

City and County of San Francisco Employees' Retirement System

**July 1, 2018
Actuarial Valuation Report**

Produced by Cheiron

February 2019

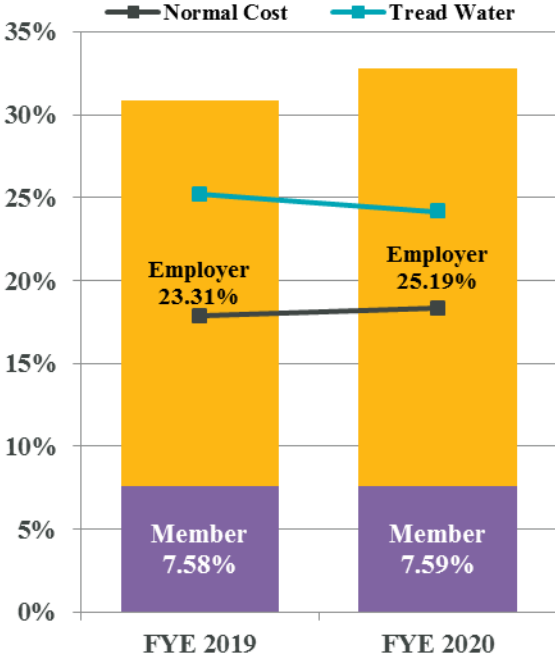
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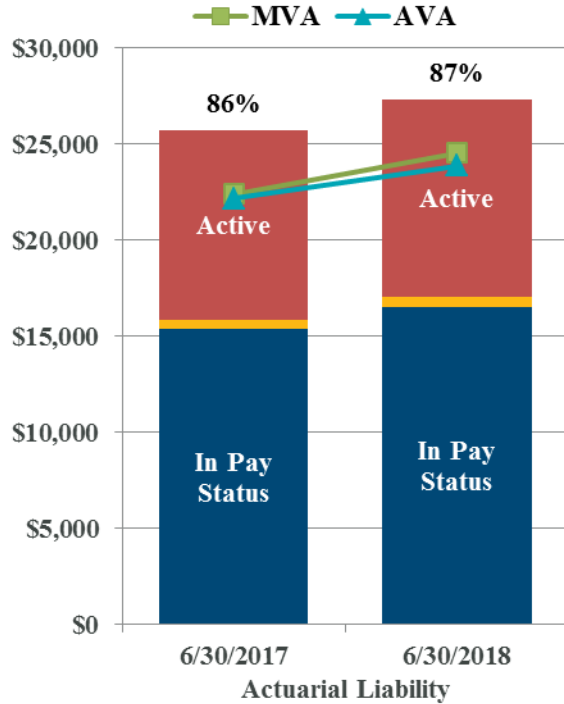
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SECTION I – BOARD SUMMARY

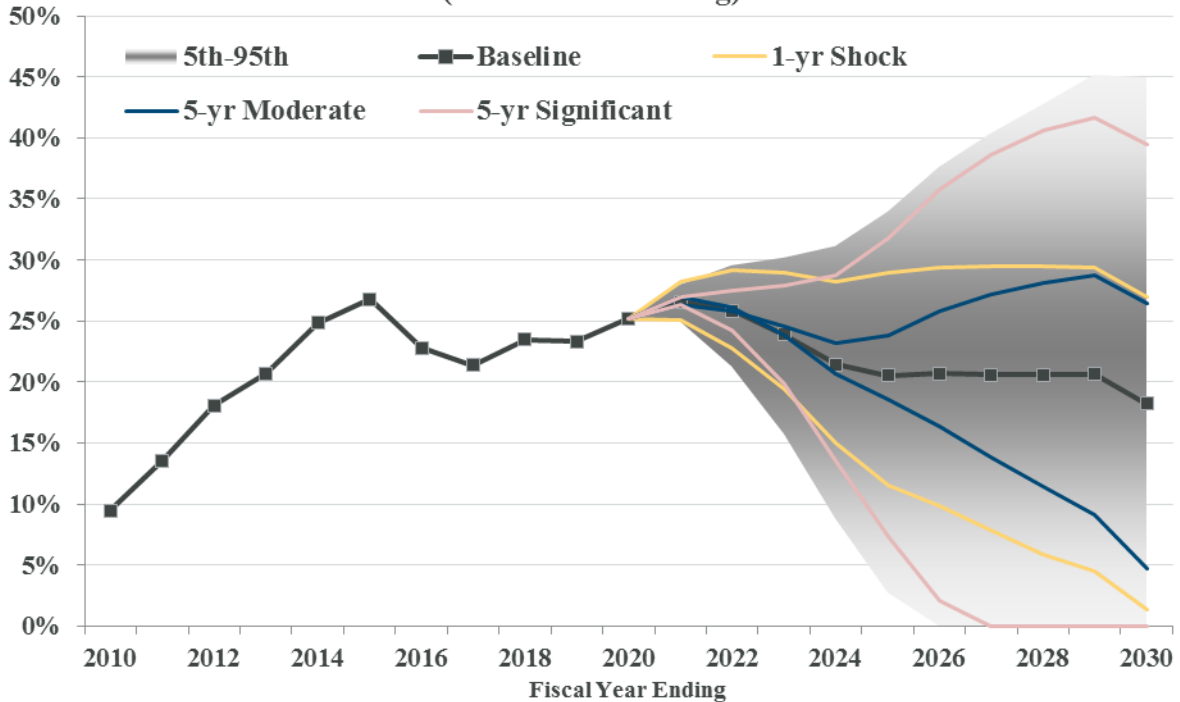
**Contribution Rates
(Before Cost-Sharing)**



AVA Funded Status



**Historical and Projected Employer Contribution Rates
(Before Cost-Sharing)**



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Key Findings of the July 1, 2018 Valuation

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

- The employer contribution rate increased from 23.31% for FYE 2019 to 25.19% for FYE 2020 before any cost-sharing adjustments. After the cost-sharing adjustments, the estimated employer contribution rate increased from 19.81% to 21.78%. 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 VI-2 for more details.
- The employee contribution rates in FYE 2020 after the cost-sharing adjustment will remain the same as they were in FYE 2019. That is, there is no change to the cost-sharing adjustments. The average employee contribution rate after cost-sharing adjustments is estimated to be 11.00%.
- The funded ratio based on the Market Value of Assets increased from 87.2% to 89.8%, and the unfunded liability decreased from \$3.30 billion to \$2.78 billion. On an actuarial value basis, the funded ratio also increased from 86.3% to 87.3%, and the unfunded liability decreased from \$3.52 billion to \$3.47 billion.
- The return on the Market Value of Assets for the year ended June 30, 2018 was approximately 11.5% resulting in a gain of about \$880 million that will be recognized over the next five years. The return on the Actuarial Value of Assets was 9.5%, which recognizes 20% of the FYE 2018 gain as well as deferred investment gains and losses from previous years, and results in an actuarial gain of about \$410 million.
- Because actual investment returns were greater than expected, a Supplemental COLA was payable, increasing benefits for certain retirees and increasing the Actuarial Liability by approximately \$200 million. This increase is amortized over a period of five years, increasing the contribution rate by 1.38% of pay.
- The Board approved a reduction in the discount rate from 7.5% to 7.4% at the November 14, 2018 Board meeting. The Actuarial Liability increased by approximately \$300 million and the employer contribution rate increased by 1.0%.
- The amortization payment for the assumption changes effective with the July 1, 2015 valuation is being phased-in over a five-year period. SFERS is in the fourth year of the phase-in and the UAL payment increased from \$58 million to \$83 million, increasing the contribution rate by 0.63% of payroll.

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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, 2018 compared to July 1, 2017.

Table I-1 City and County of San Francisco Employees' Retirement System Summary of Key Valuation Results (Amounts in millions)				
Valuation Date	July 1, 2018	July 1, 2017	% Change	
Actuarial Liability	\$ 27,335.4	\$ 25,706.1	6.3%	
Actuarial Value of Assets	\$ 23,866.0	\$ 22,185.2	7.6%	
Unfunded Actuarial Liability (actuarial value)	3,469.4	3,520.8	-1.5%	
Funding Ratio (actuarial value)	87.3%	86.3%	1.0%	
Market Value of Assets	\$ 24,558.0	\$ 22,410.4	9.6%	
Unfunded Liability (market value)	2,777.4	3,295.7	-15.7%	
Funding Ratio (market value)	89.8%	87.2%	2.7%	
Expected Payroll	\$ 3,385.5	\$ 3,242.5	4.4%	
Interest on UAL (MVA basis)	\$ 198.3	\$ 238.4	-16.8%	
Interest Cost as Percent of Payroll	5.9%	7.4%	-1.5%	

The Actuarial Liability increased by approximately \$1.6 billion including a \$200 million increase due to the 2018 Supplemental COLA and a \$300 million increase due to the decrease in the discount rate to 7.4%. The Actuarial Value of Assets, which is used as the basis to set contribution rates, increased by approximately \$1.7 billion reflecting smoothed investment returns and contributions offset by benefits and expenses paid during the year. SFERS' Unfunded Actuarial Liability (UAL) decreased by approximately \$51 million based on the Actuarial Value of Assets.

The Market Value of Assets increased approximately \$2.1 billion. SFERS' UAL based on the Market Value of Assets decreased approximately \$520 million.

The interest cost on the UAL – based on the Market Value of Assets – decreased by \$40 million. As a result, approximately 5.9% of payroll is necessary to pay the interest on the UAL, which is a decrease from 7.4% of payroll in the prior year.

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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 summarizes the employer and member contribution rates both before and after the cost-sharing adjustments.

Table I-2 Summary Of Contributions (Amounts in millions)			
	FYE 2020	FYE 2019	Absolute Change
<u>Contribution Rates Before Adjustments</u>			
Net Employer Contribution Rate	25.19%	23.31%	1.88%
Est. Aggregate Employee Contribution Rate	<u>7.59%</u>	<u>7.58%</u>	<u>0.01%</u>
Total Contribution Rate	32.78%	30.89%	1.89%
Estimated Payroll	\$ 3,504.0	\$ 3,356.0	\$ 148.0
Estimated Net Employer Contributions	882.6	782.1	100.5
<u>Contribution Rates After Adjustments</u>			
Net Employer Contribution Rate	21.78%	19.81%	1.97%
Est. Aggregate Employee Contribution Rate	<u>11.00%</u>	<u>11.08%</u>	<u>-0.08%</u>
Total Contribution Rate	32.78%	30.89%	1.89%
Estimated Payroll	\$ 3,504.0	\$ 3,356.0	\$ 148.0
Estimated Net Employer Contributions	763.2	664.8	98.4
<u>Total Contribution Rate</u>			
Normal Cost Rate	17.71%	17.25%	0.46%
Administrative Expense Rate	0.60%	0.60%	0.00%
UAL Rate			
Interest on Market Value UAL	5.86%	7.35%	-1.49%
Principal on Market Value UAL	<u>8.61%</u>	<u>5.69%</u>	<u>2.92%</u>
Total UAL Rate	14.47%	13.04%	1.43%
Total Contribution Rate	32.78%	30.89%	1.89%

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The net employer contribution rate before applying the cost-sharing adjustments increased 1.88% of payroll from 23.31% to 25.19% for the fiscal year ending June 30, 2020. The cost-sharing adjustment is estimated to decrease the employer contribution and increase the aggregate employee contributions by about 3.4% of payroll. Thus, the estimated employer contribution rate after cost sharing is 21.78% for FYE 2020. The cost-sharing adjustments will remain at this level as long as the employer contribution rate before adjustment is between 22.51% and 27.50%.

SFERS Membership

As shown in Table I-3 below, membership in SFERS increased in total by 2.9%. Active membership increased 1.5%, terminated vested membership increased 9.1%, and members receiving benefits increased by 2.9%. Total payroll increased by 4.4% for active members. The average pay per active member increased 2.9%.

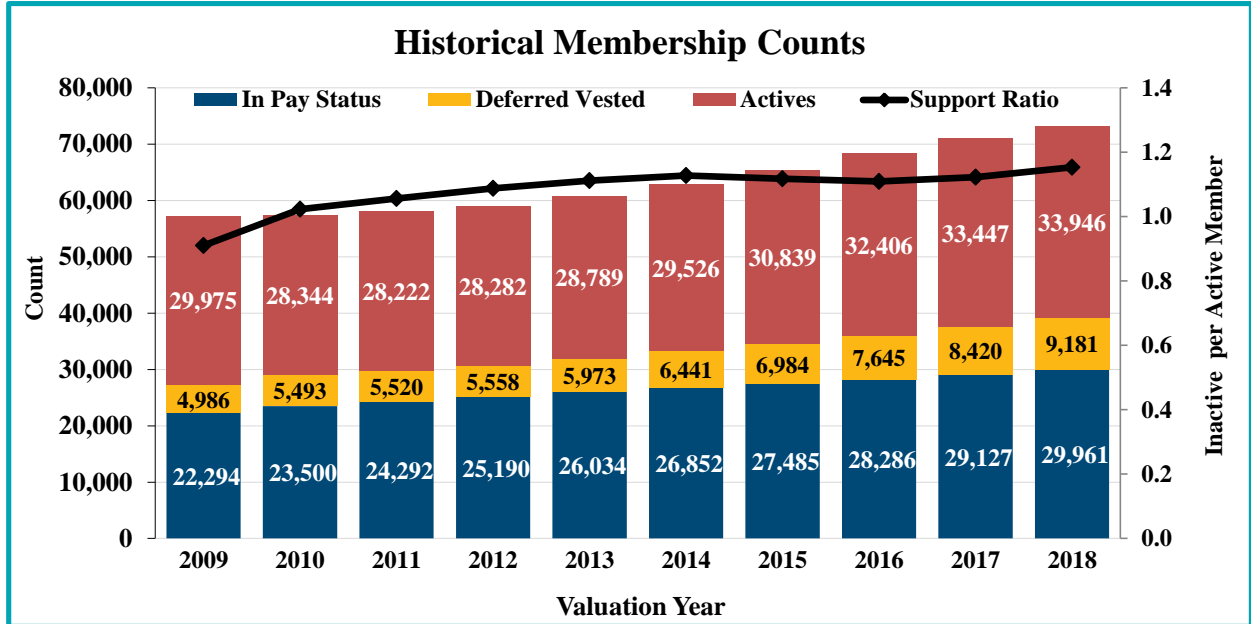
Table I-3			
Membership Total			
	July 1, 2018	July 1, 2017	% Change
Actives	33,946	33,447	1.5%
Terminated Vested	9,183	8,420	9.1%
Members Receiving Benefits	29,965	29,127	2.9%
Total SFERS Members	73,094	70,994	3.0%
Active Member Payroll (FYE 2019/2018)	\$ 3,385,520,000	\$ 3,242,470,000	4.4%
Average Pay per Active	\$ 99,700	\$ 96,900	2.9%

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

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The chart below shows the historical trend in membership counts over the last 10 years. This trend can be an important indicator of growing plan maturity and sensitivity to investment returns, assumption changes, and other changes to the System. In particular, if the ratio of inactives to active members grows, it indicates that any losses on inactive liabilities or assets are likely to place a relatively greater burden on active members and employers. For SFERS, there was a moderate increase in this ratio immediately following the recession beginning in 2009, but the ratio has been relatively stable from 2013 to 2018 between 1.11 and 1.15.



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Contribution Reconciliation

The SFERS contribution rate for FYE 2020 before cost-sharing adjustments increased from 23.31% to 25.19% of membership payroll. Table I-4 shows sources for the change in the net employer contribution rate. The fourth year of the 5-year phase-in of the 2015 assumption changes, the July 1, 2018 Supplemental COLA, and decreasing the discount rate to 7.4% increased the contribution rate by approximately 3.01% of pay.

The investment experience decreased the contribution rate by 0.92%. In addition, two Safety Charter amendments were fully paid resulting in a 0.21% decrease in the Plan contribution rate.

Table I-4 Net Employer Contribution Rate Reconciliation			
	Normal Cost¹	Amortization	Total
FYE 2019 Net Employer Contribution Rate	10.27%	13.04%	23.31%
Fully paid 1998 Charter amendments	0.00%	-0.21%	-0.21%
Phase-in of the 2015 assumption changes	0.00%	0.63%	0.63%
Investment gain on actuarial value of assets	0.00%	-0.92%	-0.92%
July 1, 2018 Supplemental COLA	0.00%	1.38%	1.38%
Discount rate change from 7.5% to 7.4%	0.41%	0.60%	1.01%
Liability experience and other changes	<u>0.04%</u>	<u>-0.05%</u>	<u>-0.01%</u>
Total Change	0.45%	1.43%	1.88%
FYE 2020 Net Employer Contribution Rate	10.72%	14.47%	25.19%

¹ Includes administrative expenses and is net of employee contributions.

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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 for future years are included in the projections on the following page.**

The top chart on the following page shows asset measures (both market and actuarial) compared to the Actuarial Liability for the historical period from 2008 to 2018 and the projected period from 2019 to 2028 assuming all assumptions are met. The purple bars represent the historical Actuarial Liability while the black bars represent the projected Actuarial Liability. The light purple bar is the current valuation year.

These projections include an assumed level of Supplemental COLA each year. For the Post '96 Retirees, we assume a 50% probability of a full Supplemental COLA (1.50% for most members), so the projections include half of a full Supplemental COLA each year. For the Pre-97 Retirees, the probability is much smaller than 50% in the short term since the System is only 89.8% funded and it needs to be 100% funded to grant this group a Supplemental COLA.

