Schools Pool
Actuarial Valuation
As of June 30, 2022

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

CalPERS

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Actuarial Certification

September 2023

To the best of our knowledge, this report is complete and accurate and contains sufficient information to disclose, fully and fairly, the funded condition of the Schools Pool and satisfies the actuarial valuation requirements of Government Code section 7504. This valuation and related validation work was performed by the CalPERS Actuarial Office and is based on the member and financial data as of June 30, 2022 provided by the various CalPERS databases and the benefits under this plan with CalPERS as of the date this report was produced. It is our opinion that the valuation has been performed in accordance with generally accepted actuarial principles, in accordance with standards of practice prescribed by the Actuarial Standards Board, and that the assumptions and methods as prescribed by the CalPERS Board of Administration are internally consistent and reasonable for this plan.

The undersigned are actuaries who satisfy the *Qualification Standards for Actuaries Issuing Statements of Actuarial Opinion in the United States* with regard to pensions.

Paul Tschida, FSA, EA, MAAA
Senior Actuary, CalPERS

May Yu, ASA, MAAA
Senior Actuary, CalPERS

Scott Terando, ASA, EA, MAAA, FCA, CFA
Chief Actuary, CalPERS

Highlights and Executive Summary

Highlights and Executive Summary

Introduction

This report presents the results of the June 30, 2022 actuarial valuation for the Schools Pool. This actuarial valuation determines the funded status as of June 30, 2022 and sets forth the Schools Pool employer and employee contribution rates for fiscal year July 1, 2023 through June 30, 2024.

The Schools Pool provides retirement benefits to classified employees of K-12 school districts, community college districts, county offices of education (except Los Angeles and San Diego counties), and charter schools (elective) in California. It generally does not cover certificated employees as they are covered by the California State Teachers' Retirement System (CalSTRS), a separate retirement system.

Purpose

This report documents the results of the actuarial valuation performed by the CalPERS Actuarial Office using data as of June 30, 2022. The purpose of the valuation is to:

- Set forth the assets and accrued liabilities of the Schools Pool as of June 30, 2022
- Determine the minimum required employer contributions for the Schools Pool for the fiscal year July 1, 2023 through June 30, 2024
- Determine the required member contribution rate for fiscal year July 1, 2023 through June 30, 2024 for school employees subject to the California Public Employees' Pension Reform Act of 2013 (PEPRA)
- Provide actuarial information as of June 30, 2022 to the CalPERS Board of Administration (board) and other interested parties

The pension funding information presented in this report should not be used in financial reports subject to Governmental Accounting Standards Board (GASB) Statement Number 68 for a Cost-Sharing Multiple-Employer Defined Benefit Pension Plan.

The use of this report for any other purpose may be inappropriate.

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 employers.

Assessment and Disclosure of Risk

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

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

Highlights and Executive Summary

Required Contribution Rates

Required Employer Contribution Rates

The required employer contribution rate for fiscal year July 1, 2023 through June 30, 2024 is displayed in the table below. For comparison purposes, the corresponding required employer contribution rate for fiscal year July 1, 2022 through June 30, 2023 is also displayed.

	Fiscal Year 2022-23	Fiscal Year 2023-24
1) Contribution as a Percentage of Payroll		
a) Total Normal Cost	17.24%	17.26%
b) Employee Contribution[1]	7.42%	7.49%
c) Employer Normal Cost [(1a) – (1b)]	9.82%	9.77%
d) Unfunded Liability Contribution	15.55%	16.91%
e) Required Employer Contribution Rate [(1c) + (1d)]	**25.37%**	**26.68%**
Projected Annual Payroll for Contribution Year	$15,180,694,663	$16,730,776,893
2) Expected Contribution in Dollars		
a) Total Normal Cost	$2,617,151,760	$2,887,732,092
b) Employee Contribution[1]	1,126,407,544	1,253,135,189
c) Employer Normal Cost [(2a) – (2b)]	1,490,744,216	1,634,596,903
d) Unfunded Liability Contribution	2,360,951,245	2,829,968,337
e) Expected Employer Contribution [(2c) + (2d)]	**$3,851,695,461**	**$4,464,565,240**

1) This is a blended rate reflecting both classic and PEPRA members. The classic member contribution rate is specified in the Public Employees' Retirement Law. The PEPRA member contribution rate is based on 50% of the total normal cost, as described below.

The payroll used to calculate the expected dollar contribution is the payroll reported for the fiscal year ending on the valuation date projected forward two years using the annual payroll growth assumption in effect on the valuation date. For example, expected fiscal year 2023-24 contributions are based on fiscal year 2021-22 reported payroll increased by 2.80% per year for two years. Actual contribution amounts will be based on actual payroll during the associated fiscal year and will differ from the expected contributions shown in the table above.

PEPRA Member Contribution Rate

In accordance with the California Public Employees' Pension Reform Act of 2013 ("PEPRA"), new members hired on or after January 1, 2013 are required to contribute 50% of the total normal cost of their pension benefit. The total normal cost of PEPRA members' benefits is remeasured annually as part of the actuarial valuation based on the active PEPRA population in the plan. If the total normal cost changes by more than 1% from the basis established for the plan, the member rate is revised to equal 50% of the new total normal cost rounded to the nearest quarter percent.

The total normal cost of PEPRA members' benefits as measured in the June 30, 2022 actuarial valuation changed by less than 1% from when the member rate was last changed. As a result, the PEPRA member contribution rate of 8.00% remains unchanged from fiscal year 2022-23 to fiscal year 2023-24. See the "PEPRA Member Contribution Rate" section of this report for more information.

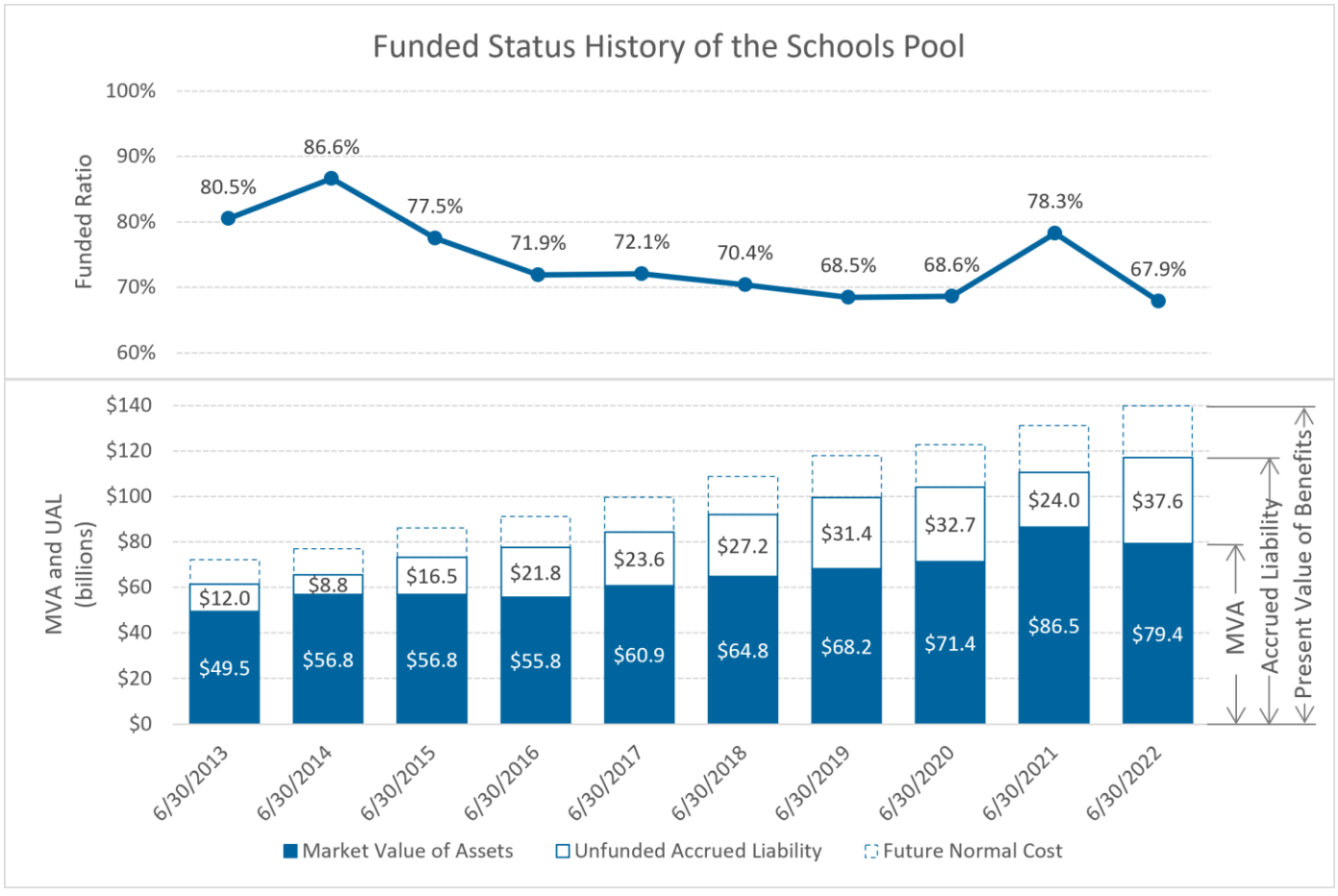
Highlights and Executive Summary

Funded Status

	June 30, 2021	June 30, 2022
1) Present Value of Benefits	$131,025,681,158	$139,816,867,879
2) Entry Age Accrued Liability	110,507,282,219	116,982,054,732
3) Market Value of Assets (MVA)	86,519,422,772	79,385,822,708
4) Unfunded Accrued Liability [(2) - (3)]	$23,987,859,447	$37,596,232,024
5) Funded Ratio [(3) / (2)]	**78.3%**	**67.9%**

The Unfunded Accrued Liability (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, an absolute measure of funded status, 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.

The graph below displays the funded status of the Schools Pool for the past ten years.



Highlights and Executive Summary

Changes Since the Prior Year's Valuation

Plan Provisions

No changes were made since the prior valuation. A summary of the plan provisions reflected in this valuation can be found in Appendix B of this report.

Actuarial Methods and Assumptions

There are no significant changes to the actuarial methods or assumptions for the June 30, 2022 actuarial valuation. A summary of the methods and assumptions used in this valuation can be found in Appendix A of this report.

Experience

Investment return for the year ending June 30, 2022 was approximately −6.1% reduced for administrative expenses, lower than the assumed return of 6.8%, leading to an investment experience loss. Non-investment experience produced a net loss driven by annuitant cost-of-living adjustments greater than assumed and salary increases greater than assumed. These experience losses generated new unfunded liability, increasing the unfunded liability component of the required employer contribution rate for the next 20 years in accordance with the Actuarial Amortization Policy.

The normal cost component of the required employer contribution rate declined slightly as the PEPRA share of the active population continued to increase.

See "Reconciliation of Employer Contributions" later in this report for a detailed reconciliation from fiscal year 2022-23 rates to 2023-24 rates.

From June 30, 2021 to June 30, 2022 the funded ratio of the pool decreased by 10.4% (from 78.3% to 67.9%), due primarily to investment return in 2021-22 being lower than expected.

Subsequent Events

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

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

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

Highlights and Executive Summary

Projected Future Contribution Rates

The table below displays the required and projected employer contributions for the next six fiscal years. Projected results reflect an investment loss for fiscal year 2022-23 based on preliminary investment return information provided by the CalPERS Investment Office.

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. The investment return after June 30, 2023 is assumed to be 6.80% each year, net of investment and administrative expenses. The projected rates below reflect that normal cost is expected to continue to decline over time as new employees are hired into lower-cost benefit tiers. 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.

	Actual	Projected				
Fiscal Year	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29
Employer Contribution Rate	26.68%	27.8%	28.5%	28.9%	30.3%	30.1%

Under the CalPERS amortization policy, changes in the Unfunded Accrued Liability (UAL) due to investment gains or losses (actual return relative to assumed return for the year) are amortized using a five-year ramp up. For more information, see “Amortization of the Unfunded Actuarial Accrued Liability” under “Actuarial Methods” in Appendix A. This method phases in the impact of the change in UAL over a five-year period in order to reduce employer cost volatility from year to year. As a result of this methodology, dramatic changes in the required employer contributions in any one year are less likely. However, required contributions can change gradually and significantly over the next five years. In years when there is a large investment loss, the relatively small amortization payments during the ramp-up period could result in a funded ratio that is projected to decrease initially while the contribution impact of the investment loss is phased in.

