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City of San José Police and Fire Department Retirement Plan

Actuarial Valuation Report as of June 30, 2017

Produced by Cheiron

January 2018

REVISED

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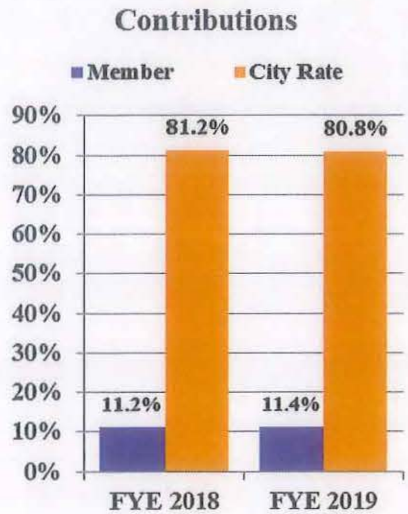
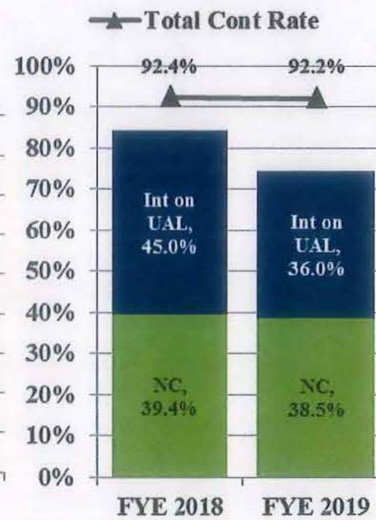
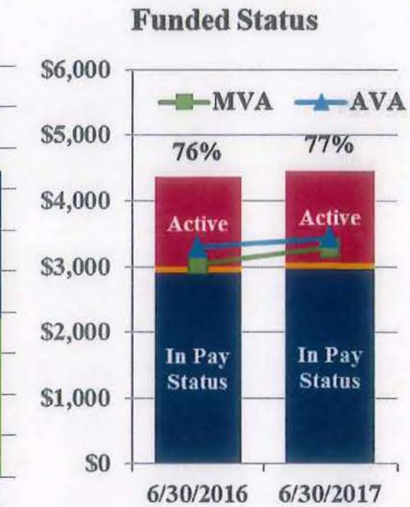
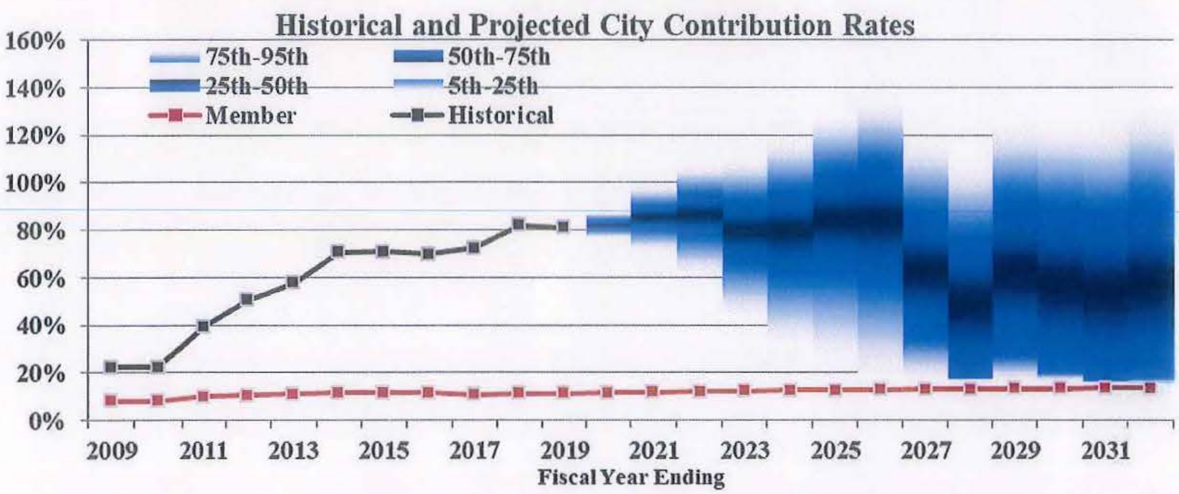
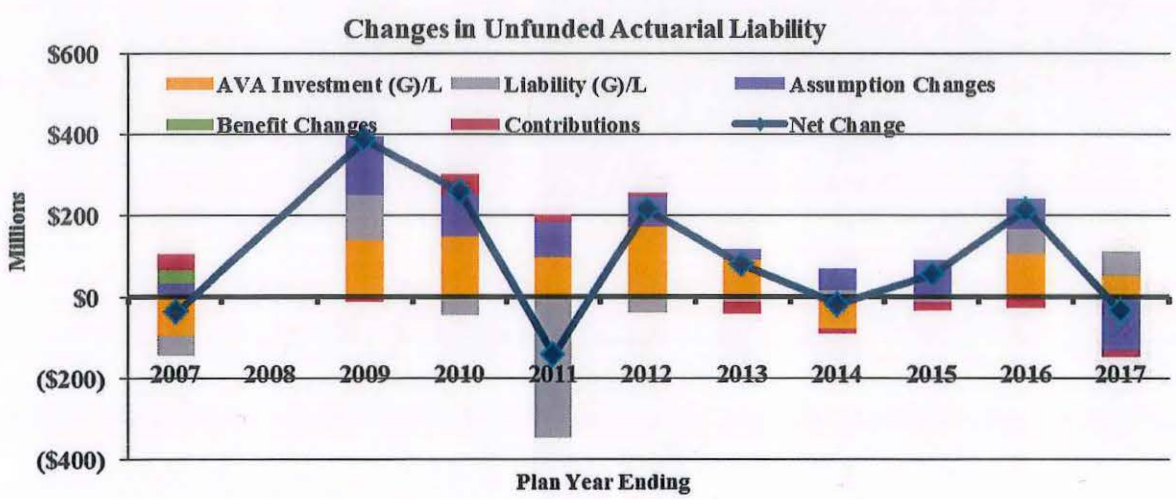










Membership

As shown in Table I-1 below, total membership grew 0.5% from 2016 to 2017, but active membership decreased 2.4%. Tier 1 active membership decreased by 60 members while Tier 2 active membership only increased by 22 members. Total expected payroll increased by 5.0% in aggregate, with Tier 1 payroll increasing 2.2% and Tier 2 payroll increasing 26.1%.

Table I-1

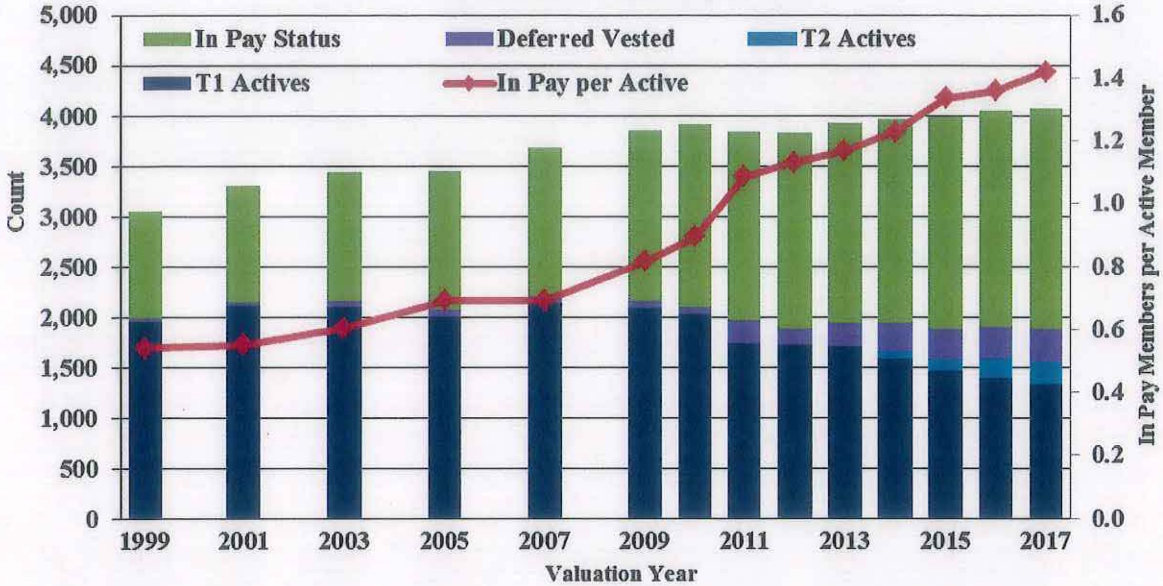
Total Membership	June 30, 2017	June 30, 2016	Change
Active Members			
Tier 1	1,333	1,393	-4.3%
Tier 2	211	189	11.6%
Total Actives	1,544	1,582	-2.4%
Deferred Vested Members	333	317	5.0%
Members In Pay Status	2,192	2,149	2.0%
Total	4,069	4,048	0.5%
Active Member Payroll			
Tier 1	$ 175,250	$ 171,422	2.2%
Tier 2	28,567	22,650	26.1%
Total	$ 203,816	$ 194,072	5.0%

Dollar amounts in thousands

As shown in the chart on the following page, the number of active members remained around 2,000 from 1999 through 2009, at which point active membership declined significantly. Since 2014 active membership has been below 1600, and the current number of actives is about 28% lower than the peak of 2,136 in 2007. At the same time, the number of members in pay status has more than doubled from 1,060 in 1999 to 2,192 in 2017. As a result, the number of members in pay status that each active member has to support if there are actuarial losses has increased from approximately 0.5 in 1999 to 1.4 in 2017. An increase in this ratio is to be expected for a maturing plan, but the impact of the recession accelerated the trend significantly. As there are more retirees to be supported by each active member, contributions tend to become more volatile and sensitive to gains and losses. Future growth in the number of active members could stabilize or reverse this trend.

SECTION I – BOARD SUMMARY

Historical Membership Counts



Funded Status

This report measures assets and liabilities for funding purposes. These measures are not appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations. Table I-2 on the next page summarizes the Actuarial Liability, assets, and related ratios as of June 30, 2016 and 2017.

SECTION I – BOARD SUMMARY

Table I-2

Actuarial Liability, Assets and Funded Status	June 30, 2017	June 30, 2016	Change
1. Actuarial Liability			
a. Actives	$ 1,413,531	$ 1,356,217	4.2%
b. Deferred Vested	91,756	97,793	-6.2%
c. In Pay Status	2,959,115	2,901,980	2.0%
d. Total	$ 4,464,402	$ 4,355,990	2.5%
2. Market Value of Assets (MVA)	$ 3,293,257	$ 3,043,651	8.2%
3. UAL - MVA Basis (1.d. - 2.)	$ 1,171,145	$ 1,312,339	-10.8%
4. Funding Ratio - MVA Basis (2. ÷ 1.d.)	73.8%	69.9%	3.9%
5. Actuarial Value of Assets (AVA)	$ 3,439,922	$ 3,297,068	4.3%
6. UAL - AVA Basis (1.d. - 5.)	$ 1,024,480	$ 1,058,922	-3.3%
7. Funding Ratio - AVA Basis (5. ÷ 1.d.)	77.1%	75.7%	1.4%
8. Expected Payroll	$ 203,816	$ 194,072	5.0%
9. Asset Leverage Ratio (2. ÷ 8.)	16.2	15.7	3.0%
10. Actuarial Liability Leverage Ratio (1.d. ÷ 8.)	21.9	22.4	-2.4%
11. Interest on UAL - MVA Basis	$ 77,883	$ 87,273	-10.8%
12. Interest Cost as Percent of Payroll (11. ÷ 8.)	38.2%	45.0%	-6.8%

Dollar amounts in thousands

The Actuarial Liability represents the target amount of assets the plan should have in the trust as of the valuation date based on the actuarial cost method. The Actuarial Liability increased 2.5% and the Market Value of Assets increased 8.2%. As a result, the Unfunded Actuarial Liability (UAL) measured on the Market Value of Assets decreased 11% from approximately $1,312.3 million to $1,171.1 million, and the funding ratio on an MVA basis increased from 69.9% to 73.8%.

The asset smoothing method deferred 80% of the investment gain while recognizing 20% of the prior four years' gains and losses, resulting in a 4.3% increase in the Actuarial Value of Assets. The UAL measured on the Actuarial Value of Assets decreased 3.3% from approximately $1,058.9 million to $1,024.5 million and the funding ratio increased from 75.7% to 77.1%. The Market Value of Assets is smaller than the actuarial value, so if the investment return assumption is met in the future, we expect an increase in contribution rates as the deferred asset losses are recognized in the Actuarial Value of Assets.

