

**City and County of San
Francisco Employees'
Retirement System**

**July 1, 2016
Actuarial Valuation Report**

Produced by Cheiron

February 2017

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**CITY AND COUNTY OF SAN FRANCISCO EMPLOYEES' RETIREMENT SYSTEM
JULY 1, 2016 ACTUARIAL VALUATION REPORT**

SECTION I – BOARD SUMMARY

Key Findings of the July 1, 2016 Valuation

The key results of the July 1, 2016 actuarial valuation are as follows:

- The employer contribution rate increased from 21.40% in FYE 2017 to 23.46% in FYE 2018 before any cost-sharing adjustments. After the cost-sharing adjustments, the estimated employer contribution rate increased from 18.83% to 20.07%. The actual aggregate employer contribution rates after cost-sharing adjustments will depend upon the proportion of the actual payroll for each employee group defined in the Charter. See Table V-2 for more details.
- The employee contribution rates in FYE 2018 after the cost-sharing adjustment will increase by 1.00% of pay for all active members with adjustments.
- The funded ratio based on the Market Value of Assets decreased from 88.9% to 82.6%. On an actuarial value basis, the funded ratio decreased slightly from 85.6% to 84.6%.
- The Unfunded Actuarial Liability increased by about \$431.6 million. The 2013 and 2014 retroactive Supplemental COLA benefits accounted for \$203.0 million and \$226.3 million of the increase respectively, or a total increase of \$429.3 million. The Board adopted a funding policy to amortize the 2013 Supplemental COLA over 17 years and the 2014 Supplemental COLA over 5 years at their Sept 14, 2016 meeting. The UAL payment increased by 0.55% of payroll due to the 2013 Supplemental COLA and 1.70% of payroll due to the 2014 Supplemental COLA.
- The assumption changes effective with the July 1, 2015 valuation are being phased-in over a five-year period. SFERS is in the second year of the phase-in and the UAL payment increased 0.61% of payroll to 1.11%. The ultimate UAL payment based on assumed payroll is expected to be 3.04% for the July 1, 2019 valuation.
- The return on the Market Value of Assets for June 30, 2015 was 0.74%, lower than the assumed 7.5% return. However, due to the recognition of some of the deferred investment gains from previous years, the return on the Actuarial Value of Assets was 7.3%, slightly lower than the assumed 7.5% return, resulting in a loss of about \$51.5 million.

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Funded Status

This report measures assets and liabilities for funding purposes. Table I-1 below summarizes the Actuarial Liability, assets, and related ratios as of July 1, 2016 compared to July 1, 2015.

Table I-1				
City and County of San Francisco Employees' Retirement System				
Summary of Key Valuation Results				
(in millions)				
Valuation Date	July 1, 2016	July 1, 2015	% Change	
Actuarial Liability	\$ 24,403.9	\$ 22,970.9	6.2%	
Actuarial Value of Assets	\$ 20,654.7	\$ 19,653.3	5.1%	
Unfunded Actuarial Liability (actuarial value)	3,749.2	3,317.6	13.0%	
Funding Ratio (actuarial value)	84.6%	85.6%	-0.9%	
Market Value of Assets	\$ 20,154.5	\$ 20,428.1	-1.3%	
Unfunded Liability (market value)	4,249.4	2,542.8	67.1%	
Funding Ratio (market value)	82.6%	88.9%	-6.3%	
Expected Payroll	\$ 3,062.4	\$ 2,821.0	8.6%	
Asset Leverage Ratio	6.6	7.2	-9.1%	
Actuarial Liability Leverage Ratio	8.0	8.1	-2.1%	
Interest on UAL (MVA basis)	\$ 307.4	\$ 183.9	67.1%	
Interest Cost as Percent of Payroll	10.0%	6.5%	3.5%	

The Actuarial Liability increased by approximately \$1.43 billion including a \$351 million increase as a result of the retroactive Supplemental COLA benefits. The Actuarial Value of Assets, which is used as the basis to set contribution rates, increased by approximately \$1.00 billion reflecting smoothed investment returns and contributions offset by benefits and expenses paid during the year. SFERS' Unfunded Actuarial Liability (UAL) increased by approximately \$432 million based on the Actuarial Value of Assets. The funding ratio based on the Actuarial Value of Assets decreased from 85.6% to 84.6%.

The Market Value of Assets decreased approximately \$274 million. SFERS' UAL based on the Market Value of Assets increased approximately \$1.71 billion. The funding ratio based on the Market Value of Assets decreased from 88.9% to 82.6%.

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The interest cost on the UAL based on the Market Value of Assets increased from approximately \$184 million to approximately \$307 million. As a result, approximately 10.0% of payroll must be contributed to pay the interest on the UAL, up from 6.5% of payroll in the prior year.

One of the most important measures of a plan's sensitivity to investment risk is the ratio of the Market Value of Assets to payroll, or the asset leverage ratio, which has decreased from 7.2 to 6.6 in the last year. If the System were 100% funded, the ratio would be 8.0, the Actuarial Liability leverage ratio shown above. The higher this ratio, the more sensitive contribution rates are to investment returns.

For example, assume SFERS assets earn 10% less than the 7.50% assumption (-2.50%), which has to be made up by contributions unless the System experiences an offsetting investment gain. Based on the current ratio of assets to payroll (6.6), the loss in assets is 66% of active payroll (6.6 times the 10% loss). Ignoring the five-year smoothing of assets, this loss would require a contribution of approximately 5.1% of payroll for 20 years. If the System had an asset to payroll ratio of 4.0 instead, the same 10% investment loss (40% of payroll) would only require a contribution of approximately 3.0% of payroll for 20 years. The Board cannot take action to reduce this ratio, but should be aware of the increased sensitivity of contribution rates to variability in investment returns as the System matures and consider if any changes in the level of investment risk taken by the System are appropriate.

Contributions

SFERS funding policy sets employer contributions equal to the sum of:

- The normal cost under the Entry Age Normal Cost Method,
- The expected administrative expenses, and
- Amortization of the Unfunded Actuarial Liability.

The Charter (as amended by Proposition C effective July 1, 2012) requires employees to pay a portion of the net employer contribution rate. The portion each employee pays depends on the net employer contribution rate, the employee group, and the level of pay received by the employee. Unless explicitly identified, the figures shown in this report are before applying the cost-sharing adjustments. Table I-2 on the next page summarizes the employer and member contribution rates both before and after the cost-sharing adjustments.

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Table I-2			
Summary Of Contributions			
(\$ amounts in millions)			
	FYE 2018	FYE 2017	Absolute Change
<u>Contribution Rates Before Adjustments</u>			
Net Employer Contribution Rate	23.46%	21.40%	2.06%
Est. Aggregate Employee Contribution Rate	<u>7.57%</u>	<u>7.56%</u>	<u>0.01%</u>
Total Contribution Rate	31.03%	28.96%	2.07%
Estimated Payroll	\$ 3,177.3	\$ 2,926.8	\$ 250.5
Estimated Net Employer Contributions	745.4	626.4	119.0
<u>Contribution Rates After Adjustments</u>			
Net Employer Contribution Rate	20.07%	18.83%	1.24%
Est. Aggregate Employee Contribution Rate	<u>10.96%</u>	<u>10.13%</u>	<u>0.83%</u>
Total Contribution Rate	31.03%	28.96%	2.07%
Estimated Payroll	\$ 3,177.3	\$ 2,926.8	\$ 250.5
Estimated Net Employer Contributions	637.7	551.1	86.6
<u>Total Contribution Rate</u>			
Normal Cost Rate	18.56%	18.65%	-0.09%
Administrative Expense Rate	0.60%	0.60%	0.00%
UAL Rate			
Interest on Market Value UAL	10.04%	6.52%	3.52%
Principal on Market Value UAL	<u>1.83%</u>	<u>3.19%</u>	<u>-1.36%</u>
Total UAL Rate	11.87%	9.71%	2.16%
Total Contribution Rate	31.03%	28.96%	2.07%

The net employer contribution rate before applying the cost-sharing adjustments increased 2.06% of payroll from 21.40% to 23.46% for the fiscal year ending June 30, 2018. The cost-sharing adjustment is estimated to decrease the employer contribution and increase the aggregate employee contributions by about 3.39% of payroll. Thus, the estimated employer contribution rate after cost sharing is 20.07% for FYE 2018. The cost-sharing adjustments increased by 1.00% for all active members with cost-sharing adjustments for FYE 2018 and will remain at this level as long as the employer contribution rate before adjustment is between 22.51% and 27.50%.

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SFERS Membership

As shown in Table I-3 below, membership in SFERS increased in total by 4.6%. Active membership increased 5.1%, terminated vested membership increased 9.5%, and members receiving benefits increased by 2.9%. Total payroll increased by 8.6% for active members. The average pay per active member increased 3.3%. As of July 1, 2016, there are no more members participating in DROP.

Table I-3				
Membership Total				
	July 1, 2016	July 1, 2015	% Change	
Actives	32,406	30,837	5.1%	
Active DROP	0	2	-100.0%	
Terminated Vested	7,645	6,984	9.5%	
Members Receiving Benefits	28,286	27,485	2.9%	
Total SFERS Members	68,337	65,308	4.6%	
Active Member Payroll (FYE 2017/2016)	\$ 3,062,420,000	\$ 2,820,970,000	8.6%	
Average Pay per Active	\$ 94,500	\$ 91,500	3.3%	

Payroll is based on valuation data projected for the next fiscal year using a full year of salary increases.

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Contribution Reconciliation

The SFERS contribution rate for FYE 2018 before the cost-sharing adjustment increased from 21.40% to 23.46% of membership payroll. Table I-4 shows sources for the change in the net employer contribution rate. The contribution rate increase is primarily attributable to the 2013 and 2014 Retroactive Supplemental COLA. The contribution rate also increased due to the second year of the 5 year phase-in as a result of the assumption changes in the July 1, 2015 valuation.

Two items decreased the contribution rate from FYE 2017 to FYE 2018. Payroll increased more than expected (8.6% instead of 3.75%) which decreases the UAL payments as a percentage of pay. Also, two 1996 Charter amendments increasing retiree benefit were fully amortized as of June 30, 2016.

Table I-4			
Net Employer Contribution Rate Reconciliation			
	Normal Cost¹	Amortization	Total
FYE 2017 Net Employer Contribution Rate	11.69%	9.71%	21.40%
2013 Retroactive Supplemental COLA	0.00%	0.55%	0.55%
2014 Retroactive Supplemental COLA	0.00%	1.70%	1.70%
Phase-in of the 2015 assumption changes (2nd year)	0.00%	0.61%	0.61%
Actuarial value of assets increased less than expected	0.00%	0.13%	0.13%
Liabilities decreased more than expected	-0.10%	-0.06%	-0.16%
Payroll increased more than expected	0.00%	-0.44%	-0.44%
Completing of 1996 propositions UAL payments	<u>0.00%</u>	<u>-0.33%</u>	<u>-0.33%</u>
Total Change	-0.10%	2.16%	2.06%
FYE 2018 Net Employer Contribution Rate	11.59%	11.87%	23.46%

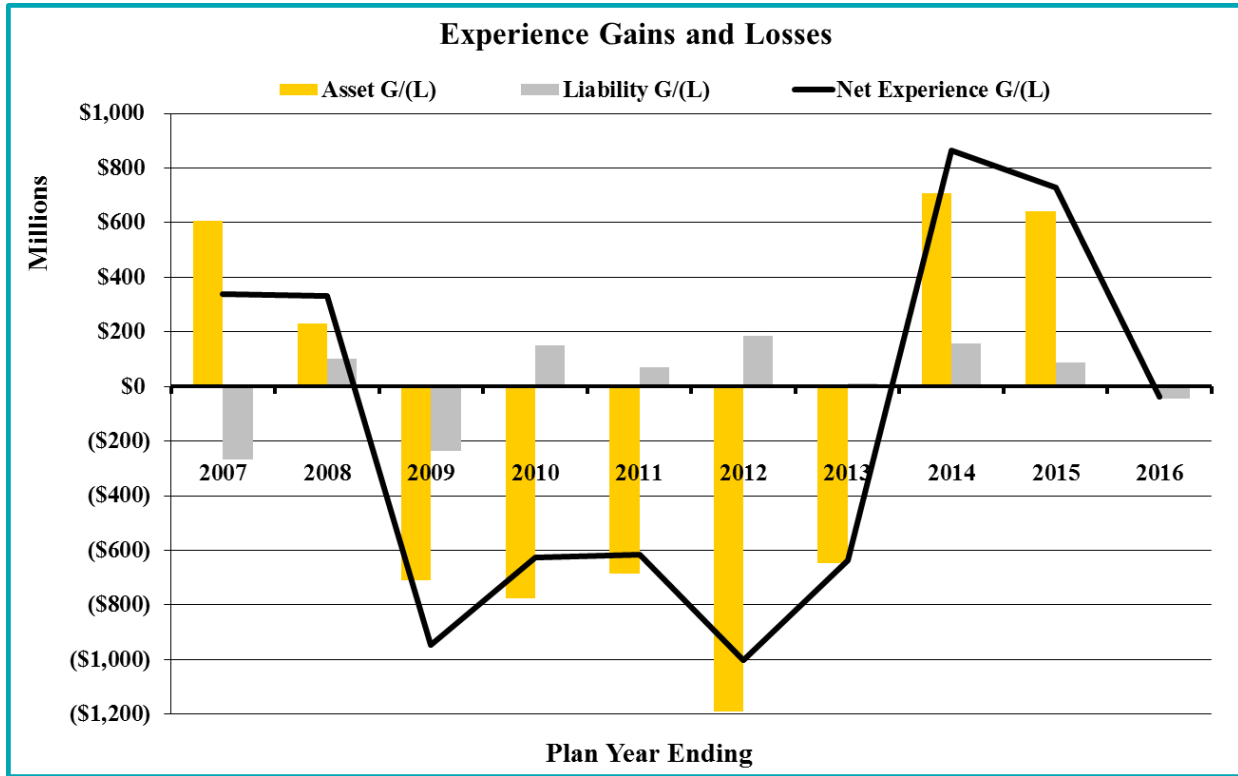
¹ Includes administrative expenses and is net of employee contributions.

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The chart below shows the pattern of SFERS annual gains and losses, broken into the investment and liability components. The chart does not include the impact of any changes to benefits, assumptions, or methods.

SFERS Historical Gain/(Loss) 2007-2016



On a smoothed asset basis, the investment gains and losses (gold bars) from 2009 to 2013 reflect material net investment losses driven by the market decline of 2008 and 2009 which was spread over the five successive years. Those losses have been fully recognized in the Actuarial Value of Assets. Recent market experience has been a mix between gains and losses with the gains currently outweighing the losses such that the return on the Actuarial Value of Assets for FYE 2016 was very close to the assumed return even though the market return was substantially less. The investment loss on the Actuarial Value of Assets was approximately \$52 million offset by a \$59 million gain as a result of the one year timing lag for contributions and the greater than expected payroll during the year. There are approximately \$500 million in net deferred losses that have not been recognized in the actuarial value of assets as of July 1, 2016.

On the liability side, SFERS has experienced mostly gains from 2010 through 2015, but they have been small relative to the investment experience. The liability gains between 2010 and 2015 are due mostly to less than expected Old Safety Charter COLAs. In 2016, net liability losses were approximately \$45 million, about 0.2% of the expected liability. The details of the gain/loss analysis are shown in Table IV-4.

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Historical and Projected Trends

Each valuation is a snapshot of the long-term progress of a pension fund. It is important to judge a current year's valuation result relative to historical trends, as well as trends expected into the future. **Assumed Supplemental COLAs are included in the projections on the following page for future years after the current valuation.**

The top chart on the following page shows asset measures (both market and actuarial) compared to the Actuarial Liability for the historical period from 2006 to 2016 and the projected period from 2017 to 2026 assuming all assumptions are met. The purple bars represent the historical Actuarial Liability while the black and gray bars represent the projected Actuarial Liability. These bars are black if a Supplemental COLA is projected to be payable. The light purple bar is the current valuation year. In the baseline projections, we assume a Supplemental COLA will be payable with a 50% probability for the Post '96 Retirees. This means there is a 50% chance that the System will have "excess earnings" each year. For the Pre-97 Retirees, the probability is much smaller than 50% in the short term since the System is only 82.6% funded and it needs to be 100% funded to grant this group a Supplemental COLA. At the top of each bar is the progression of SFERS funding ratios based on the Market Value of Assets. All information for valuation years prior to 2008 were calculated by the prior actuary.

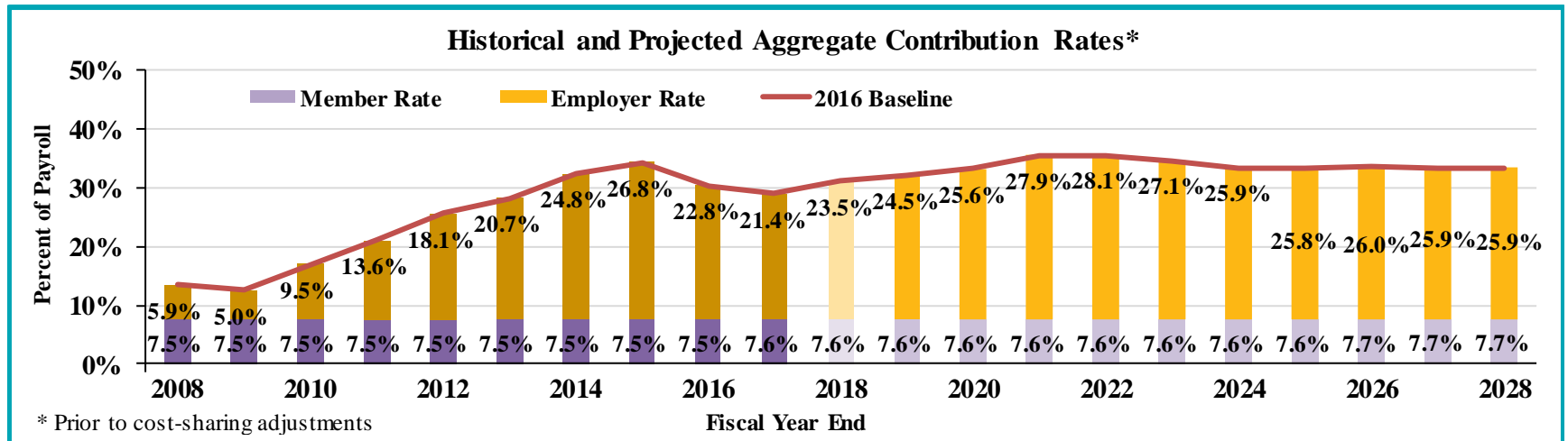
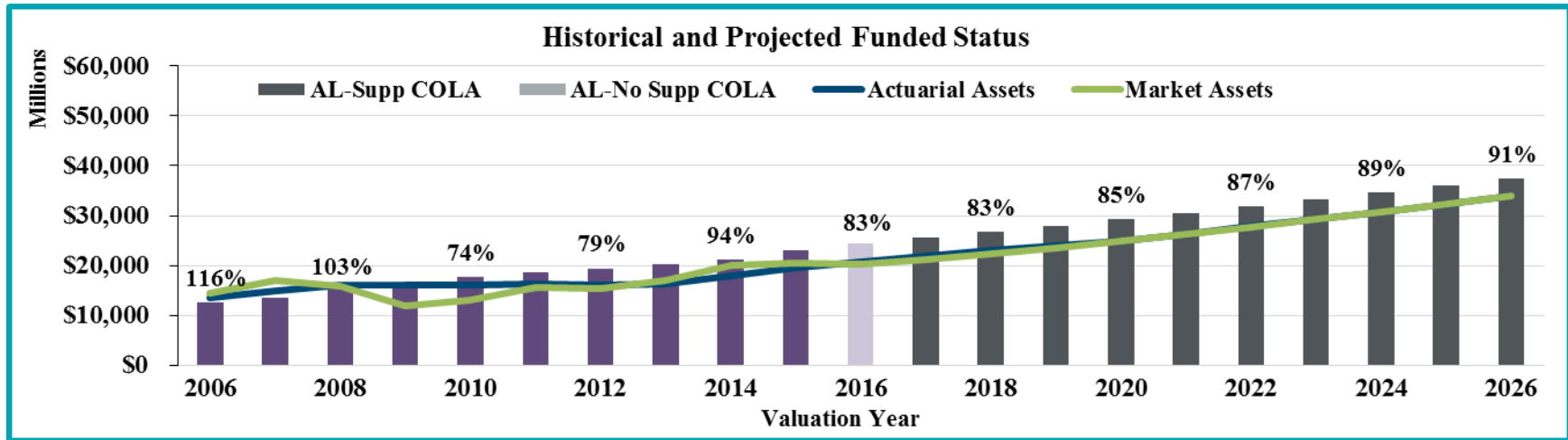
The System had a surplus and was 125% funded as of July 1, 2007. The funding ratio declined significantly over the next two years to 72% primarily due to investment experience as well as Proposition B. Since then, investment returns and contribution increases offset by some assumption changes have led to increased funding ratios reaching 83% as of July 1, 2016. However, in the last two years the funded ratio has dropped from 94% as of July 1, 2014 due to investment returns less than expected and the retroactive Supplemental COLAs for 2013 and 2014.

The bottom chart on the following page shows historical and projected contribution rates for the fiscal years ending 2007 through 2027. The purple bars represent member contribution rates, and the gold bars represent employer contribution rates. Historical or calculated rates are shown in a darker shade than projected rates. All rates are shown prior to cost-sharing adjustments.

The employer contribution rate increased significantly from fiscal year ending 2009 through 2015. The increases were primarily due to benefit changes under Proposition B, investment losses, and assumption changes. The employer contribution rate is expected to increase over the next decade primarily due to approximately \$500 million in deferred investment losses that have not been recognized in the Actuarial Value of Assets, but will be recognized over the next four years. Also, the phase-in of the amortization payment for the 2015 assumption changes over the next three years will increase the contribution rate. In addition, when the amortization of a Proposition is complete, there is an additional decline in the contribution rate.

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The darker gold and purple bars represent historical and actual contribution rates while the lighter gold and purple bars represent projected rates. The light yellow bar represents the contribution rate for the current valuation.

