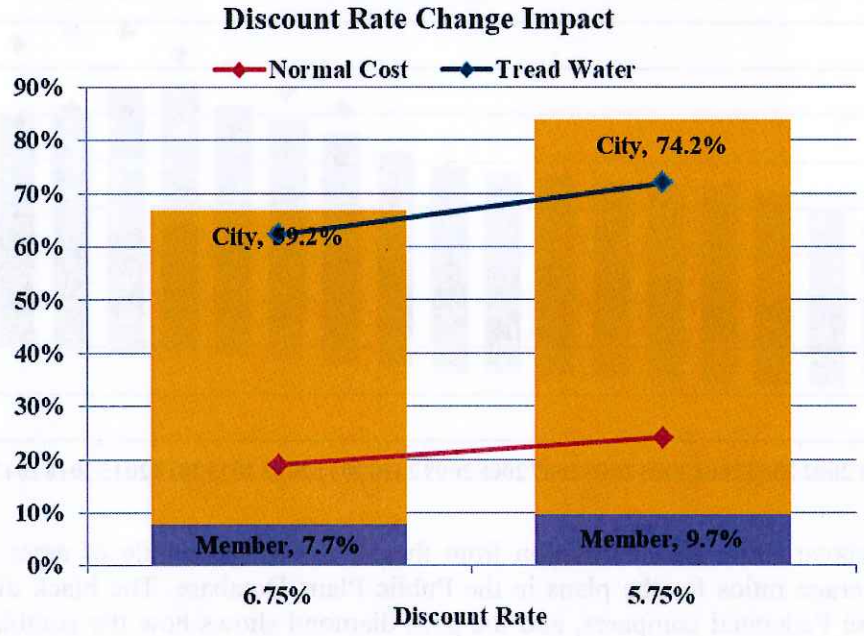
Assessing Costs and Risks

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 following chart show the Member and City contributions at the current discount rate compared to a discount rate 100 basis points lower. The red line shows the normal cost and the blue line shows the Tread Water rate for FYE 2021 based on the two discount rates.



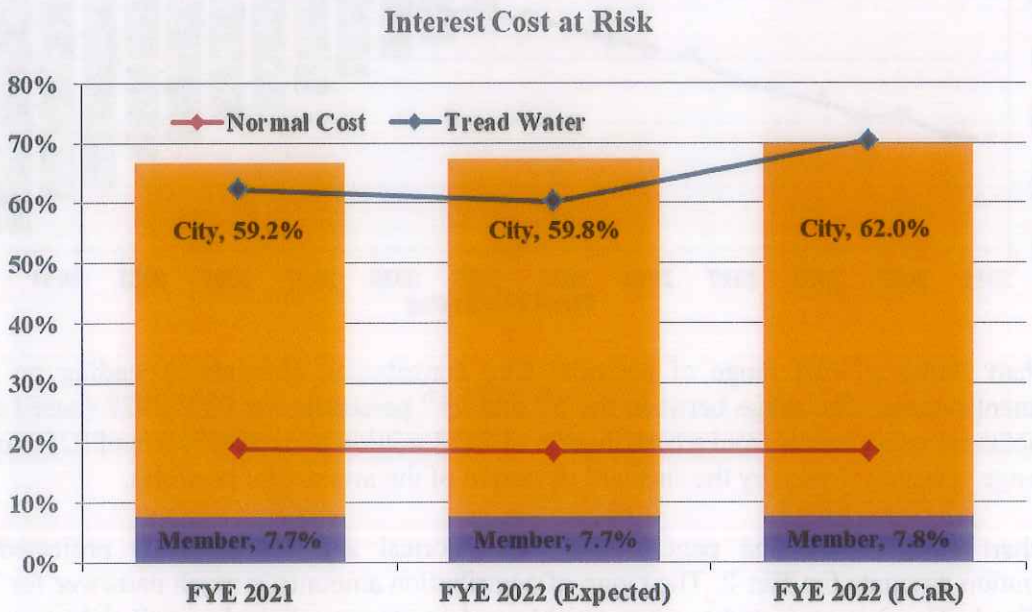
Decreasing the discount rate by 100 basis points would increase the normal cost by over 5% of payroll and the tread water rate almost 9% of payroll. Using the current amortization methods, the total contribution rate would increase by about 17% of payroll to almost 84% of pay.

SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

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 11.4%, making the investment return used to determine ICaR -16.1% (6.75% – 2 x 11.4%).

The following chart shows the contribution rates for the FYE 2021, determined in this valuation report in the far left bar graph and the expected FYE 2022 contribution rates based on a 6.75% investment rate of return for FYE 2020, in the middle of the chart. The FYE 2022 bar graph on the right shows the impact of a -16.1% return for FYE 2020. The tread water cost would increase by about 10% of pay. The City contribution rate for FYE 2022 in this scenario would be 62.0% of pay and expected to increase in future years as the investment loss is recognized over the 5-year smoothing period.



Stochastic Projections

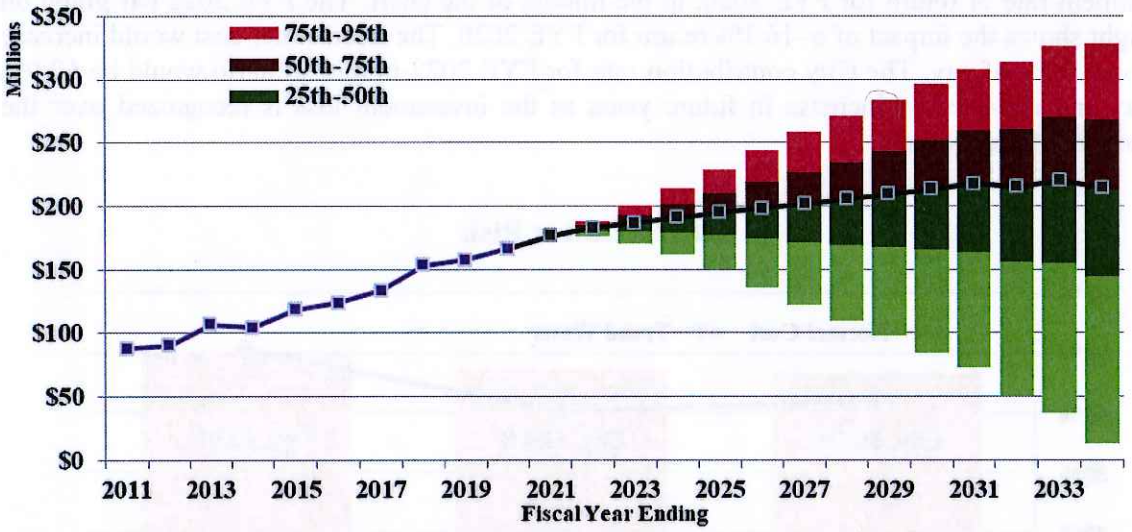
If experience has taught us anything, it is that there is a significant level of uncertainty in projections of the future. The largest source of uncertainty is the projection of investment returns. In order to better understand the potential impact of investment returns on the System, we have

SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

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 11.4% (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 below 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.

