California Public Employees' Retirement System

Schools Pool Actuarial Valuation

as of June 30, 2023

Required Contributions for Fiscal Year

July 1, 2024 — June 30, 2025

CalPERS

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Actuarial Certification

August 2024

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, 2023, 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 recommended by the Chief Actuary and adopted 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

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Highlights and Executive Summary

Highlights and Executive Summary

Introduction

This report presents the results of the June 30, 2023, actuarial valuation for the Schools Pool. This actuarial valuation determines the funded status as of June 30, 2023 and sets forth the Schools Pool employer and employee contribution rates for fiscal year July 1, 2024 through June 30, 2025.

The Schools Pool provides retirement benefits to members employed by 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 non-classified members 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, 2023. The purpose of the valuation is to:

- Set forth the assets and accrued liabilities of the Schools Pool as of June 30, 2023;
- Determine the minimum required employer contributions for the Schools Pool for the fiscal year July 1, 2024 through June 30, 2025;
- Determine the required member contribution rate for fiscal year July 1, 2024 through June 30, 2025 for school employees subject to the California Public Employees' Pension Reform Act of 2013 (PEPRA); and
- Provide actuarial information as of June 30, 2023 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 measurements shown in this actuarial valuation may not be applicable for other purposes. The agency should contact a CalPERS actuary before disseminating any portion of this report for any reason that is not explicitly described above.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; changes in actuarial policies; changes in plan provisions or applicable law; and differences between the required contributions determined by the valuation and the actual contributions made by the employers.

Assessment and Disclosure of Risk

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

- 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 mortality are 10% lower or 10% higher than our current post-retirement mortality assumptions adopted in 2021.
- Plan maturity measures indicating how sensitive a plan may be to the risks noted above.
- Funded Status - Low-Default-Risk Basis – A low-default-risk obligation measure (LDROM) of benefit costs accrued as of the valuation date has been added to this year's report.

Highlights and Executive Summary

Required Contribution Rates

Required Employer Contribution Rates

The actuarially determined required employer contributions for fiscal year July 1, 2024 through June 30, 2025 are displayed in the table below. For comparison purposes, the prior fiscal year results are also displayed.

	Fiscal Year 2023-24	Fiscal Year 2024-25
1) Contribution as a Percentage of Payroll		
a) Total Normal Cost	17.26%	17.12%
b) Employee Contribution[1]	7.49%	7.54%
c) Employer Normal Cost [(1a) – (1b)][2]	9.77%	9.58%
d) Unfunded Liability Contribution	16.91%	17.47%
e) Required Employer Contribution Rate [(1c) + (1d)]	**26.68%**	**27.05%**
Projected Annual Payroll for Contribution Year	$16,730,776,893	$19,054,625,323
2) Expected Contribution in Dollars		
a) Total Normal Cost	$2,887,732,092	$3,262,151,855
b) Employee Contribution[1]	1,253,135,189	1,436,718,749
c) Employer Normal Cost [(2a) – (2b)][2]	1,634,596,903	1,825,433,106
d) Unfunded Liability Contribution	2,829,968,337	3,327,996,891
e) Expected Employer Contribution [(2c) + (2d)]	**$4,464,565,240**	**$5,153,429,997**

1) For classic members, this is the percentage specified in the Public Employees' Retirement Law, net of any reduction from the use of a modified formula or other factors. For PEPRA members, the member contribution rate is based on 50% of the total normal cost. A development of PEPRA member contribution rates can be found in the Normal Cost Information chapter of this report.

2) The Employer Normal Cost is a blended rate for all benefit groups in the plan. For a breakout of normal cost by benefit group, see Normal Cost by Group later in the report.

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 2024-25 contributions are based on fiscal year 2022-23 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, 2023 actuarial valuation changed by less than 1% from when the rate was last changed. As a result, the PEPRA member contribution rate of 8.00% remains unchanged from fiscal year 2023-24 to fiscal year 2024-25. See the "Member Contribution Rates" section of this report for more information.

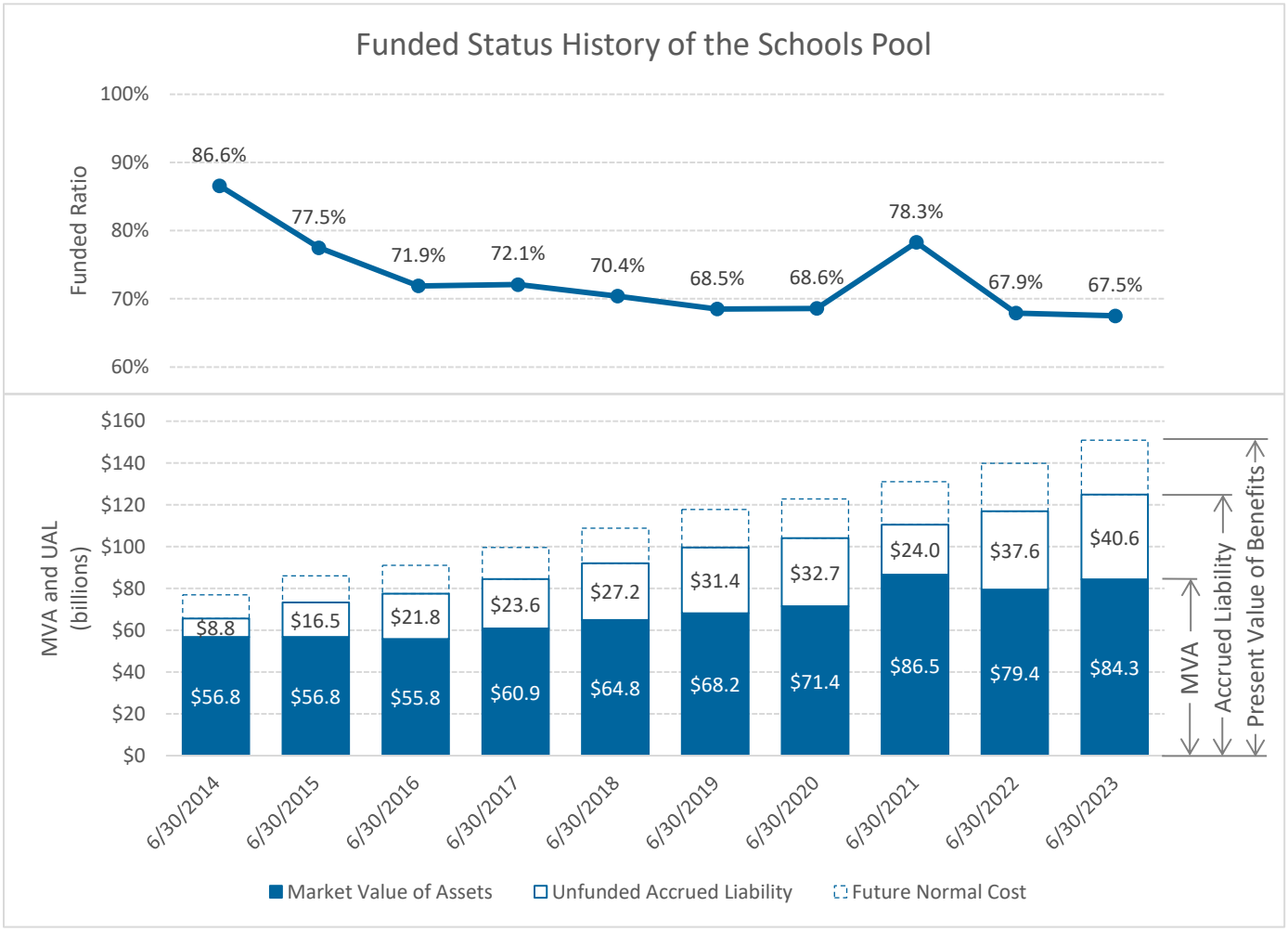
Highlights and Executive Summary

Funded Status – Funding Policy Basis

	June 30, 2022	June 30, 2023
1) Present Value of Projected Benefits	$139,816,867,879	$150,882,397,588
2) Entry Age Accrued Liability	116,982,054,732	124,923,916,585
3) Market Value of Assets (MVA)	79,385,822,708	84,292,061,179
4) Unfunded Accrued Liability [(2) - (3)]	$37,596,232,024	$40,631,855,406
5) Funded Ratio [(3) ÷ (2)]	**67.9%**	**67.5%**