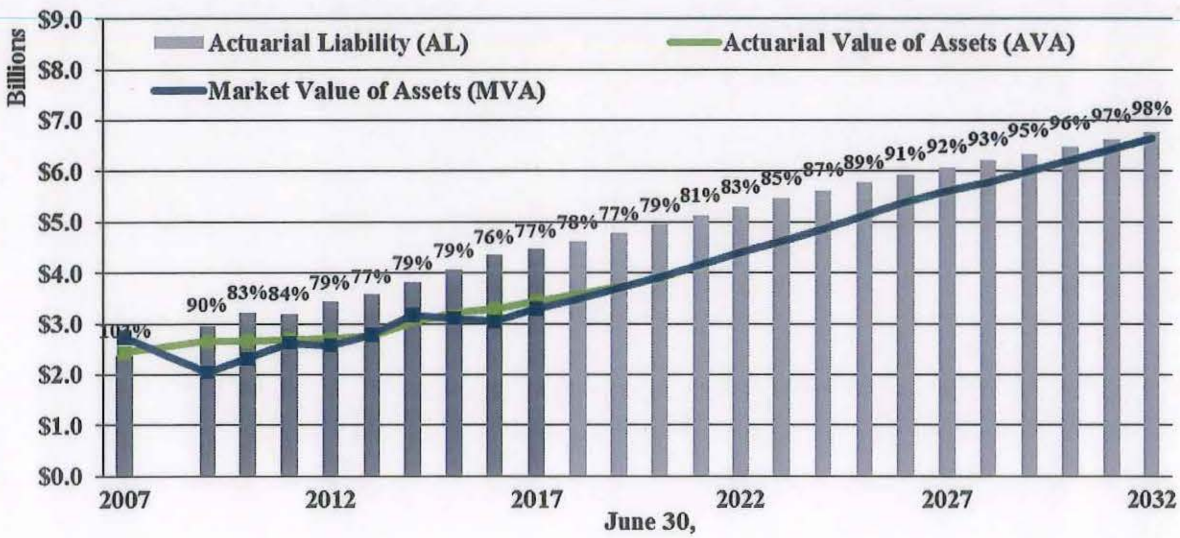
SECTION I – BOARD SUMMARY

The asset leverage ratio of 16.2 means that if the Plan experiences a 10% loss on assets compared to the discount rate of 6.875%, the loss would be equivalent to 162% of payroll. Interest payments on such a loss would be approximately 10.8 % of payroll.

Interest payments on the current UAL are approximately 38% of payroll, decreasing from 45% of payroll in the prior year due to the decreased UAL. As the Plan becomes better funded, the asset leverage ratio will increase, and if it was 100% funded, the leverage ratio would be 21.9. This leverage ratio is extremely high compared to other plans indicating that this plan is far more sensitive to investment gains and losses than other large public pension plans.

The chart below shows the historical and projected trends for assets (both market and smoothed actuarial) versus the Actuarial Liability, and also shows the progress of the funding ratios (based on the Actuarial Value of Assets) since 2007. The historical Actuarial Liability is shown in dark gray while the projected Actuarial Liability is shown in a lighter gray. From 2007 to 2013, (with the exception of 2011), the funding ratio declined primarily because the plan experienced lower than expected investment returns on the Actuarial Value of Assets and reduced its assumption of future investment returns. If all assumptions are met in the future, the funded status is expected to reach 98% by 2032.

Historical and Projected Assets and Actuarial Liability



While the funded status is expected to improve, the UAL is dependent on actual investment returns so there is potentially a wide range for the projected UAL.

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

Changes in UAL

The chart on the dashboard and Table I-3 below show the historical changes to the UAL, including investment gains and losses on the Actuarial Value of Assets, liability gains and losses, assumption changes, benefit changes and contributions compared to normal cost plus interest on the UAL. It is worth noting that 2014 and 2015 are the only years in the last 10 years in which there were investment gains on the Actuarial Value of Assets. Four years in the last ten, 2009, 2014, 2016, and 2017, experienced a liability loss. This year is also the first valuation in the last ten in which assumption changes were adopted that reduced the measure of liability. Appendix B provides a summary of the assumption changes, and more detail, including the rationale for each assumption, can be found in the experience study report.

Over the last ten years, the UAL has increased about $1.0 billion. Investment experience increased the UAL about $725 million and assumption changes (primarily reducing the discount rate) increased the UAL about $530 million. Gains on other assumptions and contributions toward the UAL reduced the UAL by about $240 million.

Table I-3

Changes in Unfunded Actuarial Liability										
	2009	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**Total**
Discount Rate	**8.00%**	**7.75%**	**7.50%**	**7.25%**	**7.125%**	**7.00%**	**7.00%**	**6.875%**	**6.875%**	
Source										
AVA (G)/L	$ 138.4	$ 149.6	$ 96.5	$ 172.8	$ 91.3	$ (78.5)	$ (2.8)	$ 106.8	$ 50.9	$ **724.9**
Liability (G)/L	113.5	(43.9)	(346.1)	(39.4)	(9.9)	14.7	(7.3)	61.3	61.8	**(195.4)**
Assumptions	145.4	104.2	89.1	75.2	28.2	56.3	90.0	72.7	(131.8)	**529.3**
Benefit Changes	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.3	**4.3**
Contributions	(9.9)	49.9	17.1	(24.6)	2.2	(9.9)	(23.4)	(27.0)	(19.6)	**(45.3)**
Total UAL Change	**$ 387.3**	**$ 259.8**	**$(143.5)**	**$ 184.0**	**$ 111.9**	**$ (17.4)**	**$ 56.5**	**$ 213.7**	**$ (34.4)**	**$1,017.9**

Dollar amounts in millions

Table I-4 on the following page shows the breakdown of the changes in UAL during the last year by source. In total, there was a reduction in the UAL of approximately $34 million, mostly attributed to assumption and method changes offset by other losses. The reductions in UAL for audit-related changes are primarily for a correction of spousal death benefits for deferred vested members and the assumed timing of City contributions for Tier 1 in the calculation of the Actuarial Value of Assets. In the table above and throughout the report, these changes have been combined with the assumption changes. The total change in the UAL is less than one percent of the Actuarial Liability.

Table I-4

Sources of FYE 2017 Change in UAL			
Source		**Amount**	**% of AL**
Contributions	$	(19,576)	-0.4%
Investment experience		50,882	1.1%
Salary experience		53,246	1.2%
Retirement experience		4,080	0.1%
Other experience		4,497	0.1%
Audit-related changes		(31,504)	-0.7%
Assumption changes		(100,328)	-2.2%
Measure F		4,261	0.1%
Total	$	(34,442)	-0.8%

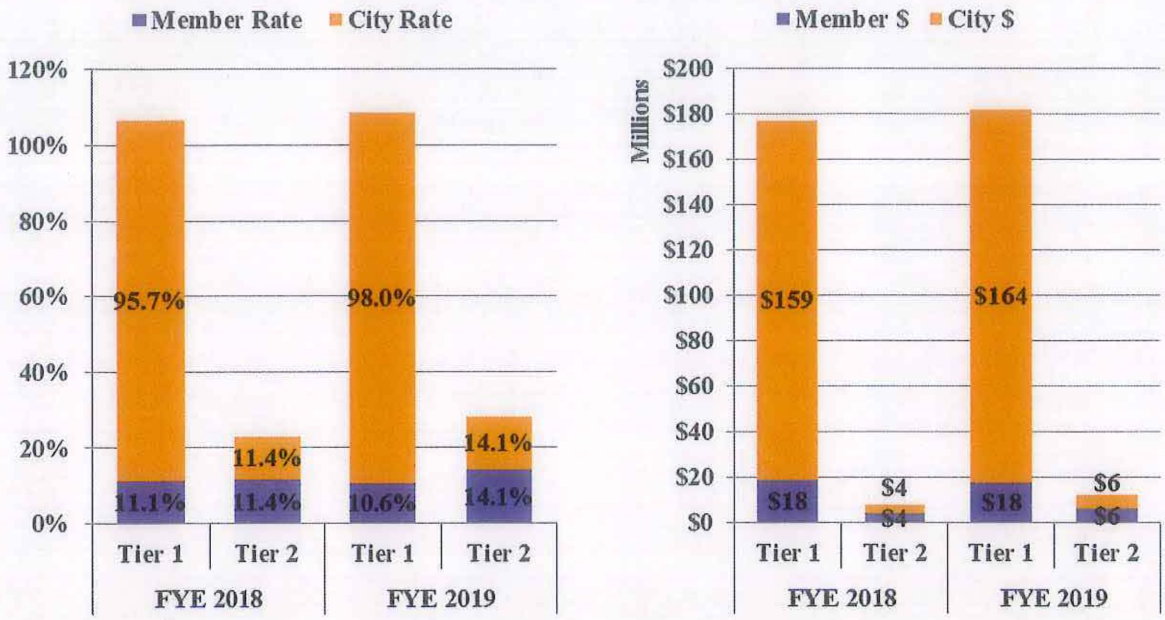
Dollar amounts in thousands

Contribution Rates

As shown in the upper right corner of the dashboard, the total City contribution rate reported in the actuarial valuation decreased from 81.2% to 80.8%. The decrease is actually a little larger because the rates reported in the prior valuation did not reflect the higher Tier 2 rates that were adopted after Measure F was implemented. Including the Measure F changes, the total City contribution rate was 81.9% and the total member rate was 11.3%. The chart in the middle of the dashboard at the top shows the total contribution rate (member plus City) compared to the normal cost (including administrative expenses) plus the interest on the UAL. The normal cost represents the benefits attributable to the next year of service and the interest on the UAL is the payment on the UAL that would be needed to prevent the UAL from growing as a dollar amount if all assumptions are met. Because the total contribution rate is greater than the normal cost plus interest on the UAL, the principal of the UAL is expected to be reduced if all assumptions are met.

The chart on the next page summarizes the contribution rates and contribution amounts by Tier for the fiscal years ending in 2018 and 2019 as reported in the valuation. Tier 1 rates increased from 2018 to 2019, reflecting the liability and investment losses offset by the assumption changes. Tier 2 rates increased largely due to the Measure F changes that had not been reflected in the prior valuation. The actual Tier 2 contribution rates implemented after Measure F for FYE 2018 were 16.26% and 15.17% for Fire and Police, respectively. The subsequent reduction in Tier 2 contribution rates for FYE 2019 is largely attributable to the assumption changes. The aggregate city rate decreased even though the Tier 1 and Tier 2 rates increased since Tier 2 members are a larger portion of the total membership compared to last year and the city contribution rates for Tier 2 are significantly lower than Tier 1.

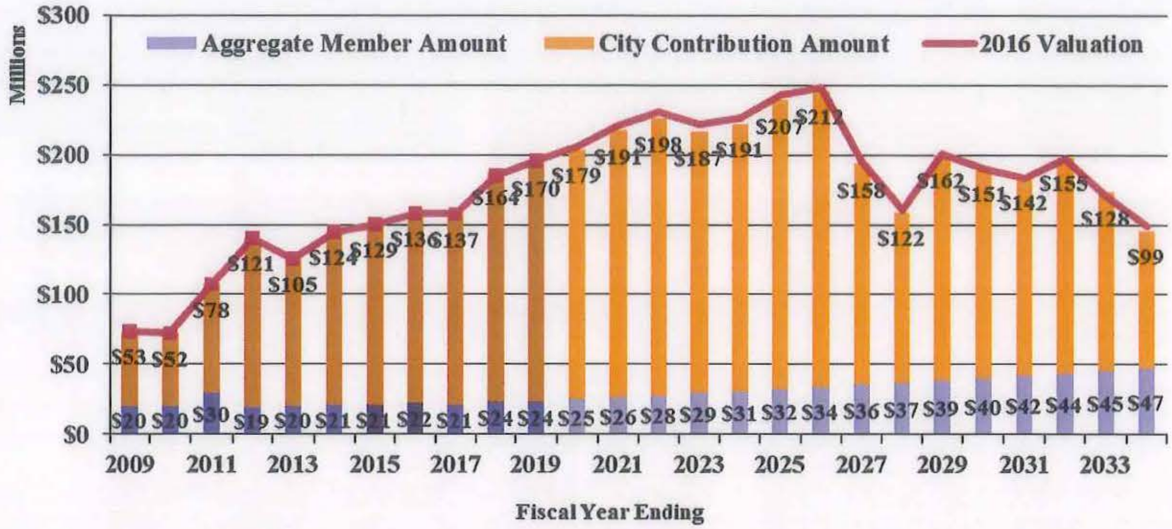
Member and City Contributions by Tier



As shown in the dashboard, City contribution rates have risen dramatically since FYE 2010 from 22.5 percent of payroll to 80.8 percent of payroll for FYE 2019. Future City contribution rates are expected to remain relatively level in the short term before declining significantly when portions of the UAL are fully amortized. However, there is a wide range of contribution rates due to the potential volatility of investment returns. As a result, the range of contribution rates from the 5^{th} to the 95^{th} percentile in FYE 2026 (based on a valuation seven years from now), is from 19% of payroll to 134% of payroll. Such a wide range is due to the combination of the size of the assets compared to payroll and the standard deviation of the investment portfolio. For these projections, we used Verus's capital market assumptions over a 10-year horizon (6.3% expected return and 11.2% standard deviation.)

The chart on the following page shows historical and projected aggregate contribution amounts for the Plan compared to those projected in the prior valuation. The purple bars are member contribution amounts for Police and Fire for both Tier 1 and Tier 2. The gold bars are city contribution amounts for Police and Fire for both Tier 1 and Tier 2. The darker shaded bars represent historical amounts and the lighter shades represent projected amounts. The projected amounts assume that all assumptions are met. The red line represents the projection from the prior valuation.

Historical and Projected Aggregate Contribution Amounts



Since the last valuation, projected City contribution amounts have not changed significantly.

Section V of this report provides additional detail on the contribution rates and the amortization schedules separately by Tier and for Police and Fire.

SECTION II – CERTIFICATION

The purpose of this report is to present the June 30, 2017 Actuarial Valuation of the City of San José Police and Fire Department Retirement Plan ("Plan"). This report is for the use of the Plan and the City of San José.

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

The discount rate used in this report was adopted by the Board of Administration with our input at the December 7, 2017 Board meeting. All other assumptions were adopted at the November 2, 2017 Board meeting based on recommendations from our experience study covering plan experience during the period from July 1, 2009 through June 30, 2017.

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

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

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

This report was prepared for the Plan for the purposes described herein. This report is not intended to benefit any third party, and Cheiron assumes no duty or liability to any such party.

