California Public Employees' Retirement System

# Actuarial Valuation for the Safety Plan of the City of Pasadena

as of June 30, 2024

(CalPERS ID: 6556986602)
(Rate Plan ID: 75)

**Required Contributions for Fiscal Year**

July 1, 2026 — June 30, 2027

CalPERS

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# 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 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, this report is complete and accurate and contains sufficient information to disclose, fully and fairly, the funded condition of the Safety Plan of the City of Pasadena 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, 2024, provided by the various CalPERS databases and the benefits under this plan with CalPERS as of the date this report was produced.

Alex Grunder, ASA, MAAA
Senior Actuary, CalPERS

## Highlights and Executive Summary


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# Introduction

This report presents the results of the June 30, 2024, actuarial valuation of the Safety Plan of the City of Pasadena of the California Public Employees' Retirement System (CalPERS). This actuarial valuation sets the minimum required contributions for fiscal year (FY) 2026-27.

# Purpose

This report documents the results of the actuarial valuation prepared by the CalPERS Actuarial Office using data as of June 30, 2024. This report contains actuarial information for the following rate plan(s).

- 75, Safety Fire First Level
- 30203, Safety Police Second Level
- 30204, Safety Police First Level
- 30205, Safety Fire Second Level
- 25060, Safety Fire PEPRA Level
- 25061, Safety Police PEPRA Level

The purpose of the valuation is to:

- Set forth the assets and accrued liabilities of this rate plan as of June 30, 2024;
- Determine the minimum required employer contributions for this rate plan for FY July 1, 2026, through June 30, 2027;
- Determine the required member contribution rate for FY July 1, 2026, through June 30, 2027, for employees subject to the California Public Employees' Pension Reform Act of 2013 (PEPRA); and
- Provide actuarial information as of June 30, 2024, 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 an Agent Employer Defined Benefit Pension Plan. A separate accounting valuation report for such purposes is available from CalPERS and details for ordering are 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 the Actuarial Standards of Practice:

- 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.
- The funded status on a termination basis.
- A low-default-risk obligation measure (LDROM) of benefit costs accrued as of the valuation date.

# 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 13**

| | Fiscal Year 2025-26 | Fiscal Year 2026-27 |
|---|---|---|
| Employer Normal Cost Rate | 20.43% | 20.18% |
| Unfunded Accrued Liability (UAL) Contribution Amount | $20,584,672 | $23,027,863 |
| Paid either as | | |
| Option 1) 12 Monthly Payments of | $1,715,389 | $1,918,989 |
| Option 2) Annual Prepayment in July | $19,918,578 | $22,282,710 |

**Member Contribution Rates — page 14**

| | Fiscal Year 2025-26 | Fiscal Year 2026-27 |
|---|---|---|
| Classic Member Contribution Rate | 9.00% | 9.00% |
| PEPRA Member Contribution Rate | 13.00% | 13.00% |

**Projected Employer Contributions — page 17**

| Fiscal Year | Normal Cost (% of payroll) | Annual UAL Payment |
|---|---|---|
| 2027-28 | 19.8% | $23,958,000 |
| 2028-29 | 19.4% | $26,417,000 |
| 2029-30 | 19.1% | $26,587,000 |
| 2030-31 | 18.7% | $26,726,000 |
| 2031-32 | 18.4% | $26,244,000 |

**Funded Status – Funding Policy Basis — page 15**

| | June 30, 2023 | June 30, 2024 |
|---|---|---|
| Entry Age Accrued Liability (AL) | $858,262,809 | $903,794,123 |
| Market Value of Assets (MVA) | 607,273,618 | 658,917,751 |
| Unfunded Accrued Liability (UAL) [AL – MVA] | $250,989,191 | $244,876,372 |
| Funded Ratio [MVA ÷ AL] | 70.8% | 72.9% |

**Summary of Valuation Data — page 34**

| | June 30, 2023 | June 30, 2024 |
|---|---|---|
| Active Member Count | 374 | 375 |
| Annual Covered Payroll | $50,730,624 | $55,020,615 |
| Transferred Member Count | 83 | 83 |
| Separated Member Count | 72 | 81 |
| Retired Members and Beneficiaries Count | 468 | 480 |

# 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 rate plans that are not in a risk pool (non-pooled), benefit changes by contract amendment are generally included in the first valuation that is prepared after the amendment becomes effective, even if the effective date of the amendment is after the valuation date.

Please refer to the Plan's Major Benefit Options and Appendix B - Principal Plan Provisions 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 the (Gain)/Loss Analysis 6/30/23 – 6/30/24 and the effect on the employer contribution is shown in the Reconciliation of Required Employer Contributions. It should be noted that no change in liability or contribution is shown for any plan changes which were already included in the prior year's valuation.

**Board Policy**

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 95$^{th}$ percentile return in the Future Investment Return Scenarios exhibit in this report, which includes returns high enough to trigger a board discussion, does not reflect any change in the discount rate.

**Actuarial Methods and Assumptions**

There are no significant changes to the actuarial methods or assumptions for the June 30, 2024, actuarial valuation.

# Subsequent Events

This actuarial valuation report reflects fund investment return through June 30, 2024, as well as statutory changes, regulatory changes and board actions through January 2025.

CalPERS will be completing an Asset Liability Management (ALM) review process in November 2025 that will review the capital market assumptions and the CalPERS Total Fund Investment Policy and ascertain whether a change in the discount is warranted. In addition, the Actuarial Office will be presenting the findings of its Experience Study which reviews economic assumptions other than the discount rate as well as all demographic assumptions and makes recommendations to modify actuarial assumptions where appropriate. Any changes in actuarial assumptions will be reflected in the June 30, 2025, actuarial valuations.

The 2024 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 2025 limits, determined in October 2024, 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.

## Assets


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# Reconciliation of the Market Value of Assets

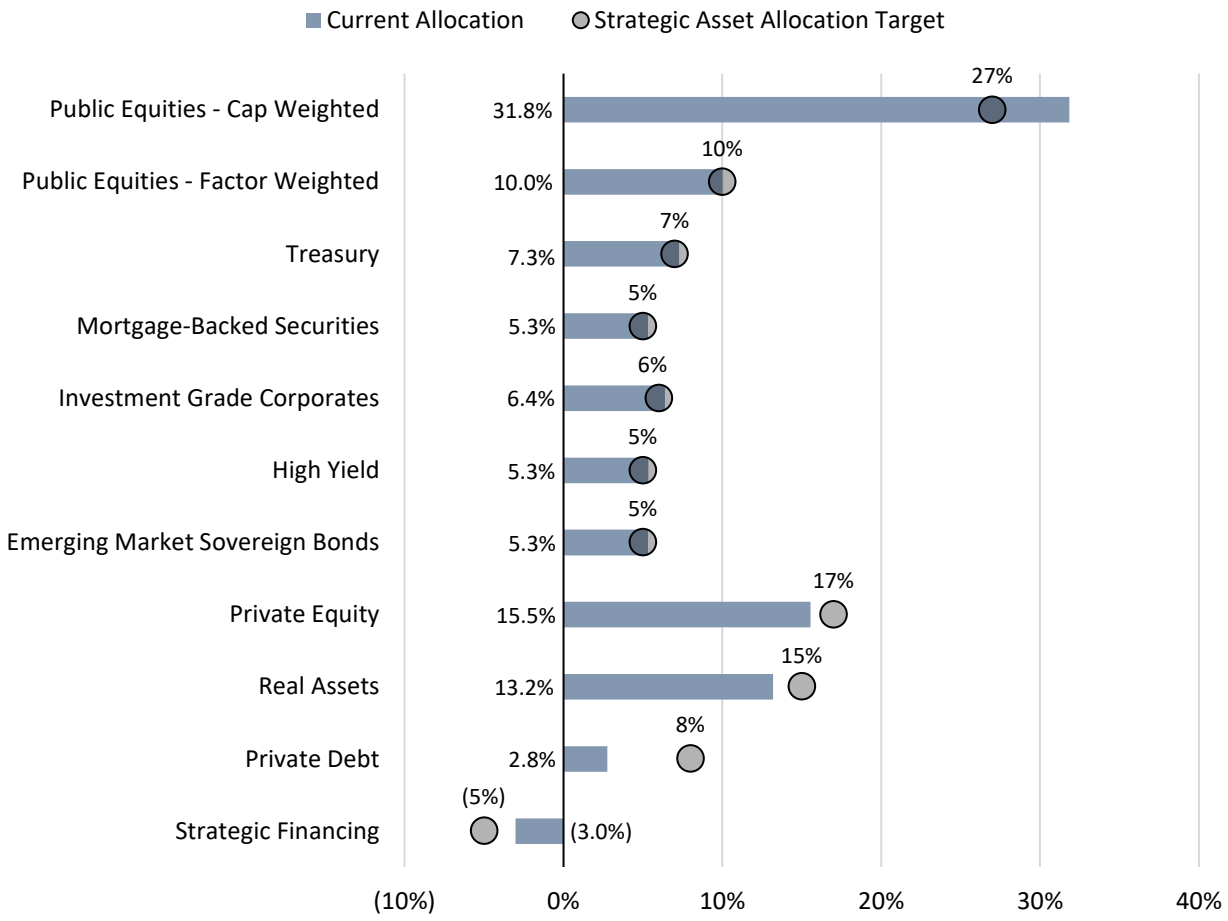
| | | |
|---|---|---|
| 1. | Market Value of Assets as of 6/30/23 including Receivables | $607,273,618 |
| 2. | Change in Receivables for Service Buybacks | (21,638) |
| 3. | Employer Contributions | 29,545,364 |
| 4. | Employee Contributions | 6,142,580 |
| 5. | Benefit Payments to Retirees and Beneficiaries | (41,051,271) |
| 6. | Refunds | 0 |
| 7. | Transfers | 0 |
| 8. | Service Credit Purchase (SCP) Payments and Interest | 27,145 |
| 9. | Administrative Expenses | (444,150) |
| 10. | Miscellaneous Adjustments | 0 |
| 11. | Investment Return (Net of Investment Expenses) | 57,446,101 |
| 12. | Market Value of Assets as of 6/30/24 including Receivables | $658,917,751 |

# Asset Allocation

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

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

On March 20, 2024, the board adopted changes to the strategic asset allocation. The new allocation was effective July 1, 2024. The asset allocation as of June 30, 2024, is shown below, along with the strategic asset allocation targets.

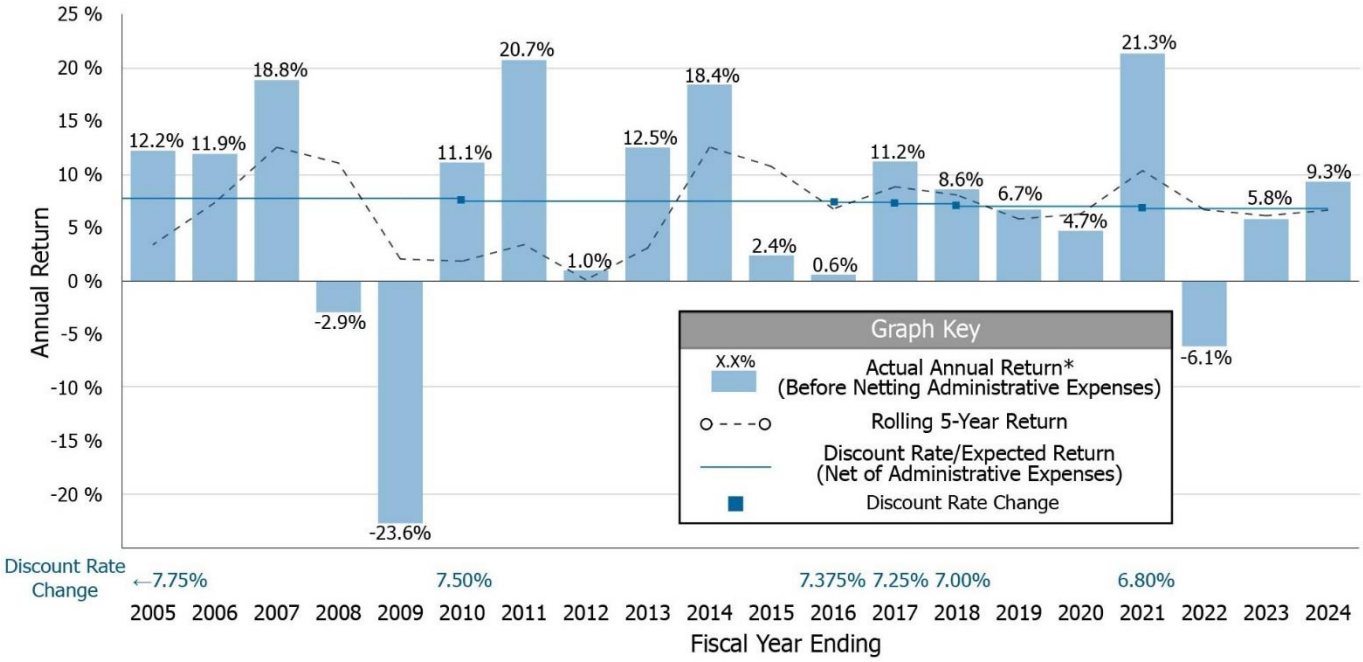



For more information see the Trust Level Review as of June 30, 2024, which is available on the CalPERS website.

# CalPERS History of Investment Returns

The following is a chart with 20 years of 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 lagged private asset valuations for investment performance reporting purposes. This can lead to a timing difference in private asset influence on performance 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 (2005 through 2024)**




* As reported by the Investment Office with lagged private valuations 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, 2024. These returns are the annual rates that if compounded over the indicated number of years would equate to the actual time-weighted investment performance of the PERF. It should be recognized that the annual rate of return is volatile, as the chart above illustrates, so when looking at investment returns, it is informative to look at average returns over longer time horizons.

**PERF Realized Rates of Return as of June 30, 2024**

| 1 year | 3 year | 5 year | 10 year | 20 year | 30 year |
|---|---|---|---|---|---|
| 9.3% | 2.8% | 6.6% | 6.2% | 6.7% | 7.7% |

## Liabilities and Contributions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# 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 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 PEPRA members it is based on 50% of the total normal cost.

When plan experience differs from the actuarial assumptions, 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 UAL 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 UAL 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 for more information on the amortization policy.

# Development of Accrued and Unfunded Liabilities

| | | June 30, 2023 | June 30, 2024 |
|---|---|---|---|
| 1. | Present Value of Projected Benefits | | |
| | a) Active Members | $401,556,947 | $433,929,638 |
| | b) Transferred Members | 16,536,651 | 19,643,055 |
| | c) Separated Members | 11,924,403 | 13,033,182 |
| | d) Members and Beneficiaries Receiving Payments | 590,456,090 | 607,015,957 |
| | e) Total | $1,020,474,091 | $1,073,621,832 |
| 2. | Present Value of Future Employer Normal Costs | $100,155,685 | $103,551,135 |
| 3. | Present Value of Future Employee Contributions | $62,055,597 | $66,276,574 |
| 4. | Entry Age Accrued Liability | | |
| | a) Active Members [(1a) - (2) - (3)] | $239,345,665 | $264,101,929 |
| | b) Transferred Members (1b) | 16,536,651 | 19,643,055 |
| | c) Separated Members (1c) | 11,924,403 | 13,033,182 |
| | d) Members and Beneficiaries Receiving Payments (1d) | 590,456,090 | 607,015,957 |
| | e) Total | $858,262,809 | $903,794,123 |
| 5. | Market Value of Assets (MVA) | $607,273,618 | $658,917,751 |
| 6. | Unfunded Accrued Liability (UAL) [(4e) - (5)] | $250,989,191 | $244,876,372 |
| 7. | Funded Ratio [(5) ÷ (4e)] | 70.8% | 72.9% |

# Required Employer Contributions

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

| | Fiscal Year |
|---|---|
| **Required Employer Contributions** | **2026-27** |
| **Employer Normal Cost Rate** | **20.18%** |
| ***Plus*** | |
| **Unfunded Accrued Liability (UAL) Contribution Amount** | **$23,027,863** |
| ***Paid either as*** | |
| **1) Monthly Payment** | **$1,918,989** |
| ***Or*** | |
| **2) Annual Prepayment Option*** | **$22,282,710** |

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.

| | Fiscal Year 2025-26 | Fiscal Year 2026-27 |
|---|---|---|
| **Normal Cost Contribution as a Percentage of Payroll** | | |
| Total Normal Cost[1] | 31.04% | 30.88% |
| Offset due to Employee Contributions[2] | (10.61%) | (10.70%) |
| Employer Normal Cost | 20.43% | 20.18% |
| Projected Annual Payroll for Contribution Year | $55,112,428 | $59,772,963 |
| **Estimated Employer Contributions Based on Projected Payroll** | | |
| Total Normal Cost | $17,106,898 | $18,457,891 |
| Expected Employee Contributions | (5,847,429) | (6,395,707) |
| Employer Normal Cost | $11,259,469 | $12,062,184 |
| Unfunded Liability Contribution | $20,584,672 | $23,027,863 |
| % of Projected Payroll (illustrative only) | 37.35% | 38.53% |
| Estimated Total Employer Contribution | $31,844,141 | $35,090,047 |
| % of Projected Payroll (illustrative only) | 57.78% | 58.71% |

[1] The Total 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 Benefit Group.

[2] 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.

**Classic Members**

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, Half Pay at age 55 | Varies by entry age |
| Safety, 2% at age 55 | 7% |
| Safety, 2% at age 50 | 9% |
| Safety, 3% at age 55 | 9% |
| Safety, 3% at age 50 | 9% |

**PEPRA Members**

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

The table below shows the determination of the PEPRA member contribution rates effective July 1, 2026, based on 50% of the total normal cost rate for each respective rate plan as of the June 30, 2024, valuation.

| | | Basis for Current Rate | | Rates Effective July 1, 2026 | | | |
|---|---|---|---|---|---|---|---|
| Rate Plan Identifier | Benefit Group Name | Total Normal Cost | Member Rate | Total Normal Cost | Change in Normal Cost | Adj. Needed | Member Rate |
| 25060 | Safety Fire PEPRA Level | 26.070% | 13.00% | 26.74% | 0.670% | No | 13.00% |
| 25061 | Safety Police PEPRA Level | 26.070% | 13.00% | 26.74% | 0.670% | No | 13.00% |

For a description of the methodology used to determine the Total Normal Cost for this purpose, see PEPRA Normal Cost Rate Methodology in Appendix A.

# 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, 2023 | June 30, 2024 |
|---|---|---|
| 1. Present Value of Benefits | $1,020,474,091 | $1,073,621,832 |
| 2. Entry Age Accrued Liability | 858,262,809 | 903,794,123 |
| 3. Market Value of Assets (MVA) | 607,273,618 | 658,917,751 |
| 4. Unfunded Accrued Liability (UAL) [(2) – (3)] | $250,989,191 | $244,876,372 |
| 5. Funded Ratio [(3) ÷ (2)] | 70.8% | 72.9% |

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. Present Value of Benefits | $1,266,201,460 | $1,073,621,832 | $924,518,138 |
| 2. Entry Age Accrued Liability | 1,030,746,089 | 903,794,123 | 800,033,384 |
| 3. Market Value of Assets (MVA) | 658,917,751 | 658,917,751 | 658,917,751 |
| 4. Unfunded Accrued Liability (UAL) [(2) – (3)] | $371,828,338 | $244,876,372 | $141,115,633 |
| 5. Funded Ratio [(3) ÷ (2)] | 63.9% | 72.9% | 82.4% |

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 CalPERS amortization policy provides a systematic methodology for paying down a plan's unfunded accrued liability (UAL) over a reasonable period of years. The projected schedule of required payments for this plan under the amortization policy is provided in Amortization Schedule and Alternatives. Certain aspects of the policy such as 1) layered amortization bases (positive and negative) with different remaining payoff periods, and 2) the phase-in of required payments toward investment gains and losses, can result in volatility in year-to-year projected UAL payments. Provided below is information on how an Additional Discretionary Payment (ADP), together with your required UAL payment of $23,027,863 for FY 2026-27, may better accomplish your agency's specific objectives with regard to either smoothing out projected future payments or achieving a greater reduction in UAL than would otherwise occur when making only the minimum required payment. Such additional payments are allowed at any time and can also result in significant long-term savings.