The table above displays information on the current funded status of the Schools pool under the funding policy. The funded status for this purpose is based on the market value of assets relative to the funding target produced by the entry age actuarial cost method and actuarial assumptions adopted by the board. The actuarial cost method allocates the total expected cost of a member's projected benefit (**Present Value of Benefits**) to individual years of service (the **Normal Cost**). The value of the projected benefit that is not allocated to future service is referred to as the **Accrued Liability** and is the plan's funding target on the valuation date. The **Unfunded Accrued Liability** (UAL) equals the funding target minus the assets. The UAL is an absolute measure of funded status and can be viewed as employer debt. The **funded ratio** equals the assets divided by the funding target. The funded ratio is a relative measure of the funded status and allows for comparisons between plans of different sizes. From June 30, 2022 to June 30, 2023 the funded ratio for the Schools Pool decreased by 0.4%. This was primarily due to salary increases in fiscal year 2022-23 being higher than expected.

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

Benefits

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

This valuation generally reflects plan changes by amendments effective before the date of the report. Please refer to Appendix B for a summary of the plan provisions used in this valuation. The effect of any mandated benefit changes or plan amendments on the unfunded liability is shown in (Gain)/Loss Analysis and the effect on the employer contribution is shown in Reconciliation of Employer Contributions. It should be noted that no change in liability or contribution is shown for any plan changes already included in the prior year's valuation.

Actuarial Methods and Assumptions

There are no significant changes to the actuarial methods or assumptions for the June 30, 2023 actuarial valuation.

Subsequent Events

This actuarial valuation report reflects fund investment return through June 30, 2023, as well as statutory changes, regulatory changes and board actions through January 2024.

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, 2024, valuation. The actual impact of higher inflation on future valuation results will depend on, among other factors, how long higher inflation persists.

The 2023 annual benefit limit under Internal Revenue Code (IRC) section 415(b) and annual compensation limits under IRC section 401(a)(17) and Government Code section 7522.10 were used for this valuation and are assumed to increase 2.3% per year based on the price inflation assumption. The actual 2024 limits, determined in October 2023, are not reflected.

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.

Projected Future Contribution Rates

The following table illustrates projected actuarially required employer contribution rates for the next five fiscal years. Projected results reflect asset and liability information as of the valuation date, June 30, 2023. Projected rates assume all actuarial assumptions will be realized, including an investment return of 6.80% per year beyond June 30, 2023, and no changes to assumptions, methods, or benefits will occur during the projection period. Projected rates further reflect member rate changes known to date and the estimated decrease in normal cost due to new hires entering lower cost benefit formulas. Projections are, by their nature, not a guarantee of future results. Actual contribution rates will differ, perhaps significantly, from the projections below. The actual long-term cost of the plan will depend on the actual benefits and expenses paid from the fund and the actual investment experience of the fund.

The actual investment return for fiscal year 2023-24 was not known at the time this report was prepared, and the projections below are identical to those presented in Agenda Item 5f to the Finance & Administration Committee on April 15, 2024. Updated projections will be provided in a circular letter in August 2024 after preliminary return figures for fiscal year 2023-24 are available. The circular letter will also include a "scenario test" projecting contribution rates under various investment income returns.

	Actual	Projected				
Fiscal Year	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30
Employer Contribution Rate	27.05%	27.6%	28.0%	29.2%	29.0%	28.8%

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 5-year period in order to reduce employer cost volatility from year to year. As a result of this methodology, dramatic changes in the required employer contributions in any one year are less likely. However, required contributions can change gradually and significantly over the next five years. In years when there is a large investment loss, the relatively small amortization payments during the ramp-up period could result in 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, 2022 Including Receivables	$79,385,822,708
2) Receivables for Service Buybacks as of June 30, 2022	(81,526,898)
3) Receivables for Service Buybacks as of June 30, 2023	72,019,947
4) Employer Contributions	4,457,043,208
5) Employee Contributions	1,318,207,597
6) Benefit Payments to Retirees and Beneficiaries	(5,533,811,001)
7) Refunds	(142,355,260)
8) Transfers In/Out	(9,910)
9) Service Credit Purchase Payment and Interest	25,564,268
10) Miscellaneous Adjustments	0
11) Realized Investment Earnings	4,838,545,332
12) Administrative Expense	(47,438,812)
13) Market Value of Assets as of June 30, 2023 Including Receivables [(1) + (2) + (3) + (4) + (5) + (6) + (7) + (8) + (9) + (10) + (11) + (12)]	$84,292,061,179
14) Receivables for Service Buybacks as of June 30, 2023	(72,019,947)
15) Market Value of Assets as of June 30, 2023 Excluding Receivables [(13) + (14)]	$84,220,041,233

Note: numbers may not add due to rounding.