William R. Hallmark	Anne Harper
William R. Hallmark, ASA, EA, FCA, MAAA	Anne D. Harper, FSA, EA, MAAA
Consulting Actuary	Consulting Actuary

SECTION III – ASSETS

The Plan uses and discloses two different asset measurements which are presented in this section of the report: market value and Actuarial Value of Assets. The market value represents the value of the assets if they were liquidated on the valuation date. The Actuarial Value of Assets is a value that smooths annual investment returns over five years to reduce the impact of short-term investment volatility on contribution rates. The Market Value of Assets is used primarily for reporting and disclosure, and the Actuarial Value of Assets is used primarily to determine contribution rates.

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

Statement of Changes in the Market Value of Assets

Table III-1 shows the changes in the Market Value of Assets by tier for the current fiscal year and in total for the prior fiscal year.

Table III-1

Change in Market Value of Assets	Fiscal Year Ending 2017				FYE 2016
	Tier 1	Tier 2 Fire	Tier 2 Police	Total	Total
Beginning Market Value	$ 3,039,552	$ 597	$ 3,501	$ 3,043,651	$ 3,110,064
Contributions					
Member	18,711	543	1,327	20,580	21,508
City	135,088	543	1,327	136,957	132,480
Total	$ 153,799	$ 1,085	$ 2,653	$ 157,537	$ 153,988
Net Investment Earnings	292,157	110	467	292,733	(29,206)
Benefit Payments	(196,013)	(3)	(16)	(196,032)	(186,939)
Administrative Expenses	(4,626)	(2)	(5)	(4,632)	(4,256)
Transfers	468	(47)	(421)	0	0
Market Value, End of Year	**$ 3,285,338**	**$ 1,740**	**$ 6,179**	**$ 3,293,257**	**$ 3,043,651**
Estimated Rate of Return	9.5%	9.9%	10.1%	9.5%	-0.9%

Dollar amounts in thousands

Under Measure F, certain Tier 2 members who had previous Tier 1 service were returned to Tier 1. The transfers shown above represent the Tier 2 assets for those members that should also be returned to Tier 1.

The net investment earnings for the year ended June 30, 2017 represent approximately a 9.5% return on the Market Value of Assets compared to an assumed return of 6.875%. For the year ended June 30, 2016, the net investment return was approximately -0.9% (7.00% was assumed).

SECTION III – ASSETS

Actuarial Value of Assets

To determine on-going contribution amounts, most pension funds use an Actuarial Value of Assets that smooths year-to-year market value returns in order to reduce the volatility of contribution rates.

The Actuarial Value of Assets is calculated by recognizing the deviation of actual investment returns compared to the expected return (6.875% for 2016-2017, 7.00% for 2015-2016, 7.00% for 2014-2015, 7.125% for 2013-2014, and 7.25% for 2012-2013) over a five-year period. The dollar amount of the expected return on the Market Value of Assets is determined using the actual contributions, benefit payments, and administrative expenses during the year. Any difference between the expected return and the actual net investment earnings is considered a gain or loss. Table III-2 on the next page shows the calculation of the Actuarial Value of Assets separately for each tier. For each of the last four years, it shows the actual earnings, the expected earnings, the gain or loss and the portion of the gain or loss that is not recognized in the current Actuarial Value of Assets. These deferred amounts will be recognized in future years.

SECTION III – ASSETS

Table III-2

Development of Actuarial Value of Assets	Fiscal Year Ending 2017				FYE 2016
	Tier 1	Tier 2 Fire	Tier 2 Police	Total	Total
Market Value of Assets (MVA)	$ 3,285,338	$ 1,740	$ 6,179	$ 3,293,257	$ 3,043,651
FYE 2017					
Actual Earnings	$ 292,157	$ 110	$ 467	$ 292,733	(29,206)
Expected Earnings	212,107	78	330	212,514	221,094
Investment Gain or (Loss)	80,050	33	137	80,220	(250,300)
Deferred (80%)	$ 64,040	$ 26	$ 110	$ 64,176	(200,240)
FYE 2016					
Actual Earnings	(29,178)	(3)	(24)	(29,206)	(27,690)
Expected Earnings	220,891	25	178	221,094	225,302
Investment Gain or (Loss)	(250,069)	(28)	(203)	(250,300)	(252,992)
Deferred (60%)	(150,041)	(17)	(122)	(150,180)	(151,795)
FYE 2015					
Actual Earnings	$ (27,680)	$ (1)	$ (9)	$ (27,690)	$ 404,979
Expected Earnings	225,224	4	75	225,302	202,301
Investment Gain or (Loss)	(252,904)	(5)	(84)	(252,992)	202,678
Deferred (40%)	(101,161)	(2)	(34)	(101,197)	81,071
FYE 2014					
Actual Earnings	$ 404,941	$ 0	$ 37	$ 404,979	$ 248,258
Expected Earnings	202,283	0	18	202,301	192,935
Investment Gain or (Loss)	202,658	0	20	202,678	55,323
Deferred (20%)	40,532	0	4	40,536	11,065
Total Deferred Gain or (Loss)	$ (146,631)	$ 7	$ (42)	$ (146,666)	$ (259,899)
Preliminary Actuarial Value of Assets	$ 3,431,969	$ 1,733	$ 6,221	$ 3,439,922	$ 3,303,550
Minimum (80% of MVA)	$ 2,628,270	$ 1,392	$ 4,943	$ 2,634,605	$ 2,434,920
Maximum (120% of MVA)	$ 3,942,405	$ 2,088	$ 7,415	$ 3,951,908	$ 3,652,381
Actuarial Value of Assets	**$ 3,431,969**	**$ 1,733**	**$ 6,221**	**$ 3,439,922**	**$ 3,303,550**
Ratio of Actuarial to Market	104.5%	99.6%	100.7%	104.5%	108.5%
Estimated Rate of Return	5.4%	6.8%	6.3%	5.4%	3.8%

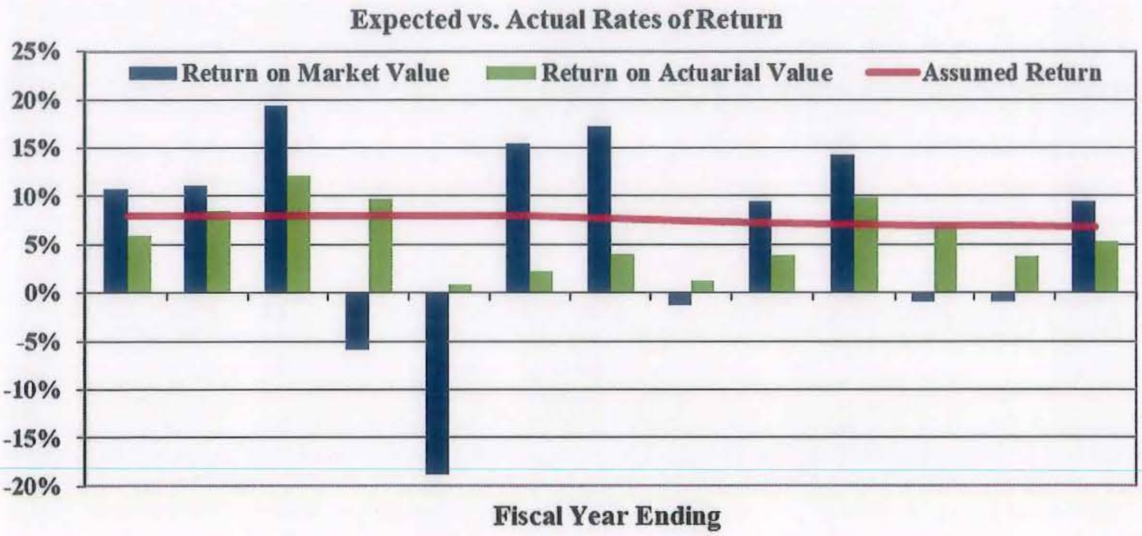
Dollar amounts in thousands

On the basis of the smoothed Actuarial Value of Assets, the return for the year ending June 30, 2017 was approximately 5.4%, which is less than both the assumed return of 6.875%,

SECTION III – ASSETS

and the return on the Market Value of Assets. The estimated rate of return varies by tier, reflecting the different cash flows for each tier and the different effective dates of the tiers that affect the number of years included in the smoothing.

The chart below shows the historical rates of return on both the Market and Actuarial Values of Assets compared to the assumed rates of return (the red line). Because of the 5-year smoothing, the return on the actuarial value is less volatile than the return on the market value.



SECTION IV – MEASURES OF LIABILITY

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

- Present Value of Future Benefits,
- Normal cost
- Actuarial Liability, and
- Analysis of changes in the Unfunded Actuarial Liability during the year.

Present Value of Future Benefits

The Present Value of Future Benefits represents the amount of money today that is expected to be needed to pay all benefits both earned as of the valuation date and expected to be earned in the future by current plan members under the current plan provisions if all assumptions are met. Table IV-1 below shows the Present Value of Future Benefits as of June 30, 2017 and June 30, 2016 separately by Tier for Police and Fire. Police Tier 2 members entered the Plan beginning August 4, 2013. Fire Tier 2 members entered the Plan beginning January 2, 2015.

Table IV-1

Present Value of Future Benefits	Fire			Police		
	6/30/2017	6/30/2016	% Change	6/30/2017	6/30/2016	% Change
Tier 1						
Actives	$ 799,705	$ 814,718	-1.8%	$ 1,068,701	$ 1,045,721	2.2%
Deferred Vested	8,495	11,140	-23.7%	82,757	86,412	-4.2%
In Pay Status	1,098,325	1,082,089	1.5%	1,860,791	1,819,891	2.2%
Total Tier 1	**$ 1,906,525**	**$ 1,907,947**	**-0.1%**	**$ 3,012,249**	**$ 2,952,024**	**2.0%**
Tier 2						
Actives	$ 25,782	$ 16,225	58.9%	$ 52,448	$ 30,917	69.6%
Deferred Vested	62	10	520.0%	442	231	91.3%
In Pay Status	0	0	N/A	0	0	N/A
Total Tier 2	**$ 25,844**	**$ 16,235**	**59.2%**	**$ 52,890**	**$ 31,148**	**69.8%**
Total	**$ 1,932,369**	**$ 1,924,182**	**0.4%**	**$ 3,065,139**	**$ 2,983,172**	**2.7%**

Dollar amounts in thousands

Normal Cost

Under the Entry Age (EA) actuarial cost method, the Present Value of Future Benefits for each individual is spread over the individual's expected working career under the Plan as a level percentage of the individual's expected pay. The normal cost rate is determined by taking the value of each member's projected future benefits divided by the value of the each member's expected future salary, both at entry age into the Plan. The normal cost rate is multiplied by current salary to determine each member's normal cost. The normal cost of the Plan is the sum of the normal costs for each individual in the Plan. The normal cost represents the amount of money today that is expected to be needed to pay the benefits attributed to the next year of service if all assumptions are met. Table IV-2 below shows the EA normal cost and Total normal cost rates as of June 30, 2017 and June 30, 2016 separately by Tier for Police and Fire, as well as a breakdown of the normal cost rate between the Retirement and COLA funds.

Table IV-2

Entry Age Normal Cost By Group	Fire			Police		
	6/30/2017	6/30/2016	% Change	6/30/2017	6/30/2016	% Change
Tier 1						
Retirement	$ 17,609	$ 17,485	0.7%	$ 16,630	$ 18,363	-9.4%
Termination	1,369	1,391	-1.6%	6,059	4,829	25.5%
Death	394	364	8.2%	431	391	10.1%
Disability	9,799	10,337	-5.2%	11,970	11,749	1.9%
Reciprocity	178	177	0.5%	978	686	42.6%
Total Tier 1 Normal Cost	**$ 29,349**	**$ 29,754**	**-1.4%**	**$ 36,068**	**$ 36,018**	**0.1%**
Expected Payroll	$ 73,447	$ 73,539	-0.1%	$ 96,073	$ 92,278	4.1%
Normal Cost Rate	**39.96%**	**40.46%**	**-0.50%**	**37.55%**	**39.02%**	**-1.47%**
Retirement	27.56%	27.82%	-0.26%	26.10%	26.94%	-0.84%
COLA	12.40%	12.64%	-0.24%	11.45%	12.08%	-0.63%
Tier 2						
Retirement	$ 603	$ 266	126.5%	$ 1,375	$ 542	153.9%
Termination	58	63	-7.5%	678	368	84.4%
Death	23	19	19.2%	54	33	63.1%
Disability	696	646	7.8%	1,608	1,190	35.1%
Total Tier 2 Normal Cost	**$ 1,380**	**$ 994**	**38.8%**	**$ 3,715**	**$ 2,132**	**74.2%**
Expected Payroll	$ 4,741	$ 4,595	3.2%	$ 14,089	$ 10,267	37.2%
Normal Cost Rate	**29.10%**	**21.63%**	**7.47%**	**26.37%**	**20.76%**	**5.61%**
Retirement	23.07%	18.49%	4.58%	21.01%	17.47%	3.54%
COLA	6.03%	3.14%	2.89%	5.36%	3.29%	2.07%

Dollar amounts in thousands

SECTION IV – MEASURES OF LIABILITY

Actuarial Liability

The Actuarial Liability represents the amount of money today that is expected to be needed to pay for benefits attributed to service prior to the valuation date under the EA method if all assumptions are met. It is the difference between the Present Value of Future Benefits and the present value of future normal costs. Table IV-3 below shows the Actuarial Liability as of June 30, 2017 and June 30, 2016 separately by Tier for Police and Fire, as well as a breakdown of the Actuarial Liability between the Retirement and COLA funds.