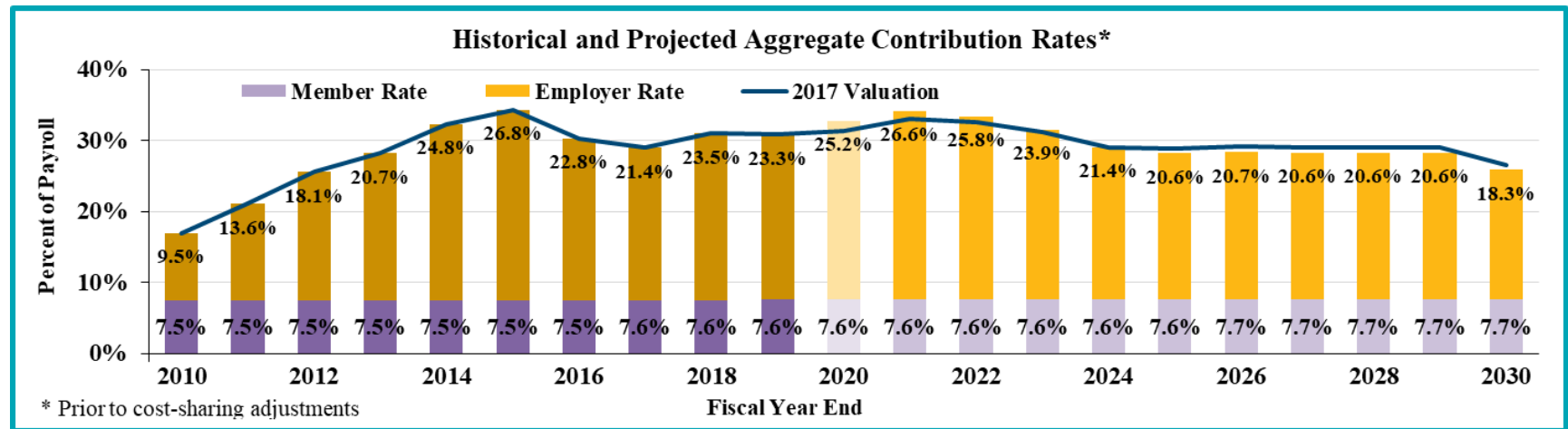
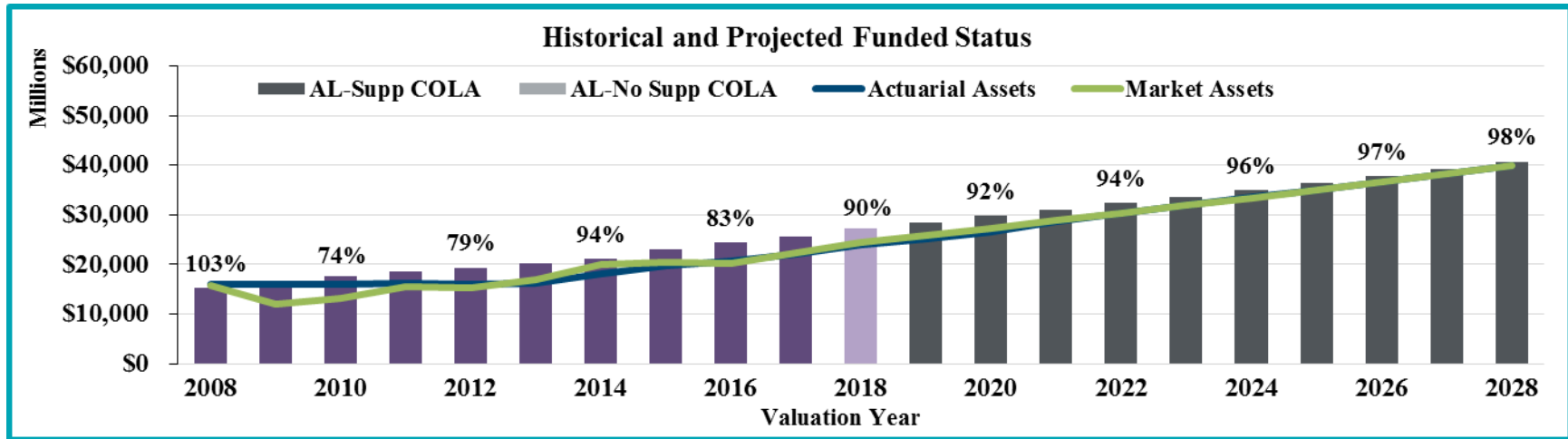
At the top of each bar is the progression of SFERS funding ratios based on the Market Value of Assets. The System had a surplus and was 103% funded as of July 1, 2008. The funding ratio declined significantly over the next two years to 74% primarily due to investment experience. Since then, investment returns and contribution increases offset by some assumption changes have led to increased funding ratios reaching 90% as of July 1, 2018.

The bottom chart on the following page shows historical and projected contribution rates for the fiscal years ending 2010 through 2030. 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 blue line represents the baseline projection from the 2017 actuarial valuation.

The employer contribution rate increased significantly from fiscal year ending 2010 through 2015. The increases were primarily due to investment losses and assumption changes. The employer contribution rate is expected to increase next year primarily due to the final phase-in of the amortization payment for the 2015 assumption changes. Employer contribution rates are expected to decline after FYE 2021 due to the recognition of deferred investment gains of approximately \$690 million and the completion of the amortization of the Supplemental COLAs. The projected contribution rates are slightly higher in FYE 2021 and 2022 also due to the decrease in the discount rate but are consistent to those projected in 2017, thereafter.

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

SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

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

Identification of Risks

The fundamental risk to the System is that the contributions needed to pay the benefits become unaffordable. While there are a number of factors that could lead to contribution amounts becoming unaffordable, we believe the primary risks for this System are:

- Investment risk,
- Interest rate risk,
- Supplemental COLA risk, and
- Assumption change risk.

Investment risk is the potential for investment returns to be different than expected. Interest rate risk is the potential for interest rates to be different than expected. For public plans, short-term fluctuations in interest rates have little or no effect, but longer-term trends can have a powerful effect on economic assumptions, particularly the discount rate. Supplemental COLA risk is the potential for the cost of future Supplemental COLAs to increase contribution rates.

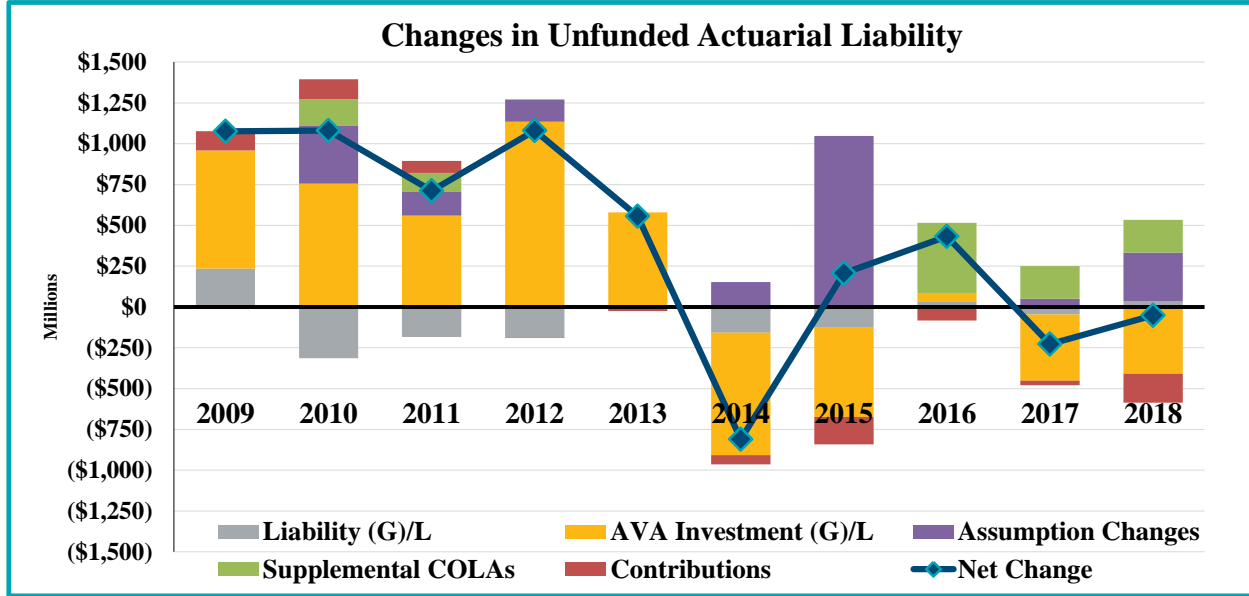
Other risks that we have not identified may also turn out to be important.

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The chart below shows the components of changes in the Unfunded Actuarial Liability (UAL) for the last 10 years, including investment gains and losses on the Actuarial Value of Assets, liability gains and losses, assumption changes, benefit changes, and contributions compared to the tread water level of contributions (normal cost plus interest on the UAL). The net UAL change is shown by the dark blue line.

SFERS Historical Changes in UAL 2009-2018



On a smoothed asset basis, the investment gains and losses (gold bars) from 2009 to 2013 reflect material investment losses driven by the market decline of 2008 and 2009, which was spread over the five successive years. Recent market experience has been primarily gains. Over the 10-year period, investment losses have added approximately \$1.7 billion to the UAL.

On the liability side (gray bars), SFERS has experienced mostly gains reducing the UAL by approximately \$720 million over the 10-year period.

Assumption and method changes (purple bars) over the last 10 years have increased the UAL by about \$2.2 billion. The significant changes have included reductions in the discount rate as interest rates have declined, decreases in mortality rates and increases in retirement rates.

Benefit changes (green bars) are all Supplemental COLAs. While our projections include an assumed level of Supplemental COLAs, the Actuarial Liability for determining contribution rates in each valuation does not. In 2016, the benefit increase is a result of the 2013 and 2014 retroactive Supplemental COLAs. Over the 10-year period, Supplemental COLAs increased the UAL by about \$1.1 billion.

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

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expected to decrease. Conversely, if contributions are less than the tread water level, the UAL is expected to increase. Over the 10-year period, contributions have decreased the UAL by about \$217 million, and during 2018, contributions decreased the UAL by about \$177 million.

In general, the amortization methods used to determine contributions to the System are designed to collect more than the tread water level. However, the System may temporarily pay less than this threshold due to asset smoothing, the one-year delay between the valuation date and when contribution rates become effective or due to unexpected reductions in payroll.

Table II-1 below summarizes the changes in the UAL over the last 10 years.

Table II-1 Changes in Unfunded Actuarial Liability											
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Total
Discount Rate	7.75%	7.75%	7.66%	7.58%	7.58%	7.50%	7.50%	7.50%	7.50%	7.40%	
Source											
AVA (G)/L	\$ 722.7	\$ 755.6	\$ 559.6	\$ 1,135.0	\$ 579.6	\$ (749.2)	\$ (545.5)	\$ 51.5	\$ (405.7)	\$ (408.9)	\$1,694.7
Liability (G)/L	235.8	(314.4)	(183.5)	(187.1)	(9.9)	(157.9)	(127.6)	34.5	(45.5)	35.7	(719.9)
Assumptions/Methods	0.0	353.4	148.8	135.5	0.0	153.1	1,048.4	0.0	50.2	297.7	2,187.1
Supplemental COLAs	0.0	164.0	112.6	0.0	0.0	0.0	0.0	429.3	200.1	200.8	1,106.8
Contributions ¹	<u>118.0</u>	<u>121.8</u>	<u>73.8</u>	<u>(2.8)</u>	<u>(14.5)</u>	<u>(56.9)</u>	<u>(168.2)</u>	<u>(83.7)</u>	<u>(27.4)</u>	<u>(176.7)</u>	<u>(216.6)</u>
Total UAL Change	\$1,076.5	\$1,080.4	\$ 711.3	\$1,080.6	\$ 555.2	\$ (810.9)	\$ 207.1	\$ 431.6	\$ (228.3)	\$ (51.4)	\$4,052.1

¹ Actual contributions less than normal cost, administrative expenses and interest on the UAL

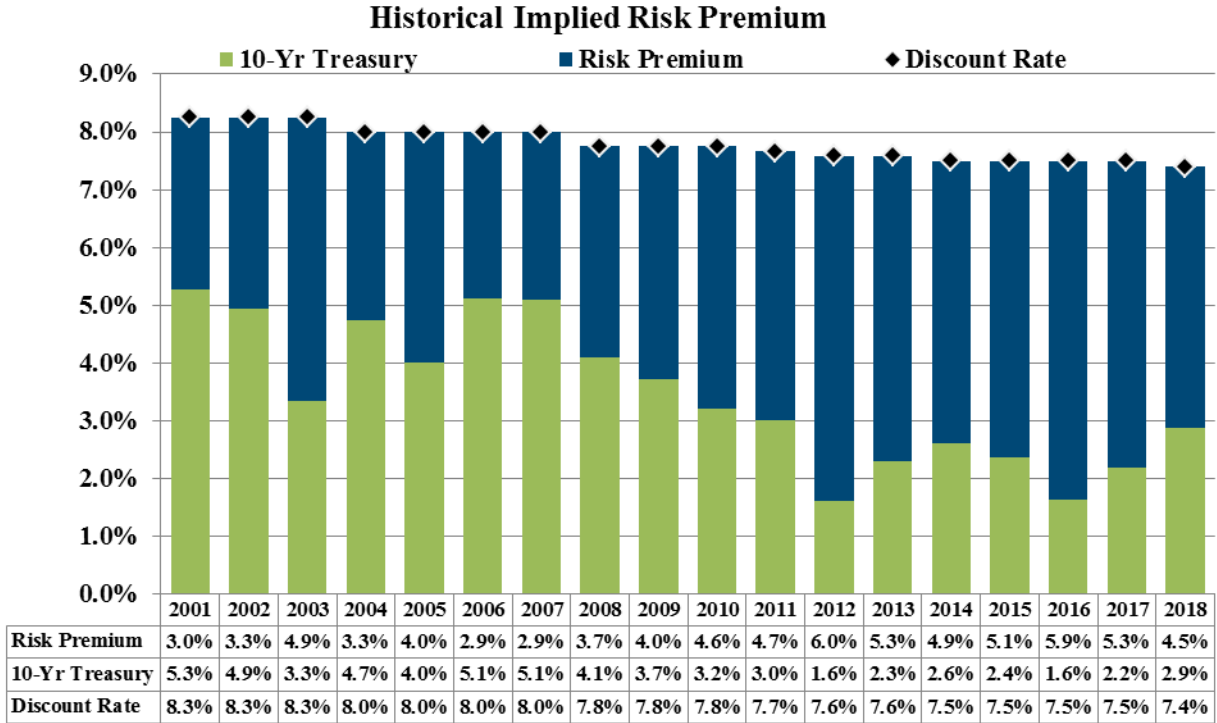
Dollar amounts in millions

These totals support our identification of investment returns, Supplemental COLAs, and assumption changes as the primary risks to the System. Part of the increases due to assumption changes has been due to reducing the discount rate which has been driven in significant part by reductions in market interest rates.

The chart on the following page shows the yield on a 10-year Treasury security compared to the System's assumed rate of return. The difference is a simple measure of the investment risk premium. As interest rates declined, the System faced a choice: maintain the same risk premium and reduce the expected rate of return; maintain the same expected rate of return and increase the risk premium; or some combination of the two strategies.

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Plan Maturity Measures

The future financial condition of a mature pension plan is more sensitive to each of the risks identified above than a less mature plan. Before assessing each of these risks, it is important to understand the maturity of SFERS compared to other public plans and how the maturity has changed over time.

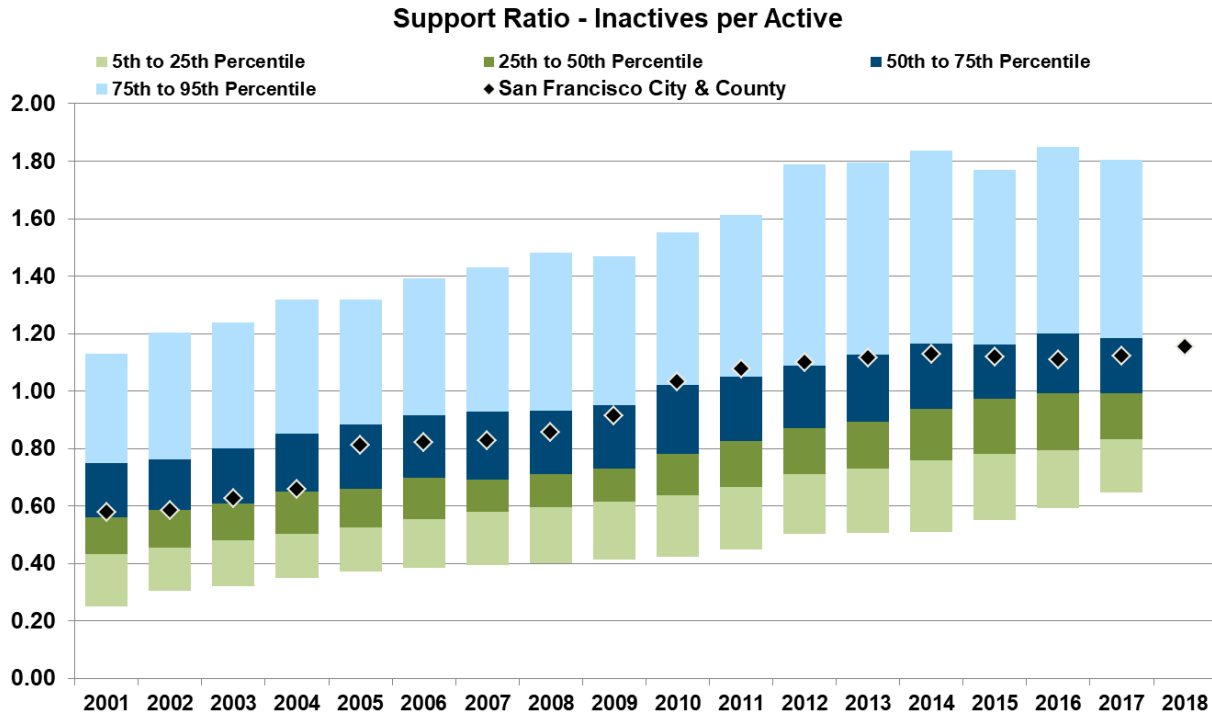
Plan maturity can be measured in a variety of ways, but all of the measures get at one basic dynamic – the larger the plan is compared to the contribution or revenue base that supports it; the more sensitive the plan will be to risk. The measures below have been selected as the most important in understanding the primary risks identified for SFERS.

