# BAY AREA WATER SUPPLY AND CONSERVATION AGENCY

## VALUATION OF RETIREE HEALTH BENEFITS

### REPORT OF GASB 75 ACTUARIAL VALUATION AS OF JUNE 30, 2022

**Prepared by: North Bay Pensions LLC**
**September 6, 2022**

# Contents of This Report

## 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, 2022 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, 2022 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.

9-6-22

Nick Franceschine, F.S.A.

**North Bay Pensions LLC**
550 Du Franc Avenue
Sebastopol, CA 95472
1-707-824-9600
nick@northbaypensions.com

## 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, 2022, BAWSCA has accumulated $994,254 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 2022-2023 year. This report also includes GASB 75 results that were accrued and disclosed by BAWSCA during the 2021-2022 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, 2022, is **$2,366,025**. 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 $2,366,025 is the sum of these amounts:

| | |
|---|---|
| Future benefits of current employees | $ 1,931,244 |
| Future benefits of current retirees | 434,781 |
| APVPBP | $ 2,366,025 |

This figure may be compared to the APVPBP of $1,942,508 that was shown in the 2021 valuation report. We would have expected the APVTPB to increase to approximately $2,018,000 by 2022 as employees continue working and approach retirement age. The difference between the 2021 figure of $1,942,508 and this year's figure of $2,366,025 is:

| | |
|---|---|
| • Expected increase in the APVPBP since 2021 | $ 75,979 |
| • Changes in assumptions | 202,575 |
| • Miscellaneous experience gains and losses | 144,963 |
| Total of changes | $ 423,517 |

The experience loss of $144,963 is nearly all from demographic causes: no employees terminated during the year, one employee covered a dependent spouse, and some

participants changed their medical plan elections. The assumption changes are discussed below, under "Actuarial Assumptions".

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, 2021 and June 30, 2022, these amounts are:

| | June 30, 2021 | June 30, 2022 |
|---|---|---|
| Present value of benefits for employees | $ 1,134,294 | $ 1,367,543 |
| Present value of benefits for retirees | 419,393 | 434,781 |
| Total OPEB Liability | $ 1,553,687 | $ 1,802,324 |
| Accumulated assets in the CERBT trust | $ 1,062,189 | $ 994,254 |
| Plan Fiduciary Net Position | $ 1,062,189 | $ 994,254 |
| Total OPEB Liability | $ 1,553,687 | $ 1,802,324 |
| Plan Fiduciary Net Position | (1,062,189) | (994,254) |
| Net OPEB Liability | $ 491,498 | $ 808,070 |

**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 7.9 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, 2022 is **$54,538**. For the year ending June 30, 2023, the OPEB Expense is **$71,780**. Derivations of these amounts are shown in Exhibit 4.

**Disclosure Information as of June 30, 2022 and June 30, 2023**

Amounts to be disclosed in the footnotes to BAWSCA's audited financial statements as of June 30, 2022 and as of June 30, 2023 are shown in Exhibits 2 through 6 of this report. Numbers labelled as "June 30, 2021" are to be disclosed at June 30, 2022. Numbers labelled as "June 30, 2022" are to be disclosed at June 30, 2023.

Exhibit 7 shows estimated retiree benefits and OPEB expense for the next nine years after that.

**Actuarial Assumptions**

All actuarial assumptions are unchanged from the June 30, 2021 valuation, except as noted here. All assumptions are described in more detail in Exhibit 9.

CalPERS has lowered its expectation of long-term expected investment return for the CERBT Strategy #2 trust. In keeping with the CalPERS forecast, BAWSCA has lowered its discount rate assumption from 5.75% to 5.50%. This change increased the APVPBP by $117,250.

The assumed probabilities of retirement, turnover and mortality have been changed from the 2017 CalPERS valuation rates to the 2021 CalPERS valuation rates. This change increased the APVPBP by $85,325.

**Funding Strategy**

BAWSCA has requested a calculation of an amount to budget for funding into CERBT for the 2023-2024 year. Consistent with BAWSCA's practice in recent years, I suggest this amount:

| | |
|---|---|
| Estimated amount to contribute to CERBT | $ 78,000 |
| Expected benefits to retirees 2023-24 | 42,000 |
| Estimated implicit subsidy 2023-24 | 0 |
| Total | **$ 120,000** |

Assuming 5.5% investment return each year, and assuming that BAWSCA contributes $78,000 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.

## Exhibit 1 - Actuarial Values as of June 30, 2022

The Actuarial Present Value of Projected Benefit Payments (APVPBP) as of June 30, 2022 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 | $ 1,931,244 | 9 |
| Retired Employees | 434,781 | 3 |
| | $ 2,366,025 | 12 |

As of June 30, 2022, BAWSCA has accumulated $994,254 in an irrevocable trust toward this liability.

The Total OPEB Liability (TOL) as of June 30, 2022 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 | $ 1,367,543 |
| Retired former employees | 434,781 |
| Totals | $ 1,802,324 |

Summary of Participating Employees as of June 30, 2022

Active Employees

| | |
|---|---|
| Number | 9 employees |
| Average Age | 48.9 years |
| Average Service | 9.8 years |

Retired Former Employees and Surviving Spouses

| | |
|---|---|
| Number | 3 persons |
| Average Age | 74.0 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, 2020; June 30, 2021; and June 30, 2022 these are:

| | June 30, 2020 | June 30, 2021 | June 30, 2022 |
|---|---|---|---|
| Total OPEB Liability | | | |
| Value of benefits for employees | $ 990,200 | $ 1,134,294 | $ 1,367,543 |
| Value of benefits for retirees | 430,568 | 419,393 | 434,781 |
| Total OPEB Liability | $ 1,420,768 | $ 1,553,687 | $ 1,802,324 |
| Plan Fiduciary Net Position | | | |
| Fair value of assets in CERBT | $ 812,270 | $ 1,062,189 | $ 994,254 |
| Plan Fiduciary Net Position | $ 812,270 | $ 1,062,189 | $ 994,254 |
| Net OPEB Liability | $ 608,498 | $ 491,498 | $ 808,070 |

The Net OPEB Liability has changed from June 30, 2020 to June 30, 2021 in this way:

| | TOL | FNP | NOL |
|---|---|---|---|
| Values at June 30, 2020 | $ 1,420,768 | $ 812,270 | $ 608,498 |
| Service cost | 94,221 | | 94,221 |
| Interest | 80,696 | | 80,696 |
| Differences between actual and expected experience | (7,281) | | (7,281) |
| Assumption changes | 0 | | 0 |
| Employer contributions | | 112,717 | (112,717) |
| Net investment income | | 172,398 | (172,398) |
| Benefits paid to retirees | (34,717) | (34,717) | 0 |
| Administrative expense | | (479) | 479 |
| Net changes | $ 132,919 | $ 249,919 | $ (117,000) |
| Values at June 30, 2021 | $ 1,553,687 | $ 1,062,189 | $ 491,498 |

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 |

## 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, 2021 and June 30, 2022:

| | 1% Decrease | Discount Rate | 1% Increase |
|---|---|---|---|
| | **4.75 %** | **5.75 %** | **6.75 %** |
| Net OPEB Liability 6-30-2021 | $ 762,927 | $ 491,498 | $ 275,929 |
| | **4.50 %** | **5.50 %** | **6.50 %** |
| Net OPEB Liability 6-30-2022 | $ 1,141,521 | $ 808,070 | $ 546,085 |

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, 2021 and June 30, 2022:

| | 1% Decrease<br>4.5 % | Trend Rate<br>5.5 % | 1% Increase<br>6.5 % |
|---|---|---|---|
| Net OPEB Liability 6-30-2021 | $ 275,859 | $ 491,498 | $ 759,314 |
| Net OPEB Liability 6-30-2022 | $ 544,070 | $ 808,070 | $ 1,140,747 |

## Exhibit 4 - OPEB Expense for the Fiscal Year Ending June 30, 2023

**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, 2022**, BAWSCA recognized OPEB expense of **$54,538**, computed as follows:

| | |
|---|---|
| Service cost | $ 94,221 |
| Interest | 80,696 |
| Expected investment return | (46,692) |
| Administrative expense | 479 |
| Change in NOL due to changes in benefits | 0 |
| Recognition of difference between actual and expected experience | (43,067) |
| Recognition of changes in assumptions | (401) |
| Recognition of difference between projected and actual earnings on investments | (30,698) |
| **Total** | **$ 54,538** |

## Exhibit 5 - Deferred Outflows and Inflows of Resources

The values of deferred outflows and inflows of resources related to OPEB as of June 30, 2021, **to be reported as of June 30, 2022**, are:

| | Deferred Outflows of Resources | Deferred Inflows of Resources |
|---|---|---|
| Differences between expected and actual experience | $ 0 | $ 243,444 |
| Changes of assumptions | 0 | 2,128 |
| Net difference between projected and actual earnings on OPEB plan investments | 0 | 107,236 |
| BAWSCA contributions subsequent to the measurement date | 104,257 | 0 |
| Total | $ 104,257 | $ 352,808 |

Amounts reported as deferred outflows and inflows of resources related to OPEB as of June 30, 2021, **to be reported as of June 30, 2022**, will be recognized in OPEB expense as follows:

| Year Ended June 30 | |
|---|---|
| 2023 | $ (72,369) |
| 2024 | (71,256) |
| 2025 | (68,873) |
| 2026 | (68,610) |
| 2027 | (43,468) |
| Thereafter | (28,232) |

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 | UNKNOWN | 0 |
| Total | $ | $ 280,439 |

"UNKNOWN" is the total of amounts contributed by BAWSCA to retirees' benefits and to the CERBT trust **during the 12 months ending June 30, 2023**. This is the sum of (1) the total contributions to CERBT, (2) the actual benefits paid to retirees during the 12 months ending June 30, 2023, and (3) the implicit subsidy of $(802).

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 |

## Exhibit 6 - Schedule of Changes in the Net OPEB Liability

| Reporting date | 6/30/2022 | 6/30/2023 |
|---|---|---|
| **Total OPEB liability** | | |
| Service cost | $ 94,221 | $ 58,741 |
| Interest | 80,696 | 88,553 |
| Changes of benefit terms | 0 | 0 |
| Differences between actual and expected experience | (7,281) | 57,194 |
| Changes of assumptions | 0 | 71,406 |
| Benefits paid to retirees | (34,717) | (27,257) |
| **Net change in Total OPEB liability** | 132,919 | 248,637 |
| **Total OPEB liability – beginning** | 1,420,768 | 1,553,687 |
| **Total OPEB liability – ending** | $ 1,553,687 | $ 1,802,324 |
| **Plan fiduciary net position** | | |
| Contributions – employer | $ 112,717 | $ 104,257 |
| Net investment income | 172,398 | (144,389) |
| Benefits paid to retirees | (34,717) | (27,257) |
| Administrative expense | (479) | (546) |
| **Net change in plan fiduciary net position** | 249,919 | (67,935) |
| **Plan fiduciary net position - beginning** | 812,270 | 1,062,189 |
| **Plan fiduciary net position - ending** | $ 1,062,189 | $ 994,254 |
| Net OPEB Liability – ending | $ 491,498 | $ 808,070 |
| Plan fiduciary net position as a percentage of the Total OPEB liability | 68.37 % | 55.17% |
| Covered-employee payroll | $ 1,283,055 | 1,437,717 |
| Net OPEB liability as a percentage of covered-employee payroll | 38.31 % | 56.21% |

## 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 $78,000 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 |
|---|---|---|---|
| 2023 | $ 36,000 | $ (802) | $ 71,780 |
| 2024 | 42,000 | (845) | 113,000 |
| 2025 | 51,000 | 0 | 116,000 |
| 2026 | 63,000 | 2,000 | 116,000 |
| 2027 | 72,000 | 1,000 | 141,000 |
| 2028 | 85,000 | 4,000 | 123,000 |
| 2029 | 100,000 | 7,000 | 132,000 |
| 2030 | 106,000 | 5,000 | 136,000 |
| 2031 | 115,000 | 4,000 | 118,000 |
| 2032 | 116,000 | 2,000 | 114,000 |

## 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, 2022 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. In the 2021 valuation, this rate was 5.75%.

**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%. In the 2021 valuation, the discount rate was 5.75%.

**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. In the 2021 valuation, mortality rates were taken from the 2017 valuation of CalPERS.

**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 % |

In the 2021 valuation, rates were taken from the 2017 CalPERS valuation.

**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 % |

In the 2021 valuation, rates were taken from the 2017 CalPERS valuation.

**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 2022-2023 fiscal year are as follows (rates are shown for certain ages only):

| Age | Annual Claims |
|---|---|
| 40 | $ 7,511 |
| 45 | 9,081 |
| 50 | 11,219 |
| 55 | 13,837 |
| 60 | 16,128 |
| 64 | 17,304 |

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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Item 10A - Attachment 2

CHEIRON Classic Values, Innovative Advice

# City and County of San Francisco Postretirement Health Plan

## GASB 74/75 Report
## June 30, 2020 Measurement Date for June 30, 2021 Reporting Date

**Produced by Cheiron**

**December 2021**

www.cheiron.us 1.877.CHEIRON (243.4766)

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## 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;
- 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

The measurement date for GASB 74 and 75 is June 30, 2020. Measurements are based on the fair value of assets as of June 30, 2020 and the Total OPEB Liability as of the valuation date, which is also June 30, 2020. 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 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 6/30/2020 | 6/30/2019 |
|---|---|---|
| Net OPEB Liability | $ 3,823,334 | $ 3,915,814 |
| Deferred Outflows | (580,662) | (481,678) |
| Deferred Inflows | 547,780 | 281,625 |
| Net Impact on Statement of Net Position | $ 3,790,452 | $ 3,715,761 |
| Contributions Subsequent to Measurement Date (Included in Deferred Outflows Above) | | |
| Contributions to Trust | $ 39,555 | $ 39,518 |
| Benefit Payments | 206,439 | 196,445 |
| Total | $ 245,994 | $ 235,963 |
| OPEB Expense ($ Amount) | $ 320,685 | $ 330,672 |
| OPEB Expense (% of Payroll) | 8.11% | 8.79% |

*Amounts in Thousands*

The Net OPEB Liability (NOL) decreased approximately $92 million since the prior measurement date. This decrease is due to a combination of $382 million in experience gains offset by $152 million in assumption changes and $138 million due to contributions and net investment income being less than service cost, administrative expenses, and interest on the NOL.

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, 2021, the end of the reporting year, the City and County reports a Net OPEB Liability of $3,823,334,000, Deferred Outflows of $580,662,000, and Deferred Inflows of $547,780,000. Consequently, the net impact on the City and County's Statements of Net Position is $3,790,452,000 at the end of the reporting year. Contributions of $245,994,000 between the measurement date (June 30, 2020) and the City and County's reporting date (June 30, 2021) 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, 2021, the Annual OPEB Expense is $320,685,000, or 8.11% 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 V of this report.

## SECTION I – BOARD SUMMARY

### Reconciliation to Prior Valuation Results

The table below compares the Total OPEB Liability and service cost under GASB 74 and 75 as of June 30, 2020 to the prior valuation of June 30, 2018. The service cost shown in this table is for the year beginning on the valuation date, so it differs from the amount shown in the OPEB expense calculation for the measurement year ending on the valuation date.

| Comparison of Results to Prior Valuation | | | | |
|---|---|---|---|---|
| **Valuation Date** | | **6/30/2020** | | **6/30/2018** |
| Discount Rate | | 7.00% | | 7.40% |
| Total OPEB Liability | | | | |
| Actives | $ | 1,614,663 | $ | 1,485,785 |
| Terminated Vested Members | | 391,069 | | 302,668 |
| Retirees | | 2,306,591 | | 2,068,478 |
| Total | $ | 4,312,323 | $ | 3,856,931 |
| Service Cost (at middle of year) | $ | 146,242 | $ | 125,048 |

*Amounts in Thousands*

The following table shows the impact of the primary sources contributing to the change in Total OPEB Liability and service cost since the prior actuarial valuation. Note that the expected values as of June 30, 2020 are based on assumptions and methods from the prior valuation.

| Reconciliation of Results to Prior Valuation | | | | |
|---|---|---|---|---|
| | | **Total OPEB Liability** | | **Service Cost** |
| Expected Value, June 30, 2020 | $ | 4,542,520 | $ | 144,820 |
| Demographic Changes | $ | 2,903 | $ | (4,240) |
| Actual Claims and Premiums | | (384,825) | | (10,566) |
| Assumption Changes | | 151,725 | | 16,228 |
| Total Changes | $ | (230,197) | $ | 1,422 |
| Actual Value, June 30, 2020 | $ | 4,312,323 | $ | 146,242 |

*Amounts in Thousands*

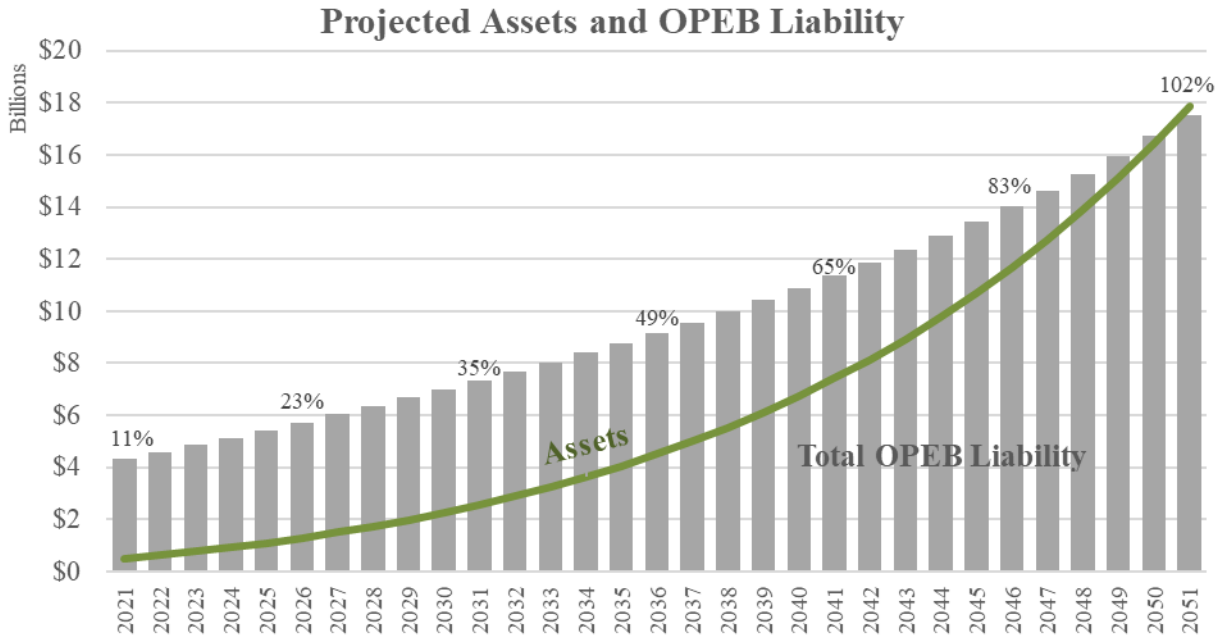
## SECTION I – BOARD SUMMARY

Below is a brief description of each of the changes shown in the previous table:

- The *Expected Value* is what the Total OPEB Liability and service cost would have been had experience matched all the assumptions between June 30, 2018 and June 30, 2020.
- The *Demographic Changes* represent the impact of population changes between June 30, 2018 and June 30, 2020.
- The *Actual Claims and Premiums* represent the impact of the difference between actual health care claims, expense costs, and premiums adopted as of the measurement date compared to the projected costs using the assumptions from the June 30, 2018 valuation.
- The *Assumption Changes* represent the impact of changes to the discount rate, health care trend assumptions, SFERS pension assumptions as a result of its most recent experience study (including rates of retirement, mortality, termination, salary increases, etc.), and OPEB-specific demographic assumptions (including participation, plan election, etc.). The assumption changes are described in Appendix B of the report.

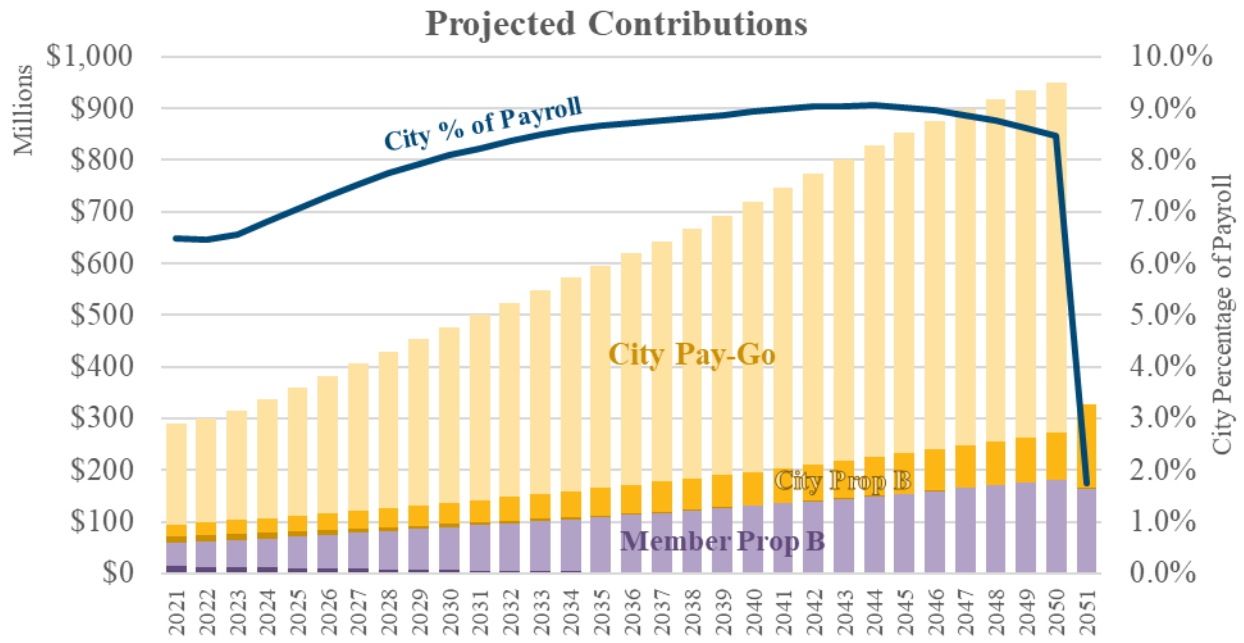
### Funding Projections

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 11% funded to 102% funded over the 30-year period if all assumptions are met, including the 7.0% discount rate. Benefits cannot be paid from the RHCTF until the plan is 100% funded.



## SECTION I – BOARD SUMMARY

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 below shows the projected contributions over the next 30 years.




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 2051 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 affect

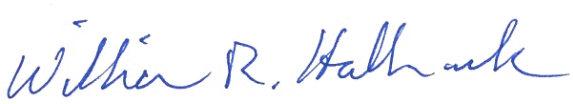
## SECTION II – CERTIFICATION

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

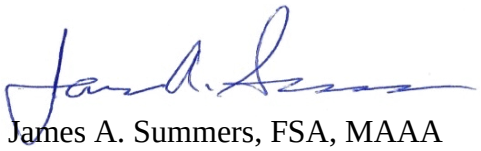
Future actuarial measurements may differ significantly from the current measurements due to such factors as the following: plan experience differing from that anticipated by the assumptions; changes in assumptions; and, changes in plan provisions or applicable law.

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.



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



James A. Summers, FSA, MAAA
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 – 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, 2020.

**Change in Net OPEB Liability**

| | Increase (Decrease) | | |
|---|---|---|---|
| | Total OPEB Liability | Plan Fiduciary Net Position | Net OPEB Liability |
| **Balance at end of prior year** | $ 4,282,416 | $ 366,602 | $ 3,915,814 |
| **Changes for the year:** | | | |
| Service cost | 141,642 | | 141,642 |
| Interest | 314,907 | | 314,907 |
| Changes of benefits | 0 | | 0 |
| Differences between expected and actual experience | (381,922) | | (381,922) |
| Changes of assumptions | 151,725 | | 151,725 |
| Contributions - employer | | 235,963 | (235,963) |
| Contributions - member | | 60,236 | (60,236) |
| Net investment income | | 22,746 | (22,746) |
| Benefit payments | (196,445) | (196,445) | 0 |
| Administrative expense | | (114) | 114 |
| **Net changes** | 29,907 | 122,387 | (92,479) |
| **Balance at end of current year** | $ 4,312,323 | $ 488,989 | $ 3,823,334 |

*Amounts in Thousands*

During the measurement year, the NOL decreased by approximately $92 million. The service cost, interest cost, and administrative expenses increased the NOL by approximately $457 million while contributions and investment income decreased the NOL by approximately $319 million.

The assumption changes effective at the end of the measurement year increased the NOL by approximately $152 million. There were actuarial experience gains during the year of approximately $382 million.

## SECTION IV – 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 | $ 4,925,888 | $ 4,312,323 | $ 3,811,442 |
| Plan Fiduciary Net Position | 488,989 | 488,989 | 488,989 |
| Net OPEB Liability | $ 4,436,900 | $ 3,823,334 | $ 3,322,453 |
| Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability | 9.9% | 11.3% | 12.8% |

*Amounts in Thousands*

A one percent decrease in the discount rate increases the TOL by approximately 14% and increases the NOL by approximately 16%. A one percent increase in the discount rate decreases the TOL by approximately 12% and decreases the NOL by approximately 13%.

## SECTION IV – 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 | $ 3,794,778 | $ 4,312,323 | $ 4,986,889 |
| Plan Fiduciary Net Position | 488,989 | 488,989 | 488,989 |
| Net OPEB Liability | $ 3,305,789 | $ 3,823,334 | $ 4,497,900 |
| Plan Fiduciary Net Position as a Percentage of the Total OPEB Liability | 12.9% | 11.3% | 9.8% |

*Amounts in Thousands*

A one percent decrease in the healthcare trends decreases the TOL by approximately 12% and decreases the NOL by approximately 14%. A one percent increase in the healthcare trends increases the TOL by approximately 16% and increases the NOL by approximately 18%.

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

*Amounts in Thousands*

## SECTION IV – 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 2020 | MYE 2019 | MYE 2018 | MYE 2017 | MYE 2016 |
|---|---|---|---|---|---|
| Charter Required Contribution | $ 235,963 | $ 218,625 | $ 203,858 | $ 183,898 | $ 168,855 |
| Contributions in Relation to the Charter Required Contribution | 235,963 | 218,625 | 203,858 | 183,898 | 168,855 |
| Contribution Deficiency/(Excess) | $ 0 | $ 0 | $ 0 | $ 0 | $ 0 |
| Covered Payroll | $ 3,951,792 | $ 3,763,446 | $ 3,583,448 | $ 3,393,658 | $ 3,241,700 |
| Actual Contributions as % of Pay | 5.97% | 5.81% | 5.69% | 5.42% | 5.21% |

| | MYE 2015 | MYE 2014 | MYE 2013 | MYE 2012 | MYE 2011 |
|---|---|---|---|---|---|
| Charter Required Contribution | $ 167,241 | $ 166,628 | $ 160,300 | $ 156,252 | $ 145,880 |
| Contributions in Relation to the Charter Required Contribution | 167,241 | 166,628 | 160,300 | 156,252 | 145,880 |
| Contribution Deficiency/(Excess) | $ 0 | $ 0 | $ 0 | $ 0 | $ 0 |
| Covered Payroll | $ 3,017,847 | $ 2,869,603 | $ 2,810,519 | $ 2,673,271 | $ 2,574,138 |
| Actual Contributions as % of Pay | 5.54% | 5.81% | 5.70% | 5.84% | 5.67% |

*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 V – 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, 2020 measurement date and are intended be used for their 2021 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 | $ 138,620 | $ 547,780 |
| Changes in assumptions | 193,547 | 0 |
| Net difference between projected and actual earnings on OPEB plan investments | 2,502 | 0 |
| Contributions subsequent to the measurement date | | |
| Contributions to the Trust | $ 39,555 | |
| Benefit payments | 206,439 | |
| Total contributions | $ 245,994 | |
| **Total** | **$ 580,662** | **$ 547,780** |

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, 2021. Other amounts reported as deferred outflows and deferred inflows of resources will be recognized in OPEB expense as follows:

| **Measurement year ended June 30:** | |
|---|---|
| 2021 | $ (44,993) |
| 2022 | (43,494) |
| 2023 | (43,786) |
| 2024 | (42,791) |
| 2025 | (5,161) |
| Thereafter | (32,885) |

*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 V – GASB 75 REPORTING INFORMATION

### Recognition of Experience (Gains) and Losses

| Year | Recognition Period | Total Amount | Beginning Remaining Amount | Ending Remaining Amount | Recognition Year 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | Thereafter |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2020 | 7.0 | $ (381,922) | $ (381,922) | $ (327,362) | $ (54,560) | $ (54,560) | $ (54,560) | $ (54,560) | $ (54,560) | $ (54,560) | $ (54,560) |
| 2019 | 7.0 | 194,068 | 166,344 | 138,620 | 27,724 | 27,724 | 27,724 | 27,724 | 27,724 | 27,724 | 0 |
| 2018 | 7.0 | (385,732) | (275,523) | (220,418) | (55,105) | (55,105) | (55,105) | (55,105) | (55,105) | 0 | 0 |
| Deferred Outflows | | | 166,344 | 138,620 | 27,724 | 27,724 | 27,724 | 27,724 | 27,724 | 27,724 | 0 |
| Deferred (Inflows) | | | (657,445) | (547,780) | (109,665) | (109,665) | (109,665) | (109,665) | (109,665) | (54,560) | (54,560) |
| Net Change in OPEB Expense | | | $ (491,101) | $ (409,160) | $ (81,941) | $ (81,941) | $ (81,941) | $ (81,941) | $ (81,941) | $ (26,836) | $ (54,560) |

*Amounts in Thousands*

### Recognition of Assumption Changes

| Year | Recognition Period | Total Amount | Beginning Remaining Amount | Ending Remaining Amount | Recognition Year 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | Thereafter |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2020 | 7.0 | $ 151,725 | $ 151,725 | $ 130,050 | $ 21,675 | $ 21,675 | $ 21,675 | $ 21,675 | $ 21,675 | $ 21,675 | $ 21,675 |
| 2019 | 7.0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2018 | 7.0 | 111,119 | 79,371 | 63,497 | 15,874 | 15,874 | 15,874 | 15,874 | 15,874 | 0 | 0 |
| Deferred Outflows | | | 231,096 | 193,547 | 37,549 | 37,549 | 37,549 | 37,549 | 37,549 | 21,675 | 21,675 |
| Deferred (Inflows) | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Net Change in OPEB Expense | | | $ 231,096 | $ 193,547 | $ 37,549 | $ 37,549 | $ 37,549 | $ 37,549 | $ 37,549 | $ 21,675 | $ 21,675 |

*Amounts in Thousands*

## SECTION V – GASB 75 REPORTING INFORMATION

### Recognition of Investment (Gains) and Losses

| Year | Recognition Period | Total Amount | Beginning Remaining Amount | Ending Remaining Amount | Recognition Year 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | Thereafter |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2020 | 5.0 | $ 8,003 | $ 8,003 | $ 6,402 | $ 1,601 | $ 1,601 | $ 1,601 | $ 1,601 | $ 1,601 | $ 0 | $ 0 |
| 2019 | 5.0 | (4,977) | (3,982) | (2,986) | (995) | (995) | (995) | (995) | 0 | 0 | 0 |
| 2018 | 5.0 | 1,462 | 877 | 585 | 292 | 292 | 292 | 0 | 0 | 0 | 0 |
| 2017 | 5.0 | (7,494) | (2,998) | (1,499) | (1,499) | (1,499) | 0 | 0 | 0 | 0 | 0 |
| Net Change in OPEB Expense | | | $ 1,901 | $ 2,502 | $ (601) | $ (601) | $ 898 | $ 605 | $ 1,601 | $ 0 | $ 0 |

*Amounts in Thousands*

## SECTION V – 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, 2020 | June 30, 2019 |
|---|---|---|
| Change in Net OPEB Liability | $ (92,479) | $ 314,847 |
| Change in Deferred Outflows | (88,954) | (150,470) |
| Change in Deferred Inflows | 266,155 | (52,330) |
| Employer Contributions | 235,963 | 218,625 |
| **OPEB Expense** | **$ 320,685** | **$ 330,672** |
| **OPEB Expense as % of Payroll** | **8.11%** | **8.79%** |
| **Operating Expenses** | | |
| Service cost | $ 141,642 | $ 133,736 |
| Employee contributions | (60,236) | (51,025) |
| Administrative expenses | 114 | 132 |
| Total | $ 81,520 | $ 82,843 |
| **Financing Expenses** | | |
| Interest cost | $ 314,907 | $ 283,520 |
| Expected return on assets | (30,749) | (21,982) |
| Total | $ 284,158 | $ 261,537 |
| **Changes** | | |
| Benefit changes | $ 0 | $ 0 |
| Recognition of assumption changes | 37,549 | 15,874 |
| Recognition of liability gains and losses | (81,941) | (27,381) |
| Recognition of investment gains and losses | (601) | (2,202) |
| Total | $ (44,993) | $ (13,708) |
| **OPEB Expense** | **$ 320,685** | **$ 330,672** |

*Amounts in Thousands*

## SECTION V – 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 $10 million. The recognition of changes decreased about $31 million and operating expenses decreased about $1 million while financing expenses increased about $23 million.

## APPENDIX A – MEMBERSHIP INFORMATION

The census data used to develop the Total OPEB Liability as of June 30, 2020 is based on a June 30, 2020 valuation date. The census data used for the previous valuation at June 30, 2018 is shown for comparison purposes.

**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% |

The following table provides a summary of active employees by age and service as of the current valuation date.

