



San Joaquin County Employees' Retirement Association

**Actuarial Valuation
as of January 1, 2017**

Produced by Cheiron

August 2017

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August 9, 2017

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, 2017. 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



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



Anne Harper, FSA, MAAA, EA
Consulting Actuary

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2017**

FOREWORD

Cheiron has performed the actuarial valuation of the San Joaquin County Employees' Retirement Association as of January 1, 2017. 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
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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 2018.

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, 2016 provided to SJCERA in May 2017.

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

A. Valuation Basis

This valuation determines the employer contributions for the Plan Year 2018.

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 in 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 17 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 last year, covering experience from January 1, 2013 through December 31, 2015. There have been no changes in assumptions or methods since the prior valuation.

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ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2017**

SECTION I – EXECUTIVE SUMMARY

B. Key Findings of this Valuation

The key results of the January 1, 2017 actuarial valuation are as follows:

- The actuarially determined employer contribution rate increased from 42.99% of payroll last year to 43.21% of payroll for 2017.
- The System's funded ratio, the ratio of assets over actuarial liability, decreased from 65.0% last year to 64.6% as of January 1, 2017 on an Actuarial Value of Assets (AVA) basis. It slightly increased from 60.1% to 60.3% 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 \$1,401,917,266 to \$1,501,242,285 as of January 1, 2017.
- During the year ending December 31, 2016, the return on Plan assets was 6.27% on a market value basis, as compared to the 7.40% assumption. This resulted in a market value loss on investments of \$27,128,991. 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 5.34% on the smoothed value of assets, an actuarial asset loss of \$53,460,728 for the year.
- The Actuarial Value of Assets of \$2,733,851,661 is currently 107% of market value at \$2,554,802,124. Since actuarial assets are above market assets, there are unrecognized investment losses (approximately \$180 million) that will be reflected in the smoothed value in future years.
- The System experienced a loss on the actuarial liability of \$45,033,413 primarily due to higher than expected salary increases for General members. Combining the liability and asset losses, as well as contributions being lower than expected, the System experienced a total loss of \$101,614,714.

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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, 2016	January 1, 2017	% Change
<u>Participant Counts</u>			
Active Participants	5,924	6,102	3.00%
Participants Receiving a Benefit	5,435	5,628	3.55%
Terminated Vested Participants	899	913	1.56%
Terminated Non-Vested Participants	<u>557</u>	<u>596</u>	7.00%
Total	12,815	13,239	3.31%
Annual Pay of Active Members	\$ 407,188,125	\$ 440,796,718	8.25%
Calendar Year Projected Pay	\$ 413,551,615	\$ 447,685,438	8.25%
<u>Assets and Liabilities</u>			
Actuarial Liability (AL)	\$ 4,006,390,050	\$ 4,235,093,946	5.71%
Actuarial Value of Assets (AVA)	<u>2,604,472,784</u>	<u>2,733,851,661</u>	4.97%
Unfunded Actuarial Liability (UAL)	\$ 1,401,917,266	\$ 1,501,242,285	7.08%
Funded Ratio (AVA)	65.0%	64.6%	-0.4%
Funded Ratio (MVA)	60.1%	60.3%	0.2%
Inactive Funded Ratio	61.7%	62.4%	0.7%
<u>Contributions as a Percentage of Payroll</u>			
Normal Cost Rate	15.52%	14.84%	-0.68%
Unfunded Actuarial Liability Rate	26.56%	27.51%	0.95%
Administrative Expense	<u>0.91%</u>	<u>0.86%</u>	-0.05%
Total Contribution Rate	42.99%	43.21%	0.22%

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 62.4% 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 has been slightly below the Inactive Funded Ratio for the last two valuations.

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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, 2016	\$ 124,969,696	37.15%	\$ 47,975,040	72.74%	\$ 172,944,736	42.99%
Change in Cost Due to:						
Expected Change (Pay Growth)	3,936,545	0.00%	1,511,214	0.00%	5,447,759	0.00%
Asset Experience	3,250,590	0.91%	1,216,536	1.75%	4,467,126	1.05%
Demographic Experience	1,246,326	0.34%	488,963	0.70%	1,735,289	0.26%
Salary Experience	6,369,615	1.04%	(746,735)	(0.68%)	5,622,880	0.76%
Payroll Amortization	0	(1.52%)	0	0.68%	0	(1.40%)
PEPRA Transition	(1,326,975)	(0.38%)	(513,275)	(0.80%)	(1,840,250)	(0.45%)
Total Cost as of January 1, 2017	\$ 138,445,797	37.54%	\$ 49,931,743	74.39%	\$ 188,377,540	43.21%

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 slightly worse overall than predicted by the actuarial assumptions in aggregate, causing a 0.26% increase in employer cost, with mortality gains somewhat offsetting the impact of higher than expected COLA increases for members in pay status.

- Overall pay increases for returning members were above expectations.

Increases in pay among active General members exceeded expectations while Safety members during 2016 were below those anticipated by the actuarial assumptions. In total, the actuarial liabilities increased more than expected, resulting in an actuarial loss, and increasing the overall employer contribution rate by 0.76% of payroll. In addition to the liability losses, the higher pay increases resulted in additional normal cost contributions, which combined to increase the overall cost by approximately \$5.6 million.

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

The payroll used to amortize the unfunded liability for General members was higher than expected due to an expansion in the General member workforce and higher than expected salary increases, which decreased the General employer contribution rate by an additional 1.52% of pay. While the Safety workforce did increase from 793 to 811 active members, the lower than expected Safety projected payroll resulted in an increase in the contribution rate by over 0.68% of pay.

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The aggregate impact from the change in total projected payroll was a reduction in the contribution rate of 1.40% 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 2016, there were 744 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 0.38% of payroll for General members and by 0.80% of pay for Safety members. The overall contribution rate dropped by 0.45% of pay.

Overall, the combined demographic and salary experience resulted in an increase in the dollar amount of the actuarial cost, but a net reduction in the contribution rate by about 0.83% of pay.

- Asset experience produced an investment loss on a market and smoothed basis.

The assets of the Plan returned 6.27% on a market basis, lower than the assumed rate of 7.40%, resulting in a loss of approximately \$27 million for 2016. Under the actuarial asset smoothing policy, 20% of this loss is recognized in the current year, in addition to 20% of the gains and losses from each of the prior three years. The overall return on the smoothed assets was 5.34%, increasing the overall contribution rate by 1.05% of pay.

The contribution rate increased more for Safety members (by 1.75% of pay) than for General members (0.91% 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.

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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, 2016			
	Total	General	Safety
Projected Active Member Payroll	\$ 447,685,438	\$ 379,035,168	\$ 68,650,270
Assets (Market Value Net of Non-Valuation Reserves)	\$ 2,553,886,731	\$ 1,858,384,590	\$ 695,502,141
Ratio of Assets to Payroll	5.70	4.90	10.13
Ratio with 100% Funding	9.46	8.14	16.77

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 nearly 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 over nine times payroll, perhaps higher depending on the Plan's future demographic makeup.

To appreciate the impact of the ratio of assets to payroll on 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 7.40%, there is an actuarial loss of 17.40% of plan assets. Based on the current ratio of assets to payroll (570%), that means the loss in assets is about 99% of active payroll (570% of the 17.40% 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 in the vicinity of 9.0% 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 (946%), the asset loss would be about 165% of active payroll (946% of the 17.40% 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 14.9% of payroll, 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 490% for the General members and 1013% for Safety members. The 10% loss described above would translate to a loss of 85% of General pay and 176% of Safety pay, which would require amortization payment increases of 7.7% and 15.9% 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.

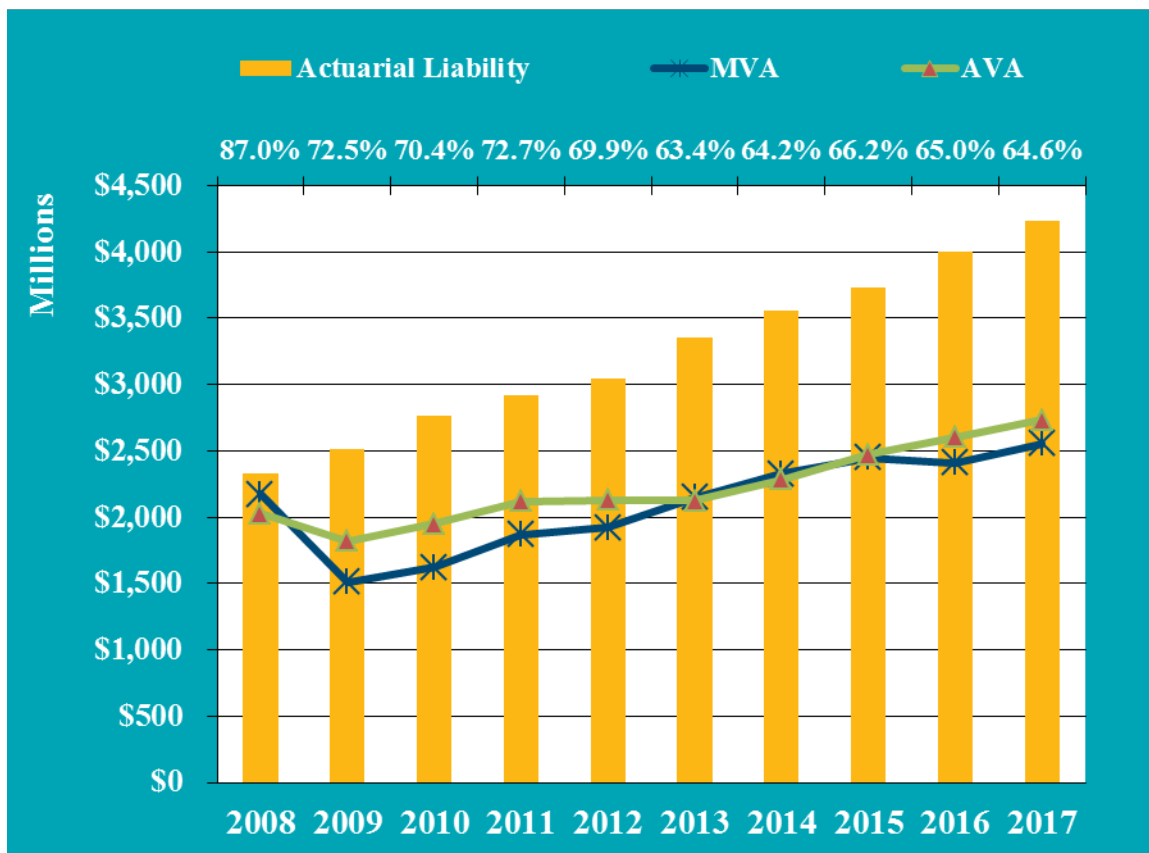
SECTION I – EXECUTIVE SUMMARY

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).