Support Ratio (Inactives per Active)

One simple measure of plan maturity is the ratio of the number of inactive members (those receiving benefits or entitled to a deferred benefit) to the number of active members. The revenue base supporting the plan is usually proportional to the number of active members, so a relatively high number of inactives compared to actives indicate a larger plan relative to its revenue base as well.

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The chart above shows the distribution from the 5th to 95th percentile of support ratios for the plans in the Public Plans Database. The black diamond shows how San Francisco (SFERS) compares. Through 2004, the Plan was in the middle of the distribution even as the support ratio increased. Proposition F established an early retirement window for Miscellaneous members that resulted in a significant increase in the support ratio in 2005. The support ratio increased again following the Great Recession, but has stabilized in recent years at a level near the 75th percentile for public plans.

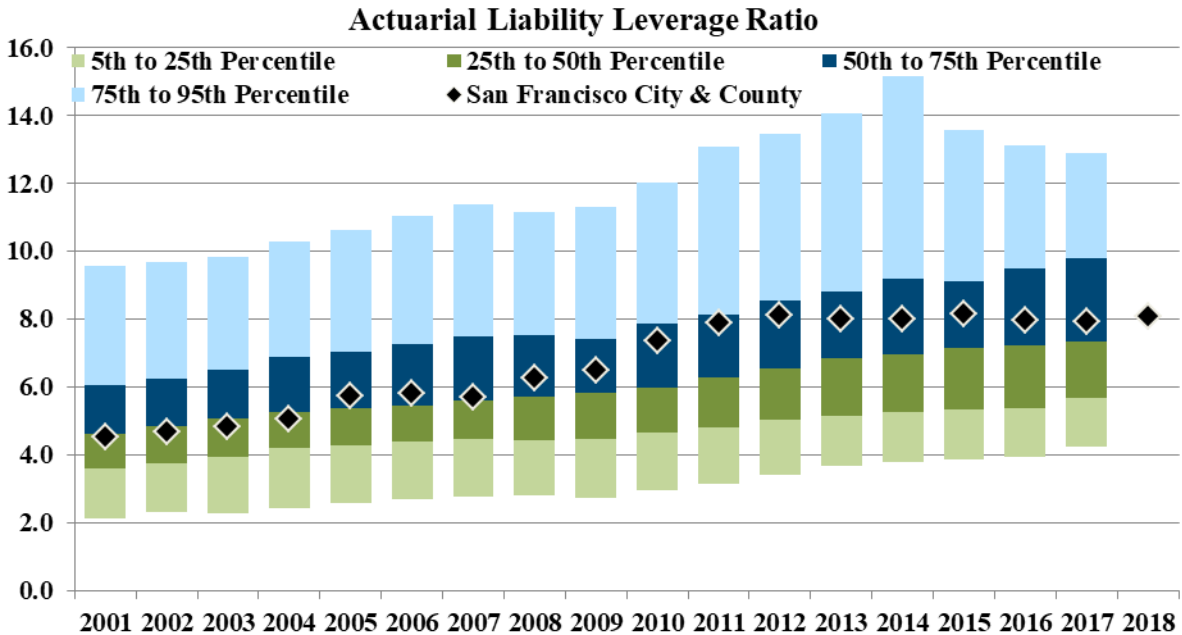
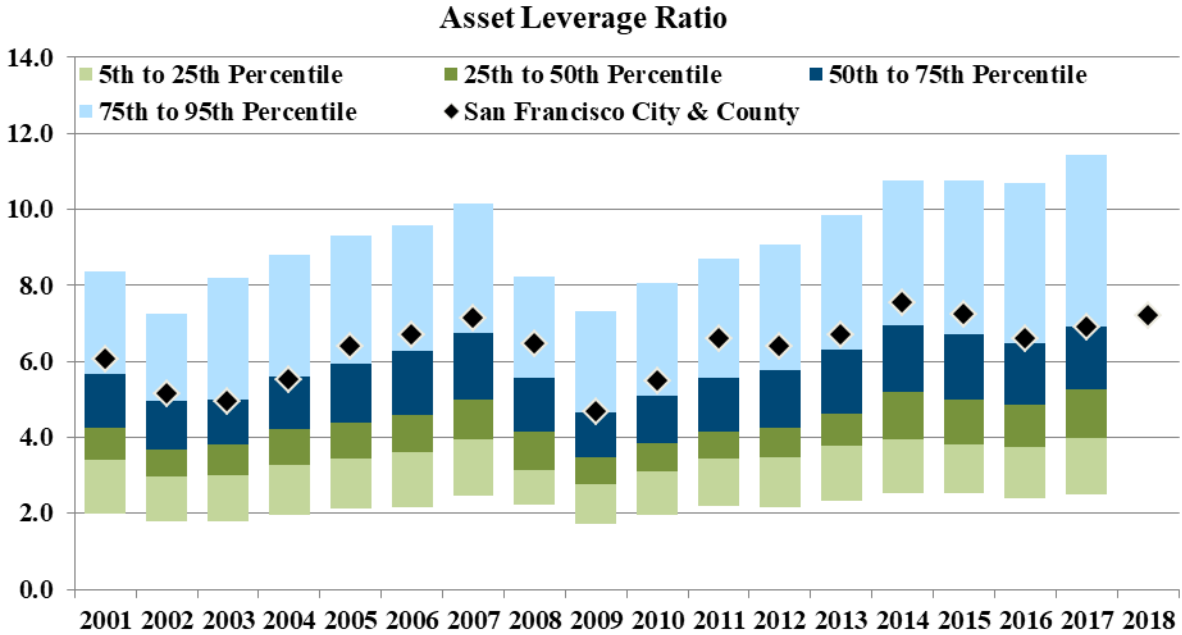
Leverage Ratios

Leverage or volatility ratios measure the size of the plan compared to its revenue base more directly. An asset leverage ratio of 5.0, for example, means that if the system experiences a 10% loss on assets compared to the expected return, the loss would be equivalent to 50% of payroll. The same investment loss for a system with an asset leverage ratio of 10.0 would be equivalent to 100% of payroll.

As SFERS becomes better funded, the asset leverage ratio will increase, and if it was 100% funded, the leverage ratio would equal the Actuarial Liability (AL) leverage ratio. The AL leverage ratio also indicates how sensitive the system is to experience gains and losses or assumption changes. For example, an assumption change that increases the AL by 5% would add a liability equivalent to about 50% of payroll if the AL leverage ratio is 10.0.

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The charts above show the distribution from the 5th to 95th percentile of asset and Actuarial Liability leverage ratios for the plans in the Public Plans Database. The black diamond shows how SFERS compares.

SFERS' asset leverage ratio has consistently been at the 75th percentile or above compared to other plans while its absolute level has fluctuated with investment returns and the growth of the system. It reached a low during this period of 4.7 in 2009 and a peak of 7.6 in 2014 compared to the current ratio of 7.2.

SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

SFERS' Actuarial Liability leverage ratio has consistently been between the 50th-75th percentile since 2001, and has recently been holding relatively constant around 8.1 while other plans have been increasing.

Assessment of Risks

The fundamental risk to the System is that the contributions needed to fund the benefits become unaffordable. Assessing this risk, however, is complex because there is no bright line of what is unaffordable and the contribution amounts themselves are affected not just by the experience of the System, but also by the interaction of that experience and decisions by the Board related to assumptions, asset smoothing methods, and amortization periods.

Investment Risk – Stress Testing

To assess the potential impact of investment risk, we developed six hypothetical scenarios. 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 = 6.9%, standard deviation = 13.2%).

Distribution of Expected Average Annual Returns		
Percentile	1 Year	5 Year
5%	-14.8%	-2.8%
25%	-2.0%	2.9%
50%	6.9%	6.9%
75%	15.8%	10.9%
95%	28.6%	16.6%

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 on the next page summarizes the theoretical scenarios.

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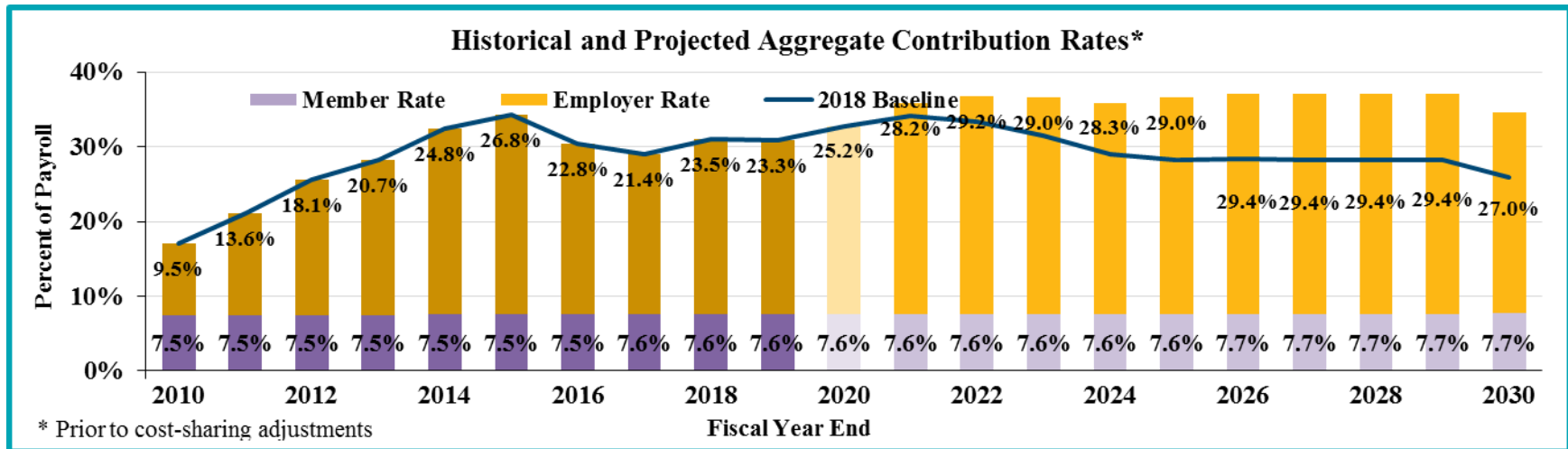
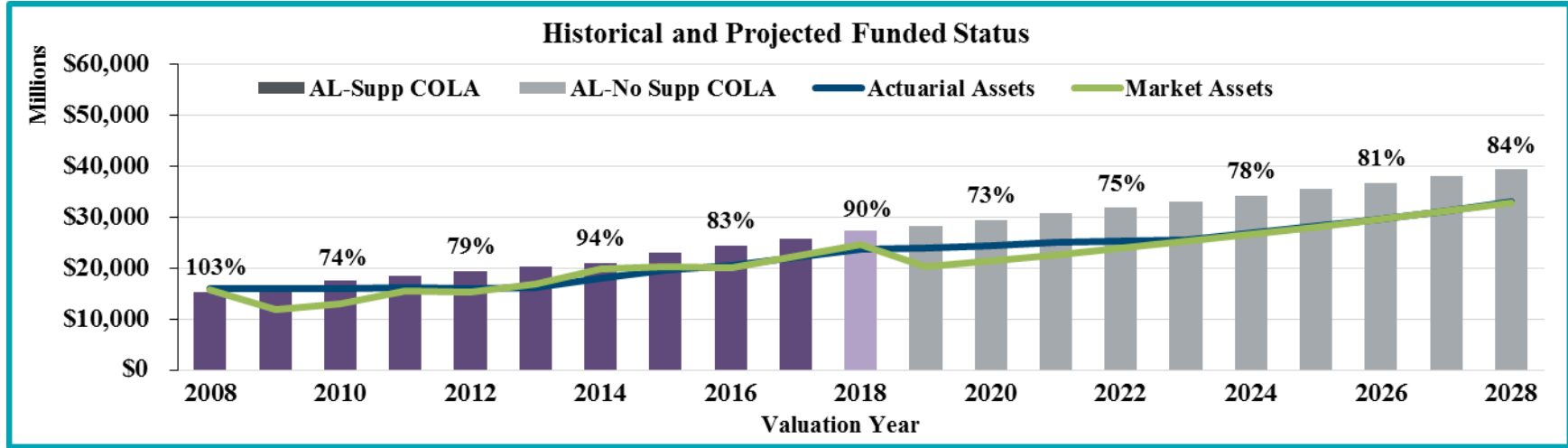
FYE	Theoretical Scenarios					
	1-Yr Shock		5-Yr Moderate		5-Yr Significant	
	Neg	Pos	Neg	Pos	Neg	Pos
2019	-14.80%	28.60%	2.90%	10.90%	-2.80%	16.60%
2020	7.40%	7.40%	2.90%	10.90%	-2.80%	16.60%
2021	7.40%	7.40%	2.90%	10.90%	-2.80%	16.60%
2022	7.40%	7.40%	2.90%	10.90%	-2.80%	16.60%
2023	7.40%	7.40%	2.90%	10.90%	-2.80%	16.60%
2024+	7.40%	7.40%	7.40%	7.40%	7.40%	7.40%

The charts on the following pages show the projections under each of these theoretical scenarios. The contribution charts include a blue line representing the baseline projections shown in the Board Summary 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 liability projections are shown as black bars in years a Supplemental COLA is payable and gray bars in years when no Supplemental COLA is payable. The contribution rates are shown before any cost-sharing adjustments.

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SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

One-Year Negative Shock Scenario: -14.8% return FYE 2019, 7.4% after

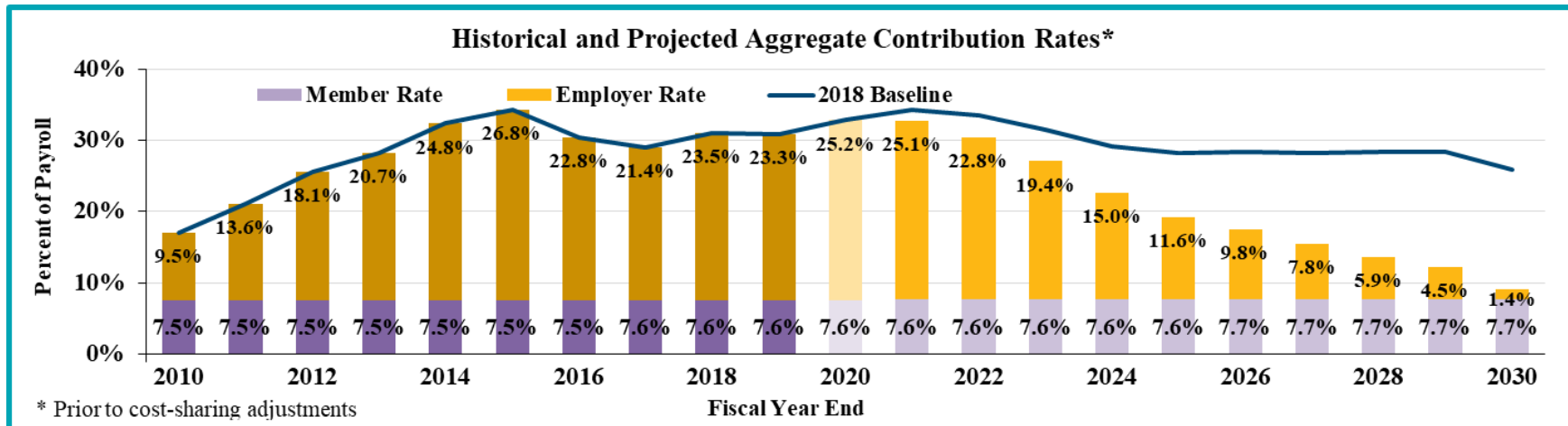
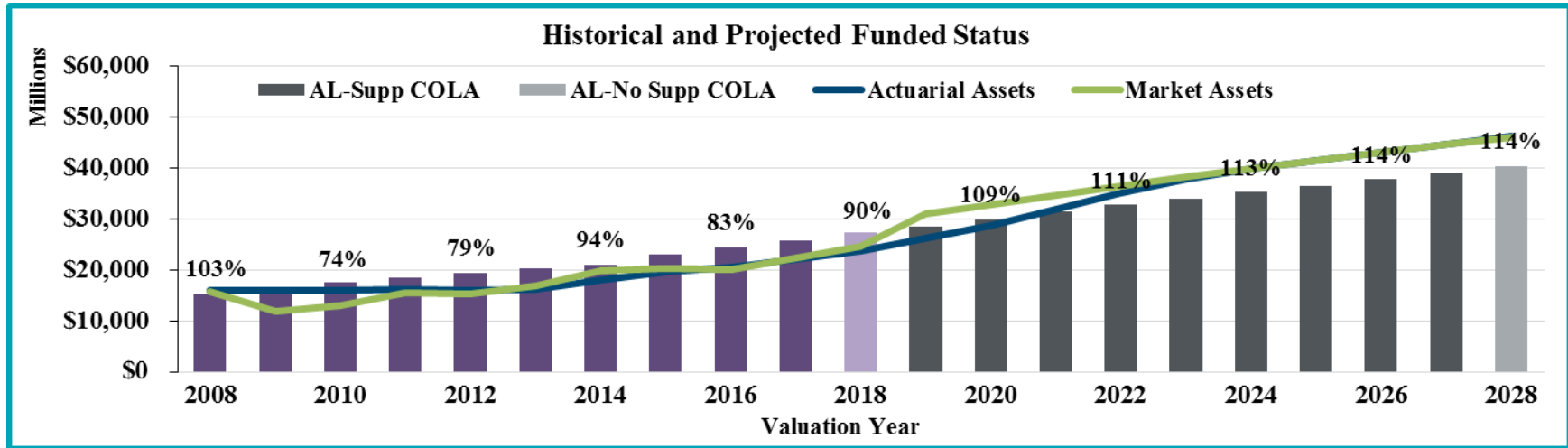


The darker gold and purple bars represent actual historical contribution rates while the lighter bars represent projected rates. The very light gold bar represents the contribution rate developed in the current valuation.