Assets

Assets

Reconciliation of Market Value of Assets

1) Market Value of Assets as of June 30, 2021 Including Receivables	$86,519,422,772
2) Receivables for Service Buybacks as of June 30, 2021	(92,304,380)
3) Receivables for Service Buybacks as of June 30, 2022	81,526,898
4) Employer Contributions	3,557,107,442
5) Employee Contributions	1,086,463,016
6) Benefit Payments to Retirees and Beneficiaries	(5,182,681,079)
7) Refunds	(116,076,456)
8) Transfers In/Out	2,862
9) Service Credit Purchase Payment and Interest	28,554,952
10) Miscellaneous Adjustments	0
11) Realized Investment Earnings	(6,428,580,106)
12) Administrative Expenses	(67,613,213)
13) Market Value of Assets as of June 30, 2022 Including Receivables [(1) + (2) + (3) + (4) + (5) + (6) + (7) + (8) + (9) + (10) + (11) + (12)]	$79,385,822,708
14) Receivables for Service Buybacks as of June 30, 2022	(81,526,898)
15) Market Value of Assets as of June 30, 2022 Excluding Receivables [(13) + (14)]	$79,304,295,810

Assets

Asset Allocation

CalPERS adheres to an Asset Allocation Strategy which establishes asset class allocation policy targets and ranges and manages those asset class allocations within their policy ranges. CalPERS Investment Belief No. 6 recognizes that strategic asset allocation is the dominant determinant of portfolio risk and return.

On November 17, 2021, the board adopted changes to the strategic asset allocation. The new allocation was effective July 1, 2022, and is displayed below, expressed as a percentage of total assets.

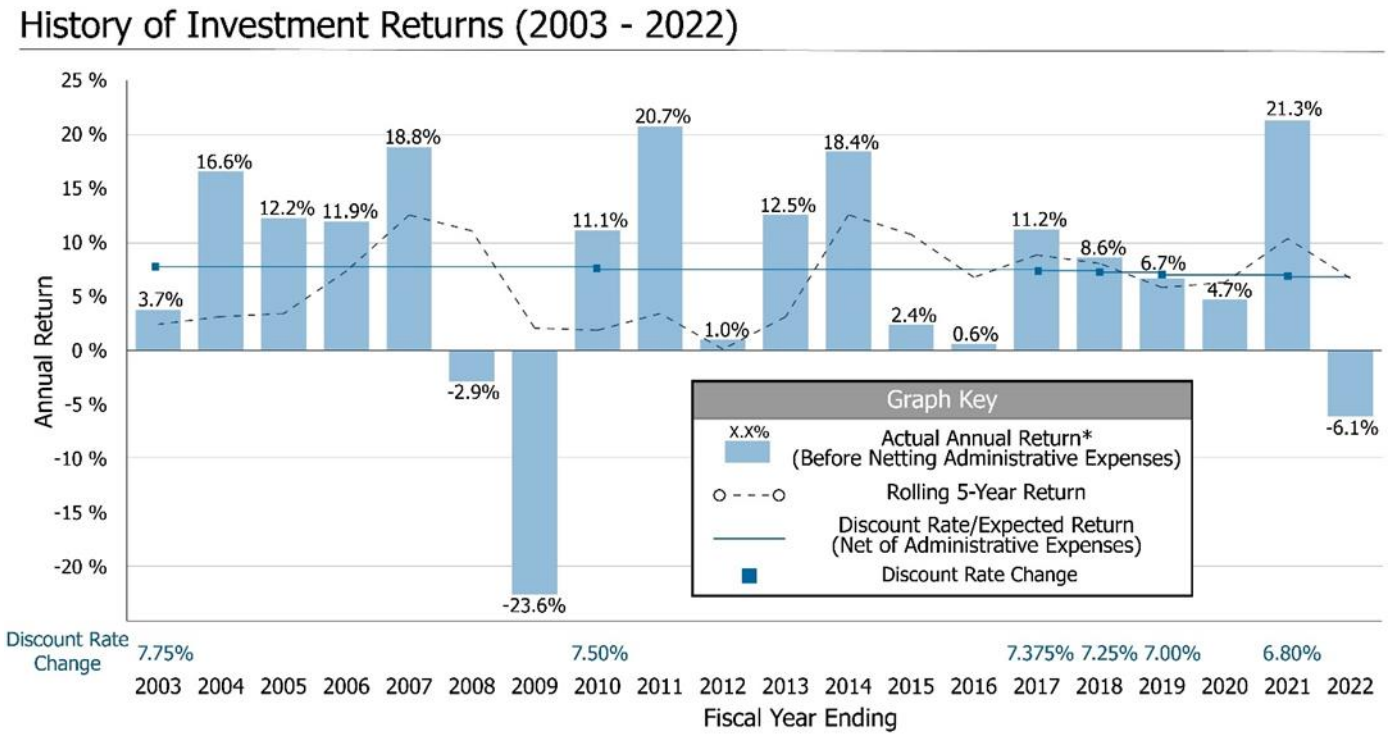
Strategic Asset Allocation Policy Targets

Asset Class	Actual Allocation 9/30/2022	Policy Target Allocation effective 7/1/2022
Global Public Equity		
Market Capitalization Weighted	33.7%	30.0%
Factor Weighted	12.6%	12.0%
Private Equity	11.6%	13.0%
Income		
Treasuries	3.9%	5.0%
Mortgage-backed Securities	5.6%	5.0%
Investment Grade Corporates	5.8%	10.0%
High Yield Bonds	4.6%	5.0%
Emerging Market Sovereign Bonds	2.1%	5.0%
Total Fund Income	1.5%	-
Real Assets	17.1%	15.0%
Private Debt	1.8%	5.0%
Other Trust Level	3.8%	-
Leverage		
Strategic	(0.3%)	(5.0%)
Active	(3.8%)	-
Total Fund	**100.00%**	**100.0%**

Assets

CalPERS History of Investment Returns

The following chart displays the 20-year historical annual returns of the PERF for each fiscal year ending on June 30 as reported by the Investment Office. Investment returns reported are net of investment expenses but without reduction for administrative expenses. The assumed rate of return, however, is net of both investment and administrative expenses. The Investment Office uses a three-month lag on private equity and real assets for investment performance reporting purposes. This can lead to a timing difference in the returns below and those used for financial reporting purposes. The investment gain or loss calculation in this report relies on final assets that have been audited and are appropriate for financial reporting. Because of these differences, the effective investment return for funding purposes can be higher or lower than the return reported by the Investment Office shown here.



* As reported by the Investment Office with a three-month lag on private equity and real assets.

The table below displays annualized investment returns of the PERF for various time periods ending on June 30, 2022 (figures reported are net of investment expenses but without reduction for administrative expenses). These returns are the annual rates that if compounded over the indicated number of years would equate to the actual time-weighted investment performance of the PERF. It should be recognized that in any given year the rate of return is volatile. The portfolio has an expected volatility of 12.1% per year based on the most recent Asset Liability Management study. The realized volatility is a measure of the risk of the portfolio expressed as the standard deviation of the fund's total monthly return distribution, expressed as an annual percentage. Due to their volatile nature, when looking at investment returns, it is more instructive to look at returns over longer time horizons.

History of CalPERS Compound Annual Rates of Return and Volatilities

	1 year	5 year	10 year	20 year	30 year
Compound Annual Return	(6.1)%	6.7%	7.7%	6.9%	7.7%
Realized Volatility	–	8.3%	7.1%	8.5%	8.6%

Liabilities and Employer Contributions

Liabilities and Employer Contributions

Accrued and Unfunded Liabilities

	June 30, 2021	June 30, 2022
Members Included in the Valuation[1]		
Active Members	316,847	333,784
Transfers from Schools	19,964	20,711
Vested Terminations[2]	218,322	235,394
Receiving Payments	253,988	261,341
Total	**809,121**	**851,230**
Average Entry Age of Active Members	35.8	35.8
Average Age of Active Members	46.5	45.9
Average Age of Retired Members	72.9	73.0
Average Pay	$45,337	$47,431
Covered Payroll in Fiscal Year	$14,364,992,906	$15,831,784,824
Projected Payroll for Contribution Rate	$15,180,694,663	$16,730,776,893
1) Present Value of Projected Benefits		
a) Active Members	$68,819,284,788	$72,757,373,200
b) Transferred Members	987,593,458	1,052,011,838
c) Terminated Members	3,586,340,389	4,000,326,206
d) Members and Beneficiaries Receiving Payments	57,632,462,523	62,007,156,635
e) Total	**$131,025,681,158**	**$139,816,867,879**
2) Present Value of Future Employer Normal Costs	$11,785,756,193	$12,385,909,606
3) Present Value of Future Employee Normal Costs	$8,732,642,746	$10,448,903,541
4) Entry Age Accrued Liability		
a) Active Members [(1a) – (2) – (3)]	$48,300,885,849	$49,922,560,053
b) Transferred Members (1b)	987,593,458	1,052,011,838
c) Terminated Members (1c)	3,586,340,389	4,000,326,206
d) Members and Beneficiaries Receiving Payments (1d)	57,632,462,523	62,007,156,635
e) Total	**$110,507,282,219**	**$116,982,054,732**
5) Market Value of Assets (MVA)	$86,519,422,772	$79,385,822,708
6) Unfunded Liability/(Surplus) [(4e) – (5)]	$23,987,859,447	$37,596,232,024
7) Funded Ratio [(5) / (4e)]	**78.3%**	**67.9%**

(1) Counts are of unique members included in the valuation. Multiple records may exist for members with service in more than one benefit group. This does not result in double counting liabilities.

(2) Includes non-vested terminated participants with employee contributions remaining in the plan.

Liabilities and Employer Contributions

Schedule of Amortization Bases

The schedule on the following page shows the development of payments on the amortization bases used to determine the employer contribution rate. Each row of the schedule gives a brief description of a base (or portion of the Unfunded Actuarial Liability), the date the base was established, the balance of the base on the valuation date, and the number of years remaining in the amortization period. The schedule also shows the expected payment for the year immediately following the valuation date, the balance on the date a year after the valuation date, and the required payment for fiscal year 2023-24. Please refer to Appendix A for an explanation of how amortization periods are determined.

There is a one-year lag between the valuation date and the start of the contribution year:

- The assets, liabilities, and funded status of the plan are measured as of the valuation date (June 30, 2022)
- The required employer contributions determined by the valuation are for the fiscal year beginning one year after the valuation date (fiscal year 2023-24)

This one-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 employers with their required employer contribution rate before the start of the fiscal year.

The Unfunded Accrued Liability (UAL) is used to determine the employer contribution and therefore must be rolled forward one year 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 on the UAL for a fiscal year is equal to the expected employer contribution for the fiscal year, plus any additional discretionary payments made during the year, minus the expected Normal Cost for the year. The employer contribution for the first fiscal year is determined by the actuarial valuation from the prior year. The Normal Cost rate for all future fiscal years is assumed to be the same as the rate determined in the current valuation. Expected dollar amounts are determined by multiplying the Normal Cost rate by the expected payroll for the applicable fiscal year, based on payroll as of the valuation date.

Schedule of Amortization Bases (continued)