**Fiscal Year 2026-27 Employer Contribution Versus Agency Funding Objectives**

The interest-to-payment ratio for the FY 2026-27 minimum required UAL payment is 68%, which means the required payment of $23,027,863 includes $15,548,388 of interest cost and results in a $7,479,475 reduction in the UAL, as can be seen in Amortization Schedule and Alternatives (see columns labelled Current Amortization Schedule). If the interest-to-payment ratio is close to 100%, and the reduction in the UAL is small, it may indicate that required contributions will be increasing in the coming years, which would be shown in Projected Employer Contributions. Another measure that can be used to evaluate how well the FY 2026-27 required UAL payment meets the agency's specific funding objectives is the number of years required to pay off the existing UAL if the annual payment were held constant in future years. With an annual payment of $23,027,863 it would take 17.6 years to pay off the current UAL. A result that is longer than the agency's target funding period suggests that the option of supplementing the minimum payment with an ADP should be weighed against the agency's budget constraints.

Provided below are select ADP options for consideration. Making such an ADP during FY 2026-27 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 2026-27 Employer Contributions — Illustrative Scenarios**

| If the Annual UAL Payment Each Year Were… | The Current UAL Would be Paid Off in… | This Would Require an ADP[1] in FY 2026-27 of… | Plus the Estimated Normal Cost of… | Estimated Total Contribution |
|---|---|---|---|---|
| $23,027,863 | 17.6 years | $0 | $12,062,184 | $35,090,047 |
| 25,174,503 | 15 years | 2,146,640 | 12,062,184 | 37,236,687 |
| 32,756,768 | 10 years | 9,728,905 | 12,062,184 | 44,818,952 |
| 56,331,393 | 5 years | 33,303,530 | 12,062,184 | 68,393,577 |

[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, 2026, as determined in the June 30, 2024, 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 |
|---|---|---|---|
| 2017-18 | N/A | 2021-22 | $0 |
| 2018-19 | $0 | 2022-23 | 0 |
| 2019-20 | 0 | 2023-24 | 0 |
| 2020-21 | 0 | 2024-25 | 0 |

# 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 2024-25 is assumed to be 6.80% per year, net of investment and administrative expenses. 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.

The projected normal cost percentages below reflect that the normal cost is expected to continue to decline over time as new employees are hired into lower cost benefit tiers. Future contribution requirements may differ significantly from those shown below. The actuarial valuation does not include payroll beyond the valuation date. For the most realistic projections, the employer should apply projected payroll amounts to the rates below based on the most recent information available, such as current payroll as well as any plans to fill vacancies or add or remove positions.

| | **Required Contribution** | **Projected Future Employer Contributions (Assumes 6.80% Return for Fiscal Year 2024-25 and Beyond)** | | | | |
|---|---|---|---|---|---|---|
| | 2026-27 | 2027-28 | 2028-29 | 2029-30 | 2030-31 | 2031-32 |
| Normal Cost % | 20.18% | 19.8% | 19.4% | 19.1% | 18.7% | 18.4% |
| UAL Payment | $23,027,863 | $23,958,000 | $26,417,000 | $26,587,000 | $26,726,000 | $26,244,000 |
| Total as a % of Payroll* | 58.71% | 58.8% | 61.3% | 60.0% | 58.8% | 56.6% |
| Projected Payroll | $59,772,963 | $61,446,606 | $63,167,111 | $64,935,790 | $66,753,992 | $68,623,104 |

*Illustrative only and based on the projected payroll shown.

The required UAL payments are expected to vary significantly from the projections above due to experience, particularly investment experience. 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.

For ongoing plans, investment gains and losses are amortized using an initial 5-year ramp. For more information, please see Amortization of Unfunded Actuarial Accrued Liability 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 initial ramp 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.

# (Gain)/Loss Analysis 6/30/23 – 6/30/24

To calculate the cost requirements of the plan, 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 shown below.

| | | |
|---|---|---|
| 1. | Total (Gain)/Loss for the Year | |
| a) | Unfunded Accrued Liability (UAL) as of 6/30/23 | $250,989,191 |
| b) | Expected payment on the UAL during 2023-24 | 17,425,757 |
| c) | Interest through 6/30/24 [0.068 x (1a) - ((1.068)$^{½}$ - 1) x (1b)] | 16,484,534 |
| d) | Expected UAL before all other changes [(1a) - (1b) + (1c)] | 250,047,968 |
| e) | Change due to plan changes | 0 |
| f) | Change due to AL Significant Increase | 0 |
| g) | Change due to assumption changes | 0 |
| h) | Change due to method changes | 0 |
| i) | Change due to discount rate change with Funding Risk Mitigation | 0 |
| j) | Expected UAL after all other changes [(1d) + (1e) + (1f) + (1g) + (1h) + (1i)] | 250,047,968 |
| k) | Actual UAL as of 6/30/24 | 244,876,372 |
| l) | Total (Gain)/Loss for 2023-24 [(1k) - (1j)] | ($5,171,596) |
| 2. | Investment (Gain)/Loss for the Year | |
| a) | Market Value of Assets as of 6/30/23 | $607,273,618 |
| b) | Prior fiscal year receivables | (93,268) |
| c) | Current fiscal year receivables | 71,631 |
| d) | Contributions received | 35,687,945 |
| e) | Benefits and refunds paid | (41,051,271) |
| f) | Transfers, SCP payments and interest, and miscellaneous adjustments | 27,145 |
| g) | Expected return at 6.8% per year | 41,109,817 |
| h) | Expected assets as of 6/30/24 [(2a) + (2b) + (2c) + (2d) + (2e) + (2f) + (2g)] | 643,025,617 |
| i) | Actual Market Value of Assets as of 6/30/24 | 658,917,751 |
| j) | Investment (Gain)/Loss [(2h) - (2i)] | ($15,892,134) |
| 3. | Non-Investment (Gain)/Loss for the Year | |
| a) | Total (Gain)/Loss (1l) | ($5,171,596) |
| b) | Investment (Gain)/Loss (2j) | (15,892,134) |
| c) | Non-Investment (Gain)/Loss [(3a) - (3b)] | $10,720,538 |

# 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, 2024.
- The required employer contributions determined by the valuation are for the fiscal year beginning two years after the valuation date: FY 2026-27.

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 2024-25 is based on the actuarial valuation two years ago, adjusted for additional discretionary payments, if necessary, and the expected payment for FY 2025-26 is based on the actuarial valuation one year ago.

| Reason for Base | Date Est. | Ramp Level 2026-27 | Ramp Shape | Escalation Rate | Amort. Period | Balance 6/30/24 | Expected Payment 2024-25 | Balance 6/30/25 | Expected Payment 2025-26 | Balance 6/30/26 | Minimum Required Payment 2026-27 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arnett Case | 6/30/07 | No Ramp | | 2.80% | 0 | 2,451 | 2,533 | 0 | 0 | 0 | 0 |
| Assets Change | 6/30/07 | No Ramp | | 2.80% | 0 | (16,817) | (17,379) | 0 | 0 | 0 | 0 |
| Assumption Change | 6/30/07 | No Ramp | | 2.80% | 0 | (1,581,483) | (1,634,369) | 0 | 0 | 0 | 0 |
| Method Change | 6/30/07 | No Ramp | | 2.80% | 0 | (225,192) | (118,582) | (117,958) | (121,903) | 0 | 0 |
| Benefit Change | 6/30/08 | No Ramp | | 2.80% | 3 | 231,093 | 51,479 | 193,607 | 52,920 | 152,083 | 54,402 |
| Assumption Change | 6/30/09 | No Ramp | | 2.80% | 5 | 5,124,836 | 845,935 | 4,599,101 | 869,621 | 4,013,138 | 893,971 |
| Special (Gain)/Loss | 6/30/09 | No Ramp | | 2.80% | 15 | 8,900,224 | 721,598 | 8,759,710 | 741,803 | 8,588,761 | 762,573 |
| Special (Gain)/Loss | 6/30/10 | No Ramp | | 2.80% | 16 | (4,773,040) | (371,740) | (4,713,435) | (382,148) | (4,639,021) | (392,848) |
| Assumption Change | 6/30/11 | No Ramp | | 2.80% | 7 | 7,028,184 | 935,603 | 6,539,210 | 961,799 | 5,989,914 | 988,730 |
| Special (Gain)/Loss | 6/30/11 | No Ramp | | 2.80% | 17 | (3,653,265) | (274,136) | (3,618,384) | (281,811) | (3,573,199) | (289,702) |
| (Gain)/Loss | 6/30/12 | No Ramp | | 2.80% | 18 | 47,539,731 | 3,446,154 | 47,211,036 | 3,542,646 | 46,760,271 | 3,641,840 |
| Payment (Gain)/Loss | 6/30/12 | No Ramp | | 2.80% | 18 | (4,997,893) | (362,297) | (4,963,337) | (372,441) | (4,915,948) | (382,870) |
| (Gain)/Loss | 6/30/13 | 100% | Up/Dn | 2.80% | 19 | 57,802,178 | 4,343,333 | 57,244,148 | 4,464,946 | 56,522,492 | 4,589,964 |
| (Gain)/Loss | 6/30/14 | 100% | Up/Dn | 2.80% | 20 | (52,474,593) | (3,808,728) | (52,106,770) | (3,915,372) | (51,603,725) | (4,025,002) |
| Assumption Change | 6/30/14 | 100% | Up/Dn | 2.80% | 10 | 25,724,570 | 3,147,693 | 24,220,886 | 3,235,828 | 22,523,869 | 3,326,431 |
| (Gain)/Loss | 6/30/15 | 100% | Up/Dn | 2.80% | 21 | 28,401,046 | 1,995,985 | 28,269,585 | 2,051,872 | 28,071,428 | 2,109,324 |
| (Gain)/Loss | 6/30/16 | 100% | Up/Dn | 2.80% | 22 | 28,148,358 | 1,919,580 | 28,078,674 | 1,973,329 | 27,948,705 | 2,028,582 |
| Assumption Change | 6/30/16 | 100% | Up/Dn | 2.80% | 12 | 11,419,312 | 1,205,733 | 10,949,771 | 1,239,493 | 10,413,413 | 1,274,199 |
| (Gain)/Loss | 6/30/17 | 100% | Up/Dn | 2.80% | 23 | (19,588,636) | (1,298,788) | (19,578,443) | (1,335,154) | (19,529,974) | (1,372,538) |
| Assumption Change | 6/30/17 | 100% | Up/Dn | 2.80% | 13 | 16,579,884 | 1,644,214 | 16,008,118 | 1,690,252 | 15,349,895 | 1,737,579 |

# Schedule of Amortization Bases (continued)

| Reason for Base | Date Est. | Ramp Level 2026-27 | Ramp Shape | Escala-tion Rate | Amort. Period | Balance 6/30/24 | Expected Payment 2024-25 | Balance 6/30/25 | Expected Payment 2025-26 | Balance 6/30/26 | Minimum Required Payment 2026-27 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| (Gain)/Loss | 6/30/18 | 100% | Up/Dn | 2.80% | 24 | (5,171,969) | (333,999) | (5,178,495) | (343,350) | (5,175,801) | (352,964) |
| Assumption Change | 6/30/18 | 100% | Up/Dn | 2.80% | 14 | 25,158,950 | 2,357,087 | 24,433,849 | 2,423,085 | 23,591,236 | 2,490,932 |
| Method Change | 6/30/18 | 100% | Up/Dn | 2.80% | 14 | 3,625,412 | 339,657 | 3,520,925 | 349,167 | 3,399,504 | 358,944 |
| Investment (Gain)/Loss | 6/30/19 | 100% | Up Only | 0.00% | 15 | 3,311,333 | 263,918 | 3,263,760 | 329,898 | 3,144,766 | 329,897 |
| Non-Investment (Gain)/Loss | 6/30/19 | No Ramp | | 0.00% | 15 | 645,170 | 63,060 | 623,873 | 63,060 | 601,128 | 63,061 |
| Investment (Gain)/Loss | 6/30/20 | 100% | Up Only | 0.00% | 16 | 15,219,029 | 915,067 | 15,308,255 | 1,220,090 | 15,088,325 | 1,525,112 |
| Non-Investment (Gain)/Loss | 6/30/20 | No Ramp | | 0.00% | 16 | 496,526 | 47,076 | 481,640 | 47,077 | 465,740 | 47,077 |
| AL Significant Increase* | 6/30/21 | No Ramp | | 0.00% | 17 | 623,142 | 57,468 | 606,126 | 57,468 | 587,953 | 57,468 |
| Assumption Change | 6/30/21 | No Ramp | | 0.00% | 17 | (356,219) | (32,851) | (346,492) | (32,852) | (336,103) | (32,851) |
| Net Investment (Gain) | 6/30/21 | 80% | Up Only | 0.00% | 17 | (73,758,191) | (3,031,995) | (75,640,360) | (4,547,993) | (76,083,823) | (6,063,990) |
| Non-Investment (Gain)/Loss | 6/30/21 | No Ramp | | 0.00% | 17 | (1,765,134) | (162,785) | (1,716,934) | (162,785) | (1,665,457) | (162,786) |
| Benefit Change | 6/30/22 | No Ramp | | 0.00% | 18 | 270,349 | 24,311 | 263,609 | 24,311 | 256,410 | 24,311 |
| Investment (Gain)/Loss | 6/30/22 | 60% | Up Only | 0.00% | 18 | 104,441,489 | 2,244,938 | 109,223,500 | 4,489,876 | 112,010,677 | 6,734,814 |
| Non-Investment (Gain)/Loss | 6/30/22 | No Ramp | | 0.00% | 18 | 13,783,859 | 1,239,494 | 13,440,218 | 1,239,494 | 13,073,209 | 1,239,494 |
| Investment (Gain)/Loss | 6/30/23 | 40% | Up Only | 0.00% | 19 | 4,456,403 | 0 | 4,759,438 | 102,303 | 4,977,356 | 204,605 |
| Non-Investment (Gain)/Loss | 6/30/23 | No Ramp | | 0.00% | 19 | 9,476,871 | 0 | 10,121,298 | 910,143 | 9,868,967 | 910,143 |
| Investment (Gain)/Loss | 6/30/24 | 20% | Up Only | 0.00% | 20 | (15,892,134) | 0 | (16,972,799) | 0 | (18,126,949) | (389,633) |
| Non-Investment (Gain)/Loss | 6/30/24 | No Ramp | | 0.00% | 20 | 10,720,538 | 0 | 11,449,535 | 0 | 12,228,103 | 1,099,594 |
| **Total** | | | | | | **244,876,372** | **16,364,267** | **244,616,465** | **20,584,672** | **239,977,343** | **23,027,863** |

*Government Code Section 20791 requires that a significant increase in actuarial liability to a contracting agency due to increased compensation by a subsequent employer to a non-represented employee is borne by the agency that created the increase in liability.

# Amortization Schedule and Alternatives

The amortization schedule on the previous page(s) shows the minimum contributions required according to the CalPERS amortization policy. Each year, many agencies express a desire for a more stable pattern of payments or indicate 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)

| | Current Amortization Schedule | | Alternative Schedules | | | |
|---|---|---|---|---|---|---|
| | | | 15 Year Amortization | | 10 Year Amortization | |
| **Date** | **Balance** | **Payment** | **Balance** | **Payment** | **Balance** | **Payment** |
| **6/30/2026** | 239,977,343 | 23,027,863 | 239,977,343 | 25,174,503 | 239,977,343 | 32,756,768 |
| **6/30/2027** | 232,497,868 | 23,957,833 | 230,279,442 | 25,174,503 | 222,443,620 | 32,756,768 |
| **6/30/2028** | 223,548,721 | 26,417,475 | 219,922,084 | 25,174,504 | 203,717,604 | 32,756,768 |
| **6/30/2029** | 211,449,137 | 26,587,143 | 208,860,425 | 25,174,504 | 183,718,219 | 32,756,768 |
| **6/30/2030** | 198,351,438 | 26,726,398 | 197,046,573 | 25,174,503 | 162,358,876 | 32,756,769 |
| **6/30/2031** | 184,219,182 | 26,243,762 | 184,429,380 | 25,174,503 | 139,547,096 | 32,756,769 |
| **6/30/2032** | 169,624,709 | 25,988,773 | 170,954,218 | 25,174,504 | 115,184,115 | 32,756,768 |
| **6/30/2033** | 154,301,332 | 24,505,080 | 156,562,744 | 25,174,504 | 89,164,453 | 32,756,769 |
| **6/30/2034** | 139,469,273 | 23,838,973 | 141,192,650 | 25,174,504 | 61,375,452 | 32,756,768 |
| **6/30/2035** | 124,317,014 | 22,676,520 | 124,777,389 | 25,174,503 | 31,696,800 | 32,756,768 |
| **6/30/2036** | 109,335,731 | 20,684,760 | 107,245,892 | 25,174,504 | | |
| **6/30/2037** | 95,394,082 | 19,470,838 | 88,522,252 | 25,174,503 | | |
| **6/30/2038** | 81,758,922 | 18,178,453 | 68,525,405 | 25,174,504 | | |
| **6/30/2039** | 68,532,173 | 17,169,061 | 47,168,772 | 25,174,504 | | |
| **6/30/2040** | 55,449,151 | 16,606,155 | 24,359,888 | 25,174,503 | | |
| **6/30/2041** | 42,058,217 | 13,930,497 | | | | |
| **6/30/2042** | 30,521,829 | 12,990,063 | | | | |
| **6/30/2043** | 19,172,849 | 19,814,005 | | | | |
| **6/30/2044** | | | | | | |
| **6/30/2045** | | | | | | |
| **6/30/2046** | | | | | | |
| **6/30/2047** | | | | | | |
| **6/30/2048** | | | | | | |
| **6/30/2049** | | | | | | |
| **Total** | **388,813,652** | | **377,617,553** | | **327,567,683** | |
| **Interest Paid** | **148,836,309** | | **137,640,210** | | **87,590,340** | |
| **Estimated Savings** | | | **11,196,099** | | **61,245,969** | |

# Reconciliation of Required Employer Contributions

**Normal Cost (% of Payroll)**

| | | |
|---|---|---|
| 1. | For Period 7/1/25 – 6/30/26 | |
| | a) Employer Normal Cost | 20.43% |
| | b) Employee contribution | 10.61% |
| | c) Total Normal Cost | 31.04% |
| 2. | Changes since the prior year annual valuation | |
| | a) Effect of demographic experience | (0.16%) |
| | b) Effect of plan changes | 0.00% |
| | c) Effect of discount rate change due to Funding Risk Mitigation | 0.00% |
| | d) Effect of assumption changes | 0.00% |
| | e) Effect of method changes | 0.00% |
| | f) Net effect of the changes above [sum of (a) through (e)] | (0.16%) |
| 3. | For Period 7/1/26 – 6/30/27 | |
| | a) Employer Normal Cost | 20.18% |
| | b) Employee contribution | 10.70% |
| | c) Total Normal Cost | 30.88% |
| | Employer Normal Cost Change [(3a) – (1a)] | (0.25%) |
| | Employee Contribution Change [(3b) – (1b)] | 0.09% |

**Unfunded Liability Contribution ($)**

| | | |
|---|---|---|
| 1. | For Period 7/1/25 – 6/30/26 | 20,584,672 |
| 2. | Changes since the prior year annual valuation | |
| | a) Effect of adjustments to prior year's amortization schedule | 0 |
| | b) Effect of elimination of amortization bases | 121,903 |
| | c) Effect of progression of amortization bases[1] | 1,611,327 |
| | d) Effect of investment (gain)/loss during prior year[2] | (389,633) |
| | e) Effect of non-investment (gain)/loss during prior year | 1,099,594 |
| | f) Effect of re-amortizing existing bases due to Funding Risk Mitigation | 0 |
| | g) Effect of Golden Handshake | 0 |
| | h) Effect of plan changes | 0 |
| | i) Effect of AL Significant Increase (Government Code section 20791) | 0 |
| | j) Effect of assumption changes | 0 |
| | k) Effect of adjustments to the amortization schedule (e.g., Fresh Start) | 0 |
| | l) Effect of method change | 0 |
| | m) Net effect of the changes above [sum of (a) through (l)] | 2,443,191 |
| 3. | For Period 7/1/26 – 6/30/27 [(1) + (2m)] | 23,027,863 |

The amounts shown for the period 7/1/25 – 6/30/26 may be different if a prepayment of unfunded actuarial liability is made or a plan change became effective after the prior year's actuarial valuation was performed.