**Active Employees by Age and Service**
**As of June 30, 2020**

| Age Group | Years of Service | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | < 5 | 5-9 | 10-14 | 15-19 | 20-24 | 25-29 | 30+ | Total |
| Under 25 | 361 | 1 | 0 | 0 | 0 | 0 | 0 | 362 |
| 25 to 29 | 1,588 | 222 | 0 | 0 | 0 | 0 | 0 | 1,810 |
| 30 to 34 | 2,396 | 1,195 | 146 | 1 | 0 | 0 | 0 | 3,738 |
| 35 to 39 | 2,073 | 1,586 | 750 | 97 | 2 | 0 | 0 | 4,508 |
| 40 to 44 | 1,473 | 1,277 | 912 | 509 | 120 | 0 | 0 | 4,291 |
| 45 to 49 | 1,186 | 963 | 892 | 812 | 670 | 125 | 1 | 4,649 |
| 50 to 54 | 1,010 | 811 | 741 | 837 | 945 | 523 | 91 | 4,958 |
| 55 to 59 | 715 | 699 | 650 | 708 | 901 | 547 | 432 | 4,652 |
| 60 to 64 | 370 | 445 | 404 | 451 | 488 | 281 | 306 | 2,745 |
| Over 65 | 131 | 185 | 177 | 202 | 198 | 95 | 178 | 1,166 |
| Total | 11,303 | 7,384 | 4,672 | 3,617 | 3,324 | 1,571 | 1,008 | 32,879 |

# APPENDIX A – MEMBERSHIP INFORMATION

Key statistics for active participants by employee group are provided as of the valuation date in the following table.

**Active Employees by Employee Group**
**As of June 30, 2020**

| | Police | Fire | Muni | Craft | Misc. | Total |
|---|---|---|---|---|---|---|
| ***Pre-Prop B (for vesting schedule)*** | | | | | | |
| Count | 1,891 | 886 | 1,059 | 1,854 | 9,962 | 15,652 |
| Average age | 48.3 | 50.5 | 53.4 | 55.0 | 52.6 | 52.3 |
| Average service | 19.1 | 20.9 | 16.0 | 18.6 | 17.2 | 17.7 |
| Total Payroll ($000's) | $272,070 | $128,004 | $84,051 | $195,514 | $1,157,130 | $1,836,770 |
| ***Post-Prop B (for vesting schedule)*** | | | | | | |
| Count | 1,324 | 772 | 1,449 | 1,987 | 11,695 | 17,227 |
| Average age | 34.6 | 36.5 | 44.2 | 46.0 | 41.4 | 41.4 |
| Average service | 5.5 | 4.8 | 4.8 | 4.6 | 4.2 | 4.4 |
| Total Payroll ($000's) | $154,115 | $85,334 | $109,142 | $196,927 | $1,209,227 | $1,754,745 |
| ***Total Actives*** | | | | | | |
| Count | 3,215 | 1,658 | 2,508 | 3,841 | 21,657 | 32,879 |
| Average age | 42.6 | 43.9 | 48.0 | 50.4 | 46.5 | 46.6 |
| Average service | 13.5 | 13.4 | 9.5 | 11.3 | 10.2 | 10.8 |
| Total Payroll ($000's) | $426,185 | $213,338 | $193,193 | $392,441 | $2,366,357 | $3,591,515 |

A member's vesting schedule is based on their original hire date. However, their contribution schedule is based on their most recent date of hire. The following table provides a summary of the active membership broken into the pre and post-Prop B contribution schedules.

**Active Employees by Contribution Schedule**
**As of June 30, 2020**

| | Pre-Prop B | Post-Prop B | Total |
|---|---|---|---|
| Count | 12,118 | 20,761 | 32,879 |
| Average age | 53.5 | 42.6 | 46.6 |
| Average service | 20.0 | 5.4 | 10.8 |
| Total Payroll ($000's) | $1,477,780 | $2,113,734 | $3,591,515 |

## APPENDIX A – MEMBERSHIP INFORMATION

A schedule of inactive participants by status and age group is shown below.

**Inactive Members by Status and Age Group**
**As of June 30, 2020**

| Age Group | Disabled Retiree | Retiree | Survivor | Term Vested | Total |
|---|---|---|---|---|---|
| Under 40 | 3 | 6 | 3 | 199 | 211 |
| 40 to 44 | 17 | 2 | 9 | 367 | 395 |
| 45 to 49 | 35 | 2 | 22 | 597 | 656 |
| 50 to 54 | 86 | 316 | 50 | 518 | 970 |
| 55 to 59 | 233 | 1,053 | 73 | 272 | 1,631 |
| 60 to 64 | 397 | 2,724 | 145 | 149 | 3,415 |
| 65 to 69 | 477 | 4,194 | 258 | 73 | 5,002 |
| 70 to 74 | 492 | 4,098 | 385 | 25 | 5,000 |
| 75 to 79 | 318 | 2,525 | 409 | 4 | 3,256 |
| 80 to 84 | 166 | 1,636 | 398 | 2 | 2,202 |
| 85 to 90 | 79 | 816 | 372 | 4 | 1,271 |
| Over 90 | 62 | 491 | 376 | 1 | 930 |
| Total | 2,365 | 17,863 | 2,500 | 2,211 | 24,939 |

Shown below is the distribution of medical plan elections for participants currently receiving a benefit from the Plan.

**Medical Plan Elections for In-Pay Members [1]**
**As of June 30, 2020**

| | Pre-Medicare | | | Medicare Eligible | | |
|---|---|---|---|---|---|---|
| Medical Plan | Retirees & Surviving Spouses | Spouses & Domestic Partners | Total | Retirees & Surviving Spouses | Spouses & Domestic Partners | Total |
| Blue Shield Access | 1,083 | 335 | 1,418 | 0 | 0 | 0 |
| Blue Shield Trio | 731 | 187 | 918 | 0 | 0 | 0 |
| City Health Plan / UHC PPO | 872 | 805 | 1,677 | 9,764 | 2,607 | 12,371 |
| Kaiser | 2,490 | 1,085 | 3,575 | 7,788 | 2,003 | 9,791 |
| Total | 5,176 | 2,412 | 7,588 | 17,552 | 4,610 | 22,162 |

[1] Assumes Medicare eligibility at age 65.

# APPENDIX A – MEMBERSHIP INFORMATION

## *Data Assumptions and Methods*

The methodology for preparing the data used for the valuation is based upon the assumptions and practices as outlined below and described in the Data Memo provided to the City and County dated November 16, 2021.

The raw data is adjusted and combined to reflect members covered by the OPEB plan as follows:

- The Active members for the OPEB valuation are the Active members reported by SFERS plus the Active members reported to CalPERS in the City payroll report both adjusted for members reported as In-Pay by HSS.
- The Vested Terminated members for the OPEB valuation are the Vested Terminated members reported by SFERS plus estimated Vested Terminated members in CalPERS adjusted for those currently active, duplicates, and members reported as In-Pay by HSS. The estimated Vested Terminated members in CalPERS equal the Vested Terminated members reported as of the 2019 valuation plus Active members in the 2019 valuation who were not reported in the 2020 City payroll report to CalPERS and were hired before January 10, 2009.
- The In-Pay status members for the OPEB valuation are the members reported as In-Pay by HSS.

The following table provides a summary of the adjustments made to the raw data.

**Counts Reconciliation**

| Description | SFERS | CalPERS | Total |
|---|---|---|---|
| **Active** | | | |
| Total Raw Data | 32,203 | 685 | 32,888 |
| Remove: HSS Retired | (9) | (0) | (9) |
| **OPEB Valuation Data** | 32,194 | 685 | **32,879** |
| | | | |
| **Vested Terminated** | | | |
| Total Raw Data | 2,575 | 259 | 2,834 |
| Add: CalPERS Active in 2019, but not in 2020 | N/A | 55 | 55 |
| Remove: Active in CalPERS / SFERS | (493) | (64) | (557) |
| Remove: Duplicated in SFERS and CalPERS | N/A | (66) | (66) |
| Remove: HSS Retired | (16) | (39) | (55) |
| **OPEB Valuation Data** | 2,066 | 145 | **2,211** |
| | | | |
| **In-Pay** | | | |
| Total Raw Data | N/A | N/A | 25,064 |
| Remove: Waived Coverage | N/A | N/A | (2,336) |
| **OPEB Valuation Data** | N/A | N/A | **22,728** |

## APPENDIX A – MEMBERSHIP INFORMATION

The following table provides the assumptions and methods used to set key data fields used in the valuation. Unless otherwise indicated, for Active and Vested Terminated members, healthcare-related fields are from the HSS data and all other fields are from the retirement or payroll data. For In-Pay participants, the HSS data is used.

"SFERS" refers to the 7/1/2020 SFERS valuation data, "CalPERS" refers to the 6/30/2019 CalPERS Safety valuation data, "HSS" refers to the 6/30/2020 HSS census data, "City Payroll" refers to the Controller's Office Active Member Payroll reports as of June 26, 2020.

| Active Participants | Affected Group | Base Data Set Fields Used |
|---|---|---|
| Categorize Prop B *(for vesting)* | All actives | • (SFERS) SFERS Hire Dt [1]<br>• (CalPERS) CalPERS Assumption Alignment Date, if available, or HSS HIRE_DT |
| Categorize Prop B *(for contributions)* | All actives | • (SFERS) SFERS Mbrship Dt [1]<br>• (CalPERS) CalPERS Membership Effective Date, if available, or HSS SVC_DT<br>• (Applicable to All) If Prop B (vesting), or if Prop B or inactive in the 2018 OPEB valuation |
| Total Service | CalPERS Actives | • CalPERS Program Eligibility Service + [1 year of service x CalPERS Pay Part Time Percent], if available, or HSS SVC_DT |
| Years Service | CalPERS Actives | • CalPERS [(Service Credit Years) - (Service Credit Purchase Years)] + [1 year of service x CalPERS Pay Part Time Percent], if available, or HSS SVC_DT |
| Adjust Salary to FYE 2021 | All actives | • (SFERS) HSS ANNUAL_RT (an annualized rate of pay as of the valuation date), if available, or annualized SFERS Rate (pay rate as of the valuation date)<br>• (CalPERS) Annualized City Payroll MEM EARNINGS, for the last biweekly pay period ending before the valuation date.<br>To estimate pay for FYE 2021, known bargained inflationary increases are applied along with half a year of merit increases |

[1] SFERS Hire Dt is defined as the earliest period of employment and Mbrship Dt is defined as the most recent membership date for the plan

## APPENDIX A – MEMBERSHIP INFORMATION

| Vested Terminated Participants | Affected Group | Base Data Set Fields Used |
|---|---|---|
| Date of Termination | All Vested Terminated | The earlier of [the most recent date of hire + the member's years of service], or the valuation date |

| In-Pay Participants | Affected Group | Base Data Set Fields Used |
|---|---|---|
| Assign Status (Retired, Disabled, Survivor) | All In-Pay | First SFERS classification, then CalPERS classification, then classification in last OPEB valuation, then HSS classification of Survivor, then Disabled if under age 65 and on Medicare, retirement reason "RTD", or newly retired before age 50. Remaining are considered Retired. |
| Assign Group (Misc, Safety) | All In-Pay | First SFERS classification, then CalPERS classification, then classification in last OPEB valuation, then HSS "FIR" or "POL" as Safety, and remaining are considered Miscellaneous. |
| Assign Medical Plan Information | 28 | Delinquent members missing medical plan information were assumed to participate in a medical plan, and are thus included in the valuation |

## 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 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. 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 Year Beginning January 1 | 10-County Trend | Medical & Rx Non-Medicare | Medical & Rx Medicare Eligible | Vision / Expense | To Year Beginning January 1 | 10-County Trend | Medical & Rx Non-Medicare | Medical & Rx Medicare Eligible | Vision / Expense |
|---|---|---|---|---|---|---|---|---|---|
| 2021 | *Actual Premiums Used* | | | | 2049 | 4.70% | 4.70% | 4.70% | 3.00% |
| 2022 | 4.50% | 4.00% | 1.00% | 3.00% | 2050 | 4.69% | 4.69% | 4.69% | 3.00% |
| 2023 | 5.50% | 7.00% | 7.50% | 3.00% | 2051 | 4.68% | 4.68% | 4.68% | 3.00% |
| 2024 | 5.50% | 6.50% | 7.00% | 3.00% | 2052 | 4.67% | 4.67% | 4.67% | 3.00% |
| 2025 | 5.45% | 6.28% | 6.70% | 3.00% | 2053 | 4.66% | 4.66% | 4.66% | 3.00% |
| 2026 | 5.39% | 6.06% | 6.39% | 3.00% | 2054 | 4.65% | 4.65% | 4.65% | 3.00% |
| 2027 | 5.34% | 5.84% | 6.09% | 3.00% | 2055 | 4.65% | 4.65% | 4.65% | 3.00% |
| 2028 | 5.29% | 5.62% | 5.79% | 3.00% | 2056 | 4.64% | 4.64% | 4.64% | 3.00% |
| 2029 | 5.23% | 5.40% | 5.48% | 3.00% | 2057 | 4.63% | 4.63% | 4.63% | 3.00% |
| 2030 | 5.18% | 5.18% | 5.18% | 3.00% | 2058 | 4.62% | 4.62% | 4.62% | 3.00% |
| 2031 | 5.00% | 5.00% | 5.00% | 3.00% | 2059 | 4.61% | 4.61% | 4.61% | 3.00% |
| 2032 | 4.97% | 4.97% | 4.97% | 3.00% | 2060 | 4.60% | 4.60% | 4.60% | 3.00% |
| 2033 | 4.94% | 4.94% | 4.94% | 3.00% | 2061 | 4.60% | 4.60% | 4.60% | 3.00% |
| 2034 | 4.92% | 4.92% | 4.92% | 3.00% | 2062 | 4.59% | 4.59% | 4.59% | 3.00% |
| 2035 | 4.90% | 4.90% | 4.90% | 3.00% | 2063 | 4.58% | 4.58% | 4.58% | 3.00% |
| 2036 | 4.88% | 4.88% | 4.88% | 3.00% | 2064 | 4.57% | 4.57% | 4.57% | 3.00% |
| 2037 | 4.86% | 4.86% | 4.86% | 3.00% | 2065 | 4.57% | 4.57% | 4.57% | 3.00% |
| 2038 | 4.84% | 4.84% | 4.84% | 3.00% | 2066 | 4.51% | 4.51% | 4.51% | 3.00% |
| 2039 | 4.83% | 4.83% | 4.83% | 3.00% | 2067 | 4.45% | 4.45% | 4.45% | 3.00% |
| 2040 | 4.81% | 4.81% | 4.81% | 3.00% | 2068 | 4.40% | 4.40% | 4.40% | 3.00% |
| 2041 | 4.80% | 4.80% | 4.80% | 3.00% | 2069 | 4.34% | 4.34% | 4.34% | 3.00% |
| 2042 | 4.78% | 4.78% | 4.78% | 3.00% | 2070 | 4.29% | 4.29% | 4.29% | 3.00% |
| 2043 | 4.77% | 4.77% | 4.77% | 3.00% | 2071 | 4.24% | 4.24% | 4.24% | 3.00% |
| 2044 | 4.76% | 4.76% | 4.76% | 3.00% | 2072 | 4.19% | 4.19% | 4.19% | 3.00% |
| 2045 | 4.75% | 4.75% | 4.75% | 3.00% | 2073 | 4.14% | 4.14% | 4.14% | 3.00% |
| 2046 | 4.74% | 4.74% | 4.74% | 3.00% | 2074 | 4.09% | 4.09% | 4.09% | 3.00% |
| 2047 | 4.72% | 4.72% | 4.72% | 3.00% | 2075 | 4.04% | 4.04% | 4.04% | 3.00% |
| 2048 | 4.71% | 4.71% | 4.71% | 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 | | | |
|---|---|---|---|
| | Published Table | Adjustment Factor 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 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 2020 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 Valuation*

The expected return on assets was reduced from 7.40% to 7.00%. The price inflation assumption was reduced from 2.75% to 2.50%. The wage inflation assumption was reduced from 3.50% to 3.25%.

Per person healthcare cost trends were updated.

Rates of retirement, termination, member refunds, mortality, disability, and salary increases were updated to reflect the changes SFERS adopted due to their most recent experience study.

Participation in the postretirement health plan, anticipated medical plan elections, portion of new entrant payroll eligible for pre-Prop B benefits, dependent age, and the average annual claims by age assumptions were updated to reflect recent experience.

# 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)
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, 2021 are as follows.

| Medical Premiums / Premium Equivalents [1,2] | | | | |
|---|---|---|---|---|
| | 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 - Choice Not Available | 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 - Choice Not Available | 1,510.84 | 2,400.05 | N/A | N/A |
| City Plan[3] | 1,510.84 | 2,400.05 | $ 441.82 | $ 880.66 |
| Kaiser | 1,295.75 | 1,938.49 | 372.71 | 742.44 |
| **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 - Choice Not Available | 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 - Choice Not Available | 1,747.72 | 2,535.05 | N/A | N/A |
| City Plan[3] | 1,747.72 | 2,535.05 | $ 429.17 | $ 855.36 |
| Kaiser | 1,370.10 | 2,049.60 | 354.32 | 705.66 |

[1] Includes Rx, vision, and expense.

[2] All claims stabilization amounts are included in the premiums shown.

[3] The premiums shown for Medicare eligible retirees is the UHC Medicare Advantage 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 (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 | |
|---|---|
| Period Ending | |
| December 31, 2020 | $ 706.78 |
| December 31, 2021[1] | $ 729.19 |

[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 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*

The City Plan – Choice Not Available plan was added as an option for active employees and non-Medicare retirees.

## 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 |
|---|---|---|---|---|---|---|---|---|
| 2021 | $ 488,989 | $ 281,138 | $ 118 | $ 196,542 | $ 37,136 | $ 610,603 | $ 196,542 | $ 0 |
| 2022 | 610,603 | 282,659 | 121 | 202,435 | 45,498 | 736,204 | 202,435 | 0 |
| 2023 | 736,204 | 290,077 | 125 | 212,708 | 54,192 | 867,640 | 212,708 | 0 |
| 2024 | 867,640 | 304,158 | 129 | 229,670 | 63,293 | 1,005,292 | 229,670 | 0 |
| 2025 | 1,005,292 | 318,701 | 134 | 247,213 | 72,826 | 1,149,472 | 247,213 | 0 |
| 2026 | 1,149,472 | 333,555 | 138 | 265,226 | 82,809 | 1,300,473 | 265,226 | 0 |
| 2027 | 1,300,473 | 349,285 | 143 | 284,263 | 93,265 | 1,458,617 | 284,263 | 0 |
| 2028 | 1,458,617 | 364,868 | 147 | 303,164 | 104,221 | 1,624,395 | 303,164 | 0 |
| 2029 | 1,624,395 | 379,791 | 152 | 321,464 | 115,709 | 1,798,279 | 321,464 | 0 |
| 2030 | 1,798,279 | 394,394 | 157 | 339,552 | 127,761 | 1,980,726 | 339,552 | 0 |
| 2031 | 1,980,726 | 408,760 | 162 | 357,418 | 140,412 | 2,172,318 | 357,418 | 0 |
| 2032 | 2,172,318 | 423,744 | 167 | 375,941 | 153,701 | 2,373,655 | 375,941 | 0 |
| 2033 | 2,373,655 | 439,509 | 173 | 395,258 | 167,673 | 2,585,406 | 395,258 | 0 |
| 2034 | 2,585,406 | 453,851 | 178 | 413,195 | 182,371 | 2,808,255 | 413,195 | 0 |
| 2035 | 2,808,255 | 467,701 | 184 | 430,684 | 197,845 | 3,042,934 | 430,684 | 0 |
| 2036 | 3,042,934 | 480,971 | 190 | 447,682 | 214,144 | 3,290,177 | 447,682 | 0 |
| 2037 | 3,290,177 | 494,539 | 196 | 465,082 | 231,319 | 3,550,757 | 465,082 | 0 |
| 2038 | 3,550,757 | 509,145 | 203 | 483,674 | 249,422 | 3,825,448 | 483,674 | 0 |
| 2039 | 3,825,448 | 524,249 | 209 | 502,961 | 268,507 | 4,115,032 | 502,961 | 0 |
| 2040 | 4,115,032 | 539,775 | 216 | 522,801 | 288,629 | 4,420,419 | 522,801 | 0 |
| 2041 | 4,420,419 | 556,304 | 223 | 543,746 | 309,854 | 4,742,608 | 543,746 | 0 |
| 2042 | 4,742,608 | 572,651 | 230 | 564,637 | 332,250 | 5,082,642 | 564,637 | 0 |
| 2043 | 5,082,642 | 587,570 | 238 | 584,230 | 355,892 | 5,441,635 | 584,230 | 0 |
| 2044 | 5,441,635 | 602,335 | 245 | 603,781 | 380,856 | 5,820,799 | 603,781 | 0 |
| 2045 | 5,820,799 | 614,527 | 253 | 620,804 | 407,231 | 6,221,500 | 620,804 | 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 |
|---|---|---|---|---|---|---|---|---|
| 2046 | $ 6,221,500 | $ 625,617 | $ 262 | $ 636,742 | $ 435,113 | $ 6,645,227 | $ 636,742 | $ 0 |
| 2047 | 6,645,227 | 633,770 | 270 | 649,707 | 464,608 | 7,093,627 | 649,707 | 0 |
| 2048 | 7,093,627 | 640,382 | 279 | 661,063 | 495,833 | 7,568,500 | 661,063 | 0 |
| 2049 | 7,568,500 | 645,386 | 288 | 670,641 | 528,916 | 8,071,873 | 670,641 | 0 |
| 2050 | 8,071,873 | 648,847 | 297 | 678,432 | 564,003 | 8,605,994 | 678,432 | 0 |
| 2051 | 8,605,994 | 12,418 | 307 | 680,937 | 579,407 | 8,516,574 | 680,937 | 0 |
| 2052 | 8,516,574 | 9,918 | 317 | 682,811 | 572,996 | 8,416,360 | 682,811 | 0 |
| 2053 | 8,416,360 | 7,879 | 327 | 682,158 | 565,933 | 8,307,687 | 682,158 | 0 |
| 2054 | 8,307,687 | 6,195 | 338 | 678,614 | 558,390 | 8,193,321 | 678,614 | 0 |
| 2055 | 8,193,321 | 4,821 | 349 | 674,566 | 550,476 | 8,073,702 | 674,566 | 0 |
| 2056 | 8,073,702 | 3,711 | 360 | 669,886 | 542,225 | 7,949,392 | 669,886 | 0 |
| 2057 | 7,949,392 | 2,813 | 372 | 663,802 | 533,701 | 7,821,732 | 663,802 | 0 |
| 2058 | 7,821,732 | 2,099 | 384 | 657,751 | 524,948 | 7,690,644 | 657,751 | 0 |
| 2059 | 7,690,644 | 1,543 | 397 | 652,120 | 515,946 | 7,555,616 | 652,120 | 0 |
| 2060 | 7,555,616 | 1,114 | 410 | 645,418 | 506,710 | 7,417,612 | 645,418 | 0 |
| 2061 | 7,417,612 | 786 | 423 | 639,720 | 497,234 | 7,275,489 | 639,720 | 0 |
| 2062 | 7,275,489 | 545 | 437 | 634,863 | 487,444 | 7,128,178 | 634,863 | 0 |
| 2063 | 7,128,178 | 371 | 451 | 629,988 | 477,293 | 6,975,403 | 629,988 | 0 |
| 2064 | 6,975,403 | 245 | 465 | 624,546 | 466,781 | 6,817,418 | 624,546 | 0 |
| 2065 | 6,817,418 | 159 | 481 | 618,729 | 455,919 | 6,654,287 | 618,729 | 0 |
| 2066 | 6,654,287 | 103 | 496 | 611,726 | 444,738 | 6,486,906 | 611,726 | 0 |
| 2067 | 6,486,906 | 64 | 512 | 603,062 | 433,318 | 6,316,714 | 603,062 | 0 |
| 2068 | 6,316,714 | 40 | 529 | 592,798 | 421,756 | 6,145,183 | 592,798 | 0 |
| 2069 | 6,145,183 | 24 | 546 | 580,807 | 410,160 | 5,974,014 | 580,807 | 0 |
| 2070 | 5,974,014 | 13 | 564 | 567,043 | 398,651 | 5,805,072 | 567,043 | 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 |
|---|---|---|---|---|---|---|---|---|
| 2071 | $ 5,805,072 | $ 7 | $ 582 | $ 551,518 | $ 387,359 | $ 5,640,337 | $ 551,518 | $ 0 |
| 2072 | 5,640,337 | 4 | 601 | 534,274 | 376,420 | 5,481,885 | 534,274 | 0 |
| 2073 | 5,481,885 | 2 | 621 | 515,373 | 365,978 | 5,331,871 | 515,373 | 0 |
| 2074 | 5,331,871 | 1 | 641 | 494,903 | 356,180 | 5,192,508 | 494,903 | 0 |
| 2075 | 5,192,508 | 0 | 662 | 472,984 | 347,178 | 5,066,041 | 472,984 | 0 |
| 2076 | 5,066,041 | 0 | 683 | 449,866 | 339,120 | 4,954,612 | 449,866 | 0 |
| 2077 | 4,954,612 | 0 | 705 | 425,796 | 332,148 | 4,860,259 | 425,796 | 0 |
| 2078 | 4,860,259 | 0 | 728 | 400,928 | 326,398 | 4,785,000 | 400,928 | 0 |
| 2079 | 4,785,000 | 0 | 752 | 375,438 | 322,006 | 4,730,816 | 375,438 | 0 |
| 2080 | 4,730,816 | 0 | 776 | 349,519 | 319,104 | 4,699,624 | 349,519 | 0 |
| 2081 | 4,699,624 | 0 | 802 | 323,381 | 317,819 | 4,693,261 | 323,381 | 0 |
| 2082 | 4,693,261 | 0 | 828 | 297,244 | 318,272 | 4,713,462 | 297,244 | 0 |
| 2083 | 4,713,462 | 0 | 855 | 271,334 | 320,577 | 4,761,850 | 271,334 | 0 |
| 2084 | 4,761,850 | 0 | 882 | 245,879 | 324,839 | 4,839,928 | 245,879 | 0 |
| 2085 | 4,839,928 | 0 | 911 | 221,102 | 331,156 | 4,949,071 | 221,102 | 0 |
| 2086 | 4,949,071 | 0 | 941 | 197,217 | 339,617 | 5,090,530 | 197,217 | 0 |
| 2087 | 5,090,530 | 0 | 971 | 174,419 | 350,302 | 5,265,442 | 174,419 | 0 |
| 2088 | 5,265,442 | 0 | 1,003 | 152,883 | 363,286 | 5,474,842 | 152,883 | 0 |
| 2089 | 5,474,842 | 0 | 1,035 | 132,754 | 378,636 | 5,719,689 | 132,754 | 0 |
| 2090 | 5,719,689 | 0 | 1,069 | 114,145 | 396,414 | 6,000,889 | 114,145 | 0 |
| 2091 | 6,000,889 | 0 | 1,104 | 97,135 | 416,682 | 6,319,332 | 97,135 | 0 |
| 2092 | 6,319,332 | 0 | 1,140 | 81,766 | 439,501 | 6,675,927 | 81,766 | 0 |
| 2093 | 6,675,927 | 0 | 1,177 | 68,045 | 464,933 | 7,071,639 | 68,045 | 0 |
| 2094 | 7,071,639 | 0 | 1,215 | 55,948 | 493,048 | 7,507,523 | 55,948 | 0 |
| 2095 | 7,507,523 | 0 | 1,254 | 45,423 | 523,921 | 7,984,766 | 45,423 | 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 |
|---|---|---|---|---|---|---|---|---|
| 2096 | $ 7,984,766 | $ 0 | $ 1,295 | $ 36,390 | $ 557,637 | $ 8,504,719 | $ 36,390 | $ 0 |
| 2097 | 8,504,719 | 0 | 1,337 | 28,748 | 594,295 | 9,068,928 | 28,748 | 0 |
| 2098 | 9,068,928 | 0 | 1,381 | 22,380 | 634,007 | 9,679,175 | 22,380 | 0 |
| 2099 | 9,679,175 | 0 | 1,426 | 17,157 | 676,903 | 10,337,494 | 17,157 | 0 |
| 2100 | 10,337,494 | 0 | 1,472 | 12,944 | 723,129 | 11,046,207 | 12,944 | 0 |
| 2101 | 11,046,207 | 0 | 1,520 | 9,603 | 772,852 | 11,807,935 | 9,603 | 0 |
| 2102 | 11,807,935 | 0 | 1,569 | 7,001 | 826,261 | 12,625,626 | 7,001 | 0 |
| 2103 | 12,625,626 | 0 | 1,620 | 5,013 | 883,566 | 13,502,559 | 5,013 | 0 |
| 2104 | 13,502,559 | 0 | 1,673 | 3,522 | 945,000 | 14,442,364 | 3,522 | 0 |
| 2105 | 14,442,364 | 0 | 1,727 | 2,427 | 1,010,823 | 15,449,032 | 2,427 | 0 |
| 2106 | 15,449,032 | 0 | 1,783 | 1,640 | 1,081,314 | 16,526,924 | 1,640 | 0 |
| 2107 | 16,526,924 | 0 | 1,841 | 1,085 | 1,156,784 | 17,680,781 | 1,085 | 0 |
| 2108 | 17,680,781 | 0 | 1,901 | 703 | 1,237,565 | 18,915,742 | 703 | 0 |
| 2109 | 18,915,742 | 0 | 1,963 | 446 | 1,324,019 | 20,237,352 | 446 | 0 |
| 2110 | 20,237,352 | 0 | 2,027 | 277 | 1,416,535 | 21,651,585 | 277 | 0 |
| 2111 | 21,651,585 | 0 | 2,092 | 168 | 1,515,533 | 23,164,858 | 168 | 0 |
| 2112 | 23,164,858 | 0 | 2,160 | 99 | 1,621,462 | 24,784,060 | 99 | 0 |
| 2113 | 24,784,060 | 0 | 2,231 | 57 | 1,734,806 | 26,516,578 | 57 | 0 |
| 2114 | 26,516,578 | 0 | 2,303 | 32 | 1,856,080 | 28,370,323 | 32 | 0 |
| 2115 | 28,370,323 | 0 | 2,378 | 18 | 1,985,840 | 30,353,767 | 18 | 0 |
| 2116 | 30,353,767 | 0 | 2,455 | 9 | 2,124,679 | 32,475,982 | 9 | 0 |
| 2117 | 32,475,982 | 0 | 2,535 | 5 | 2,273,231 | 34,746,673 | 5 | 0 |
| 2118 | 34,746,673 | 0 | 2,617 | 2 | 2,432,177 | 37,176,230 | 2 | 0 |
| 2119 | 37,176,230 | 0 | 2,703 | 1 | 2,602,243 | 39,775,770 | 1 | 0 |
| 2120 | 39,775,770 | 0 | 2,790 | 0 | 2,784,208 | 42,557,187 | 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.


*Classic Values, Innovative Advice*

**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 2022**

**Miscellaneous Plan of the Bay Area Water Supply and Conservation Agency (CalPERS ID: 3304364524)**
**Annual Valuation Report as of June 30, 2021**

Dear Employer,

Attached to this letter, you will find the June 30, 2021 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) 2023-24**. 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, 2021.

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, 2021.

Your June 30, 2021 actuarial valuation report contains important actuarial information about your pension plan at CalPERS. The plan actuary whose signature is in the Actuarial Certification is available to discuss.

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 Contribution**

The table below shows the minimum required employer contributions for FY 2023-24 along with estimates of the required contributions for FY 2024-25. 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 |
|---|---|---|
| 2023-24 | 13.79% | $64,007 |
| *Projected Results* | | |
| *2024-25* | *13.8%* | *$61,000* |

The actual investment return for FY 2021-22 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 2021-22 differs from 6.8%, the actual contribution requirements for FY 2024-25 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 2028-29.

**Changes from Previous Year's Valuation**

On July 12, 2021, CalPERS reported a preliminary 21.3% net return on investments for FY 2020-21. Since the return exceeded the 7.00% discount rate sufficiently, the CalPERS Funding Risk Mitigation policy allows CalPERS to use a portion of the investment gain to offset the cost of reducing the expected volatility of future investment returns. Based on the thresholds specified in the policy, the excess return of 14.3% prescribes a reduction in investment volatility that corresponds to a reduction in the discount rate of 0.20%, from 7.00% to 6.80%.

On November 17, 2021, the board adopted new actuarial assumptions based on the recommendations in the November 2021 CalPERS Experience Study and Review of Actuarial Assumptions. This study reviewed the retirement rates, termination rates, mortality rates, rates of salary increases, and inflation assumption for public agencies. These new assumptions are incorporated in this actuarial valuation and will impact the required contribution for FY 2023-24. In addition, the board adopted a new strategic asset allocation as part of its Asset Liability Management process. The new asset allocation along with the new capital market assumptions and economic assumptions support a discount rate of 6.80%. This includes a reduction in the price inflation assumption from 2.50% to 2.30%.

Besides the above noted changes, there may also be changes specific to the plan such as contract amendments and funding changes.

Further descriptions of general changes are included in the "Highlights and Executive Summary" section and in Appendix A of the Section 2 report, "Actuarial Methods and Assumptions."

**Questions**

We understand that you might have questions about these results, and the plan actuary whose signature is on the valuation report is available to discuss. If you have other questions, you may call the Customer Contact Center at (888)-CalPERS or (**888-225-7377**).

Sincerely,

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


# Actuarial Valuation
# as of June 30, 2021

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

**(CalPERS ID: 3304364524)**

## Required Contributions
## for Fiscal Year
## July 1, 2023 - June 30, 2024

# Table of Contents

# Section 1

CALIFORNIA PUBLIC EMPLOYEES' RETIREMENT SYSTEM

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# 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

To the best of our knowledge, this report, comprising 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, 2021 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 consistent 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, 2021 and employer contribution as of July 1, 2023 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 Pension Actuary, CalPERS

# Highlights and Executive Summary

- **Introduction**
- **Purpose of Section 1**
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# Introduction

This report presents the results of the June 30, 2021 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 required employer contributions for (FY) 2023-24.

# 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 plan actuary in order to:

- Set forth the assets and accrued liabilities of this plan as of June 30, 2021;
- Determine the minimum required employer contribution for this plan for the FY July 1, 2023 through June 30, 2024; and
- Provide actuarial information as of June 30, 2021 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 recommendations of Actuarial Standards 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 2023-24 |
|---|---|
| **Employer Normal Cost Rate** | **13.79%** |
| ***Plus*** | |
| **Required Payment on Amortization Bases[1]** | **$64,007** |
| ***Paid either as*** | |
| **1) Monthly Payment** | **$5,333.92** |
| ***Or*** | |
| **2) Annual Prepayment Option*** | **$61,936** |

*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)**.*

| | Fiscal Year 2022-23 | Fiscal Year 2023-24 |
|---|---|---|
| **Development of Normal Cost as a Percentage of Payroll** | | |
| Base Total Normal Cost for Formula | 17.24% | 18.76% |
| Surcharge for Class 1 Benefits[2] | | |
| a) FAC 1 | 0.55% | 0.63% |
| b) PRSA | 0.74% | 0.79% |
| c) 3% COLA | 0.78% | 0.53% |
| Phase out of Normal Cost Difference[3] | 0.00% | 0.00% |
| Plan's Total Normal Cost | 19.31% | 20.71% |
| Formula's Expected Employee Contribution Rate | 6.92% | 6.92% |
| Employer Normal Cost Rate | 12.39% | 13.79% |

[1] The required payment on amortization bases does not take into account any additional discretionary payment made after April 29, 2022.