Reason for Base	Date Established	Ramp Level 2023-24	Ramp Shape	Payment Type	Remaining Amort. Period	Balance 6/30/2022	Expected Payment 2022-23	Balance 6/30/2023	Expected Payment 2023-24	Payment as Percentage of Payroll
(Gain)/Loss	Various		No Ramp	Level %	21	($337,252,026)	($22,973,461)	($336,443,451)	($23,616,718)	(0.14%)
Fresh Start	6/30/2004		No Ramp	Level %	12	2,524,993,368	249,833,482	2,438,504,790	256,828,820	1.54%
(Gain)/Loss	6/30/2009		No Ramp	Level %	17	841,384,798	65,529,745	830,877,849	67,364,578	0.40%
Assumption Change	6/30/2009		No Ramp	Level %	7	753,300,124	110,796,819	690,022,573	113,899,130	0.68%
(Gain)/Loss	6/30/2010		No Ramp	Level %	18	414,210,309	31,081,724	410,255,487	31,952,012	0.19%
(Gain)/Loss	6/30/2011		No Ramp	Level %	19	(916,322,291)	(66,424,172)	(909,986,754)	(68,284,049)	(0.41%)
Assumption Change	6/30/2011		No Ramp	Level %	9	1,101,177,273	134,318,940	1,037,246,647	138,079,871	0.83%
(Gain)/Loss	6/30/2014	100%	Up/Down	Level %	22	4,334,783,444	304,642,324	4,314,718,895	313,172,309	1.87%
(Gain)/Loss	6/30/2015	100%	Up/Down	Level %	23	4,329,102,929	295,223,655	4,318,385,742	303,489,917	1.81%
Assumption Change	6/30/2015	100%	Up/Down	Level %	13	4,599,051,500	485,600,812	4,409,947,284	499,197,634	2.98%
(Gain)/Loss	6/30/2016	100%	Up/Down	Level %	24	5,470,766,802	362,728,998	5,467,919,979	372,885,410	2.23%
(Gain)/Loss	6/30/2017	100%	Up/Down	Level %	25	(423,086,062)	(27,322,305)	(423,619,928)	(28,087,330)	(0.17%)
Assumption Change	6/30/2017	100%	Up/Down	Level %	15	1,571,536,856	147,233,841	1,526,243,896	151,356,388	0.90%
(Gain)/Loss	6/30/2018	100%	Up/Down	Level %	26	(563,856,271)	(28,769,725)	(572,466,688)	(36,969,097)	(0.22%)
Assumption Change - Demo	6/30/2018	100%	Up/Down	Level %	16	1,221,392,037	88,441,822	1,213,047,303	113,647,741	0.68%
Assumption Change - Econ	6/30/2018	100%	Up/Down	Level %	16	1,257,883,722	91,084,209	1,249,289,672	117,043,209	0.70%
Method Change	6/30/2018	100%	Up/Down	Level %	16	1,450,118,072	105,004,028	1,440,210,648	134,930,176	0.81%
Assumption Change	6/30/2019	80%	Up/Down	Level %	17	3,115,598,960	166,685,437	3,155,200,149	228,470,172	1.37%
Investment (Gain)/Loss	6/30/2019	80%	Up Only	Level $	17	607,693,883	36,538,526	611,256,662	48,718,035	0.29%
Non-Investment (Gain)/Loss	6/30/2019		No Ramp	Level $	17	280,357,956	26,581,222	271,952,176	26,581,222	0.16%
Investment (Gain)/Loss	6/30/2020	60%	Up Only	Level $	18	1,894,510,659	77,878,089	1,942,854,985	116,817,134	0.70%
Non-Investment (Gain)/Loss	6/30/2020		No Ramp	Level $	18	(223,156,709)	(20,580,121)	(217,063,027)	(20,580,121)	(0.12%)
Assumption Change	6/30/2021		No Ramp	Level $	19	339,283,494	30,509,578	330,824,927	30,509,578	0.18%
Net Investment (Gain)	6/30/2021	40%	Up Only	Level $	19	(8,954,813,570)	(192,480,979)	(9,364,823,185)	(384,961,958)	(2.30%)
Non-Investment (Gain)/Loss	6/30/2021		No Ramp	Level $	19	(1,003,199,252)	(90,211,243)	(978,188,817)	(90,211,243)	(0.54%)
Risk Mitigation	6/30/2021		No Ramp	Level $	0	2,901,318,814	2,998,341,395	0	0	0.00%
Risk Mitigation Offset	6/30/2021		No Ramp	Level $	0	(2,901,318,814)	(2,998,341,395)	0	0	0.00%
Investment (Gain)/Loss	6/30/2022	20%	Up Only	Level $	20	12,352,282,351	0	13,192,237,551	283,563,112	1.69%
Non-Investment (Gain)/Loss	6/30/2022		No Ramp	Level $	20	1,558,489,668	166,816,616	1,492,071,859	134,172,405	0.80%
Total						**$37,596,232,024**	**$2,527,767,861**	**$37,540,477,224**	**$2,829,968,337**	**16.91%**

Liabilities and Employer Contributions

Gain/Loss Analysis

To calculate the cost requirements of the pool, assumptions are made about future events that affect the amount and timing of benefits to be paid and assets to be accumulated. Each year, actual experience is compared to the expected experience based on the actuarial assumptions. This results in actuarial gains or losses, as displayed below.

1) Total (Gain)/Loss for the Year	
a) Unfunded Accrued Liability (UAL) as of June 30, 2021	$23,987,859,447
b) Expected Payment on the UAL during Fiscal Year 2021-22	1,871,005,850
c) Interest through June 30, 2022 [0.068 x (1a) – ((1.068)$^{1/2}$ – 1) x (1b)]	1,568,606,408
d) Expected UAL before Other Changes [(1a) – (1b) + (1c)]	$23,685,460,005
e) Change due to Risk Mitigation (Discount Rate Change)	0
f) Change due to Assumption Changes	0
g) Change due to Method Changes	0
h) Expected UAL After All Other Changes [(1d) + (1e) + (1f) + (1g)]	$23,685,460,005
i) Actual UAL as of June 30, 2022	37,596,232,024
j) Total (Gain)/Loss for Fiscal Year 2021-22 [(1i) – (1h)]	**$13,910,772,019**
2) Contribution (Gain)/Loss for the Year	
a) Expected Contribution with interest (Employer and Employee)	$4,564,577,340
b) Actual Contributions with interest	4,798,855,423
c) Contribution (Gain)/Loss for Fiscal Year 2021-22 [(2a) – (2b)]	**($234,278,083)**
3) Asset (Gain)/Loss for the Year	
a) Market Value of Assets as of June 30, 2021	$86,519,422,772
b) Prior Fiscal Year Receivables	(92,304,380)
c) Current Fiscal Year Receivables	81,526,898
d) Contributions Received	4,643,570,458
e) Benefits and Refunds Paid	(5,298,757,535)
f) Transfers, Service Credit Purchases, and Miscellaneous Adjustments	28,557,814
g) Expected Interest [0.068 x (3a + 3b) + ((1.068)$^{1/2}$ – 1) x ((3d) + (3e) + (3f))]	5,856,089,033
h) Expected Assets as of June 30, 2022 [(3a) + (3b) + (3c) + (3d) + (3e) + (3f) + (3g)]	91,738,105,059
i) Market Value of Assets as of June 30, 2022	79,385,822,708
j) Asset (Gain)/Loss for Fiscal Year 2021-22 [(3h) – (3i)]	**$12,352,282,351**
4) Liability (Gain)/Loss for the Year	
a) Total (Gain)/Loss (1j)	$13,910,772,019
b) Contribution (Gain)/Loss (2c)	(234,278,083)
c) Asset (Gain)/Loss (3j)	12,352,282,351
d) Liability (Gain)/Loss for Fiscal Year 2021-22 [(4a) – (4b) – (4c)]	**$1,792,767,751**

Liabilities and Employer Contributions

Reconciliation of Employer Contributions

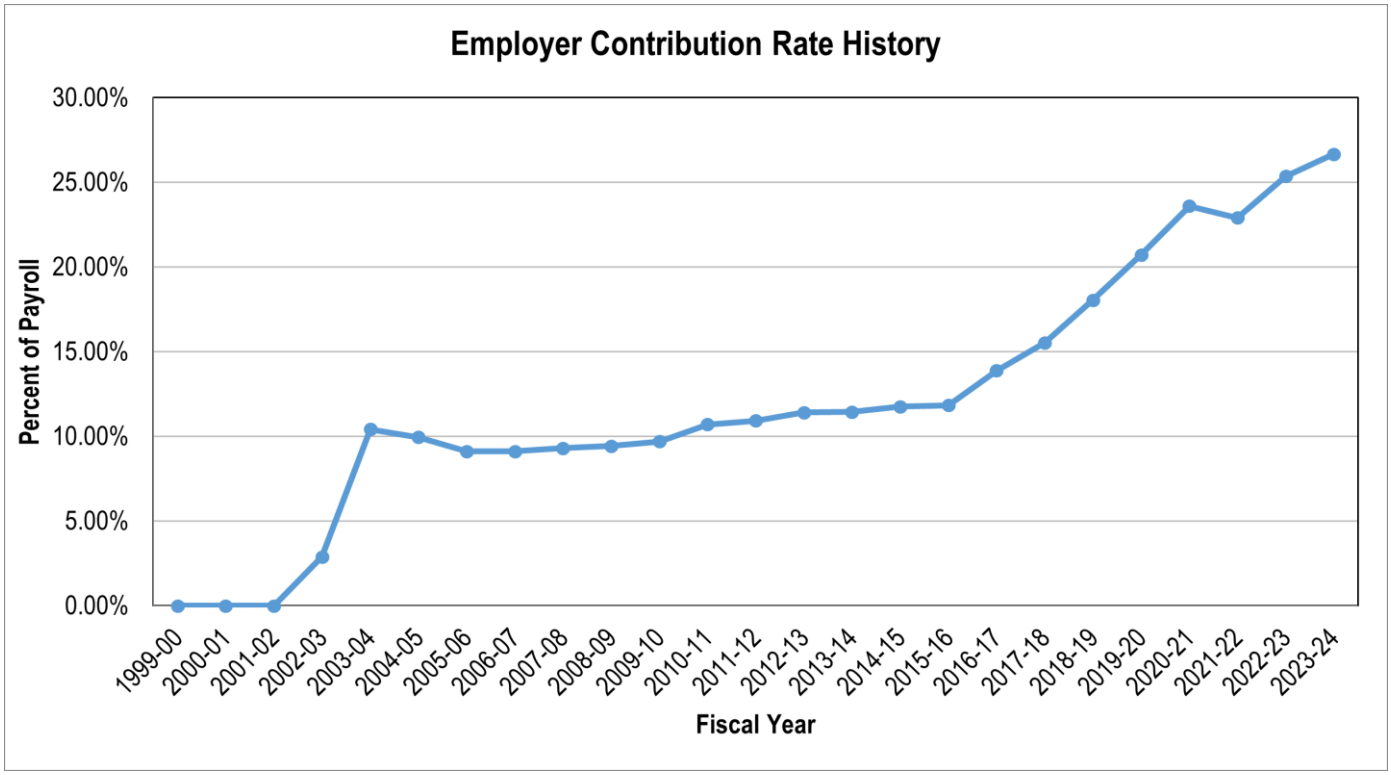
	Rate (% of Payroll)	Estimated Dollars (millions)
Employer Normal Cost		
2022-23 Employer Normal Cost Contribution	9.82%	$1,491
Effect of Change in Payroll	0.00%	152
Effect of Demographic Experience	(0.05%)	(8)
Effect of Assumption Changes	0.00%	0
Effect of Change in Member Contribution Rates	0.00%	0
2023-24 Employer Normal Cost Contribution	9.77%	$1,635
Unfunded Liability Contribution		
2022-23 Unfunded Liability Contribution	15.55%	$2,361
Effect of Progression of Amortization Bases and Change in Payroll	(1.13%)	51
Effect of Investment (Gain)/Loss	1.69%	284
Effect of Non-Investment (Gain)/Loss	0.80%	134
Effect of Assumption Changes	0.00%	0
2023-24 Unfunded Liability Contribution	16.91%	$2,830
Total Required Employer Contribution		
2022-23 Total Required Employer Contribution	25.37%	$3,852
Effect of Progression of Amortization Bases and Change in Payroll	(1.13%)	203
Effect of Assumption Changes	0.00%	0
Effect of Experience (Gains)/Losses	2.44%	410
Effect of Change in Member Contribution Rates	0.00%	0
2023-24 Total Required Employer Contribution	26.68%	$4,465

Liabilities and Employer Contributions

History of Employer Contribution Rates

The table below displays a 25-year history of contribution rates for the Schools Pool. In cases where the contribution rate changed during a fiscal year, the entry shown is the weighted average of the rates effective during the fiscal year.

Fiscal Year	Valuation Date	Employer Normal Cost	Unfunded Liability Contribution/(Credit)	Total Employer Contribution
2023 - 2024	6/30/2022	9.77%	16.91%	26.68%
2022 - 2023	6/30/2021	9.82%	15.55%	25.37%
2021 - 2022	6/30/2020	9.32%	13.59%	22.91%
2020 - 2021	6/30/2019	9.47%	14.13%	23.60%
2019 - 2020	6/30/2018	8.992%	11.741%	20.733%
2018 - 2019	6/30/2017	8.739%	9.323%	18.062%
2017 - 2018	6/30/2016	8.103%	7.428%	15.531%
2016 - 2017	6/30/2015	8.242%	5.646%	13.888%
2015 - 2016	6/30/2014	7.621%	4.226%	11.847%
2014 - 2015	6/30/2013	7.814%	3.957%	11.771%
2013 - 2014	6/30/2012	7.313%	4.129%	11.442%
2012 - 2013	6/30/2011	7.415%	4.002%	11.417%
2011 - 2012	6/30/2010	7.132%	3.791%	10.923%
2010 - 2011	6/30/2009	7.173%	3.534%	10.707%
2009 - 2010	6/30/2008	7.410%	2.299%	9.709%
2008 - 2009	6/30/2007	7.414%	2.014%	9.428%
2007 - 2008	6/30/2006	7.421%	1.885%	9.306%
2006 - 2007	6/30/2005	7.398%	1.726%	9.124%
2005 - 2006	6/30/2004	7.399%	1.717%	9.116%
2004 - 2005	6/30/2003	7.393%	2.559%	9.952%
2003 - 2004	6/30/2002	9.396%	1.024%	10.420%
2002 - 2003	6/30/2001	9.329%	(6.435%)	2.894%
2001 - 2002	6/30/2000	9.082%	(9.082%)	0.000%
2000 - 2001	6/30/1999	6.914%	(6.914%)	0.000%
1999 - 2000	6/30/1998	6.867%	(6.867%)	0.000%



Liabilities and Employer Contributions

History of Funded Status and Funding Progress

A 30-year history of funding status for the Schools Pool is displayed below. (Dollars in millions.)

