Classic Values, Innovative Advice

City and County of San Francisco Employees' Retirement System

July 1, 2019
Actuarial Valuation Report

Produced by Cheiron

February 2020

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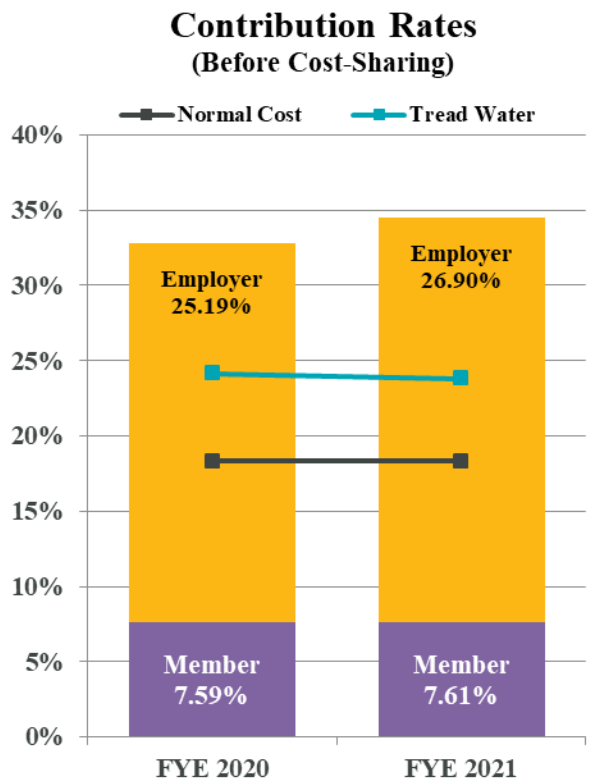
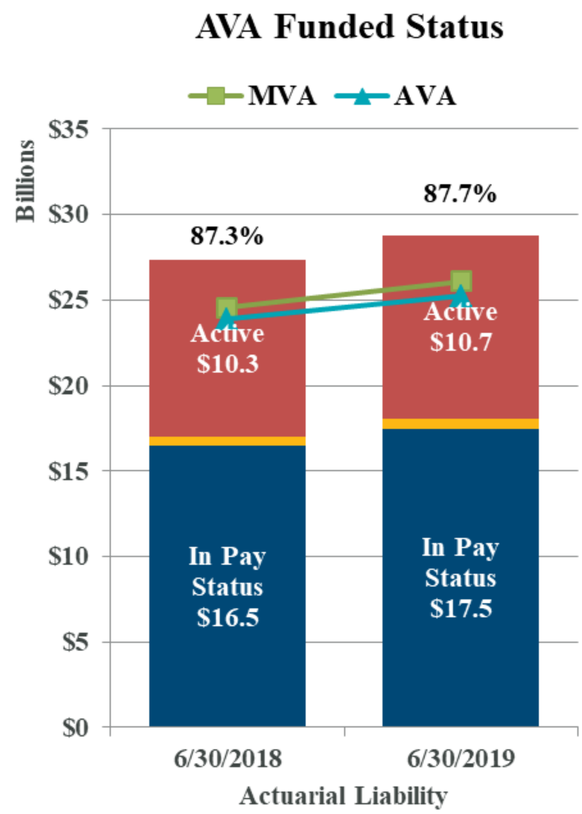
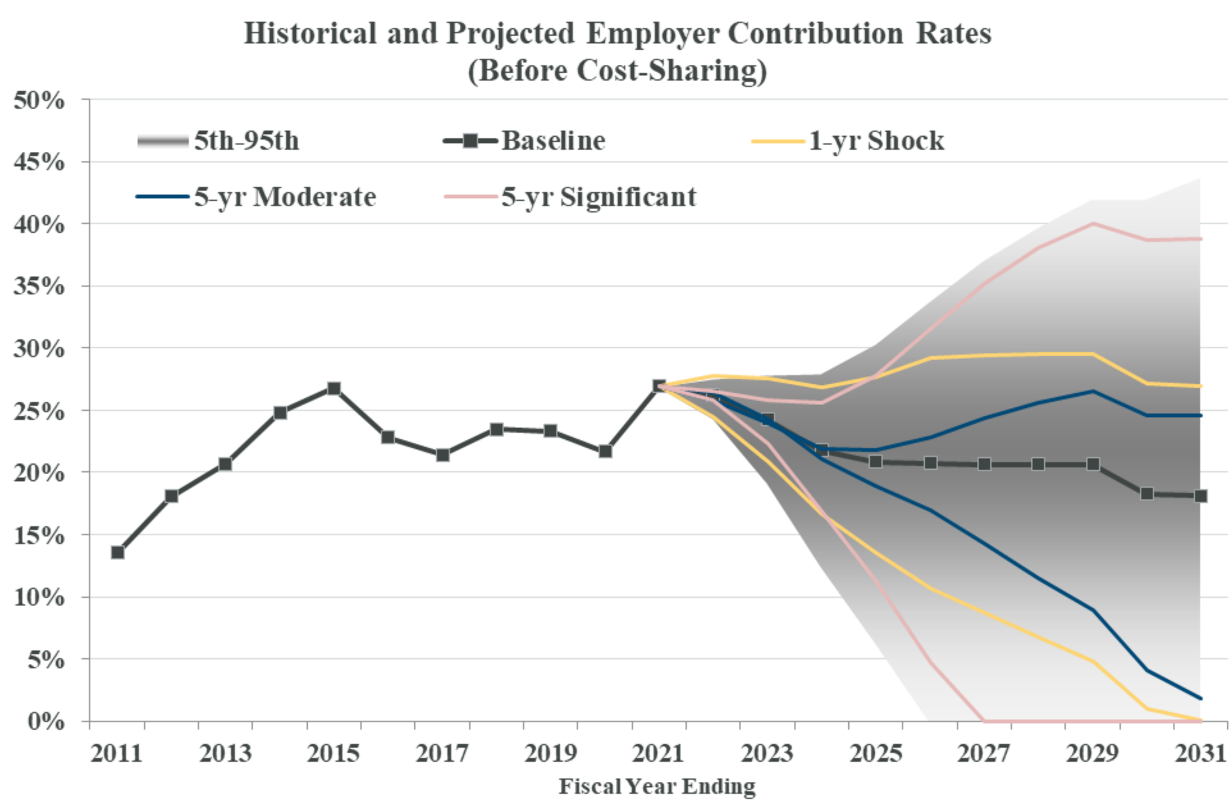






SECTION I – BOARD SUMMARY

Key Findings of the July 1, 2019 Valuation

The key results of the July 1, 2019 actuarial valuation are as follows:

- The employer contribution rate increased from 25.19% for FYE 2020 to 26.90% for FYE 2021 before any cost-sharing adjustments. After the cost-sharing adjustments, the estimated employer contribution rate increased from 21.78% to 23.49%. 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 2021 after the cost-sharing adjustment will remain the same as they are in FYE 2020. That is, there is no change to the cost-sharing adjustments. The average employee contribution rate after cost-sharing adjustments is estimated to be 11.02%.

- The funded ratio based on the Market Value of Assets increased from 89.8% to 90.6%, and the unfunded liability decreased from $2.78 billion to $2.72 billion. On an actuarial value basis, the funded ratio increased from 87.3% to 87.7%, though the unfunded liability increased from $3.47 billion to $3.55 billion.

- The return on the Market Value of Assets for the year ended June 30, 2019 was approximately 8.1% resulting in a gain of about $198 million that will be recognized over the next five years. The return on the Actuarial Value of Assets was 7.7%, which recognizes 20% of the FYE 2019 gain as well as deferred investment gains and losses from previous years, and results in an actuarial gain of about $59 million.

- Because actual investment returns were greater than expected, a partial Supplemental COLA was payable, increasing benefits for certain retirees and increasing the Actuarial Liability by approximately $141 million. This increase is amortized over a period of five years, increasing the contribution rate by 0.92% of pay.

- 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 fifth and final year of the phase-in and the UAL payment increased from $83 million to $109 million, increasing the contribution rate by 0.63% of payroll.

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, 2019 compared to July 1, 2018.

Table I-1
Summary of Key Valuation Results
(Amounts in millions)

Valuation Date		July 1, 2019		July 1, 2018	% Change
Actuarial Liability	$	28,798.6	$	27,335.4	5.4%
Actuarial Value of Assets	$	25,247.6	$	23,866.0	5.8%
Unfunded Actuarial Liability (actuarial value)		3,551.0		3,469.4	2.4%
Funding Ratio (actuarial value)		87.7%		87.3%	0.4%
Market Value of Assets	$	26,078.6	$	24,558.0	6.2%
Unfunded Liability (market value)		2,720.0		2,777.4	-2.1%
Funding Ratio (market value)		90.6%		89.8%	0.7%
Expected Payroll	$	3,549.9	$	3,385.5	4.9%
Interest on UAL (MVA basis)	$	194.2	$	198.3	-2.1%
Interest Cost as Percent of Payroll		5.5%		5.9%	-0.4%

The Actuarial Liability increased by approximately $1.5 billion including a $141 million increase due to the 2019 partial Supplemental COLA. The Actuarial Value of Assets, which is used as the basis to set contribution rates, increased by approximately $1.4 billion reflecting smoothed investment returns and contributions offset by benefits and expenses paid during the year. SFERS' Unfunded Actuarial Liability (UAL) increased by approximately $82 million based on the Actuarial Value of Assets.

The Market Value of Assets increased approximately $1.5 billion. SFERS' UAL based on the Market Value of Assets decreased approximately $57 million.

The interest cost on the UAL – based on the Market Value of Assets – decreased by $4 million. As a result, approximately 5.5% of payroll is necessary to pay the interest on the UAL, which is a decrease from 5.9% of payroll in the prior year.

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 2021	FYE 2020	Absolute Change
Contribution Rates Before Adjustments			
Net Employer Contribution Rate	26.90%	25.19%	1.71%
Est. Aggregate Employee Contribution Rate	7.61%	7.59%	0.02%
Total Contribution Rate	34.51%	32.78%	1.73%
Estimated Payroll	$ 3,674.2	$ 3,504.0	$ 170.2
Estimated Net Employer Contributions	988.5	882.6	105.9
Contribution Rates After Adjustments			
Net Employer Contribution Rate	23.49%	21.78%	1.71%
Est. Aggregate Employee Contribution Rate	11.02%	11.00%	0.02%
Total Contribution Rate	34.51%	32.78%	1.73%
Estimated Payroll	$ 3,674.2	$ 3,504.0	$ 170.2
Estimated Net Employer Contributions	863.1	763.2	99.9
Total Contribution Rate			
Normal Cost Rate	17.72%	17.71%	0.01%
Administrative Expense Rate	0.60%	0.60%	0.00%
UAL Rate			
Interest on Market Value UAL	5.47%	5.86%	-0.39%
Principal on UAL	10.72%	8.61%	2.11%
Total UAL Rate	16.19%	14.47%	1.72%
Total Contribution Rate	34.51%	32.78%	1.73%

SECTION I – BOARD SUMMARY

The net employer contribution rate before applying the cost-sharing adjustments increased 1.71% of payroll from 25.19% to 26.90% for the fiscal year ending June 30, 2021. The cost-sharing adjustment is estimated to decrease the employer contribution and increase the aggregate employee contributions by about 3.41% of payroll. Thus, the estimated employer contribution rate after cost sharing is 23.49% for FYE 2021. 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 2.5%. Active membership increased 0.8%, terminated vested membership increased 8.4%, and members receiving benefits increased by 2.7%. Total payroll increased by 4.9% for active members. The average pay per active member increased 4.1%.

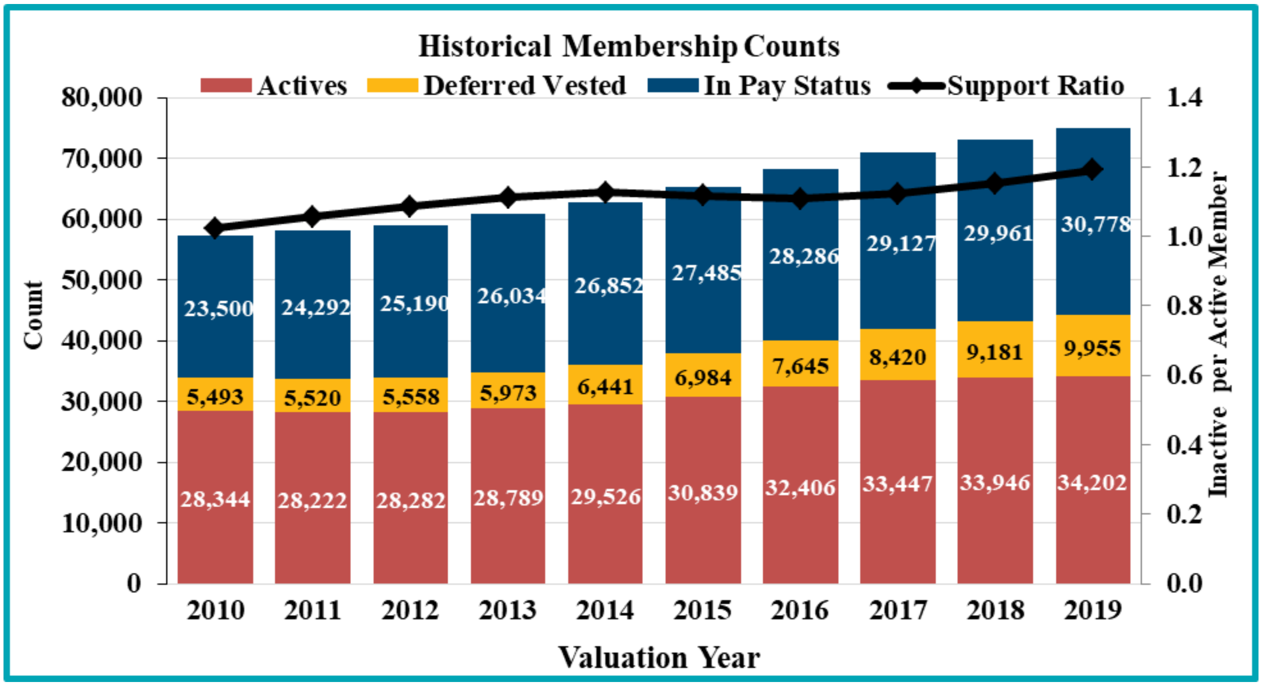
Table I-3
Membership Total

	July 1, 2019	July 1, 2018	% Change
Actives	34,202	33,946	0.8%
Terminated Vested	9,955	9,183	8.4%
Members Receiving Benefits	30,778	29,965	2.7%
Total SFERS Members	74,935	73,094	2.5%
Active Member Payroll (thousands)	$ 3,549,940	$ 3,385,520	4.9%
Average Pay per Active	$ 103,800	$ 99,700	4.1%

Active member payroll is projected for the fiscal year beginning on the valuation date.

SECTION I – BOARD SUMMARY

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 when active membership declined while the number of retirees grew. The ratio had been relatively stable just above 1.1 for several years as active membership grew in tandem with the growth in the number of retirees. In the last two years, however, growth in the inactive membership has outpaced the growth in active membership, and the support ratio has increased to almost 1.2.



Contribution Reconciliation

The SFERS contribution rate for FYE 2021 before cost-sharing adjustments increased from 25.19% to 26.90% of membership payroll. Table I-4 shows sources for the change in the net employer contribution rate. The final year of the 5-year phase-in of the 2015 assumption changes and the July 1, 2019 Supplemental COLA, increased the contribution rate by approximately 1.55% of pay. The remainder of the increase was due to liability experience offset by the impact of the increased payroll and investment experience.

Table I-4
Net Employer Contribution Rate Reconciliation

	Normal Cost[1]	Amortization	Total
FYE 2020 Net Employer Contribution Rate	10.72%	14.47%	25.19%
Phase-in of the 2015 assumption changes	0.00%	0.63%	0.63%
Payroll increase more than assumed	0.00%	-0.20%	-0.20%
Investment gain on actuarial value of assets	0.00%	-0.12%	-0.12%
July 1, 2019 Supplemental COLA	0.00%	0.92%	0.92%
Liability experience and other changes	-0.01%	0.49%	0.48%
Total Change	-0.01%	1.72%	1.71%
FYE 2021 Net Employer Contribution Rate	10.71%	16.19%	26.90%

[1] *Includes administrative expenses and is net of employee contributions.*

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 2009 to 2019 and the projected period from 2020 to 2029 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 90.6% funded based on the Market Value of Assets, 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 was 72% funded as of July 1, 2009, immediately after the market decline. Since then, investment returns and contribution increases offset by some assumption changes and the impact of Supplemental COLAs have led to increased funding ratios reaching 91% as of July 1, 2019.

The bottom chart on the following page shows historical and projected contribution rates for the fiscal years ending 2011 through 2031. 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 2018 actuarial valuation.

The employer contribution rate increased significantly from fiscal year ending 2011 through 2015. The increases were primarily due to the recognition of investment losses and assumption changes. Employer contribution rates declined for 2016 and 2017, but have gradually returned to about the same level as they were in 2015. This increase has been driven primarily by a combination of assumption changes and Supplemental COLAs. After FYE 2021, employer contributions are expected to gradually decline due to the recognition of net deferred investment gains of approximately $873 million and the completion of the amortization of propositions from 2000 and 2002. In addition, the amortizations for some of the recent Supplemental COLAs will have been completed while the amortizations for the investment gains that created them will continue.