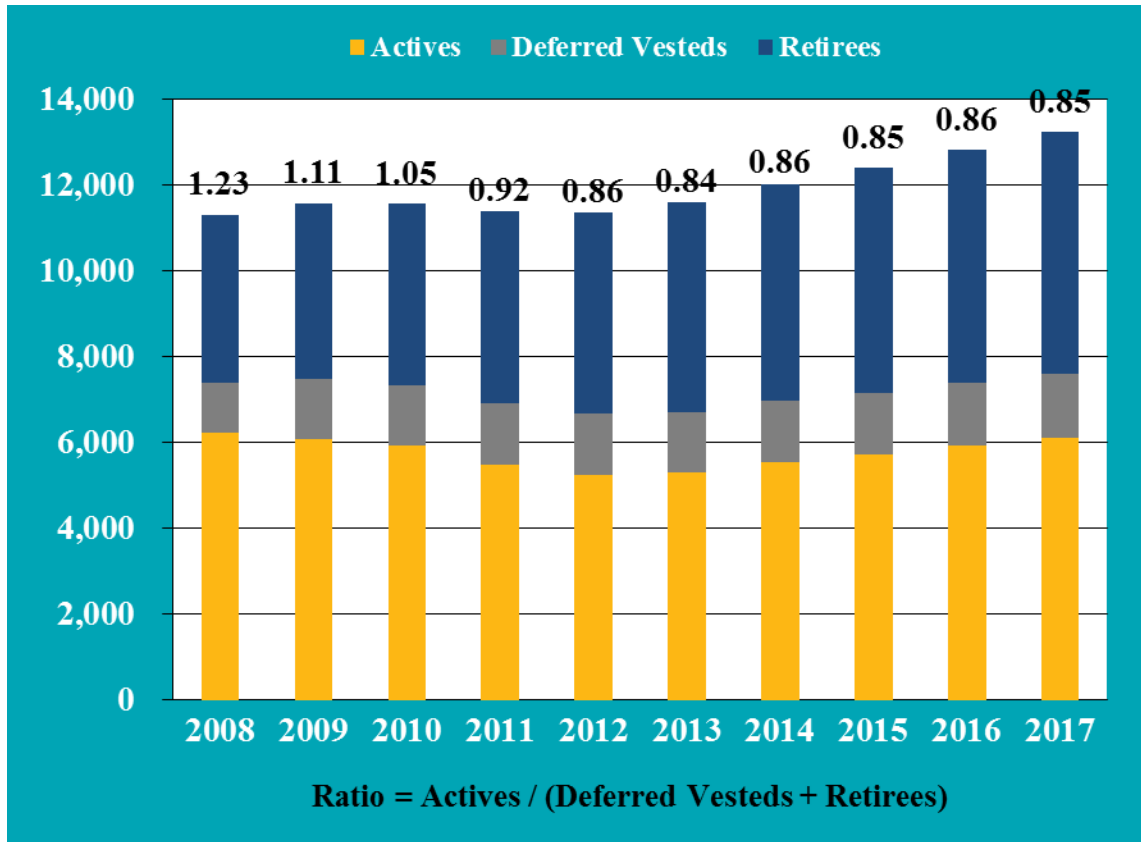


The funded ratio has declined from 72.7% in 2011 to 64.6% in 2017. The extraordinary asset loss of 2008 adversely affected the funded ratio from 2011 to 2013, as losses were recognized with asset smoothing. In addition, for the January 1, 2013 and January 1, 2016 valuations assumption changes were made that reflected lower expected future returns on assets and improved mortality, increasing the actuarial liability, and therefore decreasing the funded ratio.

SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2017

SECTION I – EXECUTIVE SUMMARY

Participant Trends



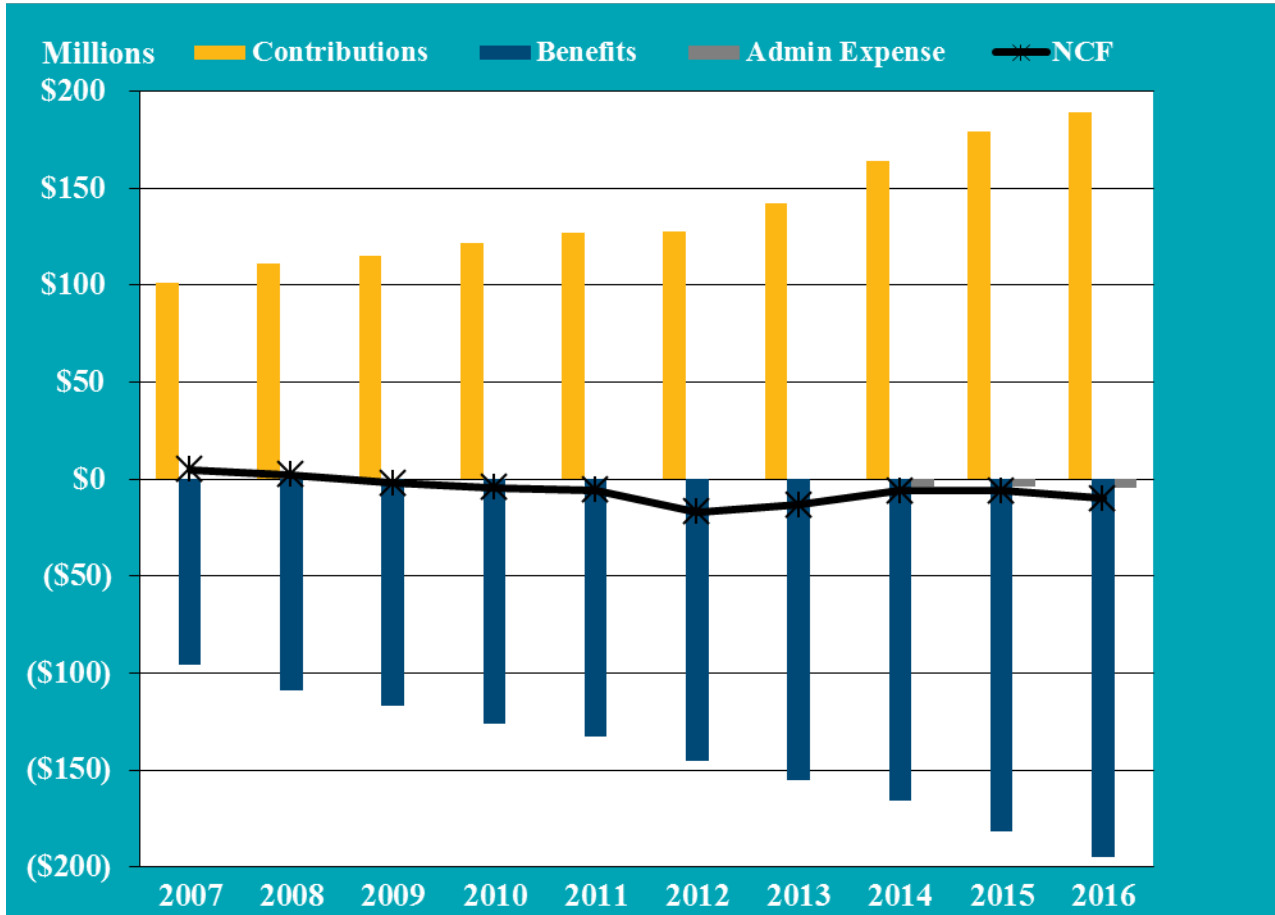
The chart above provides a measure for the maturity in the Plan by comparing the ratio of active members to inactive members (retirees and deferred vested participants). These ratios are given at the top of each bar. As the Plan matures, this ratio is expected to decrease as more employees leave the 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 2008 to 2013, but has remained fairly stable since, as the active workforce has increased at approximately the same rate as the inactive population.

Cash Flows

The chart on the next page shows the Plan's cash flow (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.

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The contributions, benefit payments, administrative expenses and the Plan’s net cash flow (NCF) are represented by the chart above. The NCF - shown as the black line in the chart - has been slightly negative for the last eight years, with a -\$9.8 million net cash flow this year (about 0.4% of total plan assets). A significant increase in future negative net cash flow could magnify the losses during a market decline hindering the Plan in its ability to absorb market fluctuations. The implications of a plan in 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.