Valuation Date	Actuarial Accrued Liabilities	Market Value of Assets	Unfunded Liabilities/(Surplus)	Funded Ratio	Projected Payroll for Contribution	Unfunded/(Surplus) as a % of Payroll
6/30/2022	$116,982	$79,386	$37,596	67.9%	$16,731	224.7%
6/30/2021	110,507	86,519	23,988	78.3%	15,181	158.0%
6/30/2020	104,062	71,400	32,662	68.6%	15,295	213.6%
6/30/2019	99,528	68,177	31,351	68.5%	14,844	211.2%
6/30/2018	92,071	64,846	27,225	70.4%	14,234	191.3%
6/30/2017	84,416	60,865	23,551	72.1%	13,683	172.1%
6/30/2016	77,544	55,785	21,759	71.9%	13,022	167.1%
6/30/2015	73,325	56,814	16,511	77.5%	12,098	136.5%
6/30/2014	65,600	56,838	8,761	86.6%	11,294	77.6%
6/30/2013	61,487	49,482	12,005	80.5%	10,424	115.2%
6/30/2012	59,439	44,854	14,585	75.5%	10,242	142.4%
6/30/2011	58,358	45,901	12,457	78.7%	10,540	118.2%
6/30/2010	55,307	38,435	16,872	69.5%	11,283	149.5%
6/30/2009	52,493	34,146	18,347	65.0%	11,110	165.1%
6/30/2008	48,538	45,548	2,990	93.8%	11,138	26.8%
6/30/2007	44,810	48,293	(3,483)	107.8%	10,250	(34.0%)
6/30/2006	41,409	40,852	556	98.7%	9,881	5.6%
6/30/2005	38,368	36,898	1,469	96.2%	9,223	15.9%
6/30/2004	35,933	32,828	3,104	91.4%	9,069	34.2%
6/30/2003	33,793	28,182	5,611	83.4%	9,079	61.8%
6/30/2002	31,271	27,690	3,581	88.5%	8,344	42.9%
6/30/2001	27,946	30,308	(2,361)	108.4%	7,912	(29.8%)
6/30/2000	25,474	33,295	(7,821)	130.7%	7,053	(110.9%)
6/30/1999	21,216	30,918	(9,702)	145.7%	5,961	(162.8%)
6/30/1998	19,499	27,874	(8,374)	142.9%	5,445	(153.8%)
6/30/1997	17,583	23,499	(5,916)	133.6%	4,907	(120.5%)
6/30/1996	17,572	19,706	(2,135)	112.1%	5,146	(41.5%)
6/30/1995	16,422	17,314	(892)	105.4%	5,351	(16.7%)
6/30/1994	15,136	15,373	(238)	101.6%	5,140	(4.6%)
6/30/1993	13,575	14,956	(1,381)	110.2%	4,853	(28.4%)

Normal Cost Information

Normal Cost Information

Normal Cost By Group

The normal cost is determined using the Entry Age cost method. The Total Normal Cost is the annual cost of service accrual for the fiscal year for active employees and can be viewed as the long-term contribution rate for the benefits provided. Future measurements of the Total Normal Cost for each group may differ significantly from the current values due to changes in the demographics of the group, changes in economic and demographic assumptions, or changes in plan benefits or applicable law.

Employer Normal Cost rates displayed below for individual benefit groups are illustrative only; employers pay the same normal cost rate for all active members (as shown in the Plan Total line). FAC means Final Average Compensation.

Benefit Group	Total Normal Cost	Employee Contribution[1]	Employer Normal Cost	Number of Actives	Payroll on June 30,2022
Schools 2% @ 62 – 3 Year FAC (PEPRA)	16.30%	8.00%	8.30%	190,858	$7,687,719,485
Schools 2% @ 55 – 1 Year FAC (Classic)	18.17%	7.00%	11.17%	142,926	$8,144,065,339
Plan Total	**17.26%**	**7.49%**	**9.77%**	**333,784**	**$15,831,784,824**

(1) Employee contribution rates are those in effect on the valuation date.

PEPRA Member Contribution Rate

In accordance with the California Public Employees' Pension Reform Act of 2013 ("PEPRA"), new members hired on or after January 1, 2013 ("PEPRA members") are required under PEPRA to contribute 50% of the total normal cost of their pension benefit.

The total normal cost of PEPRA members' benefits is remeasured annually as part of the actuarial valuation based on the active PEPRA population in the plan. If the total normal cost changes by more than 1% from the basis established for the plan, the member rate is revised to equal 50% of the new total normal cost rounded to the nearest quarter percent. The PEPRA member contribution rate for fiscal year 2022-23 of 8.00% was based on a total normal cost of 15.91% of payroll established by the June 30, 2021 actuarial valuation. In this valuation, the total normal cost for PEPRA members is 16.30% of payroll. Since the total normal cost did not change by more than 1% from when the member contribution rate was last changed, the PEPRA member contribution rate will remain 8.00% for the fiscal year beginning July 1, 2023.

The table below displays the determination of the PEPRA member contribution rate effective July 1, 2023 based on 50% of the Total Normal Cost as of June 30, 2022.

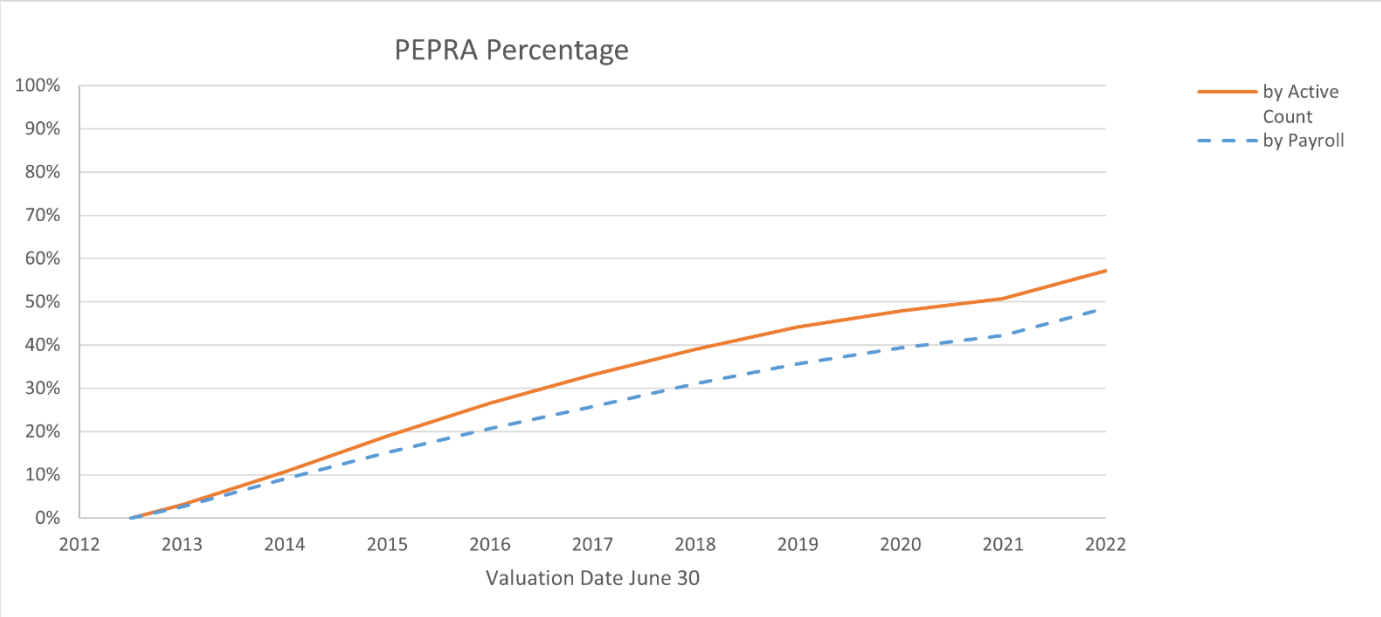
	Basis for Current Rate			Rate Effective July 1, 2023			
	Total Normal Cost	Actuarial Valuation Date	Member Rate	Total Normal Cost	Change	Change Needed	Member Rate
Schools Pool	15.91%	6/30/2021	8.00%	16.30%	0.39%	No	8.00%

Normal Cost Information

PEPRA Transition

As of June 30, 2022, there are 190,858 active PEPRA members in the Schools Pool, which represents 57% of the total active population of the Schools Pool. The total payroll for active PEPRA members is $7,687,719,485, which represents 49% of the total Schools Pool payroll.

The graph below displays the share of Schools Pool active headcount and payroll attributable to PEPRA members since PEPRA became effective.



Risk Analysis

Risk Analysis

Future Investment Return Scenarios

Analysis was performed to determine the effects of various future investment returns on required employer contributions. Projected results reflect an investment loss for fiscal year 2022-23 based on preliminary investment return information provided by the CalPERS Investment Office. The projections below reflect the impact of the CalPERS Funding Risk Mitigation policy whereby the discount rate is automatically reduced when annual investment return exceeds specified thresholds. The projections reflect that rates are anticipated to decline over time as new employees are hired into the lower-cost PEPRA benefit tier. 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 displays projected contribution requirements if the fund were to earn either 3.0% or 10.8% annually. These investment return scenarios were chosen because 90% of long-term average returns are expected to fall between them over the 20-year period ending June 30, 2042, based on capital market assumptions from the Asset Liability Management process completed in 2021.

Assumed Annual Return from 2023-24 through 2041-42	Current Rate	Projected Employer Contribution Rate				
	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29
3.0% (5th percentile)	26.68%	27.8%	28.9%	30.1%	32.7%	34.0%
10.8% (95th percentile)	26.68%	27.8%	28.3%	28.2%	28.8%	27.4%

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 more than 10.8% over a 20-year period, the likelihood of a single investment return less than 3.0% or more 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 a 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 table below displays the effect of a one or two standard deviation investment loss in fiscal year 2023-24 on the required contributions for the following two fiscal years. Note that a single-year investment gain or loss decreases or increases the required contribution incrementally for each of the next five years, not just one, due to the five-year ramp in the amortization policy. However, the contribution requirements beyond the first fiscal year are also impacted by investment returns beyond the first fiscal 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 fiscal year 2025-26.

Assumed Annual Return for Fiscal Year 2023-24	Current Rate	Projected Employer Contribution Rate	
	2023-24	2024-25	2025-26
−17.2% (2 standard deviation loss)	26.68%	27.8%	31.1%
−5.2% (1 standard deviation loss)	26.68%	27.8%	29.8%

- Without investment gains (returns higher than 6.8%) in fiscal years 2024-25 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 fiscal year 2023-24.
- The Pension Outlook Tool can be used to model projected contributions for these scenarios beyond fiscal year 2025-26 as well as to model other investment return scenarios.

Discount Rate Sensitivity

The discount rate assumption is calculated as the sum of the assumed real rate of return and the assumed annual price inflation, currently 4.5% and 2.3%, respectively. Changing either the price inflation assumption or the real rate of return assumption will change the discount rate. The sensitivity of the valuation results to the discount rate assumption depends on which component of the discount rate is changed. Displayed below are various valuation results as of June 30, 2022 assuming alternative 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 current assumption of 6.8%.

	Sensitivity to the Real Rate of Return Assumption		
As of June 30, 2022	1% Lower Real Return Rate	Current Assumptions	1% Higher Real Return Rate
Discount Rate	**5.8%**	**6.8%**	**7.8%**
Inflation	2.3%	2.3%	2.3%
Real Rate of Return	**3.5%**	**4.5%**	**5.5%**
a) Total Normal Cost Rate	21.84%	17.26%	13.83%
b) Accrued Liability	$132,756,280,282	$116,982,054,732	$103,954,092,765
c) Market Value of Assets	$79,385,822,708	$79,385,822,708	$79,385,822,708
d) Unfunded Accrued Liability/(Surplus) [(b) – (c)]	$53,370,457,574	$37,596,232,024	$24,568,270,057
e) Funded Ratio	59.8%	67.9%	76.4%

	Sensitivity to the Price Inflation Assumption		
As of June 30, 2022	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 Rate	18.19%	17.26%	15.59%
b) Accrued Liability	$120,850,026,410	$116,982,054,732	$107,213,075,148
c) Market Value of Assets	$79,385,822,708	$79,385,822,708	$79,385,822,708
d) Unfunded Accrued Liability/(Surplus) [(b) – (c)]	$41,464,203,702	$37,596,232,024	$27,827,252,440
e) Funded Ratio	65.7%	67.9%	74.0%

Risk Analysis

Mortality Rate Sensitivity

The table below shows how June 30, 2022 valuation results would differ under two alternative longevity scenarios, namely post-retirement mortality rates that are 10% lower or 10% higher than the rates currently assumed. This type of analysis highlights the impact on the plan of improving or worsening mortality over the long term.