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One-Year Positive Shock Scenario: 28.6% return FYE 2019, 7.4% after

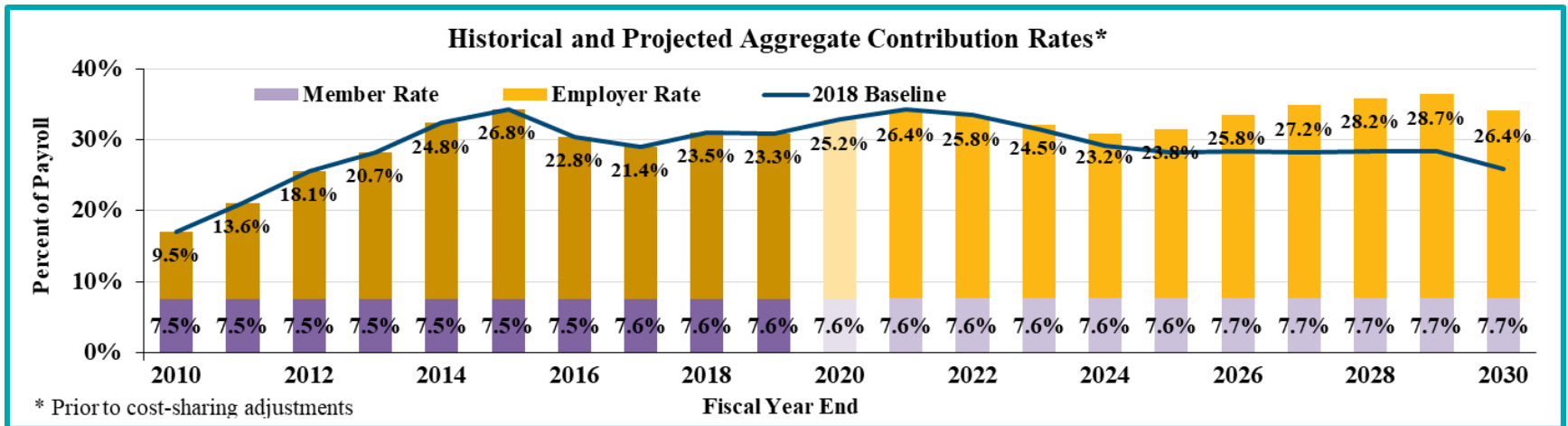
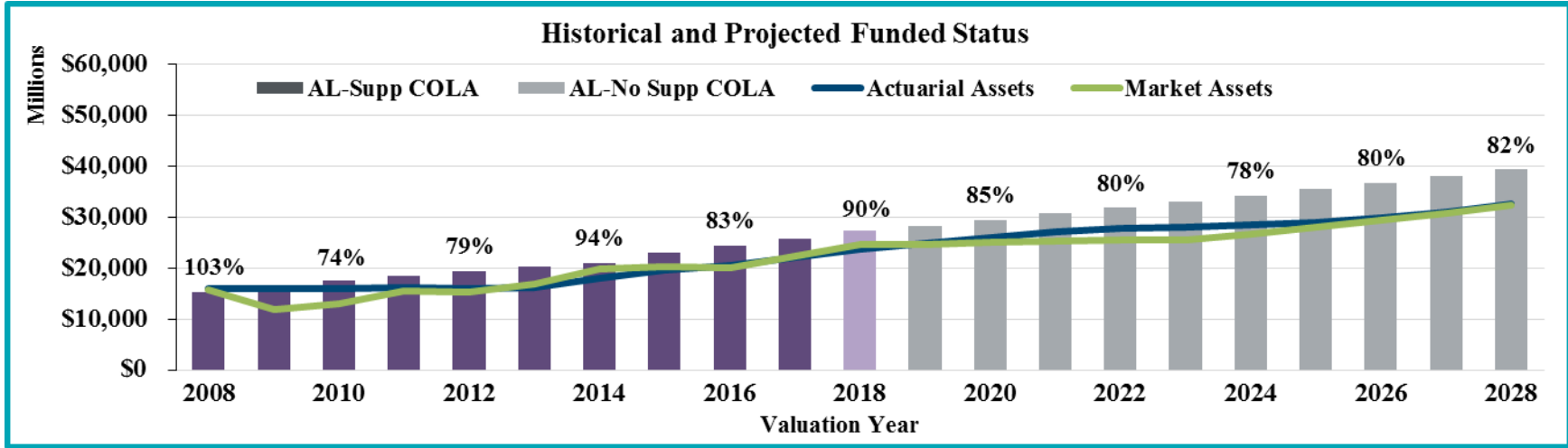


The darker gold and purple bars represent actual historical contribution rates while the lighter bars represent projected rates. The very light gold bar represents the contribution rate developed in the current valuation.

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Five-Year Moderate Negative Scenario: 2.9% return FYE 2019-2023, 7.4% after

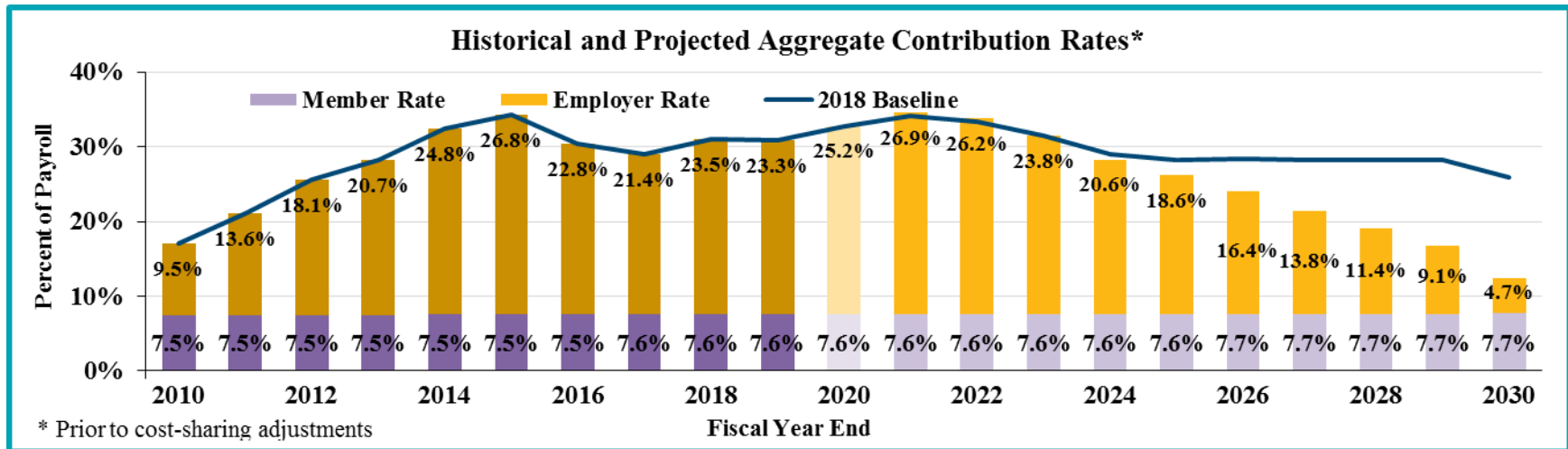
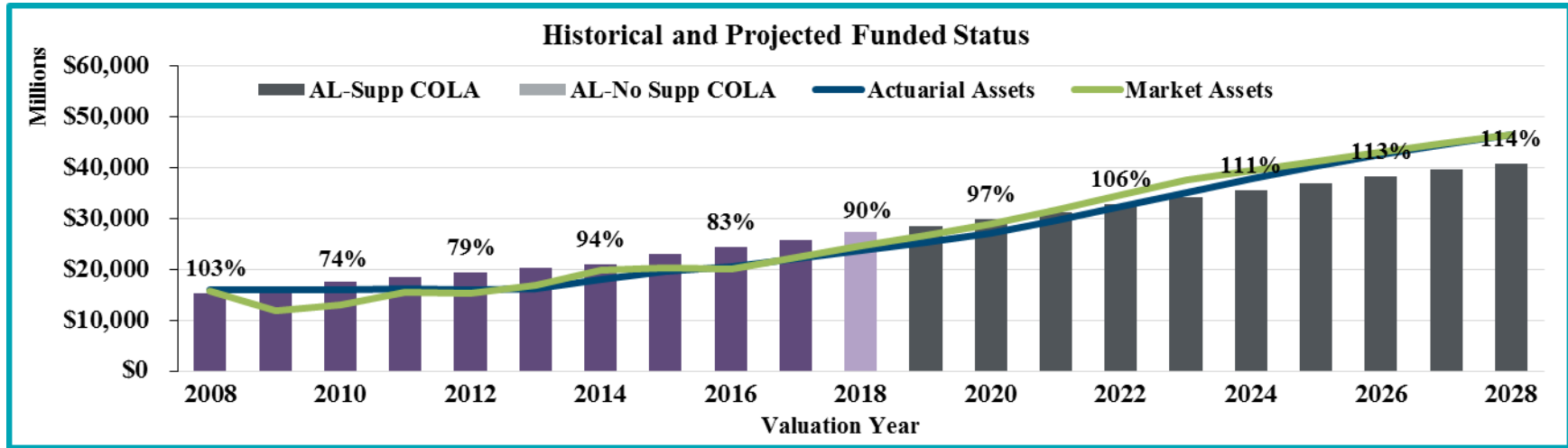


The darker gold and purple bars represent actual historical contribution rates while the lighter bars represent projected rates. The very light gold bar represents the contribution rate developed in the current valuation.

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Five-Year Moderate Positive Scenario: 10.9% return FYE 2019-2023, 7.4% after



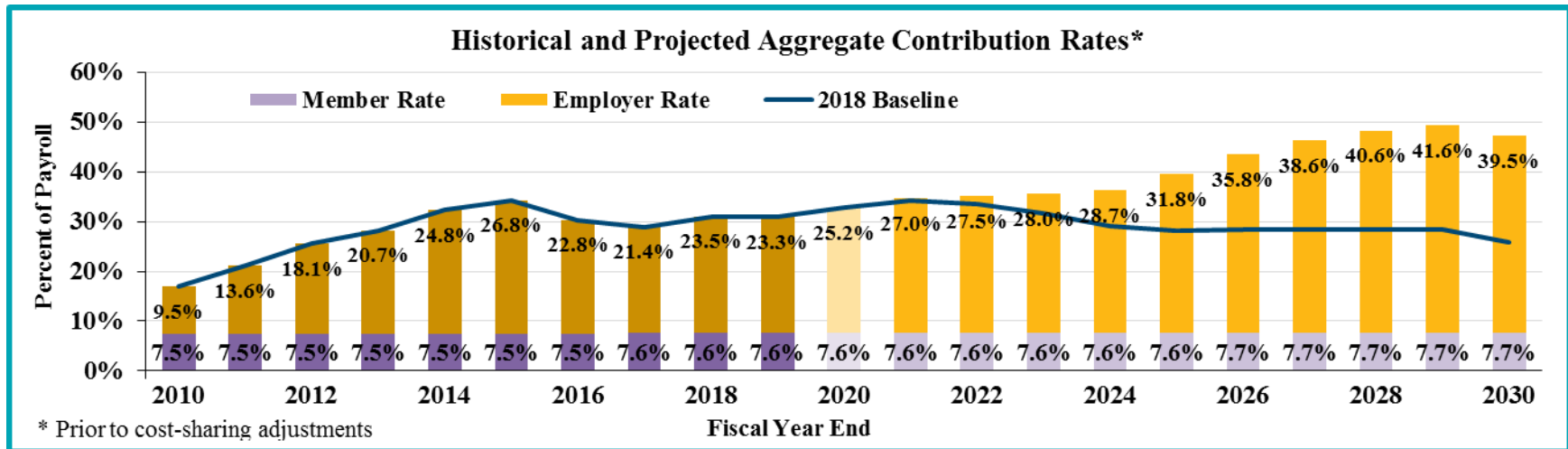
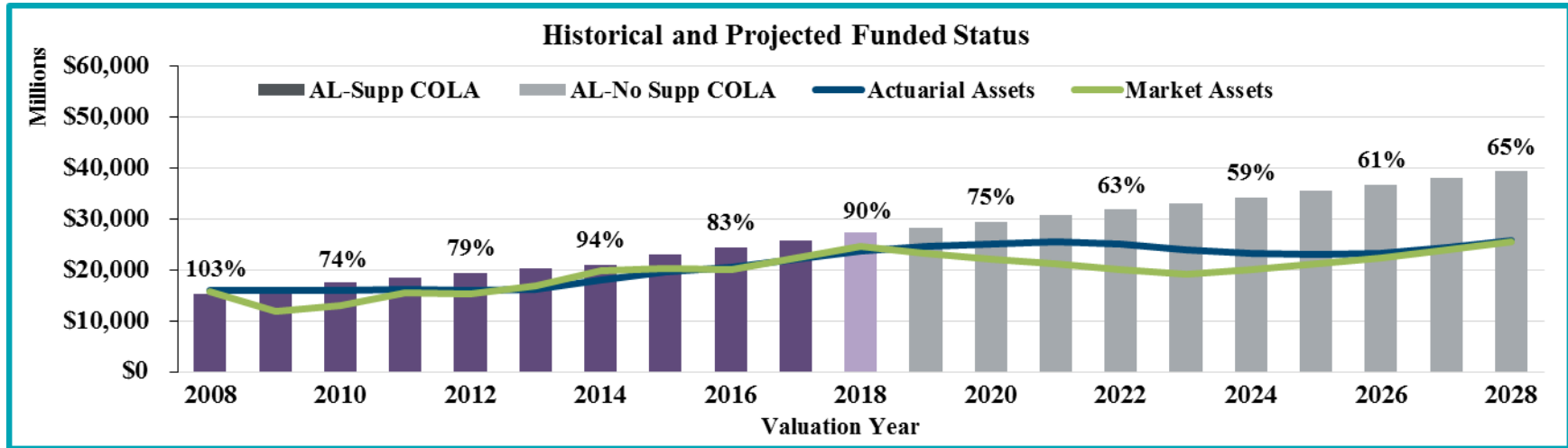
* Prior to cost-sharing adjustments

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

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Five-Year Significant Negative Scenario: -2.8% return FYE 2019–2023, 7.4% after



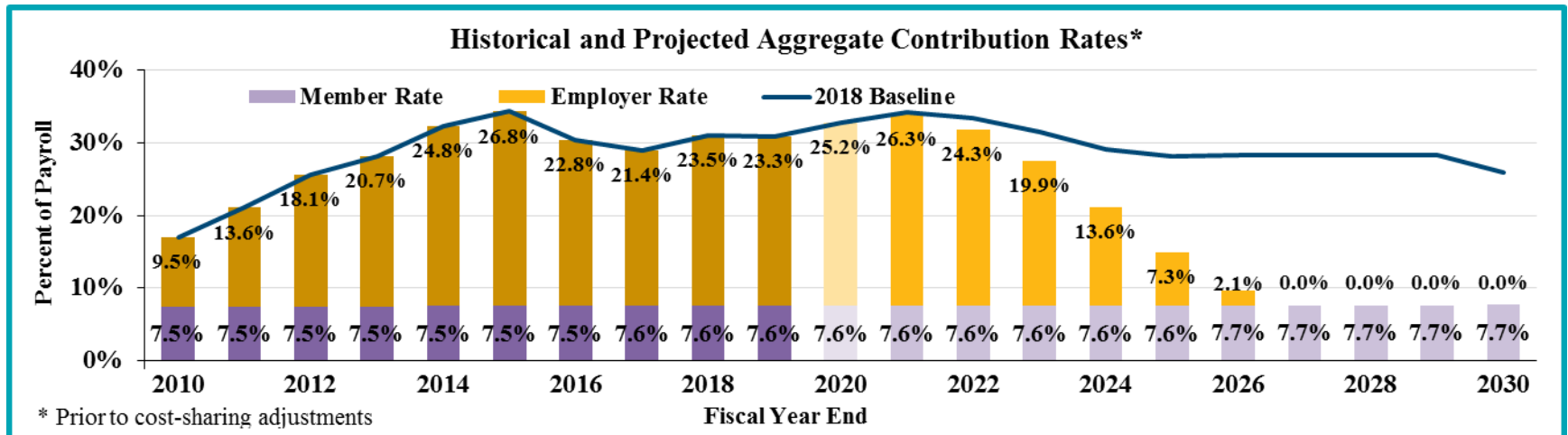
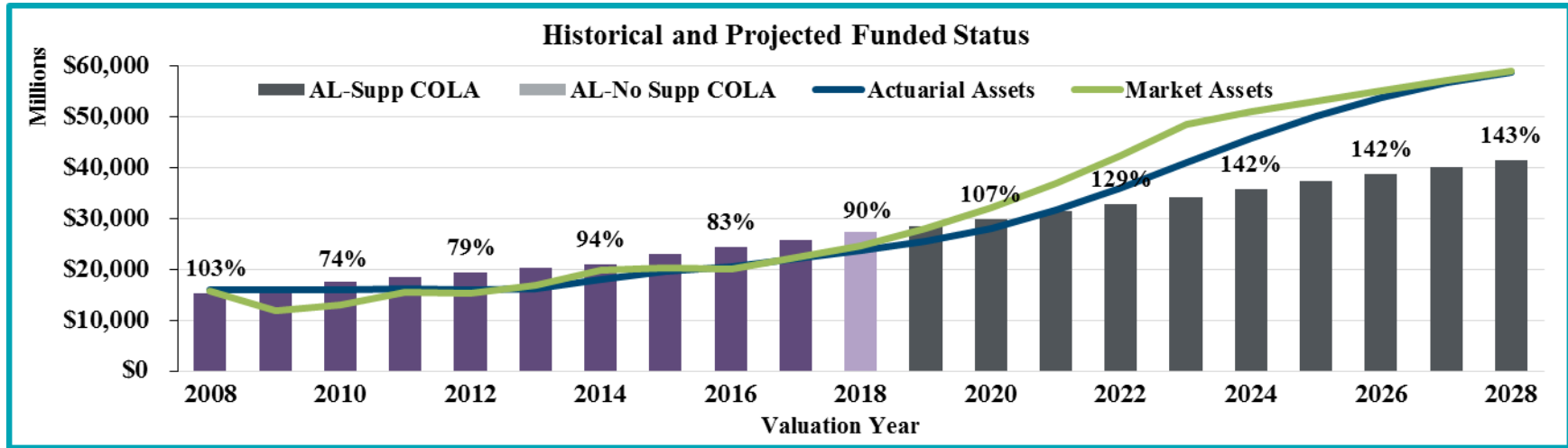
* Prior to cost-sharing adjustments