Table IV-3

Actuarial Liability	Fire			Police		
	6/30/2017	6/30/2016	% Change	6/30/2017	6/30/2016	% Change
Tier 1						
Actives						
Retirement	$ 412,839	$ 393,394	4.9%	$ 675,581	$ 645,882	4.6%
Termination	4,739	4,402	7.7%	27,660	22,346	23.8%
Death	1,972	1,750	12.7%	2,405	1,944	23.7%
Disability	141,656	152,025	-6.8%	137,747	130,459	5.6%
Total Actives	$ 561,206	$ 551,571	1.7%	$ 843,393	$ 800,631	5.3%
Deferred Vested	$ 8,495	$ 11,140	-23.7%	$ 82,757	$ 86,412	-4.2%
In Pay Status						
Service Retirees	$ 429,302	$ 426,051	0.8%	$ 1,219,837	$ 1,176,472	3.7%
Beneficiaries	75,926	73,858	2.8%	72,562	68,512	5.9%
Disabled Retirees	593,097	582,180	1.9%	568,392	574,907	-1.1%
Total In Pay Status	$ 1,098,325	$ 1,082,089	1.5%	$ 1,860,791	$ 1,819,891	2.2%
Tier 1 Actuarial Liability	**$ 1,668,026**	**$ 1,644,800**	**1.4%**	**$ 2,786,941**	**$ 2,706,934**	**3.0%**
Retirement	975,861	962,395	1.4%	1,626,629	1,576,206	3.2%
COLA	692,165	682,405	1.4%	1,160,312	1,130,728	2.6%
Tier 2						
Actives						
Retirement	$ 1,126	$ 186	505.4%	$ 3,234	$ 954	239.0%
Termination	(71)	32	-321.9%	867	893	-2.9%
Death	26	8	225.0%	72	32	125.0%
Disability	1,123	397	182.9%	2,554	1,513	68.8%
Total Actives	$ 2,204	$ 623	253.8%	$ 6,727	$ 3,392	98.3%
Deferred Vested	$ 62	$ 10	N/A	$ 442	$ 231	91.3%
Tier 2 Actuarial Liability	**$ 2,266**	**$ 633**	**258.0%**	**$ 7,169**	**$ 3,623**	**97.9%**
Retirement	1,776	541	228.3%	5,726	3,161	81.1%
COLA	490	92	432.6%	1,443	462	212.3%
Total Actuarial Liability	**$ 1,670,292**	**$ 1,645,433**	**1.5%**	**$ 2,794,110**	**$ 2,710,557**	**3.1%**

Dollar amounts in thousands

Analysis of Change in Unfunded Actuarial Liability (UAL)

The UAL of any retirement plan is expected to change at each subsequent valuation for a variety of reasons. In each valuation, we analyze the sources of the change in the UAL and report the most significant causes of the change. Table IV-4 below develops the expected UAL by Tier and identifies the primary sources for changes in the UAL since the last valuation.

Table IV-4

Development of Experience Gain or (Loss)	Tier 1	Tier 2 Fire	Tier 2 Police	Total
Unfunded actuarial liability, 6/30/2016	$ 1,058,995	$ 10	$ (83)	$ 1,058,922
Interest	72,806	1	(6)	72,801
Expected unfunded actuarial liability payment with interest	(88,533)	(0)	9	(88,525)
Change due to Measure F	3,345	216	700	4,261
Change in assumptions/methods	(131,196)	(145)	(491)	(131,832)
Expected unfunded actuarial liability, 6/30/2017	$ 915,417	$ 81	$ 129	$ 915,627
Actual unfunded actuarial liability	1,022,998	533	949	1,024,480
Experience Gain or (Loss)	**$ (107,582)**	**$ (452)**	**$ (820)**	**$ (108,854)**
Portion due to investment experience				$ (50,882)
Portion due to salary experience				(53,246)
Portion due to retirement experience				(4,080)
Portion due to other experience				(645)
Total				$ (108,854)

Dollar amounts in thousands

The most significant losses compared to assumptions are due to the investment experience on the Actuarial Value of Assets and the greater than expected salary increases. The UAL also increased slightly due to the implementation of Measure F, and the changes to the Plan's actuarial assumptions following the experience study lowered the UAL.

SECTION V – CONTRIBUTIONS

Under the contribution allocation procedure employed by the Plan, there are three components to the total contribution: the normal cost, assumed administrative expenses, and the Unfunded Actuarial Liability contribution. The normal cost rate was developed in Section IV. This section develops the UAL and administrative expense contribution rates and divides the contributions between the members and the City.

Table V-1 on the following page shows the outstanding balance, remaining period and amortization payments for each component of the Tier 1 UAL as of June 30, 2017. Each component is amortized as a level percent of expected payroll with payroll assumed to increase 3.25% each year. The City is responsible for all components except the contribution rate increase delay for Police in 2006 and a portion of the liability attributable to certain rehires who were moved from Tier 2 to Tier 1 under Measure F. At the bottom of each section, the total is divided into the portion attributable to the basic retirement benefits and the portion attributable to COLA benefits. These amounts are used to set separate contribution rates for the basic retirement benefits and the COLA benefits portions of the Plan.

SECTION V – CONTRIBUTIONS

Table V-1

Tier 1 UAL Amortization Bases and Payments

Source	Date	Balance Total	Remaining Period	Amortization Payment Fire	Amortization Payment Police	Amortization Payment Total
Members						
Rate Increase Delay	12/17/2006	130	4.5	0	33	33
Measure F	6/30/2017	297	15.0	2	25	27
Total Members		$ 427		$ 2	$ 57	$ 59
Retirement		251		1	37	38
COLA		176		1	20	21
City						
Experience Loss	6/30/2005	$ 22,486	4.0	$ 2,826	$ 3,497	$ 6,323
Ben Improvement	6/30/2005	18,419	4.0	0	5,179	5,179
Ben Improvement	6/30/2007	21,685	6.0	4,203	0	4,203
Experience Gain	6/30/2007	(90,506)	6.0	(7,840)	(9,703)	(17,543)
Assumption Change	6/30/2007	21,041	6.0	1,823	2,256	4,078
Experience Loss	6/30/2009	184,123	8.0	12,366	15,303	27,669
Assumption Change	6/30/2009	109,897	8.0	7,381	9,134	16,515
Experience Loss	6/30/2010	127,733	9.0	7,752	9,593	17,344
Assumption Change	6/30/2010	83,635	9.0	5,075	6,281	11,356
Experience Gain	6/30/2011	(210,130)	10.0	(11,665)	(14,436)	(26,102)
Assumption Change	6/30/2011	52,369	14.0	2,214	2,740	4,955
Experience Loss	6/30/2012	117,198	11.0	6,011	7,439	13,451
SRBR Elimination	6/30/2012	(28,582)	11.0	(1,466)	(1,814)	(3,280)
Assumption Change	6/30/2012	103,102	15.0	4,134	5,116	9,250
Experience Loss	6/30/2013	74,164	12.0	3,544	4,386	7,929
Assumption Change	6/30/2013	27,399	16.0	1,046	1,295	2,341
Experience Gain	6/30/2014	(59,847)	13.0	(2,682)	(3,319)	(6,002)
Assumption Change	6/30/2014	54,721	17.0	1,998	2,472	4,470
Experience Gain	6/30/2015	(9,788)	14.0	(414)	(512)	(926)
Assumption Change	6/30/2015	89,103	18.0	3,120	3,861	6,981
Experience Gain	6/30/2016	158,128	14.0	6,687	8,275	14,961
Assumption Change	6/30/2016	72,286	19.0	2,435	3,014	5,449
Measure F	6/30/2017	3,049	15.0	122	151	274
Experience Loss	6/30/2017	107,582	15.0	4,314	5,338	9,652
Assumption/Method Change	6/30/2017	(131,196)	20.0	(4,264)	(5,277)	(9,540)
7/1 UAL Payment		104,500				
Total City		**$ 1,022,572**		**$ 48,718**	**$ 60,268**	**$ 108,987**
Retirement		489,242		20,785	25,686	46,471
COLA		533,330		27,933	34,582	62,516
Total Tier 1		**$ 1,022,999**		**$ 48,720**	**$ 60,325**	**$ 109,046**

Dollar amounts in thousands

SECTION V – CONTRIBUTIONS

Table V-2 below shows the outstanding balance, remaining period, and amortization payments for each component of the Tier 2 UAL as of June 30, 2017. Each component is amortized from the valuation date in which it was first recognized. All components of the Tier 2 UAL are split evenly between the members and the City.

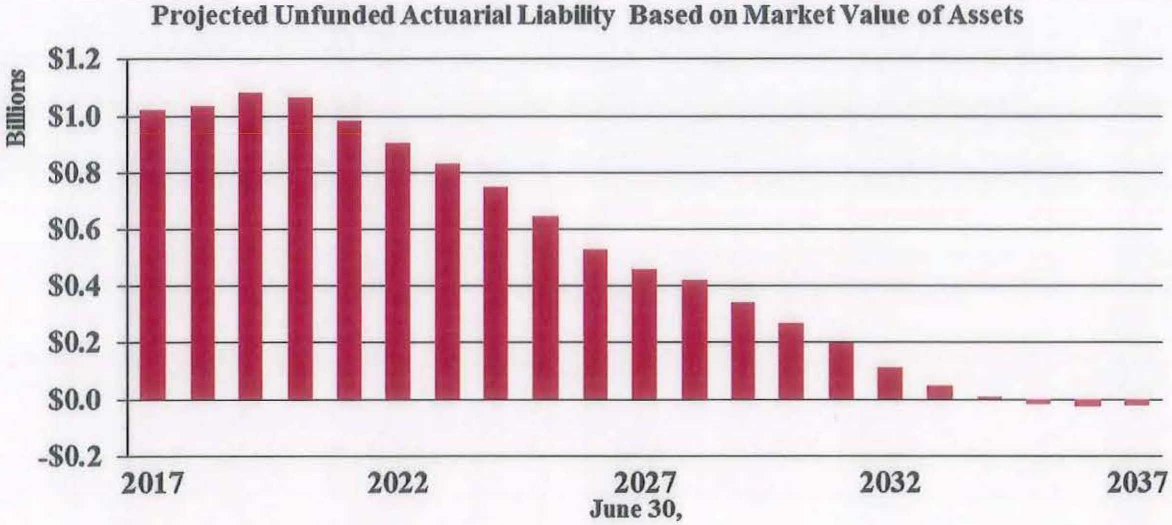
Table V-2

Tier 2 UAL Amortization Bases						
		Outstanding Balance		Remaining	Amortization Payment	
Source	Date	Fire	Police	Period	Fire	Police
Members and City						
Experience Gain	6/30/2014	$ 0	$ (26)	13.0	$ 0	$ (3)
Assumption Change	6/30/2014	0	(5)	17.0	0	(0)
Experience Gain	6/30/2015	44	19	14.0	4	2
Assumption Change	6/30/2015	7	(18)	18.0	1	(1)
Experience Gain	6/30/2016	(60)	(138)	14.0	(6)	(13)
Assumption Change	6/30/2016	18	88	19.0	1	7
Measure F	6/30/2016	216	700	15.0	19	63
Experience Loss	6/30/2017	452	820	15.0	41	74
Assumption/Method Change	6/30/2017	(145)	(491)	20.0	(11)	(36)
Total Tier 2		**$ 533**	**$ 949**		**$ 50**	**$ 92**
Retirement		288	368		27	38
COLA		245	581		23	54

Dollar amounts in thousands

The chart on the following page shows the projected aggregate balance of the UAL based on the Market Value of Assets for the Plan under the amortization schedules shown above assuming all expected payments are made and all assumptions are met. This projection includes new amortization bases for the unrecognized investment gains and losses that will be recognized over the next four years.

SECTION V – CONTRIBUTIONS



In addition to the UAL payments shown above, Tier 1 members pay 3/11ths of the EA normal cost (excluding reciprocity normal cost) plus their historical share of administrative expenses. Tier 2 members pay half of the EA normal cost, half of administrative expenses, and half of the UAL payments. In the prior valuation, administrative expenses were assumed to be 1.90% of valuation payroll. The administrative expense assumption was changed to $1,175 per member following the June 30, 2017 experience study. Table V-3 below shows the development of the administrative expense rates for the 2018-2019 fiscal year.

Table V-3

Administrative Expense By Group	Fire		Police	
	Tier 1	Tier 2	Tier 1	Tier 2
Members	1,481	67	2,322	199
Administrative Expense	$ 1,740	$ 79	$ 2,728	$ 234
Member Admin Expense Rate	**0.26%**	**0.34%**	**0.26%**	**0.37%**
Retirement	0.18%	0.27%	0.18%	0.29%
COLA	0.08%	0.07%	0.08%	0.08%
City Admin Expense Rate	**2.07%**	**0.34%**	**2.69%**	**0.37%**
Retirement	1.42%	0.27%	1.87%	0.29%
COLA	0.65%	0.07%	0.82%	0.08%

Dollar amounts in thousands

SECTION V – CONTRIBUTIONS

Table V-4 below shows the contribution rates for the 2018-2019 fiscal year for members and the City by Tier split between Police and Fire groups.

