

California Public Employees' Retirement System

Actuarial Valuation for the Safety Fire Plan of the City of Encinitas as of June 30, 2023

(CalPERS ID: 7856446300)
(Rate Plan ID: 4646)

Required Contributions for Fiscal Year

July 1, 2025 — June 30, 2026

Table of Contents

Section 1 – Plan Specific Information

Section 2 – Risk Pool Actuarial Valuation Information

Section 1

California Public Employees' Retirement System

**Plan Specific Information
for the
Safety Fire Plan
of the
City of Encinitas**

**(CalPERS ID: 7856446300)
(Rate Plan ID: 4646)**

Table of Contents — Section 1

Actuarial Certification	1
Highlights and Executive Summary	2
Introduction	3
Purpose of Section 1	3
Summary of Key Valuation Results	4
Changes Since the Prior Year's Valuation.....	5
Subsequent Events.....	5
Liabilities and Contributions	6
Determination of Required Contributions	7
Required Employer Contributions	8
Member Contribution Rates	9
Other Pooled Safety Risk Pool Rate Plans	10
Breakdown of Entry Age Accrued Liability.....	11
Allocation of Plan's Share of Pool's Experience.....	11
Development of the Plan's Share of Pool's Assets	11
Funded Status – Funding Policy Basis.....	12
Additional Employer Contributions	13
Projected Employer Contributions.....	14
Schedule of Amortization Bases.....	15
Amortization Schedule and Alternatives	17
Employer Contribution History	19
Funding History.....	19
Risk Analysis	20
Future Investment Return Scenarios	21
Discount Rate Sensitivity.....	22
Mortality Rate Sensitivity.....	22
Maturity Measures	23
Maturity Measures History.....	24
Funded Status – Termination Basis.....	25
Funded Status – Low-Default-Risk Basis	26
Summary of Valuation Data	27
List of Class 1 Benefit Provisions	27
Plan's Major Benefit Options	28

Actuarial Certification

It is our opinion that the valuation has been performed in accordance with generally accepted actuarial principles as well as the applicable Standards of Practice promulgated by the Actuarial Standards Board. While this report, consisting of Section 1 and Section 2, is intended to be complete, our office is available to answer questions as needed. All of the undersigned are actuaries who satisfy the *Qualification Standards for Actuaries Issuing Statements of Actuarial Opinion in the United States* of the American Academy of Actuaries with regard to pensions.

Actuarial Methods and Assumptions

It is our opinion 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.

Randall Dziubek, ASA, MAAA
Deputy Chief Actuary, Valuation Services, CalPERS

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

Actuarial Data and Rate Plan Results

To the best of my knowledge and having relied upon the attestation above that the actuarial methods and assumptions are reasonable as well as the information in Section 2 of this report, this report is complete and accurate and contains sufficient information to disclose, fully and fairly, the funded condition of the Safety Fire Plan of the City of Encinitas and satisfies the actuarial valuation requirements of Government Code section 7504. This valuation and related validation work was performed by the CalPERS Actuarial Office. The valuation was 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. Section 1 of this report is based on the member and financial data for City of Encinitas, while Section 2 is based on the corresponding information for all agencies participating in the Safety Risk Pool to which the plan belongs.

Nina Ramsey, ASA, MAAA
Senior Actuary, CalPERS

Highlights and Executive Summary

• Introduction	3
• Purpose of Section 1	3
• Summary of Key Valuation Results	4
• Changes Since the Prior Year's Valuation	5
• Subsequent Events	5

Introduction

This report presents the results of the June 30, 2023, actuarial valuation of the Safety Fire Plan of the City of Encinitas of the California Public Employees' Retirement System (CalPERS). This actuarial valuation sets the minimum required contributions for fiscal year (FY) 2025-26.

Purpose of Section 1

This Section 1 report for the Safety Fire Plan of the City of Encinitas of CalPERS was prepared by the Actuarial Office using data as of June 30, 2023. The purpose of the valuation is to:

- Set forth the assets and accrued liabilities of this rate plan as of June 30, 2023;
- Determine the minimum required employer contributions for this rate plan for FY July 1, 2025, through June 30, 2026;
- Determine the required member contribution rate for FY July 1, 2025, through June 30, 2026, for 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 No. 68 for a Cost Sharing Employer Defined Benefit Pension Plan. A separate accounting valuation report for such purposes is available on the CalPERS website (www.calpers.ca.gov).

The measurements shown in this actuarial valuation may not be applicable for other purposes. The agency should contact 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 agency.

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

Summary of Key Valuation Results

Below is a brief summary of key valuation results along with page references where more detailed information can be found.

Required Employer Contributions — page 8

	Fiscal Year 2024-25	Fiscal Year 2025-26
Employer Normal Cost Rate	26.29%	26.36%
Unfunded Accrued Liability (UAL) Contribution Amount	\$2,666,926	\$3,012,497
Paid either as		
Option 1) 12 Monthly Payments of	\$222,243.83	\$251,041.42
Option 2) Annual Prepayment in July	\$2,580,628	\$2,915,016

Member Contribution Rates — page 9

	Fiscal Year 2024-25	Fiscal Year 2025-26
Member Contribution Rate	9.00%	9.00%

Projected Employer Contributions — page 14

Fiscal Year	Normal Cost (% of payroll)	Annual UAL Payment
2026-27	26.4%	\$3,211,000
2027-28	26.4%	\$3,375,000
2028-29	26.4%	\$3,720,000
2029-30	26.4%	\$3,805,000
2030-31	26.4%	\$3,882,000