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

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Five-Year Significant Positive Scenario: 16.6% return FYE 2019-2023, 7.4% after



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

SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

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 still remain the same or increase in FYE 2021 due to the final phase-in of the assumption changes, but then decline quickly and steadily over the projection period to 4.7% or lower. The five-year significant positive scenario shows a slight increase in the first year then a steady decline in the employer contribution rate to 0.0% by FYE 2027, while both the five-year positive moderate and one-year positive shock scenarios show more gradual declines to 4.7% and 1.4% respectively by FYE 2030.

Conversely, the one-year negative shock shows an increase to 29% within two years and remains at this level throughout most of the projection period. Whereas the five-year significant negative scenarios result in only gradual increases over the next four years since the asset losses are offset by the \$690 million in deferred asset gains that will be recognized. By FYE 2025, the contribution rate reaches 32% and hits its peak in FYE 2029 at 42%. The five-year moderate negative scenario has the one year increase in FYE 2021, but then the contribution rates actually decrease gradually to 23% in FYE 2024 due the deferred asset gains. Thereafter, the rates increase steadily to 29% by 2029.

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.

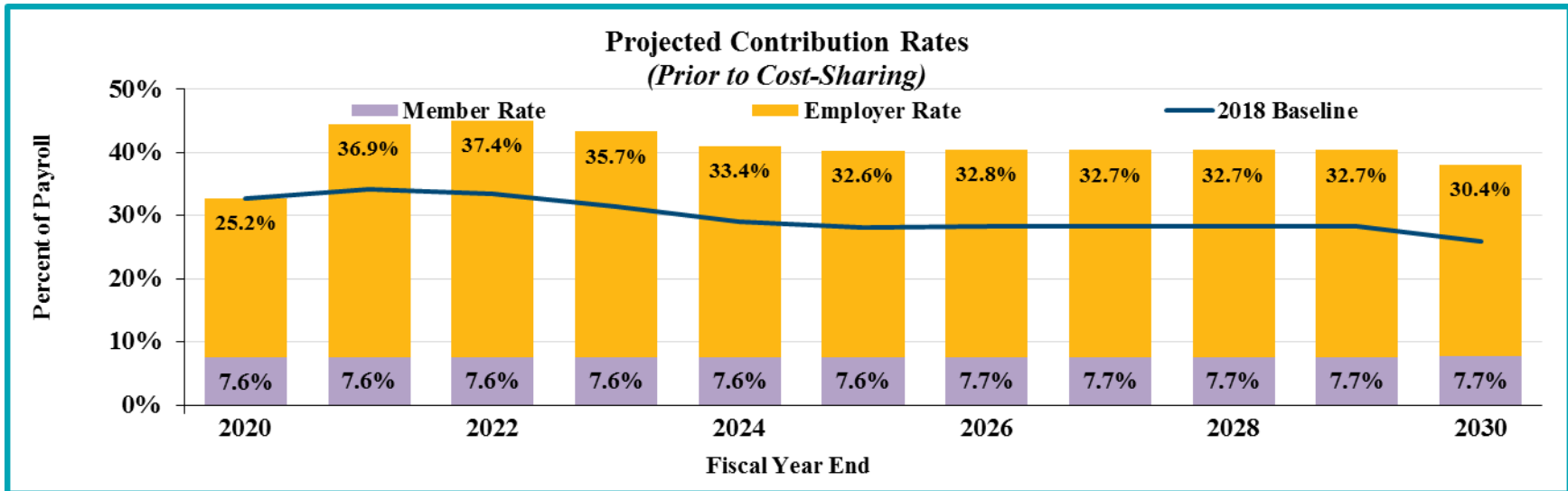
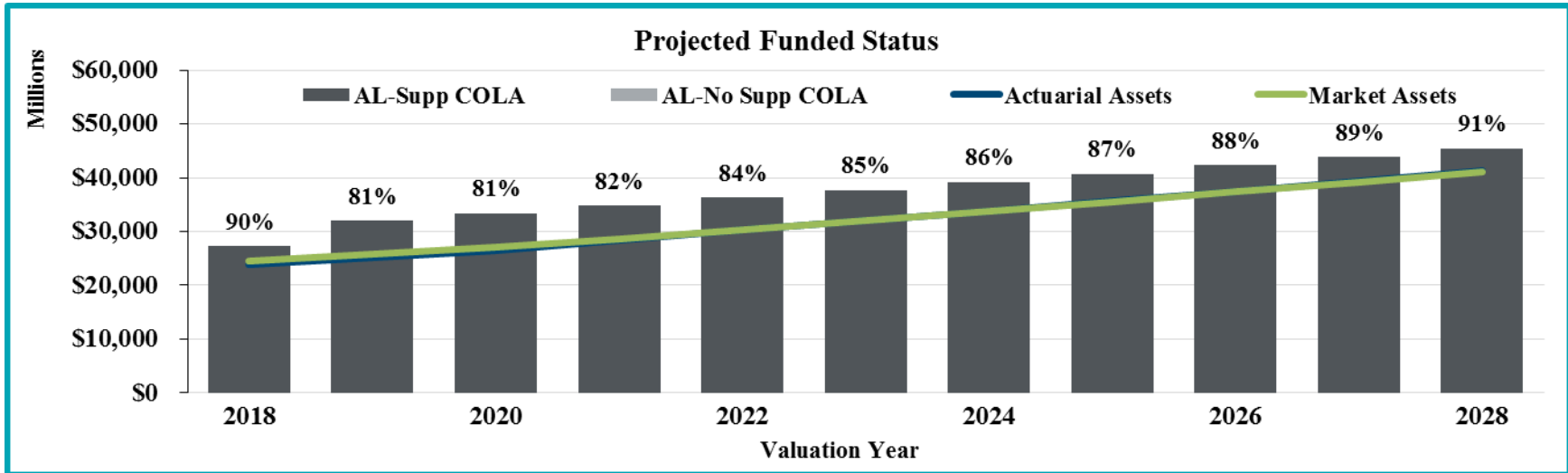
Interest Rate and Assumption Change Risk – Sensitivity Testing

As shown above, assumption changes over the last decade have increased the UAL by approximately \$2.2 billion. The most significant changes were reductions in the discount rate, projections of mortality improvement, and increases in retirement rates. The reductions in discount rates have been largely driven by declines in interest rates that affect expectations of future investment returns. If there are further declines in interest rates or if there is a desire or need to reduce investment risk that reduces expected returns, the discount rate and expected returns may need to be reduced further. The charts on the following page show the impact on projected funded status and projected contributions if the discount rate and expected returns were reduced 100 basis points.

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Discount Rate Sensitivity Testing – 100 Basis Point Reduction



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SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

Supplemental COLA Risk – Stress Testing

Supplement COLA risk is the potential for the cost of future Supplemental COLAs to increase contribution rates. Supplemental COLAs are granted if there are excess returns (the actual return on the Market Value of Assets minus the expected return on Actuarial Value of Assets). For members who retired prior to November 6, 1996 or were hired after Proposition C passed in 2012, the Supplemental COLA is only payable if the System was 100% funded the prior year.

In determining the Actuarial Liability in the funding valuation and whether or not the System is 100% funded, there are no future Supplemental COLAs assumed. In projections, however, Supplemental COLAs are assumed to be granted each year in the future with 50% probability (multiplied by the probability of being 100% funded for members with that requirement). If the Actuarial Liability were determined with the same assumption, it would affect the funded status as shown in the table below.

Table II-2				
Impact of Anticipating Future Supplemental COLAs				
(Amounts in millions)				
	Future Supplemental COLAs			
	None	Assumed	% Difference	
Actuarial Liability	\$ 27,335.4	\$ 29,185.3		6.8%
Actuarial Value of Assets	\$ 23,866.0	\$ 23,866.0		0.0%
Unfunded Actuarial Liability (actuarial value)	3,469.4	5,319.3		53.3%
Funding Ratio (actuarial value)	87.3%	81.8%		-5.5%
Market Value of Assets	\$ 24,558.0	\$ 24,558.0		0.0%
Unfunded Liability (market value)	2,777.4	4,627.3		66.6%
Funding Ratio (market value)	89.8%	84.1%		-5.7%

While current contributions rates do not anticipate any future Supplemental COLAs, when a Supplemental COLA is granted, the increase in Actuarial Liability is amortized over five years. The higher than expected investment returns that generate a Supplemental COLA are smoothed into the Actuarial Value of Assets over five years and then amortized over 20 years providing a reduction in contribution rates. In most cases, the gain from the investment returns is sufficient to offset the loss due to the Supplemental COLA in contribution rates. However, the worst situation for contribution rates is for investment returns to be just large enough to generate a Supplemental COLA. Then, the five-year amortization of the Supplemental COLA creates an increase in contribution rates that is not offset by the investment gains until after the five-year period.

To illustrate this potential risk, the projections on the following page assume investment returns are just large enough to trigger a Supplemental COLA. The 20-year investment return average is 8.18%. When a Supplemental COLA is paid the resulting UAL is amortized over 5 years so in

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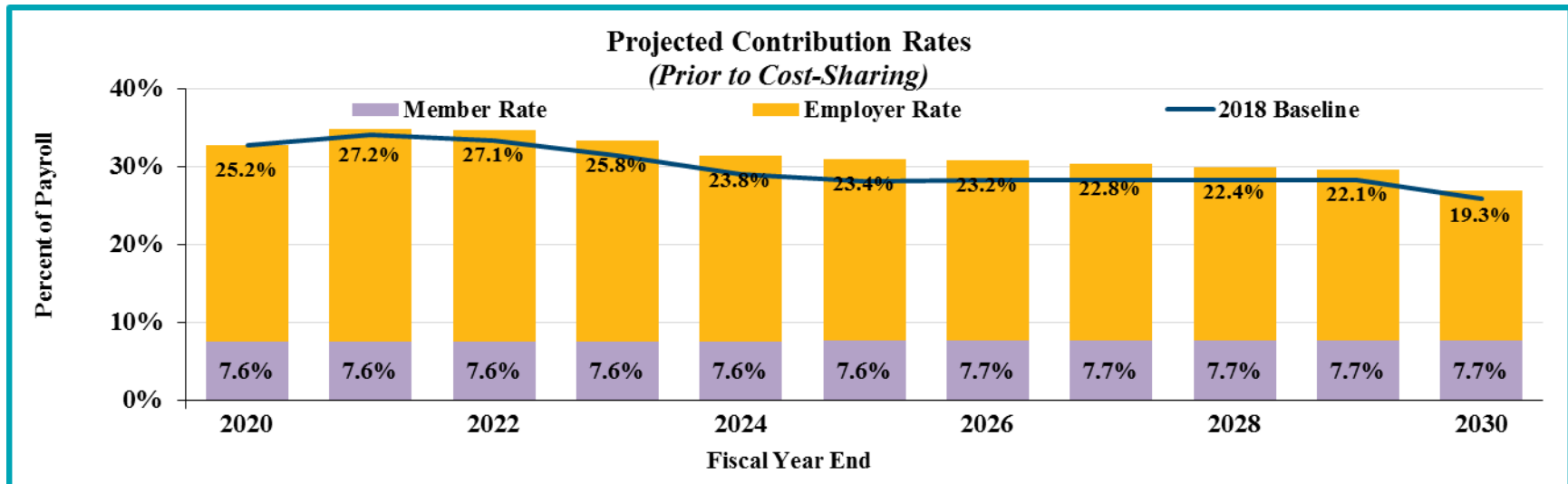
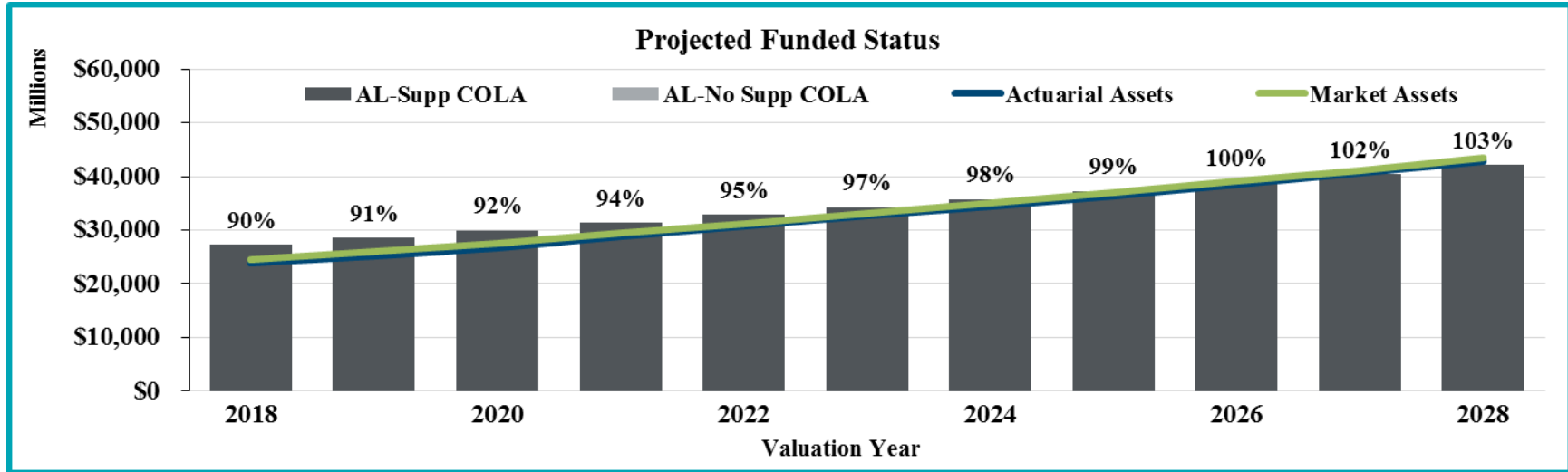
the short term the contribution rate increases to 27% but then starts to decline as the deferred investments gains are recognized.

These projections show that the 5-year amortization method manages this risk relatively well. There is a chance that contributions increase somewhat above the current level in the short-term, but the risk is limited both in scope and duration. Also, there is significant progress in the funded status of the plan reaching 100% funding in 2026.

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SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

Supplemental COLA Risk Stress Test



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

The purpose of this report is to present the July 1, 2018 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 adopted by the Board with our input at the November 14, 2018 Board 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.



William R. Hallmark, ASA, EA, FCA, MAAA
Consulting Actuary



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

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SECTION IV – 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 IV-1		
Change in Market Value of Assets		
(Amounts in thousands)		
	FYE 2018	FYE 2017
1a. Market Value, Beginning of Year	\$ 22,410,350	\$ 20,154,503
b. Restatement due adoption of GASB 75	(2,996)	
c. Market Value, BOY (as restated)	\$ 22,407,354	
2. Additions		
a. Employer Contributions	619,067	551,809
b. Member Contributions	<u>364,696</u>	<u>316,844</u>
c. Total Additions: (2a. + 2b.)	\$ 983,763	\$ 868,653
3. Net Investment Income	2,549,674	2,683,468
4. Benefits and Administrative Expenses	<u>(1,382,825)</u>	<u>(1,296,274)</u>
5. Net Increase/(Decrease): (2c.+3.+4.)	\$ 2,150,612	\$ 2,255,847
6. Market Value, End of Year	\$ 24,557,966	\$ 22,410,350
7. Estimated Rate of Return on Market Value	11.5%	13.5%

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

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SECTION IV – ASSETS

cash flows and the assumed rate of return (7.50% for the years ending 2015 – 2018, and 7.58% for 2014.) See Appendix B for further explanation of the asset valuation method.

