

State Actuarial Valuation

As of June 30, 2020



Required Contributions for Fiscal Year
July 1, 2021 through June 30, 2022



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Actuarial Certification



September 2021

To the best of our knowledge, this report is complete and accurate and contains sufficient information to fully and fairly disclose the actuarial funded condition of the State plans. This valuation is based on the member and financial data as of June 30, 2020 provided by the various CalPERS databases and the benefits under these plans with CalPERS as of the date this report was produced. In our opinion, this valuation has been performed in accordance with generally accepted actuarial principles and in accordance with standards of practice prescribed by the Actuarial Standards Board. The assumptions and methods are internally consistent and reasonable for these plans, as prescribed by the CalPERS Board of Administration according to provisions set forth in the California Public Employees' Retirement Law.

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

Nina Ramsey, ASA, MAAA

Associate Pension Actuary, CalPERS

Shelly Chu, ASA, MAAA

Senior Pension Actuary, CalPERS

Eddie W. Lee, ASA, EA, FCA, MAAA

Senior Pension Actuary, CalPERS

Scott Terando, ASA, EA, MAAA, FCA, CFA

Chief Actuary, CalPERS

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Highlights and Executive Summary

Introduction

This is the actuarial valuation report as of June 30, 2020 for the State plans. This actuarial valuation was used to set the fiscal year 2021-22 required employer contribution rates.

The five plans included in this valuation provide retirement benefits to members employed by the State of California. This includes employees of the California State University system but generally does not include employees of the University of California system. It also does not cover school employees or employees of local governments that have elected to contract with CalPERS.

Purpose of Report

This actuarial valuation was performed by the CalPERS Actuarial Office using data as of June 30, 2020. The purpose of the report is to:

- Set forth the assets and accrued liabilities of the State plans as of June 30, 2020.
- Determine the required employer contribution rates of these plans for the fiscal year July 1, 2021 through June 30, 2022.
- Provide actuarial information as of June 30, 2020 to the CalPERS Board of Administration (board) and other interested parties.

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

The use of this report for any other purpose may not be appropriate.

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; and changes in plan provisions or applicable law.

Assessment and Disclosure of Risk

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

- A “Sensitivity Analysis,” showing the impact on current valuation results using alternative discount rates of 6.0% and 8.0%.
- A “Sensitivity Analysis,” showing the impact on current valuation results assuming rates of mortality are 10% lower or 10% higher than our current mortality assumptions adopted in 2017.
- Plan maturity measures indicating how sensitive a plan may be to the risks noted above.

Highlights and Executive Summary

Required Employer Contribution Rates

The actuarially required employer contribution rates for fiscal year July 1, 2021 through June 30, 2022 are shown in the table below. For comparison purposes, the corresponding contribution rates for fiscal year July 1, 2020 through June 30, 2021 are also provided. The estimated contribution amounts that these rates are expected to generate are also shown.

| Plan | Fiscal Year 2020-21 | | Fiscal Year 2021-22 | |
|-------------------------------------|--------------------------------|--|--------------------------------|--|
| | Expected Employer Contribution | Required Employer Rate ^{1, 2} | Expected Employer Contribution | Required Employer Rate ^{1, 2} |
| State Miscellaneous | \$3,985,565,766 | 29.27% | \$4,160,143,107 | 29.12% |
| State Industrial | 133,362,651 | 17.31% | 132,980,339 | 16.46% |
| State Safety | 479,527,293 | 18.77% | 476,457,256 | 18.29% |
| State Peace Officers & Firefighters | 1,318,007,092 | 34.45% | 1,262,870,664 | 31.19% |
| California Highway Patrol | 574,508,860 | 59.76% | 600,841,189 | 61.46% |
| Total State | \$6,490,971,662 | | \$6,633,292,555 | |

¹ Includes supplanting payments under Government Code section 20825.1. For rates prior to these adjustments, see Appendix D for more information.

² Excludes additional contributions pursuant to Government Code section 20683.2. See "Additional Contributions" section on page 7 for more information about that requirement.

The estimated employer contribution dollar amounts shown above are calculated prior to the contribution year and should not be used for financial disclosure purposes. These amounts should not be confused with the Actuarially Determined Contributions, which are calculated after the contribution year and disclosed in the CalPERS GASB 68 accounting reports.