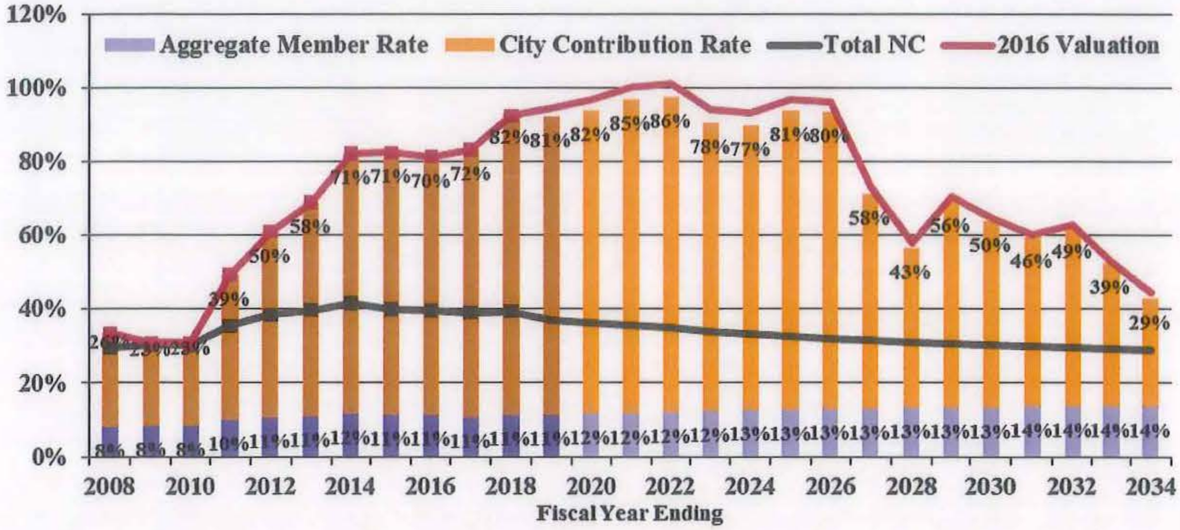
Table V-4

Fiscal Year 2018-19 Contribution Rates	Fire			Police		
	Retirement	COLA	Total	Retirement	COLA	Total
Tier 1 - Members						
Normal Cost	7.46%	3.37%	10.83%	6.90%	3.06%	9.96%
Admin Expense	0.18%	0.08%	0.26%	0.18%	0.08%	0.26%
UAL	0.00%	0.00%	0.00%	0.04%	0.02%	0.06%
Total	**7.64%**	**3.45%**	**11.09%**	**7.12%**	**3.16%**	**10.28%**
Tier 1 - City						
Normal Cost	20.10%	9.03%	29.13%	19.20%	8.39%	27.59%
Admin Expense	1.42%	0.65%	2.07%	1.87%	0.82%	2.69%
UAL	28.71%	38.58%	67.29%	28.67%	38.60%	67.27%
Total	**50.23%**	**48.26%**	**98.49%**	**49.74%**	**47.81%**	**97.55%**
Tier 2 - Members						
Normal Cost	11.54%	3.02%	14.56%	10.51%	2.68%	13.19%
Admin Expense	0.27%	0.07%	0.34%	0.29%	0.08%	0.37%
UAL	0.12%	0.11%	0.23%	0.06%	0.09%	0.15%
Total	**11.93%**	**3.20%**	**15.13%**	**10.86%**	**2.85%**	**13.71%**
Tier 2 - City						
Normal Cost	11.54%	3.02%	14.56%	10.51%	2.68%	13.19%
Admin Expense	0.27%	0.07%	0.34%	0.29%	0.08%	0.37%
UAL	0.12%	0.11%	0.23%	0.06%	0.09%	0.15%
Total	**11.93%**	**3.20%**	**15.13%**	**10.86%**	**2.85%**	**13.71%**

The chart on the next page shows historical and projected aggregate contribution rates for the Plan compared to those projected in the prior valuation. The purple bars are weighted average member contribution rates for Police and Fire for both Tier 1 and Tier 2. The gold bars are weighted average city contribution rates for Police and Fire for both Tier 1 and Tier 2. The darker shaded bars represent historical amounts and the lighter shades represent projected rates. The projected rates assume that all assumptions are met. The chart in the dashboard shows potential variations from these projections for stochastically generated investment returns. The black line shows the weighted average normal cost rate. All contribution rates above this rate represent payments toward the UAL. The red line represents the projection from the prior valuation.

SECTION V – CONTRIBUTIONS

Historical and Projected Aggregate Contribution Rates



The normal cost rate is projected to decline as Tier 1 members terminate employment or retire and are replaced by Tier 2 members who have a significantly lower normal cost rate. Since the last valuation, the investment losses, higher than expected salary increases, and the assumption changes have increased projected City contribution rates. There is a significant decrease in City contribution rates projected between FYE 2026 and FYE 2028 due to the completion of payments on the amortization schedules for the 2009 and 2010 assumption changes and experience losses.

SECTION V – CONTRIBUTIONS

Table V-5 below shows the estimated dollar amounts of the City's contributions assuming contributions are made throughout the fiscal year.

Table V-5

Fiscal Year Ending 2019 Estimated City Contribution Amounts
Contributions Throughout the Year

	Fire			Police		
	Retirement	COLA	Total	Retirement	COLA	Total
Tier 1						
Normal Cost	$ 15,040	$ 6,760	$ 21,800	$ 17,786	$ 7,766	$ 25,552
Admin Expense	1,066	480	1,546	1,729	758	2,488
UAL	21,487	28,878	50,365	26,554	35,751	62,305
Total	**$ 37,593**	**$ 36,117**	**$ 73,711**	**$ 46,070**	**$ 44,275**	**$ 90,345**
Tier 2						
Normal Cost	$ 1,314	$ 344	$ 1,658	$ 3,320	$ 846	$ 4,166
Admin Expense	31	8	39	92	25	117
UAL	14	13	26	19	28	47
Total	**$ 1,358**	**$ 364**	**$ 1,723**	**$ 3,430**	**$ 900**	**$ 4,330**
Total						
Normal Cost	$ 16,354	$ 7,104	$ 23,458	$ 21,106	$ 8,613	$ 29,718
Admin Expense	1,097	488	1,584	1,821	783	2,604
UAL	21,501	28,890	50,391	26,573	35,779	62,353
Total	**$ 38,952**	**$ 36,482**	**$ 75,434**	**$ 49,500**	**$ 45,175**	**$ 94,676**

Dollar amounts in thousands

Historically, the City has made Tier 1 contributions at the beginning of the fiscal year and Tier 2 contributions throughout the year. Table V-6 on the following page shows the estimated dollar amounts of the City's Tier 1 contributions assuming contributions are made at the beginning of the fiscal year. In accordance with the Board's policy, contributions made at the beginning of FYE 2019 are discounted for one-half year of interest at 55% of the valuation discount rate. To the extent the City's contributions are made after the beginning of the fiscal year, the amounts should be adjusted for interest.

SECTION V – CONTRIBUTIONS

Table V-6

Fiscal Year Ending 2019 Estimated City Contribution Amounts Beginning of Year	Fire			Police		
	Retirement	COLA	Total	Retirement	COLA	Total
Tier 1						
Normal Cost	$ 14,764	$ 6,636	$ 21,399	$ 17,459	$ 7,623	$ 25,083
Admin Expense	1,046	471	1,517	1,698	744	2,442
UAL	21,092	28,347	49,439	26,066	35,094	61,160
Total	**$ 36,902**	**$ 35,453**	**$ 72,356**	**$ 45,223**	**$ 43,461**	**$ 88,684**

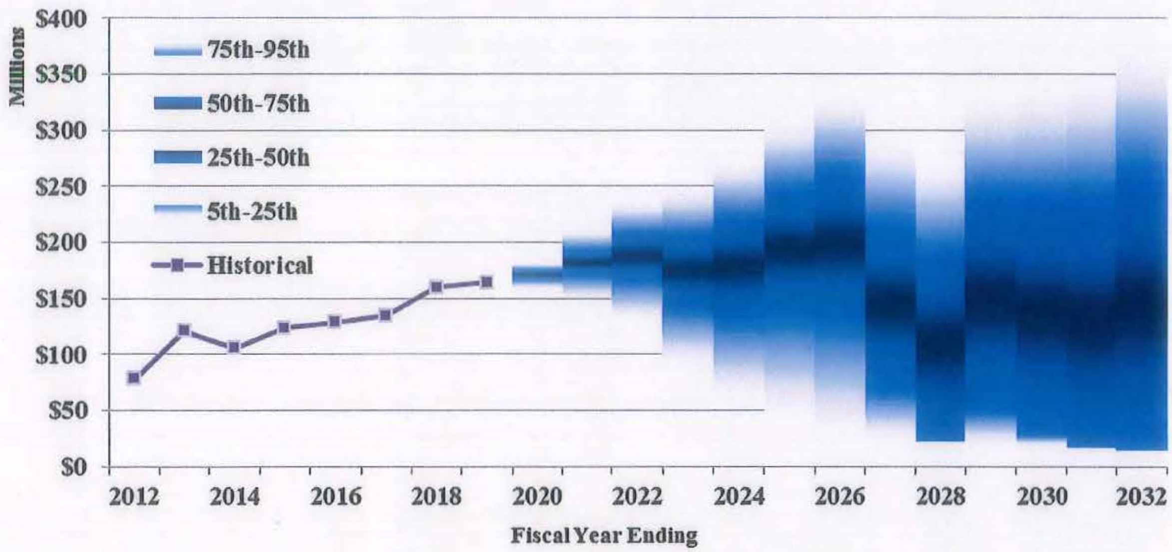
Dollar amounts in thousands

If experience has taught us anything, it is that there is a significant level of uncertainty in projections of the future. The largest source of uncertainty is the projection of investment returns. In order to better understand the potential impact of investment returns on the Plan, we have included some stochastic projections in the dashboard and in this section of the report. The stochastic projections are based on Verus's 10-year capital market assumptions for the Plan's investment portfolio, including a 6.3% geometric return and an 11.2% standard deviation. Each projection contains 10,000 trials that are 15 years in length.

The chart on the next page shows the historical and stochastically projected City contribution amounts for Tier 1. The purple line represents the amounts paid historically or the amounts already determined by an actuarial valuation. The projected amounts are shown as bars that are dark blue at the median of the 10,000 trials and fade to white as the range extends to the 5th and 95th percentiles of the 10,000 trials. This range is intended to convey the degree of uncertainty in the projections based on future investment returns.

SECTION V – CONTRIBUTIONS

Historical and Stochastically Projected Tier 1 City Contribution Amounts

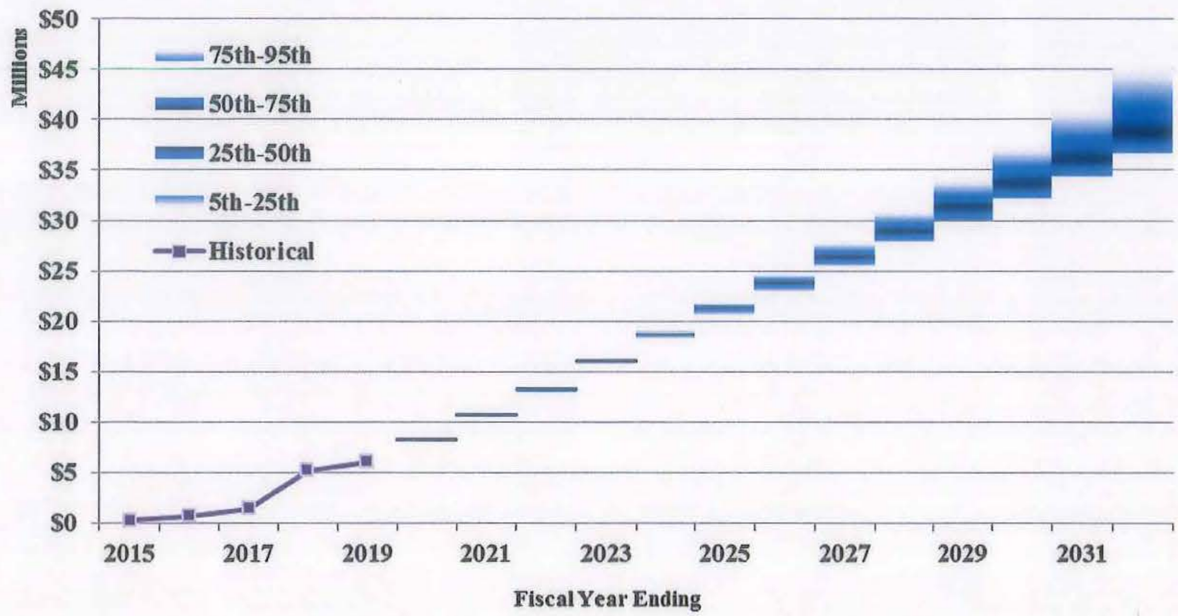


The chart shows a very wide range of potential City contribution amounts depending on actual investment returns. The range between the 5th and 95th percentile for FYE 2026 (based on the 2024 actuarial valuation) is from a contribution of $27 million to a contribution of $328 million. This range is largely driven by the standard deviation of the investment portfolio.

