BAY AREA WATER SUPPLY AND CONSERVATION AGENCY

VALUATION OF RETIREE HEALTH BENEFITS

REPORT OF GASB 75 ACTUARIAL VALUATION AS OF JUNE 30, 2023

Prepared by: North Bay Pensions LLC
September 18, 2023

Contents of This Report

Actuarial Certification		**1**
Summary of Results		**2**
Detailed Exhibits		
Exhibit 1	Actuarial Values as of June 30, 2023	**5**
Exhibit 2	Net OPEB Liability	**6**
Exhibit 3	Sensitivity of the Net OPEB Liability	**7**
Exhibit 4	OPEB Expense for the Fiscal Year Ending 6-30-2024	**8**
Exhibit 5	Deferred Outflows and Inflows of Resources	**9**
Exhibit 6	Schedule of Changes in the Net OPEB Liability	**11**
Exhibit 7	Ten-Year Projection of Costs	**12**
Exhibit 8	Summary of Benefit Provisions	**13**
Exhibit 9	Summary of Actuarial Assumptions	**13**

Actuarial Certification

This report presents the determination of benefit obligations under **Statement No. 75 of the Governmental Accounting Standards Board (GASB 75)** as of June 30, 2023 for the retiree health and welfare benefits provided by the Bay Area Water Supply and Conservation Agency (BAWSCA). I was retained by BAWSCA to perform these calculations.

GASB Statement 75, "Accounting and Financial Reporting for Postemployment Benefits Other Than Pensions", was issued to provide standards for governmental employers to record expense for **Other Postemployment Benefits (OPEB)**.

The information contained in this report was based on a participant census as of June 30, 2023 provided to me by BAWSCA. The actuarial assumptions and methods used in this valuation were selected by BAWSCA after consultation with me. I believe the assumptions and methods are reasonable and appropriate for purposes of actuarial computations under GASB 75.

Actuarial computations under GASB 75 are for purposes of fulfilling employer accounting requirements. The calculations reported herein have been made on a basis consistent with my understanding of GASB 75. Determinations for purposes other than meeting employer financial accounting requirements may be significantly different from the results reported herein. Due to the limited scope of my assignment, I did not perform an analysis of the potential range of future measurements.

To the best of my knowledge, this report is complete and accurate. This valuation has been conducted in accordance with generally accepted actuarial principles and practices. The undersigned is a Fellow of the Society of Actuaries, a Fellow of the Conference of Consulting Actuaries, and a Member of the American Academy of Actuaries, and meets their continuing education requirements and qualification standards for public statements of actuarial opinion relating to retirement plans. In my opinion, I am qualified to perform this valuation.

9-18-23

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Summary of Results

Background

The Bay Area Water Supply and Conservation Agency (BAWSCA) pays monthly medical insurance premiums on behalf of retired former employees. As of June 30, 2023, BAWSCA has accumulated $1,099,366 in the CalPERS CERBT (California Employers' Retirement Benefit Trust) toward the cost of future benefits.

In June 2015, the Governmental Accounting Standards Board (GASB) released Statement No. 75, "Accounting and Financial Reporting for Postemployment Benefits Other Than Pensions". This statement, often referred to as **GASB 75**, requires governmental entities to (1) record annual expense for their OPEB and (2) disclose certain information in their year-end financial statements.

BAWSCA has requested this actuarial valuation to determine what its OPEB obligations under the program are, and what the impact of GASB 75 will be for the 2023-2024 year. This report also includes GASB 75 results that were accrued and disclosed by BAWSCA during the 2022-2023 year.

Actuarial Present Value of Projected Benefit Payments

The Actuarial Present Value of Projected Benefit Payments (APVPBP) for all current and former employees, as of June 30, 2023, is **$2,573,809**. This is the amount BAWSCA would theoretically need to set aside at this time to fully fund all those future benefits.

The total value of $2,573,809 is the sum of these amounts:

Future benefits of current employees	$ 2,121,288
Future benefits of current retirees	452,521
APVPBP	$ 2,573,809

This figure may be compared to the APVPBP of $2,366,025 that was shown in the 2022 valuation report. We would have expected the APVPBP to increase to approximately $2,467,000 by 2023 as employees continue working and approach retirement age. The difference between the 2022 figure of $2,366,025 and this year's figure of $2,573,809 is:

• Expected increase in the APVPBP since 2022	$ 101,195
• Changes in medical premiums	65,607
• Miscellaneous experience gains and losses	40,982
Total of changes	$ 207,784

These figures are computed by (1) estimating the OPEB benefits that will be paid to each current and former employee and their beneficiaries (if applicable), upon the employee's retirement from BAWSCA, (2) estimating the likelihood that each payment will be made, taking into consideration the likelihood of remaining employed until retirement age and the likelihood of survival after retirement, and (3) discounting each expected future payment back to the present date at an assumed rate of investment return.

Net OPEB Liability

The **Total OPEB Liability** (TOL) is the portion of the APVPBP which has been "earned" by employees based on past years of service (i.e. benefits allocated to past years of service).

The **Plan Fiduciary Net Position** (FNP) is equal to the value of assets that have been accumulated in an irrevocable trust for these benefits.

The **Net OPEB Liability** or **Asset** (NOL) is the excess of the Total OPEB Liability over the Plan Fiduciary Net Position. At the end of each fiscal year, BAWSCA must show a liability equal to the NOL.

At June 30, 2022 and June 30, 2023, these amounts are:

	June 30, 2022	June 30, 2023
Present value of benefits for employees	$ 1,367,543	$ 1,554,414
Present value of benefits for retirees	434,781	452,521
Total OPEB Liability	$ 1,802,324	$ 2,006,935
Accumulated assets in the CERBT trust	$ 994,254	$ 1,099,366
Plan Fiduciary Net Position	$ 994,254	$ 1,099,366
Total OPEB Liability	$ 1,802,324	$ 2,006,935
Plan Fiduciary Net Position	(994,254)	(1,099,366)
Net OPEB Liability	$ 808,070	$ 907,569

OPEB Expense under GASB 75

GASB 75 requires that the annual change in the NOL be recognized as OPEB expense, except for certain specific changes which are to be recognized over different periods of time. Changes in actuarial assumptions, and experience gains and losses, are to be recognized over the average of the expected remaining service lives of all employees. This average for BAWSCA employees is 7.7 years. Differences between actual and expected investment earnings are to be recognized over 5 years. The unrecognized remaining amounts of assumption changes, experience gains/losses and investment earnings differences are called "deferred outflows and inflows of resources relating to OPEB" (see Exhibit 5).

The OPEB Expense for the fiscal year ending June 30, 2023 is **$71,780**. For the year ending June 30, 2024, the OPEB Expense is **$123,703**. Derivations of these amounts are shown in Exhibit 4.

The increase from $71,780 in FY23 to $123,703 in FY24 is mostly from changing the discount rate from 5.75% to 5.5% back in 2022. Because of the one-year look-back rule, and the fact that most of the accrual expense is computed at the beginning of the prior year, most of the $71,780 amount was calculated as of June 30, 2021 at the old 5.75% discount rate, while most of the $123,703 amount was calculated as of June 30, 2022 using the "new" 5.5% discount rate.

Disclosure Information as of June 30, 2023 and June 30, 2024

Amounts to be disclosed in the footnotes to BAWSCA's audited financial statements as of June 30, 2023 and as of June 30, 2024 are shown in Exhibits 2 through 6 of this report. Numbers labelled as "June 30, 2022" are to be disclosed at June 30, 2023. Numbers labelled as "June 30, 2023" are to be disclosed at June 30, 2024.

Exhibit 7 shows estimated retiree benefits and OPEB expense for the next ten years.

Actuarial Assumptions

All actuarial assumptions are unchanged from the June 30, 2022 valuation. All assumptions are described in more detail in Exhibit 9.

Funding Strategy

BAWSCA has requested a calculation of an amount to budget for funding into CERBT for 2024-2025. Consistent with BAWSCA's recent practice, I suggest this amount:

Estimated amount to contribute to CERBT	$ 80,000
Expected benefits to retirees 2024-2025	49,000
Estimated implicit subsidy 2024-2025	0
Total	**$ 129,000**

Assuming 5.5% investment return each year, and assuming that BAWSCA contributes $80,000 to the CERBT trust each year, **it is estimated that the Net OPEB Liability will be reduced to $0 approximately in the year 2036**. This estimate also assumes no significant changes in the workforce, in the promised schedule of benefits, or in the

actuarial assumptions. Obviously, this is a very rough estimate of a number many years in the future, and should be regarded in that light.

The estimated contribution has increased from $78,000 last year to $80,000 this year, mainly because the increase in certain CalPERS medical premiums from 2022 to 2023 was more than we expected.

Exhibit 1 - Actuarial Values as of June 30, 2023

The Actuarial Present Value of Projected Benefit Payments (APVPBP) as of June 30, 2023 of all future employer-paid benefits from the program, for all current and former employees, is as follows:

	Actuarial Present Values	Number of Persons
Current Employees	$ 2,121,288	9
Retired Employees	452,521	3
	$ 2,573,809	12

As of June 30, 2023, BAWSCA has accumulated $1,099,366 in an irrevocable trust toward this liability.

The Total OPEB Liability (TOL) as of June 30, 2023 is the portion of the APVPBP which has been “earned” to date by current and former employees, based on the years of service already completed:

Current employees	$ 1,554,414
Retired former employees	452,521
Totals	$ 2,006,935

Summary of Participating Employees as of June 30, 2023

Active Employees

Number	9 employees
Average Age	49.9 years
Average Service	10.8 years

Retired Former Employees and Surviving Spouses

Number	3 persons
Average Age	75.0 years

Exhibit 2 - Net OPEB Liability

The Net OPEB Liability (NOL) is the excess of the Total OPEB Liability (TOL) over the Plan Fiduciary Net Position (FNP). As of June 30, 2021; June 30, 2022; and June 30, 2023 these are:

	June 30, 2021	June 30, 2022	June 30, 2023
Total OPEB Liability			
Value of benefits for employees	$ 1,134,294	$ 1,367,543	$ 1,554,414
Value of benefits for retirees	419,393	434,781	452,521
Total OPEB Liability	$ 1,553,687	$ 1,802,324	$ 2,006,935
Plan Fiduciary Net Position			
Fair value of assets in CERBT	$ 1,062,189	$ 994,254	$ 1,099,366
Plan Fiduciary Net Position	$ 1,062,189	$ 994,254	$ 1,099,366
Net OPEB Liability	$ 491,498	$ 808,070	$ 907,569

The Net OPEB Liability has changed from June 30, 2021 to June 30, 2022 in this way:

	TOL	FNP	NOL
Values at June 30, 2021	$ 1,553,687	$ 1,062,189	$ 491,498
Service cost	58,741		58,741
Interest	88,553		88,553
Differences between actual and expected experience	57,194		57,194
Assumption changes	71,406		71,406
Employer contributions		104,257	(104,257)
Net investment income		(144,389)	144,389
Benefits paid to retirees	(27,257)	(27,257)	0
Administrative expense		(546)	546
Net changes	$ 248,637	$ (67,935)	$ 316,572
Values at June 30, 2022	$ 1,802,324	$ 994,254	$ 808,070

The Net OPEB Liability has changed from June 30, 2022 to June 30, 2023 in this way:

	TOL	FNP	NOL
Values at June 30, 2022	$ 1,802,324	$ 994,254	$ 808,070
Service cost	82,889		82,889
Interest	98,353		98,353
Differences between actual and expected experience	51,531		51,531
Assumption changes	0		0
Employer contributions		98,162	(98,162)
Net investment income		35,630	(35,630)
Benefits paid to retirees	(28,162)	(28,162)	0
Administrative expense		(518)	518
Net changes	$ 204,611	$ 105,112	$ 99,499
Values at June 30, 2023	$ 2,006,935	$ 1,099,366	$ 907,569

Exhibit 3 - Sensitivity of the Net OPEB Liability

The following presents the Net OPEB Liability (NOL) as well as what the NOL would be if it were calculated using a discount rate that is 1-percentage-point higher or lower than the current discount rate, as of June 30, 2022 and June 30, 2023:

	1% Decrease 4.50 %	Discount Rate 5.50 %	1% Increase 6.50 %
Net OPEB Liability 6-30-2022	$ 1,141,521	$ 808,070	$ 546,085
Net OPEB Liability 6-30-2023	$ 1,277,348	$ 907,569	$ 616,990

The following presents the Net OPEB Liability (NOL) as well as what the NOL would be if it were calculated using healthcare cost trend rates that are 1-percentage-point higher or lower than the current healthcare cost trend rates, as of June 30, 2022 and June 30, 2023:

	1% Decrease 4.5 %	Trend Rate 5.5 %	1% Increase 6.5 %
Net OPEB Liability 6-30-2022	$ 544,070	$ 808,070	$ 1,140,747
Net OPEB Liability 6-30-2023	$ 613,508	$ 907,569	$ 1,278,933

Exhibit 4 - OPEB Expense for the Fiscal Year Ending June 30, 2024

For the year ending June 30, 2023, BAWSCA recognized OPEB expense of **$71,780**, computed as follows:

Service cost	$ 58,741
Interest	88,553
Expected investment return	(61,060)
Administrative expense	546
Change in NOL due to changes in benefits	0
Recognition of difference between actual and expected experience	(35,827)
Recognition of changes in assumptions	8,638
Recognition of difference between projected and actual earnings on investments	12,189
Total	**$ 71,780**

For the year ending June 30, 2024, BAWSCA will recognize OPEB expense of **$123,703**, computed as follows:

Service cost	$ 82,889
Interest	98,353
Expected investment return	(54,670)
Administrative expense	518
Change in NOL due to changes in benefits	0
Recognition of difference between actual and expected experience	(29,135)
Recognition of changes in assumptions	8,638
Recognition of difference between projected and actual earnings on investments	17,110
Total	**$ 123,703**

Exhibit 5 - Deferred Outflows and Inflows of Resources

The values of deferred outflows and inflows of resources related to OPEB as of June 30, 2022, **to be reported as of June 30, 2023**, are:

	Deferred Outflows of Resources	Deferred Inflows of Resources
Differences between expected and actual experience	$ 49,954	$ 200,377
Changes of assumptions	62,367	1,727
Net difference between projected and actual earnings on OPEB plan investments	164,359	78,335
BAWSCA contributions subsequent to the measurement date	98,162	0
Total	$ 374,842	$ 280,439

Amounts reported as deferred outflows and inflows of resources related to OPEB as of June 30, 2022, **to be reported as of June 30, 2023**, will be recognized in OPEB expense as follows:

Year Ended June 30	
2024	$ (13,887)
2025	(11,504)
2026	(11,241)
2027	13,900
2028	(3,356)
Thereafter	22,329

The values of deferred outflows and inflows of resources related to OPEB as of June 30, 2023, **to be reported as of June 30, 2024**, are:

	Deferred Outflows of Resources	Deferred Inflows of Resources
Differences between expected and actual experience	$ 87,553	$ 157,310
Changes of assumptions	53,328	1,326
Net difference between projected and actual earnings on OPEB plan investments	138,501	50,547
BAWSCA contributions subsequent to the measurement date	UNKNOWN	0
Total	$	$ 209,183

"UNKNOWN" is the total of amounts contributed by BAWSCA to retirees' benefits and to the CERBT trust **during the 12 months ending June 30, 2024**. This is the sum of (1) the total contributions to CERBT ($78,000), (2) the actual benefits paid to/for retirees during the 12 months ending June 30, 2024, and (3) the implicit subsidy of $(651).

Amounts reported as deferred outflows and inflows of resources related to OPEB as of June 30, 2023, **to be reported as of June 30, 2024**, will be recognized in OPEB expense as follows:

Year Ended June 30	
2025	$ (1,004)
2026	(741)
2027	24,400
2028	7,144
2029	14,828
Thereafter	25,572

Exhibit 6 - Schedule of Changes in the Net OPEB Liability

Reporting date	6/30/2023	6/30/2024
Total OPEB liability		
Service cost	$ 58,741	$ 82,889
Interest	88,553	98,353
Changes of benefit terms	0	0
Differences between actual and expected experience	57,194	51,531
Changes of assumptions	71,406	0
Benefits paid to retirees	(27,257)	(28,162)
Net change in Total OPEB liability	248,637	204,611
Total OPEB liability – beginning	1,553,687	1,802,324
Total OPEB liability – ending	$ 1,802,324	$ 2,006,935
Plan fiduciary net position		
Contributions – employer	$ 104,257	$ 98,162
Net investment income	(144,389)	35,630
Benefits paid to retirees	(27,257)	(28,162)
Administrative expense	(546)	(518)
Net change in plan fiduciary net position	(67,935)	105,112
Plan fiduciary net position - beginning	1,062,189	994,254
Plan fiduciary net position - ending	$ 994,254	$ 1,099,366
Net OPEB Liability – ending	$ 808,070	$ 907,569
Plan fiduciary net position as a percentage of the Total OPEB liability	55.17%	54.78%
Covered-employee payroll	1,437,717	1,437,060
Net OPEB liability as a percentage of covered-employee payroll	56.21%	63.15%

Exhibit 7 - Ten-Year Projection of Costs

Shown below are estimates of (a) the benefits expected to be paid to retirees, and (b) the amounts BAWSCA is expected to accrue as GASB 75 OPEB expense, for the next ten years. For these estimates, it is assumed that all actuarial assumptions and the size of the workforce will remain unchanged, that the promised benefits will remain the same, that BAWSCA will contribute $80,000 to the CERBT each year, that there are no experience gains or losses, and that the CERBT trust will earn 5.5% each year.

Fiscal Year Ending:	Employer-Paid Retiree Payments	Projected Implicit Rate Subsidy Payments	GASB 75 OPEB Expense
2024	$ 39,000	$ (651)	$ 123,703
2025	49,000	486	141,000
2026	60,000	2,000	101,000
2027	70,000	3,000	126,000
2028	84,000	5,000	107,000
2029	99,000	9,000	113,000
2030	106,000	8,000	117,000
2031	114,000	8,000	97,000
2032	115,000	6,000	113,000
2033	115,000	3,000	111,000

Exhibit 8 - Summary of Benefit Provisions

BAWSCA contributes toward post-retirement benefits for employees who retire after age 50 with at least 5 years of service. For employees new to CalPERS on or after January 1, 2013, the minimum retirement age is 52.

Retired employees may select any of the medical plans offered by CalPERS. BAWSCA pays the full amount of the monthly medical premium, subject to a phase-in under the "unequal contribution" method, which phases in to the full premium amount over a period of years. The retiree may cover dependents, and may add dependents after retirement if a qualifying event occurs. Payments are made for the lifetime of the retired employee and dependent spouse.

No dental, vision or other post-retirement benefits are provided to retired employees.

Exhibit 9 - Summary of Actuarial Assumptions

Actuarial Assumptions: The following assumptions as of June 30, 2023 were selected by BAWSCA in accordance with the requirements of GASB 75. These assumptions, in my opinion, are reasonable and appropriate for purposes of determining OPEB costs under GASB 75.

Long-Term Expected Rate of Return on Investments: CalPERS expects that the 20-year rate of return for CERBT investment strategy #2 will be approximately 5.5%. Therefore, BAWSCA has selected 5.5% as its best estimate of the long-term expected rate of return for the CERBT investments.

Discount rate: 5.5% per year. The cash flows of the OPEB plan were projected to future years, assuming that BAWSCA will contribute an amount so that the assets always exceed expected benefits to retirees. Under that projection, the plan assets are projected to be adequate to pay all benefits to retirees in all future years, so the discount rate has been set equal to the long-term expected rate of return on investments, 5.5%.

Medical Cost Increases (Trend): Medical premium amounts are assumed to increase 5.5% per year.

Payroll Growth: Total payroll is assumed to increase 3.0% per year in the future.

Coverage Elections: 100% of future eligible retired employees who have current medical coverage are assumed to participate in this program. Employees are assumed to keep the same medical plan and marital status after retirement that they have while employed. Male spouses are assumed to be 3 years older than females.

Mortality: Mortality rates are taken from the 2021 valuation of CalPERS, projected to future years with the ultimate rates of projection scale MP-2021.

Funding Method: The Entry Age actuarial cost method has been used, with normal costs calculated as a level percentage of payroll, as required by GASB 75.

Retirement: Rates are taken from the 2021 CalPERS valuation for miscellaneous public employees with a 2% at age 55 retirement formula. Sample rates:

	10 Years Service	20 Years Service	30 Years Service
Age 55	4.2 %	8.6 %	12.3 %
Age 58	4.4 %	7.4 %	12.3 %
Age 61	7.4 %	10.7 %	16.8 %
Age 64	13.8 %	19.0 %	22.8 %

Disability: Incidence of disability is considered to be included in the termination and retirement rates here, so no explicit recognition of disablement has been included.

Turnover (withdrawal): Likelihood of termination within the next year is taken from the 2021 CalPERS pension valuation for "public agency miscellaneous". Sample rates are:

	5 Years Service	10 Years Service	15 Years Service
Males			
Age 20	8.433 %		
Age 30	8.040 %	3.770 %	1.804 %
Age 40	6.265 %	3.372 %	1.804 %
Age 50	4.971 %	2.449 %	1.515 %
Females			
Age 20	8.833 %		
Age 30	8.615 %	4.915 %	2.516 %
Age 40	6.702 %	4.358 %	2.516 %
Age 50	5.343 %	2.999 %	1.738 %

Inflation: Long-term inflation is assumed to be 2.75% per year.

Age-Specific Medical Claims: The estimated per person medical claims (true costs of coverage) during the 2023-2024 fiscal year are as follows (rates are shown for certain ages only):

Age	Annual Claims
40	$ 8,099
45	9,792
50	12,097
55	14,920
60	17,390
64	18,658

These age-specific rates were developed so as to reproduce in the aggregate the same total premium that would be paid to the carriers for all current employees and all current retirees.

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City and County of San Francisco Postretirement Health Plan

GASB 74/75 Report
June 30, 2021 Measurement Date
for June 30, 2022 Reporting Date

Produced by Cheiron

January 2023

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TABLE OF CONTENTS

Section		*Page*
Section I	Board Summary	1
Section II	Certification	5
Section III	Determination of Discount Rate	7
Section IV	Projection of Total OPEB Liability	8
Section V	GASB 74 Reporting Information	10
Section VI	GASB 75 Reporting Information	15

Appendices

Appendix A	Membership Information	20
Appendix B	Actuarial Assumptions and Methods	21
Appendix C	Summary of Plan Provisions	36
Appendix D	Determination of Discount Rate	43
Appendix E	Glossary of Terms	48

SECTION I – BOARD SUMMARY

The purpose of this report is to provide accounting and financial reporting information under the Governmental Accounting Standards Board Statements No. 74 and No. 75 (GASB 74 and GASB 75) for the City and County of San Francisco Postretirement Health Plan. This information includes:

- Determination of the discount rate as of the measurement date;
- Projection of the Total OPEB Liability from the valuation date to the measurement date;
- Sensitivity of the Net OPEB Liability to changes in discount rates and health care cost trend rates;
- Changes in the Net OPEB Liability;
- Schedule of Employer Contributions;
- Disclosure of Deferred Inflows and Outflows; and,
- Calculation of the Annual OPEB Expense for the City and County of San Francisco.

Numbers in the tables in this report may not add due to rounding.

Highlights

For this plan, valuations are conducted every other year, and each valuation is used as the basis for two years of reporting and disclosure of the Total OPEB Liability under GASB 74 and 75. The measurement date for this report is June 30, 2021. Measurements are based on the fair value of assets as of June 30, 2021 and the Total OPEB Liability as of the valuation date, June 30, 2020, updated to June 30, 2021. The update procedures include an adjustment to reflect calendar year 2022 premiums and premium equivalents and the addition of service cost and interest cost offset by actual benefit payments. There were no significant events between the valuation date and the measurement date of which we are aware.

The table on the next page provides a summary of the key results during this measurement period. For GASB 74 reporting purposes, only the Net OPEB Liability applies.

SECTION I – BOARD SUMMARY

Summary of Results				
	Measurement Date			
		6/30/2021		6/30/2020
Net OPEB Liability	$	3,691,122	$	3,823,334
Deferred Outflows		(519,760)		(580,662)
Deferred Inflows		638,225		547,780
Net Impact on Statement of Net Position	$	3,809,587	$	3,790,452
Contributions Subsequent to Measurement Date (Included in Deferred Outflows Above)				
Contributions to Trust	$	41,841	$	39,555
Benefit Payments		211,025		206,439
Total	$	252,866	$	245,994
OPEB Expense ($ Amount)	$	272,001	$	320,685
OPEB Expense (% of Payroll)		6.88%		8.11%

Amounts in Thousands

The Net OPEB Liability (NOL) decreased approximately $132 million since the prior measurement date. This decrease is due to a combination of $152 million in experience gains offset by $20 million due to contributions and net investment income being less than service cost, administrative expenses, and interest on the TOL.

Plan changes are recognized immediately, investment gains and losses are recognized over five years, and experience gains and losses and assumption changes are recognized over the average remaining service life, which is seven years. Unrecognized amounts are reported as deferred outflows and deferred inflows of resources.

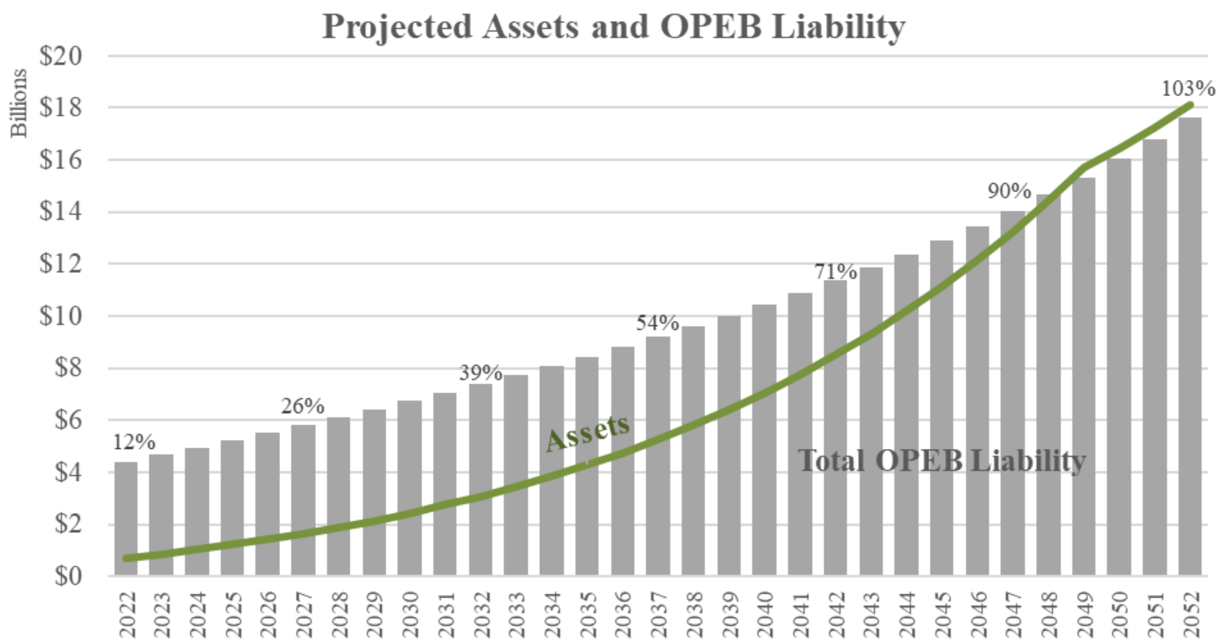
As of June 30, 2022, the end of the reporting year, the City and County reports a Net OPEB Liability of $3,691,122,000, Deferred Outflows of $519,760,000, and Deferred Inflows of $638,225,000. Consequently, the net impact on the City and County's Statements of Net Position is $3,809,587,000 at the end of the reporting year. Contributions of $252,866,000 between the measurement date (June 30, 2021) and the City and County's reporting date (June 30, 2022) are reported as deferred outflows to offset the cash outflow reported and are included in the figures above.

For the fiscal year ending June 30, 2022, the annual OPEB expense is $272,001,000, or 6.88% of covered payroll. Volatility in OPEB expense from year to year is to be expected given the immediate recognition of plan changes and the short recognition periods for investment gains and losses, assumption changes, and liability gains and losses. A breakdown of the components of the net OPEB expense is shown in Section VI of this report.

SECTION I – BOARD SUMMARY

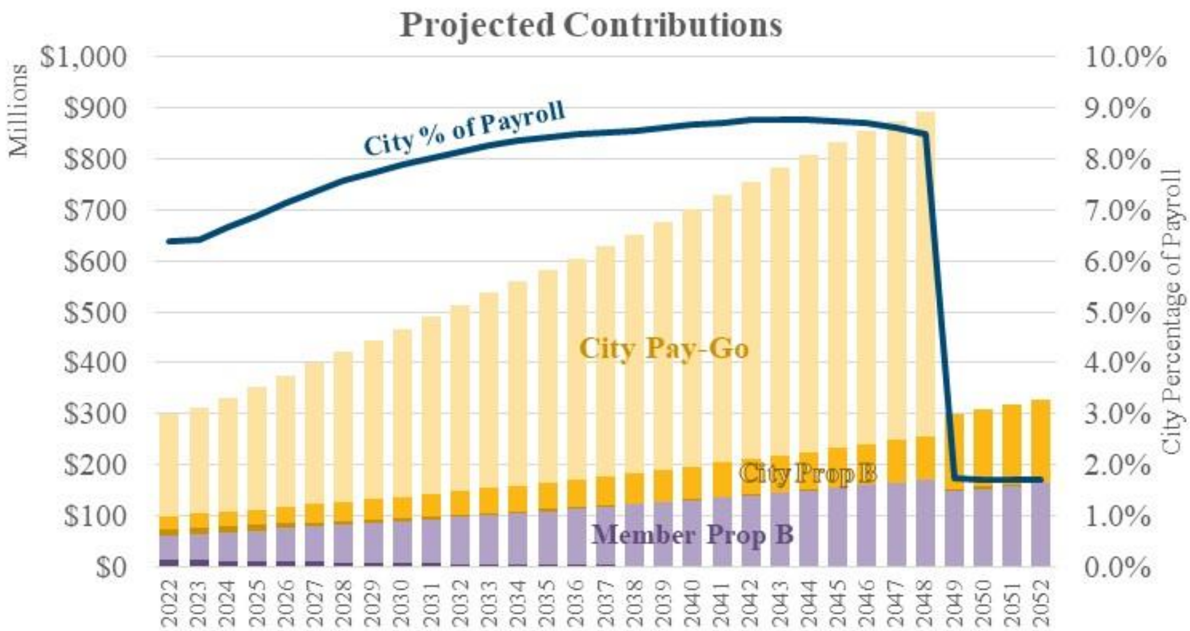
Funding Projections

The chart below shows the projected growth of the Total OPEB Liability and the assets in the Retiree Health Care Trust Fund (RHCTF) over the next 30 years. The plan is expected to grow from 12% funded to 103% funded over the 30-year period if all assumptions are met, including the 7.0% expected return on assets. Benefits cannot be paid from the RHCTF until the plan is 100% funded.



Contributions to fund the OPEB plan are defined in the Charter and are not actuarially determined. Until the plan is 100% funded, Pre-Prop B members contribute 1% of pay and Prop B members contribute 2% of pay while the City contributes 1% of pay and pays the benefits on a pay-as-you-go (Pay-Go) basis each year. If the City's contributions exceed 10% of payroll, there are some potential adjustments that are described in detail in Section III and Appendix C of the report. Once the plan is 100% funded, members pay 50% of the normal cost up to 2% of pay (1% if Pre-Prop B) and the City pays the remainder of the normal cost. The chart on the following page shows the projected contributions over the next 30 years.

SECTION I – BOARD SUMMARY



Member contributions are shown as purple bars with the darker purple for Pre-Prop B members. City contributions are shown as gold bars with dark gold for Pre-Prop B members, medium gold for Prop B members, and light gold for the pay-as-you-go benefit payments. The blue line represents total City contributions as a percentage of payroll. If all assumptions are met, City contributions do not reach the 10% of payroll threshold and contributions drop significantly in 2049 when the plan is projected to reach 100% funding.

Details of the contribution and disbursement structure both before and after full funding are provided in Appendix C (Summary of Plan Provisions).

SECTION II – CERTIFICATION

The purpose of this report is to provide accounting and financial reporting information under GASB No. 74 for the City and County of San Francisco Postretirement Health Plan (Plan) and under GASB No. 75 for the City and County of San Francisco. This report is for the use of the City and County of San Francisco and its auditors in preparing financial reports in accordance with applicable law and accounting requirements. This report is not appropriate for other purposes, including the calculation of actuarially determined contributions.

In preparing our report, we relied on information (some oral and some written) supplied by the City and County of San Francisco (CCSF), the Health Services System (HSS), and the San Francisco Employees' Retirement System (SFERS). This information includes, but is not limited to, the plan provisions, employee data, and financial information. We performed an informal examination of the obvious characteristics of the data for reasonableness and consistency in accordance with Actuarial Standard of Practice No. 23.

The City and County of San Francisco selected the actuarial assumptions based on our analysis and recommendations. We believe the selected assumptions to be reasonable for the purpose of financial reporting under GASB Statement Nos. 74 and 75.

Medical trend assumptions were developed using the Society of Actuaries (SOA) Long-Term Health Care Cost Trends Model (Model). This Model and its baseline projection are based on an econometric analysis of historical U.S. medical expenditures and the judgments of experts in the field. The long-run baseline projection and input variables have been developed under the guidance of the SOA Project Oversight Group. We have reviewed the baseline assumptions for the Model and found them to be reasonable and consistent with the other economic assumptions used in the valuation, except the capacity constraint assumptions were adjusted based on our review of the current economic environment, and our expectations for the future. Further rationale and detail on the parameters used in this Model can be found in Appendix B of this report – Actuarial Assumptions and Methods. We have relied on the SOA as the developer of the Model. We have reviewed the Model and have a basic understanding of the Model and have used the Model in accordance with its original intended purpose. We have not identified any material inconsistencies in assumptions or output of the Model that would affect these results.

Cheiron utilizes ProVal, an actuarial valuation software leased from Winklevoss Technologies (WinTech) to calculate the liabilities, normal costs, and projected benefit payments. We have relied on WinTech as the developer of ProVal. We have reviewed ProVal and have a basic understanding of it and have used ProVal in accordance with its original intended purpose. We have not identified any material inconsistencies in assumptions or output of ProVal that would affect this actuarial valuation.

The funding projections shown in the Board Summary and the projection of future contributions shown in Appendix D – Determination of the Discount Rate are developed using an open group deterministic projection of the liabilities and assets associated with the Plan. The projection uses projected benefit payments for current members but does not include projected benefit payments for new members. This limitation is not material for the purpose of the projection as it would

SECTION II – CERTIFICATION

affect the assets and liabilities by the same amount. The projection uses standard roll-forward techniques that implicitly assume a stable active population.

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 assumptions; changes in assumptions; and, changes in plan provisions or applicable law.

The Inflation Reduction Act of 2022 (the Act) contains provisions that may impact the cost of benefits provided to Medicare eligible retirees. The Act provides for changes that could reduce costs and changes that could increase costs. Implementing regulations and market responses are likely to affect the net impact. Based on information currently available, we do not expect the Act to have a material impact on costs.

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, collectively 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 exclusively for the City and County of San Francisco for the purposes described herein and for the use by the City's auditor in completing an audit related to the matters herein. Other users of this report are not intended users as defined in the Actuarial Standards of Practice, and Cheiron assumes no duty or liability to any other user.

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Consulting Actuary

B. Taylor Stevens
Taylor Stevens, ASA, MAAA
Associate Actuary

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Michael Schionning, FSA, MAAA
Principal Consulting Actuary

SECTION III – DETERMINATION OF DISCOUNT RATE

The discount rate used to measure the Total OPEB Liability was 7.00%.

Employee and City and County contributions to the Plan are set in Charter Section A8.432(a) and (b) and are not actuarially determined. Employee and City and County contributions to the Retiree Health Care Trust Fund (RHCTF) are a fixed percent of pay that varies depending on the employee's hire date, the year in which the payment is made, and whether the Trust is fully funded.

As described in Charter Section A8.432(d), before the Trust is fully funded, other than limited disbursements described below to stabilize City and County contributions and disbursements for reasonable administrative expenses, no disbursements may be made from the RHCTF. As a result, the City and County pays for all benefits on a pay-as-you-go basis while the contributions accumulate in the Trust.

If the City and County's retiree health care costs (RHCTF contributions plus benefit payments) are projected to exceed 10% of payroll, with approval of the Mayor and by resolution of the Board of Supervisors, the RHCTF Board may authorize stabilization disbursements to the extent necessary to reduce the City's retiree health care costs to 10% of payroll provided that such stabilization disbursement does not exceed 10% of the balance in the RHCTF as of the prior year.

Once the RHCTF is fully funded:

- Benefits for current retirees can be paid from the Trust,
- Employee contributions to the Trust become 50% of normal cost up to 2% of pay, and
- City and County contributions become the remainder of the normal cost not paid by employee contributions.

Details of the contribution and disbursement structure both before and after full funding are provided in Appendix C (Summary of Plan Provisions).

To determine the discount rate, we have assumed that the City and County and employees will contribute to the RHCTF at the rates specified by the Charter and disbursements from the RHCTF will continue to be limited by the Charter until it is fully funded.

A formal cash flow projection as described under Paragraph 37 of GASB Statement 75 is included in Appendix D. In performing the crossover test, we made the following conservative assumptions to simplify the test:

- In projecting when the Plan becomes fully funded, the Total OPEB Liability includes the service cost for new entrants and the assets include contributions for new entrants, but the Total OPEB Liability and assets are only reduced for projected benefit payments for current members.
- All projected administrative expenses are allocated to current members.

The projection shows that for each future period, the amount of the Plan's fiduciary net position is projected to be greater than the benefit payments that are projected to be made in that period. Therefore, the long-term expected rate of return on plan investments was applied to all periods of projected benefit payments to determine the Total OPEB Liability.

SECTION IV – PROJECTION OF TOTAL OPEB LIABILITY

The Total OPEB Liability (TOL) at the end of the measurement year is measured as of the valuation date, June 30, 2020, and projected to June 30, 2021. The update procedures include an adjustment to reflect actual calendar year 2022 premiums and premium equivalents and the addition of service cost and interest cost offset by actual benefit payments. There were no significant events between the valuation date and the measurement date of which we are aware.

The amounts shown in the exhibits in this section as of June 30, 2020 reflect actual medical premiums and premium equivalents for the 2022 calendar year. They do not match the TOL shown in the prior report because the 2022 premiums and premium equivalents in that report were projected using trend assumptions as of the June 30, 2020 measurement date.

The table below shows the projection of the TOL at discount rates equal to the rate used for disclosure and plus and minus one percent from that rate.

Projection of Total OPEB Liability from Valuation to Measurement Date

Discount Rate	6.00%	7.00%	8.00%
Valuation Total OPEB Liability, 6/30/2020			
Actives	$ 1,833,252	$ 1,564,727	$ 1,347,081
Deferred Vested	456,987	382,755	325,284
Retirees	2,473,033	2,226,987	2,021,008
Total	**$ 4,763,272**	**$ 4,174,469**	**$ 3,693,373**
Service Cost	192,763	151,544	120,317
Benefit Payments	206,439	206,439	206,439
Interest	285,392	290,324	292,091
Total OPEB Liability, 6/30/2021	**$ 5,034,988**	**$ 4,409,899**	**$ 3,899,342**

Amounts in Thousands

SECTION IV – PROJECTION OF TOTAL OPEB LIABILITY

The table below shows the projection of the TOL at healthcare trend rates equal to the rates used for disclosure and plus and minus one percent from those rates.

Projection of Total OPEB Liability from Valuation to Measurement Date

Healthcare Trends	-1.00%	Baseline	1.00%
Valuation Total OPEB Liability, 6/30/2020			
Actives	$ 1,305,785	$ 1,564,727	$ 1,897,999
Deferred Vested	330,068	382,755	449,178
Retirees	2,052,123	2,226,987	2,431,266
Total	**$ 3,687,976**	**$ 4,174,469**	**$ 4,778,443**
Service Cost	123,721	151,544	188,787
Benefit Payments	206,439	206,439	206,439
Interest	255,312	290,324	333,884
Total OPEB Liability, 6/30/2021	**$ 3,860,571**	**$ 4,409,899**	**$ 5,094,675**

Amounts in Thousands

SECTION V – GASB 74 REPORTING INFORMATION

Note Disclosures

The table below shows the changes in the Total OPEB Liability (TOL), the Plan Fiduciary Net Position (i.e., fair value of Plan assets) (FNP), and the Net OPEB Liability (NOL) during the measurement period ending on June 30, 2021.

Change in Net OPEB Liability

	Increase (Decrease)		
	Total OPEB Liability	Plan Fiduciary Net Position	Net OPEB Liability
Balance at end of prior year	$ 4,312,323	$ 488,989	$ 3,823,334
Changes for the year:			
Service cost	155,840		155,840
Interest	300,122		300,122
Changes of benefits	0		0
Differences between expected and actual experience	(151,947)		(151,947)
Changes of assumptions	0		0
Contributions - employer		245,994	(245,994)
Contributions - member		61,582	(61,582)
Net investment income		128,916	(128,916)
Benefit payments	(206,439)	(206,439)	0
Administrative expense		(265)	265
Net changes	97,576	229,788	(132,212)
Balance at end of current year	$ 4,409,899	$ 718,777	$ 3,691,122

Amounts in Thousands

During the measurement year, the NOL decreased by approximately $132 million. The service cost, interest cost, and administrative expenses increased the NOL by approximately $456 million while contributions and investment income decreased the NOL by approximately $436 million. There were actuarial experience gains during the year of approximately $152 million.

SECTION V – GASB 74 REPORTING INFORMATION

Changes in the discount rate affect the measurement of the TOL. Lower discount rates produce a higher TOL and higher discount rates produce a lower TOL. The table below shows the sensitivity of the NOL to the discount rate.

Sensitivity of Net OPEB Liability to Changes in Discount Rate

	1% Decrease 6.00%	Discount Rate 7.00%	1% Increase 8.00%
Total OPEB Liability	$ 5,034,988	$ 4,409,899	$ 3,899,342
Plan Fiduciary Net Position	718,777	718,777	718,777
Net OPEB Liability	$ 4,316,212	$ 3,691,122	$ 3,180,565
Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	14.3%	16.3%	18.4%

Amounts in Thousands

A one percent decrease in the discount rate increases the TOL by approximately 14% and increases the NOL by approximately 17%. A one percent increase in the discount rate decreases the TOL by approximately 12% and decreases the NOL by approximately 14%.

SECTION V – GASB 74 REPORTING INFORMATION

Changes in healthcare trend rates affect the measurement of the TOL. Lower healthcare trends produce a lower TOL and higher healthcare trends produce a higher TOL. The table below shows the sensitivity of the NOL to the healthcare trends.

Sensitivity of Net OPEB Liability to Changes in Healthcare Cost Trend Rates

	1% Decrease	Healthcare Trend	1% Increase
Total OPEB Liability	$ 3,860,571	$ 4,409,899	$ 5,094,675
Plan Fiduciary Net Position	718,777	718,777	718,777
Net OPEB Liability	$ 3,141,794	$ 3,691,122	$ 4,375,898
Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability	18.6%	16.3%	14.1%

Amounts in Thousands

A one percent decrease in the healthcare trends decreases the TOL by approximately 12% and decreases the NOL by approximately 15%. A one percent increase in the healthcare trends increases the TOL by approximately 16% and increases the NOL by approximately 19%.

SECTION V – GASB 74 REPORTING INFORMATION

Required Supplementary Information

The schedules of Required Supplementary Information generally start with information as of the implementation of GASB 74 and 75, and eventually will build up to 10 years of information. The schedule below shows the changes in NOL and related ratios required by GASB for each measurement year since implementation. The covered payroll represents the pay on which contributions to the Retiree Health Care Trust Fund were made during the measurement year.

Schedule of Changes in Net OPEB Liability and Related Ratios

	MYE 2021	MYE 2020	MYE 2019	MYE 2018	MYE 2017
Total OPEB Liability					
Service cost	$ 155,840	$ 141,642	$ 133,736	$ 127,850	$ 125,193
Interest	300,122	314,907	283,520	290,029	272,943
Changes of benefit terms	0	0	0	0	0
Differences between expected and actual experience	(151,947)	(381,922)	194,068	(385,732)	0
Changes of assumptions	0	151,725	0	111,119	0
Benefit payments	(206,439)	(196,445)	(185,839)	(178,019)	(165,470)
Net change in TOL	**$ 97,576**	**$ 29,907**	**$ 425,485**	**$ (34,753)**	**$ 232,666**
TOL - beginning	**4,312,323**	**4,282,416**	**3,856,931**	**3,891,684**	**3,659,019**
TOL - ending	**$ 4,409,899**	**$ 4,312,323**	**$ 4,282,416**	**$ 3,856,931**	**$ 3,891,684**
Plan fiduciary net position					
Contributions - employer	$ 245,994	$ 235,963	$ 218,625	$ 203,858	$ 183,898
Contributions - member	61,582	60,236	51,025	41,682	31,686
Net investment income	128,916	22,746	26,959	14,105	17,369
Benefit payments	(206,439)	(196,445)	(185,839)	(178,019)	(165,470)
Administrative expense	(265)	(114)	(132)	(138)	(109)
Net change in plan fiduciary net position	**$ 229,788**	**$ 122,387**	**$ 110,638**	**$ 81,488**	**$ 67,373**
Plan fiduciary net position - beginning	**488,989**	**366,602**	**255,964**	**174,477**	**107,103**
Plan fiduciary net position - ending	**$ 718,777**	**$ 488,989**	**$ 366,602**	**$ 255,964**	**$ 174,477**
NOL - ending	**$ 3,691,122**	**$ 3,823,334**	**$ 3,915,814**	**$ 3,600,967**	**$ 3,717,207**
Plan fiduciary net position as a percentage of the TOL	16.3%	11.3%	8.6%	6.6%	4.5%
Covered payroll	$ 3,955,498	$ 3,951,792	$ 3,763,446	$ 3,583,448	$ 3,393,658
NOL as a percentage of covered payroll	93.3%	96.7%	104.0%	100.5%	109.5%

Amounts in Thousands

SECTION V – GASB 74 REPORTING INFORMATION

Employee and City and County contributions to the Plan are set by the Charter and are not actuarially determined. Employee and City and County contributions to the Retiree Health Care Trust Fund (RHCTF) are a fixed percent of pay that varies depending on the employee's hire date, the year in which the payment is being made, and whether the Trust is fully funded. In addition to the contributions to the Trust, the City and County pay plan benefits on a pay-as-you-go basis until the Trust is fully funded. For purposes of the schedule of employer contributions, the combination of the pay-as-you-go amounts and the contributions to the Trust are considered Charter required contributions. The table below shows the Charter required contributions for each of the last 10 measurement years.