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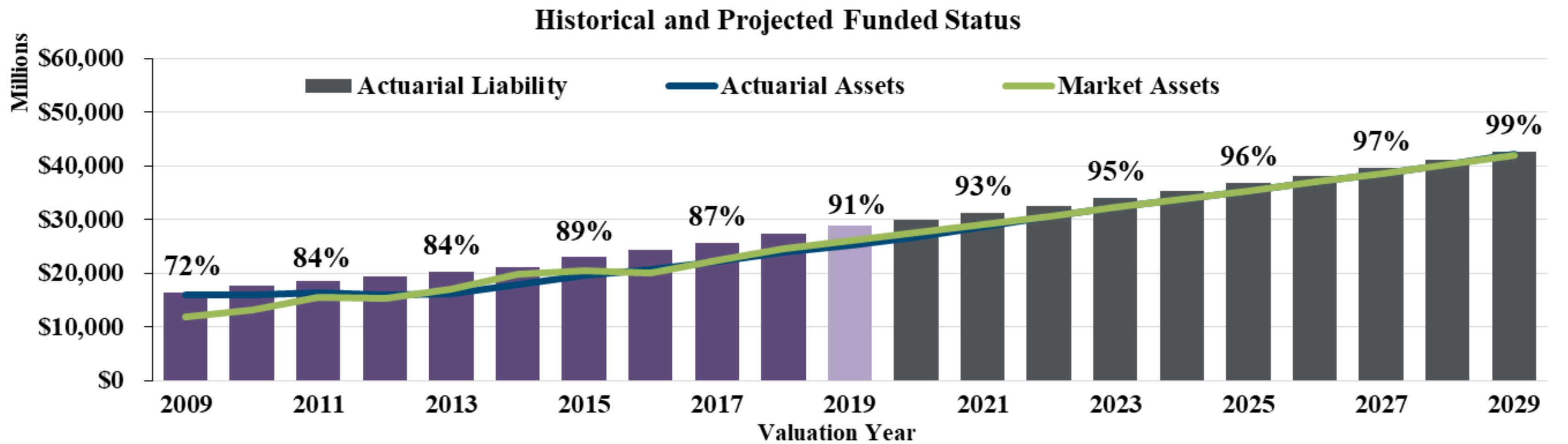
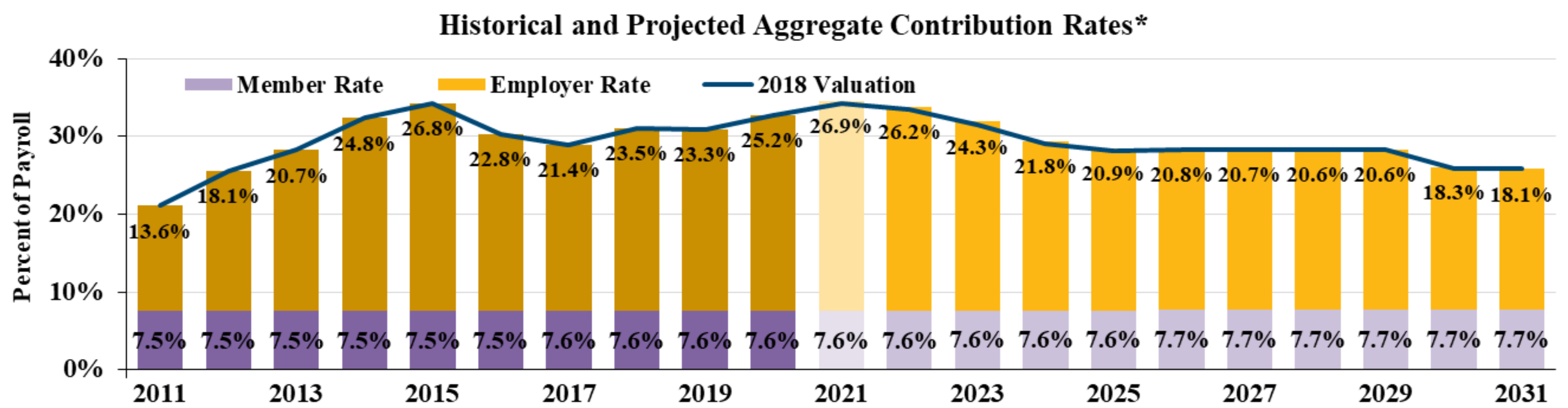




* Prior to cost-sharing adjustments

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.

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 SFERS cannot determine on its own what contribution level is unaffordable, we can project expected contribution rates and illustrate the potential impact of key sources of risk on those contribution rates so the employers can assess affordability. 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, and
- Supplemental COLA risk.

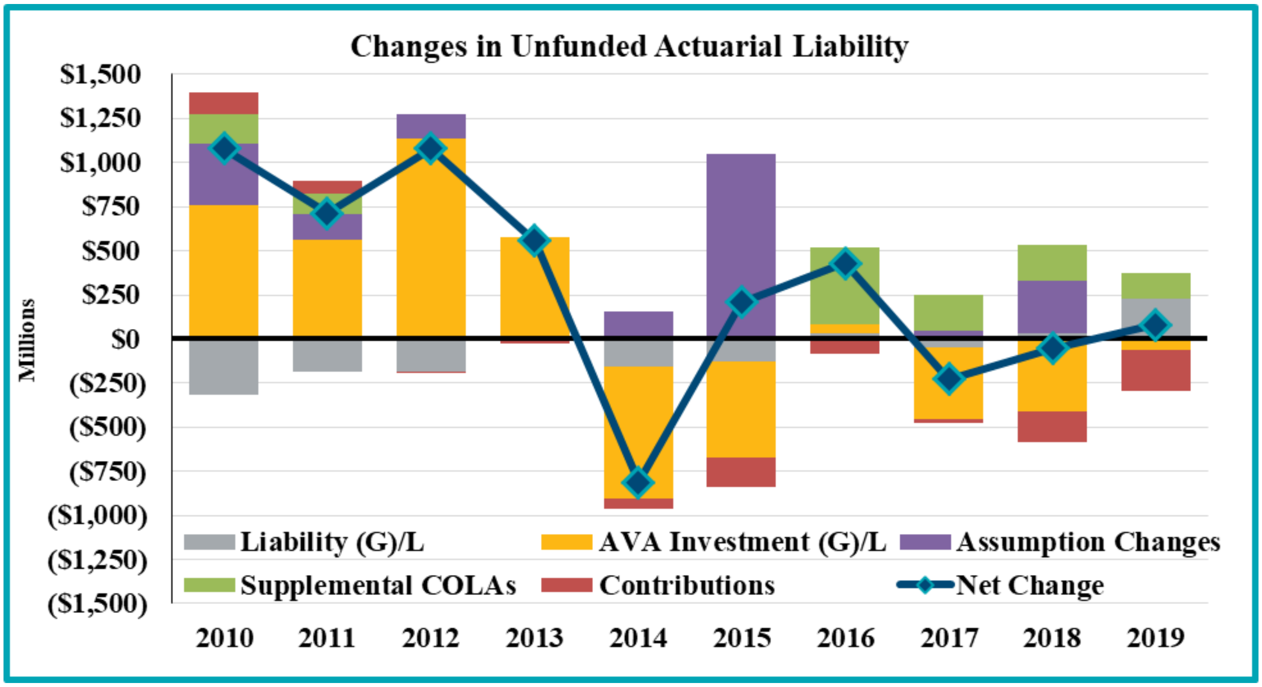
Investment risk is the potential for investment returns to be different than expected. Interest rate risk is the potential for interest rates to be different than expected. For public plans, short-term fluctuations in interest rates have little or no effect, but longer-term trends can have a powerful 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.

SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

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 2010-2019



On a smoothed asset basis, the investment gains and losses (gold bars) from 2010 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 $0.9 billion to the UAL.

On the liability side (gray bars), SFERS has experienced mostly gains reducing the UAL by approximately $0.7 billion 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 $1.2 billion.

SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

Each year, the UAL is expected to increase for active member benefits attributable to the current year of service (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 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 $0.6 billion, and during 2019, contributions decreased the UAL by about $232 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

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total
Discount Rate	**7.75%**	**7.66%**	**7.58%**	**7.58%**	**7.50%**	**7.50%**	**7.50%**	**7.50%**	**7.40%**	**7.40%**	
Source											
AVA (G)/L	$ 755.6	$ 559.6	$ 1,135.0	$ 579.6	$ (749.2)	$ (545.5)	$ 51.5	$ (405.7)	$ (408.9)	$ (58.6)	**$ 913.4**
Liability (G)/L	(314.4)	(183.5)	(187.1)	(9.9)	(157.9)	(127.6)	34.5	(45.5)	35.7	231.6	**(724.1)**
Assumptions/Methods	353.4	148.8	135.5	0.0	153.1	1,048.4	0.0	50.2	297.7	0.0	**2,187.1**
Supplemental COLAs	164.0	112.6	0.0	0.0	0.0	0.0	429.3	200.1	200.8	141.0	**1,247.8**
Contributions[1]	121.8	73.8	(2.8)	(14.5)	(56.9)	(168.2)	(83.7)	(27.4)	(176.7)	(232.4)	**(567.0)**
Total UAL Change	**$ 1,080.4**	**$ 711.3**	**$ 1,080.6**	**$ 555.2**	**$ (810.9)**	**$ 207.1**	**$ 431.6**	**$ (228.3)**	**$ (51.4)**	**$ 81.6**	**$ 3,057.2**

[1] *Actual contributions less than normal cost, administrative expenses and interest on the UAL* — *Dollar amounts in millions*

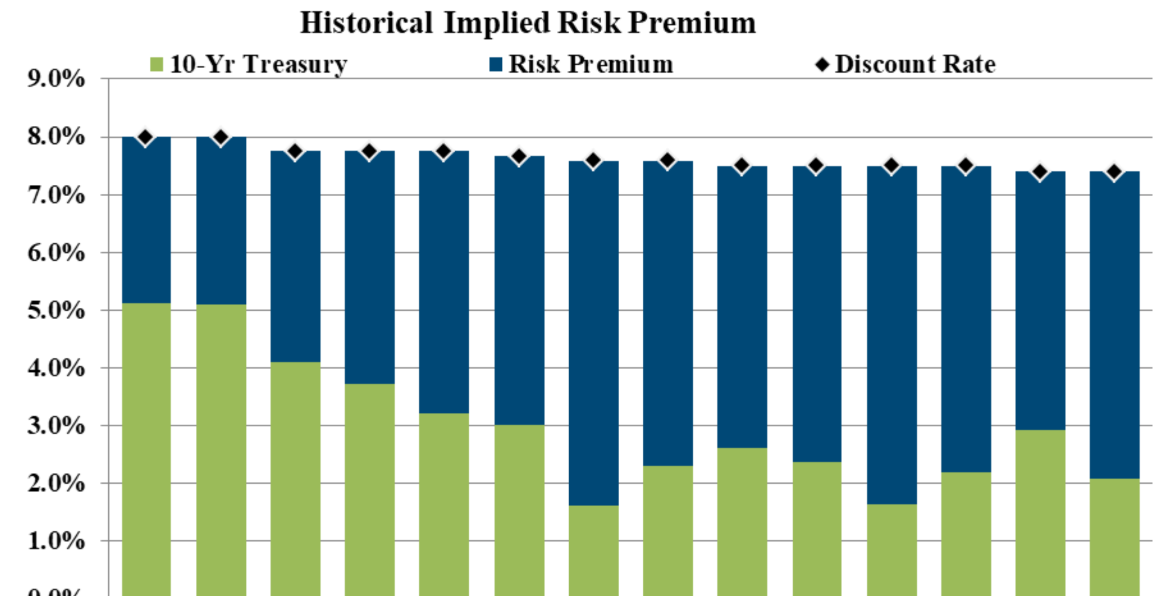
These totals support our identification of investment returns, Supplemental COLAs, and interest rates that drive assumption changes as the primary risks to the System.

SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

The chart below 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. From 2006 to 2019, the yield on the 10-year Treasury declined from about 5.1% to 2.1%. 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.

During this period, the System reduced its expected rate of return 60 basis points from 8.0% to 7.4% and increased its expected risk premium 240 basis points from 2.9% to 5.3%.



	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Risk Premium	2.89%	2.90%	3.65%	4.03%	4.55%	4.66%	5.96%	5.28%	4.90%	5.14%	5.86%	5.31%	4.49%	5.33%
10-Yr Treasury	5.11%	5.10%	4.10%	3.72%	3.20%	3.00%	1.62%	2.30%	2.60%	2.36%	1.64%	2.19%	2.91%	2.07%
Discount Rate	8.00%	8.00%	7.75%	7.75%	7.75%	7.66%	7.58%	7.58%	7.50%	7.50%	7.50%	7.50%	7.40%	7.40%

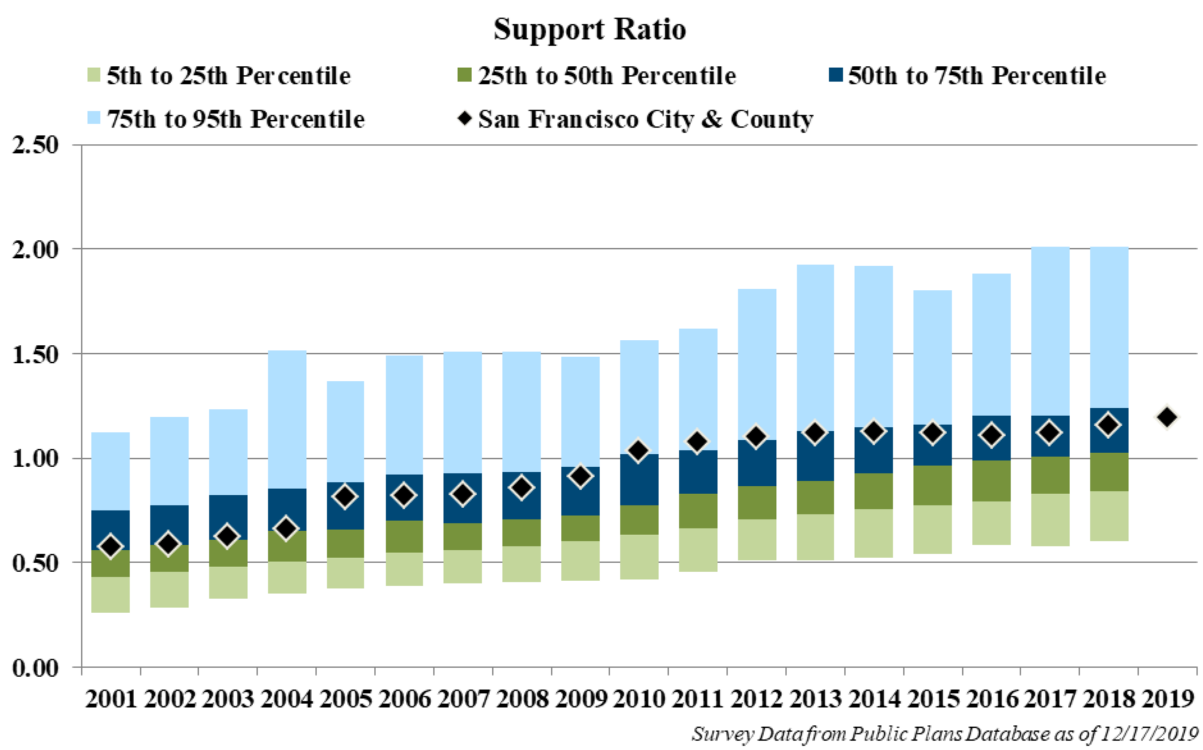
Plan Maturity Measures

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.

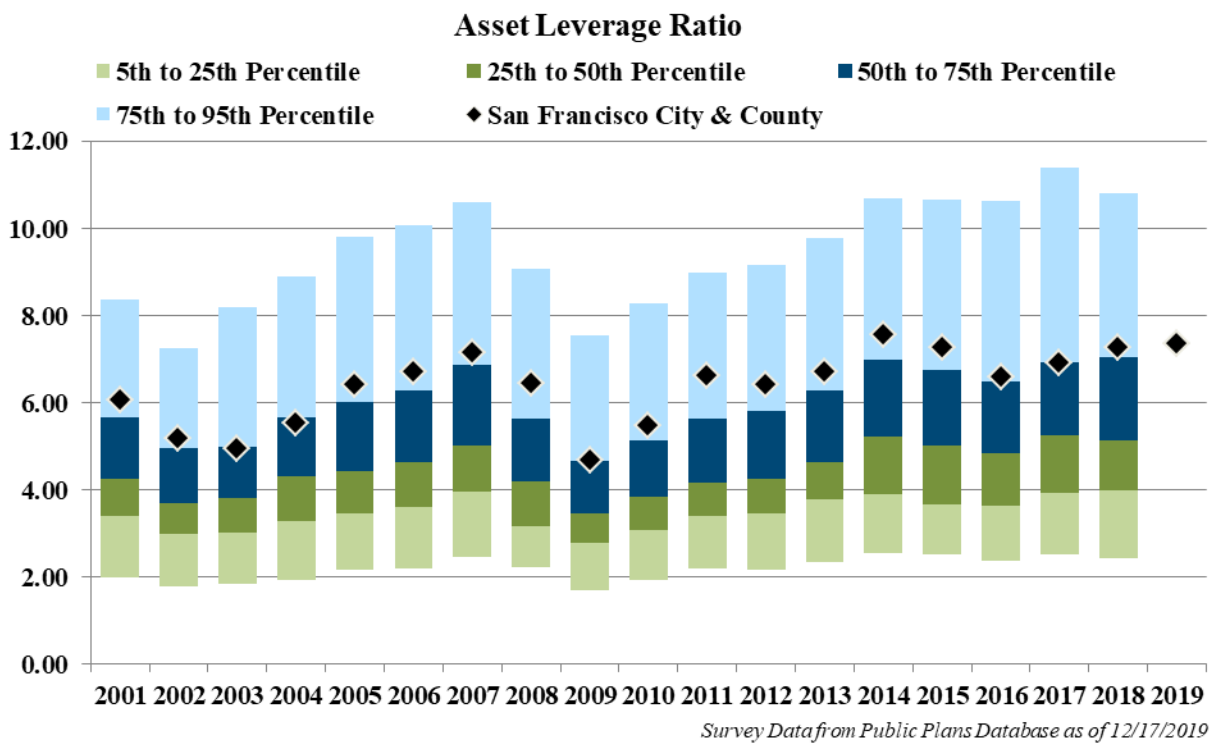


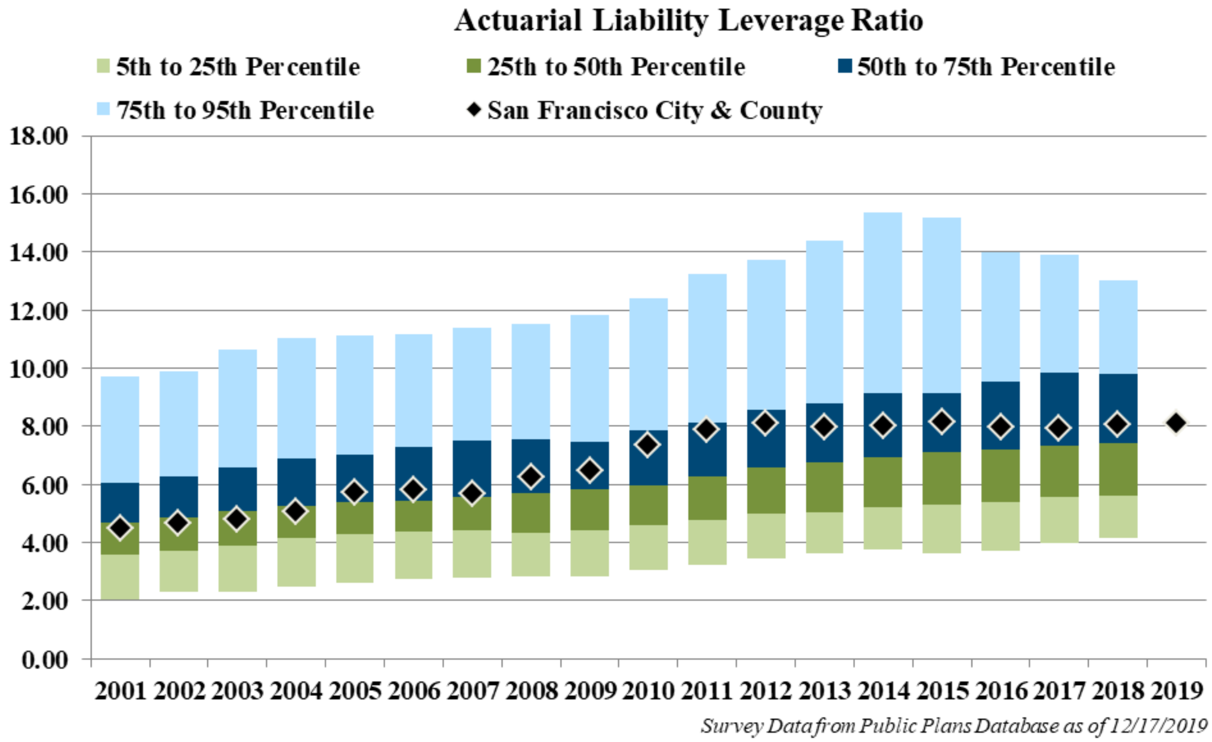
The chart above shows the distribution from the 5th to 95th percentile of support ratios for the plans in the Public Plans Database. The black diamond shows how San Francisco (SFERS) compares. Through 2004, the Plan was in the middle of the distribution even as the support ratio increased. Proposition 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 in the 50th to 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.





