

San Joaquin County Employees' Retirement Association

Actuarial Valuation Report as of January 1, 2019

Produced by Cheiron

August 2019

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August 14, 2019

Retirement Board of San Joaquin
County Employees' Retirement Association
6 South El Dorado Street, Suite 400
Stockton, CA 95202

Dear Members of the Board:

At your request, we have conducted an actuarial valuation of the San Joaquin County Employees' Retirement Association (SJCERA, the System, the Fund, the Plan) as of January 1, 2019. This report contains information on the System's assets and liabilities and discloses employer and employee contribution levels. It also contains schedules for inclusion in the Actuarial Section of the Comprehensive Annual Financial Report (CAFR). Your attention is called to the Foreword in which we refer to the general approach employed in the preparation of this report.

The purpose of this report is to present the results of the annual actuarial valuation of SJCERA. This report is for the use of the Retirement Board of SJCERA and its auditors in preparing financial reports in accordance with applicable law and accounting requirements.

Cheiron's report was prepared solely for the Retirement Board of SJCERA for the purposes described herein, except that the plan auditor may rely on this report solely for the purpose of completing an audit related to the matters 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.

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

Sincerely,
Cheiron

A handwritten signature in blue ink, reading "Graham A. Schmidt".

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

A handwritten signature in blue ink, reading "Anne D. Harper".

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

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2019**

SECTION I – EXECUTIVE SUMMARY

Cheiron has performed the actuarial valuation of the San Joaquin County Employees' Retirement Association as of January 1, 2019. The valuation is organized as follows:

- In Section I, the **Executive Summary**, we describe the purpose of an actuarial valuation, summarize the key results found in this valuation and disclose important trends;
- The **Main Body** of the report presents details on the System's
 - Section II – Identification and Assessment of Risks
 - Section III – Assets
 - Section IV – Liabilities
 - Section V – Contributions
 - Section VI – Additional CAFR Schedules
- In the **Appendices**, we conclude our report with detailed information describing plan membership (Appendix A), actuarial assumptions and methods employed in the valuation (Appendix B), a summary of pertinent plan provisions (Appendix C), a 401(h) repayment schedule (Appendix D), a glossary of key actuarial terms (Appendix E), a summary of General and Safety Employer contribution rates (Appendix F), and tables containing member contribution rates (Appendix G).

The results of this report rely on future plan experience conforming to the actuarial assumptions. To the extent that actual plan experience deviates from these assumptions, the results would vary accordingly.

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

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

- The financial condition of the System,
- Past and expected trends in the financial progress of the System,
- Employer and employee contribution rates for Plan Year 2020, and
- An assessment and disclosure of key risks.

The information required under GASB standards Nos. 67 and 68 is included in a separate report, with the report for the Plan's Fiscal Year Ending December 31, 2018 provided to SJCERA in May 2019.

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

A. Valuation Basis

This valuation determines the employer contributions for the Plan Year 2020.

The System's funding policy is to contribute an amount equal to the sum of:

- The normal cost under the Entry Age Normal Cost Method,
- Amortization of the Unfunded Actuarial Liability (UAL), and
- A portion of the Fund's expected administrative expenses.

At the July 24, 2015 board meeting, the SJCERA Board of Retirement made a change to the funding policy, choosing to amortize any new unexpected changes in the UAL over a period of 15 years as a level percent of pay, with new amortization layers each year. The amortization period for each layer of the remaining UAL will decrease each year. Prior to this change, all UAL, other than the extraordinary loss from 2008, was being amortized over a closed period of 19 years as a level percentage of member payroll. The extraordinary loss from 2008 is amortized over a closed period of 30 years starting in 2009, as a level percentage of payroll. The single equivalent amortization period for these streams of payments is 15 years. Table V-4 shows a detailed summary of each amortization layer.

This valuation was prepared based on the plan provisions shown in Appendix C. There have been no changes in plan provisions since the prior valuation.

An Actuarial Experience Study was performed since the last valuation, covering experience from January 1, 2016 through December 31, 2018, leading to changes in demographic assumptions. No changes were made to the economic assumptions.

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B. Key Findings of this Valuation

The key results of the January 1, 2019 actuarial valuation are as follows:

- The actuarially determined employer contribution rate increased from 45.50% of payroll last year to 46.68% of payroll for 2019 before assumption changes. Assumption changes further increased the employer contribution rate from 46.68% to 47.46%.
- The System's funded ratio, the ratio of assets over Actuarial Liability, decreased from 64.8% last year to 64.5% as of January 1, 2019 on an Actuarial Value of Assets (AVA) basis. It decreased from 64.0% to 60.2% on a Market Value of Assets (MVA) basis.
- The Unfunded Actuarial Liability (UAL) is the excess of the System's Actuarial Liability over the Actuarial Value of Assets. The System experienced an increase in the UAL from \$ 1,583,814,311 to \$ 1,676,389,785 as of January 1, 2019.
- During the year ending December 31, 2018, the return on Plan assets was -1.95% on a market value basis, as compared to the 7.25% assumption. This resulted in a market value loss on investments of \$265,804,447. The Actuarial Value of Assets recognizes 20% of the difference between the expected Actuarial Value of Assets and the Market Value of Assets. This method of smoothing the asset gains and losses returned 3.94% on the smoothed value of assets, an actuarial asset loss of \$95,800,416 for the year.
- The Actuarial Value of Assets of \$3,044,897,691 is currently 107% of market value at \$ 2,841,042,076 . Since actuarial assets are above market assets, there are unrecognized investment losses (approximately \$204 million) that will be reflected in the smoothed value in future years.
- The System experienced a loss on the Actuarial Liability of \$ 12,744,671 primarily due to higher than expected COLAs for retired members. Combining the liability and asset net loss, as well as the contribution-timing lag, the System experienced a total loss of \$121,736,454. The updated demographic assumptions from the experience study further increased the liability by \$16,016,526.
- During 2018, the County and the Mosquito and Vector Control District (MVCD) made additional voluntary contributions (above the actuarially determined amount) of \$20,434,919. The total market value of the additional contributions, including prior year amounts and accumulated with interest at the Plan's actual rate of return, was \$40,548,809 as of December 31, 2018. These assets are included in the calculation of the UAL and funded ratio. However, under the funding policy with respect to these reserves requested by the contributors and approved by the Board, these assets are not currently included in the calculation of the employer contribution rates.

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Table I-1 below summarizes all the key results of the valuation with respect to membership, assets and liabilities, and contributions. The results are presented and compared for both the current and prior plan year.

TABLE I-1					
Summary of Principal Plan Results					
	January 1, 2018		January 1, 2019	% Change	
<u>Participant Counts</u>					
Active Participants	6,218		6,345	2.04%	
Participants Receiving a Benefit	5,822		6,053	3.97%	
Terminated Vested Participants	946		954	0.85%	
Terminated Non-Vested Participants	678		756	11.50%	
Total	13,664		14,108	3.25%	
Annual Pay of Active Members	\$	451,928,053	\$	474,501,897	5.00%
Calendar Year Projected Pay	\$	458,990,732	\$	\$481,917,358	5.00%
<u>Assets and Liabilities</u>					
Actuarial Liability (AL)	\$	4,496,975,597	\$	4,721,287,476	4.99%
Actuarial Value of Assets (AVA) ¹		2,913,161,286		3,044,897,691	4.52%
Unfunded Actuarial Liability (UAL)	\$	1,583,814,311	\$	1,676,389,785	5.85%
Funded Ratio (AVA)		64.8%		64.5%	-0.3%
Funded Ratio (MVA) ²		64.0%		60.2%	-3.8%
Inactive Funded Ratio		63.3%		64.6%	1.3%
<u>Contributions as a Percentage of Payroll</u>					
Normal Cost Rate		14.91%		14.86%	-0.05%
Unfunded Actuarial Liability Rate ³		29.73%		31.76%	2.03%
Administrative Expense		0.86%		0.84%	-0.02%
Total Contribution Rate		45.50%		47.46%	1.96%

¹ Includes additional County and MVCD Contribution Reserves.

² The Market Value of Assets includes additional County and MVCD Contribution Reserves.

³ Based on Actuarial Value of Assets that does not include additional County and MVCD Contribution Reserves.

The Inactive Funded Ratio shown in Table I-1 represents the percentage of the Actuarial Liability attributable to members who are not active employees. A funded ratio of 64.6% or more, for example, is required just to fund the liabilities of the System's inactive members: those currently retired, disabled, terminated with vested benefits, and their beneficiaries. We note that the funded ratio for the System on a market value basis was higher than the Inactive Funded Ratio last year but is now lower again.

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Changes in Cost

Table I-2 below summarizes the impact of actuarial experience on Plan cost, for the Plan as a whole and for the General and Safety classes.

TABLE I-2 Summary of Changes in Plan Cost from Prior Review						
	General		Safety		Total	
	Employer Cost	Rate (% Payroll)	Employer Cost	Rate (% Payroll)	Employer Cost	Rate (% Payroll)
January 1, 2018	\$ 148,978,487	39.50%	\$ 54,687,104	77.68%	\$ 203,665,592	45.50%
Change in Cost Due to:						
Expected Change (Pay Growth)	4,692,822	0.00%	1,722,644	0.00%	6,415,466	0.00%
Asset Experience	5,744,051	1.44%	2,243,858	3.03%	7,987,909	1.69%
Contribution (Gain)/Loss (Rate Delay)	1,149,240	0.29%	252,753	0.34%	1,401,993	0.30%
Demographic Experience	1,532,311	0.38%	373,247	0.49%	1,905,558	0.37%
Salary Experience	776,387	(0.04%)	(693,215)	(0.91%)	83,172	(0.17%)
Payroll Amortization	0	(0.62%)	0	0.25%	0	(0.58%)
PEPRA Transition	(1,387,944)	(0.37%)	(506,312)	(0.73%)	(1,894,256)	(0.43%)
Assumption Change	4,062,974	1.01%	(249,503)	(0.39%)	3,813,471	0.78%
Total Cost as of January 1, 2019	\$ 165,548,328	41.59%	\$ 57,830,577	79.76%	\$ 223,378,904	47.46%

An analysis of the cost changes from the prior valuation reveals the following:

- Demographic experience was somewhat unfavorable.

The demographic experience of the Plan – rates of retirement, death, disability, and termination – was close to that predicted by the actuarial assumptions in aggregate. However, the post-retirement COLA granted in 2018 (3.0%) was higher than the assumption (2.6%). In addition, there were fewer deaths than expected among those in pay status, which also increased liabilities. The net impact of these and other unexpected demographic changes was an increase of 0.37% of pay in employer cost.

- Overall pay increases for returning members were below expectations.

Salaries for continuing members increased less than expected, decreasing the overall employer contribution rate by 0.17% of payroll.

- The unfunded liability is being amortized over a larger-than-expected payroll base for the General members, but over a smaller-than-expected base for Safety members.

The payroll used to amortize the unfunded liability for General members was higher than expected due to higher than expected payroll growth (5.42%, versus the 3.15% assumption), which decreased the General employer contribution rate by an additional 0.62% of pay, since the UAL payments are spread out over a higher payroll base than expected. The lower than expected Safety projected payroll - reflecting a 2.69% increase - resulted in an increase in the contribution rate by about 0.25% of pay.

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The aggregate impact from the change in total projected payroll was a decrease in the contribution rate of 0.58% of pay. Note that the change in the payroll base used to amortize the unfunded liability does not change the dollar amount of the contribution – only the contribution rate calculated as a percentage of pay.

- New members entered the Plan as PEPPRA members.

During 2018, there were 731 newly hired or rehired members entering the Plan to replace departing members. New Tier 2 hires have a smaller Plan normal cost as a percentage of payroll when compared to the legacy (Tier 1) members.

Due to the shift in both populations towards more Tier 2 members, the employer contribution rate decreased by 0.37% of payroll for General members, 0.73% of pay for Safety members, and the overall contribution rate dropped by 0.43% of pay.

Overall, the combined demographic and salary experience resulted in a small increase in the dollar amount of the actuarial cost by about \$94,000 and a decrease in the contribution rate by about 0.81% of pay.

- New demographic assumptions from the experience study increased cost.

The demographic assumption changes increased the employer contribution rate by 0.78% overall and by \$3.8 million. The increase was 1.01% of pay for General members and a decrease of 0.39% of pay for Safety members. The primary drivers of the overall cost impact were changes to the mortality and merit/longevity salary scale assumptions. More detail on the impact of the individual assumption changes can be found in the Actuarial Experience Study report.

- Asset experience produced an investment loss on both a market and smoothed basis, though the loss on the smoothed basis was smaller.

The assets of the Plan returned -1.95% on a market basis, lower than the assumed rate of 7.25%, resulting in a loss of approximately \$266 million for 2018. Under the actuarial asset smoothing policy, 20% of this loss is recognized in the current year, in addition to 20% of the gains and losses from each of the prior three years. The overall return on the smoothed assets was 3.94%; still lower than the assumed return of 7.25%, so the overall contribution rate increased by 1.69% of pay.

The contribution rate increased more for Safety members (by 3.03% of pay) than for General members (1.44% of pay) as a result of the asset loss; this is due to the fact that the Safety members have a higher ratio of assets to payroll than the General members, and is discussed further in this report.

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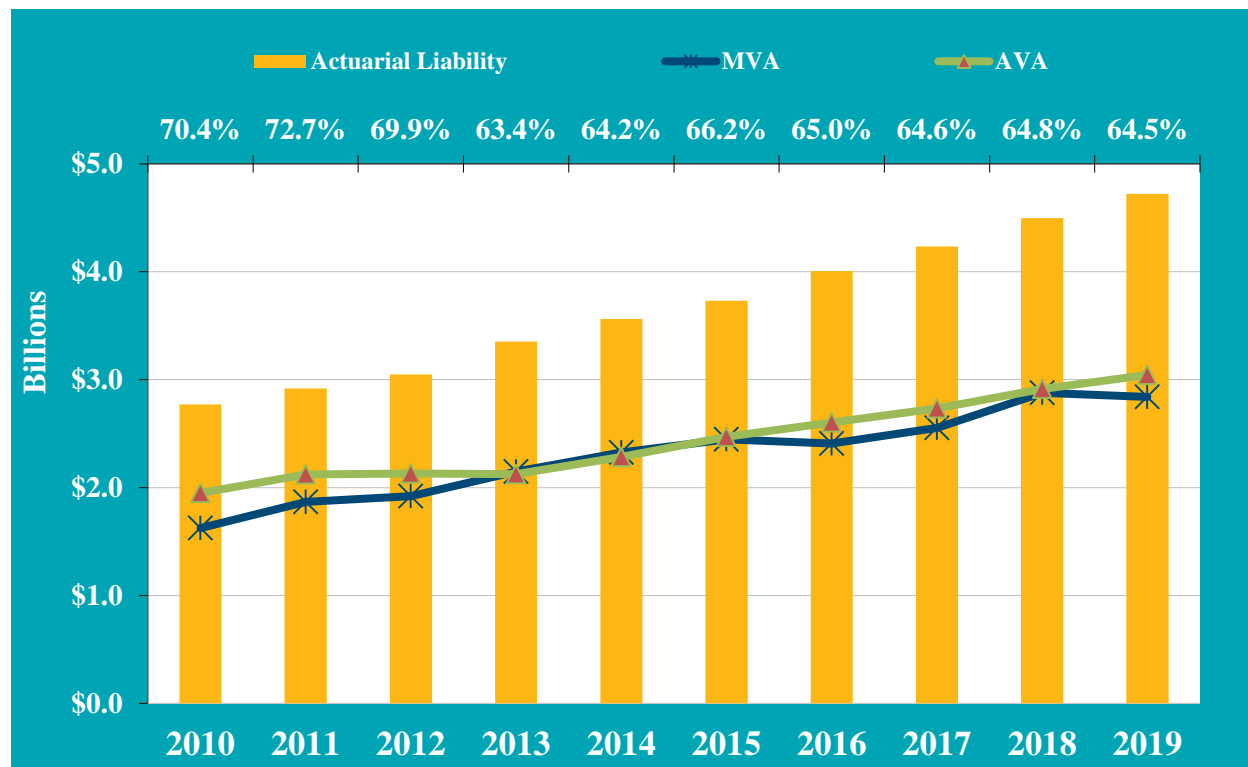
- Contributions less than the actuarial cost increased the employer contribution rate by 0.30% of pay, largely due to the 12-month delay in implementation of the contribution rates.

C. Historical Trends

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

Assets and Liabilities

The chart on this page compares the Market Value of Assets (MVA) and Actuarial Value of Assets (AVA) to the Actuarial Liabilities. The percentage shown at the top of each bar is the ratio of the Actuarial Value of Assets to the Actuarial Liability (the funded ratio).



The funded ratio has declined from 72.7% in 2011 to 64.5% in 2019. The extraordinary asset loss of 2008 adversely affected the funded ratio through 2013, as losses were recognized with asset smoothing. In addition, for the 2013, 2016, and 2018 valuations, assumption changes were

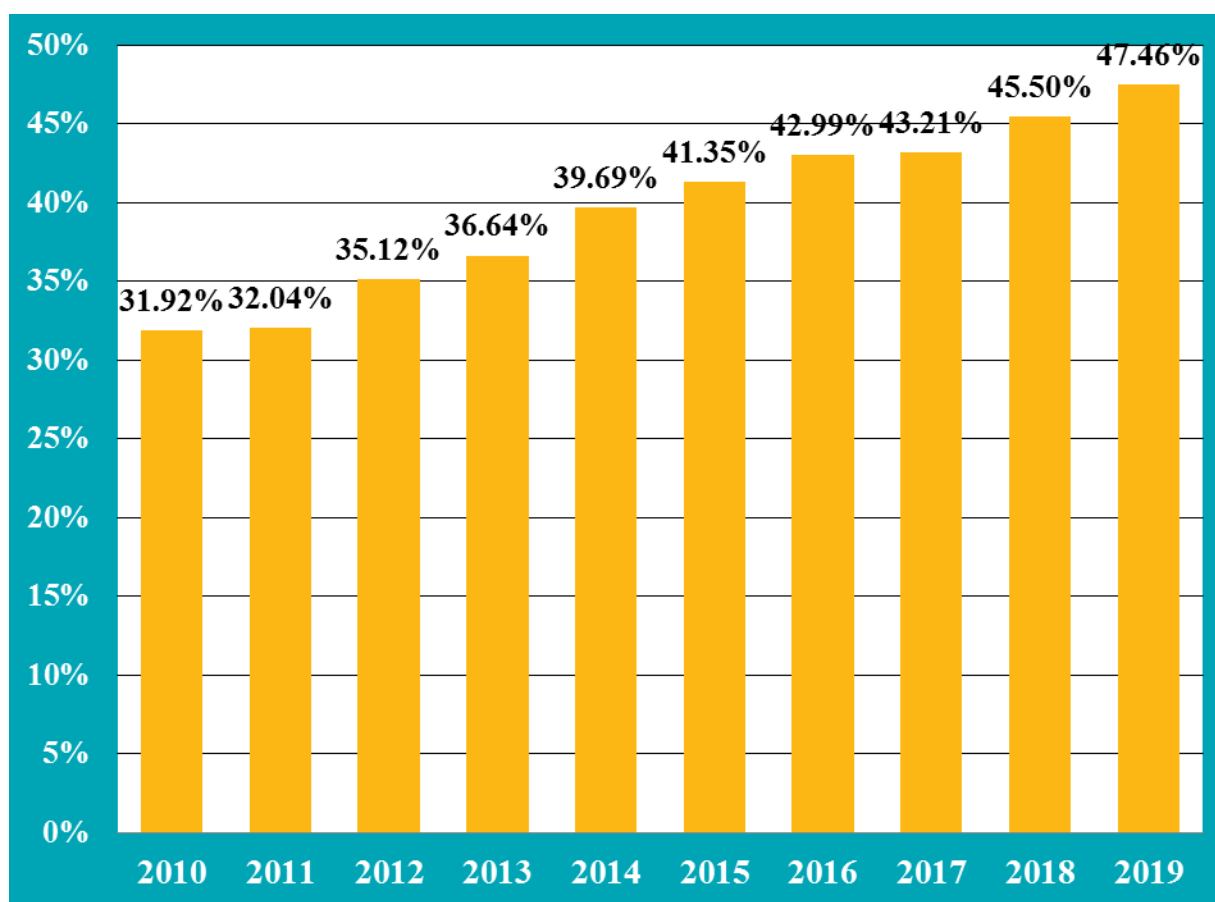
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made that reflected lower expected future returns on assets and improved mortality, increasing the Actuarial Liability, and therefore decreasing the funded ratio. Demographic assumptions were updated after performing an experience study this year, resulting in additional increases in the liabilities for 2019. The return on the actuarial value of assets the last four years has been between 3.9%-5.6%, lower than the assumed rate of return, which has also impacted the Plan's lack of funding progress.

Employer Contribution Rates

The chart on this page shows the employer contribution rate for each of the last 10 valuation cycles.



The employer contribution rate has increased from 31.92% of pay in 2010 to 47.46% of pay in 2019. The significant market drop in 2008 increased rates from 2009 – 2013 as the asset losses were recognized over the five-year smoothing period. In addition, the return on the actuarial value of assets the last four years has been between 3.9%-5.6%, lower than the assumed rate of return, which has been a partial cause of the contribution rate increases since 2015. As mentioned in the summary of assets and liabilities above, for the 2013, 2016, and 2018 valuations, assumption changes were made that reflected lower expected future returns on assets

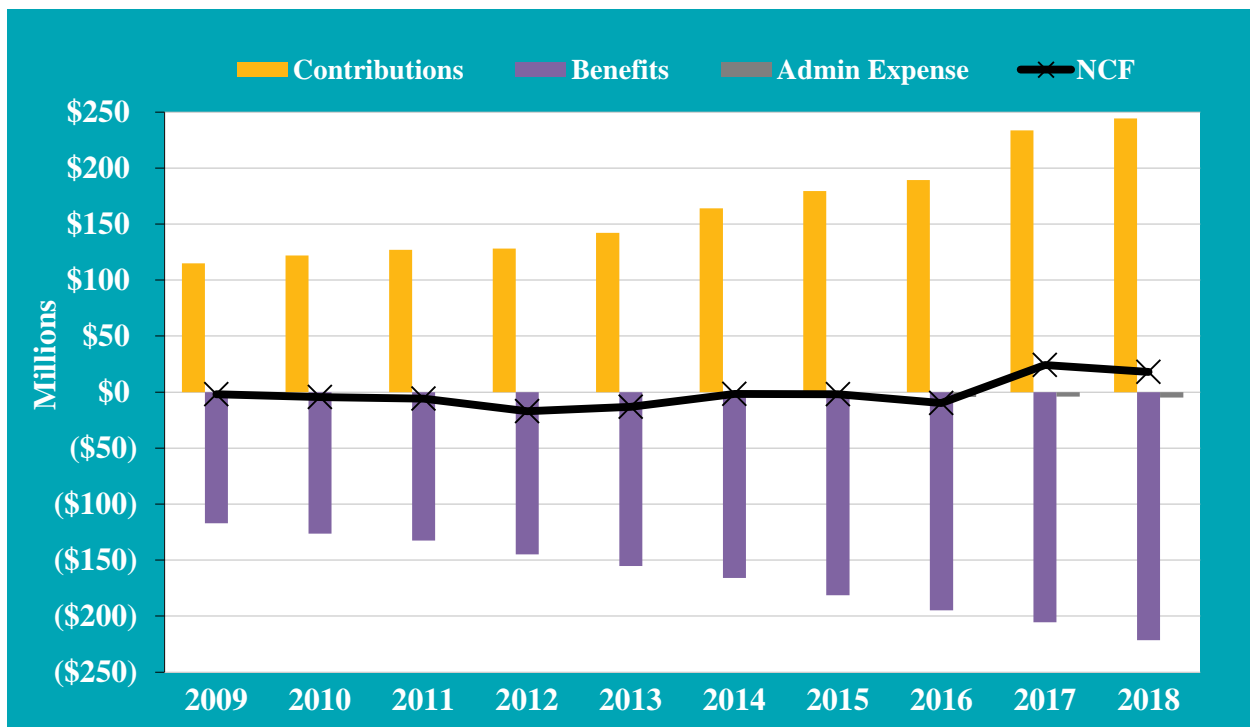
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and improved mortality, increasing the Actuarial Liability, and therefore the employer contribution rate. Demographic assumptions were updated after performing an experience study this year, resulting in additional increases in the employer rate on an aggregate basis.

