

San Joaquin County Employees' Retirement Association

Actuarial Valuation Report as of January 1, 2018

Produced by Cheiron

August 2018

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August 1, 2018

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, 2018. 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.

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

Sincerely,
Cheiron

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

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

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

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

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2018**

FOREWORD

Cheiron has performed the actuarial valuation of the San Joaquin County Employees' Retirement Association as of January 1, 2018. The valuation is organized as follows:

- In Section I, the **Executive Summary**, we describe the purpose of an actuarial valuation, summarize the key results found in this valuation and disclose important trends;
- The **Main Body** of the report presents details on the System's
 - Section II – Assets
 - Section III – Liabilities
 - Section IV – Contributions
 - Section V – 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.

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2018**

SECTION I – EXECUTIVE SUMMARY

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

- The financial condition of the System,
- Past and expected trends in the financial progress of the System, and
- Employer and employee contribution rates for Plan Year 2019.

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, 2017 provided to SJCERA in May 2018.

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 2019.

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 16 years. Table IV-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.

A summary of the assumptions and methods used in the current valuation is shown in Appendix B, which is based on the Actuarial Experience Study performed in 2016, covering experience from January 1, 2013 through December 31, 2015. The discount rate assumption was lowered from 7.40% to 7.25% since the prior valuation. No other assumption changes were made.

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2018**

SECTION I – EXECUTIVE SUMMARY

B. Key Findings of this Valuation

The key results of the January 1, 2018 actuarial valuation are as follows:

- The actuarially determined employer contribution rate increased from 43.21% of payroll last year to 43.68% of payroll for 2018 before assumption changes. Assumption changes further increased the employer contribution rate from 43.68% to 45.50%.
- The System's funded ratio, the ratio of assets over Actuarial Liability, increased from 64.6% last year to 64.8% as of January 1, 2018 on an Actuarial Value of Assets (AVA) basis. It increased from 60.3% to 64.0% 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 \$ 1,501,242,285 to \$ 1,583,814,311 as of January 1, 2018.
- During the year ending December 31, 2017, the return on Plan assets was 11.68% on a market value basis, as compared to the 7.40% assumption. This resulted in a market value gain on investments of \$110,000,340. 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 5.64% on the smoothed value of assets, an actuarial asset loss of \$48,426,208 for the year.
- The Actuarial Value of Assets of \$2,913,161,286 is currently 101% of market value at \$ 2,879,288,631. Since actuarial assets are above market assets, there are unrecognized investment losses (approximately \$34 million) that will be reflected in the smoothed value in future years.
- The System experienced a gain on the Actuarial Liability of \$ 14,692,836 primarily due to lower than expected salary growth. Lowering the discount rate assumption from 7.40% to 7.25% increased the liability by \$ 81,854,661. Combining the liability and asset net loss, as well as the contribution-timing lag, the System experienced a total loss of \$37,659,824.
- During 2017, the County made additional voluntary contributions (above the actuarially determined amount) of \$20,226,860, which had accumulated to \$20,385,011 at year-end. 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 County and approved by the Board, these assets are not currently included in the calculation of the employer contribution rates.

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2018**

SECTION I – EXECUTIVE SUMMARY

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, 2017		January 1, 2018		% Change
<u>Participant Counts</u>					
Active Participants	6,102		6,218		1.90%
Participants Receiving a Benefit	5,628		5,822		3.45%
Terminated Vested Participants	913		946		3.61%
Terminated Non-Vested Participants	<u>596</u>		<u>678</u>		13.76%
Total	13,239		13,664		3.21%
Annual Pay of Active Members	\$	440,796,718	\$	451,928,053	2.53%
Calendar Year Projected Pay	\$	447,685,438	\$	458,990,732	2.53%
<u>Assets and Liabilities</u>					
Actuarial Liability (AL)	\$	4,235,093,946	\$	4,496,975,597	6.18%
Actuarial Value of Assets (AVA) ¹		<u>2,733,851,661</u>		<u>2,913,161,286</u>	6.56%
Unfunded Actuarial Liability (UAL)	\$	1,501,242,285	\$	1,583,814,311	5.50%
Funded Ratio (AVA)		64.6%		64.8%	0.2%
Funded Ratio (MVA) ²		60.3%		64.0%	3.7%
Inactive Funded Ratio		62.4%		63.3%	0.9%
<u>Contributions as a Percentage of Payroll</u>					
Normal Cost Rate		14.84%		14.91%	0.07%
Unfunded Actuarial Liability Rate ³		27.51%		29.73%	2.22%
Administrative Expense		<u>0.86%</u>		<u>0.86%</u>	0.00%
Total Contribution Rate		43.21%		45.50%	2.29%

¹ For January 1, 2018 includes the additional 5% County Contribution Reserve of \$20.4 million.

² For January 1, 2018 the Market Value of Assets include the additional 5% County Contribution Reserve.

³ For January 1, 2018, based on Actuarial Value of Assets that do not include the additional 5% County Contribution Reserve.

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 63.3% 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 below the Inactive Funded Ratio for the last two valuations but is now slightly higher.

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2018**

SECTION I – EXECUTIVE SUMMARY

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 Employer Cost	General Employer Contribution Rate (% Payroll)	Safety Employer Cost	Safety Employer Contribution Rate (% Payroll)	Total Employer Cost	Employer Contribution Rate (% Payroll)
January 1, 2017	\$ 138,445,797	37.54%	\$ 49,931,743	74.39%	\$ 188,377,539	43.21%
Change in Cost Due to:						
Expected Change (Pay Growth)	4,361,043	0.00%	1,572,850	0.00%	5,933,893	0.00%
Asset Experience	2,940,982	0.75%	1,129,489	1.60%	4,070,471	0.88%
Contribution (Gain)/Loss (Rate Delay)	569,229	0.15%	134,127	0.19%	703,356	0.15%
Demographic Experience	233,709	0.06%	542,829	0.77%	776,539	0.23%
Salary Experience	(2,240,569)	(0.46%)	(437,204)	(1.02%)	(2,677,773)	(0.55%)
Payroll Amortization	0	0.25%	0	(0.76%)	0	0.18%
PEPRA Transition	(1,248,786)	(0.35%)	(518,341)	(0.77%)	(1,767,127)	(0.42%)
Assumption Change	5,917,082	1.55%	2,331,611	3.29%	8,248,694	1.82%
Total Cost as of January 1, 2018	\$ 148,978,487	39.50%	\$ 54,687,104	77.68%	\$ 203,665,592	45.50%

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. In addition, the post-retirement COLA granted in 2017 (3.0%) was higher than the assumption (2.6%). The net impact was an increase of 0.23% 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 0.55% of payroll, and the overall cost by approximately \$2.7 million.

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

The payroll used to amortize the unfunded liability for General members was lower than expected due to lower than expected payroll growth, which increased the General employer contribution rate by an additional 0.25% of pay, since the UAL payments are spread out over a smaller payroll base than expected. The higher than expected Safety projected payroll was a result of an increase in Safety membership of 4.6% and resulted in a decrease in the contribution rate by about 0.76% of pay.

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SECTION I – EXECUTIVE SUMMARY

The aggregate impact from the change in total projected payroll was an increase in the contribution rate of 0.18% 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 PEPRA members.

During 2017, there were 736 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 0.35% of payroll for General members, 0.77% of pay for Safety members, and the overall contribution rate dropped by 0.42% of pay.

Overall, the combined demographic and salary experience resulted in a decrease in the dollar amount of the actuarial cost by about \$3.7 million and in the contribution rate by about 0.56% of pay.

- Lowering the discount rate assumption from 7.40% to 7.25% increased cost.

This assumption change increased the employer contribution rate by 1.82% overall and by a little over eight million dollars. The increase was 3.29% of pay for Safety members and 1.55% of pay for General members.

- Asset experience produced an investment gain on a market basis, but the recognition of deferred investment losses resulted in a loss on a smoothed basis.

The assets of the Plan returned 11.68% on a market basis, higher than the assumed rate of 7.40%, resulting in a gain of approximately \$110 million for 2017. Under the actuarial asset smoothing policy, 20% of this gain 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 5.64%, increasing the overall contribution rate by 0.88% of pay.

The contribution rate increased more for Safety members (by 1.60% of pay) than for General members (0.75% 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 the section on cost sensitivity on the next page.

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2018**

SECTION I – EXECUTIVE SUMMARY

Contribution Volatility

Table I-3 below shows the ratio of assets to projected active member payroll for SJCERA.

TABLE I-3			
Asset to Payroll Ratio as of December 31, 2017			
	Total	General	Safety
Projected Active Member Payroll	\$ 458,990,732	\$ 387,108,033	\$ 71,882,700
Assets (Market Value Net of Non-Valuation Reserves)	\$ 2,878,809,252	\$ 2,101,734,878	\$ 777,074,374
Ratio of Assets to Payroll	6.27	5.43	10.81
Ratio with 100% Funding	9.80	8.46	17.00

This ratio indicates the sensitivity of the Plan to the returns earned on plan assets. We note in the table that plan assets currently are over six times covered payroll for the Plan; as funding improves and the Plan reaches 100% funding, the ratio of asset to payroll will increase to nearly 10 times payroll, perhaps higher depending on the Plan's future demographic makeup.

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 assets are so small.

On the other hand, consider the situation for SJCERA. Suppose SJCERA's assets lose 10% of their value in a year. Since they are assumed to earn 7.25%, there is an actuarial loss of 17.25% of plan assets. Based on the current ratio of assets to payroll (627%), that means the loss in assets is about 108% of active payroll (627% of the 17.25% loss). There is only one source of funding to make up for this loss: additional contributions. Consequently, barring future offsetting investment gains or additional contributions by the members, the employer has to make up the asset loss in future contributions. In this example of a one-year loss of 10%, this shortfall will eventually require an additional amortization payment of almost 10% of payroll if amortized over 15 years.

Furthermore, consider the impact of a one-year asset loss of 10% if the Plan is 100% funded. Based on the ratio of asset to payroll at 100% funding (980%), the asset loss would be about 169% of active payroll (980% of the 17.25% loss). Again, there is only one source of funding to make up for this loss: the employers. In this example, the shortfall could require an additional amortization payment of approximately 15% of payroll, if amortized over 15 years.

Finally, we note that the ratio of both assets and liabilities to payroll, and therefore the sensitivity to investment returns, is higher for the Safety membership compared to the General members, because of the higher benefit amounts and the earlier average retirement ages for Safety. The current ratio of assets to payroll is 543% for the General members and 1081% for Safety members. The 10% loss described above would translate to a loss of 94% of General pay and 186% of Safety pay, which would require amortization payment increases of 8.4% and 16.7% of General and Safety pay, respectively. Therefore the contribution rates (expressed as a percentage of payroll) for the Safety members will generally be much more volatile than those of the General members.