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

[3] The normal cost change 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 the 2023-24 FY is $64,007. 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 2023-24 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 2023-24**

| Estimated Normal Cost | Minimum UAL Payment | ADP | Total UAL Contribution | Estimated Total Contribution |
|---|---|---|---|---|
| $130,059 | $64,007 | $0 | $64,007 | $194,066 |

**Alternative Fiscal Year 2023-24 Employer Contributions for Greater UAL Reduction**

| Funding Target | Estimated Normal Cost | Minimum UAL Payment | ADP[1] | Total UAL Contribution | Estimated Total Contribution |
|---|---|---|---|---|---|
| 5 years | $130,059 | $64,007 | $7,823 | $71,830 | $201,889 |

[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 Unfunded Accrued Liability as of June 30, 2023 as determined in the June 30, 2021 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.

# Plan's Funded Status

| | June 30, 2020 | June 30, 2021 |
|---|---|---|
| 1. Present Value of Projected Benefits (PVB) | $5,005,202 | $5,581,606 |
| 2. Entry Age Accrued Liability (AL) | 3,895,146 | 4,395,827 |
| 3. Plan's Market Value of Assets (MVA) | 3,108,316 | 4,032,483 |
| 4. Unfunded Accrued Liability (UAL) [(2) - (3)] | 786,830 | 363,344 |
| 5. Funded Ratio [(3) / (2)] | 79.8% | 91.7% |

The UAL and funded ratio are assessments of the need for future employer contributions based on the actuarial cost method used to fund the plan. The UAL is the present value of future employer contributions for service that has already been earned and is in addition to future normal cost contributions for active members. The funded ratio, on the other hand, is a relative measure of funded status that allows for comparison between plans of different sizes. For measures of funded status that are appropriate for assessing the sufficiency of plan assets to cover estimated termination liabilities, please see "Hypothetical Termination Liability" in the "Risk Analysis" section.

# 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 2021-22 is assumed to be 6.80% per year, net of investment and administrative expenses. Actual contribution rates during this projection period could be significantly higher or lower than the projection shown below. 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 2021-22 and Beyond) | | | | |
|---|---|---|---|---|---|---|
| **Fiscal Year** | **2023-24** | **2024-25** | **2025-26** | **2026-27** | **2027-28** | **2028-29** |
| | Rate Plan 4540 Results | | | | | |
| **Normal Cost %** | 13.79% | 13.8% | 13.8% | 13.8% | 13.8% | 13.8% |
| **UAL Payment** | $64,007 | $61,000 | $55,000 | $49,000 | $41,000 | $43,000 |

For some sources of UAL, the change in UAL is 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 increase in UAL, the relatively small amortization payments during the ramp up period could result in a funded ratio that is projected to decrease initially 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 below, 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 payroll for each rate plan will grow according to the overall payroll growth assumption of 2.80% per year for three years.

| | Fiscal Year 2022-23 | Fiscal Year 2023-24 |
|---|---|---|
| **Estimated Combined Employer Contributions for all Pooled Miscellaneous Rate Plans** | | |
| Projected Payroll for the Contribution Year | $1,331,761 | $1,389,693 |
| Estimated Employer Normal Cost | $145,870 | $167,927 |
| Required Payment on Amortization Bases | $76,396 | $64,007 |
| Estimated Total Employer Contributions | $222,266 | $231,934 |
| Estimated Total Employer Contribution Rate (illustrative only) | 16.69% | 16.69% |

# 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 2016-17, the Amortization of UAL component was expressed as a percentage of total active payroll. Starting with FY 2016-17, the Amortization of UAL component was expressed as a dollar amount and invoiced on a monthly basis. There continues to be 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, 2021, 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 changes by amendments effective before the date of the report. Please refer to the "Plan's Major Benefit Options" and Appendix B of the Section 2 Report for a summary of the plan provisions used in this valuation.

**Actuarial Methods and Assumptions**

On November 17, 2021, the board adopted new actuarial assumptions based on the recommendations in the 2021 CalPERS Experience Study and Review of Actuarial Assumptions. This study reviewed the retirement rates, termination rates, mortality rates, rates of salary increases, and inflation assumption for Public Agencies. These new assumptions are incorporated in this actuarial valuation and will impact the required contribution for FY 2023-24. In addition, the board adopted a new asset portfolio as part of its Asset Liability Management process. The new asset mix supports a 6.80% discount rate, which reflects a change in the price inflation assumption to 2.30%.

# Subsequent Events

The contribution requirements determined in this actuarial valuation report are based on demographic and financial information as of June 30, 2021. Changes subsequent to that date are not reflected. Investment returns below the assumed rate of return may increase future required contributions while investment returns above the assumed rate of return may decrease future required contributions.

The projected employer contributions on Page 6 are calculated under the assumption that the discount rate remains at 6.8% going forward and that the realized rate of return on assets for FY 2021-22 is 6.8%.

This actuarial valuation report reflects statutory changes, regulatory changes and board actions through January 2022. Any subsequent changes or actions are not reflected.

# 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 Plan's Amortization Bases**
- **Amortization Schedule and Alternatives**
- **Employer Contribution History**
- **Funding History**

# Breakdown of Entry Age Accrued Liability

| | |
|---|---|
| Active Members | $3,295,747 |
| Transferred Members | 41,317 |
| Terminated Members | 61,621 |
| Members and Beneficiaries Receiving Payments | 997,142 |
| Total | $4,395,827 |

# 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 | $4,395,827 |
| 2. | Projected UAL balance at 6/30/2021 | 784,942 |
| 3. | Pool's Accrued Liability[1] | 20,794,529,023 |
| 4. | Sum of Pool's Individual Plan UAL Balances at 6/30/2021[1] | 4,597,734,264 |
| 5. | Pool's 2020/21 Investment (Gain)/Loss[1] | (2,338,185,055) |
| 6. | Pool's 2020/21 Non-Investment (Gain)/Loss[1] | (84,077,623) |
| 7. | Plan's Share of Pool's Investment (Gain)/Loss: [(1) - (2)] ÷ [(3) - (4)] × (5) | (521,271) |
| 8. | Plan's Share of Pool's Non-Investment (Gain)/Loss: (1) ÷ (3) × (6) | (17,773) |
| 9. | Plan's New (Gain)/Loss as of 6/30/2021: (7) + (8) | (539,044) |
| 10. | Increase in Pool's Accrued Liability due to Change in Assumptions[1] | 60,407,898 |
| 11. | Plan's Share of Pool's Change in Assumptions: (1) ÷ (3) × (10) | 12,770 |
| 12. | Increase in Pool's Accrued Liability due to Funding Risk Mitigation[1] | 495,172,731 |
| 13. | Plan's Share of Pool's Change due to Funding Risk Mitigation: (1) ÷ (3) × (12) | 104,676 |
| 14. | Offset due to Funding Risk Mitigation | (117,392) |
| 15. | Plan's Net Investment (Gain): (7) – (14) | (403,879) |

[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

| | | |
|---|---|---|
| 16. | Plan's UAL: (2) + (9) + (11) + (13) | $363,344 |
| 17. | Plan's Share of Pool's MVA: (1) - (16) | $4,032,483 |

# Schedule of Plan's Amortization Bases

Note that there is a two-year lag between the valuation date and the start of the contribution fiscal year.

- The assets, liabilities, and funded status of the plan are measured as of the valuation date: June 30, 2021.
- The required employer contributions determined by the valuation are for the fiscal year beginning two years after the valuation date: FY 2023-24.

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 2023-24 | Ramp Shape | Escala-tion Rate | Amort. Period | Balance 6/30/21 | Expected Payment 2021-22 | Balance 6/30/22 | Expected Payment 2022-23 | Balance 6/30/23 | Minimum Required Payment 2023-24 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Fresh Start | 6/30/17 | No Ramp | | 2.80% | 11 | 541,193 | 54,291 | 521,888 | 55,784 | 499,727 | 56,410 |
| Assumption Change | 6/30/18 | 80% | Up/Down | 2.80% | 17 | 109,252 | 3,984 | 112,564 | 6,140 | 113,873 | 8,246 |
| Investment (Gain)/Loss | 6/30/18 | 80% | Up/Down | 2.80% | 27 | (30,780) | (818) | (32,028) | (1,261) | (32,903) | (1,679) |
| Method Change | 6/30/18 | 80% | Up/Down | 2.80% | 17 | 28,517 | 1,040 | 29,381 | 1,603 | 29,722 | 2,152 |
| Non-Investment (Gain)/Loss | 6/30/18 | 80% | Up/Down | 2.80% | 27 | 14,327 | 381 | 14,907 | 587 | 15,314 | 781 |
| Investment (Gain)/Loss | 6/30/19 | 60% | Up Only | 0.00% | 18 | 15,537 | 340 | 16,242 | 679 | 16,645 | 1,001 |
| Non-Investment (Gain)/Loss | 6/30/19 | No Ramp | | 0.00% | 18 | 15,302 | 1,396 | 14,900 | 1,396 | 14,471 | 1,372 |
| Investment (Gain)/Loss | 6/30/20 | 40% | Up Only | 0.00% | 19 | 78,554 | 0 | 83,896 | 1,838 | 87,701 | 3,605 |
| Non-Investment (Gain)/Loss | 6/30/20 | No Ramp | | 0.00% | 19 | 13,040 | 0 | 13,927 | 1,273 | 13,558 | 1,250 |
| Assumption Change | 6/30/21 | No Ramp | | 0.00% | 20 | 12,770 | (6,591) | 20,450 | (6,776) | 28,843 | 2,594 |
| Net Investment (Gain) | 6/30/21 | 20% | Up Only | 0.00% | 20 | (403,879) | 0 | (431,343) | 0 | (460,674) | (9,902) |
| Non-Investment (Gain)/Loss | 6/30/21 | No Ramp | | 0.00% | 20 | (17,773) | 0 | (18,982) | 0 | (20,273) | (1,823) |
| Risk Mitigation | 6/30/21 | No Ramp | | 0.00% | 1 | 104,676 | (6,696) | 118,714 | (6,884) | 133,901 | 138,379 |
| Risk Mitigation Offset | 6/30/21 | No Ramp | | 0.00% | 1 | (117,392) | 0 | (125,375) | 0 | (133,901) | (138,379) |
| **Total** | | | | | | **363,344** | **47,327** | **339,141** | **54,379** | **306,004** | **64,007** |

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 | | | |
|---|---|---|---|---|---|---|
| | | | 5 Year Amortization | | 0 Year Amortization | |
| **Date** | **Balance** | **Payment** | **Balance** | **Payment** | **Balance** | **Payment** |
| **6/30/2023** | 306,004 | 64,007 | 306,004 | 71,830 | N/A | N/A |
| **6/30/2024** | 260,664 | 60,530 | 252,580 | 71,830 | | |
| **6/30/2025** | 215,837 | 54,727 | 195,523 | 71,830 | | |
| **6/30/2026** | 173,956 | 48,650 | 134,587 | 71,831 | | |
| **6/30/2027** | 135,507 | 40,824 | 69,506 | 71,830 | | |
| **6/30/2028** | 102,534 | 42,960 | | | | |
| **6/30/2029** | 65,109 | 45,154 | | | | |
| **6/30/2030** | 22,873 | 23,638 | | | | |
| **6/30/2031** | | | | | | |
| **6/30/2032** | | | | | | |
| **6/30/2033** | | | | | | |
| **6/30/2034** | | | | | | |
| **6/30/2035** | | | | | | |
| **6/30/2036** | | | | | | |
| **6/30/2037** | | | | | | |
| **6/30/2038** | | | | | | |
| **6/30/2039** | | | | | | |
| **6/30/2040** | | | | | | |
| **6/30/2041** | | | | | | |
| **6/30/2042** | | | | | | |
| **6/30/2043** | | | | | | |
| **6/30/2044** | | | | | | |
| **6/30/2045** | | | | | | |
| **6/30/2046** | | | | | | |
| **6/30/2047** | | | | | | |
| **6/30/2048** | | | | | | |
| **6/30/2049** | | | | | | |
| **6/30/2050** | | | | | | |
| **6/30/2051** | | | | | | |
| **6/30/2052** | | | | | | |
| **Total** | **380,490** | | **359,151** | | **N/A** | |
| **Interest Paid** | **74,486** | | **53,147** | | **N/A** | |
| **Estimated Savings** | | | **21,339** | | **N/A** | |

# Employer Contribution History

The table below provides a recent history of the required employer contributions for the plan. The amounts are based on the actuarial valuation from two years prior and does not account for prepayments or benefit changes made during a fiscal year. Additional discretionary payments before July 1, 2019 or after June 30, 2021 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 | |
| 2022 - 23 | 12.39% | 68,039 | |
| 2023 - 24 | 13.79% | 64,007 | |

# 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 |
|---|---|---|---|---|---|
| 06/30/2012 | $1,489,743 | $1,148,004 | $341,739 | 77.1% | $728,042 |
| 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 |

## Risk Analysis

- **Future Investment Return Scenarios**
- **Discount Rate Sensitivity**
- **Mortality Rate Sensitivity**
- **Maturity Measures**
- **Maturity Measures History**
- **Hypothetical Termination Liability**

# 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, 2041.

| Assumed Annual Return FY 2021-22 through 2040-41 | Projected Employer Contributions | | | | |
|---|---|---|---|---|---|
| | 2024-25 | 2025-26 | 2026-27 | 2027-28 | 2028-29 |
| **3.0% (5th percentile)** | | | | | |
| Normal Cost Rate | 13.8% | 13.8% | 13.8% | 13.8% | 13.8% |
| UAL Contribution | $64,000 | $66,000 | $72,000 | $80,000 | $101,000 |
| **10.8% (95th percentile)** | | | | | |
| Normal Cost Rate | 14.1% | 14.3% | 14.6% | 14.9% | 15.1% |
| UAL Contribution | $57,000 | $0 | $0 | $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 2021-22 on the FY 2024-25 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 2024-25.

| Assumed Annual Return for Fiscal Year 2021-22 | Required Employer Contributions | Projected Employer Contributions |
|---|---|---|
| | 2023-24 | 2024-25 |
| **(17.2)% (2 standard deviation loss)** | | |
| Normal Cost Rate | 13.79% | 13.8% |
| UAL Contribution | $64,007 | $84,000 |
| **(5.2)% (1 standard deviation loss)** | | |
| Normal Cost Rate | 13.79% | 13.8% |
| UAL Contribution | $64,007 | $72,000 |

- Without investment gains (returns higher than 6.8%) in year FY 2022-23 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 2021-22.
- The Pension Outlook Tool can be used to model projected contributions for these scenarios beyond FY 2024-25 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, 2021 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, 2021 | 1% Lower Real Return Rate | Current Assumptions | 1% Higher Real Return Rate |
|---|---|---|---|
| **Discount Rate** | **5.8%** | **6.8%** | **7.8%** |
| Inflation | 2.3% | 2.3% | 2.3% |
| **Real Rate of Return** | **3.5%** | **4.5%** | **5.5%** |
| a) Total Normal Cost | 26.04% | 20.71% | 16.65% |
| b) Accrued Liability | $5,053,990 | $4,395,827 | $3,850,733 |
| c) Market Value of Assets | $4,032,483 | $4,032,483 | $4,032,483 |
| d) Unfunded Liability/(Surplus) [(b) - (c)] | $1,021,507 | $363,344 | ($181,750) |
| e) Funded Ratio | 79.8% | 91.7% | 104.7% |

**Sensitivity to the Price Inflation Assumption**

| As of June 30, 2021 | 1% Lower Inflation Rate | Current Assumptions | 1% Higher Inflation Rate |
|---|---|---|---|
| **Discount Rate** | **5.8%** | **6.8%** | **7.8%** |
| **Inflation** | **1.3%** | **2.3%** | **3.3%** |
| Real Rate of Return | 4.5% | 4.5% | 4.5% |
| a) Total Normal Cost | 21.73% | 20.71% | 18.89% |
| b) Accrued Liability | $4,412,555 | $4,395,827 | $4,256,520 |
| c) Market Value of Assets | $4,032,483 | $4,032,483 | $4,032,483 |
| d) Unfunded Liability/(Surplus) [(b) - (c)] | $380,072 | $363,344 | $224,037 |
| e) Funded Ratio | 91.4% | 91.7% | 94.7% |

# Mortality Rate Sensitivity

The following table looks at the change in the June 30, 2021 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 improving or worsening mortality over the long-term.

| As of June 30, 2021 | 10% Lower Mortality Rates | Current Assumptions | 10% Higher Mortality Rates |
|---|---|---|---|
| a) Total Normal Cost | 21.07% | 20.71% | 20.38% |
| b) Accrued Liability | $4,479,282 | $4,395,827 | $4,318,849 |
| c) Market Value of Assets | $4,032,483 | $4,032,483 | $4,032,483 |
| d) Unfunded Liability/(Surplus) [(b) - (c)] | $446,799 | $363,344 | $286,366 |
| e) Funded Ratio | 90.0% | 91.7% | 93.4% |

# 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, 2020** | **June 30, 2021** |
|---|---|---|
| 1. Retired Accrued Liability | $1,017,374 | $997,142 |
| 2. Total Accrued Liability | 3,895,146 | 4,395,827 |
| 3. Ratio of Retiree AL to Total AL [(1) / (2)] | 0.26 | 0.23 |

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 is 0.82 and is 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, 2020** | **June 30, 2021** |
|---|---|---|
| 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 an asset-to-payroll ratio of 8 may experience twice the contribution volatility due to investment return volatility than a plan with an asset-to-payroll ratio 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 the 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 ratio 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, 2020 | June 30, 2021 |
|---|---|---|
| 1. Market Value of Assets | $3,108,316 | $4,032,483 |
| 2. Payroll | 807,674 | 868,156 |
| 3. Asset Volatility Ratio (AVR) [(1) / (2)] | 3.8 | 4.6 |
| 4. Accrued Liability | $3,895,146 | $4,395,827 |
| 5. Liability Volatility Ratio (LVR) [(4) / (2)] | 4.8 | 5.1 |

# 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 |

# Hypothetical Termination Liability

The hypothetical termination liability is an estimate of the financial position of the plan had the contract with CalPERS been terminated as of June 30, 2021. The plan liability on a termination basis is calculated differently compared to the plan's ongoing funding liability. For the hypothetical 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.

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.

| Market Value of Assets (MVA) | Hypothetical Termination Liability[1,2] at 1.00% | Funded Ratio | Unfunded Termination Liability at 1.00% | Hypothetical Termination Liability[1,2] at 2.25% | Funded Ratio | Unfunded Termination Liability at 2.25% |
|---|---|---|---|---|---|---|
| $4,032,483 | $10,442,232 | 38.6% | $6,409,749 | $9,023,802 | 44.7% | $4,991,319 |

[1] The hypothetical liabilities calculated above include a 5% contingency load. The contingency load and other actuarial assumptions can be found in Appendix A.

[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 2.00% on June 30, 2021, 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, 2020 | June 30, 2021 |
|---|---|---|
| **Active Members** | | |
| Counts | 5 | 5 |
| Average Attained Age | 53.05 | 54.05 |
| Average Entry Age to Rate Plan | 40.91 | 40.91 |
| Average Years of Credited Service | 12.16 | 13.16 |
| Average Annual Covered Pay | $161,535 | $173,631 |
| Annual Covered Payroll | $807,674 | $868,156 |
| Present Value of Future Payroll | $5,538,655 | $5,781,412 |
| **Transferred Members** | 1 | 1 |
| **Separated Members** | 2 | 2 |
| **Retired Members and Beneficiaries** | | |
| Counts* | 3 | 3 |
| Average Annual Benefits* | $24,460 | $24,763 |

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

**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 2022**

**PEPRA Miscellaneous Plan of the Bay Area Water Supply and Conservation Agency (CalPERS ID: 3304364524)**
**Annual Valuation Report as of June 30, 2021**

Dear Employer,

Attached to this letter, you will find the June 30, 2021 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) 2023-24**. 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, 2021.

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, 2021.

Your June 30, 2021 actuarial valuation report contains important actuarial information about your pension plan at CalPERS. The plan actuary whose signature is in the Actuarial Certification is available to discuss.

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 Contribution**

The table below shows the minimum required employer contributions and the Employee PEPRA Rate for FY 2023-24 along with estimates of the required contributions for FY 2024-25. 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 Rate |
|---|---|---|---|
| 2023-24 | 8.48% | $0 | 8.25% |
| *Projected Results* | | | |
| *2024-25* | *8.5%* | *$0* | *TBD* |

The actual investment return for FY 2021-22 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 2021-22 differs from 6.8%, the actual contribution requirements for FY 2024-25 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 2028-29.

**Changes from Previous Year's Valuation**

On July 12, 2021, CalPERS reported a preliminary 21.3% net return on investments for FY 2020-21. Since the return exceeded the 7.00% discount rate sufficiently, the CalPERS Funding Risk Mitigation policy allows CalPERS to use a portion of the investment gain to offset the cost of reducing the expected volatility of future investment returns. Based on the thresholds specified in the policy, the excess return of 14.3% prescribes a reduction in investment volatility that corresponds to a reduction in the discount rate of 0.20%, from 7.00% to 6.80%.

On November 17, 2021, the board adopted new actuarial assumptions based on the recommendations in the November 2021 CalPERS Experience Study and Review of Actuarial Assumptions. This study reviewed the retirement rates, termination rates, mortality rates, rates of salary increases, and inflation assumption for public agencies. These new assumptions are incorporated in this actuarial valuation and will impact the required contribution for FY 2023-24. In addition, the board adopted a new strategic asset allocation as part of its Asset Liability Management process. The new asset allocation along with the new capital market assumptions and economic assumptions support a discount rate of 6.80%. This includes a reduction in the price inflation assumption from 2.50% to 2.30%.

Besides the above noted changes, there may also be changes specific to the plan such as contract amendments and funding changes.

Further descriptions of general changes are included in the "Highlights and Executive Summary" section and in Appendix A of the Section 2 report, "Actuarial Methods and Assumptions."

**Questions**

We understand that you might have questions about these results, and the plan actuary whose signature is on the valuation report is available to discuss. If you have other questions, you may call the Customer Contact Center at (888)-CalPERS or (**888-225-7377**).

Sincerely,

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


# Actuarial Valuation
# as of June 30, 2021

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

**(CalPERS ID: 3304364524)**

## Required Contributions
## for Fiscal Year
## July 1, 2023 - June 30, 2024

# Table of Contents

# Section 1

CALIFORNIA PUBLIC EMPLOYEES' RETIREMENT SYSTEM

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# 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

To the best of our knowledge, this report, comprising 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, 2021 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 consistent 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, 2021 and employer contribution as of July 1, 2023 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 Pension Actuary, CalPERS

# Highlights and Executive Summary

- **Introduction**
- **Purpose of Section 1**
- **Required Contributions**
- **Additional Discretionary Employer Contributions**
- **Plan's Funded Status**
- **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, 2021 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 required employer contributions for (FY) 2023-24.

# 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 plan actuary in order to:

- Set forth the assets and accrued liabilities of this plan as of June 30, 2021;
- Determine the minimum required employer contribution for this plan for the FY July 1, 2023 through June 30, 2024; and
- Provide actuarial information as of June 30, 2021 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 recommendations of Actuarial Standards 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 2023-24 |
|---|---|
| **Employer Normal Cost Rate** | **8.48%** |
| ***Plus*** | |
| **Required Payment on Amortization Bases[1]** | **$0** |
| ***Paid either as*** | |
| **1) Monthly Payment** | **$0.00** |
| ***Or*** | |
| **2) Annual Prepayment Option*** | **$0** |
| **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 PEPRA member contribution rate see section on PEPRA Member Contribution Rates.*

| | Fiscal Year 2022-23 | Fiscal Year 2023-24 |
|---|---|---|
| **Development of Normal Cost as a Percentage of Payroll** | | |
| Base Total Normal Cost for Formula | 14.22% | 15.43% |
| Surcharge for Class 1 Benefits[2] | | |
| a) PRSA | 0.79% | 0.82% |
| b) 3% COLA | 0.68% | 0.48% |
| Phase out of Normal Cost Difference[3] | 0.00% | 0.00% |
| Plan's Total Normal Cost | 15.69% | 16.73% |
| Plan's Employee Contribution Rate | 7.50% | 8.25% |
| Employer Normal Cost Rate | 8.19% | 8.48% |

[1] The required payment on amortization bases does not take into account any additional discretionary payment made after April 29, 2022.

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

[3] The normal cost change 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 the 2023-24 FY is $0. 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 2023-24 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 2023-24**

| Estimated Normal Cost | Minimum UAL Payment | ADP | Total UAL Contribution | Estimated Total Contribution |
|---|---|---|---|---|
| $37,868 | $0 | $0 | $0 | $37,868 |

**Alternative Fiscal Year 2023-24 Employer Contributions for Greater UAL Reduction**

| Funding Target | Estimated Normal Cost | Minimum UAL Payment | ADP[1] | Total UAL Contribution | Estimated Total Contribution |
|---|---|---|---|---|---|
| N/A | N/A | N/A | N/A | N/A | N/A |

[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 Unfunded Accrued Liability as of June 30, 2023 as determined in the June 30, 2021 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.

# Plan's Funded Status

| | June 30, 2020 | June 30, 2021 |
|---|---|---|
| 1. Present Value of Projected Benefits (PVB) | $1,061,105 | $1,221,710 |
| 2. Entry Age Accrued Liability (AL) | 383,218 | 491,128 |
| 3. Plan's Market Value of Assets (MVA) | 334,433 | 500,762 |
| 4. Unfunded Accrued Liability (UAL) [(2) - (3)] | 48,785 | (9,634) |
| 5. Funded Ratio [(3) / (2)] | 87.3% | 102.0% |

The UAL and funded ratio are assessments of the need for future employer contributions based on the actuarial cost method used to fund the plan. The UAL is the present value of future employer contributions for service that has already been earned and is in addition to future normal cost contributions for active members. The funded ratio, on the other hand, is a relative measure of funded status that allows for comparison between plans of different sizes. For measures of funded status that are appropriate for assessing the sufficiency of plan assets to cover estimated termination liabilities, please see "Hypothetical Termination Liability" in the "Risk Analysis" section.

# 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 2021-22 is assumed to be 6.80% per year, net of investment and administrative expenses. Actual contribution rates during this projection period could be significantly higher or lower than the projection shown below. 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 2021-22 and Beyond) | | | | |
|---|---|---|---|---|---|---|
| **Fiscal Year** | **2023-24** | **2024-25** | **2025-26** | **2026-27** | **2027-28** | **2028-29** |
| | Rate Plan 26893 Results | | | | | |
| **Normal Cost %** | 8.48% | 8.5% | 8.5% | 8.5% | 8.5% | 8.5% |
| **UAL Payment** | $0 | $0 | $0 | $0 | $0 | $0 |

For some sources of UAL, the change in UAL is 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 increase in UAL, the relatively small amortization payments during the ramp up period could result in a funded ratio that is projected to decrease initially 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 below, 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 payroll for each rate plan will grow according to the overall payroll growth assumption of 2.80% per year for three years.

| | Fiscal Year 2022-23 | Fiscal Year 2023-24 |
|---|---|---|
| **Estimated Combined Employer Contributions for all Pooled Miscellaneous Rate Plans** | | |
| Projected Payroll for the Contribution Year | $1,331,761 | $1,389,693 |
| Estimated Employer Normal Cost | $145,870 | $167,927 |
| Required Payment on Amortization Bases | $76,396 | $64,007 |
| Estimated Total Employer Contributions | $222,266 | $231,934 |
| Estimated Total Employer Contribution Rate (illustrative only) | 16.69% | 16.69% |

# 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 2016-17, the Amortization of UAL component was expressed as a percentage of total active payroll. Starting with FY 2016-17, the Amortization of UAL component was expressed as a dollar amount and invoiced on a monthly basis. There continues to be 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, 2021, 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 changes by amendments effective before the date of the report. Please refer to the "Plan's Major Benefit Options" and Appendix B of the Section 2 Report for a summary of the plan provisions used in this valuation.

**Actuarial Methods and Assumptions**

On November 17, 2021, the board adopted new actuarial assumptions based on the recommendations in the 2021 CalPERS Experience Study and Review of Actuarial Assumptions. This study reviewed the retirement rates, termination rates, mortality rates, rates of salary increases, and inflation assumption for Public Agencies. These new assumptions are incorporated in this actuarial valuation and will impact the required contribution for FY 2023-24. In addition, the board adopted a new asset portfolio as part of its Asset Liability Management process. The new asset mix supports a 6.80% discount rate, which reflects a change in the price inflation assumption to 2.30%.

# Subsequent Events

The contribution requirements determined in this actuarial valuation report are based on demographic and financial information as of June 30, 2021. Changes subsequent to that date are not reflected. Investment returns below the assumed rate of return may increase future required contributions while investment returns above the assumed rate of return may decrease future required contributions.

The projected employer contributions on Page 6 are calculated under the assumption that the discount rate remains at 6.8% going forward and that the realized rate of return on assets for FY 2021-22 is 6.8%.

This actuarial valuation report reflects statutory changes, regulatory changes and board actions through January 2022. Any subsequent changes or actions are not reflected.

# 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 Plan's Amortization Bases**
- **Amortization Schedule and Alternatives**
- **Employer Contribution History**
- **Funding History**

# Breakdown of Entry Age Accrued Liability

| | |
|---|---|
| Active Members | $157,790 |
| Transferred Members | 151,674 |
| Terminated Members | 181,664 |
| Members and Beneficiaries Receiving Payments | 0 |
| Total | $491,128 |

# 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 | $491,128 |
| 2. | Projected UAL balance at 6/30/2021 | 43,806 |
| 3. | Pool's Accrued Liability[1] | 20,794,529,023 |
| 4. | Sum of Pool's Individual Plan UAL Balances at 6/30/2021[1] | 4,597,734,264 |
| 5. | Pool's 2020/21 Investment (Gain)/Loss[1] | (2,338,185,055) |
| 6. | Pool's 2020/21 Non-Investment (Gain)/Loss[1] | (84,077,623) |
| 7. | Plan's Share of Pool's Investment (Gain)/Loss: [(1) - (2)] ÷ [(3) - (4)] × (5) | (64,576) |
| 8. | Plan's Share of Pool's Non-Investment (Gain)/Loss: (1) ÷ (3) × (6) | (1,986) |
| 9. | Plan's New (Gain)/Loss as of 6/30/2021: (7) + (8) | (66,562) |
| 10. | Increase in Pool's Accrued Liability due to Change in Assumptions[1] | 60,407,898 |
| 11. | Plan's Share of Pool's Change in Assumptions: (1) ÷ (3) × (10) | 1,427 |
| 12. | Increase in Pool's Accrued Liability due to Funding Risk Mitigation[1] | 495,172,731 |
| 13. | Plan's Share of Pool's Change due to Funding Risk Mitigation: (1) ÷ (3) × (12) | 11,695 |
| 14. | Offset due to Funding Risk Mitigation | (17,714) |
| 15. | Plan's Net Investment (Gain): (7) – (14) | (46,862) |

[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

| | | |
|---|---|---|
| 16. | Plan's UAL: (2) + (9) + (11) + (13) | ($9,634) |
| 17. | Plan's Share of Pool's MVA: (1) - (16) | $500,762 |

# Schedule of Plan's Amortization Bases

Note that there is a two-year lag between the valuation date and the start of the contribution fiscal year.

- The assets, liabilities, and funded status of the plan are measured as of the valuation date: June 30, 2021.
- The required employer contributions determined by the valuation are for the fiscal year beginning two years after the valuation date: FY 2023-24.