[1] Includes scheduled escalation in individual amortization base payments due to the 5-year ramp and payroll growth assumption used in the pre-2019 amortization policy.

[2] The unfunded liability contribution for the investment (gain)/loss during the year prior to the valuation date is 20% of the "full" annual requirement due to the 5-year ramp. Increases to this amount that occur during the ramp period will be included in line c) for each of the next four years.

# Employer Contribution History

The table below provides a 10-year 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 |
|---|---|---|---|
| 06/30/2015 | 2017-18 | 17.141% | $9,230,863 |
| 06/30/2016 | 2018-19 | 17.940% | 10,953,259 |
| 06/30/2017 | 2019-20 | 18.907% | 12,900,362 |
| 06/30/2018 | 2020-21 | 19.864% | 14,399,802 |
| 06/30/2019 | 2021-22 | 19.27% | 16,388,303 |
| 06/30/2020 | 2022-23 | 19.07% | 18,025,647 |
| 06/30/2021 | 2023-24 | 20.96% | 17,430,790 |
| 06/30/2022 | 2024-25 | 20.51% | 16,364,267 |
| 06/30/2023 | 2025-26 | 20.43% | 20,584,672 |
| 06/30/2024 | 2026-27 | 20.18% | 23,027,863 |

# Funding History

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

| Valuation Date | Accrued Liability (AL) | Market Value of Assets (MVA) | Unfunded Accrued Liability (UAL) | Funded Ratio | Annual Covered Payroll |
|---|---|---|---|---|---|
| 6/30/2015 | $530,413,907 | $400,797,210 | $129,616,697 | 75.6% | $40,318,379 |
| 6/30/2016 | 561,743,295 | 398,311,673 | 163,431,622 | 70.9% | 41,687,863 |
| 6/30/2017 | 604,467,787 | 438,683,394 | 165,784,393 | 72.6% | 43,504,868 |
| 6/30/2018 | 658,183,970 | 470,973,528 | 187,210,442 | 71.6% | 43,923,808 |
| 6/30/2019 | 691,239,940 | 497,823,672 | 193,416,268 | 72.0% | 46,088,633 |
| 6/30/2020 | 724,161,437 | 517,053,606 | 207,107,831 | 71.4% | 46,156,603 |
| 6/30/2021 | 773,658,343 | 632,076,321 | 141,582,022 | 81.7% | 46,181,443 |
| 6/30/2022 | 817,298,968 | 578,088,197 | 239,210,771 | 70.7% | 47,623,428 |
| 6/30/2023 | 858,262,809 | 607,273,618 | 250,989,191 | 70.8% | 50,730,624 |
| 6/30/2024 | 903,794,123 | 658,917,751 | 244,876,372 | 72.9% | 55,020,615 |

## Risk Analysis


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# 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 UAL contributions. The CalPERS Funding Risk Mitigation Policy stipulates that when the investment return exceeds the discount rate by at least 2%, the board will consider adjustments to the discount rate. The projections below use a discount rate of 6.8% for all scenarios even though an annual return of 10.8% is high enough to trigger a board discussion on the discount rate. 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 employer normal cost rates are not affected by investment returns, and since no future assumption changes are being reflected, the projected employer normal cost rates for every future investment return scenario are the same as those shown earlier in this report. See Projected Employer Contributions for more information on projecting the employer normal cost.

The first table shows projected UAL 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, 2044.

| Assumed Annual Return FY 2024-25 through FY 2043-44 | Projected Employer UAL Contributions | | | | |
|---|---|---|---|---|---|
| | 2027-28 | 2028-29 | 2029-30 | 2030-31 | 2031-32 |
| 3.0% (5th percentile) | $24,568,000 | $28,261,000 | $30,302,000 | $32,969,000 | $35,690,000 |
| 10.8% (95th percentile) | $23,315,000 | $24,427,000 | $22,469,000 | $19,621,000 | $0 |

Required UAL 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 2024-25 on the FY 2027-28 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 2027-28.

| Assumed Annual Return for Fiscal Year 2024-25 | Required Employer UAL Contributions | Projected Employer UAL Contributions |
|---|---|---|
| | 2026-27 | 2027-28 |
| (17.2%) (2 standard deviation loss) | $23,027,863 | $27,811,000 |
| (5.2%) (1 standard deviation loss) | $23,027,863 | $25,885,000 |

- Without investment gains (returns higher than 6.8%) in FY 2025-26 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 2024-25.
- The Pension Outlook Tool can be used to model projected contributions for these scenarios beyond FY 2027-28 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, 2024, 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 Discount Rate Due to Varying the Real Rate of Return Assumption**

| As of June 30, 2024 | 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 | 39.55% | 30.88% | 24.39% |
| b) Accrued Liability | $1,030,746,089 | $903,794,123 | $800,033,384 |
| c) Market Value of Assets | $658,917,751 | $658,917,751 | $658,917,751 |
| d) Unfunded Liability/(Surplus) [(b) - (c)] | $371,828,338 | $244,876,372 | $141,115,633 |
| e) Funded Ratio | 63.9% | 72.9% | 82.4% |

**Sensitivity to the Discount Rate Due to Varying the Price Inflation Assumption**

| As of June 30, 2024 | 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 | 32.49% | 30.88% | 27.97% |
| b) Accrued Liability | $935,111,174 | $903,794,123 | $842,535,698 |
| c) Market Value of Assets | $658,917,751 | $658,917,751 | $658,917,751 |
| d) Unfunded Liability/(Surplus) [(b) - (c)] | $276,193,423 | $244,876,372 | $183,617,947 |
| e) Funded Ratio | 70.5% | 72.9% | 78.2% |

# Mortality Rate Sensitivity

The following table looks at the change in the June 30, 2024, 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, 2024 | 10% Lower Mortality Rates | Current Assumptions | 10% Higher Mortality Rates |
|---|---|---|---|
| a) Total Normal Cost | 31.24% | 30.88% | 30.55% |
| b) Accrued Liability | $918,538,153 | $903,794,123 | $890,134,539 |
| c) Market Value of Assets | $658,917,751 | $658,917,751 | $658,917,751 |
| d) Unfunded Liability/(Surplus) [(b) - (c)] | $259,620,402 | $244,876,372 | $231,216,788 |
| e) Funded Ratio | 71.7% | 72.9% | 74.0% |

# 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 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, 2023 | June 30, 2024 |
|---|---|---|
| 1. Retiree Accrued Liability | $590,456,090 | $607,015,957 |
| 2. Total Accrued Liability | $858,262,809 | $903,794,123 |
| 3. Ratio of Retiree AL to Total AL [(1) ÷ (2)] | 69% | 67% |

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, 2023, was 0.78 and was calculated consistently with how it is for the individual rate plan. Note that to calculate the support ratio for all public agency plans, a retiree with service from more than one CalPERS agency is counted as a retiree more than once.

| Support Ratio | June 30, 2023 | June 30, 2024 |
|---|---|---|
| 1. Number of Actives | 374 | 375 |
| 2. Number of Retirees | 468 | 480 |
| 3. Support Ratio [(1) ÷ (2)] | 0.80 | 0.78 |

# 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, 2023 | June 30, 2024 |
|---|---|---|
| 1. Market Value of Assets without Receivables | $607,180,350 | $658,846,121 |
| 2. Payroll | 50,730,624 | 55,020,615 |
| 3. Asset Volatility Ratio (AVR) [(1) ÷ (2)] | 12.0 | 12.0 |
| 4. Accrued Liability | $858,262,809 | $903,794,123 |
| 5. Liability Volatility Ratio (LVR) [(4) ÷ (2)] | 16.9 | 16.4 |

# Maturity Measures History

| Valuation Date | Ratio of Retiree Accrued Liability to Total Accrued Liability | Support Ratio | Asset Volatility Ratio | Liability Volatility Ratio |
|---|---|---|---|---|
| 6/30/2017 | 58% | 1.10 | 10.1 | 13.9 |
| 6/30/2018 | 58% | 1.01 | 10.7 | 15.0 |
| 6/30/2019 | 59% | 0.99 | 10.8 | 15.0 |
| 6/30/2020 | 62% | 0.89 | 11.2 | 15.7 |
| 6/30/2021 | 65% | 0.83 | 13.7 | 16.8 |
| 6/30/2022 | 68% | 0.81 | 12.1 | 17.2 |
| 6/30/2023 | 69% | 0.80 | 12.0 | 16.9 |
| 6/30/2024 | 67% | 0.78 | 12.0 | 16.4 |

# Funded Status – Termination Basis

The funded status measured on a termination basis is an estimated range for the financial position of the plan had the contract with CalPERS been terminated as of June 30, 2024. 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 demonstrated below.

| Valuation Date | 20-Year Treasury Rate | Valuation Date | 20-Year Treasury Rate |
|---|---|---|---|
| 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% |
| 06/30/2019 | 2.31% | 06/30/2024 | 4.61% |

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: 3.61% Price Inflation: 2.45% | Discount Rate: 5.61% Price Inflation: 2.45% |
|---|---|---|
| 1. Termination Liability[1] | $1,412,717,564 | $1,044,316,125 |
| 2. Market Value of Assets (MVA) | 658,917,751 | 658,917,751 |
| 3. Unfunded Termination Liability [(1) – (2)] | $753,799,813 | $385,398,374 |
| 4. Funded Ratio [(2) ÷ (1)] | 46.6% | 63.1% |

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

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 5.35%, which is the Standard FTSE Pension Liability Index[1] discount rate as of June 30, 2024.

| **Selected Measures on a Low-Default-Risk Basis** | **June 30, 2024** |
|---|---|
| Discount Rate | 5.35% |
| 1. Accrued Liability – Low-Default-Risk Basis (LDROM) | |
| a) Active Members | $340,072,444 |
| b) Transferred Members | 27,155,174 |
| c) Separated Members | 16,366,500 |
| d) Members and Beneficiaries Receiving Payments | 713,614,723 |
| e) Total | $1,097,208,841 |
| 2. Market Value of Assets (MVA) | 658,917,751 |
| 3. Unfunded Accrued Liability – Low-Default-Risk Basis [(1e) – (2)] | $438,291,090 |
| 4. Unfunded Accrued Liability – Funding Policy Basis | 244,876,372 |
| 5. Present Value of Unearned Investment Risk Premium [(3) – (4)] | $193,414,718 |

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.

## Supplementary Information


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# Normal Cost by Benefit Group

The table below displays the Total Normal Cost broken out by benefit group for FY 2026-27. 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 contracted. 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.

| Rate Plan Identifier | Benefit Group Name | Total Normal Cost FY 2026-27 | Offset due to Employee Contributions FY 2026-27 | Employer Normal Cost[1] FY 2026-27 | Number of Actives | Payroll on 6/30/2024 |
|---|---|---|---|---|---|---|
| 75 | Safety Fire First Level | 27.29% | 9.00% | 18.29% | 1 | $137,597 |
| 30203 | Safety Police Second Level | 35.41% | 9.00% | 26.41% | 115 | 19,721,372 |
| 30204 | Safety Police First Level | N/A | N/A | N/A | 0 | 0 |
| 30205 | Safety Fire Second Level | 31.72% | 9.00% | 22.72% | 74 | 12,377,309 |
| 25060 | Safety Fire PEPRA Level | 24.97% | 13.00% | 11.97% | 83 | 10,214,885 |
| 25061 | Safety Police PEPRA Level | 28.20% | 13.00% | 15.20% | 102 | 12,569,452 |
| | **Plan Total** | **30.88%** | **10.70%** | **20.18%** | **375** | **$55,020,615** |

[1] The employer normal cost for individual rate plans is provided for illustrative purposes only. The employer normal cost rate for contribution purposes is the blended rate shown in the Plan Total row and is the employer normal cost contribution rate that applies to the covered payroll of members in every rate plan shown above.

Note that if a Benefit Group above has multiple bargaining units, each of which has separately contracted for different benefits such as Employer Paid Member Contributions, then the Normal Cost shown for the respective benefit level does not reflect those differences. Additionally, if a Second Level Benefit Group amended to the same benefit formula as a First Level Benefit Group, their Normal Costs may be dissimilar due to demographic or other population differences. For questions in these situations, please contact a CalPERS actuary.

# Summary of Valuation Data

| | June 30, 2023 | June 30, 2024 |
|---|---|---|
| 1. **Active Members** | | |
| a) Counts | 374 | 375 |
| b) Average Attained Age | 39.68 | 40.12 |
| c) Average Entry Age to Rate Plan | 28.41 | 28.55 |
| d) Average Years of Credited Service | 11.32 | 11.64 |
| e) Average Annual Covered Payroll | $135,643 | $146,722 |
| f) Annual Covered Payroll | $50,730,624 | $55,020,615 |
| g) Projected Annual Payroll for Contribution Year | $55,112,428 | $59,772,963 |
| h) Present Value of Future Payroll | $552,712,462 | $584,573,670 |
| 2. **Transferred Members** | | |
| a) Counts | 83 | 83 |
| b) Average Attained Age | 41.84 | 41.55 |
| c) Average Years of Credited Service | 4.32 | 4.64 |
| d) Average Annual Covered Payroll | $123,847 | $131,627 |
| 3. **Separated Members** | | |
| a) Counts | 72 | 81 |
| b) Average Attained Age | 43.27 | 42.75 |
| c) Average Years of Credited Service | 4.44 | 4.04 |
| d) Average Annual Covered Payroll | $83,618 | $86,291 |
| 4. **Retired Members and Beneficiaries Receiving Payments** | | |
| a) Counts | 468 | 480 |
| b) Average Attained Age | 63.95 | 64.73 |
| c) Average Annual Benefits | $86,123 | $87,698 |
| d) Total Annual Benefits | $40,305,625 | $42,095,169 |
| 5. **Active to Retired Ratio** [(1a) ÷ (4a)] | 0.80 | 0.78 |

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.

Average Annual Benefits represents benefit amounts payable by this plan only. Some members may have service with another agency and would therefore have a larger total benefit than would be included as part of the average shown here.

# Status of PEPRA Transition

The California Public Employees' Pension Reform Act of 2013 (PEPRA), which took effect in January 2013, changed CalPERS retirement benefits and placed compensation limits on new members joining CalPERS on or after January 1, 2013. One of the objectives of PEPRA was to improve the ability of employers to manage the costs of retirement benefits for their members. While such changes can reduce future benefit costs in a meaningful way, the full impact on employer contributions will not occur until all active members are subject to the rules and provisions of PEPRA. The table below illustrates the status of this transition as of June 30, 2024.

| | Classic | PEPRA | PEPRA as a Percent of Total |
|---|---|---|---|
| **Active Members** | | | |
| Count | 190 | 185 | 49.3% |
| Average Attained Age | 46.94 | 33.12 | |
| Average Entry Age | 28.50 | 28.61 | |
| Average Years of Credited Service | 18.49 | 4.62 | |
| Average Annual Covered Payroll | $169,665 | $123,159 | |
| Annual Covered Payroll | $32,236,278 | $22,784,337 | 41.4% |
| Present Value of Future Payroll | $242,950,075 | $341,623,595 | 58.4% |
| **Transferred Members** | | | |
| Count | 46 | 37 | 44.6% |
| **Separated Members** | | | |
| Count | 52 | 29 | 35.8% |
| **Retired Members and Beneficiaries Receiving Payments** | | | |
| Count | 477 | 3 | 0.6% |
| Average Annual Benefit | $87,938 | $49,538 | |
| Total Annual Benefits | $41,946,554 | $148,615 | 0.4% |
| **Accrued Liabilities** | | | |
| Active Members | $235,290,133 | $28,811,796 | 10.9% |
| Transferred Members | 17,101,961 | 2,541,094 | 12.9% |
| Separated Members | 12,574,216 | 458,966 | 3.5% |
| Retired Members and Beneficiaries | 604,205,223 | 2,810,734 | 0.5% |
| Total | $869,171,533 | $34,622,590 | 3.8% |

# 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 Appendix B.

| | Benefit Group | | | | | | |
|---|---|---|---|---|---|---|---|
| **Member Category** | **Fire** | **Police** | **Police** | **Fire** | **Fire** | **Police** | **Police** |
| **Demographics** | | | | | | | |
| Actives | Yes | Yes | No | Yes | Yes | Yes | No |
| Transfers/Separated | No | Yes | Yes | Yes | Yes | Yes | No |
| Receiving | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| **Benefit Provision** | | | | | | | |
| Benefit Formula | 3% @ 55 | 3% @ 55 | 3% @ 55 | 3% @ 55 | 2.7% @ 57 | 2.7% @ 57 | |
| Social Security Coverage | No | No | No | No | No | No | |
| Full/Modified | Full | Full | Full | Full | Full | Full | |
| Employee Contribution Rate | 9.00% | 9.00% | | 9.00% | 13.00% | 13.00% | |
| Final Average Compensation Period | One Year | One Year | One Year | One Year | Three Year | Three Year | |
| Sick Leave Credit | Yes | Yes | Yes | Yes | Yes | Yes | |
| Non-Industrial Disability | Standard | Standard | Standard | Standard | Standard | Standard | |
| Industrial Disability | Standard | Standard | Standard | Standard | Standard | Standard | |
| Pre-Retirement Death Benefits | | | | | | | |
| Optional Settlement 2 | Yes | Yes | Yes | Yes | Yes | Yes | |
| 1959 Survivor Benefit Level | Level 4 | Level 4 | Level 4 | Level 4 | Level 4 | Level 4 | |
| Special | Yes | Yes | Yes | Yes | Yes | Yes | |
| Alternate (firefighters) | No | No | No | No | No | No | |
| Post-Retirement Death Benefits | | | | | | | |
| Lump Sum | $2,000 | $2,000 | $2,000 | $2,000 | $2,000 | $2,000 | $2,000 |
| Survivor Allowance (PRSA) | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| COLA | 2% | 2% | 2% | 2% | 2% | 2% | 2% |

* The benefits listed here are those associated with the plan where an accrued liability adjustment has been made in accordance with Government Code Section 20791 and not of the contracting agency.

# Plan's Major Benefit Options (Continued)

Shown below is a summary of the major optional benefits for which the agency has contracted. A description of principal stand ard and optional plan provisions is in Appendix B.

| | Benefit Group | | | | | | |
|---|---|---|---|---|---|---|---|
| **Member Category** | **Police** | **Police** | **Police** | **Fire** | **Fire** | **Fire** | **EXL*** |
| **Demographics** | | | | | | | |
| Actives | No | No | No | No | No | No | No |
| Transfers/Separated | No | No | No | No | No | No | No |
| Receiving | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| **Benefit Provision** | | | | | | | |
| Benefit Formula | | | | | | | |
| Social Security Coverage | | | | | | | |
| Full/Modified | | | | | | | |
| Employee Contribution Rate | | | | | | | |
| Final Average Compensation Period | | | | | | | |
| Sick Leave Credit | | | | | | | |
| Non-Industrial Disability | | | | | | | |
| Industrial Disability | | | | | | | |
| Pre-Retirement Death Benefits | | | | | | | |
| Optional Settlement 2 | | | | | | | |
| 1959 Survivor Benefit Level | | | | | | | |
| Special | | | | | | | |
| Alternate (firefighters) | | | | | | | |
| Post-Retirement Death Benefits | | | | | | | |
| Lump Sum | $2,000 | $2,000 | $2,000 | $2,000 | $2,000 | $2,000 | $0 |
| Survivor Allowance (PRSA) | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| COLA | 2% | 2% | 2% | 2% | 2% | 2% | 2% |

* The benefits listed here are those associated with the plan where an accrued liability adjustment has been made in accordance with Government Code Section 20791 and not of the contracting agency.

## Appendix A - Actuarial Methods and Assumptions


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# Actuarial Data

As stated in the Actuarial Certification, the data which serves as the basis of this valuation has been obtained from the 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 former 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 required employer contributions.

# Actuarial Methods

**Actuarial Cost Method**

With one exception, the actuarial cost method used in this valuation is the Entry Age Actuarial Cost Method. This method is used to calculate the required employer contributions and the PEPRA member contribution rate. Under this method, the cost of the projected benefits is allocated on an individual basis as a level percent of earnings for the individual between entry age and retirement age. The portion allocated to the year following the valuation date is the normal cost. 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.

The actuarial accrued liability for active members is then calculated as the present value of benefits minus the present value of future normal cost, or the portion of the total present value of benefits 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.

To calculate the accrued liability on termination basis, this valuation used the Traditional Unit Credit Actuarial Cost Method. This method differs from the entry age method only for active members where the accrued liability is the present value of benefits assuming no future pay increases or service accruals.