	Sensitivity to the Post-Retirement Mortality Assumption		
As of June 30, 2022	10% Lower Mortality Rates	Current Assumptions	10% Higher Mortality Rates
a) Total Normal Cost Rate	17.53%	17.26%	17.00%
b) Accrued Liability	$119,589,414,998	$116,982,054,732	$114,592,525,502
c) Market Value of Assets	$79,385,822,708	$79,385,822,708	$79,385,822,708
d) Unfunded Accrued Liability/(Surplus) [(b) – (c)]	$40,203,592,290	$37,596,232,024	$35,206,702,794
e) Funded Ratio	66.4%	67.9%	69.3%

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.

Ratio of Retiree Accrued Liability to Total Accrued Liability

One way to look at the maturity level of CalPERS and its plans is to look at the ratio of retiree liability to 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 increases. A mature plan will often have a ratio above 60%-65%.

	June 30, 2021			June 30, 2022		
	Retiree Accrued Liability	Total Accrued Liability	Ratio	Retiree Accrued Liability	Total Accrued Liability	Ratio
Schools Pool	57,632,462,523	110,507,282,219	52%	62,007,156,635	116,982,054,732	53%

Support Ratio

Another measure of maturity is the ratio of actives to retirees, also called the support ratio. A pension plan in its infancy will have a 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 pool, 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 the pool. For this reason, the support ratio, while intuitive, may be less informative than the ratio of retiree liability to total accrued liability above.

	June 30, 2021			June 30, 2022		
	Number of Actives	Number of Retirees	Support Ratio	Number of Actives	Number of Retirees	Support Ratio
Schools Pool	316,847	253,988	1.25	333,784	261,341	1.28

Risk Analysis

Maturity Measures (continued)

Volatility Ratios

Asset Volatility Ratio

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

Liability Volatility Ratio

Also displayed in the table below is the liability volatility ratio (LVR), which is the ratio of accrued liability to payroll. Plans that have a higher LVR experience more volatile employer contributions (as a percentage of payroll) due to changes in liability. For example, a plan with LVR of 8 is expected to have twice the contribution volatility of a plan with LVR of 4 when there is a change in accrued liability, such as when there is a change in actuarial assumptions. 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%.

Market Value of Assets without Receivables	Annual Covered Payroll	Asset Volatility Ratio	Accrued Liability	Liability Volatility Ratio
(1)	(2)	(1) ÷ (2)	(3)	(3) ÷ (2)
$79,304,295,810	$15,831,784,824	5.0	$116,982,054,732	7.4

Maturity Measures History

Valuation Date	Ratio of Retiree Accrued Liability to Total Accrued Liability	Support Ratio	Asset Volatility Ratio	Liability Volatility Ratio
06/30/2018	51%	1.38	4.8	6.8
06/30/2019	51%	1.37	4.8	7.1
06/30/2020	52%	1.33	4.9	7.2
06/30/2021	52%	1.25	6.0	7.7
06/30/2022	53%	1.28	5.0	7.4

Appendices

Appendix A – Actuarial Methods and Assumptions

Actuarial Data

As stated in the Actuarial Certification, the data that serves as the basis for this valuation has been obtained from various CalPERS databases. We have reviewed the valuation data and believe that it is reasonable and appropriate in aggregate. We are unaware of any potential data issues that would have a material effect on the results of this valuation, except that data does not always contain the latest salary information for members now in reciprocal systems and does not recognize the potential for unusually large salary deviation in certain cases such as elected officials. Therefore, salary information in these cases may not be accurate. These situations are relatively infrequent, however, and generally do not have a material impact on the employer contribution rates.

Actuarial Methods

Actuarial Cost Method

The actuarial cost method is the Entry Age Actuarial Cost Method. Under this method, projected benefits are determined for all members and the associated liabilities are spread in a manner that produces level annual cost as a percentage of pay in each year from the member's entry age into the plan to their assumed retirement age on the valuation date. The cost allocated to the current fiscal year is called the normal cost.

The actuarial accrued liability for active members is then calculated as the portion of the total cost of the plan allocated to prior years. The actuarial accrued liability for members currently receiving benefits and for members entitled to deferred benefits is equal to the present value of the benefits expected to be paid. No normal costs are applicable for these participants.

CalPERS uses an in-house proprietary actuarial model for calculating plan costs. We believe this model is fit for its intended purpose and meets all applicable Actuarial Standards of Practice. Furthermore, the actuarial results of our model are independently confirmed periodically by outside auditing actuaries. The actuarial assumptions used are internally consistent and the generated results are reasonable.

Amortization of Unfunded Actuarial Accrued Liability

The excess of the total actuarial accrued liability over the market value of the Pool's assets is called the unfunded actuarial accrued liability (UAL). Funding requirements are determined by adding the normal cost and a payment toward the UAL. The UAL payment is equal to the sum of individual amortization payments, each representing a different source of UAL for a given measurement period.

Amortization payments are determined according to the CalPERS amortization policy. The current policy was adopted effective with the June 30, 2019 actuarial valuation and applies only to bases established on/after that date. Amortization bases (sources of UAL) established prior to the June 30, 2019 valuation will continue to be amortized according to the prior policy. There is one exception to the new policy for the Schools Pool wherein the impact of the discount rate change from 7.25% to 7.00% in the June 30, 2019 valuation was amortized under the prior policy in order to be consistent with the treatment of the corresponding base in the State and public agency plans.

Appendix A – Actuarial Methods and Assumptions

Actuarial Methods (continued)

Prior Policy (Bases Established prior to June 30, 2019)[1]

Amortization payments are determined as a level percentage of payroll whereby the payment increases each year at an escalation rate. Gains or losses are amortized over a fixed 30-year period with a 5-year ramp up at the beginning and a 5-year ramp down at the end of the amortization period. All changes in liability due to plan amendments (other than golden handshakes) are amortized over a 20-year period with no ramp. Changes in actuarial assumptions or changes in actuarial methodology are amortized over a 20-year period with a 5-year ramp up at the beginning and a 5-year ramp down at the end of the amortization period. Changes in unfunded accrued liability due to a Golden Handshake will be amortized over a period of five years. Bases established prior to June 30, 2013 may be amortized differently. A summary is displayed in the table below:

	Source				
	(Gain)/Loss		Assumption/ Method Change	Benefit Change	Golden Handshake
	Investment	Non-investment			
Amortization Period	30 Years	30 Years	20 Years	20 Years	5 Years
Escalation Rate - Active Plans - Inactive Plans	2.80% 0%	2.80% 0%	2.80% 0%	2.80% 0%	2.80% 0%
Ramp Up	5	5	5	0	0
Ramp Down	5	5	5	0	0

The 5-year ramp up means that the payments in the first four years of the amortization period are 20%, 40%, 60%, and 80% of the "full" payment that begins in year five. The 5-year ramp down means that the reverse is true in the final four years of the amortization period.

Current Policy (Bases Established on or after June 30, 2019)[1]

Amortization payments are determined as a level dollar amount. Investment gains or losses are amortized over a fixed 20-year period with a 5-year ramp up at the beginning of the amortization period. Non-investment gains or losses are amortized over a fixed 20-year period with no ramps. All changes in liability due to plan amendments (other than golden handshakes) are amortized over a 20-year period with no ramps. Changes in actuarial assumptions or changes in actuarial methodology are amortized over a 20-year period with no ramps. Changes in unfunded accrued liability due to a Golden Handshake are amortized over a period of five years. A summary is displayed in the table below:

	Source				
	(Gain)/Loss		Assumption/ Method Change	Benefit Change	Golden Handshake
	Investment	Non-investment			
Amortization Period	20 Years	20 Years	20 Years	20 Years	5 Years
Escalation Rate	0%	0%	0%	0%	0%
Ramp Up	5	0	0	0	0
Ramp Down	0	0	0	0	0

[1] An exception for the Schools Pool is that the impact of the discount rate change from 7.25% to 7.00% in the June 30, 2019 valuation is amortized under the prior policy.

Appendix A – Actuarial Methods and Assumptions

Exceptions for Inconsistencies

An exception to the amortization rules above is used whenever their application results in inconsistencies. In these cases, a "fresh start" approach is used. This means that the current amortization bases are combined and the total unfunded actuarial liability is amortized over a set number of years. For example, a fresh start is needed in the following situations:

- 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, resulting in a large change in the employer contribution requirement.

It should be noted that the actuary may determine that a fresh start is necessary under other circumstances. In all cases of fresh start, the period is set by the actuary at what is deemed appropriate; however, the period will not be greater than 20 years.

Asset Valuation Method

The Actuarial Value of Assets is set equal to the Market Value of Assets. The direct rate smoothing technique described under "Amortization of Unfunded Actuarial Accrued Liability" is used to determine employer contribution rates.

Accounts Receivable

In preparing valuations and setting employer contribution rates, asset values include accounts receivable. The CalPERS Actuarial Office assumes that all assets are accruing interest at the actuarially assumed rate. Therefore, the rates depicted assume that all payments have been made and are accruing interest.

PEPRA Normal Cost Rate Methodology

Per Government Code section 7522.30(b), the "normal cost rate" shall mean the annual actuarially determined normal cost for the plan of retirement benefits provided to the new member and shall be established based on actuarial assumptions used to determine the liabilities and costs as part of the annual actuarial valuation. The plan of retirement benefits shall include any elements that would impact the actuarial determination of the normal cost, including, but not limited to, the retirement formula, eligibility and vesting criteria, ancillary benefit provisions, and any automatic cost-of-living adjustments as determined by the public retirement system.

For purposes of setting PEPRA member contribution rates for the Schools Pool, the total PEPRA normal cost is determined based solely on PEPRA membership of the Pool.

Actuarial Methods (continued)

Purchasing Power Protection Act (PPPA) Method

PPPA benefits are cost-of-living adjustments intended to maintain the individual's current retirement benefit at 75% of the original benefit at retirement adjusted for inflation since retirement. The PPPA benefit is paid, if necessary, in addition to any other cost-of-living adjustment provided under the terms of the plan. Prior to January 1, 2001, there was a single PPPA pool covering all CalPERS employers. However, commencing January 1, 2001, separate PPPA pools were established. A pool was set up for all State plans and a separate pool for Schools Pool employers. The public agencies were removed entirely from PPPA pooling resulting in each public agency plan paying for its own PPPA benefits. The creation of separate pools effectively eliminates the cross subsidization between the State, Schools, and public agencies.

For the Schools Pool, the total annual outlay for PPPA benefits is limited by State statute to earnings of up to 1.1% of accumulated member contributions. If this annual outlay is insufficient to provide the PPPA benefits in a given fiscal year, the 75% maintenance target would be proportionately reduced. Since the inception of the PPPA benefit program, 1.1% has proved more than sufficient to provide the 75% maintenance. Under the inflation assumption of 2.5% compounded annually, the 1.1% appears to remain more than sufficient in the foreseeable future.

Internal Revenue Code Section 415

The limitations on benefits imposed by Internal Revenue Code section 415 are taken into account in this valuation. Each year the impact of any changes in this limitation since the prior valuation is included and amortized as part of the actuarial gain or loss base. This results in lower contributions for those employers contributing to the Replacement Benefit Fund and protects CalPERS from prefunding expected benefits in excess of limits imposed by federal tax law. The Section 415(b) dollar limit for the 2022 calendar year is $245,000.

Internal Revenue Code Section 401(a)(17)

The limitations on compensation imposed by Internal Revenue Code section 401(a)(17) are taken into account in this valuation. Each year, the impact of any changes in the compensation limitation since the prior valuation is included and amortized as part of the actuarial gain or loss base. The compensation limit for classic members for the 2022 calendar year is $305,000.

Appendix A – Actuarial Methods and Assumptions

Actuarial Assumptions

In 2021, CalPERS completed its most recent asset liability management study incorporating actuarial assumptions and strategic asset allocation. In November 2021, the board adopted changes to the asset allocation that increased the expected volatility of returns. The adopted asset allocation was expected to have a long-term blended return that continued to support a discount rate assumption of 6.80%. The board also approved several changes to the demographic assumptions to take into account recent experience.

For more details and additional rationale for the selection of the actuarial assumptions, please refer to the CalPERS Experience Study and Review of Actuarial Assumptions report from November 2021 that can be found on the CalPERS website under “Forms and Publications.” Click on “View All” and search for Experience Study.

All actuarial assumptions (except the discount rates used for the hypothetical termination liability) represent an estimate of future experience rather than observations of the estimates inherent in market data.