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Stress Testing

The projections shown above assume all assumptions are met each and every year in the future including an assumption for future Supplemental COLAs. We know that will not be the case. We developed six hypothetical scenarios to illustrate the impact actual investment returns may have on future funded status and contribution rates. The scenarios are balanced between positive and negative scenarios and are based on a normal distribution of one and five year expected returns as shown in the table below using the 5-7 year capital market assumptions from SFERS' investment consultant NEPC (Geometric return = 7.1%, standard deviation = 12.4%).

Distribution of Expected Average Annual Returns		
Percentile	1 Year	5 Year
5%	-13.3%	-2.0%
25%	-1.3%	3.4%
50%	7.1%	7.1%
75%	15.5%	10.8%
95%	27.5%	16.2%

The scenarios include a one-year shock using the 5th and 95th percentile returns for one year, a 5-year moderate scenario using the 25th and 75th percentile returns for five years and a 5-year significant scenario using the 5th and 95th percentile returns for five years. The table below summarizes the theoretical scenarios.

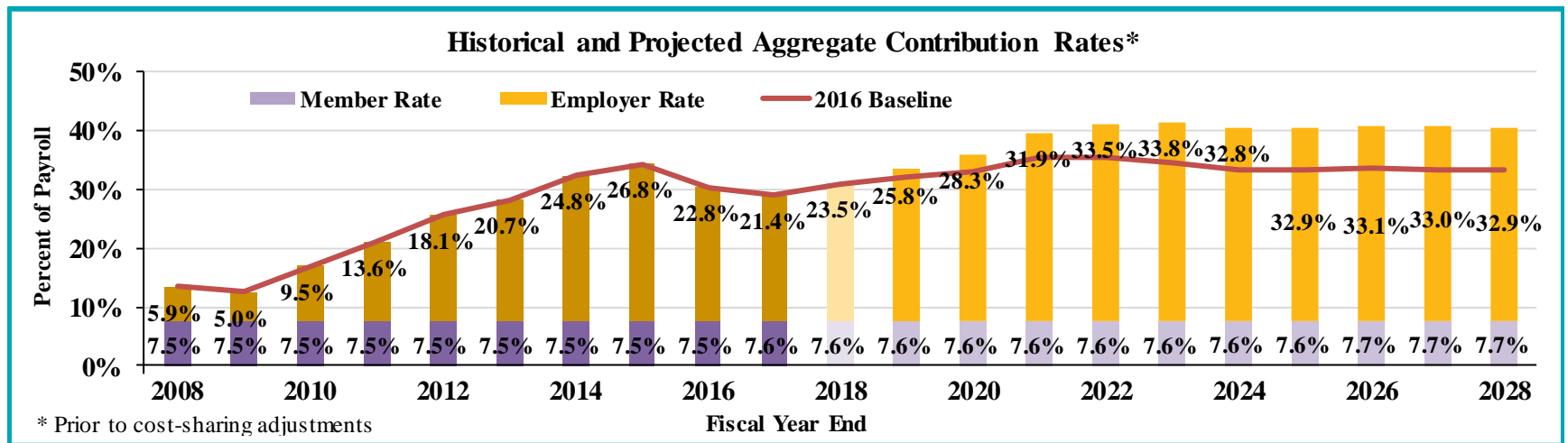
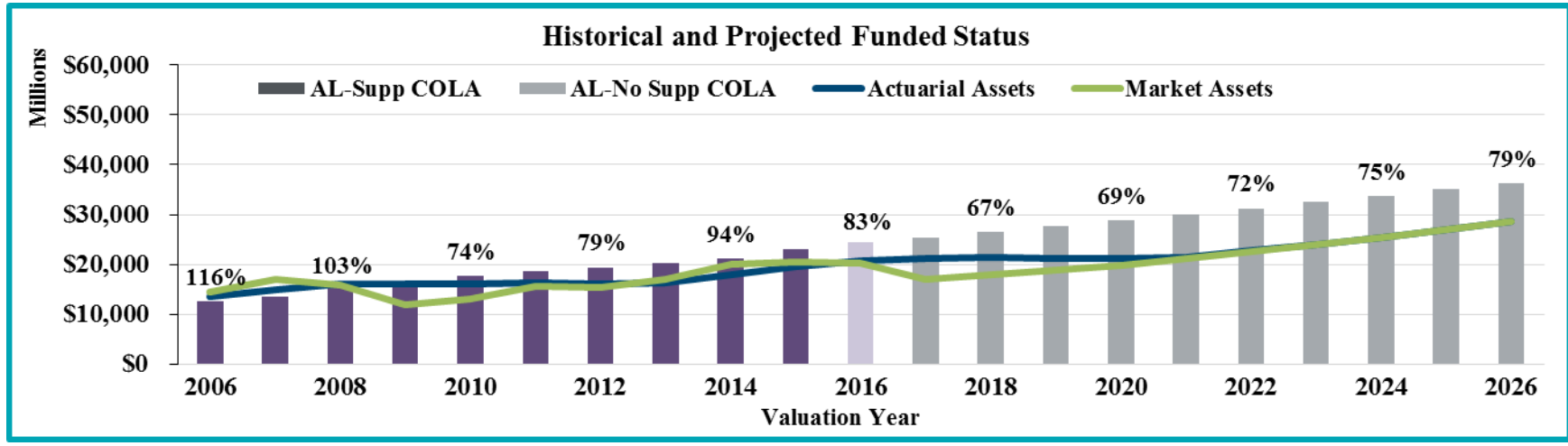
FYE	Theoretical Scenarios					
	1-Yr Shock		5-Yr Moderate		5-Yr Significant	
	Neg	Pos	Neg	Pos	Neg	Pos
2017	-13.30%	27.50%	3.40%	10.80%	-2.00%	16.20%
2018	7.50%	7.50%	3.40%	10.80%	-2.00%	16.20%
2019	7.50%	7.50%	3.40%	10.80%	-2.00%	16.20%
2020	7.50%	7.50%	3.40%	10.80%	-2.00%	16.20%
2021	7.50%	7.50%	3.40%	10.80%	-2.00%	16.20%
2022+	7.50%	7.50%	7.50%	7.50%	7.50%	7.50%

The charts on the following pages show the projections under each of these theoretical scenarios. The contribution charts include a red line representing the baseline projections shown above to facilitate the comparison between the particular scenario and the projections assuming all assumptions are met. Supplemental COLAs for future years are calculated based on returns in excess of the expected rate of return. No Supplemental COLAs are assumed in years where there are no excess returns. The contribution rates are shown before any cost-sharing adjustments.

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One-Year Negative Shock Scenario: -13.3% return FYE 2017, 7.5% after



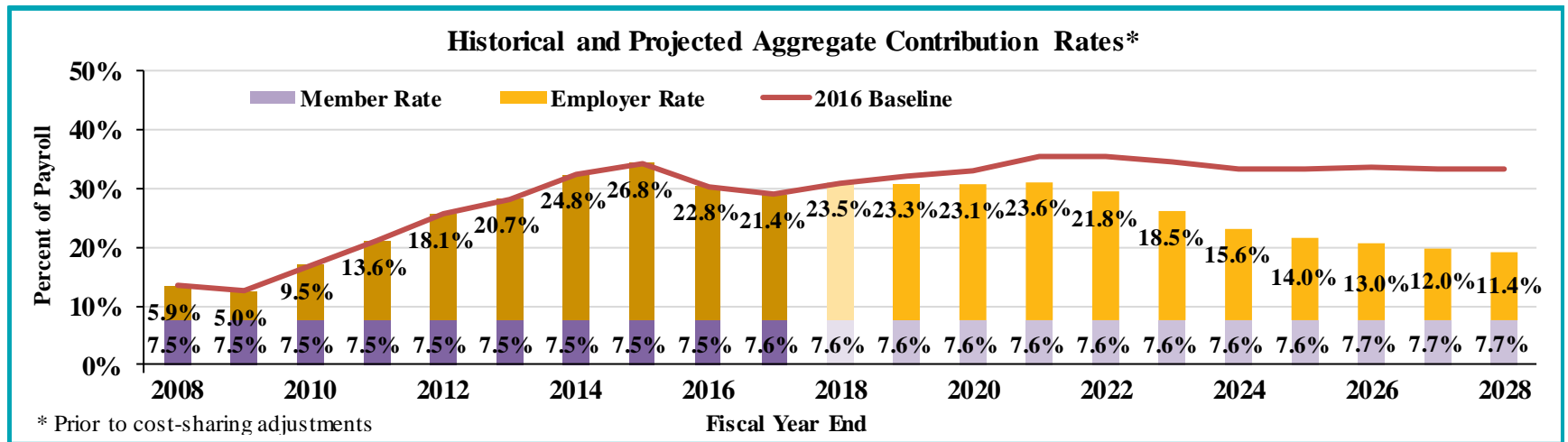
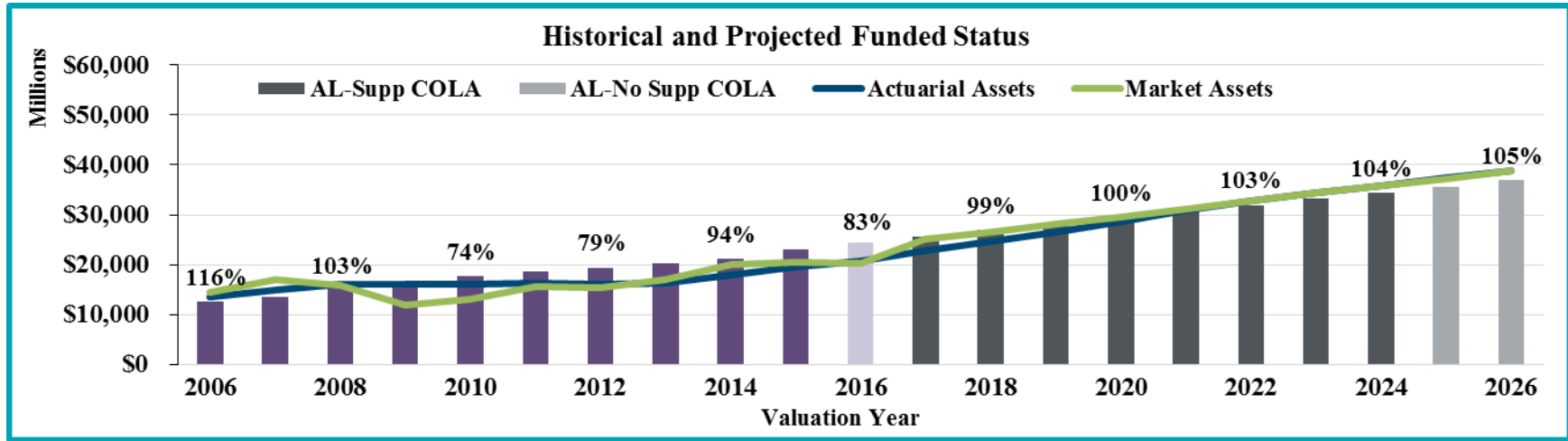
* Prior to cost-sharing adjustments

The darker gold and purple bars represent historical and actual contribution rates while the lighter gold and purple bars represent projected rates. The light yellow bar represents the contribution rate for the current valuation.

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One-Year Positive Shock Scenario: 27.5% return FYE 2017, 7.5% after



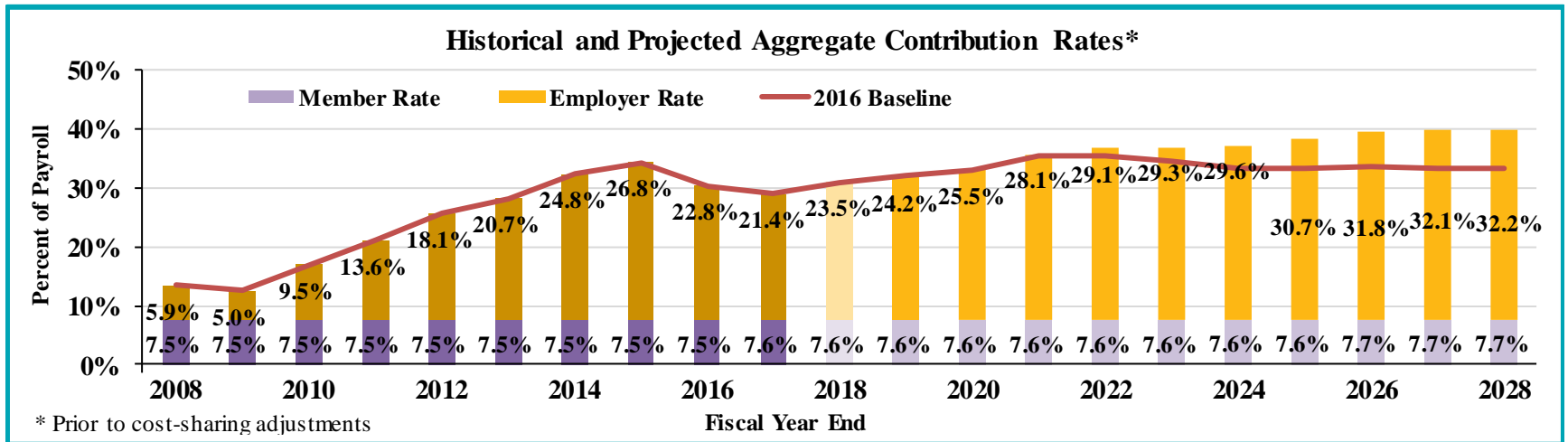
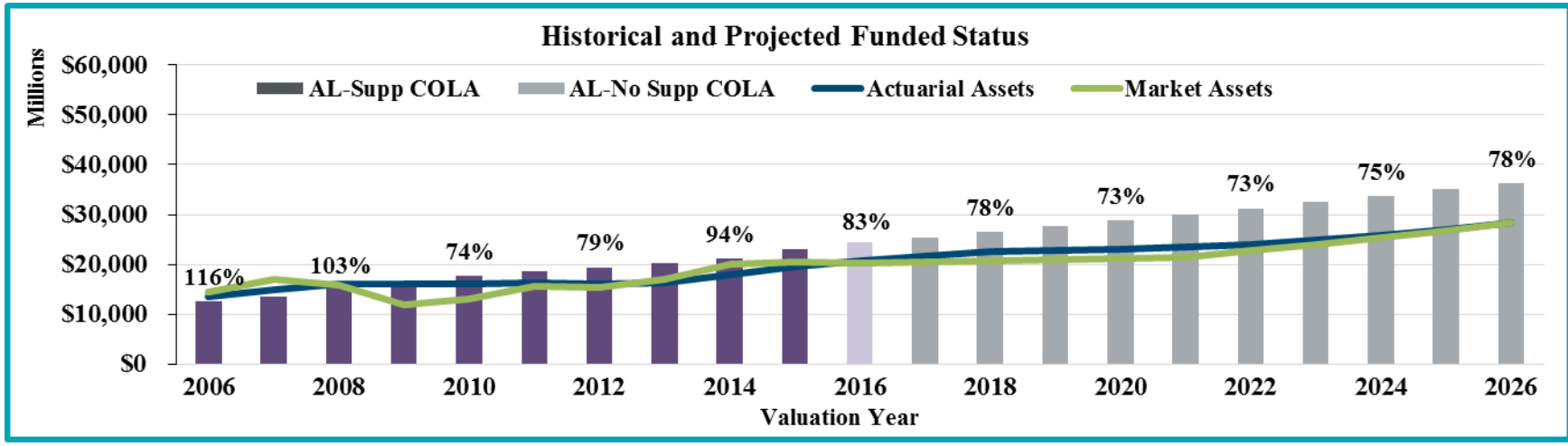
* Prior to cost-sharing adjustments

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Five-Year Moderate Negative Scenario: 3.4% return FYE 2017-2021, 7.5% after



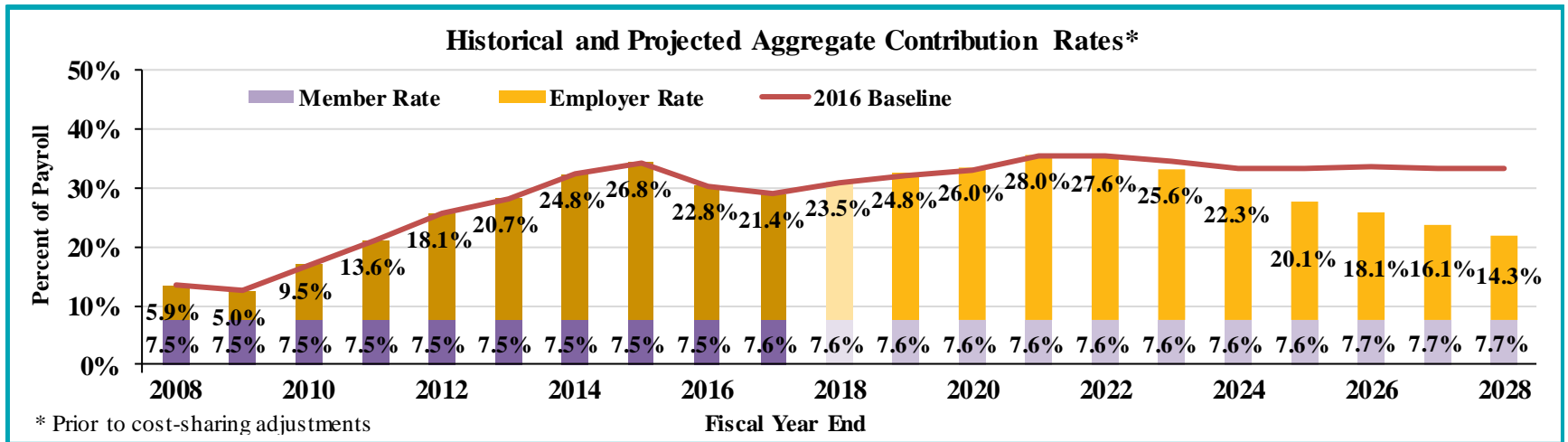
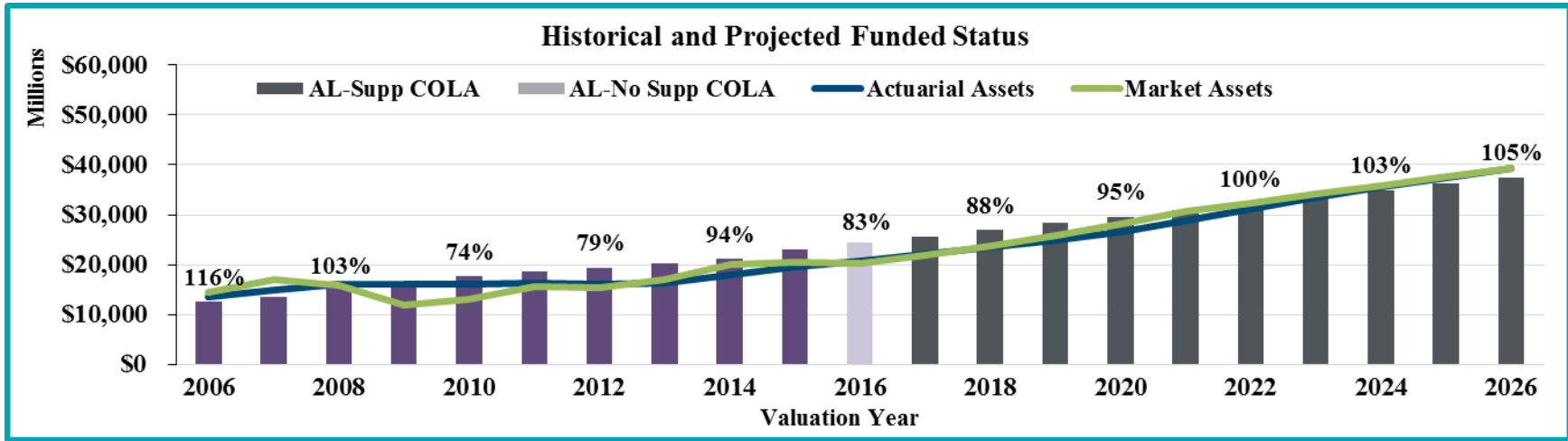
* Prior to cost-sharing adjustments

The darker gold and purple bars represent historical and actual contribution rates while the lighter gold and purple bars represent projected rates. The light yellow bar represents the contribution rate for the current valuation.