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 2023-24 | Ramp Shape | Escala-tion Rate | Amort. Period | Balance 6/30/21 | Expected Payment 2021-22 | Balance 6/30/22 | Expected Payment 2022-23 | Balance 6/30/23 | Minimum Required Payment 2023-24 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Fresh Start | 6/30/21 | | | | N/A | (9,634) | 1,743 | (12,090) | 1,890 | (14,865) | 0 |
| **Total** | | | | | | **(9,634)** | **1,743** | **(12,090)** | **1,890** | **(14,865)** | **0** |

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 | | | |
|---|---|---|---|---|---|---|
| | | | N/A Year Amortization | | N/A Year Amortization | |
| **Date** | **Balance** | **Payment** | **Balance** | **Payment** | **Balance** | **Payment** |
| **6/30/2023** | N/A | N/A | N/A | N/A | N/A | N/A |
| **6/30/2024** | | | | | | |
| **6/30/2025** | | | | | | |
| **6/30/2026** | | | | | | |
| **6/30/2027** | | | | | | |
| **6/30/2028** | | | | | | |
| **6/30/2029** | | | | | | |
| **6/30/2030** | | | | | | |
| **6/30/2031** | | | | | | |
| **6/30/2032** | | | | | | |
| **6/30/2033** | | | | | | |
| **6/30/2034** | | | | | | |
| **6/30/2035** | | | | | | |
| **6/30/2036** | | | | | | |
| **6/30/2037** | | | | | | |
| **6/30/2038** | | | | | | |
| **6/30/2039** | | | | | | |
| **6/30/2040** | | | | | | |
| **6/30/2041** | | | | | | |
| **6/30/2042** | | | | | | |
| **6/30/2043** | | | | | | |
| **6/30/2044** | | | | | | |
| **6/30/2045** | | | | | | |
| **6/30/2046** | | | | | | |
| **6/30/2047** | | | | | | |
| **6/30/2048** | | | | | | |
| **6/30/2049** | | | | | | |
| **6/30/2050** | | | | | | |
| **6/30/2051** | | | | | | |
| **6/30/2052** | | | | | | |
| **Total** | | **N/A** | | **N/A** | | **N/A** |
| **Interest Paid** | | **N/A** | | **N/A** | | **N/A** |
| **Estimated Savings** | | | | **N/A** | | **N/A** |

# Employer Contribution History

The table below provides a recent history of the required employer contributions for the plan. The amounts are based on the actuarial valuation from two years prior and does not account for prepayments or benefit changes made during a fiscal year. Additional discretionary payments before July 1, 2019 or after June 30, 2021 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 | |
| 2022 - 23 | 8.19% | 8,357 | |
| 2023 - 24 | 8.48% | 0 | |

# 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 |

## Risk Analysis

- **Future Investment Return Scenarios**
- **Discount Rate Sensitivity**
- **Mortality Rate Sensitivity**
- **Maturity Measures**
- **Maturity Measures History**
- **Hypothetical Termination Liability**

# 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, 2041.

| Assumed Annual Return FY 2021-22 through 2040-41 | Projected Employer Contributions | | | | |
|---|---|---|---|---|---|
| | 2024-25 | 2025-26 | 2026-27 | 2027-28 | 2028-29 |
| **3.0% (5th percentile)** | | | | | |
| Normal Cost Rate | 8.5% | 8.5% | 8.5% | 8.5% | 8.5% |
| UAL Contribution | $130 | $740 | $1,800 | $3,400 | $5,600 |
| **10.8% (95th percentile)** | | | | | |
| Normal Cost Rate | 8.7% | 8.9% | 9.1% | 9.3% | 8.8% |
| UAL Contribution | $0 | $0 | $0 | $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 2021-22 on the FY 2024-25 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 2024-25.

| Assumed Annual Return for Fiscal Year 2021-22 | Required Employer Contributions | Projected Employer Contributions |
|---|---|---|
| | 2023-24 | 2024-25 |
| **(17.2)% (2 standard deviation loss)** | | |
| Normal Cost Rate | 8.48% | 8.5% |
| UAL Contribution | $0 | $2,600 |
| **(5.2)% (1 standard deviation loss)** | | |
| Normal Cost Rate | 8.48% | 8.5% |
| UAL Contribution | $0 | $1,100 |

- Without investment gains (returns higher than 6.8%) in year FY 2022-23 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 2021-22.
- The Pension Outlook Tool can be used to model projected contributions for these scenarios beyond FY 2024-25 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, 2021 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, 2021 | 1% Lower Real Return Rate | Current Assumptions | 1% Higher Real Return Rate |
|---|---|---|---|
| **Discount Rate** | **5.8%** | **6.8%** | **7.8%** |
| Inflation | 2.3% | 2.3% | 2.3% |
| **Real Rate of Return** | **3.5%** | **4.5%** | **5.5%** |
| a) Total Normal Cost | 20.95% | 16.73% | 13.52% |
| b) Accrued Liability | $607,099 | $491,128 | $401,765 |
| c) Market Value of Assets | $500,762 | $500,762 | $500,762 |
| d) Unfunded Liability/(Surplus) [(b) - (c)] | $106,337 | ($9,634) | ($98,997) |
| e) Funded Ratio | 82.5% | 102.0% | 124.6% |

**Sensitivity to the Price Inflation Assumption**

| As of June 30, 2021 | 1% Lower Inflation Rate | Current Assumptions | 1% Higher Inflation Rate |
|---|---|---|---|
| **Discount Rate** | **5.8%** | **6.8%** | **7.8%** |
| **Inflation** | **1.3%** | **2.3%** | **3.3%** |
| Real Rate of Return | 4.5% | 4.5% | 4.5% |
| a) Total Normal Cost | 17.64% | 16.73% | 15.21% |
| b) Accrued Liability | $514,070 | $491,128 | $459,391 |
| c) Market Value of Assets | $500,762 | $500,762 | $500,762 |
| d) Unfunded Liability/(Surplus) [(b) - (c)] | $13,308 | ($9,634) | ($41,371) |
| e) Funded Ratio | 97.4% | 102.0% | 109.0% |

# Mortality Rate Sensitivity

The following table looks at the change in the June 30, 2021 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 improving or worsening mortality over the long-term.

| As of June 30, 2021 | 10% Lower Mortality Rates | Current Assumptions | 10% Higher Mortality Rates |
|---|---|---|---|
| a) Total Normal Cost | 17.03% | 16.73% | 16.45% |
| b) Accrued Liability | $498,218 | $491,128 | $484,561 |
| c) Market Value of Assets | $500,762 | $500,762 | $500,762 |
| d) Unfunded Liability/(Surplus) [(b) - (c)] | ($2,544) | ($9,634) | ($16,201) |
| e) Funded Ratio | 100.5% | 102.0% | 103.3% |

# 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, 2020** | **June 30, 2021** |
|---|---|---|
| 1. Retired Accrued Liability | $0 | $0 |
| 2. Total Accrued Liability | 383,218 | 491,128 |
| 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 is 0.82 and is 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, 2020** | **June 30, 2021** |
|---|---|---|
| 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 an asset-to-payroll ratio of 8 may experience twice the contribution volatility due to investment return volatility than a plan with an asset-to-payroll ratio 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 the 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 ratio 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, 2020 | June 30, 2021 |
|---|---|---|
| 1. Market Value of Assets | $334,433 | $500,762 |
| 2. Payroll | 419,994 | 411,047 |
| 3. Asset Volatility Ratio (AVR) [(1) / (2)] | 0.8 | 1.2 |
| 4. Accrued Liability | $383,218 | $491,128 |
| 5. Liability Volatility Ratio (LVR) [(4) / (2)] | 0.9 | 1.2 |

# 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 |

# Hypothetical Termination Liability

The hypothetical termination liability is an estimate of the financial position of the plan had the contract with CalPERS been terminated as of June 30, 2021. The plan liability on a termination basis is calculated differently compared to the plan's ongoing funding liability. For the hypothetical 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.

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.

| Market Value of Assets (MVA) | Hypothetical Termination Liability[1,2] at 1.00% | Funded Ratio | Unfunded Termination Liability at 1.00% | Hypothetical Termination Liability[1,2] at 2.25% | Funded Ratio | Unfunded Termination Liability at 2.25% |
|---|---|---|---|---|---|---|
| $500,762 | $1,689,721 | 29.6% | $1,188,959 | $1,271,652 | 39.4% | $770,890 |

[1] The hypothetical liabilities calculated above include a 5% contingency load. The contingency load and other actuarial assumptions can be found in Appendix A.

[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 2.00% on June 30, 2021, 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, 2020 | June 30, 2021 |
|---|---|---|
| **Active Members** | | |
| Counts | 4 | 4 |
| Average Attained Age | 38.91 | 39.91 |
| Average Entry Age to Rate Plan | 37.23 | 37.23 |
| Average Years of Credited Service | 1.03 | 2.02 |
| Average Annual Covered Pay | $104,999 | $102,762 |
| Annual Covered Payroll | $419,994 | $411,047 |
| Present Value of Future Payroll | $4,864,832 | $4,923,969 |
| **Transferred Members** | 2 | 3 |
| **Separated Members** | 4 | 3 |
| **Retired Members and Beneficiaries** | | |
| Counts* | 0 | 0 |
| Average 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 | 7.50% | |
| 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 rate is dependent on the plan of retirement benefits, 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, 2023, based on 50% of the total normal cost rate as of the June 30, 2021 valuation.

| | | Basis for Current Rate | | Rates Effective July 1, 2023 | | | |
|---|---|---|---|---|---|---|---|
| **Rate Plan Identifier** | **Benefit Group Name** | **Total Normal Cost** | **Member Rate** | **Total Normal Cost** | **Change** | **Change Needed** | **Member Rate** |
| 26893 | Miscellaneous PEPRA Level | 15.028% | 7.50% | 16.73% | 1.702% | Yes | 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

CHEIRON Classic Values, Innovative Advice

# City and County of San Francisco Employees' Retirement System

## July 1, 2021 Actuarial Valuation Report

**Produced by Cheiron**

**January 2022**

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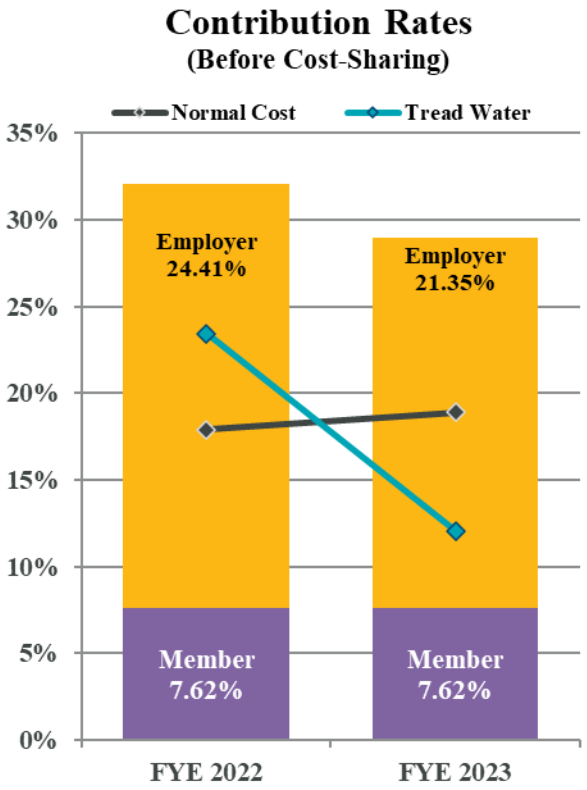
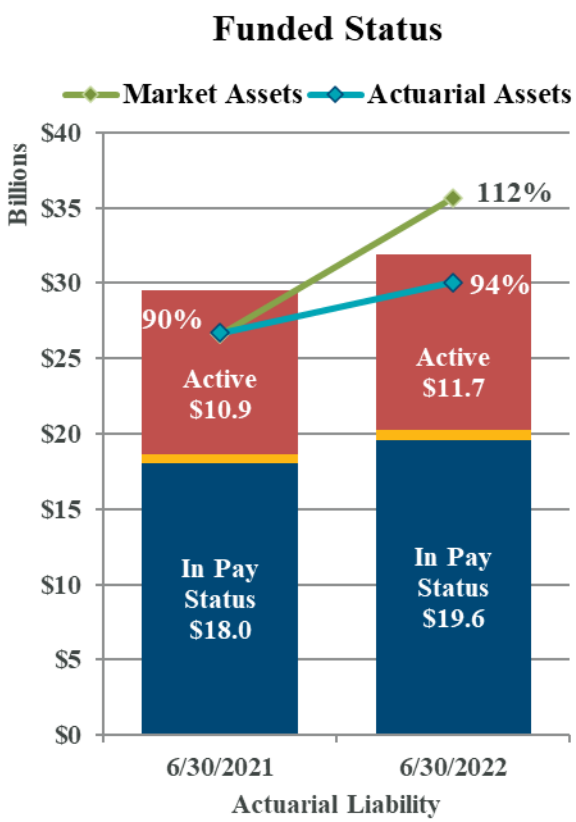
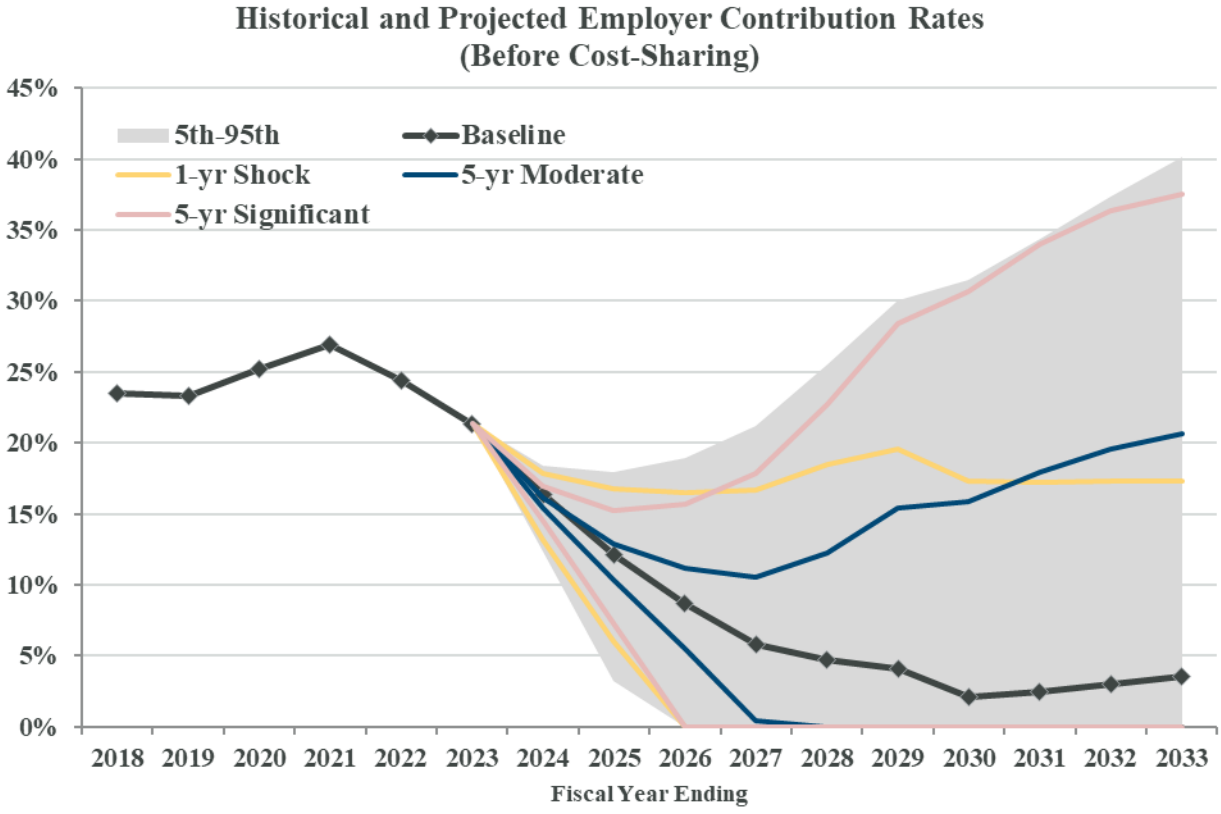


## SECTION I – BOARD SUMMARY

# Key Findings of the July 1, 2021 Valuation

The key results of the July 1, 2021 actuarial valuation are as follows:

- The employer contribution rate decreased from 24.41% for FYE 2022 to 21.35% for FYE 2023 before any cost-sharing adjustments[1]. After the cost-sharing adjustments, the estimated employer contribution rate decreased from 20.88% to 18.76%. 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 1.00% of pay in FYE 2023. The average employee contribution rate after cost-sharing adjustments is estimated to be 10.21% of pay in FYE 2023 compared to 11.15% in FYE 2022.

- On a Market Value of Assets basis (MVA), the funded ratio increased from 90.2% to 111.8%, and the Unfunded Actuarial Liability (UAL) decreased from $2.88 billion to a surplus of $3.77 billion. On an actuarial value basis (AVA), the funded ratio increased from 90.5% to 94.2%, and the Unfunded Actuarial Liability decreased from $2.80 billion to $1.86 billion.

- The return on the Market Value of Assets for the year ended June 30, 2021 was approximately 35.8% resulting in an actuarial gain of about $7.46 billion that will be recognized over the next five years. The return on the Actuarial Value of Assets was 13.9%, which recognizes 20% of the FYE 2021 gain as well as deferred investment gains and losses from previous years, and results in an actuarial gain of about $1.75 billion.

- Because actual investment returns were greater than expected and the System is fully funded based on the Market Value of Assets as of June 30, 2021, a Supplemental COLA was payable to all retirees whose Basic COLA was less than 3.5%. increasing the Actuarial Liability by approximately $264 million. This increase is amortized over a period of five years, increasing the contribution rate by 1.61% of pay.

- At the November 10, 2021 Board meeting, the Board elected to reduce the discount rate from 7.4% to 7.2%. The assumption change increased the employer contribution rate by about 2.14% of pay, including both an increase to the normal cost rate and to the UAL rate. The Actuarial Liability increased by approximately $702 million. The Board also elected to amortize all prior assumption changes and actuarial gains and losses (including the FYE 2021 actuarial gain) over five years. This change reduced the contribution rate by 2.20%.

[1]*The cost-sharing adjustments are dependent on the employer contribution rate, the employee group, and the level of pay based on the applicable table in the Charter. The FYE 2023 average cost-sharing adjustment is 2.59%, 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, 2021 compared to July 1, 2020.

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

| Valuation Date | July 1, 2021 | July 1, 2020 | % Change |
|---|---|---|---|
| Actuarial Liability | $ 31,905.3 | $ 29,499.9 | 8.2% |
| Actuarial Value of Assets | $ 30,043.2 | $ 26,695.8 | 12.5% |
| Unfunded Actuarial Liability (actuarial value) | 1,862.1 | 2,804.1 | -33.6% |
| Funding Ratio (actuarial value) | 94.2% | 90.5% | 3.7% |
| Market Value of Assets | $ 35,673.8 | $ 26,620.2 | 34.0% |
| Unfunded Liability (market value) | (3,768.5) | 2,879.7 | -230.9% |
| Funding Ratio (market value) | 111.8% | 90.2% | 21.6% |
| Expected Payroll | $ 3,828.8 | $ 3,703.1 | 3.4% |
| Interest on UAL (MVA basis) | $ (262.1) | $ 205.6 | -227.4% |
| Interest Cost as Percent of Payroll | -6.8% | 5.6% | -12.4% |

The Actuarial Liability increased by approximately $2.4 billion. The Actuarial Value of Assets, which is used as the basis to set contribution rates, increased by approximately $3.3 billion reflecting smoothed investment returns and contributions offset by benefits and expenses paid during the year. SFERS' Unfunded Actuarial Liability decreased by approximately $0.9 billion based on the Actuarial Value of Assets.

The Market Value of Assets increased approximately $9.1 billion, and the UAL based on the Market Value of Assets decreased approximately $6.6 billion. Assets now exceed the Actuarial Liability by $3.8 billion.

The interest cost on the UAL – based on the Market Value of Assets – decreased by $468 million. As a result, there is an expected interest credit of approximately 6.8% of payroll that acts as a buffer against the cost of future assumption changes, benefit changes, and actuarial losses.

## SECTION I – BOARD SUMMARY

## 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 (as amended by Proposition C effective July 1, 2012) 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 2022 | Change |
|---|---|---|---|
| Contribution Rates Before Adjustments | | | |
| Net Employer Contribution Rate | 21.35% | 24.41% | -3.06% |
| Est. Aggregate Employee Contribution Rate | 7.62% | 7.62% | 0.00% |
| Total Contribution Rate | 28.97% | 32.03% | -3.06% |
| Estimated Payroll | $ 3,953.2 | $ 3,823.5 | $ 129.7 |
| Estimated Net Employer Contributions | 843.9 | 933.5 | (89.6) |
| Contribution Rates After Adjustments | | | |
| Net Employer Contribution Rate | 18.76% | 20.88% | -2.12% |
| Est. Aggregate Employee Contribution Rate | 10.21% | 11.15% | -0.94% |
| Total Contribution Rate | 28.97% | 32.03% | -3.06% |
| Estimated Payroll | $ 3,953.2 | $ 3,823.5 | $ 129.7 |
| Estimated Net Employer Contributions | 741.6 | 798.3 | (56.7) |
| Total Contribution Rate | | | |
| Normal Cost Rate | 18.31% | 17.29% | 1.02% |
| Administrative Expense Rate | 0.60% | 0.60% | 0.00% |
| UAL Rate | | | |
| Interest on Market Value UAL | -6.84% | 5.55% | -12.39% |
| Principal on UAL | 16.90% | 8.59% | 8.31% |
| Total UAL Rate | 10.06% | 14.14% | -4.08% |
| Total Contribution Rate | 28.97% | 32.03% | -3.06% |

## SECTION I – BOARD SUMMARY

The net employer contribution rate before applying the cost-sharing adjustments decreased 3.06% of payroll from 24.41% to 21.35% for the fiscal year ending June 30, 2023. The cost-sharing adjustment is estimated to decrease the employer contribution and increase the aggregate employee contributions by about 2.59% of payroll. Thus, the estimated employer contribution rate after cost sharing is 18.76% for FYE 2023. The cost-sharing adjustments will remain at this level as long as the employer contribution rate before adjustment is between 20.01% and 22.50%.

## SFERS Membership

As shown in Table I-3 below, membership in SFERS increased in total by 0.6%. Active membership decreased 2.5%, terminated vested membership increased 5.5%, and members receiving benefits increased by 2.4%. Total payroll increased by 3.4%. The average pay per active member increased 6.1%.

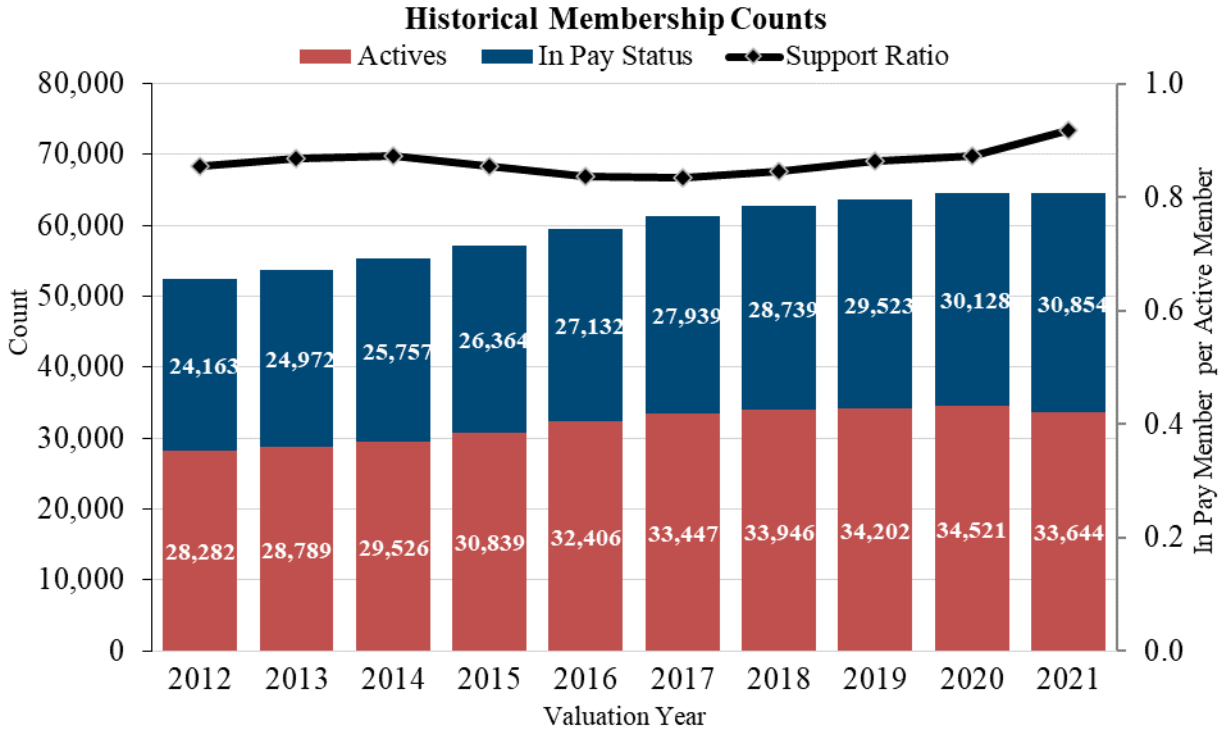
**Table I-3**
**Membership Total**

| | July 1, 2021 | July 1, 2020 | % Change |
|---|---|---|---|
| Actives | 33,644 | 34,521 | -2.5% |
| Terminated Vested | 11,126 | 10,549 | 5.5% |
| Members Receiving Benefits | 30,854 | 30,128 | 2.4% |
| Total SFERS Members | 75,624 | 75,198 | 0.6% |
| Active Member Payroll (thousands)[1] | $ 3,828,800 | $ 3,703,100 | 3.4% |
| Average Pay per Active | $ 113,800 | $ 107,300 | 6.1% |

[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, there was a moderate increase in this ratio immediately following the Great Recession when active membership declined while the number of retirees grew. The ratio has remained relatively stable over the last decade, however it increased in 2021 due to the first decline in active membership since 2011. Over the last decade, growth in the number of retirees has slightly outpaced the growth in active membership and as a result the support ratio has increased from 0.85 to 0.92 over this period demonstrating a relatively stable but maturing population of members.



## SECTION I – BOARD SUMMARY

## Contribution Reconciliation

The SFERS contribution rate for FYE 2023 before cost-sharing adjustments decreased from 24.41% to 21.35% of payroll. Table I-4 shows sources for the change in the net employer contribution rate. The investment gain was the largest contributing factor to the decrease and reduced the contribution rate by 3.49%. The change to the amortization periods for prior assumption changes and actuarial gains and losses decreased the contribution rate by 2.20%. The amortization payments for the 2014 Supplemental COLA were completed resulting in a 1.63% decrease in the employer contribution rate.

The July 1, 2021 Supplemental COLA and the reduction in the discount rate offset the decrease in the employer contribution rate, increasing the contribution rate by 3.75%. Liability experience further increased the contribution rate.

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

| | Normal Cost[1] | UAL Payment | Total |
|---|---|---|---|
| FYE 2022 Net Employer Contribution Rate | 10.27% | 14.14% | 24.41% |
| Investment gain on actuarial value of assets | 0.00% | -3.49% | -3.49% |
| Amortization policy changes | 0.00% | -2.20% | -2.20% |
| Decrease in the discount rate from 7.4% to 7.2% | 0.81% | 1.33% | 2.14% |
| July 1, 2021 Supplemental COLA | 0.00% | 1.61% | 1.61% |
| Fully paid 2014 Supplemental COLA | 0.00% | -1.63% | -1.63% |
| Liability experience and other changes | 0.21% | 0.32% | 0.53% |
| Payroll increase more than assumed | 0.00% | -0.02% | -0.02% |
| Total Change | 1.02% | -4.08% | -3.06% |
| FYE 2023 Net Employer Contribution Rate | 11.29% | 10.06% | 21.35% |

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

## SECTION I – BOARD SUMMARY

## 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 retired prior to November 6, 1996 (Pre-97 Retirees) or 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 the Post '96 Retirees, the projections assume 50% of a full Supplemental COLA each year (0.75% for most members). For the Pre-97 and Prop C Retirees, the probability is near 50% in the short term since the System is now 112% funded based on the Market Value of Assets.

The top chart on page 10 compares the Market Value of Assets to the Actuarial Liability for the historical period from 2011 to 2021 and the projected period from 2022 to 2031 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 84% funded as of July 1, 2011. Since then, investment returns and contribution increases offset by some assumption changes and the impact of actual Supplemental COLAs have increased funding ratios, reaching 90% as of July 1, 2020 and jumping to 112% as of July 1, 2021.

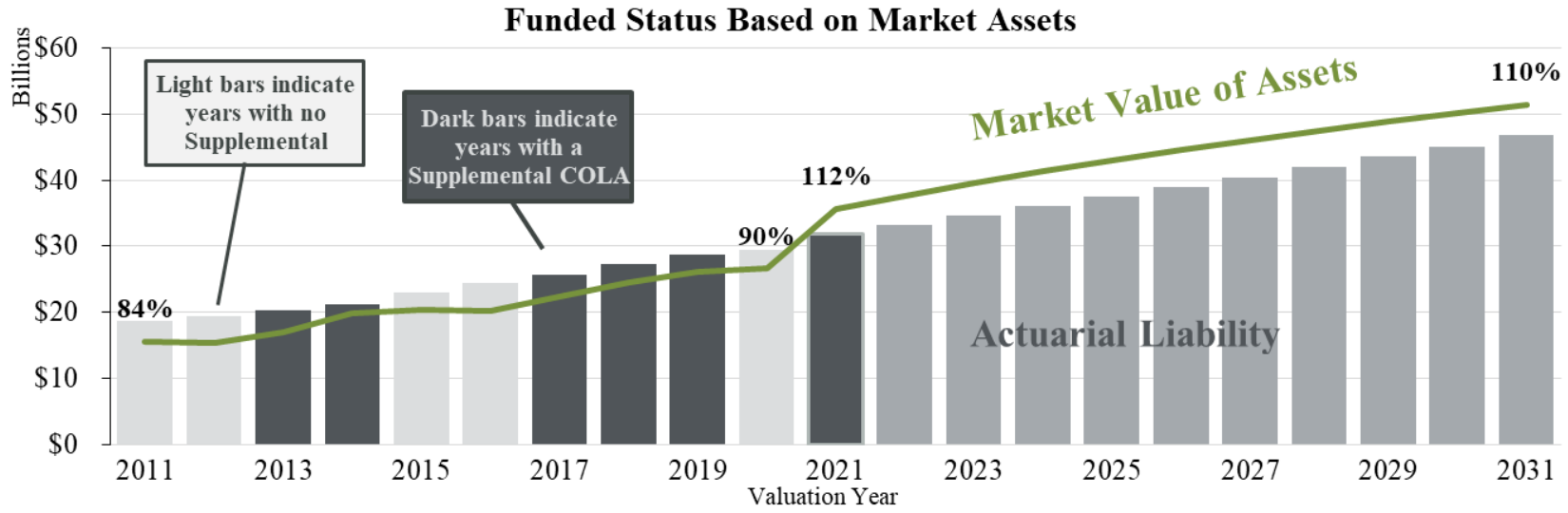
The bottom chart on page 10 shows historical and projected contribution rates for the fiscal years ending 2013 through 2033. The dark and light gray bars represent historical member and employer contribution rates while the purple and gold bars represent member and employer contribution rates currently 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 2020 actuarial valuation.

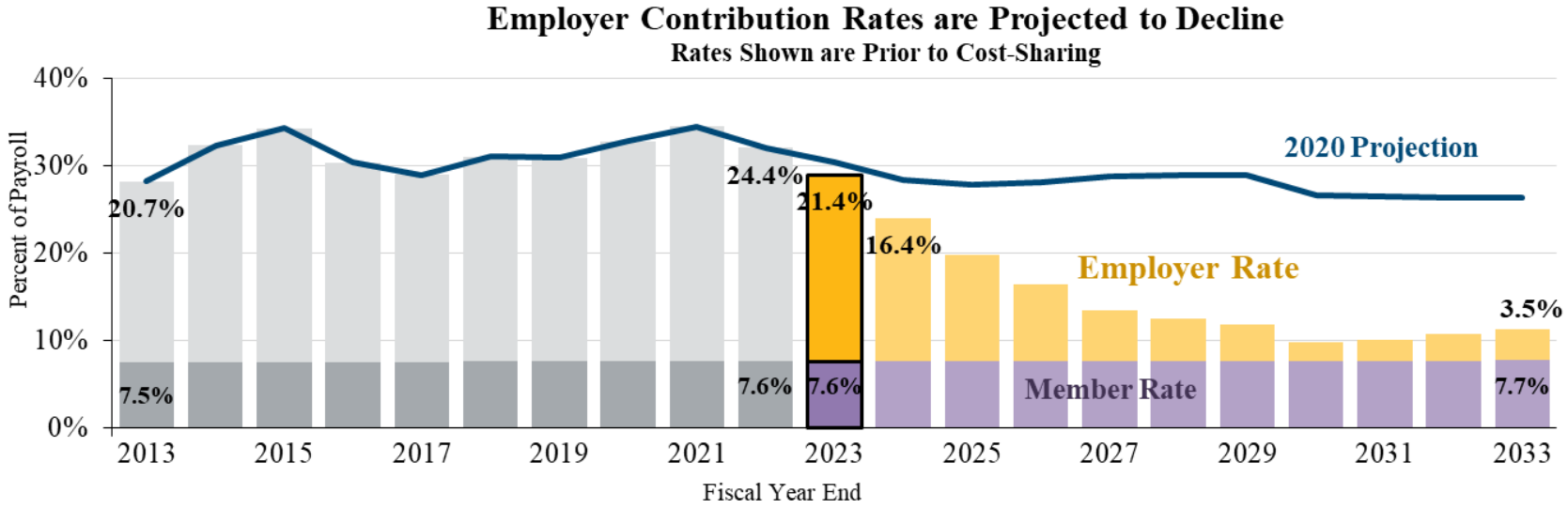
The employer contribution rate increased significantly from fiscal year ending 2013 through 2015. The increases were primarily due to the recognition of investment losses and assumption changes. Employer contribution rates declined for 2016 and 2017, but then increased again reaching a peak in 2021 at 26.9%. This increase has been driven primarily by Supplemental COLAs. The contribution rate decreased for FYE 2022 primarily due to assumption changes and the completion of the amortization payments for a charter amendment. The contribution rate decreased for FYE 2023 primarily due to the exceptional investment returns in FYE 2021 and the change in amortization policy offset by the increase due to the change in discount rate. After FYE 2023, employer contributions are expected to continue to decline sharply over the next four years as the $5.6 billion in deferred asset gains are recognized. SFERS is expected to be over

## SECTION I – BOARD SUMMARY

100% funded based on the Actuarial Value of Assets beginning July 1, 2023. While there was no change to the amortization of future layers while a UAL remains, when the Plan becomes 100% funded based on the Actuarial Value of Assets, the revised amortization policy states that any new amortization layers (including Supplemental COLAs) will be amortized over a rolling 20-year period.