D. Future Expected Financial Trends

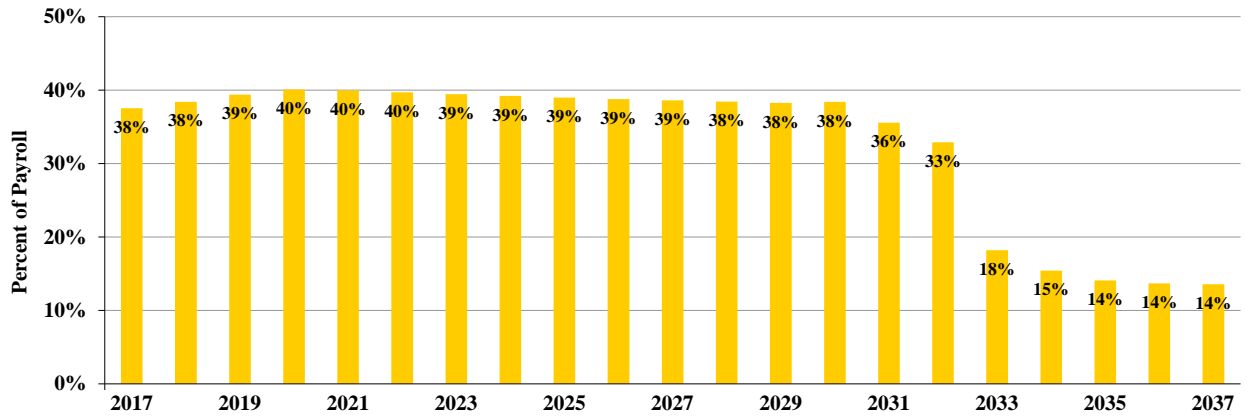
The analysis of projected financial trends is perhaps the most important component of this valuation. In this Section, we present our assessment of the implications of the January 1, 2017 valuation results in terms of cost and benefit security (assets over liabilities). All the projections in this section are based on the current interest rate assumption of 7.40%. We have assumed a level active workforce population and future salary increases of 3.15% per year.

The following graphs show the expected employer contribution rates for General and Safety members based on actually achieving the 7.40% assumption each year for the next 20 years.

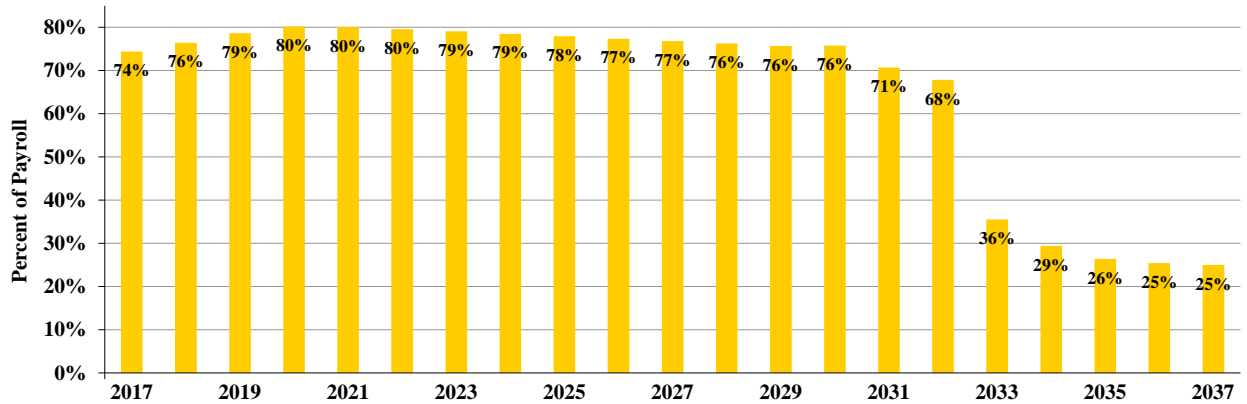
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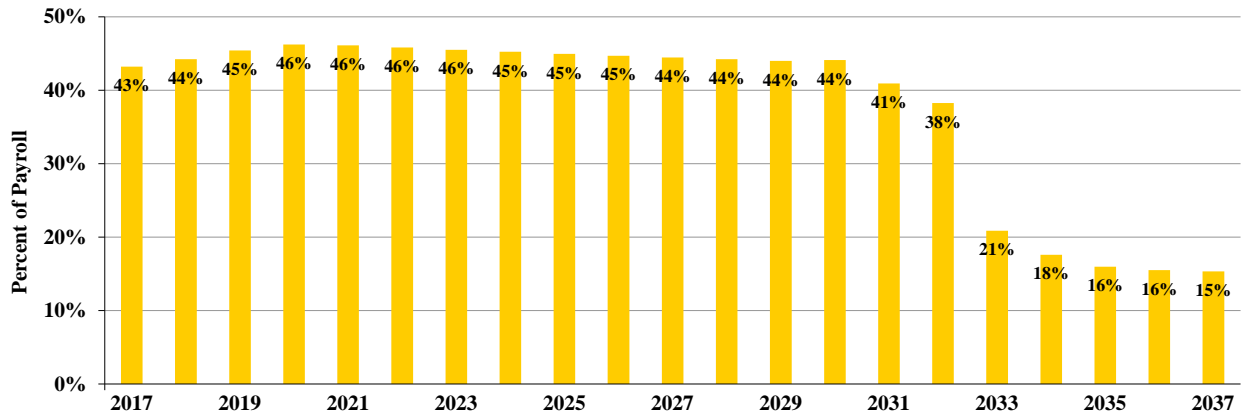
Projection of General Employer Contributions, 7.40% return each year



Projection of Safety Employer Contributions, 7.40% return each year



Projection of Total Employer Contributions, 7.40% return each year



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

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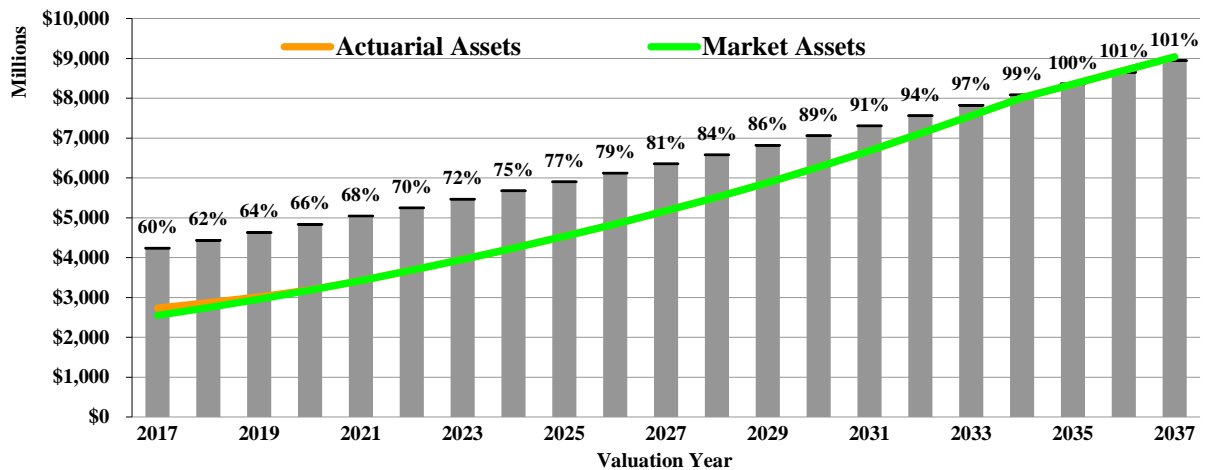
hires. The dollar contribution will be approximately \$138 million for General and \$50 million for Safety in 2017, growing to around \$177 million for General and \$64 million for Safety in five years, then remaining flat as a percent of pay until 2033 when the 2014 UAL is paid off.

Note that the graphs above do not forecast any actuarial gains or losses. Even relatively modest losses relative to the 7.4% 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 7.40% assumption each year during the projection period.

Projection of Assets and Liabilities, 7.40% return each year



The graph shows that the projected funded status on a market value basis increases over the next 18 years to 100%, assuming the actuarial assumption is achieved. However, as above, it is the actual return on System assets that will determine the future funding status and contribution rates to the Fund.

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, 2015 and December 31, 2016,
- 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, 2017.

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, 2015 and December 31, 2016.

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SECTION II – ASSETS

TABLE II-1		
Statement of Assets at Market Value		
December 31,		
Assets:	2015	2016
Cash and Cash Equivalents	\$ 79,806,039	\$ 83,994,149
Cash Collateral-Securities Lending	<u>147,105,961</u>	<u>141,349,290</u>
Total Cash and Cash Equivalents	226,912,000	225,343,439
Receivables:		
Investment Income Receivables	3,103,370	3,753,205
Contributions Receivable	3,041,118	4,190,176
Securities Sold, Not Received - Domestic	2,720,987	2,517,855
Other Investment Income Receivable	1,142	869
Miscellaneous Receivables	<u>63,074</u>	<u>62,267</u>
Total Receivables	8,929,691	10,524,372
Investments, at Market Value:		
Fixed Income	534,574,588	369,643,380
U.S. and Non U.S. Equities	825,704,397	755,047,503
Global Equity	0	0
Real Estate	265,514,852	310,352,364
Alternative Investments	702,471,159	1,028,772,624
Global Opportunistic Strategy	0	0
Risk Parity	<u>0</u>	<u>0</u>
Total Investments	2,328,264,996	2,463,815,871
Other Assets:		
Prepaid Expenses	112,136	127,142
Equipment and Fixtures, Net	<u>192,519</u>	<u>115,488</u>
Total Assets	2,564,411,342	2,699,926,312
Liabilities:		
Securities Lending-Cash Collateral	147,105,961	141,349,290
Securities Purchased, Not Paid	2,739,348	2,542,373
Accrued Expenses and Other Payables	1,306,553	1,169,645
Security Lending Interest and Other Expense	16,933	62,880
Total Liabilities	<u>151,168,795</u>	<u>145,124,188</u>
Market Value of Assets	\$ 2,413,242,547	\$ 2,554,802,124

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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 2015 and 2016.