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Five-Year Moderate Positive Scenario: 10.8% return FYE 2017-2021, 7.5% after

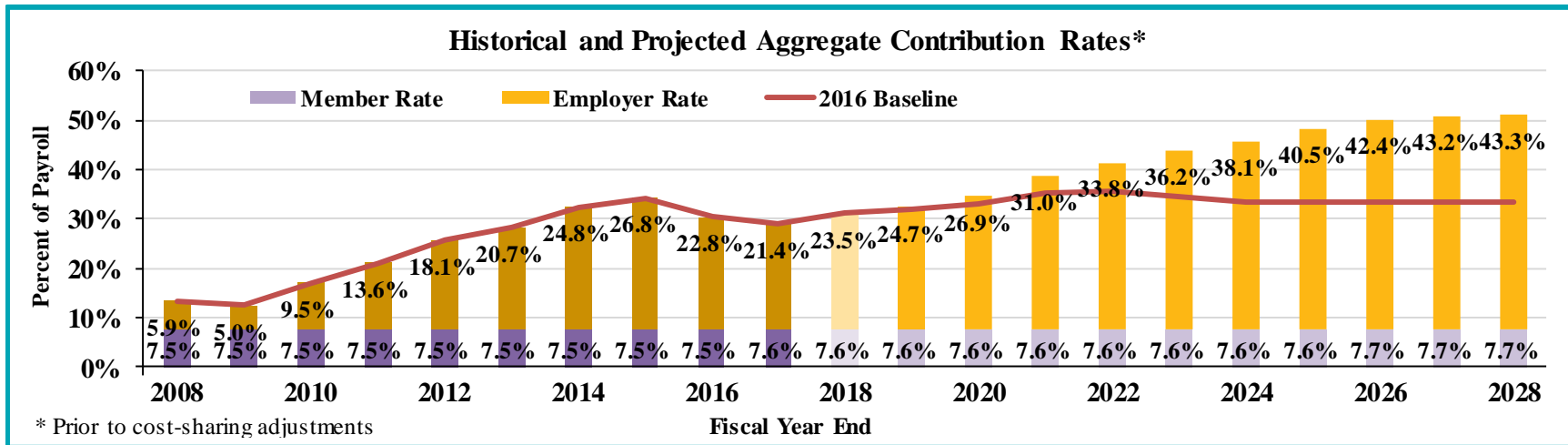
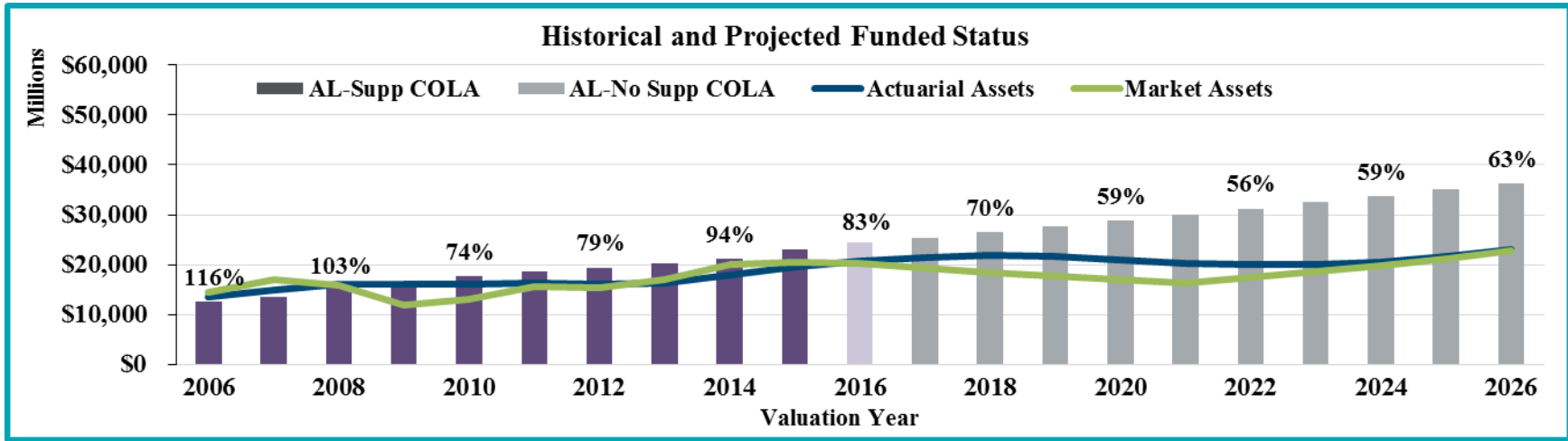


The darker gold and purple bars represent historical and actual contribution rates while the lighter gold and purple bars represent projected rates. The light yellow bar represents the contribution rate for the current valuation.

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Five-Year Significant Negative Scenario: -2.0% return FYE 2017–2021, 7.5% after

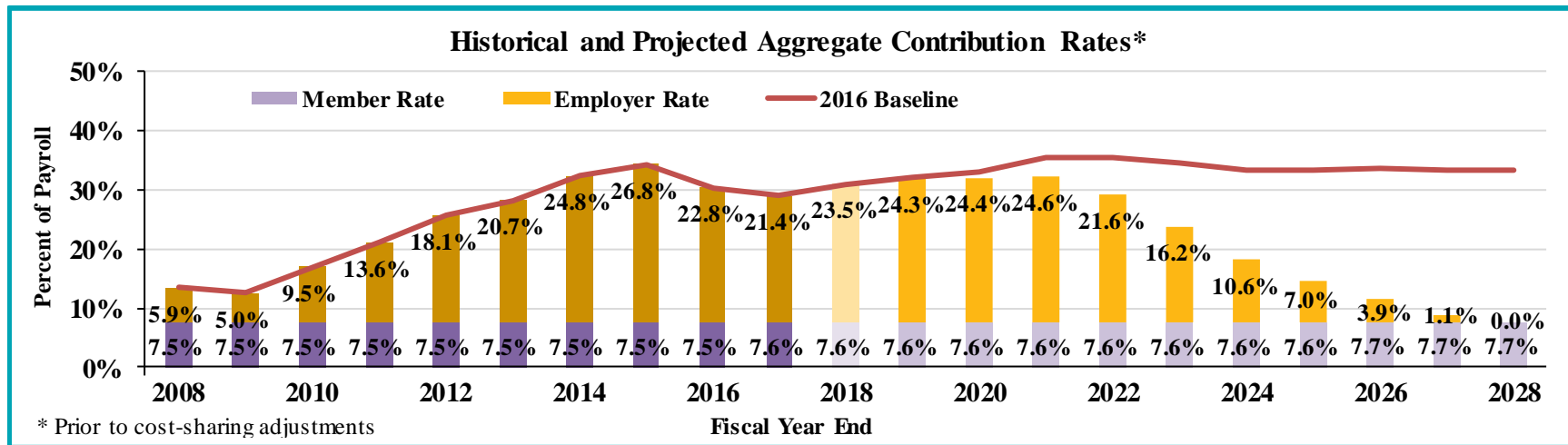
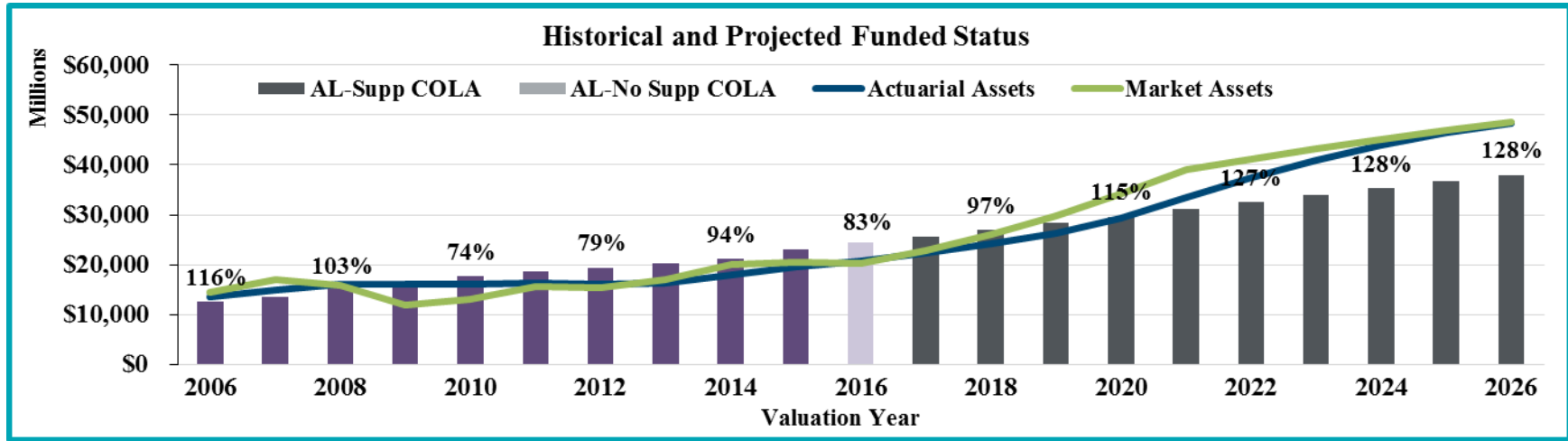


The darker gold and purple bars represent historical and actual contribution rates while the lighter gold and purple bars represent projected rates. The light yellow bar represents the contribution rate for the current valuation.

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Five-Year Significant Positive Scenario: 16.2% return FYE 2017-2021, 7.5% after



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The scenarios show that actual future investment returns have a significant impact on future contribution rates. The positive economic scenarios all result in the payment of Supplemental COLAs to both Pre-96 and Post-96 Retirees. The employer contribution rates decline to 16% or lower before the end of the projection period. The five-year significant positive scenario shows a slight increase in the first three years then a steady decline in the employer contribution rate to 0.0% by FYE 2028, while both the five-year positive moderate and one-year positive shock scenarios show more gradual declines to 14.3% and 11.4% respectively by FYE 2028. Conversely, the one-year negative shock and the five-year significant negative scenarios result in relatively rapid increases in the contribution rate to between 32% and 43% of payroll respectively from the current contribution rate of 23.5%. The five-year moderate negative scenario results in a more gradual increase in the contribution rate.

The investment returns used in the projections above were selected solely to illustrate the impact of investment volatility on the pattern of funded status and employer contribution rates. They are not intended to be predictive of actual future contribution rates or funded status or even to represent a realistic pattern of investment returns.

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SECTION II – CERTIFICATION

The purpose of this report is to present the July 1, 2016 actuarial valuation of the City and County of San Francisco Employees' Retirement System (SFERS or the System). This report is for the use of the System and its auditors in preparing financial reports in accordance with applicable law and annual report requirements.

In preparing our report, we relied on information, some oral and some written, supplied by the System. 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 the Actuarial Standard of Practice No. 23.

All demographic assumptions were adopted at the November 18, 2015 Board meeting based on recommendations from our experience study covering plan experience during the period from July 1, 2009 through June 30, 2014. The economic assumptions in this report were first adopted by the Board with our input at the January 14, 2015 Board meeting. The Board reaffirmed these assumptions at the November 9, 2016 meeting. The amortization policy for the increase in Unfunded Actuarial Liability due to the restoration of the 2013 and 2014 Supplemental COLAs for Post 96 retirees was adopted by the Board at the September 14, 2016 meeting.

The measures, including 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 System for the purposes described herein and for the use by the plan auditor in 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.



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**CITY AND COUNTY OF SAN FRANCISCO EMPLOYEES' RETIREMENT SYSTEM
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SECTION III – ASSETS

SFERS 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 attempts to smooth annual investment return performance over multiple years to reduce the impact of investment volatility on SFERS contribution rates.

This section includes the following information on SFERS assets:

- Statement of changes in the Market Value of Assets during the year,
- Development of the Actuarial Value of Assets, and
- Discussion of investment performance for the year.

Changes in the Market Value of Assets

Table III-1		
Change in Market Value of Assets		
(in thousands)		
	FYE 2016	FYE 2015
1. Market Value, Beginning of Year	\$ 20,428,069	\$ 19,920,607
2. Additions		
a. Employer Contributions	526,805	592,643
b. Member Contributions	<u>322,764</u>	<u>301,682</u>
c. Total Additions: (2a. + 2b.)	\$ 849,569	\$ 894,325
3. Net Investment Income	150,190	763,429
4. Benefits and Administrative Expenses	<u>(1,273,325)</u>	<u>(1,150,292)</u>
5. Net Increase/(Decrease): (2c.+3.+4.)	\$ (273,566)	\$ 507,462
6. Market Value, End of Year	\$ 20,154,503	\$ 20,428,069
7. Estimated Rate of Return on Market Value	0.7%	3.9%

Actuarial Value of Assets

To determine on-going contribution requirements, most pension funds utilize an Actuarial Value of Assets that differs from the Market Value of Assets. The Actuarial Value of Assets is intended to smooth year-to-year investment returns to reduce the volatility of contribution rates.

The actuarial value is calculated by recognizing 20% of the variance of each of the prior five years of actual investment returns compared to the expected return on the Actuarial Value of Assets. The expected return on the Actuarial Value of Assets is determined using SFERS actual cash flows and the assumed rate of return (7.50% for the years ending 2015 and 2016, 7.58% for the years ending 2013 and 2014, and 7.66% for the year ending 2012). (See Appendix B for further explanation of the asset valuation method).

**CITY AND COUNTY OF SAN FRANCISCO EMPLOYEES' RETIREMENT SYSTEM
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SECTION III – ASSETS

Table III-2	
Development of Actuarial Value of Assets for 7/1/2016	
(in thousands)	
	Total
1. Actuarial Value as of 7/1/2015	\$ 19,653,338
2. Non-Investment Cash Flow for FYE 2016	(423,756)
3. Expected Return for FYE 2016	<u>1,476,572</u>
4. Expected Actuarial Value as of 7/1/2016: (1+2+3)	\$ 20,706,154
5. Actual Return in FYE 2016	150,190
6. Actual Return (Below) Expected in 2015-2016: (5 - 3)	(1,326,382)
7. Recognition of Returns Above / (Below) Expected	
a. 2015-2016 (20% of 6.)	(265,276)
b. 2014-2015	(117,657)
c. 2013-2014	389,909
d. 2012-2013	172,511
e. 2011-2012	<u>(230,938)</u>
f. Total: (7a. + 7b. + 7c. + 7d. + 7e.)	\$ (51,451)
8. Actuarial Value as of 7/1/2016: (4 + 7f.)	\$ 20,654,703
9. Ratio of Actuarial Value to Market Value	102.5%
10. Estimated Rate of Return on Actuarial Value	7.3%

Investment Performance

The internal rate of return on the Market Value of Assets, net of investment expenses, was 0.7% for the year ending June 30, 2016. This return compares to an assumed rate of return of 7.50% and resulted in actual returns that are approximately \$1.3 billion less than the expected return on the Actuarial Value of Assets.

On an Actuarial Value of Assets basis, the return for the year ending June 30, 2016 was 7.3% compared to the assumed return of 7.50%. This return produced an overall SFERS investment loss on the Actuarial Value of Assets of \$51.5 million for the year ending June 30, 2016.

**CITY AND COUNTY OF SAN FRANCISCO EMPLOYEES' RETIREMENT SYSTEM
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SECTION IV – MEASURES OF LIABILITY

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

- Present value of all future benefits,
- Normal cost,
- Actuarial Liability, and
- Analysis of changes in the Unfunded Actuarial Liability during the year.

Present Value of all Future Benefits

The present value of all future benefits represents the amount of money today that is expected to be needed to pay all benefits of SFERS both earned as of the valuation date and those 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 all future benefits as of July 1, 2016 and July 1, 2015.

Table IV-1			
Present Value of Future Benefits			
(in thousands)			
	July 1, 2016	July 1, 2015	% Change
Present Value of Future Benefits			
Actives	\$ 14,456,121	\$ 13,627,780	6.1%
Active DROP	0	2,940	-100.0%
Terminated Vested	435,493	420,625	3.5%
Members Receiving Benefits	<u>14,505,186</u>	<u>13,510,337</u>	7.4%
Total	\$ 29,396,800	\$ 27,561,682	6.7%

Normal Cost

Under the Entry Age actuarial cost method, the present value of future benefits for each individual is spread over the individual's expected working career as a level percentage of the individual's expected pay. The normal cost is the amount attributed to the next year of service. Table IV-2 on the next page shows the normal cost as of the valuation date separately for each tier of benefits for Police, Fire, and Miscellaneous employees.

**CITY AND COUNTY OF SAN FRANCISCO EMPLOYEES' RETIREMENT SYSTEM
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SECTION IV – MEASURES OF LIABILITY

Table IV-2				
Normal Cost by Group as of July 1, 2016				
(in thousands)				
	Police	Fire	Miscellaneous	Total
Normal Cost by Benefit Tier				
Old	\$ 0	\$ 0	\$ 258	\$ 258
New	70,256	54,215	281,038	405,509
Prop D	1,124	2,501	24,833	28,458
Prop C	20,044	11,836	105,190	137,070
Total	\$ 91,424	\$ 68,552	\$ 411,319	\$ 571,295

Actuarial Liability

The Actuarial Liability is calculated by taking the present value of all future benefits and subtracting the present value of future normal costs as determined under the Entry Age actuarial cost method. 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 if all assumptions are met. Table IV-3 below shows the Actuarial Liability as of the valuation date separately for Police, Fire, and Miscellaneous employees.

Table IV-3				
Actuarial Liability by Group as of July 1, 2016				
(in thousands)				
	Police	Fire	Miscellaneous	Total
Actuarial Liability				
Actives	\$ 1,393,161	\$ 1,195,537	\$ 6,874,505	\$ 9,463,203
Terminated Vested	18,201	18,117	399,175	435,493
Members Receiving Benefits				
Retirees	2,077,531	1,239,508	8,046,971	11,364,010
Disabled	623,574	983,483	419,896	2,026,953
Beneficiaries	339,041	262,163	513,019	1,114,223
Total Members Receiving Benefits	3,040,146	2,485,154	8,979,886	14,505,186
Total Actuarial Liability	\$ 4,451,508	\$ 3,698,808	\$ 16,253,566	\$ 24,403,882

**CITY AND COUNTY OF SAN FRANCISCO EMPLOYEES' RETIREMENT SYSTEM
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SECTION IV – MEASURES OF LIABILITY

Changes in Unfunded Actuarial Liability

The Unfunded Actuarial Liability (UAL) is the difference between the Actuarial Liability and the Actuarial Value of Assets. The UAL of any retirement plan is expected to change at each subsequent valuation for a variety of reasons. Table IV-4 below presents key changes in the UAL since the last valuation.

Table IV-4	
Development of 2016 Experience Gain/(Loss)	
(in millions)	
Item	Cost
1. Unfunded Actuarial Liability at July 1, 2015	\$ 3,317.6
2. Middle of year actuarial liability payment	(264.3)
3. Interest to end of year on 1. and 2.	239.1
4. Increase in UAL due to 2013/2014 Supplemental COLAs	429.3
5. Expected Unfunded Actuarial Liability at July 1, 2016 (1+2+3+4)	\$ 3,721.7
6. Actual Unfunded Liability at July 1, 2016	<u>3,749.2</u>
7. Difference: (5 - 6)	\$ (27.5)
8. Portion of difference due to:	
a. Investment experience on actuarial value	\$ (51.5)
b. Old Safety COLAs less than expected	64.8
c. Salaries more than expected	(4.9)
d. Contributions (rate delay and payroll changes)	58.7
e. Retirements, terminations, and disabilities	(72.2)
f. Mortality	(14.0)
g. New entrant loss	(18.8)
h. Other experience	<u>10.4</u>
i. Total	(27.5)

**CITY AND COUNTY OF SAN FRANCISCO EMPLOYEES' RETIREMENT SYSTEM
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SECTION V – CONTRIBUTIONS

The contribution allocation procedure employed by SFERS has three components to the total contribution: the normal cost determined under the Entry Age actuarial cost method, administrative expenses, and the Unfunded Actuarial Liability contribution.

The normal cost shown in the prior section is divided by the projected payroll for the year for each benefit tier to determine the normal cost rate for that tier. The aggregate normal cost rate is the weighted average of the normal cost rate for each tier based on the expected payroll for that tier for the fiscal year to which the contribution rate applies. Finally, the normal cost rate is reduced by the member contribution rate to produce the employer normal cost rate.

Assumed administrative expenses of 0.60% of payroll are added to the contribution rate.

The difference between the Actuarial Liability determined under the Entry Age actuarial cost method and the Actuarial Value of Assets is the Unfunded Actuarial Liability (UAL). The UAL is made up of unamortized prior Charter amendments, plus the impact of accumulated experience, assumption changes, and method changes.

Table V-1 below develops the employer's contribution rate for FYE 2017 prior to any cost-sharing adjustments. The employer pays the composite contribution rate on the payroll for all employees. The contribution rates shown for Police, Fire, and Miscellaneous are for illustrative purposes only.

Table V-1					
Development of the Net Employer Contribution Rate as of July 1, 2016 for FYE 2018					
(dollars in millions)					
	July 1, 2016				July 1, 2015
	Police	Fire	Miscellaneous	COMPOSITE	COMPOSITE
1. Total Normal Cost Rate	32.55%	33.56%	15.85%	18.56%	18.65%
2. Member Contribution Rate	<u>7.93%</u>	<u>7.93%</u>	<u>7.50%</u>	<u>7.57%</u>	<u>7.56%</u>
3. Employer Normal Cost Rate (1.- 2.)	24.62%	25.63%	8.35%	10.99%	11.09%
4. a. UAL - Proposition balance as of 7/1/2016	\$141.5	\$135.0	\$762.3	\$1,038.8	\$1,115.7
b. Other UAL as of 7/1/2016	<u>248.1</u>	<u>181.2</u>	<u>2,281.1</u>	<u>2,710.4</u>	<u>2,201.9</u>
c. Net UAL - as of 7/1/2016 (4a.+4b.)	\$389.6	\$316.2	\$3,043.4	\$3,749.2	\$3,317.6
5. a. Amortization of 4a., Proposition UAL	9.84%	11.76%	4.08%	5.12%	5.69%
b. Amortization of 4b., Other UAL	<u>6.75%</u>	<u>6.75%</u>	<u>6.75%</u>	<u>6.75%</u>	<u>4.02%</u>
c. Amortization of Net UAL (5a.+5b.)	16.59%	18.51%	10.83%	11.87%	9.71%
6. Administrative Expenses	<u>0.60%</u>	<u>0.60%</u>	<u>0.60%</u>	<u>0.60%</u>	<u>0.60%</u>
7. Net Employer Contribution Rate (3.+5c.+6.)	41.81%	44.74%	19.78%	23.46%	21.40%

**CITY AND COUNTY OF SAN FRANCISCO EMPLOYEES' RETIREMENT SYSTEM
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SECTION V – CONTRIBUTIONS

Table V-2 shows the estimated member and employer contributions adjusted for the cost-sharing provisions under Proposition C. The adjustments are based on the applicable table in the Charter for an employer contribution rate of 23.46% and the hourly pay rates shown in the table below.