## 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 2012-2021**

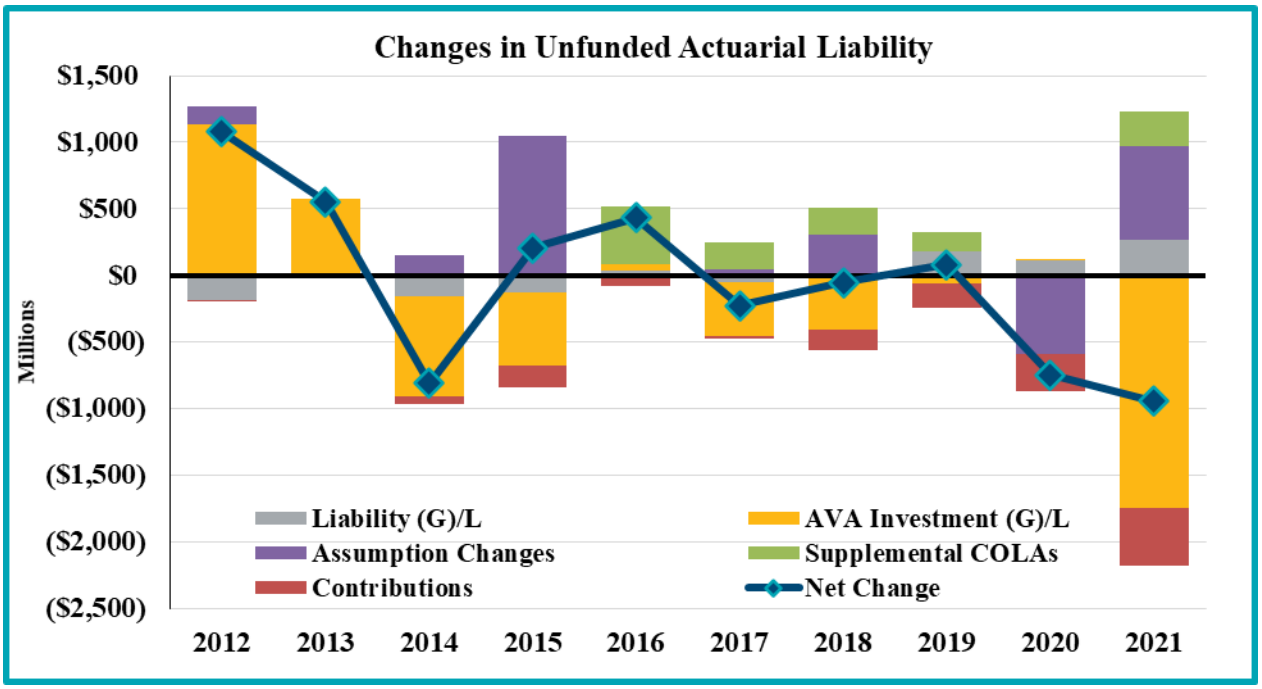



**Table II-1**
**Changes in Unfunded Actuarial Liability**
**(Amounts in millions)**

| | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Discount Rate** | **7.58%** | **7.58%** | **7.50%** | **7.50%** | **7.50%** | **7.50%** | **7.40%** | **7.40%** | **7.40%** | **7.20%** | |
| **Source** | | | | | | | | | | | |
| AVA (G)/L | $ 1,135.0 | $ 579.6 | $ (749.2) | $ (545.5) | $ 51.5 | $ (405.7) | $ (408.9) | $ (58.6) | $ 6.4 | $ (1,750.0) | **$ (2,145.4)** |
| Liability (G)/L | (187.1) | (9.9) | (157.9) | (127.6) | 34.5 | (45.5) | 6.5 | 185.4 | 112.3 | 270.0 | **80.7** |
| Assumptions/Methods | 135.5 | 0.0 | 153.1 | 1,048.4 | 0.0 | 50.2 | 297.7 | 0.0 | (591.4) | 701.6 | **1,795.1** |
| Supplemental COLAs | 0.0 | 0.0 | 0.0 | 0.0 | 429.3 | 200.1 | 200.8 | 141.0 | 0.0 | 264.1 | **1,235.3** |
| Contributions[1] | (2.8) | (14.5) | (56.9) | (168.2) | (83.7) | (27.4) | (147.5) | (186.2) | (274.2) | (427.7) | **(1,389.1)** |
| **Total UAL Change** | **$1,080.6** | **$ 555.2** | **$ (810.9)** | **$ 207.1** | **$ 431.6** | **$ (228.3)** | **$ (51.4)** | **$ 81.6** | **$ (746.9)** | **$ (942.0)** | **$ (423.4)** |

[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 gains and losses (gold bars) from 2012 and 2013 reflect material investment losses driven by the market decline in FYE 2009, which was spread over the five successive years. Recent market experience has primarily produced gains with a $1.75 billion gain in 2021. Over the 10-year period, investment gains reduced the UAL by approximately $2.1 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 $81 million over the 10-year period.

Assumption and method changes (purple bars) over the last 10 years have increased the UAL by about $1.8 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 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. Over the 10-year period, Supplemental COLAs increased the UAL by about $1.2 billion.

Each year, the UAL is expected to increase for active member benefits attributable to the current year of service (the normal cost), administrative expenses, and interest on the UAL. This expected increase is referred to as the tread water level. If contributions are greater than the tread water level, the UAL is expected to decrease. Conversely, if contributions are less than the tread water level, the UAL is expected to increase. Over the 10-year period, contributions have decreased the UAL by about $1.4 billion, and during 2021, contributions decreased the UAL by about $428 million.

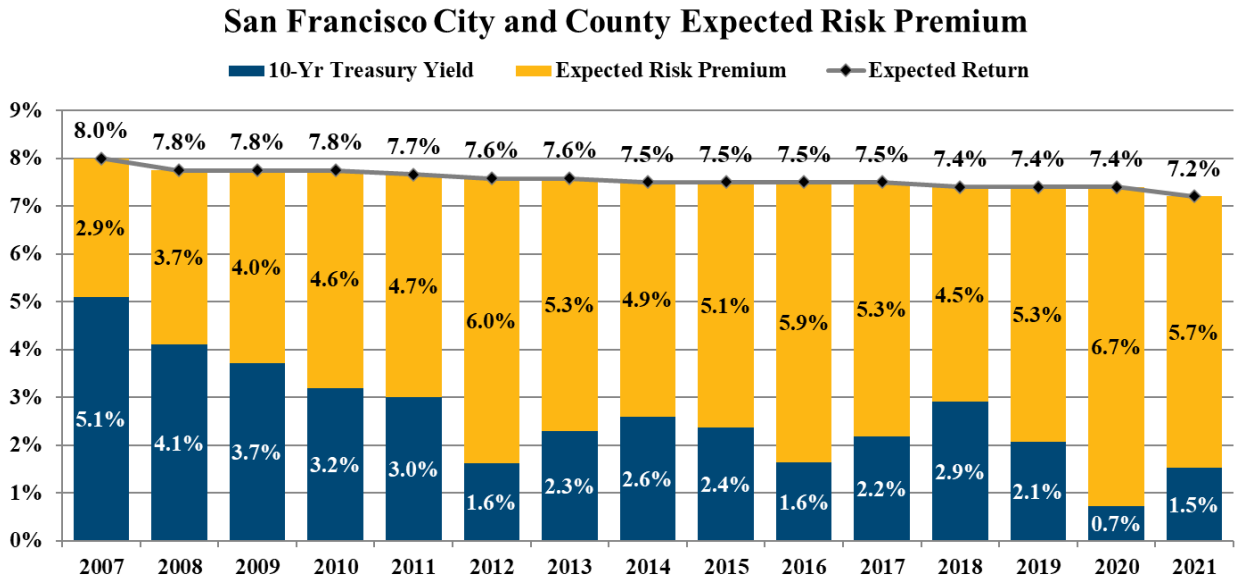
In general, the amortization methods used to determine contributions to the System are designed to collect more than the tread water level. However, the System may temporarily pay less than this threshold due to asset smoothing, the one-year delay between the valuation date and when contribution rates 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 2007 to 2021, the yield on the 10-year Treasury declined from about 5.1% to 1.5%. 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 80 basis points from 8.0% to 7.2% and increased its expected risk premium 280 basis points from 2.9% to 5.7%. If interest rates remain this low, there will be continued pressure to reduce the discount rate.



## SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

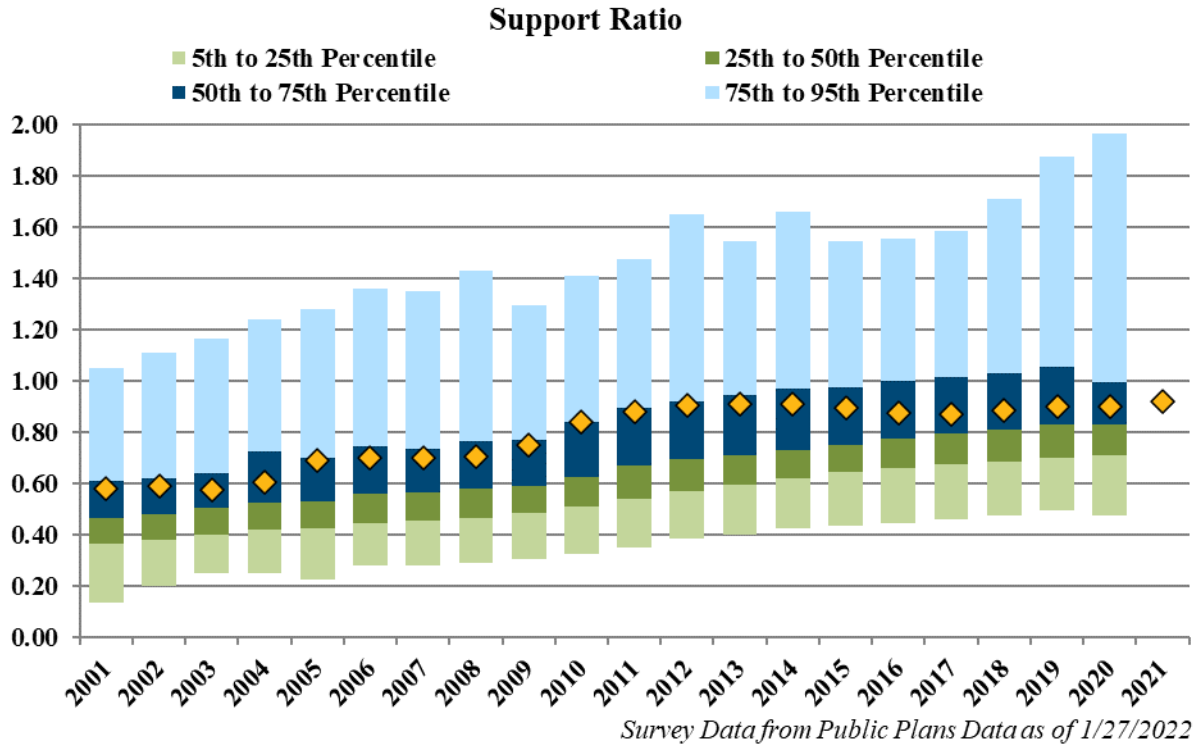
# Plan Maturity Measures

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.

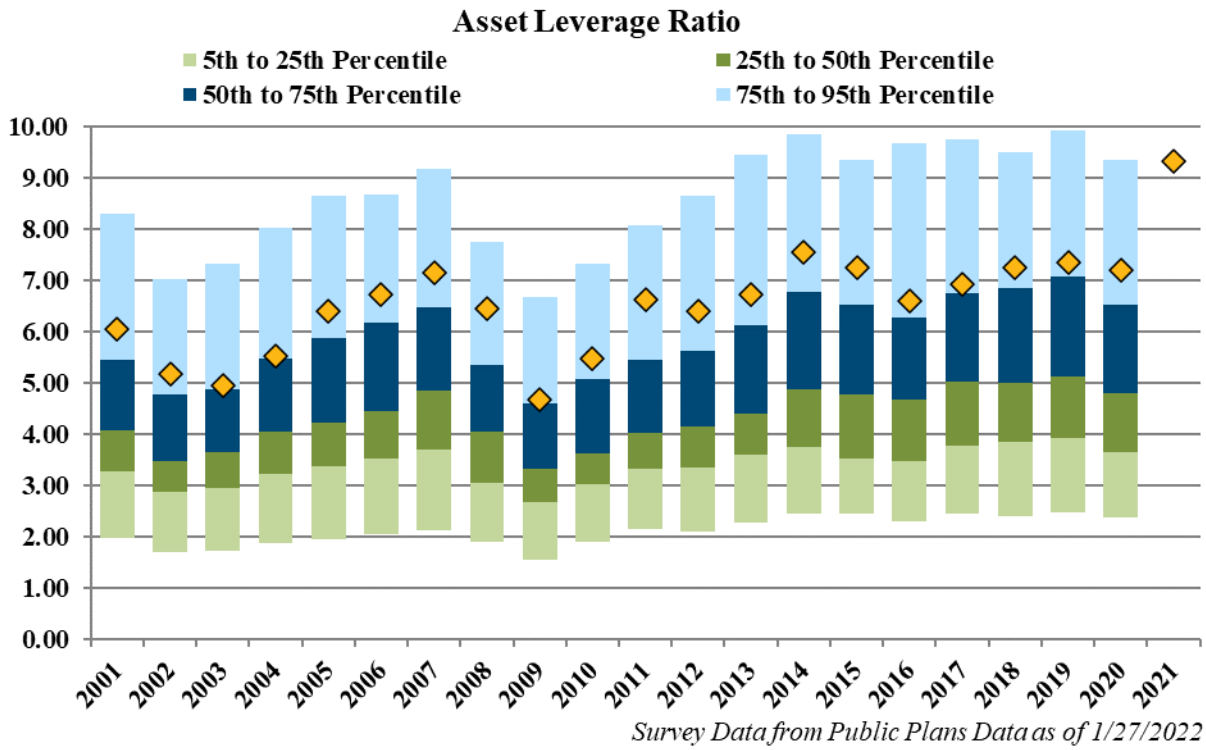



The chart above compares the distribution from the 5th to 95th percentile of support ratios for the plans in Public Plans Data to SFERS (yellow diamonds). Like many other plans, SFERS support ratio increased during the Great Recession, but SFERS has stabilized in recent years while other plans have continued to increase. The support ratio for SFERS increased slightly in 2021 due to a decline in the active membership.

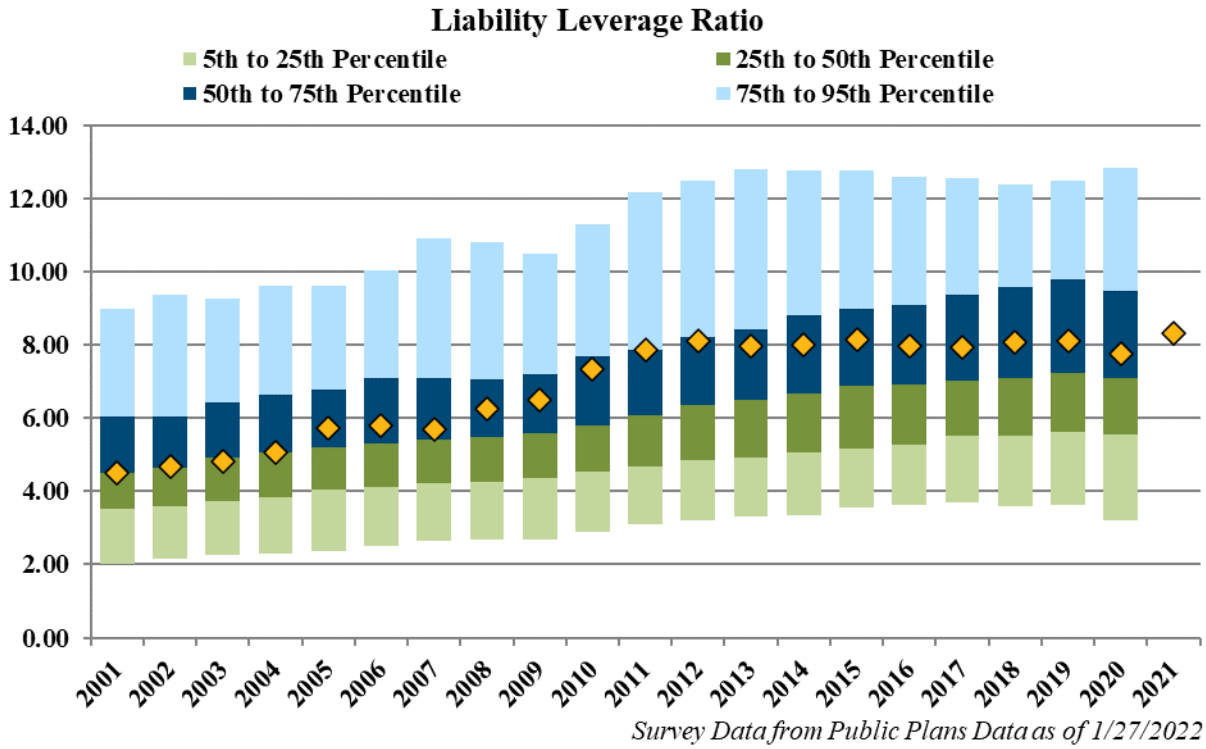
## SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

### 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.




SFERS' asset leverage ratio increased significantly in 2021 primarily due to the exceptional investment returns. The asset leverage ratio is greater than the liability leverage ratio because the Plan's Market Value of Assets exceeds the Actuarial Liability. The liability leverage ratio indicates how sensitive the system is to experience gains and losses or assumption changes. For example, an assumption change that increases the Actuarial Liability by 5% would add a liability equivalent to about 50% of payroll if the liability leverage ratio is 10.0.




The chart above and on the previous page compare the distribution from the 5th to 95th percentile of asset and liability 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. This level indicates that SFERS is more sensitive to investment returns than 75% of public plans.

SFERS' Actuarial Liability leverage ratio has consistently been between the 50th-75th 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 more sensitive to the impact of assumption changes than most public plans.

## Assessment of Risks

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

## 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 = 6.9%, standard deviation = 11.9% (1 year), 15.1% - (5 year)).

| Distribution of Expected Average Annual Returns | | |
|---|---|---|
| **Percentile** | **1 Year** | **5 Year** |
| **5th** | -10.9% | -3.6% |
| **25th** | -0.8% | 2.4% |
| **50th** | 6.9% | 6.9% |
| **75th** | 15.2% | 11.4% |
| **95th** | 28.3% | 18.4% |

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

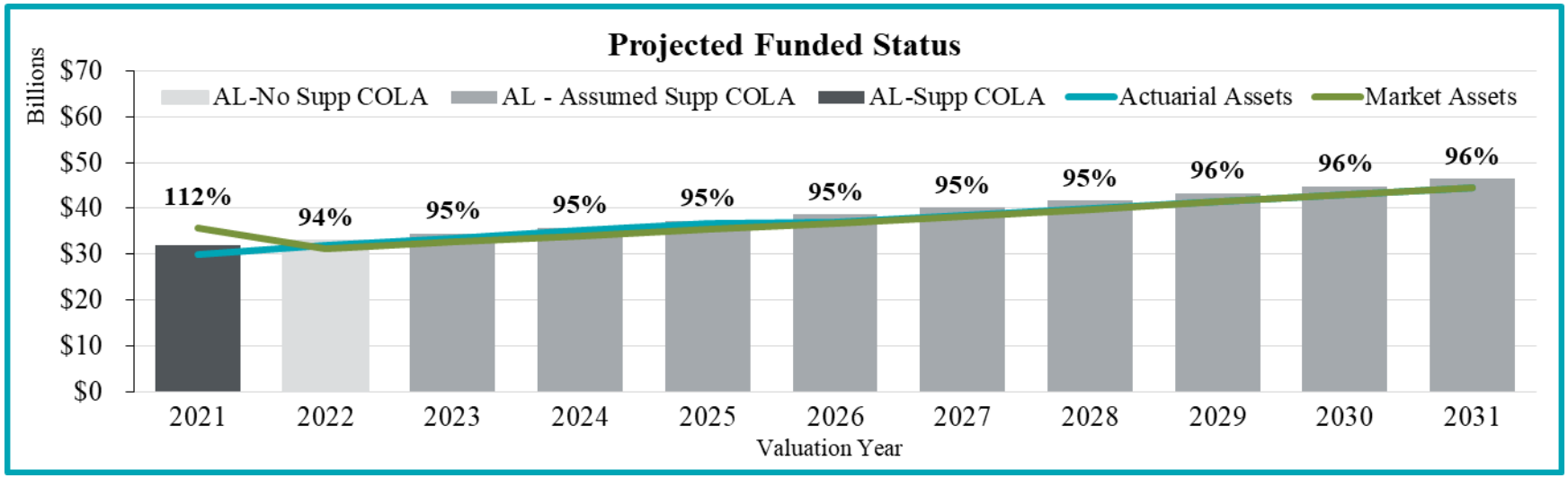
| Theoretical Scenarios | | | | | | |
|---|---|---|---|---|---|---|
| | 1-Yr Shock | | 5-Yr Moderate | | 5-Yr Significant | |
| **FYE** | **Neg** | **Pos** | **Neg** | **Pos** | **Neg** | **Pos** |
| 2022 | -10.9% | 28.3% | 2.4% | 11.4% | -3.6% | 18.4% |
| 2023 | 7.2% | 7.2% | 2.4% | 11.4% | -3.6% | 18.4% |
| 2024 | 7.2% | 7.2% | 2.4% | 11.4% | -3.6% | 18.4% |
| 2025 | 7.2% | 7.2% | 2.4% | 11.4% | -3.6% | 18.4% |
| 2026 | 7.2% | 7.2% | 2.4% | 11.4% | -3.6% | 18.4% |
| 2027+ | 7.2% | 7.2% | 7.2% | 7.2% | 7.2% | 7.2% |

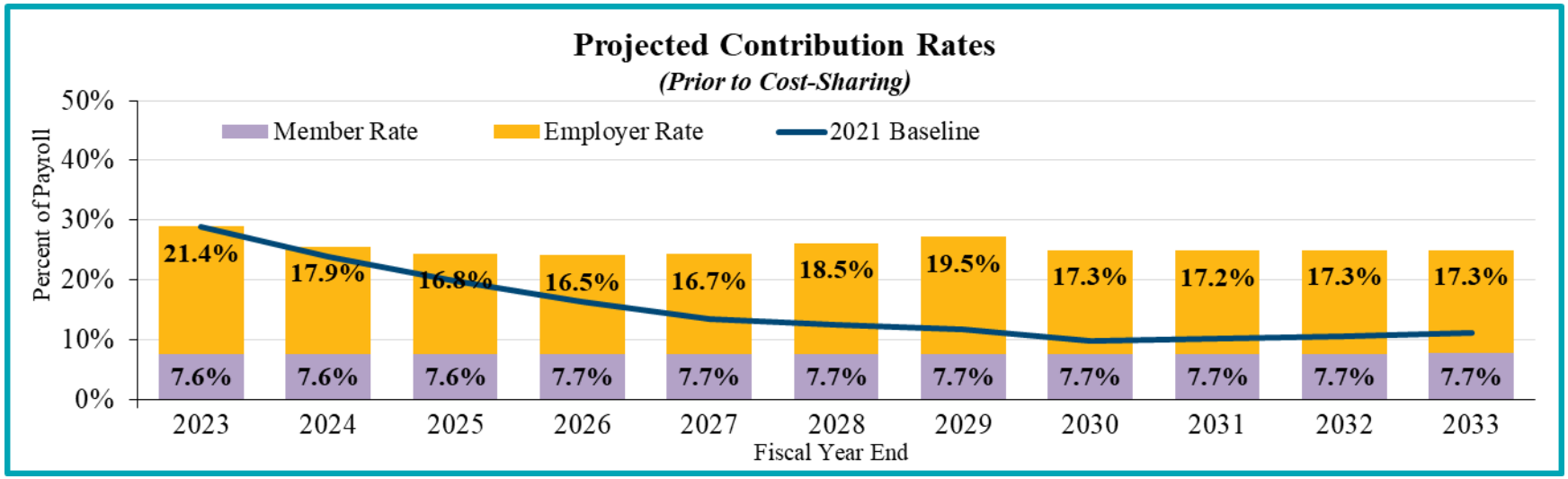
## SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

The charts on the following pages 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 10) 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 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

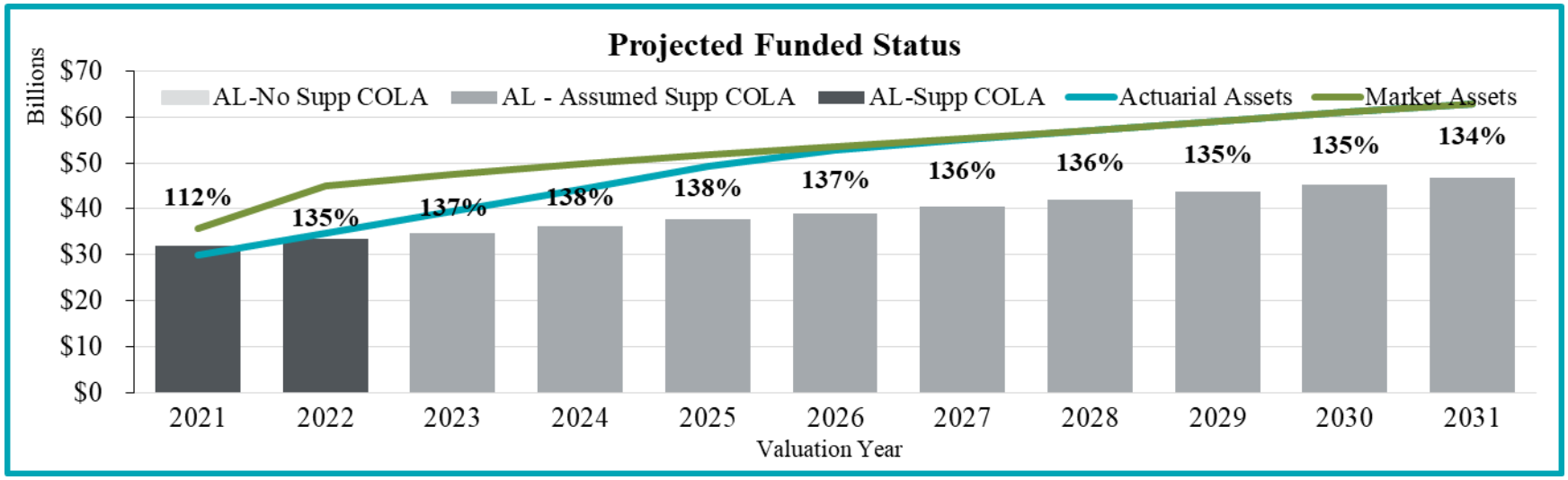
**One-Year Negative Shock Scenario: -10.9% return FYE 2022, 7.2% after**

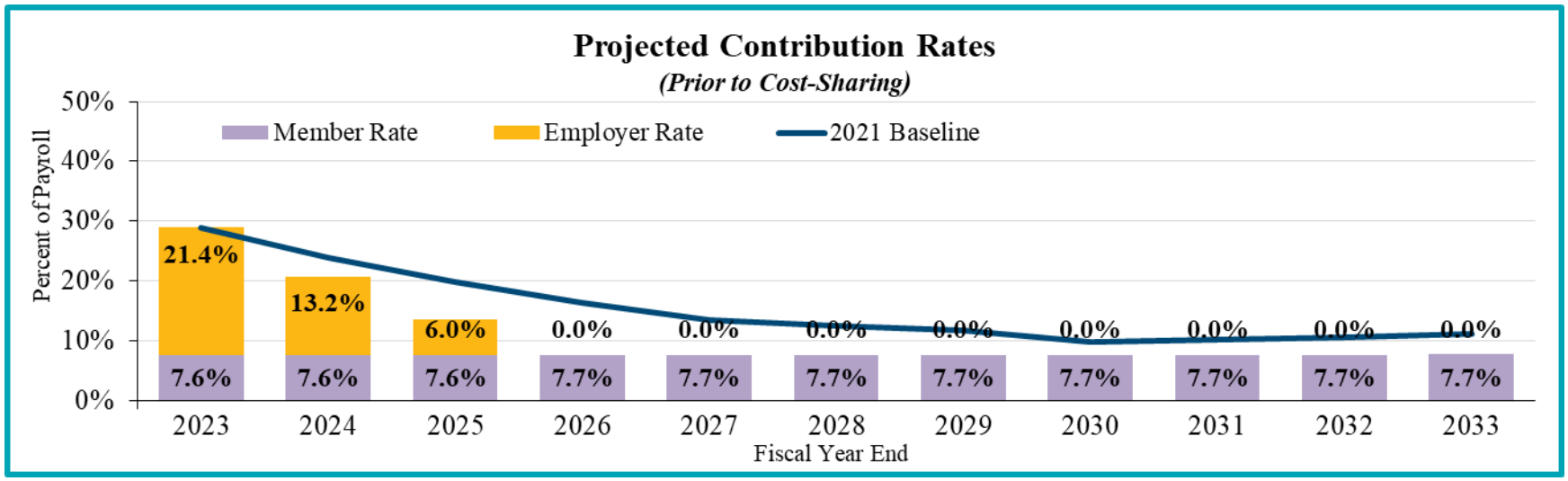


## SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

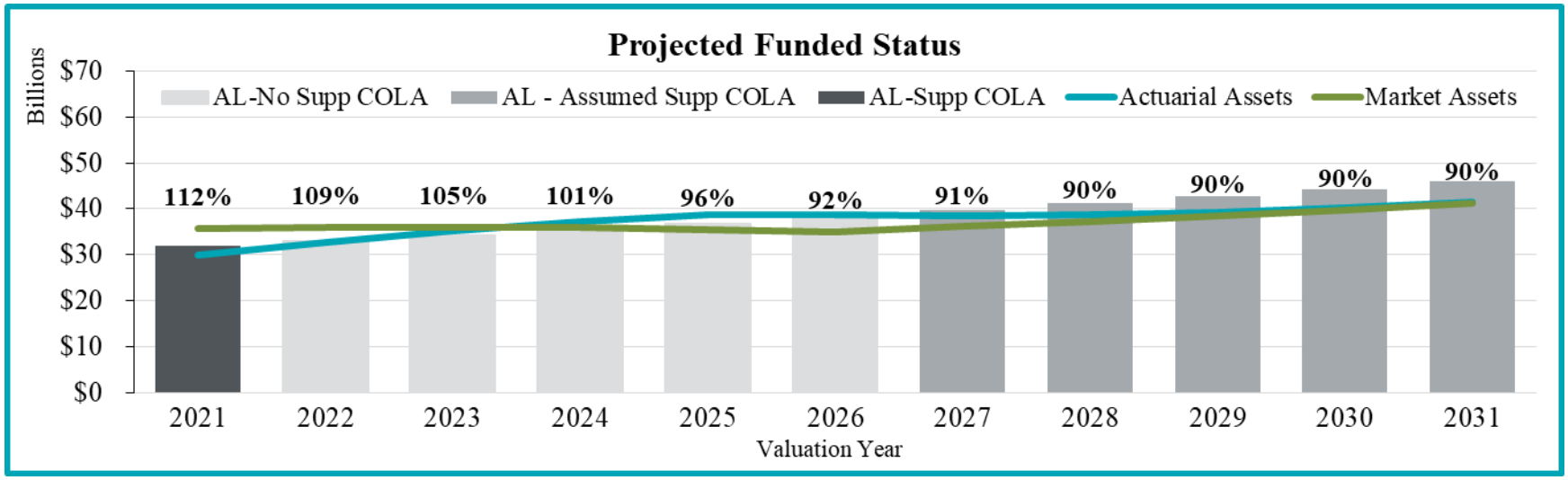
**One-Year Positive Shock Scenario: 28.3% return FYE 2022, 7.2% after**

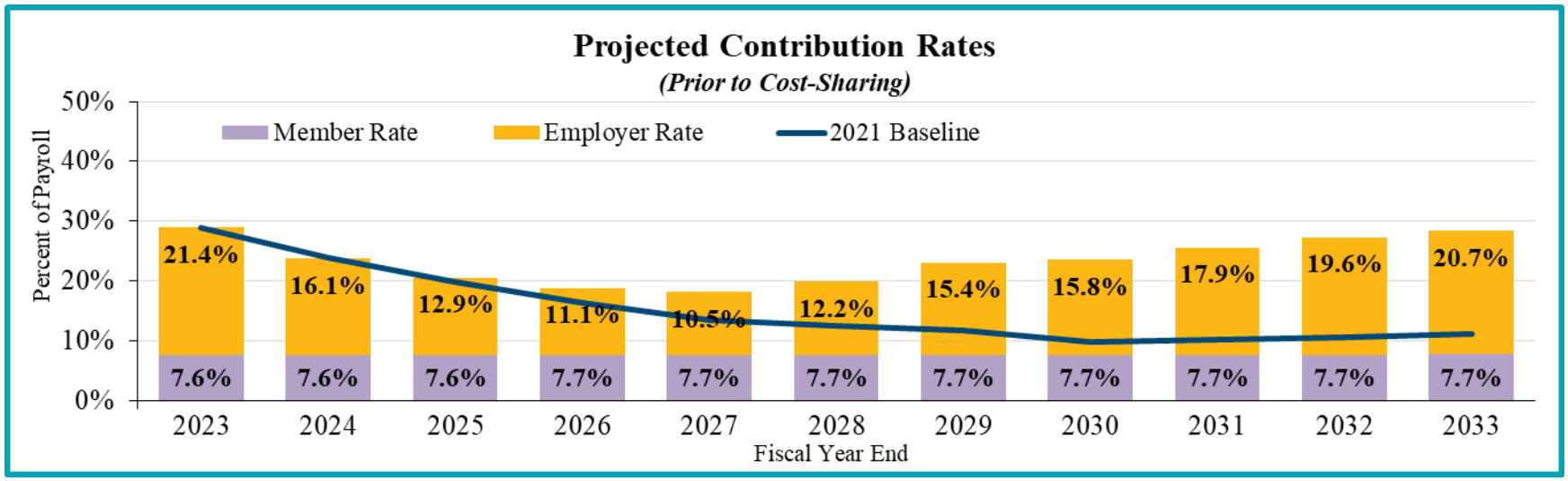


## SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

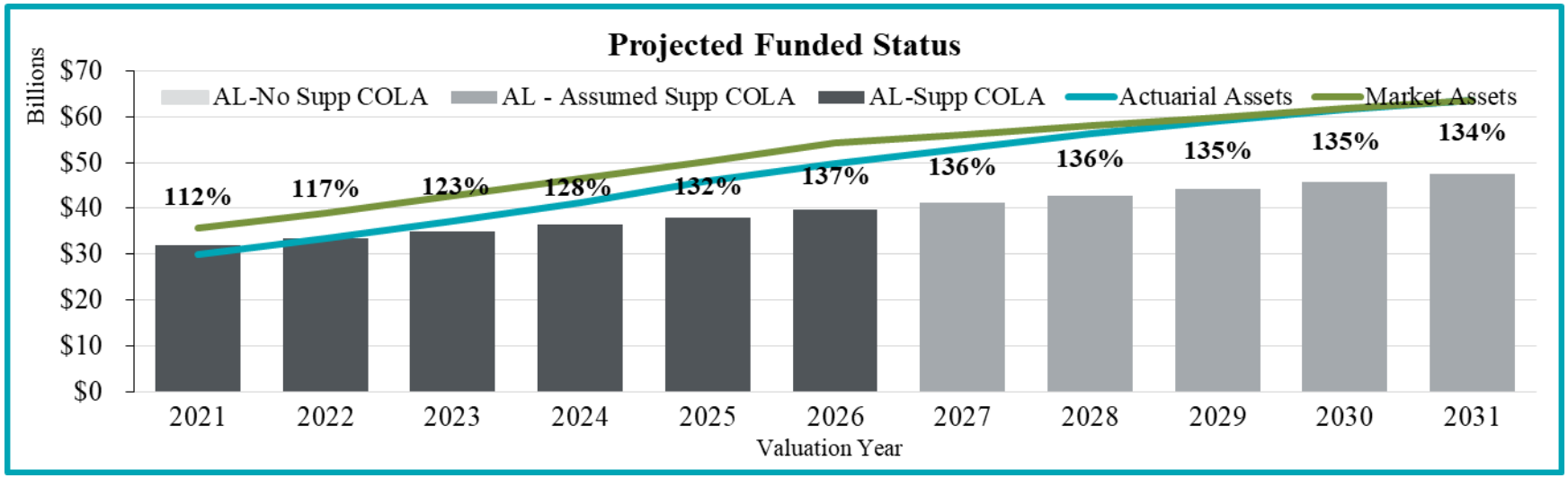
**Five-Year Moderate Negative Scenario: 2.4% return FYE 2022-2026, 7.2% after**