**Amortization of Unfunded Actuarial Accrued Liability**

The excess of the total actuarial accrued liability over the market value of plan 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 Actuarial Amortization Policy. The board adopted a new policy effective for the June 30, 2019, actuarial valuation. The new policy applies prospectively only; amortization bases (sources of UAL) established prior to the June 30, 2019, valuation will continue to be amortized according to the prior policy.

**Amortization of Unfunded Actuarial Accrued Liability (continued)**

Prior Policy (Bases Established on or after June 30, 2013, and prior to June 30, 2019)

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 are amortized over a period of five years (20 years prior to June 30, 2014). A summary is provided in the following table:

| | Source | | | | |
|---|---|---|---|---|---|
| | (Gain)/Loss | | | | |
| Driver | Investment | Non-investment | Assumption/Method Change | Benefit Change | Golden Handshake |
| Amortization Period | 30 Years | 30 Years | 20 Years | 20 Years | 5 Years |
| Escalation Rate<br>- Active Plans<br>- Inactive Plans | 2.80%<br>0% | 2.80%<br>0% | 2.80%<br>0% | 2.80%<br>0% | 2.80%<br>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 which 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)

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 provided in the table below:

| | Source | | | | |
|---|---|---|---|---|---|
| | (Gain)/Loss | | | | |
| Driver | Investment | Non-investment | Assumption/ Method Change | Benefit Change | Golden Handshake |
| 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 |

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 which begins in year five.

**Amortization of Unfunded Actuarial Accrued Liability (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 unfunded actuarial liability is projected and 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, and results 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.

Exceptions for Plans in Surplus

If a surplus exists (i.e., the Market Value of Assets exceeds the plan's accrued liability) any prior amortization layers shall be considered fully amortized, and the surplus shall not be amortized.

In the event of any subsequent unfunded liability, a Fresh Start shall be used with an amortization period of 20 years or less.

Exceptions for Small Amounts

Where small unfunded liabilities are identified in annual valuations which result in small payment amounts, the actuary may shorten the remaining period for these bases.

- When the balance of a single amortization base has an absolute value less than $250, the amortization period is reduced to one year.
- When the entire unfunded liability is a small amount, the actuary may perform a Fresh Start and use an appropriate amortization period.

Exceptions for Inactive Plans

The following exceptions apply to plans classified as Inactive. These plans have no active members and no expectation to have active members in the future.

- Amortization of the unfunded liability is on a "level dollar" basis rather than a "level percent of pay" basis. For amortization layers, which utilize a ramp up and ramp down, the "ultimate" payment is constant.
- Actuarial judgment will be used to shorten amortization periods for Inactive plans with existing periods that are deemed too long given the duration of the liability. The specific demographics of the plan will be used to determine if shorter periods may be more appropriate.

Exceptions for Inactive Agencies

For a public agency with no active members in any CalPERS rate plan, the unfunded liability shall be amortized over a closed amortization period of no more than 15 years.

**Asset Valuation Method**

The Actuarial Value of Assets is set equal to the market value of assets. Asset values include accounts receivable.

**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.

**PEPRA Normal Cost Rate Methodology (continued)**

For purposes of setting member rates, it is preferable to determine total normal cost using a large active population so that the rate remains relatively stable. While each CalPERS non-pooled plan has a sufficiently large active population for this purpose, the PEPRA active population by itself may not be sufficiently large enough yet. The total PEPRA normal cost for each PEPRA benefit tier will be determined based on the entire active plan population (both PEPRA and Classic) only until the number of members covered under the PEPRA formula meets either:

1. 50% of the active population, or
2. 25% of the active population and 100 or more PEPRA members

Once one of these conditions is met, the total PEPRA normal cost for each PEPRA benefit tier will be determined using the entire active PEPRA population.

# 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 that more closely aligned with actual experience.

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

All actuarial assumptions (except the discount rates and price inflation assumption used for the accrued liability on a termination basis and the interest rate used for the low-default-risk obligation measure) represent an estimate of future experience rather than observations of the estimates inherent in market data.

**Economic Assumptions**

Discount Rate
The prescribed discount rate assumption, adopted by the board on November 17, 2021, is 6.80% compounded annually (net of investment and administrative expenses) as of June 30, 2024. The discount rate is based on the long-term expected rate of return on assets using a building-block method in which expected future real rates of return (expected returns, net of pension plan investment expense and inflation) are developed for each major asset class. The current assumption, originally based on capital market assumptions developed by the Investment Office in 2021, has been reviewed for this valuation based on capital market assumptions developed by the Investment Office in 2023.

Termination Liability Discount Rate
The current discount rate assumption used for termination valuations is a weighted average of the 10-year and 30-year U.S. Treasury yields where the weights are based on matching asset and liability durations as of the termination date. The accrued liabilities on a termination basis in this report use discount rates that are based on the 20-year Treasury rate on the valuation date.

To illustrate the impact of the variability of interest rates, the accrued liabilities on a termination basis in this report use discount rates 1% below and 1% above the 20-year Treasury rate on the valuation date. The 20-year Treasury rate was 4.61% on June 30, 2024.

Salary Increases

Annual increases vary by category, entry age, and duration of service. A sample of assumed increases due to seniority, merit and promotion are shown below. Assumed wage inflation is combined with these factors to develop the total expected salary increases.

**Public Agency Miscellaneous**

| Duration of Service | (Entry Age 20) | (Entry Age 30) | (Entry Age 40) |
|---|---|---|---|
| 0 | 0.0764 | 0.0621 | 0.0521 |
| 1 | 0.0663 | 0.0528 | 0.0424 |
| 2 | 0.0576 | 0.0449 | 0.0346 |
| 3 | 0.0501 | 0.0381 | 0.0282 |
| 4 | 0.0435 | 0.0324 | 0.0229 |
| 5 | 0.0378 | 0.0276 | 0.0187 |
| 10 | 0.0201 | 0.0126 | 0.0108 |
| 15 | 0.0155 | 0.0102 | 0.0071 |
| 20 | 0.0119 | 0.0083 | 0.0047 |
| 25 | 0.0091 | 0.0067 | 0.0031 |
| 30 | 0.0070 | 0.0054 | 0.0020 |

**Public Agency Fire**

| Duration of Service | (Entry Age 20) | (Entry Age 30) | (Entry Age 40) |
|---|---|---|---|
| 0 | 0.1517 | 0.1549 | 0.0631 |
| 1 | 0.1191 | 0.1138 | 0.0517 |
| 2 | 0.0936 | 0.0835 | 0.0423 |
| 3 | 0.0735 | 0.0613 | 0.0346 |
| 4 | 0.0577 | 0.0451 | 0.0284 |
| 5 | 0.0453 | 0.0331 | 0.0232 |
| 10 | 0.0188 | 0.0143 | 0.0077 |
| 15 | 0.0165 | 0.0124 | 0.0088 |
| 20 | 0.0145 | 0.0108 | 0.0101 |
| 25 | 0.0127 | 0.0094 | 0.0115 |
| 30 | 0.0112 | 0.0082 | 0.0132 |

**Public Agency Police**

| Duration of Service | (Entry Age 20) | (Entry Age 30) | (Entry Age 40) |
|---|---|---|---|
| 0 | 0.1181 | 0.1051 | 0.0653 |
| 1 | 0.0934 | 0.0812 | 0.0532 |
| 2 | 0.0738 | 0.0628 | 0.0434 |
| 3 | 0.0584 | 0.0485 | 0.0353 |
| 4 | 0.0462 | 0.0375 | 0.0288 |
| 5 | 0.0365 | 0.0290 | 0.0235 |
| 10 | 0.0185 | 0.0155 | 0.0118 |
| 15 | 0.0183 | 0.0150 | 0.0131 |
| 20 | 0.0181 | 0.0145 | 0.0145 |
| 25 | 0.0179 | 0.0141 | 0.0161 |
| 30 | 0.0178 | 0.0136 | 0.0179 |

Salary Increases (continued)

**Public Agency County Peace Officers**

| Duration of Service | (Entry Age 20) | (Entry Age 30) | (Entry Age 40) |
|---|---|---|---|
| 0 | 0.1238 | 0.1053 | 0.0890 |
| 1 | 0.0941 | 0.0805 | 0.0674 |
| 2 | 0.0715 | 0.0616 | 0.0510 |
| 3 | 0.0544 | 0.0471 | 0.0387 |
| 4 | 0.0413 | 0.0360 | 0.0293 |
| 5 | 0.0314 | 0.0276 | 0.0222 |
| 10 | 0.0184 | 0.0142 | 0.0072 |
| 15 | 0.0174 | 0.0124 | 0.0073 |
| 20 | 0.0164 | 0.0108 | 0.0074 |
| 25 | 0.0155 | 0.0094 | 0.0075 |
| 30 | 0.0147 | 0.0083 | 0.0077 |

**Schools**

| Duration of Service | (Entry Age 20) | (Entry Age 30) | (Entry Age 40) |
|---|---|---|---|
| 0 | 0.0275 | 0.0275 | 0.0200 |
| 1 | 0.0422 | 0.0373 | 0.0298 |
| 2 | 0.0422 | 0.0373 | 0.0298 |
| 3 | 0.0422 | 0.0373 | 0.0298 |
| 4 | 0.0388 | 0.0314 | 0.0245 |
| 5 | 0.0308 | 0.0239 | 0.0179 |
| 10 | 0.0236 | 0.0160 | 0.0121 |
| 15 | 0.0182 | 0.0135 | 0.0103 |
| 20 | 0.0145 | 0.0109 | 0.0085 |
| 25 | 0.0124 | 0.0102 | 0.0058 |
| 30 | 0.0075 | 0.0053 | 0.0019 |

- The Miscellaneous salary scale is used for Local Prosecutors.
- The Police salary scale is used for Other Safety, Local Sheriff, and School Police.

Price Inflation
2.30% compounded annually.

Termination Liability Price Inflation
The breakeven inflation rate for 20-year Treasuries on the valuation date, 2.45%.

Wage Inflation
2.80% compounded annually. This is used in projecting individual salary increases.

Payroll Growth
2.80% compounded annually. This is used as the escalation rate of the amortization payments on level percent of payroll amortization bases, that is, on any amortization bases established prior to 2019 for plans that currently have active members.

**Miscellaneous Loading Factors**

Credit for Unused Sick Leave
Total years of service is increased by 1% for those plans that have adopted the provision of providing Credit for Unused Sick Leave.

Conversion of Employer Paid Member Contributions (EPMC)
Total years of service is increased by the Employee Contribution Rate for those plans with the provision providing for the Conversion of Employer Paid Member Contributions (EPMC) during the final compensation period.

Norris Decision (Best Factors)
Employees hired prior to July 1, 1982, have projected benefit amounts increased in order 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.

Termination Liability
The termination liabilities include a 5% contingency load. This load is for unforeseen improvements in mortality.

**Demographic Assumptions**

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

Rates vary by age and gender. This table only contains a sample of the 2017 base table rates for illustrative purposes. The non-industrial death rates are used for all plans. The industrial death rates are used for Safety plans, except for local Safety members described in Government Code section 20423.6 where the agency has not specifically contracted for industrial death benefits.

| | Miscellaneous | | Safety | | | |
|---|---|---|---|---|---|---|
| | Non-Industrial Death (Not Job-Related) | | Non-Industrial Death (Not Job-Related) | | Industrial Death (Job-Related) | |
| Age | Male | Female | Male | Female | Male | Female |
| 20 | 0.00039 | 0.00014 | 0.00038 | 0.00014 | 0.00004 | 0.00002 |
| 25 | 0.00033 | 0.00013 | 0.00034 | 0.00018 | 0.00004 | 0.00002 |
| 30 | 0.00044 | 0.00019 | 0.00042 | 0.00025 | 0.00005 | 0.00003 |
| 35 | 0.00058 | 0.00029 | 0.00048 | 0.00034 | 0.00005 | 0.00004 |
| 40 | 0.00075 | 0.00039 | 0.00055 | 0.00042 | 0.00006 | 0.00005 |
| 45 | 0.00093 | 0.00054 | 0.00066 | 0.00053 | 0.00007 | 0.00006 |
| 50 | 0.00134 | 0.00081 | 0.00092 | 0.00073 | 0.00010 | 0.00008 |
| 55 | 0.00198 | 0.00123 | 0.00138 | 0.00106 | 0.00015 | 0.00012 |
| 60 | 0.00287 | 0.00179 | 0.00221 | 0.00151 | 0.00025 | 0.00017 |
| 65 | 0.00403 | 0.00250 | 0.00346 | 0.00194 | 0.00038 | 0.00022 |
| 70 | 0.00594 | 0.00404 | 0.00606 | 0.00358 | 0.00067 | 0.00040 |
| 75 | 0.00933 | 0.00688 | 0.01099 | 0.00699 | 0.00122 | 0.00078 |
| 80 | 0.01515 | 0.01149 | 0.02027 | 0.01410 | 0.00225 | 0.00157 |

- The pre-retirement mortality rates above are for 2017 and are projected generationally for future years using 80% of the Society of Actuaries' Scale MP-2020.
- Miscellaneous plans usually have industrial death rates set to zero unless the agency has specifically contracted for industrial death benefits. If so, each non-industrial death rate shown above will be split into two components: 99% will become the non-industrial death rate and 1% will become the industrial death rate.

Post-Retirement Mortality
Rates vary by age, type of retirement, and gender. See sample rates in table below. These rates are used for all plans.

| | Service Retirement | | Non-Industrial Disability (Not Job-Related) | | Industrial Disability (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 | 0.06112 | 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 | 0.24665 | 0.20364 | 0.24665 | 0.20364 |
| 100 | 0.36198 | 0.31582 | 0.36198 | 0.31582 | 0.36198 | 0.31582 |
| 105 | 0.52229 | 0.44679 | 0.52229 | 0.44679 | 0.52229 | 0.44679 |
| 110 | 1.00000 | 1.00000 | 1.00000 | 1.00000 | 1.00000 | 1.00000 |

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

Marital Status
For active members, a percentage who are married upon retirement is assumed according to the member category as shown in the following table.

| Member Category | Percent Married |
|---|---|
| Miscellaneous Member | 70% |
| Local Police | 85% |
| Local Fire | 85% |
| Other Local Safety | 70% |
| School Police | 85% |
| Local County Peace Officers | 75% |

Age of Spouse
It is assumed that female spouses are 3 years younger than male spouses. This assumption is used for all plans.

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 for Miscellaneous members and age 54 for Safety members.

Termination with Refund

Rates vary by entry age and service for Miscellaneous plans. Rates vary by service for Safety plans. See sample rates in tables below.

**Public Agency Miscellaneous**

| Duration of Service | Entry Age 20 | | Entry Age 25 | | Entry Age 30 | | Entry Age 35 | | Entry Age 40 | | Entry Age 45 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Male | Female | Male | Female | Male | Female | Male | Female | Male | Female | Male | Female |
| 0 | 0.1851 | 0.1944 | 0.1769 | 0.1899 | 0.1631 | 0.1824 | 0.1493 | 0.1749 | 0.1490 | 0.1731 | 0.1487 | 0.1713 |
| 1 | 0.1531 | 0.1673 | 0.1432 | 0.1602 | 0.1266 | 0.1484 | 0.1101 | 0.1366 | 0.1069 | 0.1323 | 0.1037 | 0.1280 |
| 2 | 0.1218 | 0.1381 | 0.1125 | 0.1307 | 0.0970 | 0.1183 | 0.0815 | 0.1058 | 0.0771 | 0.0998 | 0.0726 | 0.0938 |
| 3 | 0.0927 | 0.1085 | 0.0852 | 0.1020 | 0.0727 | 0.0912 | 0.0601 | 0.0804 | 0.0556 | 0.0737 | 0.0511 | 0.0669 |
| 4 | 0.0672 | 0.0801 | 0.0616 | 0.0752 | 0.0524 | 0.0670 | 0.0431 | 0.0587 | 0.0392 | 0.0523 | 0.0352 | 0.0459 |
| 5 | 0.0463 | 0.0551 | 0.0423 | 0.0517 | 0.0358 | 0.0461 | 0.0292 | 0.0404 | 0.0261 | 0.0350 | 0.0230 | 0.0296 |
| 10 | 0.0112 | 0.0140 | 0.0101 | 0.0129 | 0.0083 | 0.0112 | 0.0064 | 0.0094 | 0.0048 | 0.0071 | 0.0033 | 0.0049 |
| 15 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 20 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 25 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 30 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 35 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

**Public Agency Safety**

| Duration of Service | Fire | | Police | | County Peace Officer | |
|---|---|---|---|---|---|---|
| | Male | Female | Male | Female | Male | Female |
| 0 | 0.1022 | 0.1317 | 0.1298 | 0.1389 | 0.1086 | 0.1284 |
| 1 | 0.0686 | 0.1007 | 0.0789 | 0.0904 | 0.0777 | 0.0998 |
| 2 | 0.0441 | 0.0743 | 0.0464 | 0.0566 | 0.0549 | 0.0759 |
| 3 | 0.0272 | 0.0524 | 0.0274 | 0.0343 | 0.0385 | 0.0562 |
| 4 | 0.0161 | 0.0349 | 0.0170 | 0.0206 | 0.0268 | 0.0402 |
| 5 | 0.0092 | 0.0214 | 0.0113 | 0.0128 | 0.0186 | 0.0276 |
| 10 | 0.0015 | 0.0000 | 0.0032 | 0.0047 | 0.0046 | 0.0038 |
| 15 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0023 | 0.0036 |
| 20 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 25 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 30 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 35 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

- The police termination and refund rates are also used for Public Agency Local Prosecutors, Other Safety, Local Sheriff, and School Police.

Termination with Refund (continued)

**Schools**

| Duration of Service | Entry Age 20 | | Entry Age 25 | | Entry Age 30 | | Entry Age 35 | | Entry Age 40 | | Entry Age 45 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Male | Female | 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 | 0.1318 | 0.1032 |
| 1 | 0.1922 | 0.2069 | 0.1778 | 0.1883 | 0.1539 | 0.1573 | 0.1300 | 0.1264 | 0.1191 | 0.1087 | 0.1083 | 0.0910 |
| 2 | 0.1678 | 0.1859 | 0.1536 | 0.1681 | 0.1298 | 0.1383 | 0.1060 | 0.1086 | 0.0957 | 0.0934 | 0.0853 | 0.0782 |
| 3 | 0.1384 | 0.1575 | 0.1256 | 0.1417 | 0.1042 | 0.1155 | 0.0829 | 0.0893 | 0.0736 | 0.0774 | 0.0643 | 0.0656 |
| 4 | 0.1085 | 0.1274 | 0.0978 | 0.1143 | 0.0800 | 0.0925 | 0.0622 | 0.0707 | 0.0542 | 0.0620 | 0.0462 | 0.0533 |
| 5 | 0.0816 | 0.0991 | 0.0732 | 0.0887 | 0.0590 | 0.0713 | 0.0449 | 0.0539 | 0.0383 | 0.0476 | 0.0317 | 0.0413 |
| 10 | 0.0222 | 0.0248 | 0.0200 | 0.0221 | 0.0163 | 0.0174 | 0.0125 | 0.0128 | 0.0094 | 0.0100 | 0.0063 | 0.0072 |
| 15 | 0.0106 | 0.0132 | 0.0095 | 0.0113 | 0.0077 | 0.0083 | 0.0058 | 0.0052 | 0.0040 | 0.0039 | 0.0021 | 0.0026 |
| 20 | 0.0059 | 0.0065 | 0.0050 | 0.0054 | 0.0035 | 0.0036 | 0.0021 | 0.0019 | 0.0010 | 0.0009 | 0.0000 | 0.0000 |
| 25 | 0.0029 | 0.0034 | 0.0025 | 0.0029 | 0.0018 | 0.0020 | 0.0010 | 0.0012 | 0.0005 | 0.0006 | 0.0000 | 0.0000 |
| 30 | 0.0012 | 0.0015 | 0.0011 | 0.0013 | 0.0011 | 0.0011 | 0.0010 | 0.0009 | 0.0005 | 0.0005 | 0.0000 | 0.0000 |
| 35 | 0.0006 | 0.0007 | 0.0006 | 0.0007 | 0.0005 | 0.0006 | 0.0005 | 0.0005 | 0.0003 | 0.0002 | 0.0000 | 0.0000 |

Termination with Vested Benefits

Rates vary by entry age and service for Miscellaneous plans. Rates vary by service for Safety plans. See sample rates in tables below.