Funded Status — Funding Policy Basis — page 12

	June 30, 2022	June 30, 2023
Entry Age Accrued Liability (AL)	\$100,724,947	\$104,605,657
Market Value of Assets (MVA)	67,209,521	69,247,300
Unfunded Accrued Liability (UAL) [AL – MVA]	\$33,515,426	\$35,358,357
Funded Ratio [MVA ÷ AL]	66.7%	66.2%

Summary of Valuation Data — Page 27

	June 30, 2022	June 30, 2023
Active Member Count	28	25
Annual Covered Payroll	\$3,574,655	\$3,406,607
Transferred Member Count	10	9
Separated Member Count	10	12
Retired Members and Beneficiaries Count	87	91

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. For pooled rate plans, voluntary benefit changes by plan amendment are generally included in the first valuation with a valuation date on or after the effective date of the amendment.

Please refer to the [Plan's Major Benefit Options](#) in this report and Appendix B of the Section 2 Report for a summary of the plan provisions used in this valuation.

Actuarial Methods and Assumptions

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

New Disclosure Items

In December 2021, the Actuarial Standards Board issued a revision of Actuarial Standard of Practice No. 4 (ASOP 4) requiring actuaries to disclose a low-default-risk obligation measure (LDROM) of the benefits earned. This information is shown in a new exhibit, [Funded Status – Low-Default-Risk Basis](#).

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 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.

On April 16, 2024, the board took action to modify the Funding Risk Mitigation Policy to remove the automatic change to the discount rate when the investment return exceeds various thresholds. Rather than an automatic change to the discount rate, a board discussion would be placed on the calendar. The 95th percentile return in the [Future Investment Return Scenarios](#) exhibit in this report has not been modified and still reflects the projected contribution requirements associated with a reduction in the discount rate.

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.

Liabilities and Contributions

• Determination of Required Contributions	7
• Required Employer Contributions	8
• Member Contribution Rates	9
• Other Pooled Safety Risk Pool Rate Plans	10
• Breakdown of Entry Age Accrued Liability	11
• Allocation of Plan's Share of Pool's Experience	11
• Development of the Plan's Share of Pool's Assets	11
• Funded Status – Funding Policy Basis	12
• Additional Employer Contributions	13
• Projected Employer Contributions	14
• Schedule of Amortization Bases	15
• Amortization Schedule and Alternatives	17
• Employer Contribution History	19
• Funding History	19

Determination of Required Contributions

Contributions to fund the plan are determined by an actuarial valuation performed each year. The valuation employs complex calculations based on a set of actuarial assumptions and methods. See Appendix A in Section 2 for information on the assumptions and methods used in this valuation. The valuation incorporates all plan experience through the valuation date and sets required contributions for the fiscal year that begins two years after the valuation date.

Contribution Components

Two components comprise required contributions:

- Normal Cost — expressed as a percentage of pensionable payroll
- Unfunded Accrued Liability (UAL) Contribution — expressed as a dollar amount

Normal Cost represents the value of benefits allocated to the upcoming year for active employees. If all plan experience exactly matched the actuarial assumptions, normal cost would be sufficient to fully fund all benefits. The employer and employees each pay a share of the normal cost with contributions payable as part of the regular payroll reporting process. The contribution rate for Classic members is set by statute based on benefit formula whereas for PEPRAs members it is based on 50% of the total normal cost.

When plan experience differs from the actuarial assumptions, unfunded accrued liability (UAL) emerges. The new UAL may be positive or negative. If the total UAL is positive (i.e., accrued liability exceeds assets), the employer is required to make contributions to pay off the UAL over time. This is called the Unfunded Accrued Liability Contribution component. There is an option to prepay this amount during July of each fiscal year, otherwise it is paid monthly.

In measuring the UAL each year, plan experience is split by source. Common sources of UAL include investment experience different than expected, non-investment experience different than expected, assumption changes and benefit changes. Each source of UAL (positive or negative) forms a base that is amortized, or paid off, over a specified period of time in accordance with the CalPERS [Actuarial Amortization Policy](#). The Unfunded Accrued Liability Contribution is the sum of the payments on all bases. See the [Schedule of Amortization Bases](#) section of this report for an inventory of existing bases and Appendix A in Section 2 for more information on the amortization policy.

Required Employer Contributions

The required employer contributions in this report do not reflect any cost sharing arrangement between the agency and the employees.

Required Employer Contributions	Fiscal Year 2025-26
Employer Normal Cost Rate	26.36%
<i>Plus</i>	
Unfunded Accrued Liability (UAL) Contribution Amount¹	\$3,012,497
<i>Paid either as</i>	
1) Monthly Payment	\$251,041.42
<i>Or</i>	
2) Annual Prepayment Option*	\$2,915,016
The total minimum required employer contribution is the sum of the Plan's Employer Normal Cost Rate (expressed as a percentage of payroll and paid as payroll is reported) and the Unfunded Accrued Liability (UAL) Contribution Amount (billed monthly(1) or prepaid annually(2) in dollars).	
* Only the UAL portion of the employer contribution can be prepaid (which must be received in full no later than July 31) .	
For Member Contribution Rates see the following page.	

Development of Normal Cost as a Percentage of Payroll	Fiscal Year 2024-25	Fiscal Year 2025-26
Base Total Normal Cost for Formula	31.99%	32.05%
Surcharge for Class 1 Benefits ²		
a) FAC 1	1.33%	1.34%
b) PRSA	1.96%	1.96%
Plan's Total Normal Cost	35.28%	35.35%
Offset Due to Employee Contributions ³	8.99%	8.99%
Employer Normal Cost	26.29%	26.36%

¹ The required payment on amortization bases does not take into account any additional discretionary payment made after April 30, 2024.