The two previous charts above and on page 16 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 7.3. This level indicates that SFERS is more sensitive to investment returns than 75% of public plans.

SFERS' Actuarial Liability leverage ratio has consistently been between the 50th-75th percentile since 2001, and has recently been holding relatively constant around 8.0 while other plans have been increasing. This level means that SFERS is more sensitive to the impact of assumption changes than the majority of public plans.

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 = 7.7%, standard deviation = 13.7%).

Distribution of Expected Average Annual Returns		
Percentile	**1 Year**	**5 Year**
5%	-14.8%	-2.4%
25%	-1.5%	3.6%
50%	7.7%	7.7%
75%	16.9%	11.8%
95%	30.2%	17.8%

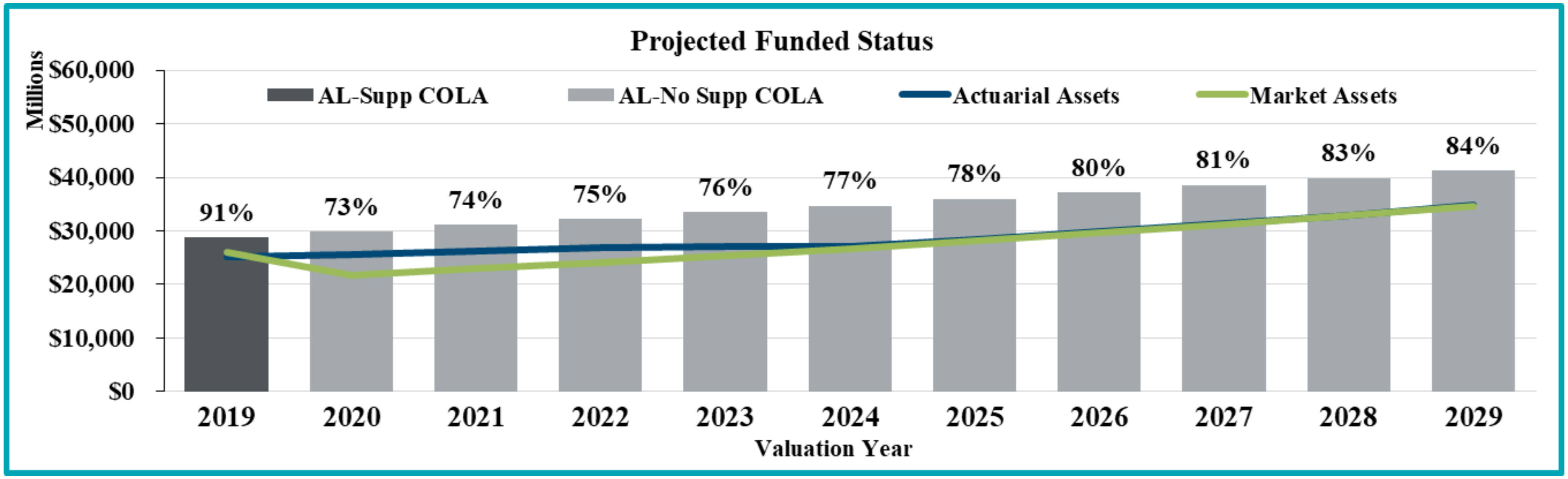
The scenarios include a one-year shock using the 5th and 95th percentile returns for one year, a 5-year moderate scenario using the 25th and 75th percentile returns for five years and a 5-year significant scenario using the 5th and 95th percentile returns for five years. The table below summarizes the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

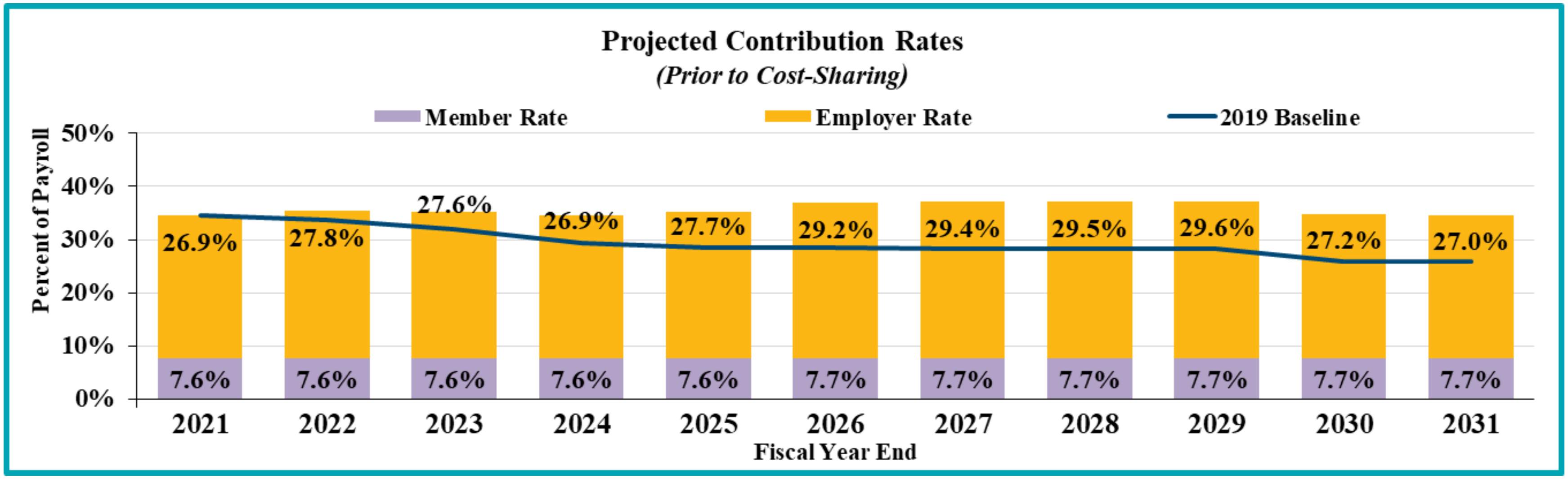
	Theoretical Scenarios					
	1-Yr Shock		**5-Yr Moderate**		**5-Yr Significant**	
FYE	**Neg**	**Pos**	**Neg**	**Pos**	**Neg**	**Pos**
2020	-14.80%	30.20%	3.60%	11.80%	-2.40%	17.80%
2021	7.40%	7.40%	3.60%	11.80%	-2.40%	17.80%
2022	7.40%	7.40%	3.60%	11.80%	-2.40%	17.80%
2023	7.40%	7.40%	3.60%	11.80%	-2.40%	17.80%
2024	7.40%	7.40%	3.60%	11.80%	-2.40%	17.80%
2025+	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 2019 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 actual returns in excess of the expected return on the Actuarial Value of Assets. 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.

SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

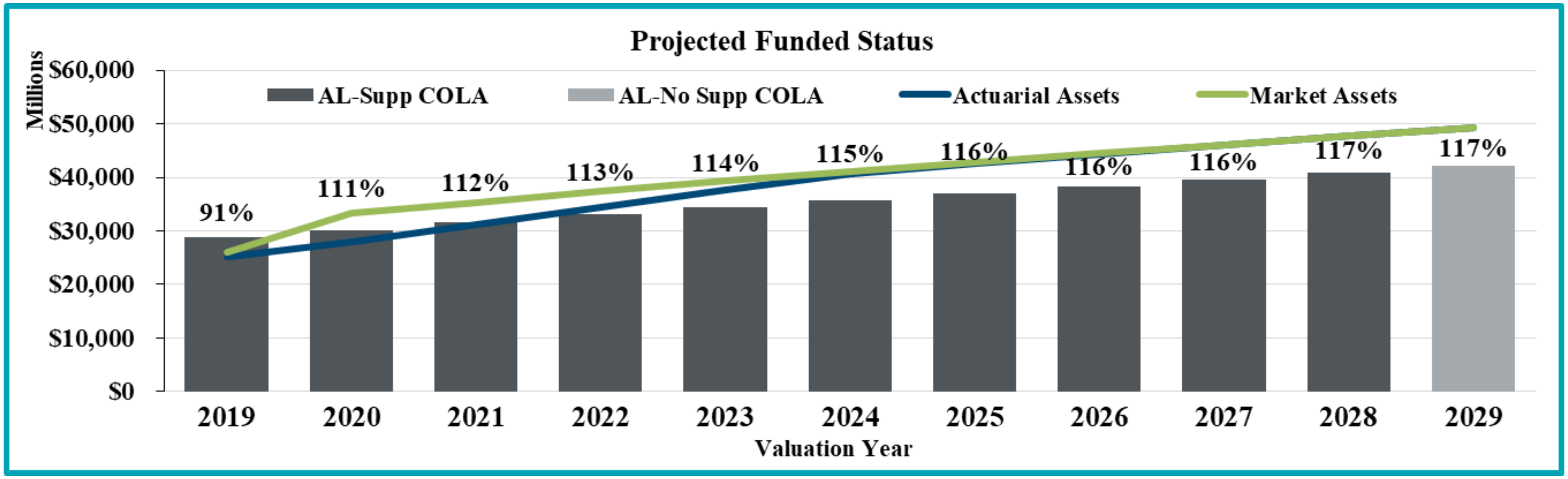
One-Year Negative Shock Scenario: -14.8% return FYE 2020, 7.4% after

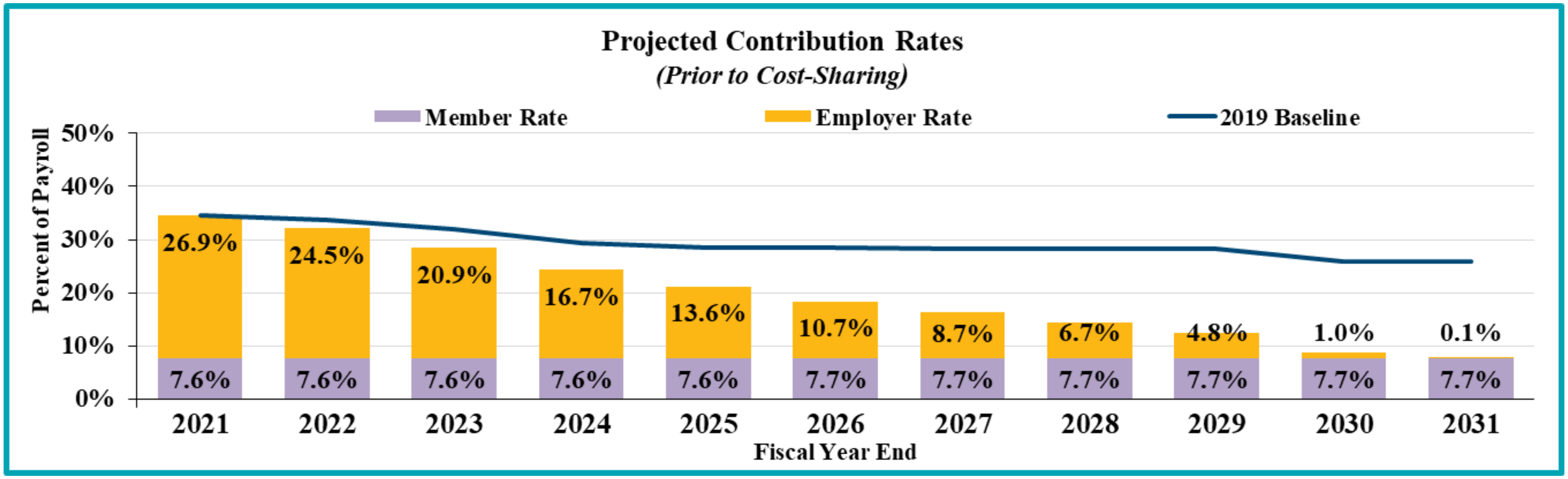




SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

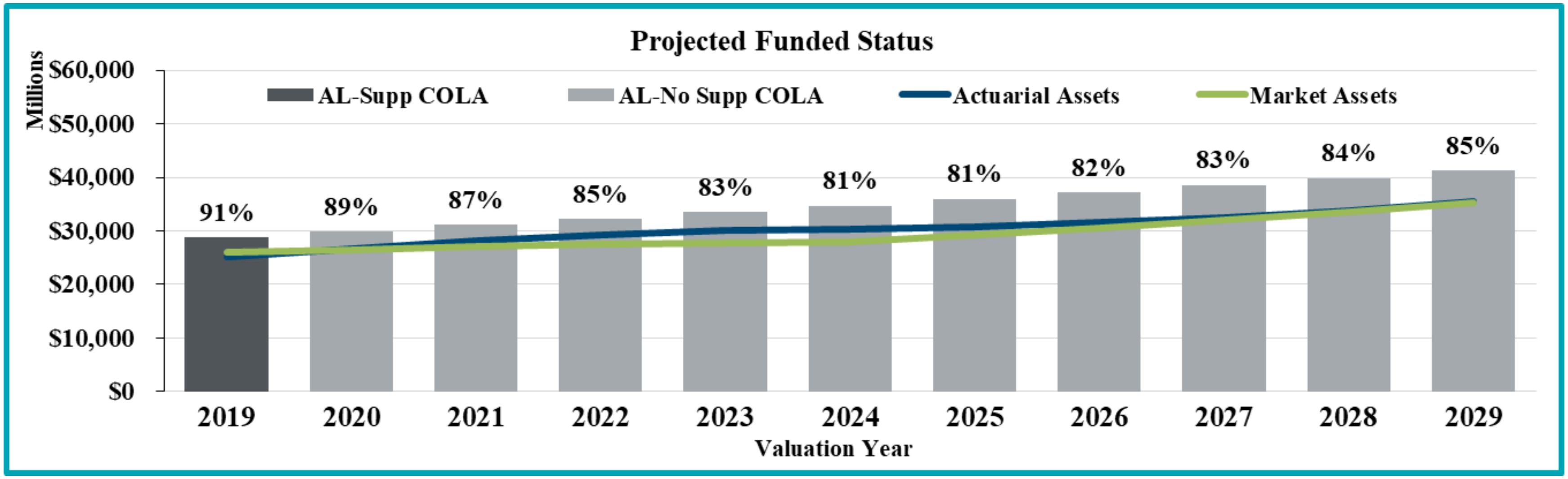
One-Year Positive Shock Scenario: 30.2% return FYE 2020, 7.4% after