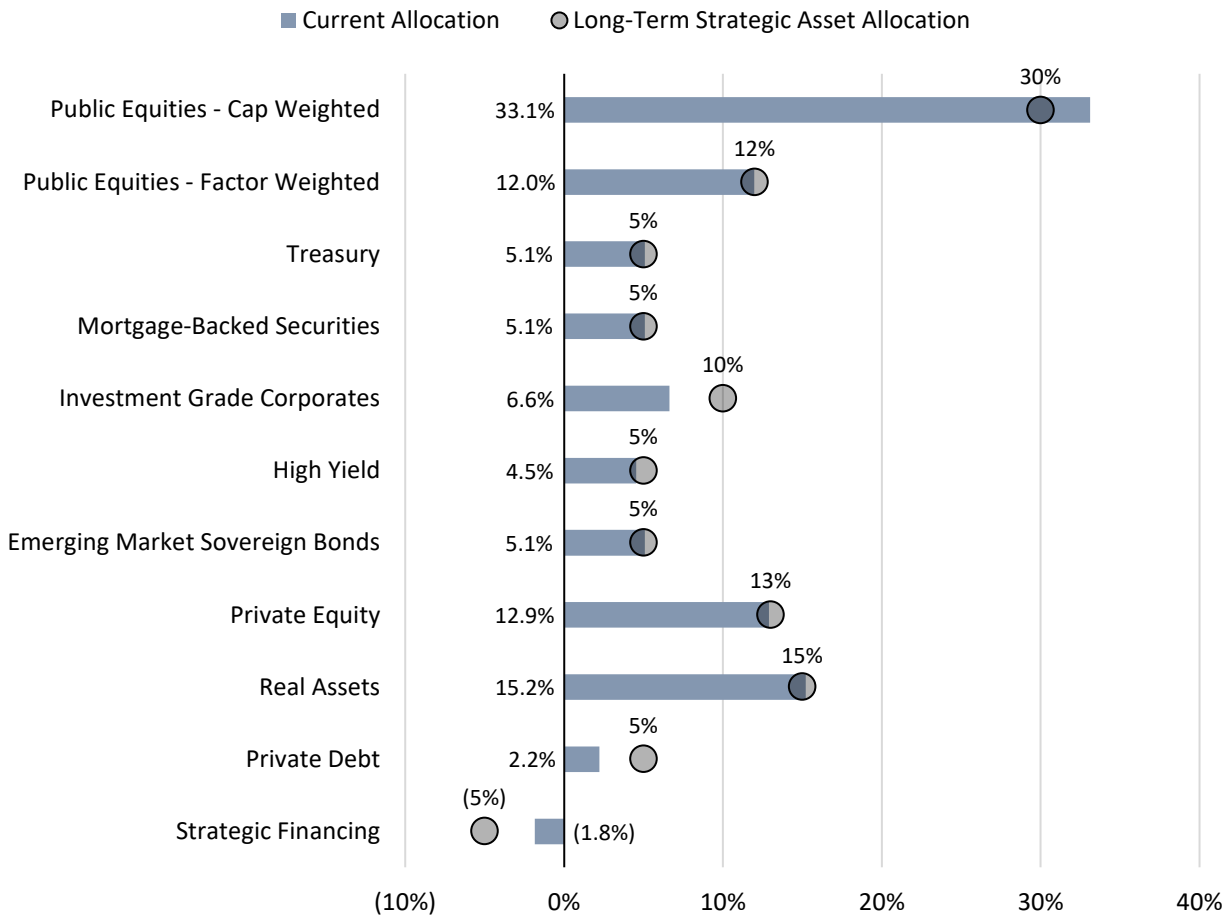
Assets

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 recognizes that over 90% of the variation in investment returns of a large, well-diversified pool of assets can typically be attributed to asset allocation decisions.

The asset allocation shown below reflects the allocation of the Public Employees' Retirement Fund (PERF) in its entirety. The assets for the Schools Pool are a subset of the PERF and are invested accordingly.

On November 17, 2021, the board adopted changes to the strategic asset allocation. The new allocation was effective July 1, 2022. The asset allocation as of June 30, 2023, is shown below, along with the long-term strategic asset allocations.



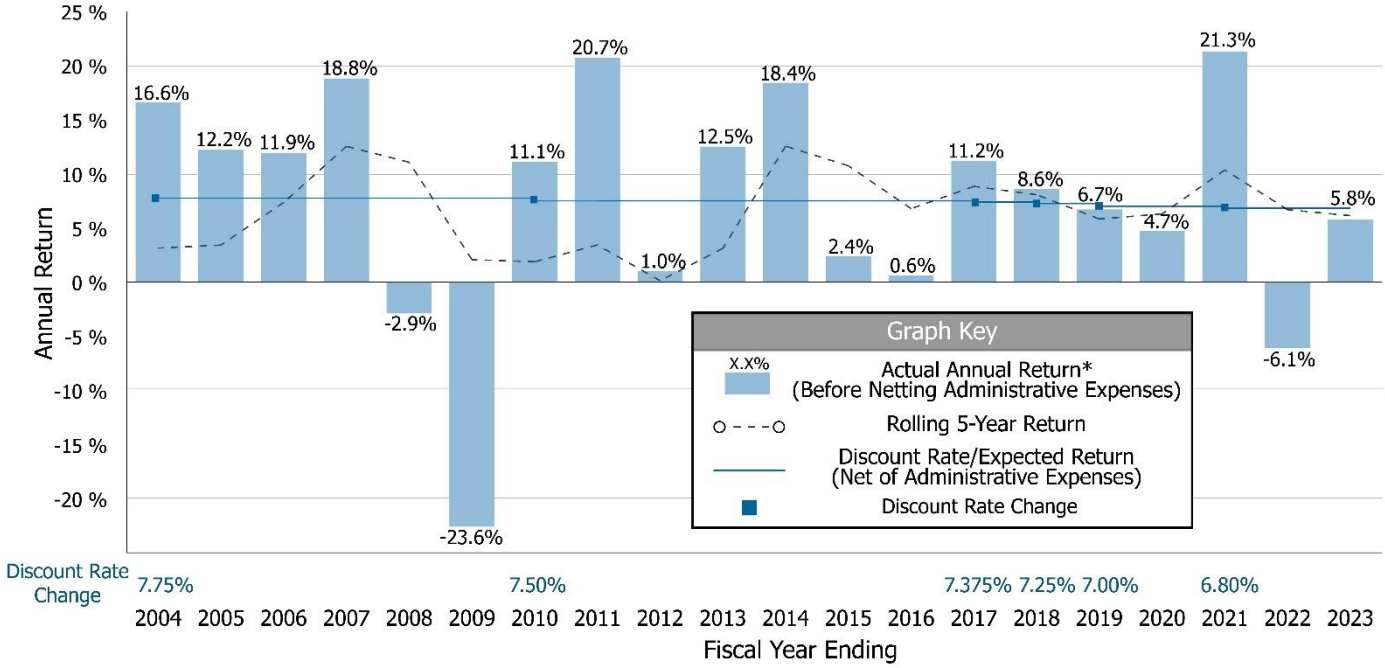
For more information see the Trust Level Review as of June 30, 2023, which is available on the CalPERS website.

Assets

CalPERS History of Investment Returns

The following is a chart with 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. Also, 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 in a single year can be higher or lower than the return reported by the Investment Office shown here.

History of Investment Returns (2004 – 2023)



* As reported by the Investment Office with a 3-month lag on private equity and real assets and without any reduction for administrative expenses.

The table below shows annualized investment returns of the PERF for various time periods ending on June 30, 2023 (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 equal 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 12.0% 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	5.8%	6.1%	7.1%	7.0%	7.5%
Realized Volatility	–	9.5%	7.8%	8.4%	8.8%

Liabilities and Employer Contributions

Liabilities and Employer Contributions

Accrued and Unfunded Liabilities

	June 30, 2022	June 30, 2023
Members Included in the Valuation[1]		
Active Members	333,784	356,050
Transfers from Schools	20,711	22,189
Vested Terminations[2]	235,394	249,895
Receiving Payments	261,341	266,322
Total	**851,230**	**894,456**
Average Entry Age of Active Members	35.8	35.8
Average Age of Active Members	45.9	45.5
Average Age of Retired Members	73.0	73.2
Average Pay	$47,431	$50,641
Covered Payroll in Fiscal Year	$15,831,784,824	$18,030,766,290
Projected Payroll for Contribution Rate	$16,730,776,893	$19,054,625,323
1) Present Value of Projected Benefits		
a) Active Members	$72,757,373,200	$80,464,988,552
b) Transferred Members	1,052,011,838	1,167,324,856
c) Terminated Members	4,000,326,206	4,266,009,340
d) Members and Beneficiaries Receiving Payments	62,007,156,635	64,984,074,840
e) Total	**$139,816,867,879**	**$150,882,397,588**
2) Present Value of Future Employer Normal Costs	$12,385,909,606	$13,901,792,166
3) Present Value of Future Employee Normal Costs	$10,448,903,541	$12,056,688,837
4) Entry Age Accrued Liability		
a) Active Members [(1a) – (2) – (3)]	$49,922,560,053	$54,506,507,549
b) Transferred Members (1b)	1,052,011,838	1,167,324,856
c) Terminated Members (1c)	4,000,326,206	4,266,009,340
d) Members and Beneficiaries Receiving Payments (1d)	62,007,156,635	64,984,074,840
e) Total	**$116,982,054,732**	**$124,923,916,585**
5) Market Value of Assets	$79,385,822,708	$84,292,061,179
6) Unfunded Liability/(Surplus) [(4e) – (5)]	$37,596,232,024	$40,631,855,406
7) Funded Status [(5) ÷ (4e)]	**67.9%**	**67.5%**

(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 2024-25. 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, 2023).
- The required employer contributions determined by the valuation are for the fiscal year beginning one year after the valuation date (fiscal year 2024-25).