Historical and Stochastically Projected Tier 1 City Contribution Amounts

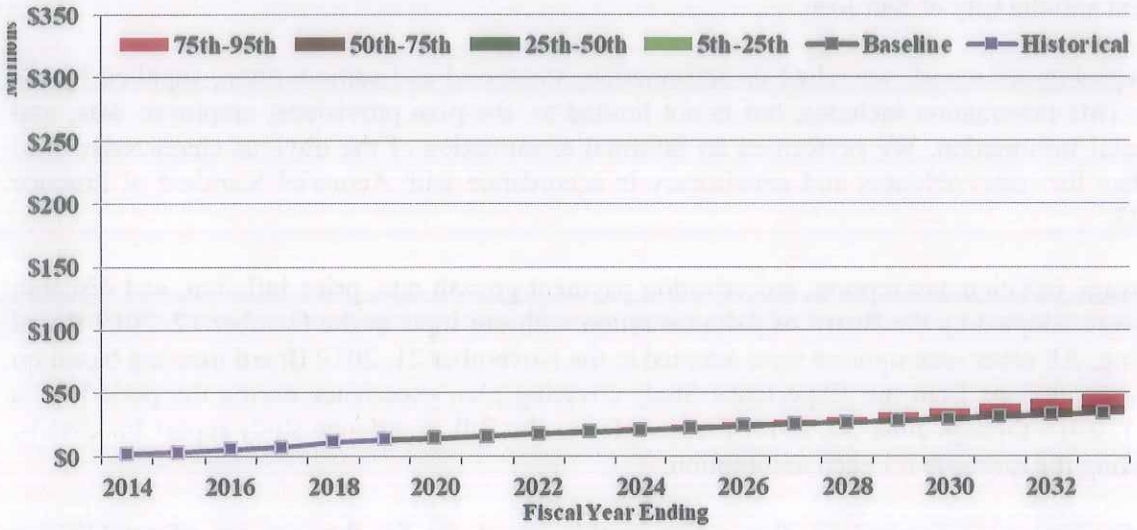


The chart shows a wide range of potential City contribution amounts depending on actual investment returns. The range between the 5th and 95th percentile for FYE 2027 (based on the 2025 actuarial valuation) is from a contribution of $123 million to a contribution of $258 million. This range is largely 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, 2019 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, price inflation, and discount rate were adopted by the Board of Administration with our input at the October 17, 2019 Board meeting. All other assumptions were adopted at the November 21, 2019 Board meeting based on recommendations from our Experience Study covering plan experience during the period from July 1, 2015 through June 30, 2019. Please refer to the full experience study report for details, including 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.

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

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, FCA, MAAA
Consulting Actuary

Jacqueline R. King, ASA, EA, MAAA
Associate 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 2019			Fiscal Year Ending 2018		
	Tier 1	Tier 2	Total	Tier 1	Tier 2	Total
Beginning Market Value	$ 2,023,908	$ 45,424	$ 2,069,332	$ 1,945,723	$ 27,068	$ 1,972,791
Contributions						
Member	11,274	11,332	22,606	11,406	9,095	20,501
City	161,673	11,332	173,005	147,675	9,095	156,770
Total	$ 172,947	$ 22,664	$ 195,611	$ 159,081	$ 18,190	$ 177,271
Net Investment Earnings	74,757	2,099	76,856	115,423	2,069	117,492
Benefit Payments	(204,261)	(804)	(205,065)	(192,847)	(553)	(193,400)
Administrative Expenses	(4,485)	(97)	(4,582)	(4,761)	(61)	(4,822)
Measure F Transfers	0	0	0	1,289	(1,289)	0
Market Value, End of Year	**$ 2,062,866**	**$ 69,286**	**$ 2,132,152**	**$ 2,023,908**	**$ 45,424**	**$ 2,069,332**
Estimated Rate of Return	3.6%	3.7%	3.6%	5.8%	6.0%	5.8%

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 classic members who were reclassified to Tier 1.

The net investment earnings for the year ended June 30, 2019 represent approximately a 3.6% return on the Market Value of Assets compared to an assumed return of 6.75%. This return produced an investment loss of $67.9 million for the year ending June 30, 2019. For the year ended June 30, 2018, the net investment return was approximately 5.8% (6.875% was assumed), which produced an investment loss of $22.6 million.

SECTION IV – ASSETS

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 (6.75% for FYE 2019, 6.875% for FYE 2018 and 2017, and 7.00% for FYE 2016) 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	$ 1,345,806	$ 717,059	$ 2,062,866	$ 59,851	$ 9,435	$ 69,286
FYE 2019						
Actual Earnings	$ 49,326	$ 25,431	$ 74,757	$ 1,822	$ 276	$ 2,098
Expected Earnings	92,402	48,569	140,971	3,290	499	3,789
Investment Gain or (Loss)	(43,076)	(23,138)	(66,214)	(1,468)	(223)	(1,691)
Deferred (80%)	(34,461)	(18,511)	(52,971)	(1,174)	(178)	(1,352)
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 (60%)	$ (8,639)	$ (4,736)	$ (13,376)	$ (158)	$ (21)	$ (178)
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 (40%)	$ 4,239	$ 1,533	$ 5,772	$ 82	$ 9	$ 92
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 (20%)	$ (24,087)	$ (10,335)	$ (34,422)	$ (195)	$ (20)	$ (215)
Total Deferred Gain or (Loss)	$ (62,948)	$ (32,049)	$ (94,997)	$ (1,444)	$ (209)	$ (1,653)
Actuarial Value of Assets	**$ 1,408,754**	**$ 749,108**	**$ 2,157,863**	**$ 61,295**	**$ 9,644**	**$ 70,939**
Ratio of Actuarial to Market	104.7%	104.5%	104.6%	102.4%	102.2%	102.4%
Estimated Rate of Return	2.5%	3.2%	2.7%	5.5%	5.7%	5.5%

Dollar amounts in thousands

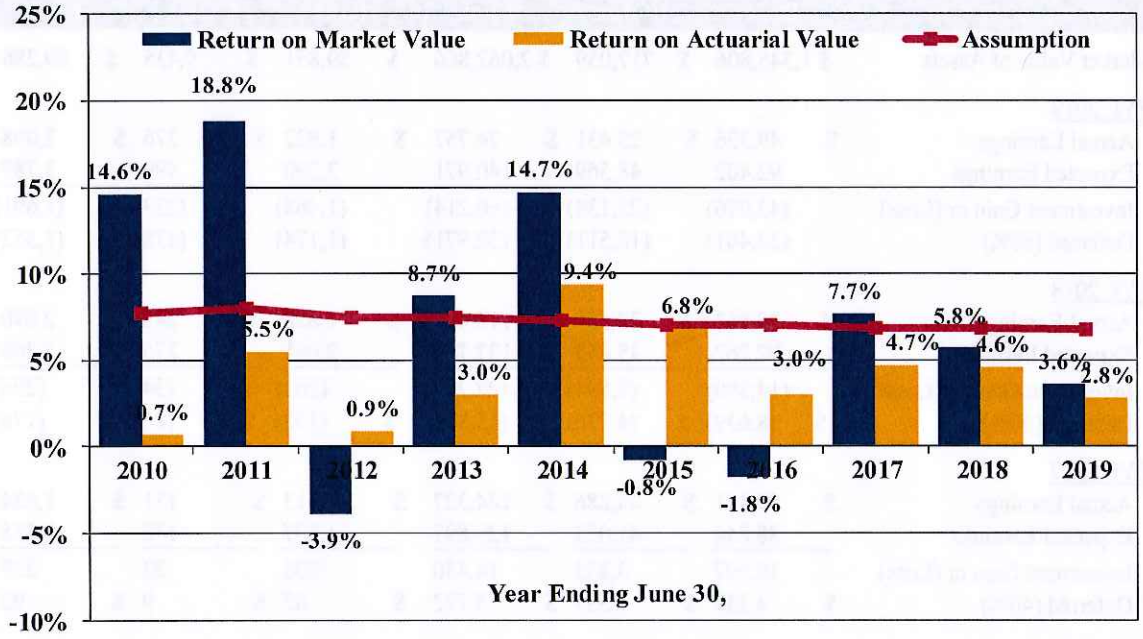
On an Actuarial Value of Assets basis, the aggregate return for the year ending June 30, 2019 was 2.7% for Tier 1 and 5.5% for Tier 2, both less than the assumed return of 6.75% and the return on the Market Value of Assets. This return on the Actuarial Value of Assets produced an investment loss of $88.8 million for the year ending June 30, 2019.

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 18.8% in 2011 to -3.9% in 2012. The geometric average return was 2.8% and 6.5% over the last five and 10 years, respectively. The

SECTION IV – ASSETS

return on the Actuarial Value of Assets is more stable than on the market value with a geometric average of 4.4% over the last five 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, 2019 and June 30, 2018 separately by Tier.