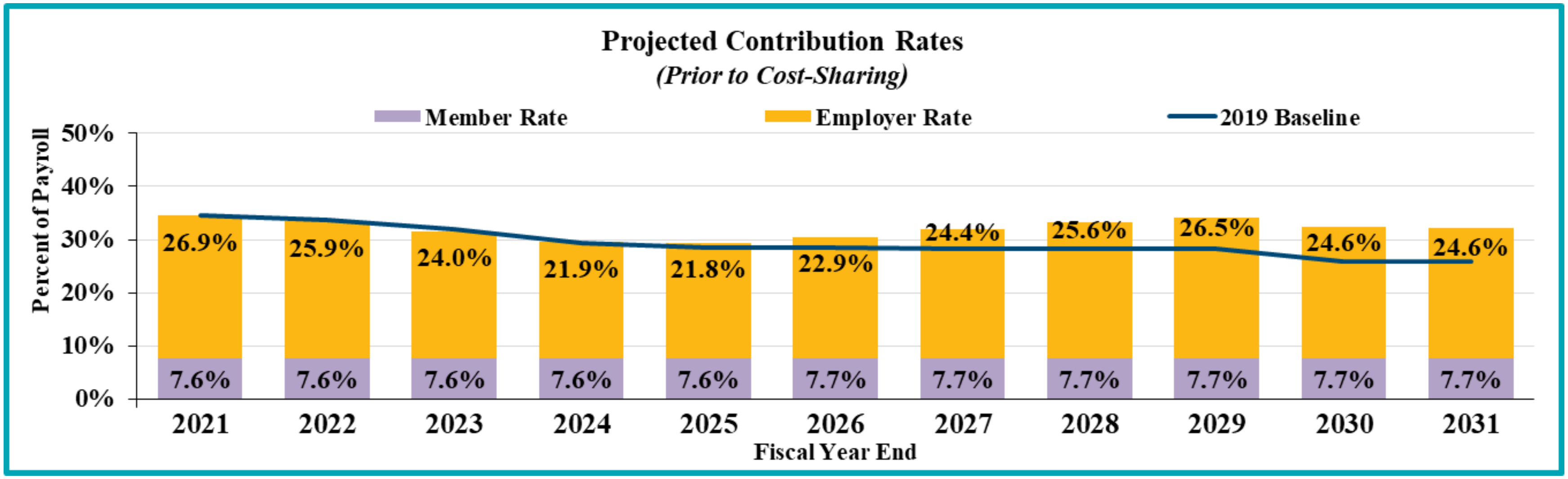




SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

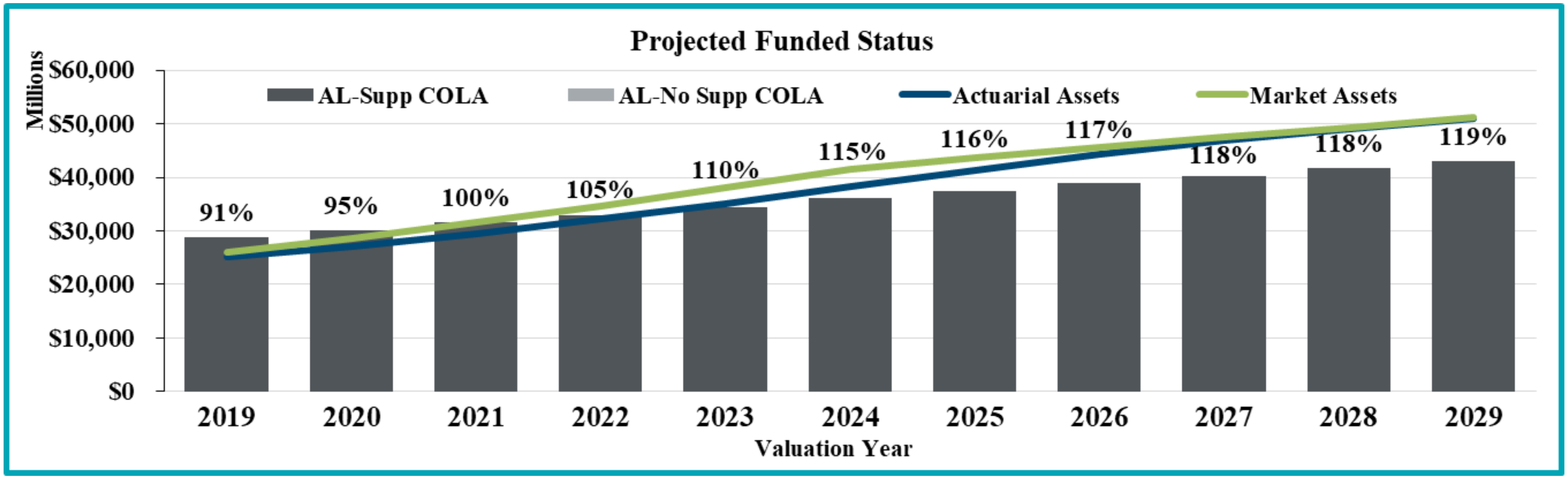
Five-Year Moderate Negative Scenario: 3.6% return FYE 2020-2024, 7.4% after

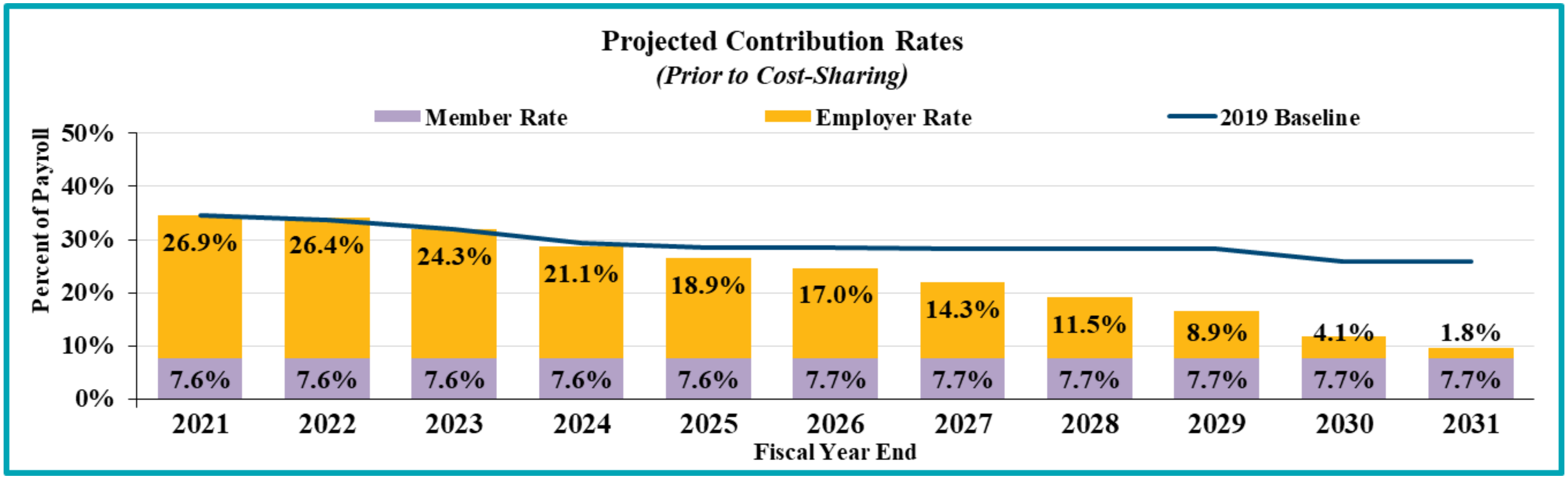




SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

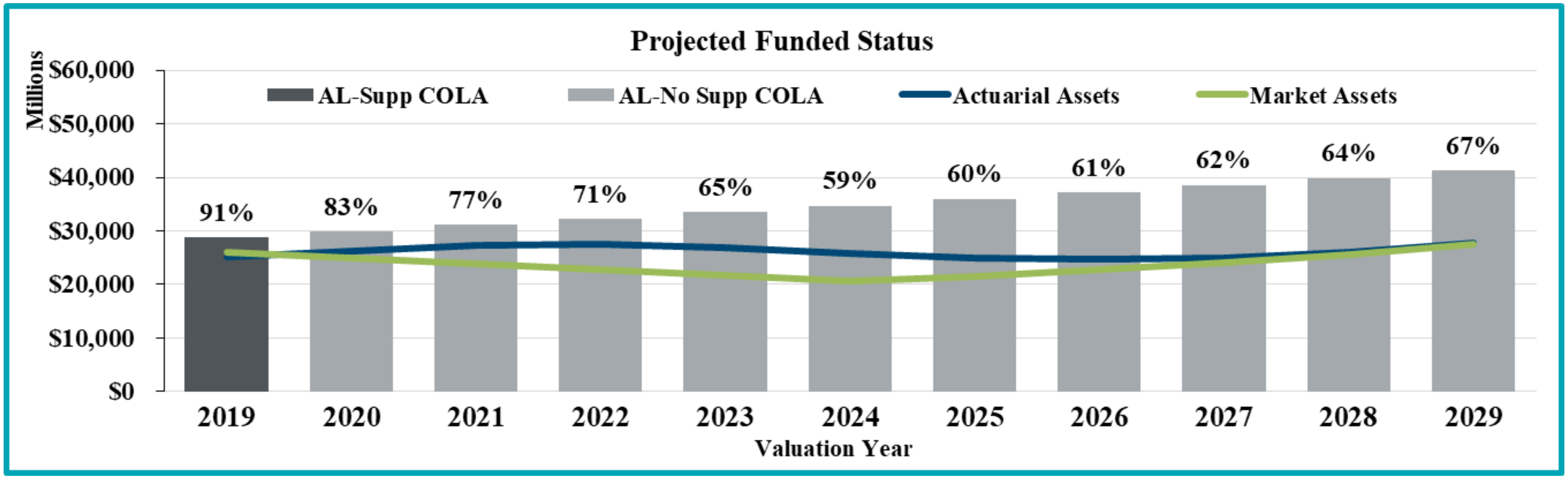
Five-Year Moderate Positive Scenario: 11.8% return FYE 2020-2024, 7.4% after

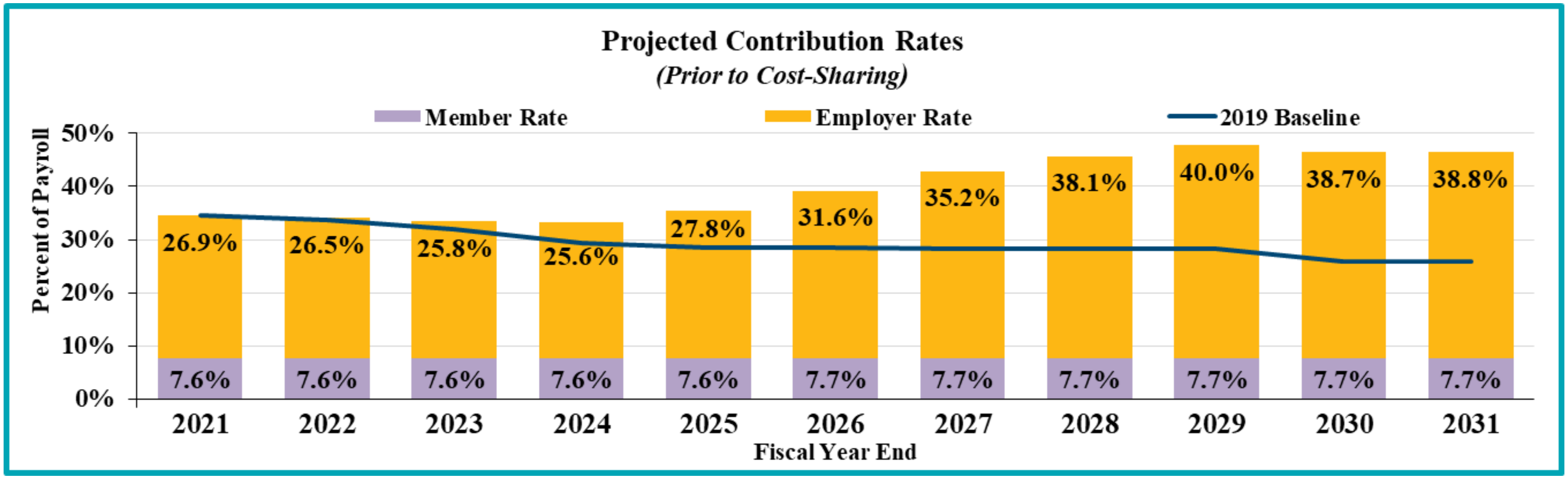




SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

Five-Year Significant Negative Scenario: -2.4% return FYE 2020–2024, 7.4% after





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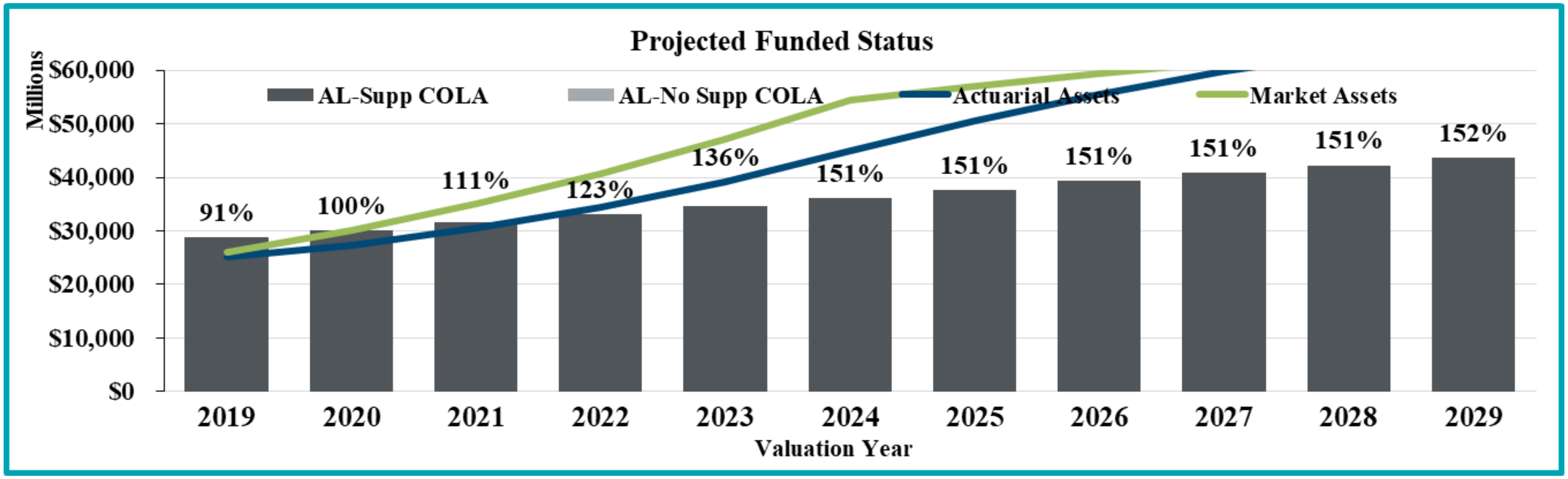
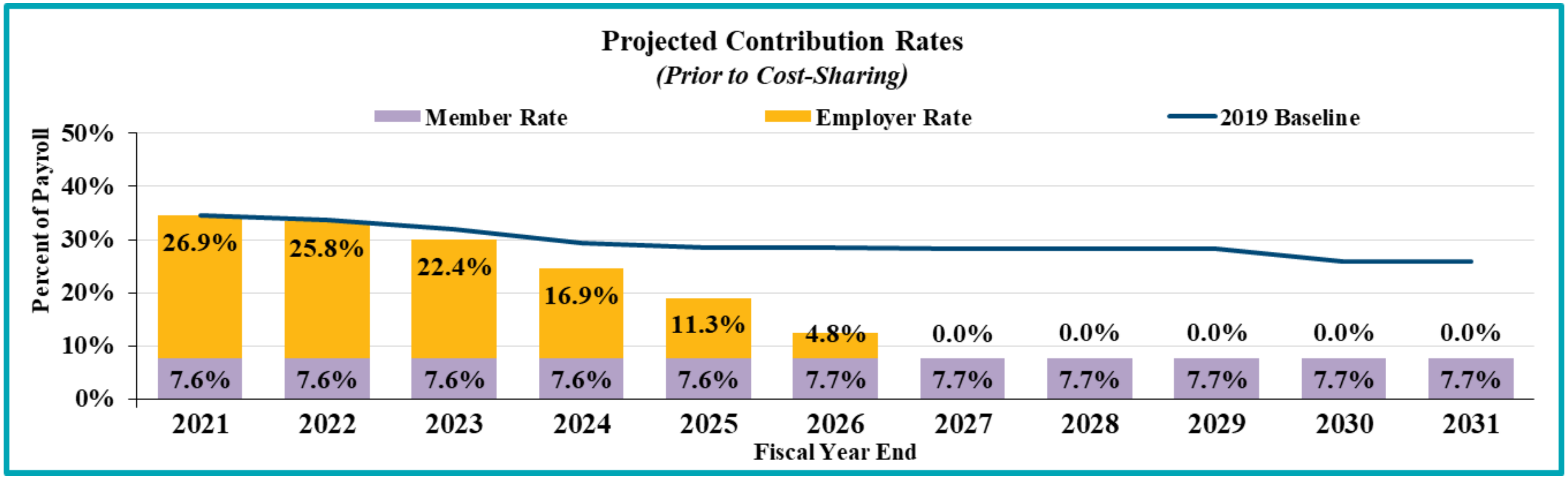
SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

Five-Year Significant Positive Scenario: 17.8% return FYE 2020-2024, 7.4% after





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 decrease in FYE 2022 and continue to decline quickly and steadily for the remainder of the projection period. The five-year significant positive scenario (17.8%) shows a steady decline in the employer contribution rate to 0.0% by FYE 2027, while both the five-year positive moderate (11.8%) and one-year positive shock (30.2%) scenarios show more gradual declines to 1.8% and 0.1% respectively by FYE 2031.

The negative economic scenarios show relative stable or slight decreases in the employer contribution rates over the next four years before contributions rise again. Net deferred investment gains of approximately $873 million and the completion of several amortizations in each of the next four years creates significant downward pressure on contribution rates for the next four years. The one-year negative shock (-14.8%) shows slight rate increases, averaging 27.7%, for the next two years with a decrease in FYE 2024 to 26.9% before the employer rate climbs to its peak in FYE 2029 of 29.6%. The five-year significant negative scenario (-2.4%) actually results in a gradual decrease over the next three years to 25.6% before the employer rate escalates to its peak in FYE 2029 of 40.0%. Finally, the five-year moderate negative scenario (3.6%) results in rate decreases over the entire 10-year period, actually decreasing to 21.8% in FYE 2025 before it increases and peaks in FYE 2029 at 26.5%.