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

³ This is the expected employee contributions, taking into account individual benefit formula and any offset from the use of a modified formula, divided by projected annual payroll. For member contribution rates above the breakpoint for each benefit formula, see [Member Contribution Rates](#).

Member Contribution Rates

The required member contributions in this report do not reflect any cost sharing arrangement between the agency and the employees.

Each member contributes toward their retirement based upon the retirement formula. The standard Classic member contribution rate above the breakpoint, if any, is as described below.

Benefit Formula	Percent Contributed above the Breakpoint
Safety, 2% at age 55	7%
Safety, 2% at age 50	9%
Safety, 3% at age 55	9%
Safety, 3% at age 50	9%

Other Pooled Safety Risk Pool Rate Plans

All of the results presented in this Section 1 report, except those shown on this page, correspond to rate plan 4646. In many cases, employers have additional rate plans within the same risk pool. For cost analysis and budgeting it is useful to consider contributions for these rate plans as a whole rather than individually. The estimated contribution amounts and rates for all of the employer's rate plans in the Safety Risk Pool are shown below and assume that the total employer payroll within the Safety Risk Pool will grow according to the overall payroll growth assumption of 2.80% per year for three years. Classic members who are projected to terminate employment are assumed to be replaced by PEPRA members.

	Fiscal Year	Fiscal Year
Estimated Employer Contributions for all Pooled Safety Rate Plans	2024-25	2025-26
Projected Payroll for the Contribution Year	\$8,147,251	\$8,489,633
Estimated Employer Normal Cost	\$1,712,605	\$1,771,554
Required Payment on Amortization Bases	\$2,783,733	\$3,174,917
Estimated Total Employer Contributions	\$4,496,338	\$4,946,471
Estimated Total Employer Contribution Rate (illustrative only)	55.19%	58.26%

Breakdown of Entry Age Accrued Liability

Active Members	\$27,540,243
Transferred Members	2,851,898
Separated Members	1,414,794
Members and Beneficiaries Receiving Payments	<u>72,798,722</u>
Total	\$104,605,657

Allocation of Plan's Share of Pool's Experience

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

1. Plan's Accrued Liability	\$104,605,657
2. Projected UAL Balance at 6/30/2023	33,531,481
3. Other UAL Adjustments (Golden Handshake, Prior Service Purchase, etc.)	0
4. Adjusted UAL Balance at 6/30/2023 for Asset Share	33,531,481
5. Pool's Accrued Liability ¹	30,525,472,379
6. Sum of Pool's Individual Plan UAL Balances at 6/30/2023 ¹	7,735,444,959
7. Pool's 2022-23 Investment (Gain)/Loss ¹	146,133,368
8. Pool's 2022-23 Non-Investment (Gain)/Loss ¹	400,118,077
9. Plan's Share of Pool's Investment (Gain)/Loss: $[(1) - (4)] \div [(5) - (6)] \times (7)$	455,739
10. Plan's Share of Pool's Non-Investment (Gain)/Loss: $(1) \div (5) \times (8)$	1,371,137
11. Plan's New (Gain)/Loss as of 6/30/2023: $(9) + (10)$	1,826,876
12. Increase in Pool's Accrued Liability due to Change in Assumptions ¹	0
13. Plan's Share of Pool's Change in Assumptions: $(1) \div (5) \times (12)$	0
14. Increase in Pool's Accrued Liability due to Funding Risk Mitigation ¹	0
15. Plan's Share of Pool's Change due to Funding Risk Mitigation: $(1) \div (5) \times (14)$	0
16. Offset due to Funding Risk Mitigation	0
17. Plan's Investment (Gain)/Loss: $(9) - (16)$	455,739

¹ Does not include plans that transferred to the pool on the valuation date.

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

18. Plan's UAL: $(2) + (3) + (11) + (13) + (15)$	\$35,358,357
19. Plan's Share of Pool's Market Value of Assets (MVA): $(1) - (18)$	\$69,247,300

For a reconciliation of the pool's Market Value of Assets (MVA), information on the fund's asset allocation and a history of CalPERS investment returns, see [Section 2](#), which can be found on the CalPERS website (www.calpers.ca.gov).

Funded Status – Funding Policy Basis

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

	June 30, 2022	June 30, 2023
1. Present Value of Benefits	\$108,111,571	\$111,629,658
2. Entry Age Accrued Liability	100,724,947	104,605,657
3. Market Value of Assets (MVA)	67,209,521	69,247,300
4. Unfunded Accrued Liability (UAL) [(2) – (3)]	\$33,515,426	\$35,358,357
5. Funded Ratio [(3) ÷ (2)]	66.7%	66.2%

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

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

	1% Lower Average Return	Current Assumption	1% Higher Average Return
Discount Rate	5.8%	6.8%	7.8%
1. Entry Age Accrued Liability	\$117,295,807	\$104,605,657	\$94,027,448
2. Market Value of Assets (MVA)	69,247,300	69,247,300	69,247,300
3. Unfunded Accrued Liability (UAL) [(1) – (2)]	\$48,048,507	\$35,358,357	\$24,780,148
4. Funded Ratio [(2) ÷ (1)]	59.0%	66.2%	73.6%

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

Additional Employer Contributions

The minimum required employer contribution towards the Unfunded Accrued Liability (UAL) for this rate plan for FY 2025-26 is \$3,012,497. CalPERS allows agencies to make additional discretionary payments (ADPs) at any time. These optional payments serve to reduce the UAL and future required contributions and can result in significant long-term savings. Agencies can also use ADPs to stabilize annual contributions as a fixed dollar amount, percent of payroll or percent of revenue.