Schedule of Employer Contributions

	MYE 2021	MYE 2020	MYE 2019	MYE 2018	MYE 2017
Charter Required Contribution	$ 245,994	$ 235,963	$ 218,625	$ 203,858	$ 183,898
Contributions in Relation to the Charter Required Contribution	245,994	235,963	218,625	203,858	183,898
Contribution Deficiency/(Excess)	$ 0	$ 0	$ 0	$ 0	$ 0
Covered Payroll	$ 3,955,498	$ 3,951,792	$ 3,763,446	$ 3,583,448	$ 3,393,658
Actual Contributions as % of Pay	6.22%	5.97%	5.81%	5.69%	5.42%
	MYE 2016	**MYE 2015**	**MYE 2014**	**MYE 2013**	**MYE 2012**
Charter Required Contribution	$ 168,855	$ 167,241	$ 166,628	$ 160,300	$ 156,252
Contributions in Relation to the Charter Required Contribution	168,855	167,241	166,628	160,300	156,252
Contribution Deficiency/(Excess)	$ 0	$ 0	$ 0	$ 0	$ 0
Covered Payroll	$ 3,241,700	$ 3,017,847	$ 2,869,603	$ 2,810,519	$ 2,673,271
Actual Contributions as % of Pay	5.21%	5.54%	5.81%	5.70%	5.84%

Amounts in Thousands

For measurement years prior to 2017, covered payroll represents the pay during the measurement year for members eligible to receive future OPEB benefits if they meet the age and service requirements for benefits. For the measurement years ended on or after June 30, 2017 covered payroll is the payroll on which contributions to the RHCTF were made.

SECTION VI – GASB 75 REPORTING INFORMATION

We understand the City and County elected to use a measurement date as of the end of the prior fiscal year for their reporting under GASB 75. As a result, the schedules in this section are based on the June 30, 2021 measurement date and are intended be used for their 2022 reporting date.

The table below summarizes the current balances of deferred outflows and deferred inflows of resources related to the Plan along with the net recognition over the next five years and the total amount recognized thereafter, if any.

Schedule of Deferred Inflows and Outflows of Resources

	Deferred Outflows of Resources	Deferred Inflows of Resources
Differences between expected and actual experience	$ 110,896	$ 568,356
Changes in assumptions	155,998	0
Net difference between projected and actual earnings on OPEB plan investments	0	69,869
Contributions subsequent to the measurement date		
Contributions to the Trust	$ 41,841	
Benefit payments	211,025	
Total contributions	$ 252,866	
Total	**$ 519,760**	**$ 638,225**

Amounts reported as deferred outflows due to contributions subsequent to the measurement date will be recognized as a reduction of the Total OPEB Liability in the measurement year ended June 30, 2022. Other amounts reported as deferred outflows and deferred inflows of resources will be recognized in OPEB expense as follows:

Measurement year ended June 30:	
2022	$ (83,444)
2023	(83,736)
2024	(82,741)
2025	(45,111)
2026	(54,592)
Thereafter	(21,707)

Amounts in Thousands

The tables on the following pages provide details on the current balances of deferred inflows and outflows of resources along with the recognition of each base for each of the current and following five years, as well as the total for any years thereafter.

SECTION VI – GASB 75 REPORTING INFORMATION

Recognition of Experience (Gains) and Losses

Year	Recognition Period	Total Amount	Beginning Remaining Amount	Ending Remaining Amount	2021	2022	2023	2024	2025	2026	Thereafter
					Recognition Year						
2021	7.0	$(151,947)	$ (151,947)	$ (130,240)	$ (21,707)	$ (21,707)	$ (21,707)	$ (21,707)	$ (21,707)	$ (21,707)	$ (21,707)
2020	7.0	(381,922)	(327,362)	(272,802)	(54,560)	(54,560)	(54,560)	(54,560)	(54,560)	(54,560)	0
2019	7.0	194,068	138,620	110,896	27,724	27,724	27,724	27,724	27,724	0	0
2018	7.0	(385,732)	(220,418)	(165,314)	(55,105)	(55,105)	(55,105)	(55,105)	0	0	0
Deferred Outflows			$ 138,620	$ 110,896	$ 27,724	$ 27,724	$ 27,724	$ 27,724	$ 27,724	$ 0	$ 0
Deferred (Inflows)			(699,727)	(568,356)	(131,372)	(131,372)	(131,372)	(131,372)	(76,267)	(76,267)	(21,707)
Net Change in OPEB Expense			$ (561,107)	$ (457,460)	$(103,648)	$(103,648)	$(103,648)	$(103,648)	$ (48,543)	$ (76,267)	$ (21,707)

Amounts in Thousands

Recognition of Assumption Changes

Year	Recognition Period	Total Amount	Beginning Remaining Amount	Ending Remaining Amount	2021	2022	2023	2024	2025	2026	Thereafter
					Recognition Year						
2020	7.0	$ 151,725	$ 130,050	$ 108,375	$ 21,675	$ 21,675	$ 21,675	$ 21,675	$ 21,675	$ 21,675	$ 0
2018	7.0	111,119	63,497	47,623	15,874	15,874	15,874	15,874	0	0	0
Deferred Outflows			$ 193,547	$ 155,998	$ 37,549	$ 37,549	$ 37,549	$ 37,549	$ 21,675	$ 21,675	$ 0
Deferred (Inflows)			0	0	0	0	0	0	0	0	0
Net Change in OPEB Expense			$ 193,547	$ 155,998	$ 37,549	$ 37,549	$ 37,549	$ 37,549	$ 21,675	$ 21,675	$ 0

Amounts in Thousands

SECTION VI – GASB 75 REPORTING INFORMATION

Recognition of Investment (Gains) and Losses

Year	Recognition Period	Total Amount	Beginning Remaining Amount	Ending Remaining Amount	2021	2022	2023	2024	2025	2026	Thereafter
					Recognition Year						
2021	5.0	$ (91,216)	$ (91,216)	$ (72,973)	$ (18,243)	$ (18,243)	$ (18,243)	$ (18,243)	$ (18,243)	$ 0	$ 0
2020	5.0	8,003	6,402	4,802	1,601	1,601	1,601	1,601	0	0	0
2019	5.0	(4,977)	(2,986)	(1,991)	(995)	(995)	(995)	0	0	0	0
2018	5.0	1,462	585	292	292	292	0	0	0	0	0
2017	5.0	(7,494)	(1,499)	0	(1,499)	0	0	0	0	0	0
Net Change in OPEB Expense			$ (88,714)	$ (69,869)	$ (18,845)	$ (17,346)	$ (17,638)	$ (16,643)	$ (18,243)	$ 0	$ 0

Amounts in Thousands

SECTION VI – GASB 75 REPORTING INFORMATION

The Annual OPEB Expense recognized by the City and County of San Francisco can be calculated two different ways. It is the change in the amounts reported on the City and County's Statements of Net Position that relate to the Plan and are not attributable to employer contributions. That is, it is the change in NOL plus the changes in deferred outflows and inflows plus employer contributions. Alternatively, Annual OPEB Expense can be calculated by its individual components. While GASB does not require or suggest the organization of the individual components shown in the table below, we believe it helps to understand the level and volatility of the OPEB expense.

The table below shows the development of OPEB expense using both of these methodologies.

Calculation of OPEB Expense		
Measurement Year Ending	**June 30, 2021**	**June 30, 2020**
Change in Net OPEB Liability	$ (132,212)	$ (92,479)
Change in Deferred Outflows	67,775	(88,954)
Change in Deferred Inflows	90,445	266,155
Employer Contributions	245,994	235,963
OPEB Expense	**$ 272,001**	**$ 320,685**
OPEB Expense as % of Payroll	**6.88%**	**8.11%**
Operating Expenses		
Service cost	$ 155,840	$ 141,642
Employee contributions	(61,582)	(60,236)
Administrative expenses	265	114
Total	$ 94,523	$ 81,520
Financing Expenses		
Interest cost	$ 300,122	$ 314,907
Expected return on assets	(37,700)	(30,749)
Total	$ 262,422	$ 284,158
Changes		
Benefit changes	$ 0	$ 0
Recognition of assumption changes	37,549	37,549
Recognition of liability gains and losses	(103,648)	(81,941)
Recognition of investment gains and losses	(18,845)	(601)
Total	$ (84,943)	$ (44,993)
OPEB Expense	**$ 272,001**	**$ 320,685**

Amounts in Thousands

SECTION VI – GASB 75 REPORTING INFORMATION

Operating expenses are items directly attributable to the operation of the Plan during the measurement year. Service cost less employee contributions represents the increase in employer-provided benefits attributable to the year, and administrative expenses are the cost of operating the Plan for the year.

The financing expenses are the interest on the Total OPEB Liability less the expected return on assets. Financing expenses are the primary source of expenses for the plan. As the funding level improves, the financing expenses will decline.

The remaining components of the annual expense are due to the recognition of changes. These components will drive most of the volatility in OPEB expense from year to year. They include any changes in benefits made during the year and the recognized amounts due to assumption changes, gains or losses on the TOL, and investment gains or losses.

The Total OPEB Expense decreased by approximately $49 million. The recognition of changes decreased by about $40 million and financing expenses decreased about $22 million while operating expenses increased about $13 million.

APPENDIX A – MEMBERSHIP INFORMATION

The census data used to develop the Total OPEB Liability as of June 30, 2021 is the same census data used in our June 30, 2020 actuarial valuation. Please refer to the GASB 74/75 Report for the June 30, 2020 measurement date for a more complete summary of the census data.

Schedule of Valuation Data			
Valuation Date	**June 30, 2020**	**June 30, 2018**	**% Change**
Active Employees			
Count	32,879	32,380	2%
Average Age	46.6	46.4	0%
Average Service	10.8	10.8	0%
Total Payroll ($000's)	$ 3,591,515	$ 3,265,545	10%
Vested, Terminated Members			
Count	2,211	2,071	7%
Average Age	50.3	49.1	2%
In-Pay Members with Coverage			
Count	22,728	22,045	3%
Average Age	72.0	71.3	1%
Total Member Count	57,818	56,496	2%

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

Economic Assumptions

Based on Meketa's 10 and 20-year capital market assumptions for the RHCTF's asset allocation, an expected return on plan assets of 7.0% was adopted by the City and County.

The wage inflation and price inflation assumptions are the same as those adopted by the City and County of San Francisco Employees' Retirement System at the December 9, 2020 Board meeting. Please refer to the economic assumption review presentation for SFERS dated December 9, 2020 for the rationale for the wage inflation and price inflation assumptions.

The per person healthcare cost trends were developed using the 2021 Getzen Model of Long-Run Medical Cost Trends published by the Society of Actuaries. Initial trends reflect short-term expectations, including the impact of health insurance tax repeal and Centers for Medicare & Medicaid Services (CMS) rebasing by county. Longer-term trends are based on our review of the current economic environment, and our expectations for the future.

Please refer to the Assumptions and Methods presentations dated October 28, 2021 and June 27, 2022 for further detail on the rationale for these assumptions.

These assumptions have been reviewed and approved by the City and County of San Francisco.

1. Expected Return on Assets and Discount Rate

7.00% per year, net of investment expenses

2. Inflation

Price Inflation:	2.50%, compounded annually
Wage Inflation:	Bargained increases through July 1, 2022 followed by 3.25% compounded annually thereafter

3. Per Person Cost Trends

Medical trends were developed using the 2021 Society of Actuaries Long-Term Health Care Cost Trends model with the following parameters:

Inflation:	2.5%
Real GDP per Capita:	1.5%
Excess Medical Cost Growth:	1.1%
Capacity Constraints	
Expected Health Share of GDP in 2030:	20.5%
Resistance Point – Share of GDP:	20.0%
Year Limited to GDP Growth:	2075

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

Annual Per Person Cost Increases

To Fiscal Year Beginning	10-County Trend	Medical & Rx Non-Medicare	Medical & Rx Medicare Eligible	Vision / Expense	To Fiscal Year Beginning	10-County Trend	Medical & Rx Non-Medicare	Medical & Rx Medicare Eligible	Vision / Expense
2022	*Varies by Plan*				2049	4.70%	4.70%	4.70%	3.00%
2023	5.50%	6.74%	7.24%	3.00%	2050	4.69%	4.69%	4.69%	3.00%
2024	5.47%	6.39%	6.84%	3.00%	2051	4.68%	4.68%	4.68%	3.00%
2025	5.42%	6.17%	6.54%	3.00%	2052	4.67%	4.67%	4.67%	3.00%
2026	5.37%	5.95%	6.24%	3.00%	2053	4.66%	4.66%	4.66%	3.00%
2027	5.31%	5.73%	5.93%	3.00%	2054	4.65%	4.65%	4.65%	3.00%
2028	5.26%	5.51%	5.63%	3.00%	2055	4.64%	4.64%	4.64%	3.00%
2029	5.21%	5.29%	5.33%	3.00%	2056	4.63%	4.63%	4.63%	3.00%
2030	5.09%	5.09%	5.09%	3.00%	2057	4.62%	4.62%	4.62%	3.00%
2031	4.98%	4.98%	4.98%	3.00%	2058	4.62%	4.62%	4.62%	3.00%
2032	4.96%	4.96%	4.96%	3.00%	2059	4.61%	4.61%	4.61%	3.00%
2033	4.93%	4.93%	4.93%	3.00%	2060	4.60%	4.60%	4.60%	3.00%
2034	4.91%	4.91%	4.91%	3.00%	2061	4.59%	4.59%	4.59%	3.00%
2035	4.89%	4.89%	4.89%	3.00%	2062	4.59%	4.59%	4.59%	3.00%
2036	4.87%	4.87%	4.87%	3.00%	2063	4.58%	4.58%	4.58%	3.00%
2037	4.85%	4.85%	4.85%	3.00%	2064	4.57%	4.57%	4.57%	3.00%
2038	4.83%	4.83%	4.83%	3.00%	2065	4.54%	4.54%	4.54%	3.00%
2039	4.82%	4.82%	4.82%	3.00%	2066	4.48%	4.48%	4.48%	3.00%
2040	4.80%	4.80%	4.80%	3.00%	2067	4.42%	4.42%	4.42%	3.00%
2041	4.79%	4.79%	4.79%	3.00%	2068	4.37%	4.37%	4.37%	3.00%
2042	4.78%	4.78%	4.78%	3.00%	2069	4.31%	4.31%	4.31%	3.00%
2043	4.76%	4.76%	4.76%	3.00%	2070	4.26%	4.26%	4.26%	3.00%
2044	4.75%	4.75%	4.75%	3.00%	2071	4.21%	4.21%	4.21%	3.00%
2045	4.74%	4.74%	4.74%	3.00%	2072	4.16%	4.16%	4.16%	3.00%
2046	4.73%	4.73%	4.73%	3.00%	2073	4.11%	4.11%	4.11%	3.00%
2047	4.72%	4.72%	4.72%	3.00%	2074	4.06%	4.06%	4.06%	3.00%
2048	4.71%	4.71%	4.71%	3.00%	2075	4.04%	4.04%	4.04%	3.00%

Deductibles, Co-payments, Out-of-Pocket Maximums, and Annual Maximum are assumed to increase at the above trend rates.

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

Demographic Assumptions

Rates of retirement, termination, member refunds, mortality, disability, and salary increases are the same as those adopted by the SFERS Board at the December 9, 2020 Board meeting. Please refer to the demographic experience study report for SFERS dated August 2020 for the rationale for these demographic assumptions.

The other demographic assumptions are based on recent Plan experience and our expectations for the future. Please refer to the Assumptions and Methods presentation dated October 28, 2021 for further detail on the rationale for these assumptions.

These assumptions have been reviewed and approved by the City and County of San Francisco.

1. Retirement Rates

Rates of retirement are based on age and service according to the tables on the following pages. Separate rates are used for members hired on or after January 7, 2012 under Charter Sections A8.603 and above (Prop C). Any deferred vested member hired on or after January 10, 2009 is assumed to retire outside of the 180-day retirement window set in place by Proposition B (passed 6/3/2008).

Police Rates of Retirement						
	Other than Prop C Years of Service			Prop C Years of Service		
Age	< 25	25 - 29	30 +	< 25	25 - 29	30 +
50	1.50%	5.00%	5.00%	1.50%	5.00%	5.00%
51	1.50	5.00	15.00	1.50	5.00	10.00
52	2.00	7.50	20.00	2.00	7.50	20.00
53	5.00	20.00	40.00	5.00	15.00	25.00
54	7.50	22.00	50.00	7.50	17.50	30.00
55	7.50	35.00	50.00	7.50	20.00	35.00
56	7.50	26.00	40.00	7.50	24.00	35.00
57	10.00	28.00	45.00	10.00	26.00	40.00
58	10.00	30.00	45.00	10.00	35.00	60.00
59	15.00	25.00	45.00	15.00	25.00	45.00
60	20.00	34.00	45.00	20.00	34.00	45.00
61	10.00	36.00	40.00	10.00	36.00	40.00
62	15.00	36.00	40.00	15.00	36.00	40.00
63	12.50	36.00	40.00	12.50	36.00	40.00
64	12.50	36.00	40.00	12.50	36.00	40.00
65 & over	100.00	100.00	100.00	100.00	100.00	100.00

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

Fire Rates of Retirement						
	Other than Prop C Years of Service			Prop C Years of Service		
Age	< 25	25 - 29	30 +	< 25	25 - 29	30 +
50	2.00%	5.00%	5.00%	2.00%	2.00%	2.00%
51	1.00	5.00	5.00	1.00	2.00	2.00
52	2.00	5.00	5.00	2.00	5.00	5.00
53	3.00	5.00	15.00	3.00	5.00	12.50
54	7.50	20.00	35.00	7.50	12.50	20.00
55	7.50	25.00	35.00	7.50	15.00	25.00
56	7.50	20.00	35.00	7.50	15.00	30.00
57	12.50	20.00	35.00	12.50	15.00	30.00
58	12.50	20.00	25.00	12.50	30.00	35.00
59	12.50	25.00	25.00	12.50	25.00	25.00
60	15.00	25.00	35.00	15.00	25.00	35.00
61	15.00	40.00	40.00	15.00	40.00	40.00
62	15.00	40.00	40.00	15.00	40.00	40.00
63	15.00	20.00	25.00	15.00	20.00	25.00
64	20.00	20.00	25.00	20.00	20.00	25.00
65 & over	100.00	100.00	100.00	100.00	100.00	100.00

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

Muni Drivers Rates of Retirement						
	Other than Prop C Years of Service			Prop C Years of Service		
Age	< 20	20 - 29	30 +	< 20	20 - 29	30 +
50	0.00%	1.00%	1.50%	0.00%	0.00%	0.00%
51	0.00	1.00	1.50	0.00	0.00	0.00
52	0.00	1.00	1.50	0.00	0.00	0.00
53	0.00	1.00	1.50	0.00	1.00	1.50
54	0.00	1.00	1.50	0.00	1.00	1.50
55	0.00	4.00	5.00	0.00	1.00	5.00
56	0.00	4.00	5.00	0.00	1.00	5.00
57	0.00	4.00	5.00	0.00	2.00	5.00
58	0.00	4.00	5.00	0.00	2.00	5.00
59	0.00	4.00	5.00	0.00	2.00	5.00
60	10.00	10.00	20.00	5.00	10.00	15.00
61	12.50	25.00	30.00	7.50	12.50	20.00
62	20.00	32.50	35.00	10.00	15.00	30.00
63	15.00	30.00	30.00	10.00	20.00	25.00
64	15.00	30.00	30.00	10.00	25.00	25.00
65	27.50	30.00	35.00	27.50	30.00	40.00
66	27.50	30.00	35.00	27.50	30.00	35.00
67	27.50	30.00	35.00	27.50	30.00	35.00
68	27.50	30.00	35.00	27.50	30.00	35.00
69	27.50	30.00	35.00	27.50	30.00	35.00
70 & over	100.00	100.00	100.00	100.00	100.00	100.00

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

Craft Rates of Retirement						
	Other than Prop C Years of Service			Prop C Years of Service		
Age	< 20	20 - 29	30 +	< 20	20 - 29	30 +
50	0.00%	1.50%	1.50%	0.00%	0.00%	0.00%
51	0.00	1.50	1.50	0.00	0.00	0.00
52	0.00	1.50	1.50	0.00	0.00	0.00
53	0.00	2.50	4.00	0.00	1.50	1.50
54	0.00	2.50	4.00	0.00	1.50	1.50
55	0.00	2.50	5.00	0.00	1.50	2.50
56	0.00	3.00	5.00	0.00	1.50	2.50
57	0.00	3.00	5.00	0.00	2.00	2.50
58	0.00	3.00	5.00	0.00	2.00	5.00
59	0.00	8.00	20.00	0.00	2.00	10.00
60	7.50	12.00	32.50	5.00	7.50	15.00
61	10.00	20.00	35.00	7.50	12.50	20.00
62	20.00	30.00	37.50	17.50	25.00	30.00
63	10.00	25.00	30.00	10.00	17.50	25.00
64	17.50	25.00	30.00	10.00	17.50	25.00
65	25.00	27.50	30.00	25.00	30.00	40.00
66	27.50	30.00	32.50	27.50	30.00	32.50
67	27.50	30.00	32.50	27.50	30.00	32.50
68	15.00	25.00	30.00	15.00	25.00	30.00
69	15.00	25.00	30.00	15.00	25.00	30.00
70 & over	100.00	100.00	100.00	100.00	100.00	100.00

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

Miscellaneous Rates of Retirement						
	Other than Prop C Years of Service			Prop C Years of Service		
Age	< 20	20 - 29	30 +	< 20	20 - 29	30 +
50	0.00%	2.75%	3.50%	0.00%	0.00%	0.00%
51	0.00	2.50	3.50	0.00	0.00	0.00
52	0.00	2.50	3.50	0.00	0.00	0.00
53	0.00	3.25	3.50	0.00	3.25	3.25
54	0.00	4.00	4.00	0.00	4.00	4.00
55	0.00	4.00	5.50	0.00	4.00	4.00
56	0.00	4.25	6.75	0.00	4.25	4.25
57	0.00	4.50	8.75	0.00	4.50	4.50
58	0.00	5.00	10.00	0.00	5.00	7.50
59	0.00	8.75	20.00	0.00	8.75	10.00
60	9.00	11.50	30.00	7.50	10.00	12.50
61	13.25	20.00	35.00	10.00	15.00	15.00
62	20.00	30.00	35.00	17.50	25.00	25.00
63	16.00	22.50	30.00	12.50	17.50	20.00
64	16.00	22.50	30.00	12.50	17.50	20.00
65	20.00	30.00	30.00	25.00	40.00	40.00
66	25.00	30.00	35.00	25.00	30.00	35.00
67	25.00	30.00	35.00	25.00	30.00	35.00
68	20.00	30.00	30.00	20.00	30.00	30.00
69	20.00	30.00	30.00	20.00	30.00	30.00
70	25.00	25.00	30.00	25.00	25.00	30.00
71	25.00	25.00	30.00	25.00	25.00	30.00
72	25.00	25.00	30.00	25.00	25.00	30.00
73	25.00	25.00	30.00	25.00	25.00	30.00
74	25.00	25.00	30.00	25.00	25.00	30.00
75 & over	100.00	100.00	100.00	100.00	100.00	100.00

The assumed retirement age for inactive terminated vested members and actives who are expected to terminate is shown below.

Deferred Retirement Age		
	Non-Prop C	Prop C
Safety	51	55
	Non-Reciprocal	Reciprocal
Miscellaneous	55	60

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

2. Rates of Termination of Employment

Sample rates of termination by service for Police, Fire, Muni Drivers, and Craft members are shown below.

Rates of Termination				
Service	Police	Fire	Muni Drivers	Craft
0	8.00%	2.50%	12.00%	9.50%
1	5.00	1.00	5.00	6.50
2	2.00	1.00	4.00	5.75
3	1.50	1.00	3.50	4.50
4	1.00	1.00	3.25	3.50
5	1.00	1.00	3.00	3.25
10	0.75	0.50	2.50	1.75
15	0.50	0.25	2.50	1.75
20+	0.50	0.25	2.50	1.75

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

Misc. Rates of Termination by Age and Service Years			
	Age		
Service	Under 30	30 to 39	40 & over
0	38.00%	24.00%	20.00%
1	20.00	12.00	9.00
2	14.00	9.00	6.00
3	10.00	7.00	4.80
4	7.50	6.50	4.60
5	6.75	6.00	4.40
10	3.75	3.75	3.75
15	2.25	2.25	2.25
20+	1.00	1.00	1.00

When members are eligible to retire, it is assumed that their termination rates are zero.

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

3. Member Refunds

The rates of refund of contributions for terminated vested members are shown below.

Vested Terminated Rates of Refund		
Service	Police & Fire	Miscellaneous
5	24.0%	20.0%
6	20.0	15.0
7	16.0	12.0
8	12.0	10.0
9	8.0	9.0
10	4.0	8.5
15	0.0	6.0
20	0.0	0.0

4. Base Rates of Mortality

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 SFERS experience study for the period ending June 30, 2019. The base mortality tables are described below.

Base Mortality Tables		Adjustment Factor	
	Published Table	Male	Female
Non-Annuitants			
Miscellaneous	PubG-2010 Employee	0.834	0.866
Safety	PubS-2010 Employee	1.011	0.979
Healthy Retirees			
Miscellaneous	PubG-2010 Retiree	1.031	0.977
Safety	PubS-2010 Retiree	0.947	1.044
Disabled Retirees			
Miscellaneous	PubG-2010 Disabled	1.045	1.003
Safety	PubS-2010 Disabled	0.916	0.995
Beneficiaries			
Miscellaneous	PubG-2010 Retiree	1.031	0.977
Safety	PubG-2010 Retiree	1.031	0.977

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

5. Mortality Projection Scale

The mortality rates shown in the base tables above are projected generationally from the base year using the MP-2019 projection scale.

6. 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.

Rates of Disability at Selected Ages						
Age	Police	Fire	Muni Drivers	Craft	Misc Females	Misc Males
30	0.05%	0.04%	0.01%	0.01%	0.01%	0.01%
35	0.14	0.09	0.06	0.06	0.04	0.04
40	0.35	0.24	0.11	0.11	0.07	0.08
45	0.44	0.42	0.17	0.20	0.15	0.11
50	0.90	0.84	0.45	0.40	0.40	0.28
55	3.30	3.50	1.35	0.75	0.55	0.45
60	5.75	7.30	0.00	0.00	0.00	0.00
65	0.00	0.00	0.00	0.00	0.00	0.00

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

7. Salary Increase Rate

Wage Inflation Component: Bargained increases through July 1, 2022 followed by 3.25% compounded annually thereafter.

Current Bargained Wage Increases			
Date of Increase	Police	Fire	Misc
12/26/2020	0.0%	0.0%	3.0%
6/30/2021	0.0%	0.0%	0.5%
7/1/2021	3.0%	3.0%	
6/30/2022	2.0%	1.0%	
7/1/2022	3.0%	3.0%	

Additional Merit Component:

Salary Merit Increases - Sample Rates					
Years of Service	Police	Fire	Muni Drivers	Craft	Misc
0	7.50%	14.00%	16.00%	3.75%	5.50%
1	6.75	10.00	11.00	3.00	4.50
2	6.00	8.00	6.50	2.40	3.75
3	5.25	6.00	3.50	1.80	3.25
4	4.50	5.00	1.75	1.50	2.75
5	3.75	4.00	1.25	1.20	2.25
10	1.50	1.50	0.30	0.50	1.10
15	0.50	0.50	0.00	0.50	0.55
20 & over	0.50	0.50	0.00	0.50	0.30

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

8. Percent of Retirees Electing Coverage

Future eligible retirees are assumed to elect coverage at retirement at the following rates, which vary by vesting level and Medicare eligibility.

Percent of Retirees Electing Coverage					
	Vesting Level				
	0%	**50%**	**75%**	**100%**	**Disabled**
Non-Medicare Eligible	20%	65%	75%	85%	90%
Medicare Eligible	15%	75%	90%	94%	97%

Participants currently receiving benefits are assumed to keep their current coverage.

9. Medical Plan Election

Future retirees' plan elections are assumed to mirror current retiree plan elections. The following rates are used to determine blended claims and contributions for future retirees.

Assumed Plan Elections for Future Retirees		
Medical Plan	**Non-Medicare**	**Medicare Eligible**
Blue Shield Access	20%	N/A
Blue Shield Trio	15%	N/A
City Health Plan	7.5%	N/A
City Health Plan – Choice Not Available	7.5%	N/A
Kaiser	50%	45%
UHC PPO	N/A	55%

Participants currently receiving benefits are assumed to continue participation in their current medical plan.

10. Medicare Participation

All in-pay participants, both current and future, are assumed to be eligible for and elect into Medicare at age 65. All participants under age 65 and currently on Medicare are assumed not to be on Medicare until age 65.

11. Future Service Accruals

Actives are assumed to accrue a full year of credited service each year. Members currently terminated and under a reciprocity arrangement are assumed to meet the City's eligibility requirements for retiree healthcare through earned reciprocity service.

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

12. Portion of New Entrant Payroll Eligible for Pre-Prop B Benefits

In order to project payroll for employees eligible for the pre-Proposition B vesting schedule, we assumed the following portion of newly hired employees were originally hired on or before January 9, 2009 and returned to work: 10% in fiscal year ending (FYE) 2021 and decreasing by 0.5% each year thereafter until 0%.

13. Coverage Elections for Spouses and Domestic Partners

The percentage of future retirees who elect to cover a spouse or domestic partner is shown in the following table.

Spousal Coverage Elections					
	Vesting Level				
	0%	50%	75%	100%	Disabled
Pre-Medicare	75%	40%	35%	35%	25%
Medicare Eligible	40%	40%	40%	40%	45%

Actual spouse/domestic partner coverage data is used for participants currently receiving a benefit.

The cost for children is fully paid for by the member. No additional load was added for children.

14. Dependent Age

For participants currently receiving a benefit, actual spouse date of birth is used if available. Otherwise, spouses and domestic partners of male members are assumed to be three years younger than the member and spouses and domestic partners of female members are assumed to be two years older than the member.

15. Surviving Spouse Participation

100% of surviving spouses continue coverage.

16. Deferred Member Benefit

Based on the data provided (date of birth, date of hire, date of termination), service credit and deferred retirement age were estimated. These estimates were used to compute eligibility and vesting for the OPEB benefit, upon which the liabilities are based.

17. Future Increases in Retiree Healthcare Trust Fund Administrative Expense

FYE 2021 expenses increased by 3.25% per year

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

Claim and Expense Assumptions

1. **Average Annual Claims Assumptions:** The following claim assumptions are applicable to the 12-month plan year beginning July 1, 2020 and are based on the premiums in effect on the valuation date. Subsequent years' costs are based on actual premiums, then adjusted with trends previously listed.

Annual Claims and Expenses - Non-Medicare
For the Period July 1, 2020 to June 30, 2021

	Medical & Rx				Expense			
Age	Blue Shield Access	Blue Shield Trio	Kaiser	City Plan	Blue Shield	Kaiser	City Plan	Vision
40	$ 8,138	$ 7,247	$ 6,169	$ 7,506	$ 36	$ 36	$ 916	$ 47
45	9,281	8,265	7,036	8,679	36	36	916	47
50	10,993	9,789	8,334	10,572	36	36	916	47
55	13,367	11,903	10,133	13,147	36	36	916	47
60	16,235	14,457	12,308	15,935	36	36	916	47
64	18,594	16,559	14,097	17,636	36	36	916	47

Annual Claims and Expenses - Medicare Eligible
For the Period July 1, 2020 to June 30, 2021

	Medical & Rx		Expense		
Age	Kaiser	UHC	Kaiser	UHC	Vision
65	$ 3,615	$ 4,353	$ 36	$ 36	$ 47
70	3,767	4,537	36	36	47
75	4,287	5,163	36	36	47
80	4,865	5,859	36	36	47
85	5,282	6,361	36	36	47

2. **Dental, Vision, and Expense:** These benefits are assumed to have no implicit subsidy cost.

3. **Medicare Part D Subsidy:** Per GASB guidance, the Part D Subsidy has not been reflected in this valuation.

4. **Annual Limits:** Assumed to increase at the same rate as trend.

5. **Lifetime Maximums:** Unlimited.

6. **Geography:** Implicitly assumed to remain the same as current retirees.

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

Methodology

The Entry Age Actuarial Cost Method was used to measure the Plan's Total OPEB Liability and service cost. Under this method, the service cost rate is the percentage of pay contribution that is expected to be sufficient to fund the Plan benefits if it were paid from each member's hire date at the City until termination or retirement.

A service cost rate is determined for each individual by taking the value, as of age at entry into the Plan, of the member's projected future benefits and dividing it by the value, also as of the member's entry age, of the member's expected future salary.

The Total OPEB Liability is that portion of the present value of projected benefits that is not expected to be paid by future service costs. The difference between the Total OPEB Liability and the Market Value of Assets (or Fiduciary Net Position) as of the same date is the Net OPEB Liability.

The medical claims costs were developed based on actual premiums for the six months ending December 31, 2020 and calendar year 2021 for the HMO plans and actual rates for the six months ending December 31, 2020 and calendar year 2021 for the City Plan. For Non-Medicare adults, the premiums (or rates, as applicable) for active employee only, first dependent of active employee, Non-Medicare retiree, and first dependent of Non-Medicare retirees were blended based upon enrollment data for the period July 1, 2019 to June 30, 2020. The same process was used for Medicare adults, except only Medicare retirees and first dependents of Medicare retirees were included. The resulting per person per month (PPPM) cost was then adjusted using age curves. Expenses and vision costs were based directly on the rates in effect for 2020-2021.

Changes Since Last Measurement Date

Future increases in the Retiree Healthcare Trust Fund administrative expenses were updated to reflect actual experience during the fiscal year ending 2021. The Per Person Cost Trends were adjusted to reflect the actual increases in premiums between 2021 and 2022.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

Eligibility

Former employees of the City and County of San Francisco who were members of the Health Service System and who retire under SFERS or CalPERS are eligible for postretirement health benefits from the City and County of San Francisco. Superior Court members who were separated as of January 1, 2001 are treated as former employees of the City and County. Effective with Proposition B, passed 6/3/2008, employees hired on or after January 10, 2009 must retire within 180 days of separation in order to be eligible for retiree healthcare benefits from the City.

The eligibility requirements to receive a pension benefit, and thus commence postretirement health benefits, are as follows:

City and County of San Francisco's Retirement System (SFERS)

Normal Retirement	Miscellaneous	Age 50 with 20 years of credited service[1]
		Age 60 with 10 years of credited service
	Safety	Age 50 with 5 years of credited service
Disabled Retirement[2]	Any age with 10 years of credited service	
Terminated Vested	5 years of credited service at separation	

California Public Employees' Retirement System (CalPERS) – the Safety Plan of the City and County of San Francisco

Normal Retirement	Age 50 with 5 years of credited service
Disabled Retirement[2]	Any age with 5 years of credited service
Terminated Vested	5 years of credited service at separation

[1] Age 53 with 20 years of credited service, age 60 with 10 years of credited service, or age 65 for Miscellaneous members hired on or after January 7, 2012 under Charter Section 8.603.

[2] No service requirement for Safety members retiring under the industrial disability benefit or for surviving spouses / domestic partners of those killed in the line of duty.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

Healthcare Benefits for Retirees

The San Francisco Health Service System administers healthcare benefits to the retirees of the City and County of San Francisco.

Medical: PPO – City Health Plan (self-insured) and UHC Medicare Advantage (fully-insured). The City Health Plan was replaced with the Blue Shield of California PPO-Accolade plan effective January 1, 2022.

HMO – Kaiser (fully-insured) and Blue Shield (flex-funded)

Dental: Delta Dental, DeltaCare USA, and UHC Dental

Vision: Vision benefits are provided under the medical insurance plans and are administered by Vision Service Plan.

Premiums: Monthly premiums for January 1, 2020 through December 31, 2020 are as follows. The premiums for January 1, 2021 through December 31, 2022 are shown on the following page.

Medical Premiums / Premium Equivalents [1]

	Pre-Medicare		Medicare Eligible	
	Single	**Dual**	**Single**	**Dual**
January 1, 2020 – December 31, 2020				
Active				
Blue Shield Access+	$ 891.88	$1,780.98	N/A	N/A
Blue Shield Trio	753.66	1,504.53	N/A	N/A
City Plan - CNA	891.88	1,780.98	N/A	N/A
City Plan	1,185.11	2,295.01	N/A	N/A
Kaiser	645.71	1,288.45	N/A	N/A
Retiree				
Blue Shield Access+	$2,059.22	$2,983.75	N/A	N/A
Blue Shield Trio	1,738.67	2,519.44	N/A	N/A
City Plan[2]	1,510.84	2,400.05	$ 441.82	$ 880.66
Kaiser	1,295.75	1,938.49	372.71	742.44

[1] Includes Rx, vision, and expense. All claims stabilization amounts are included in the premiums shown. CNA = Choice Not Available.

[2] Includes Choice Not Available. UHC Medicare Advantage PPO premiums are shown for Medicare eligible

APPENDIX C – SUMMARY OF PLAN PROVISIONS

Medical Premiums / Premium Equivalents [1]	Pre-Medicare		Medicare Eligible	
	Single	Dual	Single	Dual
January 1, 2021 – December 31, 2021				
Active				
Blue Shield Access+	$ 923.71	$ 1,844.31	N/A	N/A
Blue Shield Trio	800.83	1,598.55	N/A	N/A
City Plan - CNA	923.71	1,844.31	N/A	N/A
City Plan	1,298.42	2,517.88	N/A	N/A
Kaiser	682.48	1,361.98	N/A	N/A
Retiree				
Blue Shield Access+	$ 2,133.09	$ 3,090.39	N/A	N/A
Blue Shield Trio	1,848.11	2,677.60	N/A	N/A
City Plan[2]	1,747.72	2,535.05	$ 429.17	$ 855.36
Kaiser	1,370.10	2,049.60	354.32	705.66
January 1, 2022 – December 31, 2022				
Active				
Blue Shield Access+	$ 931.44	$ 1,859.91	N/A	N/A
Blue Shield Trio	816.90	1,630.81	N/A	N/A
Health Net CanopyCare	859.02	1,715.06	N/A	N/A
BSC PPO - Accolade - CNA[3]	931.44	1,859.91	N/A	N/A
BSC PPO - Accolade[3]	1,337.19	2,586.45	N/A	N/A
Kaiser	715.97	1,428.96	N/A	N/A
Retiree				
Blue Shield Access+	$ 2,151.00	$ 3,116.47	N/A	N/A
Blue Shield Trio	1,885.34	2,731.68	N/A	N/A
Health Net CanopyCare	1,983.02	2,873.17	N/A	N/A
BSC PPO - Accolade [2, 3]	1,797.54	2,604.04	$ 434.17	$ 865.36
Kaiser	1,437.79	2,150.78	316.71	630.44

[1] Includes Rx, vision, and expense. All claims stabilization amounts are included in the premiums shown.
CNA = Choice Not Available.

[2] Includes Choice Not Available. UHC Medicare Advantage PPO premiums are shown for Medicare eligible retirees.

[3] Blue Shield of CA PPO-Accolade plans have similar network and benefit structure as the City Plans (UHC PPO).

APPENDIX C – SUMMARY OF PLAN PROVISIONS

The following table summarizes the medical plans that were in effect as of June 30, 2020.

Health Plan Last Modified	1/1/2018	1/1/2018	1/1/2020	1/1/2018
Plan:	Blue Shield Trio (HMO)	Blue Shield Access+ (HMO)	City Health Plan (PPO)	Kaiser (HMO)
In-Network (INN) Benefits				
Deductible (Individual / Family)	None	None	$250 / $750	None
Coinsurance	N/A	N/A	15%	N/A
Out-of-Pocket Max (Individual / Family)	$2,000 / $4,000	$2,000 / $4,000	$3,750 / $7,500	$1,500 / $3,000
Copays				
Preventive Care	Fully Covered	Fully Covered	Fully Covered	Fully Covered
Office Visit (OV) - Primary Care (PCP)	$25 per visit	$25 per visit	DC[1]	$20 per visit
OV - Specialist Care Provider (SCP)	$25 per visit	$25 per visit	DC[1]	$20 per visit
Hospital Emergency Room (ER)	$100 per visit	$100 per visit	DC[1]	$100 per visit
Outpatient Surgery	$100 per surgery	$100 per surgery	DC[1]	$35 per surgery
Hospital Inpatient	$200 per admission	$200 per admission	DC[1]	$100 per admission
Lifetime Max	Unlimited	Unlimited	Unlimited	Unlimited
Out-of-Network (OON) Benefits	Not Covered	Not Covered		Not Covered
Deductible (Individual / Family)			$500 / $1500	
Coinsurance			50%	
Office Visits (PCP) & (SCP)			DC[1]	
Out-of-Pocket Max (Individual / Family)			$7,500 per person	
Lifetime Max			Unlimited	
Prescription Drugs				
Retail (30 Days) - Generic/Formulary/Non-Form.	$10 / $25 / $50	$10 / $25 / $50	$10 / $25 / $50 (OON $5 / $20 / $45 then 50% coins)	$5 / $15 / Physician authorized only
Mail Order (90 Days) - Generic/Form./Non-Form.	$20 / $50 / $100	$20 / $50 / $100	$20 / $50 / $100 (OON no coverage)	$10 / $30 / Physician authorized only
Specialty Pharmacy	20% of script up to $100	20% of script up to $100	Same as Mail/Retail	20% of script up to $100
Mental Health and Substance Abuse				
Mental Health Inpatient	$200 per admission	$200 per admission	DC[1]	$100 per admission
Mental Health Outpatient	$25 per visit	$25 per visit	DC[1]	$20 per visit
Substance Abuse Inpatient	$200 per admission	$200 per admission	DC[1]	$100 per admission
Substance Abuse Outpatient	$25 per visit	$25 per visit	DC[1]	$20 per visit
Detail Benefits				
Chiropractic Benefit	$15 per visit (30 visit limit)	$15 per visit (30 visit limit)	Deductible and 50% Coins. ($1000 limit)	$15 per visit (combined 30 visit limit with acupuncture)
Rehab (speech, occupational, physical)	$25 per visit	$25 per visit	DC[1] (60 visit limit)	$20 per visit
Hearing Aids	$2,500 for 36 mos.	$2,500 for 36 mos.	DC[1] (up to $2,500 for 36 mos.)	$2,500 for 36 mos.
Durable Medical Equipment	Fully Covered	Fully Covered	DC[1]	Fully Covered
Medical Management	PCP referral required	PCP referral required	Required on Some Services	PCP referral required
Medicare Integration	N/A	N/A	Medicare Advantage PPO	Medicare Advantage HMO
Vision Care Services	Not Covered	Not Covered	Not Covered	Not Covered

[1] DC = Deductible and coinsurance applies

APPENDIX C – SUMMARY OF PLAN PROVISIONS

Cost-Sharing Provisions

Medical & Vision: Members are required to pay the difference between the cost of coverage and the City contribution.

Dental Coverage: Retirees pay the full cost of dental coverage offered by the City for themselves and their dependents.

City Contribution: The City pays a portion of the retiree or spouse/domestic partner premium as detailed in the following table with the vesting schedule also applied. The City's contribution is limited by the premium. Medicare Part B premiums are the responsibility of the retiree. The City does not contribute to coverage for dependent children.

City Contribution[1]	
Pre-Medicare:	
Retiree/Surviving Spouse	Single Retiree Premium less 50% of the amount the Single Active Premium exceeds the 10-County Amount
Spouse/Domestic Partner	50% of the difference between the Single and Dual Retiree Coverage Premiums
Medicare Eligible:	
Retiree/Surviving Spouse	100% of Single Retiree Premium, up to the 10-County Amount
Spouse/Domestic Partner	50% of the difference between the Single and Dual Retiree Coverage Premiums

[1] For participants terminated on or before 6/30/2001 and not yet retired on or before 1/6/2012, Proposition C (passed 11/8/2011) removes the additional City Contribution put in place by Proposition E (passed 11/7/2000), which decreased the amount the retiree pays for one dependent coverage by half.

Vesting Schedule[1] (based on years of service)[1]	
Originally hired on or before January 9, 2009 (with 5 years)	100%
Originally hired on or after January 10, 2009	
Under 10 years	0%
10 to 15 years	50%
15 to 20 years	75%
Over 20 years	100%

[1] Proposition B, passed 6/3/2008, introduced this vesting schedule to the postretirement health benefit plan. Participants retiring under disability or benefiting under the active death benefit receive 100% of the City Contribution, regardless of hire date and service. The participant's vesting schedule is based on their original hire date.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

10-County Amount: The 10-County Amount (historical amounts are listed in the table below) is the average of the monthly employer contribution in the 10 most populous counties in California (other than San Francisco).

10-County Amount[1]	
Period Ending	
December 31, 2020	$ 706.78
December 31, 2021	$ 729.19
December 31, 2022[1]	$ 757.31

[1] Calculated amount

Retiree Health Care Trust Fund Contributions

The City and County of San Francisco created the Retiree Health Care Trust Fund (RHCTF) as an irrevocable trust fund established under City Charter Section A8.432.

The employee's contribution is based on their latest date of hire.

Employees most recently hired before January 10, 2009: Once the plan is fully funded, employees contribute the lesser of 50% of the normal cost or 1% of payroll and the employer contributes the remainder of the normal cost. Prior to becoming fully funded, employee and employer contributions are the lesser of 100% of normal cost or 1% of payroll and employer contributions are 1% of payroll.

Employees most recently hired on or after January 10, 2009: Once the plan is fully funded, employees contribute the lesser of 50% of the normal cost or 2% of payroll and the employer contributes the remainder of the normal cost. Prior to becoming fully funded, employee contributions are the lesser of 100% of normal cost or 2% of payroll and employer contributions are 1% of payroll.

APPENDIX C – SUMMARY OF PLAN PROVISIONS

Disbursements from Retiree Health Care Trust Fund

Other than disbursements described below to stabilize City contributions and disbursements for reasonable administrative expenses, no disbursements may be made from the RHCTF unless it is fully funded.

If City retiree health care costs (RHCTF contributions plus benefit payments) are projected to exceed 10% of payroll, with approval of the Mayor and by resolution of the Board of Supervisors, the RHCTF Board may authorize stabilization disbursements up to the extent necessary to reduce the City's retiree health care costs to 10% of payroll provided that such stabilization disbursement does not exceed 10% of the balance in the RHCTF as of the prior year.

Changes Since Last Measurement Date

There have been no changes to the plan provisions since the last measurement date.