Cash Flows

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



The NCF – shown as the black line in the chart – has been slightly negative for the last eight years prior to last year, but has been positive the past two years due to the additional contributions being made by the County and other employers.

The implications of a plan with negative net cash flow are that the impact of market fluctuations can be more severe: as assets are being depleted to pay benefits in down markets, there is less principal available to be reinvested during favorable return periods. If there were a shift to future negative net cash flow, it could magnify the losses during a market decline, hindering the Plan in its ability to absorb market fluctuations.

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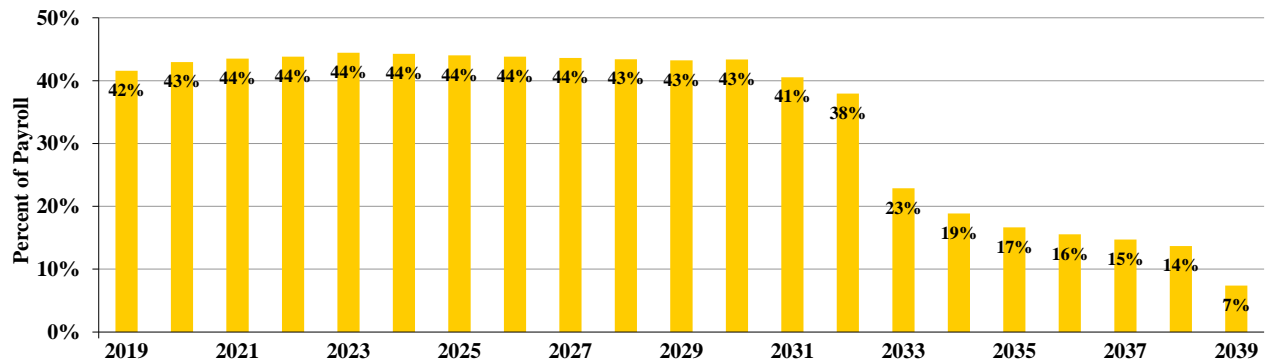
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D. Future Expected Financial Trends

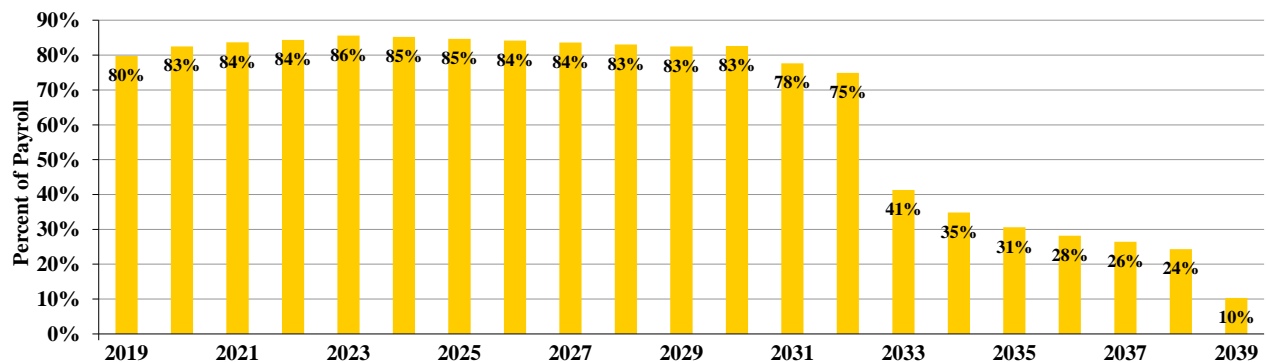
The analysis of projected financial trends is perhaps the most important component of this valuation. In this section, we present our assessment of the implications of the January 1, 2019 valuation results in terms of cost and benefit security (assets over liabilities). All the projections in this section are based on the current interest rate assumption of 7.25%. We have assumed a level active workforce population and future payroll growth of 3.15% per year.

The following graphs show the expected employer contribution rates for General and Safety members, and for the Plan in aggregate, based on actually achieving the 7.25% assumption each year for the next 20 years, and if the employers contribute at the actuarially determined rates.

Projection of General Employer Contributions, 7.25% return each year



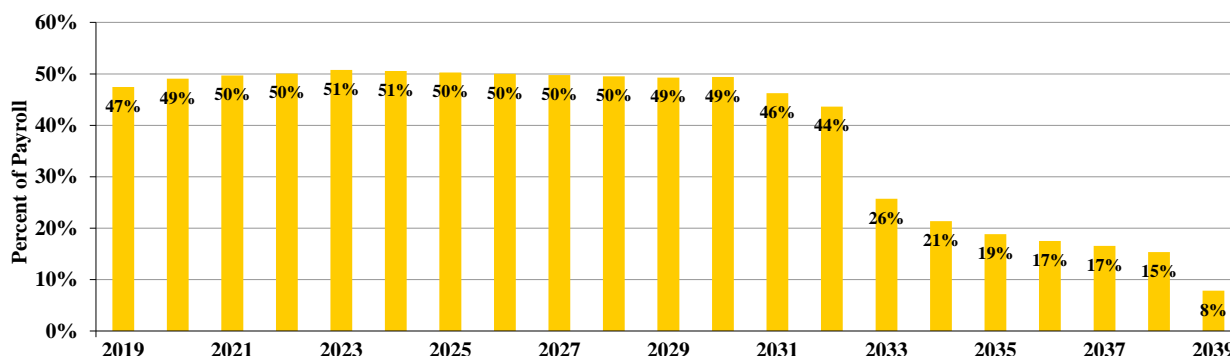
Projection of Safety Employer Contributions, 7.25% return each year



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Projection of Total Employer Contributions, 7.25% return each year



The projections show that General, Safety and Total County contributions are expected to increase over the next four years, as the deferred investment losses are recognized. The dollar contribution will be approximately \$161 million for General and \$57 million for Safety in 2019, growing to around \$212 million for General and \$74 million for Safety in five years, then remaining relatively flat as a percent of pay until 2033 when the 2014 UAL is paid off. The slight decline in contribution rates from 2024-2032 is attributable to Tier 2 new hires that are expected to replace existing Tier 1 membership.

Note that the graphs on the previous page do not forecast any actuarial gains or losses. Even relatively modest losses relative to the 7.25% assumed return could push the employer contribution rates even higher in the next few years. The graphs also do not include the impact of the additional contributions currently being made by the County and the Mosquito and Vector Control District; those additional contributions would eventually be expected to be available to reduce the employer contributions in future years.

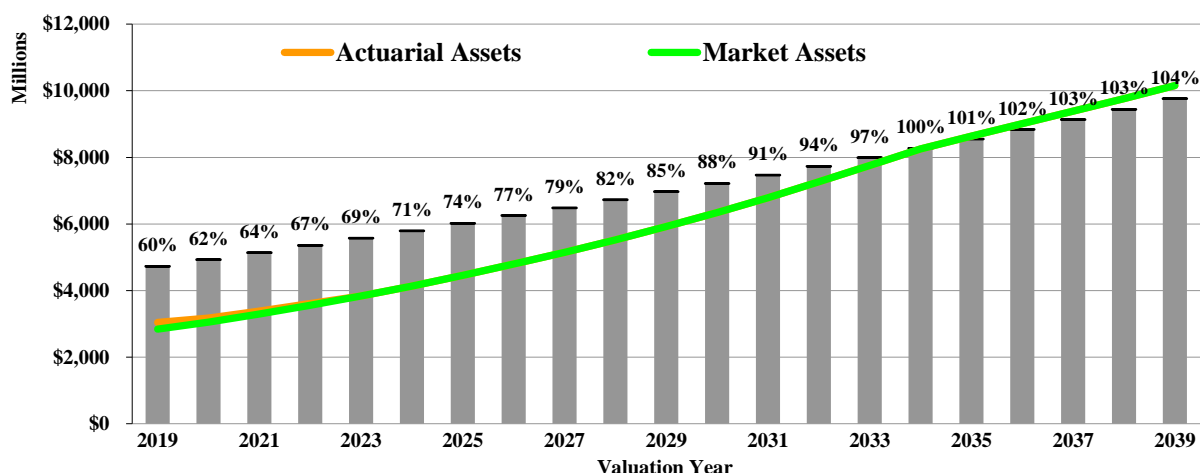
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Asset and Liability Projections:

The graph below shows the projection of SJCERA's assets and liabilities assuming that assets will earn the 7.25% assumption each year during the projection period and the employers contribute at the actuarially determined rates.

Projection of Assets and Liabilities, 7.25% return each year



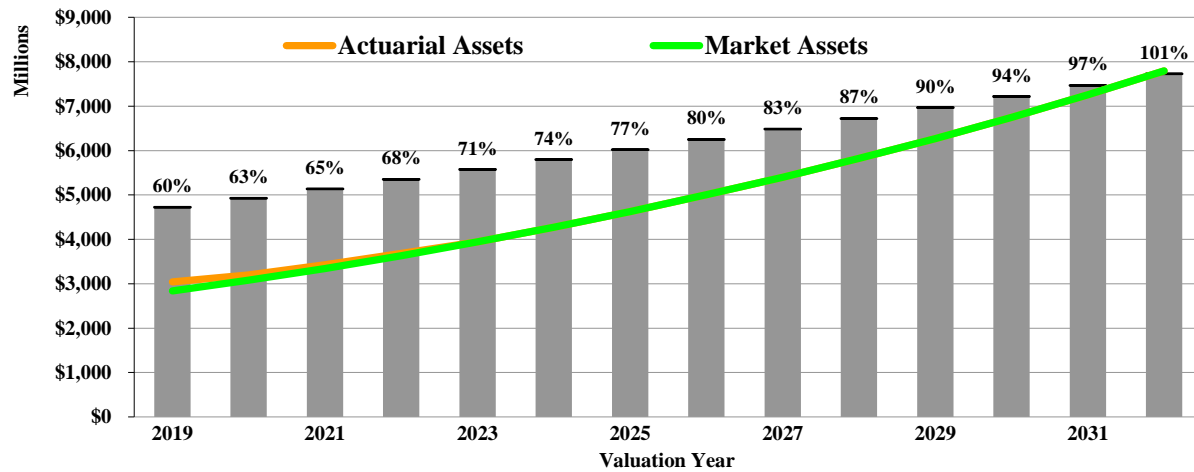
The graph shows that the projected funded status on a market value basis increases over the next 20 years to 104%, assuming the actuarial rate of return assumption is achieved. However, as noted above, it is the actual return on System assets that will determine the future funding status and contribution rates to the Fund.

The assets in the graph above include the additional contributions that the County and the Mosquito and Vector Control District made to the fund in 2017 and 2018. No further additional contributions are assumed. The graph on the next page shows the same information as the previous graph, but only through 2032, and assumes that the County continues making additional contributions of 5% of payroll until the System's funded ratio reaches 100%. No additional contributions on behalf of the Mosquito and Vector Control District are incorporated in these projections, as they are not expected to have a significant impact on the funded status for SJCERA as a whole, though they would affect the unfunded liabilities reported on the District's balance sheet. Note that no change in the contribution rate is assumed due to the additional contributions made by the County; these assets continue to be excluded from the actuarial cost calculation, as noted earlier.

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Projection of Assets and Liabilities, 7.25% return each year, Ongoing County Additional 5% Contributions



As can be seen in the projection above, with the additional expected 5% of pay contributions from the County the Plan would be expected to return to full funding in 2032, two years earlier than expected in the projections without the additional future contributions.

SECTION II – DISCLOSURES RELATED TO RISK

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

Identification of Risks

A fundamental risk to a pension plan is that the contributions needed to pay the benefits become unaffordable. While we believe it is unlikely that the Plan by itself would become unaffordable, the contributions needed to support the Plan may differ significantly from expectations. While there are a number of factors that could lead to contribution amounts deviating from expectations, we believe the primary risks are:

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

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

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

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

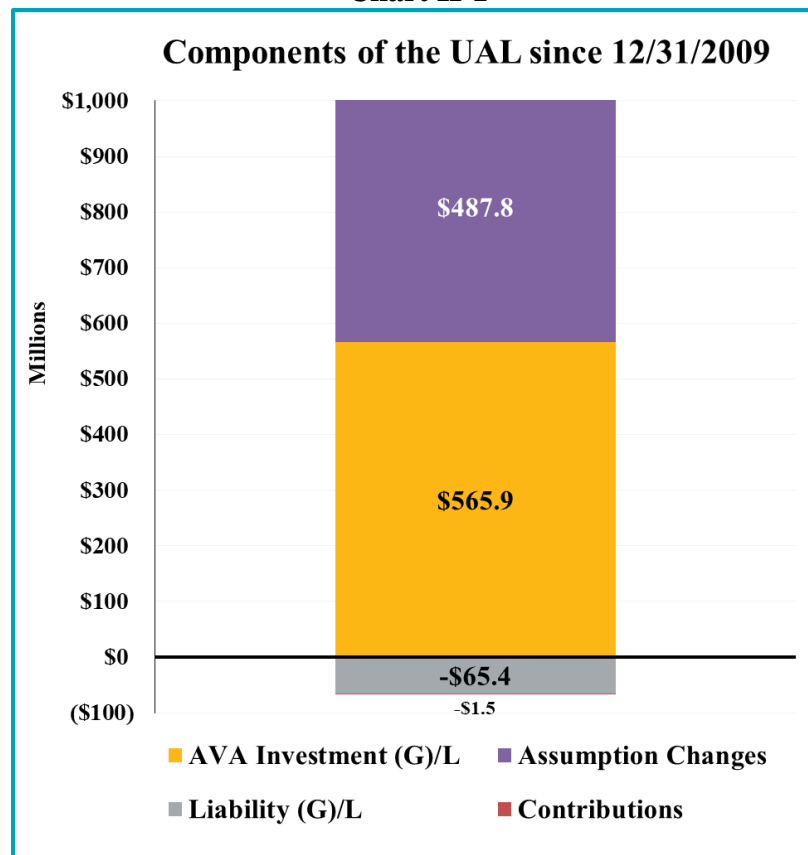
Contribution risk is the potential for actual future contributions to deviate from expected future contributions. There are different sources of contribution risk such as the sponsor choosing to not make contributions in accordance with the funding policy or if the contribution requirement becomes such a financial strain on the sponsor as a result of material changes in the contribution base (e.g., covered employees, covered payroll) that affect the amount of contributions the Plan can collect.

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The chart below shows the components contributing to the Unfunded Actuarial Liability (UAL) from December 31, 2009 through December 31, 2018. Over the last 10 years, the UAL has increased by approximately \$987 million. The investment losses (gold bar) of \$488 million on the actuarial value of assets (AVA) and assumptions changes (purple bar) resulting in a total UAL increase of \$566 million are the primary sources in the UAL growth. The net liability gains (gray bar) of \$65 million and contributions in excess of the “tread water” level (red bar) of \$1.5 million have decreased the UAL since December 31, 2009.

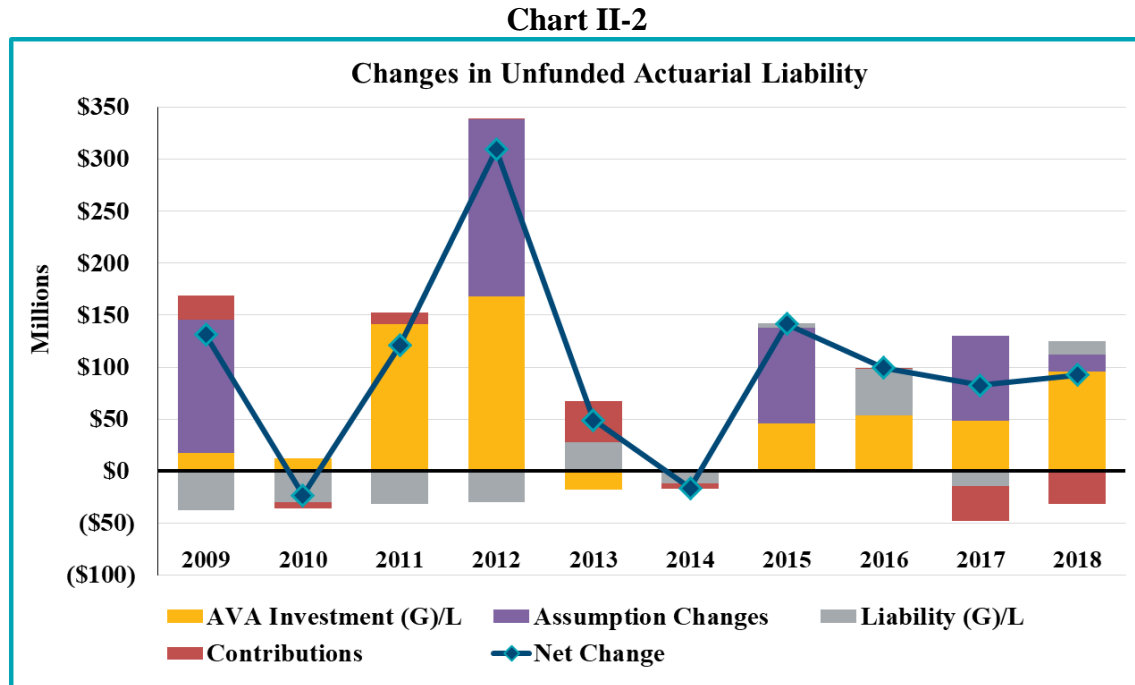
Chart II-1



**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
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Chart II-2 below details the annual sources of the UAL change (colored bars) for the plan years ending December 31. The net UAL change for each year is represented by the blue diamonds.



On a market value basis, the average annual geometric return over the 10-year period is 6.3% that has resulted in investment losses on the AVA every year, increasing the UAL, except for the 2013 plan year. As of January 1, 2019, there are approximately \$204 million of deferred losses that will be recognized over the next four years. As a result, even if the Plan earns the expected return of 7.25%, there will be losses on the smoothed value of assets in the next few years.

Over the same time period, the assumed rate of return decreased from 8.16% to 7.25%. It is important to note that these changes simply reflect a downward revision to the estimate of future investment earnings and ultimately costs will be determined by actual investment earnings. Based on PCA/Meketa's current capital market assumptions (including their inflation assumption of 2.25%) and the Plan's asset allocation, the expected average annual return is 6.26% compared to the Plan's current assumption of 7.25%. Future expectations of investment returns may continue to decline necessitating further reductions in the discount rate.

The impact of all assumption changes is represented by the purple bars and also includes decreases in mortality rates projected in the future which had a significant impact on the measurement of the UAL. The assumption changes effective with the January 1, 2019 valuation are only demographic changes with no change to the expected rate of return of 7.25%.

Each year the UAL is expected to increase for benefits earned in the current year (the normal cost), administrative expenses, and interest on the UAL. This expected increase is referred to as the tread water level. If contributions are greater than the tread water level, the UAL is expected

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to decrease. Conversely, if contributions are less than the tread water level, the UAL is expected to increase. The amortization policy (as well as the contribution-timing lag) can impact whether or not the contributions exceed the tread water level. For example, the Board changed the amortization policy in 2009 to amortize 50% of the extraordinary asset loss over a 30-year period and the remaining UAL over a 20-year period. Initially, the relatively long amortization period resulted in contributions being below the tread water level.

However, the single equivalent amortization period for the last two years is much lower, around 15-16 years and the UAL payment went toward principal as well as interest on the current UAL. In addition, the County and at least one other employer have made discretionary contributions above the actuarial determined contribution rate, in the County's case equal to 5% of their pensionable payroll, approximately \$20 million for both the 2017 and 2018 plan year. These contributions went directly toward paying down the principal on the UAL as seen below in Table II-1, which numerically summarizes the changes in the UAL for each year by source over the last 10 years.