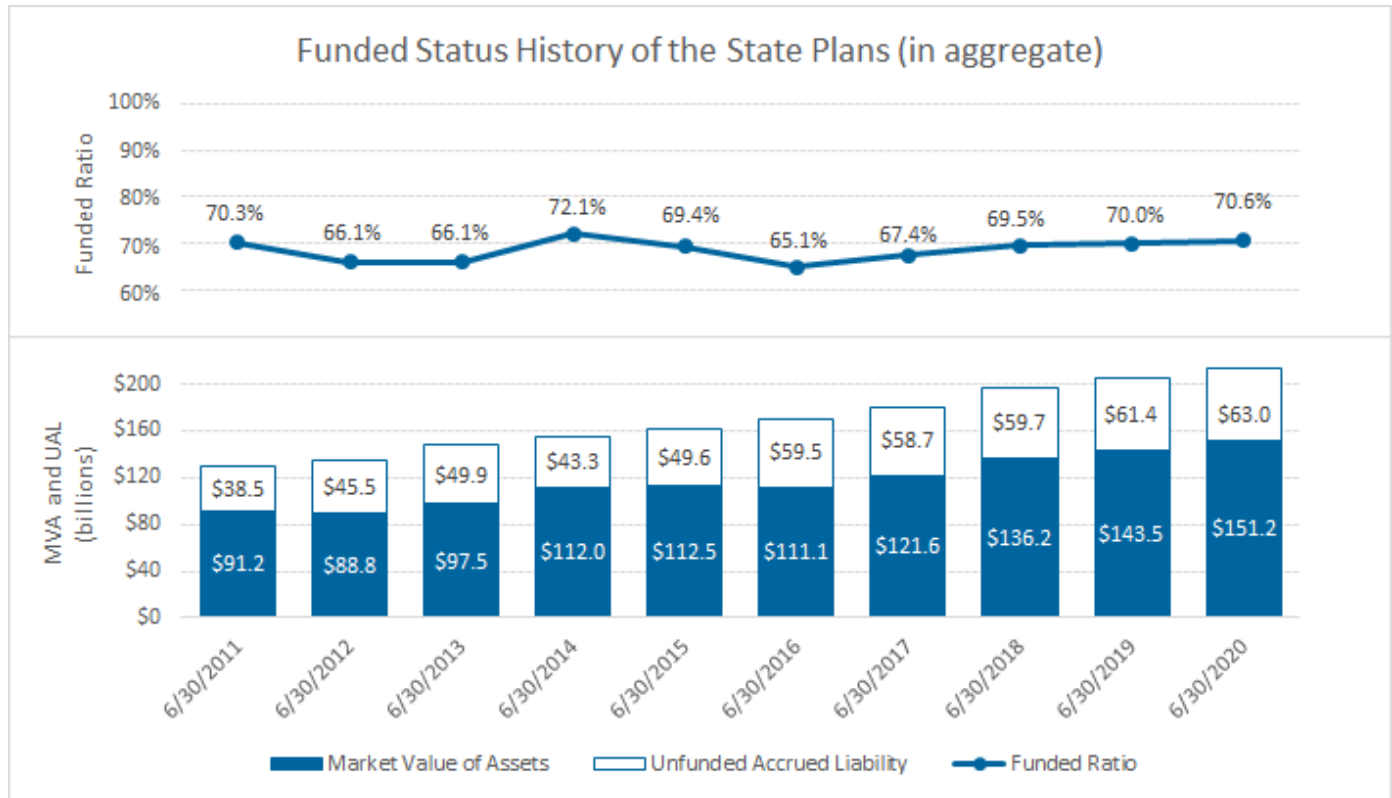
The payroll used to calculate the expected dollar contribution is payroll reported for the fiscal year ending on the valuation date projected forward two years using the annual payroll growth assumption in effect on the valuation date. For example, expected fiscal year 2021-22 contributions are based on fiscal year 2019-20 reported payroll increased by 2.75% per year for two years. Actual contribution amounts will be based on actual payroll during the associated fiscal year and will differ from the expected contributions shown in the table above. State Miscellaneous and State Industrial include both Tier 1 and Tier 2 benefit levels.

The supporting exhibits titled "Reconciliation of Employer Contribution Rates" and "Reconciliation of Employer Contributions" in the Liabilities and Employer Contributions section of this report explain the changes in required contribution rates and expected contribution amounts from fiscal year 2020-21 to fiscal year 2021-22.

Highlights and Executive Summary

Funded Status

The Unfunded Accrued Liability (UAL) and funded ratio are assessments of the need for future employer contributions based on the actuarial cost method used to fund the plan. The UAL is the accrued liability minus the assets, while the funded ratio is the assets divided by the accrued liability. The UAL is the present value of future employer contributions for service that has already been earned and is in addition to future normal cost contributions for active members. The funded ratio, on the other hand, is a relative measure of funded status that allows for comparison between plans of different sizes. From June 30, 2019 to June 30, 2020 the funded ratio for the State plans in aggregate increased by 0.6%.