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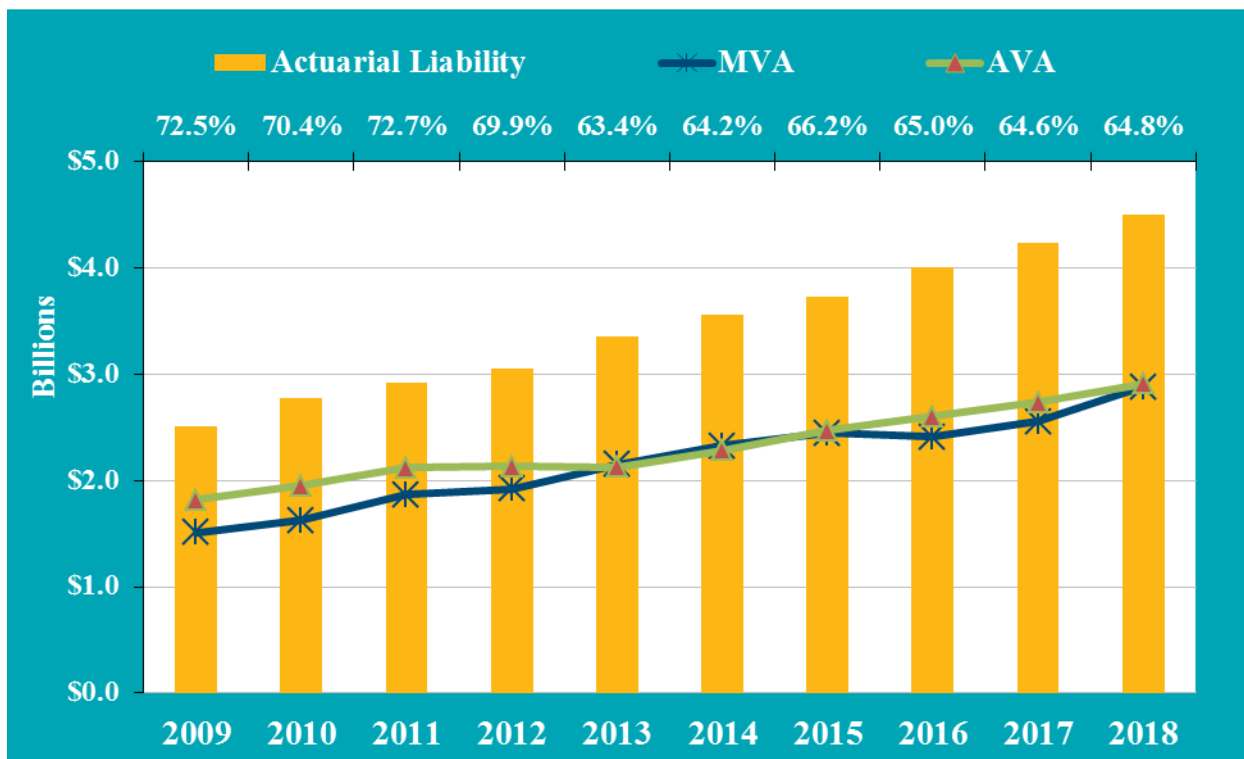
SECTION I – EXECUTIVE SUMMARY

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).

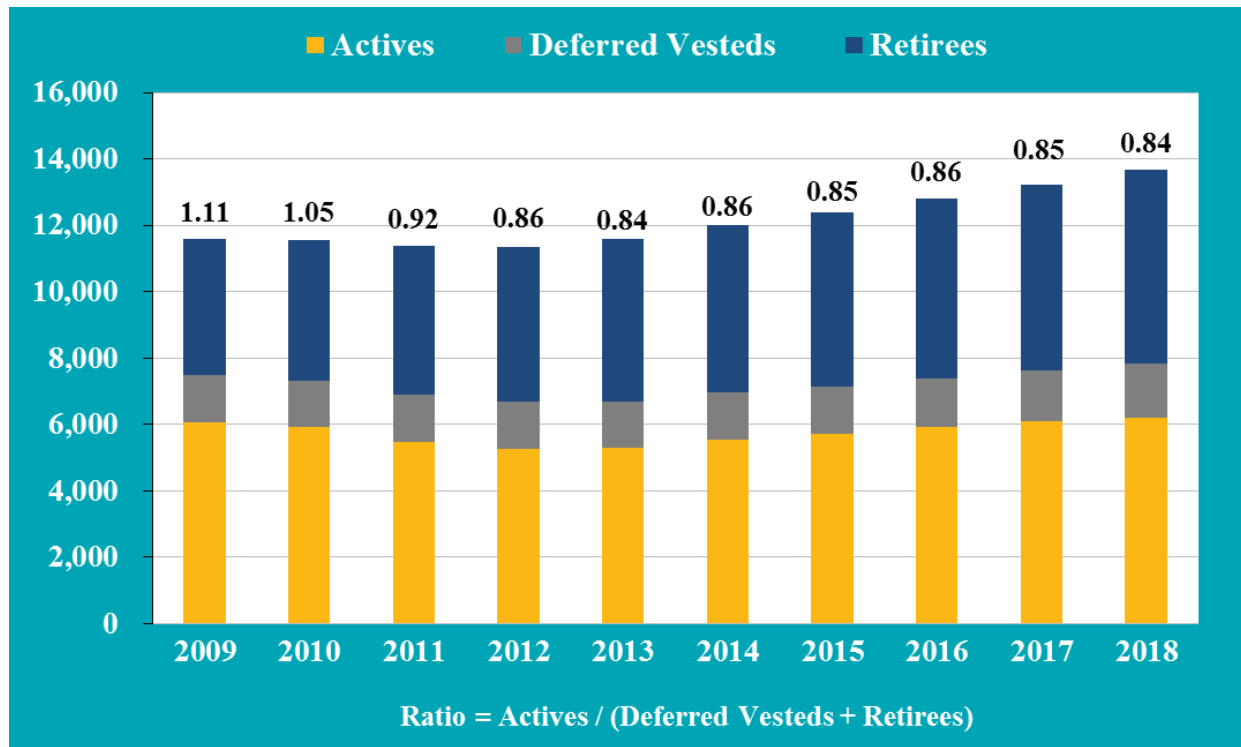


The funded ratio has declined from 72.7% in 2011 to 64.8% in 2018. The extraordinary asset loss of 2008 adversely affected the funded ratio from 2011 to 2013, as losses were recognized with asset smoothing. In addition, for the January 1, 2013 and January 1, 2016 valuations, assumption changes were made that reflected lower expected future returns on assets and improved mortality, increasing the Actuarial Liability, and therefore decreasing the funded ratio. The expected asset return assumption was also decreased in the current valuation to 7.25%, increasing liability and lowering the funded ratio from what it would be if the 7.40% assumption had remained.

SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2018

SECTION I – EXECUTIVE SUMMARY

Participant Trends



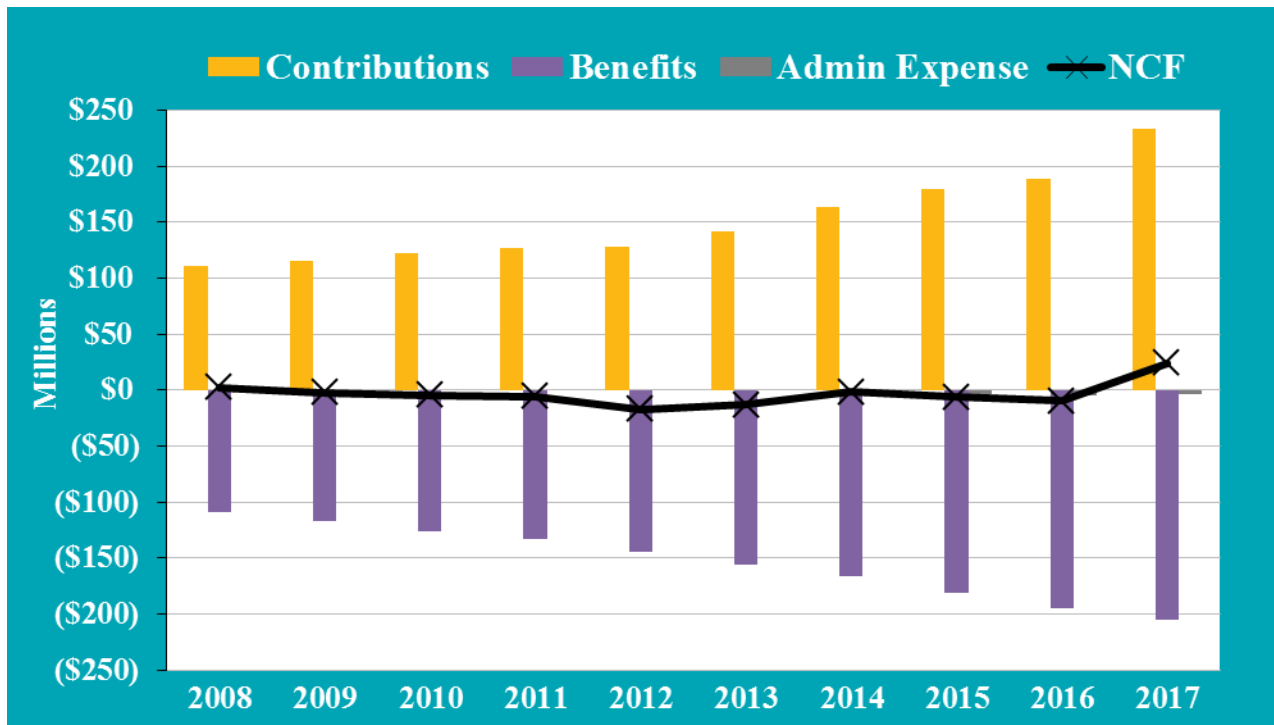
The chart above provides a measure for the maturity in the Plan by comparing the ratio of active members to inactive members (retirees and deferred vested participants). These ratios are shown at the top of each bar. As the Plan matures, this ratio is expected to decrease as more employees leave the active workforce and receive benefits. The increase in inactive liabilities relative to active liabilities may result in a larger burden on the employers should assets perform poorly. The active-to-inactive ratio decreased significantly from 2009 to 2013, but has remained somewhat stable since, as the active workforce has increased at approximately the same rate as the inactive population.

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
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SECTION I – EXECUTIVE SUMMARY

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 this one, but is now a positive \$24.2 million net cash flow this year (about 0.8% of total plan assets). Even without the County's additional \$20.4 million in contributions, the net cash flow would be positive. 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.

D. Future Expected Financial Trends

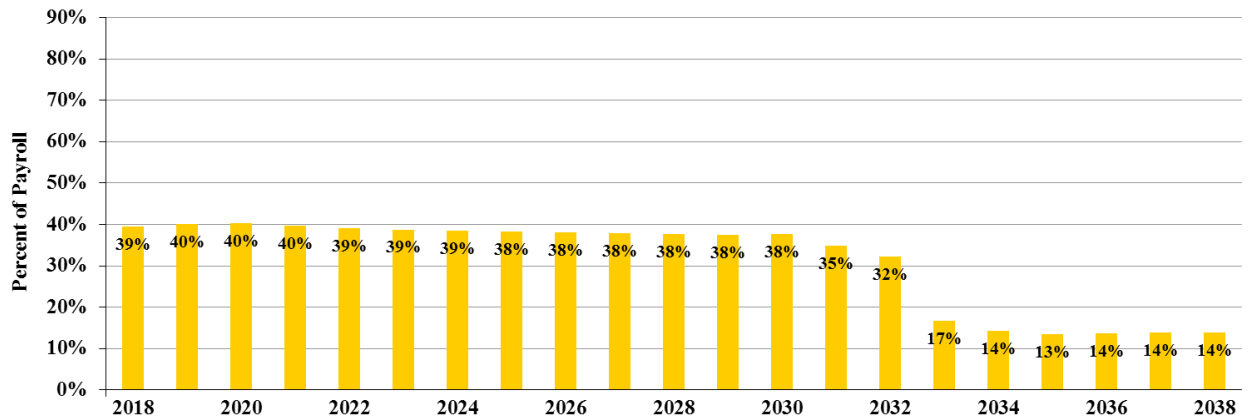
The analysis of projected financial trends is perhaps the most important component of this valuation. In this section, we present our assessment of the implications of the January 1, 2018 valuation results in terms of cost and benefit security (assets over liabilities). All the projections in this section 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.