APPENDIX D – DETERMINATION OF DISCOUNT RATE

FYE	Beginning Fiduciary Net Position	Contributions	Admin Expenses	Benefit Payments	Investment Earnings	Ending Fiduciary Net Position	"Funded" Portion of Benefit Payments	"Unfunded" Portion of Benefit Payments
2022	$ 718,777	$ 280,837	$ 274	$ 200,061	$ 53,084	$ 852,364	$ 200,061	$ 0
2023	852,364	285,695	282	207,555	62,344	992,566	207,555	0
2024	992,566	299,427	292	223,945	72,067	1,139,823	223,945	0
2025	1,139,823	313,619	301	240,908	82,279	1,294,512	240,908	0
2026	1,294,512	328,076	311	258,284	93,007	1,457,000	258,284	0
2027	1,457,000	343,415	321	276,682	104,275	1,627,687	276,682	0
2028	1,627,687	358,609	331	294,942	116,117	1,807,140	294,942	0
2029	1,807,140	373,130	342	312,583	128,571	1,995,916	312,583	0
2030	1,995,916	387,324	353	329,995	141,675	2,194,566	329,995	0
2031	2,194,566	401,277	365	347,179	155,468	2,403,767	347,179	0
2032	2,403,767	415,850	377	365,015	170,000	2,624,225	365,015	0
2033	2,624,225	431,193	389	383,630	185,319	2,856,718	383,630	0
2034	2,856,718	445,085	402	400,831	201,479	3,102,050	400,831	0
2035	3,102,050	458,479	415	417,572	218,537	3,361,079	417,572	0
2036	3,361,079	471,296	428	433,818	236,550	3,634,680	433,818	0
2037	3,634,680	484,407	442	450,453	255,581	3,923,772	450,453	0
2038	3,923,772	498,553	456	468,267	275,690	4,229,292	468,267	0
2039	4,229,292	513,209	471	486,777	296,944	4,552,197	486,777	0
2040	4,552,197	528,287	486	505,830	319,410	4,893,577	505,830	0
2041	4,893,577	544,391	502	526,002	343,166	5,254,629	526,002	0
2042	5,254,629	560,330	519	546,130	368,295	5,636,606	546,130	0
2043	5,636,606	574,851	535	564,959	394,884	6,040,847	564,959	0
2044	6,040,847	589,232	553	583,751	423,029	6,468,804	583,751	0
2045	6,468,804	601,035	571	600,001	452,832	6,922,099	600,001	0
2046	6,922,099	611,752	589	615,176	484,409	7,402,494	615,176	0

Amounts in Thousands

APPENDIX D – DETERMINATION OF DISCOUNT RATE

FYE	Beginning Fiduciary Net Position	Contributions	Admin Expenses	Benefit Payments	Investment Earnings	Ending Fiduciary Net Position	"Funded" Portion of Benefit Payments	"Unfunded" Portion of Benefit Payments
2047	$ 7,402,494	$ 619,537	$ 609	$ 627,378	$ 517,884	$ 7,911,928	$ 627,378	$ 0
2048	7,911,928	625,803	628	637,988	553,394	8,452,508	637,988	0
2049	8,452,508	18,448	649	646,842	570,031	8,393,498	646,842	0
2050	8,393,498	15,019	670	653,939	565,538	8,319,445	653,939	0
2051	8,319,445	12,076	692	655,749	560,190	8,235,270	655,749	0
2052	8,235,270	9,643	714	656,996	554,170	8,141,373	656,996	0
2053	8,141,373	7,660	737	655,754	547,571	8,040,113	655,754	0
2054	8,040,113	6,022	761	651,662	540,566	7,934,277	651,662	0
2055	7,934,277	4,685	786	647,120	533,267	7,824,324	647,120	0
2056	7,824,324	3,606	812	642,016	525,708	7,710,811	642,016	0
2057	7,710,811	2,733	838	635,565	517,953	7,595,095	635,565	0
2058	7,595,095	2,039	865	629,220	510,047	7,477,096	629,220	0
2059	7,477,096	1,499	893	623,373	501,969	7,356,298	623,373	0
2060	7,356,298	1,082	922	616,515	493,733	7,233,676	616,515	0
2061	7,233,676	763	952	610,747	485,336	7,108,077	610,747	0
2062	7,108,077	530	983	605,897	476,702	6,978,428	605,897	0
2063	6,978,428	360	1,015	601,111	467,784	6,844,447	601,111	0
2064	6,844,447	238	1,048	595,828	458,582	6,706,390	595,828	0
2065	6,706,390	155	1,082	590,245	449,106	6,564,325	590,245	0
2066	6,564,325	100	1,117	583,551	439,389	6,419,145	583,551	0
2067	6,419,145	63	1,154	575,279	429,508	6,272,283	575,279	0
2068	6,272,283	39	1,191	565,490	419,563	6,125,203	565,490	0
2069	6,125,203	23	1,230	554,050	409,659	5,979,605	554,050	0
2070	5,979,605	13	1,270	540,925	399,917	5,837,341	540,925	0
2071	5,837,341	7	1,311	526,119	390,466	5,700,384	526,119	0

Amounts in Thousands

APPENDIX D – DETERMINATION OF DISCOUNT RATE

FYE	Beginning Fiduciary Net Position	Contributions	Admin Expenses	Benefit Payments	Investment Earnings	Ending Fiduciary Net Position	"Funded" Portion of Benefit Payments	"Unfunded" Portion of Benefit Payments
2072	$ 5,700,384	$ 4	$ 1,354	$ 509,668	$ 381,444	$ 5,570,810	$ 509,668	$ 0
2073	5,570,810	2	1,398	491,640	372,992	5,450,766	491,640	0
2074	5,450,766	1	1,443	472,114	365,259	5,342,469	472,114	0
2075	5,342,469	0	1,490	451,207	358,396	5,248,168	451,207	0
2076	5,248,168	0	1,539	429,155	352,552	5,170,028	429,155	0
2077	5,170,028	0	1,589	406,193	347,871	5,110,117	406,193	0
2078	5,110,117	0	1,640	382,471	344,492	5,070,497	382,471	0
2079	5,070,497	0	1,693	358,155	342,553	5,053,202	358,155	0
2080	5,053,202	0	1,749	333,429	342,191	5,060,216	333,429	0
2081	5,060,216	0	1,805	308,494	343,538	5,093,454	308,494	0
2082	5,093,454	0	1,864	283,561	346,721	5,154,750	283,561	0
2083	5,154,750	0	1,925	258,844	351,860	5,245,842	258,844	0
2084	5,245,842	0	1,987	234,561	359,070	5,368,364	234,561	0
2085	5,368,364	0	2,052	210,925	368,457	5,523,844	210,925	0
2086	5,523,844	0	2,118	188,139	380,123	5,713,709	188,139	0
2087	5,713,709	0	2,187	166,392	394,159	5,939,289	166,392	0
2088	5,939,289	0	2,258	145,848	410,654	6,201,837	145,848	0
2089	6,201,837	0	2,332	126,645	429,691	6,502,551	126,645	0
2090	6,502,551	0	2,408	108,893	451,349	6,842,599	108,893	0
2091	6,842,599	0	2,486	92,667	475,708	7,223,154	92,667	0
2092	7,223,154	0	2,567	78,005	502,848	7,645,431	78,005	0
2093	7,645,431	0	2,650	64,916	532,855	8,110,720	64,916	0
2094	8,110,720	0	2,736	53,376	565,820	8,620,428	53,376	0
2095	8,620,428	0	2,825	43,336	601,842	9,176,109	43,336	0
2096	9,176,109	0	2,917	34,718	641,033	9,779,507	34,718	0

Amounts in Thousands

APPENDIX D – DETERMINATION OF DISCOUNT RATE

FYE	Beginning Fiduciary Net Position	Contributions	Admin Expenses	Benefit Payments	Investment Earnings	Ending Fiduciary Net Position	"Funded" Portion of Benefit Payments	"Unfunded" Portion of Benefit Payments
2097	$ 9,779,507	$ 0	$ 3,012	$ 27,428	$ 683,518	$ 10,432,586	$ 27,428	$ 0
2098	10,432,586	0	3,109	21,353	729,439	11,137,563	21,353	0
2099	11,137,563	0	3,211	16,370	778,956	11,896,938	16,370	0
2100	11,896,938	0	3,315	12,350	832,247	12,713,520	12,350	0
2101	12,713,520	0	3,423	9,163	889,513	13,590,448	9,163	0
2102	13,590,448	0	3,534	6,680	950,980	14,531,213	6,680	0
2103	14,531,213	0	3,649	4,783	1,016,895	15,539,677	4,783	0
2104	15,539,677	0	3,767	3,361	1,087,532	16,620,081	3,361	0
2105	16,620,081	0	3,890	2,316	1,163,192	17,777,067	2,316	0
2106	17,777,067	0	4,016	1,565	1,244,203	19,015,689	1,565	0
2107	19,015,689	0	4,147	1,036	1,330,920	20,341,427	1,036	0
2108	20,341,427	0	4,281	671	1,423,729	21,760,204	671	0
2109	21,760,204	0	4,421	426	1,523,048	23,278,405	426	0
2110	23,278,405	0	4,564	264	1,629,322	24,902,899	264	0
2111	24,902,899	0	4,713	160	1,743,035	26,641,062	160	0
2112	26,641,062	0	4,866	95	1,864,704	28,500,806	95	0
2113	28,500,806	0	5,024	54	1,994,882	30,490,609	54	0
2114	30,490,609	0	5,187	31	2,134,163	32,619,554	31	0
2115	32,619,554	0	5,356	17	2,283,184	34,897,365	17	0
2116	34,897,365	0	5,530	9	2,442,625	37,334,452	9	0
2117	37,334,452	0	5,710	5	2,613,215	39,941,953	5	0
2118	39,941,953	0	5,895	2	2,795,734	42,731,789	2	0
2119	42,731,789	0	6,087	1	2,991,016	45,716,717	1	0
2120	45,716,717	0	6,284	0	3,199,954	48,910,386	0	0
2121	48,910,386	0	6,489	0	3,423,504	52,327,401	0	0

Amounts in Thousands

APPENDIX D – DETERMINATION OF DISCOUNT RATE

FYE	Beginning Fiduciary Net Position	Contributions	Admin Expenses	Benefit Payments	Investment Earnings	Ending Fiduciary Net Position	"Funded" Portion of Benefit Payments	"Unfunded" Portion of Benefit Payments
2122	$ 52,327,401	$ 0	$ 6,700	$ 0	$ 3,662,688	$ 55,983,389	$ 0	$ 0
2123	55,983,389	0	6,917	0	3,918,599	59,895,071	0	0
2124	59,895,071	0	7,142	0	4,192,409	64,080,338	0	0
2125	64,080,338	0	7,374	0	4,485,370	68,558,334	0	0
2126	68,558,334	0	7,614	0	4,798,821	73,349,541	0	0

Amounts in Thousands

APPENDIX E – GLOSSARY OF TERMS

1. Actuarially Determined Contribution

A target or recommended contribution for the reporting period, determined in conformity with Actuarial Standards of Practice based on the most recent measurement available when the contribution for the reporting period was adopted.

2. Actuarial Valuation Date

The date as of which an actuarial valuation is performed. This date may be up to 24 months prior to the measurement date and up to 30 months prior to the employer's reporting date.

3. Deferred Inflow of Resources

An acquisition of net assets by a government employer that is applicable to a future reporting period. In the context of GASB 75, these are experience gains on the Total OPEB Liability, assumption changes reducing the Total OPEB Liability, or investment gains that are recognized in future reporting periods.

4. Deferred Outflow of Resources

A consumption of net assets by a government employer that is applicable to a future reporting period. In the context of GASB 75, these are experience losses on the Total OPEB Liability, assumption changes increasing the Total OPEB Liability, or investment losses that are recognized in future reporting periods.

5. Entry Age Actuarial Cost Method

The actuarial cost method required for GASB 74 and 75 calculations. Under this method, the actuarial present value of the projected benefits of each individual included in an actuarial valuation is allocated on a level basis over the earnings of the individual between entry age and assumed exit ages. The portion of this actuarial present value allocated to a valuation year is called the service cost. The portion of this actuarial present value not provided for at a valuation date by the actuarial present value of future service costs is called the Total OPEB Liability.

6. Measurement Date

The date as of which the Total OPEB liability and plan fiduciary net position are measured. The Total OPEB Liability may be projected from the actuarial valuation date to the measurement date. The measurement date must be the same as the reporting date for the plan.

APPENDIX E – GLOSSARY OF TERMS

7. Net OPEB Liability

The liability of employers and nonemployer contributing entities for employees for benefits provided through a defined benefit OPEB plan. It is calculated as the Total OPEB Liability less the plan fiduciary net position.

8. Plan Fiduciary Net Position

The fair or Market Value of Assets.

9. Reporting Date

The last day of the plan or employer's fiscal year.

10. Service Cost

The portion of the actuarial present value of projected benefit payments that is attributed to the current period of employee service in conformity with the requirements of GASB 74 and 75. The service cost is the normal cost calculated under the Entry Age Actuarial Cost Method.

11. Total OPEB Liability

The portion of the actuarial present value of projected benefit payments that is attributed to past periods of employee service in conformity with the requirements of GASB 74 and 75. The Total OPEB Liability is the Actuarial Liability calculated under the Entry Age Actuarial Cost Method.

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California Public Employees' Retirement System
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July 2023

Miscellaneous Plan of the Bay Area Water Supply and Conservation Agency (CalPERS ID: 3304364524)
Annual Valuation Report as of June 30, 2022

Dear Employer,

Attached to this letter is the June 30, 2022 actuarial valuation report for the rate plan noted above. **Provided in this report is the determination of the minimum required employer contributions for fiscal year (FY) 2024-25**. In addition, the report contains important information regarding the current financial status of the plan as well as projections and risk measures to aid in planning for the future.

Because this plan is in a risk pool, the following valuation report has been separated into two sections:

- Section 1 contains specific information for the plan including the development of the current and projected employer contributions, and
- Section 2 contains the Risk Pool Actuarial Valuation appropriate to the plan as of June 30, 2022.

Section 2 can be found on the CalPERS website (www.calpers.ca.gov). From the home page, go to *"Forms & Publications"* and select *"View All"*. In the search box, enter *"Risk Pool"* and from the results list download the Miscellaneous Risk Pool Actuarial Valuation Report for June 30, 2022.

Actuarial valuations are based on assumptions regarding future plan experience including investment return and payroll growth, eligibility for the types of benefits provided, and longevity among retirees. The CalPERS Board of Administration (board) adopts these assumptions after considering the advice of CalPERS actuarial and investment teams and other professionals. Each actuarial valuation reflects all prior differences between actual and assumed experience and adjusts the contribution requirements as needed. This valuation is based on an investment return assumption of 6.8%, which was adopted by the board in November 2021. Other assumptions used in this report are those recommended in the CalPERS Experience Study and Review of Actuarial Assumptions report from November 2021.

Required Contributions

The table below shows the minimum required employer contributions for FY 2024-25 along with estimates of the required contributions for FY 2025-26. Employee contributions other than cost sharing (whether paid by the employer or the employee) are in addition to the results shown below. **The required employer contributions in this report do not reflect any cost sharing arrangement between the agency and the employees.**

Fiscal Year	Employer Normal Cost Rate	Employer Amortization of Unfunded Accrued Liability
2024-25	13.84%	$82,691
Projected Results		
2025-26	*13.8%*	*$92,000*

The actual investment return for FY 2022-23 was not known at the time this report was prepared. The projections above assume the investment return for that year would be 6.8%. ***To the extent the actual investment return for FY 2022-23 differs from 6.8%, the actual contribution requirements for FY 2025-26 will differ from those shown above.*** For additional details regarding the assumptions and methods used for these projections, please refer to the "Projected Employer Contributions" in the "Highlights and Executive Summary" section. This section also contains projected required contributions through FY 2029-30.

Changes from Previous Year's Valuations

There are no significant changes in actuarial assumptions or policies in the 2022 actuarial valuation. There may be changes specific to the plan such as contract amendments and funding changes.

Further descriptions of general changes are included in "Highlights and Executive Summary" and in Appendix A of the Section 2 report in "Actuarial Methods and Assumptions." The effects of any changes on the required contributions are included in "Reconciliation of Required Employer Contributions," also in the Section 2 report.

Questions

A CalPERS actuary is available to answer questions about this report. Other questions may be directed to the Customer Contact Center at (888)-CalPERS or (**888-225-7377**).

Sincerely,

SCOTT TERANDO, ASA, EA, MAAA, FCA, CFA
Chief Actuary, CalPERS

RANDALL DZIUBEK, ASA, MAAA
Deputy Chief Actuary, Valuation Services, CalPERS

Actuarial Valuation
as of June 30, 2022

for the
Miscellaneous Plan
of the
Bay Area Water Supply and Conservation Agency

(CalPERS ID: 3304364524)

Required Contributions
for Fiscal Year
July 1, 2024 - June 30, 2025

Table of Contents

Section 1 – Plan Specific Information

Section 2 – Risk Pool Actuarial Valuation Information

Section 1

CALIFORNIA PUBLIC EMPLOYEES' RETIREMENT SYSTEM

Plan Specific Information for the Miscellaneous Plan of the Bay Area Water Supply and Conservation Agency

(CalPERS ID: 3304364524)
(Rate Plan ID: 4540)

Table of Contents

Actuarial Certification 1

Highlights and Executive Summary

Introduction 3
Purpose of Section 1 3
Required Contributions 4
Additional Discretionary Employer Contributions 5
Funded Status – Funding Policy Basis 6
Projected Employer Contributions 7
Other Pooled Miscellaneous Risk Pool Rate Plans 8
Cost 9
Changes Since the Prior Year's Valuation 10
Subsequent Events 10

Assets and Liabilities

Breakdown of Entry Age Accrued Liability 12
Allocation of Plan's Share of Pool's Experience/Assumption Change 12
Development of Plan's Share of Pool's Market Value of Assets 12
Schedule of Amortization Bases 13
Amortization Schedule and Alternatives 14
Employer Contribution History 16
Funding History 16

Risk Analysis

Future Investment Return Scenarios 18
Discount Rate Sensitivity 19
Mortality Rate Sensitivity 19
Maturity Measures 20
Maturity Measures History 21
Funded Status – Termination Basis 22

Participant Data 23

List of Class 1 Benefit Provisions 23

Plan's Major Benefit Options 24

Actuarial Certification

To the best of our knowledge, this report, comprised of Sections 1 and 2, is complete and accurate and contains sufficient information to disclose, fully and fairly, the funded condition of the Miscellaneous Plan of the Bay Area Water Supply and Conservation Agency and satisfies the actuarial valuation requirements of Government Code section 7504. This valuation is based on the member and financial data as of June 30, 2022 provided by the various CalPERS databases and the benefits under this plan with CalPERS as of the date this report was produced. Section 1 of this report is based on the member and financial data for Bay Area Water Supply and Conservation Agency, while Section 2 is based on the corresponding information for all agencies participating in the Miscellaneous Risk Pool to which the plan belongs.

As set forth in Section 2 of this report, the pool actuaries have certified that, in their opinion, the valuation of the Miscellaneous Risk Pool has been performed in accordance with generally accepted actuarial principles, in accordance with standards of practice prescribed by the Actuarial Standards Board, and that the assumptions and methods are internally consistent and reasonable for the risk pool as of the date of this valuation and as prescribed by the CalPERS Board of Administration according to provisions set forth in the California Public Employees' Retirement Law.

Having relied upon the information set forth in Section 2 of this report and based on the census and benefit provision information for the rate plan, it is my opinion as the plan actuary that the Unfunded Accrued Liability amortization bases as of June 30, 2022 and employer contribution as of July 1, 2024 have been properly and accurately determined in accordance with the principles and standards stated above.

The undersigned is an actuary who satisfies the *Qualification Standards for Actuaries Issuing Statements of Actuarial Opinion in the United States* with regard to pensions.

Julian M Robinson

JULIAN ROBINSON, FSA, EA, MAAA
Senior Actuary, CalPERS

Highlights and Executive Summary

- **Introduction**
- **Purpose of Section 1**
- **Required Contributions**
- **Additional Discretionary Employer Contributions**
- **Funded Status – Funding Policy Basis**
- **Projected Employer Contributions**
- **Other Pooled Miscellaneous Risk Pool Rate Plans**
- **Cost**
- **Changes Since the Prior Year's Valuation**
- **Subsequent Events**

Introduction

This report presents the results of the June 30, 2022 actuarial valuation of the Miscellaneous Plan of the Bay Area Water Supply and Conservation Agency of the California Public Employees' Retirement System (CalPERS). This actuarial valuation sets the minimum required contributions for fiscal year (FY) 2024-25.

Purpose of Section 1

This Section 1 report for the Miscellaneous Plan of the Bay Area Water Supply and Conservation Agency of CalPERS was prepared by the Actuarial Office using data as of June 30, 2022. The purpose of the valuation is to:

- Set forth the assets and accrued liabilities of this rate plan as of June 30, 2022;
- Determine the minimum required employer contributions for this rate plan for FY July 1, 2024 through June 30, 2025;
- Determine the required member contribution rate for FY July 1, 2024 through June 30, 2025 for employees subject to the California Public Employees' Pension Reform Act of 2013 (PEPRA); and
- Provide actuarial information as of June 30, 2022 to the CalPERS Board of Administration (board) and other interested parties.

The pension funding information presented in this report should not be used in financial reports subject to Governmental Accounting Standards Board (GASB) Statement No. 68 for a Cost Sharing Employer Defined Benefit Pension Plan. A separate accounting valuation report for such purposes is available on the CalPERS website (www.calpers.ca.gov).

The measurements shown in this actuarial valuation may not be applicable for other purposes. The agency should contact the plan actuary before disseminating any portion of this report for any reason that is not explicitly described above.

Future actuarial measurements may differ significantly from the current measurements presented in this report 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; changes in actuarial policies; changes in plan provisions or applicable law; and differences between the required contributions determined by the valuation and the actual contributions made by the agency.

Assessment and Disclosure of Risk

This report includes the following risk disclosures consistent with the guidance of Actuarial Standard of Practice No. 51 and recommended by the California Actuarial Advisory Panel (CAAP) in the Model Disclosure Elements document:

- A "Scenario Test," projecting future results under different investment income returns.
- A "Sensitivity Analysis," showing the impact on current valuation results using alternative discount rates of 5.8% and 7.8%.
- A "Sensitivity Analysis," showing the impact on current valuation results assuming rates of mortality are 10% lower or 10% higher than our current post-retirement mortality assumptions adopted in 2021.
- Plan maturity measures indicating how sensitive a plan may be to the risks noted above.

Required Contributions

Required Employer Contributions	Fiscal Year 2024-25
Employer Normal Cost Rate	**13.84%**
Plus	
Required Payment on Amortization Bases[1]	**$82,691**
Paid either as	
1) Monthly Payment	**$6,890.92**
Or	
2) Annual Prepayment Option*	**$80,015**

The total minimum required employer contribution is the sum of the Plan's Employer Normal Cost Rate (expressed as a percentage of payroll and paid as payroll is reported) plus the Employer Unfunded Accrued Liability (UAL) Contribution Amount (billed monthly (1) or prepaid annually (2) in dollars).

** Only the UAL portion of the employer contribution can be prepaid* ***(which must be received in full no later than July 31)****.*

Development of Normal Cost as a Percentage of Payroll	Fiscal Year 2023-24	Fiscal Year 2024-25
Base Total Normal Cost for Formula	18.76%	18.81%
Surcharge for Class 1 Benefits[2]		
a) FAC 1	0.63%	0.64%
b) PRSA	0.79%	0.79%
c) 3% COLA	0.53%	0.53%
Phase out of Normal Cost Difference[3]	0.00%	0.00%
Plan's Total Normal Cost	20.71%	20.77%
Offset Due to Employee Contributions	6.92%	6.93%
Employer Normal Cost Rate	13.79%	13.84%

[1] The required payment on amortization bases does not take into account any additional discretionary payment made after April 28, 2023.

[2] Section 2 of this report contains a list of Class 1 benefits and corresponding surcharges.

[3] When a rate plan joins the pool, the difference in normal cost between the pool and the rate plan is phased out over a five-year period in accordance with the CalPERS contribution allocation policy.

Additional Discretionary Employer Contributions

The minimum required employer contribution towards the Unfunded Accrued Liability (UAL) for this rate plan for FY 2024-25 is $82,691. CalPERS allows agencies to make additional discretionary payments (ADPs) at any time and in any amount. These optional payments serve to reduce the UAL and future required contributions and can result in significant long-term savings. Agencies can also use ADPs to stabilize annual contributions as a fixed dollar amount, percent of payroll or percent of revenue.

Provided below are select ADP options for consideration. Making such an ADP during FY 2024-25 does not require an ADP be made in any future year, nor does it change the remaining amortization period of any portion of unfunded liability. For information on permanent changes to amortization periods, see the "Amortization Schedule and Alternatives" section of the report.

Agencies considering making an ADP should contact CalPERS for additional information.

Minimum Required Employer Contribution for Fiscal Year 2024-25

Estimated Normal Cost	Minimum UAL Payment	ADP	Total UAL Contribution	Estimated Total Contribution
$108,930	$82,691	$0	$82,691	$191,621

Alternative Fiscal Year 2024-25 Employer Contributions for Greater UAL Reduction

Funding Horizon	Estimated Normal Cost	Minimum UAL Payment	ADP[1]	Total UAL Contribution	Estimated Total Contribution
20 years	$108,930	$82,691	$10,818	$93,509	$202,439
15 years	$108,930	$82,691	$26,396	$109,087	$218,017
10 years	$108,930	$82,691	$59,252	$141,943	$250,873
5 years	$108,930	$82,691	$161,406	$244,097	$353,027

[1] The ADP amounts are assumed to be made in the middle of the fiscal year. A payment made earlier or later in the fiscal year would have to be less or more than the amount shown to have the same effect on the UAL amortization.

Note that the calculations above are based on the projected UAL as of June 30, 2024 as determined in the June 30, 2022 actuarial valuation. New unfunded liabilities can emerge in future years due to assumption or method changes, changes in plan provisions, and actuarial experience different than assumed. Making an ADP illustrated above for the indicated number of years will not result in a plan that is exactly 100% funded in the indicated number of years. Valuation results will vary from one year to the next and can diverge significantly from projections over a period of several years.

Funded Status – Funding Policy Basis

The table below provides information on the current funded status of the plan under the funding policy. The funded status for this purpose is based on the market value of assets relative to the funding target produced by the entry age actuarial cost method and actuarial assumptions adopted by the board. The actuarial cost method allocates the total expected cost of a member's projected benefit (**Present Value of Benefits**) to individual years of service (the **Normal Cost**). The value of the projected benefit that is not allocated to future service is referred to as the **Accrued Liability** and is the plan's funding target on the valuation date. The **Unfunded Accrued Liability** (UAL) equals the funding target minus the assets. The UAL is an absolute measure of funded status and can be viewed as employer debt. The **funded ratio** equals the assets divided by the funding target. The funded ratio is a relative measure of the funded status and allows for comparisons between plans of different sizes.

	June 30, 2021	June 30, 2022
1. Present Value of Benefits	$5,581,606	$6,094,736
2. Entry Age Accrued Liability	4,395,827	4,933,830
3. Market Value of Assets (MVA)	4,032,483	3,911,543
4. Unfunded Accrued Liability (UAL) [(2) – (3)]	$363,344	$1,022,287
5. Funded Ratio [(3) / (2)]	91.7%	79.3%

A funded ratio of 100% (UAL of $0) implies that the funding of the plan is on target and that future contributions equal to the normal cost of the active plan members will be sufficient to fully fund all retirement benefits if future experience matches the actuarial assumptions. A funded ratio of less than 100% (positive UAL) implies that in addition to normal costs, payments toward the UAL will be required. Plans with a funded ratio greater than 100% have a negative UAL (or surplus) but are required under current law to continue contributing the normal cost in most cases, preserving the surplus for future contingencies.

Calculations for the funding target reflect the expected long-term investment return of 6.8%. If it were known on the valuation date that future investment returns will average something greater/less than the expected return, calculated normal costs and accrued liabilities provided in this report would be less/greater than the results shown. Therefore, for example, if actual average future returns are less than the expected return, calculated normal costs and UAL contributions will not be sufficient to fully fund all retirement benefits. Under this scenario, required future normal cost contributions will need to increase from those provided in this report, and the plan will develop unfunded liabilities that will also add to required future contributions. For illustrative purposes, funded statuses based on a 1% lower and higher average future investment return (discount rate) are as follows:

	1% Lower Average Return	Current Assumption	1% Higher Average Return
Discount Rate	5.8%	6.8%	7.8%
1. Entry Age Accrued Liability	$5,657,626	$4,933,830	$4,332,997
2. Market Value of Assets (MVA)	3,911,543	3,911,543	3,911,543
3. Unfunded Accrued Liability (UAL) [(1) – (2)]	$1,746,083	$1,022,287	$421,454
4. Funded Ratio [(2) / (1)]	69.1%	79.3%	90.3%

The "Risk Analysis" section of the report provides additional information regarding the sensitivity of valuation results to the expected investment return and other factors. Also provided in that section are measures of funded status that are appropriate for assessing the sufficiency of plan assets to cover estimated termination liabilities.

Projected Employer Contributions

The table below shows the required and projected employer contributions (before cost sharing) for the next six fiscal years. The projection assumes that all actuarial assumptions will be realized and that no further changes to assumptions, contributions, benefits, or funding will occur during the projection period. In particular, the investment return beginning with FY 2022-23 is assumed to be 6.80% per year, net of investment and administrative expenses. Future contribution requirements may differ significantly from those shown below. The actual long-term cost of the plan will depend on the actual benefits and expenses paid and the actual investment experience of the fund.

	Required Contribution	Projected Future Employer Contributions (Assumes 6.80% Return for Fiscal Year 2022-23 and Beyond)				
Fiscal Year	**2024-25**	**2025-26**	**2026-27**	**2027-28**	**2028-29**	**2029-30**
	Rate Plan 4540 Results					
Normal Cost %	13.84%	13.8%	13.8%	13.8%	13.8%	13.8%
UAL Payment	$82,691	$92,000	$101,000	$108,000	$125,000	$128,000

For ongoing plans, investment gains and losses are amortized using a 5-year ramp up. For more information, please see “Amortization of the Unfunded Actuarial Accrued Liability” under “Actuarial Methods” in Appendix A of the Section 2 Report. This method phases in the impact of the change in UAL over a 5-year period in order to reduce employer cost volatility from year to year. As a result of this methodology, dramatic changes in the required employer contributions in any one year are less likely. However, required contributions can change gradually and significantly over the next five years. In years when there is a large investment loss, the relatively small amortization payments during the ramp up period could result in contributions that are less than interest on the UAL (i.e. negative amortization) while the contribution impact of the increase in the UAL is phased in.

For projected contributions under alternate investment return scenarios, please see the “Future Investment Return Scenarios” in the “Risk Analysis” section. Our online pension plan projection tool, Pension Outlook, is available in the Employers section of the CalPERS website. Pension Outlook can help plan and budget pension costs under various scenarios.

Other Pooled Miscellaneous Risk Pool Rate Plans

All of the results presented in this Section 1 report, except those shown on this page, correspond to rate plan 4540. In many cases, employers have additional rate plans within the same risk pool. For cost analysis and budgeting it is useful to consider contributions for these rate plans as a whole rather than individually. The estimated contribution amounts and rates for all of the employer's rate plans in the Miscellaneous Risk Pool are shown below and assume that the total employer payroll within the Miscellaneous Risk Pool will grow according to the overall payroll growth assumption of 2.80% per year for three years. In a refinement since the prior year's report, Classic members who are projected to terminate employment are assumed to be replaced by PEPRA members.

	Fiscal Year 2023-24	Fiscal Year 2024-25
Estimated Combined Employer Contributions for all Pooled Miscellaneous Rate Plans		
Projected Payroll for the Contribution Year	$1,389,693	$1,503,483
Estimated Employer Normal Cost	$167,927	$170,757
Required Payment on Amortization Bases	$64,007	$85,252
Estimated Total Employer Contributions	$231,934	$256,009
Estimated Total Employer Contribution Rate (illustrative only)	16.69%	17.03%

Cost

Actuarial Determination of Plan Cost

Contributions to fund the plan are comprised of two components:

- Normal Cost, expressed as a percentage of total active payroll
- Amortization of the Unfunded Accrued Liability (UAL), expressed as a dollar amount

For fiscal years prior to 2015-16, the Amortization of UAL component was expressed as a percentage of total active payroll. Starting with FY 2015-16, the Amortization of UAL component was expressed as a dollar amount and invoiced on a monthly basis. There is an option to prepay this amount during July of each fiscal year.

The Normal Cost component is expressed as a percentage of active payroll with employer and employee contributions payable as part of the regular payroll reporting process.

The determination of both components requires complex actuarial calculations. The calculations are based on a set of actuarial assumptions which can be divided into two categories:

- Demographic assumptions (e.g., mortality rates, retirement rates, employment termination rates, disability rates)
- Economic assumptions (e.g., future investment earnings, inflation, salary growth rates)

These assumptions reflect CalPERS' best estimate of future experience of the plan and are long term in nature. We recognize that all assumptions will not be realized in any given year. For example, the investment earnings at CalPERS have averaged 6.9% over the 20 years ending June 30, 2022, yet individual fiscal year returns have ranged from -23.6% to +21.3%. In addition, CalPERS reviews all actuarial assumptions by conducting in-depth experience studies every four years, with the most recent experience study completed in 2021.

Changes Since the Prior Year's Valuation

Benefits

The standard actuarial practice at CalPERS is to recognize mandated legislative benefit changes in the first annual valuation following the effective date of the legislation. Voluntary benefit changes by plan amendment are generally included in the first valuation that is prepared after the amendment becomes effective, even if the valuation date is prior to the effective date of the amendment.

This valuation generally reflects plan amendments effective before the date of the report. Please refer to the "Plan's Major Benefit Options" in this report and Appendix B of the Section 2 Report for a summary of the plan provisions used in this valuation.

In 2022, SB 1168 increased the standard retiree lump sum death benefit from $500 to $2,000 for any death occurring on or after July 1, 2023. For pooled plans this is a Class 3 benefit and there is no normal cost surcharge. The impact on the unfunded liability is included in the pool's (gain)/loss.

Actuarial Methods and Assumptions

There are no significant changes to the actuarial methods or assumptions for the June 30, 2022 actuarial valuation.

Subsequent Events

This actuarial valuation report reflects fund investment return through June 30, 2022 and statutory/regulatory changes and board actions through January 2023.

During the time period between the valuation date and the publication of this report, inflation has been significantly higher than the expected inflation of 2.3% per annum. Since inflation influences cost-of-living increases for retirees and beneficiaries and active member pay increases, higher inflation is likely to put at least some upward pressure on contribution requirements and downward pressure on the funded status in the June 30, 2023 valuation. The actual impact of higher inflation on future valuation results will depend on, among other factors, how long higher inflation persists. At this time, we continue to believe the long-term inflation assumption of 2.3% is appropriate.

To the best of our knowledge, there have been no other subsequent events that could materially affect current or future certifications rendered in this report.

Assets and Liabilities

- **Breakdown of Entry Age Accrued Liability**
- **Allocation of Plan's Share of Pool's Experience/Assumption Change**
- **Development of Plan's Share of Pool's Market Value of Assets**
- **Schedule of Amortization Bases**
- **Amortization Schedule and Alternatives**
- **Employer Contribution History**
- **Funding History**

Breakdown of Entry Age Accrued Liability

Active Members	$3,812,435
Transferred Members	44,076
Separated Members	65,315
Members and Beneficiaries Receiving Payments	1,012,004
Total	$4,933,830

Allocation of Plan's Share of Pool's Experience/Assumption Change

It is the policy of CalPERS to ensure equity within the risk pools by allocating the pool's experience gains/losses and assumption changes in a manner that treats each employer equitably and maintains benefit security for the members of the System while minimizing substantial variations in employer contributions. The Pool's experience gains/losses and impact of assumption/method changes is allocated to the plan as follows:

1.	Plan's Accrued Liability	$4,933,830
2.	Projected UAL Balance at 6/30/2022	339,141
3.	Other UAL Adjustments (Golden Handshake, Prior Service Purchase, etc.)	0
4.	Adjusted UAL Balance at 6/30/2022 for Asset Share	339,141
5.	Pool's Accrued Liability[1]	22,021,735,002
6.	Sum of Pool's Individual Plan UAL Balances at 6/30/2022[1]	2,453,954,297
7.	Pool's 2021-22 Investment (Gain)/Loss[1]	2,614,071,182
8.	Pool's 2021-22 Non-Investment (Gain)/Loss[1]	309,490,972
9.	Plan's Share of Pool's Investment (Gain)/Loss: [(1) - (4)] ÷ [(5) - (6)] × (7)	613,807
10.	Plan's Share of Pool's Non-Investment (Gain)/Loss: (1) ÷ (5) × (8)	69,339
11.	Plan's New (Gain)/Loss as of 6/30/2022: (9) + (10)	683,146
12.	Increase in Pool's Accrued Liability due to Change in Assumptions[1]	0
13.	Plan's Share of Pool's Change in Assumptions: (1) ÷ (5) × (12)	0
14.	Increase in Pool's Accrued Liability due to Funding Risk Mitigation[1]	0
15.	Plan's Share of Pool's Change due to Funding Risk Mitigation: (1) ÷ (5) × (14)	0
16.	Offset due to Funding Risk Mitigation	0
17.	Plan's Investment (Gain)/Loss: (9) – (16)	613,807

[1] Does not include plans that transferred to Pool on the valuation date.

Development of the Plan's Share of Pool's Market Value of Assets

18.	Plan's UAL: (2) + (3) + (11) + (13) + (15)	$1,022,287
19.	Plan's Share of Pool's MVA: (1) - (18)	$3,911,543

Schedule of Amortization Bases

Below is the schedule of the plan's amortization bases. Note that there is a two-year lag between the valuation date and the start of the contribution year.

- The assets, liabilities, and funded status of the plan are measured as of the valuation date: June 30, 2022.
- The required employer contributions determined by the valuation are for the fiscal year beginning two years after the valuation date: FY 2024-25.

This two-year lag is necessary due to the amount of time needed to extract and test the membership and financial data, and the need to provide public agencies with their required employer contribution well in advance of the start of the fiscal year.

The Unfunded Accrued Liability (UAL) is used to determine the employer contribution and therefore must be rolled forward two years from the valuation date to the first day of the fiscal year for which the contribution is being determined. The UAL is rolled forward each year by subtracting the expected payment on the UAL for the fiscal year and adjusting for interest. The expected payment for the first fiscal year is determined by the actuarial valuation two years ago and the contribution for the second year is from the actuarial valuation one year ago. Additional discretionary payments are reflected in the Expected Payments column in the fiscal year they were made by the agency.

Reason for Base	Date Est.	Ramp Level 2024-25	Ramp Shape	Escala-tion Rate	Amort. Period	Balance 6/30/22	Expected Payment 2022-23	Balance 6/30/23	Expected Payment 2023-24	Balance 6/30/24	Minimum Required Payment 2024-25
Fresh Start	6/30/17	No Ramp		2.80%	10	521,888	55,784	499,727	56,410	475,412	57,990
Assumption Change	6/30/18	100%	Up/Down	2.80%	16	112,564	6,140	113,873	8,246	113,095	10,596
Investment (Gain)/Loss	6/30/18	100%	Up/Down	2.80%	26	(32,028)	(1,261)	(32,903)	(1,679)	(33,405)	(2,157)
Method Change	6/30/18	100%	Up/Down	2.80%	16	29,381	1,603	29,722	2,152	29,519	2,766
Non-Investment (Gain)/Loss	6/30/18	100%	Up/Down	2.80%	26	14,907	587	15,314	781	15,548	1,004
Investment (Gain)/Loss	6/30/19	80%	Up Only	0.00%	17	16,242	679	16,645	1,001	16,742	1,334
Non-Investment (Gain)/Loss	6/30/19	No Ramp		0.00%	17	14,900	1,396	14,471	1,372	14,037	1,372
Investment (Gain)/Loss	6/30/20	60%	Up Only	0.00%	18	83,896	1,838	87,701	3,605	89,939	5,408
Non-Investment (Gain)/Loss	6/30/20	No Ramp		0.00%	18	13,927	1,273	13,558	1,250	13,188	1,250
Assumption Change	6/30/21	No Ramp		0.00%	19	20,450	(6,776)	28,843	2,594	28,124	2,594
Net Investment (Gain)	6/30/21	40%	Up Only	0.00%	19	(431,343)	0	(460,674)	(9,902)	(481,767)	(19,804)
Non-Investment (Gain)/Loss	6/30/21	No Ramp		0.00%	19	(18,982)	0	(20,273)	(1,823)	(19,768)	(1,823)
Risk Mitigation	6/30/21	No Ramp		0.00%	0	118,714	(6,884)	133,901	138,379	0	0
Risk Mitigation Offset	6/30/21	No Ramp		0.00%	0	(125,375)	0	(133,901)	(138,379)	0	0
Investment (Gain)/Loss	6/30/22	20%	Up Only	0.00%	20	613,807	0	655,546	0	700,123	15,049
Non-Investment (Gain)/Loss	6/30/22	No Ramp		0.00%	20	69,339	0	74,054	0	79,090	7,112
Total						**1,022,287**	**54,379**	**1,035,604**	**64,007**	**1,039,877**	**82,691**

The (gain)/loss bases are the plan's allocated share of the risk pool's (gain)/loss for the fiscal year as disclosed in "Allocation of Plan's Share of Pool's Experience/Assumption Change" earlier in this section. These (gain)/loss bases will be amortized in accordance with the CalPERS amortization policy in effect at the time the base was established.

Amortization Schedule and Alternatives

The amortization schedule on the previous page(s) shows the minimum contributions required according to the CalPERS amortization policy. Many agencies have expressed a desire for a more stable pattern of payments or have indicated interest in paying off the unfunded accrued liabilities more quickly than required. As such, we have provided alternative amortization schedules to help analyze the current amortization schedule and illustrate the potential savings of accelerating unfunded liability payments.

Shown on the following page are future year amortization payments based on 1) the current amortization schedule reflecting the individual bases and remaining periods shown on the previous page, and 2) alternative “fresh start” amortization schedules using two sample periods that would both result in interest savings relative to the current amortization schedule. To initiate a fresh start, please contact the plan actuary.

The Current Amortization Schedule typically contains both positive and negative bases. Positive bases result from plan changes, assumption changes, method changes or plan experience that increase unfunded liability. Negative bases result from plan changes, assumption changes, method changes, or plan experience that decrease unfunded liability. The combination of positive and negative bases within an amortization schedule can result in unusual or problematic circumstances in future years, such as:

- When a negative payment would be required on a positive unfunded actuarial liability; or
- When the payment would completely amortize the total unfunded liability in a very short time period, and results in a large change in the employer contribution requirement.

In any year when one of the above scenarios occurs, the actuary will consider corrective action such as replacing the existing unfunded liability bases with a single “fresh start” base and amortizing it over an appropriate period.

The Current Amortization Schedule on the following page may appear to show that, based on the current amortization bases, one of the above scenarios will occur at some point in the future. It is impossible to know today whether such a scenario will in fact arise since there will be additional bases added to the amortization schedule in each future year. Should such a scenario arise in any future year, the actuary will take appropriate action based on guidelines in the CalPERS amortization policy.

Amortization Schedule and Alternatives (continued)

	Current Amortization Schedule		Alternate Schedules			
			15 Year Amortization		10 Year Amortization	
Date	Balance	Payment	Balance	Payment	Balance	Payment
6/30/2024	1,039,877	82,691	1,039,877	109,087	1,039,877	141,943
6/30/2025	1,025,134	91,937	997,854	109,087	963,899	141,943
6/30/2026	999,831	100,909	952,973	109,087	882,754	141,942
6/30/2027	963,535	108,132	905,040	109,087	796,093	141,943
6/30/2028	917,309	125,317	853,848	109,087	703,538	141,943
6/30/2029	850,178	127,511	799,175	109,087	604,689	141,942
6/30/2030	776,215	129,768	740,784	109,087	499,119	141,943
6/30/2031	694,891	132,089	678,422	109,087	386,369	141,942
6/30/2032	605,637	134,470	611,820	109,087	265,953	141,942
6/30/2033	507,855	136,926	540,689	109,087	137,349	141,942
6/30/2034	400,885	63,013	464,721	109,087		
6/30/2035	363,023	63,461	383,587	109,087		
6/30/2036	322,125	60,202	296,936	109,087		
6/30/2037	281,814	56,747	204,393	109,087		
6/30/2038	242,334	53,090	105,557	109,087		
6/30/2039	203,947	49,218				
6/30/2040	166,952	45,126				
6/30/2041	131,670	42,038				
6/30/2042	97,181	31,724				
6/30/2043	71,005	73,379				
6/30/2044						
6/30/2045						
6/30/2046						
6/30/2047						
6/30/2048						
6/30/2049						
Total		**1,707,748**		**1,636,305**		**1,419,425**
Interest Paid		**667,871**		**596,428**		**379,548**
Estimated Savings				**71,443**		**288,323**

Employer Contribution History

The table below provides a recent history of the required and discretionary employer contributions for the plan. The required amounts are based on the actuarial valuation from two years prior without subsequent adjustments, if any. Additional discretionary payments before July 1, 2019 or after April 28, 2023 are not included.

Fiscal Year	Employer Normal Cost	Unfunded Liability Payment ($)	Additional Discretionary Payments
2016 - 17	10.523%	$15,057	N/A
2017 - 18	10.565%	19,640	N/A
2018 - 19	11.154%	26,587	N/A
2019 - 20	11.767%	52,020	0
2020 - 21	12.531%	55,070	0
2021 - 22	12.38%	60,614	0
2022 - 23	12.39%	68,039	0
2023 - 24	13.79%	64,007	
2024 - 25	13.84%	82,691	

Funding History

The table below shows the recent history of the actuarial accrued liability, share of the pool's market value of assets, unfunded accrued liability, funded ratio, and annual covered payroll.

Valuation Date	Accrued Liability (AL)	Share of Pool's Market Value of Assets (MVA)	Unfunded Accrued Liability (UAL)	Funded Ratio	Annual Covered Payroll
06/30/2013	$1,707,312	$1,385,928	$321,384	81.2%	$694,378
06/30/2014	2,124,882	1,862,019	262,863	87.6%	446,127
06/30/2015	2,305,518	1,948,473	357,045	84.5%	483,328
06/30/2016	2,526,901	1,990,397	536,504	78.8%	500,694
06/30/2017	2,733,282	2,204,971	528,311	80.7%	689,767
06/30/2018	3,115,883	2,471,276	644,607	79.3%	721,486
06/30/2019	3,463,240	2,762,989	700,251	79.8%	769,596
06/30/2020	3,895,146	3,108,316	786,830	79.8%	807,674
06/30/2021	4,395,827	4,032,483	363,344	91.7%	868,156
06/30/2022	4,933,830	3,911,543	1,022,287	79.3%	925,264

Risk Analysis

- **Future Investment Return Scenarios**
- **Discount Rate Sensitivity**
- **Mortality Rate Sensitivity**
- **Maturity Measures**
- **Maturity Measures History**
- **Funded Status – Termination Basis**

Future Investment Return Scenarios

Analysis using the investment return scenarios from the Asset Liability Management process completed in 2021 was performed to determine the effects of various future investment returns on required employer contributions. The projections below reflect the impact of the CalPERS Funding Risk Mitigation policy. The projections also assume that all other actuarial assumptions will be realized and that no further changes in assumptions, contributions, benefits, or funding will occur.

The first table shows projected contribution requirements if the fund were to earn either 3.0% or 10.8% annually. These alternate investment returns were chosen because 90% of long-term average returns are expected to fall between them over the 20-year period ending June 30, 2042.