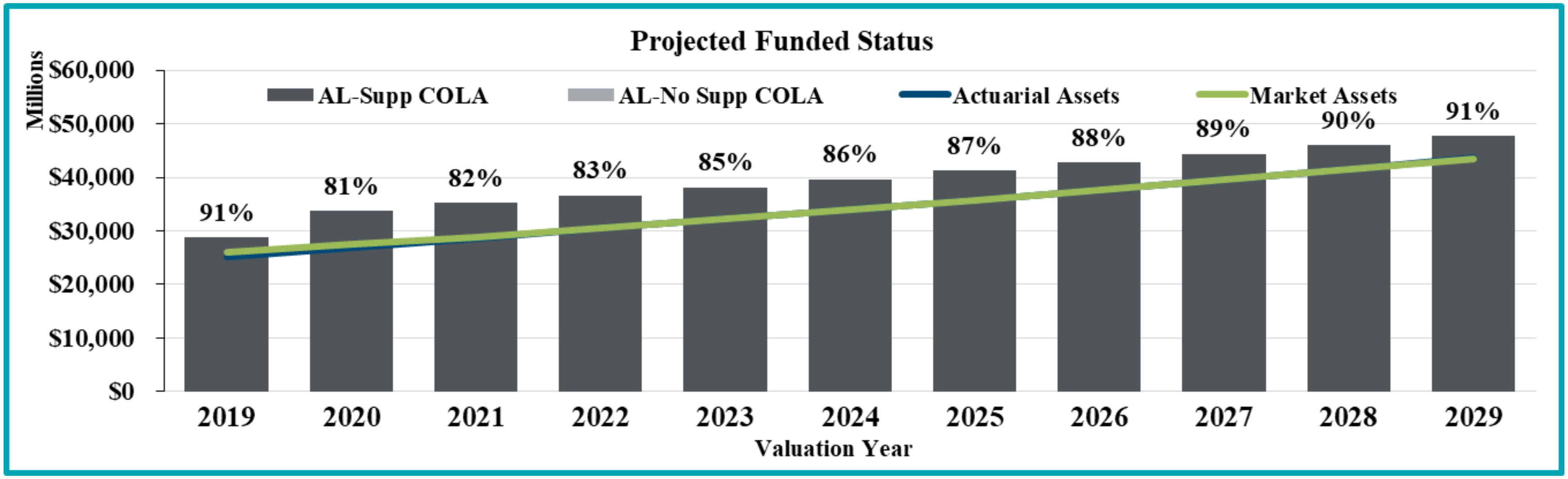
The investment returns used in the projections above were selected solely to illustrate the impact of investment volatility on the pattern of funded status and employer contribution rates. They are not intended to be predictive of actual future contribution rates or funded status or even to represent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

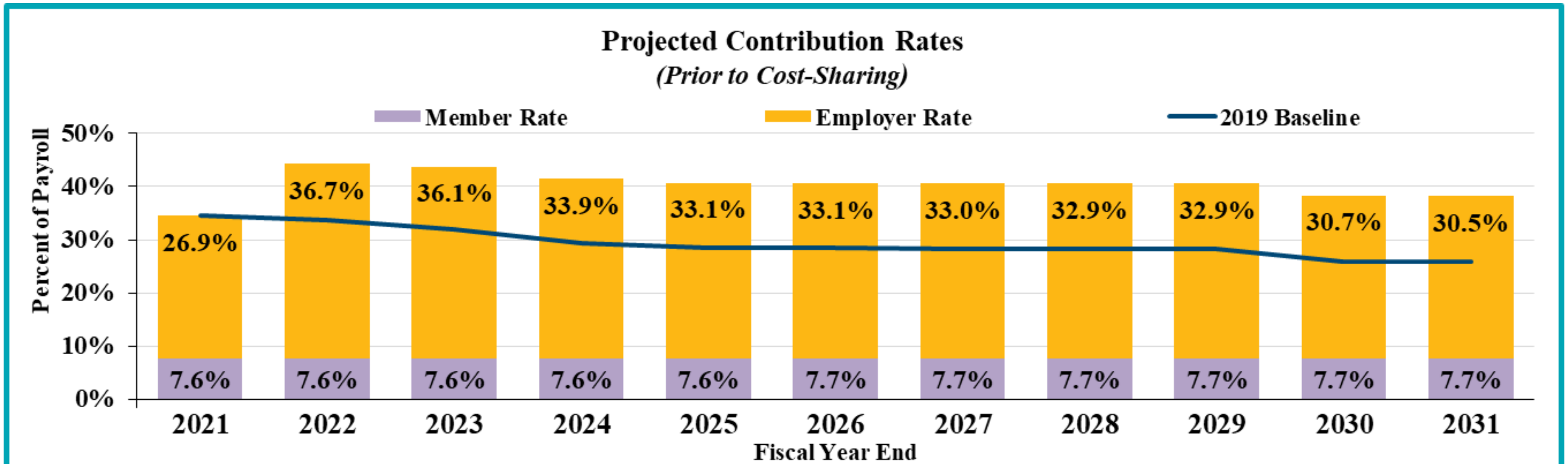
Interest Rate and Discount Rate Change Risk – Sensitivity Testing

As shown above, assumption changes over the last decade have increased the UAL by approximately $2.2 billion, with decreases in the discount rate from 7.75% to 7.40% accounting for approximately $735 million of the increase. 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. Conversely, if interest rates rise, expectations of future investment returns would also increase and the discount rate could be increased. The charts on the following pages show the impact on projected funded status and projected contributions if the discount rate and expected returns were reduced or increased by 100 basis points.

SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

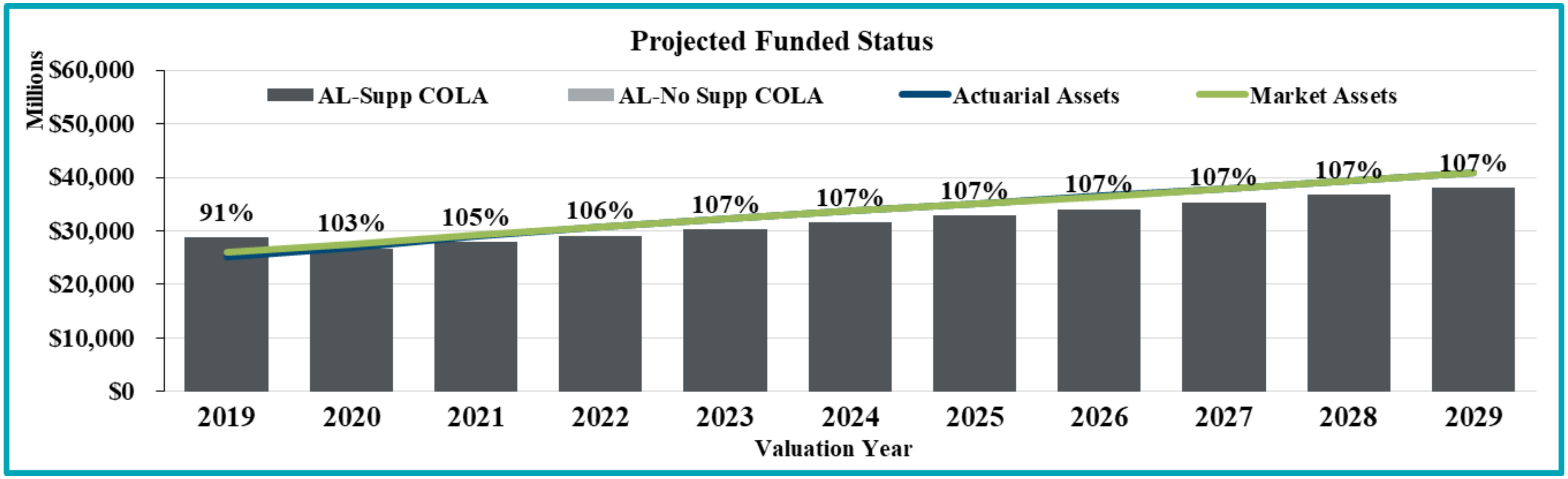
Discount Rate Sensitivity Testing – 100 Basis Point Reduction – 6.40%

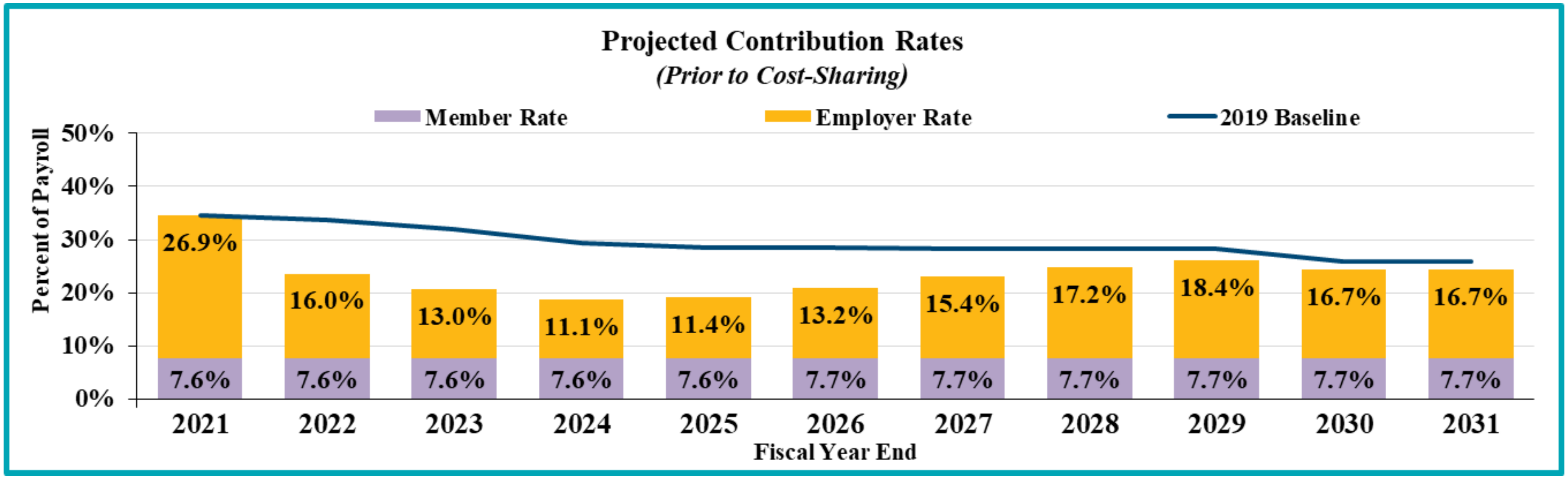




SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

Discount Rate Sensitivity Testing – 100 Basis Point Increase – 8.40%





Supplemental COLA Risk – Stress Testing

Supplemental 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 the 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	Future Supplemental COLAs Assumed	% Difference
Actuarial Liability	$ 28,798.6	$ 30,759.9	6.8%
Actuarial Value of Assets	$ 25,247.6	$ 25,247.6	0.0%
Unfunded Actuarial Liability (actuarial value)	3,551.0	5,512.3	55.2%
Funding Ratio (actuarial value)	87.7%	82.1%	-5.6%
Market Value of Assets	$ 26,078.6	$ 26,078.6	0.0%
Unfunded Liability (market value)	2,720.0	4,681.3	72.1%
Funding Ratio (market value)	90.6%	84.8%	-5.8%

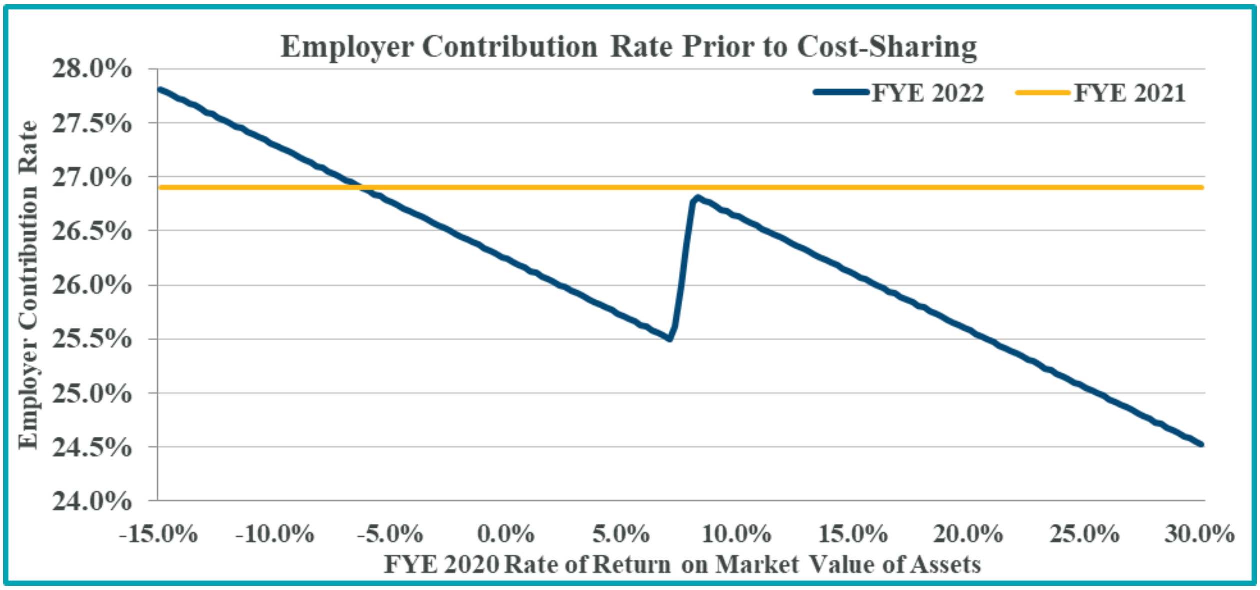
While current contributions rates do not anticipate any future Supplemental COLAs, when a Supplemental COLA is granted, the increase in Actuarial Liability is amortized over five years. The higher than expected investment returns that generate a Supplemental COLA are smoothed into the Actuarial Value 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 the impact of the Supplemental COLA on the employer contribution rate, the chart on the following page shows the estimated FYE 2022 contribution rate assuming actual rates of investment return vary from -15% to 30% with all other actuarial assumptions being met. The

SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

expected employer contribution rate for FYE 2022 ranges from 24.5% to 27.8%, a relatively narrow range compared to the extremely wide range of investment returns.

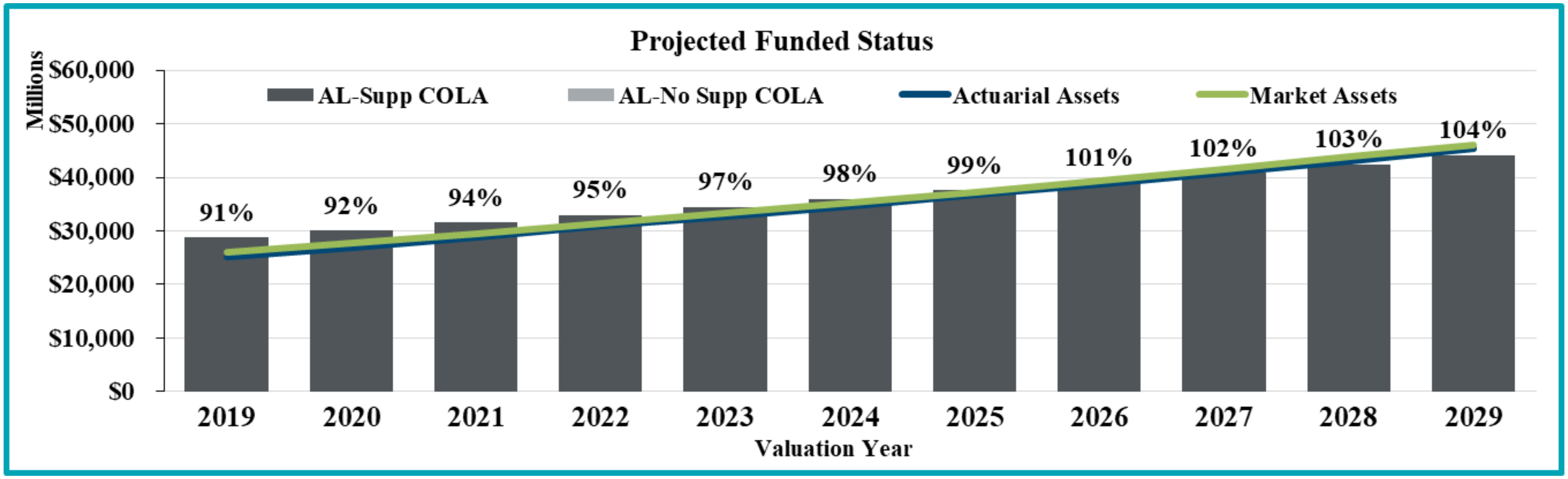
There is downward pressure on the FYE 2022 employer contribution rate due to $176 million of net deferred investment gains that are recognized in the next year, and the completion of payments on the UAL from a 2002 Charter amendment of approximately 1.2% of pay. As shown in the chart, a return of approximately 7.0% starts to generate a Supplemental COLA, and a return of approximately 8.25% or greater generates a full Supplemental COLA.

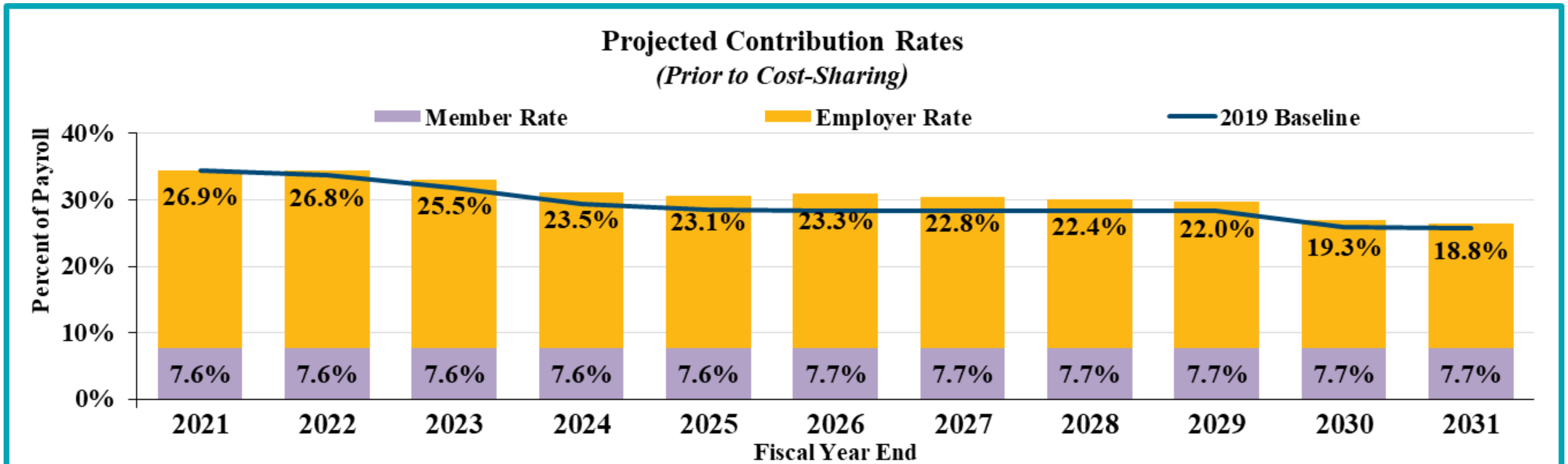


The impact of future Supplemental COLAs on contribution rates and funded status is the worst when the investment returns are just large enough to generate a Supplemental COLA. To illustrate this potential risk and how the amortization method manages it, the projections on the following page assume 8.25% returns each year.

SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

Supplemental COLA Risk Stress Test





SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

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 by 2026.

SECTION III – CERTIFICATION

The purpose of this report is to present the July 1, 2019 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 July 10, 2019 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.

This report and its contents have been prepared in accordance with generally recognized and accepted actuarial principles and practices and our understanding of the Code of Professional Conduct and applicable Actuarial Standards of Practice set out by the Actuarial Standards Board as well as applicable laws and regulations. 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

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

Anne Harper

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

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 2019	FYE 2018
1.	Market Value, Beginning of Year	$ 24,557,966	$ 22,407,354
2.	Additions		
	a. Employer Contributions	645,056	619,067
	b. Member Contributions	380,980	364,696
	c. Total Additions: (2a. + 2b.)	$ 1,026,036	$ 983,763
3.	Net Investment Income	1,970,312	2,549,674
4.	Benefits and Administrative Expenses	(1,475,665)	(1,382,825)
5.	Net Increase/(Decrease): (2c.+3.+4.)	$ 1,520,683	$ 2,150,612
6.	**Market Value, End of Year**	**$ 26,078,649**	**$ 24,557,966**
7.	Estimated Rate of Return on Market Value	8.1%	11.5%

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 cash flows and the assumed rate of return (7.40% for the plan year ending 2019 and 7.50% for the plan years ending 2015 – 2018). See Appendix B for further explanation of the asset valuation method.

SECTION IV – ASSETS

Table IV-2
Development of Actuarial Value of Assets for 7/1/2019
(Amounts in thousands)

			Total
1.	Actuarial Value as of 7/1/2018	$	23,866,028
2.	Non-Investment Cash Flow for FYE 2019		(449,629)
3.	Expected Return for FYE 2019		1,772,589
4.	Expected Actuarial Value as of 7/1/2019: (1+2+3)	$	25,188,988
5.	Actual Return in FYE 2019		1,970,312
6.	Actual Return Above Expected in 2018-2019: (5 - 3)		197,723
7.	Recognition of Returns Above / (Below) Expected		
	a. 2018-2019 (20% of 6.)		39,545
	b. 2017-2018		175,751
	c. 2016-2017		226,198
	d. 2015-2016		(265,276)
	e. 2014-2015		(117,657)
	f. Total: (7a. + 7b. + 7c. + 7d. + 7e.)	$	58,561
8.	**Actuarial Value as of 7/1/2019: (4 + 7f.)**	**$**	**25,247,549**
9.	Market Value as of 7/1/2019	$	26,078,649
10.	Ratio of Actuarial Value to Market Value: (8 / 9)		96.8%
11.	Estimated Rate of Return on Actuarial Value		7.7%

Investment Performance

The internal rate of return on the Market Value of Assets, net of investment expenses, was 8.1% for the plan year ending June 30, 2019. This return compares to an assumed rate of return of 7.40% and resulted in actual returns that are approximately $198 million more than the expected return on the Actuarial Value of Assets.

On an Actuarial Value of Assets basis, the return for the plan year ending June 30, 2019 was 7.7% compared to the assumed return of 7.40%. This return produced an overall SFERS investment gain on the Actuarial Value of Assets of $59 million for the plan year ending June 30, 2019.

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, 2019 and July 1, 2018.

Table V-1
Present Value of Future Benefits
(Amounts in thousands)

	July 1, 2019	July 1, 2018	% Change
Present Value of Future Benefits			
Actives	$ 16,274,051	$ 15,583,739	4.4%
Terminated Vested	586,750	511,149	14.8%
Members Receiving Benefits	17,487,027	16,512,803	5.9%
Total	$ 34,347,828	$ 32,607,691	5.3%

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.

SECTION V – MEASURES OF LIABILITY

Table V-2
Normal Cost by Group as of July 1, 2019
(Amounts in thousands)

	Police	Fire	Miscellaneous	Total
Normal Cost by Benefit Tier				
Old	$ 0	$ 0	$ 92	$ 92
New	64,481	48,724	241,017	354,222
Prop D	1,173	2,808	24,374	28,355
Prop C	38,358	24,751	184,937	248,046
Total	$ 104,012	$ 76,283	$ 450,420	$ 630,715

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, 2019
(Amounts in thousands)

	Police	Fire	Miscellaneous	Total
Actuarial Liability				
Actives	$ 1,623,278	$ 1,333,065	$ 7,768,461	$ 10,724,804
Terminated Vested	27,721	22,682	536,347	586,750
Members Receiving Benefits				
Retirees	2,352,561	1,524,184	10,133,180	14,009,925
Disabled	734,998	1,023,831	448,970	2,207,799
Beneficiaries	355,898	284,095	629,310	1,269,303
Total Members Receiving Benefits	3,443,457	2,832,110	11,211,460	17,487,027
Total Actuarial Liability	**$ 5,094,456**	**$ 4,187,857**	**$ 19,516,268**	**$ 28,798,581**

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 2019 Experience Gain/(Loss)
(Amounts in millions)

Item	Cost
1. Unfunded Actuarial Liability at July 1, 2018	$ 3,469.4
2. Middle of year actuarial liability payment	(472.0)
3. Interest to end of year on 1. and 2.	239.6
4. UAL increase due to July 1, 2019 Supplemental COLA	141.0
5. Expected Unfunded Actuarial Liability at July 1, 2019 (1+2+3+4)	$ 3,378.0
6. Actual Unfunded Liability at July 1, 2019	3,551.0
7. Experience (Loss:) (5 - 6)	$ (173.0)
8. Portion of difference due to:	
a. Investment experience on actuarial value	$ 58.6
b. Salaries more than expected	(46.0)
c. Old Safety Basic COLA less than expected	22.1
d. Retirements	(32.4)
e. Terminations	(47.5)
f. New entrants	(41.3)
g. Contributions (rate delay, payroll changes, and expense gain)	(46.2)
h. Mortality and disability experience	(11.5)
i. Other experience	(28.8)
j. Total Loss	(173.0)

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 2021 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, 2019 for FYE 2021
(Amounts in millions)

	FYE 2021				FYE 2020
	Police	Fire	Miscellaneous	TOTAL	TOTAL
1. Total Normal Cost Rate	31.22%	32.36%	15.05%	**17.72%**	**17.71%**
2. Member Contribution Rate	8.16%	8.17%	7.50%	**7.61%**	**7.59%**
3. Employer Normal Cost Rate (1.- 2.)	23.06%	24.19%	7.55%	**10.11%**	**10.12%**
4. a. UAL - Proposition balance as of 7/1/2019	$ 88.9	$ 88.0	$ 592.9	**$ 769.8**	**$ 867.9**
b. Other UAL as of 7/1/2019	260.4	185.0	2,335.8	**2,781.2**	**2,601.5**
c. Net UAL - as of 7/1/2019 (4a.+4b.)	$ 349.3	$ 273.0	$ 2,928.7	**$ 3,551.0**	**$ 3,469.4**
5. a. Amortization of 4a., Proposition UAL	7.49%	10.87%	3.95%	**4.74%**	**4.80%**
b. Amortization of 4b., Other UAL	11.45%	11.45%	11.45%	**11.45%**	**9.67%**
c. Amortization of Net UAL (5a.+5b.)	18.94%	22.32%	15.40%	**16.19%**	**14.47%**
6. Administrative Expenses	0.60%	0.60%	0.60%	**0.60%**	**0.60%**
7. Net Employer Contribution Rate (3.+5c.+6.)	42.60%	47.11%	23.55%	**26.90%**	**25.19%**

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 26.90% and the hourly pay rates shown in the table below.

Table VI-2
Employee and Employer Contribution Rates By Employee Group for FYE 2021
(Amounts in thousands)

Hire Date	Hourly Pay	Estimated Payroll FYE 2021	Base Rates Employee	Base Rates Employer	Adjusted Rates Employee	Adjusted Rates Employer	Cost Sharing Adjustment
Police and Fire							
< 11/2/1976	All	$ 0	7.00%	26.90%	11.50%	22.40%	4.50%
11/2/1976 - 6/30/2010	All	327,368	7.50%	26.90%	12.00%	22.40%	4.50%
> 6/30/2010	< $61	218,026	9.00%	26.90%	12.50%	23.40%	3.50%
> 6/30/2010	>= $61	42,944	9.00%	26.90%	13.00%	22.90%	4.00%
Miscellaneous							
< 11/2/1976	< $30	$ 0	8.00%	26.90%	8.00%	26.90%	0.00%
< 11/2/1976	$30 - $61	310	8.00%	26.90%	11.50%	23.40%	3.50%
< 11/2/1976	>= $61	184	8.00%	26.90%	12.00%	22.90%	4.00%
>= 11/2/1976	< $30	332,359	7.50%	26.90%	7.50%	26.90%	0.00%
>= 11/2/1976	$30 - $61	1,768,178	7.50%	26.90%	11.00%	23.40%	3.50%
>= 11/2/1976	>= $61	984,815	7.50%	26.90%	11.50%	22.90%	4.00%
Estimated Total Plan		**$ 3,674,184**	**7.61%**	**26.90%**	**11.02%**	**23.49%**	**3.41%**
Estimated Contribution Amounts			**$ 279,605**	**$ 988,356**	**$ 404,895**	**$ 863,066**	**$ 125,290**

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.

SECTION VI – CONTRIBUTIONS

Table VI-3
Development of the Proposition Amortization Rate as of July 1, 2019 for FYE 2021
(dollars in thousands)

Propositions	Remaining Period	Police Outstanding Balance	Police Amortization Payment	Fire Outstanding Balance	Fire Amortization Payment	Miscellaneous Outstanding Balance	Miscellaneous Amortization Payment	Total Outstanding Balance	Total Amortization Payment
2000 Prop C - New Misc Ret Bfts	1	$ 0	$ 0	$ 0	$ 0	$ 38,850	$ 43,241	$ 38,850	$ 43,241
6.25% Credited Interest on EE ctrbs	3	30	12	7	3	4,184	1,609	4,221	1,624
2002 Prop H - Safety Ret Bfts	3	53,213	20,477	56,570	21,769	0	0	109,783	42,246
5.0% Credited Interest on EE ctrbs	5	(292)	(70)	(139)	(33)	(26,739)	(6,401)	(27,170)	(6,504)
2004 Prop E - New Safety LOD Bfts	6	3,844	781	5,399	1,096	0	0	9,243	1,877
2003 Prop F - Misc 3+3 Early Ret Bfts	6	0	0	0	0	11,628	2,361	11,628	2,361
Liability of 2003 Prop F (extended) - Misc 3+3 Early Ret Bfts	7	0	0	0	0	7,408	1,312	7,408	1,312
Liability of 2003 Prop F (extended) - Misc 3+3 Early Ret Bfts	8	0	0	0	0	3,595	567	3,595	567
2008 Prop B - New Misc Ret Bfts and Compound COLA	9	32,059	4,575	26,162	3,734	553,975	79,077	612,196	87,386
Proposition Total		**$ 88,854**	**$ 25,775**	**$ 87,999**	**$ 26,569**	**$ 592,901**	**$ 121,766**	**$ 769,754**	**$ 174,110**
Expected FYE 2021 Payroll			**$ 343,948**		**$ 244,389**		**$ 3,085,847**		**$ 3,674,184**
Amortization Rate			**7.49%**		**10.87%**		**3.95%**		**4.74%**

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 below 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.

Table VI-4
Development of the Non-Proposition Amortization Rate as of July 1, 2019 for FYE 2021
(dollars in thousands)

Amortization Bases	Remaining Period	Outstanding Balance	Amortization Payment
2013 Non-Proposition UAL	14	$ 2,526,435	$ 252,630
2014 Actuarial Gain	15	(842,225)	(79,939)
2014 Assumption Change	15	148,987	14,141
2015 Actuarial Gain	16	(758,583)	(68,639)
2015 Assumption Change[1]	16	1,200,168	108,596
2013 Supplemental COLA	14	195,388	19,538
2014 Supplemental COLA	2	106,175	60,180
2016 Actuarial Loss	17	27,288	2,363
2017 Actuarial Gain	18	(394,754)	(32,820)
2017 Supplemental COLA	3	133,372	51,324
2017 Assumption and Method Change	18	50,042	4,160
2018 Actuarial Gain	19	(391,934)	(31,381)
2018 Supplemental COLA	4	169,288	49,750
2018 Assumption Change	19	297,564	23,825
2019 Actuarial Loss	20	173,069	13,380
2019 Supplemental COLA	5	140,998	33,751
Total Non-Proposition UAL		**$ 2,781,278**	**$ 420,859**
Expected FYE 2021 Payroll			**$ 3,674,184**
Amortization Rate			**11.45%**

[1] *The amortization payment is fully phased-in for the July 1, 2019 valuation and will increase annually only with assumed payroll growth*

SECTION VII – ACTUARIAL SECTION OF THE ANNUAL REPORT

The Government Finance Officers Association (GFOA) maintains a checklist of items to be included in a System's Comprehensive Annual Financial Report (CAFR) in order to receive recognition for excellence in financial reporting. SFERS' includes these exhibits in their Annual Report since they do not publish a formal CAFR. The following Tables VII-1 through VII-3 are exhibits listed by the GFOA, and they recommend 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, Table VII-3 shows the Schedule of Funding Progress and Table VII-4 shows the Retirees added and removed from the Rolls.

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, 2019	$ 58,561	$ (46,222)	$ (185,408)	$ (173,069)	$ (140,998)	$ (314,067)
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)

[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.*

SECTION VII – ACTUARIAL SECTION OF THE ANNUAL REPORT

Table VII-2
Schedule of Funded Liabilities by Type
(Amounts in millions)

Valuation Date July 1,	(A) Active Member Contributions	(B) Retirees, Beneficiaries, and Inactives	(C) Remaining Active Members' Liabilities	Actuarial Value of Assets	Portion of Actuarial Liabilities Covered by Reported Assets (A)	(B)	(C)
2019	$ 3,675	$ 18,074	$ 7,050	$ 25,248	100%	100%	50%
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%

[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.*

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, 2019	$ 25,247,549	$ 28,798,581	$ 3,551,032	88%	$ 3,549,936	100%
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%

SECTION VII – ACTUARIAL SECTION OF THE ANNUAL REPORT

Table VII-4
Schedule of Retirees and Beneficiaries Added to and Removed from Retirement Payroll

	Added to Rolls		Removed from Rolls		Rolls at End of Year			
FYE	Member Count	Annual Allowance	Member Count	Annual Allowance	Member Count	Annual Allowance	% Increase in Annual Allowance	Avearge Annual Allowance
2010	2,004	85,601,938	798	22,483,938	23,500	834,425,915	10.5%	35,507
2011	1,672	66,575,560	880	24,641,442	24,292	905,053,471	8.5%	37,257
2012	1,769	70,868,367	871	26,958,609	25,190	982,250,287	8.5%	38,994
2013	1,577	66,437,220	733	22,406,077	26,034	1,045,547,799	6.4%	40,161
2014	1,588	65,923,470	770	25,170,856	26,852	1,103,959,803	5.6%	41,113
2015	1,564	63,136,134	931	29,314,643	27,485	1,157,081,680	4.8%	42,099
2016	1,657	72,049,646	856	30,384,191	28,286	1,247,230,245	7.8%	44,094
2017	1,769	80,214,008	928	35,082,179	29,127	1,332,430,263	6.8%	45,746
2018	1,797	84,574,963	959	36,284,323	29,965	1,424,324,641	6.9%	47,533
2019	1,770	83,661,179	957	36,959,870	30,778	1,513,436,081	6.3%	49,173

APPENDIX A – MEMBERSHIP INFORMATION

Table A-1
Active Member Data - By Group

	July 1, 2019	July 1, 2018	% Change
Total			
Count	34,202	33,946	0.8%
Average Current Age	46.6	46.6	0.0
Average Service	10.6	10.6	0.0
Annual Pensionable Earnings	$ 3,378,714,262	$ 3,235,979,830	4.4%
Average Pensionable Earnings	$ 98,787	$ 95,327	3.6%
Police			
Count	2,471	2,394	3.2%
Average Current Age	40.6	40.6	0.0
Average Service	12.1	12.0	0.1
Annual Pensionable Earnings	$ 312,984,374	$ 291,499,014	7.4%
Average Pensionable Earnings	$ 126,663	$ 121,762	4.0%
Fire			
Count	1,675	1,642	2.0%
Average Current Age	43.7	44.0	-0.3
Average Service	13.3	13.4	-0.1
Annual Pensionable Earnings	$ 222,140,313	$ 210,854,043	5.4%
Average Pensionable Earnings	$ 132,621	$ 128,413	3.3%
Miscellaneous			
Count	30,056	29,910	0.5%
Average Current Age	47.3	47.3	0.0
Average Service	10.3	10.4	-0.1
Annual Pensionable Earnings	$ 2,843,589,575	$ 2,733,626,773	4.0%
Average Pensionable Earnings	$ 94,610	$ 91,395	3.5%

APPENDIX A – MEMBERSHIP INFORMATION

Table A-2
Active Member Data - By Charter
July 1, 2019

	Counts		Annual Pensionable Earnings
Total			
Old	18	$	2,079,248
New	17,199		1,846,428,472
Prop D	1,605		152,183,540
Prop C	15,380		1,378,023,002
Total	34,202	$	3,378,714,262
Police			
Old	0	$	0
New	1,330		192,551,338
Prop D	23		3,148,595
Prop C*	1,118		117,284,441
Total	2,471	$	312,984,374
Fire			
Old	2	$	345,068
New	931		144,208,742
Prop D	53		7,228,751
Prop C	689		70,357,752
Total	1,675	$	222,140,313
Miscellaneous			
Old	16	$	1,734,180
New	14,938		1,509,668,392
Prop D	1,529		141,806,194
Prop C	13,573		1,190,380,809
Total	30,056	$	2,843,589,575

** Includes 181 members in the Sheriffs Plan (Charter A8.608) and 103 members in the Miscellaneous Safety Plan(Charter A8.610)*