Table II-1

Unfunded Actuarial Liability (UAL) Change by Source					
December 31,	Investment Experience	Liability Experience	Assumption Changes	Contributions	Total UAL Change
2009	\$17,387,000	(\$37,639,000)	\$128,292,000	\$22,991,000	\$131,031,000
2010	12,501,000	(29,625,000)	0	(6,173,000)	(23,297,000)
2011	141,181,000	(31,403,000)	0	11,186,000	120,964,000
2012	168,334,000	(29,597,000)	169,755,000	833,000	309,325,000
2013	(18,030,000)	28,061,000	0	39,067,000	49,098,000
2014	653,000	(11,929,000)	0	(5,073,000)	(16,349,000)
2015	46,200,000	3,691,000	91,855,000	(172,000)	141,574,000
2016	53,461,000	45,033,000	0	831,000	99,325,000
2017	48,426,000	(14,693,000)	81,855,000	(33,016,000)	82,572,000
2018	95,800,000	12,745,000	16,017,000	(31,986,000)	92,576,000
Total	\$565,913,000	(\$65,356,000)	\$487,774,000	(\$1,512,000)	\$986,819,000

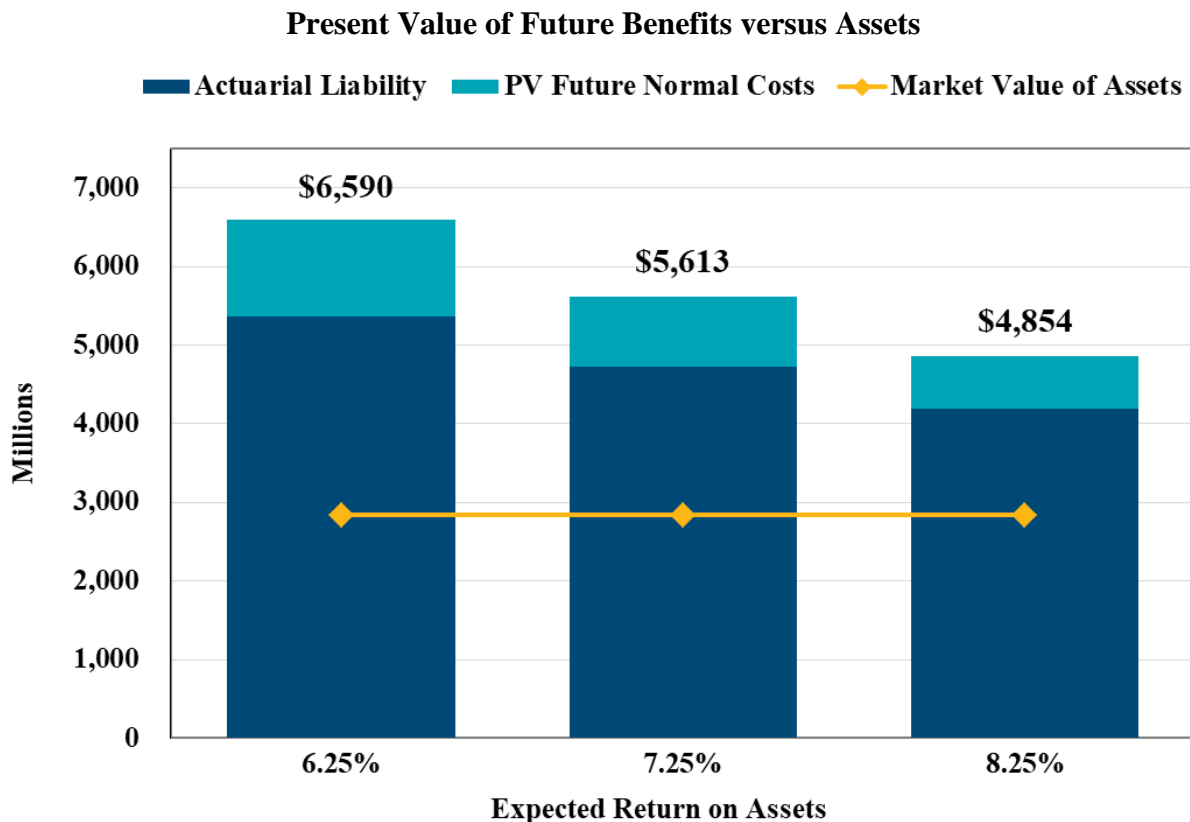
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Assessing Costs and Risks

Sensitivity to Investment Returns

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



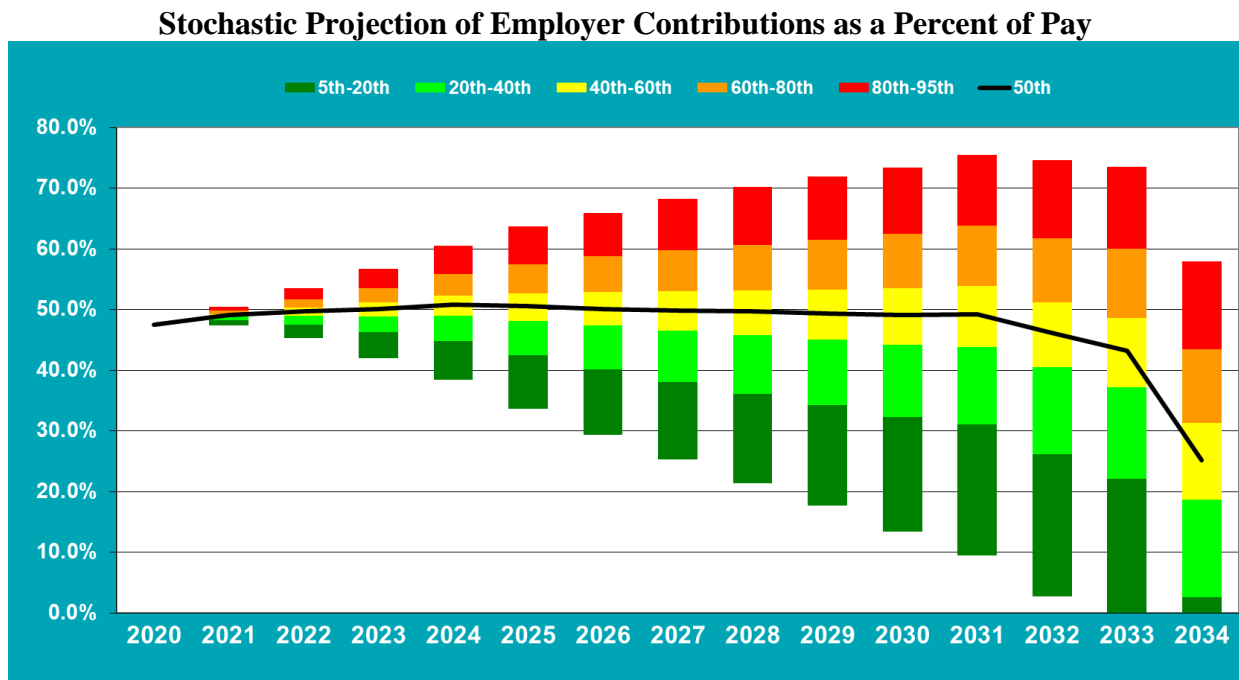
If investments return 7.25% annually, the Plan would need approximately \$5.6 billion in assets today to pay all projected benefits compared to current assets of \$2.8 billion. If investment returns are only 6.25%, the Plan would need approximately \$6.6 billion in assets today, and if investment returns are 8.25%, the Plan would need approximately \$4.9 billion in assets today.

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Sensitivity to Investment Returns - Stochastic Projections

Stochastic projections serve to show the range of probable outcomes of various measurements. The graphs below and on the following page show the projected range of the employer contribution rate and of the funded ratio on an actuarial value of assets basis. The range in both scenarios is driven by the volatility of investment returns (assumed to be based on a 9.7% standard deviation of annual returns, as indicated in PCA/Meketa's current capital market assumptions).

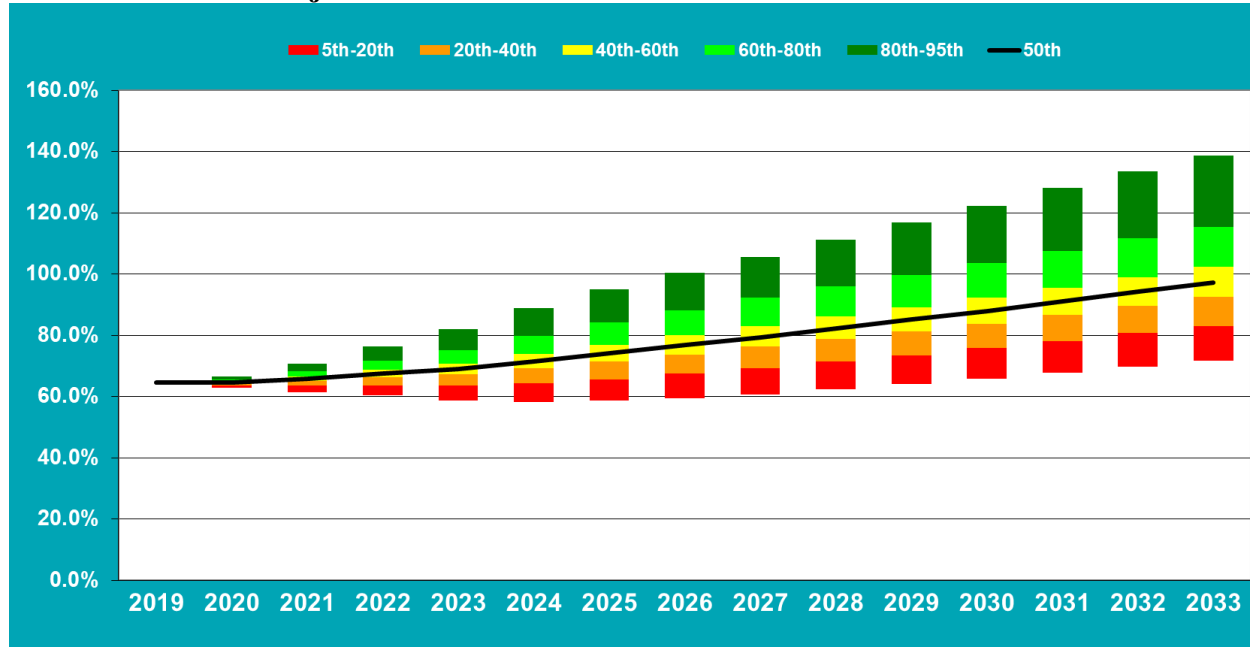


The stochastic projection of employer contributions as a percent of pay shows the probable range of future contribution rates. The baseline contribution rate (black line), which assumes actual investment returns will equal expected returns of 7.25% each year, aligns with the projections discussed in subsection D. of the Executive Summary of this report. In the most pessimistic scenario shown, the 95th percentile, the projected employer contribution rate approaches 80% of pay in 2031. Conversely, the most optimistic scenario shown, the 5th percentile, the projected employer contribution rate declines to 0% in 2034.

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Stochastic Projection of Funded Ratio on an Actuarial Value of Assets Basis



The graph above shows the projection of the funded ratio based on the actuarial value of assets. While the baseline-funded ratio (black line) is projected to be approximately 97% at the end of the 15-year period shown here, there is a wide range of potential outcomes. Good investment returns have the likelihood of bringing the funded ratio well over 100%. Due to the current funding policy of the Plan, even in scenarios with unfavorable investment returns, the Plan is projected to remain over 57% funded on an actuarial value of assets basis, as long as the actuarially determined contributions continue to be made.

Contribution Risk

The Safety contribution rate is very large at approximately 80% of payroll and as a result, future salary increases and the hiring of new members are potentially at risk. When member payroll growth stagnates or even declines, the dollar level of contributions made to the Plan also stagnate or decline since contributions are based on payroll levels.

There is also a risk of the contribution rate increasing even higher when payroll decreases since the Plan's funding policy amortizes the UAL as a level percentage of pay. This means that the UAL payments increase at the assumed payroll growth rate of 3.15%, so that the payment is expected to remain constant as a percentage of payroll. If payroll growth is less than the expected 3.15% or there is a decline in payroll, the UAL payments are spread over a smaller payroll base and the contribution rate as a percentage of pay increases, making the Plan less affordable for the Safety and potentially other plan sponsors.

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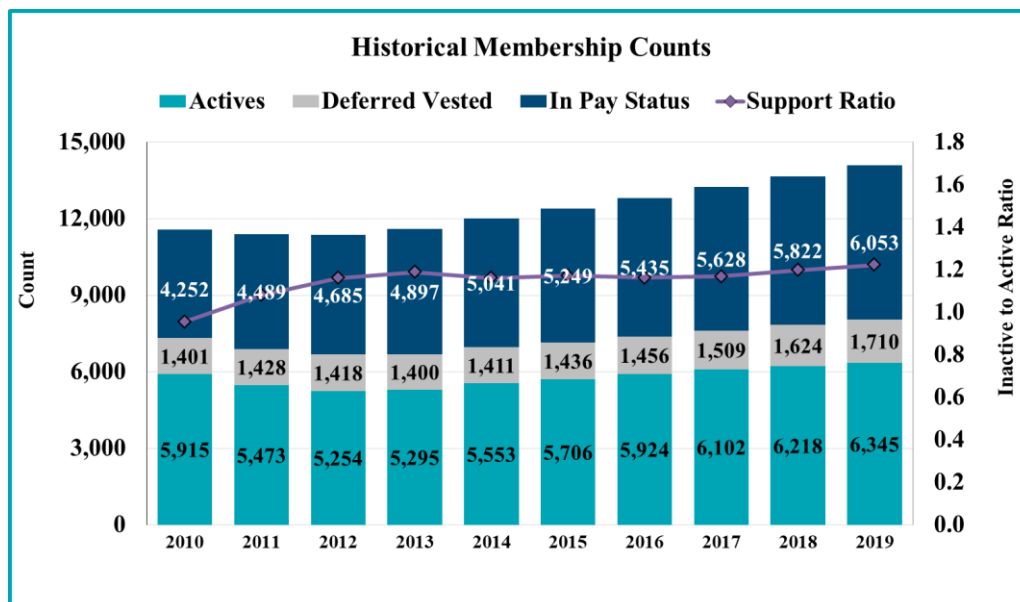
Plan Maturity Measures

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 measures below have been selected as the most important in understanding the primary risks identified for the Plan.

Inactives per Active (Support Ratio)

One simple measure of plan maturity is the ratio of the number of inactive members (those receiving benefits or inactives – those entitled to a deferred benefit) to the number of active members. The Support Ratio is expected to increase gradually as a plan matures. The chart below shows the growth in the Support Ratio from 2010 to 2013 as the number of active members declined and the number of retirees increased. The Support Ratio slightly declined from 2014 to 2017 since the active population increased an average of about 3.6% per year. The last two years, the active population increased at a slower pace than the inactive population, resulting in a slight uptick in the Support Ratio.



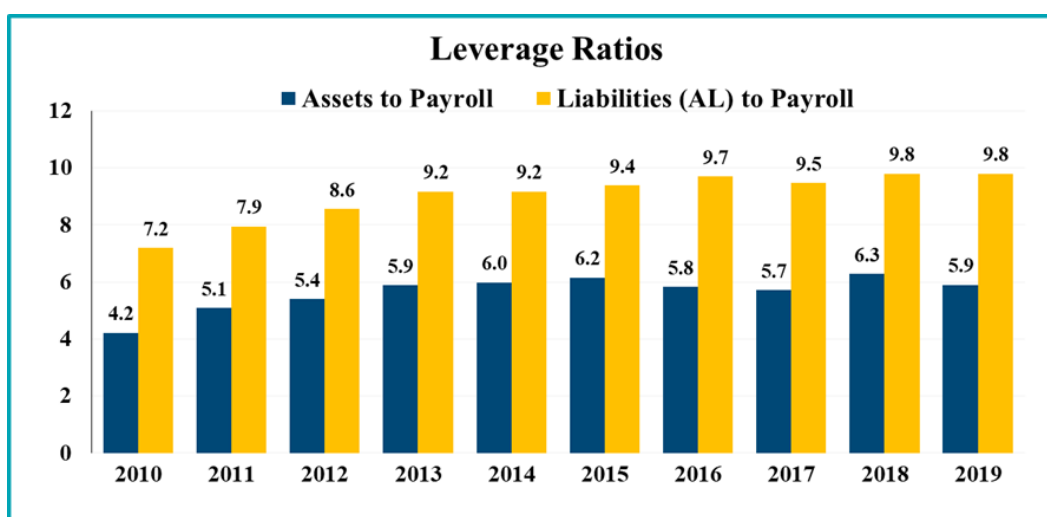
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Leverage Ratios

Leverage or volatility ratios measure the size of the plan compared to its revenue base more directly. The asset leverage ratio is simply the market value of assets to active member payroll and indicates the sensitivity of the Plan to investment returns. The liability leverage ratio is the plan's actuarial liability to active member payroll and indicates the sensitivity of the Plan to assumption changes or demographic experience.

The chart below shows the historical leverage ratios of the Plan. Both leverage ratios have gradually increased since 2010, but the asset to payroll ratio has remained relatively stable around 6.0 - assets are six times member payroll - for the last seven years.



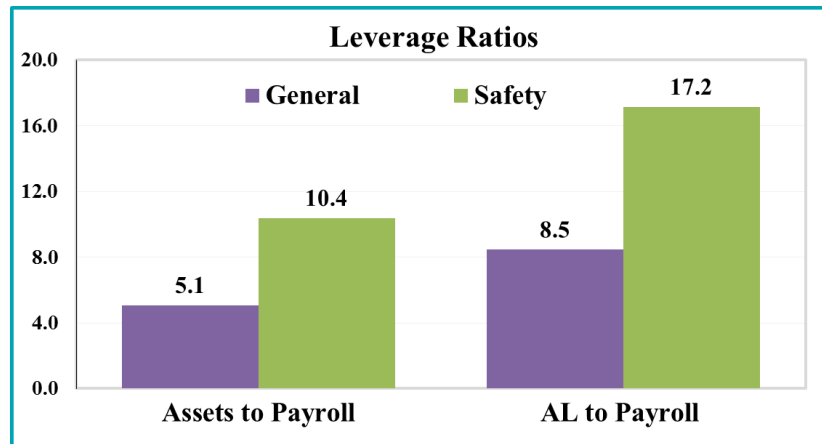
To appreciate the impact of the ratio of assets to payroll on plan cost, consider the situation for a new plan with almost no assets. Even if the assets suffer a bad year of investment returns, the impact on the plan cost is nil, because the asset level is so small.

As the Plan becomes better funded, the asset leverage ratio will increase, and if it was 100% funded, the asset leverage ratio would be close to 10 times payroll, or the Actuarial Liability (AL) leverage ratio.

We note that the ratio of both assets and liabilities to payroll, and therefore the sensitivity to investment returns, is higher for the Safety members compared to the General members, because of the higher benefit amounts and the earlier average retirement ages for Safety.

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The General asset leverage ratio of 5.1 means that if the Plan's assets lose 10% of their value, which is a 17.25% actuarial loss compared to the expected return of 7.25%, the loss would be equivalent to 88% of payroll (17.25% times 5.1). Based on the current amortization policy and economic assumptions, the General contribution rate would ultimately increase by about 8% of payroll, after deferred asset losses are fully recognized. The same investment loss for the Safety group with an asset ratio of 10.4 would be equivalent to just over 179% of payroll, or an approximate contribution rate increase of 16%. Therefore, the contribution rates for the Safety members will generally be much more volatile than those of the General members.

More Detailed Assessment

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

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SECTION III – ASSETS

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

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

- **Disclosure** of System assets as of December 31, 2017 and December 31, 2018,
- Statement of the **changes** in market values during the year,
- Development of the **Actuarial Value of Assets**,
- An assessment of **investment performance**, and
- Determination of **reserve balances** as of January 1, 2019.

Disclosure

There are two types of asset values disclosed in the valuation, the Market Value of Assets and the Actuarial Value of Assets. The market value represents the fair value of assets that provide the principal basis for measuring financial performance from one year to the next. Market values, however, can fluctuate widely with corresponding swings in the marketplace. As a result, market values are usually not as suitable for long-range planning as are the Actuarial Value of Assets, which reflect smoothing of annual investment returns.

Table III-1 on the next page discloses and compares the market values as of December 31, 2017 and December 31, 2018.

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SECTION III – ASSETS

TABLE III-1			
Statement of Assets at Market Value			
December 31,			
Assets:	2017	2018	
Cash and Cash Equivalents	\$ 98,314,384	\$ 129,812,307	
Cash Collateral-Securities Lending	<u>86,901,391</u>	<u>81,063,525</u>	
Total Cash and Cash Equivalents	185,215,775	210,875,832	
Receivables:			
Investment Income Receivables	2,974,773	3,643,209	
Contributions Receivable	5,793,466	7,643,798	
Securities Sold, Not Received - Domestic	35,717	2,411,261	
Other Investment Income Receivable	0	0	
Miscellaneous Receivables	<u>58,120</u>	<u>49,098</u>	
Total Receivables	8,862,076	13,747,366	
Investments, at Market Value:			
Stable Fixed Income	275,595,222	295,492,803	
Credit	321,700,181	317,627,170	
Global Public Equity	995,174,782	822,935,436	
Private Appreciation	328,280,801	387,844,390	
Risk Parity	372,838,817	368,268,349	
Crisis Risk Offset	<u>480,111,036</u>	<u>509,350,711</u>	
Total Investments	2,773,700,839	2,701,518,859	
Other Assets:			
Prepaid Expenses	90,155	85,135	
Equipment and Fixtures, Net	<u>73,770</u>	<u>212,126</u>	
Other Assets	<u>163,925</u>	<u>297,261</u>	
Total Assets	2,967,942,615	2,926,439,318	
Liabilities:			
Securities Lending-Cash Collateral	86,901,391	81,063,525	
Securities Purchased, Not Paid	172,476	2,417,979	
Accrued Expenses and Other Payables	1,475,117	1,722,948	
Security Lending Interest and Other Expense	<u>105,000</u>	<u>192,790</u>	
Total Liabilities	88,653,984	85,397,242	
Market Value of Assets	\$ 2,879,288,631	\$ 2,841,042,076	

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SECTION III – ASSETS

Changes in Market Value

The components of asset change are:

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

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

TABLE III-2 Changes in Market Values		
<u>Additions</u>	<u>2017</u>	<u>2018</u>
Contributions		
Employer's Contribution	200,051,742	208,757,572
Members' Contributions	33,634,906	35,377,951
Total Contributions	<u>233,686,648</u>	<u>244,135,523</u>
Net Investment Income		
Net Appreciation/(Depreciation) in		
Fair Value of Investments	284,668,325	(74,208,559)
Interest	19,065,667	17,748,616
Dividends	8,375,172	11,859,972
Real Estate Income, net	8,352,681	8,320,486
Investment Expenses	(20,954,361)	(20,513,425)
Miscellaneous Investment Income	<u>1,943</u>	<u>1,353</u>
Net Investment Income,		
Before Securities Lending Income	<u>299,509,427</u>	<u>(56,791,557)</u>
Securities Lending Income		
Earnings	1,440,490	1,743,726
Rebates	(943,349)	(1,309,501)
Fees	<u>(124,117)</u>	<u>(108,406)</u>
Net Securities Lending Income	<u>373,024</u>	<u>325,819</u>
Net Investment Income	<u>299,882,451</u>	<u>(56,465,738)</u>
Miscellaneous Income	<u>78,242</u>	<u>68,140</u>
Total Additions	<u>533,647,341</u>	<u>187,737,925</u>

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SECTION III – ASSETS

**TABLE III-2
Changes in Market Values (Continued)**

<u>Deductions</u>	<u>2017</u>	<u>2018</u>
Benefit payments	202,408,260	218,456,053
Death Benefits	701,206	622,901
Refunds of Members' Contributions	<u>2,297,504</u>	<u>2,364,713</u>
Total Benefit Payments	205,406,970	221,443,667
Administrative & Other Expenses		
General Administrative Expenses	3,540,658	3,844,648
Actuary Fees	144,211	120,122
Fund Legal Fees	<u>433,709</u>	<u>900,312</u>
Total Administrative & Other Expenses	4,118,578	4,865,082
Transfer Between Plans	<u>(364,714)</u>	<u>(324,269)</u>
Total Deductions	209,160,834	225,984,480
Net increase (Decrease)	324,486,507	(38,246,555)
Net Assets Held in Trust for Pension Benefits:		
Beginning of Year	<u>2,554,802,124</u>	<u>2,879,288,631</u>
End of Year	<u><u>2,879,288,631</u></u>	<u><u>2,841,042,076</u></u>
Approximate Return	11.68%	-1.95%

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SECTION III – ASSETS

Actuarial Value of Assets (AVA)

The Actuarial Value of Assets represents a “smoothed” value developed by the actuary to reduce contribution volatility, which could develop due to short-term fluctuations in the Market Value of Assets. For this System, the Actuarial Value of Assets is calculated by recognizing the deviation of actual investment returns compared to the expected return over a five-year period.