Assumed Annual Return FY 2022-23 through 2041-42	**Projected Employer Contributions**				
	2025-26	**2026-27**	**2027-28**	**2028-29**	**2029-30**
3.0% (5th percentile)					
Normal Cost Rate	13.8%	13.8%	13.8%	13.8%	13.8%
UAL Contribution	$96,000	$112,000	$130,000	$162,000	$184,000
10.8% (95th percentile)					
Normal Cost Rate	14.1%	14.4%	14.7%	14.9%	15.2%
UAL Contribution	$89,000	$91,000	$88,000	$90,000	$0

Required contributions outside of this range are also possible. In particular, whereas it is unlikely that investment returns will average less than 3.0% or greater than 10.8% over a 20-year period, the likelihood of a single investment return less than 3.0% or greater than 10.8% in any given year is much greater. The following analysis illustrates the effect of an extreme, single year investment return.

The portfolio has an expected volatility (or standard deviation) of 12.0% per year. Accordingly, in any given year there is a 16% probability that the annual return will be -5.2% or less and a 2.5% probability that the annual return will be -17.2% or less. These returns represent one and two standard deviations below the expected return of 6.8%.

The following table shows the effect of a one or two standard deviation investment loss in FY 2022-23 on the FY 2025-26 contribution requirements. Note that a single-year investment gain or loss decreases or increases the required UAL contribution amount incrementally for each of the next five years, not just one, due to the 5-year ramp in the amortization policy. However, the contribution requirements beyond the first year are also impacted by investment returns beyond the first year. Historically, significant downturns in the market are often followed by higher than average returns. Such investment gains would offset the impact of these single year negative returns in years beyond FY 2025-26.

Assumed Annual Return for Fiscal Year 2022-23	**Required Employer Contributions**	**Projected Employer Contributions**
	2024-25	**2025-26**
(17.2)% (2 standard deviation loss)		
Normal Cost Rate	13.84%	13.8%
UAL Contribution	$82,691	$115,000
(5.2)% (1 standard deviation loss)		
Normal Cost Rate	13.84%	13.8%
UAL Contribution	$82,691	$103,000

- Without investment gains (returns higher than 6.8%) in FY 2023-24 or later, projected contributions rates would continue to rise over the next four years due to the continued phase-in of the impact of the illustrated investment loss in FY 2022-23.
- The Pension Outlook Tool can be used to model projected contributions for these scenarios beyond FY 2025-26 as well as to model other investment return scenarios.

Discount Rate Sensitivity

The discount rate assumption is calculated as the sum of the assumed real rate of return and the assumed annual price inflation, currently 4.5% and 2.3%, respectively. Changing either the price inflation assumption or the real rate of return assumption will change the discount rate. The sensitivity of the valuation results to the discount rate assumption depends on which component of the discount rate is changed. Shown below are various valuation results as of June 30, 2022 assuming alternate discount rates by changing the two components independently. Results are shown using the current discount rate of 6.8% as well as alternate discount rates of 5.8% and 7.8%. The rates of 5.8% and 7.8% were selected since they illustrate the impact of a 1.0% increase or decrease to the 6.8% assumption.

Sensitivity to the Real Rate of Return Assumption

As of June 30, 2022	1% Lower Real Return Rate	Current Assumptions	1% Higher Real Return Rate
Discount Rate	**5.8%**	**6.8%**	**7.8%**
Price Inflation	2.3%	2.3%	2.3%
Real Rate of Return	**3.5%**	**4.5%**	**5.5%**
a) Total Normal Cost	26.14%	20.77%	16.68%
b) Accrued Liability	$5,657,626	$4,933,830	$4,332,997
c) Market Value of Assets	$3,911,543	$3,911,543	$3,911,543
d) Unfunded Liability/(Surplus) [(b) - (c)]	$1,746,083	$1,022,287	$421,454
e) Funded Ratio	69.1%	79.3%	90.3%

Sensitivity to the Price Inflation Assumption

As of June 30, 2022	1% Lower Price Inflation	Current Assumptions	1% Higher Price Inflation
Discount Rate	**5.8%**	**6.8%**	**7.8%**
Price Inflation	**1.3%**	**2.3%**	**3.3%**
Real Rate of Return	4.5%	4.5%	4.5%
a) Total Normal Cost	21.80%	20.77%	18.94%
b) Accrued Liability	$4,962,282	$4,933,830	$4,772,675
c) Market Value of Assets	$3,911,543	$3,911,543	$3,911,543
d) Unfunded Liability/(Surplus) [(b) - (c)]	$1,050,739	$1,022,287	$861,132
e) Funded Ratio	78.8%	79.3%	82.0%

Mortality Rate Sensitivity

The following table looks at the change in the June 30, 2022 plan costs and funded status under two different longevity scenarios, namely assuming post-retirement rates of mortality are 10% lower or 10% higher than our current mortality assumptions adopted in 2021. This type of analysis highlights the impact on the plan of a change in the mortality assumption.

As of June 30, 2022	10% Lower Mortality Rates	Current Assumptions	10% Higher Mortality Rates
a) Total Normal Cost	21.13%	20.77%	20.44%
b) Accrued Liability	$5,028,829	$4,933,830	$4,846,250
c) Market Value of Assets	$3,911,543	$3,911,543	$3,911,543
d) Unfunded Liability/(Surplus) [(b) - (c)]	$1,117,286	$1,022,287	$934,707
e) Funded Ratio	77.8%	79.3%	80.7%

Maturity Measures

As pension plans mature they become more sensitive to risks. Understanding plan maturity and how it affects the ability of a pension plan sponsor to tolerate risk is important in understanding how the pension plan is impacted by investment return volatility, other economic variables, and changes in longevity or other demographic assumptions.

Since it is the employer that bears the risk, it is appropriate to perform this analysis on a pension plan level considering all rate plans. The following measures are for one rate plan only. One way to look at the maturity level of CalPERS and its plans is to look at the ratio of a plan's retiree liability to its total liability. A pension plan in its infancy will have a very low ratio of retiree liability to total liability. As the plan matures, the ratio starts increasing. A mature plan will often have a ratio above 60%-65%.

Ratio of Retiree Accrued Liability to Total Accrued Liability	**June 30, 2021**	**June 30, 2022**
1. Retired Accrued Liability	$997,142	$1,012,004
2. Total Accrued Liability	4,395,827	4,933,830
3. Ratio of Retiree AL to Total AL [(1) / (2)]	0.23	0.21

Another measure of maturity level of CalPERS and its plans is to look at the ratio of actives to retirees, also called the support ratio. A pension plan in its infancy will have a very high ratio of active to retired members. As the plan matures and members retire, the ratio declines. A mature plan will often have a ratio near or below one.

To calculate the support ratio for the rate plan, retirees and beneficiaries receiving a continuance are each counted as one, even though they may have only worked a portion of their careers as an active member of this rate plan. For this reason, the support ratio, while intuitive, may be less informative than the ratio of retiree liability to total accrued liability above.

For comparison, the support ratio for all CalPERS public agency plans as of June 30, 2021, was 0.78 and was calculated consistently with how it is for the individual rate plan. Note that to calculate the support ratio for all public agency plans, a retiree with service from more than one CalPERS agency is counted as a retiree more than once.

Support Ratio	**June 30, 2021**	**June 30, 2022**
1. Number of Actives	5	5
2. Number of Retirees	3	3
3. Support Ratio [(1) / (2)]	1.67	1.67

Maturity Measures (continued)

The actuarial calculations supplied in this communication are based on various assumptions about long-term demographic and economic behavior. Unless these assumptions (e.g., terminations, deaths, disabilities, retirements, salary growth, investment return) are exactly realized each year, there will be differences on a year-to-year basis. The year-to-year differences between actual experience and the assumptions are called actuarial gains and losses and serve to lower or raise required employer contributions from one year to the next. Therefore, employer contributions will inevitably fluctuate, especially due to the ups and downs of investment returns.

Asset Volatility Ratio

Shown in the table below is the asset volatility ratio (AVR), which is the ratio of market value of assets to payroll. Plans that have higher AVR experience more volatile employer contributions (as a percentage of payroll) due to investment return. For example, a plan with AVR of 8 may experience twice the contribution volatility due to investment return volatility than a plan with AVR of 4. It should be noted that this ratio is a measure of the current situation. It increases over time but generally tends to stabilize as a plan matures.

Liability Volatility Ratio

Also shown in the table below is the liability volatility ratio (LVR), which is the ratio of accrued liability to payroll. Plans that have a higher LVR experience more volatile employer contributions (as a percentage of payroll) due to changes in liability. For example, a plan with LVR of 8 is expected to have twice the contribution volatility of a plan with LVR of 4. It should be noted that this ratio indicates a longer-term potential for contribution volatility, since the AVR, described above, will tend to move closer to the LVR as the funded ratio approaches 100%.

Contribution Volatility	June 30, 2021	June 30, 2022
1. Market Value of Assets	$4,032,483	$3,911,543
2. Payroll	868,156	925,264
3. Asset Volatility Ratio (AVR) [(1) / (2)]	4.6	4.2
4. Accrued Liability	$4,395,827	$4,933,830
5. Liability Volatility Ratio (LVR) [(4) / (2)]	5.1	5.3

Maturity Measures History

Valuation Date	Ratio of Retiree Accrued Liability to Total Accrued Liability	Support Ratio	Asset Volatility Ratio	Liability Volatility Ratio
06/30/2017	0.37	1.67	3.2	4.0
06/30/2018	0.33	1.67	3.4	4.3
06/30/2019	0.30	1.67	3.6	4.5
06/30/2020	0.26	1.67	3.8	4.8
06/30/2021	0.23	1.67	4.6	5.1
06/30/2022	0.21	1.67	4.2	5.3

Funded Status – Termination Basis

The funded status measured on a termination basis is an estimate of the financial position of the plan had the contract with CalPERS been terminated as of June 30, 2022. The accrued liability on a termination basis (termination liability) is calculated differently compared to the plan's ongoing funding liability. For the termination liability calculation, both compensation and service are frozen as of the valuation date and no future pay increases or service accruals are assumed. This measure of funded status is not appropriate for assessing the need for future employer contributions in the case of an ongoing plan, that is, for an employer that continues to provide CalPERS retirement benefits to active employees. Unlike the actuarial cost method used for ongoing plans, the termination liability is the present value of the benefits earned through the valuation date.

A more conservative investment policy and asset allocation strategy was adopted by the board for the Terminated Agency Pool. The Terminated Agency Pool has limited funding sources since no future employer contributions will be made. Therefore, expected benefit payments are secured by risk-free assets and benefit security for members is increased while limiting the funding risk. However, this asset allocation has a lower expected rate of return than the PERF and consequently, a lower discount rate is assumed. The lower discount rate for the Terminated Agency Pool results in higher liabilities for terminated plans.

The effective termination discount rate will depend on actual market rates of return for risk-free securities on the date of termination. As market discount rates are variable, the table below shows a range for the hypothetical termination liability based on the lowest and highest interest rates observed during an approximate 19-month period from 12 months before the valuation date to seven months after.

	Discount Rate: 1.75% Price Inflation: 2.50%			Discount Rate: 4.50% Price Inflation: 2.75%		
Market Value of Assets (MVA)	**Termination Liability[1,2]**	**Funded Ratio**	**Unfunded Termination Liability**	**Termination Liability[1,2]**	**Funded Ratio**	**Unfunded Termination Liability**
$3,911,543	$11,080,250	35.3%	$7,168,707	$6,970,836	56.1%	$3,059,293

[1] The termination liabilities calculated above include a 5% contingency load. The contingency load and other actuarial assumptions can be found in Appendix A of the Section 2 report.

[2] The discount rate used for termination valuations is a weighted average of the 10-year and 30-year U.S. Treasury yields where the weights are based on matching asset and liability durations as of the termination date. The discount rates used in the table are based on 20-year Treasury bonds, rounded to the nearest quarter percentage point, which is a good proxy for most plans. The 20-year Treasury yield was 3.38% on June 30, 2022, the valuation date.

In order to terminate the plan, first contact our Pension Contract Services unit to initiate a Resolution of Intent to Terminate. The completed Resolution will allow the plan actuary to provide a preliminary termination valuation with a more up-to-date estimate of the plan liabilities. Before beginning this process, please consult with the plan actuary.

Participant Data

The table below shows a summary of the plan's member data upon which this valuation is based:

	June 30, 2021	June 30, 2022
Active Members		
Counts	5	5
Average Attained Age	54.1	55.1
Average Entry Age to Rate Plan	40.9	40.9
Average Years of Credited Service	13.2	14.2
Average Annual Covered Pay	$173,631	$185,053
Annual Covered Payroll	$868,156	$925,264
Present Value of Future Payroll	$5,781,412	$5,679,972
Transferred Members	1	1
Separated Members	2	2
Retired Members and Beneficiaries*		
Counts	3	3
Average Annual Benefits	$24,763	$25,822
Total Annual Benefits	$74,290	$77,465

Counts of members included in the valuation are counts of the records processed by the valuation. Multiple records may exist for those who have service in more than one valuation group. This does not result in double counting of liabilities.

* Values include community property settlements.

List of Class 1 Benefit Provisions

This plan has the additional Class 1 Benefit Provisions:

- One Year Final Compensation (FAC 1)
- Post-Retirement Survivor Allowance (PRSA)
- 3% Annual Cost-of-Living Allowance Increase (3% COLA)

Plan's Major Benefit Options

Shown below is a summary of the major optional benefits for which the agency has contracted. A description of principal standard and optional plan provisions is in Section 2.

	Benefit Group	
Member Category	Misc	
Demographics		
Actives	Yes	
Transfers/Separated	Yes	
Receiving	Yes	
Benefit Provision		
Benefit Formula	2% @ 55	
Social Security Coverage	No	
Full/Modified	Full	
Employee Contribution Rate	7.00%	
Final Average Compensation Period	One Year	
Sick Leave Credit	Yes	
Non-Industrial Disability	Standard	
Industrial Disability	No	
Pre-Retirement Death Benefits		
Optional Settlement 2	Yes	
1959 Survivor Benefit Level	Level 4	
Special	No	
Alternate (firefighters)	No	
Post-Retirement Death Benefits		
Lump Sum	$5000	
Survivor Allowance (PRSA)	Yes	
COLA	3%	

Section 2

CALIFORNIA PUBLIC EMPLOYEES' RETIREMENT SYSTEM

Risk Pool Actuarial Valuation Information

Section 2 may be found on the
CalPERS website (www.calpers.ca.gov)
in the Forms and Publications section

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California Public Employees' Retirement System
Actuarial Office
400 Q Street, Sacramento, CA 95811 | Phone: (916) 795-3000 | Fax: (916) 795-2744
888 CalPERS (or **888**-225-7377) | TTY: (877) 249-7442 | **www.calpers.ca.gov**

July 2023

PEPRA Miscellaneous Plan of the Bay Area Water Supply and Conservation Agency (CalPERS ID: 3304364524)
Annual Valuation Report as of June 30, 2022

Dear Employer,

Attached to this letter is the June 30, 2022 actuarial valuation report for the rate plan noted above. **Provided in this report is the determination of the minimum required employer contributions for fiscal year (FY) 2024-25**. In addition, the report contains important information regarding the current financial status of the plan as well as projections and risk measures to aid in planning for the future.

Because this plan is in a risk pool, the following valuation report has been separated into two sections:

- Section 1 contains specific information for the plan including the development of the current and projected employer contributions, and
- Section 2 contains the Risk Pool Actuarial Valuation appropriate to the plan as of June 30, 2022.

Section 2 can be found on the CalPERS website (www.calpers.ca.gov). From the home page, go to *"Forms & Publications"* and select *"View All"*. In the search box, enter *"Risk Pool"* and from the results list download the Miscellaneous Risk Pool Actuarial Valuation Report for June 30, 2022.

Actuarial valuations are based on assumptions regarding future plan experience including investment return and payroll growth, eligibility for the types of benefits provided, and longevity among retirees. The CalPERS Board of Administration (board) adopts these assumptions after considering the advice of CalPERS actuarial and investment teams and other professionals. Each actuarial valuation reflects all prior differences between actual and assumed experience and adjusts the contribution requirements as needed. This valuation is based on an investment return assumption of 6.8%, which was adopted by the board in November 2021. Other assumptions used in this report are those recommended in the CalPERS Experience Study and Review of Actuarial Assumptions report from November 2021.

Required Contributions

The table below shows the minimum required employer contributions and the PEPRA member contribution rate for FY 2024-25 along with estimates of the required contributions for FY 2025-26. Employee contributions other than cost sharing (whether paid by the employer or the employee) are in addition to the results shown below. **The required employer contributions in this report do not reflect any cost sharing arrangement between the agency and the employees.**

Fiscal Year	Employer Normal Cost Rate	Employer Amortization of Unfunded Accrued Liability	PEPRA Member Contribution Rate
2024-25	8.63%	$2,561	8.25%
Projected Results			
2025-26	*8.6%*	*$4,200*	*TBD*

The actual investment return for FY 2022-23 was not known at the time this report was prepared. The projections above assume the investment return for that year would be 6.8%. ***To the extent the actual investment return for FY 2022-23 differs from 6.8%, the actual contribution requirements for FY 2025-26 will differ from those shown above.*** For additional details regarding the assumptions and methods used for these projections, please refer to the "Projected Employer Contributions" in the "Highlights and Executive Summary" section. This section also contains projected required contributions through FY 2029-30.

Changes from Previous Year's Valuations

There are no significant changes in actuarial assumptions or policies in the 2022 actuarial valuation. There may be changes specific to the plan such as contract amendments and funding changes.

Further descriptions of general changes are included in "Highlights and Executive Summary" and in Appendix A of the Section 2 report in "Actuarial Methods and Assumptions." The effects of any changes on the required contributions are included in "Reconciliation of Required Employer Contributions," also in the Section 2 report.

Questions

A CalPERS actuary is available to answer questions about this report. Other questions may be directed to the Customer Contact Center at (888)-CalPERS or (**888-225-7377**).

Sincerely,

SCOTT TERANDO, ASA, EA, MAAA, FCA, CFA
Chief Actuary, CalPERS

RANDALL DZIUBEK, ASA, MAAA
Deputy Chief Actuary, Valuation Services, CalPERS

Actuarial Valuation
as of June 30, 2022

for the
PEPRA Miscellaneous Plan
of the
Bay Area Water Supply and Conservation Agency

(CalPERS ID: 3304364524)

Required Contributions
for Fiscal Year
July 1, 2024 - June 30, 2025

Table of Contents

Section 1 – Plan Specific Information

Section 2 – Risk Pool Actuarial Valuation Information

Section 1

Plan Specific Information
for the
PEPRA Miscellaneous Plan
of the
Bay Area Water Supply and Conservation Agency

(CalPERS ID: 3304364524)
(Rate Plan ID: 26893)

Table of Contents

Actuarial Certification 1

Highlights and Executive Summary

- Introduction 3
- Purpose of Section 1 3
- Required Contributions 4
- Additional Discretionary Employer Contributions 5
- Funded Status – Funding Policy Basis 6
- Projected Employer Contributions 7
- Other Pooled Miscellaneous Risk Pool Rate Plans 8
- Cost 9
- Changes Since the Prior Year's Valuation 10
- Subsequent Events 10

Assets and Liabilities

- Breakdown of Entry Age Accrued Liability 12
- Allocation of Plan's Share of Pool's Experience/Assumption Change 12
- Development of Plan's Share of Pool's Market Value of Assets 12
- Schedule of Amortization Bases 13
- Amortization Schedule and Alternatives 14
- Employer Contribution History 16
- Funding History 16

Risk Analysis

- Future Investment Return Scenarios 18
- Discount Rate Sensitivity 19
- Mortality Rate Sensitivity 19
- Maturity Measures 20
- Maturity Measures History 21
- Funded Status – Termination Basis 22

Participant Data 23

List of Class 1 Benefit Provisions 23

Plan's Major Benefit Options 24

PEPRA Member Contribution Rates 25

Actuarial Certification

To the best of our knowledge, this report, comprised of Sections 1 and 2, is complete and accurate and contains sufficient information to disclose, fully and fairly, the funded condition of the PEPRA Miscellaneous Plan of the Bay Area Water Supply and Conservation Agency and satisfies the actuarial valuation requirements of Government Code section 7504. This valuation is based on the member and financial data as of June 30, 2022 provided by the various CalPERS databases and the benefits under this plan with CalPERS as of the date this report was produced. Section 1 of this report is based on the member and financial data for Bay Area Water Supply and Conservation Agency, while Section 2 is based on the corresponding information for all agencies participating in the Miscellaneous Risk Pool to which the plan belongs.

As set forth in Section 2 of this report, the pool actuaries have certified that, in their opinion, the valuation of the Miscellaneous Risk Pool has been performed in accordance with generally accepted actuarial principles, in accordance with standards of practice prescribed by the Actuarial Standards Board, and that the assumptions and methods are internally consistent and reasonable for the risk pool as of the date of this valuation and as prescribed by the CalPERS Board of Administration according to provisions set forth in the California Public Employees' Retirement Law.

Having relied upon the information set forth in Section 2 of this report and based on the census and benefit provision information for the rate plan, it is my opinion as the plan actuary that the Unfunded Accrued Liability amortization bases as of June 30, 2022 and employer contribution as of July 1, 2024 have been properly and accurately determined in accordance with the principles and standards stated above.

The undersigned is an actuary who satisfies the *Qualification Standards for Actuaries Issuing Statements of Actuarial Opinion in the United States* with regard to pensions.

Julian M Robinson

JULIAN ROBINSON, FSA, EA, MAAA
Senior Actuary, CalPERS

Highlights and Executive Summary

- **Introduction**
- **Purpose of Section 1**
- **Required Contributions**
- **Additional Discretionary Employer Contributions**
- **Funded Status – Funding Policy Basis**
- **Projected Employer Contributions**
- **Other Pooled Miscellaneous Risk Pool Rate Plans**
- **Cost**
- **Changes Since the Prior Year's Valuation**
- **Subsequent Events**

Introduction

This report presents the results of the June 30, 2022 actuarial valuation of the PEPRA Miscellaneous Plan of the Bay Area Water Supply and Conservation Agency of the California Public Employees' Retirement System (CalPERS). This actuarial valuation sets the minimum required contributions for fiscal year (FY) 2024-25.

Purpose of Section 1

This Section 1 report for the PEPRA Miscellaneous Plan of the Bay Area Water Supply and Conservation Agency of CalPERS was prepared by the Actuarial Office using data as of June 30, 2022. The purpose of the valuation is to:

- Set forth the assets and accrued liabilities of this rate plan as of June 30, 2022;
- Determine the minimum required employer contributions for this rate plan for FY July 1, 2024 through June 30, 2025;
- Determine the required member contribution rate for FY July 1, 2024 through June 30, 2025 for employees subject to the California Public Employees' Pension Reform Act of 2013 (PEPRA); and
- Provide actuarial information as of June 30, 2022 to the CalPERS Board of Administration (board) and other interested parties.

The pension funding information presented in this report should not be used in financial reports subject to Governmental Accounting Standards Board (GASB) Statement No. 68 for a Cost Sharing Employer Defined Benefit Pension Plan. A separate accounting valuation report for such purposes is available on the CalPERS website (www.calpers.ca.gov).

The measurements shown in this actuarial valuation may not be applicable for other purposes. The agency should contact the plan actuary before disseminating any portion of this report for any reason that is not explicitly described above.

Future actuarial measurements may differ significantly from the current measurements presented in this report 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; changes in actuarial policies; changes in plan provisions or applicable law; and differences between the required contributions determined by the valuation and the actual contributions made by the agency.

Assessment and Disclosure of Risk

This report includes the following risk disclosures consistent with the guidance of Actuarial Standard of Practice No. 51 and recommended by the California Actuarial Advisory Panel (CAAP) in the Model Disclosure Elements document:

- A "Scenario Test," projecting future results under different investment income returns.
- A "Sensitivity Analysis," showing the impact on current valuation results using alternative discount rates of 5.8% and 7.8%.
- A "Sensitivity Analysis," showing the impact on current valuation results assuming rates of mortality are 10% lower or 10% higher than our current post-retirement mortality assumptions adopted in 2021.
- Plan maturity measures indicating how sensitive a plan may be to the risks noted above.

Required Contributions

Required Employer Contributions	Fiscal Year 2024-25
Employer Normal Cost Rate	**8.63%**
Plus	
Required Payment on Amortization Bases[1]	**$2,561**
Paid either as	
1) Monthly Payment	**$213.42**
Or	
2) Annual Prepayment Option*	**$2,478**
Required PEPRA Member Contribution Rate	**8.25%**

The total minimum required employer contribution is the sum of the Plan's Employer Normal Cost Rate (expressed as a percentage of payroll and paid as payroll is reported) plus the Employer Unfunded Accrued Liability (UAL) Contribution Amount (billed monthly (1) or prepaid annually (2) in dollars).

** Only the UAL portion of the employer contribution can be prepaid **(which must be received in full no later than July 31)**.*

For additional detail regarding the determination of the required contribution rate for PEPRA members, see "PEPRA Member Contribution Rates" section.

Development of Normal Cost as a Percentage of Payroll	**Fiscal Year 2023-24**	**Fiscal Year 2024-25**
Base Total Normal Cost for Formula	15.43%	15.62%
Surcharge for Class 1 Benefits[2]		
a) PRSA	0.82%	0.81%
b) 3% COLA	0.48%	0.45%
Phase out of Normal Cost Difference[3]	0.00%	0.00%
Plan's Total Normal Cost	16.73%	16.88%
Offset Due to Employee Contributions	8.25%	8.25%
Employer Normal Cost Rate	8.48%	8.63%

1 The required payment on amortization bases does not take into account any additional discretionary payment made after April 28, 2023.

2 Section 2 of this report contains a list of Class 1 benefits and corresponding surcharges.

3 When a rate plan joins the pool, the difference in normal cost between the pool and the rate plan is phased out over a five-year period in accordance with the CalPERS contribution allocation policy.

Additional Discretionary Employer Contributions

The minimum required employer contribution towards the Unfunded Accrued Liability (UAL) for this rate plan for FY 2024-25 is $2,561. CalPERS allows agencies to make additional discretionary payments (ADPs) at any time and in any amount. These optional payments serve to reduce the UAL and future required contributions and can result in significant long-term savings. Agencies can also use ADPs to stabilize annual contributions as a fixed dollar amount, percent of payroll or percent of revenue.

Provided below are select ADP options for consideration. Making such an ADP during FY 2024-25 does not require an ADP be made in any future year, nor does it change the remaining amortization period of any portion of unfunded liability. For information on permanent changes to amortization periods, see the "Amortization Schedule and Alternatives" section of the report.

Agencies considering making an ADP should contact CalPERS for additional information.

Minimum Required Employer Contribution for Fiscal Year 2024-25

Estimated Normal Cost	Minimum UAL Payment	ADP	Total UAL Contribution	Estimated Total Contribution
$61,827	$2,561	$0	$2,561	$64,388

The minimum required contribution above is less than interest on the UAL. With no ADP the UAL is projected to increase over the following year. If the minimum UAL payment were split between interest and principal, the principal portion would be negative. This situation is referred to as **negative amortization**. If only the minimum required contribution is made, contributions are not expected to exceed interest on the UAL until FY **2027-28**, as shown in the "Amortization Schedule and Alternatives" section of the report (see columns labeled "Current Amortization Schedule").

Fiscal Year 2024-25 Employer Contribution Necessary to Avoid Negative Amortization

Estimated Normal Cost	Minimum UAL Payment	ADP[1]	Total UAL Contribution	Estimated Total Contribution
$61,827	$2,561	$3,241	$5,802	$67,629

Alternative Fiscal Year 2024-25 Employer Contributions for Greater UAL Reduction

Funding Horizon	Estimated Normal Cost	Minimum UAL Payment	ADP[1]	Total UAL Contribution	Estimated Total Contribution
20 years	$61,827	$2,561	$5,368	$7,929	$69,756
15 years	$61,827	$2,561	$6,689	$9,250	$71,077
10 years	$61,827	$2,561	$9,475	$12,036	$73,863
5 years	$61,827	$2,561	$18,137	$20,698	$82,525

[1] The ADP amounts are assumed to be made in the middle of the fiscal year. A payment made earlier or later in the fiscal year would have to be less or more than the amount shown to have the same effect on the UAL amortization.

Note that the calculations above are based on the projected UAL as of June 30, 2024 as determined in the June 30, 2022 actuarial valuation. New unfunded liabilities can emerge in future years due to assumption or method changes, changes in plan provisions, and actuarial experience different than assumed. Making an ADP illustrated above for the indicated number of years will not result in a plan that is exactly 100% funded in the indicated number of years. Valuation results will vary from one year to the next and can diverge significantly from projections over a period of several years.

Funded Status – Funding Policy Basis

The table below provides information on the current funded status of the plan under the funding policy. The funded status for this purpose is based on the market value of assets relative to the funding target produced by the entry age actuarial cost method and actuarial assumptions adopted by the board. The actuarial cost method allocates the total expected cost of a member's projected benefit (**Present Value of Benefits**) to individual years of service (the **Normal Cost**). The value of the projected benefit that is not allocated to future service is referred to as the **Accrued Liability** and is the plan's funding target on the valuation date. The **Unfunded Accrued Liability** (UAL) equals the funding target minus the assets. The UAL is an absolute measure of funded status and can be viewed as employer debt. The **funded ratio** equals the assets divided by the funding target. The funded ratio is a relative measure of the funded status and allows for comparisons between plans of different sizes.

	June 30, 2021	June 30, 2022
1. Present Value of Benefits	$1,221,710	$1,400,639
2. Entry Age Accrued Liability	491,128	606,920
3. Market Value of Assets (MVA)	500,762	527,786
4. Unfunded Accrued Liability (UAL) [(2) – (3)]	($9,634)	$79,134
5. Funded Ratio [(3) / (2)]	102.0%	87.0%

A funded ratio of 100% (UAL of $0) implies that the funding of the plan is on target and that future contributions equal to the normal cost of the active plan members will be sufficient to fully fund all retirement benefits if future experience matches the actuarial assumptions. A funded ratio of less than 100% (positive UAL) implies that in addition to normal costs, payments toward the UAL will be required. Plans with a funded ratio greater than 100% have a negative UAL (or surplus) but are required under current law to continue contributing the normal cost in most cases, preserving the surplus for future contingencies.

Calculations for the funding target reflect the expected long-term investment return of 6.8%. If it were known on the valuation date that future investment returns will average something greater/less than the expected return, calculated normal costs and accrued liabilities provided in this report would be less/greater than the results shown. Therefore, for example, if actual average future returns are less than the expected return, calculated normal costs and UAL contributions will not be sufficient to fully fund all retirement benefits. Under this scenario, required future normal cost contributions will need to increase from those provided in this report, and the plan will develop unfunded liabilities that will also add to required future contributions. For illustrative purposes, funded statuses based on a 1% lower and higher average future investment return (discount rate) are as follows:

	1% Lower Average Return	Current Assumption	1% Higher Average Return
Discount Rate	5.8%	6.8%	7.8%
1. Entry Age Accrued Liability	$751,615	$606,920	$495,114
2. Market Value of Assets (MVA)	527,786	527,786	527,786
3. Unfunded Accrued Liability (UAL) [(1) – (2)]	$223,829	$79,134	($32,672)
4. Funded Ratio [(2) / (1)]	70.2%	87.0%	106.6%

The "Risk Analysis" section of the report provides additional information regarding the sensitivity of valuation results to the expected investment return and other factors. Also provided in that section are measures of funded status that are appropriate for assessing the sufficiency of plan assets to cover estimated termination liabilities.

Projected Employer Contributions

The table below shows the required and projected employer contributions (before cost sharing) for the next six fiscal years. The projection assumes that all actuarial assumptions will be realized and that no further changes to assumptions, contributions, benefits, or funding will occur during the projection period. In particular, the investment return beginning with FY 2022-23 is assumed to be 6.80% per year, net of investment and administrative expenses. Future contribution requirements may differ significantly from those shown below. The actual long-term cost of the plan will depend on the actual benefits and expenses paid and the actual investment experience of the fund.

	Required Contribution	**Projected Future Employer Contributions (Assumes 6.80% Return for Fiscal Year 2022-23 and Beyond)**				
Fiscal Year	**2024-25**	**2025-26**	**2026-27**	**2027-28**	**2028-29**	**2029-30**
	Rate Plan 26893 Results					
Normal Cost %	8.63%	8.6%	8.6%	8.6%	8.6%	8.6%
UAL Payment	$2,561	$4,200	$5,900	$7,600	$9,300	$9,300

For ongoing plans, investment gains and losses are amortized using a 5-year ramp up. For more information, please see “Amortization of the Unfunded Actuarial Accrued Liability” under “Actuarial Methods” in Appendix A of the Section 2 Report. This method phases in the impact of the change in UAL over a 5-year period in order to reduce employer cost volatility from year to year. As a result of this methodology, dramatic changes in the required employer contributions in any one year are less likely. However, required contributions can change gradually and significantly over the next five years. In years when there is a large investment loss, the relatively small amortization payments during the ramp up period could result in contributions that are less than interest on the UAL (i.e. negative amortization) while the contribution impact of the increase in the UAL is phased in.

The required contribution for FY 2024-25 is less than interest on the UAL, a situation referred to as **negative amortization**, as explained in the “Additional Discretionary Employer Contributions” section earlier in this report. If only the minimum required contribution is made, contributions are not expected to exceed interest on the UAL until FY 2027-28, as shown in the “Amortization Schedule and Alternatives” section of the report (see columns labelled “Current Amortization Schedule”).

For projected contributions under alternate investment return scenarios, please see the “Future Investment Return Scenarios” in the “Risk Analysis” section. Our online pension plan projection tool, Pension Outlook, is available in the Employers section of the CalPERS website. Pension Outlook can help plan and budget pension costs under various scenarios.

Other Pooled Miscellaneous Risk Pool Rate Plans

All of the results presented in this Section 1 report, except those shown on this page, correspond to rate plan 26893. In many cases, employers have additional rate plans within the same risk pool. For cost analysis and budgeting it is useful to consider contributions for these rate plans as a whole rather than individually. The estimated contribution amounts and rates for all of the employer's rate plans in the Miscellaneous Risk Pool are shown below and assume that the total employer payroll within the Miscellaneous Risk Pool will grow according to the overall payroll growth assumption of 2.80% per year for three years. In a refinement since the prior year's report, Classic members who are projected to terminate employment are assumed to be replaced by PEPRA members.

	Fiscal Year 2023-24	Fiscal Year 2024-25
Estimated Combined Employer Contributions for all Pooled Miscellaneous Rate Plans		
Projected Payroll for the Contribution Year	$1,389,693	$1,503,483
Estimated Employer Normal Cost	$167,927	$170,757
Required Payment on Amortization Bases	$64,007	$85,252
Estimated Total Employer Contributions	$231,934	$256,009
Estimated Total Employer Contribution Rate (illustrative only)	16.69%	17.03%

Cost

Actuarial Determination of Plan Cost

Contributions to fund the plan are comprised of two components:

- Normal Cost, expressed as a percentage of total active payroll
- Amortization of the Unfunded Accrued Liability (UAL), expressed as a dollar amount

For fiscal years prior to 2015-16, the Amortization of UAL component was expressed as a percentage of total active payroll. Starting with FY 2015-16, the Amortization of UAL component was expressed as a dollar amount and invoiced on a monthly basis. There is an option to prepay this amount during July of each fiscal year.

The Normal Cost component is expressed as a percentage of active payroll with employer and employee contributions payable as part of the regular payroll reporting process.

The determination of both components requires complex actuarial calculations. The calculations are based on a set of actuarial assumptions which can be divided into two categories:

- Demographic assumptions (e.g., mortality rates, retirement rates, employment termination rates, disability rates)
- Economic assumptions (e.g., future investment earnings, inflation, salary growth rates)

These assumptions reflect CalPERS' best estimate of future experience of the plan and are long term in nature. We recognize that all assumptions will not be realized in any given year. For example, the investment earnings at CalPERS have averaged 6.9% over the 20 years ending June 30, 2022, yet individual fiscal year returns have ranged from -23.6% to +21.3%. In addition, CalPERS reviews all actuarial assumptions by conducting in-depth experience studies every four years, with the most recent experience study completed in 2021.

Changes Since the Prior Year's Valuation

Benefits

The standard actuarial practice at CalPERS is to recognize mandated legislative benefit changes in the first annual valuation following the effective date of the legislation. Voluntary benefit changes by plan amendment are generally included in the first valuation that is prepared after the amendment becomes effective, even if the valuation date is prior to the effective date of the amendment.

This valuation generally reflects plan amendments effective before the date of the report. Please refer to the "Plan's Major Benefit Options" in this report and Appendix B of the Section 2 Report for a summary of the plan provisions used in this valuation.

In 2022, SB 1168 increased the standard retiree lump sum death benefit from $500 to $2,000 for any death occurring on or after July 1, 2023. For pooled plans this is a Class 3 benefit and there is no normal cost surcharge. The impact on the unfunded liability is included in the pool's (gain)/loss.

Actuarial Methods and Assumptions

There are no significant changes to the actuarial methods or assumptions for the June 30, 2022 actuarial valuation.

Subsequent Events

This actuarial valuation report reflects fund investment return through June 30, 2022 and statutory/regulatory changes and board actions through January 2023.

During the time period between the valuation date and the publication of this report, inflation has been significantly higher than the expected inflation of 2.3% per annum. Since inflation influences cost-of-living increases for retirees and beneficiaries and active member pay increases, higher inflation is likely to put at least some upward pressure on contribution requirements and downward pressure on the funded status in the June 30, 2023 valuation. The actual impact of higher inflation on future valuation results will depend on, among other factors, how long higher inflation persists. At this time, we continue to believe the long-term inflation assumption of 2.3% is appropriate.

To the best of our knowledge, there have been no other subsequent events that could materially affect current or future certifications rendered in this report.

Assets and Liabilities

- **Breakdown of Entry Age Accrued Liability**
- **Allocation of Plan's Share of Pool's Experience/Assumption Change**
- **Development of Plan's Share of Pool's Market Value of Assets**
- **Schedule of Amortization Bases**
- **Amortization Schedule and Alternatives**
- **Employer Contribution History**
- **Funding History**

Breakdown of Entry Age Accrued Liability

Active Members	$249,417
Transferred Members	166,778
Separated Members	190,725
Members and Beneficiaries Receiving Payments	0
Total	$606,920

Allocation of Plan's Share of Pool's Experience/Assumption Change

It is the policy of CalPERS to ensure equity within the risk pools by allocating the pool's experience gains/losses and assumption changes in a manner that treats each employer equitably and maintains benefit security for the members of the System while minimizing substantial variations in employer contributions. The Pool's experience gains/losses and impact of assumption/method changes is allocated to the plan as follows:

1.	Plan's Accrued Liability	$606,920
2.	Projected UAL Balance at 6/30/2022	(12,090)
3.	Other UAL Adjustments (Golden Handshake, Prior Service Purchase, etc.)	0
4.	Adjusted UAL Balance at 6/30/2022 for Asset Share	(12,090)
5.	Pool's Accrued Liability[1]	22,021,735,002
6.	Sum of Pool's Individual Plan UAL Balances at 6/30/2022[1]	2,453,954,297
7.	Pool's 2021-22 Investment (Gain)/Loss[1]	2,614,071,182
8.	Pool's 2021-22 Non-Investment (Gain)/Loss[1]	309,490,972
9.	Plan's Share of Pool's Investment (Gain)/Loss: [(1) - (4)] ÷ [(5) - (6)] × (7)	82,694
10.	Plan's Share of Pool's Non-Investment (Gain)/Loss: (1) ÷ (5) × (8)	8,530
11.	Plan's New (Gain)/Loss as of 6/30/2022: (9) + (10)	91,224
12.	Increase in Pool's Accrued Liability due to Change in Assumptions[1]	0
13.	Plan's Share of Pool's Change in Assumptions: (1) ÷ (5) × (12)	0
14.	Increase in Pool's Accrued Liability due to Funding Risk Mitigation[1]	0
15.	Plan's Share of Pool's Change due to Funding Risk Mitigation: (1) ÷ (5) × (14)	0
16.	Offset due to Funding Risk Mitigation	0
17.	Plan's Investment (Gain)/Loss: (9) – (16)	82,694
18.	Partial Fresh Start Base: (2) + (17)	70,604

[1] Does not include plans that transferred to Pool on the valuation date.

Development of the Plan's Share of Pool's Market Value of Assets

19.	Plan's UAL: (2) + (3) + (11) + (13) + (15)	$79,134
20.	Plan's Share of Pool's MVA: (1) - (19)	$527,786

Schedule of Amortization Bases

Below is the schedule of the plan's amortization bases. Note that there is a two-year lag between the valuation date and the start of the contribution year.

- The assets, liabilities, and funded status of the plan are measured as of the valuation date: June 30, 2022.
- The required employer contributions determined by the valuation are for the fiscal year beginning two years after the valuation date: FY 2024-25.

This two-year lag is necessary due to the amount of time needed to extract and test the membership and financial data, and the need to provide public agencies with their required employer contribution well in advance of the start of the fiscal year.

The Unfunded Accrued Liability (UAL) is used to determine the employer contribution and therefore must be rolled forward two years from the valuation date to the first day of the fiscal year for which the contribution is being determined. The UAL is rolled forward each year by subtracting the expected payment on the UAL for the fiscal year and adjusting for interest. The expected payment for the first fiscal year is determined by the actuarial valuation two years ago and the contribution for the second year is from the actuarial valuation one year ago. Additional discretionary payments are reflected in the Expected Payments column in the fiscal year they were made by the agency.

Reason for Base	Date Est.	Ramp Level 2024-25	Ramp Shape	Escala-tion Rate	Amort. Period	Balance 6/30/22	Expected Payment 2022-23	Balance 6/30/23	Expected Payment 2023-24	Balance 6/30/24	Minimum Required Payment 2024-25
Non-Investment (Gain)/Loss	6/30/22	No Ramp		0.00%	20	8,530	0	9,110	0	9,729	875
Partial Fresh Start	6/30/22	20%	Up Only	0.00%	20	70,604	1,890	73,452	0	78,447	1,686
Total						**79,134**	**1,890**	**82,562**	**0**	**88,176**	**2,561**

The (gain)/loss bases are the plan's allocated share of the risk pool's (gain)/loss for the fiscal year as disclosed in "Allocation of Plan's Share of Pool's Experience/Assumption Change" earlier in this section. These (gain)/loss bases will be amortized in accordance with the CalPERS amortization policy in effect at the time the base was established.

The partial fresh start base established June 30, 2022 is the sum of the UAL balance from the June 30, 2021 valuation (projected to June 30, 2022) and the June 30, 2022 investment loss, as shown on the previous page.

Amortization Schedule and Alternatives

The amortization schedule on the previous page(s) shows the minimum contributions required according to the CalPERS amortization policy. Many agencies have expressed a desire for a more stable pattern of payments or have indicated interest in paying off the unfunded accrued liabilities more quickly than required. As such, we have provided alternative amortization schedules to help analyze the current amortization schedule and illustrate the potential savings of accelerating unfunded liability payments.

Shown on the following page are future year amortization payments based on 1) the current amortization schedule reflecting the individual bases and remaining periods shown on the previous page, and 2) alternative "fresh start" amortization schedules using two sample periods that would both result in interest savings relative to the current amortization schedule. To initiate a fresh start, please contact the plan actuary.

The Current Amortization Schedule typically contains both positive and negative bases. Positive bases result from plan changes, assumption changes, method changes or plan experience that increase unfunded liability. Negative bases result from plan changes, assumption changes, method changes, or plan experience that decrease unfunded liability. The combination of positive and negative bases within an amortization schedule can result in unusual or problematic circumstances in future years, such as:

- When a negative payment would be required on a positive unfunded actuarial liability; or
- When the payment would completely amortize the total unfunded liability in a very short time period, and results in a large change in the employer contribution requirement.

In any year when one of the above scenarios occurs, the actuary will consider corrective action such as replacing the existing unfunded liability bases with a single "fresh start" base and amortizing it over an appropriate period.

The Current Amortization Schedule on the following page may appear to show that, based on the current amortization bases, one of the above scenarios will occur at some point in the future. It is impossible to know today whether such a scenario will in fact arise since there will be additional bases added to the amortization schedule in each future year. Should such a scenario arise in any future year, the actuary will take appropriate action based on guidelines in the CalPERS amortization policy.

Amortization Schedule and Alternatives (continued)

			Alternate Schedules			
	Current Amortization Schedule		20 Year Amortization		15 Year Amortization	
Date	**Balance**	**Payment**	**Balance**	**Payment**	**Balance**	**Payment**
6/30/2024	88,176	2,561	88,176	7,929	88,176	9,250
6/30/2025	91,525	4,247	85,978	7,929	84,613	9,250
6/30/2026	93,360	5,934	83,630	7,929	80,807	9,250
6/30/2027	93,576	7,620	81,123	7,929	76,743	9,250
6/30/2028	92,064	9,306	78,445	7,929	72,402	9,250
6/30/2029	88,707	9,306	75,585	7,929	67,766	9,250
6/30/2030	85,122	9,306	72,531	7,929	62,815	9,250
6/30/2031	81,293	9,306	69,269	7,929	57,527	9,250
6/30/2032	77,203	9,306	65,785	7,929	51,880	9,250
6/30/2033	72,835	9,306	62,064	7,929	45,849	9,250
6/30/2034	68,170	9,305	58,090	7,929	39,407	9,250
6/30/2035	63,189	9,305	53,846	7,929	32,527	9,250
6/30/2036	57,870	9,306	49,313	7,929	25,180	9,250
6/30/2037	52,188	9,306	44,472	7,929	17,333	9,251
6/30/2038	46,119	9,304	39,302	7,929	8,951	9,250
6/30/2039	39,639	9,304	33,780	7,929		
6/30/2040	32,719	9,304	27,883	7,930		
6/30/2041	25,329	9,306	21,584	7,929		
6/30/2042	17,435	9,306	14,858	7,930		
6/30/2043	9,003	9,304	7,673	7,930		
6/30/2044						
6/30/2045						
6/30/2046						
6/30/2047						
6/30/2048						
6/30/2049						
Total		**169,248**		**158,583**		**138,751**
Interest Paid		**81,072**		**70,407**		**50,575**
Estimated Savings				**10,665**		**30,497**

Employer Contribution History

The table below provides a recent history of the required and discretionary employer contributions for the plan. The required amounts are based on the actuarial valuation from two years prior without subsequent adjustments, if any. Additional discretionary payments before July 1, 2019 or after April 28, 2023 are not included.

Fiscal Year	Employer Normal Cost	Unfunded Liability Payment ($)	Additional Discretionary Payments
2016 - 17	7.191%	$71	N/A
2017 - 18	7.170%	1,936	N/A
2018 - 19	7.557%	2,277	N/A
2019 - 20	7.528%	5,617	0
2020 - 21	8.239%	8,115	0
2021 - 22	8.09%	8,034	0
2022 - 23	8.19%	8,357	0
2023 - 24	8.48%	0	
2024 - 25	8.63%	2,561	

Funding History

The table below shows the recent history of the actuarial accrued liability, share of the pool's market value of assets, unfunded accrued liability, funded ratio, and annual covered payroll.