Table V-2								
Employee and Employer Contribution Rates By Employee Group for FYE 2018								
(in thousands)								
Hire Date	Hourly Pay	Estimated Payroll FYE 2018	Base Rates		Adjusted Rates		Cost Sharing Adjustment	
			Employee	Employer	Employee	Employer		
Police and Fire								
< 11/2/1976	All	\$ 0	7.00%	23.46%	11.50%	18.96%	4.50%	
11/2/1976 - 6/30/2010	All	358,677	7.50%	23.46%	12.00%	18.96%	4.50%	
> 6/30/2010	< \$55	135,240	9.00%	23.46%	12.50%	19.96%	3.50%	
> 6/30/2010	>= \$55	9,301	9.00%	23.46%	13.00%	19.46%	4.00%	
Miscellaneous								
< 11/2/1976	< \$28	\$ 21	8.00%	23.46%	8.00%	23.46%	0.00%	
< 11/2/1976	\$28 - \$55	772	8.00%	23.46%	11.50%	19.96%	3.50%	
< 11/2/1976	>= \$55	502	8.00%	23.46%	12.00%	19.46%	4.00%	
>= 11/2/1976	< \$28	323,493	7.50%	23.46%	7.50%	23.46%	0.00%	
>= 11/2/1976	\$28 - \$55	1,495,825	7.50%	23.46%	11.00%	19.96%	3.50%	
>= 11/2/1976	>= \$55	853,430	7.50%	23.46%	11.50%	19.46%	4.00%	
Estimated Total Plan		\$3,177,262	7.57%	23.46%	10.96%	20.07%	3.39%	
Estimated Contribution Amounts			\$240,519	\$745,386	\$348,228	\$637,677	\$107,709	

Dollar Amounts in Thousands

Table V-3 on the following page provides the payment schedules to amortize the changes to the Actuarial Liability as a result of changes to the Charter. Each Charter change is amortized over 20 years from the date it is first recognized in the valuation. Effective with the July 1, 2014 valuation, any new changes to active member benefits are amortized over a closed 15-year period, and any new changes to inactive or retired member benefits, including Supplemental COLAs, are amortized over a closed 5-year period. All amortization schedules are determined on a level percent of pay basis which means that for the duration of the amortization schedule, the payment amount increases each year at the assumed wage inflation rate.

**CITY AND COUNTY OF SAN FRANCISCO EMPLOYEES' RETIREMENT SYSTEM
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SECTION V – CONTRIBUTIONS

Table V-3 Development of the Proposition Amortization Rate as of July 1, 2016 (FYE 2018) (dollars in thousands)													
Propositions	Remaining Period	Police			Fire			Miscellaneous			Total		
		Outstanding Balance	Amortization Payment	Payment as % of Pay	Outstanding Balance	Amortization Payment	Payment as % of Pay	Outstanding Balance	Amortization Payment	Payment as % of Pay	Outstanding Balance	Amortization Payment	Payment as % of Pay
1998 Prop A - New Police Ret Bfts	2	9,656	5,477	1.88%	0	0	0.00%	0	0	0.00%	9,656	5,477	0.17%
1998 Prop C - Paramedics Bfts	2	0	0	0.00%	2,001	1,135	0.53%	0	0	0.00%	2,001	1,135	0.04%
2000 Prop C - New Misc Ret Bfts	4	0	0	0.00%	0	0	0.00%	132,425	38,888	1.45%	132,425	38,888	1.22%
6.25% Credited Interest on EE ctrbs	6	51	10	0.00%	12	3	0.00%	7,136	1,446	0.05%	7,199	1,459	0.05%
2002 Prop H - Safety Ret Bfts	6	90,752	18,390	6.32%	96,478	19,550	9.20%	0	0	0.00%	187,231	37,939	1.19%
5.0% Credited Interest on EE ctrbs	8	(398)	(63)	-0.02%	(189)	(30)	-0.01%	(36,508)	(5,740)	-0.21%	(37,096)	(5,833)	-0.18%
2004 Prop E - New Safety LOD Bfts	9	4,922	700	0.24%	6,913	983	0.46%	0	0	0.00%	11,834	1,682	0.05%
2003 Prop F - Misc 3+3 Early Ret Bfts	9	0	0	0.00%	0	0	0.00%	14,889	2,116	0.08%	14,889	2,116	0.07%
Liability of 2003 Prop F (extended) - Misc 3+3 Early Ret Bfts	10	0	0	0.00%	0	0	0.00%	9,036	1,176	0.04%	9,036	1,176	0.04%
Liability of 2003 Prop F (extended) - Misc 3+3 Early Ret Bfts	11	0	0	0.00%	0	0	0.00%	4,223	508	0.02%	4,223	508	0.02%
2008 Prop B - New Misc Ret Bfts and Compound COLA	12	36,525	4,093	1.41%	29,805	3,340	1.57%	631,135	70,731	2.65%	697,465	78,164	2.46%
Proposition Total		\$141,508	\$ 28,607	9.84%	\$135,021	\$ 24,981	11.76%	\$762,336	\$109,124	4.08%	\$1,038,864	\$162,711	5.12%

**CITY AND COUNTY OF SAN FRANCISCO EMPLOYEES' RETIREMENT SYSTEM
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SECTION V – CONTRIBUTIONS

Effective July 1, 2014, any new sources of UAL due to actuarial gains and losses, assumption changes, or method changes are amortized over a closed, layered 20-year period. In addition, the UAL as of July 1, 2013, not attributable to Propositions was re-amortized over a closed 19-year period as of July 1, 2014. As of July 1, 2016, the UAL attributable to the 2013 Supplemental COLA is amortized over a closed 17-year period; and, the UAL attributable to the 2014 Supplemental COLA is amortized over a closed 5-year period. Table V-4 shows all the Non-Proposition amortizations under the new amortization policy. All amortization schedules are determined on a level percent of pay basis which means that for the duration of the amortization schedule, the payment amount increases each year at the assumed wage inflation rate.

The amortization payment on the 2015 assumption changes is being phased in over a five-year period. The phase-in is calculated by multiplying the normal first year amortization payment by 20 percent. For the second year, the amortization schedule is recalculated reflecting the 20 percent payment in the first year and the remaining 19-year period. The recalculated amortization payment is then multiplied by 40 percent. The process is repeated until the full amortization payment is made beginning in the fifth year of the 20-year period.

Table V-4				
Development of the Non-Proposition Amortization Rate as of July 1, 2016 (FYE 2018)				
(dollars in thousands)				
Amortization Bases	Remaining Period	Outstanding Balance	Amortization Payment	Payment as % of Pay
2013 Non-Proposition UAL	17	\$ 2,625,724	\$ 225,281	7.08%
2014 Actuarial Gain	18	(865,315)	(71,243)	-2.24%
2014 Assumption Change	18	153,072	12,603	0.40%
2015 Actuarial Gain	19	(771,517)	(61,137)	-1.92%
2015 Assumption Change ¹	19	1,111,511	35,232	1.11%
2013 Supplemental COLA	17	203,067	17,423	0.55%
2014 Supplemental COLA	5	226,270	54,083	1.70%
2016 Actuarial Loss	20	27,505	2,103	0.07%
Total Non-Proposition UAL		\$ 2,710,317	\$ 214,345	6.75%

¹ The full amortization payment is being phased in over a five year period. The ultimate rate, based on assumed payroll, is 3.04%.

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SECTION VI – ACTUARIAL SECTION OF THE CAFR

The Government Finance Officers Association (GFOA) maintains a checklist of items to be included in a System's Comprehensive Annual Financial Report (CAFR) in order to receive recognition for excellence in financial reporting. The following Tables VI-1 through VI-3 are listed by the GFOA for inclusion in the Actuarial Section of the System's CAFR. The GFOA recommends showing 10 years of experience in each of these exhibits. Table VI-1 presents an Analysis of Financial Experience for the valuation year, Table VI-2 presents the Solvency Test, and Table VI-3 shows the Schedule of Funding Progress.

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

Table VI-1						
ANALYSIS OF FINANCIAL EXPERIENCE						
(in thousands)						
Gain or (Loss) for Year Ending	Investment Income and Expenses	Contribution Income¹	Combined Liability Experience	Gain or (Loss) From Experience	Non-Recurring Items	Composite Gain or (Loss) During Year
July 1, 2016	\$ (51,714)	\$ 58,723	\$ (79,298)	\$ (72,289)	\$ (429,337)	\$ (501,626)
July 1, 2015	537,853	105,097	117,379	760,329	(1,048,350)	(288,021)
July 1, 2014	745,132	(37,585)	157,931	865,478	(153,100)	712,378
July 1, 2013	(584,049)	(61,143)	9,873	(635,319)	0	(635,319)
July 1, 2012	(1,139,038)	(51,415)	187,116	(1,003,336)	(135,527)	(1,138,863)
July 1, 2011	(563,305)	(122,074)	70,969	(614,410)	(148,758)	(763,168)
July 1, 2010	(755,593)		150,330	(605,263)	(373,175)	(978,438)
July 1, 2009	(722,712)		(235,783)	(958,495)	12,527	(945,968)
July 1, 2008	216,709		122,569	339,278	(1,155,958)	(816,680)

¹ Due to Payroll Changes and One-Year Lag (Not determined separately prior to the July 1, 2011 valuation).

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SECTION VI – ACTUARIAL SECTION OF THE CAFR

Table VI-2 SOLVENCY TEST (in thousands)							
Valuation Date July 1,	(A)	(B)	(C)	Reported Assets ¹	Portion of Actuarial Liabilities Covered by Reported Assets		
	Active Member Contributions	Retirees And Beneficiaries	Remaining Active Members' Liabilities		(A)	(B)	(C)
2016 ²	\$ 3,388,887	\$ 14,505,186	\$ 6,509,809	\$ 20,654,703	100%	100%	42%
2015 ³	3,201,422	13,510,337	6,259,133	19,653,338	100%	100%	47%
2014 ⁴	3,007,666	12,505,691	5,609,210	18,012,088	100%	100%	45%
2013	2,828,233	11,878,160	5,518,383	16,303,397	100%	100%	29%
2012 ⁴	2,687,347	11,261,886	5,444,621	16,027,683	100%	100%	38%
2011 ⁴	2,663,625	10,615,852	5,319,251	16,313,120	100%	100%	57%
2010 ⁵	2,593,076	9,761,070	5,289,247	16,069,058	100%	100%	70%
2009	2,528,667	8,720,050	5,249,932	16,004,730	100%	100%	91%
2008 ⁶	2,411,027	8,013,456	4,934,341	15,941,390	100%	100%	100%
2007 ⁷	2,251,564	7,423,580	3,866,243	14,929,287	100%	100%	100%

¹ Actuarial Value of Assets.

² Reflects 2013 and 2014 Retroactive Supplemental COLA benefits for Post96 Retirees

³ Reflects revised demographic assumptions.

⁴ Reflects revised discount rate and wage inflation.

⁵ Reflects revised economic and demographic assumptions.

⁶ Reflects revised economic assumptions and Prop B changes.

⁷ July 1, 2007 numbers calculated by the prior actuary.

The Government Finance Officers Association has named the exhibit above, 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.

**CITY AND COUNTY OF SAN FRANCISCO EMPLOYEES' RETIREMENT SYSTEM
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SECTION VI – ACTUARIAL SECTION OF THE CAFR

Table VI-3						
SCHEDULE OF FUNDING PROGRESS						
<i>(in thousands)</i>						
Actuarial Valuation Date	Actuarial Value of Assets	Actuarial Liability (AL)	Unfunded AL	Funded Ratio	Covered Payroll	Unfunded AL as a % of Covered Payroll
July 1, 2016	\$20,654,703	\$24,403,882	\$ 3,749,179	85%	\$3,062,422	122%
July 1, 2015	19,653,338	22,970,892	3,317,554	86%	2,820,968	118%
July 1, 2014	18,012,088	21,122,567	3,110,479	85%	2,640,153	118%
July 1, 2013	16,303,397	20,224,776	3,921,379	81%	2,535,963	155%
July 1, 2012	16,027,683	19,393,854	3,366,171	83%	2,393,842	141%
July 1, 2011	16,313,120	18,598,728	2,285,608	88%	2,360,413	97%
July 1, 2010	16,069,058	17,643,394	1,574,336	91%	2,398,823	66%
July 1, 2009	16,004,730	16,498,649	493,919	97%	2,544,939	19%
July 1, 2008	15,941,390	15,358,823	(582,567)	104%	2,457,196	-24%
July 1, 2007 ¹	14,929,287	13,541,388	(1,387,899)	110%	2,376,221	-58%

¹ Amounts for the July 1, 2007 valuation were calculated by the prior actuary.

**CITY AND COUNTY OF SAN FRANCISCO EMPLOYEES' RETIREMENT SYSTEM
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APPENDIX A – MEMBERSHIP INFORMATION

Table A-1			
Active Member Data - By Group			
	July 1, 2016	July 1, 2015	% Change
Total			
Count	32,406	30,837	5.1%
Average Current Age	46.9	47.4	-0.5
Average Service	11.1	11.6	-0.5
Annual Pensionable Earnings*	\$ 2,902,722,369	\$ 2,700,739,913	7.5%
Average Pensionable Earnings	\$ 89,574	\$ 87,581	2.3%
Police			
Count	2,223	2,118	5.0%
Average Current Age	41.3	41.8	-0.5
Average Service	12.6	13.1	-0.5
Annual Pensionable Earnings*	\$ 267,454,223	\$ 254,388,969	5.1%
Average Pensionable Earnings	\$ 120,312	\$ 120,108	0.2%
Fire			
Count	1,560	1,486	5.0%
Average Current Age	44.6	44.9	-0.3
Average Service	14.0	14.4	-0.4
Annual Pensionable Earnings*	\$ 195,298,648	\$ 187,030,689	4.4%
Average Pensionable Earnings	\$ 125,191	\$ 125,862	-0.5%
Miscellaneous			
Count	28,623	27,233	5.1%
Average Current Age	47.5	47.9	-0.4
Average Service	10.8	11.3	-0.5
Annual Pensionable Earnings*	\$ 2,439,969,498	\$ 2,259,320,255	8.0%
Average Pensionable Earnings	\$ 85,245	\$ 82,963	2.8%

* Fiscal Year ending June 30, 2015 excludes DROP members

**CITY AND COUNTY OF SAN FRANCISCO EMPLOYEES' RETIREMENT SYSTEM
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APPENDIX A – MEMBERSHIP INFORMATION

Table A-2		
Active Member Data - By Charter		
July 1, 2016		
	Counts	Annual Pensionable Earnings*
Total		
Old	40	\$ 3,845,013
New	21,024	2,016,981,418
Prop D	1,751	145,301,465
Prop C	<u>9,591</u>	<u>736,594,473</u>
Total	32,406	\$ 2,902,722,369
Police		
Old	0	\$ 0
New	1,565	206,040,889
Prop D	25	2,998,857
Prop C*	<u>633</u>	<u>58,414,477</u>
Total	2,223	\$ 267,454,223
Fire		
Old	2	\$ 325,412
New	1,123	157,081,902
Prop D	54	6,335,687
Prop C	<u>381</u>	<u>31,555,647</u>
Total	1,560	\$ 195,298,648
Miscellaneous		
Old	38	\$ 3,519,601
New	18,336	1,653,858,627
Prop D	1,672	135,966,921
Prop C	<u>8,577</u>	<u>646,624,349</u>
Total	28,623	\$ 2,439,969,498

* Includes 38 member in the Sheriffs Plan (Charter A8.608) and 60 members in the Miscellaneous Safety Plan(Charter A8.610)

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APPENDIX A – MEMBERSHIP INFORMATION

Table A-3				
Active DROP Member Data - Total System				
	July 1, 2016	July 1, 2015	% Change	
Total Active DROP				
Count	0	2	-100.0%	
Average Current Age	N / A	59.5	N / A	
Total Annual Benefit*	\$ 0	\$ 207,068	-100.0%	
Average Annual Benefit	N / A	\$ 103,534	N / A	
Total DROP Account Balance	\$ 0	\$ 423,995	-100.0%	

* Benefits provided in June 30, valuation data.

Table A-4				
Non-Active Member Data - Total System				
	July 1, 2016	July 1, 2015	Change	
Retired				
Count	21,761	21,029	3.5%	
Average Age	70.3	70.1	0.2	
Total Annual Benefit*	\$ 969,672,532	\$ 894,343,016	8.4%	
Average Annual Benefit	\$ 44,560	\$ 42,529	4.8%	
Disabled				
Count	2,593	2,612	-0.7%	
Average Age	68.6	68.3	0.3	
Total Annual Benefit*	\$ 154,169,480	\$ 147,219,197	4.7%	
Average Annual Benefit	\$ 59,456	\$ 56,363	5.5%	
Beneficiaries				
Count	3,932	3,844	2.3%	
Average Age	77.4	77.3	0.1	
Total Annual Benefit*	\$ 123,388,233	\$ 115,519,467	6.8%	
Average Annual Benefit	\$ 31,381	\$ 30,052	4.4%	
Payee Total				
Count	28,286	27,485	2.9%	
Average Age	71.1	70.9	0.2	
Total Annual Benefit*	\$ 1,247,230,245	\$ 1,157,081,680	7.8%	
Average Annual Benefit	\$ 44,094	\$ 42,099	4.7%	
Inactives				
Count	7,645	7,092	7.8%	
Average Age	47.7	48.0	-0.3	
Total Contribution Balance with Interest	\$ 213,978,231	\$ 205,789,703	4.0%	
Average Contribution Balance with Interest	\$ 27,989	\$ 29,017	-3.5%	

* Benefits provided in June 30, valuation data, plus estimated Basic COLA effective July 1, 2016.

If applicable, limited by Section 415(b) of the Internal Revenue Code.

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APPENDIX A – MEMBERSHIP INFORMATION

Table A-5			
Non-Active Member Data - Old Safety - Prop H			
Pre 7/1/1975 Retirements			
	July 1, 2016	July 1, 2015	Change
Retired			
Count	8	11	-27.3%
Average Age	88.6	89.2	-0.6
Total Annual Benefit*	\$ 210,373	\$ 297,428	-29.3%
Average Annual Benefit	\$ 26,297	\$ 27,039	-2.7%
Disabled			
Count	71	73	-2.7%
Average Age	83.6	82.7	0.9
Total Annual Benefit*	\$ 2,643,511	\$ 2,710,224	-2.5%
Average Annual Benefit	\$ 37,233	\$ 37,126	0.3%
Beneficiaries			
Count	150	161	-6.8%
Average Age	84.3	84.1	0.2
Total Annual Benefit*	\$ 4,709,428	\$ 4,983,427	-5.5%
Average Annual Benefit	\$ 31,396	\$ 30,953	1.4%
Payee Total			
Count	229	245	-6.5%
Average Age	84.2	83.9	0.3
Total Annual Benefit*	\$ 7,563,312	\$ 7,991,079	-5.4%
Average Annual Benefit	\$ 33,028	\$ 32,617	1.3%
Inactives			
Count	N/A	N/A	
Average Age	N/A	N/A	
Total Contribution Balance with Interest	N/A	N/A	
Average Contribution Balance with Interest	N/A	N/A	

* Benefits provided in June 30, valuation data, plus estimated Basic COLA effective July 1, 2016.

If applicable, limited by Section 415(b) of the Internal Revenue Code.

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Table A-6			
Non-Active Member Data - Old Safety - Prop M			
Charters A8.559, A8.585, A8.595, and A8.596			
	July 1, 2016	July 1, 2015	Change
Retired			
Count	1,080	1,123	-3.8%
Average Age	74.7	74.0	0.7
Total Annual Benefit*	\$ 105,541,174	\$ 103,614,457	1.9%
Average Annual Benefit	\$ 97,723	\$ 92,266	5.9%
Disabled			
Count	644	677	-4.9%
Average Age	75.0	74.3	0.7
Total Annual Benefit*	\$ 62,780,417	\$ 62,431,254	0.6%
Average Annual Benefit	\$ 97,485	\$ 92,218	5.7%
Beneficiaries			
Count	703	689	2.0%
Average Age	79.8	79.3	0.5
Total Annual Benefit*	\$ 53,656,479	\$ 50,943,084	5.3%
Average Annual Benefit	\$ 76,325	\$ 73,938	3.2%
Payee Total			
Count	2,427	2,489	-2.5%
Average Age	76.3	75.6	0.7
Total Annual Benefit*	\$ 221,978,070	\$ 216,988,795	2.3%
Average Annual Benefit	\$ 91,462	\$ 87,179	4.9%
Inactives			
Count	2	2	0.0%
Average Age	70.5	69.5	1.0
Total Contribution Balance with Interest	\$ 2,395	\$ 2,303	4.0%
Average Contribution Balance with Interest	\$ 1,198	\$ 1,152	4.0%

* Benefits provided in June 30, valuation data, plus estimated Basic COLA effective July 1, 2016.

If applicable, limited by Section 415(b) of the Internal Revenue Code.

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APPENDIX A – MEMBERSHIP INFORMATION

Table A-7			
Non-Active Member Data - New Safety			
	July 1, 2016	July 1, 2015	Change
Retired			
Count	1,430	1,341	6.6%
Average Age	62.0	61.5	0.5
Total Annual Benefit*	\$ 143,405,488	\$ 130,994,184	9.5%
Average Annual Benefit	\$ 100,284	\$ 97,684	2.7%
Disabled			
Count	510	482	5.8%
Average Age	61.9	61.3	0.6
Total Annual Benefit*	\$ 49,783,015	\$ 44,456,111	12.0%
Average Annual Benefit	\$ 97,614	\$ 92,233	5.8%
Beneficiaries			
Count	107	99	8.1%
Average Age	59.7	59.2	0.5
Total Annual Benefit*	\$ 6,071,598	\$ 5,226,677	16.2%
Average Annual Benefit	\$ 56,744	\$ 52,795	7.5%
Payee Total			
Count	2,047	1,922	6.5%
Average Age	61.9	61.3	0.6
Total Annual Benefit*	\$ 199,260,102	\$ 180,676,972	10.3%
Average Annual Benefit	\$ 97,343	\$ 94,005	3.6%
Inactives			
Count	228	216	5.6%
Average Age	44.8	45.7	-0.9
Total Contribution Balance with Interest	\$ 12,433,166	\$ 12,784,741	-2.7%
Average Contribution Balance with Interest	\$ 54,531	\$ 59,189	-7.9%

* Benefits provided in June 30, valuation data. If applicable, limited by Section 415(b) of the Internal Revenue Code.