Provided below are select ADP options for consideration. Making such an ADP during FY 2025-26 does not require an ADP be made in any future year, nor does it change the remaining amortization period of any portion of unfunded liability. For information on permanent changes to amortization periods, see [Amortization Schedule and Alternatives](#). Agencies considering making an ADP should contact CalPERS for additional information.

Fiscal Year 2025-26 Employer Contributions — Illustrative Scenarios

Funding Approach	Estimated Normal Cost	Minimum UAL Contribution	ADP ¹	Total UAL Contribution	Estimated Total Contribution
Minimum required only	\$797,857	\$3,012,497	0	\$3,012,497	\$3,810,354
20 year funding horizon	\$797,857	\$3,012,497	\$142,324	\$3,154,821	\$3,952,678
15 year funding horizon	\$797,857	\$3,012,497	\$667,877	\$3,680,374	\$4,478,231
10 year funding horizon	\$797,857	\$3,012,497	\$1,776,362	\$4,788,859	\$5,586,716
5 year funding horizon	\$797,857	\$3,012,497	\$5,222,842	\$8,235,339	\$9,033,196

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

The calculations above are based on the projected UAL as of June 30, 2025, as determined in the June 30, 2023, actuarial valuation. New unfunded liabilities can emerge in future years due to assumption or method changes, changes in plan provisions, and actuarial experience different than assumed. Making an ADP illustrated above for the indicated number of years will not result in a plan that is exactly 100% funded in the indicated number of years. Valuation results will vary from one year to the next and can diverge significantly from projections over a period of several years.

Additional Discretionary Payment History

The following table provides a recent history of actual ADPs made to the plan.

Fiscal Year	ADP	Fiscal Year	ADP
2019-20	\$0	2022-23	\$0
2020-21	\$0	2023-24 ²	\$0
2021-22	\$0		

² Excludes payments made after April 30, 2024

Projected Employer Contributions

The table below shows the required and projected employer contributions (before cost sharing) for the next six fiscal years. The projection assumes that all actuarial assumptions will be realized and that no further changes to assumptions, contributions, benefits, or funding will occur during the projection period. In particular, the investment return beginning with FY 2023-24 is assumed to be 6.80% per year, net of investment and administrative expenses. Future contribution requirements may differ significantly from those shown below. The actual long-term cost of the plan will depend on the actual benefits and expenses paid and the actual investment experience of the fund.

	Required Contribution	Projected Future Employer Contributions (Assumes 6.80% Return for Fiscal Year 2023-24 and Beyond)				
Fiscal Year	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31
	Rate Plan 4646 Results					
Normal Cost%	26.36%	26.4%	26.4%	26.4%	26.4%	26.4%
UAL Payment	\$3,012,497	\$3,211,000	\$3,375,000	\$3,720,000	\$3,805,000	\$3,882,000

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

For projected contributions under alternate investment return scenarios, please see the [Future Investment Return Scenarios](#) exhibit. Our online pension plan projection tool, [Pension Outlook](#), is available in the Employers section of the CalPERS website. Pension Outlook can help plan and budget pension costs under various scenarios.

Schedule of Amortization Bases

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

- The assets, liabilities and funded status of the plan are measured as of the valuation date: June 30, 2023.
- The required employer contributions determined by the valuation are for the fiscal year beginning two years after the valuation date: FY 2025-26.

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

The Unfunded Accrued Liability (UAL) is used to determine the employer contribution and therefore must be rolled forward two years from the valuation date to the first day of the fiscal year for which the contribution is being determined. The UAL is rolled forward each year by subtracting the expected payment on the UAL for the fiscal year and adjusting for interest. The expected payment on the UAL for FY 2023-24 is based on the actuarial valuation two years ago, adjusted for additional discretionary payments made on or before April 30, 2024, if necessary, and the expected payment for FY 2024-25 is based on the actuarial valuation one year ago.