Table IV-2	
Development of Actuarial Value of Assets for 7/1/2018	
(Amounts in thousands)	
	Total
1. Actuarial Value as of 7/1/2017	\$ 22,185,244
2. Non-Investment Cash Flow for FYE 2018	(399,062)
3. Expected Return for FYE 2018	<u>1,670,921</u>
4. Expected Actuarial Value as of 7/1/2018: (1+2+3)	\$ 23,457,103
5. Actual Return in FYE 2018	\$ 2,549,674
6. Actual Return Above Expected in 2017-2018: (5 - 3)	\$ 878,753
7. Recognition of Returns Above / (Below) Expected	
a. 2017-2018 (20% of 6.)	\$ 175,751
b. 2016-2017	226,198
c. 2015-2016	(265,276)
d. 2014-2015	(117,657)
e. 2013-2014	<u>389,909</u>
f. Total: (7a. + 7b. + 7c. + 7d. + 7e.)	\$ 408,925
8. Actuarial Value as of 7/1/2018: (4 + 7f.)	\$ 23,866,028
9. Market Value as of 7/1/2018	\$ 24,557,966
10. Ratio of Actuarial Value to Market Value: (8 / 9)	97.2%
11. Estimated Rate of Return on Actuarial Value	9.5%

Investment Performance

The internal rate of return on the Market Value of Assets, net of investment expenses, was 11.5% for the year ending June 30, 2018. This return compares to an assumed rate of return of 7.50% and resulted in actual returns that are approximately \$879 million more 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, 2018 was 9.5% compared to the assumed return of 7.50%. This return produced an overall SFERS investment gain on the Actuarial Value of Assets of \$409 million for the year ending June 30, 2018.

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SECTION V – 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.

These measures are developed for the purpose of establishing contribution rates and are not appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations.

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 V-1 below shows the present value of all future benefits as of July 1, 2018 and July 1, 2017.

Table V-1				
Present Value of Future Benefits				
(Amounts in thousands)				
	July 1, 2018	July 1, 2017	% Change	
Present Value of Future Benefits				
Actives	\$ 15,583,739	\$ 14,698,981	6.0%	
Terminated Vested	511,149	464,498	10.0%	
Members Receiving Benefits	<u>16,512,803</u>	<u>15,382,025</u>	7.4%	
Total	\$ 32,607,691	\$ 30,545,504	6.8%	

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 V-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.

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SECTION V – MEASURES OF LIABILITY

Table V-2				
Normal Cost by Group as of July 1, 2018				
<i>(Amounts in thousands)</i>				
	Police	Fire	Miscellaneous	Total
Normal Cost by Benefit Tier				
Old	\$ 0	\$ 0	\$ 104	\$ 104
New	64,517	49,910	249,851	364,278
Prop D	1,098	2,612	24,302	28,012
Prop C	31,831	20,159	157,305	209,295
Total	\$ 97,446	\$ 72,681	\$ 431,562	\$ 601,689

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 V-3 below shows the Actuarial Liability as of the valuation date separately for Police, Fire, and Miscellaneous employees.

Table V-3				
Actuarial Liability by Group as of July 1, 2018				
<i>(Amounts in thousands)</i>				
	Police	Fire	Miscellaneous	Total
Actuarial Liability				
Actives	\$ 1,506,040	\$ 1,281,604	\$ 7,523,821	\$ 10,311,465
Terminated Vested	21,958	15,966	473,225	511,149
Members Receiving Benefits				
Retirees	2,284,500	1,439,362	9,448,073	13,171,935
Disabled	677,452	995,946	446,843	2,120,241
Beneficiaries	344,835	280,511	595,281	1,220,627
Total Members Receiving Benefits	3,306,787	2,715,819	10,490,197	16,512,803
Total Actuarial Liability	\$ 4,834,785	\$ 4,013,389	\$ 18,487,243	\$ 27,335,417

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SECTION V – 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 V-4 below presents key changes in the UAL since the last valuation.

Table V-4	
Development of 2018 Experience Gain/(Loss)	
(Amounts in millions)	
Item	Cost
1. Unfunded Actuarial Liability at July 1, 2017	\$ 3,520.8
2. Middle of year actuarial liability payment	(406.8)
3. Interest to end of year on 1. and 2.	249.1
4. UAL increase due to July 1, 2018 Supplemental COLA	200.8
5. UAL increase due to discount rate decrease to 7.4%	<u>297.7</u>
6. Expected Unfunded Actuarial Liability at July 1, 2018 (1+2+3+4+5)	\$ 3,861.6
7. Actual Unfunded Liability at July 1, 2018	<u>3,469.4</u>
8. Experience Gain: (6 - 7)	\$ 392.2
9. Portion of difference due to:	
a. Investment experience on actuarial value	\$ 408.9
b. Salaries less than expected	53.7
c. Old Safety COLAs less than expected	29.6
d. Contributions (rate delay, payroll changes, and expense gain)	19.0
e. Retirements, terminations, and disabilities	(48.7)
f. New entrant loss	(39.2)
g. Audit programming changes	(29.2)
h. Mortality	(10.7)
i. Other experience	<u>8.8</u>
j. Total Gain	\$ 392.2

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SECTION VI – 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 VI-1 below develops the employer's contribution rate for FYE 2020 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 VI-1					
Development of the Net Employer Contribution Rate as of July 1, 2018 for FYE 2020					
(Amounts in millions)					
	FYE 2020				FYE 2019
	Police	Fire	Miscellaneous	TOTAL	TOTAL
1. Total Normal Cost Rate	31.56%	32.63%	15.05%	17.71%	17.25%
2. Member Contribution Rate	<u>8.09%</u>	<u>8.09%</u>	<u>7.50%</u>	<u>7.59%</u>	<u>7.58%</u>
3. Employer Normal Cost Rate (1.- 2.)	23.47%	24.54%	7.55%	10.12%	9.67%
4. a. UAL - Proposition balance as of 7/1/2018	\$105.1	\$105.0	\$657.8	\$867.9	\$959.8
b. Other UAL as of 7/1/2018	<u>236.8</u>	<u>171.6</u>	<u>2,193.2</u>	<u>2,601.6</u>	<u>2,561.0</u>
c. Net UAL - as of 7/1/2018 (4a.+4b.)	\$341.9	\$276.6	\$2,851.0	\$3,469.5	\$3,520.8
5. a. Amortization of 4a., Proposition UAL	7.81%	11.11%	3.98%	4.80%	5.07%
b. Amortization of 4b., Other UAL	<u>9.67%</u>	<u>9.67%</u>	<u>9.67%</u>	<u>9.67%</u>	<u>7.97%</u>
c. Amortization of Net UAL (5a.+5b.)	17.48%	20.78%	13.65%	14.47%	13.04%
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.)	41.55%	45.92%	21.80%	25.19%	23.31%

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

Table VI-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 25.19% and the hourly pay rates shown in the table below.

Table VI-2								
Employee and Employer Contribution Rates By Employee Group for FYE 2020								
(Amounts in thousands)								
Hire Date	Hourly Pay	Estimated Payroll FYE 2020	Base Rates		Adjusted Rates		Cost Sharing Adjustment	
			Employee	Employer	Employee	Employer		
Police and Fire								
< 11/2/1976	All	\$ 0	7.00%	25.19%	11.50%	20.69%	4.50%	
11/2/1976 - 6/30/2010	All	333,797	7.50%	25.19%	12.00%	20.69%	4.50%	
> 6/30/2010	< \$59	198,547	9.00%	25.19%	12.50%	21.69%	3.50%	
> 6/30/2010	>= \$59	17,692	9.00%	25.19%	13.00%	21.19%	4.00%	
Miscellaneous								
< 11/2/1976	< \$30	\$ 0	8.00%	25.19%	8.00%	25.19%	0.00%	
< 11/2/1976	\$30 - \$59	369	8.00%	25.19%	11.50%	21.69%	3.50%	
< 11/2/1976	>= \$59	320	8.00%	25.19%	12.00%	21.19%	4.00%	
>= 11/2/1976	< \$30	329,716	7.50%	25.19%	7.50%	25.19%	0.00%	
>= 11/2/1976	\$30 - \$59	1,616,922	7.50%	25.19%	11.00%	21.69%	3.50%	
>= 11/2/1976	>= \$59	1,006,645	7.50%	25.19%	11.50%	21.19%	4.00%	
Estimated Total Plan		\$ 3,504,010	7.59%	25.19%	11.00%	21.78%	3.41%	
Estimated Contribution Amounts			\$ 265,954	\$ 882,660	\$ 385,441	\$ 763,173	\$ 119,487	

Dollar Amounts in Thousands

Table VI-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 VI – CONTRIBUTIONS

Table VI-3									
Development of the Proposition Amortization Rate as of July 1, 2018 for FYE 2020									
(dollars in thousands)									
Propositions	Remaining Period	Police		Fire		Miscellaneous		Total	
		Outstanding Balance	Amortization Payment	Outstanding Balance	Amortization Payment	Outstanding Balance	Amortization Payment	Outstanding Balance	Amortization Payment
2000 Prop C - New Misc Ret Bfts	2	\$ 0	\$ 0	\$ 0	\$ 0	\$ 73,710	\$ 41,779	\$ 73,710	\$ 41,779
6.25% Credited Interest on EE ctrbs	4	38	11	9	3	5,293	1,556	5,341	1,570
2002 Prop H - Safety Ret Bfts	4	67,322	19,785	71,569	21,033	0	0	138,891	40,817
5.0% Credited Interest on EE ctrbs	6	(332)	(67)	(158)	(32)	(30,454)	(6,184)	(30,944)	(6,284)
2004 Prop E - New Safety LOD Bfts	7	4,257	754	5,978	1,059	0	0	10,235	1,813
2003 Prop F - Misc 3+3 Early Ret Bfts	7	0	0	0	0	12,877	2,281	12,877	2,281
Liability of 2003 Prop F (extended) - Misc 3+3 Early Ret Bfts	8	0	0	0	0	8,037	1,268	8,037	1,268
Liability of 2003 Prop F (extended) - Misc 3+3 Early Ret Bfts	9	0	0	0	0	3,840	548	3,840	548
2008 Prop B - New Misc Ret Bfts and Compound COLA	10	<u>33,822</u>	<u>4,421</u>	<u>27,601</u>	<u>3,608</u>	<u>584,447</u>	<u>76,399</u>	<u>645,869</u>	<u>84,430</u>
Proposition Total		\$ 105,107	\$ 24,904	\$ 104,999	\$ 25,671	\$ 657,750	\$ 117,647	\$ 867,856	\$ 168,222
Expected FYE 2020 Payroll Amortization Rate			\$ 318,936 7.81%		\$ 231,101 11.11%		\$ 2,953,974 3.98%		\$ 3,504,010 4.80%

**CITY AND COUNTY OF SAN FRANCISCO EMPLOYEES' RETIREMENT SYSTEM
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SECTION VI – 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. Table VI-4 on the next page 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.

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

**Table VI-4
Development of the Non-Proposition Amortization Rate as of July 1, 2018 for FYE 2020**
(dollars in thousands)

Amortization Bases	Remaining Period	Outstanding Balance	Amortization Payment
2013 Non-Proposition UAL	15	\$ 2,571,661	\$ 244,088
2014 Actuarial Gain	16	(853,587)	(77,236)
2014 Assumption Change	16	150,997	13,663
2015 Actuarial Gain	17	(765,899)	(66,318)
2015 Assumption Change ¹	17	1,191,638	82,546
2013 Supplemental COLA	15	198,885	18,877
2014 Supplemental COLA	3	151,100	58,145
2016 Actuarial Loss	18	27,459	2,283
2017 Actuarial Gain	19	(396,045)	(31,710)
2017 Supplemental COLA	4	168,735	49,588
2017 Assumption and Method Change	19	50,205	4,020
2018 Actuarial Gain	20	(392,170)	(30,320)
2018 Supplemental COLA	5	200,810	48,068
2018 Assumption Change	20	297,744	23,019
Total Non-Proposition UAL		\$ 2,601,533	\$ 338,713
Expected FYE 2020 Payroll Amortization Rate			\$ 3,504,010 9.67%

¹ The full amortization payment is being phased in over a five year period (currently in 4th year). The fully-phased in payment for the next valuation is \$108.6 million, which will increase annually with assumed payroll growth.

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

The Government Finance Officers Association (GFOA) maintains a checklist of items to be included in the System's Comprehensive Annual Financial Report (CAFR) in order to receive recognition for excellence in financial reporting. The following Tables VII-1 through VII-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 VII-1 presents an Analysis of Financial Experience for the valuation year, Table VII-2 presents the Schedule of Funded Liabilities by Type, and Table VII-3 shows the Schedule of Funding Progress.

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

Table VII-1 ANALYSIS OF FINANCIAL EXPERIENCE (Amounts in thousands)						
Gain or (Loss) for Year Ending	(A) Investment Income	(B) Contribution Income ¹	(C) Combined Liability Experience	(D) (A)+(B)+(C) Gain or (Loss) From Experience	(E) Non-Recurring Items ²	(F) (D)+(E) Composite Gain or (Loss) During Year
July 1, 2018	\$ 408,925	\$ 19,028	\$ (35,783)	\$ 392,170	\$ (498,554)	\$ (106,384)
July 1, 2017	405,685	(55,038)	45,496	396,143	(250,285)	145,858
July 1, 2016	(51,452)	58,461	(34,514)	(27,505)	(429,336)	(456,841)
July 1, 2015	545,506	97,444	127,610	770,560	(1,048,350)	(277,790)
July 1, 2014	749,173	(41,626)	157,931	865,478	(153,100)	712,378
July 1, 2013	(579,555)	(65,637)	9,873	(635,319)	0	(635,319)
July 1, 2012	(1,135,013)	(55,440)	187,116	(1,003,337)	(135,527)	(1,138,864)
July 1, 2011	(559,587)		183,528	(376,059)	(261,317)	(637,376)
July 1, 2010	(755,593)		294,571	(461,022)	(517,416)	(978,438)
July 1, 2009	(722,712)		(223,256)	(945,968)	0	(945,968)

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

² Includes Assumption, Method, and Benefit Changes as well as Supplemental COLAs.

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

Table VII-2									
SCHEDULE OF FUNDED LIABILITIES BY TYPE									
(Amounts in millions)									
Valuation Date July 1,	(A)	(B)	(C)	Actuarial Value of Assets	Portion of Actuarial Liabilities Covered by Reported Assets				
	Active Member Contributions	Retirees, Beneficiaries, and Inactives	Remaining Active Members' Liabilities		(A)	(B)	(C)		
2018 ¹	\$ 3,496	\$ 17,024	\$ 6,816	\$ 23,866	100%	100%	49%		
2017 ²	3,325	15,847	6,535	22,185	100%	100%	46%		
2016 ³	3,175	14,941	6,288	20,655	100%	100%	40%		
2015 ⁴	2,995	13,931	6,045	19,653	100%	100%	45%		
2014 ⁵	2,825	12,901	5,397	18,012	100%	100%	42%		
2013	2,633	12,257	5,335	16,303	100%	100%	26%		
2012 ⁵	2,451	11,658	5,285	16,028	100%	100%	36%		
2011 ⁵	2,364	10,987	5,248	16,313	100%	100%	56%		
2010 ⁶	2,331	10,171	5,141	16,069	100%	100%	69%		
2009	2,376	9,028	5,095	16,005	100%	100%	90%		

¹ Reflects revised discount rate

² Reflects revised wage inflation assumption.

³ Reflects 2013 and 2014 Retroactive Supplemental COLA benefits for Post96 Retirees.

⁴ Reflects revised demographic assumptions.

⁵ Reflects revised discount rate and wage inflation.

⁶ Reflects revised economic and demographic assumptions.