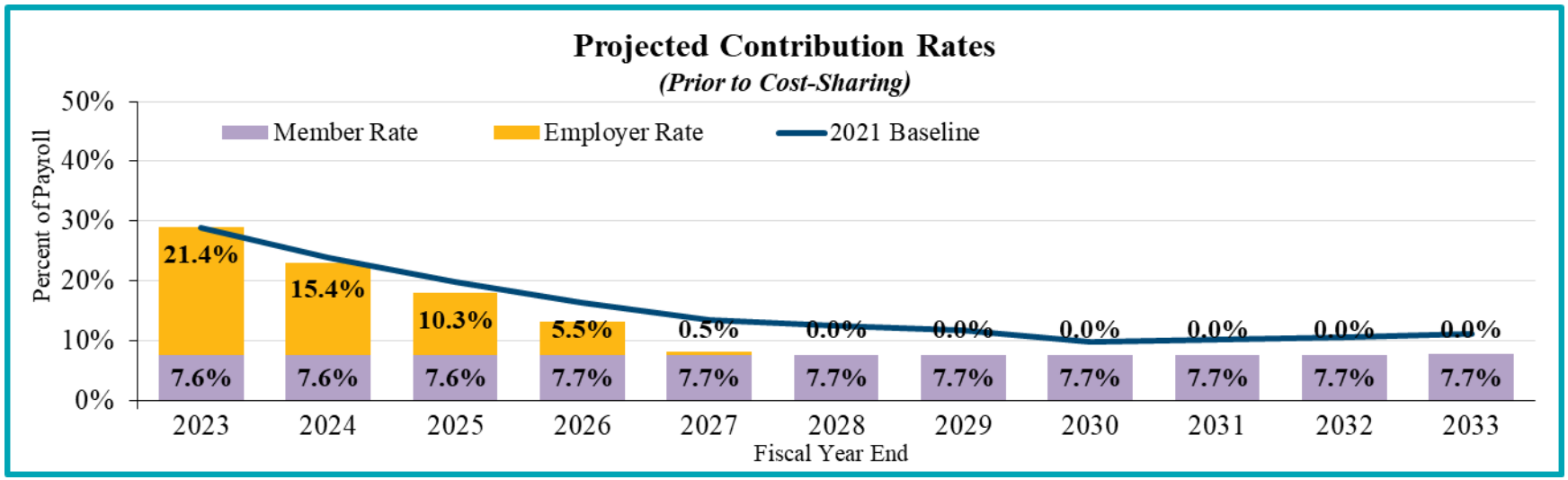


## SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

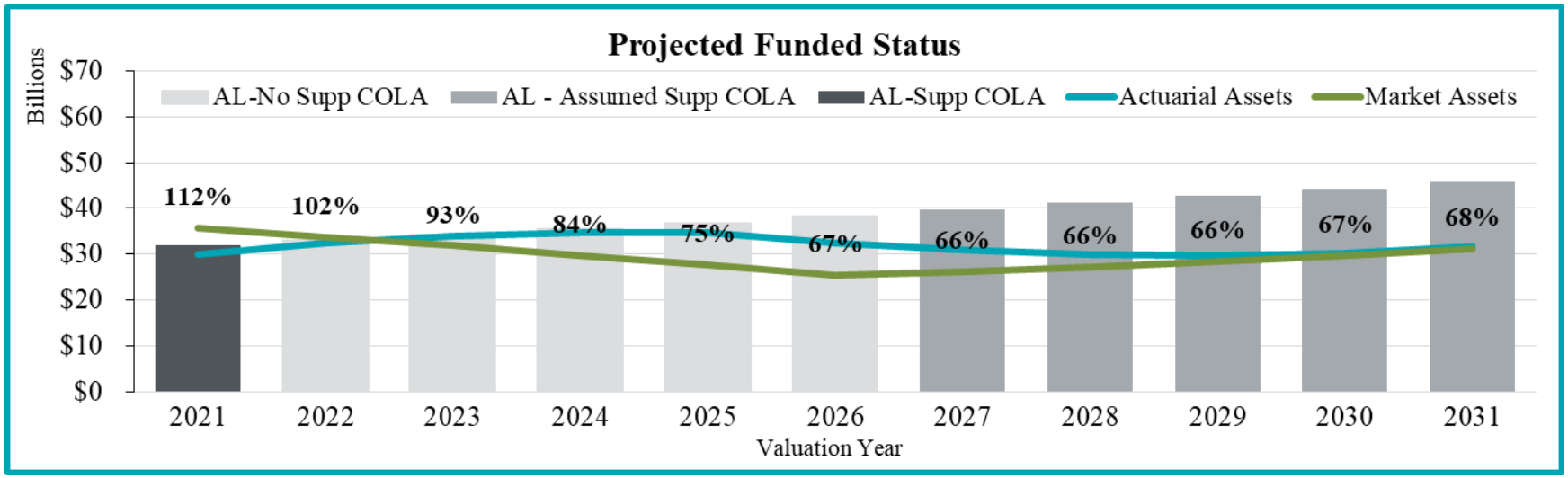
**Five-Year Moderate Positive Scenario: 11.4% return FYE 2022-2026, 7.2% after**

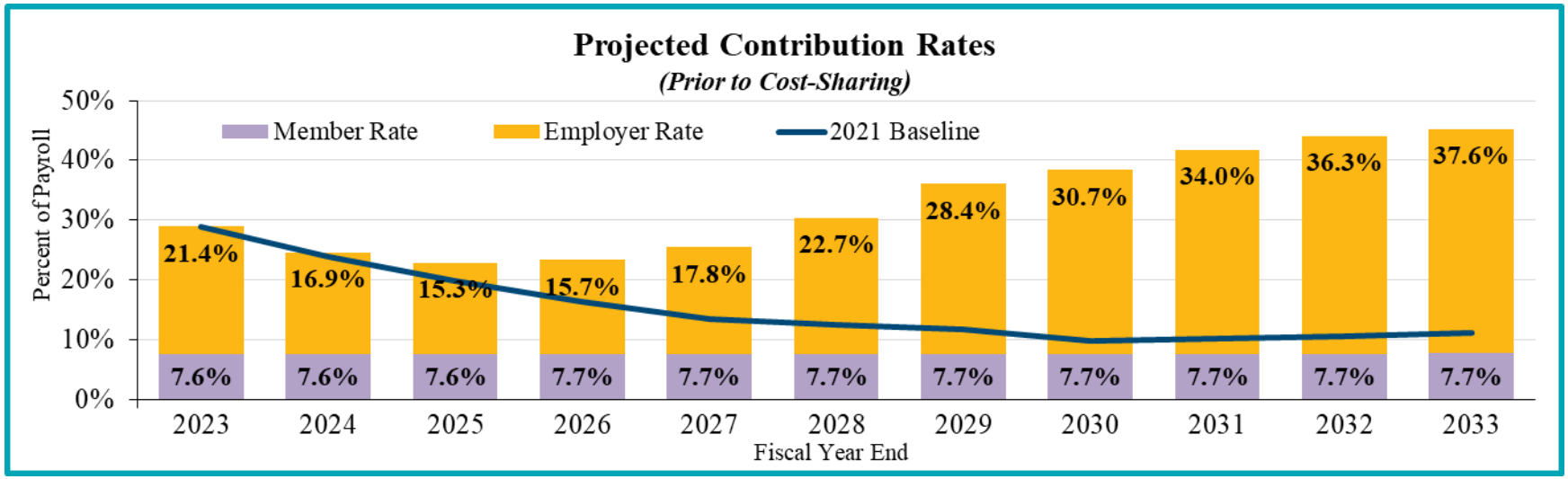


## SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

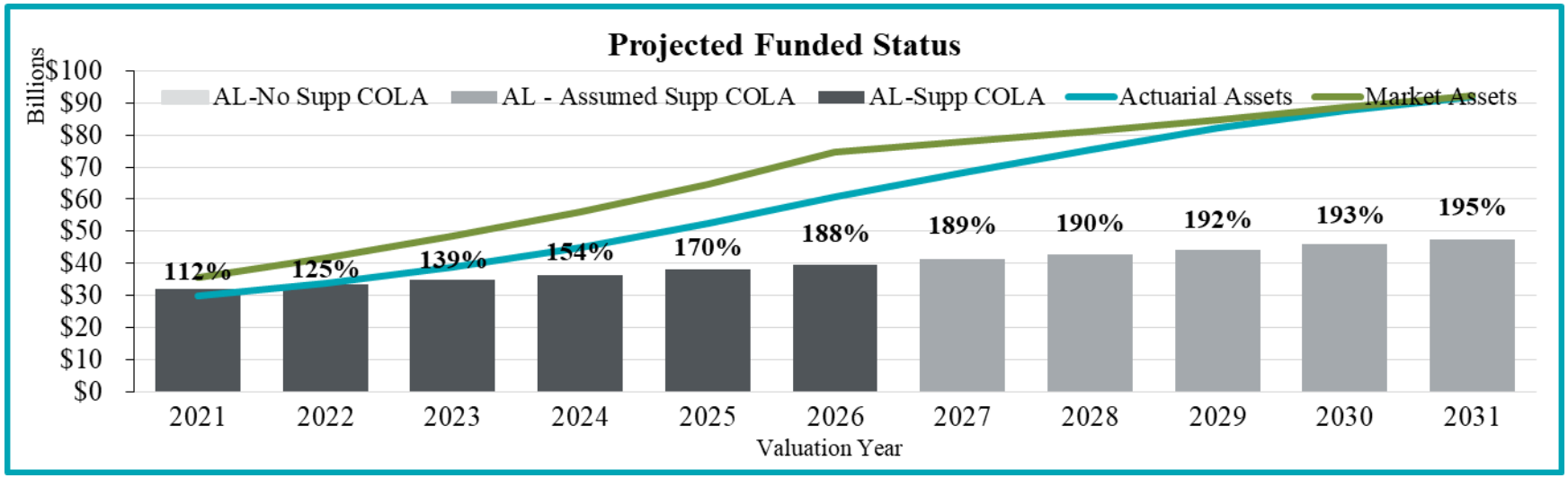
**Five-Year Significant Negative Scenario: -3.6% return FYE 2022–2026, 7.2% after**

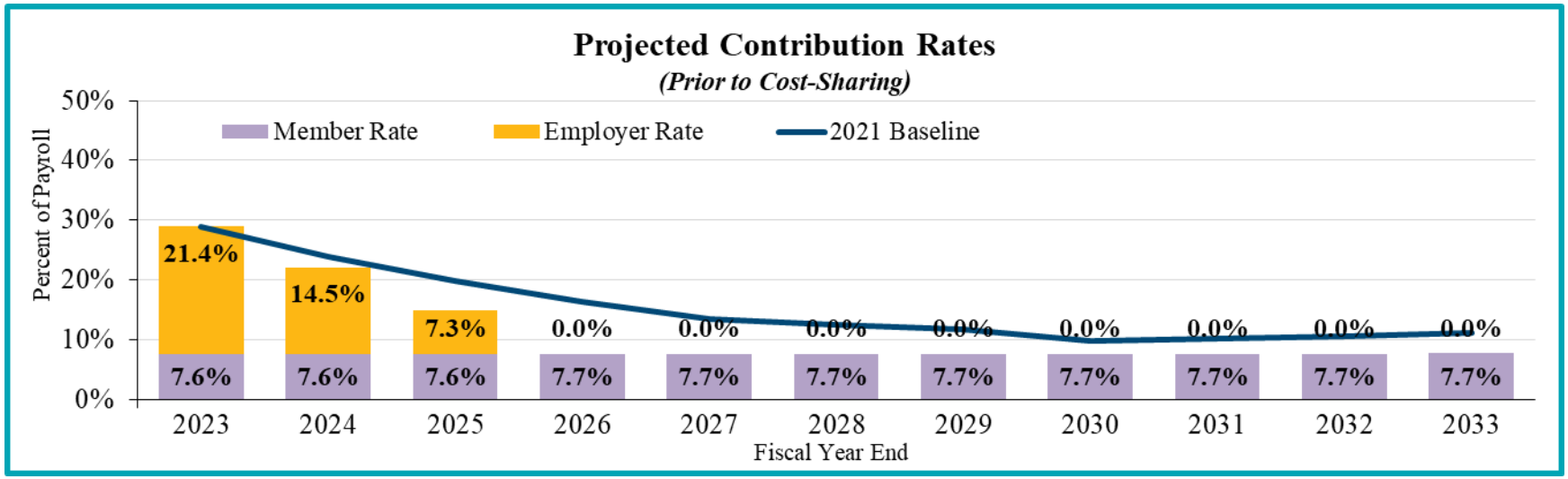


## SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

**Five-Year Significant Positive Scenario: 18.4% return FYE 2022-2026, 7.2% after**



The scenarios show that actual future investment returns have a significant impact on future contribution rates. The 5-year positive economic scenarios all result in the payment of Supplemental COLAs to all retirees. The employer contribution rates decrease in FYE 2024 and continue to decline quickly and steadily reaching 0.0% in FYE 2026 or 2028.

Even the negative economic scenarios show decreases in the employer contribution rates over the next few years before contributions rise again. The recognition of the deferred investment gains from FYE 2021 and the completion of payments on several amortization layers in each of the next two years creates significant downward pressure on contribution rates.

- The one-year negative shock (-10.9%) still shows a substantial rate decrease for FYE 2024 after which the employer rate remains relatively level with a peak in FYE 2029 of 19.5%. The funded status declines, but stays at or above 94% throughout the 10-year period.

- The five-year moderate negative scenario (2.4%) produces rate decreases over the next four years, decreasing to 10.5% in FYE 2027 before it increases to 20.7% in FYE 2033. The funded status remains above 100% until July 1, 2025, but stays at or above 90% thereafter.

- The five-year significant negative scenario (-3.6%) produces gradually decreasing rates over the next two years to 15.3% before the employer rate escalates to 37.9% in FYE 2033. The funded status is above 100% in the next year, but declines significantly each year, dropping to 68% funded in the last year of the projection period.

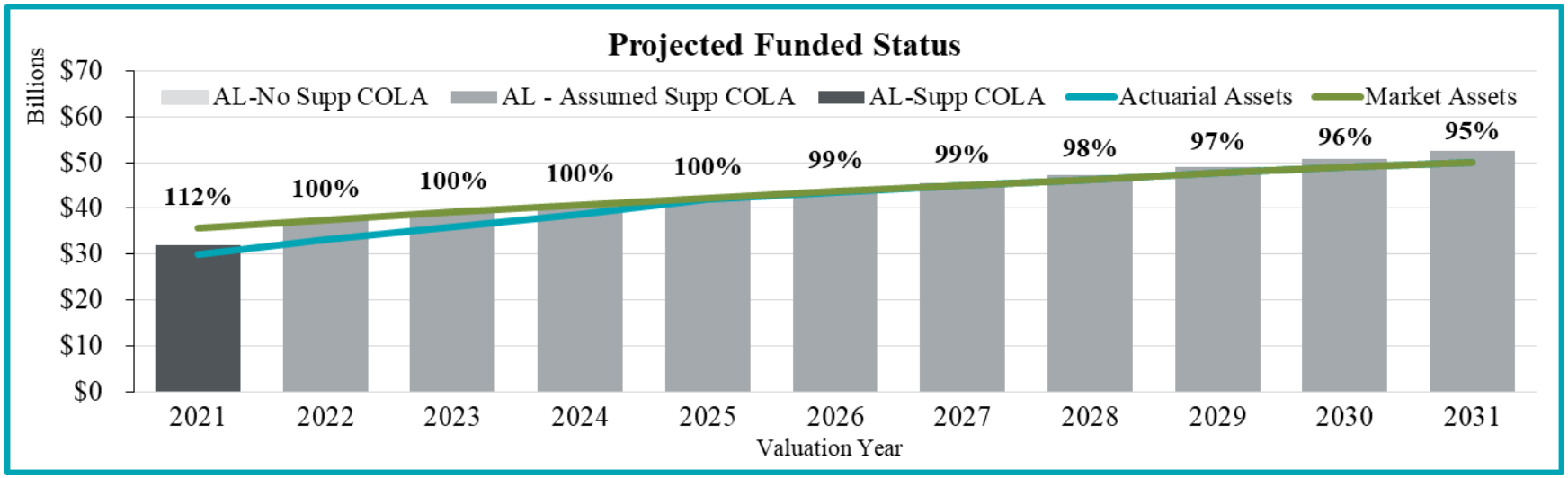
**The investment returns used in the projections above were selected solely to illustrate the impact of investment volatility on the pattern of funded status and employer contribution rates. They are not intended to be predictive of actual future contribution rates or funded status or even to represent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

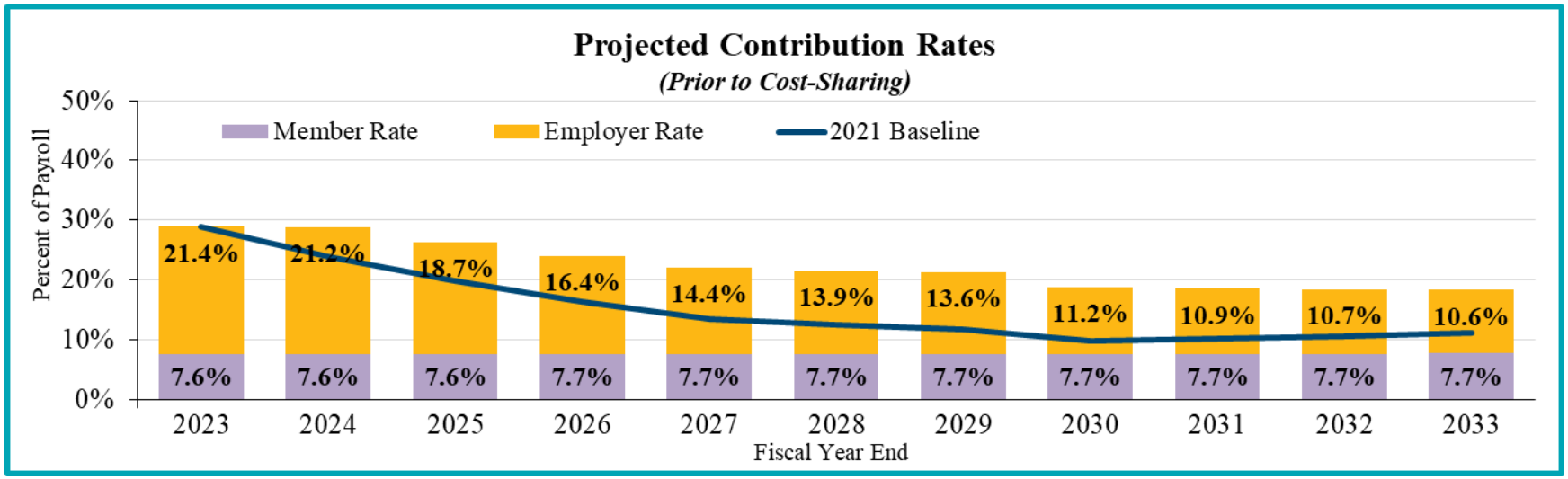
## Interest Rate and Discount Rate Change Risk – Sensitivity Testing

As shown above, assumption changes over the last decade have increased the UAL by approximately $1.8 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 remain at 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 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 the following pages show the impact on projected funded status and projected contributions if the discount rate and expected returns were reduced or increased by 100 basis points.

## SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

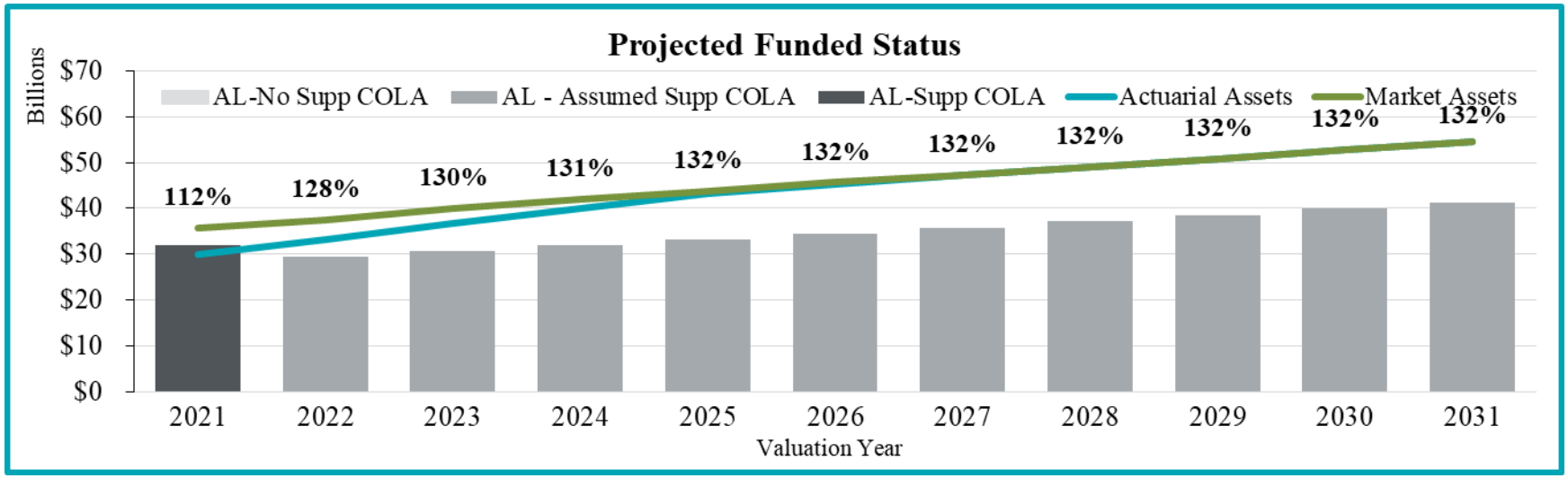
### Discount Rate Sensitivity Testing – 100 Basis Point Reduction – 6.20%

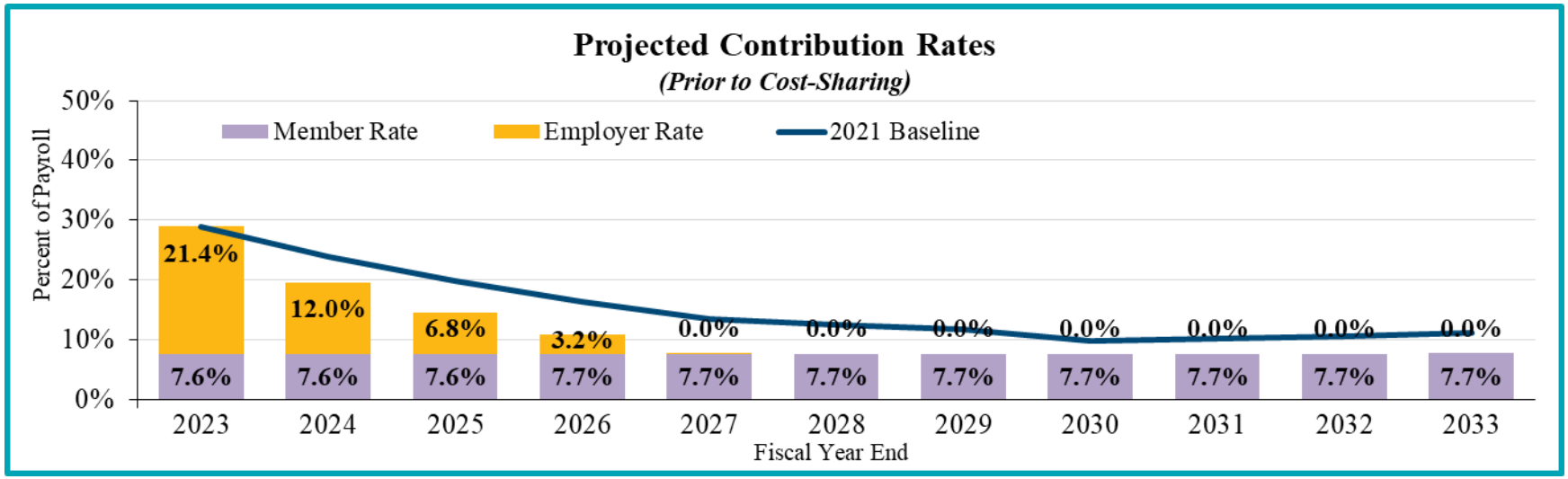


## SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

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



## SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

# Supplemental COLA Risk – Stress Testing

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

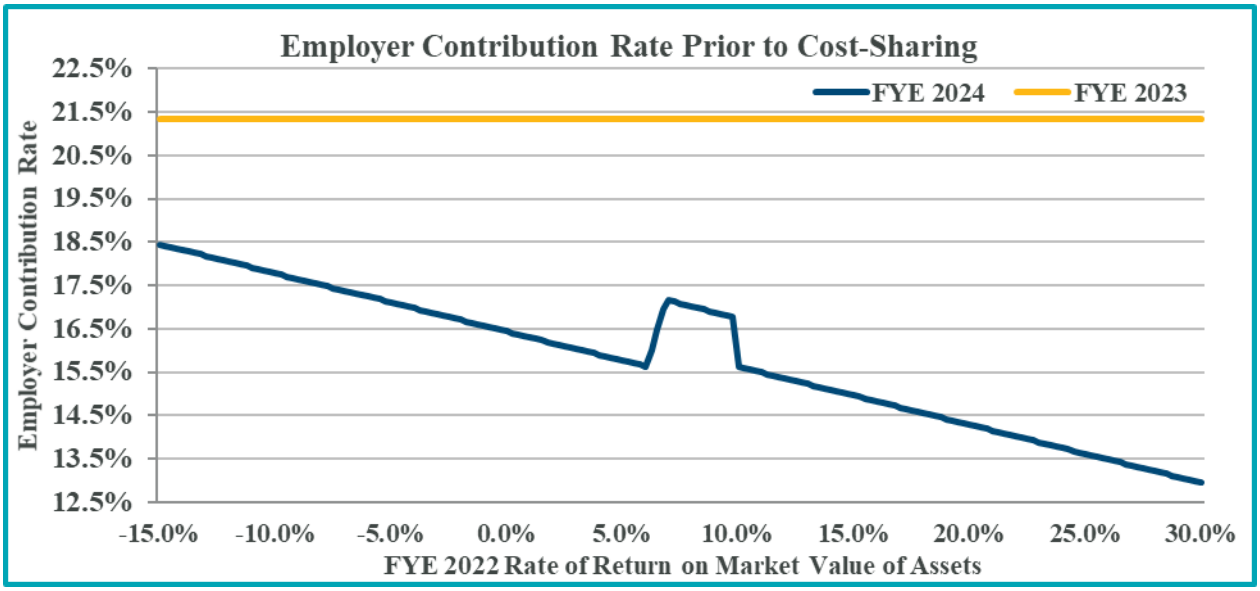
| | Future Supplemental COLAs | | |
|---|---|---|---|
| | None | Assumed | % Difference |
| Actuarial Liability | $ 31,905.3 | $ 34,066.5 | 6.8% |
| Actuarial Value of Assets | $ 30,043.2 | $ 30,043.2 | 0.0% |
| Unfunded Actuarial Liability (actuarial value) | 1,862.1 | 4,023.3 | 116.1% |
| Funding Ratio (actuarial value) | 94.2% | 88.2% | -6.0% |
| Market Value of Assets | $ 35,673.8 | $ 35,673.8 | 0.0% |
| Unfunded Liability (market value) | (3,768.5) | (1,607.3) | -57.3% |
| Funding Ratio (market value) | 111.8% | 104.7% | -7.1% |

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.

## SECTION II – ASSESSMENT AND DISCLOSURE OF RISK

To illustrate the impact of the Supplemental COLA on the employer contribution rate, the chart on the following page shows the estimated FYE 2024 contribution rate assuming actual rates of investment return vary from -15% to 30% with all other actuarial assumptions being met. The expected employer contribution rate for FYE 2024 ranges from 13.0% to 18.5%, a relatively narrow range compared to the extremely wide range of investment returns.

There is downward pressure on the FYE 2024 employer contribution rate due to the 20% recognition of the FYE 2021 investment gains. As shown in the chart, a return of approximately 6.1% starts to generate a Supplemental COLA, and a return of approximately 6.9% or greater generates a full Supplemental COLA. A return of 9.8% reaches 100% funding based on the Actuarial Value of Assets, which extends the amortization of the Supplemental COLA from 5 years to 20 years.

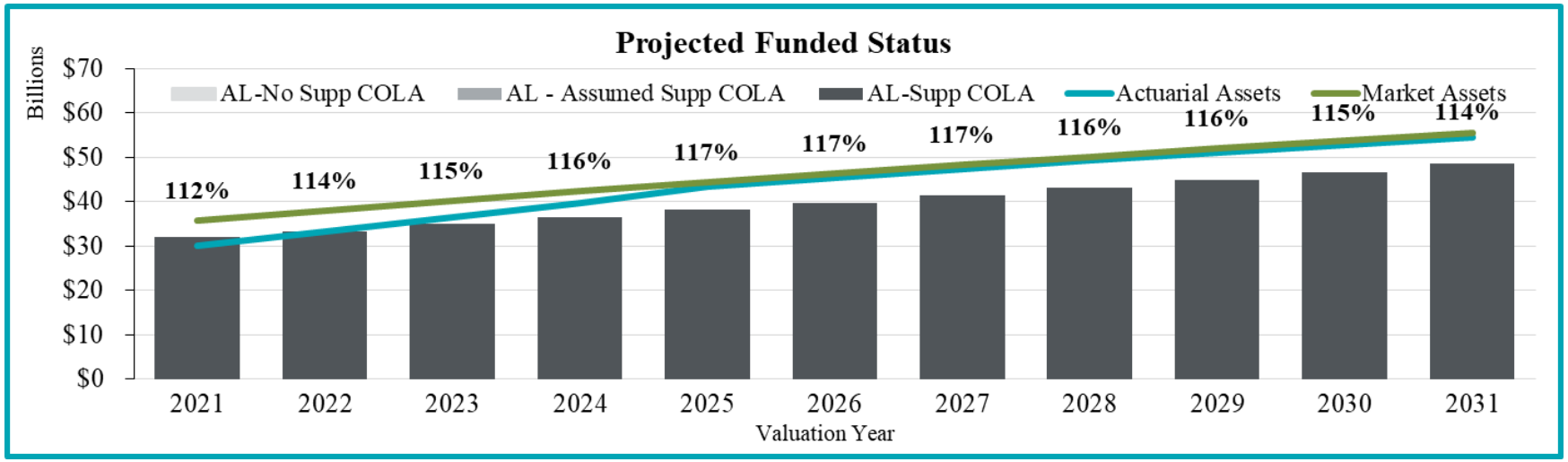


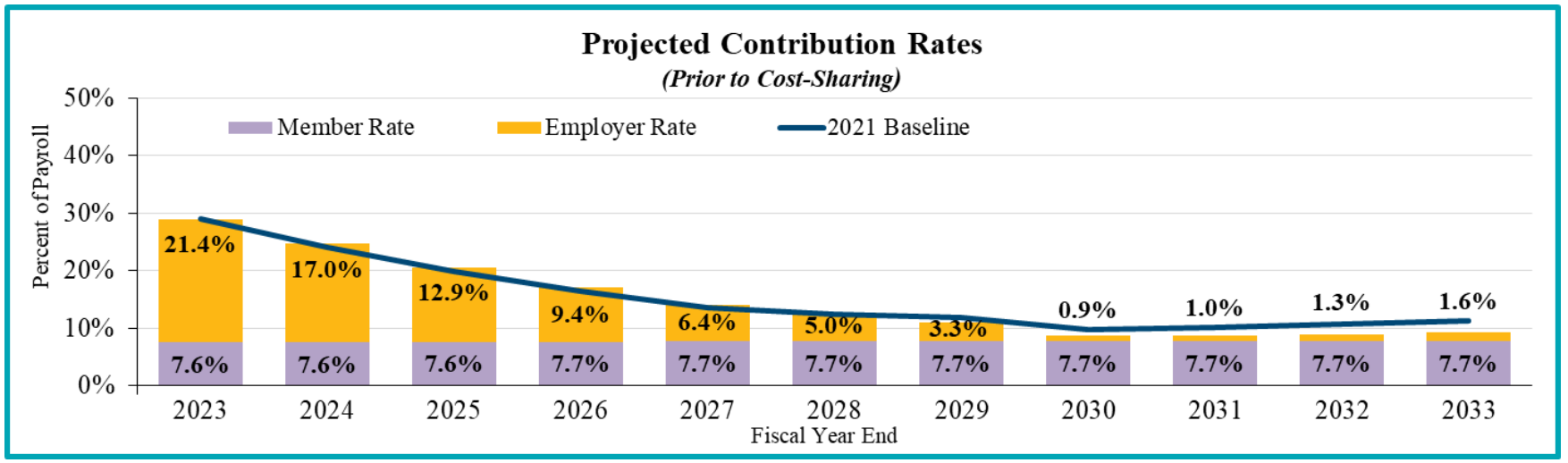

The impact of future Supplemental COLAs on contribution rates and funded status is the worst when the investment returns are just large enough to generate a Supplemental COLA. To illustrate this potential risk and how the amortization method manages it, the projections on the following page assume 8.00% 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 2022-2031



## SECTION III – CERTIFICATION

The purpose of this report is to present the July 1, 2021 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, ASA, EA, FCA, MAAA
Consulting Actuary

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 2020 |
|---|---|---|---|
| 1. | Market Value, Beginning of Year | $ 26,620,218 | $ 26,078,649 |
| 2. | Additions | | |
| | a. Employer Contributions | 836,559 | 742,985 |
| | b. Member Contributions | 409,398 | 400,649 |
| | c. Total Additions: (2a. + 2b.) | $ 1,245,957 | $ 1,143,634 |
| 3. | Net Investment Income | 9,447,669 | 966,282 |
| 4. | Benefits and Administrative Expenses | (1,640,010) | (1,568,347) |
| 5. | Net Increase/(Decrease): (2c.+3.+4.) | $ 9,053,616 | $ 541,569 |
| 6. | **Market Value, End of Year** | **$ 35,673,834** | **$ 26,620,218** |
| 7. | Estimated Rate of Return on Market Value | 35.8% | 3.7% |

## 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 7/1/2021**
(Amounts in thousands)

| | | | Total |
|---|---|---|---|
| 1. | Actuarial Value of Assets (AVA) as of 7/1/2020 | $ | 26,695,844 |
| 2. | Non-Investment Cash Flow for FYE 2021 | | (394,053) |
| 3. | Expected Return on AVA for FYE 2021 | | 1,991,288 |
| 4. | Expected Actuarial Value as of 7/1/2021: (1+2+3) | $ | 28,293,079 |
| 5. | Actual Return on Market Value of Assets in FYE 2021 | | 9,447,669 |
| 6. | Actual Return Above Expected in 2020-2021: (5 - 3) | | 7,456,381 |
| 7. | Recognition of Returns Above / (Below) Expected | | |
| | a. 2020-2021 (20% of 6.) | | 1,491,276 |
| | b. 2019-2020 | | (182,627) |
| | c. 2018-2019 | | 39,545 |
| | d. 2017-2018 | | 175,751 |
| | e. 2016-2017 | | 226,198 |
| | f. Total: (7a. + 7b. + 7c. + 7d. + 7e.) | $ | 1,750,143 |
| 8. | **Actuarial Value as of 7/1/2021: (4 + 7f.)** | **$** | **30,043,222** |
| 9. | Market Value as of 7/1/2021 | $ | 35,673,834 |
| 10. | Ratio of Actuarial Value to Market Value: (8 / 9) | | 84.2% |
| 11. | Estimated Rate of Return on Actuarial Value | | 13.9% |

## Investment Performance

The internal rate of return on the Market Value of Assets, net of investment expenses, was 35.8% for the plan year ending June 30, 2021. This return compares to an assumed rate of return of 7.40% and resulted in actual returns that are approximately $7.5 billion more than the expected return on the Actuarial Value of Assets.