Reason for Base	Date Est.	Ramp Level 2025-26	Ramp Shape	Escalation Rate	Amort. Period	Balance 6/30/23	Expected Payment 2023-24	Balance 6/30/24	Expected Payment 2024-25	Balance 6/30/25	Minimum Required Payment 2025-26
Investment (Gain)/Loss	6/30/13	100%	Up/Dn	2.80%	20	9,643,328	699,935	9,575,733	719,533	9,483,288	739,680
Non-Investment (Gain)/Loss	6/30/13	100%	Up/Dn	2.80%	20	(586,022)	(42,535)	(581,914)	(43,726)	(576,296)	(44,950)
Share of Pre-2013 Pool UAL	6/30/13	No Ramp		2.80%	12	6,282,520	587,381	6,102,708	603,828	5,893,672	620,735
Assumption Change	6/30/14	100%	Up/Dn	2.80%	11	4,135,978	468,185	3,933,383	481,294	3,703,464	494,770
Investment (Gain)/Loss	6/30/14	100%	Up/Dn	2.80%	21	(7,381,053)	(518,730)	(7,346,888)	(533,254)	(7,295,390)	(548,185)
Non-Investment (Gain)/Loss	6/30/14	100%	Up/Dn	2.80%	21	88,812	6,242	88,400	6,416	87,781	6,596
Investment (Gain)/Loss	6/30/15	100%	Up/Dn	2.80%	22	4,492,837	306,390	4,481,714	314,968	4,460,970	323,788
Non-Investment (Gain)/Loss	6/30/15	100%	Up/Dn	2.80%	22	(16,067)	(1,096)	(16,027)	(1,126)	(15,953)	(1,158)
Assumption Change	6/30/16	100%	Up/Dn	2.80%	13	1,562,634	154,965	1,508,746	159,304	1,446,709	163,765
Investment (Gain)/Loss	6/30/16	100%	Up/Dn	2.80%	23	5,562,667	368,822	5,559,773	379,149	5,546,009	389,766
Non-Investment (Gain)/Loss	6/30/16	100%	Up/Dn	2.80%	23	(899,216)	(59,621)	(898,748)	(61,290)	(896,523)	(63,006)
Assumption Change	6/30/17	100%	Up/Dn	2.80%	14	2,046,490	191,731	1,987,509	197,100	1,918,968	202,618
Investment (Gain)/Loss	6/30/17	100%	Up/Dn	2.80%	24	(2,721,210)	(175,732)	(2,724,644)	(180,652)	(2,723,227)	(185,711)
Non-Investment (Gain)/Loss	6/30/17	100%	Up/Dn	2.80%	24	68,840	4,446	68,926	4,570	68,890	4,698
Assumption Change	6/30/18	100%	Up/Dn	2.80%	15	3,134,721	226,987	3,113,304	291,679	3,023,576	299,846
Investment (Gain)/Loss	6/30/18	100%	Up/Dn	2.80%	25	(834,882)	(42,598)	(847,631)	(54,739)	(848,700)	(56,271)
Method Change	6/30/18	100%	Up/Dn	2.80%	15	714,451	51,734	709,570	66,478	689,120	68,339
Non-Investment (Gain)/Loss	6/30/18	100%	Up/Dn	2.80%	25	399,666	20,392	405,769	26,204	406,281	26,938
Investment (Gain)/Loss	6/30/19	100%	Up Only	0.00%	16	389,205	23,402	391,486	31,202	385,862	39,003
Non-Investment (Gain)/Loss	6/30/19	No Ramp		0.00%	16	416,065	39,448	403,590	39,448	390,267	39,448

Schedule of Amortization Bases (continued)

Reason for Base	Date Est.	Ramp Level 2025-26	Ramp Shape	Escalation Rate	Amort. Period	Balance 6/30/23	Expected Payment 2023-24	Balance 6/30/24	Expected Payment 2024-25	Balance 6/30/25	Minimum Required Payment 2025-26
Investment (Gain)/Loss	6/30/20	80%	Up Only	0.00%	17	1,810,673	74,432	1,856,878	111,648	1,867,764	148,863
Non-Investment (Gain)/Loss	6/30/20	No Ramp		0.00%	17	307,940	28,399	299,531	28,399	290,550	28,399
Assumption Change	6/30/21	No Ramp		0.00%	18	676,463	60,830	659,598	60,830	641,586	60,830
Net Investment (Gain)	6/30/21	60%	Up Only	0.00%	18	(8,322,894)	(178,898)	(8,703,970)	(357,796)	(8,926,079)	(536,694)
Non-Investment (Gain)/Loss	6/30/21	No Ramp		0.00%	18	(416,855)	(37,485)	(406,463)	(37,485)	(395,364)	(37,485)
Risk Mitigation	6/30/21	No Ramp		0.00%	0	2,795,233	2,888,708	0	0	0	0
Risk Mitigation Offset	6/30/21	No Ramp		0.00%	0	(2,795,233)	(2,888,708)	0	0	0	0
Investment (Gain)/Loss	6/30/22	40%	Up Only	0.00%	19	11,374,715	0	12,148,196	261,122	12,704,419	522,243
Non-Investment (Gain)/Loss	6/30/22	No Ramp		0.00%	19	1,601,675	0	1,710,589	153,822	1,667,943	153,822
Investment (Gain)/Loss	6/30/23	20%	Up Only	0.00%	20	455,739	0	486,729	0	519,827	11,174
Non-Investment (Gain)/Loss	6/30/23	No Ramp		0.00%	20	1,371,137	0	1,464,374	0	1,563,951	140,636
Total						35,358,357	2,257,026	35,430,221	2,666,926	35,083,365	3,012,497

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

Amortization Schedule and Alternatives

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

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

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

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

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

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

Amortization Schedule and Alternatives (continued)

Date	Current Amortization Schedule		Alternative Schedules			
	Balance	Payment	15 Year Amortization		10 Year Amortization	
			Balance	Payment	Balance	Payment
6/30/2025	35,083,365	3,012,497	35,083,365	3,680,374	35,083,365	4,788,859
6/30/2026	34,355,797	3,211,489	33,665,585	3,680,374	32,520,031	4,788,859
6/30/2027	33,373,109	3,375,187	32,151,396	3,680,374	29,782,391	4,788,859
6/30/2028	32,154,426	3,719,748	30,534,242	3,680,374	26,858,591	4,788,859
6/30/2029	30,496,789	3,805,213	28,807,122	3,680,374	23,735,973	4,788,859
6/30/2030	28,638,111	3,881,580	26,962,557	3,680,373	20,401,017	4,788,859
6/30/2031	26,574,119	3,960,092	24,992,563	3,680,373	16,839,284	4,788,859
6/30/2032	24,288,639	3,920,739	22,888,609	3,680,373	13,035,353	4,788,860
6/30/2033	21,888,416	3,876,926	20,641,587	3,680,374	8,972,753	4,788,859
6/30/2034	19,370,254	3,786,435	18,241,766	3,680,374	4,633,898	4,788,860
6/30/2035	16,774,374	3,635,273	15,678,757	3,680,373		
6/30/2036	14,158,192	3,373,744	12,941,465	3,680,374		
6/30/2037	11,634,384	2,368,781	10,018,036	3,680,373		
6/30/2038	9,977,527	2,194,570	6,895,815	3,680,374		
6/30/2039	8,388,041	2,057,795	3,561,282	3,680,374		
6/30/2040	6,831,818	1,973,810				
6/30/2041	5,256,567	1,704,314				
6/30/2042	3,852,705	1,460,597				
6/30/2043	2,605,247	2,194,238				
6/30/2044	514,790	478,636				
6/30/2045	55,154	56,998				
6/30/2046						
6/30/2047						
6/30/2048						
6/30/2049						
Total		58,048,662		55,205,605		47,888,592
Interest Paid		22,965,297		20,122,240		12,805,227
Estimated Savings				2,843,057		10,160,070