The dollar amount of the expected return on the Market Value of Assets is determined using the actual contributions, administrative expense, and benefit payments during the year. Any difference between this amount and the actual investment earnings is considered a gain or loss. However, in no event will the Actuarial Value of Assets be less than 80% or more than 120% of market value on the valuation date. The following table shows the development of the actuarial asset value.

TABLE III-3 Development of Actuarial Value of Assets as of January 1, 2019									
	(a)	(b)	(c)	(d)	(e)	(f)	(g) = (f) – (c)	(h)	(i) = (g) x (h)
Year	Contributions	Benefits	Administrative Expense	Healthcare Fund Transfer	Expected Return	Actual Return	Additional Earnings	Not Recognized	Unrecognized Earnings
2015	179,398,457	181,468,912	4,075,745	378,969	184,778,322	(47,339,751)	(232,118,073)	20%	(46,423,615)
2016	189,239,931	194,719,177	4,369,744	293,779	178,243,779	151,114,788	(27,128,991)	40%	(10,851,596)
2017	233,686,648	205,406,970	4,118,578	364,714	189,960,353	299,960,693	110,000,340	60%	66,000,203
2018	244,135,523	221,443,667	4,865,082	324,269	209,406,849	(56,397,598)	(265,804,447)	80%	(212,643,558)
1. Total Unrecognized Dollars									(203,918,566)
2. Market Value of Assets as of December 31, 2018									2,841,042,076
3. Preliminary Actuarial Value of Assets as of December 31, 2018: [(2) - (1)]									3,044,960,642
4. Corridor Limits									
a. 80% of Net Market Value									2,272,833,661
b. 120% of Net Market Value									3,409,250,491
5. Actuarial Value of Assets after Corridor									3,044,960,642
6. Ratio of Actuarial Value to Market Value [(5) ÷ (2)]									107.18%
7. Market Stabilization Designation [(2) – (5)]									(203,918,566)
8. Special (Non Valuation) Reserves:									
Class Action Settlement – Post 4/1/1982									62,951
Contingency									0
Undistributed Earnings Reserve									0
Total Special Reserves									62,951
9. Actuarial Value of Assets for the Funding Ratio: [(5) - (8)]									\$3,044,897,691
10. Additional Contribution Reserves									\$40,548,809
11. Actuarial Value of Assets Used for Calculating the Employer Contribution Rates: [(9) - (10)]									\$3,004,348,882

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SECTION III – ASSETS

Investment Performance

The following table calculates the investment related gain/loss for the plan year on both a market value and an actuarial value basis. The market value gain/loss is a useful measure for comparing the actual asset performance to the previous valuation assumption.

The employer contributions include the additional contributions of \$20,434,919 made by the County and the MVCD in the gain/loss development for the market value of assets, but are excluded in the analysis for the valuation assets.

TABLE III-4 Asset Gain/(Loss)		
	Market Value	Valuation Assets
January 1, 2018 value	\$ 2,879,288,631	\$ 2,892,776,276
Employer Contributions	208,757,572	188,322,653
Employee Contributions	35,377,951	35,377,951
Healthcare Transfer	324,269	324,269
Benefit Payments	(221,443,667)	(221,443,667)
Administrative Expenses	(4,865,082)	(4,865,082)
Expected Investment Earnings (7.25%)	<u>209,406,849</u>	<u>209,656,898</u>
Expected Value December 31, 2018	\$ 3,106,846,523	\$ 3,100,149,298
Investment Gain / (Loss)	<u>(265,804,447)</u>	<u>(95,800,416)</u>
January 1, 2019 value	\$ 2,841,042,076	\$ 3,004,348,882
Return	-1.95%	3.94%

Note that the return on market value shown above is not the dollar-weighted return on assets required for purposes of GASB Statements 67 and 68.

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SECTION III – ASSETS

The following table shows the historical annual asset returns on a market value and actuarial value basis, as well in the increase in the Consumer Price Index (CPI) since 1999.

TABLE III-5 Historical Asset Returns			
Year Ended December 31	Return on Market Value	Return on Actuarial Value	Increase in CPI¹
1999	13.7%	15.1%	2.7%
2000	3.2%	11.5%	3.4%
2001	(0.1%)	8.8%	1.6%
2002	(5.5%)	4.7%	2.4%
2003	25.5%	6.8%	1.9%
2004	11.8%	6.6%	3.3%
2005	6.9%	7.2%	3.4%
2006	12.7%	9.6%	2.5%
2007	6.9%	11.2%	4.1%
2008	(30.1%)	(14.3%)	(0.5%)
2009	11.4%	7.4%	2.5%
2010	12.4%	6.4%	1.5%
2011	1.3%	(1.8%)	3.0%
2012	11.7%	(0.2%)	1.7%
2013	9.2%	8.5%	1.5%
2014	4.7%	7.5%	0.8%
2015	(1.9%)	5.6%	0.7%
2016	6.3%	5.3%	2.1%
2017	11.7%	5.6%	2.1%
2018	(2.0%)	3.9%	1.9%
Compounded 15- Year Average	4.2%	4.4%	2.0%
Compounded 10- Year Average	6.3%	4.8%	1.8%
Compounded 5- Year Average	3.6%	5.6%	1.5%

¹ Based on All Urban Consumers - U.S. City Average, December Indices.

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SECTION III – ASSETS

Reserve Balances

The following table shows historical balances of the Post-1982 Settlement Reserve.

TABLE III-6 Post-1982 Settlement Reserve				
Valuation Date January 1	Number Eligible	Benefits Payable	Reserve	Estimated Years of Payments
2008	1,896	3,683,939	25,872,222	13
2009	1,856	3,602,904	22,015,055	10
2010	1,800	3,484,762	20,090,654	9
2011	1,738	3,370,636	18,108,660	6
2012	1,679	3,243,068	14,556,866	5
2013	1,709	3,244,009	11,063,855	4
2014	1,662	3,197,416	8,765,004	3
2015	1,617	3,046,233	6,338,007	2
2016	1,560	2,939,133	3,644,507	1
2017	1,501	2,821,575	915,393	<1
2018	1,441	2,705,007	485,100	<1
2019	1,376	2,594,058	0	0

As of January 1, 2019, the total projected liability associated with paying the Post-82 Settlement allowances for the remaining lifetime of the eligible members and beneficiaries was estimated to be approximately \$19.5 million. Payments from the Post-82 Settlement reserve have been suspended, with the last benefits payable in August of 2018.

SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2019

SECTION IV – LIABILITIES

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

- **Disclosure** of System liabilities at January 1, 2018 and January 1, 2019
- Statement of **changes** in these liabilities during the year.

Disclosure

Several types of liabilities are calculated and presented in this report. We note that the liabilities described below are not appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations, in the case of a plan termination or other similar action.

- **Present Value of Future Benefits:** Used for measuring all future System obligations, represents the amount of money needed today to fully fund all benefits of the System both earned as of the valuation date and those to be earned in the future by current plan participants, under the current System provisions.
- **Actuarial Liability:** Used for funding calculations, this liability is calculated taking the Present Value of Future Benefits and subtracting the present value of future Member Contributions and future Employer Normal Costs under an acceptable actuarial funding method. The method used for this System is called the **Entry Age Normal** (EAN) funding method.
- **Unfunded Actuarial Liability:** The excess of the Actuarial Liability over the Actuarial Value of Assets.

Table IV-1 discloses each of these liabilities for the current and prior valuations. With respect to each disclosure, a subtraction of the appropriate value of Plan assets yields, for each respective type, a **net surplus**, or an **Unfunded Actuarial Liability**.

SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2019

SECTION IV – LIABILITIES

TABLE IV-1			
Liabilities/Net (Surplus)/Unfunded			
	January 1, 2018		January 1, 2019
<u>Present Value of Future Benefits</u>			
Active Participant Benefits	\$	2,466,338,760	\$ 2,560,534,003
Retiree and Inactive Benefits		<u>2,846,006,965</u>	<u>3,052,260,096</u>
Present Value of Future Benefits (PVB)	\$	5,312,345,725	\$ 5,612,794,099
<u>Actuarial Liability</u>			
Present Value of Future Benefits (PVB)	\$	5,312,345,725	\$ 5,612,794,099
Present Value of Future Normal Costs (PVFNC)		<u>815,370,128</u>	<u>891,506,623</u>
Actuarial Liability (AL = PVB – PVFNC)	\$	4,496,975,597	\$ 4,721,287,476
Actuarial Value of Assets (AVA) ¹		<u>2,913,161,286</u>	<u>3,044,897,691</u>
Net (Surplus)/Unfunded (AL – AVA)	\$	1,583,814,311	\$ 1,676,389,785

¹ Assets include the additional County and MVCD Contribution Reserves.

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2019**

SECTION IV – LIABILITIES

Changes in Liabilities

Each of the liabilities disclosed in the prior table are expected to change at each valuation. The components of that change, depending upon which liability is analyzed, can include:

- New hires since the last valuation
- Benefits accrued since the last valuation
- Plan amendments
- Passage of time which adds interest to the prior liability
- Benefits paid to retirees since the last valuation
- Participants retiring, terminating, or dying at rates different than expected
- A change in actuarial or investment assumptions
- A change in the actuarial funding method

Unfunded liabilities will change because of all of the above, and due to changes in System assets resulting from:

- Employer contributions different than expected
- Investment earnings different than expected
- A change in the method used to measure plan assets

**TABLE IV-2
Changes in Actuarial Liability**

Actuarial Liability at January 1, 2018	\$	4,496,975,597
Actuarial Liability at January 1, 2019	\$	4,721,287,476
Liability Increase (Decrease)		224,311,879
Change due to:		
Accrual of Benefits	\$	92,168,301
Actual Benefit Payments		(221,443,667)
Interest		324,826,048
Assumption Changes		16,016,526
Actuarial Liability (Gain)/Loss		12,744,671

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
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SECTION IV – LIABILITIES

**TABLE IV-3
Development of Actuarial (Gain) / Loss**

1. Unfunded Actuarial Liability at Start of Year (not less than zero)	\$ 1,604,199,321
2. Middle of year unfunded actuarial liability payment	(136,458,099)
3. Interest to end of year on 1. and 2.	111,444,392
4. Increase in Actuarial Liability due to assumption change	16,016,526
5. Expected UAL at the end of year (1+2+3+4)	1,595,202,140
6. Actual Unfunded Liability at end of year ¹	1,716,938,594
7. Net (Gain)/Loss: (6 - 5)	121,736,454
8. Actuarial Liability (Gain) / Loss	\$ 12,744,671
9. Actuarial Asset (Gain) / Loss	\$ 95,800,416
10. Contribution Delay (Gain) / Loss	\$ 13,191,367

¹ Assets exclude the additional County and MVCD Contribution Reserves.

SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
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SECTION V – CONTRIBUTIONS

In the process of evaluating the financial condition of any pension plan, the actuary analyzes the assets and liabilities to determine what level (if any) of contributions is needed to properly maintain the funding status of the System. The actuarial process utilizes funding techniques with a goal of producing a pattern of contributions that are both stable and predictable.

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

The normal cost rate is determined in the following steps. First, an individual normal cost rate is determined by taking the value, as of entry age into the System, of each member's projected future benefits. This value is then divided by the value, also at entry age, of the member's expected future salary producing a normal cost rate that should remain relatively constant over a member's career. The total normal cost is adjusted with interest to the middle of the year, to reflect the fact that the normal cost contributions are paid throughout the year as member payroll payments are made. Finally, the total normal cost rate is reduced by the member contribution rate to produce the employer normal cost rate.

The Unfunded Actuarial Liability is the difference between the EAN Actuarial Liability and the Actuarial Value of Assets. At the July 24, 2015 board meeting, the SJCERA Board of Retirement chose to make a change to their funding policy, opting to amortize any unexpected changes in the UAL over a period of 15 years as a level percent of pay, with new amortization layers each year. The result was a set of three amortization bases as of January 1, 2015: the 2008 loss being amortized over 24 years, the remaining UAL as of December 31, 2014 being amortized over 18 years, and new additions to the UAL on and after January 1, 2015 amortized over 15 years. The single equivalent amortization period for all streams of UAL payments is 15 years as of January 1, 2019. The amortization period for each Unfunded Actuarial Liability layer will decrease each year.

The total administrative expenses are assumed to be \$4,762,311 per year, increasing with the CPI assumption each valuation. The administrative expenses are split between employees and employers based on their share of the overall contributions.

The tables on the following pages present the employer contributions for the System for this valuation.

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2019**

SECTION V – CONTRIBUTIONS

TABLE V-1 Development of Employer Contribution Amount		
	January 1, 2019	
		% of pay
1. Normal Cost at Middle of Year	\$ 66,245,547	14.86%
2. Amortization of Unfunded Liability		
a. Actuarial Liability	\$ 4,721,287,476	
b. Actuarial Value of Assets ¹	3,004,348,882	
c. Unfunded Liability (a) – (b)	\$ 1,716,938,594	
d. Amortization of Unfunded Liability	\$ 153,075,201	31.76%
3. Administrative Expenses <i>(Employer allocation only)</i>	\$ 4,058,156	0.84%
4. Actuarially Determined Contribution (1) + (2d) + (3)	\$ 223,378,904	47.46%

¹Assets exclude additional County and MVCD Contribution Reserves.

TABLE V-2 Employer Contribution Rate		
	January 1, 2018	January 1, 2019
Contributions as a Percentage of Payroll²		
Gross Entry Age Normal Cost Rate	22.51%	22.95%
Employee Contribution Rate	<u>7.60%</u>	<u>8.09%</u>
Employer Entry Age Normal Cost Rate	14.91%	14.86%
Employer Normal Cost Rate	14.91%	14.86%
Administrative Expense	0.86%	0.84%
Amortization Payment	<u>29.73%</u>	<u>31.76%</u>
Employer Contribution Rate	45.50%	47.46%
Actuarially Determined Contribution (Employer)	\$ 203,665,592	\$ 223,378,904

²Normal cost and employee contribution rates do not include administrative expenses.

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2019**

SECTION V – CONTRIBUTIONS

TABLE V-3 Employer Contribution Rate				
	General Tier 1 January 1, 2019	General Tier 2 January 1, 2019	Safety Tier 1 January 1, 2019	Safety Tier 2 January 1, 2019
Contributions as a Percentage of Payroll¹				
Gross Entry Age Normal Cost Rate	22.56%	18.60%	35.66%	28.81%
Employee Contribution Rate	<u>6.74%</u>	<u>9.30%</u>	<u>8.03%</u>	<u>14.41%</u>
Employer Entry Age Normal Cost Rate	15.82%	9.30%	27.63%	14.40%
Employer Normal Cost Rate	15.82%	9.30%	27.63%	14.40%
Administrative Expense	0.84%	0.84%	0.84%	0.84%
Amortization Payment	<u>27.59%</u>	<u>27.59%</u>	<u>54.82%</u>	<u>54.82%</u>
Employer Contribution Rate	44.25%	37.73%	83.29%	70.06%
Actuarially Determined Contribution (Employer)	\$ 103,885,950	\$ 61,662,377	\$ 44,452,600	\$ 13,377,976

¹ Normal cost and employee contribution rates do not include administrative expenses.

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2019**

SECTION V – CONTRIBUTIONS

**TABLE V-4
Development of Amortization Payment
For Fiscal Year 2019**

Type of Base	Date Established	Initial Amount	Initial Amortization Years	1/1/2019 Outstanding Balance	Remaining Amortization Years	Amortization Amount
Charges/(Credits)						
1. 2008 Extraordinary Actuarial Loss	1/1/2009	\$ 424,264,899	30	\$ 465,032,272	20	\$ 34,005,872
2. Remaining 1/1/2014 UAL	1/1/2014	820,499,756	19	773,372,436	14	72,802,108
3. 1/1/2015 Gain	1/1/2015	(16,438,883)	15	(14,696,825)	11	(1,668,690)
4. 1/1/2016 Loss	1/1/2016	52,425,827	15	48,608,727	12	5,151,239
5. 1/1/2016 Assumption Changes	1/1/2016	91,855,247	15	85,167,305	12	9,025,482
6. 1/1/2017 Loss	1/1/2017	109,410,922	15	104,590,746	13	10,416,170
7. 1/1/2018 Loss	1/1/2018	37,659,825	15	36,902,456	14	3,473,846
8. 1/1/2018 Assumption Changes	1/1/2018	81,854,661	15	80,208,498	14	7,550,499
9. 1/1/2019 Loss	1/1/2019	121,736,453	15	121,736,453	15	10,886,384
10. 1/1/2019 Assumption Changes	1/1/2019	16,016,526	15	<u>16,016,526</u>	15	<u>1,432,291</u>
				\$ 1,716,938,594	15 ¹	\$ 153,075,201

¹ The single equivalent amortization period - i.e. the length of time required to amortize the overall UAL as a level percentage of payroll based on the total current amortization payment is approximately 15 years.

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2019**

SECTION VI – ADDITIONAL CAFR SCHEDULES

This section of the report provides a schedule for the Actuarial Section of the CAFR for SJCERA that is not provided in the GASB 67 and 68 reports.

We have prepared the following schedule:

Schedule of Funded Liabilities by Type

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

The Actuarial Liability is determined assuming that the System is ongoing and participants continue to terminate employment, retire, etc., in accordance with the actuarial assumptions. Liabilities for 2013 through 2015 were discounted at an assumed interest rate of 7.50%, whereas liabilities for 2016 and 2017 were discounted at the assumed rate of 7.40%, and the liabilities for 2018 and 2019 are discounted at the assumed rate of 7.25%.

Table VI-1 Schedule of Funded Liabilities by Type Aggregate Actuarial Liabilities for							
Valuation Date January 1,	Active Member Contributions	Retirees & Beneficiaries	Active Members¹	Actuarial Value of Assets	Portion of Actuarial Liabilities Covered by Reported Assets		
	(1)	(2)	(3)		(1)	(2)	(3)
2019	\$ 368,549,547	\$2,899,425,320	\$1,437,296,083	\$3,044,897,691	100%	92%	0%
2018	344,503,811	2,706,791,152	1,445,680,634	2,913,161,286	100%	95%	0%
2017	318,020,652	2,513,640,349	1,403,432,945	2,733,851,661	100%	96%	0%
2016	297,179,041	2,347,908,211	1,361,302,798	2,604,472,784	100%	98%	0%
2015	276,818,405	2,117,009,658	1,337,806,309	2,471,291,047	100%	100%	6%
2014	258,198,240	1,956,930,619	1,346,730,197	2,285,165,972	100%	100%	5%
2013	209,987,230	1,810,775,897	1,332,531,085	2,125,700,227	100%	100%	8%
2012	202,924,928	1,627,338,404	1,218,058,024	2,130,052,649	100%	100%	25%
2011	193,612,757	1,495,665,075	1,228,410,127	2,120,384,183	100%	100%	35%
2010	187,986,706	1,373,256,766	1,208,368,072	1,949,011,498	100%	100%	32%
2009	176,235,961	1,231,647,623	1,103,041,755	1,821,357,079	100%	100%	37%
2008	166,804,000	1,119,690,000	1,048,027,000	2,029,949,000	100%	100%	71%
2007	159,100,000	1,023,296,000	967,542,000	1,869,717,000	100%	100%	71%
2006	147,953,000	904,208,000	883,657,000	1,727,033,000	100%	100%	76%

¹ Includes terminated vested members.

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
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APPENDIX A – MEMBERSHIP INFORMATION

The data for this valuation was provided by the San Joaquin County staff as of January 1, 2019.