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 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.

Liabilities and Employer Contributions

Schedule of Amortization Bases (continued)

Reason for Base	Date Established	Ramp Level 2024-25	Ramp Shape	Remaining Amort. Period	Balance 6/30/2023	Expected Payment 2023-24	Balance 6/30/2024	Expected Payment 2024-25	Payment as Percentage of Payroll
(Gain)/Loss	Various		No Ramp	20	($336,443,451)	($23,616,718)	($334,915,124)	($24,277,986)	(0.13%)
Fresh Start	6/30/2004		No Ramp	11	2,438,504,790	256,828,820	2,338,905,720	264,020,027	1.39%
Assumption Change	6/30/2009		No Ramp	6	690,022,573	113,899,130	619,236,094	117,088,305	0.61%
(Gain)/Loss	6/30/2009		No Ramp	16	830,877,849	67,364,578	817,760,236	69,250,786	0.36%
(Gain)/Loss	6/30/2010		No Ramp	17	410,255,487	31,952,012	405,132,346	32,846,669	0.17%
Assumption Change	6/30/2011		No Ramp	8	1,037,246,647	138,079,871	965,082,039	141,946,107	0.74%
(Gain)/Loss	6/30/2011		No Ramp	18	(909,986,754)	(68,284,049)	(901,298,327)	(70,196,003)	(0.37%)
(Gain)/Loss	6/30/2014	100%	Up/Down	21	4,314,718,895	313,172,309	4,284,474,721	321,941,133	1.69%
Assumption Change	6/30/2015	100%	Up/Down	12	4,409,947,284	499,197,634	4,193,932,470	513,175,168	2.69%
(Gain)/Loss	6/30/2015	100%	Up/Down	22	4,318,385,742	303,489,917	4,298,397,093	311,987,634	1.64%
(Gain)/Loss	6/30/2016	100%	Up/Down	23	5,467,919,979	372,885,410	5,454,383,521	383,326,201	2.01%
Assumption Change	6/30/2017	100%	Up/Down	14	1,526,243,896	151,356,388	1,473,610,606	155,594,367	0.82%
(Gain)/Loss	6/30/2017	100%	Up/Down	24	(423,619,928)	(28,087,330)	(423,399,489)	(28,873,775)	(0.15%)
(Gain)/Loss	6/30/2018	100%	Up/Down	25	(572,466,688)	(36,969,097)	(573,189,048)	(38,004,232)	(0.20%)
Method Change	6/30/2018	100%	Up/Down	15	1,440,210,648	134,930,176	1,398,702,616	138,708,221	0.73%
Assumption Change - Econ	6/30/2018	100%	Up/Down	15	1,249,289,672	117,043,209	1,213,284,136	120,320,419	0.63%
Assumption Change - Demo	6/30/2018	100%	Up/Down	15	1,213,047,303	113,647,741	1,178,086,301	116,829,877	0.61%
Non-Investment (Gain)/Loss	6/30/2019		No Ramp	16	271,952,176	26,581,222	262,974,803	26,581,222	0.14%
Investment (Gain)/Loss	6/30/2019	100%	Up Only	16	611,256,662	48,718,035	602,474,907	60,897,543	0.32%
Assumption Change	6/30/2019	100%	Up/Down	16	3,155,200,149	228,470,172	3,133,643,349	293,584,171	1.54%
Non-Investment (Gain)/Loss	6/30/2020		No Ramp	17	(217,063,027)	(20,580,121)	(210,554,975)	(20,580,121)	(0.11%)
Investment (Gain)/Loss	6/30/2020	80%	Up Only	17	1,942,854,985	116,817,134	1,954,245,525	155,756,178	0.82%
Non-Investment (Gain)/Loss	6/30/2021		No Ramp	18	(978,188,817)	(90,211,243)	(951,477,672)	(90,211,243)	(0.47%)
Net Investment (Gain)	6/30/2021	60%	Up Only	18	(9,364,823,185)	(384,961,958)	(9,603,795,747)	(577,442,938)	(3.03%)
Assumption Change	6/30/2021		No Ramp	18	330,824,927	30,509,578	321,791,178	30,509,578	0.16%
Non-Investment (Gain)/Loss	6/30/2022		No Ramp	19	1,492,071,859	134,172,405	1,454,873,501	134,172,405	0.70%
Investment (Gain)/Loss	6/30/2022	40%	Up Only	19	13,192,237,551	283,563,112	13,796,264,000	567,126,224	2.98%
Non-Investment (Gain)/Loss	6/30/2023		No Ramp	20	2,485,624,555	330,356,194	2,313,243,437	208,015,072	1.09%
Investment (Gain)/Loss	6/30/2023	20%	Up Only	20	605,753,627	0	646,944,874	13,905,882	0.07%
Total					**$40,631,855,406**	**$3,160,324,531**	**$40,128,813,091**	**$3,327,996,891**	**17.47%**

Liabilities and Employer Contributions

Gain/Loss Analysis

To calculate the cost requirements for the Schools 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, 2022	$37,596,232,024
b) Expected Payment on the UAL during Fiscal Year 2022-23	2,527,767,861
c) Interest through June 30, 2023 [.068 x (1a) – ((1.068)$^{1/2}$ – 1) x (1b)]	2,472,013,061
d) Expected UAL before Other Changes [(1a) – (1b) + (1c)]	$37,540,477,224
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)]	$37,540,477,224
i) Actual UAL as of June 30, 2023	40,631,855,406
j) Total (Gain)/Loss for Fiscal Year 2022-23 [(1i) – (1h)]	**$3,091,378,182**
2) Contribution (Gain)/Loss for the Year	
a) Expected Contribution with interest (Employer and Employee)	$5,515,057,392
b) Actual Contributions with interest	5,968,380,128
c) Contribution (Gain)/Loss for Fiscal Year 2022-23 [(2a) – (2b)]	**($453,322,736)**
3) Asset (Gain)/Loss for the Year	
a) Market Value of Assets as of June 30, 2022	$79,385,822,708
b) Prior Fiscal Year Receivables	(81,526,898)
c) Current Fiscal Year Receivables	72,019,947
d) Contributions Received	5,775,250,805
e) Benefits and Refunds Paid	(5,676,166,261)
f) Transfers, Service Credit Purchases, and Miscellaneous Adjustments	25,554,358
g) Expected Interest [0.068 x (3a + 3b) + ((1.068)$^{1/2}$ – 1) x ((3d) + (3e) + (3f))]	5,396,860,147
h) Expected Assets as of June 30, 2023 [(3a) + (3b) + (3c) + (3d) + (3e) + (3f) + (3g)]	84,897,814,806
i) Market Value of Assets as of June 30, 2023	84,292,061,179
j) Asset (Gain)/Loss for Fiscal Year 2022-23 [(3h) – (3i)]	**$605,753,627**
4) Liability (Gain)/Loss for the Year	
a) Total (Gain)/Loss(1j)	$3,091,378,182
b) Contribution (Gain)/Loss (2c)	(453,322,736))
c) Asset (Gain)/Loss (3j)	605,753,627
d) Liability (Gain)/Loss for Fiscal Year 2022-23 [(4a) – (4b) – (4c)]	**$2,938,947,291**