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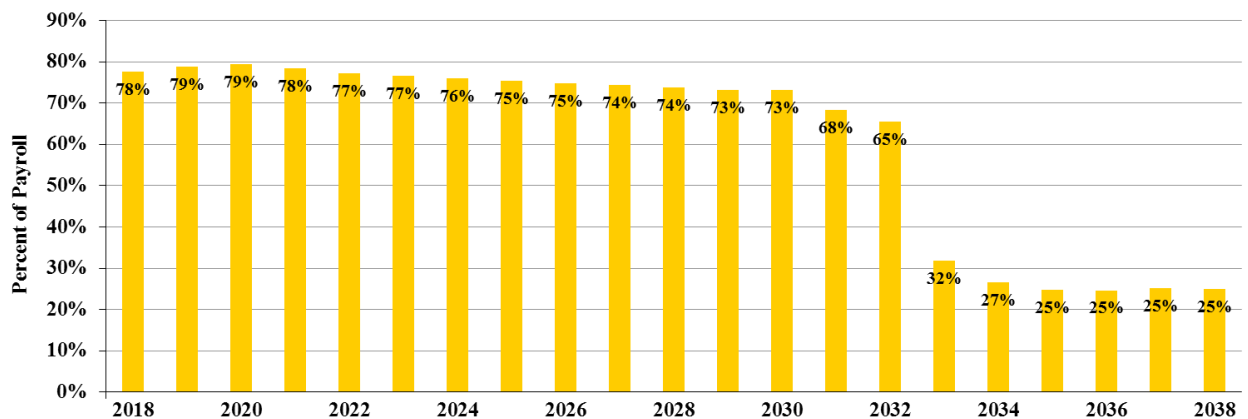
SECTION I – EXECUTIVE SUMMARY

The following graphs show the expected employer contribution rates for General and Safety members based on actually achieving the 7.25% assumption each year for the next 20 years.

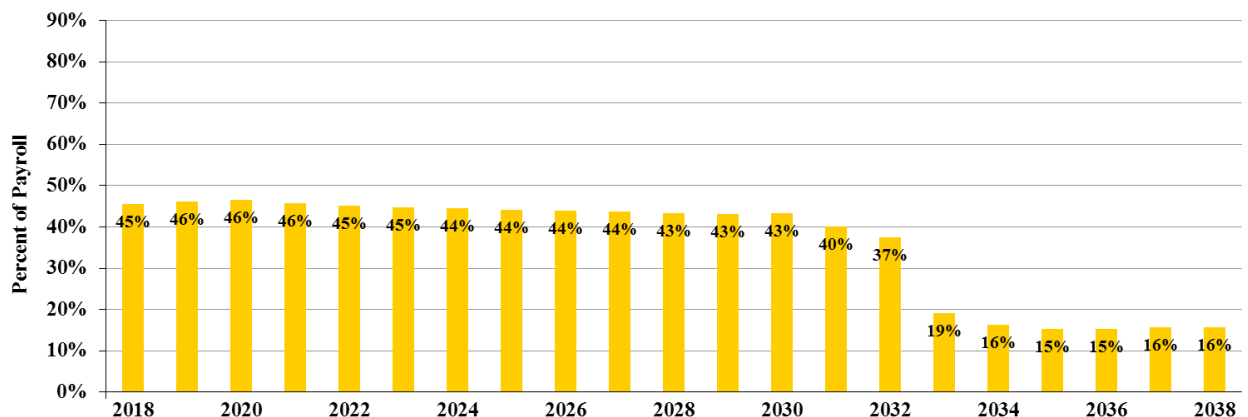
Projection of General Employer Contributions, 7.25% return each year



Projection of Safety Employer Contributions, 7.25% return each year



Projection of Total Employer Contributions, 7.25% return each year



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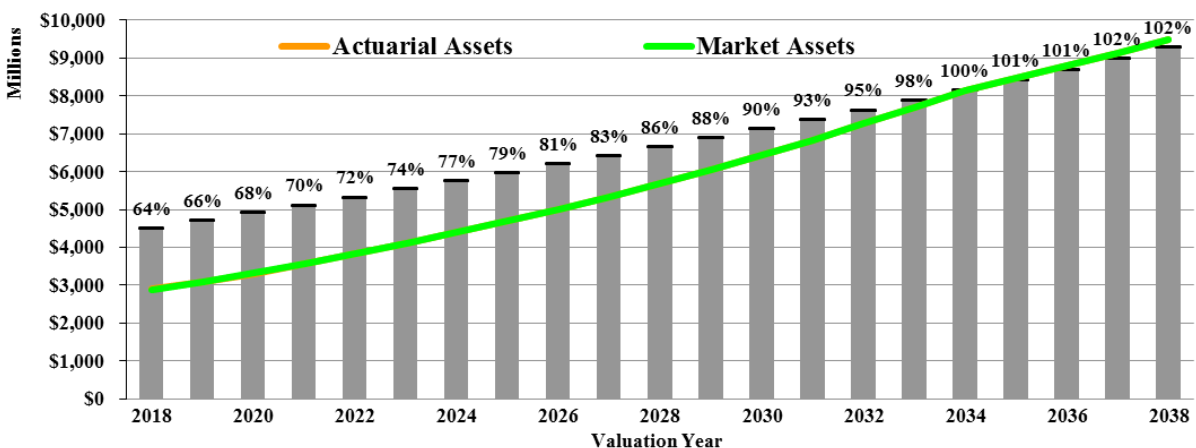
The contribution rate graphs on the previous page show that General, Safety and Total County contributions are expected to increase over the next few years, as the deferred investment losses from the last three years are recognized. The contribution rates are then expected to decline slowly, as the existing Tier 1 membership is gradually expected to be replaced by Tier 2 new hires. The dollar contribution will be approximately \$145 million for General and \$53 million for Safety in 2018, growing to around \$177 million for General and \$65 million for Safety in five years, then remaining flat as a percent of pay until 2033 when the 2014 UAL is paid off.

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.

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.

Projection of Assets and Liabilities, 7.25% return each year



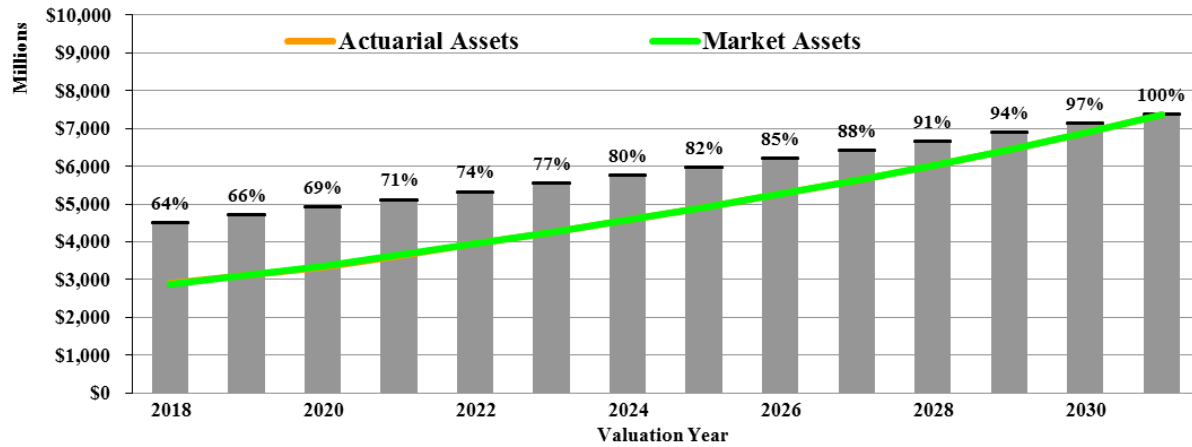
The graph shows that the projected funded status on a market value basis increases over the next 17 years to 101%, assuming the actuarial rate of return assumption is achieved. However, as noted above, it is the actual return on System assets that will determine the future funding status and contribution rates to the Fund.

The assets in the graph above include the additional contributions that the County made to the fund in 2017, but assumes no further additional contributions. The graph on the next page shows the same information as the previous graph, but only through 2031, and assumes that the County continues making additional contributions of 5% of payroll until the System's funded ratio reaches 100%. 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.

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SECTION I – EXECUTIVE SUMMARY

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



SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
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SECTION II – 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, 2016 and December 31, 2017,
- 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, 2018.

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 II-1 on the next page discloses and compares the market values as of December 31, 2016 and December 31, 2017.

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SECTION II – ASSETS

TABLE II-1			
Statement of Assets at Market Value			
December 31,			
Assets:	2016	2017	
Cash and Cash Equivalents	\$ 83,994,149	\$ 98,314,384	
Cash Collateral-Securities Lending	<u>141,349,290</u>	<u>86,901,391</u>	
Total Cash and Cash Equivalents	225,343,439	185,215,775	
Receivables:			
Investment Income Receivables	3,754,074	2,974,773	
Contributions Receivable	4,190,176	5,793,466	
Securities Sold, Not Received - Domestic	2,517,855	35,717	
Other Investment Income Receivable	0	0	
Miscellaneous Receivables	<u>62,267</u>	<u>58,120</u>	
Total Receivables	10,524,372	8,862,076	
Investments, at Market Value:			
Stable Fixed Income	230,000,201	275,595,222	
Credit	314,318,602	321,700,181	
Global Public Equity	811,746,374	995,174,782	
Private Appreciation	308,327,211	328,280,801	
Risk Parity	330,517,689	372,838,817	
Crisis Risk Offset	<u>468,905,794</u>	<u>480,111,036</u>	
Total Investments	2,463,815,871	2,773,700,839	
Other Assets:			
Prepaid Expenses	127,142	90,155	
Equipment and Fixtures, Net	<u>115,488</u>	<u>73,770</u>	
Other Assets	<u>242,630</u>	<u>163,925</u>	
Total Assets	2,699,926,312	2,967,942,615	
Liabilities:			
Securities Lending-Cash Collateral	141,349,290	86,901,391	
Securities Purchased, Not Paid	2,542,373	172,476	
Accrued Expenses and Other Payables	1,169,645	1,475,117	
Security Lending Interest and Other Expense	<u>62,880</u>	<u>105,000</u>	
Total Liabilities	145,124,188	88,653,984	
Market Value of Assets	\$ 2,554,802,124	\$ 2,879,288,631	

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2018**

SECTION II – 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 II-2 below shows the components of change in the Market Value of Assets during 2016 and 2017.