On an Actuarial Value of Assets basis, the return for the plan year ending June 30, 2021 was 13.9% compared to the assumed return of 7.40%. This return produced an investment gain on the Actuarial Value of Assets of $1.75 billion for the plan year ending June 30, 2021.

# 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, 2020.

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

| | July 1, 2021 | July 1, 2020 | % Change |
|---|---|---|---|
| **Present Value of Future Benefits** | | | |
| Actives | $ 17,993,081 | $ 16,536,203 | 8.8% |
| Terminated Vested | 669,126 | 606,081 | 10.4% |
| Members Receiving Benefits | 19,558,857 | 18,014,526 | 8.6% |
| **Total** | $ 38,221,064 | $ 35,156,810 | 8.7% |

## Normal Cost

Under the Entry Age Actuarial Cost Method, the present value of future benefits for each individual is spread over the individual's expected working career as a level percentage of the individual's expected pay. The normal cost is the amount attributed to the next year of service. Table 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, 2021**
(Amounts in thousands)

| | Police | Fire | Miscellaneous | Total |
|---|---|---|---|---|
| **Normal Cost by Benefit Tier** | | | | |
| Old | $ 0 | $ 0 | $ 70 | $ 70 |
| New | 55,218 | 40,362 | 249,654 | 345,234 |
| Prop D | 1,012 | 2,748 | 27,862 | 31,622 |
| Prop C | 46,355 | 29,678 | 249,589 | 325,622 |
| **Total** | $ 102,585 | $ 72,788 | $ 527,175 | $ 702,548 |

## 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, 2021**
(Amounts in thousands)

| | Police | Fire | Miscellaneous | Total |
|---|---|---|---|---|
| **Actuarial Liability** | | | | |
| Actives | $ 1,713,393 | $ 1,303,407 | $ 8,660,491 | $ 11,677,291 |
| Terminated Vested | 30,671 | 18,659 | 619,796 | 669,126 |
| Members Receiving Benefits | | | | |
| Retirees | 2,530,582 | 1,772,125 | 11,516,772 | 15,819,479 |
| Disabled | 817,693 | 1,038,196 | 474,249 | 2,330,138 |
| Beneficiaries | 369,389 | 307,080 | 732,772 | 1,409,241 |
| Total Members Receiving Benefits | 3,717,664 | 3,117,401 | 12,723,793 | 19,558,858 |
| **Total Actuarial Liability** | **$ 5,461,728** | **$ 4,439,467** | **$ 22,004,080** | **$ 31,905,275** |

## SECTION V – MEASURES OF LIABILITY

### Changes in Unfunded Actuarial Liability

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

**Table V-4**
**Development of 2021 Experience Gain/(Loss)**
(Amounts in millions)

| Item | Cost |
|---|---|
| 1. Unfunded Actuarial Liability (UAL) at July 1, 2020 | $ 2,804.1 |
| 2. Middle of year expected actuarial liability payment | (503.6) |
| 3. Interest to end of year on 1. and 2. | 189.2 |
| 4. UAL increase due to July 1, 2021 Supplemental COLA | 264.1 |
| 5. UAL increase due to changes in the discount rate | 701.6 |
| 6. Expected UAL at July 1, 2021 (1+2+3+4+5) | $ 3,455.4 |
| 7. Actual Unfunded Liability at July 1, 2021 | 1,862.1 |
| 8. Experience Gain: (6-7) | $ 1,593.3 |
| 9. Portion of difference due to: | |
| a. Investment experience on actuarial value | $ 1,750.1 |
| b. Salaries more than expected | (169.8) |
| c. Old Safety Basic COLA less than expected | 19.8 |
| d. Retirements | (39.8) |
| e. Terminations | (29.1) |
| f. New entrants | (24.1) |
| g. Contributions (rate delay, payroll changes, and expense gain) | 113.2 |
| h. Mortality and disability experience | (14.9) |
| i. Other experience | (12.1) |
| j. Total gain | $ 1,593.3 |

Table V-5 on the next page 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.

## SECTION V – MEASURES OF LIABILITY

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

| Source | Year Ending June 30, 2017 | 2018 | 2019 | 2020 | 2021 | Total |
|---|---|---|---|---|---|---|
| Salary Increases | $ (80,610) | $ (53,729) | $ 45,993 | $ 114,500 | $ 169,789 | $ 195,943 |
| Retirement | 27,735 | 20,226 | 32,398 | 3,918 | 39,765 | 124,042 |
| Termination | 20,742 | 22,919 | 47,547 | 19,838 | 29,126 | 140,172 |
| Mortality | (6,205) | 10,721 | 1,112 | 4,590 | (1,492) | 8,726 |
| Disability | (912) | 5,585 | 10,387 | 10,327 | 16,369 | 41,756 |
| New Entrants | 19,793 | 39,173 | 41,251 | 45,006 | 24,142 | 169,365 |
| Old Safety COLAs | (64,299) | (29,632) | (22,131) | (86,577) | (19,826) | (222,465) |
| Other | 38,260 | (8,717) | 28,851 | 691 | 12,171 | 71,256 |
| Total | $ (45,496) | $ 6,546 | $ 185,408 | $ 112,293 | $ 270,044 | $ 528,795 |

# 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 below 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.

**Table VI-1**
**Development of the Net Employer Contribution Rate as of July 1, 2021 for FYE 2023**
(Amounts in millions)

| | FYE 2023 | | | | FYE 2022 |
|---|---|---|---|---|---|
| | Police | Fire | Miscellaneous | TOTAL | TOTAL |
| 1. Total Normal Cost Rate | 29.32% | 30.40% | 16.22% | **18.31%** | **17.29%** |
| 2. Member Contribution Rate | 8.29% | 8.27% | 7.50% | **7.62%** | **7.62%** |
| 3. Employer Normal Cost Rate (1 - 2) | 21.03% | 22.13% | 8.72% | **10.69%** | **9.67%** |
| 4. a. UAL - Proposition balance | $ 50.0 | $ 47.4 | $ 478.6 | **$ 576.0** | **$ 658.7** |
| b. Other UAL | 117.4 | 80.7 | 1,088.0 | **1,286.1** | **2,145.4** |
| c. Total UAL (4a+4b) | $ 167.4 | $ 128.1 | $ 1,566.6 | **$ 1,862.1** | **$ 2,804.1** |
| 5. a. Amortization of Proposition UAL | 7.62% | 11.43% | 2.51% | **3.54%** | **3.56%** |
| b. Amortization of Other UAL | 6.52% | 6.52% | 6.52% | **6.52%** | **10.58%** |
| c. Total Amortization (5a+5b) | 14.14% | 17.95% | 9.03% | **10.06%** | **14.14%** |
| 6. Administrative Expenses | 0.60% | 0.60% | 0.60% | **0.60%** | **0.60%** |
| 7. Net Employer Contribution Rate (3+ 5c+6) | 35.77% | 40.68% | 18.35% | **21.35%** | **24.41%** |

## 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 21.35% and the hourly pay rates shown in the table below.

**Table VI-2**
**Employee and Employer Contribution Rates By Employee Group for FYE 2023**
(Amounts in thousands)

| Hire Date | Hourly Pay | Estimated Payroll FYE 2023 | Base Rates | | Adjusted Rates | | Cost Sharing Adjustment |
|---|---|---|---|---|---|---|---|
| | | | Employee | Employer | Employee | Employer | |
| **Police and Fire** | | | | | | | |
| < 11/2/1976 | All | $ 0 | 7.00% | 21.35% | 10.50% | 17.85% | 3.50% |
| 11/2/1976 - 6/30/2010 | All | 291,398 | 7.50% | 21.35% | 11.00% | 17.85% | 3.50% |
| > 6/30/2010 | < $65 | 295,862 | 9.00% | 21.35% | 11.50% | 18.85% | 2.50% |
| > 6/30/2010 | >= $65 | 21,759 | 9.00% | 21.35% | 12.00% | 18.35% | 3.00% |
| **Miscellaneous** | | | | | | | |
| < 11/2/1976 | < $32 | $ 0 | 8.00% | 21.35% | 8.00% | 21.35% | 0.00% |
| < 11/2/1976 | $32 - $65 | 257 | 8.00% | 21.35% | 10.50% | 18.85% | 2.50% |
| < 11/2/1976 | >= $65 | 109 | 8.00% | 21.35% | 11.00% | 18.35% | 3.00% |
| >= 11/2/1976 | < $32 | 204,313 | 7.50% | 21.35% | 7.50% | 21.35% | 0.00% |
| >= 11/2/1976 | $32 - $65 | 1,999,406 | 7.50% | 21.35% | 10.00% | 18.85% | 2.50% |
| >= 11/2/1976 | >= $65 | 1,140,130 | 7.50% | 21.35% | 10.50% | 18.35% | 3.00% |
| **Estimated Total Plan** | | **$ 3,953,233** | **7.62%** | **21.35%** | **10.21%** | **18.76%** | **2.59%** |
| **Estimated Contribution Amounts** | | | **$ 301,236** | **$ 844,015** | **$ 403,625** | **$ 741,627** | **$ 102,389** |

*Dollar Amounts in Thousands*

## 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 is amortized over 20 years from the date it is first recognized in the valuation. Effective with the July 1, 2014 valuation, any new changes to active member benefits are amortized over a closed 15-year period, and any new changes to inactive or retired member benefits, including Supplemental COLAs which are shown in Table VI-4, are amortized over a closed 5-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, 2021 for FYE 2023**
(dollars in thousands)

| | | Police | | Fire | | Miscellaneous | | Total | |
|---|---|---|---|---|---|---|---|---|---|
| Propositions | Remaining Period | Outstanding Balance | Amortization Payment | Outstanding Balance | Amortization Payment | Outstanding Balance | Amortization Payment | Outstanding Balance | Amortization Payment |
| 6.25% Credited Interest on EE ctrbs | 1 | 11 | 12 | 3 | 3 | 1,547 | 1,718 | 1,561 | 1,733 |
| 2002 Prop H - Safety Ret Bfts | 1 | 19,684 | 21,847 | 20,925 | 23,226 | 0 | 0 | 40,609 | 45,073 |
| 5.0% Credited Interest on EE ctrbs | 3 | (194) | (75) | (92) | (35) | (17,796) | (6,833) | (18,082) | (6,943) |
| 2004 Prop E - New Safety LOD Bfts | 4 | 2,842 | 833 | 3,991 | 1,171 | 0 | 0 | 6,833 | 2,004 |
| 2003 Prop F - Misc 3+3 Early Ret Bfts | 4 | 0 | 0 | 0 | 0 | 8,596 | 2,521 | 8,596 | 2,521 |
| Liability of 2003 Prop F (extended) - Misc 3+3 Early Ret Bfts | 5 | 0 | 0 | 0 | 0 | 5,866 | 1,402 | 5,866 | 1,402 |
| Liability of 2003 Prop F (extended) - Misc 3+3 Early Ret Bfts | 6 | 0 | 0 | 0 | 0 | 2,989 | 606 | 2,989 | 606 |
| 2008 Prop B - New Misc Ret Bfts and Compound COLA | 7 | 27,630 | 4,891 | 22,547 | 3,989 | 477,448 | 84,491 | 527,625 | 93,371 |
| **Proposition Total** | | **$ 49,973** | **$ 27,508** | **$ 47,374** | **$ 28,354** | **$ 478,650** | **$ 83,905** | **$ 575,997** | **$ 139,767** |
| **Expected FYE 2023 Payroll** | | | **$ 360,915** | | **$ 248,104** | | **$ 3,344,214** | | **$ 3,953,233** |
| **Amortization Rate** | | | **7.62%** | | **11.43%** | | **2.51%** | | **3.54%** |

# SECTION VI – CONTRIBUTIONS

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

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) are reduced to 5 years. If the System becomes fully funded based on the Actuarial Value of Assets, any unexpected changes in the UAL is amortized over a rolling 20-year period.

## SECTION VI – CONTRIBUTIONS

**Table VI-4**
**Development of the Non-Proposition Amortization Rate as of July 1, 2021 for FYE 2023**
(dollars in thousands)

| Amortization Bases | Remaining Period | Outstanding Balance | Amortization Payment |
|---|---|---|---|
| 2013 Non-Proposition UAL | 5 | $ 2,396,711 | $ 572,712 |
| 2014 Actuarial Gain | 5 | (807,663) | (192,997) |
| 2014 Assumption Change | 5 | 142,873 | 34,141 |
| 2015 Actuarial Gain | 5 | (734,271) | (175,459) |
| 2015 Assumption Change | 5 | 1,161,704 | 277,597 |
| 2013 Supplemental COLA | 12 | 185,355 | 20,900 |
| 2016 Actuarial Loss | 5 | 26,629 | 6,363 |
| 2017 Actuarial Gain | 5 | (387,982) | (92,711) |
| 2017 Supplemental COLA | 1 | 49,335 | 54,758 |
| 2017 Assumption and Method Change | 5 | 49,183 | 11,753 |
| 2018 Actuarial Gain | 5 | (387,653) | (92,632) |
| 2018 Supplemental COLA | 2 | 93,908 | 53,093 |
| 2018 Assumption Change | 5 | 294,314 | 70,328 |
| 2019 Actuarial Loss | 5 | 172,145 | 41,135 |
| 2019 Supplemental COLA | 3 | 93,835 | 36,028 |
| 2020 Actuarial (Gain)/Loss | 5 | 155,398 | 37,133 |
| 2020 Assumption Changes | 5 | (590,111) | (141,011) |
| 2021 Actuarial (Gain)/Loss | 5 | (1,593,348) | (380,742) |
| 2021 Supplemental COLA | 5 | 264,091 | 63,106 |
| 2021 Assumption Change | 20 | 701,603 | 54,340 |
| **Total Non-Proposition UAL** | | **$ 1,286,056** | **$ 257,835** |
| **Expected FYE 2023 Payroll** | | | **$ 3,953,233** |
| **Amortization Rate** | | | **6.52%** |

## 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, 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) |
| July 1, 2012 | (1,135,013) | (55,440) | 187,116 | (1,003,337) | (135,527) | (1,138,864) |

[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) |
|---|---|---|---|---|---|---|---|
| 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% |
| 2012[6] | 2,451 | 11,658 | 5,285 | 16,028 | 100% | 100% | 36% |

[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, 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% |
| July 1, 2012 | 16,027,683 | 19,393,854 | 3,366,171 | 83% | 2,393,842 | 141% |

**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 |
| 2012 | 1,769 | $70,868,367 | 871 | $26,958,609 | 25,190 | $ 982,250,287 | 8.5% | $38,994 |
| 2013 | 1,577 | 66,437,220 | 733 | 22,406,077 | 26,034 | 1,045,547,799 | 6.4% | 40,161 |
| 2014 | 1,588 | 65,923,470 | 770 | 25,170,856 | 26,852 | 1,103,959,803 | 5.6% | 41,113 |
| 2015 | 1,564 | 63,136,134 | 931 | 29,314,643 | 27,485 | 1,157,081,680 | 4.8% | 42,099 |
| 2016 | 1,657 | 72,049,646 | 856 | 30,384,191 | 28,286 | 1,247,230,245 | 7.8% | 44,094 |
| 2017 | 1,769 | 80,214,008 | 928 | 35,082,179 | 29,127 | 1,332,430,263 | 6.8% | 45,746 |
| 2018 | 1,797 | 84,574,963 | 959 | 36,284,323 | 29,965 | 1,424,324,641 | 6.9% | 47,533 |
| 2019 | 1,770 | 83,661,179 | 957 | 36,959,870 | 30,778 | 1,513,436,081 | 6.3% | 49,173 |
| 2020 | 1,470 | 74,777,425 | 816 | 34,764,875 | 30,128 | 1,587,981,080 | 4.9% | 52,708 |
| 2021 | 1,722 | 97,495,262 | 996 | 43,909,238 | 30,854 | 1,691,633,291 | 6.5% | 54,827 |

** 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, 2021 | July 1, 2020 | % Change |
|---|---|---|---|
| **Total** | | | |
| Count | 33,644 | 34,521 | -2.5% |
| Average Current Age | 47.2 | 46.7 | 0.5 |
| Average Service | 11.0 | 10.6 | 0.4 |
| Annual Pensionable Earnings | $ 3,586,532,188 | $ 3,583,266,358 | 0.1% |
| Average Pensionable Earnings | $ 106,602 | $ 103,800 | 2.7% |
| **Police** | | | |
| Count | 2,475 | 2,534 | -2.3% |
| Average Current Age | 40.9 | 40.8 | 0.1 |
| Average Service | 12.4 | 12.3 | 0.1 |
| Annual Pensionable Earnings | $ 332,503,625 | $ 336,710,528 | -1.2% |
| Average Pensionable Earnings | $ 134,345 | $ 132,877 | 1.1% |
| **Fire** | | | |
| Count | 1,599 | 1,660 | -3.7% |
| Average Current Age | 43.9 | 43.9 | 0.0 |
| Average Service | 13.3 | 13.4 | -0.1 |
| Annual Pensionable Earnings | $ 228,221,528 | $ 230,760,703 | -1.1% |
| Average Pensionable Earnings | $ 142,728 | $ 139,012 | 2.7% |
| **Miscellaneous** | | | |
| Count | 29,570 | 30,327 | -2.5% |
| Average Current Age | 47.9 | 47.4 | 0.5 |
| Average Service | 10.7 | 10.4 | 0.3 |
| Annual Pensionable Earnings | $ 3,025,807,035 | $ 3,015,795,127 | 0.3% |
| Average Pensionable Earnings | $ 102,327 | $ 99,443 | 2.9% |

# APPENDIX A – MEMBERSHIP INFORMATION

## Table A-2
## Active Member Data - By Charter
## July 1, 2021

| | Police | Fire | Miscellaneous | Total |
|---|---|---|---|---|
| **Member Counts** | | | | |
| Old | 0 | 2 | 8 | 10 |
| New | 1,162 | 772 | 12,961 | 14,895 |
| Prop D | 20 | 52 | 1,468 | 1,540 |
| Prop C* | 1,293 | 773 | 15,133 | 17,199 |
| Total | 2,475 | 1,599 | 29,570 | 33,644 |
| **Annual Pensionable Earnings** | | | | |
| Old | $ 0 | $ 405,492 | $ 780,561 | $ 1,186,053 |
| New | 180,072,573 | 130,551,348 | 1,410,846,374 | 1,721,470,295 |
| Prop D | 2,939,709 | 7,622,650 | 148,068,857 | 158,631,216 |
| Prop C* | 149,491,343 | 89,642,038 | 1,466,111,243 | 1,705,244,624 |
| Total | $ 332,503,625 | $ 228,221,528 | $ 3,025,807,035 | $ 3,586,532,188 |

** Police includes 282 members in the Sheriffs Plan (Charter A8.608) and 107 members in the Miscellaneous Safety Plan (Charter A8.610)*

# APPENDIX A – MEMBERSHIP INFORMATION

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

| | July 1, 2021 | July 1, 2020 | Change |
|---|---|---|---|
| **Retired** | | | |
| Count | 24,147 | 23,519 | 2.7% |
| Average Age | 71.5 | 71.3 | 0.2 |
| Average Annual Benefit* | $ 56,052 | $ 53,537 | 4.7% |
| **Disabled** | | | |
| Count | 2,507 | 2,523 | -0.6% |
| Average Age | 69.6 | 69.5 | 0.1 |
| Average Annual Benefit* | $ 72,329 | $ 68,942 | 4.9% |
| **Beneficiaries** | | | |
| Count | 4,200 | 4,086 | 2.8% |
| Average Age | 77.8 | 77.8 | 0.0 |
| Average Annual Benefit* | $ 37,299 | $ 35,911 | 3.9% |
| **Payee Average** | | | |
| Count | 30,854 | 30,128 | 2.4% |
| Average Age | 72.2 | 72.1 | 0.1 |
| Average Annual Benefit* | $ 54,822 | $ 52,436 | 4.5% |
| **Inactives** | | | |
| Count | 11,126 | 10,549 | 5.5% |
| Average Age | 47.6 | 47.3 | 0.3 |
| Total Contribution Balance with Interest | $ 346,437,842 | $ 315,944,777 | 9.7% |
| Average Contribution Balance with Interest | $ 31,138 | $ 29,950 | 4.0% |

** Benefits provided in June 30 valuation data, plus estimated Basic and Supplemental COLA effective July 1, 2021. 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**

| | July 1, 2021 | | | | | | |
|---|---|---|---|---|---|---|---|
| Charter Section | Prop H | 8.559 | 8.585 | 8.595 | 8.596 | Total | July 1, 2020 | Change |
| **Retired** | | | | | | | | |
| Count | 3 | 575 | | 324 | | 902 | 935 | -3.5% |
| Average Age | 88.7 | 80.8 | | 73.2 | | 78.1 | 77.3 | 0.8 |
| Average Annual Benefit* | $ 26,125 | $ 95,598 | | $ 143,699 | | $ 112,645 | $ 108,196 | 4.1% |
| **Disabled** | | | | | | | | |
| Count | 36 | 367 | | 144 | | 547 | 586 | -6.7% |
| Average Age | 85.6 | 80.3 | | 73.8 | | 78.9 | 78.4 | 0.5 |
| Average Annual Benefit* | $ 43,209 | $ 100,898 | | $ 151,256 | | $ 110,359 | $ 104,880 | 5.2% |
| **Beneficiaries** | | | | | | | | |
| Count | 93 | 618 | | 49 | | 760 | 771 | -1.4% |
| Average Age | 84.0 | 82.2 | | 70.0 | | 81.6 | 81.4 | 0.2 |
| Average Annual Benefit* | $ 35,186 | $ 86,478 | | $ 117,286 | | $ 82,188 | $ 78,409 | 4.8% |
| **Payee Average** | | | | | | | | |
| Count | 132 | 1,560 | | 517 | | 2,209 | 2,292 | -3.6% |
| Average Age | 84.5 | 81.2 | | 73.1 | | 79.5 | 79.0 | 0.5 |
| Average Annual Benefit* | $ 37,168 | $ 93,232 | | $ 143,301 | | $ 101,600 | $ 97,328 | 4.4% |
| **Inactives** | | | | | | | | |
| Count | 0 | 0 | | 2 | | 2 | 2 | 0.0% |
| Average Age | N/A | N/A | | 75.5 | | 75.5 | 74.5 | 1.0 |
| Total Contribution Balance with Interest | N/A | N/A | | $ 2,914 | | $ 2,914 | $ 2,802 | 4.0% |
| Average Contribution Balance with Interest | N/A | N/A | | $ 1,457 | | $ 1,457 | $ 1,401 | 4.0% |

** Benefits provided in June 30 valuation data, plus estimated Basic and Supplemental COLA effective July 1, 2021. 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, 2020 | Change |
|---|---|---|---|
| **Retired** | | | |
| Count | 1,989 | 1,830 | 8.7% |
| Average Age | 64.1 | 63.9 | 0.2 |
| Average Annual Benefit* | $ 117,391 | $ 113,068 | 3.8% |
| **Disabled** | | | |
| Count | 671 | 628 | 6.8% |
| Average Age | 64.0 | 63.9 | 0.1 |
| Average Annual Benefit* | $ 115,396 | $ 111,630 | 3.4% |
| **Beneficiaries** | | | |
| Count | 155 | 144 | 7.6% |
| Average Age | 63.0 | 62.3 | 0.7 |
| Average Annual Benefit* | $ 74,800 | $ 71,680 | 4.4% |
| **Payee Average** | | | |
| Count | 2,815 | 2,602 | 8.2% |
| Average Age | 64.0 | 63.8 | 0.2 |
| Average Annual Benefit* | $ 114,570 | $ 110,430 | 3.7% |
| **Inactives** | | | |
| Count | 376 | 356 | 5.6% |
| Average Age | 42.4 | 42.2 | 0.2 |
| Total Contribution Balance with Interest | $ 21,523,590 | $ 19,504,067 | 10.4% |
| Average Contribution Balance with Interest | $ 57,244 | $ 54,787 | 4.5% |

** Benefits provided in June 30 valuation data, plus estimated Supplemental COLA effective July 1, 2021 If applicable, limited by Section 415(b) of the Internal Revenue Code.*

# APPENDIX A – MEMBERSHIP INFORMATION

| Table A-6<br>Non-Active Member Data - Miscellaneous | | July 1, 2021 | | July 1, 2020 | Change |
|---|---|---|---|---|---|
| **Retired** | | | | | |
| Count | | 21,256 | | 20,754 | 2.4% |
| Average Age | | 71.9 | | 71.7 | 0.2 |
| Average Annual Benefit* | $ | 47,911 | $ | 45,825 | 4.6% |
| **Disabled** | | | | | |
| Count | | 1,289 | | 1,309 | -1.5% |
| Average Age | | 68.6 | | 68.2 | 0.4 |
| Average Annual Benefit* | $ | 33,771 | $ | 32,373 | 4.3% |
| **Beneficiaries** | | | | | |
| Count | | 3,285 | | 3,171 | 3.6% |
| Average Age | | 77.7 | | 77.6 | 0.1 |
| Average Annual Benefit* | $ | 25,144 | $ | 23,954 | 5.0% |
| **Payee Average** | | | | | |
| Count | | 25,830 | | 25,234 | 2.4% |
| Average Age | | 72.5 | | 72.3 | 0.2 |
| Average Annual Benefit* | $ | 44,310 | $ | 42,379 | 4.6% |
| **Inactives** | | | | | |
| Count | | 10,748 | | 10,191 | 5.5% |
| Average Age | | 47.7 | | 47.4 | 0.3 |
| Total Contribution Balance with Interest | $ | 324,911,338 | $ | 296,437,908 | 9.6% |
| Average Contribution Balance with Interest | $ | 30,230 | $ | 29,088 | 3.9% |

** Benefits provided in June 30 valuation data, plus estimated Supplemental COLA effective July 1, 2021. 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, 2021**
**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** | 73 | 97 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 171 |
| **25 to 29** | 180 | 1,043 | 192 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,415 |
| **30 to 34** | 223 | 1,777 | 1,296 | 93 | 0 | 0 | 0 | 0 | 0 | 0 | 3,389 |
| **35 to 39** | 196 | 1,770 | 1,903 | 642 | 84 | 1 | 0 | 0 | 0 | 0 | 4,596 |
| **40 to 44** | 178 | 1,327 | 1,551 | 934 | 516 | 109 | 0 | 0 | 0 | 0 | 4,615 |
| **45 to 49** | 123 | 986 | 1,187 | 880 | 687 | 587 | 87 | 1 | 0 | 0 | 4,538 |
| **50 to 54** | 127 | 892 | 1,001 | 785 | 792 | 1,003 | 467 | 74 | 0 | 0 | 5,141 |
| **55 to 59** | 95 | 621 | 849 | 706 | 702 | 961 | 552 | 289 | 69 | 3 | 4,847 |
| **60 to 64** | 50 | 378 | 600 | 517 | 451 | 637 | 333 | 250 | 124 | 11 | 3,351 |
| **65 to 69** | 15 | 110 | 226 | 213 | 164 | 236 | 89 | 78 | 56 | 19 | 1,206 |
| **70 and up** | 4 | 37 | 51 | 64 | 51 | 65 | 37 | 26 | 22 | 18 | 375 |
| **Total Count** | 1,264 | 9,038 | 8,857 | 4,834 | 3,447 | 3,599 | 1,565 | 718 | 271 | 51 | 33,644 |

**Table A-8**
**Distribution of Active Members as of July 1, 2021**
**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** | $ 59,695 | $ 66,337 | $ 98,811 | $ 0 | $ 0 | $ 0 | $ 0 | $ 0 | $ 0 | $ 0 | $ 63,691 |
| **25 to 29** | 79,558 | 84,192 | 101,498 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 85,950 |
| **30 to 34** | 95,555 | 91,241 | 105,858 | 109,051 | 0 | 0 | 0 | 0 | 0 | 0 | 97,603 |
| **35 to 39** | 100,044 | 95,406 | 108,888 | 121,359 | 133,935 | 68,175 | 0 | 0 | 0 | 0 | 105,510 |
| **40 to 44** | 97,912 | 95,019 | 108,230 | 118,870 | 128,586 | 124,213 | 0 | 0 | 0 | 0 | 108,840 |
| **45 to 49** | 93,658 | 93,547 | 106,185 | 116,420 | 125,905 | 128,845 | 144,872 | 107,963 | 0 | 0 | 111,743 |
| **50 to 54** | 91,941 | 91,782 | 102,185 | 108,057 | 119,085 | 128,958 | 147,859 | 145,457 | 0 | 0 | 113,622 |
| **55 to 59** | 93,390 | 91,262 | 98,166 | 104,614 | 112,333 | 118,081 | 132,343 | 129,915 | 113,613 | 84,551 | 110,124 |
| **60 to 64** | 95,139 | 95,193 | 98,970 | 105,200 | 104,125 | 105,503 | 112,205 | 127,080 | 106,340 | 95,442 | 105,057 |
| **65 to 69** | 71,166 | 91,019 | 91,846 | 94,204 | 102,469 | 101,045 | 123,763 | 120,824 | 104,367 | 105,025 | 100,193 |
| **70 and up** | 97,973 | 71,499 | 95,507 | 90,356 | 92,914 | 116,781 | 115,196 | 114,057 | 110,830 | 136,910 | 101,735 |
| **Avg. Salary** | $ 91,225 | $ 91,919 | $ 104,837 | $ 111,801 | $ 117,718 | $ 119,673 | $ 132,491 | $ 128,937 | $ 108,149 | $ 113,007 | $ 106,602 |

# APPENDIX A – MEMBERSHIP INFORMATION

**Table A-9**
**Distribution of Active Members as of July 1, 2021**
**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** | 0 | 13 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 |
| **25 to 29** | 0 | 197 | 81 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 278 |
| **30 to 34** | 0 | 140 | 306 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 461 |
| **35 to 39** | 0 | 75 | 217 | 156 | 24 | 0 | 0 | 0 | 0 | 0 | 472 |
| **40 to 44** | 0 | 33 | 86 | 114 | 101 | 29 | 0 | 0 | 0 | 0 | 363 |
| **45 to 49** | 0 | 10 | 37 | 52 | 73 | 106 | 36 | 0 | 0 | 0 | 314 |
| **50 to 54** | 1 | 10 | 15 | 26 | 42 | 107 | 140 | 12 | 0 | 0 | 353 |
| **55 to 59** | 1 | 9 | 14 | 11 | 25 | 40 | 57 | 14 | 2 | 0 | 173 |
| **60 to 64** | 0 | 2 | 4 | 3 | 2 | 9 | 12 | 1 | 2 | 0 | 35 |
| **65 to 69** | 0 | 1 | 0 | 0 | 0 | 1 | 6 | 2 | 0 | 0 | 10 |
| **70 and up** | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 2 |
| **Total Count** | 2 | 490 | 761 | 378 | 267 | 292 | 252 | 29 | 4 | 0 | 2,475 |