Liabilities and Employer Contributions

Reconciliation of Employer Contributions

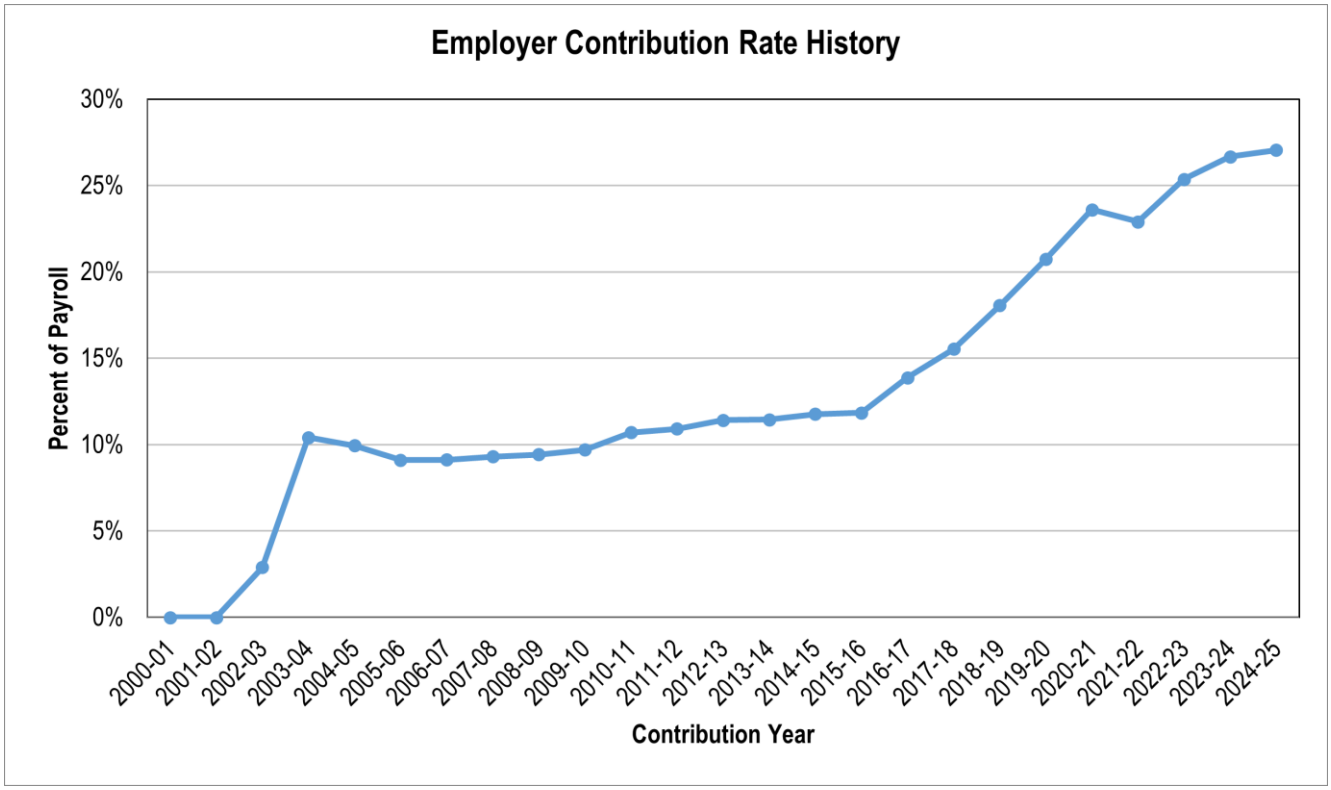
	Rate (% of Payroll)	Estimated Dollars (millions)
Employer Normal Cost		
2023-24 Employer Normal Cost Contribution	9.77%	$1,635
Effect of Change in Payroll	0.00%	226
Effect of Changes in Demographic Results	(0.19%)	(36)
Effect of Risk Mitigation	0.00%	0
Effect of Change in Assumptions	0.00%	0
Effect of Change in Member Contribution Rates	0.00%	0
2024-25 Employer Normal Cost Contribution	9.58%	$1,825
Unfunded Liability Contribution		
2023-24 Unfunded Liability Contribution	16.91%	$2,830
Effect of Progression of Amortization Bases	1.14%	276
Effect of Amortizing Prior Year's Bases over a (Larger)/Smaller than Expected Payroll	(1.74%)	0
Effect of Investment (Gain)/Loss	0.07%	14
Effect of Non-Investment (Gain)/Loss	1.09%	208
Effect of Assumption Change	0.00%	0
2024-25 Unfunded Liability Contribution	17.47%	$3,328
Total Required Employer Contribution		
2023-24 Total Required Employer Contribution	26.68%	$4,465
Effect of Progression of Amortization Bases and Change in Payroll	(0.60%)	502
Effect of Risk Mitigation	0.00%	0
Effect of Change in Assumptions	0.00%	0
Effect of (Gain)/Loss	0.97%	186
Effect of Change in Member Contribution Rates	0.00%	0
2024-25 Total Required Employer Contribution	27.05%	$5,153

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
2024 - 2025	6/30/2023	9.58%	17.47%	27.05%
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%



Liabilities and Employer Contributions

History of 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
6/30/2023	$124,924	$84,292	$40,632	67.5%	$19,055	213.2%
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%)

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. Generally, the normal cost for a benefit group subject to more generous benefit provisions will exceed the normal cost for a group with less generous benefits. However, based on the characteristics of the members (particularly when the number of actives is small), this may not be the case. Future measurements of the Total Normal Cost for each group may differ significantly from the current values due to such factors as: changes in the demographics of the group, changes in economic and demographic assumptions, 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 30,2023
Schools 2% @ 62 – 3 Year FAC	16.32%	8.00%	8.32%	222,745	$9,702,783,463
Schools 2% @ 55 – 1 Year FAC	18.06%	7.00%	11.06%	133,305	$8,327,982,827
Plan Total	**17.12%**	**7.54%**	**9.58%**	**356,050**	**$18,030,766,290**

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

Member Contribution Rates

Classic Members

In accordance with Government Code section 20677, the Classic member contribution rate is 7%.

PEPRA Members

In accordance with Government Code section 7522.30, new members hired on or after January 1, 2013 ("PEPRA members") 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 PEPRA member contribution rate for fiscal year 2023-24 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 16.32% 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% effective July 1, 2024.

The table below displays the determination of the PEPRA member contribution rate effective July 1, 2024 based on 50% of the Total Normal Cost as of June 30, 2023.