TABLE II-2		
Changes in Market Values		
<u>Additions</u>	<u>2016</u>	<u>2017</u>
Contributions		
Employer's Contribution	159,122,523	200,051,742
Members' Contributions	30,117,408	33,634,906
Total Contributions	<u>189,239,931</u>	<u>233,686,648</u>
Net Investment Income		
Net Appreciation/(Depreciation) in		
Fair Value of Investments	119,638,107	284,668,325
Interest	21,433,543	19,065,667
Dividends	18,476,288	8,375,172
Real Estate Income, net	9,870,590	8,352,681
Investment Expenses	(19,015,255)	(20,954,361)
Miscellaneous Investment Income	8,057	1,943
Net Investment Income,		
Before Securities Lending Income	<u>150,411,330</u>	<u>299,509,427</u>
Securities Lending Income		
Earnings	1,149,690	1,440,490
Rebates	(323,724)	(943,349)
Fees	(206,122)	(124,117)
Net Securities Lending Income	<u>619,844</u>	<u>373,024</u>
Net Investment Income	<u>151,031,174</u>	<u>299,882,451</u>
Miscellaneous Income	83,614	78,242
Total Additions	<u>340,354,719</u>	<u>533,647,341</u>

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
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SECTION II – ASSETS

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

<u>Deductions</u>	<u>2016</u>	<u>2017</u>
Benefit payments	192,113,542	202,408,260
Death Benefits	618,769	701,206
Refunds of Members' Contributions	<u>1,986,866</u>	<u>2,297,504</u>
Total Benefit Payments	194,719,177	205,406,970
Administrative & Other Expenses		
General Administrative Expenses	3,830,298	3,540,658
Actuary Fees	251,775	144,211
Fund Legal Fees	<u>287,671</u>	<u>433,709</u>
Total Administrative & Other Expenses	4,369,744	4,118,578
Transfer Between Plans	<u>(293,779)</u>	<u>(364,714)</u>
Total Deductions	198,795,142	209,160,834
Net increase (Decrease)	141,559,577	324,486,507
Net Assets Held in Trust for Pension Benefits:		
Beginning of Year	<u>2,413,242,547</u>	<u>2,554,802,124</u>
End of Year	<u><u>2,554,802,124</u></u>	<u><u>2,879,288,631</u></u>
Approximate Return	6.27%	11.68%

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2018**

SECTION II – 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 II-3 Development of Actuarial Value of Assets as of January 1, 2018									
	(a)	(b)	(c)	(d)	(e)	(f)	(g) = (f) – (e)	(h)	(i) = (g) x (h)
Year	Contributions	Benefits	Administrative Expense	Healthcare Fund Transfer	Expected Return	Actual Return	Additional Earnings	Not Recognized	Unrecognized Earnings
2014	164,054,041	165,870,971	4,042,986	19,968,779	176,895,311	110,728,303	(66,167,008)	20%	(13,233,402)
2015	179,398,457	181,468,912	4,075,745	378,969	184,778,322	(47,339,751)	(232,118,073)	40%	(92,847,229)
2016	189,239,931	194,719,177	4,369,744	293,779	178,243,779	151,114,788	(27,128,991)	60%	(16,277,396)
2017	233,686,648	205,406,970	4,118,578	364,714	189,960,353	299,960,693	110,000,340	80%	88,000,272
1. Total Unrecognized Dollars									(34,357,755)
2. Market Value of Assets as of December 31, 2017									2,879,288,631
3. Preliminary Actuarial Value of Assets as of December 31, 2017: [(2) - (1)]									2,913,646,386
4. Corridor Limits									
a. 80% of Net Market Value									2,303,430,905
b. 120% of Net Market Value									3,455,146,357
5. Actuarial Value of Assets after Corridor									2,913,646,386
6. Ratio of Actuarial Value to Market Value [(5) ÷ (2)]									101.19%
7. Market Stabilization Designation [(2) – (5)]									(34,357,755)
8. Special (Non Valuation) Reserves:									
Class Action Settlement – Post 4/1/1982									485,100
Contingency									0
Undistributed Earnings Reserve									0
Total Special Reserves									485,100
9. Actuarial Value of Assets for the Funding Ratio: [(5) - (8)*(6)]									\$2,913,161,286
10. Additional County Contribution Reserve									\$20,385,011
11. Actuarial Value of Assets Used for Calculating the Employer Contribution Rates: [(9) - (10)]									\$2,892,776,276

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
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SECTION II – 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.

TABLE II-4 Asset Gain/(Loss)		
	Market Value	Actuarial Value
January 1, 2017 value	\$ 2,554,802,124	\$ 2,733,851,661
Employer Contributions	200,051,742	200,051,742
Employee Contributions	33,634,906	33,634,906
Healthcare Transfer	364,714	364,714
Benefit Payments	(205,406,970)	(205,406,970)
Administrative Expenses	(4,118,578)	(4,118,578)
Expected Investment Earnings (7.40%)	189,960,353	203,210,019
Expected Value December 31, 2017	\$ 2,769,288,291	\$ 2,961,587,494
Investment Gain / (Loss)	110,000,340	(48,426,208)
January 1, 2018 value	2,879,288,631	\$ 2,913,161,286
Return	11.68%	5.64%

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.

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
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SECTION II – 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 II-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%	11.6%	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%
Compounded			
15- Year Average	6.0%	4.8%	2.0%
Compounded			
10- Year Average	2.8%	3.2%	1.5%
Compounded			
5- Year Average	5.9%	6.5%	1.4%

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

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2018**

SECTION II – ASSETS

Reserve Balances

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

TABLE II-6 Post-1982 Settlement Reserve				
Valuation Date January 1	Number of Recipients	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

As of January 1, 2018, the total projected liability associated with paying the Post-82 Settlement allowances for the lifetime of the members and beneficiaries was estimated to be \$20,786,602. 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
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SECTION III – LIABILITIES

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

- **Disclosure** of System liabilities at January 1, 2017 and January 1, 2018
- 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 III-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**.

TABLE III-1			
Liabilities/Net (Surplus)/Unfunded			
	January 1, 2017		January 1, 2018
<u>Present Value of Future Benefits</u>			
Active Participant Benefits	\$	2,353,911,041	\$ 2,466,338,760
Retiree and Inactive Benefits		<u>2,643,733,644</u>	<u>2,846,006,965</u>
Present Value of Future Benefits (PVB)	\$	4,997,644,685	\$ 5,312,345,725
<u>Actuarial Liability</u>			
Present Value of Future Benefits (PVB)	\$	4,997,644,685	\$ 5,312,345,725
Present Value of Future Normal Costs (PVFNC)		<u>762,550,739</u>	<u>815,370,128</u>
Actuarial Liability (AL = PVB – PVFNC)	\$	4,235,093,946	\$ 4,496,975,597
Actuarial Value of Assets (AVA) ¹		<u>2,733,851,661</u>	<u>2,913,161,286</u>
Net (Surplus)/Unfunded (AL – AVA)	\$	1,501,242,285	\$ 1,583,814,311

¹ Assets as of January 1, 2018 include the additional 5% County Contribution Reserve

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2018**

SECTION III – 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 III-2
Changes in Actuarial Liability**

Actuarial Liability at January 1, 2017	\$	4,235,093,946
Actuarial Liability at January 1, 2018	\$	4,496,975,597
Liability Increase (Decrease)		261,881,651
Change due to:		
Accrual of Benefits	\$	87,704,166
Actual Benefit Payments		(205,406,970)
Interest		312,422,630
Assumption Changes		81,854,661
Actuarial Liability (Gain)/Loss		(14,692,836)

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2018**

SECTION III – LIABILITIES

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

1. Unfunded Actuarial Liability at Start of Year (not less than zero)	\$ 1,501,242,285
2. Middle of year unfunded actuarial liability payment	(123,173,296)
3. Interest to end of year on 1. and 2.	106,615,847
4. Increase in Actuarial Liability due to assumption change	81,854,661
5. Expected UAL at the end of year (1+2+3+4)	1,566,539,497
6. Actual Unfunded Liability at end of year ¹	1,604,199,321
7. Net (Gain)/Loss: (6 - 5)	37,659,824
8. Actuarial Liability (Gain) / Loss	\$ (14,692,836)
9. Actuarial Asset (Gain) / Loss	\$ 48,426,208
10. Contribution Delay (Gain) / Loss	\$ 3,926,452

¹ Assets exclude the additional 5% County Contribution Reserve

SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2018

SECTION IV – CONTRIBUTIONS

In the process of evaluating the financial condition of any pension plan, the actuary analyzes the assets and liabilities to determine what level (if any) of contributions is needed to properly maintain the funding status of the 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 16 years as of January 1, 2018. The amortization period for each Unfunded Actuarial Liability layer will decrease each year.

The total administrative expenses are assumed to be \$4,628,096 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, 2018**

SECTION IV – CONTRIBUTIONS

TABLE IV-1 Development of Employer Contribution Amount		
	January 1, 2018	
		% of pay
1. Normal Cost at Middle of Year	\$ 63,252,050	14.91%
2. Amortization of Unfunded Liability		
a. Actuarial Liability	\$ 4,496,975,597	
b. Actuarial Value of Assets ¹	\$ 2,892,776,276	
c. Unfunded Liability (a) – (b)	\$ 1,604,199,321	
d. Amortization of Unfunded Liability	\$ 136,458,099	29.73%
3. Administrative Expense	\$ 3,955,443	0.86%
4. Annual Required Contribution (1) + (2d) + (3)	\$ 203,665,592	45.50%

¹ Assets exclude the additional 5% County Contribution Reserve

TABLE IV-2 Employer Contribution Rate		
	January 1, 2017	January 1, 2018
Contributions as a Percentage of Payroll		
Gross Entry Age Normal Cost Rate	21.99%	22.51%
Employee Contribution Rate	<u>7.15%</u>	<u>7.60%</u>
Employer Entry Age Normal Cost Rate	14.84%	14.91%
Employer Normal Cost Rate	14.84%	14.91%
Administrative Expense	0.86%	0.86%
Amortization Payment	<u>27.51%</u>	<u>29.73%</u>
Employer Contribution Rate	43.21%	45.50%
Annual Required Contribution (Employer)	\$ 188,377,539	\$ 203,665,593

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

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2018**

SECTION IV – CONTRIBUTIONS

TABLE IV-3 Employer Contribution Rate								
		General Tier I January 1, 2018	General Tier II January 1, 2018	Safety Tier I January 1, 2018	Safety Tier II January 1, 2018			
Contributions as a Percentage of Payroll								
Gross Entry Age Normal Cost Rate		21.48%	18.06%	35.73%	28.66%			
Employee Contribution Rate		<u>6.42%</u>	<u>9.03%</u>	<u>7.56%</u>	<u>14.33%</u>			
Employer Entry Age Normal Cost Rate		15.06%	9.03%	28.17%	14.33%			
Employer Normal Cost Rate		15.06%	9.03%	28.17%	14.33%			
Administrative Expense		0.86%	0.86%	0.86%	0.86%			
Amortization Payment		<u>25.67%</u>	<u>25.67%</u>	<u>51.59%</u>	<u>51.59%</u>			
Employer Contribution Rate		41.59%	35.56%	80.62%	66.78%			
Annual Required Contribution (Employer)	\$	102,281,527	\$	46,696,960	\$	44,808,660	\$	9,878,445

Normal costs and employee contribution rates do not include administrative expenses.