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

SECTION V – CONTRIBUTIONS

Historical and Stochastically Projected Tier 2 City Contribution Amounts



SECTION VI – ACTUARIAL SECTION OF THE CAFR

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

Table VI-1

Schedule of Funding Progress

Actuarial Valuation Date	Actuarial Value of Assets	Actuarial Liability (AL)	Unfunded Actuarial Liability	Funded Ratio	Covered Payroll	Unfunded AL as a % of Covered Payroll
6/30/2017	$ 3,439,922	$ 4,464,402	$ 1,024,480	77.1%	$ 203,816	502.6%
6/30/2016	3,303,550	4,355,990	1,052,440	75.8%	194,072	542.3%
6/30/2015	3,212,776	4,058,410	845,634	79.2%	184,733	457.8%
6/30/2014	3,025,101	3,813,825	788,724	79.3%	188,189	419.1%
6/30/2013	2,771,924	3,578,031	806,107	77.5%	184,645	436.6%
6/30/2012	2,703,539	3,397,792	694,253	79.6%	187,959	369.4%
6/30/2011	2,685,721	3,196,007	510,286	84.0%	190,726	267.5%
6/30/2010	2,576,705	3,230,456	653,751	79.8%	251,058	260.4%
6/30/2009	2,569,569	2,963,482	393,913	86.7%	255,223	154.3%
6/30/2007	2,365,790	2,372,386	6,596	99.7%	227,734	2.9%

Amounts prior to June 30, 2011 calculated by prior actuary *Dollar amounts in thousands*

The Government Finance Officers Association has named the exhibit on the next page, the Solvency Test. It should be noted, however, that it doesn't test the solvency of the plan in the sense understood by financial economists that a 100 percent ratio would mean that there were sufficient assets to settle the obligation on the valuation date. Instead, a 100 percent ratio only means that assets are expected to be sufficient if all assumptions are met in the future, including the expected rate of return on investments.

SECTION VI – ACTUARIAL SECTION OF THE CAFR

Table VI-2

Solvency Test							
	Actuarial Liability For						
Actuarial Valuation Date	Active Member Contributions (A)	Retirees, Beneficiaries and Other Inactives (B)	Remaining Active Members' Liability (C)	Reported Assets	Portion of Actuarial Liability Covered by Reported Assets (A)	(B)	(C)
6/30/2017	$ 299,933	$ 3,050,871	$ 1,113,598	$ 3,439,922	100%	100%	8%
6/30/2016	294,535	2,999,773	1,061,682	3,303,550	100%	100%	1%
6/30/2015	285,538	2,819,410	953,462	3,212,776	100%	100%	11%
6/30/2014	288,227	2,585,611	939,987	3,025,101	100%	100%	16%
6/30/2013	280,727	2,452,728	844,576	2,771,924	100%	100%	5%
6/30/2012	276,047	2,310,295	811,450	2,703,539	100%	100%	14%
6/30/2011	260,172	2,174,044	761,791	2,685,721	100%	100%	33%
6/30/2010	246,356	1,907,931	1,076,169	2,576,705	100%	100%	39%
6/30/2009	243,302	1,630,914	1,089,266	2,569,569	100%	100%	64%
6/30/2007	227,191	1,240,126	905,069	2,365,790	100%	100%	99%

Amounts prior to June 30, 2011 calculated by prior actuary *Dollar amounts in thousands*

SECTION VI – ACTUARIAL SECTION OF THE CAFR

In the exhibit below, non-recurring items include changes in assumptions and changes in plan provisions.

Table VI-3

Analysis of Financial Experience					
	Gain or (Loss) for Year(s) Ending on Valuation Date Due To:				
Actuarial Valuation Date	Investment Income	Combined Liability Experience	Total Financial Experience	Non-Recurring Items	Total Experience
6/30/2017	$ (50,882)	$ (57,971)	$ (108,853)	$ 127,571	$ 18,718
6/30/2016	(106,785)	(54,528)	(161,313)	(72,680)	(233,993)
6/30/2015	2,806	7,291	10,097	(90,004)	(79,907)
6/30/2014	78,462	(14,678)	63,784	(55,787)	7,997
6/30/2013	(92,499)	11,115	(81,384)	(28,233)	(109,618)
6/30/2012	(172,759)	39,432	(133,327)	(75,220)	(208,548)
6/30/2011	(96,473)	278,051	181,578	12,360	193,938
6/30/2010	(149,621)	43,880	(105,741)	(104,240)	(209,981)
6/30/2009	(138,383)	(113,495)	(251,878)	(145,351)	(397,229)
6/30/2007	97,135	47,735	144,870	(93,343)	51,527

Amounts prior to June 30, 2011 calculated by prior actuary — *Dollar amounts in thousands*

Data Assumptions and Methods

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

- Records on the "Active" data file are considered to be Active if they do not have a reason for termination.
- Records on any of the data files are considered to be Inactive if they have a reason for termination of deferred vested or leave of absence/inactive.
- Records on the "Retiree" and "Beneficiary/QDRO" files are considered in pay status if they do not have a date of death, are not inactive and have not withdrawn from the plan.
- Salary for the year commencing on the valuation date is defined as the greater of:
  - Annualized "compensation rate 2," increased with one year of wage inflation and one half year of merit increase; and,
  - "Pensionable compensation" for the year ending on the valuation date, increased with one year of wage inflation and one year of merit increase.
- The annual benefit for deferred vested members is set to be the accrued benefit provided. If an accrued benefit is not provided, then an annual benefit is estimated at the later of their current age and assumed retirement age, using the benefit service provided and annualized "compensation rate 2."
- We assume any member found in last year's "Retiree" file and not in this year's file is deceased without a beneficiary and should be removed from the valuation data.
- We assume all deceased members with payments continuing to a beneficiary have already been accounted for in the "Retiree" file.
- If a spouse continuance amount is not provided on a retiree or disabled member's record, it is assumed to equal the member's benefit, multiplied by 37.5% and divided by the member's benefit multiplier at retirement.

APPENDIX A – MEMBERSHIP INFORMATION

Table A-1

Active Member Data	June 30, 2017			June 30, 2016	
	Fire	Police	Total	Total	% Change
Count					
Tier 1	586	747	1,333	1,393	-4.3%
Tier 2	61	150	211	189	11.6%
Total	647	897	1,544	1,582	-2.4%
Average Current Age	43.2	42.4	42.7	42.4	0.7%
Average Vesting Service	14.1	15.0	14.6	14.3	1.9%
Expected Pensionable Earnings					
Total	$ 83,517,112	$ 120,299,327	$ 203,816,439	$ 194,072,092	5.0%
Average	$ 129,084	$ 134,113	$ 132,005	$ 122,675	7.6%

Table A-2

Schedule of Active Member Data

Valuation Year	Active Count	Annual Payroll	Monthly Average Pay	Percent Change in Average Pay*
2017	1,544	$ 203,816,439	$ 11,000	7.61%
2016	1,582	194,072,093	10,223	4.72%
2015	1,577	184,733,063	9,762	2.96%
2014	1,654	188,188,712	9,481	5.19%
2013	1,707	184,645,250	9,014	-1.13%
2012	1,718	187,958,523	9,117	-0.48%
2011	1,735	190,726,258	9,161	-11.51%
2010	2,021	251,058,473	10,352	1.38%
2009	2,083	255,222,552	10,211	14.92%
2007	2,136	227,734,449	8,885	1.68%

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

APPENDIX A – MEMBERSHIP INFORMATION

Table A-3

Non-Active Member Data	Count			Average Age		
	June 30, 2017	June 30, 2016	%Change	June 30, 2017	June 30, 2016	%Change
Retired	974	942	3.4%	64.4	64.0	0.6%
Disabled	912	912	0.0%	67.9	67.6	0.4%
Beneficiaries	306	295	3.7%	67.9	66.9	1.5%
Payee Total	1,218	1,207	0.9%	66.3	65.9	0.6%
Deferred Vesteds	330	314	5.1%	41.3	41.0	0.7%

Table A-4

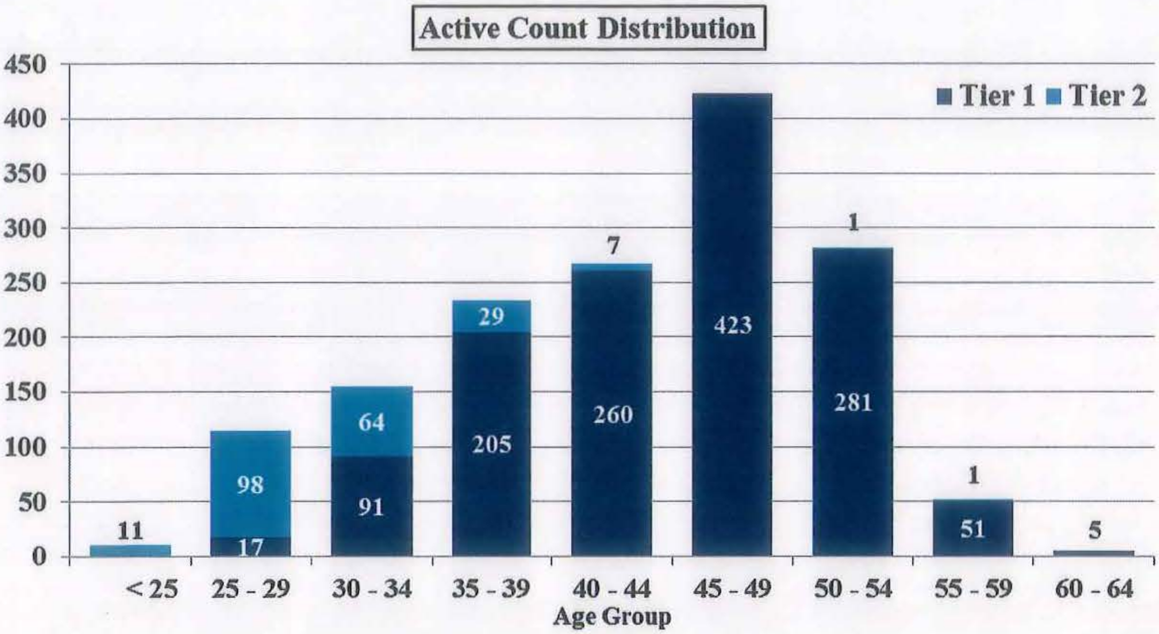
Non-Active Member Data	Total Annual Benefit*			Average Annual Benefit*		
	June 30, 2017	June 30, 2016	%Change	June 30, 2017	June 30, 2016	%Change
Retired	$ 104,800,003	$ 99,250,254	5.6%	$ 107,598	$ 105,361	2.1%
Disabled	82,587,125	79,679,106	3.6%	90,556	87,367	3.7%
Beneficiaries	12,809,856	11,967,590	7.0%	41,862	40,568	3.2%
Payee Total	$ 200,196,985	$ 190,896,949	4.9%	$ 240,016	$ 233,296	2.9%
Deferred Vesteds**	$ 6,719,359	$ 6,279,561	7.0%	$ 20,362	$ 19,999	1.8%

* Benefits provided in June 30 valuation data.

** Deferred vested benefit amounts are estimated based on the last known salary and benefit service.

APPENDIX A – MEMBERSHIP INFORMATION

Chart A-1



APPENDIX A – MEMBERSHIP INFORMATION

Table A-5

Distribution of Active Members as of June 30, 2017

	Years of Benefit Service								
Age	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 and Up	Total
Under 25	10	1	-	-	-	-	-	-	11
25 to 29	22	91	2	-	-	-	-	-	115
30 to 34	8	88	33	26	-	-	-	-	155
35 to 39	9	45	83	88	9	-	-	-	234
40 to 44	-	11	41	88	112	15	-	-	267
45 to 49	-	5	20	37	157	180	24	-	423
50 to 54	-	2	2	13	82	122	56	5	282
55 to 59	-	2	-	4	9	22	14	1	52
60 to 64	-	-	-	-	1	2	1	1	5
65 to 69	-	-	-	-	-	-	-	-	-
70 and up	-	-	-	-	-	-	-	-	-
Total Count	49	245	181	256	370	341	95	7	1,544

Table A-6

Distribution of Active Members as of June 30, 2017

	Average Expected Salary Years of Benefit Service								
Age	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 and Up	Total
Under 25	$ 95,234	$ 100,049	$ -	$ -	$ -	$ -	$ -	$ -	$ 95,671
25 to 29	95,447	100,934	121,153	-	-	-	-	-	100,236
30 to 34	95,234	104,902	127,382	133,670	-	-	-	-	114,015
35 to 39	95,234	104,543	127,632	134,881	136,051	-	-	-	124,996
40 to 44	-	106,294	127,903	132,595	139,666	147,637	-	-	134,602
45 to 49	-	119,202	128,514	135,936	138,135	146,899	159,613	-	142,212
50 to 54	-	97,693	126,142	131,606	137,316	142,705	155,021	155,989	142,871
55 to 59	-	94,572	-	137,512	134,590	139,076	143,762	133,989	137,631
60 to 64	-	-	-	-	127,782	134,113	195,574	183,308	154,978
65 to 69	-	-	-	-	-	-	-	-	-
70 and up	-	-	-	-	-	-	-	-	-
Avg. Salary	$ 95,329	$ 103,554	$ 127,657	$ 133,999	$ 138,252	$ 144,851	$ 154,949	$ 156,749	$ 132,005

APPENDIX A – MEMBERSHIP INFORMATION

Table A-7

Retirees and Disabled by Attained Age and Benefit Effective Date
As of June 30, 2017