Employer Contribution History

The table below provides a recent history of the employer contribution requirements for the plan, as determined by the annual actuarial valuation. Changes due to prepayments or plan amendments after the valuation report was finalized are not reflected.

Valuation Date	Contribution Year	Employer Normal Cost Rate	Unfunded Liability Payment
06/30/2014	2016 - 17	19.334%	\$724,666
06/30/2015	2017 - 18	19.520%	909,579
06/30/2016	2018 - 19	20.416%	1,175,435
06/30/2017	2019 - 20	21.748%	1,467,902
06/30/2018	2020 - 21	23.558%	1,688,252
06/30/2019	2021 - 22	23.62%	1,997,768
06/30/2020	2022 - 23	23.68%	2,286,103
06/30/2021	2023 - 24	26.11%	2,257,026
06/30/2022	2024 - 25	26.29%	2,666,926
06/30/2023	2025 - 26	26.36%	3,012,497

Funding History

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

Valuation Date	Accrued Liability (AL)	Share of Pool's Market Value of Assets (MVA)	Unfunded Accrued Liability (UAL)	Funded Ratio	Annual Covered Payroll
06/30/2014	\$75,274,427	\$63,193,128	\$12,081,299	84.0%	\$3,970,293
06/30/2015	78,016,650	61,892,067	16,124,583	79.3%	3,802,139
06/30/2016	80,273,783	58,763,284	21,510,499	73.2%	3,630,663
06/30/2017	82,914,750	61,008,592	21,906,158	73.6%	3,541,612
06/30/2018	88,013,322	62,732,596	25,280,726	71.3%	3,426,745
06/30/2019	91,115,375	64,479,541	26,635,834	70.8%	3,634,166
06/30/2020	92,944,002	64,120,776	28,823,226	69.0%	3,770,083
06/30/2021	97,329,283	75,481,927	21,847,356	77.6%	3,730,868
06/30/2022	100,724,947	67,209,521	33,515,426	66.7%	3,574,655
06/30/2023	104,605,657	69,247,300	35,358,357	66.2%	3,406,607

Risk Analysis

• Future Investment Return Scenarios	21
• Discount Rate Sensitivity	22
• Mortality Rate Sensitivity	22
• Maturity Measures	23
• Maturity Measures History	24
• Funded Status – Termination Basis	25
• Funded Status – Low-Default-Risk Basis	26

Future Investment Return Scenarios

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

The first table shows projected contribution requirements if the fund were to earn either 3.0% or 10.8% annually. These alternate investment returns were chosen because 90% of long-term average returns are expected to fall between them over the 20-year period ending June 30, 2043.

Assumed Annual Return FY 2023-24 through FY 2042-43	Projected Employer Contributions				
	2026-27	2027-28	2028-29	2029-30	2030-31
3.0% (5th percentile)					
Discount Rate	6.80%	6.80%	6.80%	6.80%	6.80%
Normal Cost Rate	26.4%	26.4%	26.4%	26.4%	26.4%
UAL Contribution	\$3,275,000	\$3,568,000	\$4,107,000	\$4,454,000	\$4,862,000
10.8% (95th percentile)					
Discount Rate	6.75%	6.70%	6.65%	6.60%	6.55%
Normal Cost Rate	26.8%	27.3%	27.7%	28.1%	28.6%
UAL Contribution	\$3,149,000	\$3,192,000	\$3,350,000	\$3,179,000	\$2,920,000

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

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

The following table shows the effect of one and two standard deviation investment losses in FY 2023-24 on the FY 2026-27 contribution requirements. Note that a single-year investment gain or loss decreases or increases the required UAL contribution amount incrementally for each of the next five years, not just one, due to the 5-year ramp in the amortization policy. However, the contribution requirements beyond the first year are also impacted by investment returns beyond the first year. Historically, significant downturns in the market are often followed by higher than average returns. Such investment gains would offset the impact of these single year negative returns in years beyond FY 2026-27.

Assumed Annual Return for Fiscal Year 2023-24	Required Employer Contributions	Projected Employer Contributions
	2025-26	2026-27
(17.2%) (2 standard deviation loss)		
Discount Rate	6.80%	6.80%
Normal Cost Rate	26.36%	26.4%
UAL Contribution	\$3,012,497	\$3,615,000
(5.2%) (1 standard deviation loss)		
Discount Rate	6.80%	6.80%
Normal Cost Rate	26.36%	26.4%
UAL Contribution	\$3,012,497	\$3,413,000

- Without investment gains (returns higher than 6.8%) in FY 2024-25 or later, projected contributions rates would continue to rise over the next four years due to the continued phase-in of the impact of the illustrated investment loss in FY 2023-24.
- The Pension Outlook Tool can be used to model projected contributions for these scenarios beyond FY 2026-27 as well as to model other investment return scenarios.