Table V-1

Present Value of Future Benefits

	June 30, 2019			June 30, 2018	
	Basic	COLA	Total	Total	% Change
Tier 1					
Actives	$ 857,918	$ 353,199	$ 1,211,117	$ 1,295,256	-6.5%
Deferred Vested	166,654	71,126	237,780	232,508	2.3%
In Pay Status	1,637,628	1,267,502	2,905,130	2,765,610	5.0%
Total Tier 1	**$ 2,662,200**	**$ 1,691,827**	**$ 4,354,027**	**$ 4,293,374**	**1.4%**
Tier 2					
Actives	$ 220,598	$ 39,239	$ 259,837	$ 225,760	15.1%
Deferred Vested	6,268	693	6,961	3,708	87.7%
In Pay Status	683	119	802	185	333.5%
Total Tier 2	**$ 227,549**	**$ 40,051**	**$ 267,600**	**$ 229,653**	**16.5%**
Total System	**$ 2,889,749**	**$ 1,731,878**	**$ 4,621,627**	**$ 4,523,027**	**2.2%**

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. Table V-2 below shows the Total normal cost rates as of June 30, 2019 and June 30, 2018 separately by Tier. The decrease in normal cost rate for each Tier is primarily attributable to the assumption changes for this valuation.

Table V-2

Normal Cost

	June 30, 2019			June 30, 2018	
	Basic	COLA	Total	Total	% Change
Tier 1					
Retirement	$ 16,859	$ 6,974	$ 23,833	$ 27,619	-13.7%
Termination	7,116	2,311	9,427	9,219	2.3%
Death	492	206	698	791	-11.8%
Disability	1,104	488	1,592	1,319	20.7%
Reciprocity	561	244	805	785	2.5%
Total Tier 1	**$ 26,132**	**$ 10,223**	**$ 36,355**	**$ 39,733**	**-8.5%**
Expected Payroll	$ 148,356	$ 148,356	$ 148,356	$ 156,433	-5.2%
Tier 1 NC Rate	**17.61%**	**6.89%**	**24.50%**	**25.40%**	**-3.5%**
Tier 2					
Retirement	$ 11,631	$ 2,132	$ 13,763	$ 12,753	7.9%
Termination	4,303	523	4,826	3,554	35.8%
Death	538	87	625	556	12.4%
Disability	852	150	1,002	653	53.4%
Total Tier 2	**$ 17,324**	**$ 2,892**	**$ 20,216**	**$ 17,516**	**15.4%**
Expected Payroll	$ 137,855	$ 137,855	$ 137,855	$ 115,893	18.9%
Tier 2 NC Rate	**12.57%**	**2.09%**	**14.66%**	**15.11%**	**-3.0%**

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, 2019 and June 30, 2018 separately by Tier.

Table V-3

Actuarial Liability

	June 30, 2019			June 30, 2018	
	Basic	COLA	Total	Total	% Change
Tier 1					
Actives					
Retirement	$ 642,761	$ 261,849	$ 904,610	$ 974,392	-7.2%
Termination	33,373	19,468	52,841	56,512	-6.5%
Death	6,806	2,563	9,369	8,502	10.2%
Disability	9,855	3,893	13,748	10,162	35.3%
Total Actives	$ 692,795	$ 287,773	$ 980,568	$ 1,049,568	-6.6%
Deferred Vested	$ 166,654	$ 71,126	$ 237,780	$ 232,508	2.3%
In Pay Status					
Retirees	$ 1,512,258	$ 1,137,472	$ 2,649,730	$ 2,515,834	5.3%
Beneficiaries	81,160	87,363	168,523	160,898	4.7%
Disabled	44,210	42,666	86,876	88,878	-2.3%
Total In Pay Status	$ 1,637,628	$ 1,267,501	$ 2,905,129	$ 2,765,610	5.0%
Total Tier 1	**$ 2,497,077**	**$ 1,626,400**	**$ 4,123,477**	**$ 4,047,686**	**1.9%**
Tier 2					
Actives					
Retirement	$ 46,875	$ 8,580	$ 55,455	$ 40,891	35.6%
Termination	7,262	2,062	9,324	5,314	75.5%
Death	1,979	343	2,322	1,680	38.2%
Disability	1,997	370	2,367	1,357	74.4%
Total Actives	$ 58,113	$ 11,355	$ 69,468	$ 49,242	41.1%
Deferred Vested	6,268	693	6,961	3,708	87.7%
In Pay Status					
Retirees	$ 683	$ 119	$ 802	$ 185	333.5%
Beneficiaries	0	0	0	0	
Disabled	0	0	0	0	
Total In Pay Status	$ 683	$ 119	$ 802	$ 185	333.5%
Total Tier 2	**$ 65,064**	**$ 12,167**	**$ 77,231**	**$ 53,135**	**45.3%**
Total System	**$ 2,562,141**	**$ 1,638,567**	**$ 4,200,708**	**$ 4,100,821**	**2.4%**

Dollar amounts in thousands

SECTION VI – CONTRIBUTIONS

Amortization of the Unfunded Actuarial Liability

Under the contribution allocation procedure employed by the System, there are three components to the contribution: the normal cost, 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 administrative expense and UAL contribution rates.

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, 2018 plus the impact of the 2019 experience and assumption changes, and the 2018 UAL payment that is made by the City on July 1, 2019.

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	$ 565	$ 414	$ 979	N/A	$ 65	$ 48	$ 114
Classic UAL Pmt	552	389	940	19	43	30	73
Total Members	$ 1,116	$ 803	$ 1,919		$ 108	$ 79	$ 186
City UAL							
Golden Handshake	$ 17,000	$ 4,134	$ 21,133	20	$ 1,273	$ 310	$ 1,583
2009 UAL	609,110	149,162	758,272	20	45,616	11,171	56,787
2010 (Gain) or Loss	40,134	2,925	43,059	11	4,680	341	5,021
2010 Assumption Change	(33,832)	(18,781)	(52,613)	16	(2,960)	(1,643)	(4,603)
2011 (Gain) or Loss	8,164	(10,779)	(2,615)	12	888	(1,173)	(284)
2011 Assumption Changes	106,297	64,068	170,366	17	8,903	5,366	14,270
2012 (Gain) or Loss	(172,706)	277,971	105,266	13	(17,653)	28,413	10,760
SRBR Elimination	(38,684)		(38,684)	13	(3,954)		(3,954)
2013 (Gain) or Loss	47,667	19,925	67,592	14	4,604	1,924	6,528
2013 Assumption Changes	30,515	29,919	60,434	19	2,366	2,319	4,685
2014 (Gain) or Loss	(21,750)	(2,222)	(23,972)	15	(1,995)	(204)	(2,199)
2014 Assumption Changes	57,563	42,580	100,143	20	4,311	3,189	7,500
2015 (Gain) or Loss	27,374	19,411	46,786	16	2,395	1,698	4,093
2015 Assumption Changes	96,230	106,754	202,984	21	6,979	7,742	14,720
2016 (Gain) or Loss	75,619	33,604	109,223	17	6,334	2,815	9,148
2016 Assumption Changes	32,151	27,434	59,585	22	2,263	1,931	4,193
2017 (Gain) or Loss	40,939	17,460	58,399	18	3,294	1,405	4,699
Measure F	4,006	2,967	6,973	18	322	239	561
2017 Assumption Changes	(12,678)	(4,724)	(17,402)	23	(868)	(323)	(1,191)
2018 (Gain) or Loss	32,796	15,426	48,222	19	2,542	1,196	3,738
2018 Assumption Change	29,079	24,102	53,182	24	1,938	1,607	3,545
2019 (Gain) or Loss	53,826	2,238	56,063	20	4,031	168	4,199
2019 Assumption Change	(9,399)	7,703	(1,695)	25	(611)	501	(110)
7/1/2019 Payment	67,782	65,212	132,994				
Total City	$ 1,087,206	$ 876,490	$ 1,963,696		$ 74,699	$ 68,990	$143,689
Total Tier 1	**$ 1,088,322**	**$ 877,292**	**$ 1,965,615**		**$ 74,807**	**$ 69,069**	**$143,876**