TABLE II-2		
Changes in Market Values		
<u>Additions</u>	<u>2015</u>	<u>2016</u>
Contributions		
Employer's Contribution	150,371,556	159,122,523
Members' Contributions	29,026,901	30,117,408
Total Contributions	<u>179,398,457</u>	<u>189,239,931</u>
Net Investment Income		
Net Appreciation/(Depreciation) in		
Fair Value of Investments	(81,873,013)	119,638,107
Interest	41,500,345	21,433,543
Dividends	4,613,426	18,476,288
Real Estate Income, net	8,039,770	9,870,590
Investment Expenses	(20,220,393)	(19,015,255)
Miscellaneous Investment Income	<u>6,835</u>	<u>8,057</u>
Net Investment Income, Before Securities Lending Income	<u>(47,933,030)</u>	<u>150,411,330</u>
Securities Lending Income		
Earnings	527,763	1,149,690
Rebates	116,314	(323,724)
Fees	<u>(160,288)</u>	<u>(206,122)</u>
Net Securities Lending Income	<u>483,789</u>	<u>619,844</u>
Net Investment Income	<u>(47,449,241)</u>	<u>151,031,174</u>
Miscellaneous Income	<u>109,490</u>	<u>83,614</u>
Total Additions	132,058,706	340,354,719

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2017**

SECTION II – ASSETS

TABLE II-2		
Changes in Market Values (Continued)		
<u>Deductions</u>	<u>2015</u>	<u>2016</u>
Benefit payments	179,023,164	192,113,542
Death Benefits	561,971	618,769
Refunds of Members' Contributions	<u>1,883,777</u>	<u>1,986,866</u>
Total Benefit Payments	181,468,912	194,719,177
Administrative & Other Expenses		
General Administrative Expenses	3,710,047	3,830,298
Actuary Fees	151,893	251,775
Fund Legal Fees	<u>213,805</u>	<u>287,671</u>
Total Administrative & Other Expenses	4,075,745	4,369,744
Transfer Between Plans	<u>(378,969)</u>	<u>(293,779)</u>
Total Deductions	185,165,688	198,795,142
Net increase (Decrease)	(53,106,982)	141,559,577
Net Assets Held in Trust for Pension Benefits:		
Beginning of Year	<u>2,466,349,529</u>	<u>2,413,242,547</u>
End of Year	<u><u>2,413,242,547</u></u>	<u><u>2,554,802,124</u></u>
Approximate Return	-1.92%	6.27%

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2017**

SECTION II – ASSETS

Actuarial Value of Assets (AVA)

The actuarial value of assets represents a “smoothed” value developed by the actuary to reduce the volatile results, 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 (beginning in 2013), 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, 2017									
	(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
2013	142,184,201	155,401,819	4,134,716	0	161,392,211	198,449,237	37,057,026	20%	7,411,405
2014	164,054,041	165,870,971	4,042,986	19,968,779	176,895,311	110,728,303	(66,167,008)	40%	(26,466,803)
2015	179,398,457	181,468,912	4,075,745	378,969	184,778,322	(47,339,751)	(232,118,073)	60%	(139,270,844)
2016	189,239,931	194,719,177	4,369,744	293,779	178,243,779	151,114,788	(27,128,991)	80%	(21,703,193)
1. Total Unrecognized Dollars									(180,029,435)
2. Market Value of Assets as of December 31, 2016									2,554,802,124
3. Preliminary Actuarial Value of Assets as of December 31, 2016: [(2) - (1)]									2,734,831,559
4. Corridor Limits									
a. 80% of Net Market Value									2,043,841,699
b. 120% of Net Market Value									3,065,762,549
5. Actuarial Value of Assets after Corridor									2,734,831,559
6. Ratio of Actuarial Value to Market Value [(5) ÷ (2)]									107.05%
7. Market Stabilization Designation [(2) – (5)]									(180,029,435)
8. Special (Non Valuation) Reserves:									
Class Action Settlement – Post 4/1/1982									915,393
Contingency									0
Undistributed Earnings Reserve									0
Total Special Reserves									915,393
9. Pension Reserves at Actuarial Value (Valuation Assets): [(5) - (8)*(6)]									\$2,733,851,661

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2017**

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 valuations.

TABLE II-4 Asset Gain/(Loss)		
	Market Value	Actuarial Value
January 1, 2016 value	\$ 2,413,242,547	\$ 2,604,472,784
County Contributions	159,122,523	159,122,523
Employee Contributions	30,117,408	30,117,408
Healthcare Transfer	293,779	293,779
Benefit Payments	(194,719,177)	(194,719,177)
Administrative Expenses	(4,369,744)	(4,369,744)
Expected Investment Earnings (7.40%)	<u>178,243,779</u>	<u>192,394,816</u>
Expected Value December 31, 2016	\$ 2,581,931,115	\$ 2,787,312,389
Investment Gain / (Loss)	<u>(27,128,991)</u>	<u>(53,460,728)</u>
January 1, 2017 value	2,554,802,124	\$ 2,733,851,661
Return	6.27%	5.34%

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
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2017**

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 1998.

TABLE II-5 Historical Asset Returns			
Year Ended December 31	Return on Market Value	Return on Actuarial Value	Increase in CPI¹
1998	9.9%	13.3%	1.6%
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%
Compounded 15 Year Average	4.8%	4.8%	2.1%
Compounded 10 Year Average	2.4%	3.7%	1.7%
Compounded 5 Year Average	5.9%	5.3%	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, 2017**

SECTION II – ASSETS

Reserve Balances

The following table shows the Post-1982 Settlement Reserve balances as of January 1, 2017.

TABLE II-6				
Post-1982 Settlement Reserve				
Valuation Date	Number of	Benefits Payable	Reserve	Estimated Years
January 1	Recipients			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

As of January 1, 2017, the total projected liability associated with paying the Post-82 Settlement allowances for the lifetime of the members and beneficiaries is estimated to be \$21,910,124. Payments from the Post-82 Settlement reserve have been suspended, with last benefits payable in March of 2017.

SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2017

SECTION III – LIABILITIES

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

- **Disclosure** of System liabilities at January 1, 2016 and January 1, 2017
- 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, 2016	January 1, 2017
<u>Present Value of Future Benefits</u>		
Active Participant Benefits	\$ 2,251,826,857	\$ 2,353,911,041
Retiree and Inactive Benefits	<u>2,470,481,038</u>	<u>2,643,733,644</u>
Present Value of Future Benefits (PVB)	\$ 4,722,307,895	\$ 4,997,644,685
<u>Actuarial Liability</u>		
Present Value of Future Benefits (PVB)	\$ 4,722,307,895	\$ 4,997,644,685
Present Value of Future Normal Costs (PVFNC)	<u>715,917,845</u>	<u>762,550,739</u>
Actuarial Liability (AL = PVB – PVFNC)	\$ 4,006,390,050	\$ 4,235,093,946
Actuarial Value of Assets (AVA)	<u>2,604,472,784</u>	<u>2,733,851,661</u>
Net (Surplus)/Unfunded (AL – AVA)	\$ 1,401,917,266	\$ 1,501,242,285

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2017**

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, 2016	\$ 4,006,390,050
Actuarial Liability at January 1, 2017	\$ 4,235,093,946
Liability Increase (Decrease)	228,703,896
Change due to:	
Accrual of Benefits	\$ 82,861,113
Actual Benefit Payments	(194,719,177)
Interest	295,528,547
Assumption Changes	0
Actuarial Liability (Gain)/Loss	45,033,413

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2017**

SECTION III – LIABILITIES

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

1. Unfunded Actuarial Liability at Start of Year (not less than zero)	\$ 1,401,917,266
2. Employer Normal Cost at Middle of Year	82,861,113
3. Administrative Expense	4,369,744
4. Interest on 1. 2. and 3. to End of Year	110,032,395
5. Contributions for Prior Year	189,239,931
6. Healthcare Fund Transfer	293,779
7. Interest on 5. and 6. to End of Year	6,898,664
8. Assumption Changes	0
9. Expected Unfunded Actuarial Liability at End of Year [1. + 2. + 3. + 4. – 5. – 6. + 7. + 8.]	\$ 1,402,748,144
10. Actual Unfunded Actuarial Liability at End of Year (not less than zero)	1,501,242,285
11. Unfunded Actuarial Liability Gain / (Loss) [9. – 10.]	\$ (98,494,141)
12. Actuarial Liability Gain / (Loss)	\$ (45,033,413)
13. Actuarial Asset Gain / (Loss) [11. – 12.]	\$ (53,460,728)

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2017**

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. Typically, the actuarial process will use a funding technique that will result in a pattern of contributions that are both stable and predictable.

For this 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 17 years as of January 1, 2017. The amortization period for each unfunded actuarial liability layer will decrease each year.

The administrative expenses are assumed to be \$4,497,664 per year, increasing with the CPI assumption each valuation.