APPENDIX A – MEMBERSHIP INFORMATION

Table A-3
Non-Active Member Data - Total System

	July 1, 2019	July 1, 2018	Change
Retired			
Count	24,218	23,404	3.5%
Average Age	70.7	70.5	0.2
Total Annual Benefit*	$ 1,202,485,890	$ 1,124,937,875	6.9%
Average Annual Benefit	$ 49,653	$ 48,066	3.3%
Disabled			
Count	2,533	2,554	-0.8%
Average Age	69.2	69.1	0.1
Total Annual Benefit*	$ 169,403,447	$ 164,031,034	3.3%
Average Annual Benefit	$ 66,879	$ 64,225	4.1%
Beneficiaries			
Count	4,027	4,007	0.5%
Average Age	77.5	77.4	0.1
Total Annual Benefit*	$ 141,546,744	$ 135,355,732	4.6%
Average Annual Benefit	$ 35,149	$ 33,780	4.1%
Payee Total			
Count	30,778	29,965	2.7%
Average Age	71.4	71.3	0.1
Total Annual Benefit*	$ 1,513,436,081	$ 1,424,324,641	6.3%
Average Annual Benefit	$ 49,173	$ 47,533	3.4%
Inactives			
Count	9,955	9,183	8.4%
Average Age	47.1	47.1	0.0
Total Contribution Balance with Interest	$ 294,295,619	$ 255,588,224	15.1%
Average Contribution Balance with Interest	$ 29,563	$ 27,833	6.2%

** Benefits provided in June 30 valuation data, plus estimated Basic COLAs effective July 1 and December 28, 2019 for the Old Safety COLA groups. Estimated Supplemental COLAs effective July 1, 2019 for eligible members are also included. If applicable, limited by Section 415(b) of the Internal Revenue Code.*

APPENDIX A – MEMBERSHIP INFORMATION

Table A-4
Non-Active Member Data - Old Safety - Prop H
Pre 7/1/1975 Retirements

	July 1, 2019	July 1, 2018	Change
Retired			
Count	4	5	-20.0%
Average Age	89.0	89.4	-0.4
Total Annual Benefit*	$ 111,423	$ 140,713	-20.8%
Average Annual Benefit	$ 27,856	$ 28,143	-1.0%
Disabled			
Count	48	54	-11.1%
Average Age	84.8	84.4	0.4
Total Annual Benefit*	$ 1,947,700	$ 2,110,886	-7.7%
Average Annual Benefit	$ 40,577	$ 39,090	3.8%
Beneficiaries			
Count	109	120	-9.2%
Average Age	84.5	84.5	0.0
Total Annual Benefit*	$ 3,651,779	$ 3,948,134	-7.5%
Average Annual Benefit	$ 33,503	$ 32,901	1.8%
Payee Total			
Count	161	179	-10.1%
Average Age	84.7	84.6	0.1
Total Annual Benefit*	$ 5,710,903	$ 6,199,733	-7.9%
Average Annual Benefit	$ 35,471	$ 34,635	2.4%
Inactives			
Count	0	0	
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 COLAs effective July 1 and December 28, 2019. If applicable, limited by Section 415(b) of the Internal Revenue Code.*

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, 2019	July 1, 2018	Change
Retired			
Count	960	1,002	-4.2%
Average Age	76.7	76.0	0.7
Total Annual Benefit*	$ 103,603,182	$ 104,955,370	-1.3%
Average Annual Benefit	$ 107,920	$ 104,746	3.0%
Disabled			
Count	571	592	-3.5%
Average Age	77.1	76.5	0.6
Total Annual Benefit*	$ 62,234,997	$ 61,848,926	0.6%
Average Annual Benefit	$ 108,993	$ 104,475	4.3%
Beneficiaries			
Count	673	682	-1.3%
Average Age	80.5	80.2	0.3
Total Annual Benefit*	$ 57,113,676	$ 55,628,396	2.7%
Average Annual Benefit	$ 84,864	$ 81,567	4.0%
Payee Total			
Count	2,204	2,276	-3.2%
Average Age	78.0	77.4	0.6
Total Annual Benefit*	$ 222,951,855	$ 222,432,692	0.2%
Average Annual Benefit	$ 101,158	$ 97,730	3.5%
Inactives			
Count	2	2	0.0%
Average Age	73.5	72.5	1.0
Total Contribution Balance with Interest	$ 2,694	$ 2,591	4.0%
Average Contribution Balance with Interest	$ 1,347	$ 1,295	4.0%

** Benefits provided in June 30 valuation data, plus estimated Basic COLAs effective July 1 and December 28, 2019.
Estimated Supplemental COLAs effective July 1, 2019 for eligible members are also included.
If applicable, limited by Section 415(b) of the Internal Revenue Code.*

APPENDIX A – MEMBERSHIP INFORMATION

Table A-6
Non-Active Member Data - New Safety

	July 1, 2019	July 1, 2018	Change
Retired			
Count	1,760	1,662	5.9%
Average Age	63.3	62.8	0.5
Total Annual Benefit*	$ 194,571,987	$ 179,164,375	8.6%
Average Annual Benefit	$ 110,552	$ 107,800	2.6%
Disabled			
Count	585	556	5.2%
Average Age	63.5	63.0	0.5
Total Annual Benefit*	$ 63,516,857	$ 58,703,838	8.2%
Average Annual Benefit	$ 108,576	$ 105,582	2.8%
Beneficiaries			
Count	130	124	4.8%
Average Age	61.3	60.5	0.8
Total Annual Benefit*	$ 8,866,890	$ 7,969,218	11.3%
Average Annual Benefit	$ 68,207	$ 64,268	6.1%
Payee Total			
Count	2,475	2,342	5.7%
Average Age	63.3	62.7	0.6
Total Annual Benefit*	$ 266,955,734	$ 245,837,431	8.6%
Average Annual Benefit	$ 107,861	$ 104,969	2.8%
Inactives			
Count	317	283	12.0%
Average Age	44.1	43.8	0.3
Total Contribution Balance with Interest	$ 17,817,385	$ 13,707,053	30.0%
Average Contribution Balance with Interest	$ 56,206	$ 48,435	16.0%

** Benefits provided in June 30 valuation data, plus estimated Supplemental COLA effective July 1, 2019 for eligible members. If applicable, limited by Section 415(b) of the Internal Revenue Code.*

APPENDIX A – MEMBERSHIP INFORMATION

Table A-7
Non-Active Member Data - Miscellaneous

	July 1, 2019	July 1, 2018	Change
Retired			
Count	21,494	20,735	3.7%
Average Age	71.0	70.8	0.2
Total Annual Benefit*	$ 904,199,297	$ 840,677,417	7.6%
Average Annual Benefit	$ 42,068	$ 40,544	3.8%
Disabled			
Count	1,329	1,352	-1.7%
Average Age	67.8	67.7	0.1
Total Annual Benefit*	$ 41,703,892	$ 41,367,384	0.8%
Average Annual Benefit	$ 31,380	$ 30,597	2.6%
Beneficiaries			
Count	3,115	3,081	1.1%
Average Age	77.2	77.1	0.1
Total Annual Benefit*	$ 71,914,399	$ 67,809,984	6.1%
Average Annual Benefit	$ 23,086	$ 22,009	4.9%
Payee Total			
Count	25,938	25,168	3.1%
Average Age	71.6	71.4	0.2
Total Annual Benefit*	$ 1,017,817,589	$ 949,854,785	7.2%
Average Annual Benefit	$ 39,240	$ 37,741	4.0%
Inactives			
Count	9,636	8,898	8.3%
Average Age	47.2	47.2	0.0
Total Contribution Balance with Interest	$ 276,475,540	$ 241,878,580	14.3%
Average Contribution Balance with Interest	$ 28,692	$ 27,183	5.5%

** Benefits provided in June 30 valuation data, plus estimated Supplemental COLA effective July 1, 2019 for eligible members. If applicable, limited by Section 415(b) of the Internal Revenue Code.*

APPENDIX A – MEMBERSHIP INFORMATION

Table A-8
Distribution of Active Members as of July 1, 2019
Count By Age/Service - Total System

	Years of Service										
Age	**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**	**Total**
Under 25	147	133	0	0	0	0	0	0	0	0	280
25 to 29	435	1,272	129	0	0	0	0	0	0	0	1,836
30 to 34	520	2,206	976	131	0	0	0	0	0	0	3,833
35 to 39	397	1,959	1,281	731	81	2	0	0	0	0	4,451
40 to 44	291	1,383	1,094	907	508	91	1	0	0	0	4,275
45 to 49	241	1,129	891	931	898	591	61	0	0	0	4,742
50 to 54	207	940	758	797	970	905	457	75	2	0	5,111
55 to 59	133	751	672	734	908	800	594	306	106	0	5,004
60 to 64	63	383	455	517	611	491	337	261	115	8	3,241
65 to 69	22	115	166	189	217	155	88	77	48	22	1,099
70 and up	7	25	43	51	58	55	33	29	16	13	330
Total Count	2,463	10,296	6,465	4,988	4,251	3,090	1,571	748	287	43	34,202

Table A-9
Distribution of Active Members as of July 1, 2019
Average Salary By Age/Service - Total System

	Years of Service										
Age	**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**	**Total**
Under 25	$ 61,362	$ 68,613	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 64,806
25 to 29	76,187	80,332	91,226	0	0	0	0	0	0	0	80,116
30 to 34	83,226	84,282	100,728	107,794	0	0	0	0	0	0	89,130
35 to 39	87,596	88,308	102,274	114,548	118,629	114,241	0	0	0	0	97,137
40 to 44	83,254	88,171	101,469	111,654	118,889	118,917	88,244	0	0	0	100,526
45 to 49	85,084	87,707	98,483	111,545	116,645	128,186	132,556	0	0	0	105,381
50 to 54	79,592	87,675	92,263	102,588	109,852	122,382	134,622	133,036	189,028	0	105,611
55 to 59	82,982	88,765	91,984	98,803	103,167	112,373	121,333	114,387	101,280	0	102,601
60 to 64	82,470	86,763	92,382	97,019	94,468	100,496	111,224	113,563	104,140	85,448	97,952
65 to 69	97,176	89,262	84,810	92,560	101,183	100,737	112,852	114,189	109,547	100,373	98,031
70 and up	51,570	69,223	92,753	88,517	98,761	104,433	103,248	105,304	94,944	121,452	95,834
Avg. Salary	$ 81,264	$ 86,004	$ 97,710	$ 106,140	$ 108,301	$ 115,911	$ 122,590	$ 115,597	$ 104,067	$ 103,969	$ 98,787

APPENDIX A – MEMBERSHIP INFORMATION

Table A-10
Distribution of Active Members as of July 1, 2019
Count By Age/Service - Police

	Years of Service										
Age	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	Total
Under 25	5	30	0	0	0	0	0	0	0	0	35
25 to 29	12	282	34	0	0	0	0	0	0	0	328
30 to 34	6	210	186	46	0	0	0	0	0	0	448
35 to 39	2	91	119	201	13	0	0	0	0	0	426
40 to 44	0	31	42	122	100	12	0	0	0	0	307
45 to 49	0	15	24	74	108	141	12	0	0	0	374
50 to 54	1	19	8	25	71	128	104	6	1	0	363
55 to 59	0	14	12	7	19	53	37	7	1	0	150
60 to 64	0	2	0	2	5	7	10	3	2	0	31
65 to 69	0	1	0	2	0	4	1	1	0	0	9
70 and up	0	0	0	0	0	0	0	0	0	0	0
Total Count	26	695	425	479	316	345	164	17	4	0	2,471

Table A-11
Distribution of Active Members as of July 1, 2019
Average Salary By Age/Service - Police

	Years of Service										
Age	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	Total
Under 25	$ 87,566	$ 89,979	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 89,634
25 to 29	87,566	94,389	112,632	0	0	0	0	0	0	0	96,031
30 to 34	87,566	96,064	118,738	133,370	0	0	0	0	0	0	109,195
35 to 39	87,566	95,957	122,203	138,271	141,866	0	0	0	0	0	124,615
40 to 44	0	102,987	124,048	137,709	143,363	154,264	0	0	0	0	134,822
45 to 49	0	103,572	125,750	137,290	138,616	149,641	164,788	0	0	0	141,119
50 to 54	123,453	118,543	125,555	136,573	137,554	152,110	162,922	159,542	258,131	0	149,284
55 to 59	0	153,856	130,136	139,371	146,788	143,772	158,534	172,946	160,491	0	148,913
60 to 64	0	84,342	0	141,641	133,481	136,992	149,657	150,161	133,663	0	138,474
65 to 69	0	265,812	0	138,564	0	132,787	147,311	133,594	0	0	150,555
70 and up	0	0	0	0	0	0	0	0	0	0	0
Avg. Salary	$ 88,946	$ 97,568	$ 120,591	$ 137,448	$ 140,423	$ 149,364	$ 161,165	$ 161,880	$ 171,487	$ 0	$ 126,663

APPENDIX A – MEMBERSHIP INFORMATION

Table A-12
Distribution of Active Members as of July 1, 2019
Count By Age/Service - Fire

	Years of Service										
Age	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	Total
Under 25	3	8	0	0	0	0	0	0	0	0	11
25 to 29	18	85	1	0	0	0	0	0	0	0	104
30 to 34	25	150	59	3	0	0	0	0	0	0	237
35 to 39	9	103	95	41	17	0	0	0	0	0	265
40 to 44	6	38	69	41	50	17	0	0	0	0	221
45 to 49	2	11	30	37	97	91	11	0	0	0	279
50 to 54	1	8	9	25	78	114	91	11	0	0	337
55 to 59	0	1	6	7	41	44	60	9	1	0	169
60 to 64	0	0	0	3	10	9	12	7	1	0	42
65 to 69	0	1	0	0	1	1	2	1	1	1	8
70 and up	0	0	0	0	0	0	1	0	0	1	2
Total Count	64	405	269	157	294	276	177	28	3	2	1,675

Table A-13
Distribution of Active Members as of July 1, 2019
Average Salary By Age/Service - Fire

	Years of Service										
Age	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	Total
Under 25	$ 67,371	$ 87,282	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 81,852
25 to 29	70,993	87,398	110,258	0	0	0	0	0	0	0	84,779
30 to 34	70,088	93,099	125,111	132,859	0	0	0	0	0	0	99,144
35 to 39	78,653	97,787	131,109	142,497	160,234	0	0	0	0	0	120,006
40 to 44	94,830	93,484	122,854	145,674	150,624	149,361	0	0	0	0	129,598
45 to 49	54,935	112,225	128,695	151,008	146,960	155,865	177,542	0	0	0	147,614
50 to 54	72,375	83,328	134,376	140,057	146,365	160,086	172,201	171,526	0	0	156,300
55 to 59	0	172,353	120,865	132,076	147,180	156,078	167,209	170,116	53,539	0	155,864
60 to 64	0	0	0	182,040	132,977	147,070	170,380	193,592	182,872	0	161,479
65 to 69	0	45,000	0	0	141,315	146,883	180,927	158,631	156,928	184,237	149,356
70 and up	0	0	0	0	0	0	146,560	0	0	160,831	153,695
Avg. Salary	$ 73,301	$ 93,420	$ 127,210	$ 145,051	$ 147,729	$ 156,922	$ 170,671	$ 176,129	$ 131,113	$ 172,534	$ 132,621

APPENDIX A – MEMBERSHIP INFORMATION

Table A-14
Distribution of Active Members as of July 1, 2019
Count By Age/Service - Miscellaneous

	Years of Service										
Age	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	Total
Under 25	139	95	0	0	0	0	0	0	0	0	234
25 to 29	405	905	94	0	0	0	0	0	0	0	1,404
30 to 34	489	1,846	731	82	0	0	0	0	0	0	3,148
35 to 39	386	1,765	1,067	489	51	2	0	0	0	0	3,760
40 to 44	285	1,314	983	744	358	62	1	0	0	0	3,747
45 to 49	239	1,103	837	820	693	359	38	0	0	0	4,089
50 to 54	205	913	741	747	821	663	262	58	1	0	4,411
55 to 59	133	736	654	720	848	703	497	290	104	0	4,685
60 to 64	63	381	455	512	596	475	315	251	112	8	3,168
65 to 69	22	113	166	187	216	150	85	75	47	21	1,082
70 and up	7	25	43	51	58	55	32	29	16	12	328
Total Count	2,373	9,196	5,771	4,352	3,641	2,469	1,230	703	280	41	30,056

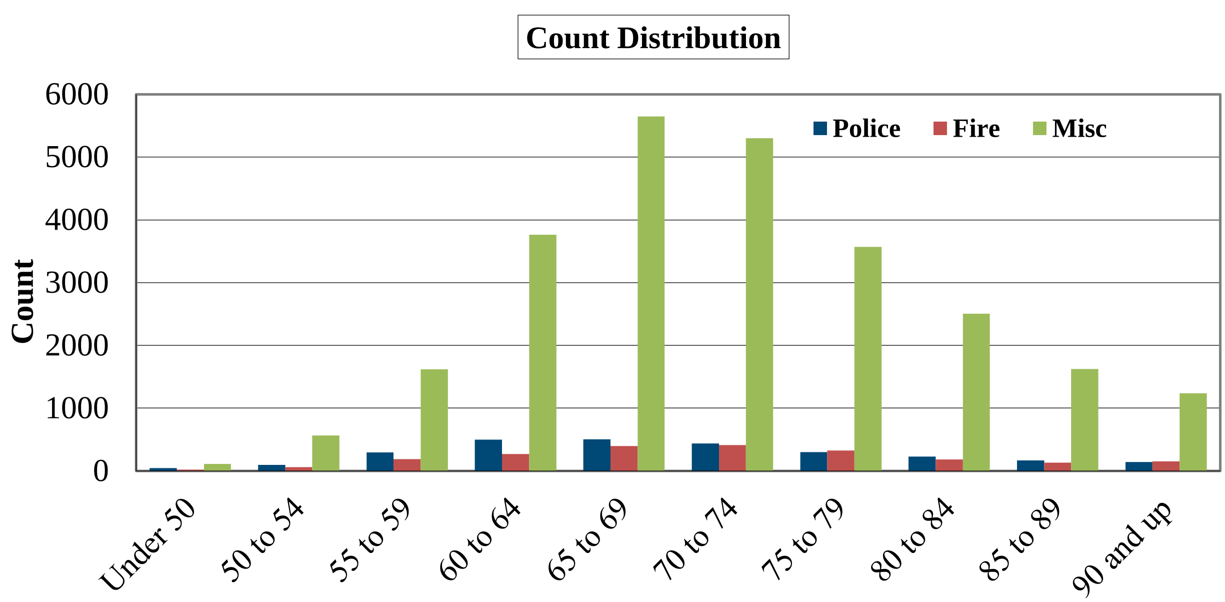
Table A-15
Distribution of Active Members as of July 1, 2019
Average Salary By Age/Service - Miscellaneous