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, 2019 over 10 years. The amortization payments increase 2.75% each year while payroll is expected to increase 3.00% 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

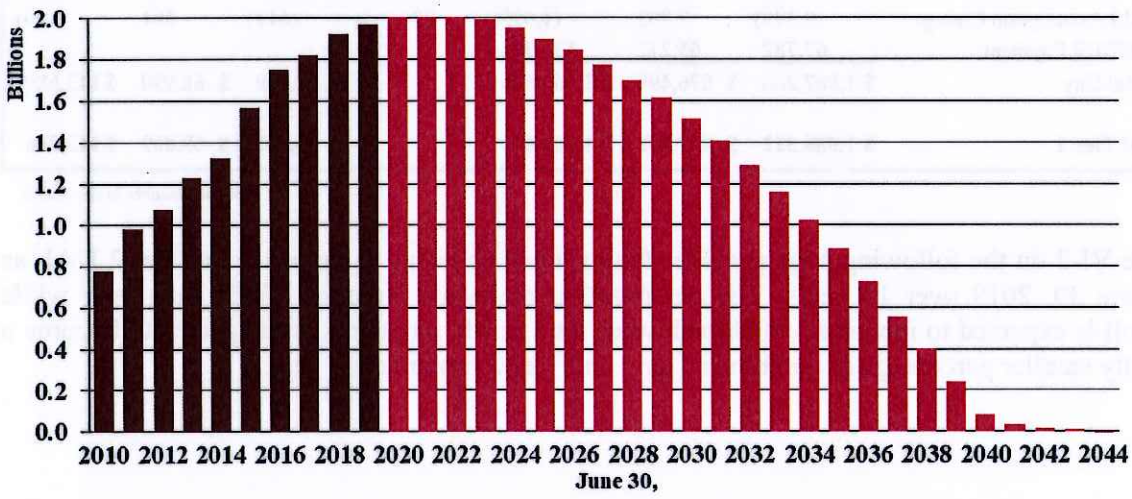
UAL Amortization - Tier 2

	Outstanding Balance			Remaining	Payment		
	Basic	COLA	Total	Period	Basic	COLA	Total
2013 (Gain) or Loss	$ 34	$ 8	$ 43	8	$ 5	$ 1	$ 6
2013 Assumption Changes	1	(0)	0	8	0	(0)	0
2014 (Gain) or Loss	(538)	1	(537)	8	(82)	0	(82)
2014 Assumption Changes	82	17	98	8	12	3	15
2015 (Gain) or Loss	624	151	775	8	95	23	118
2015 Assumption Changes	295	81	376	8	45	12	57
2016 (Gain) or Loss	(646)	139	(507)	8	(98)	21	(77)
2016 Assumption Changes	339	74	413	8	51	11	63
2017 (Gain) or Loss	(643)	(22)	(666)	8	(98)	(3)	(101)
Measure F	3,378	1,697	5,075	8	513	258	771
2017 Assumption Changes	1,177	318	1,495	8	179	48	227
2018 (Gain) or Loss	(1,460)	(741)	(2,201)	9	(201)	(102)	(303)
2018 Assumption Changes	1,065	284	1,349	9	146	39	185
2019 (Gain) or Loss	577	394	971	10	73	50	122
2019 Assumption Changes	(1,062)	(178)	(1,240)	10	(134)	(22)	(156)
7/1/2019 Payment	548	300	848				
Total Tier 2	**$ 3,769**	**$ 2,522**	**$ 6,291**		**$ 508**	**$ 339**	**$ 846**

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 Projected Unfunded Actuarial Liability



SECTION VI – CONTRIBUTIONS

This amortization structure results in a total UAL rate of 46.3% of payroll for FYE 2021, which is more than the amount needed to pay the projected interest on the UAL based on the Market Value of Assets (41.8% of payroll). As a result, the dollar amount of the UAL is expected to decrease during FYE 2021.

Contributions for Administrative Expenses

In prior years, contributions to cover administrative expenses were set at 1.0 percent of payroll. This approach allocated more contributions for administrative expenses to Tier 2 than there were actual administrative expenses and fewer contributions to Tier 1 than there were actual administrative expenses. Beginning with FYE 2021, contributions for administrative expenses are set equal to $515 per member (increasing 3.0 percent each year). Table VI-3 shows the number of members for each tier, the contributions for administrative expenses by tier, and the administrative expense contribution rates by tier for FYE 2021 and 2020. Tier 1 members pay 3/11ths of the administrative expenses expected for Tier 1, and Tier 2 members pay half of the administrative expenses expected for Tier 2.

Table VI-3

Administrative Expense By Group	Fiscal Year Ending 2021		Fiscal Year Ending 2020	
	Tier 1	Tier 2	Tier 1	Tier 2
Members	7,025	2,486	7,099	2,114
Administrative Expense	$ 3,618	$ 1,280	$ 1,400	$ 1,836
Member Admin Expense Rate	**0.69%**	**0.35%**	**0.27%**	**0.50%**
Basic	0.45%	0.31%	0.18%	0.44%
COLA	0.24%	0.04%	0.09%	0.06%
City Admin Expense Rate	**1.85%**	**0.35%**	**0.73%**	**0.50%**
Basic	1.21%	0.31%	0.49%	0.44%
COLA	0.64%	0.04%	0.24%	0.06%

Contribution Rates and Amounts

Tier 1 members pay 3/11ths of the total normal cost (excluding reciprocity normal cost) and administrative expenses while the City pays 8/11ths of the total normal cost (excluding reciprocity normal cost), all of the reciprocity normal cost, 8/11ths of administrative expenses, 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 total 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

SECTION VI – CONTRIBUTIONS

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.

Tier 1 members who were rehired into Tier 2 and subsequently reclassified back into Tier 1 under Measure F pay half of the increased cost attributable to their Tier 2 service. The Board set a contribution rate of 3.0 percent of pay that applies to each individual member until they have paid off their individual UAL amount for reclassification. In addition, Tier 2 members who were defined as classic members due to reciprocal service were reclassified as Tier 1 members under Measure F. All classic members pay an additional contribution rate to pay half of the additional liability attributable to reclassifying these members. This contribution rate is recalculated with each valuation. Table VI-4 shows the reclassification contribution rates applicable to classic members for FYE 2021 and 2020.

Table VI-4

Classic Member Contribution Rate

	Fiscal Year Ending 2021			Fiscal Year Ending 2020		
	Basic	COLA	Total	Basic	COLA	Total
Classic UAL Payment	$ 43	$ 30	$ 73	$ 41	$ 29	$ 70
Expected Classic Payroll			$ 6,590			$ 5,475
Classic Member Rate	**0.65%**	**0.46%**	**1.11%**	**0.86%**	**0.60%**	**1.46%**

Dollar amounts in thousands

SECTION VI – CONTRIBUTIONS

Table VI-5 shows the components of the member contribution rates for FYE 2021 and 2020, including the average of the reclassification rates under Measure F over all Tier 1 payroll.

Table VI-5

Member Contribution Rates

	Fiscal Year Ending 2021			Fiscal Year Ending 2020		
	Basic	COLA	Total	Basic	COLA	Total
Tier 1						
Normal Cost Rate	4.70%	1.83%	6.53%	4.90%	1.89%	6.79%
Admin Expense Rate	0.45%	0.24%	0.69%	0.18%	0.09%	0.27%
Regular Member Rate	**5.15%**	**2.07%**	**7.22%**	**5.08%**	**1.98%**	**7.06%**
Average Reclassification Rate	0.08%	0.06%	0.14%	0.06%	0.04%	0.10%
Average Member Rate	**5.23%**	**2.13%**	**7.36%**	**5.14%**	**2.02%**	**7.16%**
Tier 2						
Normal Cost Rate	6.29%	1.04%	7.33%	6.48%	1.08%	7.56%
Admin Expense Rate	0.31%	0.04%	0.35%	0.44%	0.06%	0.50%
UAL Rate	0.15%	0.09%	0.24%	0.18%	0.09%	0.27%
Member Rate	**6.75%**	**1.17%**	**7.92%**	**7.10%**	**1.23%**	**8.33%**

Table VI-6 shows the City's contribution rates and dollar amounts for FYE 2021 and 2020 assuming contributions are made throughout 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 2021, the projected payroll is $142.1 million for Tier 1 and $180.6 million for Tier 2.