Benefit	Age										
Effective	Under 50	50 to 54	55 to 59	60 to 64	65 to 69	70 to 74	75 to 79	80 to 84	85 to 89	90 and up	Total
Pre-1997	-	1	6	8	13	87	136	99	44	12	406
PYE 1997	-	1	-	1	4	28	22	3	1	-	60
PYE 1998	-	-	1	2	8	38	17	1	-	-	67
PYE 1999	-	-	-	2	9	27	12	2	-	-	52
PYE 2000	-	-	1	-	12	24	10	1	-	-	48
PYE 2001	-	1	1	3	18	27	3	1	-	-	54
PYE 2002	-	1	2	1	18	25	1	-	-	-	48
PYE 2003	1	1	2	8	31	28	3	-	-	-	74
PYE 2004	-	-	-	5	29	9	2	-	-	-	45
PYE 2005	-	1	3	17	36	15	2	1	-	-	75
PYE 2006	-	-	-	12	11	12	1	-	-	-	36
PYE 2007	-	3	2	27	26	7	-	-	-	-	65
PYE 2008	4	-	-	33	21	4	-	-	-	-	62
PYE 2009	1	3	19	73	45	11	2	-	-	-	154
PYE 2010	1	1	40	73	20	2	-	-	-	-	137
PYE 2011	4	3	57	42	5	-	1	-	-	-	112
PYE 2012	6	5	38	18	2	1	-	-	-	-	70
PYE 2013	9	14	20	9	3	-	-	-	-	-	55
PYE 2014	9	16	26	3	-	-	-	-	-	-	54
PYE 2015	10	37	39	7	2	-	-	-	-	-	95
PYE 2016	7	35	10	3	-	-	-	-	-	-	55
PYE 2017	9	35	16	2	-	-	-	-	-	-	62
Total	61	158	283	349	313	345	212	108	45	12	1,886

Average Age at Retirement/Disability		52.4
Average Current Age		64.4
Average Annual Pension	$	107,598

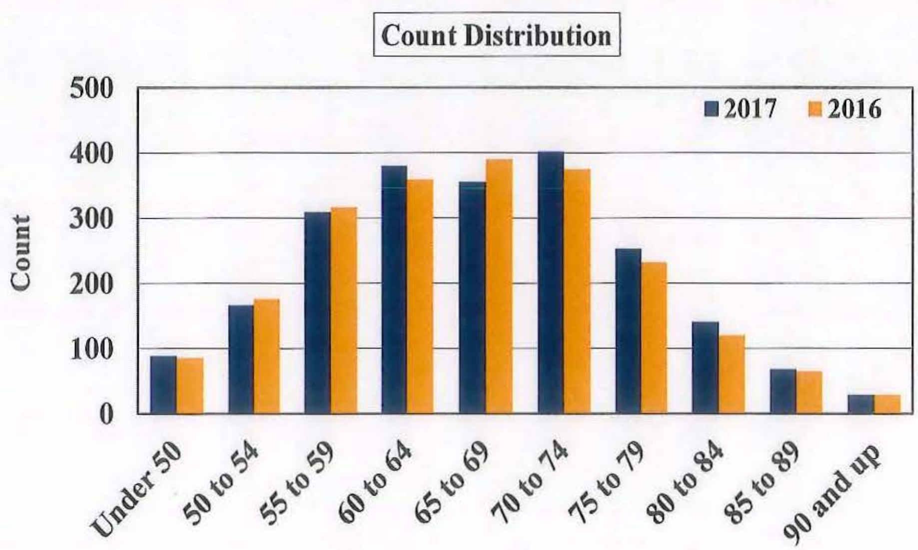
APPENDIX A – MEMBERSHIP INFORMATION

Table A-8

Distribution of Retirees, Disabled Members, and Beneficiaries

Age	June 30, 2017	June 30, 2016
Under 50	89	86
50 to 54	166	176
55 to 59	309	317
60 to 64	380	359
65 to 69	355	390
70 to 74	402	375
75 to 79	253	232
80 to 84	141	120
85 to 89	68	65
90 and up	29	29
Total	**2,192**	**2,149**

Chart A-2



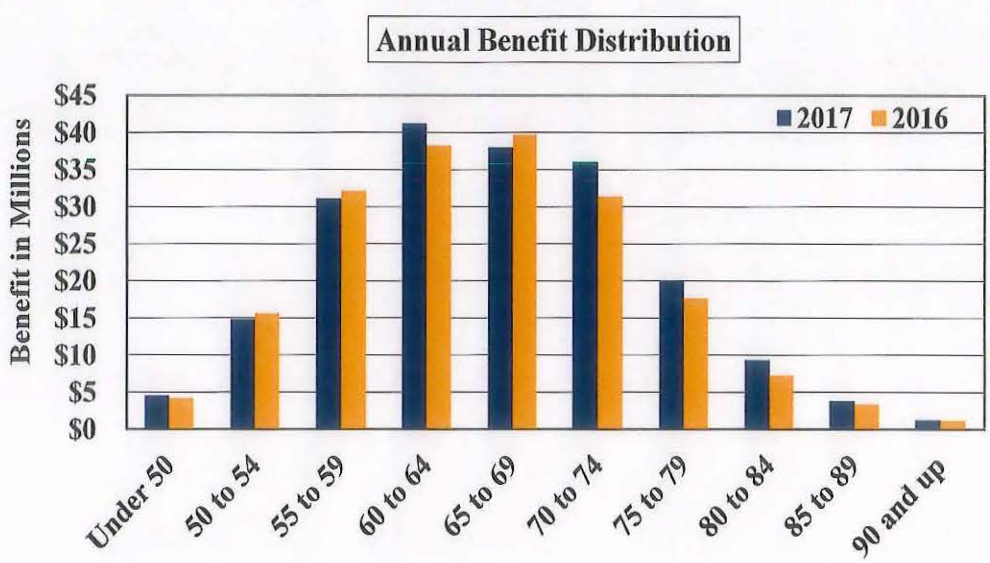
APPENDIX A – MEMBERSHIP INFORMATION

Table A-9

Distribution of Annual Benefit Amounts

Age	June 30, 2017	June 30, 2016
Under 50	$ 4,579,327	$ 4,219,555
50 to 54	14,812,172	15,653,157
55 to 59	31,124,020	32,180,301
60 to 64	41,206,100	38,247,118
65 to 69	38,023,573	39,746,098
70 to 74	36,039,674	31,387,689
75 to 79	20,000,867	17,648,377
80 to 84	9,333,881	7,265,093
85 to 89	3,864,580	3,378,785
90 and up	1,212,790	1,170,777
Total	**$ 200,196,985**	**$ 190,896,949**

Chart A-3



APPENDIX A – MEMBERSHIP INFORMATION

Table A-10

Changes in Plan Membership	Actives		Terminated				In-Pay		
	Tier 1	Tier 2	Non-Vested	Vested	Reciprocal	Retirees	Disabilities	Beneficiaries	Total
June 30, 2016	**1,393**	**189**	**97**	**66**	**154**	**942**	**912**	**295**	**4,048**
New Entrants	0	48							48
Rehires	2	1	(3)						0
Non-Vested Terminations	(1)	(17)	18						0
Vested Deferrals	(13)	(1)		14					0
Transfers			(2)	(1)	3				0
Return of Contributions		(1)	(6)	(9)	(2)				(18)
Disabilities	(11)			(2)		(12)	25		0
Retirements	(46)			(2)	(3)	51			0
Deaths	(1)					(7)	(25)	23	(10)
Beneficiary Deaths								(8)	(8)
Measure F Transfers	9	(8)	(1)						0
Adjustments	1		2	10				(4)	9
June 30, 2017	**1,333**	**211**	**105**	**76**	**152**	**974**	**912**	**306**	**4,069**

Table A-11

Schedule Of Retirees and Beneficiaries Added to and Removed from Rolls	Beginning		Added to Rolls		Removed from Rolls		End of Period		% Increase	Average
Period	Count	Annual Allowances	Count	Annual Allowances	Count	Annual Allowances	Count	Annual Allowances	in Annual Allowances*	Annual Allowances
2016-2017	2,149	$ 190,897	87	$ 11,816	44	$ 2,516	2,192	$ 200,197	4.9%	$ 91,331
2015-2016	2,108	182,185	72	10,843	31	2,131	2,149	190,897	4.8%	88,831
2014-2015	2,032	170,872	115	13,700	39	2,387	2,108	182,185	6.6%	86,426
2013-2014	1,994	162,716	73	10,142	35	1,986	2,032	170,872	5.0%	84,091
2012-2013	1,942	154,381	91	10,259	39	1,924	1,994	162,716	5.4%	81,603
2011-2012	1,885	144,139	88	11,583	31	1,341	1,942	154,381	7.1%	79,496
2010-2011	1,810	131,014	133	15,384	58	2,259	1,885	144,139	10.0%	76,466
2009-2010	1,700	115,573	152	17,238	42	1,797	1,810	131,014	13.4%	72,383
2007-2009	1,477	90,061	276	27,537	53	2,025	1,700	115,573	28.3%	67,984
2005-2007	1,385	76,071	143	15,913	51	1,923	1,477	90,061	18.4%	60,976
2003-2005	1,271	62,314	161	15,619	47	1,862	1,385	76,071	22.1%	54,925

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

Annual Allowances in Thousands

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

A. Actuarial Assumptions

The discount rate used in this report was adopted by the Board of Administration with our input at the December 7, 2017 Board meeting. All other assumptions were adopted at the November 2, 2017 Board meeting based on recommendations from our experience study covering plan experience during the period from July 1, 2009 through June 30, 2017. Please refer to the experience study for the rationale for each of the assumptions.

1. Discount Rate

6.875% net of investment expenses. The long-term expected return on assets based on Meketa's capital market assumptions for a 20-year time horizon is 7.1%. The Board applied a margin for adverse deviation to improve the probability of achieving the discount rate.

2. Price Inflation

2.75% per annum.

3. Wage Inflation

3.25% per annum (0.50% real wage growth).

4. Salary Increase Rate

The following merit component is added to wage inflation, based on an individual member's years of service:

Table B-1

Salary Merit Increases	
Years of Service	Merit/ Longevity
0	6.00%
1	5.50
2	5.00
3	4.50
4	4.00
5	3.50
6	2.75
7	2.00
8	1.50
9	1.00
10	0.75
11+	0.50

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

5. Rates of Retirement

Rates of retirement are based on age and service according to the following Tables B-2, B-3, and B-4. Tier 1 rates only apply when the member is eligible for unreduced benefits.

Table B-2

Tier 1 Rates of Retirement by Age and Service				
	Police		Fire	
Age	<30 Years	30+ Years	<30 Years	30+ Years
50	55.0%	100.0%	35.0%	100.0%
51	45.0	100.0	35.0	100.0
52	40.0	100.0	35.0	100.0
53 – 55	35.0	100.0	35.0	100.0
56 - 57	35.0	100.0	27.5	100.0
58 - 61	50.0	100.0	27.5	100.0
62+	100.0	100.0	100.0	100.0

Table B-3

Tier 2 Rates of Retirement by Age and Service Police				
Age	5 - 19 Years	20 - 24 Years	25 – 29 Years	30+ Years
50 - 56	2.0%	2.0%	2.0%	5.0%
57 - 59	7.5	10.0	20.0	100.0
60 - 61	10.0	20.0	35.0	100.0
62 - 64	25.0	50.0	75.0	100.0
65+	100.0	100.0	100.0	100.0

Table B-4

Tier 2 Rates of Retirement by Age and Service Fire				
Age	5 - 19 Years	20 - 24 Years	25 – 29 Years	30+ Years
50 - 56	1.0%	1.0%	1.0%	2.5%
57 - 59	5.0	7.5	15.0	100.0
60 - 61	7.5	15.0	25.0	100.0
62 - 64	20.0	35.0	50.0	100.0
65+	100.0	100.0	100.0	100.0

Tier 1 vested terminated members are assumed to retire at age 55 and Tier 2 vested terminated members are assumed to retire at age 60.

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

6. Rates of Termination

Sample rates of termination are shown in the following Table B-5.

Table B-5

	Rates of Termination	
Service	Police	Fire
0	16.00%	25.00%
1	11.75	7.00
2	9.85	3.50
3	8.35	1.75
4	7.00	1.25
5	5.75	1.00
6	4.75	0.90
7	4.00	0.80
8	3.50	0.70
9	3.50	0.60
10	3.50	0.50
11	3.50	0.50
12	3.00	0.50
13	2.50	0.50
14	2.00	0.50
15+	2.00	0.50

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

75% of terminating employees are assumed to subsequently work for a reciprocal employer and receive 3.25% pay increases per year.

7. Rates of Disability

For Police, disability rates are equal to the CalPERS police industrial and non-industrial rates for public agencies multiplied by 90% for ages under 50 and 140% for ages 50 and older. For Fire, disability rates are equal to the CalPERS fire industrial and non-industrial rates for public agencies multiplied by 90% for ages under 50 and 180% for ages 50 and older. Sample disability rates of active participants are provided in Table B-6.

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

Table B-6

Rates of Disability at Selected Ages		
Age	Police	Fire
25	0.16%	0.03%
30	0.45	0.08
35	0.74	0.15
40	1.03	0.28
45	1.32	0.50
50	2.70	5.08
55	6.88	7.54
60	8.71	10.77
65	10.47	14.84

100% of disabilities are assumed to be duty related.

8. Rates of Mortality

Mortality rates for actives, retirees, beneficiaries, terminated vested, and reciprocals are based on the sex-distinct employee and annuitant mortality tables shown below. Future mortality improvements are reflected by applying the SOA MP-2017 projection scale on a generational basis from the base year of 2009.

Table B-7

	Base Mortality Tables	
Category	Male	Female
Healthy Annuitant	0.948 times the CalPERS 2009 Healthy Annuitant Mortality Table (Male)	1.048 times the CalPERS 2009 Healthy Annuitant Mortality Table (Female)
Healthy Non-Annuitant	0.948 times the CalPERS 2009 Employee Mortality Table (Male)	1.048 times the CalPERS 2009 Employee Mortality Table (Female)
Disabled Annuitant	0.903 times the CalPERS 2009 Industrial Disability Mortality Table (Male)	0.903 times the CalPERS 2009 Industrial Disability Mortality Table (Male)

It is assumed that 50% of active deaths are service related.