**Public Agency Miscellaneous**

| Duration of Service | Entry Age 20 | | Entry Age 25 | | Entry Age 30 | | Entry Age 35 | | Entry Age 40 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Male | Female | Male | Female | Male | Female | Male | Female | Male | Female |
| 5 | 0.0381 | 0.0524 | 0.0381 | 0.0524 | 0.0358 | 0.0464 | 0.0334 | 0.0405 | 0.0301 | 0.0380 |
| 10 | 0.0265 | 0.0362 | 0.0265 | 0.0362 | 0.0254 | 0.0334 | 0.0244 | 0.0307 | 0.0197 | 0.0236 |
| 15 | 0.0180 | 0.0252 | 0.0180 | 0.0252 | 0.0166 | 0.0213 | 0.0152 | 0.0174 | 0.0119 | 0.0132 |
| 20 | 0.0141 | 0.0175 | 0.0141 | 0.0175 | 0.0110 | 0.0131 | 0.0079 | 0.0087 | 0.0000 | 0.0000 |
| 25 | 0.0084 | 0.0108 | 0.0084 | 0.0108 | 0.0064 | 0.0076 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 30 | 0.0047 | 0.0056 | 0.0047 | 0.0056 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 35 | 0.0038 | 0.0041 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

**Public Agency Safety**

| Duration of Service | Fire | | Police | | County Peace Officer | |
|---|---|---|---|---|---|---|
| | Male | Female | Male | Female | Male | Female |
| 5 | 0.0089 | 0.0224 | 0.0156 | 0.0272 | 0.0177 | 0.0266 |
| 10 | 0.0066 | 0.0164 | 0.0113 | 0.0198 | 0.0126 | 0.0189 |
| 15 | 0.0048 | 0.0120 | 0.0083 | 0.0144 | 0.0089 | 0.0134 |
| 20 | 0.0035 | 0.0088 | 0.0060 | 0.0105 | 0.0063 | 0.0095 |
| 25 | 0.0024 | 0.0061 | 0.0042 | 0.0073 | 0.0042 | 0.0063 |
| 30 | 0.0012 | 0.0031 | 0.0021 | 0.0037 | 0.0021 | 0.0031 |
| 35 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |

- After termination with vested benefits, a Miscellaneous member is assumed to retire at age 59 and a Safety member at age 54.
- The Police termination with vested benefits rates are also used for Public Agency Local Prosecutors, Other Safety, Local Sheriff, and School Police.

**Schools**

| Duration of Service | Entry Age 20 | | Entry Age 25 | | Entry Age 30 | | Entry Age 35 | | Entry Age 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 | 0.0123 | 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 |

Non-Industrial (Not Job-Related) Disability
Rates vary by age and gender for Miscellaneous plans. Rates vary by age and category for Safety plans.

| | Miscellaneous | | Fire | Police | County Peace Officer | Schools | |
|---|---|---|---|---|---|---|---|
| Age | Male | Female | All | All | All | Male | Female |
| 20 | 0.0001 | 0.0000 | 0.0001 | 0.0001 | 0.0001 | 0.0000 | 0.0002 |
| 25 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0000 | 0.0002 |
| 30 | 0.0002 | 0.0003 | 0.0001 | 0.0001 | 0.0001 | 0.0002 | 0.0002 |
| 35 | 0.0004 | 0.0007 | 0.0001 | 0.0002 | 0.0003 | 0.0005 | 0.0004 |
| 40 | 0.0009 | 0.0012 | 0.0001 | 0.0002 | 0.0006 | 0.0010 | 0.0008 |
| 45 | 0.0015 | 0.0019 | 0.0002 | 0.0003 | 0.0011 | 0.0019 | 0.0015 |
| 50 | 0.0015 | 0.0019 | 0.0004 | 0.0005 | 0.0016 | 0.0027 | 0.0021 |
| 55 | 0.0014 | 0.0013 | 0.0006 | 0.0007 | 0.0009 | 0.0024 | 0.0017 |
| 60 | 0.0012 | 0.0009 | 0.0006 | 0.0011 | 0.0005 | 0.0020 | 0.0010 |

- The Miscellaneous non-industrial disability rates are used for Local Prosecutors.
- The police non-industrial disability rates are also used for Other Safety, Local Sheriff, and School Police.

Industrial (Job-Related) Disability
Rates vary by age and category.

| Age | Fire | Police | County Peace Officer |
|---|---|---|---|
| 20 | 0.0001 | 0.0000 | 0.0004 |
| 25 | 0.0002 | 0.0017 | 0.0013 |
| 30 | 0.0006 | 0.0048 | 0.0025 |
| 35 | 0.0012 | 0.0079 | 0.0037 |
| 40 | 0.0023 | 0.0110 | 0.0051 |
| 45 | 0.0040 | 0.0141 | 0.0067 |
| 50 | 0.0208 | 0.0185 | 0.0092 |
| 55 | 0.0307 | 0.0479 | 0.0151 |
| 60 | 0.0438 | 0.0602 | 0.0174 |

- The police industrial disability rates are also used for Local Sheriff and Other Safety.
- 50% of the police industrial disability rates are used for School Police.
- 1% of the police industrial disability rates are used for Local Prosecutors.
- Normally, rates are zero for Miscellaneous plans unless the agency has specifically contracted for industrial disability benefits. If so, each Miscellaneous non-industrial disability rate will be split into two components: 50% will become the non-industrial disability rate and 50% will become the industrial disability rate.

Service Retirement

Retirement rates vary by age, service, and formula, except for the Safety Half Pay at 55 and 2% at 55 formulas, where retirement rates vary by age only.

**Public Agency Miscellaneous 1.5% at age 65**

| | Duration of Service | | | | | |
|---|---|---|---|---|---|---|
| Age | 5 Years | 10 Years | 15 Years | 20 Years | 25 Years | 30 Years |
| 50 | 0.008 | 0.011 | 0.013 | 0.015 | 0.017 | 0.019 |
| 51 | 0.007 | 0.010 | 0.012 | 0.013 | 0.015 | 0.017 |
| 52 | 0.010 | 0.014 | 0.017 | 0.019 | 0.021 | 0.024 |
| 53 | 0.008 | 0.012 | 0.015 | 0.017 | 0.019 | 0.022 |
| 54 | 0.012 | 0.016 | 0.019 | 0.022 | 0.025 | 0.028 |
| 55 | 0.018 | 0.025 | 0.031 | 0.035 | 0.038 | 0.043 |
| 56 | 0.015 | 0.021 | 0.025 | 0.029 | 0.032 | 0.036 |
| 57 | 0.020 | 0.028 | 0.033 | 0.038 | 0.043 | 0.048 |
| 58 | 0.024 | 0.033 | 0.040 | 0.046 | 0.052 | 0.058 |
| 59 | 0.028 | 0.039 | 0.048 | 0.054 | 0.060 | 0.067 |
| 60 | 0.049 | 0.069 | 0.083 | 0.094 | 0.105 | 0.118 |
| 61 | 0.062 | 0.087 | 0.106 | 0.120 | 0.133 | 0.150 |
| 62 | 0.104 | 0.146 | 0.177 | 0.200 | 0.223 | 0.251 |
| 63 | 0.099 | 0.139 | 0.169 | 0.191 | 0.213 | 0.239 |
| 64 | 0.097 | 0.136 | 0.165 | 0.186 | 0.209 | 0.233 |
| 65 | 0.140 | 0.197 | 0.240 | 0.271 | 0.302 | 0.339 |
| 66 | 0.092 | 0.130 | 0.157 | 0.177 | 0.198 | 0.222 |
| 67 | 0.129 | 0.181 | 0.220 | 0.249 | 0.277 | 0.311 |
| 68 | 0.092 | 0.129 | 0.156 | 0.177 | 0.197 | 0.221 |
| 69 | 0.092 | 0.130 | 0.158 | 0.178 | 0.199 | 0.224 |
| 70 | 0.103 | 0.144 | 0.175 | 0.198 | 0.221 | 0.248 |

**Public Agency Miscellaneous 2% at age 60**

| | Duration of Service | | | | | |
|---|---|---|---|---|---|---|
| Age | 5 Years | 10 Years | 15 Years | 20 Years | 25 Years | 30 Years |
| 50 | 0.010 | 0.011 | 0.014 | 0.014 | 0.017 | 0.017 |
| 51 | 0.017 | 0.013 | 0.014 | 0.010 | 0.010 | 0.010 |
| 52 | 0.014 | 0.014 | 0.018 | 0.015 | 0.016 | 0.016 |
| 53 | 0.015 | 0.012 | 0.013 | 0.010 | 0.011 | 0.011 |
| 54 | 0.006 | 0.010 | 0.017 | 0.016 | 0.018 | 0.018 |
| 55 | 0.012 | 0.016 | 0.024 | 0.032 | 0.036 | 0.036 |
| 56 | 0.010 | 0.014 | 0.023 | 0.030 | 0.034 | 0.034 |
| 57 | 0.006 | 0.018 | 0.030 | 0.040 | 0.044 | 0.044 |
| 58 | 0.022 | 0.023 | 0.033 | 0.042 | 0.046 | 0.046 |
| 59 | 0.039 | 0.033 | 0.040 | 0.047 | 0.050 | 0.050 |
| 60 | 0.063 | 0.069 | 0.074 | 0.090 | 0.137 | 0.116 |
| 61 | 0.044 | 0.058 | 0.066 | 0.083 | 0.131 | 0.113 |
| 62 | 0.084 | 0.107 | 0.121 | 0.153 | 0.238 | 0.205 |
| 63 | 0.173 | 0.166 | 0.165 | 0.191 | 0.283 | 0.235 |
| 64 | 0.120 | 0.145 | 0.164 | 0.147 | 0.160 | 0.172 |
| 65 | 0.138 | 0.160 | 0.214 | 0.216 | 0.237 | 0.283 |
| 66 | 0.198 | 0.228 | 0.249 | 0.216 | 0.228 | 0.239 |
| 67 | 0.207 | 0.242 | 0.230 | 0.233 | 0.233 | 0.233 |
| 68 | 0.201 | 0.234 | 0.225 | 0.231 | 0.231 | 0.231 |
| 69 | 0.152 | 0.173 | 0.164 | 0.166 | 0.166 | 0.166 |
| 70 | 0.200 | 0.200 | 0.200 | 0.200 | 0.200 | 0.200 |

Service Retirement (continued)

**Public Agency Miscellaneous 2% at age 55**

| | Duration of Service | | | | | |
|---|---|---|---|---|---|---|
| Age | 5 Years | 10 Years | 15 Years | 20 Years | 25 Years | 30 Years |
| 50 | 0.014 | 0.014 | 0.017 | 0.021 | 0.023 | 0.024 |
| 51 | 0.013 | 0.017 | 0.017 | 0.018 | 0.018 | 0.019 |
| 52 | 0.013 | 0.018 | 0.018 | 0.020 | 0.020 | 0.021 |
| 53 | 0.013 | 0.019 | 0.021 | 0.024 | 0.025 | 0.026 |
| 54 | 0.017 | 0.025 | 0.028 | 0.032 | 0.033 | 0.035 |
| 55 | 0.045 | 0.042 | 0.053 | 0.086 | 0.098 | 0.123 |
| 56 | 0.018 | 0.036 | 0.056 | 0.086 | 0.102 | 0.119 |
| 57 | 0.041 | 0.046 | 0.056 | 0.076 | 0.094 | 0.120 |
| 58 | 0.052 | 0.044 | 0.048 | 0.074 | 0.106 | 0.123 |
| 59 | 0.043 | 0.058 | 0.073 | 0.092 | 0.105 | 0.126 |
| 60 | 0.059 | 0.064 | 0.083 | 0.115 | 0.154 | 0.170 |
| 61 | 0.087 | 0.074 | 0.087 | 0.107 | 0.147 | 0.168 |
| 62 | 0.115 | 0.123 | 0.151 | 0.180 | 0.227 | 0.237 |
| 63 | 0.116 | 0.127 | 0.164 | 0.202 | 0.252 | 0.261 |
| 64 | 0.084 | 0.138 | 0.153 | 0.190 | 0.227 | 0.228 |
| 65 | 0.167 | 0.187 | 0.210 | 0.262 | 0.288 | 0.291 |
| 66 | 0.187 | 0.258 | 0.280 | 0.308 | 0.318 | 0.319 |
| 67 | 0.195 | 0.235 | 0.244 | 0.277 | 0.269 | 0.280 |
| 68 | 0.228 | 0.248 | 0.250 | 0.241 | 0.245 | 0.245 |
| 69 | 0.188 | 0.201 | 0.209 | 0.219 | 0.231 | 0.231 |
| 70 | 0.229 | 0.229 | 0.229 | 0.229 | 0.229 | 0.229 |

**Public Agency Miscellaneous 2.5% at age 55**

| | Duration of Service | | | | | |
|---|---|---|---|---|---|---|
| Age | 5 Years | 10 Years | 15 Years | 20 Years | 25 Years | 30 Years |
| 50 | 0.014 | 0.017 | 0.027 | 0.035 | 0.046 | 0.050 |
| 51 | 0.019 | 0.021 | 0.025 | 0.030 | 0.038 | 0.040 |
| 52 | 0.018 | 0.020 | 0.026 | 0.034 | 0.038 | 0.037 |
| 53 | 0.013 | 0.021 | 0.031 | 0.045 | 0.052 | 0.053 |
| 54 | 0.025 | 0.025 | 0.030 | 0.046 | 0.057 | 0.068 |
| 55 | 0.029 | 0.042 | 0.064 | 0.109 | 0.150 | 0.225 |
| 56 | 0.036 | 0.047 | 0.068 | 0.106 | 0.134 | 0.194 |
| 57 | 0.051 | 0.047 | 0.060 | 0.092 | 0.116 | 0.166 |
| 58 | 0.035 | 0.046 | 0.062 | 0.093 | 0.119 | 0.170 |
| 59 | 0.029 | 0.053 | 0.072 | 0.112 | 0.139 | 0.165 |
| 60 | 0.039 | 0.069 | 0.094 | 0.157 | 0.177 | 0.221 |
| 61 | 0.080 | 0.077 | 0.086 | 0.140 | 0.167 | 0.205 |
| 62 | 0.086 | 0.131 | 0.149 | 0.220 | 0.244 | 0.284 |
| 63 | 0.135 | 0.135 | 0.147 | 0.214 | 0.222 | 0.262 |
| 64 | 0.114 | 0.128 | 0.158 | 0.177 | 0.233 | 0.229 |
| 65 | 0.112 | 0.174 | 0.222 | 0.209 | 0.268 | 0.273 |
| 66 | 0.235 | 0.254 | 0.297 | 0.289 | 0.321 | 0.337 |
| 67 | 0.237 | 0.240 | 0.267 | 0.249 | 0.267 | 0.277 |
| 68 | 0.258 | 0.271 | 0.275 | 0.207 | 0.210 | 0.212 |
| 69 | 0.117 | 0.208 | 0.266 | 0.219 | 0.250 | 0.270 |
| 70 | 0.229 | 0.229 | 0.229 | 0.229 | 0.229 | 0.229 |

Service Retirement (continued)

**Public Agency Miscellaneous 2.7% at age 55**

| | Duration of Service | | | | | |
|---|---|---|---|---|---|---|
| Age | 5 Years | 10 Years | 15 Years | 20 Years | 25 Years | 30 Years |
| 50 | 0.011 | 0.016 | 0.022 | 0.033 | 0.034 | 0.038 |
| 51 | 0.018 | 0.019 | 0.023 | 0.032 | 0.031 | 0.031 |
| 52 | 0.019 | 0.020 | 0.026 | 0.035 | 0.034 | 0.037 |
| 53 | 0.020 | 0.020 | 0.025 | 0.043 | 0.048 | 0.053 |
| 54 | 0.018 | 0.030 | 0.040 | 0.052 | 0.053 | 0.070 |
| 55 | 0.045 | 0.058 | 0.082 | 0.138 | 0.208 | 0.278 |
| 56 | 0.057 | 0.062 | 0.080 | 0.121 | 0.178 | 0.222 |
| 57 | 0.045 | 0.052 | 0.071 | 0.106 | 0.147 | 0.182 |
| 58 | 0.074 | 0.060 | 0.074 | 0.118 | 0.163 | 0.182 |
| 59 | 0.058 | 0.067 | 0.086 | 0.123 | 0.158 | 0.187 |
| 60 | 0.087 | 0.084 | 0.096 | 0.142 | 0.165 | 0.198 |
| 61 | 0.073 | 0.084 | 0.101 | 0.138 | 0.173 | 0.218 |
| 62 | 0.130 | 0.133 | 0.146 | 0.187 | 0.214 | 0.249 |
| 63 | 0.122 | 0.140 | 0.160 | 0.204 | 0.209 | 0.243 |
| 64 | 0.104 | 0.124 | 0.154 | 0.202 | 0.214 | 0.230 |
| 65 | 0.182 | 0.201 | 0.242 | 0.264 | 0.293 | 0.293 |
| 66 | 0.272 | 0.249 | 0.273 | 0.285 | 0.312 | 0.312 |
| 67 | 0.182 | 0.217 | 0.254 | 0.249 | 0.264 | 0.264 |
| 68 | 0.223 | 0.197 | 0.218 | 0.242 | 0.273 | 0.273 |
| 69 | 0.217 | 0.217 | 0.217 | 0.217 | 0.217 | 0.217 |
| 70 | 0.227 | 0.227 | 0.227 | 0.227 | 0.227 | 0.227 |

**Public Agency Miscellaneous 3% at age 60**

| | Duration of Service | | | | | |
|---|---|---|---|---|---|---|
| Age | 5 Years | 10 Years | 15 Years | 20 Years | 25 Years | 30 Years |
| 50 | 0.015 | 0.020 | 0.025 | 0.039 | 0.040 | 0.044 |
| 51 | 0.041 | 0.034 | 0.032 | 0.041 | 0.036 | 0.037 |
| 52 | 0.024 | 0.020 | 0.022 | 0.039 | 0.040 | 0.041 |
| 53 | 0.018 | 0.024 | 0.032 | 0.047 | 0.048 | 0.057 |
| 54 | 0.033 | 0.033 | 0.035 | 0.051 | 0.049 | 0.052 |
| 55 | 0.137 | 0.043 | 0.051 | 0.065 | 0.076 | 0.108 |
| 56 | 0.173 | 0.038 | 0.054 | 0.075 | 0.085 | 0.117 |
| 57 | 0.019 | 0.035 | 0.059 | 0.088 | 0.111 | 0.134 |
| 58 | 0.011 | 0.040 | 0.070 | 0.105 | 0.133 | 0.162 |
| 59 | 0.194 | 0.056 | 0.064 | 0.081 | 0.113 | 0.163 |
| 60 | 0.081 | 0.085 | 0.133 | 0.215 | 0.280 | 0.333 |
| 61 | 0.080 | 0.090 | 0.134 | 0.170 | 0.223 | 0.292 |
| 62 | 0.137 | 0.153 | 0.201 | 0.250 | 0.278 | 0.288 |
| 63 | 0.128 | 0.140 | 0.183 | 0.227 | 0.251 | 0.260 |
| 64 | 0.174 | 0.147 | 0.173 | 0.224 | 0.239 | 0.264 |
| 65 | 0.152 | 0.201 | 0.262 | 0.299 | 0.323 | 0.323 |
| 66 | 0.272 | 0.273 | 0.317 | 0.355 | 0.380 | 0.380 |
| 67 | 0.218 | 0.237 | 0.268 | 0.274 | 0.284 | 0.284 |
| 68 | 0.200 | 0.228 | 0.269 | 0.285 | 0.299 | 0.299 |
| 69 | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 |
| 70 | 0.245 | 0.245 | 0.245 | 0.245 | 0.245 | 0.245 |

Service Retirement (continued)