Discount Rate Sensitivity

The discount rate assumption is calculated as the sum of the assumed real rate of return and the assumed annual price inflation, currently 4.5% and 2.3%, respectively. Changing either the price inflation assumption or the real rate of return assumption will change the discount rate. The sensitivity of the valuation results to the discount rate assumption depends on which component of the discount rate is changed. Shown below are various valuation results as of June 30, 2023, assuming alternate discount rates by changing the two components independently. Results are shown using the current discount rate of 6.8% as well as alternate discount rates of 5.8% and 7.8%. The rates of 5.8% and 7.8% were selected since they illustrate the impact of a 1.0% increase or decrease to the 6.8% assumption.

Sensitivity to the Real Rate of Return Assumption

As of June 30, 2023	1% Lower Real Return Rate	Current Assumptions	1% Higher Real Return Rate
Discount Rate	5.8%	6.8%	7.8%
Price Inflation	2.3%	2.3%	2.3%
Real Rate of Return	3.5%	4.5%	5.5%
a) Total Normal Cost	44.21%	35.35%	28.57%
b) Accrued Liability	\$117,295,807	\$104,605,657	\$94,027,448
c) Market Value of Assets	\$69,247,300	\$69,247,300	\$69,247,300
d) Unfunded Liability/(Surplus) [(b) - (c)]	\$48,048,507	\$35,358,357	\$24,780,148
e) Funded Ratio	59.0%	66.2%	73.6%

Sensitivity to the Price Inflation Assumption

As of June 30, 2023	1% Lower Price Inflation	Current Assumptions	1% Higher Price Inflation
Discount Rate	5.8%	6.8%	7.8%
Price Inflation	1.3%	2.3%	3.3%
Real Rate of Return	4.5%	4.5%	4.5%
a) Total Normal Cost	37.04%	35.35%	32.14%
b) Accrued Liability	\$107,878,501	\$104,605,657	\$97,432,484
c) Market Value of Assets	\$69,247,300	\$69,247,300	\$69,247,300
d) Unfunded Liability/(Surplus) [(b) - (c)]	\$38,631,201	\$35,358,357	\$28,185,184
e) Funded Ratio	64.2%	66.2%	71.1%

Mortality Rate Sensitivity

The following table looks at 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.

As of June 30, 2023	10% Lower Mortality Rates	Current Assumptions	10% Higher Mortality Rates
a) Total Normal Cost	35.84%	35.35%	34.89%
b) Accrued Liability	\$106,754,690	\$104,605,657	\$102,631,428
c) Market Value of Assets	\$69,247,300	\$69,247,300	\$69,247,300
d) Unfunded Liability/(Surplus) [(b) - (c)]	\$37,507,390	\$35,358,357	\$33,384,128
e) Funded Ratio	64.9%	66.2%	67.5%

Maturity Measures

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

Since it is the employer that bears the risk, it is appropriate to perform this analysis on a pension plan level considering all rate plans. The following measures are for one rate plan only. One way to look at the maturity level of CalPERS and its plans is to look at the ratio of a plan's retiree liability to its total liability. A pension plan in its infancy will have a very low ratio of retiree liability to total liability. As the plan matures, the ratio 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
1. Retiree Accrued Liability	\$68,618,382	\$72,798,722
2. Total Accrued Liability	\$100,724,947	\$104,605,657
3. Ratio of Retiree AL to Total AL $[(1) \div (2)]$	68%	70%

Another measure of the maturity level of 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 very high ratio of active to retired members. As the plan matures and members retire, the ratio declines. A mature plan will often have a ratio near or below one.

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

For comparison, the support ratio for all CalPERS public agency plans as of June 30, 2022, was 0.77 and was calculated consistently with how it is for the individual rate plan. Note that to calculate the support ratio for all public agency plans, a retiree with service from more than one CalPERS agency is counted as a retiree more than once.

Support Ratio	June 30, 2022	June 30, 2023
1. Number of Actives	28	25
2. Number of Retirees	87	91
3. Support Ratio $[(1) \div (2)]$	0.32	0.27

Maturity Measures (continued)

The actuarial calculations supplied in this communication are based on various assumptions about long-term demographic and economic behavior. Unless these assumptions (e.g., terminations, deaths, disabilities, retirements, salary 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

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

Liability Volatility Ratio

Also shown in the table below is the liability volatility ratio (LVR), which is the ratio of accrued liability to payroll. Plans that have a higher LVR experience more volatile employer contributions (as a percentage of payroll) due to changes in liability. For example, a plan with an LVR of 8 is expected to have twice the contribution volatility of a plan with an 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	June 30, 2022	June 30, 2023
1. Market Value of Assets	\$67,209,521	\$69,247,300
2. Payroll	\$3,574,655	\$3,406,607
3. Asset Volatility Ratio (AVR) $[(1) \div (2)]$	18.8	20.3
4. Accrued Liability	\$100,724,947	\$104,605,657
5. Liability Volatility Ratio (LVR) $[(4) \div (2)]$	28.2	30.7

Maturity Measures History

Valuation Date	Ratio of Retiree Accrued Liability to Total Accrued Liability	Support Ratio	Asset Volatility Ratio	Liability Volatility Ratio
06/30/2017	71%	0.44	17.2	23.4
06/30/2018	73%	0.38	18.3	25.7
06/30/2019	71%	0.38	17.7	25.1
06/30/2020	69%	0.37	17.0	24.7
06/30/2021	69%	0.35	20.2	26.1
06/30/2022	68%	0.32	18.8	28.2
06/30/2023	70%	0.27	20.3	30.7