	Years of Service										
Age	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	Total
Under 25	$ 60,290	$ 60,294	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 60,292
25 to 29	76,081	75,288	83,280	0	0	0	0	0	0	0	76,052
30 to 34	83,844	82,225	94,177	92,530	0	0	0	0	0	0	85,520
35 to 39	87,804	87,361	97,484	102,454	98,837	114,241	0	0	0	0	92,412
40 to 44	83,010	87,668	99,004	105,507	107,620	103,729	88,244	0	0	0	96,002
45 to 49	85,336	87,247	96,618	107,441	108,978	112,744	109,355	0	0	0	99,230
50 to 54	79,413	87,071	91,392	100,196	103,987	110,160	110,335	122,995	119,924	0	98,144
55 to 59	82,982	87,413	91,019	98,085	100,061	107,270	113,025	111,244	101,170	0	99,197
60 to 64	82,470	86,776	92,382	96,346	93,495	99,075	107,750	110,893	102,909	85,448	96,714
65 to 69	97,176	88,092	84,810	92,068	100,997	99,575	110,845	113,338	108,539	96,379	97,215
70 and up	51,570	69,223	92,753	88,517	98,761	104,433	101,894	105,304	94,944	118,171	95,481
Avg. Salary	$ 81,395	$ 84,803	$ 94,650	$ 101,290	$ 102,330	$ 106,651	$ 110,528	$ 112,067	$ 102,814	$ 100,624	$ 94,610

APPENDIX A – MEMBERSHIP INFORMATION

Table A-16
Distribution of Retirees, Disabled Members, and Beneficiaries as of July 1, 2019
Count

Age	Police	Fire	Misc	Total
Under 50	46	18	111	175
50 to 54	97	60	562	719
55 to 59	295	187	1,616	2,098
60 to 64	500	270	3,765	4,535
65 to 69	503	395	5,649	6,547
70 to 74	438	412	5,304	6,154
75 to 79	299	324	3,571	4,194
80 to 84	225	184	2,503	2,912
85 to 89	164	131	1,622	1,917
90 and up	139	153	1,235	1,527
Total	2,706	2,134	25,938	30,778

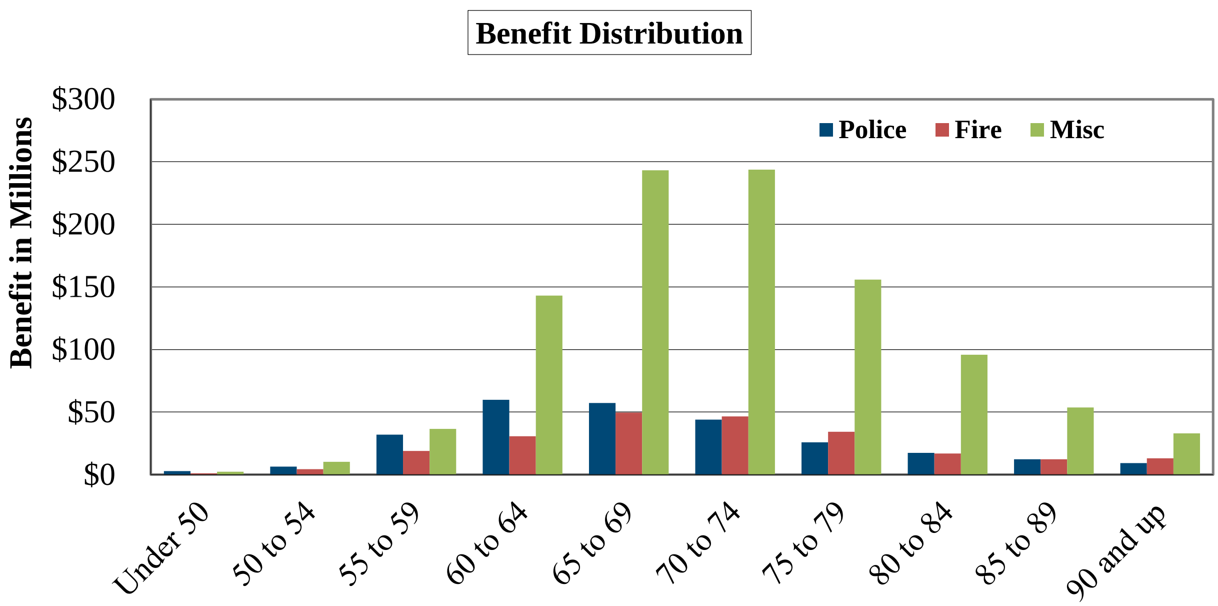


APPENDIX A – MEMBERSHIP INFORMATION

Table A-17
Distribution of Retirees, Disabled Members, and Beneficiaries as of July 1, 2019
Annual Benefit *

Age	Police	Fire	Misc	Total
Under 50	$ 2,898,758	$ 1,164,202	$ 2,438,986	$ 6,501,947
50 to 54	6,502,205	4,433,733	10,286,466	21,222,404
55 to 59	32,042,140	19,003,659	36,644,144	87,689,944
60 to 64	59,768,325	30,771,340	143,112,386	233,652,051
65 to 69	57,204,108	49,729,262	243,185,439	350,118,809
70 to 74	43,956,377	46,569,388	243,737,941	334,263,706
75 to 79	25,932,356	34,167,862	155,763,951	215,864,170
80 to 84	17,416,874	16,855,804	95,948,660	130,221,338
85 to 89	12,359,989	12,399,014	53,679,778	78,438,782
90 and up	9,244,710	13,198,386	33,019,836	55,462,932
Total	$ 267,325,842	$ 228,292,650	$ 1,017,817,589	$ 1,513,436,081

** Benefits used in the July 1, 2019 actuarial valuation*



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 7/1/2018	**33,946**	**2,147**	**1,060**	**5,976**	**2,554**	**23,404**	**4,007**	**73,094**
New Entrants	2,823	0	0	385	0	0	0	3,208
Returned to Work	188	(44)	(4)	(137)	0	(3)	0	0
Vested Terminations	(344)	344	0	0	0	0	0	0
Reciprocals	(13)	(4)	24	(7)	0	0	0	0
Non Vested Terminations	(643)	48	0	595	0	0	0	0
Refund/Withdrawal	(545)	(23)	(8)	(244)	0	0	0	(820)
Retirements	(1,165)	(122)	(20)	(8)	0	1,315	0	0
Disabilities	(13)	(12)	(8)	(1)	84	(50)	0	0
Benefit Ceased*	(32)	(3)	0	(20)	(108)	(599)	(247)	(1,009)
New Continuants	0	0	0	0	0	0	267	267
New Dissolutions	0	0	0	0	0	45	0	45
Duplicate Adjustments	0	0	0	0	3	106	0	109
Miscellaneous Adjustments	0	40	0	1	0	0	0	41
Participants as of 7/1/2019	**34,202**	**2,371**	**1,044**	**6,540**	**2,533**	**24,218**	**4,027**	**74,935**

* *Includes deaths and benefits that were terminated or suspended*

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 7/1/2018	**2,394**	**54**	**17**	**143**	**523**	**1,631**	**526**	**5,288**
New Entrants	168	0	0	11	0	0	0	179
Returned to Work	2	(1)	0	(1)	0	0	0	0
Vested Terminations	(16)	16	0	0	0	0	0	0
Non Vested Terminations	(8)	0	0	8	0	0	0	0
Reciprocals	0	0	0	0	0	0	0	0
Refund/Withdrawal	(10)	0	0	(8)	0	0	0	(18)
Retirements	(53)	(6)	0	(1)	0	60	0	0
Disabilities	(6)	(2)	(1)	0	23	(14)	0	0
Benefit Ceased*	0	0	0	0	(16)	(35)	(34)	(85)
New Continuants	0	0	0	0	0	0	31	31
New Dissolutions	0	0	0	0	0	8	0	8
Duplicate Adjustments	0	0	0	0	2	1	0	3
Miscellaneous Adjustments	0	7	0	1	0	0	0	8
Participants as of 7/1/2019	**2,471**	**68**	**16**	**153**	**532**	**1,651**	**523**	**5,414**

* *Includes deaths and benefits that were terminated or suspended*

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 7/1/2018	**1,642**	**33**	**22**	**16**	**679**	**1,038**	**400**	**3,830**
New Entrants	98	0	0	3	0	0	0	101
Returned to Work	1	0	0	0	0	(1)	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	(3)	0	0	0	0	0	0	(3)
Retirements	(58)	(1)	0	0	0	59	0	0
Disabilities	0	(1)	0	0	10	(9)	0	0
Benefit Ceased*	(1)	0	0	0	(17)	(19)	(26)	(63)
New Continuants	0	0	0	0	0	0	15	15
New Dissolutions	0	0	0	0	0	5	0	5
Duplicate Adjustments	0	0	0	0	0	0	0	0
Miscellaneous Adjustments	0	6	0	0	0	0	0	6
Participants as of 7/1/2019	**1,675**	**39**	**22**	**21**	**672**	**1,073**	**389**	**3,891**

* *Includes deaths and benefits that were terminated or suspended*

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 7/1/2018	**29,910**	**2,060**	**1,021**	**5,817**	**1,352**	**20,735**	**3,081**	**63,976**
New Entrants	2,557	0	0	371	0	0	0	2,928
Returned to Work	185	(43)	(4)	(136)	0	(2)	0	0
Vested Terminations	(326)	326	0	0	0	0	0	0
Reciprocals	(13)	(4)	24	(7)	0	0	0	0
Non Vested Terminations	(633)	48	0	585	0	0	0	0
Refund/Withdrawal	(532)	(23)	(8)	(236)	0	0	0	(799)
Retirements	(1,054)	(115)	(20)	(7)	0	1,196	0	0
Disabilities	(7)	(9)	(7)	(1)	51	(27)	0	0
Benefit Ceased*	(31)	(3)	0	(20)	(75)	(545)	(187)	(861)
New Continuants	0	0	0	0	0	0	221	221
New Dissolutions	0	0	0	0	0	32	0	32
Duplicate Adjustments	0	0	0	0	1	105	0	106
Miscellaneous Adjustments	0	27	0	0	0	0	0	27
Participants as of 7/1/2019	**30,056**	**2,264**	**1,006**	**6,366**	**1,329**	**21,494**	**3,115**	**65,630**

* *Includes deaths and benefits that were terminated or suspended*

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 6/30/2019 is equal to "Cvd Pay" reported for full-time 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 6/30/2020 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):

    - 3.5% for all active members (3.0% effective July 1, 2019; 1.0% effective 12/28/2019)

- 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 COLAs effective July 1, 2019.

- The Basic COLAs effective July 1 and December 28, 2019 for the Old Safety Charter retirees were estimated based on data provided by SFERS and included in the July 1, 2019 benefit.

- Supplemental COLA benefits were granted as of July 1, 2019 for members who retired on or after November 6, 1996 and were hired prior to January 7, 2012. There was an adjustment made to the benefits provided in the valuation data for a Supplemental COLA of 1.0% of the June 30, 2018 monthly benefit for Miscellaneous and New Safety Charters and varying amounts for the Old Safety Charter so that the total benefit increase was 3.0%, unless the Basic COLA was greater than 3.0%.

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

APPENDIX A – MEMBERSHIP INFORMATION

- For accounts having duplicate records based on Social Security Number in the "Active" data file, the records are added together for fields "Cvd Pay," "Contribs," "Interest," "Shortage," "Short Int," and "Yrs Svc." The other data in the record is determined by the record which is considered open ("Plan Stat" = "O") with the most recent "Membership Date."

- Records on the "Active" data file are considered to be 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 6/30/2019, 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.

- 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 July 10, 2019 Board meeting based on our recommendations. Please refer to the economic assumption review presentation dated July 10, 2019 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: 2.75% 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 2019. 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:

(Wage Inflation + Ultimate Merit) ÷ 2 x 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 2020, 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 2020 gradually increasing to 0.375% for FYE 2030and 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

	Service					
Age	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 from their December 2013 experience study without scale BB projection

Table B-6

Gender	Adjustment Factor	Base Year
Female	0.918	2009
Male	0.948	2009

b. Healthy Annuitants – CalPERS healthy annuitant mortality table from their December 2013 experience study without scale BB projection

Table B-7

Gender	Adjustment 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

	Actives			Annuitants	
Age	Male	Female	Age	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

Gender	Adjustment Factor	Base Year
Female	1.066	2006
Male	0.942	2006

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b. Safety Disabled Annuitants – CalPERS industrial disability mortality table from their December 2013 experience study without scale BB projection

Table B-10		
Gender	Adjustment 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				
	Police and Fire		All Miscellaneous	
Age	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					
		Females			Males	
Age	**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

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	0.1000	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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Table B-17

Rates of Retirement by Age and Service
20 - 29 Years of Service (25 to 29 for Safety) - Prop C

Age	Police	Fire	Muni Drivers	Craft	Misc
50	0.0500	0.0200	0.0000	0.0000	0.0000
51	0.0500	0.0200	0.0000	0.0000	0.0000
52	0.1000	0.0200	0.0000	0.0000	0.0000
53	0.1500	0.0500	0.0300	0.0300	0.0325
54	0.1750	0.1500	0.0300	0.0300	0.0400
55	0.2000	0.1750	0.0300	0.0300	0.0400
56	0.2400	0.1750	0.0300	0.0300	0.0425
57	0.2600	0.1750	0.0300	0.0300	0.0450
58	0.3000	0.2500	0.0300	0.0300	0.0500
59	0.3200	0.3000	0.0500	0.0300	0.0875
60	0.3400	0.3500	0.1000	0.0750	0.1000
61	0.3600	0.4000	0.1250	0.1250	0.1500
62	0.3600	0.4000	0.1500	0.2500	0.2500
63	0.3600	0.3000	0.2000	0.1750	0.2000
64	0.3600	0.3000	0.2500	0.1750	0.2000
65	1.0000	1.0000	0.3000	0.3250	0.4000
66	1.0000	1.0000	0.3000	0.2750	0.3000
67	1.0000	1.0000	0.3000	0.2750	0.3000
68	1.0000	1.0000	0.3000	0.2000	0.3000
69	1.0000	1.0000	0.3000	0.2000	0.3000
70 & over	1.0000	1.0000	1.0000	1.0000	1.0000

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Table B-18

Rates of Retirement by Age and Service
30 Years of Service or more - Prop C

Age	Police	Fire	Muni Drivers	Craft	Misc
50	0.1000	0.0200	0.0000	0.0000	0.0000
51	0.1500	0.0200	0.0000	0.0000	0.0000
52	0.2000	0.0200	0.0000	0.0000	0.0000
53	0.2500	0.1000	0.0300	0.0300	0.0325
54	0.3000	0.2000	0.0500	0.0300	0.0400
55	0.3500	0.2500	0.1000	0.0500	0.0400
56	0.3500	0.3000	0.1000	0.0500	0.0425
57	0.4500	0.3000	0.1000	0.0500	0.0450
58	0.5000	0.3500	0.1000	0.1000	0.0750
59	0.5000	0.3500	0.1000	0.1500	0.1000
60	0.5000	0.3500	0.1500	0.2000	0.1500
61	0.5000	0.4000	0.2000	0.2000	0.2000
62	0.5000	0.4000	0.3000	0.3000	0.3000
63	0.5000	0.3000	0.2500	0.2500	0.2500
64	0.5000	0.3000	0.2500	0.2500	0.2500
65	1.0000	1.0000	0.5000	0.4000	0.4000
66	1.0000	1.0000	0.4500	0.3000	0.3250
67	1.0000	1.0000	0.4500	0.3000	0.3250
68	1.0000	1.0000	0.4500	0.3000	0.3250
69	1.0000	1.0000	0.4500	0.3000	0.3250
70 & over	1.0000	1.0000	1.0000	1.0000	1.0000

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

17. Family Composition

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

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

18. Deferred Member Benefit

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

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

None.

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 (7.40% for the year ending 2019 and 7.50% for the years ending 2015-2018 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

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

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. This is the final year of the phase-in.

4. Changes Since Last Valuation

None.

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.

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.

APPENDIX C – SUMMARY OF PLAN PROVISIONS
(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.

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

None.

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.

APPENDIX C – SUMMARY OF PLAN PROVISIONS
(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.

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%

APPENDIX C – SUMMARY OF PLAN PROVISIONS
(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%

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%

<u>Benefit – Survivor</u>

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

6. Non-Industrial Disability

<u>Eligibility</u>

10 years of Credited Service.

<u>Benefit – Member</u>

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.

<u>Benefit – Survivor</u>

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.

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.

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

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

None.

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.

APPENDIX C – SUMMARY OF PLAN PROVISIONS (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.

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.

APPENDIX C – SUMMARY OF PLAN PROVISIONS (MISCELLANEOUS)

Charter Section 8.603

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

Table C-7
City and County of San Francisco Employees' Retirement System
Section 8.603 Member Service Retirement Factors

Retirement Age	Retirement Factors	Retirement Age	Retirement Factors
53	1.000%	60	1.756%
54	1.108%	61	1.864%
55	1.216%	62	1.972%
56	1.324%	63	2.080%
57	1.432%	64	2.188%
58	1.540%	65 or above	2.300%
59	1.648%		

Benefit – Survivor

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

6. Disability

Eligibility

10 years of Credited Service.

Benefit – Member

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

Benefit – Survivor

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

APPENDIX C – SUMMARY OF PLAN PROVISIONS (MISCELLANEOUS)

7. Death while an Active Employee

If Not Eligible for Service Retirement:
Lump sum benefit equal to the accumulated refund of all employee contributions with interest, plus six months' salary to a designated beneficiary. If the death is of a violent nature and job-related, an additional lump sum equivalent benefit equal to 12 months' salary is payable.

If Eligible for Service Retirement:
A qualified spouse may elect i) or ii) below:

i) Lump sum benefit equal to the accumulated refund of all employee contributions with interest, plus six months' salary to a designated beneficiary.

ii) A benefit equal to 50% of the service retirement benefit the member would have received had the member retired for service on the date of death.

8. Withdrawal Benefits

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

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

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

APPENDIX C – SUMMARY OF PLAN PROVISIONS (MISCELLANEOUS)

9. Additional Post-retirement Death Benefit

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

10. Post-retirement Cost-of-Living Benefit

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

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

11. Changes in this Valuation

None.

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.

	Adjustment to Employee Contribution Rate		
Net Employer 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.

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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