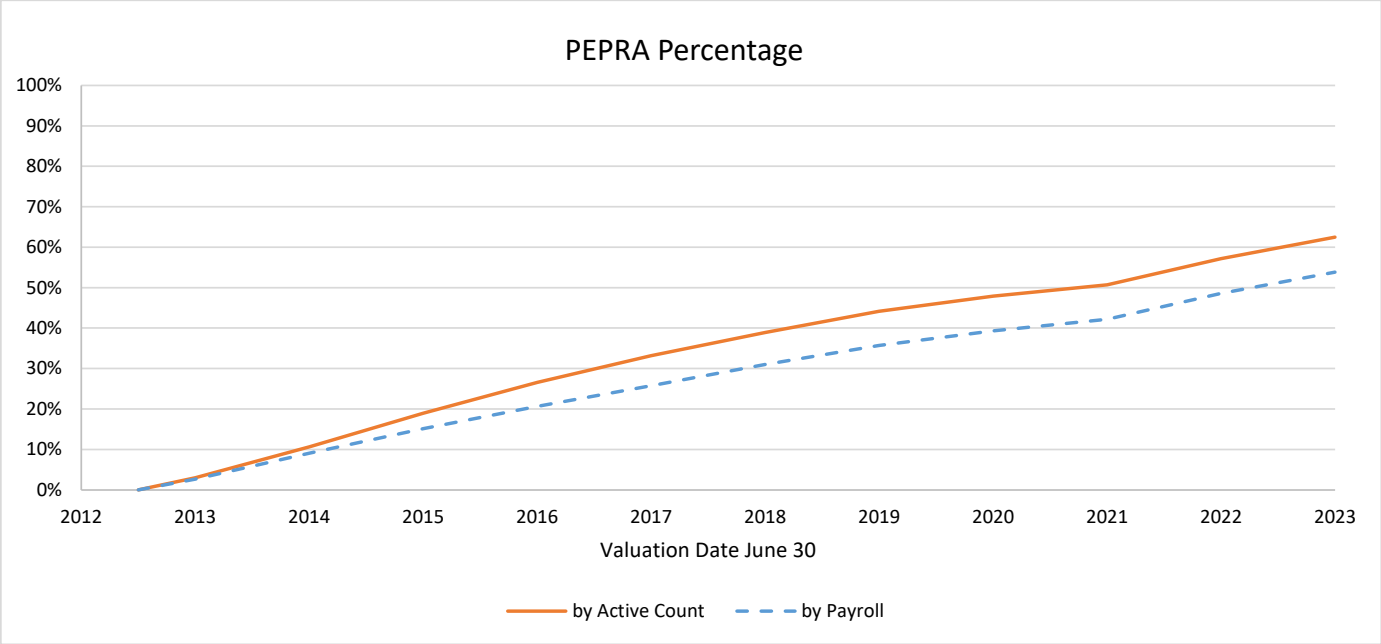
	Basis for Current Rate			Rate Effective July 1, 2024			
	Total Normal Cost	Actuarial Valuation Date	Member Rate	Total Normal Cost	Change	Change Needed	Member Rate
Schools Pool	15.91%	6/30/2021	8.00%	16.32%	0.41%	No	8.00%

Normal Cost Information

PEPRA Transition

As of June 30, 2023, there are 222,745 active PEPRA members in the Schools Pool, which represents 62% of the total active population of the Schools Pool. The total payroll for active PEPRA members is $9,702,783,463, which represents 54% 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

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, 2023 assuming alternative discount rates by changing the two components independently. Results are shown using the current discount rate of 6.8% as well as alternative 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, 2023	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	21.66%	17.12%	13.72%
b) Accrued Liability	$141,850,858,788	$124,923,916,585	$110,950,706,787
c) Market Value of Assets	$84,292,061,179	$84,292,061,179	$84,292,061,179
d) Unfunded Accrued Liability/(Surplus) [(b) – (c)]	$57,558,797,609	$40,631,855,406	$26,658,645,608
e) Funded Status	59.4%	67.5%	76.0%

	Sensitivity to the Price Inflation Assumption		
As of June 30, 2023	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	18.02%	17.12%	15.48%
b) Accrued Liability	$129,017,524,500	$124,923,916,585	$114,829,052,041
c) Market Value of Assets	$84,292,061,179	$84,292,061,179	$84,292,061,179
d) Unfunded Accrued Liability/(Surplus) [(b) – (c)]	$44,725,463,321	$40,631,855,406	$30,536,990,862
e) Funded Status	65.3%	67.5%	73.4%

Risk Analysis

Mortality Rate Sensitivity

The table below displays the change in the June 30, 2023 plan costs and funded status under two different longevity scenarios, namely assuming rates of post-retirement mortality are 10% lower or 10% higher than our current mortality assumptions adopted in 2021. This type of analysis highlights the impact on the plan of a change in the mortality assumption.

	Sensitivity to the Post-Retirement Mortality Assumption		
As of June 30, 2023	Rates 10% Lower	Current Assumptions	Rates 10% Higher
a) Total Normal Cost Rate	17.39%	17.12%	16.86%
b) Accrued Liability	$127,716,597,426	$124,923,916,585	$122,364,930,156
c) Market Value of Assets	$84,292,061,179	$84,292,061,179	$84,292,061,179
d) Unfunded Accrued Liability/(Surplus) [(b) – (c)]	$43,424,536,247	$40,631,855,406	$38,072,868,977
e) Funded Status	66.0%	67.5%	68.9%

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.

One way to look at the maturity level of CalPERS and its plans is to look at the ratio of a plan's retiree liability to its total liability. A pension plan in its infancy will have a very low ratio of retiree liability to its total liability. As the plan matures, the ratio increases. A mature plan will often have a ratio above 60%-65%.

Ratio of Retiree Accrued Liability to Total Accrued Liability

	June 30, 2022			June 30, 2023		
	Retiree Accrued Liability	Total Accrued Liability	Ratio	Retiree Accrued Liability	Total Accrued Liability	Ratio
Schools Pool	62,007,156,635	116,982,054,732	53%	64,984,074,840	124,923,916,585	52%

Another measure of maturity CalPERS and its plans 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, retirees and beneficiaries receiving a continuance are each counted as one, even though they may have only worked a portion of their careers as an active member of this plan. For this reason, the support ratio, while intuitive, may be less informative than the ratio of retiree liability to total accrued liability above. For comparison, the support ratio for CalPERS public agency plans is 0.82.

Support Ratio

	June 30, 2022			June 30, 2023		
Plan	Number of Actives	Number of Retirees	Support Ratio	Number of Actives	Number of Retirees	Support Ratio
Schools Pool	333,784	261,341	1.28	356,050	266,322	1.34

Risk Analysis

Maturity Measures (continued)

Volatility Ratios

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

Asset Volatility Ratio

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 a 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%.

Contribution Volatility as of the Valuation Date

Market Value of Assets without Receivables	Annual Covered Payroll	Asset Volatility Ratio	Accrued Liability	Liability Volatility Ratio
(1)	(2)	(1) ÷ (2)	(3)	(3) ÷ (2)
$84,220,041,233	$18,030,766,290	4.7	$124,923,916,585	6.9

Maturity Measures History

Valuation Date	Ratio of Retiree Accrued Liability to Total Accrued Liability	Support Ratio	Asset Volatility Ratio	Liability Volatility Ratio
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
06/30/2023	52%	1.34	4.7	6.9

Funded Status – Low-Default-Risk Basis

Actuarial Standard of Practice (ASOP) No. 4, Measuring Pension Obligations and Determining Pension Plan Costs or Contributions, requires the disclosure of a low-default-risk obligation measure (LDROM) of benefit costs accrued as of the valuation date using a discount rate based on the yields of high-quality fixed income securities with cash flows that replicate expected benefit payments. Conceptually, this measure represents the level at which financial markets would value the accrued plan costs, and would be approximately equal to the cost of a portfolio of low-default-risk bonds with similar financial characteristics to accrued plan costs.

As permitted in ASOP No. 4, the Actuarial Office uses the Entry Age Actuarial Cost Method to calculate the LDROM. This methodology is in line with the measure of "benefit entitlements" calculated by the Bureau of Economic Analysis and used by the Federal Reserve to report the indebtedness due to pensions of plan sponsors and, conversely, the household wealth due to pensions of plan members.

As shown below, the discount rate used for the LDROM is 4.82%, which is the Standard FTSE Pension Liability Index[1] discount rate as of June 30, 2023, net of assumed administrative expenses.