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Table A-8			
Non-Active Member Data - Miscellaneous			
	July 1, 2016	July 1, 2015	Change
Retired			
Count	19,243	18,554	3.7%
Average Age	70.6	70.5	0.1
Total Annual Benefit*	\$ 720,515,497	\$ 659,436,946	9.3%
Average Annual Benefit	\$ 37,443	\$ 35,541	5.4%
Disabled			
Count	1,368	1,380	-0.9%
Average Age	67.2	66.9	0.3
Total Annual Benefit*	\$ 38,962,536	\$ 37,621,609	3.6%
Average Annual Benefit	\$ 28,481	\$ 27,262	4.5%
Beneficiaries			
Count	2,972	2,895	2.7%
Average Age	77.2	77.1	0.1
Total Annual Benefit*	\$ 58,950,728	\$ 54,366,279	8.4%
Average Annual Benefit	\$ 19,835	\$ 18,779	5.6%
Payee Total			
Count	23,583	22,829	3.3%
Average Age	71.2	71.1	0.1
Total Annual Benefit*	\$ 818,428,761	\$ 751,424,833	8.9%
Average Annual Benefit	\$ 34,704	\$ 32,915	5.4%
Inactives			
Count	7,415	6,874	7.9%
Average Age	47.8	48.1	-0.3
Total Contribution Balance with Interest	\$ 201,542,670	\$ 193,002,659	4.4%
Average Contribution Balance with Interest	\$ 27,180	\$ 28,077	-3.2%

* Benefits provided in June 30, valuation data. If applicable, limited by Section 415(b) of the Internal Revenue Code.

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APPENDIX A – MEMBERSHIP INFORMATION

Table A-9												
Distribution of Active Members as of July 1, 2016												
Count By Age/Service - Total System												
Age	Years of 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 and up		
Under 25	235	100	0	0	0	0	0	0	0	0	0	335
25 to 29	635	1,144	101	0	0	0	0	0	0	0	0	1,880
30 to 34	664	1,817	763	95	1	0	0	0	0	0	0	3,340
35 to 39	481	1,445	1,130	562	116	0	0	0	0	0	0	3,734
40 to 44	331	1,067	1,020	757	627	92	1	0	0	0	0	3,895
45 to 49	314	869	904	881	1,120	532	107	1	0	0	0	4,728
50 to 54	249	747	791	808	1,184	768	469	114	6	0	0	5,136
55 to 59	178	564	655	658	1,049	619	656	474	76	2	0	4,931
60 to 64	86	280	414	427	734	432	410	348	73	11	0	3,215
65 to 69	21	73	141	171	218	135	112	83	28	22	0	1,004
70 and up	4	15	32	38	73	34	25	22	13	12	0	268
Total Count	3,198	8,121	5,951	4,397	5,122	2,612	1,780	1,042	196	47	0	32,466

Table A-10												
Distribution of Active Members as of July 1, 2016												
Average Salary By Age/Service - Total System												
Age	Years of 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 and up		
Under 25	\$ 60,091	\$ 61,870	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 60,622
25 to 29	64,761	71,079	75,081	0	0	0	0	0	0	0	0	69,160
30 to 34	72,795	77,780	94,487	103,695	53,620	0	0	0	0	0	0	81,335
35 to 39	75,069	79,048	92,874	102,873	101,191	0	0	0	0	0	0	86,993
40 to 44	74,433	80,066	93,231	103,383	106,590	118,997	91,484	0	0	0	0	92,759
45 to 49	76,953	78,455	88,423	97,155	104,878	119,576	122,430	127,798	0	0	0	95,638
50 to 54	73,775	76,850	86,149	92,493	98,527	111,571	117,777	102,954	101,531	0	0	95,129
55 to 59	73,646	78,690	88,361	87,519	90,109	98,068	110,422	99,053	101,268	139,348	0	92,384
60 to 64	77,455	75,718	83,247	84,089	87,294	97,214	104,011	101,707	104,125	87,244	0	90,483
65 to 69	81,348	86,803	81,182	84,134	90,610	86,735	96,189	97,389	95,516	111,381	0	88,966
70 and up	71,516	59,608	81,892	79,661	94,534	88,472	92,248	85,326	94,163	83,136	0	86,351
Avg. Salary	\$ 71,490	\$ 77,192	\$ 89,767	\$ 94,874	\$ 97,227	\$ 106,304	\$ 110,444	\$ 99,971	\$ 101,047	\$ 99,711	\$ 0	\$ 89,564

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APPENDIX A – MEMBERSHIP INFORMATION

Table A-11												
Distribution of Active Members as of July 1, 2016												
Count By Age/Service - Police												
Age	Years of 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 and up		
Under 25	11	26	0	0	0	0	0	0	0	0	0	37
25 to 29	25	201	9	0	0	0	0	0	0	0	0	235
30 to 34	17	176	160	25	0	0	0	0	0	0	0	378
35 to 39	5	68	126	104	30	0	0	0	0	0	0	333
40 to 44	1	39	58	77	117	38	0	0	0	0	0	330
45 to 49	1	12	36	44	123	166	23	0	0	0	0	405
50 to 54	4	12	12	28	57	130	74	14	1	0	0	332
55 to 59	0	7	8	3	21	35	36	17	4	0	0	131
60 to 64	1	1	2	0	7	12	9	2	1	0	0	35
65 to 69	1	0	2	0	1	2	1	0	0	0	0	7
70 and up	0	0	0	0	0	0	0	0	0	0	0	0
Total Count	66	542	413	281	356	383	143	33	6	0	0	2,223

Table A-12												
Distribution of Active Members as of July 1, 2016												
Average Salary By Age/Service - Police												
Age	Years of 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 and up		
Under 25	\$ 81,693	\$ 82,287	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 82,110
25 to 29	79,194	88,904	103,864	0	0	0	0	0	0	0	0	88,443
30 to 34	81,952	93,625	120,180	131,152	0	0	0	0	0	0	0	106,822
35 to 39	82,674	95,498	122,184	127,900	131,652	0	0	0	0	0	0	118,780
40 to 44	81,693	99,441	122,683	124,714	131,557	135,486	0	0	0	0	0	124,907
45 to 49	95,578	97,953	119,561	122,880	128,177	141,512	153,512	0	0	0	0	132,764
50 to 54	116,693	109,560	122,222	125,201	125,365	136,941	151,411	162,924	207,590	0	0	136,732
55 to 59	0	103,574	126,045	133,263	125,064	129,937	140,276	153,631	168,693	0	0	134,685
60 to 64	225,289	118,570	121,897	0	127,405	127,776	134,040	147,861	241,078	0	0	135,885
65 to 69	199,571	0	127,715	0	94,589	121,670	123,375	0	0	0	0	130,901
70 and up	0	0	0	0	0	0	0	0	0	0	0	0
Avg. Salary	\$ 87,181	\$ 92,607	\$ 120,951	\$ 126,319	\$ 128,837	\$ 137,771	\$ 147,656	\$ 157,224	\$ 187,240	\$ 0	\$ 0	\$ 120,312

**CITY AND COUNTY OF SAN FRANCISCO EMPLOYEES' RETIREMENT SYSTEM
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APPENDIX A – MEMBERSHIP INFORMATION

Table A-13												
Distribution of Active Members as of July 1, 2016												
Count By Age/Service - Fire												
Age	Years of 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 and up		
Under 25	2	4	0	0	0	0	0	0	0	0	0	6
25 to 29	21	40	1	0	0	0	0	0	0	0	0	62
30 to 34	31	119	39	7	0	0	0	0	0	0	0	196
35 to 39	14	84	39	51	12	0	0	0	0	0	0	200
40 to 44	7	35	28	62	76	8	0	0	0	0	0	216
45 to 49	4	11	18	60	161	84	31	1	0	0	0	370
50 to 54	1	4	10	28	103	99	67	1	0	0	0	313
55 to 59	1	0	6	7	37	30	67	6	2	0	0	156
60 to 64	0	0	1	1	7	6	10	3	1	0	0	29
65 to 69	0	1	0	0	0	4	3	1	1	2	0	12
70 and up	0	0	0	0	0	0	0	0	0	0	0	0
Total Count	81	298	142	216	396	231	178	12	4	2	0	1,560

Table A-14												
Distribution of Active Members as of July 1, 2016												
Average Salary By Age/Service - Fire												
Age	Years of 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 and up		
Under 25	\$ 60,539	\$ 65,900	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 64,113
25 to 29	67,403	73,783	121,226	0	0	0	0	0	0	0	0	72,387
30 to 34	69,388	87,164	111,319	132,887	0	0	0	0	0	0	0	90,792
35 to 39	71,939	88,176	116,889	137,002	134,994	0	0	0	0	0	0	107,898
40 to 44	66,738	91,770	113,423	134,134	135,693	155,630	0	0	0	0	0	123,745
45 to 49	60,539	100,910	110,870	128,441	136,526	144,043	156,836	127,798	0	0	0	135,471
50 to 54	60,539	76,442	112,950	130,009	136,880	148,287	160,795	130,332	0	0	0	143,191
55 to 59	123,951	0	134,469	138,579	135,968	144,232	162,556	147,664	178,774	0	0	149,957
60 to 64	0	0	63,932	128,196	134,102	148,324	155,429	184,875	158,462	0	0	147,868
65 to 69	0	45,000	0	0	0	135,883	152,236	145,808	181,181	162,706	0	141,470
70 and up	0	0	0	0	0	0	0	0	0	0	0	0
Avg. Salary	\$ 68,994	\$ 86,131	\$ 114,036	\$ 132,771	\$ 136,317	\$ 146,257	\$ 160,322	\$ 153,712	\$ 174,298	\$ 162,706	\$ 0	\$ 125,191

**CITY AND COUNTY OF SAN FRANCISCO EMPLOYEES' RETIREMENT SYSTEM
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APPENDIX A – MEMBERSHIP INFORMATION

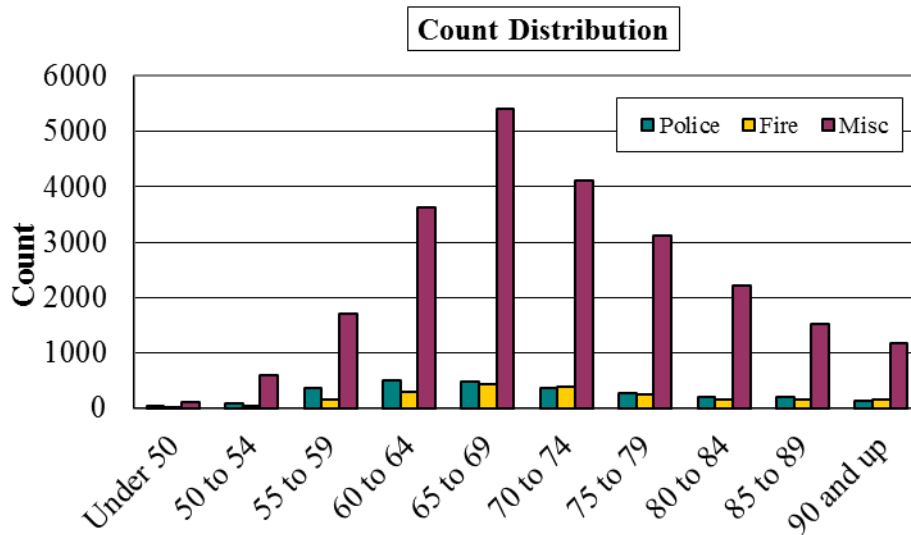
Table A-15											
Distribution of Active Members as of July 1, 2016											
Count By Age/Service - Miscellaneous											
Age	Years of Service										Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 and up	
Under 25	222	70	0	0	0	0	0	0	0	0	292
25 to 29	589	903	91	0	0	0	0	0	0	0	1,583
30 to 34	616	1,522	564	63	1	0	0	0	0	0	2,766
35 to 39	462	1,293	965	407	74	0	0	0	0	0	3,201
40 to 44	323	993	934	618	434	46	1	0	0	0	3,349
45 to 49	309	846	850	777	836	282	53	0	0	0	3,953
50 to 54	244	731	769	752	1,024	539	328	99	5	0	4,491
55 to 59	177	557	641	648	991	554	553	451	70	2	4,644
60 to 64	85	279	411	426	720	414	391	343	71	11	3,151
65 to 69	20	72	139	171	217	129	108	82	27	20	985
70 and up	4	15	32	38	73	34	25	22	13	12	268
Total Count	3,051	7,281	5,396	3,900	4,370	1,998	1,459	997	186	45	28,683

Table A-16											
Distribution of Active Members as of July 1, 2016											
Average Salary By Age/Service - Miscellaneous											
Age	Years of 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 and up	
Under 25	\$ 59,017	\$ 54,056	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 57,828
25 to 29	64,054	66,991	71,727	0	0	0	0	0	0	0	66,171
30 to 34	72,714	75,213	86,034	89,556	53,620	0	0	0	0	0	77,182
35 to 39	75,082	77,590	88,076	92,201	83,361	0	0	0	0	0	82,380
40 to 44	74,577	78,893	90,797	97,640	94,763	99,006	91,484	0	0	0	87,593
45 to 49	77,105	77,886	86,629	93,283	95,355	99,375	88,818	0	0	0	88,105
50 to 54	73,125	76,316	85,238	89,878	93,175	98,709	101,402	94,197	80,319	0	88,704
55 to 59	73,362	78,377	87,459	86,756	87,656	93,555	102,162	96,349	95,201	139,348	89,257
60 to 64	75,716	75,564	83,106	83,985	86,449	95,588	102,005	100,710	101,431	87,244	89,450
65 to 69	75,437	87,384	80,512	84,134	90,592	84,669	94,380	96,798	92,343	106,249	88,029
70 and up	71,516	59,608	81,892	79,661	94,534	88,472	92,248	85,326	94,163	83,136	86,351
Avg. Salary	\$ 71,216	\$ 75,679	\$ 86,742	\$ 90,510	\$ 91,109	\$ 95,653	\$ 100,711	\$ 97,429	\$ 96,692	\$ 96,911	\$ 85,243

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Table A-17				
Distribution of Retirees, Disabled Members, and Beneficiaries as of July 1, 2016				
Age	Count			Total
	Police	Fire	Misc	
Under 50	38	26	109	173
50 to 54	83	53	596	732
55 to 59	367	160	1,700	2,227
60 to 64	504	295	3,624	4,423
65 to 69	477	444	5,401	6,322
70 to 74	365	379	4,109	4,853
75 to 79	269	247	3,110	3,626
80 to 84	202	163	2,223	2,588
85 to 89	199	149	1,528	1,876
90 and up	133	150	1,183	1,466
Total	2,637	2,066	23,583	28,286

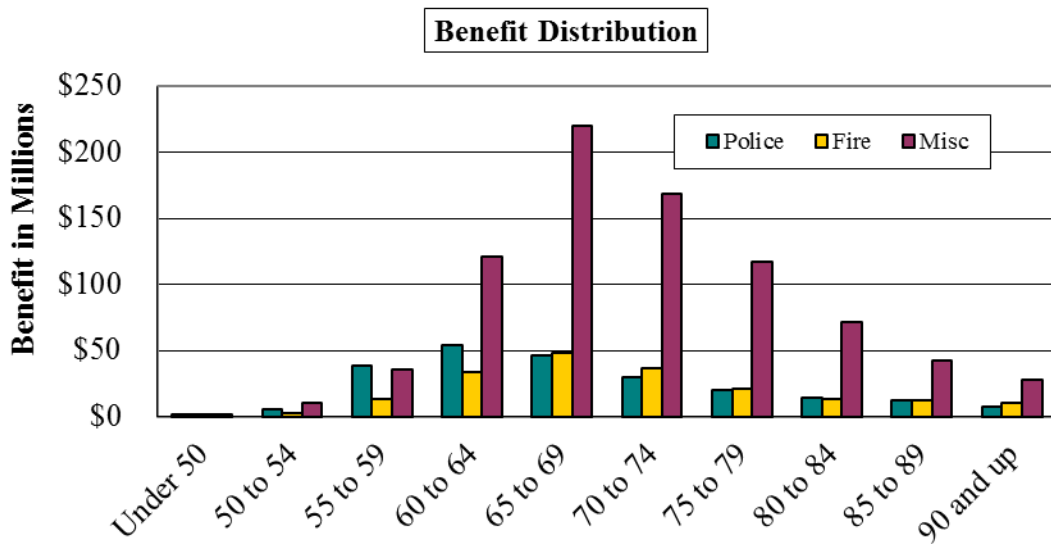


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Table A-18				
Distribution of Retirees, Disabled Members, and Beneficiaries as of July 1, 2016				
Annual Benefit *				
Age	Police	Fire	Misc	Total
Under 50	\$ 2,334,247	\$ 1,488,426	\$ 2,107,739	\$ 5,930,412
50 to 54	5,570,967	3,035,254	10,926,742	19,532,963
55 to 59	39,078,970	13,037,874	35,777,555	87,894,399
60 to 64	54,467,217	34,315,326	121,197,284	209,979,827
65 to 69	46,128,388	48,079,319	220,309,341	314,517,048
70 to 74	30,109,680	36,957,904	168,745,018	235,812,603
75 to 79	20,351,312	21,694,122	116,990,968	159,036,402
80 to 84	14,388,943	13,735,480	71,900,229	100,024,653
85 to 89	12,955,280	12,157,447	42,844,426	67,957,153
90 and up	8,028,478	10,886,850	27,629,458	46,544,786
Total	\$ 233,413,483	\$ 195,388,001	\$ 818,428,761	\$ 1,247,230,245

* Benefits used in the July 1, 2016 actuarial valuation



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Table A-19 Summary and Reconciliation of Participant Data									
	Vested		Total System Non-Vested						
	Active	Terminated	Reciprocal	Terminated	Disabled	Retired	Beneficiaries	DROP	Totals
Participants as of 7/1/2015	30,837	1,992	1,024	4,076	2,612	21,029	3,844	2	65,416
New Entrants	3,527	1	7	380	0	0	0	0	3,915
Returned to Work	199	(49)	(6)	(141)	0	(3)	0	0	0
Vested Terminations	(280)	281	0	0	0	0	0	(1)	0
Reciprocals	(10)	(9)	38	(19)	0	0	0	0	0
Non Vested Terminations	(503)	0	0	503	0	0	0	0	0
Refund/Withdrawal	(299)	(30)	(11)	(197)	0	0	0	0	(537)
Retirements	(1,049)	(160)	(17)	(4)	0	1,231	0	(1)	0
Disabilities	(15)	(15)	0	(2)	76	(44)	0	0	0
Benefit Ceased *	(1)	(5)	0	0	(94)	(580)	(172)	0	(852)
New Continuants	0	0	0	0	0	(3)	261	0	258
New Dissolutions	0	0	0	0	0	28	(1)	0	27
Duplicate Adjustments	0	0	0	0	0	105	0	0	105
Miscellaneous Adjustments	0	(1)	(7)	16	(1)	(2)	0	0	5
Participants as of 7/1/2016	32,406	2,005	1,028	4,612	2,593	21,761	3,932	0	68,337

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Table A-20 Summary and Reconciliation of Participant Data Police									
	Active	Vested Terminated	Reciprocal	Non-Vested Terminated	Disabled	Retired	Beneficiaries	DROP	Totals
Participants as of 7/1/2015	2,118	51	17	76	520	1,529	539	2	4,852
New Entrants	103	0	0	8	0	0	0	0	111
Returned to Work	0	0	0	0	0	0	0	0	0
Vested Terminations	(8)	9	0	0	0	0	0	(1)	0
Non Vested Terminations	(12)	0	0	12	0	0	0	0	0
Reciprocal	0	0	2	(2)	0	0	0	0	0
Refund/Withdrawal	(7)	(4)	0	(7)	0	0	0	0	(18)
Retirements	(67)	(6)	0	0	0	74	0	(1)	0
Disabilities	(4)	(2)	0	(1)	19	(12)	0	0	0
Benefit Ceased *	0	0	0	0	(16)	(34)	(19)	0	(69)
New Continuants	0	0	0	0	0	(3)	34	0	31
New Dissolutions	0	0	0	0	0	7	(1)	0	6
Transferred In (From Fire)	0	0	0	0	0	0	0	0	0
Transferred In (From Misc)	105	0	0	10	0	0	0	0	115
Transferred Out (To Fire)	0	0	0	0	0	0	0	0	0
Transferred Out (To Misc)	(5)	0	0	0	0	0	0	0	(5)
Duplicate Adjustments	0	0	0	0	0	0	0	0	0
Miscellaneous Adjustments	0	0	(7)	0	0	0	0	0	(7)
Participants as of 7/1/2016	2,223	48	12	96	523	1,561	553	0	5,016

* Includes deaths and benefits that were terminated or suspended

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Table A-21 Summary and Reconciliation of Participant Data Fire								
	Active	Vested Terminated	Reciprocal	Non-Vested Terminated	Disabled	Retired	Beneficiaries	Totals
Participants as of 7/1/2015	1,486	39	23	12	712	946	410	3,628
New Entrants	119	1	0	0	0	0	0	120
Returned to Work	2	(2)	0	0	0	0	0	0
Vested Terminations	(5)	5	0	0	0	0	0	0
Reciprocals	0	0	0	0	0	0	0	0
Non Vested Terminations	(2)	0	0	2	0	0	0	0
Refund/Withdrawal	0	0	0	0	0	0	0	0
Retirements	(35)	(3)	(1)	0	0	39	0	0
Disabilities	(2)	(2)	0	0	12	(8)	0	0
Benefit Ceased *	(1)	0	0	0	(22)	(23)	(26)	(72)
New Continuants	0	0	0	0	0	0	23	23
New Dissolutions	0	0	0	0	0	3	0	3
Transferred In (From Misc)	0	0	0	0	0	0	0	0
Transferred In (From Police)	0	0	0	0	0	0	0	0
Transferred Out (To Misc)	(2)	0	0	0	0	0	0	(2)
Transferred Out (To Police)	0	0	0	0	0	0	0	0
Duplicate Adjustments	0	0	0	0	0	0	0	0
Miscellaneous Adjustments	0	0	0	0	0	0	0	0
Participants as of 7/1/2016	1,560	38	22	14	702	957	407	3,700

* Includes deaths and benefits that were terminated or suspended

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Table A-22 Summary and Reconciliation of Participant Data Miscellaneous								
	Active	Vested Terminated	Reciprocal	Non-Vested Terminated	Disabled	Retired	Beneficiaries	Totals
Participants as of 7/1/2015	27,233	1,902	984	3,988	1,380	18,554	2,895	56,936
New Entrants	3,305	0	7	372	0	0	0	3,684
Returned to Work	197	(47)	(6)	(141)	0	(3)	0	0
Vested Terminations	(267)	267	0	0	0	0	0	0
Reciprocals	(10)	(9)	36	(17)	0	0	0	0
Non Vested Terminations	(489)	0	0	489	0	0	0	0
Refund/Withdrawal	(292)	(26)	(11)	(190)	0	0	0	(519)
Retirements	(947)	(151)	(16)	(4)	0	1,118	0	0
Disabilities	(9)	(11)	0	(1)	45	(24)	0	0
Benefit Ceased *	0	(5)	0	0	(56)	(523)	(127)	(711)
New Continuants	0	0	0	0	0	0	204	204
New Dissolutions	0	0	0	0	0	18	0	18
Transferred In (From Fire)	2	0	0	0	0	0	0	2
Transferred In (From Police)	5	0	0	0	0	0	0	5
Transferred Out (To Fire)	0	0	0	0	0	0	0	0
Transferred Out (To Police)	(105)	0	0	(10)	0	0	0	(115)
Duplicate Adjustments	0	0	0	0	0	105	0	105
Miscellaneous Adjustments	0	(1)	0	16	(1)	(2)	0	12
Participants as of 7/1/2016	28,623	1,919	994	4,502	1,368	19,243	2,972	59,621

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APPENDIX A – MEMBERSHIP INFORMATION

Data Assumptions and Methods

In preparing our valuation results, we relied on information supplied by the SFERS staff. 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:

- Service for members on the “Active” data file was calculated using the field “Yrs Svc.” Service buyback that has been paid for is added to the “Yrs Svc” field. Service buyback that is under contract, but not paid in full, as of the valuation date is assumed to be paid in full per the contract and this service is reflected in the projected benefit. An adjusted date of hire is retroactively calculated from the valuation date.
- Valuation Salary for the fiscal year ending 6/30/2016 is equal to “Covered Pay” reported for members hired before the beginning of the previous plan year, and the maximum of “Covered Pay” and “Calculated Pay,” which is an annualized pay rate, reported for new hires. A minimum of \$45,000 annual pay is used for all active members. Valuation Salary for the fiscal year ending 6/30/2017 is equal to Valuation Salary for the prior fiscal year increased for merit according to our assumptions and for wage inflation in accordance with the latest Memorandum Of Understanding (MOUS). The wage inflation by group is:
 - 2.0% for Fire and Police
 - 4.0% for all Miscellaneous members
- Benefits in the valuation data for members in pay status for the Miscellaneous and New Safety Charters include the Basic COLA effective July 1, 2016.
- Based on the latest MOUs and data provided by SFERS, the Basic COLA effective July 1, 2016 for the Old Safety Charter members in pay status was estimated and included in the benefit.
- No Supplemental COLA benefits were granted as of July 1, 2016. Thus, there were no adjustments to the benefits provided in the valuation data for a Supplemental COLA.
- For accounts having duplicate records based on Social Security Number in the “Active” data file, the records are added together for fields “Cvd Pay,” “Contribs,” “Interest,” “Shortage,” “Short Int,” and “Yrs Svc.” The other data in the record is determined by the record which is considered open (“Plan Stat” = “O”) with the most recent “Membership Date.”
- Records on the “Active” data file are considered to be Active if they have a status of “AM” or “RT” which mean active, no “Job End Date” or the “Job End Date” is after 6/30/2016, and do not have a retiree record and their “Cvd Pay” is greater than \$0.