SECTION VI – CONTRIBUTIONS

Table VI-6

City Contribution Rates and Amounts Throughout the Year

	Fiscal Year Ending 2021			Fiscal Year Ending 2020		
	Basic	COLA	Total	Basic	COLA	Total
Tier 1 UAL Payment	$ 77,179	$ 71,281	$ 148,460	$ 70,032	$ 67,377	$ 137,409
Tier 1 Normal Cost	$ 18,342 12.91%	$ 7,190 5.06%	$ 25,532 17.97%	$ 20,015 13.41%	$ 7,762 5.20%	$ 27,777 18.61%
Tier 1 Admin Expenses	$ 1,719 1.21%	$ 909 0.64%	$ 2,628 1.85%	$ 731 0.49%	$ 359 0.24%	$ 1,090 0.73%
Tier 2 Contribution	$ 12,193 6.75%	$ 2,113 1.17%	$ 14,306 7.92%	$ 11,321 7.10%	$ 1,961 1.23%	$ 13,282 8.33%
Aggregate Contribution	**$ 109,433 33.91%**	**$ 81,493 25.25%**	**$ 190,926 59.16%**	**$ 102,100 33.07%**	**$ 77,458 25.10%**	**$ 179,558 58.17%**

Dollar amounts in thousands

Historically, the City made its Tier 1 contribution as a lump sum at the beginning of the fiscal year. However, we understand the City has decided to make its contribution on a payroll by payroll basis throughout the year. Consequently, contribution amounts have not been calculated for payment at the beginning of the fiscal year.

Table VI-7 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 asset experience shown in the table includes investment returns, contributions, and administrative experience. As a result, for Tier 2, even though there were investment losses, contributions greater than expected due to higher payroll and administrative expenses that were lower than expected resulted in a reduction in the contribution rate due to asset experience. The higher than expected payroll growth caused a net reduction in the contribution rate because the UAL payment is spread over a larger payroll, but it also caused an increase in the dollar amount of the contribution because the normal cost rate is charged on a larger payroll.

SECTION VI – CONTRIBUTIONS

Table VI-7

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 2020 Contribution	7.16%	8.33%	13.51%	44.68%	58.19%	$ 308,702	$ 179,558
Expected FYE 2021 Contribution	7.16%	8.33%	13.51%	45.68%	59.19%	318,735	188,656
Changes Due to:							
Asset experience	0.00%	-0.07%	0.00%	0.12%	0.12%	318,735	382
Demographic experience	0.03%	0.16%	-0.59%	-0.49%	-1.08%	318,735	(3,442)
Payroll Change	0.00%	-0.06%	0.00%	-0.10%	-0.10%	323,561	2,501
Assumption Change	0.17%	-0.44%	0.10%	0.93%	1.03%	322,709	2,829
Subtotal	0.20%	-0.41%	-0.49%	0.46%	-0.03%	322,709	$ 2,270
FYE 2021 Contribution	**7.36%**	**7.92%**	**13.02%**	**46.14%**	**59.16%**	**$ 322,709**	**$ 190,926**

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
6/30/2019	[10]	$ 2,228,802	$ 4,200,708	$ 1,971,906	53%	$ 313,310	629%
6/30/2018	[9]	2,179,488	4,100,821	1,921,333	53%	298,985	643%
6/30/2017	[8]	2,101,435	3,923,966	1,822,531	54%	287,339	634%
6/30/2016	[7]	2,034,741	3,786,730	1,751,989	54%	266,823	657%
6/30/2015	[6]	2,004,481	3,569,898	1,565,417	56%	251,430	623%
6/30/2014	[5]	1,911,773	3,235,065	1,323,292	59%	234,677	564%
6/30/2013	[4]	1,783,270	3,013,763	1,230,493	59%	225,779	545%
6/30/2012	[3]	1,762,973	2,841,000	1,078,027	62%	225,859	477%
6/30/2011	[2]	1,788,660	2,770,227	981,567	65%	228,936	429%
6/30/2010	[1]	1,729,413	2,510,358	780,945	69%	300,811	260%

Dollar amounts in thousands

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

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

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

[4] *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*

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

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

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

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

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

[10] *Assumption changes decreased the AL by $3 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)
06/30/2019	$ 228,905	$ 3,150,673	$ 821,130	$ 2,228,802	100%	63%	0%
06/30/2018	230,282	3,002,012	868,527	2,179,488	100%	65%	0%
06/30/2017	236,819	2,830,143	857,004	2,101,435	100%	66%	0%
06/30/2016	240,872	2,722,224	823,634	2,034,741	100%	66%	0%
06/30/2015	243,828	2,553,892	772,178	2,004,481	100%	69%	0%
06/30/2014	233,289	2,331,656	670,120	1,911,773	100%	72%	0%
06/30/2013	234,217	2,164,153	615,393	1,783,270	100%	72%	0%
06/30/2012	234,619	2,001,498	604,883	1,762,973	100%	76%	0%
06/30/2011	234,574	1,848,254	687,400	1,788,660	100%	84%	0%
06/30/2010	242,944	1,504,698	762,716	1,729,413	100%	99%	0%

** 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
6/30/2019	$ (88,845)	$ 31,811	$ (57,034)	$ 2,935	$ (54,099)
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

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 expected annual salary for Tier 1 full-time active employees is calculated to be "compensation rate 2 earnable" multiplied by the expected pay periods for the year and increased by any expected pay increases.
- The expected annual salary for Tier 1 part-time active employees and all Tier 2 active employees is calculated to be 80 hours multiplied by their hourly rate of pay in the pay period immediately preceding the valuation date, multiplied by the expected pay periods for the year and increased by any expected pay increase.
- 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, 2019	June 30, 2018	% Change
Tier 1			
Count	1,669	1,855	-10.0%
Average Current Age	50.1	49.7	0.8%
Average Eligibility Service	17.2	16.7	3.0%
Average Benefit Service	16.7	16.2	3.1%
Average Expected Pensionable Earnings	$ 97,116	$ 92,528	5.0%
Tier 2			
Count	1,948	1,699	14.7%
Average Current Age	38.1	37.6	1.3%
Average Eligibility Service	2.7	2.4	12.5%
Average Benefit Service	2.7	2.3	17.4%
Average Expected Pensionable Earnings	$ 77,630	$ 74,954	3.6%
Total			
Count	3,617	3,554	1.8%
Average Current Age	43.6	43.9	-0.7%
Average Eligibility Service	9.4	9.9	-5.1%
Average Benefit Service	9.1	9.5	-4.2%
Average Expected Pensionable Earnings	$ 86,622	$ 84,126	3.0%

Table A-2

Schedule of Active Member Data				
Valuation Date	Active Count	Annual Payroll	Average Annual Pay	Percent Change in Average Pay
2019	3,617	$ 313,310,000	$ 86,622	3.0%
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%

APPENDIX A – MEMBERSHIP INFORMATION

Table A-3

Payee Member Data	June 30, 2019	June 30, 2018	%Change
Retired			
Count	3,637	3,509	3.6%
Average Age	69.6	69.4	0.3%
Average Annual Benefit	$ 51,880	$ 50,588	2.6%
Service Disability			
Count	120	122	- 1.6%
Average Age	66.4	65.5	1.4%
Average Annual Benefit	$ 37,338	$ 35,444	5.3%
Non-Service Disability			
Count	73	74	- 1.4%
Average Age	66.0	65.7	0.5%
Average Annual Benefit	$ 33,786	$ 32,110	5.2%
Beneficiaries & SADROs			
Count	529	520	1.7%
Average Age	75.1	74.8	0.4%
Average Annual Benefit	$ 27,817	$ 26,812	3.7%
Total			
Count	4,359	4,225	3.2%
Average Age	70.1	69.9	0.3%
Average Annual Benefit	$ 48,256	$ 46,901	2.9%

Benefits provided in June 30 valuation data.