Valuation Date	Accrued Liability (AL)	Share of Pool's Market Value of Assets (MVA)	Unfunded Accrued Liability (UAL)	Funded Ratio	Annual Covered Payroll
06/30/2014	$23,644	$24,696	($1,052)	104.5%	$400,947
06/30/2015	96,290	90,755	5,535	94.3%	414,342
06/30/2016	175,665	155,106	20,559	88.3%	428,693
06/30/2017	229,574	209,298	20,276	91.2%	246,388
06/30/2018	313,465	280,984	32,481	89.6%	323,708
06/30/2019	391,130	351,025	40,105	89.7%	336,371
06/30/2020	383,218	334,433	48,785	87.3%	419,994
06/30/2021	491,128	500,762	(9,634)	102.0%	411,047
06/30/2022	606,920	527,786	79,134	87.0%	458,682

Risk Analysis

- **Future Investment Return Scenarios**
- **Discount Rate Sensitivity**
- **Mortality Rate Sensitivity**
- **Maturity Measures**
- **Maturity Measures History**
- **Funded Status – Termination Basis**

Future Investment Return Scenarios

Analysis using the investment return scenarios from the Asset Liability Management process completed in 2021 was performed to determine the effects of various future investment returns on required employer contributions. The projections below reflect the impact of the CalPERS Funding Risk Mitigation policy. The projections also assume that all other actuarial assumptions will be realized and that no further changes in assumptions, contributions, benefits, or funding will occur.

The first table shows projected contribution requirements if the fund were to earn either 3.0% or 10.8% annually. These alternate investment returns were chosen because 90% of long-term average returns are expected to fall between them over the 20-year period ending June 30, 2042.

Assumed Annual Return FY 2022-23 through 2041-42	**Projected Employer Contributions**				
	2025-26	**2026-27**	**2027-28**	**2028-29**	**2029-30**
3.0% (5th percentile)					
Normal Cost Rate	8.6%	8.6%	8.6%	8.6%	8.6%
UAL Contribution	$4,700	$7,400	$11,000	$14,000	$17,000
10.8% (95th percentile)					
Normal Cost Rate	8.8%	9.1%	9.3%	9.5%	8.9%
UAL Contribution	$3,800	$4,600	$4,900	$0	$0

Required contributions outside of this range are also possible. In particular, whereas it is unlikely that investment returns will average less than 3.0% or greater than 10.8% over a 20-year period, the likelihood of a single investment return less than 3.0% or greater than 10.8% in any given year is much greater. The following analysis illustrates the effect of an extreme, single year investment return.

The portfolio has an expected volatility (or standard deviation) of 12.0% per year. Accordingly, in any given year there is a 16% probability that the annual return will be -5.2% or less and a 2.5% probability that the annual return will be -17.2% or less. These returns represent one and two standard deviations below the expected return of 6.8%.

The following table shows the effect of a one or two standard deviation investment loss in FY 2022-23 on the FY 2025-26 contribution requirements. Note that a single-year investment gain or loss decreases or increases the required UAL contribution amount incrementally for each of the next five years, not just one, due to the 5-year ramp in the amortization policy. However, the contribution requirements beyond the first year are also impacted by investment returns beyond the first year. Historically, significant downturns in the market are often followed by higher than average returns. Such investment gains would offset the impact of these single year negative returns in years beyond FY 2025-26.

Assumed Annual Return for Fiscal Year 2022-23	**Required Employer Contributions**	**Projected Employer Contributions**
	2024-25	**2025-26**
(17.2)% (2 standard deviation loss)		
Normal Cost Rate	8.63%	8.6%
UAL Contribution	$2,561	$7,300
(5.2)% (1 standard deviation loss)		
Normal Cost Rate	8.63%	8.6%
UAL Contribution	$2,561	$5,800

- Without investment gains (returns higher than 6.8%) in FY 2023-24 or later, projected contributions rates would continue to rise over the next four years due to the continued phase-in of the impact of the illustrated investment loss in FY 2022-23.
- The Pension Outlook Tool can be used to model projected contributions for these scenarios beyond FY 2025-26 as well as to model other investment return scenarios.

Discount Rate Sensitivity

The discount rate assumption is calculated as the sum of the assumed real rate of return and the assumed annual price inflation, currently 4.5% and 2.3%, respectively. Changing either the price inflation assumption or the real rate of return assumption will change the discount rate. The sensitivity of the valuation results to the discount rate assumption depends on which component of the discount rate is changed. Shown below are various valuation results as of June 30, 2022 assuming alternate discount rates by changing the two components independently. Results are shown using the current discount rate of 6.8% as well as alternate discount rates of 5.8% and 7.8%. The rates of 5.8% and 7.8% were selected since they illustrate the impact of a 1.0% increase or decrease to the 6.8% assumption.

Sensitivity to the Real Rate of Return Assumption

As of June 30, 2022	1% Lower Real Return Rate	Current Assumptions	1% Higher Real Return Rate
Discount Rate	**5.8%**	**6.8%**	**7.8%**
Price Inflation	2.3%	2.3%	2.3%
Real Rate of Return	**3.5%**	**4.5%**	**5.5%**
a) Total Normal Cost	21.11%	16.88%	13.67%
b) Accrued Liability	$751,615	$606,920	$495,114
c) Market Value of Assets	$527,786	$527,786	$527,786
d) Unfunded Liability/(Surplus) [(b) - (c)]	$223,829	$79,134	($32,672)
e) Funded Ratio	70.2%	87.0%	106.6%

Sensitivity to the Price Inflation Assumption

As of June 30, 2022	1% Lower Price Inflation	Current Assumptions	1% Higher Price Inflation
Discount Rate	**5.8%**	**6.8%**	**7.8%**
Price Inflation	**1.3%**	**2.3%**	**3.3%**
Real Rate of Return	4.5%	4.5%	4.5%
a) Total Normal Cost	17.81%	16.88%	15.34%
b) Accrued Liability	$632,764	$606,920	$568,706
c) Market Value of Assets	$527,786	$527,786	$527,786
d) Unfunded Liability/(Surplus) [(b) - (c)]	$104,978	$79,134	$40,920
e) Funded Ratio	83.4%	87.0%	92.8%

Mortality Rate Sensitivity

The following table looks at the change in the June 30, 2022 plan costs and funded status under two different longevity scenarios, namely assuming post-retirement rates of mortality are 10% lower or 10% higher than our current mortality assumptions adopted in 2021. This type of analysis highlights the impact on the plan of a change in the mortality assumption.

As of June 30, 2022	10% Lower Mortality Rates	Current Assumptions	10% Higher Mortality Rates
a) Total Normal Cost	17.17%	16.88%	16.61%
b) Accrued Liability	$616,154	$606,920	$598,383
c) Market Value of Assets	$527,786	$527,786	$527,786
d) Unfunded Liability/(Surplus) [(b) - (c)]	$88,368	$79,134	$70,597
e) Funded Ratio	85.7%	87.0%	88.2%

Maturity Measures

As pension plans mature they become more sensitive to risks. Understanding plan maturity and how it affects the ability of a pension plan sponsor to tolerate risk is important in understanding how the pension plan is impacted by investment return volatility, other economic variables, and changes in longevity or other demographic assumptions.

Since it is the employer that bears the risk, it is appropriate to perform this analysis on a pension plan level considering all rate plans. The following measures are for one rate plan only. One way to look at the maturity level of CalPERS and its plans is to look at the ratio of a plan's retiree liability to its total liability. A pension plan in its infancy will have a very low ratio of retiree liability to total liability. As the plan matures, the ratio starts increasing. A mature plan will often have a ratio above 60%-65%.

Ratio of Retiree Accrued Liability to Total Accrued Liability	June 30, 2021	June 30, 2022
1. Retired Accrued Liability	$0	$0
2. Total Accrued Liability	491,128	606,920
3. Ratio of Retiree AL to Total AL [(1) / (2)]	0.00	0.00

Another measure of maturity level of CalPERS and its plans is to look at the ratio of actives to retirees, also called the support ratio. A pension plan in its infancy will have a very high ratio of active to retired members. As the plan matures and members retire, the ratio declines. A mature plan will often have a ratio near or below one.

To calculate the support ratio for the rate plan, retirees and beneficiaries receiving a continuance are each counted as one, even though they may have only worked a portion of their careers as an active member of this rate plan. For this reason, the support ratio, while intuitive, may be less informative than the ratio of retiree liability to total accrued liability above.

For comparison, the support ratio for all CalPERS public agency plans as of June 30, 2021, was 0.78 and was calculated consistently with how it is for the individual rate plan. Note that to calculate the support ratio for all public agency plans, a retiree with service from more than one CalPERS agency is counted as a retiree more than once.

Support Ratio	June 30, 2021	June 30, 2022
1. Number of Actives	4	4
2. Number of Retirees	0	0
3. Support Ratio [(1) / (2)]	N/A	N/A

Maturity Measures (continued)

The actuarial calculations supplied in this communication are based on various assumptions about long-term demographic and economic behavior. Unless these assumptions (e.g., terminations, deaths, disabilities, retirements, salary growth, investment return) are exactly realized each year, there will be differences on a year-to-year basis. The year-to-year differences between actual experience and the assumptions are called actuarial gains and losses and serve to lower or raise required employer contributions from one year to the next. Therefore, employer contributions will inevitably fluctuate, especially due to the ups and downs of investment returns.

Asset Volatility Ratio

Shown in the table below is the asset volatility ratio (AVR), which is the ratio of market value of assets to payroll. Plans that have higher AVR experience more volatile employer contributions (as a percentage of payroll) due to investment return. For example, a plan with AVR of 8 may experience twice the contribution volatility due to investment return volatility than a plan with AVR of 4. It should be noted that this ratio is a measure of the current situation. It increases over time but generally tends to stabilize as a plan matures.

Liability Volatility Ratio

Also shown in the table below is the liability volatility ratio (LVR), which is the ratio of accrued liability to payroll. Plans that have a higher LVR experience more volatile employer contributions (as a percentage of payroll) due to changes in liability. For example, a plan with LVR of 8 is expected to have twice the contribution volatility of a plan with LVR of 4. It should be noted that this ratio indicates a longer-term potential for contribution volatility, since the AVR, described above, will tend to move closer to the LVR as the funded ratio approaches 100%.

Contribution Volatility	June 30, 2021	June 30, 2022
1. Market Value of Assets	$500,762	$527,786
2. Payroll	411,047	458,682
3. Asset Volatility Ratio (AVR) [(1) / (2)]	1.2	1.2
4. Accrued Liability	$491,128	$606,920
5. Liability Volatility Ratio (LVR) [(4) / (2)]	1.2	1.3

Maturity Measures History

Valuation Date	Ratio of Retiree Accrued Liability to Total Accrued Liability	Support Ratio	Asset Volatility Ratio	Liability Volatility Ratio
06/30/2017	0.00	N/A	0.8	0.9
06/30/2018	0.00	N/A	0.9	1.0
06/30/2019	0.00	N/A	1.0	1.2
06/30/2020	0.00	N/A	0.8	0.9
06/30/2021	0.00	N/A	1.2	1.2
06/30/2022	0.00	N/A	1.2	1.3

Funded Status – Termination Basis

The funded status measured on a termination basis is an estimate of the financial position of the plan had the contract with CalPERS been terminated as of June 30, 2022. The accrued liability on a termination basis (termination liability) is calculated differently compared to the plan's ongoing funding liability. For the termination liability calculation, both compensation and service are frozen as of the valuation date and no future pay increases or service accruals are assumed. This measure of funded status is not appropriate for assessing the need for future employer contributions in the case of an ongoing plan, that is, for an employer that continues to provide CalPERS retirement benefits to active employees. Unlike the actuarial cost method used for ongoing plans, the termination liability is the present value of the benefits earned through the valuation date.

A more conservative investment policy and asset allocation strategy was adopted by the board for the Terminated Agency Pool. The Terminated Agency Pool has limited funding sources since no future employer contributions will be made. Therefore, expected benefit payments are secured by risk-free assets and benefit security for members is increased while limiting the funding risk. However, this asset allocation has a lower expected rate of return than the PERF and consequently, a lower discount rate is assumed. The lower discount rate for the Terminated Agency Pool results in higher liabilities for terminated plans.

The effective termination discount rate will depend on actual market rates of return for risk-free securities on the date of termination. As market discount rates are variable, the table below shows a range for the hypothetical termination liability based on the lowest and highest interest rates observed during an approximate 19-month period from 12 months before the valuation date to seven months after.

	Discount Rate: 1.75% Price Inflation: 2.50%			Discount Rate: 4.50% Price Inflation: 2.75%		
Market Value of Assets (MVA)	**Termination Liability[1,2]**	**Funded Ratio**	**Unfunded Termination Liability**	**Termination Liability[1,2]**	**Funded Ratio**	**Unfunded Termination Liability**
$527,786	$1,743,992	30.3%	$1,216,206	$823,248	64.1%	$295,462

[1] The termination liabilities calculated above include a 5% contingency load. The contingency load and other actuarial assumptions can be found in Appendix A of the Section 2 report.

[2] The discount rate used for termination valuations is a weighted average of the 10-year and 30-year U.S. Treasury yields where the weights are based on matching asset and liability durations as of the termination date. The discount rates used in the table are based on 20-year Treasury bonds, rounded to the nearest quarter percentage point, which is a good proxy for most plans. The 20-year Treasury yield was 3.38% on June 30, 2022, the valuation date.

In order to terminate the plan, first contact our Pension Contract Services unit to initiate a Resolution of Intent to Terminate. The completed Resolution will allow the plan actuary to provide a preliminary termination valuation with a more up-to-date estimate of the plan liabilities. Before beginning this process, please consult with the plan actuary.

Participant Data

The table below shows a summary of the plan's member data upon which this valuation is based:

	June 30, 2021	June 30, 2022
Active Members		
Counts	4	4
Average Attained Age	39.9	40.9
Average Entry Age to Rate Plan	37.2	37.2
Average Years of Credited Service	2.0	3.0
Average Annual Covered Pay	$102,762	$114,671
Annual Covered Payroll	$411,047	$458,682
Present Value of Future Payroll	$4,923,969	$5,433,681
Transferred Members	3	3
Separated Members	3	3
Retired Members and Beneficiaries*		
Counts	0	0
Average Annual Benefits	$0	$0
Total Annual Benefits	$0	$0

Counts of members included in the valuation are counts of the records processed by the valuation. Multiple records may exist for those who have service in more than one valuation group. This does not result in double counting of liabilities.

* Values include community property settlements.

List of Class 1 Benefit Provisions

This plan has the additional Class 1 Benefit Provisions:

- Post-Retirement Survivor Allowance (PRSA)
- 3% Annual Cost-of-Living Allowance Increase (3% COLA)

Plan's Major Benefit Options

Shown below is a summary of the major optional benefits for which the agency has contracted. A description of principal standard and optional plan provisions is in Section 2.

	Benefit Group	
Member Category	Misc	
Demographics		
Actives	Yes	
Transfers/Separated	Yes	
Receiving	No	
Benefit Provision		
Benefit Formula	2% @ 62	
Social Security Coverage	No	
Full/Modified	Full	
Employee Contribution Rate	8.25%	
Final Average Compensation Period	Three Year	
Sick Leave Credit	Yes	
Non-Industrial Disability	Standard	
Industrial Disability	No	
Pre-Retirement Death Benefits		
Optional Settlement 2	Yes	
1959 Survivor Benefit Level	Level 4	
Special	No	
Alternate (firefighters)	No	
Post-Retirement Death Benefits		
Lump Sum	$5000	
Survivor Allowance (PRSA)	Yes	
COLA	3%	

PEPRA Member Contribution Rates

The California Public Employees' Pension Reform Act of 2013 (PEPRA) established new benefit formulas, final compensation period, and contribution requirements for "new" employees (generally those first hired into a CalPERS-covered position on or after January 1, 2013). In accordance with Government Code Section 7522.30(b), "new members … shall have an initial contribution rate of at least 50% of the normal cost rate." The normal cost for the plan is dependent on the benefit levels, actuarial assumptions, and demographics of the risk pool, particularly members' entry age. Should the total normal cost rate change by more than 1% from the base total normal cost rate, the new member rate shall be 50% of the new normal cost rate rounded to the nearest quarter percent.

The table below shows the determination of the PEPRA member contribution rates effective July 1, 2024, based on 50% of the total normal cost rate as of the June 30, 2022 valuation.

		Basis for Current Rate		Rates Effective July 1, 2024			
Rate Plan Identifier	Benefit Group Name	Total Normal Cost	Member Rate	Total Normal Cost	Change	Change Needed	Member Rate
26893	Miscellaneous PEPRA Level	16.73%	8.25%	16.88%	0.15%	No	8.25%

Section 2

CALIFORNIA PUBLIC EMPLOYEES' RETIREMENT SYSTEM

Risk Pool Actuarial Valuation Information

Section 2 may be found on the CalPERS website (www.calpers.ca.gov) in the Forms and Publications section

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City and County of San Francisco Employees' Retirement System

July 1, 2022 Actuarial Valuation Report

Produced by Cheiron

February 2023

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TABLE OF CONTENTS

Section *Page*

Section I Board Summary 1

Section II Assessment and Disclosure of Risk 10

Section III Certification 31

Section IV Assets 33

Section V Measures of Liability 35

Section VI Contributions 39

Section VII Actuarial Section of the Annual Report 45

Appendices

Appendix A Membership Information 48

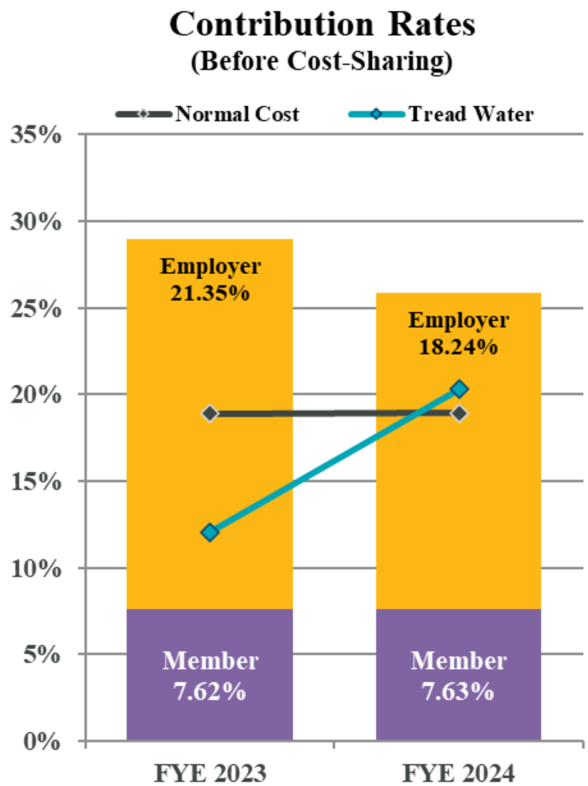
Appendix B Actuarial Assumptions and Methods 67

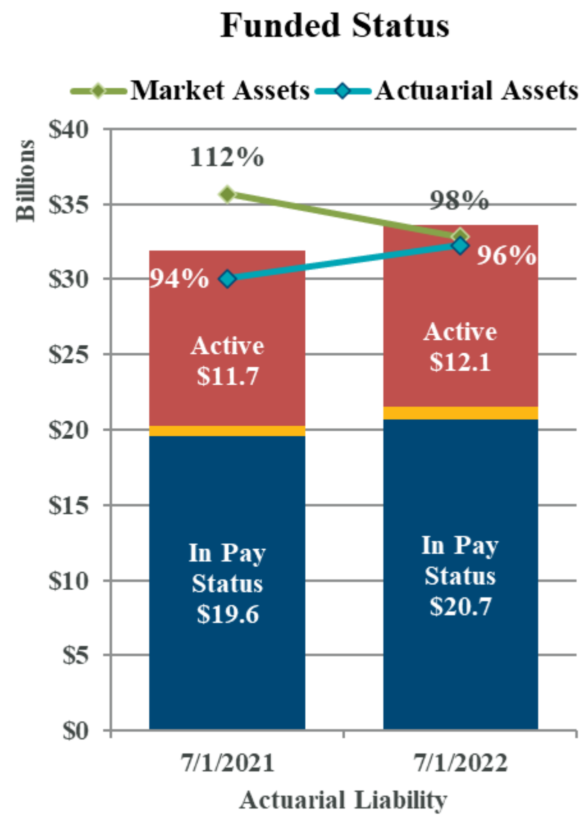
Appendix C Summary of Plan Provisions 83

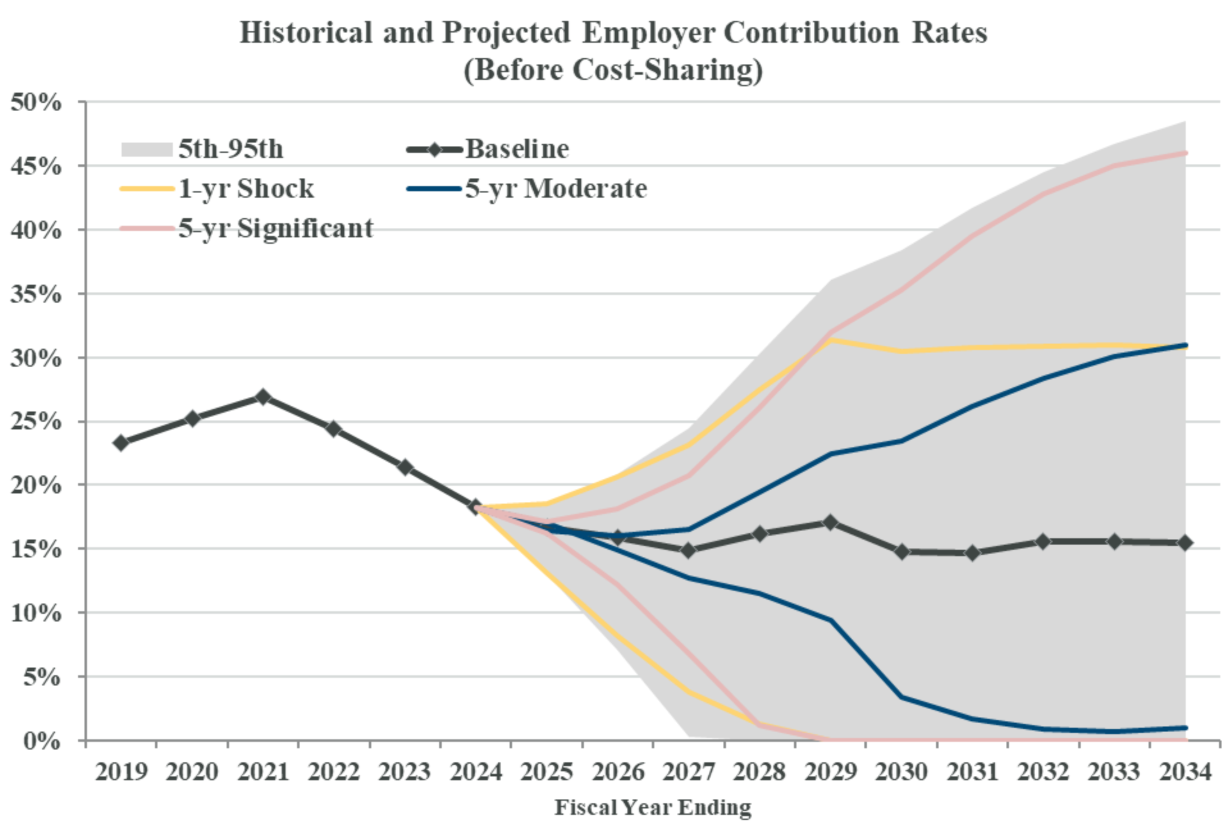
Appendix D Projection Details 105

Appendix E Glossary of Terms 108

SECTION I – BOARD SUMMARY







SECTION I – BOARD SUMMARY

Key Findings of the July 1, 2022 Valuation

The key results of the July 1, 2022 actuarial valuation are as follows:

- The employer contribution rate decreased from 21.35% for FYE 2023 to 18.24% for FYE 2024 before any cost-sharing adjustments.[1] See Table I-4 for details on the components of the decrease in contribution rates. After the cost-sharing adjustments, the estimated employer contribution rate decreased from 18.76% to 16.15%. 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 cost-sharing adjustment for employee contribution rates will decrease by 0.49% of pay in FYE 2024. The average employee contribution rate after cost-sharing adjustments is estimated to be 9.72% of pay in FYE 2024 compared to 10.21% in FYE 2023.

- Based on the Market Value of Assets, the funded ratio decreased from 111.8% to 97.6%, and the Unfunded Actuarial Liability (UAL) increased from a $3.77 billion surplus to $0.79 billion liability. Based on the smoothed Actuarial Value of Assets, the funded ratio increased from 94.2% to 96.1%, and the Unfunded Actuarial Liability decreased from $1.86 billion to $1.32 billion.

- The return on the Market Value of Assets for the year ended June 30, 2022 was approximately -6.5% resulting in an actuarial loss of about $4.48 billion that will be recognized over the next five years. The return on the Actuarial Value of Assets was 9.3%, which recognizes 20% of the FYE 2022 loss as well as deferred investment gains and losses from previous years, and results in an actuarial gain of about $0.63 billion.

- On November 8, 2022, voters approved Proposition A, eliminating the full funding requirement to receive a Supplemental COLA for members who retired prior to November 6, 1996. In addition, effective January 1, 2023, the retirement allowance for these members is increased to account for the Supplemental COLAs not received in 2013, 2014, 2017, 2018, and 2019. The increase is limited to $200 per month for members with monthly retirement allowances exceeding $4,167. This Charter change affected 4,086 members and is incorporated in the valuation as of July 1, 2022, increasing the Actuarial Liability by $48 million. The Board elected to amortize this increase over 10 years, resulting in an increase in the contribution rate of 0.15% of payroll.

- Because actual investment returns were less than expected, a Supplemental COLA was not payable on July 1, 2022.

[1] *The cost-sharing adjustments depend on the employer contribution rate, the employee group, and the level of pay based on the applicable table in the Charter. The FYE 2024 average cost-sharing adjustment is 2.09%, details of the calculation can be found in Table VI-2 of this report.*

SECTION I – BOARD SUMMARY

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, 2022 compared to July 1, 2021.

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

Valuation Date	July 1, 2021	July 1, 2022	% Change
Actuarial Liability	$ 31,905.3	$ 33,591.6	5.3%
Actuarial Value of Assets	$ 30,043.2	$ 32,275.5	7.4%
Unfunded Actuarial Liability (actuarial value)	1,862.1	1,316.1	-29.3%
Funding Ratio (actuarial value)	94.2%	96.1%	1.9%
Market Value of Assets	$ 35,673.8	$ 32,798.5	-8.1%
Unfunded Liability (market value)	(3,768.5)	793.1	-121.0%
Funding Ratio (market value)	111.8%	97.6%	-14.2%
Expected Payroll	$ 3,828.8	$ 3,984.1	4.1%
Interest on UAL (MVA basis)	$ (262.1)	$ 55.2	-121.0%
Interest Cost as Percent of Payroll	-6.8%	1.4%	8.2%

The Actuarial Liability increased by approximately $1.69 billion, including $0.05 billion due to Proposition A. The Actuarial Value of Assets, which is used as the basis to set contribution rates, increased by approximately $2.2 billion reflecting smoothed investment returns and contributions offset by benefits and expenses paid during the year. The Unfunded Actuarial Liability decreased by approximately $0.5 billion based on the Actuarial Value of Assets.

The Market Value of Assets decreased approximately $2.9 billion, and the UAL based on the Market Value of Assets increased approximately $4.6 billion.

The interest cost on the UAL – based on the Market Value of Assets – increased by $317 million. As a result, approximately 1.4% of payroll is necessary to pay the interest on the UAL, which is an increase of 8.2% of payroll compared to the credit of 6.8% received in the prior year.

Contributions

The City and County of San Francisco Employees' Retirement System (SFERS) funding policy sets employer contributions equal to the sum of:

- The employer normal cost under the Entry Age Normal Cost Method,
- The expected administrative expenses, and
- An amortization payment on the Unfunded Actuarial Liability.

The Charter requires employees to pay a portion of the employer contribution rate, depending on the 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 2023	FYE 2024	Change
Contribution Rates Before Adjustments			
Net Employer Contribution Rate	21.35%	18.24%	-3.11%
Est. Aggregate Employee Contribution Rate	7.62%	7.63%	0.01%
Total Contribution Rate	28.97%	25.87%	-3.10%
Estimated Payroll	$ 3,953.2	$ 4,113.6	$ 160.4
Estimated Net Employer Contributions	843.9	750.1	(93.8)
Contribution Rates After Adjustments			
Net Employer Contribution Rate	18.76%	16.12%	-2.64%
Est. Aggregate Employee Contribution Rate	10.21%	9.75%	-0.46%
Total Contribution Rate	28.97%	25.87%	-3.10%
Estimated Payroll	$ 3,953.2	$ 4,113.6	$ 160.4
Estimated Net Employer Contributions	741.6	663.1	(78.5)
Total Contribution Rate			
Normal Cost Rate	18.31%	18.33%	0.02%
Administrative Expense Rate	0.60%	0.60%	0.00%
UAL Rate			
Interest on Market Value UAL	-6.84%	1.38%	8.22%
Principal on UAL	16.90%	5.56%	-11.34%
Total UAL Rate	10.06%	6.94%	-3.12%
Total Contribution Rate	28.97%	25.87%	-3.10%

SECTION I – BOARD SUMMARY

The net employer contribution rate before applying the cost-sharing adjustments decreased 3.11% of payroll from 21.35% to 18.24% for the fiscal year ending June 30, 2024. The cost-sharing adjustment is estimated to decrease the employer contribution and increase the aggregate employee contributions by about 2.09% of payroll. Thus, the estimated employer contribution rate after cost sharing is 16.15% for FYE 2024. The cost-sharing adjustments will remain at this level as long as the employer contribution rate before adjustment is between 17.51% and 20.00%.

SFERS Membership

As shown in Table I-3 below, membership in SFERS increased in total by 1.8%. Active membership decreased 1.3%, terminated vested membership increased 8.6%, and members receiving benefits increased by 2.8%. Total payroll increased by 4.1%. The average pay per active member increased 5.4%.

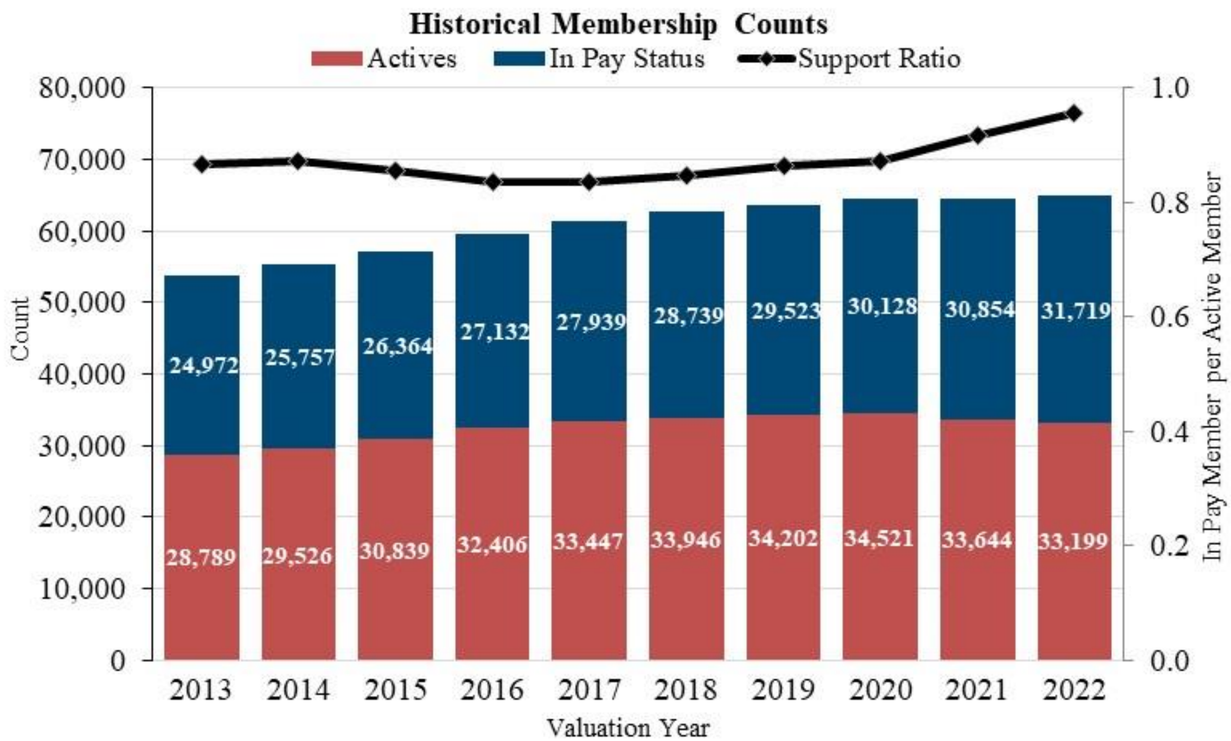
Table I-3
Membership Total

	July 1, 2021	July 1, 2022	% Change
Actives	33,644	33,199	-1.3%
Terminated Vested	11,126	12,085	8.6%
Members Receiving Benefits	30,854	31,719	2.8%
Total SFERS Members	75,624	77,003	1.8%
Active Member Payroll (thousands)[1]	$ 3,828,800	$ 3,984,150	4.1%
Average Pay per Active	$ 113,800	$ 120,000	5.4%

[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 retirees to active members grows, it indicates that any losses on retiree liabilities or assets are likely to place a relatively greater burden on employers and active members. For SFERS, the ratio had remained relatively stable over the last decade until it began to increase in 2021 due to the first decline in active membership since 2011, which has continued into 2022. Over the last decade, growth in the number of retirees has outpaced the growth in active membership and as a result the support ratio has increased from 0.87 to 0.96 over this period indicating a gradually maturing population of members.



Contribution Reconciliation

The SFERS contribution rate for FYE 2024 before cost-sharing adjustments decreased from 21.35% to 18.24% of payroll. Table I-4 shows sources for the change in the net employer contribution rate. The amortization payments for two 2002 Charter Amendments and the 2017 Supplemental COLA were completed resulting in a 2.57% decrease in the employer contribution rate. Investment gains on the smoothed Actuarial Value of Assets further reduced the contribution rate by 1.18%. Other plan experience (primarily salary increases and basic COLAs for Old Safety members increased the contribution rate by 0.72%, and Proposition A increased the contribution rate by 0.15% of payroll.

Table I-4
Net Employer Contribution Rate Reconciliation
(Before Cost-Sharing Adjustment)

	Normal Cost[1]	UAL Payment	Total
FYE 2023 Net Employer Contribution Rate	11.29%	10.06%	21.35%
Investment gain on actuarial value of assets	0.00%	-1.18%	-1.18%
Fully paid two Charter Amendments	0.00%	-1.18%	-1.18%
Fully paid 2017 Supplemental COLA	0.00%	-1.39%	-1.39%
Salary increases and Old Safety Basic COLAs	0.11%	0.61%	0.72%
Other liability experience	-0.10%	-0.07%	-0.17%
Payroll increase more than assumed	0.00%	-0.06%	-0.06%
Total Change Prior to Prop A	0.01%	-3.27%	-3.26%
Prop A - Pre96 Retiree Supplemental COLAs	0.00%	0.15%	0.15%
FYE 2024 Net Employer Contribution Rate	11.30%	6.94%	18.24%

[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 in the context of historical and projected future trends. **The baseline projections on the next page include the cost and liability for assumed future Supplemental COLAs.**

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 were hired after Proposition C (Prop C) passed in 2012, the Supplemental COLA is only payable if the System was 100% funded based on the Market Value of Assets. For non-Prop C Retirees, the projections assume 50% of a full Supplemental COLA each year (0.75% for most members). For the Prop C Retirees, the probability is slightly lower than 50% in the short term since the System is only 98% funded based on the Market Value of Assets.

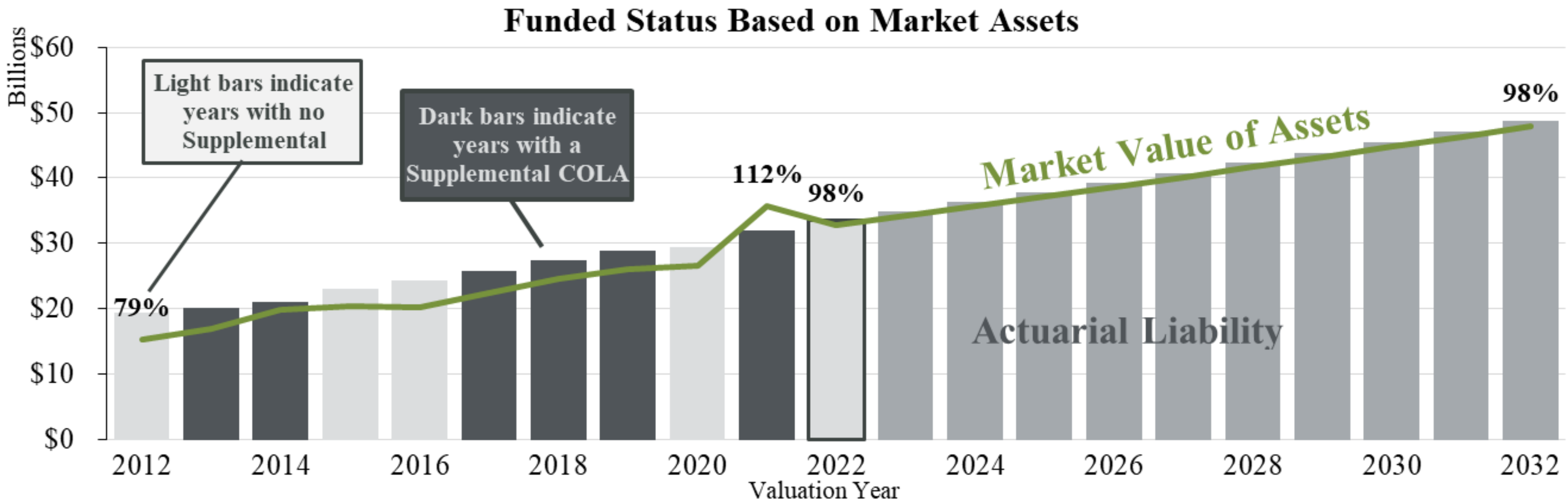
The top chart on page 9 compares the Market Value of Assets to the Actuarial Liability for the historical period from 2012 to 2022 and the projected period from 2023 to 2032 assuming all assumptions are met. The light gray bars represent the historical Actuarial Liability in years when no Supplemental COLA was paid, while the black bars represent the historical Actuarial Liability in years when a Supplemental COLA was paid. The medium gray bars represent the projected Actuarial Liability. The black bar with a light gray outline is the current valuation year.

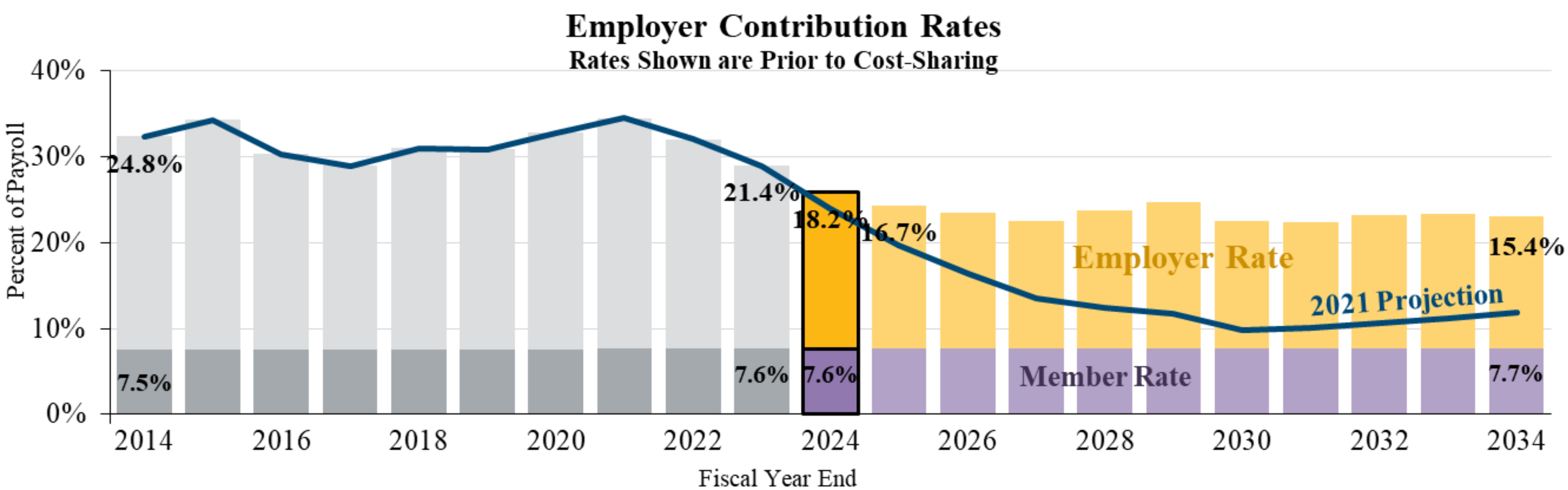
At the top of the bars, the funding ratios based on the Market Value of Assets are shown. The System was 79% funded as of July 1, 2012. Since then, investment returns and contribution increases offset by some assumption changes and the impact of actual Supplemental COLAs have increased funding ratios, jumping to 112% as of July 1, 2021, and dropping back to 98% as of July 1, 2022.

The bottom chart on page 10 shows historical and projected contribution rates for the fiscal years ending 2014 through 2034. The dark and light gray bars represent historical member and employer contribution rates while the purple and gold bars represent member and employer contribution rates currently in effect and projected for the future. The rates determined by the current valuation are a darker shade. The blue line represents the baseline projection from the 2021 actuarial valuation.

The employer contribution rate increased significantly from fiscal year ending 2013 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 then increased again reaching a peak in 2021 at 26.9%. This increase has been driven primarily by Supplemental COLAs. Since 2021, the contribution rate has decreased primarily due to the completion of the amortization payments for certain charter amendments and investment returns on the actuarial value of assets. After FYE 2024, employer contributions are expected to decline gradually over the next three years as the deferred asset gains from FYE 2021 are recognized and then increase as the deferred asset loss from FYE 2022 is recognized and some amortization credits are fully recognized. After FYE 2030, employer contributions are expected to remain relatively level.

SECTION I – BOARD SUMMARY





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 several 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 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, explained in more detail below). The net UAL change is shown by the dark blue line.

SFERS Historical Changes in UAL 2013-2022

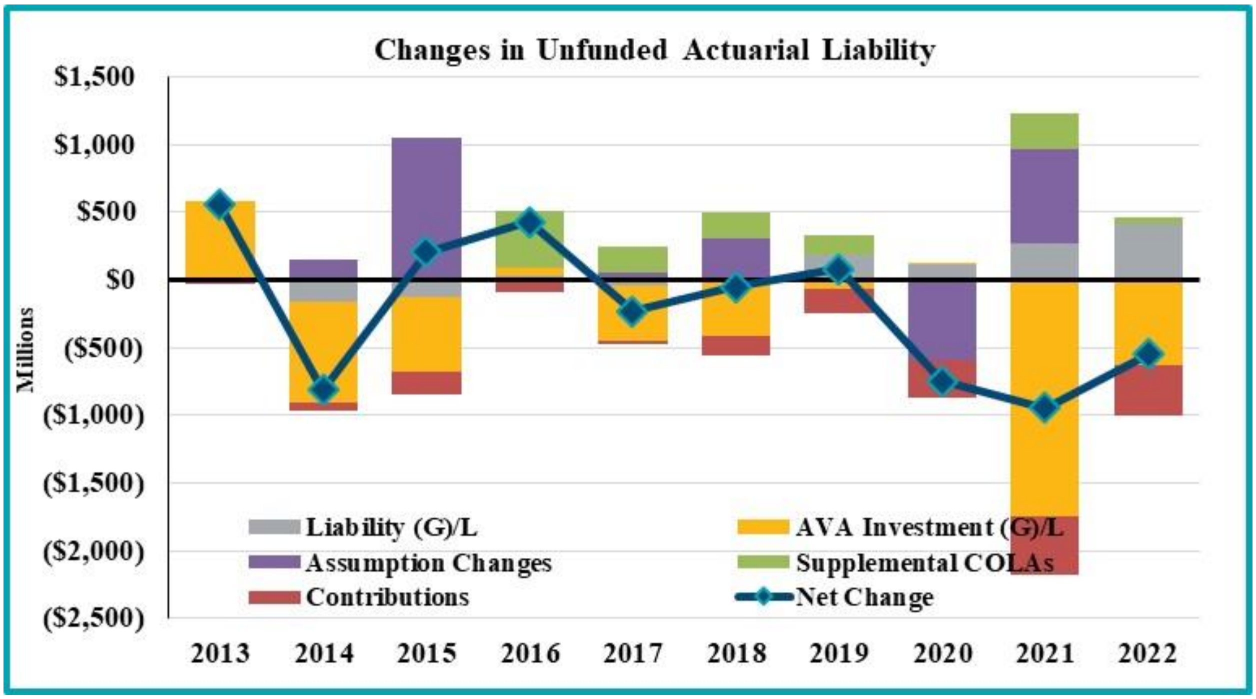


Table II-1
Changes in Unfunded Actuarial Liability
(Amounts in millions)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
Discount Rate	**7.58%**	**7.50%**	**7.50%**	**7.50%**	**7.50%**	**7.40%**	**7.40%**	**7.40%**	**7.20%**	**7.20%**	
Source											
AVA (G)/L	$ 579.6	$ (749.2)	$ (545.5)	$ 51.5	$ (405.7)	$ (408.9)	$ (58.6)	$ 6.4	$ (1,750.1)	$ (628.0)	**$ (3,908.5)**
Liability (G)/L	(9.9)	(157.9)	(127.6)	34.5	(45.5)	6.5	185.4	112.3	270.0	412.9	**680.7**
Assumptions/Methods	0.0	153.1	1,048.4	0.0	50.2	297.7	0.0	(591.4)	701.6	0.0	**1,659.6**
Supplemental COLAs	0.0	0.0	0.0	429.3	200.1	200.8	141.0	0.0	264.1	48.0	**1,283.3**
Contributions [1]	(14.5)	(56.9)	(168.2)	(83.7)	(27.4)	(147.5)	(186.2)	(274.2)	(427.6)	(378.9)	**(1,765.1)**
Total UAL Change	**$ 555.2**	**$ (810.9)**	**$ 207.1**	**$ 431.6**	**$ (228.3)**	**$ (51.4)**	**$ 81.6**	**$ (746.9)**	**$ (942.0)**	**$ (546.0)**	**$ (2,050.0)**

[1] Actual contributions (greater)/less than normal cost, administrative expenses and interest on the UAL; also includes rate implementation delay, payroll growth not as anticipated.