Selected Measures on a Low-Default-Risk Basis	June 30, 2023
Discount Rate	4.82%
1) Accrued Liability[2] – Low-Default-Risk Basis (LDROM)	
a) Active Members	$76,730,918,214
b) Transferred Members	1,756,551,863
c) Separated Members	5,560,232,831
d) Members and Beneficiaries Receiving Payments	78,002,721,779
e) Total	$162,050,424,687
2) Market Value of Assets (MVA)	84,292,061,179
3) Unfunded Accrued Liability – Low-Default-Risk Basis [(1e) – (2)]	$77,758,363,508
4) Unfunded Accrued Liability – Funding Policy Basis	40,631,855,406
5) Present Value of Unearned Investment Risk Premium [(3) – (4)]	$37,126,508,102

The difference between the unfunded liabilities on a low-default-risk basis and on the funding policy basis represents the present value of the investment risk premium that must be earned in future years to keep future contributions for currently accrued plan costs at the levels anticipated by the funding policy.

Benefit security for members of the plan relies on a combination of the assets in the plan, the investment income generated from those assets, and the ability of the plan sponsor to make necessary future contributions. If future returns fall short of 6.8%, benefit security could be at risk without higher than currently anticipated future contributions.

The funded status on a low-default-risk basis is not appropriate for assessing the sufficiency of plan assets to cover the cost of settling the plan's benefit obligations (see Funded Status – Termination Basis), nor is it appropriate for assessing the need for future contributions (see Funded Status – Funding Policy Basis).

1) This index is based on a yield curve of hypothetical AA-rated zero coupon corporate bonds whose maturities range from 6 months to 30 years. The index represents the single discount rate that would produce the same present value as discounting a standardized set of liability cash flows for a fully open pension plan using the yield curve. The liability cash flows are reasonably consistent with the pattern of benefits expected to be paid from the entire Public Employees' Retirement Fund for current and former plan members. A different index, hence, a different discount rate, may be needed to measure the LDROM for a subset of the fund, such as a single rate plan or a group of retirees.

2) If plan assets were invested entirely in the AA fixed income securities used to determine the discount rate of 4.82%, the CalPERS discount rate could, at various times, be below 4.5%, and some automatic annual retiree COLAs could be suspended (Gov. Code sections 21329). Since there is currently no proposal to adopt an asset allocation entirely comprised of fixed income securities, the automatic COLAs have been fully valued in the measures above based on the assumptions used for plan funding. Removing future COLAs from the measurement would understate the statutory obligation.

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, 2023 valuation is amortized under the prior policy.

Appendix A – Actuarial Methods and Assumptions

Actuarial Methods (continued)

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 a 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.

Internal Revenue Code Section 415

The limitations on benefits imposed by Internal Revenue Code section 415(b) 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 2023 calendar year is $265,000.

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 2023 calendar year is $330,000.

PEPRA Compensation Limit

The limitations on compensation for PEPRA members imposed by Government Code section 7522.10 are taken into account in this valuation. Each year, the impact of any changes in the compensation limitation other than assumed since the prior valuation is included and amortized as part of the non-investment gain or loss base. The PEPRA compensation limit for 2023 is $146,042 for members who participate in Social Security and $175,250 for those who do not. The limits are adjusted annually based on changes to the CPI for all urban consumers.

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.

All actuarial assumptions were set based on the CalPERS Experience Study and Review of Actuarial Assumptions conducted in 2021 and adopted by the board in November 2021. 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 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 to develop the total expected salary increases.

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.

Non-valued Potential Additional Liabilities

The potential liability loss for a cost-of-living increase exceeding the 2.30% price inflation assumption and any potential liability loss from future member service purchases that are not reflected in the valuation.

Demographic Assumptions

Pre-Retirement Mortality and Disability

The table below displays pre-retirement mortality base rates as of 2017. To reflect future mortality improvement, base rates are projected generationally to future years using 80% of the Society of Actuaries' Scale MP-2020. Rates vary by age, type of retirement, and gender. Sample rates are displayed in table below.

Attained Age	Mortality		Disability	
	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

Appendix A – Actuarial Methods and Assumptions

Demographic Assumptions (continued)

Post-Retirement Mortality

The table below displays post-retirement mortality base rates as of 2017. To reflect future mortality improvement, base rates are projected generationally to future years using 80% of the Society of Actuaries' Scale MP-2020. 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

Marital Status

For active members, 70% 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.

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 in this summary are general in nature but are intended to provide an easy to understand 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 $146,042 for 2023; for employees who do not participate in Social Security the cap for 2023 is $175,250. Adjustments to the caps are permitted annually based on changes to the Consumer Price Index for All Urban Consumers (CPI-U).
- Employees in the School's 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 certain 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, where the benefit factor is 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.

Non-Industrial (Non-Job-Related) Disability Retirement

Eligibility

A CalPERS member is eligible for Non-Industrial 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 certain 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 Non-Industrial 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.

Non-Industrial (Non-Job-Related) 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 his or her 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 his or her 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 will not be discontinued in the event the spouse remarries.

The remaining 75% of the retirement allowance (or 50% for service not covered by Social Security), which may be referred to as 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.

Appendix B – Principal Plan Provisions

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 certain other Retirement Systems with which CalPERS has reciprocity agreements). A CalPERS 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

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 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 the 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 Member Contribution Rates 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 Test 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 included:

- 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, and
- 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 included:

- 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, and
- 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 systems and hence salary information for terminated participants covered by reciprocal 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, 2022	**333,784**	**20,711**	**235,394**	**261,341**	**851,230**
First Year in Status	52,118	316	5,640	395	58,469
Rehire	6,209	(295)	(5,849)	(65)	0
Transfer	(1,754)	3,377	(1,601)	(22)	0
Terminations[1]	(23,140)	(910)	24,055	(5)	0
Retired	(8,506)	(829)	(1,889)	11,198	(26)
Ordinary Disabilities	(97)	(15)	(37)	173	24
Industrial Disabilities	0	(34)	(6)	42	2
Death with Beneficiary	(72)	(4)	(1)	123	46
Refunds of Contributions	(2,073)	(99)	(5,245)	(2)	(7,419)
Death w/o Beneficiary	(387)	(19)	(997)	(6,693)	(8,096)
Data Corrections[2]	(32)	(10)	431	(163)	226
As of June 30, 2023	**356,050**	**22,189**	**249,895**	**266,322**	**894,456**

(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	17,129	55	0	0	0	0	17,184	$559,494,223
25 – 29	27,699	2,954	19	0	0	0	30,672	$1,217,046,858
30 – 34	26,401	10,908	1,119	38	0	0	38,466	$1,783,758,446
35 – 39	22,459	12,108	4,636	1,697	42	0	40,942	$2,076,350,216
40 – 44	21,207	11,042	5,624	5,103	1,684	54	44,714	$2,386,182,389
45 – 49	17,783	9,963	5,529	5,637	4,200	1,182	44,294	$2,421,369,223
50 – 54	14,984	10,100	6,561	6,160	4,993	3,438	46,236	$2,550,640,293
55 – 59	10,901	8,749	6,952	6,661	5,181	5,092	43,536	$2,404,741,608
60 – 64	6,675	6,377	5,367	5,797	4,447	4,274	32,937	$1,794,644,974
65 and Over	3,970	3,226	2,810	2,842	2,085	2,136	17,069	$836,538,054
Total	**169,208**	**75,482**	**38,617**	**33,935**	**22,632**	**16,176**	**356,050**	**$18,030,766,289**