Funded Status – Termination Basis

The funded status measured on a termination basis is an estimate of the financial position of the plan had the contract with CalPERS been terminated as of June 30, 2023. The accrued liability on a termination basis (termination liability) is calculated differently from the plan's ongoing funding liability. For the termination liability calculation, both compensation and service are frozen as of the valuation date and no future pay increases or service accruals are assumed. This measure of funded status is not appropriate for assessing the need for future employer contributions in the case of an ongoing plan, that is, for an employer that continues to provide CalPERS retirement benefits to active employees. Unlike the actuarial cost method used for ongoing plans, the termination liability is the present value of the benefits earned through the valuation date.

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

The discount rate used for actual termination valuations is a weighted average of the 10-year and 30-year Treasury yields where the weights are based on matching asset and liability durations as of the termination date. The discount rates used in the following analysis is based on 20-year Treasury bonds, which is a good proxy for most plans. The discount rate upon contract termination will depend on actual Treasury rates on the date of termination, which varies over time, as shown below.

Valuation Date	20-Year Treasury Rate	Valuation Date	20-Year Treasury Rate
06/30/2014	3.08%	06/30/2019	2.31%
06/30/2015	2.83%	06/30/2020	1.18%
06/30/2016	1.86%	06/30/2021	2.00%
06/30/2017	2.61%	06/30/2022	3.38%
06/30/2018	2.91%	06/30/2023	4.06%

As Treasury rates are variable, the table below shows a range for the termination liability using discount rates 1% below and above the 20-year Treasury rate on the valuation date. The price inflation assumption is the 20-year Treasury breakeven inflation rate, that is, the difference between the 20-year inflation indexed bond and the 20-year fixed-rate bond.

The Market Value of Assets (MVA) also varies with interest rates and will fluctuate depending on other market conditions on the date of termination. Since it is not possible to approximate how the MVA will change in different interest rate environments, the results below use the MVA as of the valuation date.

	Discount Rate: 3.06% Price Inflation: 2.50%	Discount Rate: 5.06% Price Inflation: 2.50%
1. Termination Liability ¹	\$173,014,809	\$131,380,274
2. Market Value of Assets (MVA)	69,247,300	69,247,300
3. Unfunded Termination Liability [(1) – (2)]	\$103,767,509	\$62,132,974
4. Funded Ratio [(2) ÷ (1)]	40.0%	52.7%

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

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

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 Index¹ 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	\$37,888,549
b) Transferred Members	3,960,982
c) Separated Members	1,838,242
d) Members and Beneficiaries Receiving Payments	88,643,916
e) Total	<u>\$132,331,689</u>
2. Market Value of Assets (MVA)	<u>69,247,300</u>
3. Unfunded Accrued Liability – Low-Default-Risk Basis [(1e) – (2)]	\$63,084,389
4. Unfunded Accrued Liability – Funding Policy Basis	<u>35,358,357</u>
5. Present Value of Unearned Investment Risk Premium [(3) – (4)]	\$27,726,032

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% or 5.25%, and some automatic annual retiree COLAs could be suspended (Gov. Code sections 21329 and 21335). 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.

Summary of Valuation Data

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

	June 30, 2022	June 30, 2023
Active Members		
Counts	28	25
Average Attained Age	50.2	49.9
Average Entry Age to Rate Plan	29.6	29.5
Average Years of Credited Service	20.2	20.3
Average Annual Covered Pay	\$127,666	\$136,264
Annual Covered Payroll	\$3,574,655	\$3,406,607
Present Value of Future Payroll	\$23,500,045	\$22,399,553
Transferred Members	10	9
Separated Members	10	12
Retired Members and Beneficiaries*		
Counts	87	91
Average Annual Benefits	\$62,237	\$64,034
Total Annual Benefits	\$5,414,599	\$5,827,053

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

* Values include community property settlements.

List of Class 1 Benefit Provisions

This plan has the following Class 1 Benefit Provisions:

- One Year Final Compensation (FAC 1)
- Post-Retirement Survivor Allowance (PRSA)

Plan's Major Benefit Options

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

	Benefit Group				
Member Category	Fire	Fire	Fire	Fire	
Demographics					
Actives	Yes	No	No	No	
Transfers/Separated	Yes	Yes	Yes	No	
Receiving	Yes	Yes	Yes	Yes	
Benefit Provision					
Benefit Formula	3% @ 55	3% @ 55	2% @ 50		
Social Security Coverage	No	No	No		
Full/Modified	Full	Full	Full		
Employee Contribution Rate	9.00%				
Final Average Compensation Period	One Year	One Year	One Year		
Sick Leave Credit	Yes	Yes	Yes		
Non-Industrial Disability	Standard	Standard	Standard		
Industrial Disability	Standard	Standard	Standard		
Pre-Retirement Death Benefits					
Optional Settlement 2	Yes	Yes	No		
1959 Survivor Benefit Level	Level 3	Level 3	Level 3		
Special	Yes	Yes	Yes		
Alternate (firefighters)	No	No	No		
Post-Retirement Death Benefits					
Lump Sum	\$2,000	\$2,000	\$2,000	\$2,000	
Survivor Allowance (PRSA)	Yes	Yes	Yes	Yes	
COLA	2%	2%	2%	2%	

Section 2

California Public Employees' Retirement System

Risk Pool Actuarial Valuation Information

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