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, 2017**

SECTION IV – CONTRIBUTIONS

TABLE IV-1		
Development of Employer Contribution Amount		
	January 1, 2017	
		% of pay
1. Normal Cost at Middle of Year	\$ 61,355,783	14.84%
2. Amortization of Unfunded Liability		
a. Actuarial Liability	\$ 4,235,093,946	
b. Actuarial Value of Assets	\$ <u>2,733,851,661</u>	
c. Unfunded Liability (a) – (b)	\$ 1,501,242,285	
d. Amortization of Unfunded Liability	\$ 123,173,296	27.51%
3. Administrative Expense	\$ 3,848,461	0.86%
4. Annual Required Contribution (1c) + (2d) + (3)	\$ 188,377,540	43.21%

TABLE IV-2		
Employer Contribution Rate		
	January 1, 2016	January 1, 2017
Contributions as a Percentage of Payroll		
Gross Entry Age Normal Cost Rate	22.45%	21.99%
Employee Contribution Rate	<u>6.93%</u>	<u>7.15%</u>
Employer Entry Age Normal Cost Rate	15.52%	14.84%
Employer Normal Cost Rate	15.52%	14.84%
Administrative Expense	0.91%	0.86%
Amortization Payment	<u>26.56%</u>	<u>27.51%</u>
Employer Contribution Rate	42.99%	43.21%
Annual Required Contribution (Employer)	\$ 172,944,736	\$ 188,377,540

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

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2017**

SECTION IV – CONTRIBUTIONS

	TABLE IV-3			
	Employer Contribution Rate			
	General Tier I January 1, 2017	General Tier II January 1, 2017	Safety Tier I January 1, 2017	Safety Tier II January 1, 2017
Contributions as a Percentage of Payroll				
Gross Entry Age Normal Cost Rate	20.85%	17.43%	34.54%	28.07%
Employee Contribution Rate	<u>6.22%</u>	<u>8.72%</u>	<u>7.21%</u>	<u>14.03%</u>
Employer Entry Age Normal Cost Rate	14.63%	8.71%	27.33%	14.04%
Employer Normal Cost Rate	14.63%	8.71%	27.33%	14.04%
Administrative Expense	0.86%	0.86%	0.86%	0.86%
Amortization Payment	<u>23.76%</u>	<u>23.76%</u>	<u>48.25%</u>	<u>48.25%</u>
Employer Contribution Rate	39.25%	33.33%	76.44%	63.15%
Annual Required Contribution (Employer)	\$ 102,791,588	\$ 35,654,209	\$ 43,464,849	\$ 6,466,893

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

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2017**

SECTION IV – CONTRIBUTIONS

**TABLE IV-4
Development of Amortization Payment
For Fiscal Year 2017**

Type of Base	Date Established	Initial Amount	Initial Amortization Years	1/1/2017 Outstanding Balance	Remaining Amortization Years	Amortization Amount
Charges/(Credits)						
1. 2008 Extraordinary Actuarial Loss	1/1/2009	\$ 424,264,899	30	\$ 464,594,398	22	\$ 32,367,994
2. Remaining 1/1/2014 UAL	1/1/2014	820,499,756	19	801,516,115	16	69,073,416
3. 1/1/2015 Gain	1/1/2015	(16,438,883)	15	(15,738,697)	13	(1,580,496)
4. 1/1/2016 Loss	1/1/2016	52,425,827	15	51,400,600	14	4,881,833
5. 1/1/2016 Assumption Changes	1/1/2016	91,855,247	15	90,058,946	14	8,553,457
6. 1/1/2017 Loss ¹	1/1/2017	109,410,922	15	109,410,922	15	9,877,092
				\$ 1,501,242,285	17 ²	\$ 123,173,296

¹ The January 1, 2017 loss shown in Table IV-4 does not match the UAL loss shown in table III-3, as the loss in Table IV-4 includes the impact of contributions being less than expected during 2016.

² 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 17 years.

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2017**

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 7.5% whereas liabilities for 2016 and 2017 were discounted at the assumed rate of 7.4%.

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)
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%
2005	140,800,000	805,878,000	822,829,000	1,614,979,000	100%	100%	81%

¹ Includes terminated vested members.

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2017**

APPENDIX A – MEMBERSHIP INFORMATION

The data for this valuation was provided by the San Joaquin County staff as of January 1, 2017.

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2017**

APPENDIX A – MEMBERSHIP INFORMATION

Summary of Participant Data as of January 1, 2017			
	General	Safety	Total
Tier I Active Participants			
Number	3,445	659	4,104
Average Age	49.83	43.23	48.77
Average Benefit Service	14.65	14.21	14.58
Average Vesting Service	14.91	14.65	14.87
Average Pay	\$77,135	\$87,116	\$78,738
Tier II Active Participants			
Number	1,846	152	1,998
Average Age	39.36	32.14	38.81
Average Benefit Service	1.70	1.99	1.72
Average Vesting Service	1.73	1.99	1.75
Average Pay	\$58,220	\$67,001	\$58,888
All Active Participants			
Number	5,291	811	6,102
Average Age	46.17	41.15	45.51
Average Benefit Service	10.13	11.92	10.37
Average Vesting Service	10.31	12.28	10.57
Average Pay	\$70,535	\$83,346	\$72,238

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2017**

APPENDIX A – MEMBERSHIP INFORMATION

Summary of Participant Data as of January 1, 2017			
	General	Safety	Total
Service Retired			
Number	3,655	572	4,227
Average Age	70.49	65.64	69.83
Average Annual Base Benefit	\$17,646	\$37,689	\$20,358
Average Annual Total Benefit	\$32,810	\$65,777	\$37,271
Beneficiaries			
Number	603	184	787
Average Age	72.67	67.93	71.56
Average Annual Base Benefit	\$7,625	\$13,632	\$9,030
Average Annual Total Benefit	\$18,484	\$33,615	\$22,022
Duty Disabled			
Number	241	202	443
Average Age	63.86	60.87	62.50
Average Annual Base Benefit	\$14,430	\$31,098	\$22,030
Average Annual Total Benefit	\$24,405	\$51,110	\$36,582
Non-Duty Disabled			
Number	158	13	171
Average Age	63.88	67.08	64.12
Average Annual Base Benefit	\$9,541	\$14,113	\$9,888
Average Annual Total Benefit	\$16,214	\$28,846	\$17,174
Total Receiving Benefits			
Number	4,657	971	5,628
Average Age	70.20	65.10	69.32
Average Annual Base Benefit	\$15,907	\$31,443	\$18,588
Average Annual Total Benefit	\$29,957	\$56,137	\$34,474

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2017**

APPENDIX A – MEMBERSHIP INFORMATION

Summary of Participant Data as of January 1, 2017			
	General	Safety	Total
Deferred Vested			
Number	407	36	443
Average Age	48.99	45.17	48.68
Average Service	9.11	8.03	9.02
Transfers and DROs			
Number	370	100	470
Average Age	49.78	44.77	48.71
Average Service	5.61	4.54	5.38
Funds on Account			
Number	563	33	596
Average Age	45.66	39.21	45.30
Average Service	1.29	1.35	1.29
Total Inactive			
Number	1,340	169	1,509
Average Age	47.81	43.77	47.36
Average Service	4.86	4.66	4.83

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2017**

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, 2016	5,131	357	527	410	156	234	3,506	598	10,919
New Entrants	661	0	0	0	0	0	0	0	661
Rehires	36	(1)	(8)	(9)	0	0	(1)	0	17
Duty Disabilities	(7)	0	0	0	0	6	0	0	(1)
Non-Duty Disabilities	(5)	0	0	0	5	0	0	0	0
Retirements	(184)	(16)	(3)	(22)	0	0	223	2	0
Vested Terminations	(32)	0	0	32	0	0	0	0	0
Retirements from Safety with General Service	0	0	0	1	0	4	13	0	18
Died, With Beneficiaries' Benefit Payable	(3)	0	0	0	(4)	(2)	(27)	36	0
Died, Without Beneficiary, and Other Terminations	(80)	0	72	(1)	(3)	(4)	(52)	(2)	(70)
Transfers	(62)	32	(1)	0	0	0	0	0	(31)
Redeposits – AB 2766	0	0	0	0	0	0	0	0	0
Withdrawals Paid	(164)	(3)	(24)	(4)	0	0	0	0	(195)
Beneficiary Deaths	0	0	0	0	0	0	0	(33)	(33)
Domestic Relations Orders	0	1	0	0	0	0	0	2	3
Data Corrections	0	0	0	0	4	3	(7)	0	0
January 1, 2017	5,291	370	563	407	158	241	3,655	603	11,288

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2017**

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, 2016	793	98	30	34	14	196	554	177	1,896
New Entrants	42	0	0	0	0	0	0	0	42
Rehires	5	0	(2)	(1)	0	0	(1)	0	1
Duty Disabilities	(8)	0	0	0	0	8	0	0	0
Non-Duty Disabilities	(1)	0	0	0	0	0	0	0	(1)
Retirements	(28)	(3)	0	(3)	0	0	32	2	0
Vested Terminations	(6)	0	0	6	0	0	0	0	0
Retirements from Safety with General Service	0	0	0	0	0	0	0	0	0
Died, With Beneficiaries' Benefit Payable	0	0	0	0	0	(1)	(7)	8	0
Died, Without Beneficiary, and Other Terminations	(4)	0	4	0	(1)	(2)	(5)	0	(8)
Transfers	25	5	1	0	0	0	0	0	31
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	(5)	(5)
Domestic Relations Orders	0	1	0	0	0	0	0	2	3
Data Corrections	0	0	0	0	0	1	(1)	0	0
January 1, 2017	811	100	33	36	13	202	572	184	1,951