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2018**

SECTION IV – CONTRIBUTIONS

**TABLE IV-4
Development of Amortization Payment
For Fiscal Year 2018**

Type of Base	Date Established	Initial Amount	Initial Amortization Years	1/1/2018 Outstanding Balance	Remaining Amortization Years	Amortization Amount
Charges/(Credits)						
1. 2008 Extraordinary Actuarial Loss	1/1/2009	\$ 424,264,899	30	\$ 465,430,146	21	\$ 32,967,400
2. Remaining 1/1/2014 UAL	1/1/2014	820,499,756	19	789,244,784	15	70,578,874
3. 1/1/2015 Gain	1/1/2015	(16,438,883)	15	(15,265,429)	12	(1,617,731)
4. 1/1/2016 Loss	1/1/2016	52,425,827	15	50,145,007	13	4,993,931
5. 1/1/2016 Assumption Changes	1/1/2016	91,855,247	15	87,859,021	13	8,749,862
6. 1/1/2017 Loss	1/1/2017	109,410,922	15	107,271,308	14	10,098,081
7. 1/1/2018 Loss	1/1/2018	37,659,825	15	37,659,825	15	3,367,762
8. 1/1/2018 Assumption Changes	1/1/2018	81,854,661	15	81,854,661	15	7,319,921
				\$ 1,604,199,322	16 ¹	\$ 136,458,100

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 16 years.

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
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SECTION V – 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:

Solvency Test

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 liability for 2018 is discounted at the new assumed rate of 7.25%.

Table V-1 Solvency Test Aggregate Actuarial Liabilities for							
Valuation Date January 1,	Active Member Contributions (1)	Retirees & Beneficiaries (2)	Active Members¹ (3)	Actuarial Value of Assets	Portion of Actuarial Liabilities Covered by		
					(1)	(2)	(3)
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
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2018**

APPENDIX A – MEMBERSHIP INFORMATION

The data for this valuation was provided by the San Joaquin County staff as of January 1, 2018.

Summary of Participant Data as of January 1, 2018			
	General	Safety	Total
Tier I Active Participants			
Number	3,186	631	3,817
Average Age	50.26	43.60	49.16
Average Benefit Service	15.39	14.83	15.30
Average Vesting Service	15.63	15.25	15.57
Average Pay	\$78,274	\$88,869	\$80,025
Tier II Active Participants			
Number	2,184	217	2,401
Average Age	39.97	31.77	39.23
Average Benefit Service	2.16	2.27	2.17
Average Vesting Service	2.20	2.28	2.21
Average Pay	\$60,335	\$67,742	\$61,004
All Active Participants			
Number	5,370	848	6,218
Average Age	46.07	40.57	45.32
Average Benefit Service	10.01	11.62	10.23
Average Vesting Service	10.17	11.93	10.41
Average Pay	\$70,978	\$83,463	\$72,681

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2018**

APPENDIX A – MEMBERSHIP INFORMATION

Summary of Participant Data as of January 1, 2018			
	General	Safety	Total
Service Retired			
Number	3,789	600	4,389
Average Age	70.65	65.87	70.00
Average Annual Base Benefit	\$16,664	\$35,459	\$19,233
Average Annual Total Benefit	\$33,973	\$66,576	\$38,430
Beneficiaries			
Number	615	195	810
Average Age	72.49	68.65	71.56
Average Annual Base Benefit	\$7,252	\$13,259	\$8,698
Average Annual Total Benefit	\$19,103	\$34,639	\$22,843
Duty Disabled			
Number	245	207	452
Average Age	64.09	61.08	62.71
Average Annual Base Benefit	\$13,648	\$29,904	\$21,093
Average Annual Total Benefit	\$24,953	\$51,862	\$37,276
Non-Duty Disabled			
Number	157	14	171
Average Age	63.90	66.64	64.12
Average Annual Base Benefit	\$9,152	\$13,105	\$9,475
Average Annual Total Benefit	\$16,554	\$28,686	\$17,547
Total Receiving Benefits			
Number	4,806	1,016	5,822
Average Age	70.33	65.44	69.48
Average Annual Base Benefit	\$15,060	\$29,758	\$17,625
Average Annual Total Benefit	\$31,041	\$56,927	\$35,558

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2018**

APPENDIX A – MEMBERSHIP INFORMATION

Summary of Participant Data as of January 1, 2018			
	General	Safety	Total
Deferred Vested			
Number	418	28	446
Average Age	49.15	44.18	48.84
Average Service	9.37	8.46	9.31
Transfers and DROs			
Number	395	105	500
Average Age	49.28	45.07	48.40
Average Service	5.38	4.45	5.18
Funds on Account			
Number	646	32	678
Average Age	45.57	38.91	45.25
Average Service	1.31	1.17	1.30
Total Inactive			
Number	1,459	165	1,624
Average Age	47.60	43.72	47.20
Average Service	4.72	4.49	4.70

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2018**

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, 2017	5,291	370	563	407	158	241	3,655	603	11,288
New Entrants	674	0	0	0	0	0	0	0	674
Rehires	14	(1)	(4)	(5)	0	0	(2)	0	2
Duty Disabilities	(8)	0	0	0	0	7	0	0	(1)
Non-Duty Disabilities	(6)	0	0	0	6	0	0	0	0
Retirements	(173)	(21)	(2)	(28)	0	0	220	4	0
Vested Terminations	(52)	0	0	52	0	0	0	0	0
Retirements from Safety with General Service	0	0	0	0	0	3	13	1	17
Died, With Beneficiaries' Benefit Payable	(3)	0	0	0	(3)	(2)	(31)	39	0
Died, Without Beneficiary, and Other Terminations	(111)	0	104	0	(5)	(5)	(64)	0	(81)
Transfers	(79)	46	(2)	(1)	0	0	0	0	(36)
Redeposits – AB 2766	0	0	0	0	0	0	0	0	0
Withdrawals Paid	(177)	(2)	(17)	(3)	0	0	0	0	(199)
Beneficiary Deaths	0	0	0	0	0	0	0	(37)	(37)
Domestic Relations Orders	0	3	0	0	0	0	0	5	8
Data Corrections	0	0	4	(4)	1	1	(2)	0	0
January 1, 2018	5,370	395	646	418	157	245	3,789	615	11,635

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2018**

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, 2017	811	100	33	36	13	202	572	184	1,951
New Entrants	48	0	0	0	0	0	0	0	48
Rehires	0	0	0	(1)	0	0	(1)	0	(2)
Duty Disabilities	(6)	0	0	(2)	0	8	0	0	0
Non-Duty Disabilities	0	0	0	0	1	0	0	0	1
Retirements	(25)	(3)	(2)	(6)	0	0	36	0	0
Vested Terminations	(1)	0	0	1	0	0	0	0	0
Retirements from Safety with General Service	0	0	0	0	0	1	1	0	2
Died, With Beneficiaries' Benefit Payable	(1)	0	0	0	0	(2)	(5)	8	0
Died, Without Beneficiary, and Other Terminations	(2)	0	2	0	0	(2)	(2)	0	(4)
Transfers	31	6	(1)	0	0	0	0	0	36
Redeposits – AB 2766	0	0	0	0	0	0	0	0	0
Withdrawals Paid	(7)	(1)	0	0	0	0	0	0	(8)
Beneficiary Deaths	0	0	0	0	0	0	0	(1)	(1)
Domestic Relations Orders	0	3	0	0	0	0	0	3	6
Data Corrections	0	0	0	0	0	0	(1)	1	0
January 1, 2018	848	105	32	28	14	207	600	195	2,029

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2018**

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, 2017	6,102	470	596	443	171	443	4,227	787	13,239
New Entrants	722	0	0	0	0	0	0	0	722
Rehires	14	(1)	(4)	(6)	0	0	(3)	0	0
Duty Disabilities	(14)	0	0	(2)	0	15	0	0	(1)
Non-Duty Disabilities	(6)	0	0	0	7	0	0	0	1
Retirements	(198)	(24)	(4)	(34)	0	0	256	4	0
Vested Terminations	(53)	0	0	53	0	0	0	0	0
Retirements from Safety with General Service	0	0	0	0	0	4	14	1	19
Died, With Beneficiaries' Benefit Payable	(4)	0	0	0	(3)	(4)	(36)	47	0
Died, Without Beneficiary, and Other Terminations	(113)	0	106	0	(5)	(7)	(66)	0	(85)
Transfers	(48)	52	(3)	(1)	0	0	0	0	0
Redeposits – AB 2766	0	0	0	0	0	0	0	0	0
Withdrawals Paid	(184)	(3)	(17)	(3)	0	0	0	0	(207)
Beneficiary Deaths	0	0	0	0	0	0	0	(38)	(38)
Domestic Relations Orders	0	6	0	0	0	0	0	8	14
Data Corrections	0	0	4	(4)	1	1	(3)	1	0
January 1, 2018	6,218	500	678	446	171	452	4,389	810	13,664

SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2018

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%

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, 2018**

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%

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, 2018**

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

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, 2018**

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, 2018**

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, 2018**

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
1/2/15 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, 2018**

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

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2018**

APPENDIX A – MEMBERSHIP INFORMATION

DISTRIBUTION OF GENERAL ACTIVE MEMBERS BY AGE AND SERVICE AS OF JANUARY 1, 2018											
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	20	15	0	0	0	0	0	0	0	0	35
25 to 29	70	251	14	0	0	0	0	0	0	0	335
30 to 34	60	395	86	42	1	0	0	0	0	0	584
35 to 39	56	339	151	161	39	0	0	0	0	0	746
40 to 44	33	258	109	182	133	20	1	0	0	0	736
45 to 49	40	192	96	174	204	62	24	0	0	0	792
50 to 54	30	143	83	124	135	86	74	27	1	0	703
55 to 59	17	129	77	107	152	83	95	58	16	0	734
60 to 64	11	72	53	74	116	58	62	32	25	4	507
65 to 69	0	21	23	31	41	10	11	11	6	4	158
70 & up	0	9	7	6	5	6	3	1	1	2	40
Total	337	1,824	699	901	826	325	270	129	49	10	5,370

Average Age = 46.07

Average Service = 10.01

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2018**

APPENDIX A – MEMBERSHIP INFORMATION

DISTRIBUTION OF SAFETY ACTIVE MEMBERS BY AGE AND SERVICE AS OF JANUARY 1, 2018											
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	3	19	0	0	0	0	0	0	0	0	22
25 to 29	7	62	7	0	0	0	0	0	0	0	76
30 to 34	4	73	37	34	0	0	0	0	0	0	148
35 to 39	1	31	24	81	27	0	0	0	0	0	164
40 to 44	1	11	15	46	72	6	0	0	0	0	151
45 to 49	0	3	4	30	55	43	7	0	0	0	142
50 to 54	1	5	1	11	21	13	15	4	0	0	71
55 to 59	0	5	3	4	12	6	12	7	0	0	49
60 to 64	0	2	0	4	5	1	2	2	0	1	17
65 to 69	0	0	0	4	3	0	0	1	0	0	8
70 & up	0	0	0	0	0	0	0	0	0	0	0
Total	17	211	91	214	195	69	36	14	0	1	848

Average Age = 40.57

Average Service = 11.62

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2018**

APPENDIX A – MEMBERSHIP INFORMATION

PAYROLL DISTRIBUTION OF GENERAL ACTIVE PARTICIPANTS BY AGE AND SERVICE AS OF JANUARY 1, 2018											
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	52,493	45,166	0	0	0	0	0	0	0	0	49,353
25 to 29	52,921	60,360	76,228	0	0	0	0	0	0	0	59,469
30 to 34	52,810	63,039	70,153	56,831	44,886	0	0	0	0	0	62,558
35 to 39	50,767	58,839	76,814	71,808	69,967	0	0	0	0	0	65,252
40 to 44	62,288	60,654	77,593	79,615	71,314	91,206	61,069	0	0	0	70,682
45 to 49	67,689	60,466	87,143	80,261	76,238	78,350	65,206	0	0	0	74,020
50 to 54	60,020	65,608	75,147	74,255	78,066	80,570	83,926	82,388	76,069	0	74,831
55 to 59	65,004	71,070	73,233	78,051	70,886	72,386	90,139	84,450	81,709	0	76,042
60 to 64	65,041	70,010	85,607	71,397	72,029	74,479	88,914	97,280	83,543	61,084	77,338
65 to 69	0	81,257	84,036	84,694	70,867	78,730	67,325	89,745	89,403	111,215	80,169
70 & up	0	71,381	159,736	49,905	63,469	61,507	55,343	53,179	162,325	109,162	83,656
Total	56,825	62,430	78,665	75,661	73,490	77,215	84,515	87,410	85,117	90,752	70,978