Table A-4

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
2018-2019	4,225	$ 198,157	230	$ 10,394	96	$ 3,634	4,359	$ 210,350	6.2%	$ 48
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

Dollar amounts in thousands

APPENDIX A – MEMBERSHIP INFORMATION

Table A-5

Inactive Member Data	Count		
	June 30, 2019	June 30, 2018	%Change
Tier 1			
Terminated Vested / Reciprocal			
Count	937	942	-0.5%
Average Age	47.9	47.6	0.6%
Average Annual Benefit	$ 18,616	$ 18,624	0.0%
Average Contribution Balance with Interest	$ 66,801	$ 65,250	2.4%
Non-Vested Terminated			
Count	68	80	-15.0%
Average Age	44.6	43.5	2.5%
Average Annual Benefit	$ 2,917	$ 2,938	-0.7%
Average Contribution Balance with Interest	$ 14,412	$ 13,883	3.8%
Total			
Count	1,005	1,022	-1.7%
Average Age	47.7	47.3	0.8%
Average Annual Benefit	$ 17,554	$ 17,396	0.9%
Average Contribution Balance with Interest	$ 63,256	$ 61,229	3.3%
Tier 2			
Terminated Vested / Reciprocal			
Count	182	52	250.0%
Average Age	38.7	39.5	-2.0%
Average Annual Benefit	$ 4,084	$ 3,751	8.9%
Average Contribution Balance with Interest	$ 14,860	$ 15,607	-4.8%
Non-Vested Terminated			
Count	348	360	-3.3%
Average Age	38.0	38.0	0.0%
Average Annual Benefit	$ 1,618	$ 1,847	-12.4%
Average Contribution Balance with Interest	$ 6,137	$ 6,863	-10.6%
Total			
Count	530	412	28.6%
Average Age	38.3	38.2	0.3%
Average Annual Benefit	$ 2,465	$ 2,087	18.1%
Average Contribution Balance with Interest	$ 9,132	$ 7,967	14.6%
Total			
Count	1,535	1,434	7.0%
Average Age	44.4	44.6	-0.4%
Average Annual Benefit	$ 12,344	$ 12,998	-5.0%
Average Contribution Balance with Interest	$ 44,568	$ 45,926	-3.0%

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-6

Distribution of Active Members as of June 30, 2019

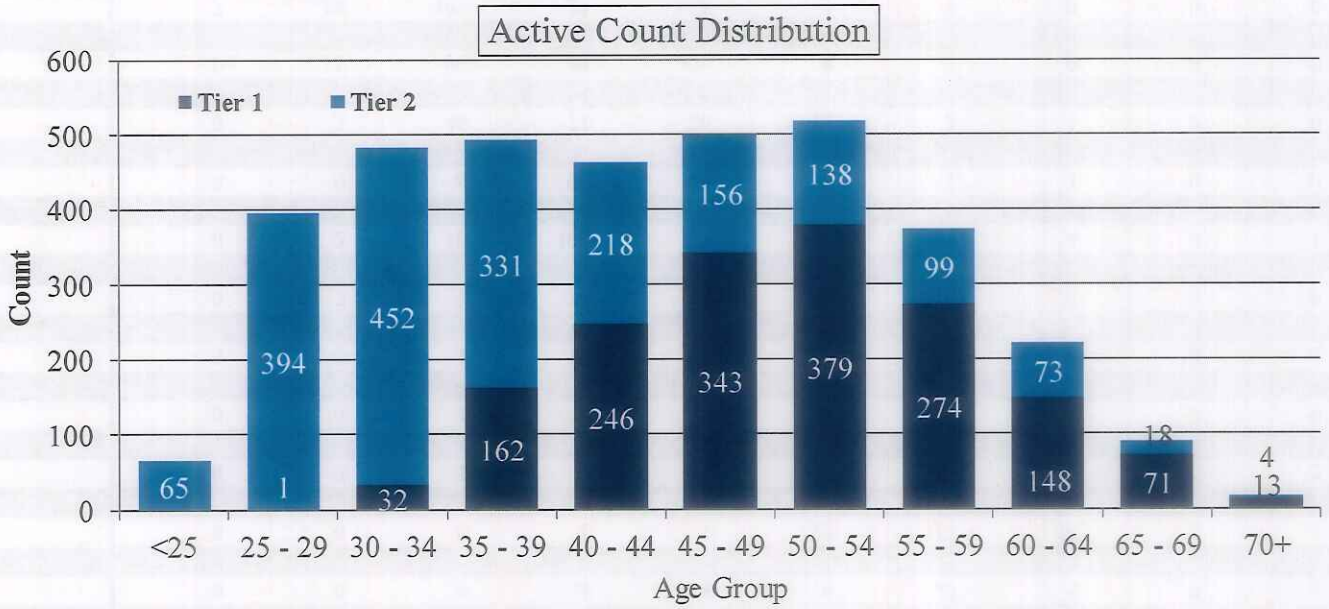
	Years of Benefit Service										
Age	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 and up	Total
Under 25	34	31	0	0	0	0	0	0	0	0	65
25 to 29	119	264	12	0	0	0	0	0	0	0	395
30 to 34	96	310	63	15	0	0	0	0	0	0	484
35 to 39	54	221	116	84	18	0	0	0	0	0	493
40 to 44	37	147	78	99	85	17	1	0	0	0	464
45 to 49	31	116	50	72	130	86	14	0	0	0	499
50 to 54	36	86	42	71	113	107	60	2	0	0	517
55 to 59	21	68	32	61	70	72	45	4	0	0	373
60 to 64	9	50	28	49	38	26	13	5	3	0	221
65 to 69	0	13	10	17	24	13	7	4	0	1	89
70 and up	0	5	0	6	4	2	0	0	0	0	17
Total Count	437	1,311	431	474	482	323	140	15	3	1	3,617

Distribution of Active Members as of June 30, 2019

	Average Expected Salary Years of Benefit 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	$ 55,982	$ 55,300	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 55,657
25 to 29	64,095	67,802	86,677	0	0	0	0	0	0	0	67,259
30 to 34	67,516	72,749	88,050	75,287	0	0	0	0	0	0	73,782
35 to 39	76,196	76,606	88,869	94,148	89,841	0	0	0	0	0	82,919
40 to 44	82,140	86,887	91,561	91,112	88,991	97,820	115,253	0	0	0	89,043
45 to 49	76,580	92,531	96,947	95,312	94,687	102,310	95,138	0	0	0	94,704
50 to 54	100,386	83,212	94,585	98,304	97,561	95,515	101,666	105,979	0	0	95,317
55 to 59	94,843	91,939	88,474	101,519	99,355	97,469	113,486	128,019	0	0	98,818
60 to 64	97,225	96,830	101,046	85,713	99,515	91,015	96,825	98,882	111,433	0	94,937
65 to 69	0	79,967	126,527	97,101	97,988	102,202	137,966	137,572	0	55,021	103,449
70 and up	0	104,592	0	90,031	88,305	110,378	0	0	0	0	96,301
Avg. Salary	$ 73,273	$ 78,119	$ 92,305	$ 93,847	$ 95,345	$ 97,880	$ 106,275	$ 117,915	$ 111,433	$ 55,021	$ 86,622

APPENDIX A – MEMBERSHIP INFORMATION

Chart A-1



APPENDIX A – MEMBERSHIP INFORMATION

Table A-7

Retirees and Disabled by Attained Age and Benefit Effective Date as of June 30, 2019