**Public Agency Miscellaneous 2% at age 62**

| | Duration of Service | | | | | |
|---|---|---|---|---|---|---|
| Age | 5 Years | 10 Years | 15 Years | 20 Years | 25 Years | 30 Years |
| 50 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 51 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 52 | 0.005 | 0.008 | 0.012 | 0.015 | 0.019 | 0.031 |
| 53 | 0.007 | 0.011 | 0.014 | 0.018 | 0.021 | 0.032 |
| 54 | 0.007 | 0.011 | 0.015 | 0.019 | 0.023 | 0.034 |
| 55 | 0.010 | 0.019 | 0.028 | 0.036 | 0.061 | 0.096 |
| 56 | 0.014 | 0.026 | 0.038 | 0.050 | 0.075 | 0.108 |
| 57 | 0.018 | 0.029 | 0.039 | 0.050 | 0.074 | 0.107 |
| 58 | 0.023 | 0.035 | 0.048 | 0.060 | 0.073 | 0.099 |
| 59 | 0.025 | 0.038 | 0.051 | 0.065 | 0.092 | 0.128 |
| 60 | 0.031 | 0.051 | 0.071 | 0.091 | 0.111 | 0.138 |
| 61 | 0.038 | 0.058 | 0.079 | 0.100 | 0.121 | 0.167 |
| 62 | 0.044 | 0.074 | 0.104 | 0.134 | 0.164 | 0.214 |
| 63 | 0.077 | 0.105 | 0.134 | 0.163 | 0.192 | 0.237 |
| 64 | 0.072 | 0.101 | 0.129 | 0.158 | 0.187 | 0.242 |
| 65 | 0.108 | 0.141 | 0.173 | 0.206 | 0.239 | 0.300 |
| 66 | 0.132 | 0.172 | 0.212 | 0.252 | 0.292 | 0.366 |
| 67 | 0.132 | 0.172 | 0.212 | 0.252 | 0.292 | 0.366 |
| 68 | 0.120 | 0.156 | 0.193 | 0.229 | 0.265 | 0.333 |
| 69 | 0.120 | 0.156 | 0.193 | 0.229 | 0.265 | 0.333 |
| 70 | 0.120 | 0.156 | 0.193 | 0.229 | 0.265 | 0.333 |

**Public Agency Fire Half Pay at age 55 and 2% at age 55**

| Age | Rate | Age | Rate |
|---|---|---|---|
| 50 | 0.016 | 56 | 0.111 |
| 51 | 0.000 | 57 | 0.000 |
| 52 | 0.034 | 58 | 0.095 |
| 53 | 0.020 | 59 | 0.044 |
| 54 | 0.041 | 60 | 1.000 |
| 55 | 0.075 | | |

**Public Agency Police Half Pay at age 55 and 2% at age 55**

| Age | Rate | Age | Rate |
|---|---|---|---|
| 50 | 0.026 | 56 | 0.069 |
| 51 | 0.000 | 57 | 0.051 |
| 52 | 0.016 | 58 | 0.072 |
| 53 | 0.027 | 59 | 0.070 |
| 54 | 0.010 | 60 | 0.300 |
| 55 | 0.167 | | |

Service Retirement (continued)

**Public Agency Police 2% at age 50**

| | Duration of Service | | | | | |
|---|---|---|---|---|---|---|
| Age | 5 Years | 10 Years | 15 Years | 20 Years | 25 Years | 30 Years |
| 50 | 0.018 | 0.077 | 0.056 | 0.046 | 0.043 | 0.046 |
| 51 | 0.022 | 0.087 | 0.060 | 0.048 | 0.044 | 0.047 |
| 52 | 0.020 | 0.102 | 0.081 | 0.071 | 0.069 | 0.075 |
| 53 | 0.016 | 0.072 | 0.053 | 0.045 | 0.042 | 0.046 |
| 54 | 0.006 | 0.071 | 0.071 | 0.069 | 0.072 | 0.080 |
| 55 | 0.009 | 0.040 | 0.099 | 0.157 | 0.186 | 0.186 |
| 56 | 0.020 | 0.051 | 0.108 | 0.165 | 0.194 | 0.194 |
| 57 | 0.036 | 0.072 | 0.106 | 0.139 | 0.156 | 0.156 |
| 58 | 0.001 | 0.046 | 0.089 | 0.130 | 0.152 | 0.152 |
| 59 | 0.066 | 0.094 | 0.119 | 0.143 | 0.155 | 0.155 |
| 60 | 0.177 | 0.177 | 0.177 | 0.177 | 0.177 | 0.177 |
| 61 | 0.134 | 0.134 | 0.134 | 0.134 | 0.134 | 0.134 |
| 62 | 0.184 | 0.184 | 0.184 | 0.184 | 0.184 | 0.184 |
| 63 | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 | 0.250 |
| 64 | 0.177 | 0.177 | 0.177 | 0.177 | 0.177 | 0.177 |
| 65 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

- These rates also apply to County Peace officers, Local Prosecutors, Local Sheriff, School Police, and Other Safety.

**Public Agency Fire 2% at age 50**

| | Duration of Service | | | | | |
|---|---|---|---|---|---|---|
| Age | 5 Years | 10 Years | 15 Years | 20 Years | 25 Years | 30 Years |
| 50 | 0.054 | 0.054 | 0.056 | 0.080 | 0.064 | 0.066 |
| 51 | 0.020 | 0.020 | 0.021 | 0.030 | 0.024 | 0.024 |
| 52 | 0.037 | 0.037 | 0.038 | 0.054 | 0.043 | 0.045 |
| 53 | 0.051 | 0.051 | 0.053 | 0.076 | 0.061 | 0.063 |
| 54 | 0.082 | 0.082 | 0.085 | 0.121 | 0.097 | 0.100 |
| 55 | 0.139 | 0.139 | 0.139 | 0.139 | 0.139 | 0.139 |
| 56 | 0.129 | 0.129 | 0.129 | 0.129 | 0.129 | 0.129 |
| 57 | 0.085 | 0.085 | 0.085 | 0.085 | 0.085 | 0.085 |
| 58 | 0.119 | 0.119 | 0.119 | 0.119 | 0.119 | 0.119 |
| 59 | 0.167 | 0.167 | 0.167 | 0.167 | 0.167 | 0.167 |
| 60 | 0.152 | 0.152 | 0.152 | 0.152 | 0.152 | 0.152 |
| 61 | 0.179 | 0.179 | 0.179 | 0.179 | 0.179 | 0.179 |
| 62 | 0.179 | 0.179 | 0.179 | 0.179 | 0.179 | 0.179 |
| 63 | 0.179 | 0.179 | 0.179 | 0.179 | 0.179 | 0.179 |
| 64 | 0.179 | 0.179 | 0.179 | 0.179 | 0.179 | 0.179 |
| 65 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

Service Retirement (continued)

**Public Agency Police 3% at age 55**

| | Duration of Service | | | | | |
|---|---|---|---|---|---|---|
| Age | 5 Years | 10 Years | 15 Years | 20 Years | 25 Years | 30 Years |
| 50 | 0.019 | 0.053 | 0.045 | 0.054 | 0.057 | 0.061 |
| 51 | 0.002 | 0.017 | 0.028 | 0.044 | 0.053 | 0.060 |
| 52 | 0.002 | 0.031 | 0.037 | 0.051 | 0.059 | 0.066 |
| 53 | 0.026 | 0.049 | 0.049 | 0.080 | 0.099 | 0.114 |
| 54 | 0.019 | 0.034 | 0.047 | 0.091 | 0.121 | 0.142 |
| 55 | 0.006 | 0.115 | 0.141 | 0.199 | 0.231 | 0.259 |
| 56 | 0.017 | 0.188 | 0.121 | 0.173 | 0.199 | 0.199 |
| 57 | 0.008 | 0.137 | 0.093 | 0.136 | 0.157 | 0.157 |
| 58 | 0.017 | 0.126 | 0.105 | 0.164 | 0.194 | 0.194 |
| 59 | 0.026 | 0.146 | 0.110 | 0.167 | 0.195 | 0.195 |
| 60 | 0.155 | 0.155 | 0.155 | 0.155 | 0.155 | 0.155 |
| 61 | 0.210 | 0.210 | 0.210 | 0.210 | 0.210 | 0.210 |
| 62 | 0.262 | 0.262 | 0.262 | 0.262 | 0.262 | 0.262 |
| 63 | 0.172 | 0.172 | 0.172 | 0.172 | 0.172 | 0.172 |
| 64 | 0.227 | 0.227 | 0.227 | 0.227 | 0.227 | 0.227 |
| 65 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

- These rates also apply to County Peace officers, Local Prosecutors, Local Sheriff, School Police, and Other Safety.

**Public Agency Fire 3% at age 55**

| | Duration of Service | | | | | |
|---|---|---|---|---|---|---|
| Age | 5 Years | 10 Years | 15 Years | 20 Years | 25 Years | 30 Years |
| 50 | 0.003 | 0.006 | 0.013 | 0.019 | 0.025 | 0.028 |
| 51 | 0.004 | 0.008 | 0.017 | 0.026 | 0.034 | 0.038 |
| 52 | 0.005 | 0.011 | 0.022 | 0.033 | 0.044 | 0.049 |
| 53 | 0.005 | 0.034 | 0.024 | 0.038 | 0.069 | 0.138 |
| 54 | 0.007 | 0.047 | 0.032 | 0.051 | 0.094 | 0.187 |
| 55 | 0.010 | 0.067 | 0.046 | 0.073 | 0.134 | 0.266 |
| 56 | 0.010 | 0.063 | 0.044 | 0.069 | 0.127 | 0.253 |
| 57 | 0.135 | 0.100 | 0.148 | 0.196 | 0.220 | 0.220 |
| 58 | 0.083 | 0.062 | 0.091 | 0.120 | 0.135 | 0.135 |
| 59 | 0.137 | 0.053 | 0.084 | 0.146 | 0.177 | 0.177 |
| 60 | 0.162 | 0.063 | 0.099 | 0.172 | 0.208 | 0.208 |
| 61 | 0.598 | 0.231 | 0.231 | 0.231 | 0.231 | 0.231 |
| 62 | 0.621 | 0.240 | 0.240 | 0.240 | 0.240 | 0.240 |
| 63 | 0.236 | 0.236 | 0.236 | 0.236 | 0.236 | 0.236 |
| 64 | 0.236 | 0.236 | 0.236 | 0.236 | 0.236 | 0.236 |
| 65 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

Service Retirement (continued)

**Public Agency Police 3% at age 50**

| | Duration of Service | | | | | |
|---|---|---|---|---|---|---|
| Age | 5 Years | 10 Years | 15 Years | 20 Years | 25 Years | 30 Years |
| 50 | 0.124 | 0.103 | 0.113 | 0.143 | 0.244 | 0.376 |
| 51 | 0.060 | 0.081 | 0.087 | 0.125 | 0.207 | 0.294 |
| 52 | 0.016 | 0.055 | 0.111 | 0.148 | 0.192 | 0.235 |
| 53 | 0.072 | 0.074 | 0.098 | 0.142 | 0.189 | 0.237 |
| 54 | 0.018 | 0.049 | 0.105 | 0.123 | 0.187 | 0.271 |
| 55 | 0.069 | 0.074 | 0.081 | 0.113 | 0.209 | 0.305 |
| 56 | 0.064 | 0.108 | 0.113 | 0.125 | 0.190 | 0.288 |
| 57 | 0.056 | 0.109 | 0.160 | 0.182 | 0.210 | 0.210 |
| 58 | 0.108 | 0.129 | 0.173 | 0.189 | 0.214 | 0.214 |
| 59 | 0.093 | 0.144 | 0.204 | 0.229 | 0.262 | 0.262 |
| 60 | 0.343 | 0.180 | 0.159 | 0.188 | 0.247 | 0.247 |
| 61 | 0.221 | 0.221 | 0.221 | 0.221 | 0.221 | 0.221 |
| 62 | 0.213 | 0.213 | 0.213 | 0.213 | 0.213 | 0.213 |
| 63 | 0.233 | 0.233 | 0.233 | 0.233 | 0.233 | 0.233 |
| 64 | 0.234 | 0.234 | 0.234 | 0.234 | 0.234 | 0.234 |
| 65 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

- These rates also apply to County Peace officers, Local Prosecutors, Local Sheriff, School Police, and Other Safety.

**Public Agency Fire 3% at age 50**

| | Duration of Service | | | | | |
|---|---|---|---|---|---|---|
| Age | 5 Years | 10 Years | 15 Years | 20 Years | 25 Years | 30 Years |
| 50 | 0.095 | 0.048 | 0.053 | 0.093 | 0.134 | 0.175 |
| 51 | 0.016 | 0.032 | 0.053 | 0.085 | 0.117 | 0.149 |
| 52 | 0.013 | 0.032 | 0.054 | 0.087 | 0.120 | 0.154 |
| 53 | 0.085 | 0.044 | 0.049 | 0.089 | 0.129 | 0.170 |
| 54 | 0.038 | 0.065 | 0.074 | 0.105 | 0.136 | 0.167 |
| 55 | 0.042 | 0.043 | 0.049 | 0.085 | 0.132 | 0.215 |
| 56 | 0.133 | 0.103 | 0.075 | 0.113 | 0.151 | 0.209 |
| 57 | 0.062 | 0.048 | 0.060 | 0.124 | 0.172 | 0.213 |
| 58 | 0.124 | 0.097 | 0.092 | 0.153 | 0.194 | 0.227 |
| 59 | 0.092 | 0.071 | 0.078 | 0.144 | 0.192 | 0.233 |
| 60 | 0.056 | 0.044 | 0.061 | 0.131 | 0.186 | 0.233 |
| 61 | 0.282 | 0.219 | 0.158 | 0.198 | 0.233 | 0.260 |
| 62 | 0.292 | 0.227 | 0.164 | 0.205 | 0.241 | 0.269 |
| 63 | 0.196 | 0.196 | 0.196 | 0.196 | 0.196 | 0.196 |
| 64 | 0.197 | 0.197 | 0.197 | 0.197 | 0.197 | 0.197 |
| 65 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

Service Retirement (continued)

**Public Agency Police 2% at age 57**

| | Duration of Service | | | | | |
|---|---|---|---|---|---|---|
| Age | 5 Years | 10 Years | 15 Years | 20 Years | 25 Years | 30 Years |
| 50 | 0.040 | 0.040 | 0.040 | 0.040 | 0.040 | 0.080 |
| 51 | 0.028 | 0.028 | 0.028 | 0.028 | 0.040 | 0.066 |
| 52 | 0.028 | 0.028 | 0.028 | 0.028 | 0.043 | 0.061 |
| 53 | 0.028 | 0.028 | 0.028 | 0.028 | 0.057 | 0.086 |
| 54 | 0.028 | 0.028 | 0.028 | 0.032 | 0.069 | 0.110 |
| 55 | 0.050 | 0.050 | 0.050 | 0.067 | 0.099 | 0.179 |
| 56 | 0.046 | 0.046 | 0.046 | 0.062 | 0.090 | 0.160 |
| 57 | 0.054 | 0.054 | 0.054 | 0.072 | 0.106 | 0.191 |
| 58 | 0.060 | 0.060 | 0.060 | 0.066 | 0.103 | 0.171 |
| 59 | 0.060 | 0.060 | 0.060 | 0.069 | 0.105 | 0.171 |
| 60 | 0.113 | 0.113 | 0.113 | 0.113 | 0.113 | 0.171 |
| 61 | 0.108 | 0.108 | 0.108 | 0.108 | 0.108 | 0.128 |
| 62 | 0.113 | 0.113 | 0.113 | 0.113 | 0.113 | 0.159 |
| 63 | 0.113 | 0.113 | 0.113 | 0.113 | 0.113 | 0.159 |
| 64 | 0.113 | 0.113 | 0.113 | 0.113 | 0.113 | 0.239 |
| 65 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

- These rates also apply to County Peace officers, Local Prosecutors, Local Sheriff, School Police, and Other Safety.

**Public Agency Fire 2% at age 57**

| | Duration of Service | | | | | |
|---|---|---|---|---|---|---|
| Age | 5 Years | 10 Years | 15 Years | 20 Years | 25 Years | 30 Years |
| 50 | 0.005 | 0.005 | 0.005 | 0.005 | 0.008 | 0.012 |
| 51 | 0.006 | 0.006 | 0.006 | 0.006 | 0.009 | 0.013 |
| 52 | 0.012 | 0.012 | 0.012 | 0.012 | 0.019 | 0.028 |
| 53 | 0.033 | 0.033 | 0.033 | 0.033 | 0.050 | 0.075 |
| 54 | 0.045 | 0.045 | 0.045 | 0.045 | 0.069 | 0.103 |
| 55 | 0.061 | 0.061 | 0.061 | 0.061 | 0.094 | 0.140 |
| 56 | 0.055 | 0.055 | 0.055 | 0.055 | 0.084 | 0.126 |
| 57 | 0.081 | 0.081 | 0.081 | 0.081 | 0.125 | 0.187 |
| 58 | 0.059 | 0.059 | 0.059 | 0.059 | 0.091 | 0.137 |
| 59 | 0.055 | 0.055 | 0.055 | 0.055 | 0.084 | 0.126 |
| 60 | 0.085 | 0.085 | 0.085 | 0.085 | 0.131 | 0.196 |
| 61 | 0.085 | 0.085 | 0.085 | 0.085 | 0.131 | 0.196 |
| 62 | 0.085 | 0.085 | 0.085 | 0.085 | 0.131 | 0.196 |
| 63 | 0.085 | 0.085 | 0.085 | 0.085 | 0.131 | 0.196 |
| 64 | 0.085 | 0.085 | 0.085 | 0.085 | 0.131 | 0.196 |
| 65 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

Service Retirement (continued)

**Public Agency Police 2.5% at age 57**

| | Duration of Service | | | | | |
|---|---|---|---|---|---|---|
| Age | 5 Years | 10 Years | 15 Years | 20 Years | 25 Years | 30 Years |
| 50 | 0.050 | 0.050 | 0.050 | 0.050 | 0.050 | 0.100 |
| 51 | 0.038 | 0.038 | 0.038 | 0.038 | 0.055 | 0.089 |
| 52 | 0.038 | 0.038 | 0.038 | 0.038 | 0.058 | 0.082 |
| 53 | 0.036 | 0.036 | 0.036 | 0.036 | 0.073 | 0.111 |
| 54 | 0.036 | 0.036 | 0.036 | 0.041 | 0.088 | 0.142 |
| 55 | 0.061 | 0.061 | 0.061 | 0.082 | 0.120 | 0.217 |
| 56 | 0.056 | 0.056 | 0.056 | 0.075 | 0.110 | 0.194 |
| 57 | 0.060 | 0.060 | 0.060 | 0.080 | 0.118 | 0.213 |
| 58 | 0.072 | 0.072 | 0.072 | 0.079 | 0.124 | 0.205 |
| 59 | 0.072 | 0.072 | 0.072 | 0.083 | 0.126 | 0.205 |
| 60 | 0.135 | 0.135 | 0.135 | 0.135 | 0.135 | 0.205 |
| 61 | 0.130 | 0.130 | 0.130 | 0.130 | 0.130 | 0.153 |
| 62 | 0.135 | 0.135 | 0.135 | 0.135 | 0.135 | 0.191 |
| 63 | 0.135 | 0.135 | 0.135 | 0.135 | 0.135 | 0.191 |
| 64 | 0.135 | 0.135 | 0.135 | 0.135 | 0.135 | 0.287 |
| 65 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

- These rates also apply to County Peace officers, Local Prosecutors, Local Sheriff, School Police, and Other Safety.