The totals above support the 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

On a smoothed asset basis, the investment loss (gold bar) from 2013 reflects the recognition of the last portion of the material investment loss in FYE 2009, which was spread over the five successive years. Recent market experience has primarily produced gains with $1.75 billion and $0.628 billion gains in 2021 and 2022, respectively. Over the 10-year period, investment gains reduced the UAL by approximately $3.9 billion.

On the liability side (gray bars), gains early in the period have been offset by more recent losses with a net experience loss increasing the UAL by approximately $681 million over the 10-year period.

Assumption and method changes (purple bars) over the last 10 years have increased the UAL by about $1.7 billion. The significant changes increasing the UAL have included reductions in the discount rate as interest rates have declined, decreases in mortality rates, and increases in retirement rates. The assumption changes lowering the UAL in 2020 were primarily due to reductions in wage inflation and assumed Old Safety COLAs. In 2021, the discount rate was reduced from 7.4% to 7.2% which increased the UAL by $702 million.

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. The 2022 increase is due to Proposition A that increased pre-96 retiree benefits for prior Supplemental COLAs that were not granted due to SFERS not being 100% funded. Over the 10-year period, Supplemental COLAs increased the UAL by about $1.3 billion.

Each year, absent any contributions, 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 $1.8 billion, and during 2022, contributions decreased the UAL by about $379 million.

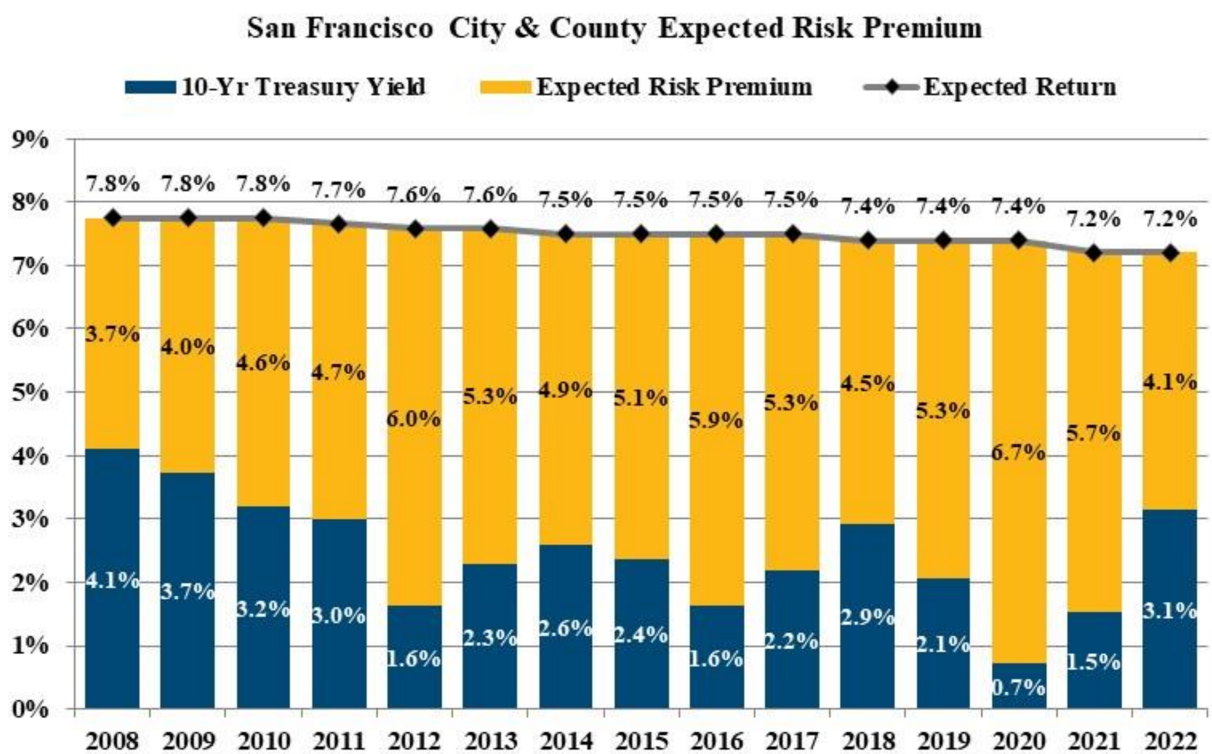
In general, the amortization methods used to determine contributions to the System are designed to collect more than the tread water level. However, the System may temporarily pay less than this threshold due to asset smoothing, the one-year delay between the valuation date and when contribution rates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

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 2008 to 2020, the yield on the 10-year Treasury declined from about 4.1% to 0.7%. In the last two years, the yield on the 10-year Treasury has rebounded to 3.1%. 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 7.8% to 7.2%. Meanwhile, its expected risk premium grew 300 basis points from 3.7% to 6.7% before contracting 160 basis points over the last two years to 4.1%. If interest rates remain at the current level, there will be less pressure to reduce the discount rate further.



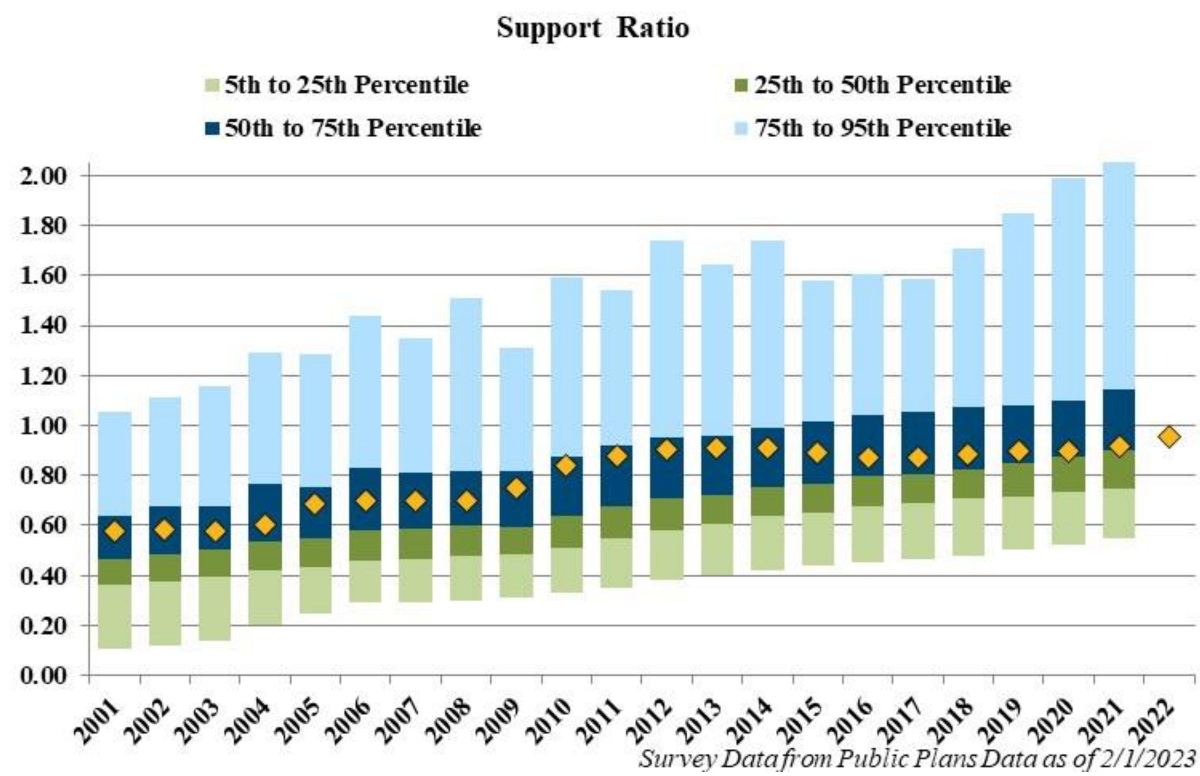
Plan Maturity Measures

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 members receiving benefits 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.

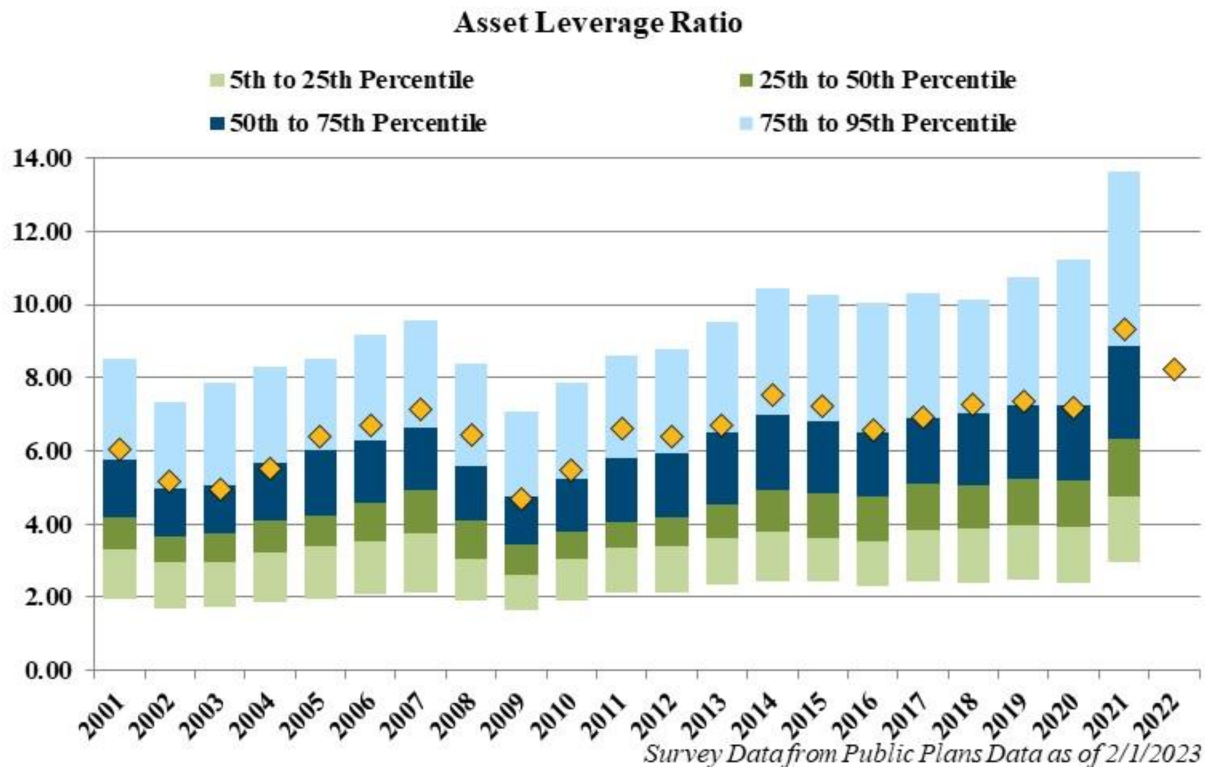


The chart above compares the distribution from the 5th to 95th percentile of support ratios for the plans in Public Plans Data to SFERS (yellow diamonds). Like many other plans, SFERS support ratio increased during the Great Recession, but SFERS has stabilized in recent years while other plans have continued to increase. The support ratio for SFERS increased slightly in 2022 due to a decline in the active membership.

SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

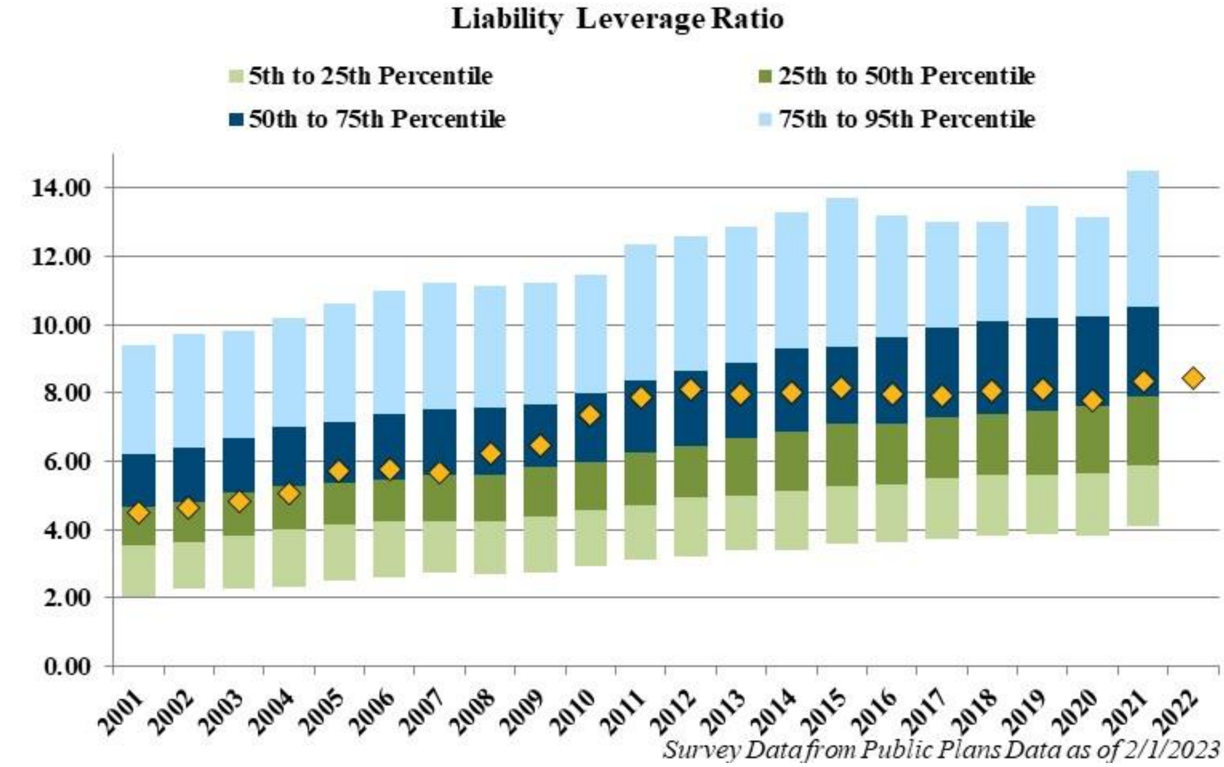
Leverage Ratios

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. Plans with higher asset leverage ratios are more sensitive to variations in investment returns.



The chart above compares the distribution from the 5th to 95th percentile of asset leverage ratios for the plans in the Public Plans Database to SFERS (yellow diamonds).

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 9.3 in 2021. SFERS' asset leverage ratio decreased in 2022 primarily due to investment losses on the Market Value of Assets. This level indicates that SFERS is more sensitive to investment returns than 75% of public plans. For example, an investment loss of 10% (compared to the assumed return) would increase SFERS UAL by about 82% of payroll compared to only 63% of payroll for the median plan in 2021.



The chart above compares the distribution from the 5th to 95th percentile of liability leverage ratios for the plans in the Public Plans Database to SFERS (yellow diamonds).

SFERS' Actuarial Liability leverage ratio has consistently been between the 50th-75th percentiles since 2001 and has recently been holding relatively constant around 8.0 while other plans have been increasing. SFERS remains in the 50th to 75th percentile which means that it is slightly more sensitive to the impact of assumption changes than most public plans. For example, an assumption change that increases the Actuarial Liability by 5% would add a liability equivalent to about 42% of payroll for SFERS compared to just under 40% of payroll for the median plan in 2021.

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.

SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

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 lognormal distribution of one and five year expected returns as shown in the table below using the 10-year capital market assumptions from SFERS' investment consultant NEPC (Geometric return = 6.6%, unsmoothed standard deviation = 15.7%).[2]

Distribution of Expected Average Annual Returns		
Percentile	1 Year	5 Year
5%	-16.0%	-4.2%
25%	-3.4%	2.0%
50%	6.6%	6.6%
75%	17.4%	11.3%
95%	35.1%	18.5%

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
2023	-16.0%	35.1%	2.0%	11.3%	-4.2%	18.5%
2024	7.2%	7.2%	2.0%	11.3%	-4.2%	18.5%
2025	7.2%	7.2%	2.0%	11.3%	-4.2%	18.5%
2026	7.2%	7.2%	2.0%	11.3%	-4.2%	18.5%
2027	7.2%	7.2%	2.0%	11.3%	-4.2%	18.5%
2028+	7.2%	7.2%	7.2%	7.2%	7.2%	7.2%

The charts on pages 19-24 show the projections under each of these theoretical scenarios. The contribution charts include a blue line representing the 2021 baseline projections shown in the Board Summary (on page 9) to facilitate the comparison between the scenario and the projections assuming all assumptions are met. Supplemental COLAs for future years where the return differs from the assumption are calculated based on actual returns in excess of the

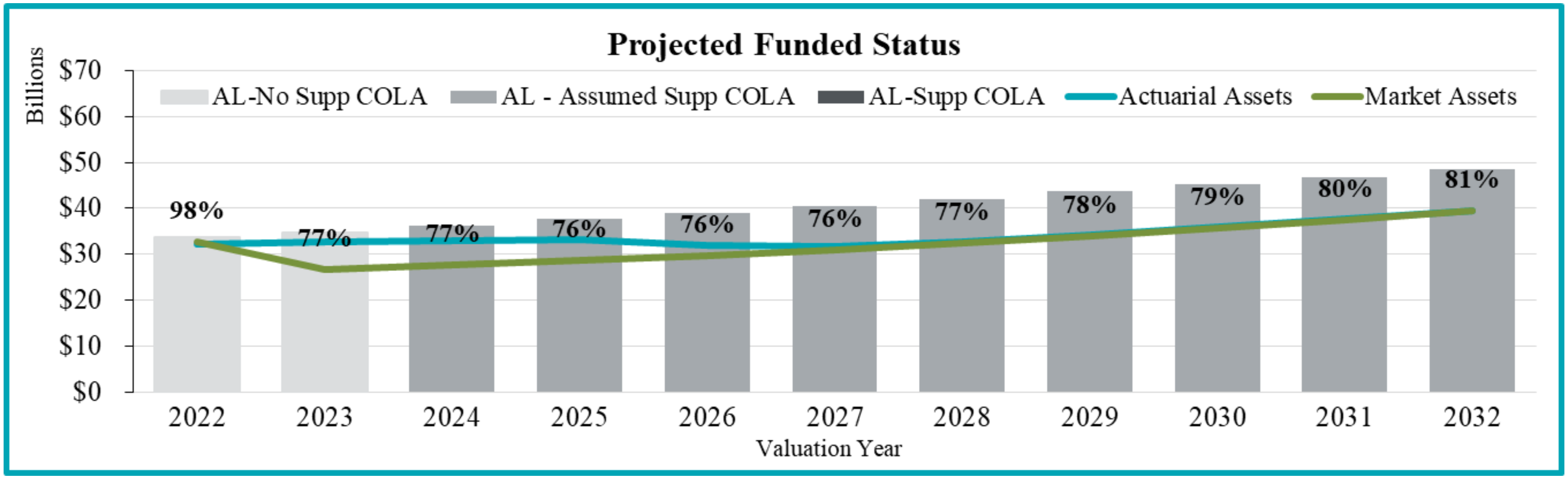
[2] NEPC's smoothed standard deviation is 11.9%.

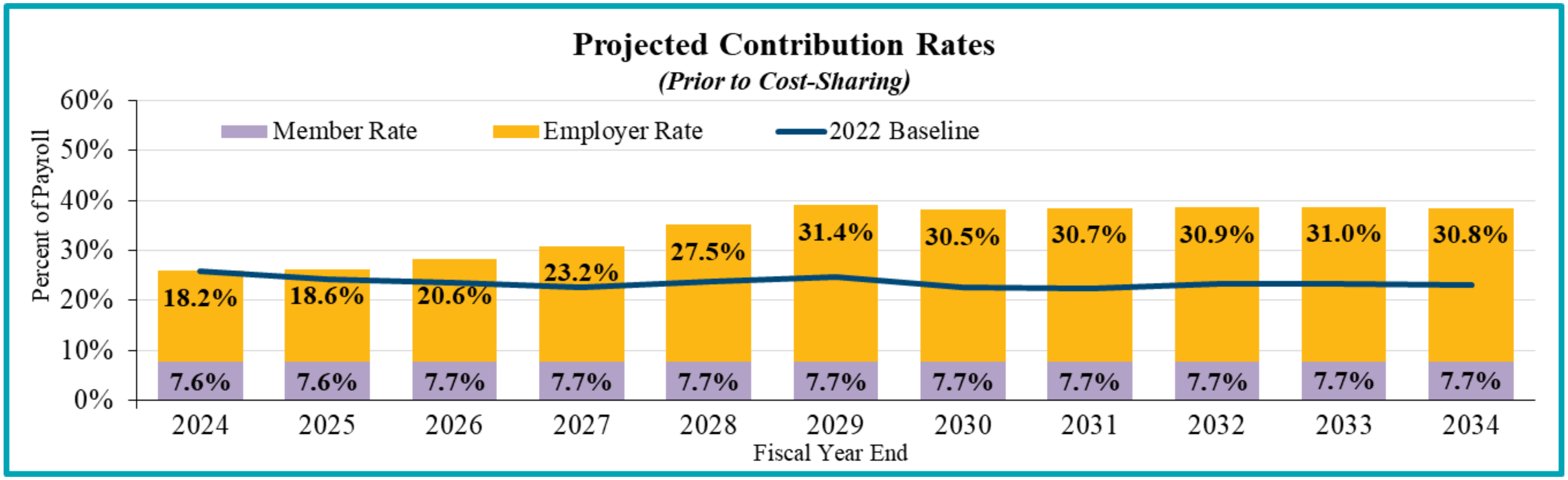
SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

expected return on the Actuarial Value of Assets. In years, where the return equals the assumed return, a partial Supplemental COLA is assumed based on the probability of the return exceeding the amount necessary to generate a Supplemental COLA. The liability projections are shown as black bars in years a Supplemental COLA is payable, medium gray bars in years when a Supplemental COLA is assumed to be payable, and light 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

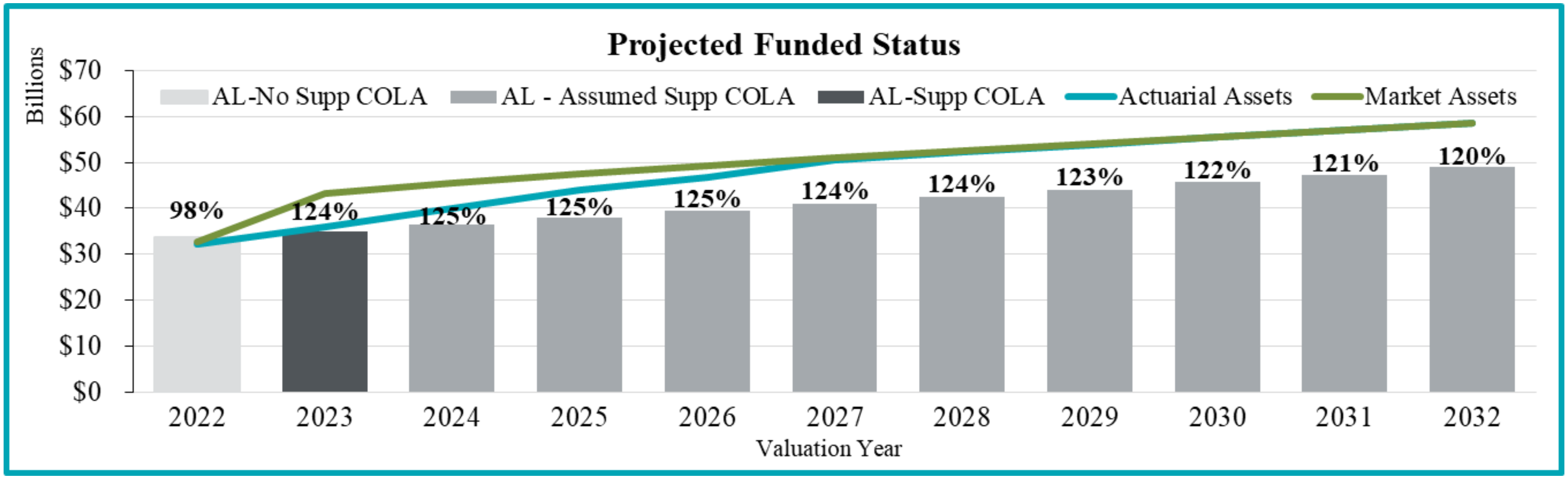
One-Year Negative Shock Scenario: -16.0% return FYE 2023, 7.2% thereafter

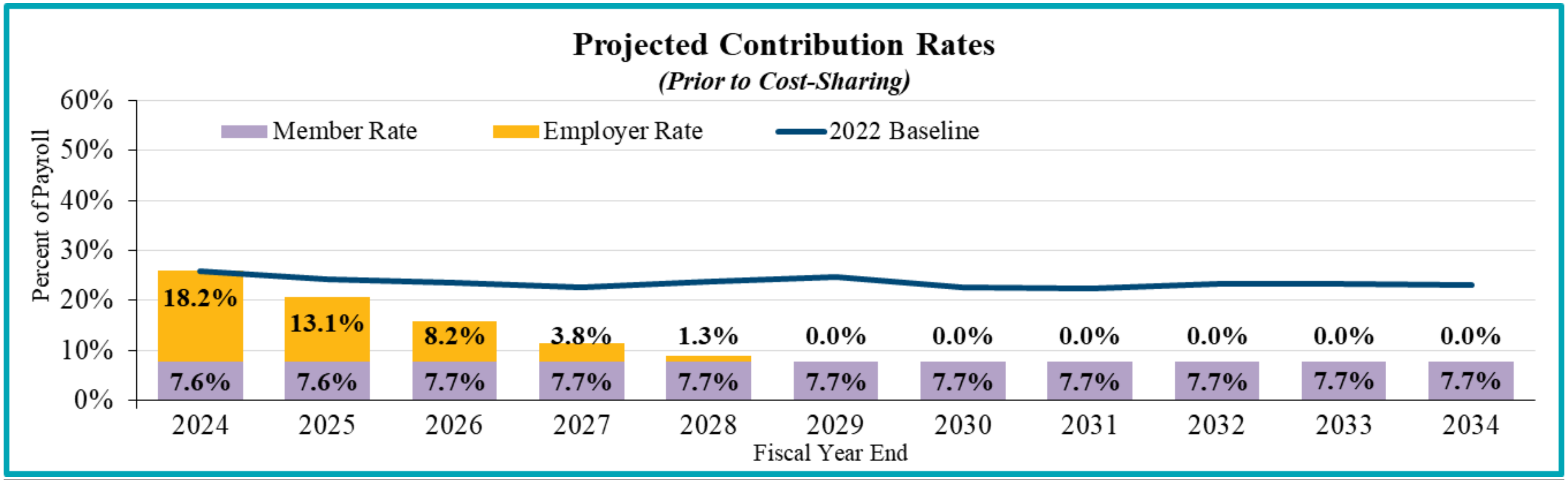




SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

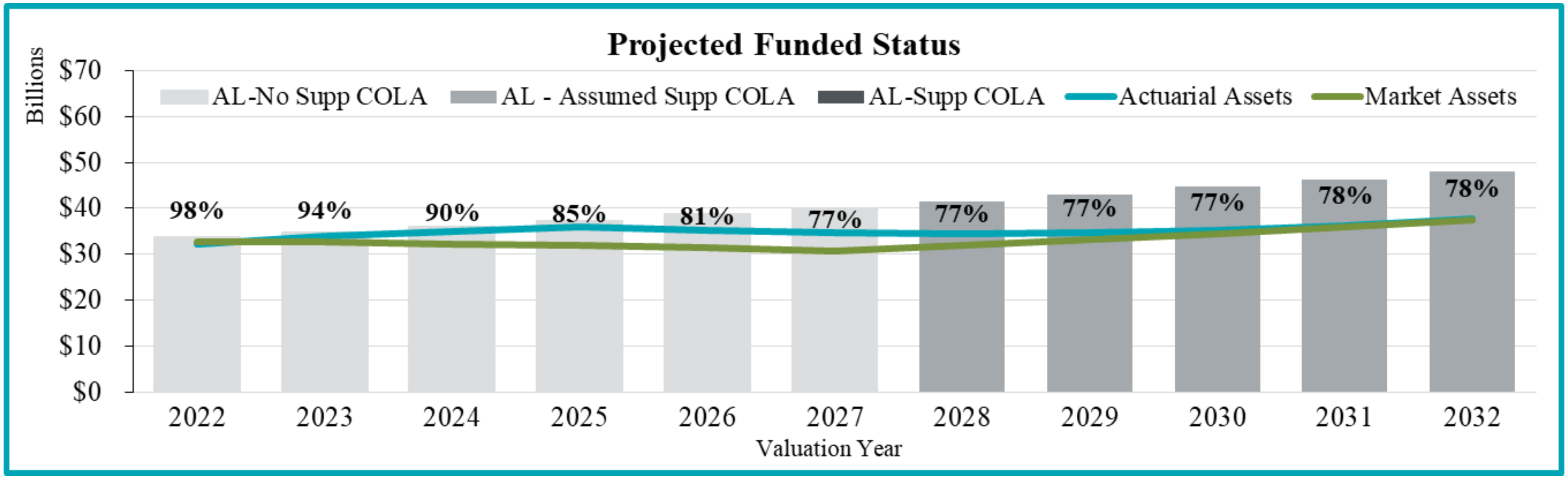
One-Year Positive Shock Scenario: 35.1% return FYE 2023, 7.2% thereafter

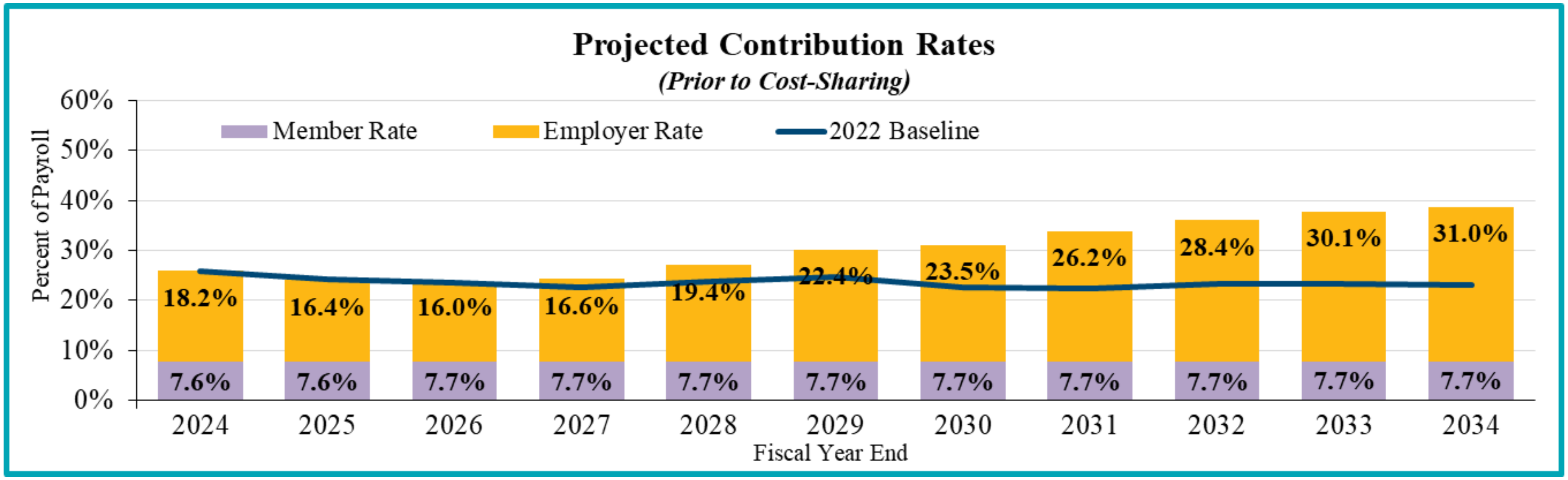




SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

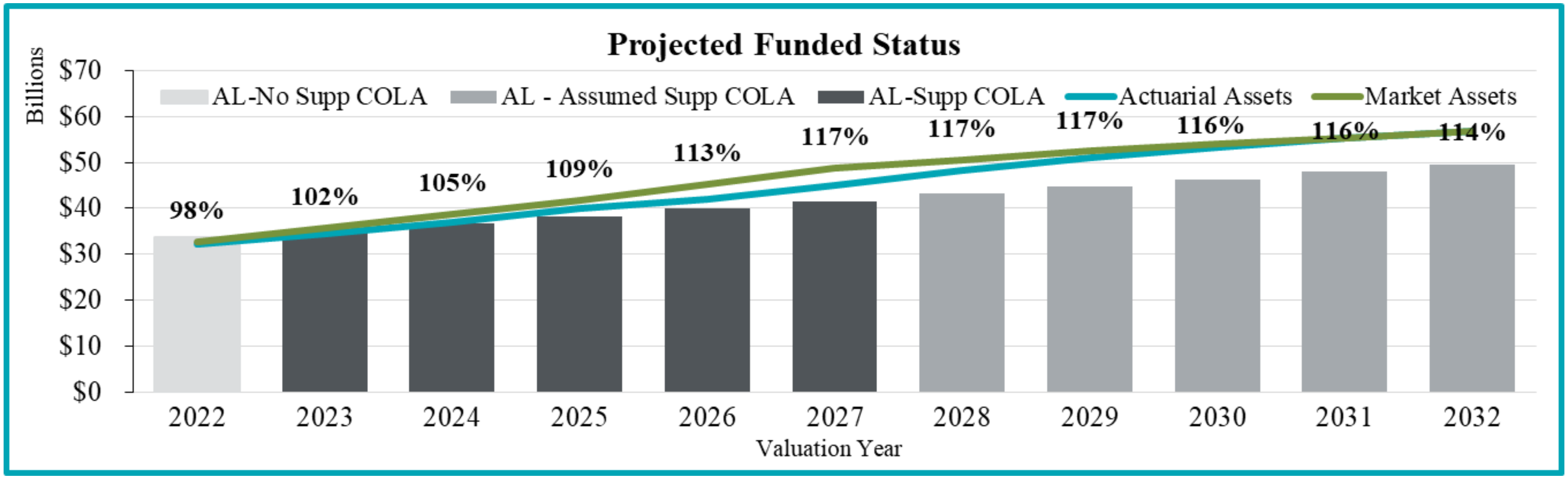
Five-Year Moderate Negative Scenario: 2.0% return FYE 2023-2027, 7.2% thereafter

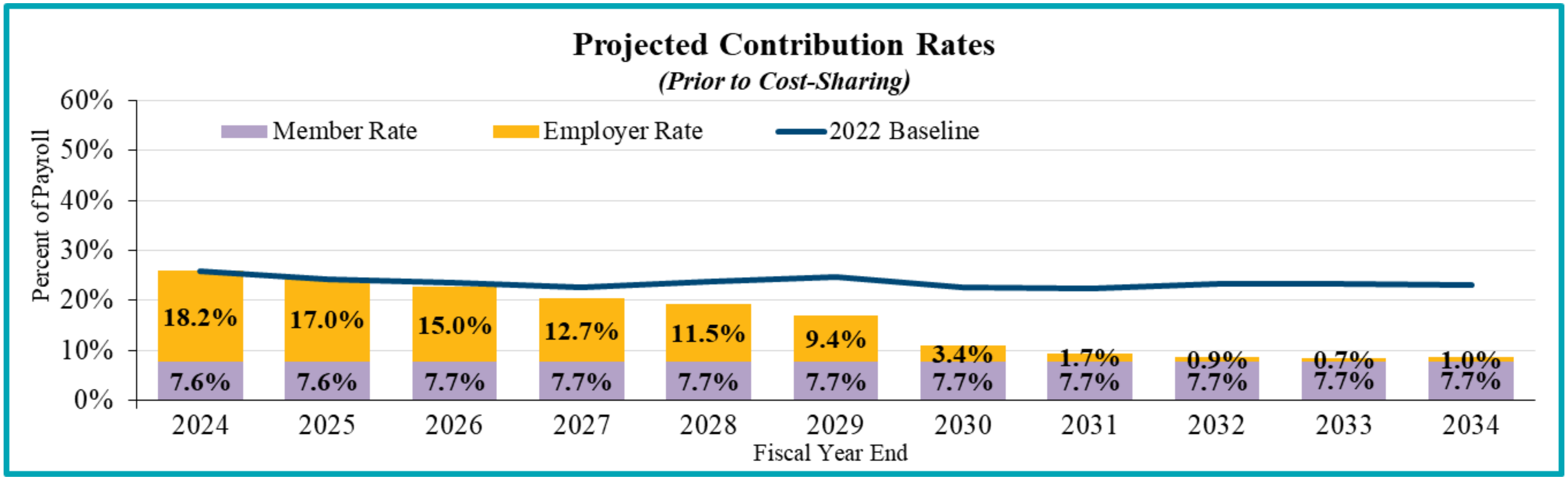




SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

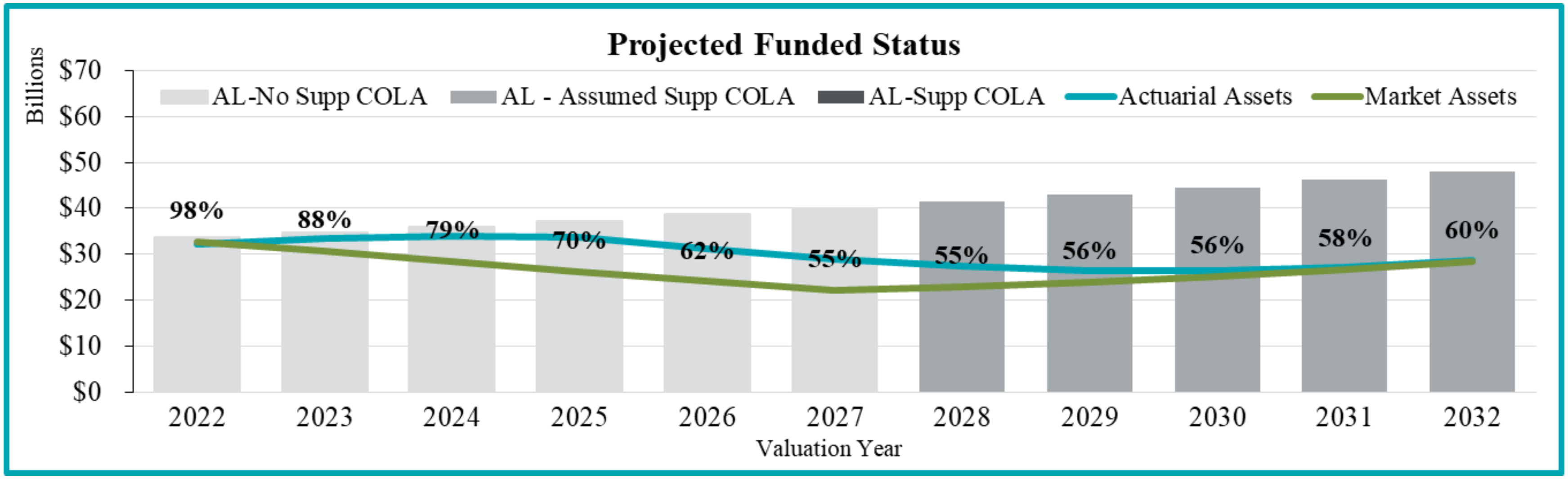
Five-Year Moderate Positive Scenario: 11.3% return FYE 2023-2027, 7.2% thereafter

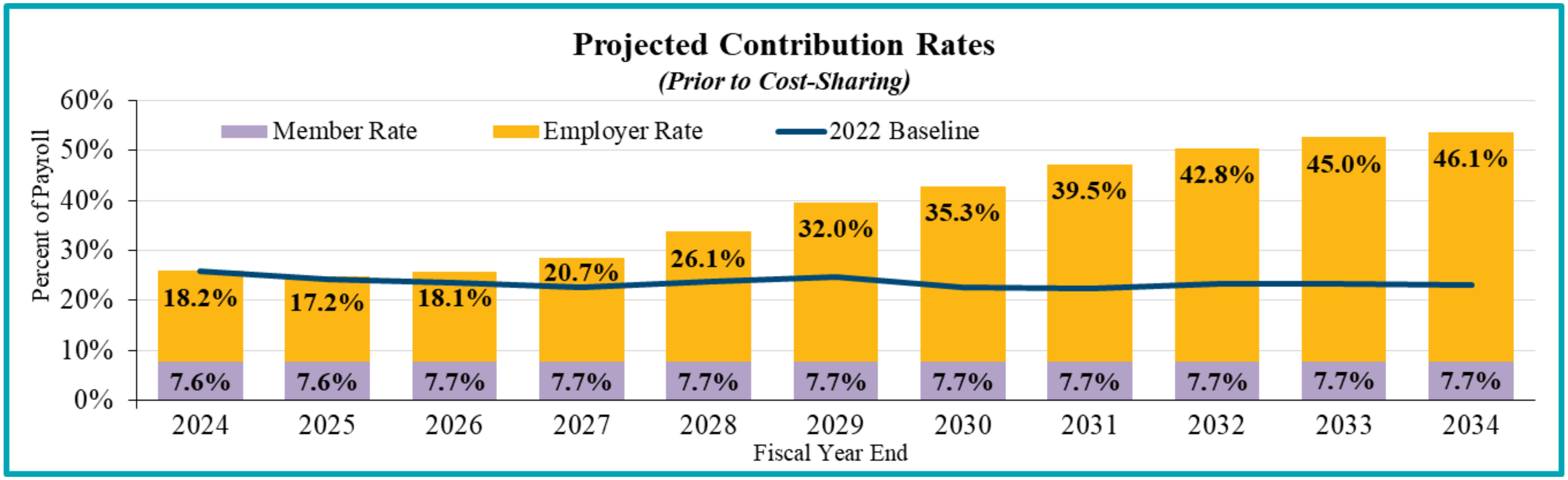




SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

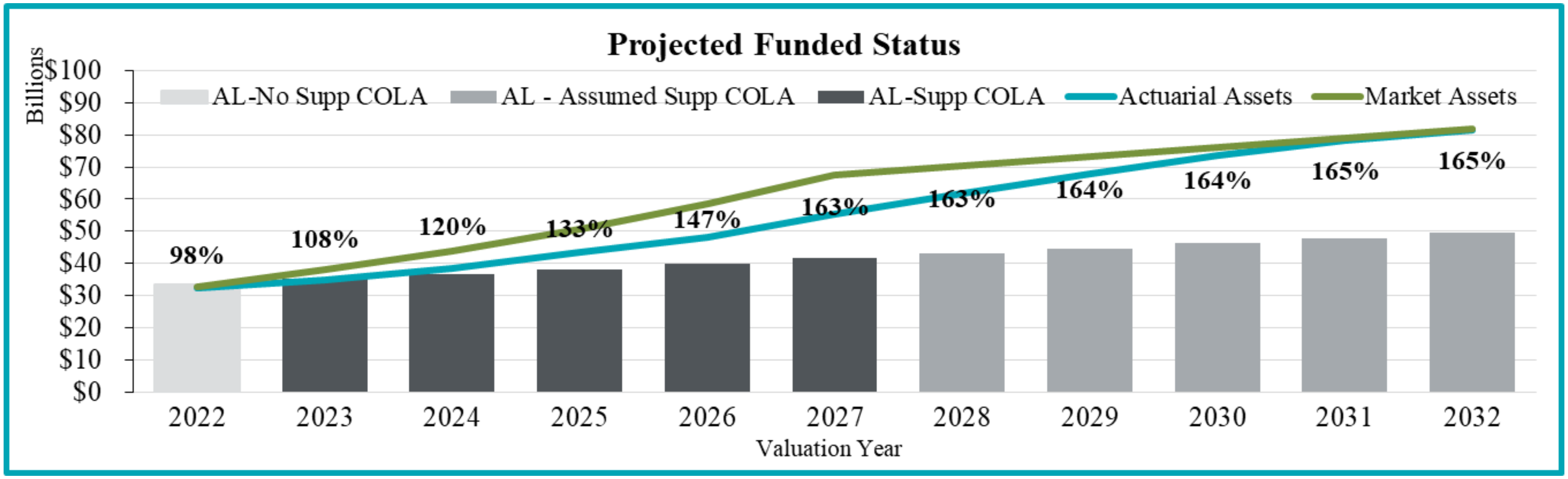
Five-Year Significant Negative Scenario: -4.2% return FYE 2023–2027, 7.2% thereafter

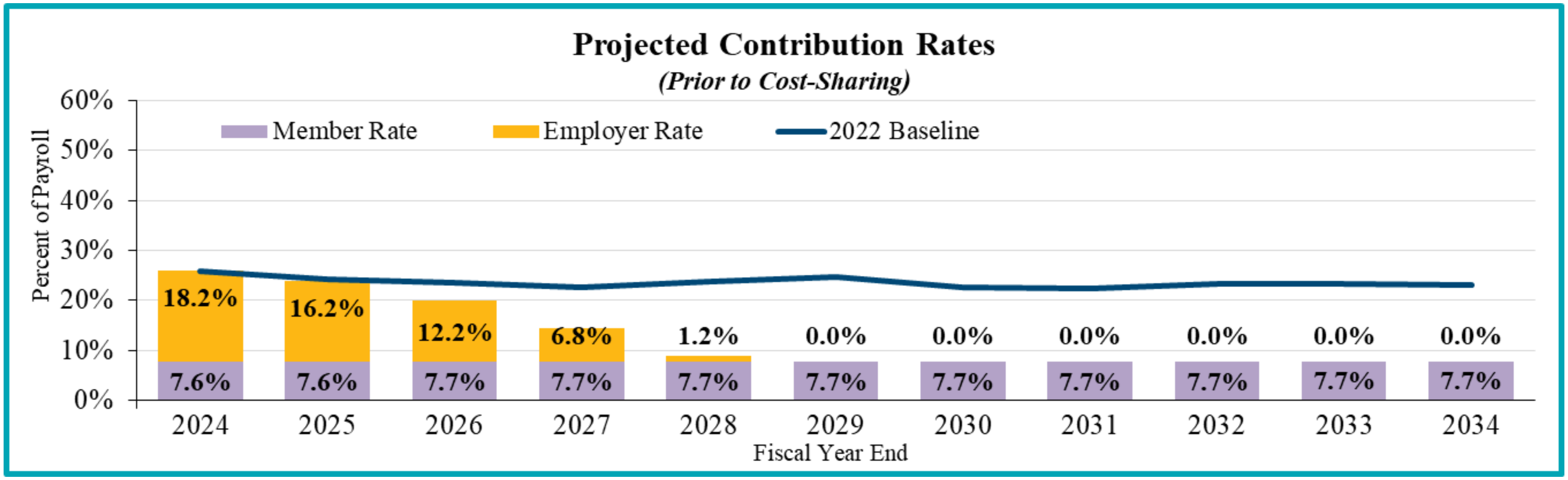




SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

Five-Year Significant Positive Scenario: 18.5% return FYE 2023-2027, 7.2% thereafter





The scenarios show that actual future investment returns have a significant impact on future contribution rates. The five-year positive economic scenarios both result in the payment of Supplemental COLAs to all retirees. The employer contribution rates decrease in FYE 2025 and continue to decline quickly and steadily reaching 0% and 1% in FYE 2029 and 2032, for the five-year significant and five-year moderate, respectively.