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

**Table VII-3
SCHEDULE OF FUNDING PROGRESS**
(in thousands)

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, 2018	\$ 23,866,027	\$ 27,335,417	\$ 3,469,390	87%	\$ 3,385,517	102%
July 1, 2017	22,185,244	25,706,090	3,520,846	86%	3,242,468	109%
July 1, 2016	20,654,703	24,403,882	3,749,179	85%	3,062,422	122%
July 1, 2015	19,653,338	22,907,892	3,254,554	86%	2,820,968	115%
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%

**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, 2018	July 1, 2017	% Change
Total			
Count	33,946	33,447	1.5%
Average Current Age	46.6	46.7	-0.1
Average Service	10.6	10.8	-0.2
Annual Pensionable Earnings	\$ 3,235,979,830	\$ 3,102,672,358	4.3%
Average Pensionable Earnings	\$ 95,327	\$ 92,764	2.8%
Police			
Count	2,394	2,293	4.4%
Average Current Age	40.6	41.0	-0.4
Average Service	12.0	12.4	-0.4
Annual Pensionable Earnings	\$ 291,499,014	\$ 276,596,552	5.4%
Average Pensionable Earnings	\$ 121,762	\$ 120,626	0.9%
Fire			
Count	1,642	1,609	2.1%
Average Current Age	44.0	44.3	-0.3
Average Service	13.4	13.8	-0.4
Annual Pensionable Earnings	\$ 210,854,043	\$ 204,443,368	3.1%
Average Pensionable Earnings	\$ 128,413	\$ 127,062	1.1%
Miscellaneous			
Count	29,910	29,545	1.2%
Average Current Age	47.3	47.3	0.0
Average Service	10.4	10.5	-0.1
Annual Pensionable Earnings	\$ 2,733,626,773	\$ 2,621,632,438	4.3%
Average Pensionable Earnings	\$ 91,395	\$ 88,734	3.0%

**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, 2018			
	Counts		Annual Pensionable Earnings
Total			
Old	24	\$	2,543,478
New	18,483		1,905,554,026
Prop D	1,660		151,446,009
Prop C	13,779		1,176,436,317
Total	33,946	\$	3,235,979,830
Police			
Old	0	\$	0
New	1,399		192,324,859
Prop D	23		2,949,200
Prop C*	972		96,224,955
Total	2,394	\$	291,499,014
Fire			
Old	2	\$	332,396
New	994		147,661,492
Prop D	53		6,716,226
Prop C	593		56,143,929
Total	1,642	\$	210,854,043
Miscellaneous			
Old	22	\$	2,211,082
New	16,090		1,565,567,675
Prop D	1,584		141,780,583
Prop C	12,214		1,024,067,433
Total	29,910	\$	2,733,626,773

** Includes 111 members in the Sheriffs Plan (Charter A8.608) and 98 members in the Miscellaneous Safety Plan(Charter A8.610)*

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

Table A-3			
Non-Active Member Data - Total System			
	July 1, 2018	July 1, 2017	Change
Retired			
Count	23,404	22,587	3.6%
Average Age	70.5	70.4	0.1
Total Annual Benefit*	\$ 1,124,937,875	\$ 1,045,974,914	7.5%
Average Annual Benefit	\$ 48,066	\$ 46,309	3.8%
Disabled			
Count	2,554	2,572	-0.7%
Average Age	69.1	68.8	0.3
Total Annual Benefit*	\$ 164,031,034	\$ 157,954,899	3.8%
Average Annual Benefit	\$ 64,225	\$ 61,413	4.6%
Beneficiaries			
Count	4,007	3,968	1.0%
Average Age	77.4	77.3	0.1
Total Annual Benefit*	\$ 135,355,732	\$ 128,500,450	5.3%
Average Annual Benefit	\$ 33,780	\$ 32,384	4.3%
Payee Total			
Count	29,965	29,127	2.9%
Average Age	71.3	71.2	0.1
Total Annual Benefit*	\$ 1,424,324,641	\$ 1,332,430,263	6.9%
Average Annual Benefit	\$ 47,533	\$ 45,746	3.9%
Inactives			
Count	9,183	8,420	9.1%
Average Age	47.1	47.3	-0.2
Total Contribution Balance with Interest	\$ 255,588,224	\$ 228,851,427	11.7%
Average Contribution Balance with Interest	\$ 27,833	\$ 27,180	2.4%

* Benefits provided in June 30 valuation data, plus estimated Basic and Supplemental COLA effective July 1, 2018.

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

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

Table A-4			
Non-Active Member Data - Old Safety - Prop H			
Pre 7/1/1975 Retirements			
	July 1, 2018	July 1, 2017	Change
Retired			
Count	5	6	-16.7%
Average Age	89.4	89.8	-0.4
Total Annual Benefit*	\$ 140,713	\$ 180,260	-21.9%
Average Annual Benefit	\$ 28,143	\$ 30,043	-6.3%
Disabled			
Count	54	63	-14.3%
Average Age	84.4	83.8	0.6
Total Annual Benefit*	\$ 2,110,886	\$ 2,403,963	-12.2%
Average Annual Benefit	\$ 39,090	\$ 38,158	2.4%
Beneficiaries			
Count	120	133	-9.8%
Average Age	84.5	84.6	-0.1
Total Annual Benefit*	\$ 3,948,134	\$ 4,297,026	-8.1%
Average Annual Benefit	\$ 32,901	\$ 32,308	1.8%
Payee Total			
Count	179	202	-11.4%
Average Age	84.6	84.5	0.1
Total Annual Benefit*	\$ 6,199,733	\$ 6,881,249	-9.9%
Average Annual Benefit	\$ 34,635	\$ 34,066	1.7%
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 and Supplemental COLA effective July 1, 2018.
If applicable, limited by Section 415(b) of the Internal Revenue Code.

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

Table A-5				
Non-Active Member Data - Old Safety - Prop M				
Charters A8.559, A8.585, A8.595, and A8.596				
	July 1, 2018		July 1, 2017	Change
Retired				
Count	1,002		1,043	-3.9%
Average Age	76.0		75.4	0.6
Total Annual Benefit*	\$ 104,955,370	\$	105,095,392	-0.1%
Average Annual Benefit	\$ 104,746	\$	100,763	4.0%
Disabled				
Count	592		615	-3.7%
Average Age	76.5		75.7	0.8
Total Annual Benefit*	\$ 61,848,926	\$	62,065,184	-0.3%
Average Annual Benefit	\$ 104,475	\$	100,919	3.5%
Beneficiaries				
Count	682		682	0.0%
Average Age	80.2		79.8	0.4
Total Annual Benefit*	\$ 55,628,396	\$	53,783,874	3.4%
Average Annual Benefit	\$ 81,567	\$	78,862	3.4%
Payee Total				
Count	2,276		2,340	-2.7%
Average Age	77.4		76.8	0.6
Total Annual Benefit*	\$ 222,432,692	\$	220,944,450	0.7%
Average Annual Benefit	\$ 97,730	\$	94,421	3.5%
Inactives				
Count	2		2	0.0%
Average Age	72.5		71.5	1.0
Total Contribution Balance with Interest	\$ 2,591	\$	2,491	4.0%
Average Contribution Balance with Interest	\$ 1,295	\$	1,246	4.0%

* Benefits provided in June 30 valuation data, plus estimated Basic and Supplemental COLA effective July 1, 2018.
If applicable, limited by Section 415(b) of the Internal Revenue Code.

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

Table A-6			
Non-Active Member Data - New Safety			
	July 1, 2018	July 1, 2017	Change
Retired			
Count	1,662	1,539	8.0%
Average Age	62.8	62.4	0.4
Total Annual Benefit*	\$ 179,164,375	\$ 159,918,518	12.0%
Average Annual Benefit	\$ 107,800	\$ 103,911	3.7%
Disabled			
Count	556	526	5.7%
Average Age	63.0	62.5	0.5
Total Annual Benefit*	\$ 58,703,838	\$ 53,415,037	9.9%
Average Annual Benefit	\$ 105,582	\$ 101,549	4.0%
Beneficiaries			
Count	124	116	6.9%
Average Age	60.5	59.6	0.9
Total Annual Benefit*	\$ 7,969,218	\$ 7,085,190	12.5%
Average Annual Benefit	\$ 64,268	\$ 61,079	5.2%
Payee Total			
Count	2,342	2,181	7.4%
Average Age	62.7	62.3	0.4
Total Annual Benefit*	\$ 245,837,431	\$ 220,418,745	11.5%
Average Annual Benefit	\$ 104,969	\$ 101,063	3.9%
Inactives			
Count	283	272	4.0%
Average Age	43.8	43.8	0.0
Total Contribution Balance with Interest	\$ 13,707,053	\$ 13,872,154	-1.2%
Average Contribution Balance with Interest	\$ 48,435	\$ 51,001	-5.0%

* Benefits provided in June 30 valuation data, plus estimated Supplemental COLA effective July 1, 2018.

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

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

Table A-7			
Non-Active Member Data - Miscellaneous			
	July 1, 2018	July 1, 2017	Change
Retired			
Count	20,735	19,999	3.7%
Average Age	70.8	70.7	0.1
Total Annual Benefit*	\$ 840,677,417	\$ 780,780,744	7.7%
Average Annual Benefit	\$ 40,544	\$ 39,041	3.8%
Disabled			
Count	1,352	1,368	-1.2%
Average Age	67.7	67.3	0.4
Total Annual Benefit*	\$ 41,367,384	\$ 40,070,715	3.2%
Average Annual Benefit	\$ 30,597	\$ 29,291	4.5%
Beneficiaries			
Count	3,081	3,037	1.4%
Average Age	77.1	77.1	0.0
Total Annual Benefit*	\$ 67,809,984	\$ 63,334,360	7.1%
Average Annual Benefit	\$ 22,009	\$ 20,854	5.5%
Payee Total			
Count	25,168	24,404	3.1%
Average Age	71.4	71.3	0.1
Total Annual Benefit*	\$ 949,854,785	\$ 884,185,819	7.4%
Average Annual Benefit	\$ 37,741	\$ 36,231	4.2%
Inactives			
Count	8,898	8,146	9.2%
Average Age	47.2	47.4	-0.2
Total Contribution Balance with Interest	\$ 241,878,580	\$ 214,976,781	12.5%
Average Contribution Balance with Interest	\$ 27,183	\$ 26,390	3.0%

* Benefits provided in June 30 valuation data, plus estimated Supplemental COLA effective July 1, 2018.

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

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

Table A-8												
Distribution of Active Members as of July 1, 2018												
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	166	164	0	0	0	0	0	0	0	0	0	330
25 to 29	466	1,333	106	0	0	0	0	0	0	0	0	1,905
30 to 34	567	2,237	842	151	0	0	0	0	0	0	0	3,797
35 to 39	403	1,925	1,112	757	102	0	0	0	0	0	0	4,299
40 to 44	287	1,301	933	896	556	83	0	0	0	0	0	4,056
45 to 49	257	1,126	806	978	1,021	569	81	1	0	0	0	4,839
50 to 54	203	917	707	814	1,137	785	474	71	1	0	0	5,109
55 to 59	136	719	615	713	1,006	693	604	371	92	0	0	4,949
60 to 64	53	399	396	520	699	436	375	321	76	12	0	3,287
65 to 69	19	96	140	187	232	138	109	98	33	15	0	1,067
70 and up	6	25	36	47	59	57	26	26	12	14	0	308
Total Count	2,563	10,242	5,693	5,063	4,812	2,761	1,669	888	214	41	0	33,946

Table A-9												
Distribution of Active Members as of July 1, 2018												
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	\$ 61,828	\$ 66,963	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 64,380
25 to 29	73,420	75,793	93,061	0	0	0	0	0	0	0	0	76,173
30 to 34	79,949	81,251	98,655	107,437	0	0	0	0	0	0	0	85,957
35 to 39	84,796	84,985	97,796	108,521	116,884	0	0	0	0	0	0	93,182
40 to 44	81,370	85,879	98,786	107,832	114,539	111,497	0	0	0	0	0	97,831
45 to 49	81,508	83,718	93,310	107,710	111,338	126,120	136,388	135,790	0	0	0	101,753
50 to 54	76,595	86,204	89,095	99,458	105,197	118,296	127,346	121,274	129,116	0	0	101,805
55 to 59	81,191	84,543	87,104	98,803	98,391	106,275	113,507	109,058	101,763	0	0	98,374
60 to 64	77,988	85,812	90,883	93,777	93,325	100,087	111,335	105,295	103,984	87,677	0	96,290
65 to 69	105,590	75,854	83,925	89,787	97,458	98,513	106,120	108,023	111,826	110,795	0	95,162
70 and up	55,748	71,628	90,671	80,443	99,736	95,718	108,234	95,481	101,169	102,104	0	92,372
Avg. Salary	\$ 78,559	\$ 82,651	\$ 94,259	\$ 102,917	\$ 104,240	\$ 112,356	\$ 117,495	\$ 108,193	\$ 104,198	\$ 101,061	\$ 0	\$ 95,327

**CITY AND COUNTY OF SAN FRANCISCO EMPLOYEES' RETIREMENT SYSTEM
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Table A-10												
Distribution of Active Members as of July 1, 2018												
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	5	43	0	0	0	0	0	0	0	0	0	48
25 to 29	17	268	27	0	0	0	0	0	0	0	0	312
30 to 34	7	208	141	70	0	0	0	0	0	0	0	426
35 to 39	3	76	86	195	28	0	0	0	0	0	0	388
40 to 44	5	28	35	111	103	17	0	0	0	0	0	299
45 to 49	1	13	18	73	122	144	15	0	0	0	0	386
50 to 54	7	21	8	25	79	134	91	6	0	0	0	371
55 to 59	1	11	6	8	23	47	27	6	2	0	0	131
60 to 64	1	0	0	1	3	10	8	2	2	0	0	27
65 to 69	0	1	0	2	0	2	0	1	0	0	0	6
70 and up	0	0	0	0	0	0	0	0	0	0	0	0
Total Count	47	669	321	485	358	354	141	15	4	0	0	2,394

Table A-11												
Distribution of Active Members as of July 1, 2018												
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	\$ 85,008	\$ 85,997	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 85,894
25 to 29	81,077	89,761	113,186	0	0	0	0	0	0	0	0	91,315
30 to 34	81,741	90,644	116,483	129,127	0	0	0	0	0	0	0	105,374
35 to 39	73,863	92,988	116,951	129,040	137,011	0	0	0	0	0	0	119,447
40 to 44	105,914	100,067	119,797	131,241	140,804	125,658	0	0	0	0	0	129,535
45 to 49	119,851	97,352	125,339	129,305	135,209	145,969	179,456	0	0	0	0	138,051
50 to 54	107,129	135,194	122,400	131,889	131,643	142,143	158,440	155,102	0	0	0	141,944
55 to 59	119,851	139,990	127,783	122,196	137,020	136,593	154,389	163,044	183,687	0	0	141,141
60 to 64	65,642	0	0	125,750	133,077	125,090	151,676	137,791	119,432	0	0	132,199
65 to 69	0	258,321	0	136,466	0	126,533	0	128,249	0	0	0	152,095
70 and up	0	0	0	0	0	0	0	0	0	0	0	0
Avg. Salary	\$ 88,978	\$ 93,243	\$ 117,548	\$ 129,654	\$ 136,271	\$ 141,601	\$ 159,516	\$ 154,180	\$ 151,560	\$ 0	\$ 0	\$ 121,762



**CITY AND COUNTY OF SAN FRANCISCO EMPLOYEES' RETIREMENT SYSTEM
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Table A-12												
Distribution of Active Members as of July 1, 2018												
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	0	7	0	0	0	0	0	0	0	0	0	7
25 to 29	11	95	4	0	0	0	0	0	0	0	0	110
30 to 34	13	161	41	4	0	0	0	0	0	0	0	219
35 to 39	12	111	54	53	14	0	0	0	0	0	0	244
40 to 44	2	40	52	46	65	9	0	0	0	0	0	214
45 to 49	1	18	20	48	120	89	17	1	0	0	0	314
50 to 54	2	5	4	23	101	99	88	6	0	0	0	328
55 to 59	0	2	5	9	44	32	58	7	1	0	0	158
60 to 64	0	0	1	3	11	4	15	3	0	0	0	37
65 to 69	0	1	0	0	0	2	5	0	1	2	0	11
70 and up	0	0	0	0	0	0	0	0	0	0	0	0
Total Count	41	440	181	186	355	235	183	17	2	2	0	1,642

Table A-13												
Distribution of Active Members as of July 1, 2018												
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	\$ 0	\$ 81,660	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 81,660
25 to 29	70,261	82,255	97,825	0	0	0	0	0	0	0	0	81,622
30 to 34	74,570	90,555	123,954	111,313	0	0	0	0	0	0	0	96,238
35 to 39	77,487	93,320	124,100	140,834	139,615	0	0	0	0	0	0	112,330
40 to 44	70,261	92,383	115,994	140,824	148,220	140,811	0	0	0	0	0	127,323
45 to 49	98,267	102,910	124,889	136,606	141,250	153,307	172,476	135,790	0	0	0	142,254
50 to 54	70,261	74,200	124,898	136,297	144,110	155,940	165,150	159,713	0	0	0	151,313
55 to 59	0	121,290	123,942	137,091	140,241	155,321	161,502	160,834	174,396	0	0	151,293
60 to 64	0	0	67,829	161,902	142,820	153,087	168,781	168,093	0	0	0	156,024
65 to 69	0	45,000	0	0	0	144,576	155,488	0	152,763	166,198	0	145,159
70 and up	0	0	0	0	0	0	0	0	0	0	0	0
Avg. Salary	\$ 74,425	\$ 89,841	\$ 120,947	\$ 138,704	\$ 143,199	\$ 154,134	\$ 164,708	\$ 160,246	\$ 163,580	\$ 166,198	\$ 0	\$ 128,413