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2017**

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, 2016	5,924	455	557	444	170	430	4,060	775	12,815
New Entrants	703	0	0	0	0	0	0	0	703
Rehires	41	(1)	(10)	(10)	0	0	(2)	0	18
Duty Disabilities	(15)	0	0	0	0	14	0	0	(1)
Non-Duty Disabilities	(6)	0	0	0	5	0	0	0	(1)
Retirements	(212)	(19)	(3)	(25)	0	0	255	4	0
Vested Terminations	(38)	0	0	38	0	0	0	0	0
Retirements from Safety with General Service	0	0	0	1	0	4	13	0	18
Died, With Beneficiaries' Benefit Payable	(3)	0	0	0	(4)	(3)	(34)	44	0
Died, Without Beneficiary, and Other Terminations	(84)	0	76	(1)	(4)	(6)	(57)	(2)	(78)
Transfers	(37)	37	0	0	0	0	0	0	0
Redeposits – AB 2766	0	0	0	0	0	0	0	0	0
Withdrawals Paid	(171)	(4)	(24)	(4)	0	0	0	0	(203)
Beneficiary Deaths	0	0	0	0	0	0	0	(38)	(38)
Domestic Relations Orders	0	2	0	0	0	0	0	4	6
Data Corrections	0	0	0	0	4	4	(8)	0	0
January 1, 2017	6,102	470	596	443	171	443	4,227	787	13,239

SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2017

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%

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, 2017**

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%

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, 2017**

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

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, 2017**

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, 2017**

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
1/2/13 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, 2017**

APPENDIX A – MEMBERSHIP INFORMATION

Schedule of Average Monthly Benefit Payments

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

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2017**

APPENDIX A – MEMBERSHIP INFORMATION

DISTRIBUTION OF GENERAL ACTIVE MEMBERS BY AGE AND SERVICE AS OF JANUARY 1, 2017												
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	24	16	0	0	0	0	0	0	0	0	0	40
25 to 29	76	238	7	0	0	0	0	0	0	0	0	321
30 to 34	91	349	100	29	1	0	0	0	0	0	0	570
35 to 39	63	323	136	160	51	0	0	0	0	0	0	733
40 to 44	48	225	120	168	145	15	1	0	0	0	0	722
45 to 49	35	178	107	177	168	59	30	1	0	0	0	755
50 to 54	32	137	99	111	136	75	87	28	1	0	0	706
55 to 59	26	126	80	123	147	78	90	56	25	1	1	752
60 to 64	8	58	55	73	115	53	66	33	23	5	5	489
65 to 69	2	24	26	33	38	11	15	7	6	3	3	165
70 & up	0	6	7	10	6	5	3	0	0	1	1	38
Total	405	1,680	737	884	807	296	292	125	55	10	10	5,291

Average Age = 46.17

Average Service = 10.13

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2017**

APPENDIX A – MEMBERSHIP INFORMATION

DISTRIBUTION OF SAFETY ACTIVE MEMBERS BY AGE AND SERVICE AS OF JANUARY 1, 2017												
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	2	13	0	0	0	0	0	0	0	0	0	15
25 to 29	5	57	5	0	0	0	0	0	0	0	0	67
30 to 34	4	52	61	30	0	0	0	0	0	0	0	147
35 to 39	1	17	39	61	30	0	0	0	0	0	0	148
40 to 44	1	9	23	46	65	8	0	0	0	0	0	152
45 to 49	0	3	11	27	50	25	10	0	0	0	0	126
50 to 54	1	8	5	9	20	11	15	5	0	0	0	74
55 to 59	1	1	4	7	13	7	16	2	0	0	0	51
60 to 64	0	2	2	3	4	2	4	3	0	1	0	21
65 to 69	0	0	1	3	2	1	3	0	0	0	0	10
70 & up	0	0	0	0	0	0	0	0	0	0	0	0
Total	15	162	151	186	184	54	48	10	0	1	0	811

Average Age = 41.15

Average Service = 11.92

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2017**

APPENDIX A – MEMBERSHIP INFORMATION

**PAYROLL DISTRIBUTION OF GENERAL ACTIVE PARTICIPANTS
BY AGE AND SERVICE AS OF JANUARY 1, 2017**

COUNTS BY AGE/SERVICE

Age	Service										Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up	
Under 25	54,883	43,600	0	0	0	0	0	0	0	0	50,370
25 to 29	57,897	61,652	63,046	0	0	0	0	0	0	0	60,794
30 to 34	51,371	59,795	65,293	63,165	45,377	0	0	0	0	0	59,560
35 to 39	49,084	61,459	71,687	71,366	70,853	0	0	0	0	0	65,109
40 to 44	52,150	60,700	86,544	77,458	69,321	79,510	70,814	0	0	0	70,462
45 to 49	63,021	57,881	82,406	80,990	76,415	74,677	73,093	44,919	0	0	73,036
50 to 54	57,932	67,221	82,626	70,137	76,526	81,880	83,863	81,949	54,059	0	75,385
55 to 59	57,206	67,464	77,413	77,420	69,331	72,689	86,155	87,478	75,911	56,735	74,697
60 to 64	63,758	76,707	80,766	71,794	69,887	75,858	87,922	92,060	83,032	98,045	77,588
65 to 69	58,531	84,042	98,776	80,279	67,552	67,901	71,503	102,726	124,246	127,548	82,334
70 & up	0	77,255	159,759	47,578	79,173	60,927	55,659	0	0	58,829	80,608
Total	54,720	62,315	79,273	74,969	72,151	75,950	83,411	87,963	83,765	98,843	70,535

Average Salary = \$70,535

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2017**

APPENDIX A – MEMBERSHIP INFORMATION

PAYROLL DISTRIBUTION OF SAFETY ACTIVE PARTICIPANTS BY AGE AND SERVICE AS OF JANUARY 1, 2017												
COUNTS BY AGE/SERVICE												
Age	Service										Total	
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 & up		
Under 25	54,968	67,054	0	0	0	0	0	0	0	0	0	65,443
25 to 29	58,194	66,587	89,678	0	0	0	0	0	0	0	0	67,684
30 to 34	50,688	66,674	85,357	85,032	0	0	0	0	0	0	0	77,738
35 to 39	86,861	68,063	81,420	79,113	90,899	0	0	0	0	0	0	80,893
40 to 44	53,019	68,790	80,923	78,562	90,351	89,400	0	0	0	0	0	83,784
45 to 49	0	69,984	72,475	79,369	85,341	91,723	121,794	0	0	0	0	86,732
50 to 54	86,861	93,163	73,962	80,633	84,332	99,639	128,323	103,025	0	0	0	96,626
55 to 59	88,629	101,503	90,829	74,065	72,736	77,560	124,232	152,790	0	0	0	95,170
60 to 64	0	99,416	108,836	81,965	86,084	90,680	85,939	83,608	0	315,497	0	99,913
65 to 69	0	0	109,397	66,233	78,131	66,924	126,956	0	0	0	0	91,215
70 & up	0	0	0	0	0	0	0	0	0	0	0	0
Total	61,269	68,926	83,107	79,690	86,955	90,657	121,982	107,153	0	315,497	0	83,346

Average Salary = \$83,346

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2017**

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	5	\$81,719	5	\$81,719
50-54	79	\$14,466	53	\$64,850	132	\$34,696
55-59	248	\$24,820	99	\$77,058	347	\$39,724
60-64	630	\$36,981	103	\$68,223	733	\$41,371
65-69	892	\$38,380	125	\$68,790	1,017	\$42,118
70-74	770	\$34,766	102	\$63,360	872	\$38,111
75-79	442	\$29,684	50	\$47,937	492	\$31,539
80-84	278	\$26,702	21	\$36,385	299	\$27,382
85-89	186	\$27,357	12	\$61,211	198	\$29,409
90-94	90	\$19,844	2	\$83,007	92	\$21,217
95+	40	\$22,576	0	\$0	40	\$22,576
All Ages	3,655	\$32,810	572	\$65,777	4,227	\$37,271

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	0	\$0	0	\$0	0	\$0
40-44	4	\$17,281	0	\$0	4	\$17,281
45-49	5	\$13,179	1	\$24,630	6	\$15,087
50-54	16	\$18,741	0	\$0	16	\$18,741
55-59	25	\$16,995	2	\$43,791	27	\$18,980
60-64	31	\$17,512	2	\$23,931	33	\$17,901
65-69	34	\$14,146	3	\$16,893	37	\$14,368
70-74	23	\$14,862	2	\$51,304	25	\$17,777
75-79	14	\$17,396	1	\$19,644	15	\$17,546
80-84	3	\$20,779	2	\$20,998	5	\$20,867
85-89	1	\$8,751	0	\$0	1	\$8,751
90-94	2	\$10,877	0	\$0	2	\$10,877
95+	0	\$0	0	\$0	0	\$0
All Ages	158	\$16,214	13	\$28,846	171	\$17,174

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2017**

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	\$129	2	\$42,682	3	\$28,498
35-39	0	\$0	3	\$31,128	3	\$31,128
40-44	6	\$13,642	9	\$34,776	15	\$26,322
45-49	12	\$10,042	15	\$39,232	27	\$26,259
50-54	13	\$18,612	28	\$44,530	41	\$36,312
55-59	35	\$20,423	35	\$54,862	70	\$37,642
60-64	52	\$27,760	33	\$57,677	85	\$39,375
65-69	70	\$27,529	36	\$55,825	106	\$37,139
70-74	30	\$24,985	23	\$49,525	53	\$35,634
75-79	11	\$25,447	9	\$57,321	20	\$39,790
80-84	8	\$27,984	4	\$43,984	12	\$33,317
85-89	1	\$31,686	4	\$64,724	5	\$58,116
90-94	2	\$33,365	1	\$74,070	3	\$46,933
95+	0	\$0	0	\$0	0	\$0
All Ages	241	\$24,405	202	\$51,110	443	\$36,582