**Public Agency Fire 2.5% at age 57**

| | Duration of Service | | | | | |
|---|---|---|---|---|---|---|
| Age | 5 Years | 10 Years | 15 Years | 20 Years | 25 Years | 30 Years |
| 50 | 0.007 | 0.007 | 0.007 | 0.007 | 0.010 | 0.015 |
| 51 | 0.008 | 0.008 | 0.008 | 0.008 | 0.012 | 0.018 |
| 52 | 0.016 | 0.016 | 0.016 | 0.016 | 0.025 | 0.038 |
| 53 | 0.042 | 0.042 | 0.042 | 0.042 | 0.064 | 0.096 |
| 54 | 0.057 | 0.057 | 0.057 | 0.057 | 0.088 | 0.132 |
| 55 | 0.074 | 0.074 | 0.074 | 0.074 | 0.114 | 0.170 |
| 56 | 0.066 | 0.066 | 0.066 | 0.066 | 0.102 | 0.153 |
| 57 | 0.090 | 0.090 | 0.090 | 0.090 | 0.139 | 0.208 |
| 58 | 0.071 | 0.071 | 0.071 | 0.071 | 0.110 | 0.164 |
| 59 | 0.066 | 0.066 | 0.066 | 0.066 | 0.101 | 0.151 |
| 60 | 0.102 | 0.102 | 0.102 | 0.102 | 0.157 | 0.235 |
| 61 | 0.102 | 0.102 | 0.102 | 0.102 | 0.157 | 0.236 |
| 62 | 0.102 | 0.102 | 0.102 | 0.102 | 0.157 | 0.236 |
| 63 | 0.102 | 0.102 | 0.102 | 0.102 | 0.157 | 0.236 |
| 64 | 0.102 | 0.102 | 0.102 | 0.102 | 0.157 | 0.236 |
| 65 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

Service Retirement (continued)

**Public Agency Police 2.7% at age 57**

| | Duration of Service | | | | | |
|---|---|---|---|---|---|---|
| Age | 5 Years | 10 Years | 15 Years | 20 Years | 25 Years | 30 Years |
| 50 | 0.050 | 0.050 | 0.050 | 0.050 | 0.050 | 0.100 |
| 51 | 0.040 | 0.040 | 0.040 | 0.040 | 0.058 | 0.094 |
| 52 | 0.038 | 0.038 | 0.038 | 0.038 | 0.058 | 0.083 |
| 53 | 0.038 | 0.038 | 0.038 | 0.038 | 0.077 | 0.117 |
| 54 | 0.038 | 0.038 | 0.038 | 0.044 | 0.093 | 0.150 |
| 55 | 0.068 | 0.068 | 0.068 | 0.091 | 0.134 | 0.242 |
| 56 | 0.063 | 0.063 | 0.063 | 0.084 | 0.123 | 0.217 |
| 57 | 0.060 | 0.060 | 0.060 | 0.080 | 0.118 | 0.213 |
| 58 | 0.080 | 0.080 | 0.080 | 0.088 | 0.138 | 0.228 |
| 59 | 0.080 | 0.080 | 0.080 | 0.092 | 0.140 | 0.228 |
| 60 | 0.150 | 0.150 | 0.150 | 0.150 | 0.150 | 0.228 |
| 61 | 0.144 | 0.144 | 0.144 | 0.144 | 0.144 | 0.170 |
| 62 | 0.150 | 0.150 | 0.150 | 0.150 | 0.150 | 0.213 |
| 63 | 0.150 | 0.150 | 0.150 | 0.150 | 0.150 | 0.213 |
| 64 | 0.150 | 0.150 | 0.150 | 0.150 | 0.150 | 0.319 |
| 65 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

- These rates also apply to County Peace officers, Local Prosecutors, Local Sheriff, School Police, and Other Safety.

**Public Agency Fire 2.7% at age 57**

| | Duration of Service | | | | | |
|---|---|---|---|---|---|---|
| Age | 5 Years | 10 Years | 15 Years | 20 Years | 25 Years | 30 Years |
| 50 | 0.007 | 0.007 | 0.007 | 0.007 | 0.010 | 0.015 |
| 51 | 0.008 | 0.008 | 0.008 | 0.008 | 0.013 | 0.019 |
| 52 | 0.016 | 0.016 | 0.016 | 0.016 | 0.025 | 0.038 |
| 53 | 0.044 | 0.044 | 0.044 | 0.044 | 0.068 | 0.102 |
| 54 | 0.061 | 0.061 | 0.061 | 0.061 | 0.093 | 0.140 |
| 55 | 0.083 | 0.083 | 0.083 | 0.083 | 0.127 | 0.190 |
| 56 | 0.074 | 0.074 | 0.074 | 0.074 | 0.114 | 0.171 |
| 57 | 0.090 | 0.090 | 0.090 | 0.090 | 0.139 | 0.208 |
| 58 | 0.079 | 0.079 | 0.079 | 0.079 | 0.122 | 0.182 |
| 59 | 0.073 | 0.073 | 0.073 | 0.073 | 0.112 | 0.168 |
| 60 | 0.114 | 0.114 | 0.114 | 0.114 | 0.175 | 0.262 |
| 61 | 0.114 | 0.114 | 0.114 | 0.114 | 0.175 | 0.262 |
| 62 | 0.114 | 0.114 | 0.114 | 0.114 | 0.175 | 0.262 |
| 63 | 0.114 | 0.114 | 0.114 | 0.114 | 0.175 | 0.262 |
| 64 | 0.114 | 0.114 | 0.114 | 0.114 | 0.175 | 0.262 |
| 65 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

Service Retirement (continued)

**Schools 2% at age 55**

| | Duration of Service | | | | | |
|---|---|---|---|---|---|---|
| Age | 5 Years | 10 Years | 15 Years | 20 Years | 25 Years | 30 Years |
| 50 | 0.003 | 0.004 | 0.006 | 0.007 | 0.010 | 0.010 |
| 51 | 0.004 | 0.005 | 0.007 | 0.008 | 0.011 | 0.011 |
| 52 | 0.005 | 0.007 | 0.008 | 0.009 | 0.012 | 0.012 |
| 53 | 0.007 | 0.008 | 0.010 | 0.012 | 0.015 | 0.015 |
| 54 | 0.006 | 0.009 | 0.012 | 0.015 | 0.020 | 0.021 |
| 55 | 0.011 | 0.023 | 0.034 | 0.057 | 0.070 | 0.090 |
| 56 | 0.012 | 0.027 | 0.036 | 0.056 | 0.073 | 0.095 |
| 57 | 0.016 | 0.027 | 0.036 | 0.055 | 0.068 | 0.087 |
| 58 | 0.019 | 0.030 | 0.040 | 0.062 | 0.078 | 0.103 |
| 59 | 0.023 | 0.034 | 0.046 | 0.070 | 0.085 | 0.109 |
| 60 | 0.022 | 0.043 | 0.062 | 0.095 | 0.113 | 0.141 |
| 61 | 0.030 | 0.051 | 0.071 | 0.103 | 0.124 | 0.154 |
| 62 | 0.065 | 0.098 | 0.128 | 0.188 | 0.216 | 0.248 |
| 63 | 0.075 | 0.112 | 0.144 | 0.197 | 0.222 | 0.268 |
| 64 | 0.091 | 0.116 | 0.138 | 0.180 | 0.196 | 0.231 |
| 65 | 0.163 | 0.164 | 0.197 | 0.232 | 0.250 | 0.271 |
| 66 | 0.208 | 0.204 | 0.243 | 0.282 | 0.301 | 0.315 |
| 67 | 0.189 | 0.185 | 0.221 | 0.257 | 0.274 | 0.287 |
| 68 | 0.127 | 0.158 | 0.200 | 0.227 | 0.241 | 0.244 |
| 69 | 0.168 | 0.162 | 0.189 | 0.217 | 0.229 | 0.238 |
| 70 | 0.191 | 0.190 | 0.237 | 0.250 | 0.246 | 0.254 |

**Schools 2% at age 62**

| | Duration of Service | | | | | |
|---|---|---|---|---|---|---|
| Age | 5 Years | 10 Years | 15 Years | 20 Years | 25 Years | 30 Years |
| 50 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 51 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 52 | 0.004 | 0.007 | 0.010 | 0.011 | 0.013 | 0.015 |
| 53 | 0.004 | 0.008 | 0.010 | 0.013 | 0.014 | 0.016 |
| 54 | 0.005 | 0.011 | 0.015 | 0.018 | 0.020 | 0.022 |
| 55 | 0.014 | 0.027 | 0.038 | 0.045 | 0.050 | 0.056 |
| 56 | 0.013 | 0.026 | 0.037 | 0.043 | 0.048 | 0.055 |
| 57 | 0.013 | 0.027 | 0.038 | 0.045 | 0.050 | 0.055 |
| 58 | 0.017 | 0.034 | 0.047 | 0.056 | 0.062 | 0.069 |
| 59 | 0.019 | 0.037 | 0.052 | 0.062 | 0.068 | 0.076 |
| 60 | 0.026 | 0.053 | 0.074 | 0.087 | 0.097 | 0.108 |
| 61 | 0.030 | 0.058 | 0.081 | 0.095 | 0.106 | 0.119 |
| 62 | 0.053 | 0.105 | 0.147 | 0.174 | 0.194 | 0.217 |
| 63 | 0.054 | 0.107 | 0.151 | 0.178 | 0.198 | 0.222 |
| 64 | 0.053 | 0.105 | 0.147 | 0.174 | 0.194 | 0.216 |
| 65 | 0.072 | 0.142 | 0.199 | 0.235 | 0.262 | 0.293 |
| 66 | 0.077 | 0.152 | 0.213 | 0.252 | 0.281 | 0.314 |
| 67 | 0.070 | 0.139 | 0.194 | 0.229 | 0.255 | 0.286 |
| 68 | 0.063 | 0.124 | 0.173 | 0.205 | 0.228 | 0.255 |
| 69 | 0.066 | 0.130 | 0.183 | 0.216 | 0.241 | 0.270 |
| 70 | 0.071 | 0.140 | 0.196 | 0.231 | 0.258 | 0.289 |

# Miscellaneous

**Models**

The valuation results are based on proprietary actuarial valuation models. The models are centralized and maintained by a specialized team to achieve a high degree of accuracy and consistency. The Actuarial Office is responsible for confirming the appropriateness of the inputs (such as participant data, actuarial methods and assumptions, and plan provisions) as well as performing tests and validating the reasonableness of the output. The results of our models are independently confirmed by parallel valuations performed by outside actuaries on a periodic basis using their models. In our professional judgment, our actuarial valuation models produce comprehensive pension funding information consistent with the purposes of the valuation and have no material limitations or known weaknesses.

**Internal Revenue Code Section 415(b)**

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 other than assumed since the prior valuation is included and amortized as part of the non-investment 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 2024 calendar year is $275,000.

**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 other than assumed since the prior valuation is included and amortized as part of the non-investment gain or loss base. The compensation limit for classic members for the 2024 calendar year is $345,000.

**PEPRA Compensation Limits**

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 2024 is $151,446 for members who participate in Social Security and $181,734 for those who do not. The limits are adjusted annually based on changes to the CPI for all urban consumers.

## Appendix B - Principal Plan Provisions


- **Service Retirement** **65**
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The following is a description of the principal plan provisions used in calculating costs and liabilities. We have indicated whether a plan provision is standard or optional. Standard benefits are applicable to all members while optional benefits vary among employers. Optional benefits that apply to a single period of time, such as Golden Handshakes, have not been included. Many of the statements in this summary are general in nature, and are intended to provide an easily understood summary of the Public Employees' Retirement Law and the California Public Employees' Pension Reform Act of 2013. The law itself governs in all situations.

# Service Retirement

**Eligibility**

A classic CalPERS member or PEPRA Safety member becomes 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). For employees hired into a plan with the 1.5% at age 65 formula, eligibility for service retirement is age 55 with at least 5 years of service. PEPRA Miscellaneous 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* depends on the benefit formula specified in the agency's contract. The table below shows the factors for each of the available formulas. Factors vary by the member's age at retirement. Listed are the factors for retirement at whole year ages:

Miscellaneous Plan Formulas

| Retirement Age | 1.5% at age 65 | 2% at age 60 | 2% at age 55 | 2.5% at age 55 | 2.7% at age 55 | 3% at age 60 | PEPRA 2% at age 62 |
|---|---|---|---|---|---|---|---|
| 50 | 0.5000% | 1.092% | 1.426% | 2.000% | 2.000% | 2.000% | N/A |
| 51 | 0.5667% | 1.156% | 1.522% | 2.100% | 2.140% | 2.100% | N/A |
| 52 | 0.6334% | 1.224% | 1.628% | 2.200% | 2.280% | 2.200% | 1.000% |
| 53 | 0.7000% | 1.296% | 1.742% | 2.300% | 2.420% | 2.300% | 1.100% |
| 54 | 0.7667% | 1.376% | 1.866% | 2.400% | 2.560% | 2.400% | 1.200% |
| 55 | 0.8334% | 1.460% | 2.000% | 2.500% | 2.700% | 2.500% | 1.300% |
| 56 | 0.9000% | 1.552% | 2.052% | 2.500% | 2.700% | 2.600% | 1.400% |
| 57 | 0.9667% | 1.650% | 2.104% | 2.500% | 2.700% | 2.700% | 1.500% |
| 58 | 1.0334% | 1.758% | 2.156% | 2.500% | 2.700% | 2.800% | 1.600% |
| 59 | 1.1000% | 1.874% | 2.210% | 2.500% | 2.700% | 2.900% | 1.700% |
| 60 | 1.1667% | 2.000% | 2.262% | 2.500% | 2.700% | 3.000% | 1.800% |
| 61 | 1.2334% | 2.134% | 2.314% | 2.500% | 2.700% | 3.000% | 1.900% |
| 62 | 1.3000% | 2.272% | 2.366% | 2.500% | 2.700% | 3.000% | 2.000% |
| 63 | 1.3667% | 2.418% | 2.418% | 2.500% | 2.700% | 3.000% | 2.100% |
| 64 | 1.4334% | 2.418% | 2.418% | 2.500% | 2.700% | 3.000% | 2.200% |
| 65 | 1.5000% | 2.418% | 2.418% | 2.500% | 2.700% | 3.000% | 2.300% |
| 66 | 1.5000% | 2.418% | 2.418% | 2.500% | 2.700% | 3.000% | 2.400% |
| 67 & up | 1.5000% | 2.418% | 2.418% | 2.500% | 2.700% | 3.000% | 2.500% |

Classic Safety Plan Formulas

| Retirement Age | Half Pay at age 55* | 2% at age 55 | 2% at age 50 | 3% at age 55 | 3% at age 50 |
|---|---|---|---|---|---|
| 50 | 1.783% | 1.426% | 2.000% | 2.400% | 3.000% |
| 51 | 1.903% | 1.522% | 2.140% | 2.520% | 3.000% |
| 52 | 2.035% | 1.628% | 2.280% | 2.640% | 3.000% |
| 53 | 2.178% | 1.742% | 2.420% | 2.760% | 3.000% |
| 54 | 2.333% | 1.866% | 2.560% | 2.880% | 3.000% |
| 55 & Up | 2.500% | 2.000% | 2.700% | 3.000% | 3.000% |

* For this formula, the benefit factor also varies by entry age. The factors shown are for members with an entry age of 35 or greater. If entry age is less than 35, then the age 55 benefit factor is 50% divided by the difference between age 55 and entry age. The benefit factor for ages prior to age 55 is the same proportion of the age 55 benefit factor as in the above table.

PEPRA Safety Plan Formulas

| Retirement Age | 2% at age 57 | 2.5% at age 57 | 2.7% at age 57 |
|---|---|---|---|
| 50 | 1.426% | 2.000% | 2.000% |
| 51 | 1.508% | 2.071% | 2.100% |
| 52 | 1.590% | 2.143% | 2.200% |
| 53 | 1.672% | 2.214% | 2.300% |
| 54 | 1.754% | 2.286% | 2.400% |
| 55 | 1.836% | 2.357% | 2.500% |
| 56 | 1.918% | 2.429% | 2.600% |
| 57 & Up | 2.000% | 2.500% | 2.700% |

- 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, and then added together for the total allowance. An agency may contract for an optional benefit where any unused sick leave accumulated at the time of retirement will be converted to credited service at a rate of 0.004 years of service for each day of sick leave.

- The *final compensation* is the monthly average of the member's highest 36 or 12 consecutive months' full-time equivalent monthly pay (no matter which CalPERS employer paid this compensation). The standard benefit is 36 months. Employers had the option of providing a final compensation equal to the highest 12 consecutive months for classic plans only. Final compensation must be defined by the highest 36 consecutive months' pay under the 1.5% at age 65 formula. PEPRA members have a limit on the annual compensation that can be used to calculate final compensation. The limits are adjusted annually based on changes to the CPI for all urban consumers.

- PEPRA benefit formulas have no Social Security offsets and Social Security coverage is optional. For Classic benefit formulas, employees must be covered by Social Security with the 1.5% at age 65 formula. Social Security is optional for all other Classic benefit formulas. For employees covered by Social Security, the modified formula is the standard benefit. Under this type of formula, the final compensation is offset by $133.33 (or by one third if the final compensation is less than $400). Employers may contract for the full benefit with Social Security that will eliminate the offset applicable to the final compensation. For employees not covered by Social Security, the full benefit is paid with no offsets. Auxiliary organizations of the CSUC system may elect reduced contribution rates, in which case the offset is $317 if members are not covered by Social Security or $513 if members are covered by Social Security.

- The Miscellaneous and PEPRA Safety service retirement benefit is not capped. The Classic Safety service retirement benefit is capped at 90% of final compensation.

# Vested Deferred Retirement

**Eligibility for Deferred Status**

CalPERS members becomes eligible for a deferred vested retirement benefit when they leave employment, keep their contribution account balance on deposit with CalPERS, **and** have 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**

The CalPERS classic members and PEPRA Safety members become eligible to receive the deferred retirement benefit upon satisfying the eligibility requirements for deferred status and upon attainment of age 50 (55 for employees hired into a 1.5% at age 65 plan). PEPRA Miscellaneous 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, and then added together for the total allowance.

# Non-Industrial Disability Retirement

**Eligibility**

A CalPERS member is eligible for Non-Industrial (non-job related) 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 their 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 employed by any CalPERS employer at the time of disability in order to be eligible for this benefit.

**Standard Benefit**

The standard 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 33⅓% of final compensation.

**Improved Benefit**

Employers have the option of providing the improved Non-Industrial Disability Retirement benefit. This benefit provides a monthly allowance equal to 30% of final compensation for the first 5 years of service, plus 1% for each additional year of service to a maximum of 50% of final compensation.

Members who are eligible for a larger service retirement benefit may choose to receive that benefit in lieu of a disability benefit. Members eligible to retire, and who have attained the normal retirement age determined by 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.

# Industrial Disability Retirement

This is a standard benefit for Safety members except those described in Section 20423.6. For excluded Safety members and all Miscellaneous members, employers have the option of providing this benefit. An employer may choose to provide the increased benefit option or the improved benefit option.

**Eligibility**

An employee is eligible for Industrial (job related) Disability Retirement if he or she becomes disabled while working, where disabled means the member is unable to perform the duties of the job because of a work-related illness or injury, which is expected to be permanent or to last indefinitely. A CalPERS member who has left active employment within this group is not eligible for this benefit, except to the extent described below.

**Standard Benefit**

The standard Industrial Disability Retirement benefit is a monthly allowance equal to 50% of final compensation.

**Increased Benefit (75% of Final Compensation)**

The increased Industrial Disability Retirement benefit is a monthly allowance equal to 75% of final compensation for total disability.

**Improved Benefit (50% to 90% of Final Compensation)**

The improved Industrial Disability Retirement benefit is a monthly allowance equal to the Workman's Compensation Appeals Board permanent disability rate percentage (if 50% or greater, with a maximum of 90%) times the final compensation.

For a CalPERS member not actively employed in this group who became disabled while employed by some other CalPERS employer, the benefit is a return of accumulated member contributions with respect to employment in this group. With the standard or increased benefit, a member may also choose to receive the annuitization of the accumulated member contributions.

If a member is eligible for service retirement and if the service retirement benefit is more than the industrial disability retirement benefit, the member may choose to receive the larger benefit.

# Post-Retirement Death Benefit

**Standard Lump Sum Payment**

Upon the death of a retiree, a one-time lump sum payment of $500 will be made to the retiree's designated survivor(s), or to the retiree's estate. The lump sum payment amount increases to $2,000 for any death occurring on or after July 1, 2023, due to SB 1168.

**Optional Lump Sum Payment**

In lieu of the standard lump sum death benefit, employers have the option of providing a lump sum death benefit of $600, $3,000, $4,000 or $5,000.

# Form of Payment for Retirement Allowance

**Standard Form of Payment**

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 their 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 their 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.

**Improved Form of Payment (Post-Retirement Survivor Allowance)**

Employers have the option to contract for the post-retirement survivor allowance.

For retirement allowances with respect to service subject to a modified Classic formula, 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. For retirement allowances with respect to service subject to a PEPRA formula or a full or supplemental Classic formula, 50% 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. This additional benefit is referred to as post-retirement survivor allowance (PRSA) or simply as survivor continuance.

In other words, 25% or 50% of the allowance, 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 child(ren) until they attain age 18; or, if no eligible child(ren), to a qualifying dependent parent) for the rest of their lifetime. This benefit will not be discontinued in the event the spouse remarries.

The remaining 75% or 50% of the retirement allowance, 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. Or, 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**

This is a standard benefit.