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

9. Family Composition

Percentage married is shown in the following Table B-8. Women are assumed to be three years younger than men.

Table B-8

Percentage Married	
Gender	**Percentage**
Males	85%
Females	85%

10. Administrative Expenses

For FYE 2018, administrative expenses are assumed to equal $1,175 per member and are assumed to increase at the wage inflation assumption of 3.25% per annum. Historically, the administrative expenses were assumed to reduce the investment return assumption by 10 basis points which resulted in a higher normal cost. To maintain the same historic division of Tier 1 member and City contributions for administrative expenses for this valuation, members were allocated a portion of the administrative expenses equal to 3/11ths of the difference in normal cost that a 10 basis point reduction in the investment return assumption would cause. Tier 2 members pay 50 percent of administrative expenses.

11. Changes Since Last Valuation

Merit salary increases, termination rates, retirement rates, administrative expenses, and the mortality improvement projection scale have been changed based on an experience study covering demographic experience from June 30, 2009 through June 30, 2017. Please refer to the experience study report for the details of the assumption changes and the rationale.

B. Contribution Allocation Procedure

The contribution allocation procedure primarily consists of an actuarial cost method, an asset smoothing method, and an amortization method as described below. All components of the contribution allocation procedure were established prior to the June 30, 2011 actuarial valuation except as specifically noted below.

1. Actuarial Cost Method

The Entry Age actuarial cost method was used for active employees, whereby the normal cost is computed as the level annual percentage of pay required to fund the retirement benefits between each member's date of hire and assumed retirement. The Actuarial Liability is the difference between the Present Value of Future Benefits and the present value of future normal cost. The Unfunded Actuarial Liability is the difference between the Actuarial Liability and the Actuarial Value of Assets.

2. Asset Valuation Method

For the purposes of determining the employer's contribution, we use an Actuarial Value of Assets. The asset smoothing method dampens the volatility in asset values that could occur because of the fluctuations in market conditions. Use of an asset smoothing method is consistent with the long-term nature of the actuarial valuation process. Assets are assumed to be used exclusively for the provision of retirement benefits and expenses.

The Actuarial Value of Assets is calculated by recognizing the deviation of actual investment returns compared to the expected return (6.875% for 2016-2017, 7.00% for 2015-2016, 7.00% for 2014-2015, 7.125% for 2013-2014, and 7.25% for 2012-2013) over a five-year period. The dollar amount of the expected return on the Market Value of Assets is determined using the actual contributions and benefit payments during the year. Any difference between this amount and the actual net investment earnings is considered a gain or loss.

Finally, the Actuarial Value of Assets is restricted to a corridor between 80 percent and 120 percent of the Market Value of Assets.

3. Amortization Method

Actuarial gains and losses and plan changes are amortized as a level percentage of pay assuming 3.25% annual growth in payroll over a 15-year period beginning with the valuation date in which they first arise. In previous valuations, actuarial gains and losses and plan changes were amortized over a 16-year period. Changes in methods and assumptions are amortized as a level percentage of pay assuming 3.25% annual growth in payroll over a 20-year period (16 years for changes prior to June 30, 2011) beginning with the valuation date on which they are effective.

APPENDIX C – SUMMARY OF PLAN PROVISIONS
TIER 1

1. Membership Requirement

Participation in the plan is immediate upon the first day of employment with the City of San José as a police officer or fire fighter except for the following:

- Independent contractors,
- Person in City service principally for training or educational purposes,
- Auxiliary or voluntary police officers or fire fighters,
- Part-time or non-salaried employees, and
- Employees receiving credit in any other retirement or pension system.

Persons eligible for Tier 1 membership include:

- Any police officer hired prior to August 4, 2013 or any firefighter hired prior to January 2, 2015.
- Any person who was a member of this plan as an employee of the police department prior to August 4, 2013, and terminated employment with the city, and returned to employment with the city in a position covered by this plan on or after August 4, 2013.
- Any person who was a member of this plan as an employee of the fire department prior to January 2, 2015, and terminated employment with the city, and returned to employment with the city in a position covered by this plan on or after January 2, 2015.
- Any person accepting employment in the police department or fire department of the city on or after January 1, 2013, who is otherwise eligible for this plan and who was an active member in another California public retirement system with which this plan has reciprocity under Part 16, and who has a break in service of less than six months from that covered employment and employment with the city.

2. Final Compensation

The highest twelve consecutive months of compensation in covered employment. However, in determining Final Compensation, no compensation in the last 12 months of employment that exceeds 108% of compensation during the 12 months immediately preceding the last 12 month shall be considered. Compensation excludes overtime pay and expense allowances.

3. Credited Service

Years of service in covered employment plus service purchased for military leave of absence, Federated service, and unpaid leaves of absence.

APPENDIX C – SUMMARY OF PLAN PROVISIONS
TIER 1

4. Contributions

a. Member:

The amount needed to fund 3/11ths of normal cost calculated under the Entry Age actuarial cost method plus the amortization payment on the February 4, 1996 benefit improvement. For Police members, there is an additional amortization payment for member contributions not made for the last 6 months of 2006.

b. Employer:

The Employer contributes the remaining amounts necessary to fund the Plan in accordance with the Board's funding policy.

5. Service Retirement

Eligibility

Age 55 with 20 years of service, age 50 with 25 years of service, age 70 with no service requirement, or any age with 30 years of service. Reduced benefits are also available at age 50 with 20 years of service.

Benefit

Police: 2.5% of Final Compensation for each year of credited service up to 20 years plus 4.0% of Final Compensation for each year of credited service in excess of 20, subject to a maximum of 90% of Final Compensation.

Fire: For members with less than 20 years of service, 2.5% of Final Compensation for each year of credited service. For members with 20 or more years of service, 3.0% of Final Compensation for each year of service, subject to a maximum of 90% of Final compensation.

6. Service Connected Disability Retirement

Eligibility

No age or service requirement.

Benefit

Police: 50% of Final Compensation plus 4.0% of Final Compensation for each year of credited service in excess of 20, subject to a maximum of 90% of Final Compensation.

APPENDIX C – SUMMARY OF PLAN PROVISIONS
TIER 1

Fire: For members with less than 20 years of service, 50% of Final Compensation. For members with 20 or more years of service, 3.0% of Final Compensation for each year of service, subject to a maximum of 90% of Final Compensation.

7. Non-Service Connected Disability Retirement

Eligibility

Two years of service.

Benefit

For members with less than 20 years of service, 32% of Final Compensation plus 1% of Final Compensation for each year of service in excess of two. For members with 20 or more years of service, the benefit amount equals the amount that would be calculated under the service retirement formula.

8. Non-Service-Connected Death

Less than 2 Years of Service:
Lump sum benefit equal to the greater of accumulated employee contributions with interest or $1,000.

Disabled retirees or members ineligible for service retirement:
Spouse receives 24% of Final Compensation plus 0.75% of Final Compensation for each year of service in excess of two, subject to a maximum of 37.5% of Final Compensation. If a member has eligible dependent children, an additional benefit is payable as follows:

1 Child: 25% of Final Compensation
2 Children: 37.5% of Final Compensation
3+ Children: 50% of Final Compensation

The total benefit payable to a family is limited to 75% of Final Compensation.

If a member does not have a spouse or eligible dependent children, a lump sum benefit equal to the greater of accumulated employee contributions with interest or $1,000.

Service retirees or members eligible for service retirement:
Spouse receives the greater of 37.5% of Final Compensation or 50% of the member's service retirement benefit, subject to a maximum of 42.5% of Final Compensation for Police and 45% of Final Compensation for Fire. Eligible dependent children will receive the same benefit as defined under the non-service-connected death for disabled retirees or

members ineligible for service retirement. The total benefit payable to a family is limited to 75% of Final Compensation.

9. Service-Connected Death

Spouse receives the greater of 37.5% of Final Compensation or 50% of the member's service retirement benefit, subject to a maximum of 42.5% of Final Compensation for Police and 45% of Final Compensation for Fire. If a member has eligible dependent children, an additional benefit of 25% of Final Compensation is payable for each eligible dependent child. The total benefit payable to a family is limited to 75% of Final Compensation.

10. Termination Benefits

Less than 10 Years of Service:
Lump sum benefit equal to the accumulated employee contributions with interest at 2% per annum.

10 or more years of credited service:
The amount of the service retirement benefit, payable at the later of age 55 or 20 years from date of membership.

11. Post-retirement Cost-of-Living Benefit

Benefits are increased every February 1 by 3.0%.

12. Changes Since Last Valuation

Membership requirements were changed by Measure F to allow former members and certain hires with reciprocity to enter Tier 1.

APPENDIX C – SUMMARY OF PLAN PROVISIONS
TIER 2

1. **Membership Requirement**

   Any police officer who is hired by the City on or after August 4, 2013, or any fire fighter who is hired by the City on or after January 2, 2015, and who does not meet the eligibility requirements for Tier 1.

2. **Final Compensation**

   The highest average monthly compensation of the member during any thirty-six consecutive months of covered employment. Compensation excludes overtime pay and expense allowances.

3. **Credited Service**

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

4. **Member Contributions**

   50% of total Tier 2 contributions to the pension plan, including, but not limited to administrative expenses, normal cost, and Unfunded Actuarial Liability. Increases in members' Unfunded Actuarial Liability contribution are limited to one-third of one percent of compensation each year. Contributions cannot be less than 50% of normal cost.

5. **Unreduced Service Retirement**

   Eligibility

   Age 57 with five years of service.

   Benefit – Member

   2.4% of Final Compensation for each year of credited service up to 20 years, plus 3.0% of Final Compensation for each year of credited service between 20 years and 25 years, plus 3.4% of Final Compensation for each year of credited service in excess of 25 years, subject to a maximum of 80% of Final Compensation.

   Benefit – Survivor

   50% joint and survivor annuity.

APPENDIX C – SUMMARY OF PLAN PROVISIONS
TIER 2

6. **Early Service Retirement**

Eligibility

Age 50 with five years of service.

Benefit – Member

Reduced 7% per year for each year between age 57 and the member's age at retirement.

7. **Service-Connected Disability Retirement**

Eligibility

No age or service requirement.

Benefit – Member

The greater of:

- Monthly benefit equivalent to 50% of Final Compensation,
- The service retirement benefit, if eligible for service retirement,
- A service retirement benefit actuarially reduced from age 50, if not eligible for service retirement.

8. **Non-Service Connected Disability Retirement**

Eligibility

Five years of service.

Benefit – Member

1.8% of Final Compensation for each year of credited service if less than age 50, or the service pension benefit if older than age 50.

APPENDIX C – SUMMARY OF PLAN PROVISIONS
TIER 2

9. Death Before Retirement

If death occurs before retirement eligibility is reached and after two years of service

Monthly benefit equal to 24% of Final Compensation plus 0.75% of Final Compensation for each year of service in excess of two, up to a maximum of 37.5% of Final Compensation

If death occurs after retirement eligibility is reached

Benefit equivalent to what the employee would have received if retired at the time of death.

Employees killed in the line of duty

Monthly benefit equal to the greater of:
- 37.5% of Final Compensation or
- 50% of what the employee would have received if retired at the time of death.

10. Withdrawal Benefits

Less than five years of credited service

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

Five or more years of credited service

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

11. Benefit Forms

Retiree may choose an optional settlement at retirement that reduces their allowance to provide a higher survivorship allowance to their spouse/domestic partner.

12. Post-retirement Cost-of-Living Benefit

Benefits are increased every April 1 by the change in the December CPI-U for San José-San Francisco-Oakland, subject to a cap of 2.0%. The first COLA after retirement shall be prorated based on the number of months retired.

APPENDIX C – SUMMARY OF PLAN PROVISIONS
TIER 2

13. Changes Since Last Valuation

Membership requirements, benefit eligibility, benefit amounts, and the COLA were all changed by Measure F.

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

APPENDIX D – GLOSSARY OF TERMS

1. Actuarial Liability

The Actuarial Liability is the difference between the Present Value of Future Benefits and the present value of total future normal costs. This is also referred to by some actuaries as the "accrued liability" or "actuarial accrued liability." The Actuarial Liability represents the amount of assets a plan should have as of a valuation date according to the Actuarial Cost Method.

2. Actuarial Assumptions

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

3. Actuarial Cost Method

A mathematical budgeting procedure for allocating the dollar amount of the Present Value of Future Benefits between future normal cost and Actuarial Liability.

4. Actuarial Gain (Loss)

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

5. Actuarial Present Value

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

6. Actuarially Determined Contribution

The payment to the Plan as determined by the actuary using a Contribution Allocation Procedure. It may or may not be the actual amount contributed to the Plan.

7. Amortization Method

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

APPENDIX D – GLOSSARY OF TERMS

8. Asset Valuation Method

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

9. Contribution Allocation Procedure

A procedure typically using an Actuarial Cost Method, an Asset Valuation Method, and an Amortization Method to develop the Actuarially Determined Contribution.

10. Discount Rate

The rate of interest used to discount future benefit payments to determine the Actuarial Present Value. For purposes of determining an Actuarially Determined Contribution, the Discount Rate is typically based on the long-term expected return on assets.

11. Funded Status or Funding Ratio

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

12. Normal Cost

The portion of the Present Value of Future Benefits allocated to the current year by the Actuarial Cost Method.

13. Present Value of Future Benefits

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

14. Unfunded Actuarial Liability (UAL)

The Unfunded Actuarial Liability is the difference between Actuarial Liability and either the Market or the Actuarial Value of Assets. This value is sometimes referred to as "Unfunded Actuarial Accrued Liability." It represents the difference between the actual assets and the amount of assets expected by the Actuarial Cost Method as of the valuation date.

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