Summary of Participant Data as of January 1, 2019			
	General	Safety	Total
Tier 1 Active Participants			
Number	2,920	587	3,507
Average Age	50.60	44.23	49.54
Average Benefit Service	16.01	15.40	15.90
Average Vesting Service	16.30	15.88	16.23
Average Pay	\$81,434	\$91,566	\$83,130
Tier 2 Active Participants			
Number	2,565	273	2,838
Average Age	40.29	31.65	39.46
Average Benefit Service	2.54	2.56	2.54
Average Vesting Service	2.58	2.61	2.58
Average Pay	\$63,951	\$69,346	\$64,470
All Active Participants			
Number	5,485	860	6,345
Average Age	45.78	40.24	45.03
Average Benefit Service	9.71	11.33	9.93
Average Vesting Service	9.87	11.66	10.11
Average Pay	\$73,258	\$84,513	\$74,784

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
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APPENDIX A – MEMBERSHIP INFORMATION

Summary of Participant Data as of January 1, 2019			
	General	Safety	Total
Service Retired			
Number	3,969	619	4,588
Average Age	70.73	66.16	70.11
Average Annual Base Benefit	\$15,610	\$33,981	\$18,089
Average Annual Total Benefit	\$35,280	\$68,458	\$39,756
Beneficiaries			
Number	635	197	832
Average Age	72.51	69.21	71.73
Average Annual Base Benefit	\$6,868	\$12,846	\$8,283
Average Annual Total Benefit	\$19,689	\$36,166	\$23,590
Duty Disabled			
Number	250	212	462
Average Age	64.54	61.44	63.12
Average Annual Base Benefit	\$13,250	\$28,778	\$20,375
Average Annual Total Benefit	\$25,606	\$53,996	\$38,633
Non-Duty Disabled			
Number	156	15	171
Average Age	64.34	66.27	64.51
Average Annual Base Benefit	\$9,004	\$12,231	\$9,287
Average Annual Total Benefit	\$17,138	\$27,820	\$18,074
Total Receiving Benefits			
Number	5,010	1,043	6,053
Average Age	70.45	65.78	69.64
Average Annual Base Benefit	\$14,179	\$28,619	\$16,667
Average Annual Total Benefit	\$32,256	\$58,835	\$36,836

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
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APPENDIX A – MEMBERSHIP INFORMATION

Summary of Participant Data as of January 1, 2019			
	General	Safety	Total
Deferred Vested			
Number	410	33	443
Average Age	49.09	43.36	48.66
Average Service	9.26	9.15	9.25
Transfers and DROs			
Number	403	108	511
Average Age	49.40	44.71	48.41
Average Service	5.35	4.43	5.15
Funds on Account			
Number	719	37	756
Average Age	45.51	39.59	45.22
Average Service	1.25	1.56	1.26
Total Inactive			
Number	1,532	178	1,710
Average Age	47.49	43.40	47.07
Average Service	4.47	4.71	4.49

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
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APPENDIX A – MEMBERSHIP INFORMATION

Changes in Plan Membership: General

	Actives	Transfers/ DROS	Non-Vested Terminations	Vested Terminations	Non-Duty Disabled	Duty Disabled	Retired	Beneficiaries	Total
January 1, 2018	5,370	395	646	418	157	245	3,789	615	11,635
New Entrants	655	0	0	0	0	0	0	0	655
Rehires	37	(1)	(13)	(7)	0	0	0	0	16
Duty Disabilities	(2)	0	0	(1)	0	3	0	0	0
Non-Duty Disabilities	(4)	0	0	0	4	0	0	0	0
Retirements	(211)	(20)	(1)	(39)	0	0	269	2	0
Vested Terminations	(45)	0	0	45	0	0	0	0	0
Retirements from Safety with General Service	0	0	0	0	0	3	11	0	14
Died, With Beneficiaries' Benefit Payable	(4)	0	0	0	(4)	(1)	(35)	44	0
Died, Without Beneficiary, and Other Terminations	(120)	(1)	116	0	(1)	(3)	(62)	0	(71)
Transfers	(45)	33	0	0	0	0	0	0	(12)
Redeposits – AB 2766	0	0	0	0	0	0	0	0	0
Withdrawals Paid	(146)	(4)	(29)	(6)	0	0	0	0	(185)
Beneficiary Deaths	0	0	0	0	0	0	0	(27)	(27)
Domestic Relations Orders	0	1	0	0	0	0	0	1	2
Data Corrections	0	0	0	0	0	3	(3)	0	0
January 1, 2019	5,485	403	719	410	156	250	3,969	635	12,027

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
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APPENDIX A – MEMBERSHIP INFORMATION

Changes in Plan Membership: Safety

	Actives	Transfers/ DROS	Non-Vested Terminations	Vested Terminations	Non-Duty Disabled	Duty Disabled	Retired	Beneficiaries	Total
January 1, 2018	848	105	32	28	14	207	600	195	2,029
New Entrants	60	0	0	0	0	0	0	0	60
Rehires	2	0	0	(2)	0	0	0	0	0
Duty Disabilities	(5)	0	0	0	0	5	0	0	0
Non-Duty Disabilities	(1)	0	0	0	1	1	0	0	1
Retirements	(25)	(5)	0	(2)	0	0	31	1	0
Vested Terminations	(9)	0	0	9	0	0	0	0	0
Retirements from Safety with General Service	0	0	0	0	0	0	1	0	1
Died, With Beneficiaries' Benefit Payable	0	0	0	0	0	(2)	(5)	7	0
Died, Without Beneficiary, and Other Terminations	(6)	0	6	0	0	(2)	(5)	0	(7)
Transfers	5	7	0	0	0	0	0	0	12
Redeposits – AB 2766	0	0	0	0	0	0	0	0	0
Withdrawals Paid	(9)	(1)	(1)	0	0	0	0	0	(11)
Beneficiary Deaths	0	0	0	0	0	0	0	(6)	(6)
Domestic Relations Orders	0	2	0	0	0	0	0	0	2
Data Corrections	0	0	0	0	0	3	(3)	0	0
January 1, 2019	860	108	37	33	15	212	619	197	2,081

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
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APPENDIX A – MEMBERSHIP INFORMATION

Changes in Plan Membership: All Groups

	Actives	Transfers/ DROS	Non-Vested Terminations	Vested Terminations	Non-Duty Disabled	Duty Disabled	Retired	Beneficiaries	Total
January 1, 2018	6,218	500	678	446	171	452	4,389	810	13,664
New Entrants	715	0	0	0	0	0	0	0	715
Rehires	39	(1)	(13)	(9)	0	0	0	0	16
Duty Disabilities	(7)	0	0	(1)	0	8	0	0	0
Non-Duty Disabilities	(5)	0	0	0	5	1	0	0	1
Retirements	(236)	(25)	(1)	(41)	0	0	300	3	0
Vested Terminations	(54)	0	0	54	0	0	0	0	0
Retirements from Safety with General Service	0	0	0	0	0	3	12	0	15
Died, With Beneficiaries' Benefit Payable	(4)	0	0	0	(4)	(3)	(40)	51	0
Died, Without Beneficiary, and Other Terminations	(126)	(1)	122	0	(1)	(5)	(67)	0	(78)
Transfers	(40)	40	0	0	0	0	0	0	0
Redeposits – AB 2766	0	0	0	0	0	0	0	0	0
Withdrawals Paid	(155)	(5)	(30)	(6)	0	0	0	0	(196)
Beneficiary Deaths	0	0	0	0	0	0	0	(33)	(33)
Domestic Relations Orders	0	3	0	0	0	0	0	1	4
Data Corrections	0	0	0	0	0	6	(6)	0	0
January 1, 2019	6,345	511	756	443	171	462	4,588	832	14,108

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
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APPENDIX A – MEMBERSHIP INFORMATION

Active Member Data by Plan

Valuation at Year End	Plan Type	Member Count	Annual Payroll	Average Annual Salary	Average Salary Increase
2006	General	5,234	\$288,178,806	\$55,059	18.22%
	Safety	820	\$56,293,820	\$68,651	15.52%
	Total	6,054	\$344,472,626	\$56,900	17.68%
2007	General	5,353	\$308,773,122	\$57,682	4.76%
	Safety	871	\$62,988,014	\$72,317	5.34%
	Total	6,224	\$371,761,136	\$59,730	4.97%
2008	General	5,180	\$315,202,954	\$60,850	5.49%
	Safety	900	\$67,127,759	\$74,586	3.14%
	Total	6,080	\$382,330,713	\$62,883	5.28%
2009	General	4,990	\$320,526,792	\$64,234	5.56%
	Safety	925	\$70,801,157	\$76,542	2.62%
	Total	5,915	\$391,327,949	\$66,159	5.21%
2010	General	4,643	\$308,183,424	\$66,376	3.33%
	Safety	830	\$64,817,396	\$78,093	2.03%
	Total	5,473	\$373,000,820	\$68,153	3.01%
2011	General	4,441	\$298,308,687	\$67,172	1.20%
	Safety	813	\$64,041,814	\$78,772	0.87%
	Total	5,254	\$362,350,501	\$68,967	1.19%
2012	General	4,492	\$301,505,122	\$67,120	-0.08%
	Safety	803	\$64,386,900	\$80,183	1.79%
	Total	5,295	\$365,892,023	\$69,101	0.19%
2013	General	4,748	\$316,885,044	\$66,741	-0.57%
	Safety	805	\$65,640,055	\$81,540	1.69%
	Total	5,553	\$382,525,098	\$68,886	-0.31%
2014	General	4,879	\$322,836,680	\$66,169	-0.86%
	Safety	827	\$68,491,483	\$82,819	1.57%
	Total	5,706	\$391,328,162	\$68,582	-0.44%
2015	General	5,131	\$340,731,847	\$66,407	0.36%
	Safety	793	\$66,456,278	\$83,804	1.19%
	Total	5,924	\$407,188,125	\$68,735	0.22%
2016	General	5,291	\$373,202,798	\$70,535	6.22%
	Safety	811	\$67,593,920	\$83,346	-0.55%
	Total	6,102	\$440,796,718	\$72,238	5.10%
2017	General	5,370	\$381,151,442	\$70,978	0.63%
	Safety	848	\$70,776,611	\$83,463	0.14%
	Total	6,218	\$451,928,053	\$72,681	0.61%
2018	General	5,485	\$401,820,940	\$73,258	3.86%
	Safety	860	\$72,680,957	\$84,513	1.40%
	Total	6,345	\$474,501,897	\$74,784	3.52%

Payroll figures represent active member's annualized pay rates on December 31.

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2019**

APPENDIX A – MEMBERSHIP INFORMATION

Schedule of Retirees and Beneficiaries Valuation Data

Valuation at Year End	Plan Type	Member Retirements	Beneficiary Continuance	Members and Beneficiaries Removed	Total Retirees on Payroll	Annual Retirement Payroll	Average Annual Allowance	Average Allowance Increase
2006	General	190	41	102	3,107	58,634,478	18,872	3.96%
	Safety	31	8	11	632	25,003,422	39,562	2.14%
	Total	221	49	113	3,739	83,637,900	22,369	3.45%
2007	General	199	31	99	3,238	65,213,731	20,140	6.72%
	Safety	38	6	8	668	27,396,329	41,012	3.67%
	Total	237	37	107	3,906	92,610,060	23,710	5.99%
2008	General	203	30	83	3,388	71,488,335	21,100	4.77%
	Safety	50	10	18	710	30,575,540	43,064	5.00%
	Total	253	40	101	4,098	102,063,875	24,906	5.04%
2009	General	207	31	104	3,522	78,988,070	22,427	6.29%
	Safety	24	7	11	730	32,575,964	44,625	3.62%
	Total	231	38	115	4,252	111,564,034	26,238	5.35%
2010	General	242	35	102	3,697	85,931,078	23,243	3.64%
	Safety	65	5	8	792	36,354,738	45,902	2.86%
	Total	307	40	110	4,489	122,285,816	27,241	3.82%
2011	General	240	42	108	3,871	92,938,361	24,009	3.30%
	Safety	32	4	14	814	38,098,866	46,805	1.97%
	Total	272	46	122	4,685	131,037,227	27,970	2.68%
2012	General	278	27	135	4,041	102,025,575	25,248	5.16%
	Safety	52	12	20	856	42,008,598	49,075	4.85%
	Total	330	39	155	4,897	144,034,172	29,413	5.16%
2013	General	213	52	134	4,172	109,869,721	26,335	4.31%
	Safety	22	11	20	869	43,548,028	50,113	2.11%
	Total	235	63	154	5,041	153,411,632	30,433	3.47%
2014	General	247	51	112	4,358	120,722,240	27,701	5.19%
	Safety	29	14	21	891	45,889,472	51,503	2.77%
	Total	276	65	133	5,249	166,611,711	31,742	4.30%
2015	General	227	45	136	4,494	129,928,957	28,912	4.37%
	Safety	54	15	19	941	50,813,875	54,000	4.85%
	Total	281	60	155	5,435	180,742,832	33,255	4.77%
2016	General	251	40	128	4,657	139,511,334	29,957	3.62%
	Safety	40	12	22	971	54,508,607	56,137	3.96%
	Total	291	52	150	5,628	194,019,941	34,474	3.66%
2017	General	249	49	149	4,806	149,183,295	31,041	3.62%
	Safety	46	12	13	1,016	57,837,517	56,927	1.41%
	Total	295	61	162	5,822	207,020,812	35,558	3.15%
2018	General	290	47	133	5,010	161,602,326	32,256	3.91%
	Safety	39	8	20	1,043	61,364,472	58,835	3.35%
	Total	329	55	153	6,053	222,966,797	36,836	3.59%

Payroll figures represent year end monthly retirement benefits annualized and exclude Post-Employment Healthcare benefits.

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2019**

APPENDIX A – MEMBERSHIP INFORMATION

Retirees and Beneficiaries Added to and Removed from Retiree Payroll

Fiscal Year	Beginning of Year	Added During Year	Allowances Added (in 000s)¹	Removed During Year	Allowances Removed	End of Year	Annual Retirement Payroll (in 000s)	Average Allowance Percentage Increase	Average Annual Allowance
2010	4,252	353	12,918	116	2,196	4,489	122,286	3.82%	27,241
2011	4,489	318	11,544	122	2,793	4,685	131,037	2.67%	27,969
2012	4,685	361	16,400	149	3,403	4,897	144,034	5.16%	29,413
2013	4,897	297	12,908	153	3,530	5,041	153,412	3.47%	30,433
2014	5,041	340	16,230	132	3,030	5,249	166,612	4.30%	31,742
2015	5,249	341	17,776	155	3,651	5,435	180,737	4.77%	33,255
2016	5,435	343	17,151	150	3,868	5,628	194,020	3.66%	34,474
2017	5,628	355	17,288	161	4,287	5,822	207,021	3.15%	35,558
2018	5,822	382	19,839	151	3,893	6,053	222,967	3.59%	36,836

¹ Includes COLA amounts not included in previous year's Annual Allowance totals.

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2019**

APPENDIX A – MEMBERSHIP INFORMATION

Schedule of Average Monthly Benefit Payments

Retirement Effective Date	Number of Years of Service Credit						
	0-4	5-9	10-14	15-19	20-24	25-29	30 & Over
1/2/11 to 1/1/12							
Retirees							
General Members							
Average Benefits	\$470	\$1,205	\$1,464	\$2,615	\$3,302	\$3,968	\$4,670
Average Final Compensation	\$5,518	\$5,903	\$4,928	\$6,463	\$6,110	\$5,541	\$5,570
Count	12	26	56	27	41	16	39
Safety Members							
Average Benefits	\$922	\$1,112	\$2,551	\$3,970	\$7,499	\$7,790	\$10,586
Average Final Compensation	\$9,746	\$4,483	\$5,290	\$7,767	\$10,430	\$9,162	\$10,797
Count	2	6	3	3	4	5	3
Survivors/QDROs							
General Members							
Average Benefits	\$622	\$890	\$773	\$1,367	\$1,838	\$2,039	\$3,281
Average Final Compensation	\$9,807	\$4,816	\$3,578	\$4,371	\$4,108	\$3,364	\$5,366
Count	5	9	11	10	5	5	5
Safety Members							
Average Benefits	\$825	\$859	\$1,591	\$3,334	\$0	\$0	\$3,829
Average Final Compensation	\$9,779	\$4,960	\$2,795	\$9,010	\$0	\$0	\$5,257
Count	1	1	2	1	0	0	1
1/2/12 to 1/1/13							
Retirees							
General Members							
Average Benefits	\$517	\$1,077	\$1,481	\$2,129	\$2,729	\$4,198	\$6,317
Average Final Compensation	\$7,532	\$5,925	\$5,233	\$4,900	\$5,338	\$6,449	\$7,295
Count	19	31	56	36	42	30	44
Safety Members							
Average Benefits	\$429	\$2,194	\$3,026	\$4,186	\$5,302	\$9,183	\$13,206
Average Final Compensation	\$6,793	\$5,812	\$6,636	\$8,124	\$7,306	\$13,360	\$13,606
Count	4	5	7	3	14	11	5
Survivors/QDROs							
General Members							
Average Benefits	\$331	\$1,189	\$1,017	\$1,525	\$1,274	\$3,105	\$2,783
Average Final Compensation	\$4,482	\$3,558	\$2,664	\$2,604	\$3,639	\$4,794	\$3,940
Count	4	4	8	3	1	2	4
Safety Members							
Average Benefits	\$0	\$1,039	\$2,423	\$3,450	\$3,573	\$3,206	\$4,887
Average Final Compensation	\$0	\$6,972	\$7,561	\$1,358	\$1,776	\$3,836	\$6,169
Count	0	2	2	2	1	3	2

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2019**

APPENDIX A – MEMBERSHIP INFORMATION

Schedule of Average Monthly Benefit Payments

Retirement Effective Date	<u>Number of Years of Service Credit</u>						
	0-4	5-9	10-14	15-19	20-24	25-29	30 & Over
1/2/13 to 1/1/14							
Retirees							
General Members							
Average Benefits	\$433	\$1,410	\$1,589	\$2,556	\$3,149	\$4,241	\$5,837
Average Final Compensation	\$7,695	\$7,279	\$5,787	\$6,125	\$6,132	\$6,467	\$6,718
Count	10	25	40	35	35	26	29
Safety Members							
Average Benefits	\$1,165	\$1,435	\$2,621	\$3,501	\$4,260	\$11,134	\$9,279
Average Final Compensation	\$9,478	\$7,434	\$6,316	\$7,044	\$5,599	\$13,945	\$9,670
Count	3	2	7	4	1	2	2
Survivors/QDROs							
General Members							
Average Benefits	\$687	\$1,000	\$883	\$1,182	\$2,063	\$1,572	\$2,985
Average Final Compensation	\$3,804	\$4,531	\$3,953	\$3,163	\$3,722	\$1,821	\$3,681
Count	6	9	15	7	5	2	5
Safety Members							
Average Benefits	\$650	\$3,101	\$1,385	\$2,012	\$1,918	\$3,745	\$4,936
Average Final Compensation	\$4,955	\$10,868	\$2,506	\$3,966	\$2,525	\$6,184	\$5,381
Count	3	1	2	1	2	1	1
1/2/14 to 1/1/15							
Retirees							
General Members							
Average Benefits	\$618	\$1,120	\$1,601	\$2,635	\$4,409	\$4,672	\$6,283
Average Final Compensation	\$9,300	\$6,612	\$5,529	\$6,454	\$8,122	\$6,944	\$7,635
Count	9	25	49	46	23	45	41
Safety Members							
Average Benefits	\$380	\$1,190	\$3,433	\$4,546	\$3,993	\$7,412	\$11,302
Average Final Compensation	\$8,910	\$6,591	\$7,642	\$8,863	\$6,031	\$9,013	\$11,761
Count	1	1	3	5	4	6	1
Survivors/QDROs							
General Members							
Average Benefits	\$475	\$654	\$1,087	\$814	\$2,160	\$1,680	\$2,941
Average Final Compensation	\$5,928	\$4,152	\$2,879	\$2,457	\$4,998	\$3,887	\$8,068
Count	11	6	11	6	5	3	5
Safety Members							
Average Benefits	\$2,030	\$2,464	\$2,890	\$3,326	\$2,002	\$3,569	\$3,499
Average Final Compensation	\$9,251	\$8,581	\$5,515	\$4,817	\$4,850	\$5,955	\$2,018
Count	2	3	4	1	1	1	2

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2019**

APPENDIX A – MEMBERSHIP INFORMATION

Schedule of Average Monthly Benefit Payments

Retirement Effective Date	Number of Years of Service Credit						
	0-4	5-9	10-14	15-19	20-24	25-29	30 & Over
1/2/15 to 1/1/16							
Retirees							
General Members							
Average Benefits	\$330	\$988	\$1,661	\$2,449	\$3,277	\$4,342	\$5,770
Average Final Compensation	\$5,778	\$5,953	\$5,826	\$5,723	\$5,918	\$6,501	\$6,781
Count	12	27	36	43	26	29	37
Safety Members							
Average Benefits	\$585	\$1,352	\$2,452	\$3,959	\$5,597	\$8,061	\$10,770
Average Final Compensation	\$7,403	\$5,334	\$6,269	\$6,943	\$8,120	\$9,621	\$11,481
Count	2	2	4	3	10	21	6
Survivors/QDROs							
General Members							
Average Benefits	\$376	\$987	\$999	\$1,612	\$3,184	\$2,709	\$5,276
Average Final Compensation	\$3,328	\$5,939	\$3,359	\$4,532	\$8,017	\$5,312	\$5,850
Count	4	10	9	4	4	3	5
Safety Members							
Average Benefits	\$530	\$2,019	\$2,184	\$1,970	\$2,902	\$4,784	\$5,026
Average Final Compensation	\$6,052	\$11,395	\$9,909	\$3,887	\$4,783	\$6,788	\$5,405
Count	2	1	2	1	2	4	3
1/2/16 to 1/1/17							
Retirees							
General Members							
Average Benefits	\$310	\$1,100	\$1,823	\$2,487	\$3,779	\$3,911	\$5,931
Average Final Compensation	\$6,616	\$5,885	\$6,368	\$5,950	\$6,805	\$5,756	\$7,132
Count	21	24	54	48	24	31	42
Safety Members							
Average Benefits	\$3,817	\$1,759	\$2,546	\$6,290	\$5,510	\$9,513	\$12,671
Average Final Compensation	\$7,634	\$5,985	\$6,353	\$11,452	\$8,566	\$11,959	\$13,175
Count	1	6	6	3	7	12	4
Survivors/QDROs							
General Members							
Average Benefits	\$313	\$858	\$1,065	\$1,596	\$3,214	\$1,720	\$2,769
Average Final Compensation	\$5,726	\$4,674	\$4,527	\$4,648	\$6,051	\$3,809	\$3,313
Count	5	7	11	6	2	5	1
Safety Members							
Average Benefits	\$495	\$2,235	\$1,253	\$1,661	\$4,086	\$5,943	\$4,712
Average Final Compensation	\$7,339	\$9,642	\$3,842	\$2,755	\$5,646	\$8,003	\$4,803
Count	2	4	1	1	1	1	2

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2019**

APPENDIX A – MEMBERSHIP INFORMATION

Schedule of Average Monthly Benefit Payments

Retirement Effective Date	<u>Number of Years of Service Credit</u>						
	0-4	5-9	10-14	15-19	20-24	25-29	30 & Over
1/2/17 to 1/1/18							
Retirees							
General Members							
Average Benefits	\$377	\$1,188	\$2,070	\$2,390	\$3,665	\$4,847	\$6,187
Average Final Compensation	\$9,793	\$6,524	\$6,533	\$5,839	\$6,699	\$7,055	\$7,391
Count	23	35	42	48	20	34	33
Safety Members							
Average Benefits	\$787	\$1,223	\$2,212	\$3,441	\$5,973	\$7,370	\$9,169
Average Final Compensation	\$9,858	\$5,688	\$5,842	\$6,681	\$9,020	\$9,264	\$9,050
Count	5	4	6	9	6	8	1
Survivors/QDROs							
General Members							
Average Benefits	\$701	\$992	\$1,442	\$1,078	\$1,941	\$1,746	\$4,828
Average Final Compensation	\$5,325	\$4,183	\$4,550	\$3,587	\$5,038	\$2,502	\$5,368
Count	11	10	8	7	3	4	4
Safety Members							
Average Benefits	\$667	\$2,413	\$1,292	\$0	\$0	\$3,363	\$5,834
Average Final Compensation	\$5,605	\$6,310	\$3,454	\$0	\$0	\$4,597	\$3,354
Count	2	3	2	0	0	1	3
1/2/18 to 1/1/19							
Retirees							
General Members							
Average Benefits	\$596	\$1,166	\$1,759	\$2,671	\$3,522	\$5,202	\$6,036
Average Final Compensation	\$9,601	\$6,704	\$5,920	\$6,603	\$6,555	\$7,633	\$6,975
Count	21	45	47	55	25	33	39
Safety Members							
Average Benefits	\$2,721	\$2,622	\$2,166	\$3,313	\$3,997	\$7,453	\$10,935
Average Final Compensation	\$5,485	\$8,987	\$6,168	\$6,135	\$6,442	\$9,615	\$11,725
Count	1	3	5	5	8	7	4
Survivors/QDROs							
General Members							
Average Benefits	\$224	\$659	\$1,201	\$1,204	\$2,150	\$2,590	\$2,759
Average Final Compensation	\$4,220	\$3,482	\$5,324	\$4,292	\$3,513	\$3,538	\$4,382
Count	3	5	10	10	1	5	9
Safety Members							
Average Benefits	\$0	\$1,724	\$3,203	\$0	\$1,201	\$0	\$6,213
Average Final Compensation	\$0	\$6,376	\$4,065	\$0	\$3,140	\$0	\$4,768
Count	0	3	1	0	1	0	3