Eligibility

An employee's beneficiary (or estate) may receive the basic death benefit if the member dies while actively employed. A CalPERS member must be actively employed with the CalPERS employer providing this benefit to be eligible for this benefit. A member's survivor who is eligible for any other pre-retirement death benefit 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 through the date of death, plus a lump sum in the amount of one month's salary for each completed year of current service, up to a maximum of six months' salary. 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.

**1957 Survivor Benefit**

This is a standard 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 and PEPRA Safety members and age 52 for PEPRA Miscellaneous members, 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). A CalPERS member must be actively employed with the CalPERS employer providing this benefit to be 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 child(ren) under age 18. A member's survivor who is eligible for any other pre-retirement death benefit may choose to receive that death benefit instead of this 1957 Survivor 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 their 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 dependent child(ren), the benefit will be discontinued upon death or attainment of age 18, unless the child(ren) is disabled. The total amount paid will be at least equal to the basic death benefit.

**Optional Settlement 2 Death Benefit**

This is an optional benefit.

Eligibility

An employee's *eligible survivor* may receive the Optional Settlement 2 Death benefit if the member dies while actively employed, has attained at least age 50 for classic and PEPRA Safety members and age 52 for PEPRA Miscellaneous members, 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). 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. A member's survivor who is eligible for any other pre-retirement death benefit may choose to receive that death benefit instead of this Optional Settlement 2 Death benefit.

Benefit

The Optional Settlement 2 Death benefit is a monthly allowance equal to the service retirement benefit that the member would have received had the member retired on the date of their death and elected 100% to continue to the eligible survivor after the member's death. The allowance is payable to the surviving spouse until death, at which time it is continued to any unmarried child(ren), if applicable. The total amount paid will be at least equal to the basic death benefit.

**Special Death Benefit**

This is a standard benefit for Safety members except those described in Section 20423.6. For excluded Safety members and all Miscellaneous members, employers have the option of providing this benefit.

Eligibility

An employee's *eligible survivor(s)* may receive the special death benefit if the member dies while actively employed and the death is job-related. 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 prior to the onset of the injury or illness that resulted in death. If there is no eligible spouse, an eligible survivor means the member's unmarried child(ren) under age 22. An eligible survivor who chooses to receive this benefit will not receive any other death benefit.

Benefit

The special death benefit is a monthly allowance equal to 50% of final compensation and will be increased whenever the compensation paid to active employees is increased but ceasing to increase when the member would have attained age 50. The allowance is payable to the surviving spouse until death, at which time the allowance is continued to any unmarried child(ren) under age 22. There is a guarantee that the total amount paid will at least equal the basic death benefit.

If the member's death is the result of an accident or injury caused by external violence or physical force incurred in the performance of the member's duty, and there are *eligible* surviving child(ren) (*eligible* means unmarried child(ren) under age 22) in addition to an eligible spouse, then an **additional monthly allowance** is paid equal to the following:

- if 1 eligible child: 12.5% of final compensation
- if 2 eligible children: 20.0% of final compensation
- if 3 or more eligible children: 25.0% of final compensation

**Alternate Death Benefit for Local Fire Members**

This is an optional benefit available only to local fire members.

Eligibility

An employee's *eligible survivor(s)* may receive the alternate death benefit in lieu of the basic death benefit or the 1957 Survivor benefit if the member dies while actively employed and has at least 20 years of total CalPERS service. 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 prior to the onset of the injury or illness that resulted in death. If there is no eligible spouse, an eligible survivor means the member's unmarried child(ren) under age 18.

Benefit

The Alternate Death benefit is a monthly allowance equal to the service retirement benefit that the member would have received had the member retired on the date of their death and elected Optional Settlement 2. (A retiree who elects Optional Settlement 2 receives an allowance that has been reduced so that it will continue to be paid after their death to a surviving beneficiary.) If the member has not yet attained age 50, the benefit is equal to that which would be payable if the member had retired at age 50, based on service credited at the time of death. The allowance is payable to the surviving spouse until death, at which time it is continued to any unmarried child(ren), if applicable. The total amount paid will be at least equal to the basic death benefit.

# Cost-of-Living Adjustments (COLA)

**Standard Benefit**

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 price inflation. The resulting increase is divided by the total increase provided in prior years. For any given year, the COLA adjustment may be less than 2% (when the rate of price inflation is low), may be greater than the rate of price inflation (when the rate of price inflation is low after several years of high price inflation) or may even be greater than 2% (when price inflation is high after several years of low price inflation).

**Improved Benefit**

Employers have the option of providing a COLA of 3%, 4%, or 5%, determined in the same manner as described above for the standard 2% COLA. An improved COLA is not available with the 1.5% at age 65 formula.

# Purchasing Power Protection Allowance (PPPA)

Retirement and survivor allowances are protected against price inflation by PPPA. PPPA benefits are cost-of-living adjustments that are intended to maintain an individual's allowance at 80% of the initial allowance at retirement adjusted for price inflation since retirement. The PPPA benefit will be coordinated with other cost-of-living adjustments provided under the plan.

# Employee Contributions

Each employee contributes toward their retirement based upon the retirement formula. The standard employee contribution is as described below.

- The percent contributed below the monthly compensation breakpoint is 0%.
- The monthly compensation breakpoint is $0 for all PEPRA members and Classic members covered by a full or supplemental formula and $133.33 for Classic members covered by a modified formula.
- The percent contributed above the monthly compensation breakpoint depends upon the benefit formula, as shown in the table below.

| Benefit Formula | Percent Contributed above the Breakpoint |
|---|---|
| Miscellaneous, 1.5% at age 65 | 2% |
| Miscellaneous, 2% at age 60 | 7% |
| Miscellaneous, 2% at age 55 | 7% |
| Miscellaneous, 2.5% at age 55 | 8% |
| Miscellaneous, 2.7% at age 55 | 8% |
| Miscellaneous, 3% at age 60 | 8% |
| Miscellaneous, 2% at age 62 | 50% of the Total Normal Cost |
| Miscellaneous, 1.5% at age 65 | 50% of the Total Normal Cost |
| Safety, Half Pay at age 55 | Varies by entry age |
| Safety, 2% at age 55 | 7% |
| Safety, 2% at age 50 | 9% |
| Safety, 3% at age 55 | 9% |
| Safety, 3% at age 50 | 9% |
| Safety, 2% at age 57 | 50% of the Total Normal Cost |
| Safety, 2.5% at age 57 | 50% of the Total Normal Cost |
| Safety, 2.7% at age 57 | 50% of the Total Normal Cost |

The employer may choose to “pick-up” these contributions for classic members (Employer Paid Member Contributions or EPMC). EPMC is prohibited for new PEPRA members.

An employer may also include Employee Cost Sharing in the contract, where employees agree to share the cost of the employer contribution. These contributions are paid in addition to the member contribution.

Auxiliary organizations of the CSU system may elect reduced contribution rates, in which case the offset is $317 and the contribution rate is 6% if members are not covered by Social Security. If members are covered by Social Security, the offset is $513 and the contribution rate is 5%.

# Refund of Employee Contributions

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

# 1959 Survivor Benefit

This is a pre-retirement death benefit available only to members not covered by Social Security. Any agency joining CalPERS subsequent to 1993 is required to provide this benefit if the members are not covered by Social Security. The benefit is optional for agencies joining CalPERS prior to 1994. Levels 1, 2, and 3 are now closed. Any new agency or any agency wishing to add this benefit or increase the current level may only choose the 4th or Indexed Level.

This benefit is not included in the results presented in this valuation. More information on this benefit is available on the CalPERS website.

## Appendix C - Participant Data


- **Active Members** **76**
- **Transferred and Separated Members** **77**
- **Retired Members and Beneficiaries** **78**

# Active Members

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.

**Distribution of Active Members by Age and Service**

| | Years of Service at Valuation Date | | | | | | |
|---|---|---|---|---|---|---|---|
| **Attained Age** | **0-4** | **5-9** | **10-14** | **15-19** | **20-24** | **25+** | **Total** |
| 15-24 | 6 | 0 | 0 | 0 | 0 | 0 | 6 |
| 25-29 | 43 | 11 | 0 | 0 | 0 | 0 | 54 |
| 30-34 | 35 | 28 | 3 | 0 | 0 | 0 | 66 |
| 35-39 | 12 | 33 | 8 | 7 | 0 | 0 | 60 |
| 40-44 | 8 | 11 | 11 | 31 | 4 | 0 | 65 |
| 45-49 | 6 | 5 | 0 | 31 | 19 | 4 | 65 |
| 50-54 | 1 | 4 | 1 | 6 | 9 | 17 | 38 |
| 55-59 | 1 | 0 | 0 | 3 | 2 | 10 | 16 |
| 60-64 | 0 | 0 | 1 | 0 | 0 | 3 | 4 |
| 65 and Over | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| **All Ages** | **112** | **92** | **24** | **78** | **34** | **35** | **375** |

**Distribution of Average Annual Salaries by Age and Service**

| | Years of Service at Valuation Date | | | | | | |
|---|---|---|---|---|---|---|---|
| **Attained Age** | **0-4** | **5-9** | **10-14** | **15-19** | **20-24** | **25+** | **Average Salary** |
| 15-24 | $90,864 | $0 | $0 | $0 | $0 | $0 | $90,864 |
| 25-29 | 111,466 | 128,873 | 0 | 0 | 0 | 0 | 115,012 |
| 30-34 | 117,838 | 132,286 | 149,025 | 0 | 0 | 0 | 125,385 |
| 35-39 | 123,190 | 139,864 | 145,713 | 149,911 | 0 | 0 | 138,481 |
| 40-44 | 125,617 | 145,877 | 143,243 | 169,691 | 164,214 | 0 | 155,423 |
| 45-49 | 131,192 | 132,566 | 0 | 178,145 | 177,545 | 203,015 | 171,660 |
| 50-54 | 313,071 | 145,555 | 143,454 | 170,337 | 166,461 | 184,173 | 176,049 |
| 55-59 | 322,317 | 0 | 0 | 165,782 | 143,220 | 177,607 | 180,135 |
| 60-64 | 0 | 0 | 116,771 | 0 | 0 | 197,897 | 177,615 |
| 65 and Over | 0 | 0 | 0 | 0 | 0 | 137,597 | 137,597 |
| **Average** | **$119,360** | **$136,813** | **$143,695** | **$171,175** | **$171,023** | **$184,296** | **$146,722** |

# Transferred and Separated Members

**Distribution of Transfers to Other CalPERS Plans by Age, Service, and average Salary**

| | Years of Service at Valuation Date | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Attained Age** | **0-4** | **5-9** | **10-14** | **15-19** | **20-24** | **25+** | **Total** | **Average Salary** |
| 15-24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | $0 |
| 25-29 | 5 | 2 | 0 | 0 | 0 | 0 | 7 | 108,305 |
| 30-34 | 9 | 1 | 0 | 0 | 0 | 0 | 10 | 116,787 |
| 35-39 | 17 | 6 | 0 | 0 | 0 | 0 | 23 | 119,882 |
| 40-44 | 7 | 5 | 4 | 0 | 0 | 0 | 16 | 129,610 |
| 45-49 | 6 | 1 | 4 | 1 | 1 | 0 | 13 | 178,627 |
| 50-54 | 6 | 4 | 1 | 0 | 0 | 0 | 11 | 143,304 |
| 55-59 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 102,280 |
| 60-64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 65 and Over | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 64,919 |
| **All Ages** | **53** | **19** | **9** | **1** | **1** | **0** | **83** | **$131,627** |

**Distribution of Separated Participants with Funds on Deposit by Age, Service, and average Salary**

| | Years of Service at Valuation Date | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Attained Age** | **0-4** | **5-9** | **10-14** | **15-19** | **20-24** | **25+** | **Total** | **Average Salary** |
| 15-24 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | $94,439 |
| 25-29 | 7 | 0 | 0 | 0 | 0 | 0 | 7 | 82,746 |
| 30-34 | 10 | 0 | 0 | 0 | 0 | 0 | 10 | 87,914 |
| 35-39 | 14 | 2 | 1 | 0 | 0 | 0 | 17 | 86,175 |
| 40-44 | 9 | 2 | 4 | 1 | 0 | 0 | 16 | 85,601 |
| 45-49 | 8 | 2 | 0 | 1 | 0 | 0 | 11 | 94,712 |
| 50-54 | 4 | 0 | 1 | 1 | 0 | 2 | 8 | 97,465 |
| 55-59 | 5 | 0 | 0 | 0 | 0 | 0 | 5 | 53,229 |
| 60-64 | 3 | 0 | 0 | 0 | 1 | 0 | 4 | 77,599 |
| 65 and Over | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 109,611 |
| **All Ages** | **62** | **6** | **7** | **3** | **1** | **2** | **81** | **$86,291** |

# Retired Members and Beneficiaries

**Distribution of Retirees and Beneficiaries by Age and Retirement Type***

| Attained Age | Service Retirement | Non-Industrial Disability | Industrial Disability | Non-Industrial Death | Industrial Death | Death After Retirement | Total |
|---|---|---|---|---|---|---|---|
| Under 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30-34 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 35-39 | 0 | 0 | 2 | 0 | 0 | 0 | 2 |
| 40-44 | 0 | 0 | 6 | 0 | 0 | 0 | 6 |
| 45-49 | 0 | 0 | 4 | 0 | 1 | 0 | 5 |
| 50-54 | 13 | 0 | 8 | 1 | 0 | 1 | 23 |
| 55-59 | 55 | 0 | 31 | 0 | 0 | 1 | 87 |
| 60-64 | 76 | 1 | 46 | 1 | 0 | 2 | 126 |
| 65-69 | 70 | 0 | 41 | 0 | 0 | 10 | 121 |
| 70-74 | 38 | 1 | 24 | 0 | 0 | 4 | 67 |
| 75-79 | 17 | 0 | 9 | 0 | 0 | 4 | 30 |
| 80-84 | 2 | 0 | 4 | 0 | 0 | 3 | 9 |
| 85 and Over | 3 | 0 | 0 | 0 | 0 | 0 | 3 |
| **All Ages** | **274** | **3** | **175** | **2** | **1** | **25** | **480** |

**Distribution of Average Annual Disbursements to Retirees and Beneficiaries by Age and Retirement Type***

| Attained Age | Service Retirement | Non-Industrial Disability | Industrial Disability | Non-Industrial Death | Industrial Death | Death After Retirement | Average |
|---|---|---|---|---|---|---|---|
| Under 30 | $0 | $0 | $0 | $0 | $0 | $0 | $0 |
| 30-34 | 0 | 4,513 | 0 | 0 | 0 | 0 | 4,513 |
| 35-39 | 0 | 0 | 48,788 | 0 | 0 | 0 | 48,788 |
| 40-44 | 0 | 0 | 48,372 | 0 | 0 | 0 | 48,372 |
| 45-49 | 0 | 0 | 41,552 | 0 | 65,322 | 0 | 46,306 |
| 50-54 | 80,117 | 0 | 66,654 | 110,673 | 0 | 104,556 | 77,826 |
| 55-59 | 112,571 | 0 | 79,809 | 0 | 0 | 84,535 | 100,575 |
| 60-64 | 99,350 | 26,364 | 86,059 | 24,180 | 0 | 36,950 | 92,331 |
| 65-69 | 101,586 | 0 | 80,963 | 0 | 0 | 73,335 | 92,263 |
| 70-74 | 103,097 | 32,724 | 67,239 | 0 | 0 | 38,440 | 85,342 |
| 75-79 | 48,996 | 0 | 79,542 | 0 | 0 | 66,767 | 60,529 |
| 80-84 | 59,512 | 0 | 51,249 | 0 | 0 | 66,176 | 58,061 |
| 85 and Over | 25,792 | 0 | 0 | 0 | 0 | 0 | 25,792 |
| **All Ages** | **$97,962** | **$21,201** | **$76,424** | **$67,427** | **$65,322** | **$64,628** | **$87,698** |

* Counts of members do not include alternate payees receiving benefits while the member is still working. Therefore, the total counts may not match information on C-1 of the report. Multiple records may exist for those who have service in more than one coverage group. This does not result in double counting of liabilities.

# Retired Members and Beneficiaries (continued)

**Distribution of Retirees and Beneficiaries 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 Yrs | 76 | 0 | 29 | 0 | 0 | 10 | 115 |
| 5-9 | 68 | 1 | 25 | 0 | 1 | 8 | 103 |
| 10-14 | 74 | 0 | 21 | 2 | 0 | 2 | 99 |
| 15-19 | 38 | 0 | 27 | 0 | 0 | 2 | 67 |
| 20-24 | 9 | 1 | 24 | 0 | 0 | 2 | 36 |
| 25-29 | 7 | 1 | 16 | 0 | 0 | 0 | 24 |
| 30 and Over | 2 | 0 | 33 | 0 | 0 | 1 | 36 |
| **All Years** | **274** | **3** | **175** | **2** | **1** | **25** | **480** |

**Distribution of Average Annual Disbursements to Retirees and Beneficiaries by Years Retired and Retirement Type***

| Years Retired | Service Retirement | Non-Industrial Disability | Industrial Disability | Non-Industrial Death | Industrial Death | Death After Retirement | Average |
|---|---|---|---|---|---|---|---|
| Under 5 Yrs | $108,794 | $0 | $112,568 | $0 | $0 | $48,998 | $104,546 |
| 5-9 | 101,308 | 4,513 | 113,226 | 0 | 65,322 | 103,465 | 103,079 |
| 10-14 | 109,598 | 0 | 93,516 | 67,427 | 0 | 56,721 | 104,266 |
| 15-19 | 75,180 | 0 | 78,356 | 0 | 0 | 28,564 | 75,068 |
| 20-24 | 33,669 | 32,724 | 46,094 | 0 | 0 | 44,514 | 42,529 |
| 25-29 | 43,039 | 26,364 | 45,530 | 0 | 0 | 0 | 44,005 |
| 30 and Over | 56,458 | 0 | 41,359 | 0 | 0 | 38,393 | 42,115 |
| **All Years** | **$97,962** | **$21,201** | **$76,424** | **$67,427** | **$65,322** | **$64,628** | **$87,698** |

* Counts of members do not include alternate payees receiving benefits while the member is still working. Therefore, the total counts may not match information on C-1 of the report. Multiple records may exist for those who have service in more than one coverage group. This does not result in double counting of liabilities .

# Appendix D - Glossary

# Glossary

**Accrued Liability (Actuarial Accrued Liability)**
The portion of the Present Value of Benefits allocated to prior years. It can also be expressed as the Present Value of Benefits minus the present value of future Normal Cost. Different actuarial cost methods and different assumptions will lead to different measures of Accrued Liability.

**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, wage inflation, and price 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.

**Actuary**
A business professional proficient in mathematics and statistics who measures and manages risk. A public retirement system actuary in California performs actuarial valuations necessary to properly fund a pension plan and disclose its liabilities and must satisfy the qualification standards for actuaries issuing statements of actuarial opinion in the United States with regard to pensions.

**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 experience 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**
The rate used to discount the expected future benefit payments to the valuation date to determine the Projected Value of Benefits. Different discount rates will produce different measures of the Projected Value of Benefits. The discount rate for funding purposes 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 that allocates the cost of the projected benefits on an individual basis as a level percent of earnings for the individual between entry age and retirement age. 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.

# Glossary (continued)

**Funded Ratio**
Defined as the Market Value of Assets divided by the Accrued Liability. Different actuarial cost methods and different assumptions will lead to different measures of Funded Ratio. The Funded Ratio with the Accrued Liability equal to the funding target 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 funding target 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.

**Funded Status**
Any comparison of a particular measure of plan assets to a particular measure of pension obligations. The methods and assumptions used to calculate a funded status should be consistent with the purpose of the measurement.

**Funding Target**
The Accrued Liability measure upon which the funding requirements are based. The funding target is the Accrued Liability under the Entry Age Actuarial Cost Method using the assumptions adopted by the board.

**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. Different actuarial cost methods and different assumptions will lead to different measures of Normal Cost. The Normal Cost under the Entry Age Actuarial Cost Method, using the assumptions adopted by the board, plus the required amortization of the UAL, if any, make up the required contributions.

**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.

**Traditional Unit Credit Actuarial Cost Method**
An actuarial cost method that sets the Accrued Liability equal to the Present Value of Benefits assuming no future pay increases or service accruals. The Traditional Unit Credit Cost Method is used to measure the accrued liability on a termination basis.

**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.