Average Salary = \$70,978

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2018**

APPENDIX A – MEMBERSHIP INFORMATION

PAYROLL DISTRIBUTION OF SAFETY ACTIVE PARTICIPANTS BY AGE AND SERVICE AS OF JANUARY 1, 2018											
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	55,120	67,566	0	0	0	0	0	0	0	0	65,869
25 to 29	60,748	67,057	91,862	0	0	0	0	0	0	0	68,760
30 to 34	50,929	67,473	83,613	86,999	0	0	0	0	0	0	75,547
35 to 39	21,840	69,374	82,689	84,901	84,959	0	0	0	0	0	81,267
40 to 44	69,326	70,834	88,128	78,768	91,655	85,005	0	0	0	0	85,450
45 to 49	0	74,814	62,888	79,647	87,563	91,950	131,202	0	0	0	88,406
50 to 54	62,878	94,728	63,128	83,394	93,330	94,944	120,992	101,407	0	0	97,630
55 to 59	0	97,106	95,355	76,230	71,631	84,079	104,302	142,549	0	0	95,715
60 to 64	0	99,299	0	88,824	81,003	71,687	81,142	95,871	0	309,768	99,670
65 to 69	0	0	0	86,980	75,643	0	0	245,424	0	0	102,534
70 & up	0	0	0	0	0	0	0	0	0	0	0
Total	55,786	69,568	83,999	83,052	88,003	90,932	115,200	131,474	0	309,768	83,463

Average Salary = \$83,463

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2018**

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	0	\$0	4	\$57,078	4	\$57,078
50-54	67	\$15,163	58	\$64,022	125	\$37,834
55-59	246	\$25,101	90	\$76,278	336	\$38,809
60-64	642	\$35,005	119	\$70,723	761	\$40,590
65-69	896	\$40,173	122	\$68,292	1,018	\$43,543
70-74	848	\$37,192	112	\$69,267	960	\$40,934
75-79	496	\$32,410	58	\$49,998	554	\$34,252
80-84	285	\$27,064	20	\$34,281	305	\$27,537
85-89	181	\$26,971	14	\$59,810	195	\$29,329
90-94	91	\$23,898	3	\$70,265	94	\$25,378
95+	37	\$18,375	0	\$0	37	\$18,375
All Ages	3,789	\$33,973	600	\$66,576	4,389	\$38,430

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	1	\$16,577	0	\$0	1	\$16,577
40-44	4	\$18,462	0	\$0	4	\$18,462
45-49	5	\$13,686	2	\$20,364	7	\$15,594
50-54	13	\$17,058	0	\$0	13	\$17,058
55-59	26	\$17,453	1	\$3,163	27	\$16,924
60-64	32	\$19,033	2	\$56,580	34	\$21,241
65-69	30	\$14,770	4	\$18,845	34	\$15,250
70-74	26	\$15,076	2	\$52,844	28	\$17,774
75-79	13	\$15,659	1	\$20,233	14	\$15,985
80-84	4	\$21,358	1	\$21,573	5	\$21,401
85-89	1	\$9,014	1	\$21,682	2	\$15,348
90-94	2	\$11,203	0	\$0	2	\$11,203
95+	0	\$0	0	\$0	0	\$0
All Ages	157	\$16,554	14	\$28,686	171	\$17,547

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2018**

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	1	\$133	2	\$43,962	3	\$29,352
35-39	1	\$353	3	\$29,833	4	\$22,463
40-44	4	\$15,928	7	\$34,798	11	\$27,937
45-49	13	\$9,417	19	\$37,502	32	\$26,092
50-54	14	\$19,294	26	\$45,223	40	\$36,148
55-59	34	\$22,933	38	\$54,397	72	\$39,539
60-64	49	\$27,716	30	\$57,197	79	\$38,911
65-69	71	\$28,035	37	\$57,761	108	\$38,219
70-74	32	\$26,434	24	\$54,306	56	\$38,379
75-79	15	\$25,953	11	\$51,670	26	\$36,833
80-84	10	\$24,832	6	\$54,029	16	\$35,781
85-89	0	\$0	3	\$77,934	3	\$77,934
90-94	1	\$44,880	1	\$76,291	2	\$60,586
95+	0	\$0	0	\$0	0	\$0
All Ages	245	\$24,953	207	\$51,862	452	\$37,276

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	7	\$16,115	0	\$0	7	\$16,115
25-29	4	\$19,029	0	\$0	4	\$19,029
30-34	2	\$9,044	0	\$0	2	\$9,044
35-39	1	\$12,122	0	\$0	1	\$12,122
40-44	4	\$7,594	2	\$49,505	6	\$21,565
45-49	13	\$15,900	8	\$42,082	21	\$25,874
50-54	18	\$11,310	16	\$14,869	34	\$12,985
55-59	34	\$15,176	22	\$21,038	56	\$17,479
60-64	68	\$16,018	21	\$34,702	89	\$20,427
65-69	87	\$18,280	30	\$36,698	117	\$23,002
70-74	103	\$22,938	30	\$39,703	133	\$26,720
75-79	85	\$19,046	30	\$36,041	115	\$23,480
80-84	67	\$17,281	18	\$44,295	85	\$23,002
85-89	62	\$20,777	11	\$46,345	73	\$24,629
90-94	38	\$22,757	7	\$29,865	45	\$23,862
95+	22	\$27,304	0	\$0	22	\$27,304
All Ages	615	\$19,103	195	\$34,639	810	\$22,843

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2018**

APPENDIX A – MEMBERSHIP INFORMATION

Assumed Probabilities of Separation from Active Membership

Age	Non-Duty Death	Ordinary Disability	Service Retirement¹	Duty Death	Duty Disability
General Members – Male					
20	0.0002	0.000	0.000	0.000	0.001
25	0.0003	0.001	0.000	0.000	0.001
30	0.0005	0.001	0.000	0.000	0.001
35	0.0005	0.001	0.000	0.000	0.001
40	0.0007	0.001	0.000	0.000	0.004
45	0.0009	0.002	0.000	0.000	0.004
50	0.0014	0.002	0.040	0.000	0.002
55	0.0022	0.003	0.085	0.000	0.002
60	0.0034	0.003	0.150	0.000	0.002
65	0.0046	0.004	0.250	0.000	0.002
General Members – Female					
20	0.0002	0.000	0.000	0.000	0.000
25	0.0002	0.001	0.000	0.000	0.000
30	0.0003	0.001	0.000	0.000	0.000
35	0.0004	0.001	0.000	0.000	0.001
40	0.0005	0.001	0.000	0.000	0.001
45	0.0006	0.002	0.000	0.000	0.001
50	0.0010	0.002	0.035	0.000	0.001
55	0.0015	0.003	0.035	0.000	0.002
60	0.0021	0.004	0.125	0.000	0.002
65	0.0029	0.005	0.250	0.000	0.003

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 2016.

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2018**

APPENDIX A – MEMBERSHIP INFORMATION

Assumed Probabilities of Separation from Active Membership

Age	Non-Duty Death	Ordinary Disability	Service Retirement¹	Duty Death	Duty Disability
Safety Members – Male					
20	0.0002	0.000	0.000	0.0000	0.000
25	0.0003	0.000	0.000	0.0001	0.001
30	0.0005	0.000	0.000	0.0001	0.001
35	0.0005	0.000	0.000	0.0001	0.002
40	0.0007	0.000	0.000	0.0001	0.004
45	0.0009	0.000	0.050	0.0001	0.008
50	0.0014	0.001	0.150	0.0001	0.014
55	0.0022	0.001	0.300	0.0001	0.014
Safety Members – Female					
20	0.0002	0.000	0.000	0.0000	0.000
25	0.0002	0.000	0.000	0.0001	0.001
30	0.0003	0.000	0.000	0.0001	0.001
35	0.0004	0.000	0.000	0.0001	0.002
40	0.0005	0.000	0.000	0.0001	0.004
45	0.0006	0.000	0.050	0.0001	0.009
50	0.0010	0.001	0.150	0.0001	0.014
55	0.0015	0.001	0.300	0.0002	0.014

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

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2018**

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	0.0934	0.1037	0.105	0.060	0.070	0.040
1	0.0831	0.0934	0.066	0.047	0.044	0.031
2	0.0728	0.0831	0.060	0.035	0.040	0.023
3	0.0624	0.0728	0.047	0.030	0.031	0.020
4	0.0521	0.0624	0.041	0.027	0.027	0.018
5	0.0470	0.0547	0.019	0.002	0.044	0.018
6	0.0418	0.0444	0.018	0.002	0.042	0.016
7	0.0392	0.0444	0.014	0.002	0.032	0.014
8	0.0367	0.0444	0.014	0.002	0.032	0.014
9	0.0367	0.0444	0.011	0.002	0.026	0.014
10	0.0367	0.0444	0.011	0.001	0.026	0.007
11	0.0367	0.0444	0.008	0.001	0.019	0.007
12	0.0367	0.0444	0.008	0.001	0.019	0.007
13	0.0367	0.0444	0.008	0.001	0.018	0.007
14	0.0367	0.0444	0.008	0.001	0.018	0.007
15	0.0367	0.0444	0.003	0.000	0.023	0.008
16	0.0367	0.0444	0.003	0.000	0.023	0.008
17	0.0367	0.0444	0.003	0.000	0.023	0.008
18	0.0367	0.0444	0.003	0.000	0.023	0.008
19	0.0367	0.0444	0.003	0.000	0.023	0.008
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+	0.0315	0.0444	0.000	0.000	0.000	0.000

¹ 25% of General Terminations are assumed to be reciprocal.

² 50% of Safety Terminations are assumed to be reciprocal.

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2018**

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

The assumptions and methods used in the actuarial valuation as of January 1, 2018 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 (15 years remaining as of January 1, 2018), except for the additional UAL attributable to the extraordinary loss from 2008, which is being amortized over a separate closed period (21 years as of January 1, 2018).

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.

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Actuarial Assumptions

The actuarial assumptions were adopted by the Board starting with the January 1, 2016 valuation based on recommendations included in an experience study performed by Cheiron, which analyzed the Plan's experience from 2013-2016 (and in some cases from 2010-2016).