**Table A-10**
**Distribution of Active Members as of July 1, 2021**
**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** | $ 0 | $ 91,929 | $ 98,811 | $ 0 | $ 0 | $ 0 | $ 0 | $ 0 | $ 0 | $ 0 | $ 92,421 |
| **25 to 29** | 0 | 97,531 | 115,496 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 102,766 |
| **30 to 34** | 0 | 99,273 | 121,831 | 129,860 | 0 | 0 | 0 | 0 | 0 | 0 | 115,242 |
| **35 to 39** | 0 | 99,513 | 125,819 | 145,984 | 154,492 | 0 | 0 | 0 | 0 | 0 | 129,762 |
| **40 to 44** | 0 | 104,089 | 127,547 | 143,524 | 149,549 | 152,426 | 0 | 0 | 0 | 0 | 138,542 |
| **45 to 49** | 0 | 108,389 | 132,557 | 145,739 | 147,423 | 153,780 | 157,100 | 0 | 0 | 0 | 147,405 |
| **50 to 54** | 142,350 | 133,083 | 127,185 | 149,265 | 152,105 | 154,687 | 175,760 | 196,409 | 0 | 0 | 161,940 |
| **55 to 59** | 142,350 | 159,057 | 146,389 | 148,421 | 150,029 | 147,874 | 166,030 | 184,754 | 177,561 | 0 | 157,960 |
| **60 to 64** | 0 | 155,291 | 132,981 | 163,928 | 154,422 | 153,548 | 151,420 | 192,510 | 171,066 | 0 | 153,621 |
| **65 to 69** | 0 | 83,397 | 0 | 0 | 0 | 143,460 | 148,004 | 195,423 | 0 | 0 | 150,573 |
| **70 and up** | 0 | 0 | 0 | 162,245 | 0 | 0 | 154,510 | 0 | 0 | 0 | 158,378 |
| **Avg. Salary** | $ 142,350 | $ 100,909 | $ 124,047 | $ 145,051 | $ 149,896 | $ 153,127 | $ 168,989 | $ 190,580 | $ 174,314 | $ 0 | $ 134,345 |

# APPENDIX A – MEMBERSHIP INFORMATION

**Table A-11**
**Distribution of Active Members as of July 1, 2021**
**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** | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| **25 to 29** | 8 | 57 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 73 |
| **30 to 34** | 19 | 122 | 72 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 215 |
| **35 to 39** | 9 | 90 | 160 | 34 | 7 | 0 | 0 | 0 | 0 | 0 | 300 |
| **40 to 44** | 6 | 30 | 97 | 38 | 49 | 12 | 0 | 0 | 0 | 0 | 232 |
| **45 to 49** | 1 | 14 | 42 | 26 | 61 | 76 | 8 | 0 | 0 | 0 | 228 |
| **50 to 54** | 0 | 5 | 15 | 15 | 55 | 148 | 71 | 20 | 0 | 0 | 329 |
| **55 to 59** | 0 | 2 | 4 | 7 | 19 | 71 | 48 | 15 | 0 | 0 | 166 |
| **60 to 64** | 0 | 0 | 1 | 3 | 6 | 17 | 7 | 7 | 2 | 0 | 43 |
| **65 to 69** | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 0 | 0 | 4 |
| **70 and up** | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 3 |
| **Total Count** | 47 | 323 | 399 | 125 | 198 | 325 | 134 | 44 | 2 | 2 | 1,599 |

**Table A-12**
**Distribution of Active Members as of July 1, 2021**
**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** | $ 66,820 | $ 85,008 | $ 0 | $ 0 | $ 0 | $ 0 | $ 0 | $ 0 | $ 0 | $ 0 | $ 72,883 |
| **25 to 29** | 75,692 | 93,693 | 131,079 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 95,817 |
| **30 to 34** | 73,582 | 97,037 | 130,855 | 117,694 | 0 | 0 | 0 | 0 | 0 | 0 | 106,481 |
| **35 to 39** | 75,286 | 99,937 | 134,482 | 142,035 | 167,185 | 0 | 0 | 0 | 0 | 0 | 123,962 |
| **40 to 44** | 59,771 | 100,532 | 137,701 | 148,494 | 171,980 | 153,390 | 0 | 0 | 0 | 0 | 140,699 |
| **45 to 49** | 45,000 | 94,244 | 134,991 | 152,022 | 157,051 | 162,476 | 189,698 | 0 | 0 | 0 | 151,020 |
| **50 to 54** | 0 | 92,386 | 150,599 | 157,354 | 157,274 | 170,250 | 187,638 | 196,339 | 0 | 0 | 170,752 |
| **55 to 59** | 0 | 86,892 | 131,842 | 147,558 | 158,013 | 166,748 | 197,958 | 197,790 | 0 | 0 | 174,965 |
| **60 to 64** | 0 | 0 | 182,547 | 183,627 | 165,075 | 162,790 | 165,184 | 180,832 | 214,607 | 0 | 170,759 |
| **65 to 69** | 0 | 0 | 0 | 0 | 149,895 | 134,484 | 0 | 166,249 | 0 | 0 | 154,219 |
| **70 and up** | 0 | 46,350 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 202,746 | 150,614 |
| **Avg. Salary** | $ 71,321 | $ 97,092 | $ 135,295 | $ 148,832 | $ 161,465 | $ 166,544 | $ 190,285 | $ 192,999 | $ 214,607 | $ 202,746 | $ 142,728 |

# APPENDIX A – MEMBERSHIP INFORMATION

**Table A-13**
**Distribution of Active Members as of July 1, 2021**
**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** | 69 | 82 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 151 |
| **25 to 29** | 172 | 789 | 103 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,064 |
| **30 to 34** | 204 | 1,515 | 918 | 76 | 0 | 0 | 0 | 0 | 0 | 0 | 2,713 |
| **35 to 39** | 187 | 1,605 | 1,526 | 452 | 53 | 1 | 0 | 0 | 0 | 0 | 3,824 |
| **40 to 44** | 172 | 1,264 | 1,368 | 782 | 366 | 68 | 0 | 0 | 0 | 0 | 4,020 |
| **45 to 49** | 122 | 962 | 1,108 | 802 | 553 | 405 | 43 | 1 | 0 | 0 | 3,996 |
| **50 to 54** | 126 | 877 | 971 | 744 | 695 | 748 | 256 | 42 | 0 | 0 | 4,459 |
| **55 to 59** | 94 | 610 | 831 | 688 | 658 | 850 | 447 | 260 | 67 | 3 | 4,508 |
| **60 to 64** | 50 | 376 | 595 | 511 | 443 | 611 | 314 | 242 | 120 | 11 | 3,273 |
| **65 to 69** | 15 | 109 | 226 | 213 | 163 | 234 | 83 | 74 | 56 | 19 | 1,192 |
| **70 and up** | 4 | 36 | 51 | 63 | 51 | 65 | 36 | 26 | 22 | 16 | 370 |
| **Total Count** | 1,215 | 8,225 | 7,697 | 4,331 | 2,982 | 2,982 | 1,179 | 645 | 265 | 49 | 29,570 |

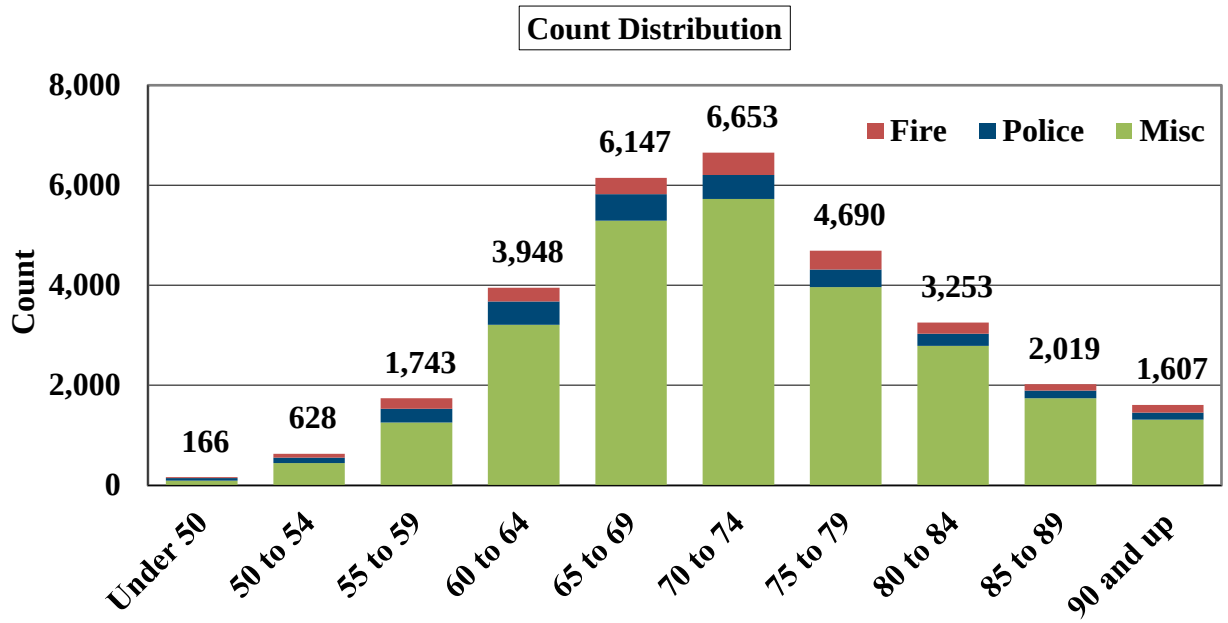
**Table A-14**
**Distribution of Active Members as of July 1, 2021**
**Average Salary By Age/Service - Miscellaneous**

| | 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** | $ 59,282 | $ 61,824 | $ 0 | $ 0 | $ 0 | $ 0 | $ 0 | $ 0 | $ 0 | $ 0 | $ 60,662 |
| **25 to 29** | 79,738 | 80,174 | 88,192 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 80,880 |
| **30 to 34** | 97,601 | 90,033 | 98,573 | 104,716 | 0 | 0 | 0 | 0 | 0 | 0 | 93,903 |
| **35 to 39** | 101,235 | 94,960 | 103,797 | 111,305 | 120,234 | 68,175 | 0 | 0 | 0 | 0 | 101,069 |
| **40 to 44** | 99,242 | 94,651 | 104,926 | 113,837 | 116,992 | 107,032 | 0 | 0 | 0 | 0 | 104,320 |
| **45 to 49** | 94,057 | 93,383 | 104,212 | 113,365 | 119,628 | 116,008 | 126,294 | 107,963 | 0 | 0 | 106,700 |
| **50 to 54** | 91,541 | 91,308 | 101,051 | 105,623 | 114,067 | 117,108 | 121,569 | 106,670 | 0 | 0 | 105,582 |
| **55 to 59** | 92,870 | 90,276 | 97,191 | 103,477 | 109,582 | 112,613 | 121,002 | 123,047 | 111,704 | 84,551 | 105,901 |
| **60 to 64** | 95,139 | 94,874 | 98,601 | 104,395 | 103,072 | 103,201 | 109,525 | 125,255 | 103,457 | 95,442 | 103,675 |
| **65 to 69** | 71,166 | 91,089 | 91,846 | 94,204 | 102,178 | 100,721 | 122,011 | 117,580 | 104,367 | 105,025 | 99,589 |
| **70 and up** | 97,973 | 72,197 | 95,507 | 89,215 | 92,914 | 116,781 | 114,104 | 114,057 | 110,830 | 128,680 | 101,033 |
| **Avg. Salary** | $ 91,911 | $ 91,180 | $ 101,358 | $ 107,831 | $ 111,932 | $ 111,289 | $ 118,122 | $ 121,796 | $ 106,347 | $ 109,344 | $ 102,327 |

## APPENDIX A – MEMBERSHIP INFORMATION

**Table A-15**
**Distribution of Retirees, Disabled Members, and Beneficiaries as of July 1, 2021**
**Count**

| Age | Police | Fire | Misc | Total |
|---|---|---|---|---|
| Under 50 | 51 | 21 | 94 | 166 |
| 50 to 54 | 108 | 73 | 447 | 628 |
| 55 to 59 | 270 | 214 | 1,259 | 1,743 |
| 60 to 64 | 470 | 270 | 3,208 | 3,948 |
| 65 to 69 | 531 | 325 | 5,291 | 6,147 |
| 70 to 74 | 474 | 450 | 5,729 | 6,653 |
| 75 to 79 | 353 | 374 | 3,963 | 4,690 |
| 80 to 84 | 244 | 222 | 2,787 | 3,253 |
| 85 to 89 | 158 | 123 | 1,738 | 2,019 |
| 90 and up | 142 | 151 | 1,314 | 1,607 |
| Total | 2,801 | 2,223 | 25,830 | 30,854 |

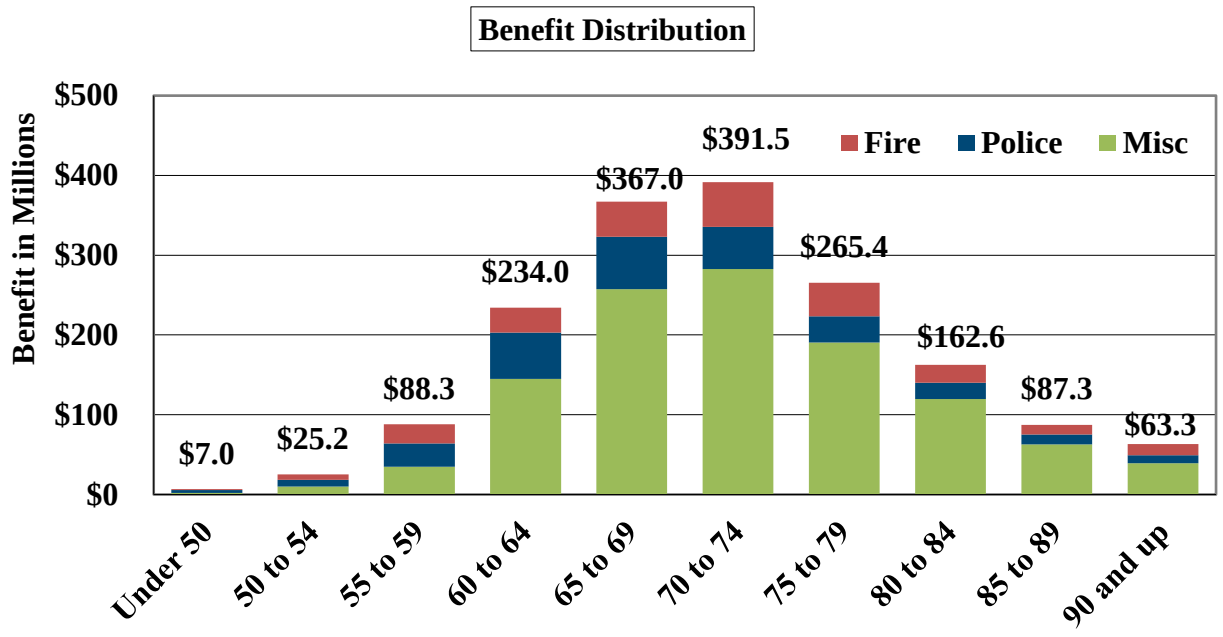


## APPENDIX A – MEMBERSHIP INFORMATION

**Table A-16**
**Distribution of Retirees, Disabled Members, and Beneficiaries as of July 1, 2021**
**Annual Benefit ***

| Age | Police | Fire | Misc | Total |
|---|---|---|---|---|
| Under 50 | $ 3,360,169 | $ 1,366,739 | $ 2,270,620 | $ 6,997,527 |
| 50 to 54 | 8,596,134 | 6,636,627 | 9,964,929 | 25,197,690 |
| 55 to 59 | 29,428,516 | 24,142,571 | 34,743,216 | 88,314,302 |
| 60 to 64 | 57,815,415 | 31,213,556 | 145,019,767 | 234,048,737 |
| 65 to 69 | 65,768,349 | 43,906,767 | 257,345,085 | 367,020,200 |
| 70 to 74 | 52,484,729 | 56,212,236 | 282,761,705 | 391,458,670 |
| 75 to 79 | 32,903,008 | 41,875,790 | 190,589,443 | 265,368,241 |
| 80 to 84 | 20,454,036 | 22,468,228 | 119,712,047 | 162,634,311 |
| 85 to 89 | 12,331,753 | 12,029,219 | 62,970,264 | 87,331,236 |
| 90 and up | 10,165,345 | 13,956,450 | 39,140,581 | 63,262,376 |
| Total | $ 293,307,452 | $ 253,808,181 | $ 1,144,517,657 | $ 1,691,633,290 |

** Benefits used in the July 1, 2021 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 7/1/2020** | **34,521** | **2,461** | **1,071** | **7,017** | **2,523** | **23,519** | **4,086** | **75,198** |
| New Entrants | 1,585 | 0 | 1 | 0 | 0 | 0 | 0 | 1,586 |
| Returned to Work | 163 | (50) | (1) | (107) | 0 | (5) | 0 | 0 |
| Vested Terminations | (336) | 336 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reciprocals | (10) | 0 | 10 | 0 | 0 | 0 | 0 | 0 |
| Non Vested Terminations | (797) | 0 | 0 | 797 | 0 | 0 | 0 | 0 |
| Refund/Withdrawal | (296) | (33) | (1) | (196) | 0 | 0 | 0 | (526) |
| Changes in Inactive Status | 0 | (4) | 22 | (18) | 0 | 0 | 0 | 0 |
| Retirements | (1,132) | (123) | (38) | (2) | 0 | 1,295 | 0 | 0 |
| Disabilities | (13) | (8) | (2) | 0 | 92 | (69) | 0 | 0 |
| Benefit Ceased* | (41) | (4) | (2) | 0 | (108) | (665) | (218) | (1,038) |
| New Continuants & Dissolutions | 0 | 0 | 0 | 0 | 0 | 46 | 332 | 378 |
| New Split Benefits | 0 | 0 | 0 | 0 | 0 | 26 | 0 | 26 |
| Other Adjustments | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Participants as of 7/1/2021** | **33,644** | **2,575** | **1,060** | **7,491** | **2,507** | **24,147** | **4,200** | **75,624** |

* *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 7/1/2020** | **2,534** | **82** | **20** | **173** | **545** | **1,658** | **527** | **5,539** |
| New Entrants | 97 | 0 | 0 | 0 | 0 | 0 | 0 | 97 |
| Returned to Work | 2 | (2) | 0 | 0 | 0 | 0 | 0 | 0 |
| Vested Terminations | (18) | 18 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reciprocals | (1) | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| Non Vested Terminations | (23) | 0 | 0 | 23 | 0 | 0 | 0 | 0 |
| Refund/Withdrawal | (11) | (1) | 0 | (9) | 0 | 0 | 0 | (21) |
| Changes in Inactive Status | 0 | (4) | 4 | 0 | 0 | 0 | 0 | 0 |
| Retirements | (98) | (4) | (2) | 0 | 0 | 104 | 0 | 0 |
| Disabilities | (6) | (4) | 0 | 0 | 34 | (24) | 0 | 0 |
| Benefit Ceased* | (1) | 0 | 0 | 0 | (15) | (31) | (29) | (76) |
| New Continuants & Dissolutions | 0 | 0 | 0 | 0 | 0 | 6 | 24 | 30 |
| 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 | 1 | 0 | 1 |
| Transferred Out (To Fire) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Transferred Out (To Misc) | 0 | (1) | 0 | 0 | 0 | 0 | 0 | (1) |
| Other Adjustments | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Participants as of 7/1/2021** | **2,475** | **84** | **23** | **187** | **564** | **1,715** | **522** | **5,570** |

* *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 7/1/2020** | **1,660** | **34** | **21** | **28** | **669** | **1,107** | **388** | **3,907** |
| New Entrants | 45 | 0 | 0 | 0 | 0 | 0 | 0 | 45 |
| Returned to Work | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Vested Terminations | (6) | 6 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reciprocals | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Non Vested Terminations | (5) | 0 | 0 | 5 | 0 | 0 | 0 | 0 |
| Refund/Withdrawal | 0 | 0 | 0 | (4) | 0 | 0 | 0 | (4) |
| Changes in Inactive Status | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Retirements | (90) | (4) | (1) | 0 | 0 | 95 | 0 | 0 |
| Disabilities | (3) | (1) | 0 | 0 | 19 | (15) | 0 | 0 |
| Benefit Ceased* | (2) | 0 | 0 | 0 | (34) | (17) | (28) | (81) |
| New Continuants & Dissolutions | 0 | 0 | 0 | 0 | 0 | 6 | 33 | 39 |
| New Split Benefits | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 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 7/1/2021** | **1,599** | **35** | **20** | **29** | **654** | **1,176** | **393** | **3,906** |

* *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 7/1/2020** | **30,327** | **2,345** | **1,030** | **6,816** | **1,309** | **20,754** | **3,171** | **65,752** |
| New Entrants | 1,443 | 0 | 1 | 0 | 0 | 0 | 0 | 1,444 |
| Returned to Work | 161 | (48) | (1) | (107) | 0 | (5) | 0 | 0 |
| Vested Terminations | (312) | 312 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reciprocals | (9) | 0 | 9 | 0 | 0 | 0 | 0 | 0 |
| Non Vested Terminations | (769) | 0 | 0 | 769 | 0 | 0 | 0 | 0 |
| Refund/Withdrawal | (285) | (32) | (1) | (183) | 0 | 0 | 0 | (501) |
| Changes in Inactive Status | 0 | 0 | 18 | (18) | 0 | 0 | 0 | 0 |
| Retirements | (944) | (115) | (34) | (2) | 0 | 1,095 | 0 | 0 |
| Disabilities | (4) | (3) | (2) | 0 | 39 | (30) | 0 | 0 |
| Benefit Ceased* | (38) | (4) | (2) | 0 | (59) | (617) | (161) | (881) |
| New Continuants & Dissolutions | 0 | 0 | 0 | 0 | 0 | 34 | 275 | 309 |
| New Split Benefits | 0 | 0 | 0 | 0 | 0 | 25 | 0 | 25 |
| Transferred In (From Fire) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Transferred In (From Police) | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| Transferred Out (To Fire) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Transferred Out (To Police) | 0 | 0 | (1) | 0 | 0 | 0 | 0 | (1) |
| Other Adjustments | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Participants as of 7/1/2021** | **29,570** | **2,456** | **1,017** | **7,275** | **1,289** | **21,256** | **3,285** | **66,148** |

* *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 6/30/2021 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
        - 0.5% as of June 30, 2021
        - 3.0% as of July 1, 2021
        - 0.5% as of January 8, 2022
    - Police active members
        - 3.0% as of July 1, 2021
        - 5.0% as of July 1, 2022 (2.0% effective on June 30, 2022, deferred from December 26, 2020, and 3.0% effective July 1, 2022)
    - Fire active members
        - 3.0% as of July 1, 2021
        - 4.0% as of July 1, 2022 (1.0% effective on June 30, 2022, deferred from December 26, 2020, and 3.0% 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, 2021.

- The Basic COLAs effective July 1, 2021 for the Old Safety Charter retirees were estimated based on data provided by SFERS and included in the July 1, 2021 benefit.

## APPENDIX A – MEMBERSHIP INFORMATION

- Supplemental COLA benefits were granted as of July 1, 2021, to all retired members, and their beneficiaries, who were retired as of July 1, 2021. There was an adjustment made to the benefits provided in the valuation data for a Supplemental COLA of 1.5% for Miscellaneous and New Safety Charters and varying amounts for the Old Safety Charter so that the total benefit increase was 3.5%, unless the Basic COLA was greater than 3.5%.

- 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 6/30/2021, 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 6/30/2021, 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.

- 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

## APPENDIX A – MEMBERSHIP INFORMATION

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, 2022 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 2020. 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 followed by 3.25% compounded annually thereafter.

**Table B-1**
**Current Bargained Wage Increases**

| Date of Increase | Police | Fire | Misc |
|---|---|---|---|
| 6/30/2021 | 0.0% | 0.0% | 0.5% |
| 7/1/2021 | 3.0% | 3.0% | 3.0% |
| 1/8/2022 | 0.0% | 0.0% | 0.5% |
| 6/30/2022 | 2.0% | 1.0% | N/A |
| 7/1/2022 | 3.0% | 3.0% | N/A |

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:

(Wage Inflation + Ultimate Merit) ÷ 2 x Factor

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

For Charters 8.559 and 8.585, the factor is 1.9
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 2023, 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 2023 gradually decreasing to 35% for FYE 2036 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 |

## APPENDIX B – ACTUARIAL ASSUMPTIONS AND METHODS

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 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**

| | 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

**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 on the next page. 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.

### 21. Changes Since Last Valuation

Discount Rate: 7.40% to 7.20%

## 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 (7.40% for the years ending 2019-2021 and 7.50% for the years ending 2017-2018 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

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) are reduced to 5 years.

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

**4. Changes Since Last Valuation**

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) are reduced to 5 years. If the System becomes fully 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 fully funded.

# 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.

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% |

**Benefit – Survivor**

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

**6. Non-Industrial Disability**

**Eligibility**

10 years of Credited Service.

**Benefit – Member**

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

**Benefit – Survivor**

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

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

### 7. Industrial Disability

**Eligibility**

No age or service requirement.

**Benefit – Member**

*Less than age 50 with 25 Years of Service:*
Final Compensation times a percentage of disability, subject to a minimum of 50% and a maximum of 90%, as determined by the Workers' Compensation Appeals Board. If the member is age 50 with 5 years of service, the disability benefit is the service retirement allowance, but not less than 50% of Final Compensation. Once the member becomes eligible for qualified service retirement, assuming that member earned service and salary increases during the period of disability, the benefit is recalculated using the service and salary rate for the rank held at retirement. The recalculated benefit is based on a minimum of 50% of Final Compensation (not to exceed 90% of Final Compensation for Charter Sections 8.597, 8.598, 8.601, 8.602, 8.608, and 8.610).

*Age 50 with 25 Years of Service:*
The service retirement allowance, but not less than 50% of Final Compensation.

**Benefit – Survivor**

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

### 8. Death while an Active Employee

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

a. Less than 10 Years of Credited Service, or No Qualified Survivor – Lump sum benefit equal to the accumulated refund of all employee contributions with interest, plus six months' salary to a designated beneficiary.

b. At least 10 but less than 25 years of Credited Service – Monthly continuation allowance to a qualified survivor equal to the non-industrial disability benefit the member would have been entitled to on the date of death, subject to a minimum of 33.3% of Average Compensation at the time of death.

c. At Least 25 Years of Credited Service but Less than Age 50 – Monthly continuation allowance to a qualified survivor equal to 50% of the monthly service retirement benefit the member would have received had the member been age 50 and retired on the date of death.

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

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

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

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

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

## 9. Withdrawal Benefits

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

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

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

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

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

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

### 10. Additional Post-retirement Death Benefit

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

### 11. Post-retirement Cost-of-Living Benefit

***Basic***

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

***Supplemental***

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

### 12. Changes in this Valuation

None.

# APPENDIX C – SUMMARY OF PLAN PROVISIONS (MISCELLANEOUS)

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

### 1. Membership Requirement

***Charter Section 8.509***
Employees and Officers, other than Police Officers or Firefighters, who became members before November 2, 1976 and continued as a member without interruption.

***Charter Section 8.587***
Active Employees and Officers, other than Police Officers or Firefighters, who were members under Section A8.584, and members under A8.587, whose accumulated contributions were in the retirement fund on November 7, 2000 and were not retired. After November 7, 2000, all full-time employees, certified Civil Service employees, or temporary employees who work more than 1,040 hours in any 12-month period; excluding all Police Officers and Firefighters.

***Charter Section 8.600***
Employees and Officers, other than Police Officers or Firefighters, who become employed on or after July 1, 2010, and prior to January 7, 2012.

***Charter Section 8.603***
Employees and Officers, other than Police Officers or Firefighters, who become employed on or after January 7, 2012.

### 2. Average Final Compensation

***Charter Sections 8.509 and 8.587***
Average monthly compensation earned during any year of Credited Service which average compensation is the highest.

***Charter Section 8.600***
Average monthly compensation earned during the higher of any two consecutive fiscal years of earnings or the twenty-four months of earnings immediately prior to retirement.

***Charter Section 8.603***
Average monthly compensation earned during the higher of any three consecutive fiscal years of earnings or the thirty-six consecutive months of earnings immediately prior to retirement. Compensation for any fiscal year shall not include remuneration that exceeds 85% of the IRC 401(a)(17) compensation limit.

## APPENDIX C – SUMMARY OF PLAN PROVISIONS (MISCELLANEOUS)

### 3. Credited Service

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

### 4. Member Contributions

a. Member:

***Charter 8.509***
8.0% of salary.

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

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

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

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

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

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

b. Employer:

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

## APPENDIX C – SUMMARY OF PLAN PROVISIONS (MISCELLANEOUS)

### 5. Service Retirement

**Eligibility**

***Charter Section 8.509, 8.587, and 8.600***
Age 50 with 20 years of Credited Service, or age 60 with 10 years of Credited Service.

***Charter Section 8.603***
Age 53 with 20 years of Credited Service, age 60 with 10 years of Credited Service, or age 65.

**Benefit – Member**

***Charter Section 8.509, 8.587, and 8.600***
The monthly service retirement benefit is the greater of i) and ii) below, subject to a maximum of 75% of Average Final Compensation.

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

**Table C-6**
**City and County of San Francisco Employees' Retirement System**
**Section 8.509, 8.587, and 8.600 Member Service Retirement Factors**

| Retirement Age | Retirement Factors | Retirement Age | Retirement Factors |
|---|---|---|---|
| 50 | 1.0% | 57 | 1.7% |
| 51 | 1.1% | 58 | 1.8% |
| 52 | 1.2% | 59 | 1.9% |
| 53 | 1.3% | 60 | 2.1% |
| 54 | 1.4% | 61 | 2.2% |
| 55 | 1.5% | 62 or above | 2.3% |
| 56 | 1.6% | | |

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

## APPENDIX C – SUMMARY OF PLAN PROVISIONS (MISCELLANEOUS)

***Charter Section 8.603***

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

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

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

**Benefit – Survivor**

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

**6. Disability**

**Eligibility**

10 years of Credited Service.

**Benefit – Member**

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

**Benefit – Survivor**

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

## APPENDIX C – SUMMARY OF PLAN PROVISIONS (MISCELLANEOUS)

### 7. Death while an Active Employee

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

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

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

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

### 8. Withdrawal Benefits

*Charter 8.509 members with less than 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.

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

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

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

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

The hourly rates shown above are for the fiscal year ending 2013. Each fiscal year these hourly rates are adjusted by the percentage increase, not to exceed 3.5%, in the cost-of-living during the previous calendar year determined by the CPI-U for San Francisco-Oakland-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 |
| 2013 | 20.71% | | | | | | |
| 2014 | 24.82% | | | | | | |
| 2015 | 26.76% | | | | | | |
| 2016 | 22.80% | | | | | | |
| 2017 | 21.40% | | | | | | |
| 2018 | 23.46% | | | | | | |
| 2019 | 23.31% | | | | | | |
| 2020 | 25.19% | | | | | | |
| 2021 | 26.90% | | | | | | |
| 2022 | 24.41% | | | | | | |
| 2023 | 21.35% | 21.35% | 21.35% | 21.35% | 21.35% | 21.35% | 21.35% |
| 2024 | 16.35% | 17.90% | 13.17% | 16.12% | 15.44% | 16.92% | 14.50% |
| 2025 | 12.11% | 16.75% | 6.01% | 12.86% | 10.34% | 15.25% | 7.31% |
| 2026 | 8.72% | 16.51% | 0.00% | 11.14% | 5.49% | 15.73% | 0.00% |
| 2027 | 5.84% | 16.68% | 0.00% | 10.51% | 0.47% | 17.83% | 0.00% |
| 2028 | 4.76% | 18.53% | 0.00% | 12.22% | 0.00% | 22.72% | 0.00% |
| 2029 | 4.09% | 19.53% | 0.00% | 15.38% | 0.00% | 28.41% | 0.00% |
| 2030 | 2.10% | 17.34% | 0.00% | 15.83% | 0.00% | 30.72% | 0.00% |
| 2031 | 2.43% | 17.24% | 0.00% | 17.92% | 0.00% | 34.02% | 0.00% |
| 2032 | 2.99% | 17.28% | 0.00% | 19.60% | 0.00% | 36.34% | 0.00% |
| 2033 | 3.54% | 17.29% | 0.00% | 20.69% | 0.00% | 37.57% | 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 |
| 2011 | 83.9% | | | | | | |
| 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% | 111.8% | 111.8% | 111.8% | 111.8% | 111.8% | 111.8% |
| 2022 | 113.2% | 94.3% | 135.1% | 108.6% | 117.2% | 102.1% | 124.6% |
| 2023 | 114.2% | 94.9% | 136.8% | 105.0% | 122.5% | 92.8% | 138.7% |
| 2024 | 114.7% | 95.1% | 137.6% | 100.9% | 127.5% | 83.7% | 153.8% |
| 2025 | 114.8% | 95.1% | 137.6% | 96.4% | 132.2% | 74.9% | 170.2% |
| 2026 | 114.4% | 95.1% | 137.0% | 91.9% | 136.8% | 66.9% | 187.9% |
| 2027 | 113.8% | 95.1% | 136.4% | 91.1% | 136.3% | 66.2% | 189.0% |
| 2028 | 113.0% | 95.3% | 135.8% | 90.5% | 135.7% | 66.0% | 190.2% |
| 2029 | 112.2% | 95.7% | 135.3% | 90.2% | 135.2% | 66.5% | 191.6% |
| 2030 | 111.1% | 95.8% | 134.8% | 90.0% | 134.7% | 67.2% | 193.1% |
| 2031 | 110.0% | 95.9% | 134.3% | 90.0% | 134.3% | 68.3% | 194.7% |

# 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 |
| 2011 | 3,000 | | | | | | |
| 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) | (3,769) | (3,769) | (3,769) | (3,769) | (3,769) | (3,769) |
| 2022 | (4,380) | 1,870 | (11,714) | (2,832) | (5,734) | (710) | (8,210) |
| 2023 | (4,924) | 1,757 | (12,778) | (1,714) | (7,856) | 2,463 | (13,500) |
| 2024 | (5,305) | 1,773 | (13,584) | (312) | (10,027) | 5,814 | (19,624) |
| 2025 | (5,533) | 1,834 | (14,137) | 1,311 | (12,273) | 9,235 | (26,706) |
| 2026 | (5,624) | 1,906 | (14,451) | 3,103 | (14,601) | 12,637 | (34,899) |
| 2027 | (5,580) | 1,972 | (14,768) | 3,532 | (14,942) | 13,402 | (36,671) |
| 2028 | (5,468) | 1,948 | (15,088) | 3,915 | (15,266) | 13,984 | (38,554) |
| 2029 | (5,301) | 1,864 | (15,410) | 4,172 | (15,594) | 14,315 | (40,556) |
| 2030 | (5,005) | 1,875 | (15,734) | 4,421 | (15,925) | 14,530 | (42,682) |
| 2031 | (4,686) | 1,884 | (16,058) | 4,572 | (16,258) | 14,558 | (44,941) |

# 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).


*Classic Values, Innovative Advice*