The five-year negative economic scenarios show decreases in the employer contribution rates next year before contributions rise again. The recognition of the deferred investment gains from FYE 2021 and the completion of payments on amortization layers creates some downward pressure on contribution rates.

- The one-year negative shock (-16.0%) shows employer rates increasing immediately reaching a peak in FYE 2029 of 31.4%. The funded status declines but stays at or above 76% throughout the 10-year period.

- The five-year moderate negative scenario (2.0%) produces rate decreases in each of the next two years before it increases to 31.0% in FYE 2034. The funded status remains at or above 77% throughout the 10-year period.

- The five-year significant negative scenario (-4.2%) produces a rate decrease for FYE 2025 before the employer rate escalates to 46.1% in FYE 2034. The funded status declines significantly each year, dropping to 55% funded in 2027.

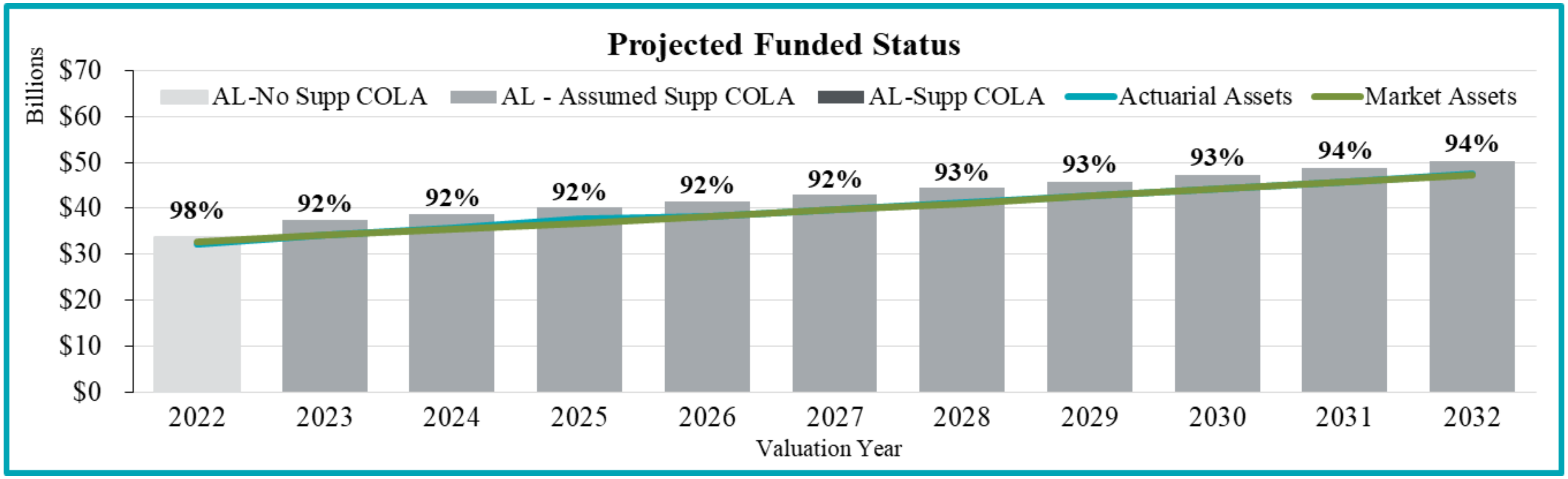
The investment returns used in the projections above were selected solely to illustrate the impact of investment volatility on the pattern of funded status and employer contribution rates. They are not intended to be predictive of actual future contribution rates or funded status or even to represent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

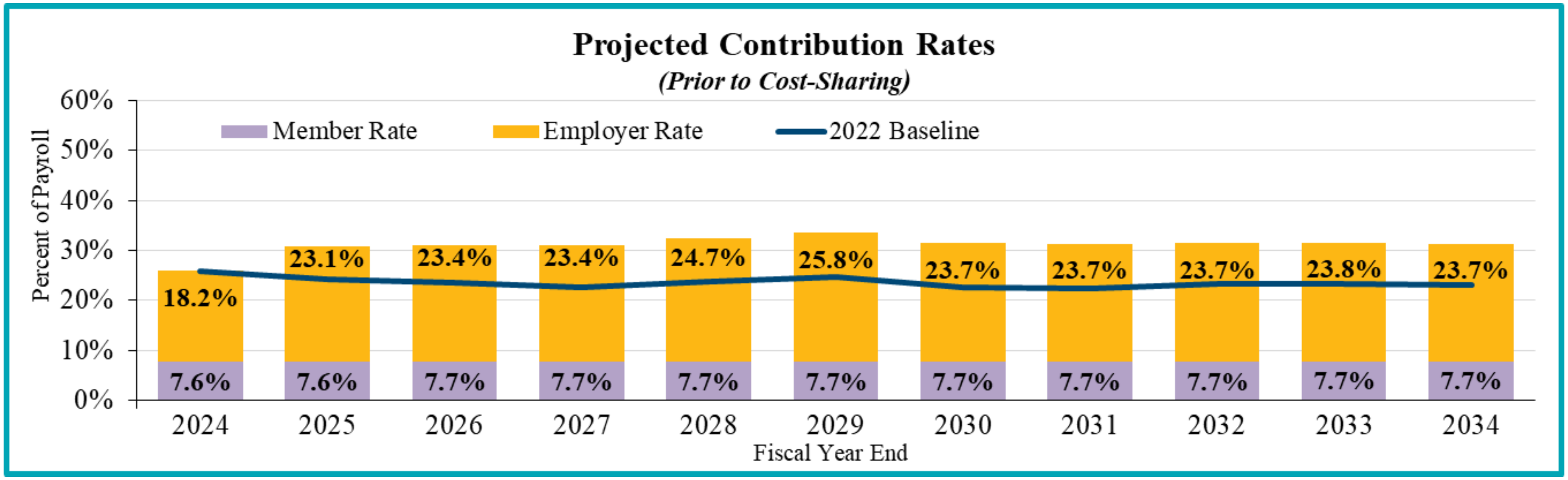
Interest Rate and Discount Rate Change Risk – Sensitivity Testing

As shown above, assumption changes over the last decade have increased the UAL by approximately $1.7 billion, with decreases in the discount rate from 7.66% to 7.20% accounting for approximately $1.3 billion 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 interest rates revert to the low levels reached during the pandemic 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 continue to rise, expectations of future investment returns would also increase and the discount rate could be increased or investment risk could be reduced without affecting the discount rate. The charts on pages 26-27 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

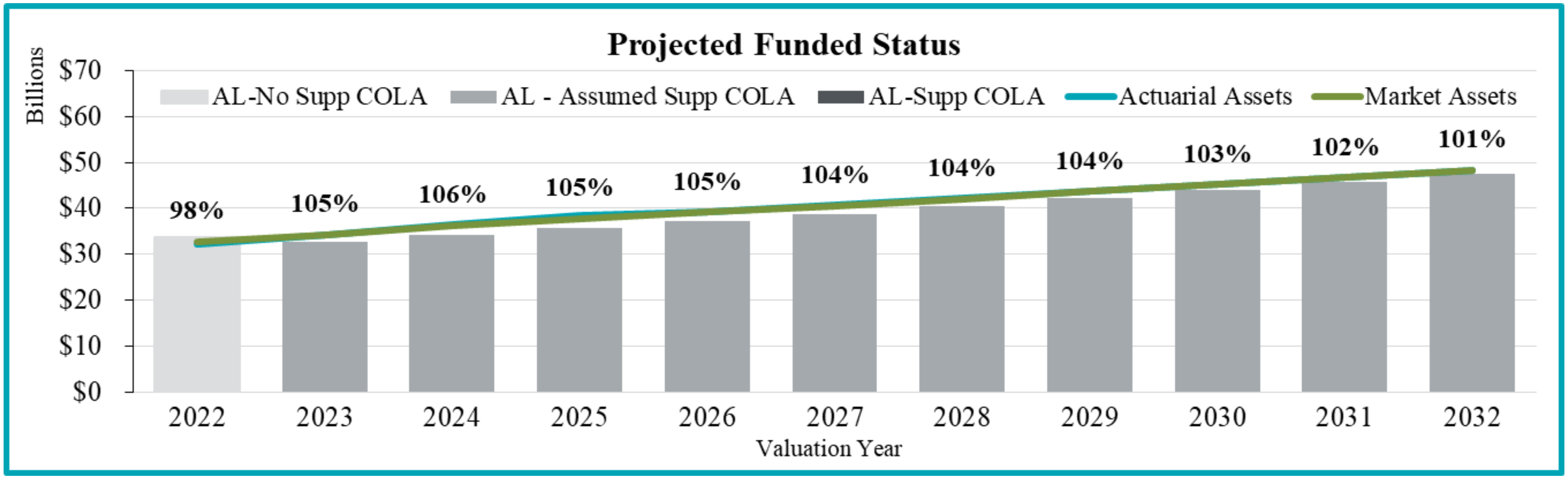
Discount Rate Sensitivity Testing – 100 Basis Point Reduction – 6.20%

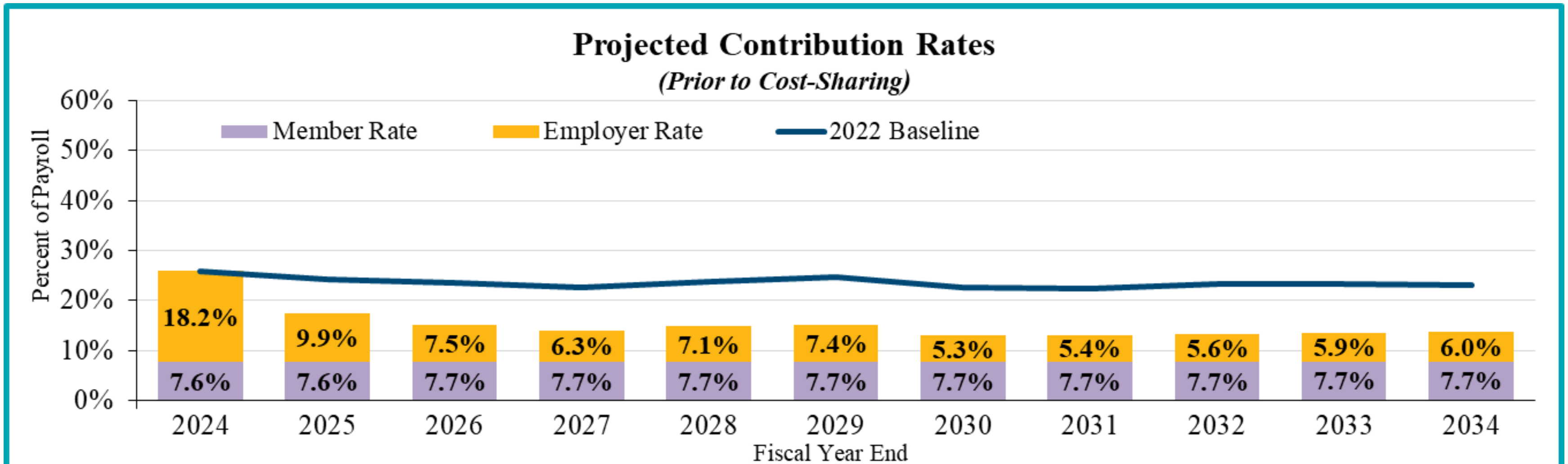




SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

Discount Rate Sensitivity Testing – 100 Basis Point Increase – 8.20%





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 were hired after Proposition C passed in 2012, the Supplemental COLA is only payable if the System is also 100% funded.

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	**Assumed**	**% Difference**
Actuarial Liability	$ 33,591.6	$ 35,958.1	7.0%
Actuarial Value of Assets	$ 32,275.5	$ 32,275.5	0.0%
Unfunded Actuarial Liability (actuarial value)	1,316.1	3,682.6	179.8%
Funding Ratio (actuarial value)	96.1%	89.8%	-6.3%
Market Value of Assets	$ 32,798.5	$ 32,798.5	0.0%
Unfunded Liability (market value)	793.1	3,159.6	298.4%
Funding Ratio (market value)	97.6%	91.2%	-6.4%

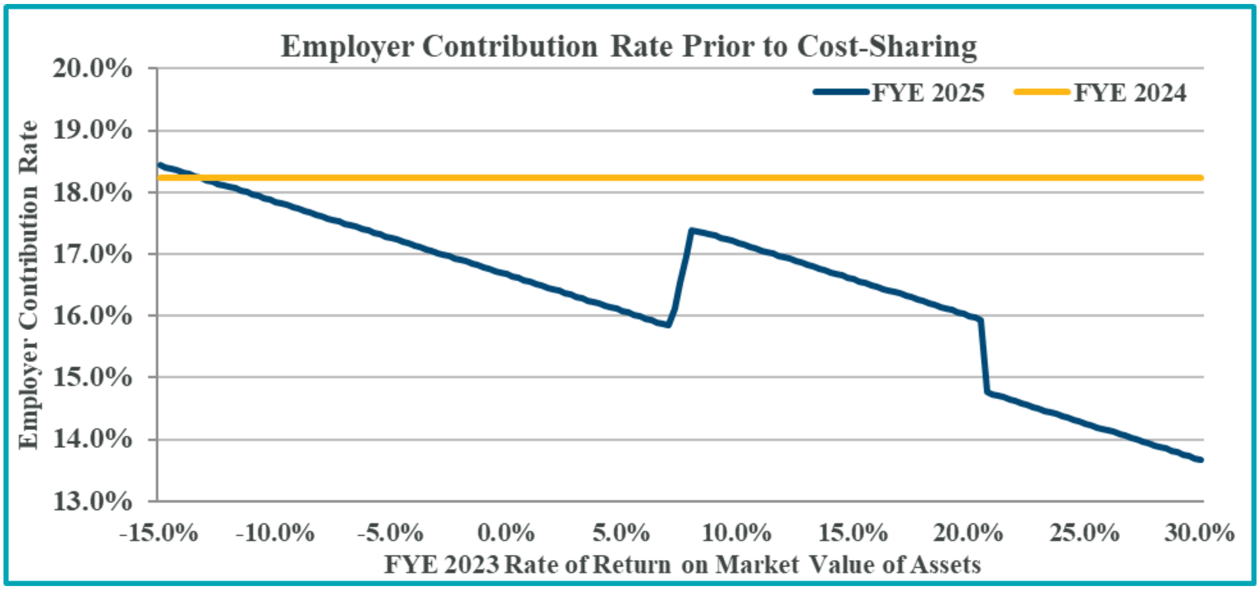
While current contributions rates do not anticipate any future Supplemental COLAs, when a Supplemental COLA is granted, the increase in Actuarial Liability is amortized over five years, increasing contribution rates. The higher-than-expected investment returns that generate a Supplemental COLA are smoothed 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 near-term 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 entirely 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 2025 contribution rate assuming actual rates of

SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

investment return vary from -15% to 30% with all other actuarial assumptions being met. The expected employer contribution rate for FYE 2025 ranges from 13.7% to 18.4%, a relatively narrow range compared to the extremely wide range of investment returns.

There is downward pressure on the FYE 2025 employer contribution rate due to the 20% recognition of the net FYE 2021 and 2022 investment gains. As shown in the chart, a return of approximately 7.0% starts to generate a Supplemental COLA, and a return of approximately 8.3% or greater generates a full Supplemental COLA. A return of 20.5% reaches 100% funding based on the Actuarial Value of Assets, which extends the amortization of the Supplemental COLA from 5 years to 20 years.

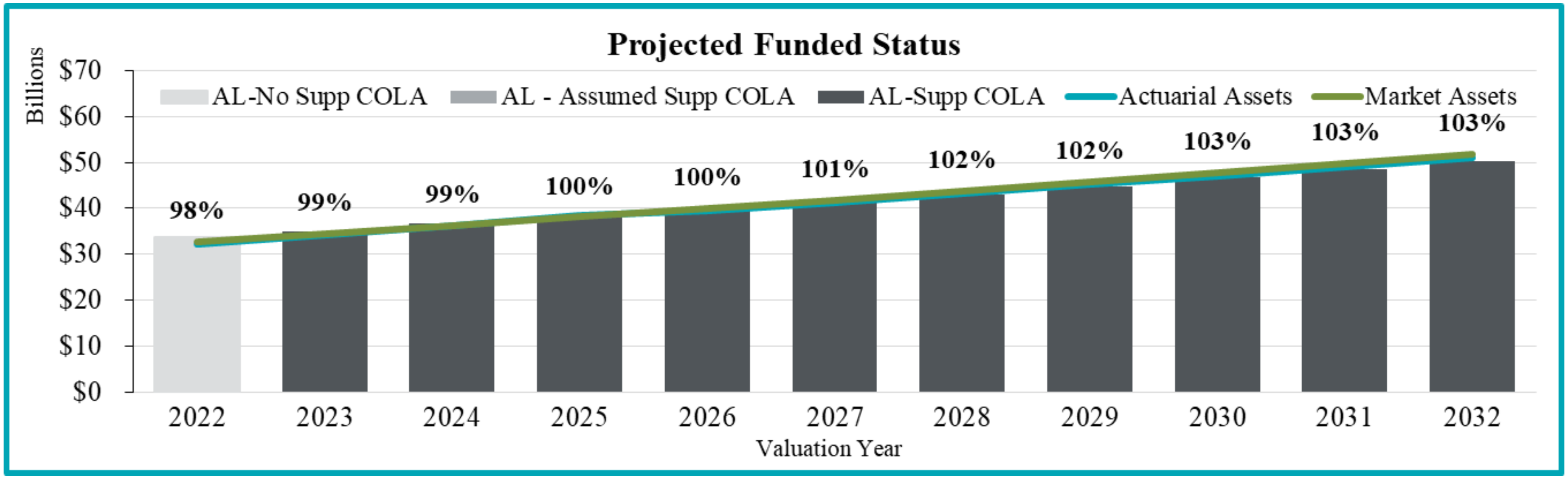


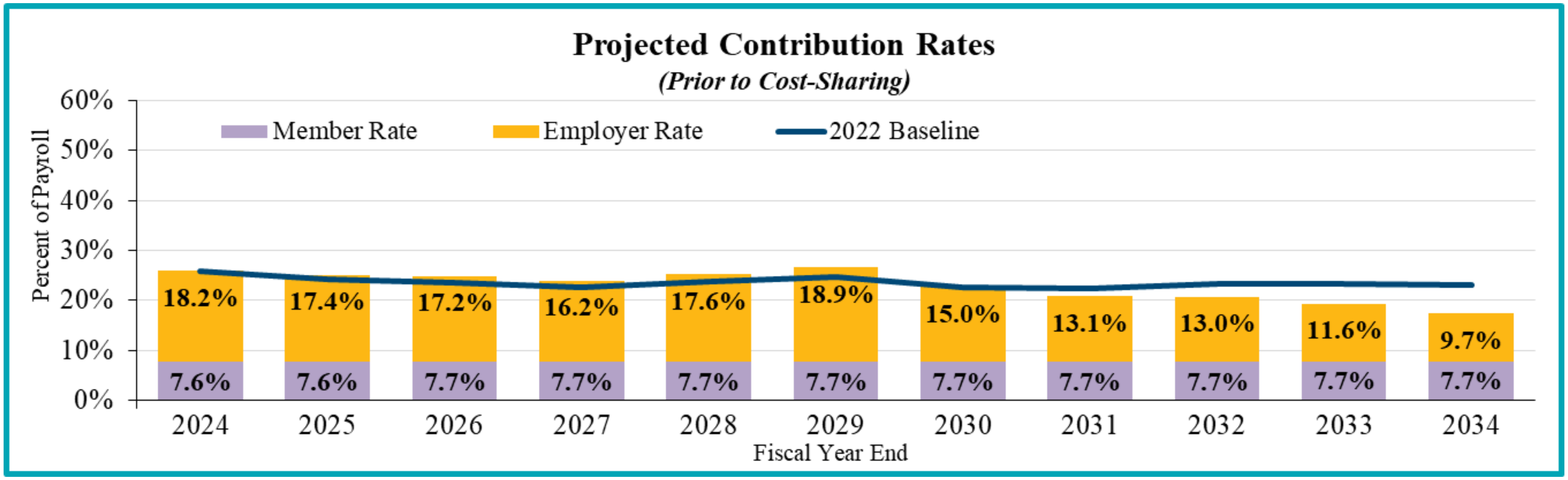
The impact of future Supplemental COLAs on contribution rates and funded status is the worst when the investment returns are just large enough to generate a Supplemental COLA. To illustrate this potential risk and how the amortization method manages it, the projections on the following page assume 8.00% returns each year, which produces a full Supplemental COLA in each year.

These projections illustrate that the 5-year amortization while less than 100% funded manages the risk of future Supplemental COLAs relatively well. The contributions remain very close to the baseline level, and the funded status also remains relatively stable.

SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

Supplemental COLA Risk Stress Test: 8.00% return FYE 2023-2032





SECTION III – CERTIFICATION

The purpose of this report is to present the July 1, 2022 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 setting contribution levels and 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 and the price and wage inflation assumptions were adopted at the December 9, 2020 Board meeting based on our recommendations. Please refer to the demographic experience study report dated August 2020 for the rationale for the demographic assumptions and the December 9, 2020 Board presentation for the rationale for the economic assumptions. The discount rate and amortization policy changes were adopted at the November 10, 2021 Board meeting. We believe all the assumptions are reasonable for the purposes of the measurement.

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.

Cheiron utilizes ProVal actuarial valuation software leased from Winklevoss Technologies (WinTech) to calculate liabilities and project benefit payments. We have relied on WinTech as the developer of ProVal. We have a basic understanding of ProVal and have used ProVal in accordance with its original intended purpose. We have not identified any material inconsistencies in assumptions or output of ProVal that would affect this valuation.

Deterministic projections in this report were developed using P-scan, a proprietary tool used to illustrate the impact of changes in assumptions, methods, plan provisions, or actual experience (particularly investment experience) on the future financial status of the System. P-scan uses standard roll-forward techniques that implicitly assume a stable active population. Assumed Supplemental COLAs are included in these projections.

Stochastic projections in this presentation were developed using R-scan, our proprietary tool for assessing the probability of different outcomes based on the range of potential investment returns. We relied on Cheiron colleagues for the development of the model. The stochastic projections of investment returns assume that each future year's investment return is independent from all other years and is identically distributed according to a lognormal distribution. The

SECTION III – CERTIFICATION

standard deviation used in the stochastic projection of investment returns was provided by the System's investment consultant.

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 2021	FYE 2022
1.	Market Value, Beginning of Year	$ 26,620,218	$ 35,673,834
2.	Additions		
	a. Employer Contributions	836,559	768,463
	b. Member Contributions	409,398	423,471
	c. Total Additions: (2a. + 2b.)	$ 1,245,957	$ 1,191,934
3.	Net Investment Income	9,447,669	(2,308,320)
4.	Benefits and Administrative Expenses	(1,640,010)	(1,758,924)
5.	Net Increase/(Decrease): (2c.+3.+4.)	$ 9,053,616	$ (2,875,310)
6.	**Market Value, End of Year**	**$ 35,673,834**	**$ 32,798,524**
7.	Estimated Rate of Return on Market Value	35.8%	-6.5%

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. See Appendix B for further explanation of the asset valuation method.

SECTION IV – ASSETS

Table IV-2
Development of Actuarial Value of Assets for 7/1/2022
(Amounts in thousands)

			Total
1.	Actuarial Value of Assets (AVA) as of 7/1/2021	$	30,043,222
2.	Non-Investment Cash Flow for FYE 2022		(566,990)
3.	Expected Return on AVA for FYE 2022		2,171,201
4.	Expected Actuarial Value as of 7/1/2022: (1+2+3)	$	31,647,433
5.	Actual Return on Market Value of Assets in FYE 2022		(2,308,320)
6.	Actual Return Above Expected in 2021-2022: (5 - 3)		(4,479,521)
7.	Recognition of Returns Above / (Below) Expected		
	a. 2021-2022 (20% of 6.)		(895,904)
	b. 2020-2021		1,491,276
	c. 2019-2020		(182,627)
	d. 2018-2019		39,545
	e. 2017-2018		175,751
	f. Total: (7a. + 7b. + 7c. + 7d. + 7e.)	$	628,041
8.	**Actuarial Value as of 7/1/2022: (4 + 7f.)**	**$**	**32,275,474**
9.	Market Value as of 7/1/2022	$	32,798,524
10.	Ratio of Actuarial Value to Market Value: (8 / 9)		98.4%
11.	Estimated Rate of Return on Actuarial Value		9.3%

Investment Performance

The internal rate of return on the Market Value of Assets, net of investment expenses, was -6.5% for the plan year ending June 30, 2022. This return compares to an assumed rate of return of 7.20% and resulted in actual investment returns that are approximately $4.5 billion less 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, 2022 was 9.3% compared to the assumed return of 7.20%. This return produced an investment gain on the Actuarial Value of Assets of $628 million for the plan year ending June 30, 2022.

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 Future Benefits

The present value of 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 future benefits as of July 1, 2021 and July 1, 2022.

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

	July 1, 2021	July 1, 2022	% Change
Present Value of Future Benefits			
Actives	$ 17,993,081	$ 18,692,979	3.9%
Terminated Vested	669,126	797,020	19.1%
Members Receiving Benefits	19,558,857	20,715,121	5.9%
Total	$ 38,221,064	$ 40,205,120	5.2%

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, 2022
(Amounts in thousands)

	Police	Fire	Miscellaneous	Total
Normal Cost by Benefit Tier				
Old	$ 0	$ 0	$ 64	$ 64
New	52,119	38,456	242,332	332,907
Prop D	985	2,958	27,727	31,670
Prop C	47,524	37,936	281,820	367,280
Total	$ 100,628	$ 79,350	$ 551,943	$ 731,921

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, 2022
(Amounts in thousands)

	Police	Fire	Miscellaneous	Total
Actuarial Liability				
Actives	$ 1,681,699	$ 1,302,327	$ 9,095,398	$ 12,079,424
Terminated Vested	43,621	20,586	732,813	797,020
Members Receiving Benefits				
Retirees	2,731,416	1,916,093	12,143,635	16,791,144
Disabled	859,797	1,049,363	478,249	2,387,409
Beneficiaries	411,720	337,787	787,061	1,536,568
Total Members Receiving Benefits	4,002,933	3,303,243	13,408,945	20,715,121
Total Actuarial Liability	**$ 5,728,253**	**$ 4,626,156**	**$ 23,237,156**	**$ 33,591,565**

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 2022 Experience Gain/(Loss)
(Amounts in millions)

Item		Cost
1. Unfunded Actuarial Liability (UAL) at July 1, 2021	$	1,862.1
2. Middle of year expected actuarial liability payment		(370.9)
3. Interest to end of year on 1. and 2.		121.0
4. Prop A - Pre96 Retiree Supplemental COLAs		48.0
5. Expected UAL at July 1, 2022 (1+2+3+4)	$	1,660.2
6. Actual Unfunded Liability at July 1, 2022		1,316.1
7. Experience Gain: (5-6)	$	344.1
8. Portion of difference due to:		
a. Investment experience on actuarial value	$	628.0
b. Salaries more than expected		(240.6)
c. Old Safety Basic COLA more than expected		(83.3)
d. Retirements		(52.5)
e. Terminations, mortality, and disability experience		(15.7)
f. New entrants		(34.7)
g. Contributions (rate delay, payroll changes, and expense gain)		129.0
h. Other experience		13.9
i. Total gain	$	344.1

SECTION V – MEASURES OF LIABILITY

Table V-5 below shows a five-year history of sources of liability gain and loss. Higher salary increases than expected, new entrants, terminations, and retirements have been the primary sources of losses while COLAs for the old safety groups have been the primary sources of gains.

Table V-5
Historical Sources of Liability (Gain) or Loss
(Amounts in Thousands)

Source	2018	2019	2020	2021	2022	Total
	Year Ending June 30,					
Salary Increases	$ (53,729)	$ 45,993	$ 114,500	$ 169,789	$ 240,602	$ 517,155
Retirement	20,226	32,398	3,918	39,765	52,504	148,811
Termination	22,919	47,547	19,838	29,126	(5,829)	113,601
Mortality	10,721	1,112	4,590	(1,492)	12,143	27,074
Disability	5,585	10,387	10,327	16,369	9,370	52,038
New Entrants	39,173	41,251	45,006	24,142	34,713	184,285
Old Safety COLAs	(29,632)	(22,131)	(86,577)	(19,826)	83,279	(74,887)
Other	(8,717)	28,851	691	12,171	(13,886)	19,110
Total	$ 6,546	$ 185,408	$ 112,293	$ 270,044	$ 412,896	$ 987,187

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 contribution toward the Unfunded Actuarial Liability.

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 portion of prior Charter amendments, plus the impact of accumulated experience, assumption changes, and method changes.

Table VI-1 on the following page develops the employer's contribution rate for FYE 2023 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.

SECTION VI – CONTRIBUTIONS

Table VI-1
Development of the Net Employer Contribution Rate as of July 1, 2022 for FYE 2024
(Amounts in millions)

	FYE 2024				FYE 2023
	Police	**Fire**	**Misc.**	**TOTAL**	**TOTAL**
1. Total Normal Cost Rate	29.46%	30.72%	16.26%	**18.33%**	**18.31%**
2. Member Contribution Rate	8.33%	8.37%	7.50%	**7.63%**	**7.62%**
3. Employer Normal Cost Rate (1 - 2)	21.13%	22.35%	8.76%	**10.70%**	**10.69%**
4. UAL Components					
a. Proposition balance	$ 38.7	$ 31.2	$ 460.6	**$ 530.5**	**$ 576.0**
b. Other UAL	67.2	51.0	667.4	**785.6**	**1,286.1**
c. Total UAL (4a+4b)	$ 105.9	$ 82.2	$ 1,128.0	**$ 1,316.1**	**$ 1,862.1**
5. Amortization Payments					
a. Proposition balance	2.09%	2.36%	2.54%	**2.49%**	**3.54%**
b. Other UAL	4.45%	4.45%	4.45%	**4.45%**	**6.52%**
c. Total Amortization (5a+5b)	6.54%	6.81%	6.99%	**6.94%**	**10.06%**
6. Administrative Expenses	0.60%	0.60%	0.60%	**0.60%**	**0.60%**
7. Net Employer Contribution Rate (3+ 5c+6)	28.27%	29.76%	16.35%	**18.24%**	**21.35%**

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 18.24% and the hourly pay rates shown in the table below.

Table VI-2
Employee and Employer Contribution Rates By Employee Group for FYE 2024
(Amounts in thousands)

Hire Date	Hourly Pay	Estimated Payroll FYE 2024	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%	18.24%	10.00%	15.24%	3.00%
11/2/1976 - 6/30/2010	All	269,010	7.50%	18.24%	10.50%	15.24%	3.00%
> 6/30/2010	< $66	273,555	9.00%	18.24%	11.00%	16.24%	2.00%
> 6/30/2010	>= $66	76,791	9.00%	18.24%	11.50%	15.74%	2.50%
Miscellaneous							
< 11/2/1976	< $33	$ 0	8.00%	18.24%	8.00%	18.24%	0.00%
< 11/2/1976	$33 - $66	185	8.00%	18.24%	10.00%	16.24%	2.00%
< 11/2/1976	>= $66	106	8.00%	18.24%	10.50%	15.74%	2.50%
>= 11/2/1976	< $33	212,404	7.50%	18.24%	7.50%	18.24%	0.00%
>= 11/2/1976	$33 - $66	2,013,691	7.50%	18.24%	9.50%	16.24%	2.00%
>= 11/2/1976	>= $66	1,267,894	7.50%	18.24%	10.00%	15.74%	2.50%
Estimated Total Plan		**$ 4,113,635**	**7.63%**	**18.24%**	**9.75%**	**16.12%**	**2.12%**
Estimated Contribution Amounts			**$ 313,870**	**$ 750,327**	**$ 401,079**	**$ 663,118**	**$ 87,209**

SECTION VI – CONTRIBUTIONS

Table VI-3 below provides the amortization schedules for the changes to the Actuarial Liability due to changes to the Charter. Each Charter change prior to 2014 is amortized over 20 years from the date it was 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 which are shown in Table VI-4, are amortized over a closed 5-year period. However, the Board elected to amortize the increase in the Unfunded Actuarial Liability due to Proposition A over a 10-year period. All amortization payments increase each year at the ultimate assumed wage inflation rate.

Table VI-3
Development of the Proposition Amortization Rate as of July 1, 2022 for FYE 2024
(dollars in thousands)

Propositions	Remaining Period	Police		Fire		Miscellaneous		Total	
		Balance	Payment	Balance	Payment	Balance	Payment	Balance	Payment
5.0% Credited Interest on EE ctrbs	2	(136)	(77)	(65)	(37)	(12,478)	(7,054)	(12,679)	(7,168)
2004 Prop E - New Safety LOD Bfts	3	2,241	861	3,148	1,209	0	(1)	5,389	2,069
2003 Prop F - Misc 3+3 Early Ret Bfts	3	0	0	0	0	6,780	2,603	6,780	2,603
(extended) - Misc 3+3 Early Ret Bfts	4	0	0	0	0	4,935	1,447	4,935	1,447
(extended) - Misc 3+3 Early Ret Bfts	5	0	0	0	0	2,619	626	2,619	626
2008 Prop B - New Misc Ret Bfts and Compound COLA	6	36,496	6,501	28,088	5,073	458,670	90,892	523,398	102,610
2022 Prop A - Pre-96 Supplemental COLAs	10	11,670	1,525	7,843	1,025	28,524	3,726	48,037	6,276
Proposition Total		**$ 38,673**	**$ 7,357**	**$ 31,243**	**$ 6,317**	**$ 460,598**	**$ 88,585**	**$ 530,514**	**$ 102,259**
Expected FYE 2024 Payroll			**$ 352,117**		**$ 267,238**		**$ 3,494,280**		**$ 4,113,635**
Amortization Rate			**2.09%**		**2.36%**		**2.54%**		**2.49%**

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.

Effective with the July 1, 2021 valuation, the remaining amortization periods for assumption changes prior to July 1, 2021 and all prior actuarial gains and losses (including the gain for 2021) were reduced to 5 years. Furthermore, if the System becomes fully funded based on the Actuarial Value of Assets, any unexpected changes in the surplus would be amortized over a rolling 20-year period.

Table VI-4 on the next page shows all the Non-Proposition amortizations under the new amortization policy. All amortization schedules are determined on a level percent of pay basis which means that for the duration of the amortization schedule, the payment amount increases each year at the assumed wage inflation rate.

SECTION VI – CONTRIBUTIONS

Table VI-4
Development of the Non-Proposition Amortization Rate as of July 1, 2022 for FYE 2024
(dollars in thousands)

Amortization Bases	Remaining Period	Outstanding Balance	Amortization Payment
2013 Non-Proposition UAL	4	$ 2,016,129	$ 591,326
2014 Actuarial Gain	4	(679,412)	(199,269)
2014 Assumption Change	4	120,186	35,250
2015 Actuarial Gain	4	(617,674)	(181,162)
2015 Assumption Change	4	977,234	286,619
2013 Supplemental COLA	11	178,515	21,579
2016 Actuarial Loss	4	22,401	6,570
2017 Actuarial Gain	4	(326,374)	(95,724)
2017 Assumption and Method Change	4	41,373	12,135
2018 Actuarial Gain	4	(326,097)	(95,643)
2018 Supplemental COLA	1	49,390	54,819
2018 Assumption Change	4	247,579	72,614
2019 Actuarial Loss	4	144,810	42,472
2019 Supplemental COLA	2	65,794	37,198
2020 Actuarial Loss	4	130,722	38,340
2020 Assumption Changes	4	(496,405)	(145,594)
2021 Actuarial Gain	4	(1,340,336)	(393,116)
2021 Supplemental COLA	4	222,155	65,157
2021 Assumption Change	19	699,635	56,106
2022 Actuarial Gain	20	(344,048)	(26,647)
Total Non-Proposition UAL		**$ 785,577**	**$ 183,030**
Expected FYE 2024 Payroll			**$ 4,113,635**
Amortization Rate			**4.45%**

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 Annual Comprehensive Financial Report in order to receive recognition for excellence in financial reporting. We understand that SFERS' includes these exhibits in their Annual Report. 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, 2022	$ 628,041	$ 128,903	$ (412,896)	$ 344,048	$ (48,037)	$ 296,011
July 1, 2021	1,750,143	113,249	(270,044)	1,593,348	(965,694)	627,654
July 1, 2020	(6,409)	(37,023)	(112,293)	(155,725)	591,355	435,630
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)

[1] *Due to Payroll Changes, One-Year Lag, and Expenses.*

[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)
2022	$ 4,232	$ 21,512	$ 7,847	$ 32,275	100%	100%	83%
2021 [1]	4,104	20,228	7,573	30,043	100%	100%	75%
2020 [2]	3,916	18,621	6,963	26,696	100%	100%	60%
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 [3]	3,325	15,847	6,535	22,185	100%	100%	46%
2016 [4]	3,175	14,941	6,288	20,655	100%	100%	40%
2015 [5]	2,995	13,931	6,045	19,653	100%	100%	45%
2014 [6]	2,825	12,901	5,397	18,012	100%	100%	42%
2013	2,633	12,257	5,335	16,303	100%	100%	26%

[1] *Reflects revised discount rate.*

[2] *Reflects revised demographic and wage inflation assumptions.*

[3] *Reflects revised wage inflation assumption.*

[4] *Reflects 2013 and 2014 Retroactive Supplemental COLA benefits for Post96 Retirees.*

[5] *Reflects revised demographic assumptions.*

[6] *Reflects revised discount rate and wage inflation.*

SECTION VII – ACTUARIAL SECTION OF THE ANNUAL REPORT

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, 2022	$ 32,275,474	$ 33,591,565	$ 1,316,091	96%	$ 3,984,150	33%
July 1, 2021	30,043,222	31,905,275	1,862,053	94%	3,828,797	49%
July 1, 2020	26,695,844	29,499,918	2,804,074	90%	3,703,103	76%
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%

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		% Increase	Avearge
FYE	Member Count*	Annual Allowance	Member Count*	Annual Allowance	Member Count*	Annual Allowance	in Annual Allowance	Annual Allowance
2022	1,872	$103,981,941	1,007	$45,948,001	31,719	$1,795,472,441	6.1%	$56,606
2021	1,722	97,495,262	996	43,909,238	30,854	1,691,633,291	6.5%	54,827
2020	1,470	74,777,425	816	34,764,875	30,128	1,587,981,080	4.9%	52,708
2019	1,770	83,661,179	957	36,959,870	30,778	1,513,436,081	6.3%	49,173
2018	1,797	84,574,963	959	36,284,323	29,965	1,424,324,641	6.9%	47,533
2017	1,769	80,214,008	928	35,082,179	29,127	1,332,430,263	6.8%	45,746
2016	1,657	72,049,646	856	30,384,191	28,286	1,247,230,245	7.8%	44,094
2015	1,564	63,136,134	931	29,314,643	27,485	1,157,081,680	4.8%	42,099
2014	1,588	65,923,470	770	25,170,856	26,852	1,103,959,803	5.6%	41,113
2013	1,577	66,437,220	733	22,406,077	26,034	1,045,547,799	6.4%	40,161

** Member count as of FYE 2020 reflects combining records for members who have both a Safety and Miscellaneous benefit.*

APPENDIX A – MEMBERSHIP INFORMATION

Table A-1
Active Member Data - By Group

	July 1, 2022	July 1, 2021	% Change
Total			
Count	33,199	33,644	-1.3%
Average Current Age	47.3	47.2	0.1
Average Service	10.9	11.0	-0.1
Annual Pensionable Earnings	$ 3,708,897,220	$ 3,586,532,188	3.4%
Average Pensionable Earnings	$ 111,717	$ 106,602	4.8%
Police			
Count	2,269	2,475	-8.3%
Average Current Age	41.4	40.9	0.5
Average Service	13.0	12.4	0.6
Annual Pensionable Earnings	$ 315,938,119	$ 332,503,625	-5.0%
Average Pensionable Earnings	$ 139,241	$ 134,345	3.6%
Fire			
Count	1,664	1,599	4.1%
Average Current Age	42.9	43.9	-1.0
Average Service	12.3	13.3	-1.0
Annual Pensionable Earnings	$ 237,555,937	$ 228,221,528	4.1%
Average Pensionable Earnings	$ 142,762	$ 142,728	0.0%
Miscellaneous			
Count	29,266	29,570	-1.0%
Average Current Age	48.0	47.9	0.1
Average Service	10.7	10.7	0.0
Annual Pensionable Earnings	$ 3,155,403,164	$ 3,025,807,035	4.3%
Average Pensionable Earnings	$ 107,818	$ 102,327	5.4%

APPENDIX A – MEMBERSHIP INFORMATION

Table A-2
Active Member Data - By Charter
July 1, 2022

	Police	Fire	Miscellaneous	Total
Member Counts				
Old	0	1	7	8
New	1,036	682	11,832	13,550
Prop D	19	51	1,380	1,450
Prop C*	1,214	930	16,047	18,191
Total	2,269	1,664	29,266	33,199
Annual Pensionable Earnings				
Old	$ 0	$ 175,327	$ 725,069	$ 900,396
New	163,678,759	119,142,755	1,363,959,456	1,646,780,970
Prop D	2,775,521	7,957,279	146,542,921	157,275,721
Prop C*	149,483,839	110,280,576	1,644,175,718	1,903,940,133
Total	$ 315,938,119	$ 237,555,937	$ 3,155,403,164	$ 3,708,897,220

**Police includes Sherriffs Plan (Charter A8.608) and Miscellaneous Safety Plan (Charter A8.610) members.*

APPENDIX A – MEMBERSHIP INFORMATION

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

	July 1, 2021	July 1, 2022	Change
Retired			
Count	24,147	24,964	3.4%
Average Age	71.5	71.6	0.1
Average Annual Benefit*	$ 56,052	$ 57,831	3.2%
Disabled			
Count	2,507	2,485	-0.9%
Average Age	69.6	69.9	0.3
Average Annual Benefit*	$ 72,329	$ 75,773	4.8%
Beneficiaries			
Count	4,200	4,270	1.7%
Average Age	77.8	77.8	0.0
Average Annual Benefit*	$ 37,299	$ 40,159	7.7%
Payee Average			
Count	30,854	31,719	2.8%
Average Age	72.2	72.3	0.1
Average Annual Benefit*	$ 54,822	$ 56,857	3.7%
Inactives			
Count	11,126	12,085	8.6%
Average Age	47.6	47.6	0.0
Total Contribution Balance with Interest	$ 346,437,842	$ 420,865,353	21.5%
Average Contribution Balance with Interest	$ 31,138	$ 34,825	11.8%

** Benefits provided in June 30 valuation data, plus estimated Basic COLA effective July 1, 2022 and increased in accordance with Proposition A for affected members. 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

Charter Section	July 1, 2022 Prop H	July 1, 2022 8.559 8.585	July 1, 2022 8.595 8.596	July 1, 2022 Total	July 1, 2021	Change
Retired						
Count	3	548	317	868	902	-3.8%
Average Age	89.7	81.5	74.2	78.8	78.1	0.7
Average Annual Benefit*	$ 30,964	$ 105,075	$ 151,265	$ 121,688	$ 112,645	8.0%
Disabled						
Count	30	345	140	515	547	-5.9%
Average Age	85.2	81.1	74.8	79.6	78.9	0.7
Average Annual Benefit*	$ 50,695	$ 108,188	$ 157,690	$ 118,295	$ 110,359	7.2%
Beneficiaries						
Count	84	598	58	740	760	-2.6%
Average Age	83.7	82.4	71.1	81.7	81.6	0.1
Average Annual Benefit*	$ 41,509	$ 96,523	$ 128,712	$ 92,801	$ 82,188	12.9%
Payee Average						
Count	117	1,491	515	2,123	2,209	-3.9%
Average Age	84.2	81.7	74.0	80.0	79.5	0.5
Average Annual Benefit*	$ 43,594	$ 102,365	$ 150,472	$ 110,796	$ 101,600	9.1%
Inactives						
Count	0	0	2	2	2	0.0%
Average Age	N/A	N/A	76.5	76.5	75.5	1.0
Total Contribution Balance with Interest	N/A	N/A	$ 3,031	$ 3,031	$ 2,914	4.0%
Average Contribution Balance with Interest	N/A	N/A	$ 1,515	$ 1,515	$ 1,457	4.0%

** Benefits provided in June 30 valuation data, plus estimated Basic COLA effective July 1, 2022 and increased in accordance with Proposition A for affected members. If applicable, limited by Section 415(b) of the Internal Revenue Code.*

APPENDIX A – MEMBERSHIP INFORMATION

Table A-5

Non-Active Member Data - New Safety (includes Prop D and C)

	July 1, 2021	July 1, 2022	Change
Retired			
Count	1,989	2,172	9.2%
Average Age	64.1	64.1	0.0
Average Annual Benefit*	$ 117,391	$ 119,041	1.4%
Disabled			
Count	671	699	4.2%
Average Age	64.0	64.5	0.5
Average Annual Benefit*	$ 115,396	$ 118,658	2.8%
Beneficiaries			
Count	155	171	10.3%
Average Age	63.0	64.5	1.5
Average Annual Benefit*	$ 74,800	$ 78,048	4.3%
Payee Average			
Count	2,815	3,042	8.1%
Average Age	64.0	64.2	0.2
Average Annual Benefit*	$ 114,570	$ 116,649	1.8%
Inactives			
Count	376	474	26.1%
Average Age	42.4	41.4	-1.0
Total Contribution Balance with Interest	$ 21,523,590	$ 32,598,500	51.5%
Average Contribution Balance with Interest	$ 57,244	$ 68,773	20.1%

** Benefits provided in June 30 valuation data, increased in accordance with Proposition A for affected members. If applicable, limited by Section 415(b) of the Internal Revenue Code*

APPENDIX A – MEMBERSHIP INFORMATION

Table A-6
Non-Active Member Data - Miscellaneous

		July 1, 2021		July 1, 2022	Change
Retired					
Count		21,256		21,924	3.1%
Average Age		71.9		72.1	0.2
Average Annual Benefit*	$	47,911	$	49,238	2.8%
Disabled					
Count		1,289		1,271	-1.4%
Average Age		68.6		69.0	0.4
Average Annual Benefit*	$	33,771	$	34,958	3.5%
Beneficiaries					
Count		3,285		3,359	2.3%
Average Age		77.7		77.7	0.0
Average Annual Benefit*	$	25,144	$	26,633	5.9%
Payee Average					
Count		25,830		26,554	2.8%
Average Age		72.5		72.7	0.2
Average Annual Benefit*	$	44,310	$	45,695	3.1%
Inactives					
Count		10,748		11,609	8.0%
Average Age		47.7		47.9	0.2
Total Contribution Balance with Interest	$	324,911,338	$	388,263,822	19.5%
Average Contribution Balance with Interest	$	30,230	$	33,445	10.6%