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2019**

APPENDIX A – MEMBERSHIP INFORMATION

DISTRIBUTION OF GENERAL ACTIVE MEMBERS BY AGE AND SERVICE AS OF JANUARY 1, 2019											
COUNTS BY AGE/SERVICE											
Age	Service										Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up	
Under 25	17	24	0	0	0	0	0	0	0	0	41
25 to 29	85	261	17	0	0	0	0	0	0	0	363
30 to 34	84	390	121	32	0	0	0	0	0	0	627
35 to 39	56	317	174	150	28	0	0	0	0	0	725
40 to 44	46	256	148	184	140	28	0	0	0	0	802
45 to 49	52	196	119	169	186	78	18	2	0	0	820
50 to 54	25	150	105	122	138	90	55	22	1	0	708
55 to 59	16	108	96	106	138	88	102	57	12	1	724
60 to 64	8	68	71	66	95	71	51	36	16	4	486
65 to 69	2	14	32	28	19	15	13	9	10	3	145
70 & up	2	7	7	5	11	6	2	1	2	1	44
Total	393	1,791	890	862	755	376	241	127	41	9	5,485

Average Age = 45.78

Average Service = 9.71

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2019**

APPENDIX A – MEMBERSHIP INFORMATION

DISTRIBUTION OF SAFETY ACTIVE MEMBERS BY AGE AND SERVICE AS OF JANUARY 1, 2019											
COUNTS BY AGE/SERVICE											
Age	Service										Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up	
Under 25	6	23	0	0	0	0	0	0	0	0	29
25 to 29	4	80	14	0	0	0	0	0	0	0	98
30 to 34	4	73	30	31	0	0	0	0	0	0	138
35 to 39	0	32	18	90	21	0	0	0	0	0	161
40 to 44	2	7	13	41	70	9	0	0	0	0	142
45 to 49	0	5	7	29	58	44	4	0	0	0	147
50 to 54	1	4	1	11	21	21	14	2	0	0	75
55 to 59	0	1	7	5	8	7	11	7	0	0	46
60 to 64	0	2	1	2	4	4	3	0	0	1	17
65 to 69	0	0	0	3	2	0	0	0	0	0	5
70 & up	0	0	0	0	1	1	0	0	0	0	2
Total	17	227	91	212	185	86	32	9	0	1	860

Average Age = 40.24

Average Service = 11.33

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2019**

APPENDIX A – MEMBERSHIP INFORMATION

PAYROLL DISTRIBUTION OF GENERAL ACTIVE PARTICIPANTS BY AGE AND SERVICE AS OF JANUARY 1, 2019											
COUNTS BY AGE/SERVICE											
Age	Service										Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up	
Under 25	54,951	50,307	0	0	0	0	0	0	0	0	52,232
25 to 29	55,495	60,669	67,642	0	0	0	0	0	0	0	59,784
30 to 34	64,682	65,871	74,159	57,508	0	0	0	0	0	0	66,884
35 to 39	59,426	63,594	75,827	72,182	67,206	0	0	0	0	0	68,125
40 to 44	56,506	65,384	74,566	80,623	78,702	80,106	0	0	0	0	72,904
45 to 49	60,020	65,241	90,299	85,117	76,360	84,680	62,452	89,628	0	0	77,012
50 to 54	64,341	64,878	79,280	78,158	78,012	81,667	82,200	82,174	64,075	0	75,860
55 to 59	67,269	77,285	71,527	76,507	76,547	73,618	86,186	94,266	87,500	81,831	78,366
60 to 64	79,870	76,910	80,851	75,037	73,373	73,265	84,653	106,354	84,166	62,238	79,168
65 to 69	106,997	70,823	87,053	79,180	92,329	81,737	75,709	74,031	113,634	142,645	85,540
70 & up	88,995	70,376	161,103	45,933	59,085	78,072	51,983	52,742	122,165	159,671	84,252
Total	60,683	65,444	78,588	77,646	76,565	78,651	82,330	93,764	93,693	102,043	73,258

Average Salary = \$73,258

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2019**

APPENDIX A – MEMBERSHIP INFORMATION

PAYROLL DISTRIBUTION OF SAFETY ACTIVE PARTICIPANTS BY AGE AND SERVICE AS OF JANUARY 1, 2019											
COUNTS BY AGE/SERVICE											
Age	Service										Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up	
Under 25	46,803	62,273	0	0	0	0	0	0	0	0	59,072
25 to 29	45,490	66,147	84,417	0	0	0	0	0	0	0	67,914
30 to 34	48,875	69,149	81,471	94,740	0	0	0	0	0	0	76,988
35 to 39	0	77,718	74,013	89,176	86,826	0	0	0	0	0	84,897
40 to 44	54,631	78,824	71,854	85,939	89,793	88,616	0	0	0	0	85,927
45 to 49	0	83,292	70,920	83,427	95,831	97,626	92,010	0	0	0	92,204
50 to 54	94,172	104,743	97,143	85,708	89,163	96,774	111,468	137,491	0	0	97,244
55 to 59	0	94,172	107,784	74,460	79,560	80,921	119,393	133,463	0	0	101,554
60 to 64	0	106,589	113,583	92,695	70,991	76,396	87,150	0	0	311,033	98,481
65 to 69	0	0	0	114,612	83,892	0	0	0	0	0	102,324
70 & up	0	0	0	0	45,088	68,108	0	0	0	0	56,598
Total	50,689	70,279	80,813	88,443	90,123	93,785	109,480	134,358	0	311,033	84,513

Average Salary = \$84,513

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
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APPENDIX A – MEMBERSHIP INFORMATION

Service Retired Benefits

Current Age	General		Safety		Total	
	Number	Annual Average Benefit	Number	Annual Average Benefit	Number	Annual Average Benefit
0-24	0	\$0	0	\$0	0	\$0
25-29	0	\$0	0	\$0	0	\$0
30-34	0	\$0	0	\$0	0	\$0
35-39	0	\$0	0	\$0	0	\$0
40-44	0	\$0	0	\$0	0	\$0
45-49	1	\$1,505	6	\$33,301	7	\$28,759
50-54	82	\$17,321	52	\$66,939	134	\$36,576
55-59	245	\$24,360	100	\$71,548	345	\$38,038
60-64	633	\$36,863	120	\$74,177	753	\$42,809
65-69	941	\$40,728	115	\$72,540	1,056	\$44,192
70-74	891	\$39,529	114	\$74,312	1,005	\$43,475
75-79	565	\$33,148	68	\$55,769	633	\$35,578
80-84	309	\$29,555	27	\$37,485	336	\$30,192
85-89	175	\$27,978	12	\$47,249	187	\$29,215
90-94	84	\$24,430	5	\$90,688	89	\$28,152
95+	43	\$21,999	0	\$0	43	\$21,999
All Ages	3,969	\$35,280	619	\$68,458	4,588	\$39,756

Non-Duty Disabled Benefits

Current Age	General		Safety		Total	
	Number	Annual Average Benefit	Number	Annual Average Benefit	Number	Annual Average Benefit
0-24	0	\$0	0	\$0	0	\$0
25-29	0	\$0	0	\$0	0	\$0
30-34	0	\$0	0	\$0	0	\$0
35-39	2	\$15,009	0	\$0	2	\$15,009
40-44	3	\$20,036	0	\$0	3	\$20,036
45-49	8	\$15,953	3	\$15,196	11	\$15,746
50-54	11	\$16,682	0	\$0	11	\$16,682
55-59	22	\$18,636	1	\$3,258	23	\$17,968
60-64	31	\$18,847	2	\$58,278	33	\$21,237
65-69	31	\$16,659	3	\$20,869	34	\$17,031
70-74	28	\$16,007	1	\$15,035	29	\$15,974
75-79	11	\$15,034	3	\$43,233	14	\$21,076
80-84	5	\$17,998	1	\$22,220	6	\$18,701
85-89	2	\$17,438	1	\$22,333	3	\$19,069
90-94	1	\$7,877	0	\$0	1	\$7,877
95+	1	\$15,199	0	\$0	1	\$15,199
All Ages	156	\$17,138	15	\$27,820	171	\$18,075

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
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APPENDIX A – MEMBERSHIP INFORMATION

Duty Disabled Benefits

Current Age	General		Safety		Total	
	Number	Annual Average Benefit	Number	Annual Average Benefit	Number	Annual Average Benefit
0-24	0	\$0	0	\$0	0	\$0
25-29	0	\$0	0	\$0	0	\$0
30-34	0	\$0	0	\$0	0	\$0
35-39	2	\$186	4	\$38,565	6	\$25,772
40-44	1	\$364	7	\$35,510	8	\$31,117
45-49	18	\$10,761	23	\$38,021	41	\$26,053
50-54	14	\$21,257	18	\$51,398	32	\$38,211
55-59	31	\$23,725	44	\$56,734	75	\$43,090
60-64	50	\$27,958	29	\$51,685	79	\$36,668
65-69	60	\$27,188	32	\$59,940	92	\$38,580
70-74	41	\$30,075	33	\$62,699	74	\$44,624
75-79	21	\$27,560	12	\$49,473	33	\$35,529
80-84	9	\$23,538	6	\$58,217	15	\$37,410
85-89	2	\$37,391	2	\$81,660	4	\$59,525
90-94	1	\$46,227	2	\$78,036	3	\$67,433
95+	0	\$0	0	\$0	0	\$0
All Ages	250	\$25,606	212	\$53,996	462	\$38,633

Surviving Beneficiary Benefits (all benefit types)

Current Age	General		Safety		Total	
	Number	Annual Average Benefit	Number	Annual Average Benefit	Number	Annual Average Benefit
0-24	6	\$18,166	0	\$0	6	\$18,166
25-29	5	\$17,357	0	\$0	5	\$17,357
30-34	3	\$9,557	0	\$0	3	\$9,557
35-39	1	\$12,486	0	\$0	1	\$12,486
40-44	3	\$5,639	2	\$50,990	5	\$23,779
45-49	13	\$15,614	7	\$42,869	20	\$25,153
50-54	19	\$12,310	13	\$18,373	32	\$14,773
55-59	36	\$16,256	24	\$20,001	60	\$17,754
60-64	63	\$17,304	23	\$31,787	86	\$21,177
65-69	90	\$18,433	27	\$40,240	117	\$23,465
70-74	105	\$21,968	33	\$41,128	138	\$26,550
75-79	104	\$20,587	31	\$38,370	135	\$24,670
80-84	70	\$19,249	17	\$49,167	87	\$25,095
85-89	52	\$19,694	12	\$42,787	64	\$24,024
90-94	39	\$22,341	8	\$36,288	47	\$24,715
95+	26	\$30,258	0	\$0	26	\$30,258
All Ages	635	\$19,689	197	\$36,166	832	\$23,590

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APPENDIX A – MEMBERSHIP INFORMATION

Assumed Probabilities of Separation from Active Membership

Age	Non-Duty Death	Ordinary Disability	Service Retirement ¹	Duty Death	Duty Disability
General Members – Male					
20	0.0004	0.000	0.000	0.000	0.001
25	0.0003	0.000	0.000	0.000	0.001
30	0.0004	0.000	0.000	0.000	0.001
35	0.0005	0.000	0.000	0.000	0.001
40	0.0006	0.001	0.000	0.000	0.004
45	0.0008	0.001	0.000	0.000	0.004
50	0.0012	0.001	0.030	0.000	0.003
55	0.0019	0.001	0.065	0.000	0.004
60	0.0029	0.001	0.090	0.000	0.004
65	0.0041	0.001	0.250	0.000	0.005
General Members – Female					
20	0.0001	0.001	0.000	0.000	0.000
25	0.0001	0.001	0.000	0.000	0.000
30	0.0002	0.001	0.000	0.000	0.000
35	0.0003	0.001	0.000	0.000	0.000
40	0.0004	0.002	0.000	0.000	0.001
45	0.0005	0.002	0.000	0.000	0.001
50	0.0008	0.003	0.035	0.000	0.001
55	0.0012	0.004	0.035	0.000	0.001
60	0.0019	0.005	0.125	0.000	0.002
65	0.0027	0.005	0.250	0.000	0.002

¹ Lower rates assumed for members with less than 10 years of service, and higher rates assumed for members with at least 30 years of service.

The probabilities for each cause of separation represent the likelihood that a given member will separate at a particular age for the indicated reason. As an example, if the probability of separation of a male general member at age 20 is 0.036, that indicates that 3.6% of active general members are expected to separate from service during the year. Rates of Duty and Non-Duty Death are for active members who reach the given age during 2019.

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
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APPENDIX A – MEMBERSHIP INFORMATION

Assumed Probabilities of Separation from Active Membership

Age	Non-Duty Death	Ordinary Disability	Service Retirement ¹	Duty Death	Duty Disability
Safety Members – Male					
20	0.0004	0.000	0.050	0.0004	0.000
25	0.0004	0.000	0.050	0.0004	0.001
30	0.0005	0.000	0.050	0.0005	0.001
35	0.0006	0.000	0.050	0.0006	0.002
40	0.0007	0.000	0.050	0.0007	0.004
45	0.0008	0.000	0.050	0.0008	0.008
50	0.0011	0.001	0.150	0.0011	0.014
55	0.0017	0.001	0.200	0.0017	0.014
Safety Members – Female					
20	0.0002	0.000	0.050	0.0002	0.000
25	0.0002	0.000	0.050	0.0002	0.001
30	0.0004	0.000	0.050	0.0004	0.001
35	0.0005	0.000	0.050	0.0005	0.002
40	0.0006	0.000	0.050	0.0006	0.004
45	0.0007	0.000	0.050	0.0007	0.009
50	0.0009	0.001	0.150	0.0009	0.014
55	0.0014	0.001	0.200	0.0014	0.014

¹ Lower rates assumed for members with less than 20 years of service.

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
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APPENDIX A – MEMBERSHIP INFORMATION

Salary Increase, Termination and Withdrawal Assumptions

Years of Service	Salary Increase: General	Salary Increase: Safety	Withdrawal: General	Withdrawal: Safety	Termination: General¹	Termination: Safety²
0	0.1140	0.1347	0.105	0.054	0.070	0.036
1	0.1037	0.1347	0.066	0.042	0.044	0.028
2	0.0728	0.0831	0.060	0.030	0.040	0.020
3	0.0728	0.0831	0.047	0.030	0.031	0.020
4	0.0521	0.0831	0.041	0.027	0.027	0.018
5	0.0521	0.0547	0.019	0.010	0.044	0.023
6	0.0521	0.0444	0.018	0.009	0.042	0.021
7	0.0521	0.0444	0.014	0.005	0.032	0.011
8	0.0444	0.0444	0.014	0.005	0.032	0.011
9	0.0444	0.0444	0.011	0.005	0.026	0.011
10	0.0418	0.0444	0.011	0.002	0.026	0.013
11	0.0418	0.0444	0.008	0.002	0.019	0.013
12	0.0418	0.0444	0.008	0.002	0.019	0.013
13	0.0418	0.0444	0.008	0.002	0.018	0.013
14	0.0418	0.0444	0.008	0.002	0.018	0.013
15	0.0367	0.0444	0.003	0.001	0.023	0.006
16	0.0367	0.0444	0.003	0.001	0.023	0.006
17	0.0367	0.0444	0.003	0.001	0.023	0.006
18	0.0367	0.0444	0.003	0.001	0.023	0.006
19	0.0367	0.0444	0.003	0.001	0.023	0.006
20	0.0367	0.0444	0.001	0.000	0.009	0.000
21	0.0367	0.0444	0.001	0.000	0.009	0.000
22	0.0367	0.0444	0.001	0.000	0.009	0.000
23	0.0367	0.0444	0.001	0.000	0.009	0.000
24	0.0367	0.0444	0.001	0.000	0.009	0.000
25	0.0367	0.0444	0.001	0.000	0.009	0.000
26	0.0367	0.0444	0.001	0.000	0.009	0.000
27	0.0367	0.0444	0.001	0.000	0.009	0.000
28	0.0367	0.0444	0.001	0.000	0.009	0.000
29	0.0367	0.0444	0.001	0.000	0.009	0.000
30+	0.0367	0.0444	0.000	0.000	0.000	0.000

¹ 75% of vested terminated General Members with less than five years of service, 25% of those with five to 14 years of service, and 30% of those with 15 or more years of service are assumed to be reciprocal.

² 67% of vested terminated Safety Members with less than five years of service, and 50% of those with five or more years of service are assumed to be reciprocal.

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2019**

**APPENDIX B – STATEMENT OF CURRENT
ACTUARIAL ASSUMPTIONS AND METHODS**

The assumptions and methods used in the actuarial valuation as of January 1, 2019 are:

Actuarial Methods

1. Actuarial Cost Method

The actuarial valuation is prepared using the entry age actuarial cost method (CERL 31453.5). Under the principles of this method, the actuarial present value of the projected benefits of each individual included in the valuation is allocated as a level percentage of the individual's projected compensation between entry age and assumed exit (until maximum retirement age). For members who transferred from outside of SJCERA, entry age (for the Actuarial Cost calculation only) is based on entry into the system. The normal cost for the Plan is based on the sum of the individual normal costs for each member (Individual Entry Age Method).

The UAL (or Surplus Funding) is amortized as a percentage of the projected salaries of present and future members of SJCERA. Effective with the January 1, 2015 valuation, the UAL as of January 1, 2014 is amortized over a closed 19-year period (14 years remaining as of January 1, 2019), except for the additional UAL attributable to the extraordinary loss from 2008, which is being amortized over a separate closed period (20 years as of January 1, 2019).

Any subsequent unexpected change in the Unfunded Actuarial Liability after January 1, 2014 is amortized over 15 years.

2. Valuation of Assets

The assets are valued using a five-year smoothed method based on the difference between the expected market value and the actual market value of the assets as of the valuation date. The expected market value is the prior year's market value increased with the net increase in the cash flow of funds, all increased with interest during the past fiscal year at the expected investment return rate assumption.

An asset corridor limit is applied such that the smoothed Market Value of Assets stays within 20% of the Market Value of Assets.

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
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**APPENDIX B – STATEMENT OF CURRENT
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Actuarial Assumptions

The recommended assumptions were adopted by the Board at their July 12, 2019 meeting. The demographic assumptions are based on an experience study covering the period from January 1, 2016 through December 31, 2018.

1. Rate of Return

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

2. Administrative Expenses

Administrative expenses are assumed to be \$4,762,311 for the next year, to be split between employees and employers based on their share of the overall contributions. Expenses are expected to grow with the cost-of-living (by 2.90% per year.)

3. Cost-of-Living

The cost-of-living as measured by the Consumer Price Index (CPI) will increase at the rate of 2.90% per year.

4. Post Retirement COLA

Benefits are assumed to increase after retirement at the rate of 2.6% per year.

5. Increases in Pay

Assumed pay increases for active Members consist of increases due to base salary adjustments plus service-based increase due to longevity and promotion, as shown below:

	Pay Increases										
	Years of Service										
	0	1	2	3	4	5	6	7	8-9	10-14	15+
Base Increase	3.15%	3.15%	3.15%	3.15%	3.15%	3.15%	3.15%	3.15%	3.15%	3.15%	3.15%
Longevity & Promotion											
General	8.00%	7.00%	4.00%	4.00%	2.00%	2.00%	2.00%	2.00%	1.25%	1.00%	0.50%
Safety	10.00%	10.00%	5.00%	5.00%	5.00%	2.25%	1.25%	1.25%	1.25%	1.25%	1.25%
Total (Compound)											
General	11.40%	10.37%	7.28%	7.28%	5.21%	5.21%	5.21%	5.21%	4.44%	4.18%	3.67%
Safety	13.47%	13.47%	8.31%	8.31%	8.31%	5.47%	4.44%	4.44%	4.44%	4.44%	4.44%

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
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**APPENDIX B – STATEMENT OF CURRENT
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6. Family Composition

Percentage married for all active members who retire, become disabled, or die during active service is shown in the following table. Male members are assumed to be three years older than their spouses, and female members are assumed to be two years younger than their spouses.

Percentage Married	
Gender	Percentage
Males	75%
Females	55%

7. Rates of Termination

Sample rates of termination are shown in the following table. Termination rates do not apply once a member is eligible for retirement.

Rates of Termination		
Years of Service	General	Safety
0	17.50%	9.00%
1	11.00%	7.00%
2	10.00%	5.00%
3	7.75%	5.00%
4	6.75%	4.50%
5	6.25%	3.25%
6	6.00%	3.00%
7	4.50%	1.50%
8	4.50%	1.50%
9	3.75%	1.50%
10	3.75%	1.50%
11-12	2.75%	1.50%
13-19	2.50%	1.50%
20-29	1.00%	0.00%
30+	0.00%	0.00%

8. Withdrawal

Rates of withdrawal apply to active Members who terminate their employment and withdraw their member contributions, forfeiting entitlement to future Plan benefits.

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60% of all General Member terminations with less than five years of service, 30% of those with five to 14 years of service, and 10% of those with more than 15 years of service, are assumed to take a refund of contributions.

60% of all Safety Member terminations with less than five years of service, 30% of those with five to 9 years of service, and 15% of those with more than 10 years of service, are assumed to take a refund of contributions.

9. Vested Termination and Reciprocal Transfers

Rates of vested termination apply to active Members who terminate their employment and leave their member contributions on deposit with the Plan.

40% of all General Member terminations with less than five years of service, 70% of those with five to 14 years of service, and 90% of those with more than 15 years of service, are assumed to leave their contributions on deposit.

40% of all Safety Member terminations with less than five years of service, 70% of those with five to nine years of service, and 85% of those with more than 10 years of service, are assumed to leave their contributions on deposit.

Vested terminated General Members are assumed to begin receiving benefits at age 58; vested terminated Safety Members are assumed to begin receiving benefits at age 50, unless they have outgoing reciprocity, in which case they are assumed to begin receiving benefits at age 53.

75% of vested terminated General Members with less than five years of service, 25% of those with five to 14 years of service, and 30% of those with more than 15 years of service, are assumed to be reciprocal.

67% of vested terminated Safety Members with less than five years of service, and 50% of those with more than five years of service, are assumed to be reciprocal.

Final average pay for General Members who terminate with reciprocity is assumed to increase by 3.67% per year until their assumed retirement date. Final average pay for Safety Members who terminate with reciprocity is assumed to increase by 4.44% per year until their assumed retirement date.

10. Rates of Service-Connected Disability

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

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Rates of Svc Disability				
	General	General	Safety	Safety
Age	Male	Female	Male	Female
22	0.094%	0.019%	0.048%	0.048%
27	0.107%	0.024%	0.086%	0.089%
32	0.122%	0.033%	0.161%	0.166%
37	0.139%	0.044%	0.296%	0.305%
42	0.414%	0.058%	0.565%	0.592%
47	0.446%	0.080%	1.023%	1.101%
52	0.361%	0.106%	1.425%	1.425%
57	0.410%	0.135%	1.425%	1.425%
62	0.470%	0.164%	1.425%	1.425%

11. Rates of Nonservice-Connected Disability

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

Rates of Non-Svc Disability				
	General	General	Safety	Safety
Age	Male	Female	Male	Female
22	0.023%	0.057%	0.003%	0.003%
27	0.027%	0.072%	0.005%	0.005%
32	0.030%	0.099%	0.008%	0.009%
37	0.035%	0.131%	0.016%	0.016%
42	0.104%	0.174%	0.030%	0.031%
47	0.112%	0.239%	0.054%	0.058%
52	0.090%	0.319%	0.075%	0.075%
57	0.102%	0.406%	0.075%	0.075%
62	0.118%	0.493%	0.075%	0.075%

12. Rates of Mortality for Healthy Lives

Mortality rates for General active members are based on the sex distinct Public General 2010 Above-Median Income Mortality Table, with generational mortality improvements projected from 2010 using Projection Scale MP-2018, and a partial credibility adjustment of 1.05 for females and no adjustment for males.