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	0	2	5	8	9	39	122	115	119	419
1996	0	2	0	1	1	0	14	7	6	0	31
1997	0	0	1	0	0	1	32	12	6	1	53
1998	0	0	1	0	3	1	27	8	7	0	47
1999	0	0	0	1	1	6	47	5	9	1	70
2000	0	0	0	0	1	21	42	11	4	1	80
2001	0	0	0	1	3	27	27	16	1	1	76
2002	0	0	2	1	3	74	24	21	1	0	126
2003	0	0	1	2	8	57	29	12	2	2	113
2004	1	0	3	0	19	74	18	9	0	0	124
2005	0	0	1	3	31	75	30	13	4	0	157
2006	2	1	4	6	55	44	27	5	0	0	144
2007	0	0	1	12	64	41	20	5	2	1	146
2008	0	1	2	10	78	40	20	5	0	0	156
2009	0	3	1	17	74	32	10	2	0	0	139
2010	0	0	5	46	91	46	17	2	1	0	208
2011	0	2	10	103	117	77	23	4	0	1	337
2012	0	0	13	93	52	39	14	2	0	0	213
2013	0	0	6	93	16	26	1	1	0	0	143
2014	1	4	12	96	22	13	3	0	0	0	151
2015	0	3	46	77	26	13	2	1	0	0	168
2016	0	8	93	24	30	14	1	0	1	0	171
2017	0	11	90	40	30	8	3	0	0	0	182
2018	1	5	102	38	22	14	4	2	0	0	188
2019	3	18	109	27	25	5	1	0	0	0	188
Total	8	58	505	696	780	757	475	265	159	127	3,830

Average Age at Retirement/Disability	57.6
Average Current Age	69.4
Average Annual Pension	$ 51,080

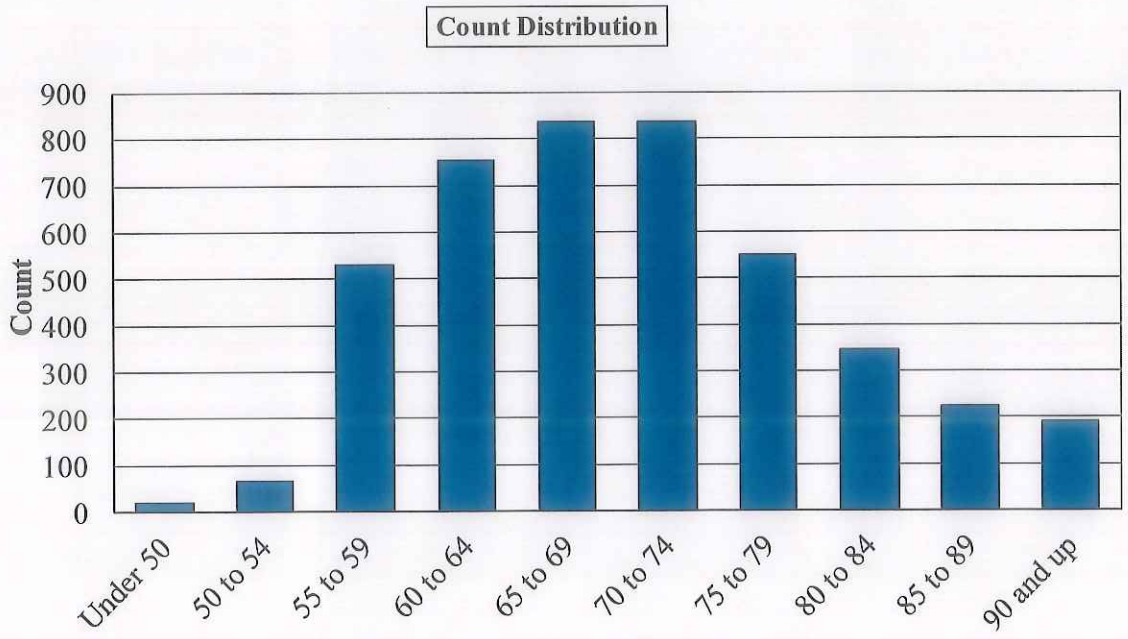
APPENDIX A – MEMBERSHIP INFORMATION

Table A-8

Distribution of Retirees, Disabled Members, and Beneficiaries as of June 30, 2019

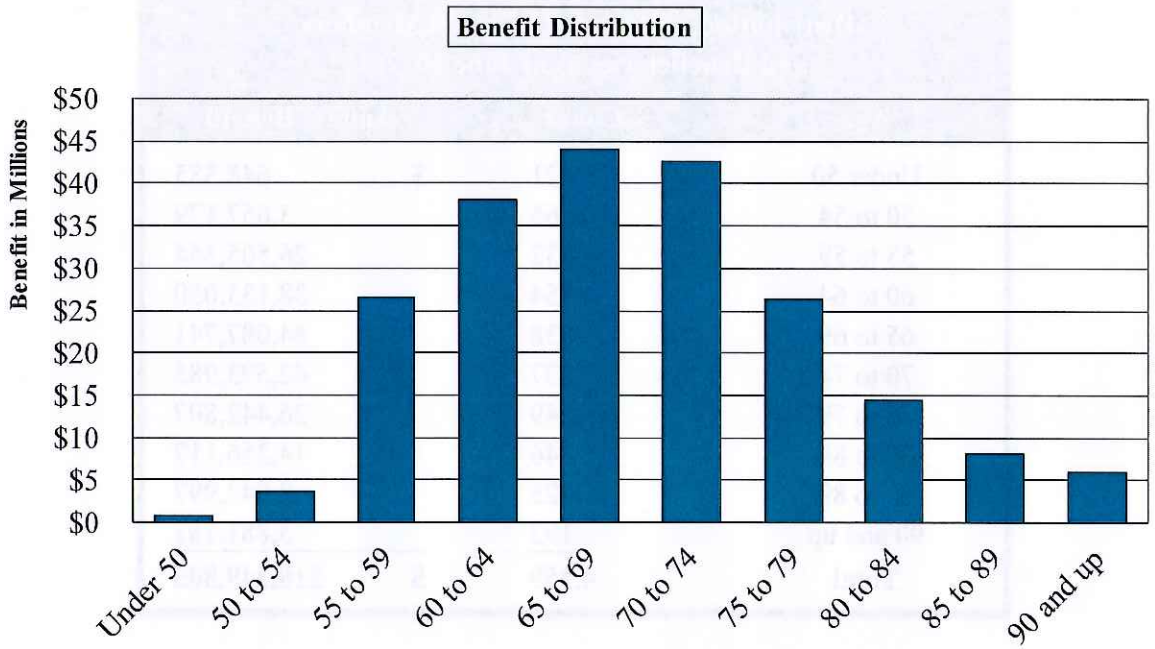
Age	Count	Annual Benefit
Under 50	21	$ 648,385
50 to 54	65	3,657,179
55 to 59	532	26,505,364
60 to 64	754	38,133,050
65 to 69	838	44,087,741
70 to 74	837	42,593,985
75 to 79	549	26,442,807
80 to 84	346	14,356,117
85 to 89	225	8,043,997
90 and up	192	5,881,181
Total	4,359	$ **210,349,805**

Chart A-2



APPENDIX A – MEMBERSHIP INFORMATION

Chart A-3



APPENDIX A – MEMBERSHIP INFORMATION

Table A-9

Change in Plan Membership

TIER 1

	Actives	Vested Terminations / Reciprocals	Non-Vested Terminations	Retirees	Disabilities	Beneficiaries/ SADRO	Total
June 30, 2018	**1,855**	**942**	**80**	**3,506**	**196**	**520**	**7,099**
New Entrants	10	0	0	0	0	0	10
Rehires	12	(10)	(1)	0	(1)	0	0
Non-Vested Terminations	(1)	0	1	0	0	0	0
Vested Terminations / Reciprocals	(60)	71	(11)	0	0	0	0
Return of Contributions	(1)	(16)	(2)	0	0	0	(19)
Disabilities	(1)	(1)	0	(3)	5	0	0
Retirements	(140)	(51)	0	191	0	0	0
Deaths	(3)	0	0	(65)	(7)	28	(47)
Beneficiary Deaths	0	0	0	0	0	(23)	(23)
Benefit Ceased	0	0	0	0	0	0	0
Tier Adjustment	0	0	0	0	0	0	0
Miscellaneous Adjustments	(2)	2	1	0	0	4	5
June 30, 2019	**1,669**	**937**	**68**	**3,629**	**193**	**529**	**7,025**