1. Rate of Return

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

2. Administrative Expenses

Administrative expenses are assumed to be \$4,628,096 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	8-29	30+
Base Increase	3.15%	3.15%	3.15%	3.15%	3.15%	3.15%	3.15%	3.15%	3.15%	3.15%
Longevity & Promotion										
General	6.00%	5.00%	4.00%	3.00%	2.00%	1.50%	1.00%	0.75%	0.50%	0.00%
Safety	7.00%	6.00%	5.00%	4.00%	3.00%	2.25%	1.25%	1.25%	1.25%	1.25%
Total (Compound)										
General	9.34%	8.31%	7.28%	6.24%	5.21%	4.70%	4.18%	3.92%	3.67%	3.15%
Safety	10.37%	9.34%	8.31%	7.28%	6.24%	5.47%	4.44%	4.44%	4.44%	4.44%

6. Family Composition

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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 four 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%	10.00%
1	11.00%	7.75%
2	10.00%	5.75%
3	7.75%	5.00%
4	6.75%	4.50%
5	6.25%	2.00%
6	6.00%	1.75%
7	4.50%	1.50%
8	4.50%	1.50%
9	3.75%	1.50%
10	3.75%	0.75%
11-12	2.75%	0.75%
13-19	2.50%	0.75%
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.

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.

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60% of all Safety Member terminations with less than five years of service, 10% of those with five to 14 years of service, and none of those with more than 15 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, 90% of those with five to 14 years of service, and 100% of those with more than 15 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.

25% of vested terminated General Members and 50% of vested terminated Safety Members 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 Service Disability				
Age	General Male	General Female	Safety Male	Safety Female
22	0.066%	0.022%	0.048%	0.048%
27	0.066%	0.030%	0.086%	0.089%
32	0.066%	0.051%	0.161%	0.166%
37	0.066%	0.073%	0.296%	0.305%
42	0.380%	0.094%	0.565%	0.592%
47	0.380%	0.123%	1.023%	1.101%
52	0.226%	0.159%	1.425%	1.425%
57	0.226%	0.204%	1.425%	1.425%
62	0.226%	0.249%	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-Service Disability				
Age	General Male	General Female	Safety Male	Safety Female
22	0.051%	0.053%	0.003%	0.003%
27	0.068%	0.067%	0.005%	0.005%
32	0.086%	0.081%	0.008%	0.009%
37	0.108%	0.102%	0.016%	0.016%
42	0.138%	0.138%	0.030%	0.031%
47	0.178%	0.197%	0.054%	0.058%
52	0.225%	0.267%	0.075%	0.075%
57	0.286%	0.337%	0.075%	0.075%
62	0.362%	0.408%	0.075%	0.075%

12. Rates of Mortality for Healthy Lives

Mortality rates for active members are based on the sex distinct CALPERS Preretirement Non-Industrial Mortality Table, with generational mortality improvements projected from 2009 using Projection Scale MP-2015, published by the Society of Actuaries.

Mortality rates for healthy annuitants are based on the sex distinct CALPERS Healthy Annuitant Mortality Table, with a partial credibility adjustment of 1.10 for Safety members, with generational mortality improvements projected from 2009 using

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Projection Scale MP-2015, published by the Society of Actuaries.

Mortality rates for active members who die in the line-of-duty are based on the sex distinct CALPERS Preretirement Industrial Mortality Table, with generational mortality improvements projected from 2009 using Projection Scale MP-2015, published by the Society of Actuaries.

13. Rates of Mortality for Disabled Retirees

Mortality rates for Safety disabled annuitants are based on the sex distinct CALPERS Industrially Disabled Annuitant Mortality Table, with generational mortality improvements projected from 2009 using Projection Scale MP-2015, published by the Society of Actuaries.

Mortality rates for General disabled annuitants are based on the sex distinct CALPERS Non-Industrially Disabled Annuitant Mortality Table, with a partial credibility adjustment of 1.05, with generational mortality improvements projected from 2009 using Projection Scale MP-2015, published by the Society of Actuaries.

14. Mortality Improvement

The mortality assumptions employ a fully generational mortality improvement projection from the base year of the CalPERS mortality tables (2009) using Scale MP-2015.

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.

16. Assumptions for Employee Contribution Rates

Mortality rates are the base mortality tables described above, projected using Scale MP-2015 from 2009 to 2038 for General Members and to 2040 for 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.

We anticipate that these mortality assumptions will be used to determine the employee contribution rates in effect for the period of January 1, 2017 through December 31, 2019. Therefore, mortality rates at the member's current age will reflect mortality improvements to 2018, the midpoint of that period.

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17. Rates of Retirement

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

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+	10-19	20+
45	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	5.00%
46	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	5.00%
47	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	5.00%
48	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	5.00%
49	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	5.00%
50	3.25%	4.00%	5.00%	3.50%	3.50%	4.50%	10.00%	15.00%
51	3.25%	4.00%	5.00%	3.50%	3.50%	4.50%	5.00%	10.00%
52	3.25%	4.00%	5.00%	3.50%	3.50%	4.50%	5.00%	10.00%
53	3.25%	4.00%	5.00%	3.50%	3.50%	4.50%	5.00%	20.00%
54	3.25%	4.00%	5.00%	3.50%	3.50%	4.50%	5.00%	20.00%
55	4.00%	8.50%	15.00%	3.50%	3.50%	4.50%	5.00%	30.00%
56	4.00%	4.00%	15.00%	3.50%	7.00%	15.00%	5.00%	20.00%
57	4.00%	4.00%	15.00%	3.50%	7.00%	15.00%	5.00%	20.00%
58	4.00%	4.00%	20.00%	3.50%	7.00%	15.00%	5.00%	20.00%
59	4.00%	15.00%	25.00%	3.50%	7.00%	15.00%	5.00%	20.00%
60	4.00%	15.00%	25.00%	7.50%	12.50%	15.00%	5.00%	20.00%
61	7.50%	17.50%	35.00%	7.50%	12.50%	25.00%	25.00%	25.00%
62	7.50%	30.00%	40.00%	7.50%	25.00%	30.00%	25.00%	50.00%
63	7.50%	25.00%	35.00%	7.50%	25.00%	35.00%	25.00%	50.00%
64	7.50%	25.00%	35.00%	7.50%	25.00%	40.00%	25.00%	50.00%
65	15.00%	25.00%	50.00%	15.00%	25.00%	40.00%	100.00%	100.00%
66	15.00%	35.00%	50.00%	15.00%	25.00%	40.00%	100.00%	100.00%
67	15.00%	30.00%	40.00%	15.00%	25.00%	40.00%	100.00%	100.00%
68	15.00%	30.00%	30.00%	15.00%	25.00%	40.00%	100.00%	100.00%
69	15.00%	30.00%	30.00%	15.00%	25.00%	40.00%	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

The assumed rate of return for assets was lowered from 7.40% to 7.25% for this valuation.

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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 II Members), only pensionable compensation up to the PEPRA compensation limit (\$121,388 for 2018) 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 (\$145,666 for 2018.) 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 II 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 I Members, Final Compensation means the highest average Compensation earned during any 12 consecutive months of the Member's employment.

For Tier II 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.

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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 II 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 II 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 II Members for all subsequent service.

Member

Contributions: Each Member contributes a percentage of Compensation to the Plan through payroll deduction. For Tier I 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 I 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.

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Table 1: Tier I 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	1.78%	2.67%	2.77%	4.16%
25	2.01%	3.02%	3.00%	4.50%
30	2.23%	3.34%	3.24%	4.86%
35	2.46%	3.69%	3.51%	5.26%
40	2.73%	4.09%	3.82%	5.73%
45	3.03%	4.55%	4.17%	6.26%
50	3.35%	5.03%	4.09%	6.14%

Rates include the employee share of the administrative expenses.

Some Tier I 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 I 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 reduction in the discount rate from 7.40% to 7.25%.

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

Table 2: Tier II Member Contribution Rates

General Member Rate	Safety Member Rate
9.21%	14.61%

Rates include the employee share of the administrative expenses.

Interest is credited semiannually to each Member's accumulated contributions. The crediting rate is set by the Board; the semi-annual rate for 2016 was 3.6822%, for an effective annual rate of 7.50%. The crediting rate for 2017 and 2018 is 3.6340%, for an effective annual rate of 7.40%.

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C. Service Retirement:

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

Benefit Amount: The Service Retirement Benefit payable to Tier I 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 I Safety Members is equal to the percentage in Table 4 on page 63 multiplied by the Member's Final Compensation. The percentage of Final Compensation may not exceed 100%.

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APPENDIX C – SUMMARY OF PLAN PROVISIONS

Table 3: Tier I 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					

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APPENDIX C – SUMMARY OF PLAN PROVISIONS

Table 4: Tier I 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

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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 II 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 II 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.

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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

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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 I Members, Tables 2 and 3 are extended for service under ten 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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APPENDIX C – SUMMARY OF PLAN PROVISIONS

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.

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 I: 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, 2017				As of January 1, 2018			
	General	Safety	Total		General	Safety	Total
Employer Normal Cost				Employer Normal Cost			
Basic	12.47%	21.19%	14.03%	Basic	12.79%	21.86%	14.47%
COL	5.24%	9.64%	6.03%	COL	5.45%	10.08%	6.31%
Total	17.71%	30.83%	20.06%	Total	18.24%	31.94%	20.78%
UAL Amortization Cost				UAL Amortization Cost			
Basic	18.06%	36.62%	21.36%	Basic	19.09%	38.71%	22.69%
COL	6.19%	12.63%	7.33%	COL	7.09%	13.90%	8.34%
Total	24.25%	49.25%	28.69%	Total	26.18%	52.61%	31.03%
Total Cost				Total Cost			
Basic	30.53%	57.81%	35.39%	Basic	31.88%	60.57%	37.16%
COL	11.43%	22.27%	13.36%	COL	12.54%	23.98%	14.65%
Total	41.96%	80.08%	48.75%	Total	44.42%	84.55%	51.81%

Rates include the employer share of the administrative expenses.

SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
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APPENDIX F – GENERAL AND SAFETY EMPLOYER CONTRIBUTION RATES

Tier I: 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, 2017				As of January 1, 2018			
	General	Safety	Total		General	Safety	Total
Employer Normal Cost				Employer Normal Cost			
Basic	11.97%	19.73%	13.36%	Basic	12.28%	20.38%	13.78%
COL	5.24%	9.64%	6.03%	COL	5.45%	10.08%	6.31%
Total	17.21%	29.37%	19.39%	Total	17.73%	30.46%	20.09%
UAL Amortization Cost				UAL Amortization Cost			
Basic	18.06%	36.62%	21.36%	Basic	19.09%	38.71%	22.69%
COL	6.19%	12.63%	7.33%	COL	7.09%	13.90%	8.34%
Total	24.25%	49.25%	28.69%	Total	26.18%	52.61%	31.03%
Total Cost				Total Cost			
Basic	30.03%	56.35%	34.72%	Basic	31.37%	59.09%	36.47%
COL	11.43%	22.27%	13.36%	COL	12.54%	23.98%	14.65%
Total	41.46%	78.62%	48.08%	Total	43.91%	83.07%	51.12%

Rates include the employer share of the administrative expenses.

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APPENDIX F – GENERAL AND SAFETY EMPLOYER CONTRIBUTION RATES

Tier I: 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, 2017				As of January 1, 2018			
	General	Safety	Total		General	Safety	Total
Employer Normal Cost				Employer Normal Cost			
Basic	12.47%	21.19%	14.03%	Basic	12.79%	21.86%	14.47%
COL	2.72%	5.02%	3.14%	COL	2.81%	5.32%	3.28%
Total	15.19%	26.21%	17.17%	Total	15.60%	27.18%	17.75%
UAL Amortization Cost				UAL Amortization Cost			
Basic	18.06%	36.62%	21.36%	Basic	19.09%	38.71%	22.69%
COL	6.19%	12.63%	7.33%	COL	7.09%	13.90%	8.34%
Total	24.25%	49.25%	28.69%	Total	26.18%	52.61%	31.03%
Total Cost				Total Cost			
Basic	30.53%	57.81%	35.39%	Basic	31.88%	60.57%	37.16%
COL	8.91%	17.65%	10.47%	COL	9.90%	19.22%	11.62%
Total	39.44%	75.46%	45.86%	Total	41.78%	79.79%	48.78%

Rates include the employer share of the administrative expenses.