Appendix A – Actuarial Methods and Assumptions

Economic Assumptions

Discount Rate

6.80% compounded annually (net of investment and administrative expenses).

Salary Growth

Annual increases vary by entry age and duration of service. A sample of assumed increases is displayed in the table below. Assumed wage inflation is combined with these factors for total salary growth.

Duration of Service	Entry Age		
	20	30	40
0	2.75%	2.75%	2.00%
3	4.22%	3.73%	2.98%
5	3.08%	2.39%	1.79%
10	2.36%	1.60%	1.21%
15	1.82%	1.35%	1.03%
20	1.45%	1.09%	0.85%
25	1.24%	1.02%	0.58%
30	0.75%	0.53%	0.19%

Overall Payroll Growth

2.80% compounded annually. This is used in projecting the payroll over which unfunded accrued liability is amortized for amortization bases with a level percentage payment type (generally those bases established prior to June 30, 2019).

Wage Inflation

2.80% compounded annually (used in projecting individual salary increases).

Price Inflation

2.30% compounded annually.

Demographic Assumptions

Post-Retirement Mortality

Rates vary by age, type of retirement, and gender. Sample rates are displayed in table below.

	Healthy Recipients		Non-Industrial Disabled (Not Job-Related)		Industrial Disabled (Job-Related)	
Age	Male	Female	Male	Female	Male	Female
50	0.00267	0.00199	0.01701	0.01439	0.00430	0.00311
55	0.00390	0.00325	0.02210	0.01734	0.00621	0.00550
60	0.00578	0.00455	0.02708	0.01962	0.00944	0.00868
65	0.00857	0.00612	0.03334	0.02276	0.01394	0.01190
70	0.01333	0.00996	0.04001	0.02910	0.02163	0.01858
75	0.02391	0.01783	0.05376	0.04160	0.03446	0.03134
80	0.04371	0.03403	0.07936	0.06111	0.05853	0.05183
85	0.08274	0.06166	0.11561	0.09385	0.10137	0.08045
90	0.14539	0.11086	0.16608	0.14396	0.16584	0.12434
95	0.24665	0.20364	0.24664	0.20364	0.24664	0.20364
100	0.36198	0.31582	0.36198	0.31582	0.36198	0.31582

The post-retirement mortality rates above are for 2017 and are projected generationally for future years using 80% of the Society of Actuaries' Scale MP-2020.

Appendix A – Actuarial Methods and Assumptions

Demographic Assumptions (continued)

Marital Status

70% of active members are assumed to be married upon retirement.

Age of Spouse

Female spouses are assumed to be 3 years younger than male spouses.

Separated Members

It is assumed that separated members refund immediately if non-vested. Separated members who are vested are assumed to retire at age 59.

Separated with Refund

Rates vary by entry age, service and gender. Sample rates are displayed in the table below.

Duration of Service	Entry Age									
	20		25		30		35		40	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
0	0.2054	0.2120	0.1933	0.1952	0.1730	0.1672	0.1527	0.1392	0.1423	0.1212
1	0.1922	0.2069	0.1778	0.1883	0.1539	0.1573	0.1300	0.1264	0.1191	0.1087
2	0.1678	0.1859	0.1536	0.1681	0.1298	0.1383	0.1060	0.1086	0.0956	0.0934
3	0.1384	0.1575	0.1256	0.1417	0.1042	0.1155	0.0829	0.0893	0.0736	0.0774
4	0.1085	0.1274	0.0978	0.1143	0.0800	0.0925	0.0622	0.0707	0.0542	0.0620
5	0.0816	0.0991	0.0732	0.0887	0.0590	0.0713	0.0449	0.0539	0.0383	0.0476
10	0.0222	0.0248	0.0200	0.0221	0.0163	0.0174	0.0125	0.0128	0.0094	0.0100
15	0.0106	0.0132	0.0095	0.0113	0.0077	0.0083	0.0058	0.0052	0.0040	0.0039
20	0.0059	0.0065	0.0050	0.0054	0.0035	0.0036	0.0021	0.0019	0.0010	0.0009
25	0.0029	0.0034	0.0025	0.0029	0.0018	0.0020	0.0010	0.0012	0.0005	0.0006
30	0.0012	0.0015	0.0011	0.0013	0.0011	0.0011	0.0010	0.0009	0.0005	0.0005
35	0.0006	0.0007	0.0006	0.0007	0.0005	0.0006	0.0005	0.0005	0.0003	0.0002

Appendix A – Actuarial Methods and Assumptions

Demographic Assumptions (continued)

Separation with Vested Benefits

Rates vary by entry age, service, and gender. Sample rates are displayed in the table below.

Duration of Service	Entry Age									
	20		25		30		35		40	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
5	0.0359	0.0501	0.0359	0.0501	0.0332	0.0402	0.0305	0.0304	0.0266	0.0272
10	0.0311	0.0417	0.0311	0.0417	0.0269	0.0341	0.0228	0.0265	0.0193	0.0233
15	0.0193	0.0264	0.0193	0.0264	0.0172	0.0220	0.0151	0.0175	0.0122	0.0142
20	0.0145	0.0185	0.0145	0.0185	0.0113	0.0141	0.0080	0.0097	0.0000	0.0000
25	0.0089	0.0123	0.0089	0.0123	0.0074	0.0093	0.0000	0.0000	0.0000	0.0000
30	0.0057	0.0064	0.0057	0.0064	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
35	0.0040	0.0049	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

- When a member is eligible to retire, the separation with vested benefits probability is set to zero.
- After separation with vested benefits, a member is assumed to retire at age 59.

Pre-Retirement Mortality and Disability

The mortality assumptions are based on mortality rates resulting from the most recent CalPERS Experience Study adopted by the CalPERS Board in November 2021. For purposes of the mortality rates, the rates incorporate generational mortality to capture on-going mortality improvement. Generational mortality explicitly assumes that members born more recently will live longer than the members born before them thereby capturing the mortality improvement seen in the past and expected continued improvement. For more details, please refer to the 2021 experience study report that can be found on the CalPERS website.

Rates vary by age and gender. Mortality rates represent healthy mortality. Disability rates represent non-industrial (not job-related) disability; no industrial disability is assumed. This table only contains a sample of the 2017 base table rates for illustrative purposes.

	Mortality		Disability	
Attained Age	Male	Female	Male	Female
20	0.00039	0.00014	0.00004	0.00015
25	0.00033	0.00013	0.00004	0.00015
30	0.00044	0.00019	0.00018	0.00017
35	0.00058	0.00029	0.00047	0.00038
40	0.00075	0.00039	0.00098	0.00077
45	0.00093	0.00054	0.00191	0.00153
50	0.00134	0.00081	0.00273	0.00214
55	0.00198	0.00123	0.00235	0.00169
60	0.00287	0.00179	0.00198	0.00102

- The pre-retirement mortality rates above are for 2017 and are projected generationally for future years using 80% of the Society of Actuaries' Scale MP-2020.

Appendix A – Actuarial Methods and Assumptions

Demographic Assumptions (continued)

Service Retirement - Classic Members

Rates vary by age and service. Sample rates are displayed in the table below.

Attained Age	Years of Service						
	5	10	15	20	25	30	35
50	0.0030	0.0040	0.0060	0.0070	0.0100	0.0100	0.0110
52	0.0050	0.0070	0.0080	0.0090	0.0120	0.0120	0.0130
54	0.0060	0.0090	0.0120	0.0150	0.0200	0.0210	0.0230
56	0.0120	0.0270	0.0360	0.0560	0.0730	0.0950	0.1080
58	0.0190	0.0300	0.0400	0.0620	0.0780	0.1030	0.1220
60	0.0220	0.0430	0.0620	0.0950	0.1130	0.1410	0.1660
62	0.0650	0.0980	0.1280	0.1880	0.2160	0.2480	0.2560
65	0.1630	0.1640	0.1970	0.2320	0.2500	0.2710	0.2890
70	0.1910	0.1900	0.2370	0.2500	0.2460	0.2540	0.2580
75	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Service Retirement - PEPRA Members

Rates vary by age and service. Sample rates are displayed in the table below.

Attained Age	Years of Service						
	5	10	15	20	25	30	35
50	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
52	0.0040	0.0070	0.0100	0.0110	0.0130	0.0150	0.0170
54	0.0050	0.0110	0.0150	0.0180	0.0200	0.0220	0.0260
56	0.0130	0.0260	0.0370	0.0430	0.0480	0.0550	0.0640
58	0.0170	0.0340	0.0470	0.0560	0.0620	0.0690	0.0810
60	0.0260	0.0530	0.0740	0.0870	0.0970	0.1080	0.1260
62	0.0530	0.1050	0.1470	0.1740	0.1940	0.2170	0.2540
65	0.0720	0.1420	0.1990	0.2350	0.2620	0.2930	0.3450
70	0.0710	0.1400	0.1960	0.2310	0.2580	0.2890	0.3380
75	0.0670	0.1320	0.1840	0.2180	0.2430	0.2720	0.3200

Miscellaneous Loading Factors

Credit for Unused Sick Leave

Total years of service is increased by 1% for employees with the Credit for Unused Sick Leave provision.

Norris Decision (Best Factors)

Projected benefit amounts for employees hired prior to July 1, 1982 increased to reflect the use of “Best Factors” in the calculation of optional benefit forms. This is due to a 1983 Supreme Court decision, known as the Norris Decision, which required males and females to be treated equally in the determination of benefit amounts. Consequently, anyone already employed at that time is given the best possible conversion factor when optional benefits are determined. No loading is necessary for employees hired after July 1, 1982.

Appendix B – Principal Plan Provisions

The following is a description of the principal plan provisions used in calculating costs and liabilities. Many of the statements are general in nature and intended to provide an easily understood summary of the Public Employees' Retirement Law and the California Public Employees' Pension Reform Act of 2013. The law itself governs in all situations.

Service Retirement

Eligibility

Classic school members become eligible for Service Retirement upon attainment of age 50 with at least 5 years of credited service (total service across all CalPERS employers, and with certain other Retirement Systems with which CalPERS has reciprocity agreements). PEPRA school members become eligible for Service Retirement upon attainment of age 52 with at least 5 years of service.

Benefit

The Service Retirement benefit is a monthly allowance equal to the product of the benefit factor, years of service, and final compensation.

- The *benefit factor* comes from the **2% at 55** benefit factor table for classic members, and from the **2% at 62** benefit factor table for PEPRA members. The factor depends on the member's age at retirement. Displayed in the table below are the factors for retirement at whole year ages:

Retirement Age	2% at 55 Factor	2% at 62 Factor
50	1.100%	N/A
51	1.280%	N/A
52	1.460%	1.000%
53	1.640%	1.100%
54	1.820%	1.200%
55	2.000%	1.300%
56	2.064%	1.400%
57	2.126%	1.500%
58	2.188%	1.600%
59	2.250%	1.700%
60	2.314%	1.800%
61	2.376%	1.900%
62	2.438%	2.000%
63	2.500%	2.100%
64	2.500%	2.200%
65	2.500%	2.300%
66	2.500%	2.400%
67 & Up	2.500%	2.500%

- The *years of service* is the amount credited by CalPERS to a member while he or she is employed in this group (or for other periods that are recognized under the employer's contract with CalPERS). For a member who has earned service with multiple CalPERS employers, the benefit from each employer is calculated separately according to each employer's contract, then added together for the total allowance. Any unused sick leave accumulated at the time of retirement will be converted to credited service at the rate of 0.004 years of service for each day of sick leave.

Service Retirement (continued)

- The *final compensation* for classic members is the monthly average of the member's highest 12 consecutive months' full-time equivalent monthly pay (no matter which CalPERS employer paid this compensation). For PEPRA members, final compensation is based on the monthly average of the member's highest 36 consecutive months' full-time equivalent monthly pay. PEPRA members have a cap on the annual salary used to calculate final compensation based on the Social Security contribution and benefit base. For employees who participate in Social Security this cap is $134,974 for 2022; for employees who do not participate in Social Security the cap for 2022 is $161,969. Adjustments to the caps are permitted annually based on changes to the Consumer Price Index for All Urban Consumers (CPI-U).
- Employees in the Schools Pool may or may not be covered by Social Security. For employees with service prior to January 1, 2001 and covered by Social Security, monthly final compensation is offset by $133.33 (or by one-third if final compensation is less than $400). For PEPRA members, the final compensation is not offset.
- The Service Retirement benefit is not capped.

Vested Deferred Retirement

Eligibility for Deferred Status

A CalPERS member becomes eligible for a deferred vested retirement benefit when he or she leaves employment, keeps his or her contribution account balance on deposit with CalPERS, and has earned at least 5 years of credited service (total service across all CalPERS employers, and with other retirement systems with which CalPERS has reciprocity agreements).