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- Records on the “Active” data file are considered to be Inactive if they have a status of “VM,” which means vested or they have a status of “AM” but their “Job End Date” is prior to 6/30/2016, or their “Cvd Pay” is \$0. If these inactive members have less than 5 years of service (non-vested), they are assumed to receive a lump sum distribution on the valuation date. If these inactive members have 5 or more years of service (vested), they are assumed to have elected a deferred benefit and to retire at age 55 for all Miscellaneous and Safety Prop C members. The assumed retirement age for Safety non-Prop C members is 51.
- For Safety members, Final Average Compensation is determined using the greater of data fields “Cvd Pay” or “Calc Pay.” If both these fields are \$0, then the pay “Rate” field is used and annualized based on the compensation frequency “Cmp Frq.”
- For Safety members, the deferred benefit is estimated using Final Average Compensation multiplied by years of service (including service purchased) multiplied by the appropriate age factor. For Miscellaneous members, the deferred benefit at retirement is 200% of the member’s contribution account balance with interest as of the valuation date projected with the assumed interest crediting rate to age 55 and then divided by the appropriate annuity factor from Table 12 of the Operating Tables. When there are deferred vested Miscellaneous Prop C members, their deferred benefit will be calculated the same except 200% will be replaced by 150%.
- Members on the “Inactive” data file are assumed to have elected a refund and receive a lump sum distribution on the valuation date if their “Withdrawal Date” is on or after the valuation date. If their “Withdrawal Date” is before the valuation date, they are assumed to have taken a full refund prior to the valuation date.
- Records on the “Retiree” file are considered in pay status if their benefit is not suspended or terminated.
- Members may retire and receive benefits under multiple Charter sections (e.g., - a police officer can have two benefits, one for the service during the academy training which is considered Miscellaneous service and a second benefit for all other service as a police officer). We value each component of a member’s benefit separately under the applicable Charter section. Consequently, the member counts reported in this valuation are slightly higher than the actual number of members due to some individual members being reported under multiple groups.
- We assume any member reported in last year’s “Retiree” file and not in this year’s file is deceased without a beneficiary and is removed from the valuation data.
- We assume all deceased members with payments continuing to a beneficiary have been reported in the “Retiree” file.

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APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

A. Actuarial Assumptions

All assumptions were adopted at the November 18, 2015 Board meeting based on our recommendations. Please refer to the demographic experience study report dated June 4, 2015 for the rationale for the demographic assumptions and the economic assumption review presentation dated November 9, 2016 for the rationale for the economic assumptions.

1. Discount Rate

SFERS assets are assumed to earn 7.50% net of investment expenses.

2. Inflation

Wage Inflation: 3.75% compounded annually
Consumer Price Inflation: 3.25% compounded annually

3. Interest Credited to Member Contributions

4.50%, compounded annually.

4. 401(a)(17) Maximum Compensation Limit

The compensation limit in Section 401(a)(17) of the Internal Revenue Code is assumed to increase with price inflation. In the valuation, compensation limits are only applied to members of new plans created by Proposition C for whom compensation is limited to a percentage of the 401(a)(17) compensation limit.

5. 415(b) Maximum Benefit Limit

The 415(b) limits have been applied to active members' current and future benefits. The 415(b) limit is assumed to increase with price inflation. The 415(b) limit has also been applied to the retiree members who were in excess of the 415(b) limit in 2015. The projected increase in the 415(b) limit for retirees is the same increase as their Basic COLA which depends on their Charter.

6. Salary Increase Rate

Wage inflation component: 3.75%

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The additional merit component:

Table B-1 Salary Merit Increases					
Years of Service	Police	Fire	Muni Drivers	Craft	Misc
0	8.00%	15.00%	15.00%	3.50%	5.25%
1	7.00	9.00	8.00	2.50	3.75
2	6.00	6.00	2.00	1.75	2.75
3	5.00	4.25	1.00	1.00	2.00
4	4.25	3.00	0.00	0.75	1.50
5	3.50	2.25	0.00	0.55	1.25
6	3.00	1.95	0.00	0.40	1.00
7	2.50	1.80	0.00	0.30	0.85
8	2.25	1.70	0.00	0.25	0.70
9	2.00	1.65	0.00	0.20	0.55
10	1.80	1.60	0.00	0.15	0.50
11	1.60	1.55	0.00	0.10	0.45
12	1.50	1.50	0.00	0.05	0.40
13	1.50	1.50	0.00	0.00	0.35
14	1.50	1.50	0.00	0.00	0.30
15	1.50	1.50	0.00	0.00	0.25
16	1.50	1.50	0.00	0.00	0.20
17	1.50	1.50	0.00	0.00	0.15
18	1.50	1.50	0.00	0.00	0.10
19	1.50	1.50	0.00	0.00	0.05
20 & over	1.50	1.50	0.00	0.00	0.00

Extra covered wages in the last year before service retirement are assumed to be as follows:

Safety	3.5%
Muni Drivers	4.5%
Craft Workers	4.5%
Miscellaneous	2.5%

7. Administrative Expense Assumption

There is a 0.60% of Payroll assumption included in the normal cost rates for administrative expenses.

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8. Timing of Contributions

Employer and employee contributions are made throughout the year.

9. Cost-of-Living Increase in Benefits

Basic COLA

Old Plans - Miscellaneous	2.00% per year
New Plans - Police, Fire, and Miscellaneous	2.00% per year
Old Plans - Police and Fire, Charters 8.559 and 8.585	4.40% per year
Old Plans - Police and Fire, Charters 8.595 and 8.596	3.30% per year
Old Plans - Police and Fire, pre-7/1/75 dates of retirement	2.70% per year

Old Safety COLA assumptions are based on the following formula:

$(\text{Wage Inflation} + \text{Ultimate Merit}) \div 2 \times \text{Factor}$

For retirements after 6/30/75, the Factor represents the ratio of the average salary for the last position held to the average pension benefit.

For Charters 8.559 and 8.585, the factor is 1.67
For Charters 8.595 and 8.596, the factor is 1.25
For pre-7/1/75 dates of retirement, the factor is 1.0

Supplemental COLA

For purposes of the actuarial valuation and the determination of contribution rates for FYE 2018, future Supplemental COLAs are assumed to be 0%.

For purposes of the baseline projections, future Supplemental COLAs are assumed to be:

- 0.075% for members (other than Old Safety) who are eligible for a Supplemental COLA regardless of the System's funded status, and
- 0.00% through FYE 2018 gradually increasing to 0.36% for FYE 2036 and later for members who are eligible for a Supplemental COLA if the System is also 100% funded.

For the economic scenarios, Supplemental COLAs are estimated based on the investment returns of the economic scenario.

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APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

10. Rates of Termination of Employment

Sample rates of termination by age and service for Miscellaneous members are shown below.

Table B-2 Misc. Rates of Termination by Age and Service Years						
Age	Service					
	0	1	2	3	4	5 or more
20	37.50%	19.00%	15.00%	12.00%	9.00%	6.50%
25	27.50	19.00	10.00	9.00	7.00	6.50
30	24.00	14.00	9.00	9.00	7.00	5.50
35	20.00	9.00	9.00	7.00	6.50	4.25
40	17.50	9.00	8.00	6.00	4.50	3.00
45	15.00	9.00	6.00	4.50	3.50	2.50
50	15.00	9.00	6.00	4.50	3.50	2.60
55	15.00	9.00	6.00	4.50	3.50	3.15
60	15.00	9.00	6.00	4.50	3.50	5.00
65	15.00	9.00	6.00	4.50	3.50	12.50

Sample rates of termination by service for Police, Fire, Muni Drivers, and Craft members are shown on the next page. When members are eligible to retire, it is assumed that their termination rates are zero.

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APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

Table B-3 Rates of Termination				
Service	Police	Fire	Muni Drivers	Craft
0	10.00%	4.00%	12.00%	10.00%
1	2.50	1.50	6.00	7.00
2	1.50	1.50	5.00	6.00
3	1.00	1.50	4.00	5.00
4	0.75	1.50	3.50	4.00
5	0.75	1.50	3.25	3.25
6	0.75	0.75	3.00	2.75
7	0.75	0.75	3.00	2.50
8	0.75	0.75	3.00	2.25
9	0.75	0.75	3.00	2.00
10	0.75	0.75	3.00	1.75
11	0.50	0.50	3.00	1.75
12	0.50	0.50	3.00	1.75
13	0.50	0.50	3.00	1.75
14	0.50	0.50	3.00	1.75
15	0.50	0.50	3.00	1.75
16	0.50	0.50	3.00	1.75
17	0.50	0.50	3.00	1.75
18	0.50	0.50	3.00	1.75
19	0.50	0.50	3.00	1.75
20	0.50	0.50	3.00	1.75
21	0.00	0.00	0.00	1.75
22	0.00	0.00	0.00	1.75
23	0.00	0.00	0.00	1.75
24	0.00	0.00	0.00	1.75
25	0.00	0.00	0.00	1.75
26	0.00	0.00	0.00	0.00

20% of terminating employees are assumed to subsequently work for a reciprocal employer and receive pay increases equal to the wage inflation assumption.

In estimating termination benefits for Miscellaneous members, it is assumed that employee contribution rates are, on average, not changed by the floating contribution rate provisions of Proposition C.

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11. Member Refunds

Non-vested terminated members are assumed to receive a refund of their contributions with interest. The rates of refund for terminated vested members are shown below.

Table B-4 Vested Terminated Rates of Refund		
Age	Police & Fire	Miscellaneous
Under 25	50.0%	60.0%
25	40.0	47.5
30	30.0	37.5
35	20.0	30.0
40	15.0	22.5
45	10.0	15.0
50	0.0	5.0
55 & over	0.0	0.0

In estimating refund amounts, it is assumed that employee contribution rates are, on average, not changed by the floating contribution rate provisions of Proposition C.

12. Rates of Disability

Sample disability rates of active participants are provided below. 100% of safety and 0% of Miscellaneous disabilities are assumed to be duty related.

Table B-5 Rates of Disability at Selected Ages						
Age	Police	Fire	Muni Drivers	Craft	Misc Females	Misc Males
30	0.05%	0.06%	0.01%	0.01%	0.01%	0.01%
35	0.09	0.15	0.06	0.06	0.05	0.04
40	0.16	0.38	0.11	0.12	0.10	0.08
45	0.37	0.60	0.17	0.24	0.28	0.11
50	0.79	1.20	0.75	0.44	0.55	0.30
55	3.00	5.00	1.20	0.64	0.60	0.42
60	6.10	12.75	0.00	0.00	0.00	0.00
65	7.50	15.00	0.00	0.00	0.00	0.00

Level of duty disability benefits (if projected to be disabled before service retirement eligibility)	
Police	55% of pay
Fire	55% of pay

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13. Base Rates of Mortality for Healthy Lives

The mortality rates used in the valuation are developed from a base table that is projected generationally from the base year of that table using the mortality projection scale described below. Base mortality tables are developed by multiplying a published table by an adjustment factor that was developed in the experience study for the period ending June 30, 2014. The base mortality tables for healthy lives are described below.

- a. Non-Annuitants – CalPERS employee mortality tables without scale BB projection

Table B-6 Adjustment		
Gender	Factor	Base Year
Female	0.918	2009
Male	0.948	2009

- b. Healthy Annuitants – CalPERS healthy annuitant mortality table without scale BB projection

Table B-7 Adjustment		
Gender	Factor	Base Year
Female	1.014	2009
Male	0.909	2009

The table on the next page provides a sample of the mortality rates prior to any projection for mortality improvements.

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Table B-8					
Base Rates of Mortality for Healthy Lives at Selected Ages					
Age	Actives		Age	Annuitants	
	Male	Female		Male	Female
25	0.04%	0.02%	50	0.48%	0.50%
30	0.05	0.02	55	0.58	0.47
35	0.06	0.03	60	0.74	0.54
40	0.08	0.05	65	0.96	0.76
45	0.11	0.07	70	1.61	1.28
50	0.16	0.10	75	2.71	2.22
55	0.23	0.14	80	4.80	3.75
60	0.34	0.20	85	8.57	6.77
65	0.48	0.30	90	14.71	12.51
70	0.67	0.43	95	23.01	21.14
			100	31.41	32.32

For active members, 25% of Safety deaths and 0% of Miscellaneous deaths are assumed to be duty related.

14. Base Rates of Mortality for Retired Disabled Lives

For disabled annuitant mortality, separate base tables are developed for males and females and for Miscellaneous and Safety members by multiplying a published table by an adjustment factor that was developed in the experience study for the period ending June 30, 2014. The base mortality tables for disabled annuitant lives are described below.

- a. Miscellaneous Disabled Annuitants – RP-2014 Disabled Retiree Tables without MP-2014 projection

Table B-9		
Adjustment		
Gender	Factor	Base Year
Female	1.066	2006
Male	0.942	2006

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- b. Safety Disabled Annuitants – CalPERS industrial disability mortality table without scale BB projection

Table B-10 Adjustment		
Gender	Factor	Base Year
Female	0.983	2009
Male	0.909	2009

The table below provides a sample of the mortality rates for members with disability retirement prior to any projection for mortality improvements.

Table B-11 Rates of Mortality for Disabled Lives at Selected Ages				
Age	Police and Fire		All Miscellaneous	
	Male	Female	Male	Female
50	0.48%	0.49%	2.26%	1.33%
55	0.58	0.45	2.34	1.60
60	0.79	0.62	2.65	2.07
65	1.30	1.05	3.42	2.70
70	2.01	1.75	4.60	3.65
75	3.49	2.90	6.31	5.24
80	6.03	4.89	8.88	7.74
85	9.44	7.82	12.92	11.57
90	14.71	12.13	19.27	16.91
95	23.01	20.50	26.34	24.16
100	31.41	31.33	33.75	33.08

15. Mortality Projection Scale

The mortality rates shown in the base tables above are projected generationally from the base year using a modified version of the MP-2015 projection scale. The scale was modified using the Society of Actuaries' model implementation tool with rates converging to the ultimate rate in 2017 (instead of 2029) and an ultimate rate of improvement of 0.85% (instead of 1.0%) up to age 85 decreasing to 0.70% (instead of 0.85%) at age 95.

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Sample rates of improvement are shown in the table below.

Table B-12 Mortality Projection Scales Year						
Age	Females			Males		
	2009	2013	2017+	2009	2013	2017+
30	-0.0064	0.0031	0.0085	0.0066	0.0132	0.0085
50	0.0036	0.0101	0.0085	0.0167	0.0170	0.0085
70	0.0211	0.0146	0.0085	0.0227	0.0140	0.0085
90	0.0145	0.0113	0.0078	0.0158	0.0120	0.0078

16. Rates of Retirement

Rates of retirement are based on age and service according to the tables on the following pages. For members hired on or after January 7, 2012 under that Charter Sections A8.603 and above (Prop C), the ultimate retirement age when the highest benefit multiplier is reached is at a later age. Thus, separate retirement rates are used for Prop C members.

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Table B-13					
Rates of Retirement by Age and Service					
19 Years of Service or less (24 or less for Safety)					
Other than Prop C					
			Muni		
Age	Police	Fire	Drivers	Craft	Misc
50	0.0150	0.0200	0.0000	0.0000	0.0000
51	0.0150	0.0100	0.0000	0.0000	0.0000
52	0.0150	0.0100	0.0000	0.0000	0.0000
53	0.0300	0.0100	0.0000	0.0000	0.0000
54	0.0500	0.0425	0.0000	0.0000	0.0000
55	0.0700	0.0750	0.0000	0.0000	0.0000
56	0.0900	0.0750	0.0000	0.0000	0.0000
57	0.0900	0.1500	0.0000	0.0000	0.0000
58	0.0900	0.1500	0.0000	0.0000	0.0000
59	0.0900	0.1500	0.0000	0.0000	0.0000
60	0.0900	0.2000	0.1000	0.1000	0.1050
61	0.0900	0.2000	0.1250	0.1000	0.1325
62	0.0900	0.2000	0.2500	0.2000	0.2000
63	0.0900	0.2000	0.2000	0.1500	0.1625
64	0.0900	0.2000	0.2000	0.1500	0.1500
65	1.0000	1.0000	0.2750	0.1500	0.2375
66	1.0000	1.0000	0.2750	0.2500	0.2375
67	1.0000	1.0000	0.2750	0.2500	0.2250
68	1.0000	1.0000	0.2750	0.1500	0.2250
69	1.0000	1.0000	0.2750	0.1500	0.2250
70 & over	1.0000	1.0000	1.0000	1.0000	1.0000

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Table B-14					
Rates of Retirement by Age and Service					
20 - 29 Years of Service (25 to 29 for Safety)					
Other than Prop C					
Age	Police	Fire	Muni		
			Drivers	Craft	Misc
50	0.0500	0.0200	0.0300	0.0300	0.0275
51	0.0500	0.0200	0.0300	0.0250	0.0250
52	0.1000	0.0200	0.0300	0.0250	0.0250
53	0.2000	0.1000	0.0300	0.0400	0.0325
54	0.2200	0.2000	0.0500	0.0400	0.0400
55	0.2400	0.2250	0.0500	0.0400	0.0400
56	0.2600	0.2250	0.0500	0.0400	0.0425
57	0.2800	0.2250	0.0750	0.0400	0.0450
58	0.3000	0.2500	0.0750	0.0400	0.0500
59	0.3200	0.3000	0.1000	0.0750	0.0875
60	0.3400	0.3500	0.1000	0.1000	0.1150
61	0.3600	0.4000	0.1750	0.1500	0.2000
62	0.3600	0.4000	0.2500	0.3000	0.3250
63	0.3600	0.3000	0.3000	0.2000	0.2500
64	0.3600	0.3000	0.3500	0.2000	0.2500
65	1.0000	1.0000	0.3500	0.2750	0.3000
66	1.0000	1.0000	0.3500	0.2750	0.3000
67	1.0000	1.0000	0.3500	0.2750	0.3000
68	1.0000	1.0000	0.3500	0.2000	0.3000
69	1.0000	1.0000	0.3500	0.2000	0.3000
70 & over	1.0000	1.0000	1.0000	1.0000	1.0000

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Table B-15					
Rates of Retirement by Age and Service					
30 Years of Service or more					
Other than Prop C					
			Muni		
Age	Police	Fire	Drivers	Craft	Misc
50	0.2000	0.0200	0.0300	0.0300	0.0350
51	0.2000	0.0200	0.0300	0.0250	0.0350
52	0.2000	0.0200	0.0300	0.0250	0.0350
53	0.4000	0.1000	0.0300	0.0400	0.0350
54	0.4000	0.3500	0.0500	0.0400	0.0400
55	0.4000	0.3500	0.1500	0.0750	0.0550
56	0.4000	0.3500	0.1500	0.0750	0.0675
57	0.5000	0.3500	0.1500	0.0750	0.0875
58	0.5000	0.3500	0.1500	0.1500	0.1250
59	0.5000	0.3500	0.1500	0.3000	0.2000
60	0.5000	0.3500	0.2000	0.3750	0.3750
61	0.5000	0.4000	0.3500	0.3750	0.4500
62	0.5000	0.4000	0.3500	0.3750	0.4500
63	0.5000	0.3000	0.3500	0.3000	0.3750
64	0.5000	0.3000	0.3500	0.3000	0.3500
65	1.0000	1.0000	0.4500	0.3000	0.3250
66	1.0000	1.0000	0.4500	0.3000	0.3250
67	1.0000	1.0000	0.4500	0.3000	0.3250
68	1.0000	1.0000	0.4500	0.3000	0.3250
69	1.0000	1.0000	0.4500	0.3000	0.3250
70 & over	1.0000	1.0000	1.0000	1.0000	1.0000