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	10	\$14,391	0	\$0	10	\$14,391
25-29	2	\$19,236	0	\$0	2	\$19,236
30-34	1	\$9,133	0	\$0	1	\$9,133
35-39	1	\$11,769	0	\$0	1	\$11,769
40-44	3	\$11,976	1	\$79,143	4	\$28,768
45-49	11	\$16,927	7	\$41,979	18	\$26,670
50-54	19	\$10,651	19	\$15,451	38	\$13,051
55-59	34	\$15,733	23	\$23,270	57	\$18,774
60-64	68	\$14,348	22	\$39,667	90	\$20,537
65-69	92	\$21,180	30	\$32,402	122	\$23,939
70-74	92	\$21,756	25	\$38,364	117	\$25,305
75-79	78	\$16,535	23	\$34,534	101	\$20,634
80-84	61	\$18,017	18	\$39,067	79	\$22,813
85-89	60	\$18,808	10	\$51,630	70	\$23,497
90-94	46	\$21,838	6	\$27,625	52	\$22,506
95+	25	\$21,432	0	\$0	25	\$21,432
All Ages	603	\$18,484	184	\$33,615	787	\$22,022

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2017**

APPENDIX A – MEMBERSHIP INFORMATION

Assumed Probabilities of Separation from Active Membership

Age	Non-Duty Death	Ordinary Disability	Service Retirement ¹	Duty Death	Duty Disability
General Members – Male					
20	0.0002	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, 2017**

APPENDIX A – MEMBERSHIP INFORMATION

Assumed Probabilities of Separation from Active Membership

Age	Non-Duty Death	Ordinary Disability	Service Retirement ¹	Duty Death	Duty Disability
Safety Members – Male					
20	0.0002	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, 2017**

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, 2017**

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

The assumptions and methods used in the actuarial valuation as of January 1, 2017 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 (16 years remaining as of January 1, 2017), except for the additional UAL attributable to the extraordinary loss from 2008, which is being amortized over a separate closed period (22 years as of January 1, 2017).

Any subsequent unexpected change in the unfunded actuarial liability after January 1, 2014 is amortized over 15 years.

2. Valuation of Assets

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

An asset corridor limit is applied such that the smoothed market value of assets stays within 20% of the market value of assets.

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2017**

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

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).

3. Rate of Return

Assets are assumed to earn 7.40% net of investment expenses.

4. Administrative Expenses

Administrative expenses are assumed to be \$4,497,664 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.)

5. 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.

6. Post Retirement COLA

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

7. 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%

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2017**

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

8. Family Composition

Percentage married for all active members who retire, become disabled, or die during active service is shown in the following table. Male members are assumed to be 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%

9. Rates of Termination

Sample rates of termination are show 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%

10. Withdrawal

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

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
ACTUARIAL VALUATION REPORT AS OF JANUARY 1, 2017**

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

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

60% of all Safety Member terminations with less than five years of service, 10% of those with five to fourteen years of service, and none of those with more than fifteen years of service, are assumed to take a refund of contributions.

11. 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 fourteen years of service, and 90% of those with more than fifteen 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 fourteen years of service, and 100% of those with more than fifteen 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.

12. 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%

13. 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%

14. 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.

15. 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.

16. 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.

17. 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.

18. 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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19. 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%

20. Changes in Assumptions

None 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 (\$118,775 for 2017) 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 (\$142,530 for 2017.) 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.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

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	1.71%	2.57%	2.68%	4.02%
25	1.94%	2.91%	2.91%	4.36%
30	2.16%	3.24%	3.15%	4.73%
35	2.39%	3.59%	3.43%	5.14%
40	2.66%	3.99%	3.75%	5.62%
45	2.97%	4.46%	4.11%	6.16%
50	3.31%	4.96%	4.04%	6.06%

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). Complete rate tables for all groups are in the Appendix G.

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.

Table 2: Tier II Member Contribution Rates

General Member Rate	Safety Member Rate
8.90%	14.33%

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 is 3.634%, for an effective annual rate of 7.40%.

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

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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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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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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

APPENDIX C – SUMMARY OF PLAN PROVISIONS

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

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

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

E. Nonservice-Connected Disability

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

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

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

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

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

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

APPENDIX C – SUMMARY OF PLAN PROVISIONS

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.

There have been no changes in plan provisions since the prior valuation.

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
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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
1/1/2016	\$27,870,288	17	\$2,385,143
1/1/2017	\$27,547,546	16	\$2,460,275
1/1/2018	\$27,125,789	15	\$2,537,774
1/1/2019	\$26,595,323	14	\$2,617,714
1/1/2020	\$25,945,663	13	\$2,700,172
1/1/2021	\$25,165,470	12	\$2,785,227
1/1/2022	\$24,242,487	11	\$2,872,962
1/1/2023	\$23,163,469	10	\$2,963,460
1/1/2024	\$21,914,105	9	\$3,056,809
1/1/2025	\$20,478,940	8	\$3,153,099
1/1/2026	\$18,841,282	7	\$3,252,421
1/1/2027	\$16,983,116	6	\$3,354,873
1/1/2028	\$14,884,994	5	\$3,460,551
1/1/2029	\$12,525,932	4	\$3,569,559
1/1/2030	\$9,883,292	3	\$3,682,000
1/1/2031	\$6,932,656	2	\$3,797,983
1/1/2032	\$3,647,690	1	\$3,917,619
1/1/2033	\$0	0	\$4,041,024

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, 2016			As of January 1, 2017		
	General	Safety	Total	General	Safety	Total
Employer Normal Cost				Employer Normal Cost		
Basic	12.56%	21.19%	14.18%	Basic	12.47%	21.19%
COL	5.25%	9.63%	6.07%	COL	5.24%	9.64%
Total	17.81%	30.82%	20.25%	Total	17.71%	30.83%
UAL Amortization Cost				UAL Amortization Cost		
Basic	17.63%	34.95%	20.84%	Basic	18.06%	36.62%
COL	5.70%	11.75%	6.82%	COL	6.19%	12.63%
Total	23.33%	46.70%	27.66%	Total	24.25%	49.25%
Total Cost				Total Cost		
Basic	30.19%	56.14%	35.02%	Basic	30.53%	57.81%
COL	10.95%	21.38%	12.89%	COL	11.43%	22.27%
Total	41.14%	77.52%	47.91%	Total	41.96%	80.08%

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 (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, 2016			As of January 1, 2017		
	General	Safety	Total	General	Safety	Total
Employer Normal Cost				Employer Normal Cost		
Basic	12.06%	19.74%	13.50%	Basic	11.97%	19.73%
COL	5.25%	9.63%	6.07%	COL	5.24%	9.64%
Total	17.31%	29.37%	19.57%	Total	17.21%	29.37%
UAL Amortization Cost				UAL Amortization Cost		
Basic	17.63%	34.95%	20.84%	Basic	18.06%	36.62%
COL	5.70%	11.75%	6.82%	COL	6.19%	12.63%
Total	23.33%	46.70%	27.66%	Total	24.25%	49.25%
Total Cost				Total Cost		
Basic	29.69%	54.69%	34.34%	Basic	30.03%	56.35%
COL	10.95%	21.38%	12.89%	COL	11.43%	22.27%
Total	40.64%	76.07%	47.23%	Total	41.46%	78.62%

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, 2016			As of January 1, 2017		
	General	Safety	Total	General	Safety	Total
Employer Normal Cost				Employer Normal Cost		
Basic	12.56%	21.19%	14.18%	Basic	12.47%	21.19%
COL	2.72%	5.04%	3.15%	COL	2.72%	5.02%
Total	15.28%	26.23%	17.33%	Total	15.19%	26.21%
UAL Amortization Cost				UAL Amortization Cost		
Basic	17.63%	34.95%	20.84%	Basic	18.06%	36.62%
COL	5.70%	11.75%	6.82%	COL	6.19%	12.63%
Total	23.33%	46.70%	27.66%	Total	24.25%	49.25%
Total Cost				Total Cost		
Basic	30.19%	56.14%	35.02%	Basic	30.53%	57.81%
COL	8.42%	16.79%	9.97%	COL	8.91%	17.65%
Total	38.61%	72.93%	44.99%	Total	39.44%	75.46%

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 (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, 2016			As of January 1, 2017		
	General	Safety	Total	General	Safety	Total
Employer Normal Cost				Employer Normal Cost		
Basic	12.06%	19.74%	13.50%	Basic	11.97%	19.73%
COL	2.72%	5.04%	3.15%	COL	2.72%	5.02%
Total	14.78%	24.78%	16.65%	Total	14.69%	24.75%
UAL Amortization Cost				UAL Amortization Cost		
Basic	17.63%	34.95%	20.84%	Basic	18.06%	36.62%
COL	5.70%	11.75%	6.82%	COL	6.19%	12.63%
Total	23.33%	46.70%	27.66%	Total	24.25%	49.25%
Total Cost				Total Cost		
Basic	29.69%	54.69%	34.34%	Basic	30.03%	56.35%
COL	8.42%	16.79%	9.97%	COL	8.91%	17.65%
Total	38.11%	71.48%	44.31%	Total	38.94%	74.00%

Rates include the employer share of the administrative expenses.