Eligibility to Start Receiving Benefits

Classic members become eligible to receive the deferred retirement benefit upon satisfying the eligibility requirements for deferred status and upon attainment of age 50. PEPRA members become eligible to receive the deferred retirement benefit upon satisfying the eligibility requirements for deferred status and upon attainment of age 52.

Benefit

The vested deferred retirement benefit is the same as the Service Retirement benefit, with the benefit factor based on the member's age at allowance commencement. For members who have earned service with multiple CalPERS employers, the benefit from each employer is calculated separately according to each employer's contract, then added together for the total allowance.

Disability Retirement

Eligibility

A CalPERS member is eligible for Disability Retirement if he or she becomes disabled and has at least 5 years of credited service (total service across all CalPERS employers, and with other retirement systems with which CalPERS has reciprocity agreements). There is no special age requirement. Disabled means the member is unable to perform his or her job because of an illness or injury which is expected to be permanent or to last indefinitely. The illness or injury does not have to be job-related. A CalPERS member must be actively working with any CalPERS employer at the time of disability in order to be eligible for this benefit.

Benefit

The Disability Retirement benefit is a monthly allowance equal to 1.8% of final compensation multiplied by *service*, which is determined as follows:

- *Service* is CalPERS credited service, for members with less than 10 years of service or greater than 18.518 years of service; or
- *Service* is CalPERS credited service plus the additional number of years that the member would have worked until age 60, for members with at least 10 years but not more than 18.518 years of service. The maximum benefit in this case is 33 1/3% of final compensation.

Disability Retirement (continued)

Members who are eligible for a larger service retirement benefit may choose to receive that benefit in lieu of a disability benefit. Members who are eligible to retire and have attained the normal retirement age under their service retirement benefit formula will receive the same dollar amount for disability retirement as that payable for service retirement. For members who have earned service with multiple CalPERS employers, the benefit attributed to each employer is the total disability allowance multiplied by the ratio of service with a particular employer to the total CalPERS service.

Post-Retirement Death Benefit

Lump Sum Payment

Upon the death of a retiree, a one-time lump sum payment of $2,000 will be made to the retiree's designated survivor(s), or to the retiree's estate.

Form of Payment for Retirement Allowance

Generally, the retirement allowance is paid to the retiree in the form of an annuity for as long as he or she is alive. The retiree may choose to provide for a portion of the allowance to be paid to any designated beneficiary after the retiree's death. CalPERS provides for a variety of such benefit options, which the retiree pays for by taking a reduction in retirement allowance. Such reduction takes into account the amount to be provided to the beneficiary and the probable duration of payments (based on the ages of the member and beneficiary) made subsequent to the member's death.

For retirement allowances with respect to service earned by employment in this group, 25% of the retirement allowance will automatically be continued to certain statutory beneficiaries upon the death of the retiree *without* a reduction in the retiree's allowance (50% for service not covered by Social Security). This additional benefit is often referred to as post-retirement survivor allowance (PRSA) or simply as *survivor continuance*.

In other words, 25% of the allowance (or 50% for service not covered by Social Security), the *continuance portion*, is paid to the retiree for as long as he or she is alive, and that same amount is continued to the retiree's spouse (or if no eligible spouse, to unmarried children until they attain age 18; or, if no eligible children, to a qualifying dependent parent) for the rest of his or her lifetime. This benefit is not discontinued in the event the spouse remarries.

The remaining 75% of the retirement allowance (or 50% for service not covered by Social Security), the *option portion* of the benefit, is paid to the retiree as an annuity for as long as he or she is alive. The retiree may choose to provide for some of this *option portion* to be paid to any designated beneficiary after the retiree's death. Benefit options applicable to the *option portion* are the same as those offered with the standard form. The reduction is calculated in the same manner but is applied only to the *option portion*.

Pre-Retirement Death Benefits

Basic Death Benefit

Eligibility

An employee's beneficiary (or estate) may receive the Basic Death Benefit if the member dies while actively employed. A CalPERS member who is no longer actively employed with any CalPERS employer is not eligible for this benefit. A member's survivor who is eligible for any other pre-retirement death benefit described below may choose to receive that death benefit instead of this Basic Death Benefit.

Benefit

The Basic Death Benefit is a lump sum in the amount of the member's accumulated contributions, where interest is credited annually at the greater of 6% or the prevailing discount rate. In addition, a lump sum in the amount of six months' salary is paid. For purposes of this benefit, one month's salary is defined as the member's average monthly full-time rate of compensation during the 12 months preceding death.

Pre-Retirement Death Benefits (continued)

1957 Survivor Benefit

Eligibility

An employee's eligible survivor(s) may receive the 1957 Survivor Benefit if the member dies while actively employed, has attained at least age 50 for classic members and age 52 for PEPRA members, and has at least five years of credited service (total service across all CalPERS employers and with other retirement systems with which CalPERS has reciprocity agreements). A member who is no longer actively employed with any CalPERS employer is not eligible for this benefit. An eligible survivor means the surviving spouse to whom the member was married at least one year before death or, if there is no eligible spouse, to the member's unmarried children under age 18. A member's survivor may choose this benefit in lieu of the Basic Death Benefit or the Special Death Benefit.

Benefit

The 1957 Survivor Benefit is a monthly allowance equal to one-half of the unmodified Service Retirement benefit that the member would have been entitled to receive if the member had retired on the date of his or her death. If the benefit is payable to the spouse, the benefit is discontinued upon the death of the spouse. If the benefit is payable to a dependent child, the benefit will be discontinued upon death or attainment of age 18, unless the child is disabled. There is a guarantee that the total amount paid will at least equal the Basic Death Benefit.

Cost-of-Living Adjustments (COLA)

Retirement and survivor allowances are adjusted each year in May for cost of living, beginning the second calendar year after the year of retirement. The standard cost-of-living adjustment (COLA) is 2%. Annual adjustments are calculated by first determining the lesser of 1) 2% compounded from the end of the year of retirement or 2) actual rate of inflation. The resulting increase is divided by the total increase provided in prior years. For any particular year, the COLA adjustment may be less than 2% (when the rate of inflation is low), may be greater than the rate of inflation (when the rate of inflation is low after several years of high inflation) or may even be greater than 2% (when inflation is high after several years of low inflation).

Purchasing Power Protection Allowance (PPPA)

Retirement and survivor allowances are further protected against inflation by the Purchasing Power Protection Allowance (PPPA). PPPA benefits are cost-of-living adjustments that are intended to maintain an individual's allowance at 75% of the initial allowance at retirement adjusted for inflation since retirement. The PPPA benefit will be coordinated with other cost-of-living adjustments provided under the plan. The total annual outlay for PPPA is limited to 1.1% of accumulated member contributions. If this amount of member contributions were insufficient to provide for PPPA payments, the 75% target would be proportionately reduced.

Employee Contributions

Each employee contributes toward his or her retirement. The employer may choose to "pick up" these contributions for employees.

- The percentage contributed below the monthly compensation breakpoint is 0%.
- The percentage contributed above the monthly compensation breakpoint is 7% for classic members.
- The PEPRA member contribution rate is tied to normal cost and can change annually. See the PEPRA Member Contribution Rate section for details.
- The monthly compensation breakpoint is $0.

Refund of Employee Contributions

If a member's service with the employer ends and the member does not satisfy the eligibility conditions for any of the retirement benefits above, the member may elect to receive a refund of his or her employee contributions, which are credited annually with 6% interest.

1959 Survivor Benefits Program

For these benefits, please refer to the 1959 Survivor Benefit Program Actuarial Valuation Report available on our website.

Appendix C – Participant Data

Source of the Participant Data

The data was extracted from various databases within CalPERS and placed in a data warehouse by a series of extract programs. Included in this data is:

- Individual member and beneficiary information,
- Employment and payroll information,
- Accumulated contributions with interest,
- Service information,
- Benefit payment information,
- Information about the various organizations which contract with CalPERS, and
- Detailed information about the plan provisions applicable to each group of members.

Data Validation Tests and Adjustments

Once the information is extracted from the various databases into the data warehouse, data exception queries are then run against this data to identify anomalous results which can then be researched and either explained or corrected. This part of the process is intended to validate the participant data for all CalPERS plans. It is not specific to the Schools Pool.

Checks on the data include:

- A reconciliation of the membership of the plans
- Comparisons of various member statistics (average attained age, average entry age, average salary, etc.) for the plan with those from the prior valuation
- Comparison of current pension amounts for each retiree and beneficiary receiving payments in the plan with amounts from the prior valuation
- Checks for invalid ages and dates
- Reasonableness checks on various key data elements such as service and salary

As the result of the tests on the data, a number of adjustments were determined to be necessary. These include:

- Dates of hire and dates of plan entry were adjusted where necessary to be consistent with the service fields, the date of birth, and each other
- The annual earnings rate for most school members were overwritten with the annualized earnings based on their yearly contributions

Data Statement

The data does not contain information about reciprocal retirement systems and hence salary information for terminated participants covered by reciprocal retirement systems does not reflect actual reciprocal salaries. This is not expected to have a material impact on the employer contribution rates since the total present value for all terminated participants represents less than 4% of the present value of benefits for all members. We are unaware of any other data issues that would have a material effect on the results of this valuation.

It is our opinion that, after the adjustments noted above, the participant data was sufficient and reliable for the purposes of the valuation.

Appendix C – Participant Data

Reconciliation of Participants

	Active	Transfer	Separated	Receiving	Total
As of June 30, 2021	**316,847**	**19,964**	**218,322**	**253,988**	**809,121**
First Year in Status	49,259	336	5,658	187	55,440
Rehire	6,629	(273)	(6,321)	(35)	0
Transfer	(1,370)	2,761	(1,368)	(23)	0
Terminations[1]	(23,750)	(954)	24,711	(7)	0
Retired	(10,898)	(885)	(1,760)	13,532	(11)
Ordinary Disabilities	(81)	(19)	(33)	140	7
Industrial Disabilities	0	(52)	(2)	58	4
Death with Beneficiary	(104)	(8)	(6)	175	57
Refunds of Contributions	(2,204)	(93)	(3,543)	0	(5,840)
Death w/o Beneficiary	(443)	(28)	(268)	(6,826)	(7,565)
Data Corrections[2]	(101)	(38)	4	152	17
As of June 30, 2022	**333,784**	**20,711**	**235,394**	**261,341**	**851,230**

(1) Includes non-vested separated participants with employee contributions left in the plan.
(2) May include the combining of data records into a single record.

Appendix C – Participant Data

Active Members

Distribution by Age and Service

Attained Age	Years of Service at Valuation Date						Total	Payroll
	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25+		
15 – 24	13,430	58	0	0	0	0	13,488	$412,692,851
25 – 29	25,146	3,054	10	0	0	0	28,210	$1,031,328,929
30 – 34	23,975	10,280	1,244	52	1	0	35,552	$1,522,525,889
35 – 39	19,875	11,154	4,828	1,769	60	2	37,688	$1,798,731,235
40 – 44	18,335	10,059	5,770	4,926	1,751	55	40,896	$2,051,217,429
45 – 49	15,883	9,398	5,797	5,542	4,252	1,049	41,921	$2,137,987,605
50 – 54	13,771	9,776	6,795	6,131	5,054	3,245	44,772	$2,296,054,132
55 – 59	10,025	8,790	7,335	6,759	5,522	4,923	43,354	$2,230,848,203
60 – 64	6,179	6,097	5,551	5,738	4,522	3,948	32,035	$1,624,979,454
65 and Over	3,475	2,945	2,795	2,749	2,008	1,896	15,868	$725,419,093
Total	**150,094**	**71,611**	**40,125**	**33,666**	**23,170**	**15,118**	**333,784**	**$15,831,784,823**

Counts are of unique members included in the valuation. Multiple records may exist for members with service in more than one benefit group. This does not result in double counting liabilities.