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Table B-16					
Rates of Retirement by Age and Service					
19 Years of Service or less (24 or less for Safety) - Prop C					
Age	Police	Fire	Muni Drivers	Craft	Misc
50	0.0150	0.0200	0.0000	0.0000	0.0000
51	0.0150	0.0100	0.0000	0.0000	0.0000
52	0.0150	0.0100	0.0000	0.0000	0.0000
53	0.0300	0.0100	0.0000	0.0000	0.0000
54	0.0500	0.0425	0.0000	0.0000	0.0000
55	0.0700	0.0750	0.0000	0.0000	0.0000
56	0.0900	0.0750	0.0000	0.0000	0.0000
57	0.0900	0.1500	0.0000	0.0000	0.0000
58	0.0900	0.1500	0.0000	0.0000	0.0000
59	0.0900	0.1500	0.0000	0.0000	0.0000
60	0.0900	0.2000	0.0500	0.0500	0.0750
61	0.0900	0.2000	0.0750	0.0750	0.1000
62	0.0900	0.2000	0.1000	0.1750	0.1750
63	0.0900	0.2000	0.1500	0.1250	0.1250
64	0.0900	0.2000	0.2000	0.1250	0.1250
65	1.0000	1.0000	0.2500	0.2000	0.3000
66	1.0000	1.0000	0.2500	0.2500	0.2375
67	1.0000	1.0000	0.2500	0.2500	0.2250
68	1.0000	1.0000	0.2500	0.1500	0.2250
69	1.0000	1.0000	0.2500	0.1500	0.2250
70 & over	1.0000	1.0000	1.0000	1.0000	1.0000

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Table B-17					
Rates of Retirement by Age and Service					
20 - 29 Years of Service (25 to 29 for Safety) - Prop C					
Age	Police	Fire	Muni Drivers	Craft	Misc
50	0.0500	0.0200	0.0000	0.0000	0.0000
51	0.0500	0.0200	0.0000	0.0000	0.0000
52	0.1000	0.0200	0.0000	0.0000	0.0000
53	0.1500	0.0500	0.0300	0.0300	0.0325
54	0.1750	0.1500	0.0300	0.0300	0.0400
55	0.2000	0.1750	0.0300	0.0300	0.0400
56	0.2400	0.1750	0.0300	0.0300	0.0425
57	0.2600	0.1750	0.0300	0.0300	0.0450
58	0.3000	0.2500	0.0300	0.0300	0.0500
59	0.3200	0.3000	0.0500	0.0300	0.0875
60	0.3400	0.3500	0.1000	0.0750	0.1000
61	0.3600	0.4000	0.1250	0.1250	0.1500
62	0.3600	0.4000	0.1500	0.2500	0.2500
63	0.3600	0.3000	0.2000	0.1750	0.2000
64	0.3600	0.3000	0.2500	0.1750	0.2000
65	1.0000	1.0000	0.3000	0.3250	0.4000
66	1.0000	1.0000	0.3000	0.2750	0.3000
67	1.0000	1.0000	0.3000	0.2750	0.3000
68	1.0000	1.0000	0.3000	0.2000	0.3000
69	1.0000	1.0000	0.3000	0.2000	0.3000
70 & over	1.0000	1.0000	1.0000	1.0000	1.0000

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Table B-18					
Rates of Retirement by Age and Service					
30 Years of Service or more - Prop C					
Age	Police	Fire	Muni Drivers	Craft	Misc
50	0.1000	0.0200	0.0000	0.0000	0.0000
51	0.1500	0.0200	0.0000	0.0000	0.0000
52	0.2000	0.0200	0.0000	0.0000	0.0000
53	0.2500	0.1000	0.0300	0.0300	0.0325
54	0.3000	0.2000	0.0500	0.0300	0.0400
55	0.3500	0.2500	0.1000	0.0500	0.0400
56	0.3500	0.3000	0.1000	0.0500	0.0425
57	0.4500	0.3000	0.1000	0.0500	0.0450
58	0.5000	0.3500	0.1000	0.1000	0.0750
59	0.5000	0.3500	0.1000	0.1500	0.1000
60	0.5000	0.3500	0.1500	0.2000	0.1500
61	0.5000	0.4000	0.2000	0.2000	0.2000
62	0.5000	0.4000	0.3000	0.3000	0.3000
63	0.5000	0.3000	0.2500	0.2500	0.2500
64	0.5000	0.3000	0.2500	0.2500	0.2500
65	1.0000	1.0000	0.5000	0.4000	0.4000
66	1.0000	1.0000	0.4500	0.3000	0.3250
67	1.0000	1.0000	0.4500	0.3000	0.3250
68	1.0000	1.0000	0.4500	0.3000	0.3250
69	1.0000	1.0000	0.4500	0.3000	0.3250
70 & over	1.0000	1.0000	1.0000	1.0000	1.0000

The assumed retirement age is 55 for Safety Prop C and all Miscellaneous inactive terminated vested members and actives who are expected to terminate; and age 51 for Non-Prop C Safety inactive terminated vested members and actives who are expected to terminate.

17. Family Composition

The percentage assumed to be married (including assumption for Domestic Partners, 1994 Proposition H) is shown on the next page. Spouses of male members are assumed to be four years younger than the member and spouses of female members are assumed to be two years older than the member.

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Table B-19 Percentage Married	
Safety Males	85%
Safety Females	55
Miscellaneous Males	75
Miscellaneous Females	52

18. Deferred Member Benefit

The benefit was estimated based on information provided by SFERS staff. The data used to value the estimated deferred benefit were date of birth, date of hire, date of termination, and last pay. Based on the data provided, service credit, highest average salary, and deferred retirement age were estimated. For non-Prop C members, vested terminated members for the miscellaneous group are assumed to retire at age 55 and the safety group at age 51. All Prop C terminated vested members are assumed to begin receiving their benefit at age 55. The estimates were used to compute the retirement benefit, upon which the liabilities are based. For those members without sufficient data or service, accumulated member contribution balances, with interest, were used as the Actuarial Liability.

20. Other

The contribution requirements and benefit values of a plan are calculated by applying actuarial assumptions to the benefit provisions and member information, using the actuarial funding methods described in the following section.

Actual experience of SFERS will not coincide exactly with assumed experiences, regardless of the choice of the assumptions, the skill of the actuary or the precision of the many calculations made. Each valuation provides a complete recalculation of assumed future experience and takes into account all past differences between assumed and actual experience. The result is a continual series of adjustments to the computed contribution rate. From time to time, it becomes appropriate to modify one or more of the assumptions, to reflect experience trends, but not random year-to-year fluctuations.

21. Changes Since Last Valuation

None.

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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 July 1, 2008 actuarial valuation except the amortization method, which was adopted by the Board at their August 13, 2014 meeting.

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 termination of employment. The normal costs calculated relate only to current member payroll. The Actuarial Liability is the difference between the present value of future benefits and the present value of future normal cost.

2. Asset Valuation Method

For the purposes of determining the Employer's contribution to SFERS, we use the Actuarial Value of Assets. The asset adjustment 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.

The actuarial value is calculated by recognizing 20% of each of the past five years of actual investment returns compared to the expected return (7.50% for the years ending 2015 and 2016, 7.58% for the years ending 2013 and 2014, and 7.66% for the year ending 2012) on the actuarial asset value. The expected return on Actuarial Value of Assets is determined using SFERS actual cash flows and the assumed return. The balance of the actual investment experience is recognized in a similar fashion in future years.

This asset smoothing method started with the market value as of July 1, 2004.

3. Amortization Method

Any Charter change prior to 7/1/2014 has been amortized over 20 years from the date it was first recognized in the valuation. After 7/1/2014, any changes to active member benefits are amortized over a closed 15-year period, and any new changes to inactive or retired member benefits, including Supplemental COLAs, are amortized over a closed 5-year period.

Prior to 7/1/2014, the portion of the UAL not attributable to charter changes was amortized over a rolling 15-year period. After 7/1/2014, any sources of UAL due to actuarial gains and losses, assumption changes, or method changes are amortized over

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closed, layered 20-year periods. In addition, the UAL as of July 1, 2013, not attributable to Propositions was re-amortized over a closed 19-year period as of July 1, 2014.

All amortization schedules are determined on a level percent of pay basis which means that for the duration of the amortization schedule, the payment amount increases each year at the assumed wage inflation rate.

The amortization payment on the 2015 assumption changes is being phased in over a five-year period. The phase-in is calculated by multiplying the normal first year amortization payment by 20 percent. For the second year, the amortization schedule is recalculated reflecting the 20 percent payment in the first year and the remaining 19-year period. The recalculated amortization payment is then multiplied by 40 percent. The process is repeated until the full amortization payment is made beginning in the fifth year of the 20-year period.

As of July 1, 2016, the UAL attributable to the 2013 Supplemental COLA is amortized over a closed 17-year period; and, the UAL attributable to the 2014 Supplemental COLA is amortized over a closed 5-year period.

4. Changes Since Last Valuation

As of July 1, 2016, the UAL attributable to the 2013 Supplemental COLA is amortized over a closed 17-year period; and, the UAL attributable to the 2014 Supplemental COLA is amortized over a closed 5-year period.

**APPENDIX C – SUMMARY OF PLAN PROVISIONS
OLD POLICE AND FIRE**

I. Old Police and Fire Members – Charter Sections 8.559 and 8.595 (Police) and 8.585 and 8.596 (Fire)

1. Membership Requirement

Charter Sections 8.559 and 8.585

Police Officers and Firefighters who became members before November 2, 1976 and retired on or before December 31, 2002 without electing membership in another Section.

Charter Sections 8.595 and 8.596

Active members on November 5, 2002 in Section 8.559 (Police) or Section 8.585 (Fire) who elected to switch to Section 8.595 (Police) or Section 8.596 (Fire) by December 31, 2002.

2. Final Compensation

Monthly salary earnable at the final rank held at termination date, or monthly salary at next lower rank if final rank held for less than one year.

3. Credited Service

One year of service credit is given for each fiscal year with 10 or more full months worked. A partial year (fraction with the numerator equal to months including partial months, and the denominator equal to 10) is given for each fiscal year with less than 10 full months worked.

4. Member Contributions

a. Member:

7.0% of salary, excluding overtime and most premium pay. These contributions are credited with interest annually as determined by the Board.

Charter 8.585, 8.595, and 8.596

Depending on the employer contribution rate, the member contribution rate can increase or decrease by up to 6% of pay.

b. Employer:

The Employer contributes the remaining amounts necessary to maintain the soundness of the Retirement System. Any decrease in the member contribution rate is paid by the City.

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OLD POLICE AND FIRE

5. Service Retirement

Eligibility

Age 50 with 25 years of Credited Service.

Benefit - Member

Charter Sections 8.559 and 8.585

55% of Final Compensation plus an additional 4% of Final Compensation for each year of credited service in excess of 25 years, subject to a maximum of 75% of Final Compensation.

Charter Sections 8.595 and 8.596

A specified percent of Final Compensation based on the member's age at retirement (factors shown in Table C-1 below) for each year of Credited Service, subject to a maximum of 90% of Final Compensation.

Table C-1 City and County of San Francisco Employees' Retirement System Sections 8.595 (Police) and 8.596 (Fire) – Service Retirement Factors	
Retirement Age	Retirement Factors
50	2.40%
51	2.52%
52	2.64%
53	2.76%
54	2.88%
55 or above	3.00%

Benefit - Survivor

75% of the service retirement benefit paid to a qualified survivor.

APPENDIX C – SUMMARY OF PLAN PROVISIONS
OLD POLICE AND FIRE

6. Non-Industrial Disability

Eligibility

10 years of Credited Service.

Benefit - Member

At least 10 but less than 25 years of Credited Service:

1.5% of Final Compensation for each year of Credited Service between 10 and 25 years, subject to a minimum of 33.3% and a maximum of 75% of Final Compensation for Charter Sections 8.559 and 8.585 or 90% of Final Compensation for Charter Sections 8.595 and 8.596.

At least 25 years of Credited Service:

Service retirement benefit determined at date of disability.

Benefit - Survivor

75% of the disability retirement benefit paid to a qualified survivor.

7. Industrial Disability

Eligibility

No age or service requirement.

Benefit - Member

If Not Eligible for Service Retirement:

Final Compensation times a percentage of disability, subject to a minimum of 50% and a maximum of 90%, as determined by the Workers' Compensation Appeals Board. Once the member becomes eligible for service retirement, assuming that member earned service and salary increases during the period of disability, the benefit is recalculated using the service and salary rate for the current rank held. The recalculated benefit is based on a minimum of 55% of Final Compensation.

If Eligible for Service Retirement:

Service retirement benefit determined at date of disability, but not less than 55% of Final Compensation.

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OLD POLICE AND FIRE**

Benefit - Survivor

If Not Eligible for Service Retirement:

100% of the disability retirement benefit paid to a qualified survivor. Once the member would have become eligible for service retirement, assuming that member earned service and salary increases from the date of disability to the eligible service retirement date, the benefit is recalculated at 100% of the service retirement benefit, using the service and salary at the eligible service retirement date, not less than 55% of Final Compensation.

If Eligible for Service Retirement:

100% of the disability retirement benefit paid to a qualified survivor, not less than 55% of Final Compensation.

8. Death while an Active Employee

If Death is due to a Non-Work-Related Cause:

- a. Less than 10 Years of Credited Service, or No Qualified Survivor – Lump sum benefit equal to the accumulated refund of all employee contributions with interest, plus six months' salary to a designated beneficiary.
- b. At least 10 but less than 25 years of Credited Service – Monthly continuation allowance to a qualified survivor equal to the non-industrial disability benefit the member would have been entitled to on the date of death, subject to a minimum of 33.3% of compensation at the time of death.
- c. At Least 25 Years of Credited Service but Less than Age 50 – Monthly continuation allowance to a qualified survivor equal to 75% of the monthly service retirement benefit the member would have received had the member been age 50 and retired on the date of death.
- d. Eligible for Service Retirement – Monthly continuation allowance to a qualified survivor equal to 75% of the monthly service retirement benefit the member would have received had the member been retired on the date of death.

If Death is due to a Work-Related Cause:

- a. No Qualified Survivor – Lump sum benefit equal to the accumulated refund of all employee contributions with interest, plus six months' salary to a designated beneficiary. If the death is of a violent nature, an additional lump sum equivalent benefit equal to 12 months' salary is payable.

**APPENDIX C – SUMMARY OF PLAN PROVISIONS
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- b. Qualified Survivor and Not Eligible for Service Retirement – Monthly continuation allowance to a qualified survivor equal to the salary at the date of death. Once the member would have become eligible for service retirement, assuming that member earned service and salary increases from the date of death to the eligible service retirement date, the benefit is recalculated at 100% of the service retirement benefit, using the service and salary at the eligible service retirement date, such allowance shall not be less than 55% of Final Compensation.
- c. Qualified Survivor and Eligible for Service Retirement – Monthly continuation allowance to a qualified survivor equal to 100% of the monthly service retirement benefit the member would have received had the member been retired on the date of death, but such allowance shall not be less than 55% of Final Compensation.

9. 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 member may choose one of the following:

- a. Lump sum benefit equal to the accumulated employee contributions with interest.
- b. **Charter Sections 8.559 and 8.585:** Retirement benefit first payable at age 50 equal to 55% of Final Compensation at termination, multiplied by a service fraction, the numerator being the Credited Service of the member at termination, and a denominator of 25.

Charter Sections 8.595 and 8.596: A specified percent of Final Compensation based on the member's age at retirement (factors shown in Table C-1) for each year of Credited Service, subject to a maximum of 90% of Final Compensation.

Cost-of-living adjustments are prorated if the member's accrued service is less than 25 years. COLA will be multiplied by a fraction where the denominator is 25 and the numerator is equal to service at date of termination.

10. Additional Post-retirement Death Benefit

A death benefit payable as a lump sum equal to \$100 for each full year of Credited Service, subject to a maximum of \$3,000, will be paid to a qualified survivor upon the member's death.

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11. Post-retirement Cost-of-Living Benefit

Basic

Monthly benefits are adjusted by 50% of the actual dollar increase or decrease (50% of the percentage increase or decrease for members under Proposition H) in the salary rank or position the member's Final Compensation used to calculate the monthly benefit was based on. A member's monthly benefit will never decrease below its original amount.

Supplemental

Effective July 1 of each fiscal year, if the Retirement System was fully funded based on the Market Value of Assets for the previous year and there are sufficient "excess" investment earnings on the Retirement fund for the previous fiscal year-end, the adjustment could be increased to 3.5% of that member's current monthly benefit less the amount of the Basic COLA above. If "excess" earnings are insufficient to fund a 3.5% increase, then to the extent of "excess" earnings, benefits are increased in increments of 0.5% up to a maximum of 3.5%. For members who worked after November 6, 1996, and before Proposition C passed in 2012, the Supplemental COLA is payable if there are "excess" investment earnings regardless of whether or not the System was fully funded.

12. Changes in this Valuation

For members who worked after November 6, 1996, and before Proposition C passed in 2012, the full funding requirement for the Supplemental COLA was eliminated due to a State Appeals Court decision.

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NEW POLICE AND FIRE

II. New Police and Fire Members – Charter Sections (Police) 8.586, 8.597, 8.602, and 8.605; (Fire) 8.588, 8.598, 8.601, and 8.604; (Sheriff's Department) 8.608; (Miscellaneous Safety) 8.610

1. Membership Requirement

Charter Sections 8.586 and 8.588

Police Officers and Firefighters who became members on or after November 2, 1976.

Charter Sections 8.597 and 8.598

Active members on January 1, 2003 in Section 8.586 (Police) or Section 8.588 (Fire) who had elected to switch to Section 8.597 (Police) or Section 8.598 (Fire) by December 31, 2002; or, new members becoming active on or after January 1, 2003 in Section 8.597 (Police) or Section 8.598 (Fire).

Charter Sections 8.601 and 8.602

Persons who become members of the fire or police department on or after July 1, 2010 and prior to January 7, 2012.

Charter Sections 8.604 and 8.605

Persons who become members of the fire or police department on or after January 7, 2012.

Charter Section 8.608

Sheriff, undersheriffs, and all deputized personnel of the sheriff's department hired on or after January 7, 2012.

Charter Section 8.610

Miscellaneous Safety members hired on or after January 7, 2012.

2. Final Compensation

Charter Sections 8.586, 8.588, 8.597, and 8.598

Average monthly total compensation earnable during any 12 months of Credited Service which average compensation is the highest.

(Pre 1998 – 3 year average of monthly compensation)

Charter Sections 8.601 and 8.602

Average monthly total compensation earnable during the higher of any two consecutive fiscal years of earnings or the twenty-four months of earnings immediately prior to retirement.

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Charter Sections 8.604, 8.605, 8.608, and 8.610

Average monthly total compensation earnable during the higher of any three consecutive fiscal years of earnings or the thirty-six months of earnings immediately prior to retirement. Compensation for any fiscal year shall not include remuneration that exceeds 75% of the IRC 401(a)(17) compensation limit.

3. Credited Service

One year of service credit is given for each fiscal year with 10 or more full months worked. A partial year (fraction with the numerator equal to months including partial months, and the denominator equal to 10) is given for each fiscal year with less than 10 full months worked.

4. Member Contributions

a. Member:

Charter Sections 8.586, 8.588, 8.597, and 8.598

7.5% of salary, excluding overtime and most premium pay. These contributions are credited with interest annually as determined by the Board.

Depending on the employer contribution rate, the member contribution rate can increase or decrease by up to 6% of pay.

Charter Sections 8.601, 8.602, 8.604, 8.605, 8.608, and 8.610

9.0% of salary, excluding overtime and most premium pay. These contributions are credited with interest annually as determined by the Board.

Depending on the employer contribution rate, the member contribution rate can increase or decrease by up to 4% of pay if the base pay rate is less than \$48 per hour or up to 5% of pay if the base pay rate is at or greater than \$48 per hour.

b. Employer:

The Employer contributes the remaining amounts necessary to maintain the soundness of the Retirement System. Any decrease in the member contribution rate is paid by the City.

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5. Service Retirement

Eligibility

Age 50 with 5 years of Credited Service. (*Pre 1998 – 50 with 25 years of Credited Service*)

Benefit - Member

Charter Sections 8.586 and 8.588

The monthly service retirement benefit is the greater of i) and ii) below, subject to a maximum of 75% of Final Compensation (*Pre 1998 – 70%*)

- i) 2% of Final Compensation for each of the first 25 years of service plus an additional 3% of Average Compensation for each year of Credited Service in excess of 25 years; (*Pre 1998 – benefit is calculated under i) only*);
- ii) A specified percent of Final Compensation based on the member's age at retirement (factors shown in Table C-2 below) for each year of Credited Service.

Table C-2	
City and County of San Francisco Employees' Retirement System Sections 8.586 (Police) and 8.588 (Fire) – Service Retirement Factors	
Retirement Age	Retirement Factors
50	2.00%
51	2.14%
52	2.28%
53	2.42%
54	2.56%
55 or above	2.70%

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Charter Sections 8.597, 8.598, 8.601, and 8.602

A specified percent of Final Compensation based on the member's age at retirement (factors shown in Table C-3 below) for each year of Credited Service, subject to a maximum of 90% of Final Compensation.

Table C-3 City and County of San Francisco Employees' Retirement System Sections 8.597 and 8.601 (Police), 8.598 and 8.602 (Fire) Service Retirement Factors	
Retirement Age	Retirement Factors
50	2.40%
51	2.52%
52	2.64%
53	2.76%
54	2.88%
55 or above	3.00%

Charter Sections 8.604, 8.605, and 8.608

A specified percent of Final Compensation based on the member's age at retirement (factors shown in Table C-4 below) for each year of Credited Service, subject to a maximum of 90% of Final Compensation.