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Mortality rates for Safety active members are based on the sex distinct Public Safety 2010 Mortality Table, with generational mortality improvements projected from 2010 using Projection Scale MP-2018, and a partial credibility adjustment of 0.98 for males and 1.06 for females. 10% of Safety member active deaths are assumed to occur in the line of duty.

Mortality rates for healthy General annuitants are based on the sex distinct Public General 2010 Above-Median Income Mortality Table, with generational mortality improvements projected from 2010 using Projection Scale MP-2018, and a partial credibility adjustment of 1.04 for females and no adjustment for males.

Mortality rates for Safety annuitants are based on the sex distinct Public Safety 2010 Mortality Table, with generational mortality improvements projected from 2010 using Projection Scale MP-2018, and a partial credibility adjustment of 1.02 for males and 1.05 for females.

13. Rates of Mortality for Disabled Retirees

Mortality rates for General disabled annuitants are based on the sex distinct Public General Disabled Annuitant 2010 Mortality Table, with generational mortality improvements projected from 2010 using Projection Scale MP-2018, with a partial credibility adjustment of 1.04 for males and 1.07 for females.

Mortality rates for Safety disabled annuitants are based on the sex distinct Public Safety Disabled Annuitant 2010 Mortality Table, with generational mortality improvements projected from 2010 using Projection Scale MP-2018, with a partial credibility adjustment of 1.04 for males and 0.98 for females.

14. Mortality Improvement

The mortality assumptions employ a fully generational mortality improvement projection from the base year of the Society of Actuaries' new Public mortality tables (2010) using Scale MP-2018.

15. Adjustment for Service Purchases

SJCERA provides Cheiron with the amount of service that active employees are eligible to purchase. We include this service when calculating the employees' benefit eligibility. Half of eligible service purchases, which have not been purchased by the members, are included in the employees' Credited Service, as employees will pay approximately half of the normal cost for these benefits when purchasing this service.

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
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**APPENDIX B – STATEMENT OF CURRENT
ACTUARIAL ASSUMPTIONS AND METHODS**

16. Assumptions for Employee Contribution Rates

Mortality rates are the base mortality tables described above, projected using Scale MP-2018 from 2010 to 2040 for General and Safety Members. The projection periods are based on the duration of active liabilities for the respective groups, and the period during which the associated employee contribution rates will be in use. The employee contribution rates are also blended using a male/female weighting of 29%/71% for General Members and 75%/25% for Safety members.

17. Rates of Retirement

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

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
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**APPENDIX B – STATEMENT OF CURRENT
ACTUARIAL ASSUMPTIONS AND METHODS**

Rates of Retirement								
Age	General Male Years of Service			General Female Years of Service			Safety Years of Service	
	5-9	10-29	30+	5-9	10-29	30+	5-19	20+
45	0.00%	0.00%	5.00%	0.00%	0.00%	4.50%	0.00%	5.00%
46	0.00%	0.00%	5.00%	0.00%	0.00%	4.50%	0.00%	5.00%
47	0.00%	0.00%	5.00%	0.00%	0.00%	4.50%	0.00%	5.00%
48	0.00%	0.00%	5.00%	0.00%	0.00%	4.50%	0.00%	5.00%
49	0.00%	0.00%	5.00%	0.00%	0.00%	4.50%	0.00%	5.00%
50	3.00%	3.00%	5.00%	1.00%	3.50%	4.50%	5.00%	15.00%
51	3.00%	3.00%	5.00%	1.00%	3.50%	4.50%	5.00%	10.00%
52	3.00%	3.00%	5.00%	1.00%	3.50%	4.50%	5.00%	10.00%
53	3.00%	3.00%	5.00%	1.00%	3.50%	4.50%	5.00%	20.00%
54	3.00%	3.00%	10.00%	5.75%	3.50%	4.50%	5.00%	20.00%
55	3.00%	6.50%	10.00%	2.50%	3.50%	4.50%	5.00%	20.00%
56	3.00%	4.00%	10.00%	1.50%	7.00%	15.00%	10.00%	20.00%
57	3.00%	4.00%	10.00%	1.50%	7.00%	15.00%	10.00%	20.00%
58	3.00%	4.00%	10.00%	1.50%	7.00%	15.00%	10.00%	20.00%
59	7.00%	9.00%	27.50%	2.00%	7.00%	15.00%	10.00%	15.00%
60	7.00%	9.00%	27.50%	6.25%	12.50%	25.00%	10.00%	30.00%
61	7.00%	15.00%	27.50%	6.25%	12.50%	25.00%	10.00%	30.00%
62	7.00%	30.00%	40.00%	18.50%	25.00%	35.00%	20.00%	30.00%
63	7.00%	25.00%	40.00%	5.00%	25.00%	35.00%	20.00%	30.00%
64	15.00%	25.00%	40.00%	9.00%	25.00%	35.00%	20.00%	50.00%
65	25.00%	25.00%	40.00%	12.50%	25.00%	35.00%	100.00%	100.00%
66	10.00%	35.00%	50.00%	25.00%	25.00%	30.00%	100.00%	100.00%
67	15.00%	30.00%	40.00%	25.00%	25.00%	30.00%	100.00%	100.00%
68	15.00%	30.00%	30.00%	25.00%	25.00%	30.00%	100.00%	100.00%
69	30.00%	40.00%	30.00%	25.00%	25.00%	30.00%	100.00%	100.00%
70	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

18. Changes in Assumptions

Details of all assumption changes can be found in the Actuarial Experience Study Report for the period covering January 1, 2016 to December 31, 2018.

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
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APPENDIX C – SUMMARY OF PLAN PROVISIONS

A. Definitions

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

For members joining the Plan on and after January 1, 2013 (Tier 2 Members), only pensionable compensation up to the PEPRA compensation limit (\$124,180 for 2019) will count for computing Plan benefits and employee contributions and employer contributions for those participating in Social Security. For those not participating in Social Security, the compensation cap is 120% of the PEPRA compensation limit (\$149,016 for 2019.) In addition, it is possible that some sources of compensation, such as any payments deemed to be terminal or special pays, may be excluded from benefit and contribution computations for Tier 2 Members.

Credited Service: In general, Credited Service is earned for the period during which Member Contributions are paid.

Temporary service for which the Member was not credited, or service for which the Member withdrew his or her Member Contributions, may be purchased by paying or repaying the Member Contributions with interest. Credit for up to 12 months of a medical leave of absence and all military leaves of absence may also be purchased.

Public Service (see below) is part of Credited Service for the computation of benefits only, not for eligibility for benefits or for vesting.

Final

Compensation: For Tier 1 Members, Final Compensation means the highest average Compensation earned during any 12 consecutive months of the Member's employment.

For Tier 2 Members, highest average Compensation will be based on the highest 36 consecutive months, rather than 12 months.

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

Public Service: The Member may elect to purchase Public Service for time spent while employed in another recognized public agency. The public agency must have a reciprocal agreement with the Plan or be one of several specified municipalities, counties, special districts, or State or Federal agencies.

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
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Public Service cannot be purchased if it is used for eligibility for another pension.

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

Safety Member: Any sworn Member engaged in law enforcement, probation, or fire suppression is a Safety Member.

B. Membership

Eligibility: All full-time, permanent employees of San Joaquin County and other participating special districts become Members on their date of appointment. Membership is mandatory; only elected officials and members who are age 60 or older at the time of employment in a position requiring membership in SJCERA may choose not to participate.

A Tier 2 Member is any Member joining the Plan for the first time on or after January 1, 2013. Employees who transfer from and are eligible for reciprocity with another public employer will not be Tier 2 Members if their service in the reciprocal system was under a previous tier. Employees who were Members of SJCERA prior to January 1, 2013 and experienced a break in service of more than six months and then were reemployed by a *different* SJCERA-participating employer on or after January 1, 2013 will be considered Tier 2 Members for all subsequent service.

Member

Contributions: Each Member contributes a percentage of Compensation to the Plan through payroll deduction. For Tier 1 members, the percentage contributed depends on the Member's age upon joining the Plan. Representative rates are shown in Table 1 on the next page.

Tier 1 members covered by Social Security have their contributions reduced by one-third on the first \$161.54 of biweekly Compensation. General Members who joined the Plan prior to March 7, 1973 and who have earned 30 years of Credited Service do not contribute; Safety Members do not contribute after earning 30 years of Credited Service.

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
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APPENDIX C – SUMMARY OF PLAN PROVISIONS

Table 1: Tier 1 Member Contribution Rates (Basic Rates)

Entry Age	General Member Rate		Safety Member Rate	
	1 st \$350/month	Over \$350	1 st \$350/month	Over \$350
20	1.89%	2.83%	2.85%	4.27%
25	2.09%	3.14%	3.08%	4.62%
30	2.33%	3.49%	3.33%	5.00%
35	2.59%	3.88%	3.62%	5.43%
40	2.88%	4.32%	3.97%	5.96%
45	3.17%	4.75%	4.36%	6.54%
50	3.45%	5.17%	4.16%	6.24%

Rates include the employee share of the administrative expenses.

Some Tier 1 members also contribute half of the normal cost associated with the post-retirement COLA benefits, also based on entry age. Many bargaining groups have also agreed to have their Tier 1 members pay additional basic rate contributions (14% of the current basic rates for General members, 33% for Safety). The complete rate tables for all groups are in the Appendix G; these tables were updated for the current valuation to reflect the new demographic assumptions adopted from the experience study.

Tier 2 Members contribute half of the normal cost of the Plan. Contributions for these Members are based on the Normal Cost associated with their benefits; General and Safety members pay different rates.

Tier 2 Members pay a single contribution rate, not a rate based on entry age. All Tier 2 Members continue contributing after earning 30 years of service. These rates are updated annually, to reflect changes in the Tier 2 demographics, as well as any changes in assumptions (such as the discount rate change).

Table 2: Tier 2 Member Contribution Rates

General Member Rate	Safety Member Rate
9.47%	14.67%

Rates include the employee share of the administrative expenses.

Interest is credited semiannually to each Member's accumulated contributions. The crediting rate for 2019 is 3.5616%, for an effective annual rate of 7.25%.

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
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APPENDIX C – SUMMARY OF PLAN PROVISIONS

C. Service Retirement:

Eligibility: Tier 1 General Members are eligible to retire at age 50 if they have earned five years of Credited Service and have passed the tenth anniversary of their membership in the Plan. Alternatively, General Members are eligible to retire at any age after having earned 30 years of Credited Service, or upon reaching age 70 with no service requirement.

Tier 1 Safety Members are eligible to retire at age 50 if they have earned five years of Credited Service and have passed the tenth anniversary of their membership in the Plan. Alternatively, Safety Members are eligible to retire at any age after having earned 20 years of Credited Service.

Tier 2 General Members are eligible to retire upon attaining age 52 and completing five or more years of service. Tier 2 Safety Members are eligible to retire upon attaining age 50 and completing five or more years of service. Tier 2 Members are eligible to retire, regardless of service, after attaining age 70.

Benefit Amount: The Service Retirement Benefit payable to Tier 1 General Members is equal to the percentage in Table 3 on the next page multiplied by the Member's Final Compensation. The Service Retirement Benefit payable to Tier 1 Safety Members is equal to the percentage in the upcoming Table 4 multiplied by the Member's Final Compensation. The percentage of Final Compensation may not exceed 100%.

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
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APPENDIX C – SUMMARY OF PLAN PROVISIONS

Table 3: Tier 1 General Members (CERL Section 31676.14)

Service	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65
10					14.75	15.67	16.67	17.41	18.41	19.48	20.61	21.82	22.68	23.54	24.40	25.26	26.11	26.11	26.11	26.11
11					16.23	17.23	18.33	19.15	20.25	21.42	22.67	24.00	24.95	25.89	26.84	27.78	28.72	28.72	28.72	28.72
12					17.70	18.80	20.00	20.89	22.10	23.37	24.73	26.19	27.22	28.25	29.28	30.31	31.34	31.34	31.34	31.34
13					19.18	20.36	21.67	22.64	23.94	25.32	26.79	28.37	29.48	30.60	31.72	32.83	33.95	33.95	33.95	33.95
14					20.65	21.93	23.33	24.38	25.78	27.27	28.85	30.55	31.75	32.95	34.16	35.36	36.56	36.56	36.56	36.56
15					22.13	23.50	25.00	26.12	27.62	29.22	30.91	32.73	34.02	35.31	36.60	37.88	39.17	39.17	39.17	39.17
16					23.60	25.06	26.67	27.86	29.46	31.16	32.97	34.92	36.29	37.66	39.04	40.41	41.78	41.78	41.78	41.78
17					25.08	26.63	28.33	29.60	31.30	33.11	35.03	37.10	38.56	40.01	41.47	42.93	44.39	44.39	44.39	44.39
18					26.55	28.20	30.00	31.34	33.14	35.06	37.09	39.28	40.82	42.37	43.91	45.46	47.00	47.00	47.00	47.00
19					28.03	29.76	31.67	33.08	34.98	37.01	39.16	41.46	43.09	44.72	46.35	47.98	49.61	49.61	49.61	49.61
20					29.50	31.33	33.33	34.82	36.83	38.95	41.22	43.64	45.36	47.08	48.79	50.51	52.23	52.23	52.23	52.23
21					30.98	32.90	35.00	36.57	38.67	40.90	43.28	45.83	47.63	49.43	51.23	53.04	54.84	54.84	54.84	54.84
22					32.45	34.46	36.67	38.31	40.51	42.85	45.34	48.01	49.90	51.78	53.67	55.56	57.45	57.45	57.45	57.45
23					33.93	36.03	38.33	40.05	42.35	44.80	47.40	50.19	52.16	54.14	56.11	58.09	60.06	60.06	60.06	60.06
24					35.40	37.60	40.00	41.79	44.19	46.74	49.46	52.37	54.43	56.49	58.55	60.61	62.67	62.67	62.67	62.67
25					36.88	39.16	41.67	43.53	46.03	48.69	51.52	54.56	56.70	58.85	60.99	63.14	65.28	65.28	65.28	65.28
26					38.35	40.73	43.33	45.27	47.87	50.64	53.58	56.74	58.97	61.20	63.43	65.66	67.89	67.89	67.89	67.89
27					39.83	42.30	45.00	47.01	49.72	52.59	55.64	58.92	61.24	63.55	65.87	68.19	70.51	70.51	70.51	70.51
28					41.30	43.86	46.67	48.75	51.56	54.54	57.70	61.10	63.50	65.91	68.31	70.71	73.12	73.12	73.12	73.12
29					42.78	45.43	48.33	50.49	53.40	56.48	59.76	63.28	65.77	68.26	70.75	73.24	75.73	75.73	75.73	75.73
30	35.28	37.27	39.41	41.73	44.25	47.00	50.00	52.24	55.24	58.43	61.82	65.47	68.04	70.61	73.19	75.77	78.34	78.34	78.34	78.34
31		38.51	40.72	43.12	45.73	48.56	51.67	53.98	57.08	60.38	63.88	67.65	70.31	72.97	75.63	78.29	80.95	80.95	80.95	80.95
32			42.04	44.51	47.20	50.13	53.33	55.72	58.92	62.33	65.95	69.83	72.58	75.32	78.07	80.82	83.56	83.56	83.56	83.56
33				45.90	48.68	51.69	55.00	57.46	60.76	64.27	68.01	72.01	74.84	77.68	80.51	83.34	86.17	86.17	86.17	86.17
34					50.15	53.26	56.67	59.20	62.60	66.22	70.07	74.19	77.11	80.03	82.95	85.87	88.78	88.78	88.78	88.78
35						54.83	58.33	60.94	64.45	68.17	72.13	76.38	79.38	82.38	85.39	88.39	91.40	91.40	91.40	91.40
36							60.00	62.68	66.29	70.12	74.19	78.56	81.65	84.74	87.83	90.92	94.01	94.01	94.01	94.01
37								64.42	68.13	72.06	76.25	80.74	83.92	87.09	90.27	93.44	96.62	96.62	96.62	96.62
38									69.97	74.01	78.31	82.92	86.18	89.44	92.71	95.97	99.23	99.23	99.23	99.23
39										75.96	80.37	85.11	88.45	91.80	95.15	98.49	100	100	100	100
40											82.43	87.29	90.72	94.15	97.59	100				
41												89.47	92.99	96.51	100					
42													95.26	98.86						
43														100						

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
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APPENDIX C – SUMMARY OF PLAN PROVISIONS

Table 4: Tier 1 Safety Members (CERL Section 31664.1)

Service	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55
10										30.00	30.00	30.00	30.00	30.00	30.00
11										33.00	33.00	33.00	33.00	33.00	33.00
12										36.00	36.00	36.00	36.00	36.00	36.00
13										39.00	39.00	39.00	39.00	39.00	39.00
14										42.00	42.00	42.00	42.00	42.00	42.00
15										45.00	45.00	45.00	45.00	45.00	45.00
16										48.00	48.00	48.00	48.00	48.00	48.00
17										51.00	51.00	51.00	51.00	51.00	51.00
18										54.00	54.00	54.00	54.00	54.00	54.00
19										57.00	57.00	57.00	57.00	57.00	57.00
20	37.55	39.75	42.02	44.38	46.83	49.36	52.07	54.51	57.13	60.00	60.00	60.00	60.00	60.00	60.00
21		41.74	44.13	46.6	49.17	51.82	54.67	57.24	59.99	63.00	63.00	63.00	63.00	63.00	63.00
22			46.23	48.82	51.51	54.29	57.27	59.96	62.85	66.00	66.00	66.00	66.00	66.00	66.00
23				51.04	53.85	56.76	59.88	62.69	65.7	69.00	69.00	69.00	69.00	69.00	69.00
24					56.2	59.23	62.48	65.41	68.56	72.00	72.00	72.00	72.00	72.00	72.00
25						61.7	65.09	68.14	71.42	75.00	75.00	75.00	75.00	75.00	75.00
26							67.69	70.86	74.27	78.00	78.00	78.00	78.00	78.00	78.00
27								73.59	77.13	81.00	81.00	81.00	81.00	81.00	81.00
28									79.98	84.00	84.00	84.00	84.00	84.00	84.00
29										87.00	87.00	87.00	87.00	87.00	87.00
30										90.00	90.00	90.00	90.00	90.00	90.00
31										93.00	93.00	93.00	93.00	93.00	93.00
32										96.00	96.00	96.00	96.00	96.00	96.00
33										99.00	99.00	99.00	99.00	99.00	99.00
34										100.00	100.00	100.00	100.00	100.00	100.00
35											100.00	100.00	100.00	100.00	100.00
36												100.00	100.00	100.00	100.00
37													100.00	100.00	100.00
38														100.00	100.00
39															100.00

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
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APPENDIX C – SUMMARY OF PLAN PROVISIONS

Table 5: Tier I Social Security Adjustment

Age at Retirement	General Member Reduction	Safety Member Reduction
46	\$1.372	\$2.879
47	\$1.449	\$3.037
48	\$1.533	\$3.180
49	\$1.623	\$3.333
50	\$1.721	\$3.500
51	\$1.828	\$3.500
52	\$1.944	\$3.500
53	\$2.031	\$3.500
54	\$2.148	\$3.500
55	\$2.272	\$3.500
56	\$2.404	\$3.500
57	\$2.546	\$3.500
58	\$2.646	\$3.500
59	\$2.746	\$3.500
60	\$2.846	\$3.500
61	\$2.946	\$3.500
62	\$3.046	\$3.500
63	\$3.046	\$3.500
64	\$3.046	\$3.500
65	\$3.046	\$3.500

For Tier 2 General Members, the benefit multiplier is 1% at age 52, increasing by 0.1% for each year of age to 2.5% at 67. For Tier 2 Safety Members, the benefit multiplier is 2% at age 50, increasing by 0.1% for each year of age to 2.7% at age 57. In between exact ages, the multiplier increases by 0.025% for each quarter year increase in age.

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

APPENDIX C – SUMMARY OF PLAN PROVISIONS

Actuarially equivalent optional benefit forms are also available.

Annually on April 1, benefits are adjusted to reflect changes in the CPI for the San Francisco Bay Area. Annual adjustments may not exceed 3%, but changes in CPI in excess of 3% are “banked” and used for future adjustments when changes in CPI are less than 3%.

In addition, ad hoc cost-of-living adjustments have been granted in the past and may be granted in the future.

A lump sum benefit of \$5,000 will be payable upon the death of a retired member.

D. Service-Connected Disability

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

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

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

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

Actuarially equivalent optional benefit forms are also available.

Annually on April 1, benefits are adjusted to reflect changes in the CPI for the San Francisco Bay Area. Annual adjustments may not exceed 3%, but

APPENDIX C – SUMMARY OF PLAN PROVISIONS

changes in CPI in excess of 3% are “banked” and used for future adjustments when changes in CPI are less than 3%.

In addition, ad hoc cost-of-living adjustments have been granted in the past and may be granted in the future.

A lump sum benefit of \$5,000 will be payable upon the death of a retired member.

E. Nonservice-Connected Disability

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

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

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

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

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

Members who return to work at a different position with lower pay may receive a Supplemental Disability Allowance that, when added to their new pay, may bring the Member's total income up to the current pay for his or her position at the time of disability. The Supplemental Disability

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Allowance may not exceed the Nonservice-Connected Disability Retirement benefit.

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

Actuarially equivalent optional benefit forms are also available.

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

In addition, ad hoc cost-of-living adjustments have been granted in the past and may be granted in the future.

A lump sum benefit of \$5,000 will be payable upon the death of a retired member.

F. Service-Connected Death

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

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

In the event the Member's death was caused by external violence or physical force, an additional benefit of 25% of the above basic benefit will be paid for the first minor child, 15% for the second, and 10% for the third.

Furthermore, for Safety Members only, there will be an additional lump sum benefit of 12 months of pay at the time of death.

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

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Annually on April 1, benefits are adjusted to reflect changes in the CPI for the San Francisco Bay Area. Annual adjustments may not exceed 3%, but changes in CPI in excess of 3% are “banked” and used for future adjustments when changes in CPI are less than 3%.

In addition, ad hoc cost-of-living adjustments have been granted in the past and may be granted in the future.

G. Nonservice-Connected Death

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

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

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

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

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

Annually on April 1, benefits are adjusted to reflect changes in the CPI for the San Francisco Bay Area. Annual adjustments may not exceed 3%, but changes in CPI in excess of 3% are “banked” and used for future adjustments when changes in CPI are less than 3%.

In addition, ad hoc cost-of-living adjustments have been granted in the past and may be granted in the future.