TIER 2

	Actives	Vested Terminations / Reciprocals	Non-Vested Terminations	Retirees	Disabilities	Beneficiaries/ SADRO	Total
June 30, 2018	**1,699**	**52**	**360**	**3**	**0**	**0**	**2,114**
New Entrants	421	0	28	0	0	0	449
Rehires	5	0	(5)	0	0	0	0
Non-Vested Terminations	(79)	0	79	0	0	0	0
Vested Terminations / Reciprocals	(47)	125	(78)	0	0	0	0
Return of Contributions	(47)	(2)	(38)	0	0	0	(87)
Disabilities	0	0	0	0	0	0	0
Retirements	(4)	0	0	4	0	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	0	0	0	0	0	0	0
Miscellaneous Adjustments	0	7	0	1	0	0	8
June 30, 2019	**1,948**	**182**	**348**	**8**	**0**	**0**	**2,486**

TOTAL

	Actives	Vested Terminations / Reciprocals	Non-Vested Terminations	Retirees	Disabilities	Beneficiaries/ SADRO	Total
June 30, 2018	**3,554**	**994**	**440**	**3,509**	**196**	**520**	**9,213**
New Entrants	431	0	28	0	0	0	459
Rehires	17	(10)	(6)	0	(1)	0	0
Non-Vested Terminations	(80)	0	80	0	0	0	0
Vested Terminations / Reciprocals	(107)	196	(89)	0	0	0	0
Return of Contributions	(48)	(18)	(40)	0	0	0	(106)
Disabilities	(1)	(1)	0	(3)	5	0	0
Retirements	(144)	(51)	0	195	0	0	0
Deaths	(3)	0	0	(65)	(7)	28	(47)
Beneficiary Deaths	0	0	0	0	0	(23)	(23)
Benefit Ceased	0	0	0	0	0	0	0
Tier Adjustment	0	0	0	0	0	0	0
Miscellaneous Adjustments	(2)	9	1	1	0	4	13
June 30, 2019	**3,617**	**1,119**	**416**	**3,637**	**193**	**529**	**9,511**

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

Actuarial Assumptions

The wage inflation assumption, amortization payment growth rate, price inflation, and discount rate were adopted by the Board of Administration with our input at the October 17, 2019 Board meeting. All other assumptions were adopted at the November 21, 2019 Board meeting based on recommendations from our experience study covering plan experience through June 30, 2019. 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 7.6% based on Meketa's 2019 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**

   3.00%, compounded annually.

3. **Amortization Payment Growth**

   2.75%, compounded annually.

4. **Price Inflation**

   2.50%, compounded annually.

5. **Administrative Expenses**

   $500 per member for FYE 2020, increasing at the wage inflation assumption of 3.00% per annum.

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

6. Salary Increase Rate

In addition to the wage inflation component of 3.00% 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	Years of Service	Merit/ Longevity
0	3.75%	8	1.00
1	3.00	9	0.85
2	2.50	10	0.70
3	2.15	11	0.55
4	1.85	12	0.45
5	1.60	13	0.30
6	1.40	14	0.20
7	1.20	15+	0.10

7. Rates of Termination

Rates of termination are shown in the following Table B-2.

Table B-2
Rates of Termination

Years of Service	Termination Rate	Years of Service	Termination Rate
0	15.00%	8	5.50
1	12.75	9	4.75
2	11.75	10	4.25
3	10.75	11	4.00
4	9.75	12	3.75
5	8.75	13	3.50
6	7.75	14	3.25
7	6.50	15+	3.25

Termination rates do not apply once a member is eligible for retirement.

8. Rate of Reciprocity

30% of terminating employees that are assumed to subsequently work for a reciprocal employer and receive 3.00% pay increases per year.

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

9. Rates of Refund

Tier 1:
Rates of vested terminated and reciprocal employees electing a refund of contributions are shown in the following Table B-3.

Table B-3
Rates of Refund

Years of Service	Under Age 35	Ages 35 - 44	Ages 45 and Older
0-4	100.00%	100.00%	100.00%
5	25.00	15.00	18.00
6	20.00	12.50	15.00
7	20.00	10.00	12.00
8	20.00	10.00	9.00
9	20.00	10.00	6.00
10	20.00	10.00	3.00
11	17.50	10.00	0.00
12	15.00	10.00	0.00
13	10.00	10.00	0.00
14	10.00	7.50	0.00
15	10.00	5.00	0.00
16	10.00	2.50	0.00
17+	10.00	0.00	0.00

Refund rates do not apply once a member is eligible for retirement.

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.

10. Deferred Vested Member Retirement Age

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

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

11. Rates of Retirement for Tier 1 Members

Rates of retirement for Tier 1 members are based on age according to the following Table B-4 – Tier 1.

Table B-4 – 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	10.0	35.0	50.0
56	10.0	20.0	45.0
57	10.0	20.0	40.0
58	5.0	15.0	35.0
59	5.0	15.0	30.0
60	5.0	15.0	30.0
61	10.0	20.0	30.0
62	15.0	20.0	30.0
63	20.0	20.0	30.0
64	20.0	20.0	30.0
65	20.0	20.0	30.0
66	25.0	30.0	30.0
67	25.0	35.0	30.0
68	25.0	35.0	30.0
69	25.0	35.0	30.0
70 & over	100.0	100.0	100.0

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

12. Rates of Retirement for Tier 2 Members

Rates of retirement for Tier 2 members are based on age and service as shown in the following Table B-4 – Tier 2. These rates are based on CalPERS retirement rates for its 2.0% at age 62 formula with adjustments based on professional judgment for differences between the CalPERS benefits and the benefits provided to Tier 2 members.

Table B-4 – 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%

13. Rates of Disability

Disability rates are equal to the 0.973 times the CalPERS 2017 non-industrial disability incidence rates for miscellaneous state agencies, blended 55% male and 45% female. Sample disability rates of active members are provided in Table B-5.

Table B-5
Rates of Disability at Selected Ages

Age	Disability
25	0.0272
30	0.0303
35	0.0613
40	0.1366
45	0.2519
50	0.3240
55	0.2631
60+	0.2191

45% of disabilities are assumed to be duty related, and 55% are assumed to be non-duty related.

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

14. Base Rates of Mortality

Base mortality rates are based on the sex-distinct employee and retiree mortality tables shown below.

Table B-6
Base Mortality Tables

Category	Male	Female
Healthy Annuitant	0.995 times the 2010 Public General Mortality Table (PubG-2010) for Healthy Retirees	0.960 times the 2010 Public General Mortality Table (PubG-2010) for Healthy Retirees
Healthy Non-Annuitant	0.992 times the 2010 Public General Mortality Table (PubG-2010) for Healthy Employees	1.084 times the 2010 Public General Mortality Table (PubG-2010) for Healthy Employees
Disabled Annuitant	1.051 times the CalPERS 2009 Ordinary Disability Mortality Table	0.991 times the CalPERS 2009 Ordinary Disability Mortality Table

15. Rates of Mortality Improvement

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 2010 for the Pub2010 tables and 2009 for the CalPERS tables. The projection scale used for the June 30, 2019 valuation is MP-2019.

16. Family Composition

Percentage married is shown in the following Table B-7. 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-7
Percentage Married

Gender	Percentage
Males	80%
Females	60%

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

17. Changes Since the Last Valuation

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

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 2.75% each year while aggregate payroll is expected to grow 3.00% 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

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

changes will be amortized over 10-year periods beginning with the valuation date in which they first arise. Amortization payments are scheduled to increase 2.75% each year while aggregate payroll is expected to grow 3.00% each year.

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. Contributions are generally made on a payroll-by-payroll basis although the City retains an option to make its contribution as of the beginning of the year.

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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