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2018**

APPENDIX F – GENERAL AND SAFETY EMPLOYER CONTRIBUTION RATES

Tier I: 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, 2017				As of January 1, 2018			
	General	Safety	Total		General	Safety	Total
Employer Normal Cost				Employer Normal Cost			
Basic	11.97%	19.73%	13.36%	Basic	12.28%	20.38%	13.78%
COL	2.72%	5.02%	3.13%	COL	2.81%	5.32%	3.28%
Total	14.69%	24.75%	16.49%	Total	15.09%	25.70%	17.06%
UAL Amortization Cost				UAL Amortization Cost			
Basic	18.06%	36.62%	21.36%	Basic	19.09%	38.71%	22.69%
COL	6.19%	12.63%	7.33%	COL	7.09%	13.90%	8.34%
Total	24.25%	49.25%	28.69%	Total	26.18%	52.61%	31.03%
Total Cost				Total Cost			
Basic	30.03%	56.35%	34.72%	Basic	31.37%	59.09%	36.47%
COL	8.91%	17.65%	10.46%	COL	9.90%	19.22%	11.62%
Total	38.94%	74.00%	45.18%	Total	41.27%	78.31%	48.09%

Rates include the employer share of the administrative expenses.

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2018**

APPENDIX F – GENERAL AND SAFETY EMPLOYER CONTRIBUTION RATES

Tier II: 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, 2017				As of January 1, 2018			
	General	Safety	Total		General	Safety	Total
Employer Normal Cost				Employer Normal Cost			
Basic	6.79%	10.50%	7.12%	Basic	7.00%	10.64%	7.38%
COL	2.11%	3.83%	2.27%	COL	2.21%	3.97%	2.39%
Total	8.90%	14.33%	9.39%	Total	9.21%	14.61%	9.77%
UAL Amortization Cost				UAL Amortization Cost			
Basic	18.06%	36.62%	19.67%	Basic	19.09%	38.71%	21.06%
COL	6.19%	12.63%	6.74%	COL	7.09%	13.90%	7.77%
Total	24.25%	49.25%	26.41%	Total	26.18%	52.61%	28.83%
Total Cost				Total Cost			
Basic	24.85%	47.12%	26.79%	Basic	26.09%	49.35%	28.44%
COL	8.30%	16.46%	9.01%	COL	9.30%	17.87%	10.16%
Total	33.15%	63.58%	35.80%	Total	35.39%	67.22%	38.60%

Rates include the employer share of the administrative expenses.

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2018**

APPENDIX F – GENERAL AND SAFETY EMPLOYER CONTRIBUTION RATES

Total Normal Cost Rates for General and Safety

As of January 1, 2017				As of January 1, 2018			
	General	Safety	Total		General	Safety	Total
Total Normal Cost				Total Normal Cost			
Tier I	21.30%	35.27%	23.80%	Tier I	21.92%	36.44%	24.61%
Tier II	17.80%	28.66%	18.78%	Tier II	18.42%	29.22%	19.54%

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

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2018**

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	1.78%	2.67%	1.17%	1.76%
17	1.78%	2.67%	1.17%	1.76%
18	1.78%	2.67%	1.17%	1.76%
19	1.78%	2.67%	1.17%	1.76%
20	1.78%	2.67%	1.17%	1.76%
21	1.83%	2.74%	1.21%	1.82%
22	1.87%	2.81%	1.25%	1.88%
23	1.92%	2.88%	1.29%	1.94%
24	1.97%	2.96%	1.34%	2.01%
25	2.01%	3.02%	1.38%	2.07%
26	2.05%	3.08%	1.42%	2.13%
27	2.09%	3.14%	1.45%	2.18%
28	2.14%	3.21%	1.49%	2.23%
29	2.18%	3.27%	1.52%	2.28%
30	2.23%	3.34%	1.56%	2.34%
31	2.27%	3.41%	1.61%	2.41%
32	2.32%	3.48%	1.64%	2.46%
33	2.37%	3.55%	1.68%	2.52%
34	2.41%	3.62%	1.72%	2.58%
35	2.46%	3.69%	1.77%	2.65%
36	2.51%	3.77%	1.81%	2.72%
37	2.56%	3.84%	1.87%	2.80%
38	2.61%	3.92%	1.92%	2.88%
39	2.67%	4.00%	1.97%	2.96%
40	2.73%	4.09%	2.04%	3.06%
41	2.78%	4.17%	2.09%	3.14%
42	2.84%	4.26%	2.15%	3.23%
43	2.90%	4.35%	2.21%	3.31%
44	2.97%	4.45%	2.27%	3.40%
45	3.03%	4.55%	2.33%	3.49%
46	3.11%	4.66%	2.40%	3.60%
47	3.17%	4.76%	2.43%	3.64%
48	3.24%	4.86%	2.45%	3.67%
49	3.30%	4.95%	2.47%	3.70%
50	3.35%	5.03%	2.48%	3.72%
51	3.39%	5.08%	2.49%	3.73%
52	3.40%	5.10%	2.50%	3.75%
53	3.39%	5.08%	2.45%	3.68%
54+	3.35%	5.03%	2.42%	3.63%

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, 2018**

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	2.03%	3.04%	1.18%	1.77%
17	2.03%	3.04%	1.18%	1.77%
18	2.03%	3.04%	1.18%	1.77%
19	2.03%	3.04%	1.18%	1.77%
20	2.03%	3.04%	1.18%	1.77%
21	2.08%	3.12%	1.22%	1.83%
22	2.13%	3.20%	1.25%	1.88%
23	2.19%	3.28%	1.29%	1.94%
24	2.25%	3.37%	1.34%	2.01%
25	2.29%	3.44%	1.38%	2.07%
26	2.34%	3.51%	1.42%	2.13%
27	2.39%	3.58%	1.45%	2.18%
28	2.44%	3.66%	1.49%	2.23%
29	2.49%	3.73%	1.52%	2.28%
30	2.54%	3.81%	1.56%	2.34%
31	2.59%	3.89%	1.61%	2.41%
32	2.65%	3.97%	1.64%	2.46%
33	2.70%	4.05%	1.69%	2.53%
34	2.75%	4.13%	1.73%	2.59%
35	2.81%	4.21%	1.77%	2.65%
36	2.87%	4.30%	1.81%	2.72%
37	2.92%	4.38%	1.87%	2.80%
38	2.98%	4.47%	1.92%	2.88%
39	3.04%	4.56%	1.98%	2.97%
40	3.11%	4.66%	2.04%	3.06%
41	3.17%	4.75%	2.09%	3.14%
42	3.24%	4.86%	2.15%	3.23%
43	3.31%	4.96%	2.21%	3.32%
44	3.38%	5.07%	2.27%	3.40%
45	3.46%	5.19%	2.33%	3.50%
46	3.54%	5.31%	2.40%	3.60%
47	3.62%	5.43%	2.43%	3.64%
48	3.69%	5.54%	2.45%	3.67%
49	3.76%	5.64%	2.47%	3.70%
50	3.82%	5.73%	2.49%	3.73%
51	3.86%	5.79%	2.49%	3.73%
52	3.87%	5.81%	2.50%	3.75%
53	3.86%	5.79%	2.46%	3.69%
54+	3.82%	5.73%	2.42%	3.63%

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, 2018**

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	2.77%	4.16%	3.01%	4.52%
17	2.77%	4.16%	3.01%	4.52%
18	2.77%	4.16%	3.01%	4.52%
19	2.77%	4.16%	3.01%	4.52%
20	2.77%	4.16%	3.01%	4.52%
21	2.82%	4.23%	3.06%	4.59%
22	2.86%	4.29%	3.11%	4.66%
23	2.91%	4.36%	3.15%	4.72%
24	2.95%	4.43%	3.19%	4.79%
25	3.00%	4.50%	3.24%	4.86%
26	3.05%	4.57%	3.29%	4.93%
27	3.09%	4.64%	3.33%	4.99%
28	3.14%	4.71%	3.37%	5.06%
29	3.19%	4.79%	3.41%	5.12%
30	3.24%	4.86%	3.45%	5.18%
31	3.29%	4.94%	3.49%	5.23%
32	3.34%	5.01%	3.53%	5.29%
33	3.39%	5.09%	3.58%	5.37%
34	3.45%	5.18%	3.59%	5.39%
35	3.51%	5.26%	3.61%	5.42%
36	3.57%	5.35%	3.60%	5.40%
37	3.63%	5.44%	3.63%	5.44%
38	3.69%	5.53%	3.66%	5.49%
39	3.75%	5.63%	3.70%	5.55%
40	3.82%	5.73%	3.74%	5.61%
41	3.89%	5.84%	3.69%	5.54%
42	3.97%	5.96%	3.73%	5.59%
43	4.07%	6.10%	3.73%	5.60%
44	4.13%	6.19%	3.74%	5.61%
45	4.17%	6.26%	3.77%	5.65%
46	4.19%	6.29%	3.82%	5.73%
47	4.19%	6.28%	3.86%	5.79%
48	4.15%	6.23%	3.90%	5.85%
49+	4.09%	6.14%	3.93%	5.90%

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, 2018**

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	3.69%	5.53%	3.01%	4.52%
17	3.69%	5.53%	3.01%	4.52%
18	3.69%	5.53%	3.01%	4.52%
19	3.69%	5.53%	3.01%	4.52%
20	3.69%	5.53%	3.01%	4.52%
21	3.75%	5.63%	3.06%	4.59%
22	3.81%	5.71%	3.11%	4.66%
23	3.87%	5.80%	3.15%	4.73%
24	3.93%	5.89%	3.19%	4.79%
25	3.99%	5.99%	3.25%	4.87%
26	4.05%	6.08%	3.29%	4.93%
27	4.11%	6.17%	3.33%	5.00%
28	4.17%	6.26%	3.37%	5.06%
29	4.25%	6.37%	3.42%	5.13%
30	4.31%	6.46%	3.45%	5.18%
31	4.38%	6.57%	3.49%	5.24%
32	4.44%	6.66%	3.53%	5.30%
33	4.51%	6.77%	3.58%	5.37%
34	4.59%	6.89%	3.60%	5.40%
35	4.67%	7.00%	3.61%	5.42%
36	4.75%	7.12%	3.60%	5.40%
37	4.83%	7.24%	3.63%	5.44%
38	4.90%	7.35%	3.66%	5.49%
39	4.99%	7.49%	3.70%	5.55%
40	5.08%	7.62%	3.75%	5.62%
41	5.18%	7.77%	3.70%	5.55%
42	5.29%	7.93%	3.73%	5.59%
43	5.41%	8.11%	3.73%	5.60%
44	5.49%	8.23%	3.75%	5.62%
45	5.55%	8.33%	3.77%	5.65%
46	5.58%	8.37%	3.82%	5.73%
47	5.57%	8.35%	3.86%	5.79%
48	5.53%	8.29%	3.91%	5.86%
49+	5.45%	8.17%	3.93%	5.90%

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