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H. Withdrawal Benefit:

- Eligibility: A Member is eligible for a Withdrawal Benefit upon termination of employment.
- Benefit Amount: The Withdrawal Benefit is a refund of the Member's accumulated contributions with interest. Upon receipt of the Withdrawal Benefit, the Member forfeits all Credited Service.
- Form of Benefit: The Withdrawal Benefit is paid in a lump sum upon election by the Member.

I. Deferred Vested Benefit:

- Eligibility: A Member is eligible for a Deferred Vested Benefit upon termination of employment after earning five years of Credited Service, including reciprocity service from another system. The Member must leave his or her Member Contributions with interest on deposit with the Plan.
- Benefit Amount: The Deferred Vested Benefit is computed in the same manner as the Service Retirement Benefit, but it is based on Credited Service and Final Compensation on the date of termination.
- For Tier 1 Members, Tables 2 and 3 are extended for service under 10 years using benefit multipliers of one-sixtieth per year of Credited Service at age 52 (General) or 3% per year of Credited Service at age 50 (Safety), with adjustments for earlier or later retirement under Sections 31676.14 and 31664.1, respectively, of the County Employees Retirement Law of 1937.
- Form of Benefit: The Deferred Vested Benefit will be paid monthly beginning at retirement and for the life of the Member; in the event of the Member's death, 60% of the benefit will continue for the life of the Member's spouse or to the age of majority of dependent minor children if there is no spouse. In the event there is no surviving spouse or minor children, any unpaid remainder of the Member's accumulated contributions will be paid to the Member's designated beneficiary.

Actuarially equivalent optional benefit forms are also available.

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

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In addition, ad hoc cost-of-living adjustments have been granted in the past and may be granted in the future.

A lump sum benefit of \$5,000 will be payable upon the death of a retired member.

J. Reciprocal Benefit:

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

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

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

Actuarially equivalent optional benefit forms are also available.

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

In addition, ad hoc cost-of-living adjustments have been granted in the past and may be granted in the future.

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

The member contribution rates have been updated for the current valuation to reflect the change in the discount rate. There have been no other changes in plan provisions since the prior valuation.

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APPENDIX D – 401(H) REPAYMENT SCHEDULE

As of January 1, 2014, a separate amortization layer was established for the repayment of funds originally transferred to a retiree health reserve. This schedule was prepared in compliance with an approved Voluntary Correction Program that SJCERA submitted to the IRS. The original balance of the amortization layer (\$48.0 million) is being amortized using the same methodology and assumptions as the UAL – as a level percentage of payroll over a 19-year period – after an initial payment of \$19.8 million.

Date	Outstanding Balance	Years Remaining	End of Year Payment
1/1/2017	\$27,547,546	16	\$2,460,275
1/1/2018	\$27,125,789	15	\$2,512,141
1/1/2019	\$26,580,267	14	\$2,591,274
1/1/2020	\$25,916,063	13	\$2,672,899
1/1/2021	\$25,122,079	12	\$2,757,095
1/1/2022	\$24,186,335	11	\$2,843,943
1/1/2023	\$23,095,900	10	\$2,933,528
1/1/2024	\$21,836,826	9	\$3,025,934
1/1/2025	\$20,394,062	8	\$3,121,251
1/1/2026	\$18,751,380	7	\$3,219,570
1/1/2027	\$16,891,285	6	\$3,320,987
1/1/2028	\$14,794,917	5	\$3,425,598
1/1/2029	\$12,441,951	4	\$3,533,504
1/1/2030	\$9,810,488	3	\$3,644,809
1/1/2031	\$6,876,939	2	\$3,759,621
1/1/2032	\$3,615,896	1	\$3,878,049
1/1/2033	\$0	0	\$0

APPENDIX E – GLOSSARY

1. Actuarial Assumptions

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

2. Actuarial Cost Method

A procedure for determining the actuarial present value of pension plan benefits and expenses and for developing an allocation of such value to each year of service, usually in the form of a normal cost and an Actuarial Liability.

3. Actuarial Gain (Loss)

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

4. Actuarial Liability

The portion of the actuarial present value of projected benefits that will not be paid by future normal costs. It represents the value of the past normal costs with interest to the valuation date.

5. Actuarial Present Value (Present Value)

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

6. Actuarial Valuation

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

7. Actuarial Value of Assets

The value of cash, investments, and other property belonging to a pension plan as used by the actuary for the purpose of an actuarial valuation. The purpose of an Actuarial Value of Assets is to smooth out fluctuations in market values.

8. Actuarially Equivalent

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

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APPENDIX E – GLOSSARY

9. Amortization Payment

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

10. Entry Age Normal Actuarial Cost Method

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

11. Funded Ratio

The ratio of the Actuarial Value of Assets to the Actuarial Liabilities. The Funded Ratio shown in this report is not appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations, in the case of a plan termination or other similar action. However, it is an appropriate measure for assessing the need for or the amount of future contributions.

12. Inactive Funded Ratio

The ratio of the Inactive Actuarial Liabilities to the total Actuarial Liabilities. The Inactive Funded Ratio is a measure that shows the minimum funded status needed to pay benefits for all inactive members.

13. Normal Cost

That portion of the actuarial present value of pension plan benefits and expenses, which is allocated to a valuation year by the Actuarial Cost Method.

14. Projected Benefits

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

15. Unfunded Actuarial Liability

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

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APPENDIX F – GENERAL AND SAFETY EMPLOYER CONTRIBUTION RATES

Tier 1: Contribution Rates for General and Safety (no COLA Cost-Sharing)

Separate rates for General and Safety members are shown below. These rates are applicable for employment groups that have not implemented equal sharing of the contributions required for post-retirement cost-of-living adjustments (COLA) in accordance with Government Code Section 31873.

As of January 1, 2018				As of January 1, 2019			
	General	Safety	Total		General	Safety	Total
Employer Normal Cost				Employer Normal Cost			
Basic	12.79%	21.86%	14.47%	Basic	13.47%	21.66%	14.99%
COL	5.45%	10.08%	6.31%	COL	5.71%	10.03%	6.52%
Total	18.24%	31.94%	20.78%	Total	19.18%	31.69%	21.51%
UAL Amortization Cost				UAL Amortization Cost			
Basic	19.09%	38.71%	22.69%	Basic	19.06%	38.66%	22.67%
COL	7.09%	13.90%	8.34%	COL	9.04%	17.17%	10.54%
Total	26.18%	52.61%	31.03%	Total	28.10%	55.83%	33.21%
Total Cost				Total Cost			
Basic	31.88%	60.57%	37.16%	Basic	32.53%	60.32%	37.66%
COL	12.54%	23.98%	14.65%	COL	14.75%	27.20%	17.06%
Total	44.42%	84.55%	51.81%	Total	47.28%	87.52%	54.72%

Rates include the employer share of the administrative expenses.

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APPENDIX F – GENERAL AND SAFETY EMPLOYER CONTRIBUTION RATES

Tier 1: Contribution Rates for General and Safety (Employer Cost with additional 14% / 33% Normal Rates by members without COLA Cost-sharing)

Separate rates for General and Safety members contributing an additional 14% / 33% of Normal Rates are shown below.

As of January 1, 2018				As of January 1, 2019			
	General	Safety	Total		General	Safety	Total
Employer Normal Cost				Employer Normal Cost			
Basic	12.28%	20.38%	13.78%	Basic	12.94%	20.13%	14.28%
COL	5.45%	10.08%	6.31%	COL	5.71%	10.03%	6.51%
Total	17.73%	30.46%	20.09%	Total	18.65%	30.16%	20.79%
UAL Amortization Cost				UAL Amortization Cost			
Basic	19.09%	38.71%	22.69%	Basic	19.06%	38.66%	22.67%
COL	7.09%	13.90%	8.34%	COL	9.04%	17.17%	10.54%
Total	26.18%	52.61%	31.03%	Total	28.10%	55.83%	33.21%
Total Cost				Total Cost			
Basic	31.37%	59.09%	36.47%	Basic	32.00%	58.79%	36.95%
COL	12.54%	23.98%	14.65%	COL	14.75%	27.20%	17.05%
Total	43.91%	83.07%	51.12%	Total	46.75%	85.99%	54.00%

Rates include the employer share of the administrative expenses.

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APPENDIX F – GENERAL AND SAFETY EMPLOYER CONTRIBUTION RATES

Tier 1: Contribution Rates for General and Safety (with COLA Cost-sharing)

Separate rates for General and Safety members contributing Normal Rates plus COLA Cost-sharing are shown below.

As of January 1, 2018				As of January 1, 2019			
	General	Safety	Total		General	Safety	Total
Employer Normal Cost				Employer Normal Cost			
Basic	12.79%	21.86%	14.47%	Basic	13.47%	21.66%	14.99%
COL	2.81%	5.32%	3.28%	COL	2.94%	5.28%	3.38%
Total	15.60%	27.18%	17.75%	Total	16.41%	26.94%	18.37%
UAL Amortization Cost				UAL Amortization Cost			
Basic	19.09%	38.71%	22.69%	Basic	19.06%	38.66%	22.67%
COL	7.09%	13.90%	8.34%	COL	9.04%	17.17%	10.54%
Total	26.18%	52.61%	31.03%	Total	28.10%	55.83%	33.21%
Total Cost				Total Cost			
Basic	31.88%	60.57%	37.16%	Basic	32.53%	60.32%	37.66%
COL	9.90%	19.22%	11.62%	COL	11.98%	22.45%	13.92%
Total	41.78%	79.79%	48.78%	Total	44.51%	82.77%	51.58%

Rates include the employer share of the administrative expenses.

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APPENDIX F – GENERAL AND SAFETY EMPLOYER CONTRIBUTION RATES

Tier 1: Contribution Rates for General and Safety (Employer Cost with additional 14% / 33% Normal Rates by members and COLA Cost-sharing)

Separate rates for General and Safety members contributing an additional 14% / 33% of Normal Rates and COLA Cost-sharing are shown below.

As of January 1, 2018				As of January 1, 2019			
	General	Safety	Total		General	Safety	Total
Employer Normal Cost				Employer Normal Cost			
Basic	12.28%	20.38%	13.78%	Basic	12.94%	20.13%	14.28%
COL	2.81%	5.32%	3.28%	COL	2.94%	5.28%	3.37%
Total	15.09%	25.70%	17.06%	Total	15.88%	25.41%	17.65%
UAL Amortization Cost				UAL Amortization Cost			
Basic	19.09%	38.71%	22.69%	Basic	19.06%	38.66%	22.67%
COL	7.09%	13.90%	8.34%	COL	9.04%	17.17%	10.54%
Total	26.18%	52.61%	31.03%	Total	28.10%	55.83%	33.21%
Total Cost				Total Cost			
Basic	31.37%	59.09%	36.47%	Basic	32.00%	58.79%	36.95%
COL	9.90%	19.22%	11.62%	COL	11.98%	22.45%	13.91%
Total	41.27%	78.31%	48.09%	Total	43.98%	81.24%	50.86%

Rates include the employer share of the administrative expenses.

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APPENDIX F – GENERAL AND SAFETY EMPLOYER CONTRIBUTION RATES

Tier 2: Contribution Rates for General and Safety (PEPRA Members)

Separate rates for General and Safety members are shown below. These rates are applicable for employment groups that are subject to Government Code Section 7522.30.

As of January 1, 2018				As of January 1, 2019			
	General	Safety	Total		General	Safety	Total
Employer Normal Cost				Employer Normal Cost			
Basic	7.00%	10.64%	7.38%	Basic	7.20%	10.70%	7.58%
COL	2.21%	3.97%	2.39%	COL	2.27%	3.97%	2.45%
Total	9.21%	14.61%	9.77%	Total	9.47%	14.67%	10.03%
UAL Amortization Cost				UAL Amortization Cost			
Basic	19.09%	38.71%	21.06%	Basic	19.06%	38.66%	21.09%
COL	7.09%	13.90%	7.77%	COL	9.04%	17.17%	9.88%
Total	26.18%	52.61%	28.83%	Total	28.10%	55.83%	30.97%
Total Cost				Total Cost			
Basic	26.09%	49.35%	28.44%	Basic	26.26%	49.36%	28.67%
COL	9.30%	17.87%	10.16%	COL	11.31%	21.14%	12.33%
Total	35.39%	67.22%	38.60%	Total	37.57%	70.50%	41.00%

Rates include the employer share of the administrative expenses.

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APPENDIX F – GENERAL AND SAFETY EMPLOYER CONTRIBUTION RATES

Total Normal Cost Rates for General and Safety

As of January 1, 2018				As of January 1, 2019			
	General	Safety	Total		General	Safety	Total
Total Normal Cost				Total Normal Cost			
Tier 1	21.92%	36.44%	24.61%	Tier 1	22.99%	36.33%	25.47%
Tier 2	18.42%	29.22%	19.54%	Tier 2	18.94%	29.34%	20.06%

The Total Normal Costs shown include the employee and employer share of the assumed administrative expenses.

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APPENDIX G – MEMBER CONTRIBUTION RATES

General Member Contribution Rates

Basic Half Rate (Government Code Section 31621.3)

Entry Age	<u>Basic Rate</u>		<u>COLA Cost-Sharing Rate¹</u>	
	1st \$350/month	Over \$350	1st \$350/month	Over \$350
16	1.89%	2.83%	1.29%	1.93%
17	1.89%	2.83%	1.29%	1.93%
18	1.89%	2.83%	1.29%	1.93%
19	1.89%	2.83%	1.29%	1.93%
20	1.89%	2.83%	1.29%	1.93%
21	1.93%	2.89%	1.33%	1.99%
22	1.97%	2.95%	1.36%	2.04%
23	2.01%	3.01%	1.41%	2.11%
24	2.05%	3.08%	1.45%	2.17%
25	2.09%	3.14%	1.49%	2.23%
26	2.14%	3.21%	1.53%	2.29%
27	2.19%	3.28%	1.56%	2.34%
28	2.23%	3.35%	1.59%	2.39%
29	2.28%	3.42%	1.63%	2.45%
30	2.33%	3.49%	1.66%	2.49%
31	2.37%	3.56%	1.69%	2.54%
32	2.43%	3.64%	1.73%	2.60%
33	2.48%	3.72%	1.77%	2.66%
34	2.53%	3.80%	1.81%	2.71%
35	2.59%	3.88%	1.85%	2.78%
36	2.65%	3.97%	1.90%	2.85%
37	2.70%	4.05%	1.95%	2.93%
38	2.77%	4.15%	2.01%	3.02%
39	2.83%	4.24%	2.07%	3.10%
40	2.88%	4.32%	2.13%	3.20%
41	2.93%	4.40%	2.19%	3.29%
42	2.99%	4.48%	2.25%	3.38%
43	3.05%	4.57%	2.31%	3.46%
44	3.11%	4.66%	2.37%	3.56%
45	3.17%	4.75%	2.44%	3.66%
46	3.23%	4.85%	2.51%	3.76%
47	3.27%	4.91%	2.53%	3.79%
48	3.33%	4.99%	2.55%	3.83%
49	3.38%	5.07%	2.57%	3.86%
50	3.45%	5.17%	2.58%	3.87%
51	3.46%	5.19%	2.60%	3.90%
52	3.49%	5.23%	2.61%	3.91%
53	3.45%	5.17%	2.59%	3.89%
54+	3.38%	5.07%	2.55%	3.83%

¹ Some members and employers share equally the contributions required for post-retirement cost-of-living adjustments (COLA) in accordance with Government Code Section 31873. For other members, the employers pay all of the contributions required for post-retirement COLA.

Rates include the employee share of the administrative expenses.

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APPENDIX G – MEMBER CONTRIBUTION RATES

General Member Contribution Rates

Basic Half Rate (Government Code Section 31621.3) + 14% , not greater than 1/2 Normal Cost

Entry Age	<u>Basic Rate</u>		<u>COLA Cost-Sharing Rate¹</u>	
	1st \$350/month	Over \$350	1st \$350/month	Over \$350
16	2.15%	3.23%	1.29%	1.93%
17	2.15%	3.23%	1.29%	1.93%
18	2.15%	3.23%	1.29%	1.93%
19	2.15%	3.23%	1.29%	1.93%
20	2.15%	3.23%	1.29%	1.93%
21	2.19%	3.29%	1.33%	1.99%
22	2.24%	3.36%	1.36%	2.04%
23	2.29%	3.43%	1.41%	2.11%
24	2.34%	3.51%	1.45%	2.17%
25	2.39%	3.58%	1.49%	2.23%
26	2.44%	3.66%	1.53%	2.29%
27	2.49%	3.74%	1.56%	2.34%
28	2.55%	3.82%	1.60%	2.40%
29	2.60%	3.90%	1.63%	2.45%
30	2.65%	3.98%	1.67%	2.50%
31	2.71%	4.06%	1.69%	2.54%
32	2.77%	4.15%	1.73%	2.60%
33	2.83%	4.24%	1.77%	2.66%
34	2.89%	4.33%	1.81%	2.71%
35	2.95%	4.42%	1.85%	2.78%
36	3.02%	4.53%	1.91%	2.86%
37	3.08%	4.62%	1.96%	2.94%
38	3.15%	4.73%	2.01%	3.02%
39	3.22%	4.83%	2.07%	3.11%
40	3.28%	4.92%	2.14%	3.21%
41	3.35%	5.02%	2.19%	3.29%
42	3.41%	5.11%	2.25%	3.38%
43	3.47%	5.21%	2.31%	3.46%
44	3.54%	5.31%	2.37%	3.56%
45	3.61%	5.42%	2.44%	3.66%
46	3.69%	5.53%	2.51%	3.76%
47	3.73%	5.60%	2.53%	3.80%
48	3.79%	5.69%	2.55%	3.83%
49	3.85%	5.78%	2.57%	3.86%
50	3.93%	5.89%	2.58%	3.87%
51	3.95%	5.92%	2.60%	3.90%
52	3.97%	5.96%	2.61%	3.91%
53	3.93%	5.89%	2.59%	3.89%
54+	3.85%	5.78%	2.55%	3.83%

¹ Some members and employers share equally the contributions required for post-retirement cost-of-living adjustments (COLA) in accordance with Government Code Section 31873. For other members, the employers pay all of the contributions required for post-retirement COLA.

Rates include the employee share of the administrative expenses.

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2019**

APPENDIX G – MEMBER CONTRIBUTION RATES

Safety Member Contribution Rates

Basic Half Rate (Government Code Section 31639.5)

Entry Age	<u>Basic Rate</u>		<u>COLA Cost-Sharing Rate¹</u>	
	1st \$350/month	Over \$350	1st \$350/month	Over \$350
16	2.85%	4.27%	2.92%	4.38%
17	2.85%	4.27%	2.92%	4.38%
18	2.85%	4.27%	2.92%	4.38%
19	2.85%	4.27%	2.92%	4.38%
20	2.85%	4.27%	2.92%	4.38%
21	2.89%	4.34%	3.02%	4.53%
22	2.94%	4.41%	3.07%	4.61%
23	2.99%	4.48%	3.12%	4.68%
24	3.03%	4.55%	3.17%	4.75%
25	3.08%	4.62%	3.21%	4.82%
26	3.13%	4.69%	3.26%	4.89%
27	3.18%	4.77%	3.29%	4.94%
28	3.23%	4.84%	3.34%	5.01%
29	3.28%	4.92%	3.38%	5.07%
30	3.33%	5.00%	3.41%	5.12%
31	3.39%	5.08%	3.42%	5.13%
32	3.45%	5.17%	3.47%	5.20%
33	3.50%	5.25%	3.51%	5.27%
34	3.56%	5.34%	3.52%	5.28%
35	3.62%	5.43%	3.54%	5.31%
36	3.69%	5.53%	3.56%	5.34%
37	3.75%	5.63%	3.60%	5.40%
38	3.82%	5.73%	3.65%	5.48%
39	3.89%	5.84%	3.70%	5.55%
40	3.97%	5.96%	3.77%	5.66%
41	4.06%	6.09%	3.83%	5.74%
42	4.16%	6.24%	3.88%	5.82%
43	4.27%	6.40%	3.95%	5.93%
44	4.36%	6.54%	4.03%	6.05%
45	4.36%	6.54%	4.11%	6.16%
46	4.37%	6.55%	4.16%	6.24%
47	4.40%	6.60%	4.19%	6.29%
48	4.28%	6.42%	4.22%	6.33%
49+	4.16%	6.24%	4.25%	6.37%

¹ Some members and employers share equally the contributions required for post-retirement cost-of-living adjustments (COLA) in accordance with Government Code Section 31873. For other members, the employers pay all of the contributions required for post-retirement COLA.

Rates include the employee share of the administrative expenses.

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2019**

APPENDIX G – MEMBER CONTRIBUTION RATES

Safety Member Contribution Rates

**Basic Half Rate (Government Code Section 31639.5) + 33% , not greater than 1/2
Normal Cost**

Entry Age	<u>Basic Rate</u>		<u>COLA Cost-Sharing Rate¹</u>	
	1st \$350/month	Over \$350	1st \$350/month	Over \$350
16	3.79%	5.68%	2.93%	4.39%
17	3.79%	5.68%	2.93%	4.39%
18	3.79%	5.68%	2.93%	4.39%
19	3.79%	5.68%	2.93%	4.39%
20	3.79%	5.68%	2.93%	4.39%
21	3.85%	5.77%	3.02%	4.53%
22	3.91%	5.87%	3.08%	4.62%
23	3.97%	5.96%	3.12%	4.68%
24	4.03%	6.05%	3.17%	4.75%
25	4.09%	6.14%	3.22%	4.83%
26	4.16%	6.24%	3.26%	4.89%
27	4.23%	6.34%	3.30%	4.95%
28	4.29%	6.44%	3.34%	5.01%
29	4.36%	6.54%	3.38%	5.07%
30	4.43%	6.65%	3.41%	5.12%
31	4.51%	6.76%	3.42%	5.13%
32	4.59%	6.88%	3.47%	5.20%
33	4.65%	6.98%	3.51%	5.27%
34	4.73%	7.10%	3.52%	5.28%
35	4.81%	7.22%	3.54%	5.31%
36	4.90%	7.35%	3.56%	5.34%
37	4.99%	7.49%	3.60%	5.40%
38	5.08%	7.62%	3.65%	5.48%
39	5.18%	7.77%	3.71%	5.56%
40	5.29%	7.93%	3.77%	5.66%
41	5.40%	8.10%	3.83%	5.74%
42	5.53%	8.30%	3.88%	5.82%
43	5.67%	8.51%	3.95%	5.93%
44	5.80%	8.70%	4.03%	6.05%
45	5.80%	8.70%	4.11%	6.16%
46	5.81%	8.71%	4.16%	6.24%
47	5.85%	8.78%	4.20%	6.30%
48	5.69%	8.54%	4.22%	6.33%
49+	5.53%	8.30%	4.25%	6.37%

¹ Some members and employers share equally the contributions required for post-retirement cost-of-living adjustments (COLA) in accordance with Government Code Section 31873. For other members, the employers pay all of the contributions required for post-retirement COLA.

Rates include the employee share of the administrative expenses.



Classic Values, Innovative Advice