**CITY AND COUNTY OF SAN FRANCISCO EMPLOYEES' RETIREMENT SYSTEM
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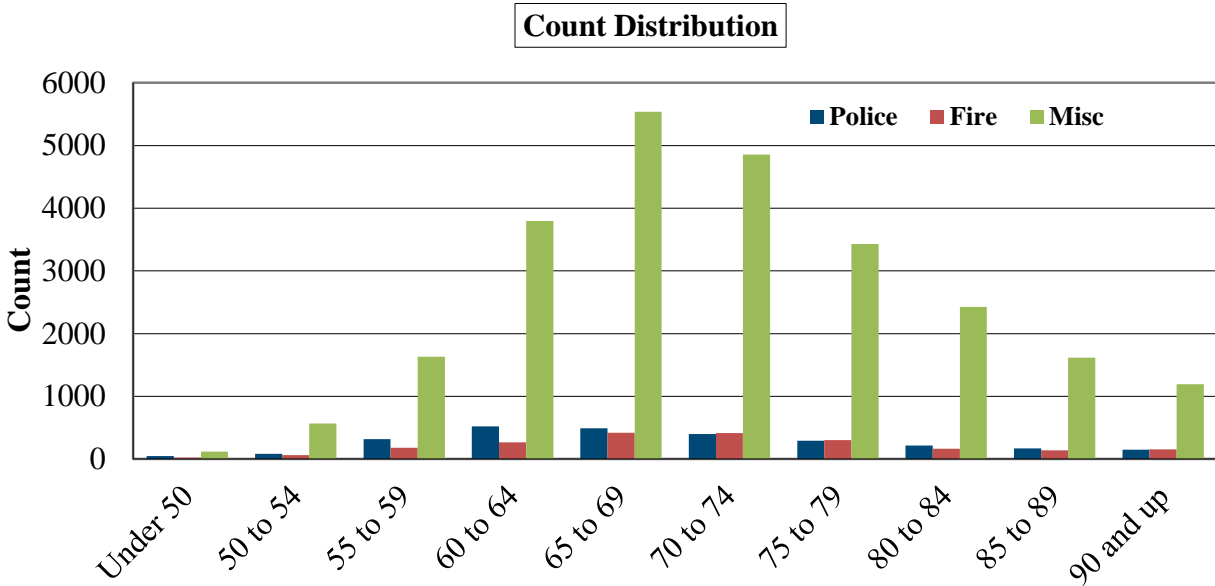
Table A-14												
Distribution of Active Members as of July 1, 2018												
Count By Age/Service - Miscellaneous												
Age	Years of Service										Total	
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 and up		
Under 25	161	114	0	0	0	0	0	0	0	0	0	275
25 to 29	438	970	75	0	0	0	0	0	0	0	0	1,483
30 to 34	547	1,868	660	77	0	0	0	0	0	0	0	3,152
35 to 39	388	1,738	972	509	60	0	0	0	0	0	0	3,667
40 to 44	280	1,233	846	739	388	57	0	0	0	0	0	3,543
45 to 49	255	1,095	768	857	779	336	49	0	0	0	0	4,139
50 to 54	194	891	695	766	957	552	295	59	1	0	0	4,410
55 to 59	135	706	604	696	939	614	519	358	89	0	0	4,660
60 to 64	52	399	395	516	685	422	352	316	74	12	12	3,223
65 to 69	19	94	140	185	232	134	104	97	32	13	13	1,050
70 and up	6	25	36	47	59	57	26	26	12	14	14	308
Total Count	2,475	9,133	5,191	4,392	4,099	2,172	1,345	856	208	39	39	29,910

Table A-15												
Distribution of Active Members as of July 1, 2018												
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	\$ 61,108	\$ 58,881	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 60,185
25 to 29	73,202	71,301	85,562	0	0	0	0	0	0	0	0	72,584
30 to 34	80,054	79,403	93,275	87,518	0	0	0	0	0	0	0	82,618
35 to 39	85,107	84,103	94,640	97,296	102,188	0	0	0	0	0	0	89,129
40 to 44	81,011	85,346	96,859	102,262	101,924	102,645	0	0	0	0	0	93,375
45 to 49	81,292	83,241	91,737	104,252	102,992	110,411	110,683	0	0	0	0	95,296
50 to 54	75,558	85,117	88,506	97,293	98,907	105,756	106,478	113,924	129,116	0	0	94,746
55 to 59	80,905	83,575	86,395	98,039	95,483	101,398	106,017	107,140	99,106	0	0	95,378
60 to 64	78,226	85,812	90,941	93,319	92,356	98,992	107,970	104,493	103,566	87,677	87,677	95,303
65 to 69	105,590	74,241	83,925	89,282	97,458	97,408	103,746	107,814	110,547	102,272	102,272	94,313
70 and up	55,748	71,628	90,671	80,443	99,736	95,718	108,234	95,481	101,169	102,104	102,104	92,372
Avg. Salary	\$ 78,429	\$ 81,529	\$ 91,889	\$ 98,450	\$ 98,068	\$ 103,070	\$ 106,666	\$ 106,353	\$ 102,716	\$ 97,721	\$ 97,721	\$ 91,395

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APPENDIX A – MEMBERSHIP INFORMATION

Table A-16				
Distribution of Retirees, Disabled Members, and Beneficiaries as of July 1, 2018				
Age	Count			Total
	Police	Fire	Misc	
Under 50	47	23	120	190
50 to 54	84	64	566	714
55 to 59	319	179	1,630	2,128
60 to 64	519	265	3,797	4,581
65 to 69	488	417	5,539	6,444
70 to 74	398	412	4,855	5,665
75 to 79	293	301	3,428	4,022
80 to 84	216	166	2,426	2,808
85 to 89	170	137	1,614	1,921
90 and up	146	153	1,193	1,492
Total	2,680	2,117	25,168	29,965

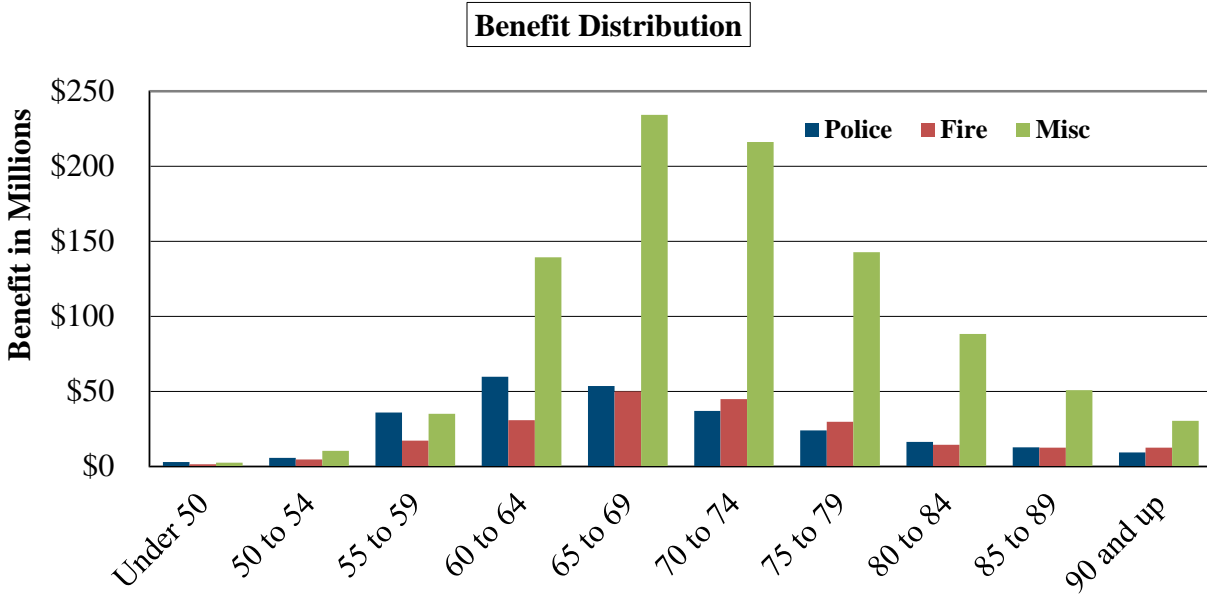


**CITY AND COUNTY OF SAN FRANCISCO EMPLOYEES' RETIREMENT SYSTEM
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APPENDIX A – MEMBERSHIP INFORMATION

Table A-17				
Distribution of Retirees, Disabled Members, and Beneficiaries as of July 1, 2018				
Annual Benefit *				
Age	Police	Fire	Misc	Total
Under 50	\$ 2,965,660	\$ 1,435,292	\$ 2,499,043	\$ 6,899,995
50 to 54	5,595,145	4,506,392	10,378,585	20,480,122
55 to 59	35,852,054	17,075,551	35,115,901	88,043,506
60 to 64	59,656,969	30,729,966	139,253,818	229,640,753
65 to 69	53,561,443	49,998,185	234,314,109	337,873,737
70 to 74	36,967,479	44,867,864	216,223,164	298,058,507
75 to 79	23,889,627	29,660,703	142,808,478	196,358,808
80 to 84	16,288,144	14,415,096	88,202,162	118,905,403
85 to 89	12,636,179	12,521,574	50,804,410	75,962,164
90 and up	9,295,729	12,550,803	30,255,113	52,101,645
Total	\$ 256,708,430	\$ 217,761,426	\$ 949,854,785	\$ 1,424,324,641

* Benefits used in the July 1, 2018 actuarial valuation



**CITY AND COUNTY OF SAN FRANCISCO EMPLOYEES' RETIREMENT SYSTEM
JULY 1, 2018 ACTUARIAL VALUATION REPORT**

APPENDIX A – MEMBERSHIP INFORMATION

Table A-18 Summary and Reconciliation of Participant Data Total System								
	Active	Vested Terminated	Reciprocal	Non-Vested Terminated	Disabled	Retired	Beneficiaries	Totals
Participants as of 7/1/2017	33,447	2,063	1,039	5,318	2,572	22,587	3,968	70,994
New Entrants	2,991	0	4	427	0	0	0	3,422
Returned to Work	179	(52)	(3)	(120)	(1)	(3)	0	0
Vested Terminations	(302)	302	0	0	0	0	0	0
Reciprocals	(33)	(9)	64	(22)	0	0	0	0
Non Vested Terminations	(601)	0	0	601	0	0	0	0
Refund/Withdrawal	(550)	(22)	(8)	(228)	0	0	0	(808)
Retirements	(1,162)	(118)	(34)	(7)	0	1,321	0	0
Disabilities	(18)	(9)	(1)	0	54	(55)	0	(29)
Benefit Ceased*	(5)	(10)	0	0	(90)	(623)	(242)	(970)
New Continuants	0	0	0	0	0	34	281	315
New Dissolutions	0	0	0	0	0	5	0	5
Duplicate Adjustments	0	0	0	0	0	128	0	128
Miscellaneous Adjustments	0	2	(1)	7	19	10	0	37
Participants as of 7/1/2018	33,946	2,147	1,060	5,976	2,554	23,404	4,007	73,094

* Includes deaths and benefits that were terminated or suspended

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

Table A-19 Summary and Reconciliation of Participant Data Police								
	Active	Vested Terminated	Reciprocal	Non-Vested Terminated	Disabled	Retired	Beneficiaries	Totals
Participants as of 7/1/2017	2,293	53	15	131	516	1,599	533	5,140
New Entrants	213	0	0	17	0	0	0	230
Returned to Work	4	(2)	0	(2)	0	0	0	0
Vested Terminations	(9)	9	0	0	0	0	0	0
Non Vested Terminations	(11)	0	0	11	0	0	0	0
Reciprocals	(1)	0	3	(2)	0	0	0	0
Refund/Withdrawal	(9)	(2)	0	(12)	0	0	0	(23)
Retirements	(79)	(3)	0	0	0	82	0	0
Disabilities	(7)	0	(1)	0	27	(19)	0	0
Benefit Ceased*	0	(1)	0	0	(19)	(34)	(36)	(90)
New Continuants	0	0	0	0	0	0	29	29
New Dissolutions	0	0	0	0	0	2	0	2
Transferred In (From Fire)	0	0	0	0	0	0	0	0
Transferred In (From Misc)	0	0	0	0	0	0	0	0
Transferred Out (To Fire)	0	0	0	0	0	0	0	0
Transferred Out (To Misc)	0	0	0	0	0	0	0	0
Duplicate Adjustments	0	0	0	0	0	0	0	0
Miscellaneous Adjustments	0	0	0	0	(1)	1	0	0
Participants as of 7/1/2018	2,394	54	17	143	523	1,631	526	5,288

* Includes deaths and benefits that were terminated or suspended

**CITY AND COUNTY OF SAN FRANCISCO EMPLOYEES' RETIREMENT SYSTEM
JULY 1, 2018 ACTUARIAL VALUATION REPORT**

APPENDIX A – MEMBERSHIP INFORMATION

Table A-20 Summary and Reconciliation of Participant Data Fire								
	Active	Vested Terminated	Reciprocal	Non-Vested Terminated	Disabled	Retired	Beneficiaries	Totals
Participants as of 7/1/2017	1,609	36	22	17	688	989	398	3,759
New Entrants	110	0	0	0	0	0	0	110
Returned to Work	0	0	0	0	0	0	0	0
Vested Terminations	(2)	2	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	(1)	0	0	(3)	0	0	0	(4)
Retirements	(69)	(2)	0	0	0	71	0	0
Disabilities	(2)	(1)	0	0	10	(7)	0	0
Benefit Ceased*	(1)	(2)	0	0	(19)	(18)	(22)	(62)
New Continuants	0	0	0	0	0	0	24	24
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)	0	0	0	0	0	0	0	0
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 7/1/2018	1,642	33	22	16	679	1,038	400	3,830

* Includes deaths and benefits that were terminated or suspended

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

Table A-21 Summary and Reconciliation of Participant Data Miscellaneous								
	Active	Vested Terminated	Reciprocal	Non-Vested Terminated	Disabled	Retired	Beneficiaries	Totals
Participants as of 7/1/2017	29,545	1,974	1,002	5,170	1,368	19,999	3,037	62,095
New Entrants	2,668	0	4	410	0	0	0	3,082
Returned to Work	175	(50)	(3)	(118)	(1)	(3)	0	0
Vested Terminations	(291)	291	0	0	0	0	0	0
Reciprocals	(32)	(9)	61	(20)	0	0	0	0
Non Vested Terminations	(588)	0	0	588	0	0	0	0
Refund/Withdrawal	(540)	(20)	(8)	(213)	0	0	0	(781)
Retirements	(1,014)	(113)	(34)	(7)	0	1,168	0	0
Disabilities	(9)	(8)	0	0	17	(29)	0	(29)
Benefit Ceased*	(4)	(7)	0	0	(52)	(571)	(184)	(818)
New Continuants	0	0	0	0	0	34	228	262
New Dissolutions	0	0	0	0	0	0	0	0
Transferred In (From Fire)	0	0	0	0	0	0	0	0
Transferred In (From Police)	0	0	0	0	0	0	0	0
Transferred Out (To Fire)	0	0	0	0	0	0	0	0
Transferred Out (To Police)	0	0	0	0	0	0	0	0
Duplicate Adjustments	0	0	0	0	0	128	0	128
Miscellaneous Adjustments	0	2	(1)	7	20	9	0	37
Participants as of 7/1/2018	29,910	2,060	1,021	5,817	1,352	20,735	3,081	63,976

* Includes deaths and benefits that were terminated or suspended

**CITY AND COUNTY OF SAN FRANCISCO EMPLOYEES' RETIREMENT SYSTEM
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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 6/30/2018 is equal to “Cvd Pay” reported for full members hired before the beginning of the previous plan year, and the maximum of “Cvd Pay” and “Calc 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 6/30/2019 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:
 - 3.0% for Fire and Police
 - 3.0% for all Miscellaneous members
- Salary used to determine benefit amounts for active part-time members (“Sch” = “P”) is calculated as the greater of “Cvd Pay” and “Calc Pay.” The annual projected service for part-time members is the same as the service accrual in the previous year. For all other members, Valuation Salary is used to determine benefit amounts.
- Benefits in the valuation data for members in pay status for the Miscellaneous and New Safety Charters include the Basic COLA effective July 1, 2018.
- Based on the latest MOUs and data provided by SFERS, the Basic COLA effective July 1, 2018 for the Old Safety Charter members in pay status was estimated and included in the benefit.
- Supplemental COLA benefits were granted as of July 1, 2018. There was an adjustment made to the benefits provided in the valuation data for a Supplemental COLA of 1.5% for Miscellaneous and New Safety Charters and varying amounts for the Old Safety Charter so that the total benefit increase was 3.5%, unless the Basic COLA was greater than 3.5%.
- 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,”

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“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 6/30/2017, and do not have a retiree record and their “Cvd Pay” is greater than \$0.
- 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 6/30/2018, 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, 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.

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- We assume all deceased members with payments continuing to a beneficiary have been reported in the “Retiree” file.

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

A. Actuarial Assumptions

All demographic 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. The economic assumptions were adopted at the November 14, 2018 Board meeting based on our recommendations. The discount rate assumption was decreased by 0.10%. Please refer to the economic assumption review presentation dated November 14, 2018 for the rationale for the economic assumptions.

1. Discount Rate

SFERS assets are assumed to earn 7.40% net of investment expenses.

2. Inflation

Wage Inflation: 3.50% compounded annually

Consumer Price Inflation: 3.00% 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: 3.50%

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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	4.20% per year
Old Plans – Police and Fire, Charters 8.595 and 8.596	3.10% per year
Old Plans – Police and Fire, pre-7/1/75 dates of retirement	2.50% 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 2019, future Supplemental COLAs are assumed to be 0%.

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

- 0.75% 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 2019 gradually increasing to 0.36% for FYE 2034 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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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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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					
Age	Police	Fire	Muni		
			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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APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

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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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.

19. 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.

20. Changes Since Last Valuation

Discount Rate: 7.50% to 7.40%

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

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, 2016, and 2017, 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 five-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 a

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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.

4. Changes Since Last Valuation

None.

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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 Sections 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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APPENDIX C – SUMMARY OF PLAN PROVISIONS
(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.

APPENDIX C – SUMMARY OF PLAN PROVISIONS
(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.

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(OLD POLICE AND FIRE)

- 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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APPENDIX C – SUMMARY OF PLAN PROVISIONS
(OLD POLICE AND FIRE)

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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APPENDIX C – SUMMARY OF PLAN PROVISIONS
(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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(NEW POLICE AND FIRE)

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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APPENDIX C – SUMMARY OF PLAN PROVISIONS
(NEW POLICE AND FIRE)

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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(NEW POLICE AND FIRE)**

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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APPENDIX C – SUMMARY OF PLAN PROVISIONS
(NEW POLICE AND FIRE)

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.

APPENDIX C – SUMMARY OF PLAN PROVISIONS
(NEW POLICE AND FIRE)

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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APPENDIX C – SUMMARY OF PLAN PROVISIONS
(NEW POLICE AND FIRE)

- 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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APPENDIX C – SUMMARY OF PLAN PROVISIONS
(MISCELLANEOUS)

III. 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 José 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
(MISCELLANEOUS)**

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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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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(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)**

IV. 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 José.

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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