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	$32,495	$52,395	$0	$0	$0	$0	$32,559
25 – 29	38,329	52,206	61,250	0	0	0	39,679
30 – 34	41,283	56,586	65,954	73,683	0	0	46,372
35 – 39	41,192	58,811	66,331	75,511	82,937	0	50,714
40 – 44	39,990	58,978	63,694	75,134	83,158	96,600	53,365
45 – 49	38,916	55,613	60,277	71,588	80,242	85,805	54,666
50 – 54	38,328	52,225	57,179	66,432	75,572	83,526	55,166
55 – 59	37,596	48,715	52,587	62,243	71,877	81,721	55,236
60 – 64	36,552	47,251	49,699	58,732	68,770	78,689	54,487
65 and Over	31,637	43,507	45,487	55,680	63,761	70,967	49,009
All Ages	**$38,575**	**$54,146**	**$57,209**	**$66,021**	**$73,746**	**$80,232**	**$50,641**

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	198	0	0	0	0	0	198	$45,723
25 – 29	1,208	33	0	0	0	0	1,241	56,688
30 – 34	2,379	273	10	0	0	0	2,662	63,519
35 – 39	2,587	401	77	9	0	0	3,074	67,304
40 – 44	2,810	503	138	55	9	0	3,515	77,362
45 – 49	2,539	500	189	82	25	2	3,337	82,887
50 – 54	2,225	542	207	87	26	8	3,095	83,470
55 – 59	1,732	435	184	77	33	12	2,473	78,038
60 – 64	1,262	301	118	55	20	4	1,760	72,599
65 and Over	638	138	44	11	2	1	834	67,752
Total	**17,578**	**3,126**	**967**	**376**	**115**	**27**	**22,189**	**$73,889**

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	6,671	2	0	0	0	0	6,673	$35,534
25 – 29	22,249	327	0	0	0	0	22,576	35,318
30 – 34	31,330	1,858	53	0	0	0	33,241	35,843
35 – 39	30,166	3,252	495	76	0	0	33,988	36,635
40 – 44	29,634	3,677	1,031	290	30	0	34,662	36,525
45 – 49	24,342	3,291	1,197	444	139	15	29,428	36,491
50 – 54	21,583	3,433	1,253	577	205	70	27,120	36,130
55 – 59	18,436	3,126	1,051	398	133	52	23,191	34,629
60 – 64	16,575	2,493	819	281	108	44	20,313	32,974
65 and Over	16,346	1,625	439	167	72	56	18,703	31,039
Total	**217,332**	**23,084**	**6,338**	**2,233**	**687**	**237**	**249,895**	**$35,392**

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	1	5	6	187	199
30 – 34	0	1	2	1	0	195	199
35 – 39	0	12	18	2	0	255	287
40 – 44	0	76	42	7	1	335	461
45 – 49	0	154	82	8	1	382	627
50 – 54	1,388	477	103	44	0	533	2,545
55 – 59	9,264	912	139	99	1	901	11,316
60 – 64	27,844	1,454	173	184	4	1,588	31,247
65 – 69	50,463	1,859	172	228	2	2,646	55,370
70 – 74	52,378	1,787	178	211	0	3,850	58,404
75 – 79	39,703	1,446	129	140	3	4,586	46,007
80 – 84	23,574	1,062	47	77	2	4,428	29,190
85 and Over	22,619	779	13	63	4	6,992	30,470
Total	**227,233**	**10,019**	**1,099**	**1,069**	**24**	**26,878**	**266,322**

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

Attained Age	Service Retirement	Non-Industrial Disability	Industrial Disability	Non-Industrial Death	Industrial Death	Death After Retirement	Total
Under 30	$0	$0	$104	$6,543	$179	$6,477	$6,257
30 – 34	0	7,877	189	7,200	0	6,385	6,335
35 – 39	0	8,333	415	13,276	0	7,759	7,361
40 – 44	0	12,961	452	16,090	4	8,900	8,890
45 – 49	0	12,239	889	14,377	2,641	9,918	9,353
50 – 54	10,157	14,378	1,307	11,846	0	10,945	10,784
55 – 59	21,387	13,853	3,331	12,069	629	11,941	19,723
60 – 64	25,355	13,477	3,143	11,114	518	13,590	23,994
65 – 69	24,916	14,332	2,259	12,730	1,874	14,878	23,959
70 – 74	23,465	13,517	3,263	9,284	0	14,966	22,488
75 – 79	22,340	13,531	3,188	10,320	1,797	14,676	21,207
80 – 84	20,276	12,380	5,265	7,768	391	13,935	18,968
85 and Over	16,404	10,769	3,664	8,727	1,126	12,092	15,247
All Ages	**$22,622**	**$13,371**	**$2,654**	**$10,766**	**$869**	**$13,391**	**$21,211**

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	61,083	694	221	290	8	9,749	72,045
5 – 9	52,701	1,244	196	247	0	6,514	60,902
10 – 14	43,378	1,545	167	222	2	4,392	49,706
15 – 19	31,755	1,609	157	160	2	2,881	36,564
20 – 24	19,996	1,979	157	90	0	1,730	23,952
25 – 29	10,502	1,659	81	29	2	886	13,159
30 and Over	7,818	1,289	120	31	10	726	9,994
Total	**227,233**	**10,019**	**1,099**	**1,069**	**24**	**26,878**	**266,322**

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

Years Retired	Service Retirement	Non-Industrial Disability	Industrial Disability	Non-Industrial Death	Industrial Death	Death After Retirement	Total
Under 5 Years	$25,530	$14,678	$2,978	$12,772	$497	$14,859	$23,858
5 – 9	24,232	14,295	2,830	10,967	0	13,803	22,791
10 – 14	23,188	14,624	3,970	10,805	487	12,818	21,885
15 – 19	21,383	14,388	2,713	9,240	482	12,138	20,213
20 – 24	19,577	13,793	2,906	8,604	0	11,054	18,333
25 – 29	13,767	11,872	793	6,526	3,405	9,785	13,163
30 and Over	10,627	10,287	790	8,251	812	8,376	10,284
All Ages	**$22,622**	**$13,371**	**$2,654**	**$10,766**	**$869**	**$13,391**	**$21,211**

Retired Members and Beneficiaries (continued)

Number Counts and Benefits – by Year of Retirement

Year Retired	Total Retirements	Total Benefits	Average Benefits
2023*	5,500	$114,984,422	$20,906
2022	14,851	351,562,161	23,673
2021	16,219	391,190,063	24,119
2020	14,558	349,804,655	24,028
2019	14,072	336,529,540	23,915
2018	13,618	322,172,427	23,658
2017	13,976	344,100,255	24,621
2016	12,011	275,381,779	22,927
2015	11,874	264,073,705	22,240
2014	10,940	236,920,896	21,656
2013	10,421	215,765,526	20,705
2012	10,343	219,540,669	21,226
2011	9,959	213,321,809	21,420
2010	10,403	232,768,204	22,375
2009	9,389	213,669,548	22,757
2008	7,616	169,270,766	22,226
2007	7,270	154,042,270	21,189
2006	7,337	145,703,123	19,859
2005	7,240	140,738,768	19,439
2004	7,272	143,110,155	19,680
2003	7,322	152,944,526	20,888
2002	5,501	111,768,279	20,318
2001	4,744	94,138,645	19,844
2000	5,556	105,379,164	18,967
1999	3,098	42,109,351	13,592
1998	3,537	49,443,481	13,979
1997	3,012	39,862,892	13,235
1996	2,727	36,107,409	13,241
1995	2,581	34,207,209	13,253
1994 and Earlier	13,375	148,268,347	11,085
Total	**266,322**	**$5,648,880,044**	**$21,211**

* The figures for 2023 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.

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