** Benefits provided in June 30 valuation data, increased in accordance with Proposition A for affected members.*
If applicable, limited by Section 415(b) of the Internal Revenue Code

APPENDIX A – MEMBERSHIP INFORMATION

Table A-7
Distribution of Active Members as of July 1, 2022
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	119	80	1	0	0	0	0	0	0	0	200
25 to 29	338	751	190	0	0	0	0	0	0	0	1,279
30 to 34	453	1,378	1,332	78	0	0	0	0	0	0	3,241
35 to 39	361	1,393	1,997	652	112	0	0	0	0	0	4,515
40 to 44	313	1,129	1,735	867	597	106	0	0	0	0	4,747
45 to 49	211	834	1,283	823	733	538	76	0	0	0	4,498
50 to 54	183	779	1,094	730	804	975	462	75	1	0	5,103
55 to 59	130	545	871	647	696	935	523	291	50	1	4,689
60 to 64	64	315	677	454	479	642	304	258	119	11	3,323
65 to 69	27	106	245	213	192	203	93	67	58	13	1,217
70 and up	6	38	61	60	51	68	40	19	24	20	387
Total Count	2,205	7,348	9,486	4,524	3,664	3,467	1,498	710	252	45	33,199

Table A-8
Distribution of Active Members as of July 1, 2022
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	$ 68,566	$ 64,003	$ 86,273	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 66,830
25 to 29	83,468	88,964	106,254	0	0	0	0	0	0	0	90,080
30 to 34	96,042	96,089	110,656	121,514	0	0	0	0	0	0	102,681
35 to 39	95,472	99,744	112,611	123,181	140,350	0	0	0	0	0	109,485
40 to 44	100,831	102,059	113,933	123,680	135,230	135,734	0	0	0	0	115,190
45 to 49	93,548	97,000	111,682	121,843	133,005	135,489	139,015	0	0	0	116,752
50 to 54	97,361	96,057	106,260	111,496	128,520	135,779	150,146	154,766	182,604	0	118,981
55 to 59	90,220	95,048	105,575	106,234	117,705	124,693	137,131	136,289	130,121	173,686	115,332
60 to 64	106,679	93,645	104,427	105,925	113,410	111,163	119,359	129,175	115,835	99,697	109,929
65 to 69	77,872	93,562	101,838	96,201	107,611	105,179	123,821	122,807	106,212	101,448	104,105
70 and up	84,455	88,386	95,693	100,489	102,677	112,629	117,250	130,590	121,029	129,979	106,726
Avg. Salary	$ 92,801	$ 96,463	$ 109,973	$ 115,392	$ 125,387	$ 125,939	$ 136,277	$ 134,231	$ 117,214	$ 115,306	$ 111,717

APPENDIX A – MEMBERSHIP INFORMATION

Table A-9
Distribution of Active Members as of July 1, 2022
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	1	10	0	0	0	0	0	0	0	0	11
25 to 29	1	121	69	0	0	0	0	0	0	0	191
30 to 34	3	107	291	15	0	0	0	0	0	0	416
35 to 39	1	50	234	117	49	0	0	0	0	0	451
40 to 44	0	32	101	85	137	32	0	0	0	0	387
45 to 49	0	11	30	32	84	104	23	0	0	0	284
50 to 54	0	5	18	16	43	116	107	14	0	0	319
55 to 59	1	8	13	6	25	48	45	18	1	0	165
60 to 64	0	1	4	2	4	11	8	4	1	0	35
65 to 69	0	1	1	0	0	0	5	0	1	0	8
70 and up	0	0	0	0	1	0	1	0	0	0	2
Total Count	7	346	761	273	343	311	189	36	3	0	2,269

Table A-10
Distribution of Active Members as of July 1, 2022
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	$ 80,545	$ 95,304	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 93,962
25 to 29	80,545	101,705	119,067	0	0	0	0	0	0	0	107,866
30 to 34	107,906	103,379	127,526	137,077	0	0	0	0	0	0	121,518
35 to 39	80,545	103,281	128,736	146,183	155,255	0	0	0	0	0	133,215
40 to 44	0	113,968	131,012	146,483	153,060	158,251	0	0	0	0	143,058
45 to 49	0	107,463	134,096	150,197	149,856	162,137	157,956	0	0	0	151,741
50 to 54	0	144,741	137,186	145,463	153,168	154,923	174,602	221,408	0	0	162,570
55 to 59	144,490	136,636	164,913	143,049	149,465	146,644	172,682	190,868	182,265	0	160,024
60 to 64	0	152,824	149,187	152,982	153,017	145,302	162,617	196,001	182,353	0	158,092
65 to 69	0	89,814	118,314	0	0	0	148,648	0	148,030	0	137,425
70 and up	0	0	0	0	166,468	0	150,182	0	0	0	158,325
Avg. Salary	$ 101,406	$ 105,125	$ 128,822	$ 146,185	$ 152,379	$ 156,060	$ 170,796	$ 203,315	$ 170,882	$ 0	$ 139,241

APPENDIX A – MEMBERSHIP INFORMATION

Table A-11
Distribution of Active Members as of July 1, 2022
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	12	4	0	0	0	0	0	0	0	0	16
25 to 29	44	50	16	0	0	0	0	0	0	0	110
30 to 34	34	100	105	2	0	0	0	0	0	0	241
35 to 39	28	76	164	39	5	0	0	0	0	0	312
40 to 44	11	24	112	44	59	9	0	0	0	0	259
45 to 49	6	11	46	37	57	62	4	0	0	0	223
50 to 54	0	3	13	16	47	133	73	14	1	0	300
55 to 59	0	3	2	7	21	68	42	13	2	0	158
60 to 64	0	0	2	2	6	20	4	4	2	0	40
65 to 69	0	0	0	0	0	1	0	2	0	0	3
70 and up	0	1	0	0	0	0	0	0	0	1	2
Total Count	135	272	460	147	195	293	123	33	5	1	1,664

Table A-12
Distribution of Active Members as of July 1, 2022
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	$ 72,811	$ 89,247	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 76,920
25 to 29	78,893	93,833	129,683	0	0	0	0	0	0	0	93,071
30 to 34	80,396	97,539	131,939	127,597	0	0	0	0	0	0	110,357
35 to 39	79,277	100,355	138,802	154,806	157,241	0	0	0	0	0	126,391
40 to 44	87,654	106,486	140,121	153,777	178,548	161,949	0	0	0	0	146,608
45 to 49	73,759	105,617	128,929	151,494	167,478	172,838	148,451	0	0	0	152,450
50 to 54	0	90,203	137,367	156,646	160,995	172,797	189,574	214,743	182,604	0	173,798
55 to 59	0	155,112	138,113	152,065	155,654	172,020	207,048	179,807	190,109	0	178,391
60 to 64	0	0	173,881	184,872	172,113	169,286	179,031	203,912	217,883	0	177,586
65 to 69	0	0	0	0	0	99,274	0	170,611	0	0	146,832
70 and up	0	45,000	0	0	0	0	0	0	0	175,327	110,163
Avg. Salary	$ 79,296	$ 99,000	$ 136,361	$ 153,773	$ 167,872	$ 171,802	$ 193,861	$ 196,993	$ 199,718	$ 175,327	$ 142,762

APPENDIX A – MEMBERSHIP INFORMATION

Table A-13
Distribution of Active Members as of July 1, 2022
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	106	66	1	0	0	0	0	0	0	0	173
25 to 29	293	580	105	0	0	0	0	0	0	0	978
30 to 34	416	1,171	936	61	0	0	0	0	0	0	2,584
35 to 39	332	1,267	1,599	496	58	0	0	0	0	0	3,752
40 to 44	302	1,073	1,522	738	401	65	0	0	0	0	4,101
45 to 49	205	812	1,207	754	592	372	49	0	0	0	3,991
50 to 54	183	771	1,063	698	714	726	282	47	0	0	4,484
55 to 59	129	534	856	634	650	819	436	260	47	1	4,366
60 to 64	64	314	671	450	469	611	292	250	116	11	3,248
65 to 69	27	105	244	213	192	202	88	65	57	13	1,206
70 and up	6	37	61	60	50	68	39	19	24	19	383
Total Count	2,063	6,730	8,265	4,104	3,126	2,863	1,186	641	244	44	29,266

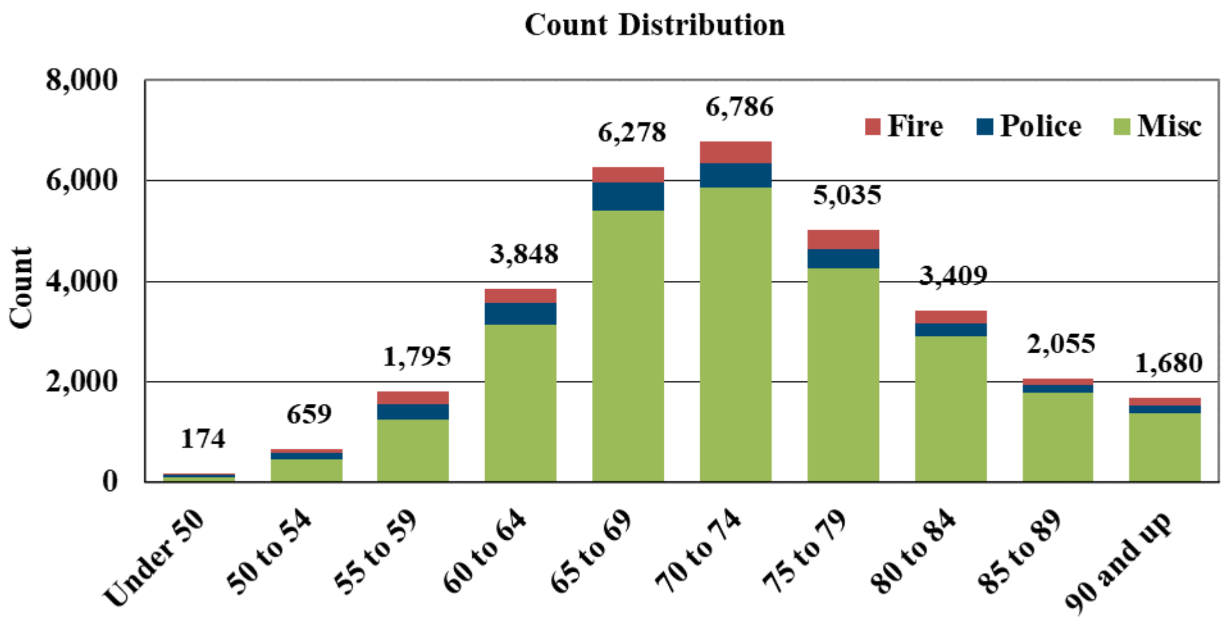
Table A-14
Distribution of Active Members as of July 1, 2022
Average Salary By Age/Service - Miscellaneous

	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	$ 67,973	$ 57,731	$ 86,273	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 0	$ 64,171
25 to 29	84,165	85,887	94,264	0	0	0	0	0	0	0	86,270
30 to 34	97,236	95,299	103,023	117,487	0	0	0	0	0	0	98,933
35 to 39	96,883	99,568	107,565	115,269	126,302	0	0	0	0	0	105,227
40 to 44	101,311	101,605	110,872	119,259	122,766	121,018	0	0	0	0	110,576
45 to 49	94,127	96,741	110,468	119,185	127,294	121,814	129,355	0	0	0	112,268
50 to 54	97,361	95,764	105,356	109,683	124,898	125,939	130,661	117,050	0	0	112,212
55 to 59	89,799	94,088	104,598	105,379	115,258	119,478	126,727	130,334	126,459	173,686	111,361
60 to 64	106,679	93,456	103,953	105,365	112,321	108,646	117,357	126,910	113,502	99,697	108,577
65 to 69	77,872	93,598	101,770	96,201	107,611	105,208	122,411	121,336	105,478	101,448	103,778
70 and up	84,455	89,559	95,693	100,489	101,401	112,629	116,406	130,590	121,029	127,593	106,438
Avg. Salary	$ 93,655	$ 95,916	$ 106,769	$ 111,969	$ 119,775	$ 117,974	$ 124,804	$ 127,120	$ 114,864	$ 113,942	$ 107,818

APPENDIX A – MEMBERSHIP INFORMATION

Table A-15
Distribution of Retirees, Disabled Members, and Beneficiaries as of July 1, 2022
Count

Age	Police	Fire	Misc	Total
Under 50	56	21	97	174
50 to 54	123	83	453	659
55 to 59	312	234	1,249	1,795
60 to 64	428	278	3,142	3,848
65 to 69	564	299	5,415	6,278
70 to 74	476	445	5,865	6,786
75 to 79	371	403	4,261	5,035
80 to 84	259	248	2,902	3,409
85 to 89	155	113	1,787	2,055
90 and up	149	148	1,383	1,680
Total	2,893	2,272	26,554	31,719

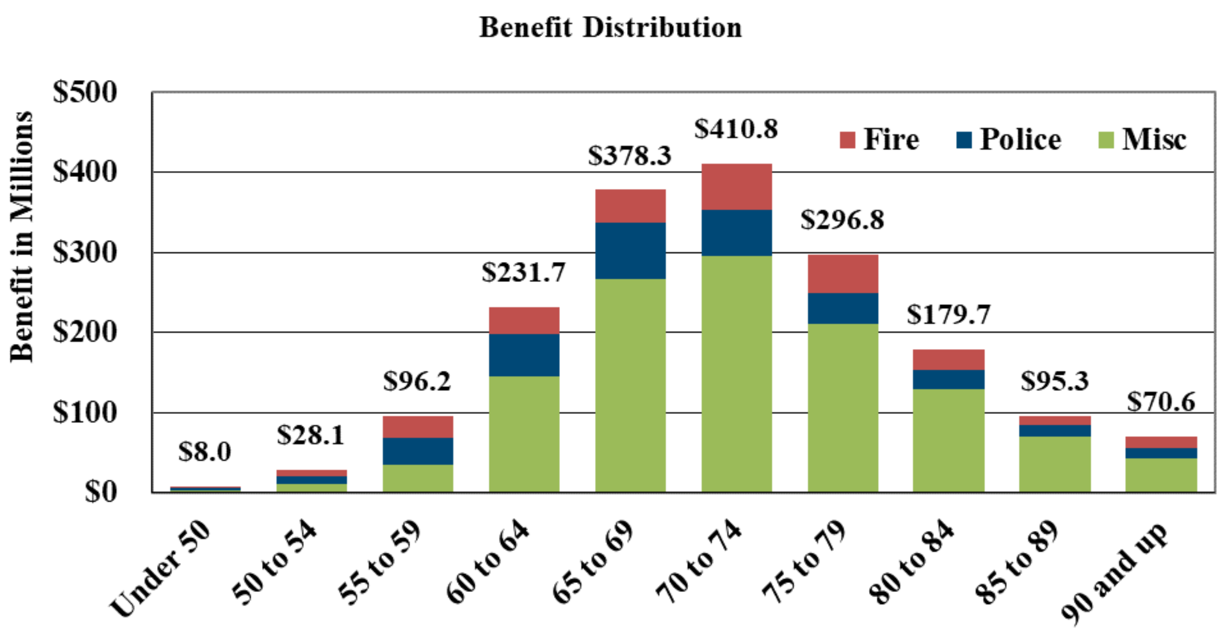


APPENDIX A – MEMBERSHIP INFORMATION

Table A-16
Distribution of Retirees, Disabled Members, and Beneficiaries as of July 1, 2022
Annual Benefit *

Age	Police	Fire	Misc	Total
Under 50	$ 3,941,203	$ 1,545,970	$ 2,496,711	$ 7,983,884
50 to 54	9,910,985	7,897,723	10,276,603	28,085,311
55 to 59	34,282,512	27,374,920	34,603,294	96,260,726
60 to 64	53,601,987	32,880,834	145,230,351	231,713,173
65 to 69	71,073,477	40,516,275	266,847,902	378,437,654
70 to 74	56,763,342	57,950,186	296,568,874	411,282,401
75 to 79	38,289,203	48,412,544	211,085,281	297,787,028
80 to 84	24,320,647	27,076,890	130,093,793	181,491,329
85 to 89	14,447,465	11,743,126	71,130,888	97,321,479
90 and up	12,821,266	15,215,370	45,059,632	73,096,268
Total	$ 319,452,088	$ 270,613,837	$ 1,213,393,329	$ 1,803,459,254

** Benefits used in the July 1, 2022 actuarial valuation*



APPENDIX A – MEMBERSHIP INFORMATION

Table A-17
Summary and Reconciliation of Participant Data
Total System

	Active	Vested Terminated	Reciprocal	Non-Vested Terminated	Disabled	Retired	Beneficiaries	Totals
Participants as of 7/1/2021	**33,644**	**2,575**	**1,060**	**7,491**	**2,507**	**24,147**	**4,200**	**75,624**
New Entrants	2,670	0	0	4	0	0	0	2,674
Returned to Work	248	(58)	(5)	(179)	0	(6)	0	0
Vested Terminations	(630)	631	0	0	0	(1)	0	0
Reciprocals	(19)	0	19	0	0	0	0	0
Non Vested Terminations	(1,001)	0	0	1,001	0	0	0	0
Refund/Withdrawal	(421)	(23)	(3)	(224)	0	0	0	(671)
Changes in Inactive Status	0	18	9	(27)	0	0	0	0
Retirements	(1,246)	(128)	(56)	(5)	0	1,435	0	0
Disabilities	(15)	(4)	(4)	0	64	(41)	0	0
Benefit Ceased*	(31)	(5)	(1)	(1)	(86)	(646)	(269)	(1,039)
New Continuants & Dissolutions	0	0	0	0	0	46	339	385
New Split Benefits	0	0	0	0	0	30	0	30
Other Adjustments	0	0	0	0	0	0	0	0
Participants as of 7/1/2022	**33,199**	**3,006**	**1,019**	**8,060**	**2,485**	**24,964**	**4,270**	**77,003**

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

APPENDIX A – MEMBERSHIP INFORMATION

Table A-18
Summary and Reconciliation of Participant Data
Police

	Active	Vested Terminated	Reciprocal	Non-Vested Terminated	Disabled	Retired	Beneficiaries	Totals
Participants as of 7/1/2021	**2,475**	**84**	**23**	**187**	**564**	**1,715**	**522**	**5,570**
New Entrants	38	0	0	0	0	0	0	38
Returned to Work	5	(3)	0	(2)	0	0	0	0
Vested Terminations	(68)	68	0	0	0	0	0	0
Reciprocals	(1)	0	1	0	0	0	0	0
Non Vested Terminations	(34)	0	0	34	0	0	0	0
Refund/Withdrawal	(25)	0	0	(7)	0	0	0	(32)
Changes in Inactive Status	0	0	2	(2)	0	0	0	0
Retirements	(112)	(7)	0	0	0	119	0	0
Disabilities	(9)	0	0	0	19	(10)	0	0
Benefit Ceased*	0	(1)	(1)	0	(14)	(34)	(34)	(84)
New Continuants & Dissolutions	0	0	0	0	0	11	34	45
New Split Benefits	0	0	0	0	0	1	0	1
Transferred In (From Fire)	0	0	0	0	0	0	0	0
Transferred In (From Misc)	0	0	0	0	0	0	0	0
Transferred Out (To Fire)	0	0	0	0	0	0	0	0
Transferred Out (To Misc)	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0
Participants as of 7/1/2022	**2,269**	**141**	**25**	**210**	**569**	**1,802**	**522**	**5,538**

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

APPENDIX A – MEMBERSHIP INFORMATION

Table A-19
Summary and Reconciliation of Participant Data
Fire

	Active	Vested Terminated	Reciprocal	Non-Vested Terminated	Disabled	Retired	Beneficiaries	Totals
Participants as of 7/1/2021	**1,599**	**35**	**20**	**29**	**654**	**1,176**	**393**	**3,906**
New Entrants	177	0	0	4	0	0	0	181
Returned to Work	0	0	0	0	0	0	0	0
Vested Terminations	(15)	15	0	0	0	0	0	0
Reciprocals	(1)	0	1	0	0	0	0	0
Non Vested Terminations	(7)	0	0	7	0	0	0	0
Refund/Withdrawal	(1)	0	0	(4)	0	0	0	(5)
Changes in Inactive Status	0	0	0	0	0	0	0	0
Retirements	(86)	(5)	(1)	0	0	92	0	0
Disabilities	(2)	0	0	0	17	(15)	0	0
Benefit Ceased*	0	(1)	0	0	(26)	(21)	(34)	(82)
New Continuants & Dissolutions	0	0	0	0	0	5	30	35
New Split Benefits	0	0	0	0	0	1	0	1
Transferred In (From Misc)	0	0	0	0	0	0	0	0
Transferred In (From Police)	0	0	0	0	0	0	0	0
Transferred Out (To Misc)	0	0	0	0	0	0	0	0
Transferred Out (To Police)	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0
Participants as of 7/1/2022	**1,664**	**44**	**20**	**36**	**645**	**1,238**	**389**	**4,036**

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

APPENDIX A – MEMBERSHIP INFORMATION

Table A-20
Summary and Reconciliation of Participant Data
Miscellaneous

	Active	Vested Terminated	Reciprocal	Non-Vested Terminated	Disabled	Retired	Beneficiaries	Totals
Participants as of 7/1/2021	**29,570**	**2,456**	**1,017**	**7,275**	**1,289**	**21,256**	**3,285**	**66,148**
New Entrants	2,455	0	0	0	0	0	0	2,455
Returned to Work	243	(55)	(5)	(177)	0	(6)	0	0
Vested Terminations	(547)	548	0	0	0	(1)	0	0
Reciprocals	(17)	0	17	0	0	0	0	0
Non Vested Terminations	(960)	0	0	960	0	0	0	0
Refund/Withdrawal	(395)	(23)	(3)	(213)	0	0	0	(634)
Changes in Inactive Status	0	18	7	(25)	0	0	0	0
Retirements	(1,048)	(116)	(55)	(5)	0	1,224	0	0
Disabilities	(4)	(4)	(4)	0	28	(16)	0	0
Benefit Ceased*	(31)	(3)	0	(1)	(46)	(591)	(201)	(873)
New Continuants & Dissolutions	0	0	0	0	0	30	275	305
New Split Benefits	0	0	0	0	0	28	0	28
Transferred In (From Fire)	0	0	0	0	0	0	0	0
Transferred In (From Police)	0	0	0	0	0	0	0	0
Transferred Out (To Fire)	0	0	0	0	0	0	0	0
Transferred Out (To Police)	0	0	0	0	0	0	0	0
Other Adjustments	0	0	0	0	0	0	0	0
Participants as of 7/1/2022	**29,266**	**2,821**	**974**	**7,814**	**1,271**	**21,924**	**3,359**	**67,429**

* *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 6/30/2022 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 projected forward is the 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):

    - Miscellaneous active members
        - 5.25% as of July 1, 2022
        - 2.50% as of July 1, 2023
        - 2.25% as of January 6, 2024
    - Police active members
        - 6.0% as of July 1, 2022 (2% deferred from July 1, 2020, 1% deferred from January 1, 2021, and 3% effective July 1, 2022)
    - Fire active members
        - 6.0% as of July 1, 2022 (3% deferred from July 1, 2020 and 3% effective July 1, 2022)

- 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, 2022.

- The Basic COLAs effective July 1, 2022 for the Old Safety Charter retirees were estimated based on data provided by SFERS and included in the July 1, 2022 benefit.

APPENDIX A – MEMBERSHIP INFORMATION

- Benefit increases for members who retired before November 6, 1996 were provided by SFERS in a separate data file and included in determining the July 1, 2022 valuation liabilities.

- No Supplemental COLA benefits were granted as of July 1, 2022. Thus, there were no adjustments made to the benefits provided in the valuation data for a Supplemental COLA.

- 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 6/30/2022, and do not have a retiree record and their "Cvd Pay" is greater than $0.

- 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 6/30/2022, 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 non-reciprocal Miscellaneous and Safety Prop C members. The assumed retirement age for reciprocal Miscellaneous members is 60. 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 the assumed retirement age 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.

APPENDIX A – MEMBERSHIP INFORMATION

- 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). For active members who are reported with a Safety benefit and a Miscellaneous benefit with less than two years of service, their benefits are added together and valued as a single record under the Safety Charter section. For all other members who are reported with multiple benefits, we value each component of the member's benefit separately under the applicable Charter section. Consequently, the active 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 and the price and wage inflation assumptions were adopted at the December 9, 2020 Board meeting based on our recommendations. Please refer to the demographic experience study report dated August 2020 for the rationale for the demographic assumptions and the presentation dated December 9, 2020 for the rationale for the price and wage inflation assumptions. The discount rate was adopted at the November 10, 2021 Board meeting. Please refer to the October 13, 2021 Board presentation for the rationale for the discount rate. We believe all assumptions are reasonable for the purpose of the measurement.

1. Discount Rate

SFERS assets are assumed to earn 7.20% net of investment expenses.

2. Price Inflation

Consumer Price Inflation: 2.50% compounded annually

3. Wage Inflation

Bargained increases through July 1, 2023 followed by 3.25% compounded annually thereafter.

4. Amortization Payment Increase Rate

Amortization payments increase at the rate of 3.25% compounded annually

5. Administrative Expenses

Administrative expenses are assumed to equal 0.60% of payroll.

6. Interest Credited to Member Contributions

4.50%, compounded annually.

7. 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.

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

8. 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 2021. The projected increase in the 415(b) limit for retirees is the same increase as their Basic COLA which depends on their Charter.

9. Salary Increase Rate

Wage inflation component: Bargained increases through July 1, 2022 for Safety members and through January 6, 2024 for Miscellaneous members, followed by 3.25% compounded annually thereafter.

Table B-1
Current Bargained Wage Increases

Date of Increase	Police	Fire	Misc
6/30/2022	3.0%	3.0%	N/A
7/1/2022	3.0%	3.0%	5.3%
7/1/2023	N/A	N/A	2.5%
1/6/2024	N/A	N/A	2.3%

The additional merit component:

Table B-2
Salary Merit Increases - Sample Rates

Years of Service	Police	Fire	Muni Drivers	Craft	Misc
0	7.50%	14.00%	16.00%	3.75%	5.50%
1	6.75	10.00	11.00	3.00	4.50
2	6.00	8.00	6.50	2.40	3.75
3	5.25	6.00	3.50	1.80	3.25
4	4.50	5.00	1.75	1.50	2.75
5	3.75	4.00	1.25	1.20	2.25
10	1.50	1.50	0.30	0.50	1.10
15	0.50	0.50	0.00	0.50	0.55
20 & over	0.50	0.50	0.00	0.50	0.30

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

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

Table B-3	
Safety	3.0%
Muni Drivers	4.5%
Craft Workers	3.0%
Miscellaneous	2.0%

10. Cost-of-Living Increase in Benefits

Basic COLA

Old Plans – Miscellaneous	2.0% per year
New Plans – Police, Fire, and Miscellaneous	2.0% per year
Old Plans – Police and Fire, Charters 8.559 and 8.585	3.6% per year
Old Plans – Police and Fire, Charters 8.595 and 8.596	2.5% per year
Old Plans – Police and Fire, pre-7/1/75 dates of retirement	1.9% per year

Old Safety COLA assumptions are based on the following formula rounded up to one decimal place:

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

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

For Charters 8.559 and 8.585, the factor is 1.9
For Charters 8.595 and 8.596, the factor is 1.3
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 2024, future Supplemental COLAs are assumed to be 0%.

For purposes of the projections, in years when the return equals the assumption, future Supplemental COLAs are assumed to be granted approximately:

- 50% of the time for members who are eligible for a Supplemental COLA regardless of the System's funded status, and
- 50% for FYE 2024 gradually decreasing to 35% for FYE 2037 and later for members who are eligible for a Supplemental COLA only if the System is also 100% funded.

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

In years when the return differs from the assumption, Supplemental COLAs are estimated based on the investment return.

11. Rates of Termination of Employment

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

Table B-4
Misc. Rates of Termination by Age and Service Years

	Age		
Service	Under 30	30 to 39	40 & over
0	38.00%	24.00%	20.00%
1	20.00	12.00	9.00
2	14.00	9.00	6.00
3	10.00	7.00	4.80
4	7.50	6.50	4.60
5	6.75	6.00	4.40
10	3.75	3.75	3.75
15	2.25	2.25	2.25
20+	1.00	1.00	1.00

Sample rates of termination by service for Police, Fire, Muni Drivers, and Craft members are shown below.

Table B-5
Rates of Termination

Service	Police	Fire	Muni Drivers	Craft
0	8.00%	2.50%	12.00%	9.50%
1	5.00	1.00	5.00	6.50
2	2.00	1.00	4.00	5.75
3	1.50	1.00	3.50	4.50
4	1.00	1.00	3.25	3.50
5	1.00	1.00	3.00	3.25
10	0.75	0.50	2.50	1.75
15	0.50	0.25	2.50	1.75
20+	0.50	0.25	2.50	1.75

When members are eligible to retire, it is assumed that their termination rates are zero. 20% of Miscellaneous and 40% of Safety terminating employees are assumed to

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

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.

12. Member Refunds

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

Table B-6
Vested Terminated Rates of Refund

Service	Police & Fire	Miscellaneous
5	24.0%	20.0%
6	20.0	15.0
7	16.0	12.0
8	12.0	10.0
9	8.0	9.0
10	4.0	8.5
15	0.0	6.0
20	0.0	0.0

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

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

13. 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-7
Rates of Disability at Selected Ages

Age	Police	Fire	Muni Drivers	Craft	Misc Females	Misc Males
30	0.05%	0.04%	0.01%	0.01%	0.01%	0.01%
35	0.14	0.09	0.06	0.06	0.04	0.04
40	0.35	0.24	0.11	0.11	0.07	0.08
45	0.44	0.42	0.17	0.20	0.15	0.11
50	0.90	0.84	0.45	0.40	0.40	0.28
55	3.30	3.50	1.35	0.75	0.55	0.45
60	5.75	7.30	0.00	0.00	0.00	0.00
65	0.00	0.00	0.00	0.00	0.00	0.00

Table B-8
Level of duty disability benefits
(if projected to be disabled before service retirement eligibility)

Police	55% of pay
Fire	55% of pay

14. 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, 2019. The base mortality tables for healthy lives are described on the following page.

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

Table B-9

	Published Table	Adjustment Factor Male	Adjustment Factor Female
Non-Annuitants			
Miscellaneous	PubG-2010 Employee	0.834	0.866
Safety	PubS-2010 Employee	1.011	0.979
Retirees			
Miscellaneous	PubG-2010 Retiree	1.031	0.977
Safety	PubS-2010 Retiree	0.947	1.044
Beneficiaries			
Miscellaneous	PubG-2010 Retiree	1.031	0.977
Safety	PubG-2010 Retiree	1.031	0.977

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

15. 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, 2019. The base mortality tables for disabled annuitant lives are described below.

Table B-10

	Published Table	Adjustment Factor Male	Adjustment Factor Female
Disabled Annuitants			
Miscellaneous	PubG-2010 Disabled	1.045	1.003
Safety	PubS-2010 Disabled	0.916	0.995

16. Mortality Projection Scale

The mortality rates shown in the base tables above are projected generationally from the base year using the MP-2019 projection scale.

17. Rates of Retirement

Rates of retirement are based on age and service according to the tables on the following pages. Separate rates are used for members hired on or after January 7, 2012 under Charter Sections A8.603 and above (Prop C).

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

Table B-11
Police Rates of Retirement

	Other than Prop C Years of Service			Prop C Years of Service		
Age	< 25	25 - 29	30 +	< 25	25 - 29	30 +
50	1.50%	5.00%	5.00%	1.50%	5.00%	5.00%
51	1.50	5.00	15.00	1.50	5.00	10.00
52	2.00	7.50	20.00	2.00	7.50	20.00
53	5.00	20.00	40.00	5.00	15.00	25.00
54	7.50	22.00	50.00	7.50	17.50	30.00
55	7.50	35.00	50.00	7.50	20.00	35.00
56	7.50	26.00	40.00	7.50	24.00	35.00
57	10.00	28.00	45.00	10.00	26.00	40.00
58	10.00	30.00	45.00	10.00	35.00	60.00
59	15.00	25.00	45.00	15.00	25.00	45.00
60	20.00	34.00	45.00	20.00	34.00	45.00
61	10.00	36.00	40.00	10.00	36.00	40.00
62	15.00	36.00	40.00	15.00	36.00	40.00
63	12.50	36.00	40.00	12.50	36.00	40.00
64	12.50	36.00	40.00	12.50	36.00	40.00
65 & over	100.00	100.00	100.00	100.00	100.00	100.00

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

Table B-12
Fire Rates of Retirement

Age	Other than Prop C Years of Service			Prop C Years of Service		
	< 25	25 - 29	30 +	< 25	25 - 29	30 +
50	2.00%	5.00%	5.00%	2.00%	2.00%	2.00%
51	1.00	5.00	5.00	1.00	2.00	2.00
52	2.00	5.00	5.00	2.00	5.00	5.00
53	3.00	5.00	15.00	3.00	5.00	12.50
54	7.50	20.00	35.00	7.50	12.50	20.00
55	7.50	25.00	35.00	7.50	15.00	25.00
56	7.50	20.00	35.00	7.50	15.00	30.00
57	12.50	20.00	35.00	12.50	15.00	30.00
58	12.50	20.00	25.00	12.50	30.00	35.00
59	12.50	25.00	25.00	12.50	25.00	25.00
60	15.00	25.00	35.00	15.00	25.00	35.00
61	15.00	40.00	40.00	15.00	40.00	40.00
62	15.00	40.00	40.00	15.00	40.00	40.00
63	15.00	20.00	25.00	15.00	20.00	25.00
64	20.00	20.00	25.00	20.00	20.00	25.00
65 & over	100.00	100.00	100.00	100.00	100.00	100.00

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

Table B-13
Muni Drivers Rates of Retirement

	Other than Prop C Years of Service			Prop C Years of Service		
Age	< 20	20 - 29	30 +	< 20	20 - 29	30 +
50	0.00%	1.00%	1.50%	0.00%	0.00%	0.00%
51	0.00	1.00	1.50	0.00	0.00	0.00
52	0.00	1.00	1.50	0.00	0.00	0.00
53	0.00	1.00	1.50	0.00	1.00	1.50
54	0.00	1.00	1.50	0.00	1.00	1.50
55	0.00	4.00	5.00	0.00	1.00	5.00
56	0.00	4.00	5.00	0.00	1.00	5.00
57	0.00	4.00	5.00	0.00	2.00	5.00
58	0.00	4.00	5.00	0.00	2.00	5.00
59	0.00	4.00	5.00	0.00	2.00	5.00
60	10.00	10.00	20.00	5.00	10.00	15.00
61	12.50	25.00	30.00	7.50	12.50	20.00
62	20.00	32.50	35.00	10.00	15.00	30.00
63	15.00	30.00	30.00	10.00	20.00	25.00
64	15.00	30.00	30.00	10.00	25.00	25.00
65	27.50	30.00	35.00	27.50	30.00	40.00
66	27.50	30.00	35.00	27.50	30.00	35.00
67	27.50	30.00	35.00	27.50	30.00	35.00
68	27.50	30.00	35.00	27.50	30.00	35.00
69	27.50	30.00	35.00	27.50	30.00	35.00
70 & over	100.00	100.00	100.00	100.00	100.00	100.00

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

Table B-14
Craft Rates of Retirement

	Other than Prop C Years of Service			Prop C Years of Service		
Age	< 20	20 - 29	30 +	< 20	20 - 29	30 +
50	0.00%	1.50%	1.50%	0.00%	0.00%	0.00%
51	0.00	1.50	1.50	0.00	0.00	0.00
52	0.00	1.50	1.50	0.00	0.00	0.00
53	0.00	2.50	4.00	0.00	1.50	1.50
54	0.00	2.50	4.00	0.00	1.50	1.50
55	0.00	2.50	5.00	0.00	1.50	2.50
56	0.00	3.00	5.00	0.00	1.50	2.50
57	0.00	3.00	5.00	0.00	2.00	2.50
58	0.00	3.00	5.00	0.00	2.00	5.00
59	0.00	8.00	20.00	0.00	2.00	10.00
60	7.50	12.00	32.50	5.00	7.50	15.00
61	10.00	20.00	35.00	7.50	12.50	20.00
62	20.00	30.00	37.50	17.50	25.00	30.00
63	10.00	25.00	30.00	10.00	17.50	25.00
64	17.50	25.00	30.00	10.00	17.50	25.00
65	25.00	27.50	30.00	25.00	30.00	40.00
66	27.50	30.00	32.50	27.50	30.00	32.50
67	27.50	30.00	32.50	27.50	30.00	32.50
68	15.00	25.00	30.00	15.00	25.00	30.00
69	15.00	25.00	30.00	15.00	25.00	30.00
70 & over	100.00	100.00	100.00	100.00	100.00	100.00

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

Table B-15
Miscellaneous Rates of Retirement

	Other than Prop C Years of Service			Prop C Years of Service		
Age	< 20	20 - 29	30 +	< 20	20 - 29	30 +
50	0.00%	2.75%	3.50%	0.00%	0.00%	0.00%
51	0.00	2.50	3.50	0.00	0.00	0.00
52	0.00	2.50	3.50	0.00	0.00	0.00
53	0.00	3.25	3.50	0.00	3.25	3.25
54	0.00	4.00	4.00	0.00	4.00	4.00
55	0.00	4.00	5.50	0.00	4.00	4.00
56	0.00	4.25	6.75	0.00	4.25	4.25
57	0.00	4.50	8.75	0.00	4.50	4.50
58	0.00	5.00	10.00	0.00	5.00	7.50
59	0.00	8.75	20.00	0.00	8.75	10.00
60	9.00	11.50	30.00	7.50	10.00	12.50
61	13.25	20.00	35.00	10.00	15.00	15.00
62	20.00	30.00	35.00	17.50	25.00	25.00
63	16.00	22.50	30.00	12.50	17.50	20.00
64	16.00	22.50	30.00	12.50	17.50	20.00
65	20.00	30.00	30.00	25.00	40.00	40.00
66	25.00	30.00	35.00	25.00	30.00	35.00
67	25.00	30.00	35.00	25.00	30.00	35.00
68	20.00	30.00	30.00	20.00	30.00	30.00
69	20.00	30.00	30.00	20.00	30.00	30.00
70	25.00	25.00	30.00	25.00	25.00	30.00
71	25.00	25.00	30.00	25.00	25.00	30.00
72	25.00	25.00	30.00	25.00	25.00	30.00
73	25.00	25.00	30.00	25.00	25.00	30.00
74	25.00	25.00	30.00	25.00	25.00	30.00
75 & over	100.00	100.00	100.00	100.00	100.00	100.00

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

The assumed retirement age for inactive terminated vested members and actives who are expected to terminate is shown below.

Table B-16 Deferred Retirement Age		
	Non-Prop C	**Prop C**
Safety	51	55
	Non-Reciprocal	**Reciprocal**
Miscellaneous	55	60

18. Family Composition

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

Table B-17 Percentage Married	
Safety Males	80%
Safety Females	60
Miscellaneous Males	75
Miscellaneous Females	55

19. Deferred Member Benefit Amount

The benefit was estimated based on information provided by SFERS staff. The data used to estimate the 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. The estimates were used to compute the retirement benefit, upon which the liabilities are based. For those members without sufficient data or service, accumulated member contribution balances, with interest, were used as the Actuarial Liability.

20. Timing of Contributions

Employer and employee contributions are made throughout the year.

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

21. Changes Since Last Valuation

None.

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

B. Contribution Allocation Procedure

The contribution allocation procedure primarily consists of an actuarial cost method, an asset smoothing method, and an amortization method as described below. All components of the contribution allocation procedure were established prior to the July 1, 2008 actuarial valuation except the amortization method, which was most recently modified by the Board at their November 10, 2021 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 (7.20% for the year ending 2022, 7.40% for the years ending 2019-2021, and 7.50% for the year ending 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 July 1, 2014 has been amortized over 20 years from the date it was first recognized in the valuation. After July 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.

The UAL not attributable to Charter changes as of July 1, 2013, was amortized over a closed 19-year period as of July 1, 2014. Any sources of UAL due to actuarial gains and

APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

losses, assumption changes, or method changes are amortized over closed, layered 20-year periods.

If the System becomes 100% funded based on the Actuarial Value of Assets, any subsequent unexpected changes in the UAL are amortized over a rolling 20-year period until the System is no longer 100% funded.

Effective with the July 1, 2021 valuation, the remaining amortization periods for assumption changes prior to July 1, 2021 and all prior actuarial gains and losses (including the gain for 2021) were reduced to 5 years.

All amortization payment amounts increase each year at the assumed wage inflation rate.

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.

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

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

If Death is Due to a Work-Related Cause:

a. No Qualified Survivor – Lump sum benefit equal to the accumulated refund of all employee contributions with interest, plus six months' salary to a designated beneficiary. For Charter Sections 8.586 and 8.588, if the death is of a violent nature, an additional lump sum equivalent benefit equal to 12 months' salary is payable.

b. Qualified Survivor and Less than Age 50 with 25 Years of Service – Monthly continuation allowance to a qualified survivor equal to 100% ***(Pre 1998 – 75%)*** of Final Compensation at the date of death. Once the member would have completed 25 years of service and attained age 50, assuming that member earned service and salary increases from the date of death to the eligible service retirement date, the benefit is recalculated at 100% of the service retirement benefit, using the service and salary at the eligible service retirement date. Such allowance shall not be less than 50% of Final Compensation (For Chapter Sections 8.597, 8.598, 8.601, 8.602, 8.608, and 8.610 not to exceed 90% of Final Compensation).

c. Qualified Survivor and Age 50 with 25 Years of Service – Monthly continuation allowance to a qualified survivor equal to 100% ***(Pre 1998 – 75%)*** of the monthly service retirement benefit the member would have received had the member been retired on the date of death, not less than 50% of Final Compensation.

9. Withdrawal Benefits

Less than five years of Credited Service:
Lump sum benefit equal to the accumulated employee contributions with interest.

Five or more years of Credited Service:
The member may choose one of the following:

a. Lump sum benefit equal to the accumulated refund all of employee contributions with interest.

b. ***Charter Sections 8.586 and 8.588*****:** Retirement benefit first payable at age 50 equal to 2% of Final Compensation at termination for each year of credited service of the member at the date of termination.

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

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%		

<u>Benefit – Survivor</u>

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

6. **Disability**

<u>Eligibility</u>

10 years of Credited Service.

<u>Benefit – Member</u>

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.

<u>Benefit – Survivor</u>

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 10 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 10 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-Hayward, CA.

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 – PROJECTION DETAILS

Historical and Projected Employer Contribution Rates By Scenario
Before Cost-Sharing Adjustments

		1-Year Shock		5-Year Moderate		5-Year Significant	
FYE	Baseline	Negative	Positive	Negative	Positive	Negative	Positive
2014	21.21%						
2015	23.18%						
2016	19.24%						
2017	18.83%						
2018	20.07%						
2019	19.81%						
2020	21.78%						
2021	23.40%						
2022	20.92%						
2023	18.75%						
2024	18.24%	18.24%	18.24%	18.24%	18.24%	18.24%	18.24%
2025	16.66%	18.56%	13.07%	16.43%	17.03%	17.16%	16.18%
2026	15.86%	20.63%	8.21%	15.98%	14.97%	18.14%	12.19%
2027	14.88%	23.20%	3.81%	16.56%	12.68%	20.73%	6.80%
2028	16.14%	27.46%	1.25%	19.39%	11.51%	26.08%	1.20%
2029	17.07%	31.35%	0.00%	22.44%	9.38%	32.01%	0.00%
2030	14.81%	30.49%	0.00%	23.46%	3.36%	35.25%	0.00%
2031	14.68%	30.73%	0.00%	26.15%	1.66%	39.53%	0.00%
2032	15.55%	30.91%	0.00%	28.40%	0.85%	42.80%	0.00%
2033	15.60%	30.97%	0.00%	30.06%	0.69%	44.99%	0.00%
2034	15.43%	30.81%	0.00%	31.00%	1.03%	46.06%	0.00%

APPENDIX D – PROJECTION DETAILS

Historical and Projected Funded Ratio Based on Market Assets By Scenario Before Cost-Sharing Adjustments							
		1-Year Shock		5-Year Moderate		5-Year Significant	
Valuation	Baseline	Negative	Positive	Negative	Positive	Negative	Positive
2012	78.9%						
2013	84.1%						
2014	94.3%						
2015	88.9%						
2016	82.6%						
2017	87.2%						
2018	89.8%						
2019	90.6%						
2020	90.2%						
2021	111.8%						
2022	97.6%	97.6%	97.6%	97.6%	97.6%	97.6%	97.6%
2023	98.2%	77.1%	123.6%	93.8%	101.6%	88.0%	108.2%
2024	98.5%	76.7%	124.6%	89.7%	105.4%	78.8%	119.9%
2025	98.6%	76.4%	125.0%	85.4%	109.3%	70.2%	132.8%
2026	98.5%	76.2%	124.9%	81.2%	113.3%	62.3%	147.1%
2027	98.4%	76.4%	124.4%	77.1%	117.3%	55.3%	162.7%
2028	98.5%	77.0%	123.5%	76.8%	117.4%	55.1%	163.1%
2029	98.6%	78.0%	122.6%	76.9%	117.3%	55.6%	163.5%
2030	98.5%	79.0%	121.6%	77.1%	116.5%	56.4%	164.0%
2031	98.4%	80.1%	120.6%	77.6%	115.5%	57.8%	164.6%
2032	98.4%	81.2%	119.6%	78.4%	114.5%	59.5%	165.2%

APPENDIX D – PROJECTION DETAILS

Historical and Projected UAL Based on Market Assets By Scenario
Before Cost-Sharing Adjustments
(Amounts in millions)

		1-Year Shock		5-Year Moderate		5-Year Significant	
FYE	Baseline	Negative	Positive	Negative	Positive	Negative	Positive
2012	4,100						
2013	3,213						
2014	1,202						
2015	2,543						
2016	4,249						
2017	3,296						
2018	2,777						
2019	2,720						
2020	2,880						
2021	(3,769)						
2022	793	793	793	793	793	793	793
2023	618	7,979	(8,276)	2,152	(559)	4,160	(2,892)
2024	553	8,430	(8,967)	3,714	(1,987)	7,630	(7,285)
2025	547	8,895	(9,488)	5,435	(3,578)	11,127	(12,562)
2026	571	9,294	(9,826)	7,265	(5,311)	14,567	(18,795)
2027	641	9,596	(9,975)	9,160	(7,185)	17,879	(26,083)
2028	652	9,701	(9,997)	9,613	(7,494)	18,623	(27,244)
2029	612	9,597	(9,939)	9,938	(7,716)	19,111	(28,414)
2030	678	9,499	(9,855)	10,220	(7,638)	19,440	(29,649)
2031	751	9,351	(9,741)	10,362	(7,448)	19,531	(30,953)
2032	777	9,150	(9,597)	10,367	(7,180)	19,403	(32,330)

APPENDIX E – 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 E – 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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