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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, 2016			As of January 1, 2017		
	General	Safety	Total	General	Safety	Total
Employer Normal Cost				Employer Normal Cost		
Basic	6.85%	10.67%	7.15%	Basic	6.79%	10.50%
COL	2.12%	3.86%	2.25%	COL	2.11%	3.83%
Total	8.97%	14.53%	9.40%	Total	8.90%	14.33%
UAL Amortization Cost				UAL Amortization Cost		
Basic	17.63%	34.95%	18.93%	Basic	18.06%	36.62%
COL	5.70%	11.75%	6.15%	COL	6.19%	12.63%
Total	23.33%	46.70%	25.08%	Total	24.25%	49.25%
Total Cost				Total Cost		
Basic	24.48%	45.62%	26.08%	Basic	24.85%	47.12%
COL	7.82%	15.61%	8.40%	COL	8.30%	16.46%
Total	32.30%	61.23%	34.48%	Total	33.15%	63.58%

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

Total Normal Cost Rates for General and Safety

	As of January 1, 2016			As of January 1, 2017		
	General	Safety	Total	General	Safety	Total
Total Normal Cost				Total Normal Cost		
Tier I	21.42%	35.23%	24.01%	Tier I	21.30%	35.27%
Tier II	17.94%	29.06%	18.80%	Tier II	17.80%	28.66%

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

**SAN JOAQUIN COUNTY EMPLOYEES' RETIREMENT ASSOCIATION
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APPENDIX G – MEMBER CONTRIBUTION RATES

General Member Contribution Rates

Basic Half Rate (Government Code Section 31621.3)

Entry Age	Basic Rate		COLA Cost-Sharing Rate ¹	
	1st \$350/month	Over \$350	1st \$350/month	Over \$350
16	1.71%	2.57%	1.10%	1.65%
17	1.71%	2.57%	1.10%	1.65%
18	1.71%	2.57%	1.10%	1.65%
19	1.71%	2.57%	1.10%	1.65%
20	1.71%	2.57%	1.10%	1.65%
21	1.75%	2.63%	1.14%	1.71%
22	1.80%	2.70%	1.18%	1.77%
23	1.85%	2.78%	1.21%	1.82%
24	1.90%	2.85%	1.26%	1.89%
25	1.94%	2.91%	1.30%	1.95%
26	1.98%	2.97%	1.33%	2.00%
27	2.03%	3.04%	1.37%	2.06%
28	2.07%	3.10%	1.41%	2.11%
29	2.11%	3.17%	1.43%	2.15%
30	2.16%	3.24%	1.47%	2.20%
31	2.20%	3.30%	1.51%	2.27%
32	2.25%	3.37%	1.55%	2.32%
33	2.30%	3.45%	1.59%	2.38%
34	2.35%	3.52%	1.63%	2.44%
35	2.39%	3.59%	1.67%	2.50%
36	2.45%	3.67%	1.71%	2.57%
37	2.50%	3.75%	1.76%	2.64%
38	2.55%	3.83%	1.82%	2.73%
39	2.61%	3.91%	1.87%	2.81%
40	2.66%	3.99%	1.94%	2.91%
41	2.72%	4.08%	1.99%	2.99%
42	2.78%	4.17%	2.05%	3.08%
43	2.84%	4.26%	2.11%	3.16%
44	2.91%	4.36%	2.17%	3.26%
45	2.97%	4.46%	2.23%	3.35%
46	3.05%	4.57%	2.31%	3.46%
47	3.12%	4.68%	2.33%	3.50%
48	3.19%	4.78%	2.36%	3.54%
49	3.25%	4.87%	2.38%	3.57%
50	3.31%	4.96%	2.39%	3.58%
51	3.34%	5.01%	2.40%	3.60%
52	3.35%	5.02%	2.41%	3.61%
53	3.34%	5.01%	2.36%	3.54%
54+	3.31%	4.97%	2.33%	3.50%

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, 2017**

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	1.95%	2.93%	1.10%	1.65%
17	1.95%	2.93%	1.10%	1.65%
18	1.95%	2.93%	1.10%	1.65%
19	1.95%	2.93%	1.10%	1.65%
20	1.95%	2.93%	1.10%	1.65%
21	2.00%	3.00%	1.14%	1.71%
22	2.05%	3.08%	1.18%	1.77%
23	2.11%	3.17%	1.21%	1.82%
24	2.17%	3.25%	1.26%	1.89%
25	2.21%	3.32%	1.30%	1.95%
26	2.26%	3.39%	1.34%	2.01%
27	2.31%	3.47%	1.37%	2.06%
28	2.35%	3.53%	1.41%	2.11%
29	2.41%	3.61%	1.44%	2.16%
30	2.46%	3.69%	1.47%	2.20%
31	2.51%	3.76%	1.51%	2.27%
32	2.56%	3.84%	1.55%	2.32%
33	2.62%	3.93%	1.59%	2.38%
34	2.67%	4.01%	1.63%	2.45%
35	2.73%	4.09%	1.67%	2.50%
36	2.79%	4.18%	1.71%	2.57%
37	2.85%	4.28%	1.76%	2.64%
38	2.91%	4.37%	1.82%	2.73%
39	2.97%	4.46%	1.87%	2.81%
40	3.03%	4.55%	1.94%	2.91%
41	3.10%	4.65%	1.99%	2.99%
42	3.17%	4.75%	2.05%	3.08%
43	3.24%	4.86%	2.11%	3.17%
44	3.31%	4.97%	2.17%	3.26%
45	3.39%	5.08%	2.24%	3.36%
46	3.47%	5.21%	2.31%	3.46%
47	3.56%	5.34%	2.33%	3.50%
48	3.63%	5.45%	2.36%	3.54%
49	3.70%	5.55%	2.38%	3.57%
50	3.77%	5.65%	2.39%	3.58%
51	3.81%	5.71%	2.40%	3.60%
52	3.81%	5.72%	2.41%	3.61%
53	3.81%	5.71%	2.37%	3.55%
54+	3.78%	5.67%	2.33%	3.50%

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, 2017**

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	2.68%	4.02%	2.85%	4.28%
17	2.68%	4.02%	2.85%	4.28%
18	2.68%	4.02%	2.85%	4.28%
19	2.68%	4.02%	2.85%	4.28%
20	2.68%	4.02%	2.85%	4.28%
21	2.72%	4.08%	2.90%	4.35%
22	2.77%	4.15%	2.95%	4.42%
23	2.81%	4.22%	2.99%	4.49%
24	2.86%	4.29%	3.04%	4.56%
25	2.91%	4.36%	3.09%	4.64%
26	2.95%	4.43%	3.13%	4.70%
27	3.00%	4.50%	3.18%	4.77%
28	3.05%	4.58%	3.23%	4.84%
29	3.10%	4.65%	3.27%	4.90%
30	3.15%	4.73%	3.31%	4.96%
31	3.21%	4.81%	3.34%	5.01%
32	3.26%	4.89%	3.39%	5.08%
33	3.31%	4.97%	3.43%	5.15%
34	3.37%	5.05%	3.45%	5.18%
35	3.43%	5.14%	3.47%	5.21%
36	3.49%	5.23%	3.47%	5.20%
37	3.55%	5.32%	3.49%	5.24%
38	3.61%	5.41%	3.53%	5.29%
39	3.67%	5.51%	3.57%	5.35%
40	3.75%	5.62%	3.61%	5.42%
41	3.82%	5.73%	3.57%	5.35%
42	3.91%	5.86%	3.61%	5.41%
43	3.99%	5.99%	3.61%	5.41%
44	4.06%	6.09%	3.62%	5.43%
45	4.11%	6.16%	3.65%	5.47%
46	4.13%	6.20%	3.70%	5.55%
47	4.13%	6.19%	3.75%	5.62%
48	4.09%	6.14%	3.79%	5.68%
49+	4.04%	6.06%	3.82%	5.73%

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, 2017**

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	3.57%	5.35%	2.86%	4.29%
17	3.57%	5.35%	2.86%	4.29%
18	3.57%	5.35%	2.86%	4.29%
19	3.57%	5.35%	2.86%	4.29%
20	3.57%	5.35%	2.86%	4.29%
21	3.62%	5.43%	2.91%	4.36%
22	3.68%	5.52%	2.95%	4.42%
23	3.74%	5.61%	2.99%	4.49%
24	3.81%	5.71%	3.04%	4.56%
25	3.87%	5.80%	3.09%	4.64%
26	3.93%	5.89%	3.14%	4.71%
27	3.99%	5.99%	3.18%	4.77%
28	4.06%	6.09%	3.23%	4.84%
29	4.12%	6.18%	3.27%	4.90%
30	4.19%	6.29%	3.31%	4.96%
31	4.27%	6.40%	3.34%	5.01%
32	4.33%	6.50%	3.39%	5.08%
33	4.41%	6.61%	3.43%	5.15%
34	4.48%	6.72%	3.45%	5.18%
35	4.56%	6.84%	3.47%	5.21%
36	4.64%	6.96%	3.47%	5.20%
37	4.72%	7.08%	3.49%	5.24%
38	4.80%	7.20%	3.53%	5.29%
39	4.89%	7.33%	3.57%	5.35%
40	4.98%	7.47%	3.61%	5.42%
41	5.08%	7.62%	3.57%	5.36%
42	5.19%	7.79%	3.61%	5.41%
43	5.31%	7.97%	3.61%	5.42%
44	5.40%	8.10%	3.62%	5.43%
45	5.46%	8.19%	3.65%	5.47%
46	5.50%	8.25%	3.71%	5.56%
47	5.49%	8.23%	3.75%	5.62%
48	5.45%	8.17%	3.79%	5.68%
49+	5.37%	8.06%	3.83%	5.74%

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