Table C-4 City and County of San Francisco Employees' Retirement System Sections 8.605 (Police), 8.604 (Fire) and 8.608 (Sheriff's Department) – Service Retirement Factors	
Retirement Age	Retirement Factors
50	2.20%
51	2.30%
52	2.40%
53	2.50%
54	2.60%
55	2.70%
56	2.80%
57	2.90%
58 and above	3.00%

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Charter Sections 8.610

A specified percent of Final Compensation based on the member's age at retirement (factors shown in Table C-5 below) for each year of Credited Service, subject to a maximum of 90% of Final Compensation.

Table C-5 City and County of San Francisco Employees' Retirement System Section 8.610 (Miscellaneous Safety) – Service Retirement Factors	
Retirement Age	Retirement Factors
50	1.800%
51	1.912%
52	2.020%
53	2.132%
54	2.244%
55	2.356%
56	2.468%
57	2.590%
58 or above	2.700%

Benefit - Survivor

50% of the service retirement benefit paid to a qualified survivor.

6. Non-Industrial Disability

Eligibility

10 years of Credited Service.

Benefit - Member

1.5% of Average Compensation for each year of Credited Service, subject to a minimum of 33.3% of Final Compensation, subject to a maximum of 75% of Final Compensation for Charter Sections 8.586 and 8.588 or 90% of Final Compensation for all other Charter Sections.

Benefit - Survivor

50% of the disability retirement benefit paid to a qualified survivor.

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7. Industrial Disability

Eligibility

No age or service requirement.

Benefit – Member

Less than age 50 with 25 Years of Service:

Final Compensation times a percentage of disability, subject to a minimum of 50% and a maximum of 90%, as determined by the Workers' Compensation Appeals Board. If the member is age 50 with 5 years of service, the disability benefit is the service retirement allowance, but not less than 50% of Final Compensation. Once the member becomes eligible for qualified service retirement, assuming that member earned service and salary increases during the period of disability, the benefit is recalculated using the service and salary rate for the rank held at retirement. The recalculated benefit is based on a minimum of 50% of Final Compensation (not to exceed 90% of Final Compensation for Charter Sections 8.597, 8.598, 8.601, 8.602, 8.608, and 8.610).

Age 50 with 25 Years of Service:

The service retirement allowance, but not less than 50% of Final Compensation.

Benefit - Survivor

75% of the disability retirement benefit paid to a qualified survivor.

8. Death while an Active Employee

If Death is Due to a Non-Work-Related Cause:

- a. Less than 10 Years of Credited Service, or No Qualified Survivor – Lump sum benefit equal to the accumulated refund of all employee contributions with interest, plus six months' salary to a designated beneficiary.
- b. At least 10 but less than 25 years of Credited Service – Monthly continuation allowance to a qualified survivor equal to the non-industrial disability benefit the member would have been entitled to on the date of death, subject to a minimum of 33.3% of Average Compensation at the time of death.
- c. At Least 25 Years of Credited Service but Less than Age 50 – Monthly continuation allowance to a qualified survivor equal to 50% of the monthly service retirement benefit the member would have received had the member been age 50 and retired on the date of death.

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- d. Age 50 with 25 Years of Credited Service – Monthly continuation allowance to a qualified survivor equal to 50% of the monthly service retirement benefit the member would have received had the member been retired on the date of death.

If Death is Due to a Work-Related Cause:

- a. No Qualified Survivor – Lump sum benefit equal to the accumulated refund of all employee contributions with interest, plus six months' salary to a designated beneficiary. For Charter Sections 8.586 and 8.588, if the death is of a violent nature, an additional lump sum equivalent benefit equal to 12 months' salary is payable.
- b. Qualified Survivor and Less than Age 50 with 25 Years of Service – Monthly continuation allowance to a qualified survivor equal to 100% (*Pre 1998 – 75%*) of Final Compensation at the date of death. Once the member would have completed 25 years of service and attained age 50, assuming that member earned service and salary increases from the date of death to the eligible service retirement date, the benefit is recalculated at 100% of the service retirement benefit, using the service and salary at the eligible service retirement date. Such allowance shall not be less than 50% of Final Compensation (For Chapter Sections 8.597, 8.598, 8.601, 8.602, 8.608, and 8.610 not to exceed 90% of Final Compensation).
- c. Qualified Survivor and Age 50 with 25 Years of Service – Monthly continuation allowance to a qualified survivor equal to 100% (*Pre 1998 – 75%*) of the monthly service retirement benefit the member would have received had the member been retired on the date of death, not less than 50% of Final Compensation.

9. **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 member may choose one of the following:

- a. Lump sum benefit equal to the accumulated refund all of employee contributions with interest.
- b. **Charter Sections 8.586 and 8.588:** Retirement benefit first payable at age 50 equal to 2% of Final Compensation at termination for each year of credited service of the member at the date of termination.

Charter Sections 8.597, 8.598, 8.601, 8.602, 8.604, 8.605, 8.608, and 8.610: A specified percent of Final Compensation at termination based on the member's age at retirement (factors shown in Table C-3, C-4, and C-5) for each year of Credited Service, subject to a maximum of 90% of Final Compensation, payable at age 50.

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10. Additional Post-retirement Death Benefit

A death benefit payable as a lump sum equal to \$100 for each full year of Credited Service, subject to a maximum of \$3,000, will be paid to a qualified survivor upon the member's death.

11. Post-retirement Cost-of-Living Benefit

Basic

Monthly benefits are increased or decreased each July 1 by a maximum of 2% per year of the initial monthly benefit. A member's monthly benefit will never decrease below its original amount. Effective July 1, 2009, monthly benefits are increased or decreased by a maximum of 2% of the prior year's monthly benefit.

Supplemental

Effective July 1 of each fiscal year, if the Retirement System was fully funded based on the Market Value of Assets for the previous year and there are sufficient "excess" investment earnings on the Retirement fund for the previous fiscal year-end, the adjustment could be increased to 3.5% of that member's current monthly benefit less the amount of the Basic COLA above. If "excess" earnings are insufficient to fund a 3.5% increase, then to the extent of "excess" earnings, benefits are increased in increments of 0.5% up to a maximum of 3.5%. For members who worked after November 6, 1996, and before Proposition C passed in 2012, the Supplemental COLA is payable if there are "excess" investment earnings regardless of whether or not the System was fully funded.

12. Changes in this Valuation

For members who worked after November 6, 1996, and before Proposition C passed in 2012, the full funding requirement for the Supplemental COLA was eliminated due to a State Appeals Court decision.

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DROP PROVISIONS**

III. Deferred Retirement Option Program (DROP) – Charter Section 8.900

Effective Date – July 1, 2008 through June 30, 2011

Section 8.900 – effective July 1, 2008 through June 30, 2011. DROP sunsets on June 30, 2011. The Board of Supervisors voted not to renew DROP.

1. Membership Requirement

Active, full duty sworn officers occupying one of the eligible ranks: Police Officer, Sergeant, Inspector, Lieutenant, or Captain.

2. Eligibility

Age 50 with 25 years of Credited Service as a sworn member, including any service as a member of the San Francisco Airport Police. To participate, the member must agree to terminate employment through retirement at the end of their participation in DROP. No member shall be eligible for a promotion during their participation in DROP.

3. Length of DROP period

Once a member enters DROP, participation continues until either termination of employment or the maximum DROP participation period has been reached.

Rank	Maximum DROP Period
Police Officer	36 months
Sergeant/Inspector	24 months
Lieutenant/Captain	12 months

4. DROP Benefit

DROP Account Balance

The service pension, which is calculated based on age, compensation, and length of service as of their date of entry into the Program, is credited monthly into a DROP Account including any Basic or Supplemental Cost-of-Living Adjustments. The DROP Account is also credited on a monthly basis with interest at an annual effective rate of 4% throughout the member's DROP period.

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DROP PROVISIONS**

Retirement Benefit

At the end of the DROP period, a lump sum distribution of the DROP Account Balance will be made and monthly retirement benefits will commence based on the initial DROP benefit calculated based on age, compensation, and service at the date of entry into DROP including any cost-of-living adjustments to which the member would otherwise be entitled.

5. Employee Contributions while in DROP

The member still makes employee contributions into the retirement system which are deemed contributions to the general assets of SFERS, and shall not be part of the member's DROP Account.

6. Effect of Disability on DROP participation

Duty Related Disability

The Member will receive an industrial disability benefit as though the participant was never enrolled in DROP. Service, compensation, and age at the time of disability will be used to calculate the disability benefit. The DROP Account will be waived.

Non-Duty Related Disability

Member will terminate participation in DROP and is paid the balance in their DROP Account. They will begin receiving a monthly payment equal to the service retirement benefit determined as of the DROP entry date including any cost-of-living adjustments to which the member would otherwise be entitled.

7. Effect of Member Death on DROP participation

Duty Related Death

The member's qualified surviving spouse, domestic partner, or other qualified dependent will receive a death allowance as though the participant was never enrolled in DROP. Service, compensation, and age at the time of death will be used to calculate the benefit. The DROP Account will be waived. The qualified spouse, domestic partner, or qualified dependent may elect to receive a non-work related death benefit specified below instead.

Non-Duty Related Death

Participation in DROP is terminated and the balance in the Member's DROP Account is paid to the Member's beneficiary. In addition, any qualified survivor will begin receiving a post-retirement continuation allowance determined on the basis of beneficiary elections made by the member at the time of entry into DROP including any cost-of-living adjustments to which the Member would otherwise be entitled.

8. Changes in this Valuation

None.

APPENDIX C – SUMMARY OF PLAN PROVISIONS
MISCELLANEOUS

IV. Miscellaneous Members – Charter Sections 8.509, 8.587, 8.600, and 8.603

1. Membership Requirement

Charter Section 8.509

Employees and Officers, other than Police Officers or Firefighters, who became members before November 2, 1976 and continued as a member without interruption.

Charter Section 8.587

Active Employees and Officers, other than Police Officers or Firefighters, who were members under Section A8.584, and members under A8.587, whose accumulated contributions were in the retirement fund on November 7, 2000, and were not retired. After November 7, 2000, all full-time employees, certified Civil Service employees, or temporary employees who work more than 1,040 hours in any 12-month period; excluding all Police Officers and Firefighters.

Charter Section 8.600

Employees and Officers, other than Police Officers or Firefighters, who become employed on or after July 1, 2010, and prior to January 7, 2012.

Charter Section 8.603

Employees and Officers, other than Police Officers or Firefighters, who become employed on or after January 7, 2012.

2. Average Final Compensation

Charter Sections 8.509 and 8.587

Average monthly compensation earned during any year of Credited Service which average compensation is the highest.

Charter Section 8.600

Average monthly compensation earned during the higher of any two consecutive fiscal years of earnings or the twenty-four months of earnings immediately prior to retirement.

Charter Section 8.603

Average monthly compensation earned during the higher of any three consecutive fiscal years of earnings or the thirty-six consecutive months of earnings immediately prior to retirement. Compensation for any fiscal year shall not include remuneration that exceeds 85% of the IRC 401(a)(17) compensation limit.

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MISCELLANEOUS

3. Credited Service

One year of service credit is given for each fiscal year with 10 or more full months worked. A partial year (fraction with the numerator equal to months including partial months, and the denominator equal to 10) is given for each fiscal year with less than 10 full months worked. (Exception: for Charter 8.509 members, in the year of retirement, the denominator in the fraction is equal to 12).

4. Member Contributions

a. Member:

Charter 8.509
8.0% of salary.

Charter 8.587, 8.600, and 8.603
7.5% of salary, excluding overtime and most premium pay.

Depending on the employer contribution rate and the base rate of pay of the member beginning on July 1, 2012, the member contribution rate can increase or decrease by up to maximum percentage of pay shown in the following table:

Hourly Rate of Pay*	Maximum Increase / Decrease in Contribution Rate
< \$24	0%
\$24 - \$48	4%
>= \$48	5%

**Adjusted each fiscal year by the percentage increase in the cost-of-living during the previous calendar year, based on the San Francisco-Oakland-San Jose CPI-U Index, but not to exceed 3.5%.*

These contributions are credited with interest annually as determined by the Board.

If the member elects Social Security, the contributions to the System may be reduced by the amount contributed to Social Security (excluding the Medicare portion). Retirement benefits are actuarially reduced by the shortage, which is the difference between contributions paid at the 8%/7.5% rate and contributions actually paid, plus plan interest.

b. Employer:

The Employer contributes the remaining amounts necessary to maintain the soundness of the Retirement System. Any decrease in the member contribution rate is paid by the City.

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**APPENDIX C – SUMMARY OF PLAN PROVISIONS
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5. Service Retirement

Eligibility

Charter Section 8.509, 8.587, and 8.600

Age 50 with 20 years of Credited Service, or age 60 with 10 years of Credited Service.

Charter Section 8.603

Age 53 with 20 years of Credited Service, age 60 with 10 years of Credited Service, or age 65.

Benefit - Member

Charter Section 8.509, 8.587, and 8.600

The monthly service retirement benefit is the greater of i) and ii) below, subject to a maximum of 75% of Average Final Compensation.

- i) A specified percent of Average Final Compensation based on the member's age at retirement (factors shown in Table C-6 below) for each year of Credited Service, effective January 11, 2009.

Table C-6			
City and County of San Francisco Employees' Retirement System			
Section 8.509, 8.587, and 8.600 Member Service Retirement Factors			
Retirement Age	Retirement Factors	Retirement Age	Retirement Factors
50	1.0%	57	1.7%
51	1.1%	58	1.8%
52	1.2%	59	1.9%
53	1.3%	60	2.1%
54	1.4%	61	2.2%
55	1.5%	62 or above	2.3%
56	1.6%		

- ii) The actuarial equivalent of twice the member's accumulated contributions with interest.

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MISCELLANEOUS**

Charter Section 8.603

The monthly service retirement benefit is a specified percent of Average Final Compensation based on the member's age at retirement subject to a maximum of 75% of Average Final Compensation (factors shown in Table C-7 below).

Table C-7 City and County of San Francisco Employees' Retirement System Section 8.603 Member Service Retirement Factors			
Retirement Age	Retirement Factors	Retirement Age	Retirement Factors
53	1.000%	60	1.756%
54	1.108%	61	1.864%
55	1.216%	62	1.972%
56	1.324%	63	2.080%
57	1.432%	64	2.188%
58	1.540%	65 or above	2.300%
59	1.648%		

Benefit - Survivor

50% of the service retirement benefit paid to a qualified survivor.

6. Disability

Eligibility

10 years of Credited Service.

Benefit - Member

1.8% of Average Final Compensation for each year of Credited Service, maximum of 75% of Average Final Compensation. If the benefit is less than 40% of Average Final Compensation, additional Credited Service had the member worked to age 60 can be added to the current Credited Service, in order to adjust the benefit to 40% of Average Final Compensation.

Benefit - Survivor

50% of the disability retirement benefit paid to a qualified survivor.

**APPENDIX C – SUMMARY OF PLAN PROVISIONS
MISCELLANEOUS**

7. Death while an Active Employee

If Not Eligible for Service Retirement:

Lump sum benefit equal to the accumulated refund of all employee contributions with interest, plus six months' salary to a designated beneficiary. If the death is of a violent nature and job-related, an additional lump sum equivalent benefit equal to 12 months' salary is payable.

If Eligible for Service Retirement:

A qualified spouse may elect i) or ii) below:

- i) Lump sum benefit equal to the accumulated refund of all employee contributions with interest, plus six months' salary to a designated beneficiary.
- ii) A benefit equal to 50% of the service retirement benefit the member would have received had the member retired for service on the date of death.

8. Withdrawal Benefits

Charter 8.509 members with less than ten years of Credited Service or less than \$1,000 in accumulated contributions and Charter 8.587, 8.600, and 8.603 members with less than five years of Credited Service:

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

Charter 8.509 members with ten or more years of Credited Service or accumulated contributions exceeding \$1,000 and Charter 8.587 and 8.600 members with five or more years of Credited Service:

The member may choose one of the following:

- i) Lump sum benefit equal to the accumulated refund all of employee contributions with interest.
- ii) A deferred retirement benefit payable on or after age 50 equal to the actuarial equivalent of twice the member's accumulated contributions with interest as of the retirement date.

Charter 8.603 members with five or more years of Credited Service:

The member may choose one of the following:

- i) Lump sum benefit equal to the accumulated refund all of employee contributions with interest.
- ii) A deferred retirement benefit payable on or after age 53 equal to the actuarial equivalent of 150% of the member's accumulated contributions with interest as of the retirement date.

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**APPENDIX C – SUMMARY OF PLAN PROVISIONS
MISCELLANEOUS**

9. Additional Post-retirement Death Benefit

A death benefit payable as a lump sum equal to \$100 for each full year of Credited Service, subject to a maximum of \$3,000, will be paid to a qualified survivor upon the member's death.

10. Post-retirement Cost-of-Living Benefit

Basic

Monthly benefits are adjusted each July 1 by the accumulated change in the Consumer Price Index to the nearest 1%, with a maximum increase or decrease of 2% per year of the prior year's monthly benefit. A member's monthly benefit will never decrease below its original amount.

Supplemental

Effective July 1 of each fiscal year, if the Retirement System was fully funded based on the Market Value of Assets for the previous year and there are sufficient "excess" investment earnings on the Retirement fund for the previous fiscal year-end, the adjustment could be increased to 3.5% of that member's current monthly benefit less the amount of the Basic COLA above. If "excess" earnings are insufficient to fund a 3.5% increase, then to the extent of "excess" earnings, benefits are increased in increments of 0.5% up to a maximum of 3.5%. For members who worked after November 6, 1996, and before Proposition C passed in 2012, the Supplemental COLA is payable if there are "excess" investment earnings regardless of whether or not the System was fully funded.

11. Changes in this Valuation

For members who worked after November 6, 1996, and before Proposition C passed in 2012, the full funding requirement for the Supplemental COLA was eliminated due to a State Appeals Court decision.

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**APPENDIX C – SUMMARY OF PLAN PROVISIONS
COST SHARING PROVISIONS**

V. Cost Sharing Provisions – Adjusted Contribution Rates

The table below shows the adjustment to the employee contribution rate based on the calculated net employer contribution rate. There are three different adjustment schedules which apply to different groups of employees.

Net Employer Contribution Rate	Adjustment to Employee Contribution Rate		
	Group 1	Group 2	Group 3
0.00% - 0.00%	-4.00%	-5.00%	-6.00%
0.01% - 1.00%	-4.00%	-4.50%	-5.00%
1.01% - 2.50%	-3.75%	-4.25%	-4.75%
2.51% - 4.00%	-3.50%	-4.00%	-4.50%
4.01% - 5.50%	-2.50%	-3.00%	-3.50%
5.51% - 7.00%	-2.00%	-2.50%	-3.00%
7.01% - 8.50%	-1.50%	-2.00%	-2.00%
8.51% - 10.00%	-1.00%	-1.50%	-1.50%
10.01% - 11.00%	-0.50%	-0.50%	-0.50%
11.01% - 12.00%	0.00%	0.00%	0.00%
12.01% - 13.00%	0.50%	0.50%	0.50%
13.01% - 15.00%	1.00%	1.50%	1.50%
15.01% - 17.50%	1.50%	2.00%	2.00%
17.51% - 20.00%	2.00%	2.50%	3.00%
20.01% - 22.50%	2.50%	3.00%	3.50%
22.51% - 25.00%	3.50%	4.00%	4.50%
25.01% - 27.50%	3.50%	4.00%	4.50%
27.51% - 30.00%	3.75%	4.25%	4.75%
30.01% - 32.50%	3.75%	4.25%	4.75%
32.51% - 35.00%	4.00%	4.50%	5.00%
35.01% +	4.00%	5.00%	6.00%

Group 1: Miscellaneous members earning between \$24 per hour and \$48 per hour, and Police or Fire members hired after June 30, 2010 earning less than \$48 per hour.

Group 2: Miscellaneous members earning \$48 per hour or more, and Police or Fire members hired after June 30, 2010 earning \$48 per hour or more.

There is no adjustment for Miscellaneous members earning less than \$24 per hour.

The hourly rates shown above are for the fiscal year ending 2013. Each fiscal year these hourly rates are adjusted by the percentage increase, not to exceed 3.5%, in the cost-of-living during the previous calendar year determined by the CPI-U for San Francisco-Oakland-San Jose.

Group 3: Police and Fire members hired before July 1, 2010.

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**APPENDIX C – SUMMARY OF PLAN PROVISIONS
COST SHARING PROVISIONS**

Note: The summary of major plan provisions is designed to outline principal plan benefits. If the SFERS staff 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 all future system 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.”

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 (salary increases and investment income) consist of an underlying rate in an inflation-free environment plus a provision for a long-term average rate of inflation.

3. Accrued Service

Service credited under the System which was rendered before the date of the actuarial valuation.

4. Actuarial Equivalent

A single amount or series of amounts of equal actuarial value to another single amount or series of amounts, computed on the basis of appropriate actuarial assumptions.

5. Actuarial Cost Method

A mathematical budgeting procedure for allocating the dollar amount of the actuarial present value of a retirement system benefit between future normal cost and actuarial accrued liability. Sometimes referred to as the “actuarial funding method.”

6. Actuarial Gain (Loss)

The difference between actual experience and actuarial assumption anticipated experience during the period between two actuarial valuation dates.

7. 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 predetermined rates of interest, and by probabilities of payment.

APPENDIX D - GLOSSARY OF TERMS

8. Amortization

Paying off an interest-discounted amount with periodic payments of interest and principal - as opposed to paying off with a lump sum payment.

9. Normal Cost

The actuarial present value of retirement system benefits allocated to the current year by the actuarial funding method.

10. Unfunded Actuarial Liability (UAL)

The Unfunded Actuarial Liability represents the difference between Actuarial Liability and valuation assets. This value is sometimes referred to as “unfunded actuarial accrued liability.”

Most retirement systems have Unfunded Actuarial Liabilities. They typically arise each time new benefits are added and each time experience losses are realized.

The existence of unfunded actuarial accrued liability is not in itself an indicator of poor funding. Also, Unfunded Actuarial Liabilities do not represent a debt that is payable today. What is important is the ability of the plan sponsor to amortize the Unfunded Actuarial Liability and the trend in its amount (after due allowance for devaluation of the dollar).



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