Average Annual Salaries by Age and Service

Attained Age	Years of Service at Valuation Date						Average Salary
	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25+	
15 – 24	$30,531	$45,857	$0	$0	$0	$0	$30,597
25 – 29	35,091	48,549	65,225	0	0	0	36,559
30 – 34	37,849	52,304	59,427	64,462	128,886	0	42,825
35 – 39	38,729	54,490	60,896	69,150	77,368	113,140	47,727
40 – 44	37,622	53,815	58,715	69,280	77,044	93,399	50,157
45 – 49	36,365	50,735	55,707	65,044	74,569	79,232	51,000
50 – 54	35,992	47,477	52,712	60,157	70,568	77,846	51,283
55 – 59	35,090	44,595	48,381	56,915	67,422	76,215	51,457
60 – 64	34,488	42,880	46,504	54,802	64,046	73,006	50,725
65 and Over	29,801	39,125	42,542	52,724	59,874	64,646	45,716
Average	**$35,985**	**$49,536**	**$52,845**	**$60,605**	**$68,862**	**$74,553**	**$47,431**

Appendix C – Participant Data

Transferred and Separated Participants

Distribution by Age and Service – Transfers to Other CalPERS Plans

Attained Age	Years of Service at Valuation Date						Total	Average Salary
	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25+		
15 – 24	138	0	0	0	0	0	138	$44,944
25 – 29	1,118	34	0	0	0	0	1,152	54,168
30 – 34	2,169	200	12	0	0	0	2,381	60,634
35 – 39	2,400	360	59	10	0	0	2,829	65,551
40 – 44	2,636	432	129	47	5	0	3,249	75,030
45 – 49	2,355	463	179	66	18	1	3,082	81,475
50 – 54	2,145	482	193	77	21	8	2,926	80,265
55 – 59	1,723	411	183	70	33	13	2,433	75,317
60 – 64	1,249	290	116	54	18	4	1,731	69,893
65 and Over	597	130	42	17	4	0	790	65,283
Total	**16,530**	**2,802**	**913**	**341**	**99**	**26**	**20,711**	**$71,651**

Counts are of unique members included in the valuation. Multiple records may exist for members with service in more than one benefit group. This does not result in double counting liabilities.

Distribution by Age and Service – Separated Participants with Funds on Deposit

Attained Age	Years of Service at Valuation Date						Total	Average Salary
	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25+		
15 – 24	5,339	1	0	0	0	0	5,340	$33,198
25 – 29	20,750	318	0	0	0	0	21,068	33,830
30 – 34	29,132	1,645	65	1	0	0	30,843	34,688
35 – 39	28,440	3,034	508	73	1	0	32,055	35,536
40 – 44	27,833	3,364	984	251	39	1	32,472	35,485
45 – 49	22,853	3,168	1,109	416	116	18	27,679	35,332
50 – 54	20,600	3,291	1,240	524	192	50	25,896	35,226
55 – 59	18,031	3,100	1,054	408	132	56	22,775	33,855
60 – 64	16,119	2,434	799	273	119	49	19,788	32,325
65 and Over	15,209	1,555	411	173	82	53	17,478	30,626
Total	**204,306**	**21,910**	**6,170**	**2,119**	**681**	**227**	**235,394**	**$34,357**

Counts are of unique members included in the valuation. Multiple records may exist for members with service in more than one benefit group. This does not result in double counting liabilities.

Appendix C – Participant Data

Retired Members and Beneficiaries

Distribution by Age and Retirement Type

Attained Age	Service Retirement	Non-Industrial Disability	Industrial Disability	Non-Industrial Death	Industrial Death	Death After Retirement	Total
Under 30	0	0	0	4	6	182	192
30 – 34	0	1	4	0	0	191	196
35 – 39	0	15	17	3	0	255	290
40 – 44	0	84	37	6	1	316	444
45 – 49	0	177	80	11	1	358	627
50 – 54	1,413	500	102	45	0	530	2,590
55 – 59	9,766	1,012	146	94	1	957	11,976
60 – 64	28,594	1,579	165	200	4	1,607	32,149
65 – 69	50,701	1,911	177	220	2	2,645	55,656
70 – 74	51,014	1,784	183	204	0	3,829	57,014
75 – 79	36,888	1,441	105	125	3	4,376	42,938
80 – 84	22,049	1,030	43	76	3	4,171	27,372
85 and Over	22,048	746	15	60	3	7,025	29,897
Total	**222,473**	**10,280**	**1,074**	**1,048**	**24**	**26,442**	**261,341**

Counts are of unique members included in the valuation. Multiple records may exist for members with service in more than one benefit group. This does not result in double counting liabilities.

Average Annual Allowance Amounts by Age and Retirement Type

Amounts Including PPPA Payments

Attained Age	Service Retirement	Non-Industrial Disability	Industrial Disability	Non-Industrial Death	Industrial Death	Death After Retirement	Total
Under 30	$0	$0	$0	$6,304	$175	$6,342	$6,148
30 – 34	0	7,616	97	0	0	6,453	6,329
35 – 39	0	7,433	366	10,217	0	7,126	6,777
40 – 44	0	12,446	549	17,919	4	9,027	9,067
45 – 49	0	12,528	818	7,597	2,589	9,282	9,078
50 – 54	10,019	13,886	1,666	12,202	0	10,070	10,485
55 – 59	21,232	13,360	3,055	11,134	617	12,157	19,539
60 – 64	24,754	13,500	3,059	10,794	508	13,265	23,425
65 – 69	24,053	13,732	2,351	11,490	1,837	14,260	23,114
70 – 74	22,609	13,257	3,046	9,477	0	14,410	21,656
75 – 79	21,465	12,961	3,745	9,716	1,762	14,182	20,358
80 – 84	19,412	12,068	4,498	7,747	752	13,180	18,128
85 and Over	15,531	10,674	3,171	9,610	973	11,597	14,466
Total	**$21,865**	**$13,047**	**$2,626**	**$10,346**	**$851**	**$12,861**	**$20,480**

Appendix C – Participant Data

Retired Members and Beneficiaries (continued)

Distribution by Years Retired and Retirement Type

Years Retired	Service Retirement	Non-Industrial Disability	Industrial Disability	Non-Industrial Death	Industrial Death	Death After Retirement	Total
Under 5 Years	63,306	706	221	309	8	9,648	74,198
5 – 9	49,548	1,459	196	234	0	6,420	57,857
10 – 14	41,323	1,506	156	213	2	4,316	47,516
15 – 19	31,807	1,794	169	157	2	2,861	36,790
20 – 24	18,462	2,051	138	80	0	1,677	22,408
25 – 29	10,497	1,582	84	24	2	834	13,023
30 and Over	7,530	1,182	110	31	10	686	9,549
Total	**222,473**	**10,280**	**1,074**	**1,048**	**24**	**26,442**	**261,341**

Counts of members do not include alternate payees receiving benefits while the member is still working. Multiple records may exist for members with service in more than one benefit group. This does not result in double counting liabilities.

Average Annual Allowance Amounts by Years Retired and Retirement Type

Amounts Including PPPA Payments

Years Retired	Service Retirement	Non-Industrial Disability	Industrial Disability	Non-Industrial Death	Industrial Death	Death After Retirement	Total
Under 5 Years	$25,306	$14,177	$3,253	$11,701	$487	$14,387	$23,655
5 – 9	22,603	14,126	3,014	10,758	0	13,149	21,226
10 – 14	22,675	14,237	3,640	10,196	477	12,231	21,339
15 – 19	20,716	14,131	3,033	9,184	473	11,545	19,550
20 – 24	17,823	12,918	1,969	7,900	0	10,580	16,699
25 – 29	13,663	11,760	807	6,327	3,339	9,367	13,059
30 and Over	9,846	9,827	829	10,071	796	7,961	9,596
Total	**$21,865**	**$13,047**	**$2,626**	**$10,346**	**$851**	**$12,861**	**$20,480**

Appendix C – Participant Data

Retired Members and Beneficiaries (continued)

Number Counts and Benefits – by Year of Retirement

Year Retired	Total Retirements	Total Benefits	Average Benefits
2022*	6,885	$144,658,863	$21,011
2021	16,390	386,510,107	23,582
2020	14,789	347,630,988	23,506
2019	14,268	332,945,699	23,335
2018	13,845	320,350,146	23,138
2017	14,181	341,223,197	24,062
2016	12,230	274,016,244	22,405
2015	12,091	262,315,142	21,695
2014	11,137	235,151,502	21,114
2013	10,614	213,409,319	20,106
2012	10,568	216,708,563	20,506
2011	10,187	211,301,477	20,742
2010	10,661	233,368,019	21,890
2009	9,643	213,772,157	22,169
2008	7,855	166,785,151	21,233
2007	7,517	154,318,670	20,529
2006	7,588	146,980,375	19,370
2005	7,525	143,075,557	19,013
2004	7,560	145,469,203	19,242
2003	7,615	155,785,082	20,458
2002	5,780	115,287,763	19,946
2001	5,000	97,455,887	19,491
2000	5,852	109,048,130	18,634
1999	3,305	44,224,035	13,381
1998	3,780	52,302,700	13,837
1997	3,268	42,775,208	13,089
1996	2,988	39,110,555	13,089
1995	2,822	37,135,475	13,159
1994	2,484	32,338,512	13,019
1993 and Earlier	12,913	136,871,199	10,599
Total	**261,341**	**$5,352,324,925**	**$20,480**

* The figures for 2022 are for the first 6 months of the calendar year only.

Counts of members do not include alternate payees receiving benefits while the member is still working. Multiple records may exist for members with service in more than one benefit group. This does not result in double counting liabilities.

Appendix D – Glossary

Accrued Liability *(Actuarial Accrued Liability)*
The portion of the Present Value of Benefits allocated to prior years. Based on CalPERS funding policies, the accrued liability is the target level of assets on any valuation date.

Actuarial Assumptions
Assumptions made about certain events that will affect pension costs. Assumptions generally can be broken down into two categories: demographic and economic. Demographic assumptions include such things as mortality, disability, and retirement rates. Economic assumptions include discount rate, salary growth, and inflation.

Actuarial Methods
Procedures employed by actuaries to achieve certain funding goals of a pension plan. Actuarial methods include an actuarial cost method, an amortization policy, and an asset valuation method.

Actuarial Valuation
The determination as of a valuation date of the Normal Cost, Accrued Liability, and related actuarial present values for a pension plan. These valuations are performed annually or when an employer is contemplating a change in plan provisions.

Amortization Bases
Separate payment schedules for different portions of the Unfunded Accrued Liability (UAL). The total UAL of a rate plan can be segregated by cause. The impact of such individual causes on the UAL are quantified at the time of their occurrence, resulting in new amortization bases. Each base is separately amortized and paid for over a specific period of time. Generally, in an actuarial valuation, the separate bases consist of changes in UAL due to contract amendments, actuarial assumption changes, method changes, and/or gains and losses.

Amortization Period
The number of years required to pay off an Amortization Base.

Classic Member (under PEPRA)
A member who joined a public retirement system prior to January 1, 2013 and who is not defined as a new member under PEPRA. (See definition of New Member below.)

Discount Rate
This is the rate used to discount the expected future benefit payments to the valuation date to determine the Projected Value of Benefits. The discount rate is based on the assumed long-term rate of return on plan assets, net of investment and administrative expenses. This rate is called the “actuarial interest rate” in Section 20014 of the California Public Employees’ Retirement Law.

Entry Age
The earliest age at which a plan member begins to accrue benefits under a defined benefit pension plan. In most cases, this is the age of the member on their date of hire.

Entry Age Actuarial Cost Method
An actuarial cost method designed to fund a member's total plan benefit evenly over the course of his or her career. This method yields a total normal cost rate, expressed as a percentage of payroll, which is designed to remain level throughout the member’s career.

Fresh Start
A Fresh Start is when multiple amortization bases are combined into a single base and amortized over a new Amortization Period.

Appendix D – Glossary

Funded Ratio

Defined as the Market Value of Assets divided by the Accrued Liability. It is a measure of how well funded a rate plan is. A ratio greater than 100% means the rate plan has more assets than the target established by CalPERS funding policies on the valuation date and the employer need only contribute the Normal Cost. A ratio less than 100% means assets are less than the funding target and contributions in addition to Normal Cost are required.

GASB 68

Statement No. 68 of the Governmental Accounting Standards Board. The accounting standard governing a state or local governmental employer's accounting and financial reporting for pensions.

New Member (under PEPRA)

A new member includes an individual who becomes a member of a public retirement system for the first time on or after January 1, 2013, and who was not a member of another public retirement system prior to that date, and who is not subject to reciprocity with another public retirement system.

Normal Cost

The portion of the Present Value of Benefits allocated to the upcoming fiscal year for active employees. The normal cost plus the required amortization of the UAL, if any, make up the required contributions.

Pension Actuary

A business professional proficient in mathematics and statistics who performs the calculations necessary to properly fund a pension plan and allow the plan sponsor to disclose its liabilities. A pension actuary must satisfy the Qualification Standards for Actuaries Issuing Statements of Actuarial Opinion in the United States with regard to pensions.

PEPRA

The California Public Employees' Pension Reform Act of 2013.

Present Value of Benefits (PVB)

The total dollars needed as of the valuation date to fund all benefits earned in the past or expected to be earned in the future for *current* members.

Unfunded Accrued Liability (UAL)

The Accrued Liability minus the Market Value of Assets. If the UAL for a rate plan is positive, the employer is required to make contributions in excess of the Normal Cost.

Actuarial Office
400 Q Street
Sacramento, CA 94229-2709
TTY - (877) 249-7442
(888) 225-7377
FAX (916) 795-2744

Available online at the CalPERS Website

California Public Employees' Retirement System
A Component Unit of the State of California