Unfunded Accrued Liability and Funded Ratio on June 30, 2020

| Plan | Present Value of Benefits | Entry Age Actuarial Accrued Liability | Market Value of Assets | Unfunded Accrued Liability | Funded Ratio |
|-------------------------------------|---------------------------|---------------------------------------|--------------------------|----------------------------|--------------|
| State Miscellaneous | \$143,390,494,888 | \$124,694,577,728 | \$87,046,873,448 | \$37,647,704,280 | 69.8% |
| State Industrial | 6,399,770,897 | 5,226,527,840 | 4,083,794,798 | 1,142,733,042 | 78.1% |
| State Safety | 19,760,856,662 | 15,352,141,590 | 12,249,799,444 | 3,102,342,146 | 79.8% |
| State Peace Officers & Firefighters | 63,722,940,433 | 54,101,543,037 | 38,327,136,595 | 15,774,406,442 | 70.8% |
| California Highway Patrol | 17,285,877,581 | 14,785,866,497 | 9,501,361,017 | 5,284,505,480 | 64.3% |
| Total for the State | \$250,559,940,461 | \$214,160,656,692 | \$151,208,965,302 | \$62,951,691,390 | 70.6% |

Funded Ratio History

| Plan | June 30, 2016 | June 30, 2017 | June 30, 2018 | June 30, 2019 | June 30, 2020 |
|-------------------------------------|---------------|---------------|---------------|---------------|---------------|
| State Miscellaneous | 65.0% | 67.5% | 69.5% | 69.8% | 69.8% |
| State Industrial | 73.0% | 76.4% | 76.9% | 77.3% | 78.1% |
| State Safety | 73.4% | 76.4% | 77.6% | 78.6% | 79.8% |
| State Peace Officers & Firefighters | 64.2% | 65.9% | 68.3% | 69.0% | 70.8% |
| California Highway Patrol | 58.5% | 60.2% | 63.8% | 64.5% | 64.3% |
| Total for the State | 65.1% | 67.4% | 69.5% | 70.0% | 70.6% |

Highlights and Executive Summary

Changes Since the Prior Year's Valuation

Overall, the required contributions for the State plans increased by \$547 million between fiscal years 2020-21 and 2021-22, a 7.3% relative increase. This excludes the effect of the State contribution under Section 20825.1. The table below highlights major contributors to the change in required contributions.

| Reason for Change | Change in Required Contribution (in millions) |
|--|--|
| Change due to normal progression of existing amortization bases | \$333.6 |
| Change due to increase in overall payroll | 118.0 |
| Decrease in normal cost due to new demographics | (52.1) |
| Impact of change in member contribution rates | (17.7) |
| First installment of the 20-year amortization of the following sources of experience gains and losses: | |
| • Investment experience (reflects five-year ramp) | 83.7 |
| • Impact of greater than expected contributions received due to higher than expected payroll | (36.1) |
| • Demographic gains and losses | 117.4 |
| Total Change in Required Contributions | \$546.8 |
| Decrease due to Section 20825.1 contribution | (1,404.5) |
| Total Change in Required Contributions (Includes Section 20825.1) | (\$857.7) |

Key changes are discussed in detail below.

Supplanting Payments Under Government Code Section 20825.1

Senate Bill 90 (SB 90), approved by the Governor on June 27, 2019 and amended by Assembly Bill 84 (AB 84) / Senate Bill 111 (SB 111), established Government Code section 20825.1 and directed the State to contribute an additional \$2.5 billion to the State plans to pay down Unfunded Accrued Liability (UAL). The contribution was made on July 29, 2019.

According to direction provided by the Department of Finance, these amounts will be treated as payments toward the required UAL contributions over a period of three fiscal years with the employer contribution rate for each fiscal year reduced accordingly. The allocation among plans and fiscal years is as follows:

| Plan | FY 2019-20 | FY 2020-21 | FY 2021-22 | Total |
|-------------------------------------|---------------------|------------------------|------------------------|------------------------|
| State Miscellaneous | \$32,384,208 | \$339,222,800 | \$476,449,992 | \$848,057,000 |
| State Industrial | 3,166,795 | 33,172,000 | 46,591,205 | 82,930,000 |
| State Safety | 7,042,595 | 73,770,800 | 103,613,605 | 184,427,000 |
| State Peace Officers & Firefighters | 52,872,296 | 553,834,400 | 777,879,304 | 1,384,586,000 |
| California Highway Patrol | 0 | 0 | 0 | 0 |
| Total for the State | \$95,465,894 | \$1,000,000,000 | \$1,404,534,106 | \$2,500,000,000 |

Assumptions and Methods

A change was made to the way in which liability is categorized for certain transferred records. For members who have both an active record and one or more transfer records due to past changes in employment within the State Plans, the total liability is now categorized as active. In prior valuations, the liability for these members was split between active and transferred. This change merely shifted a portion of liability from one status category to another — it had no significant effect on the total liability or contribution requirements of the plan.

No other changes were made since the prior valuation. A complete description of the actuarial methods and assumptions used in this valuation can be found in Appendix A of this report.

Plan Provisions

No changes were made since the prior valuation. See Appendix B for a summary of the plan provisions used in this valuation.

Highlights and Executive Summary

Plan Experience

The return on plan assets for the year ending June 30, 2020 was approximately 4.7% reduced for administrative expenses. This was lower than the assumed return of 7.0%, leading to an investment experience loss that will be amortized over 20 years with a five-year ramp up.

Payroll across the State plans increased by 4.6% in total, compared with the payroll growth assumption of 2.75%. This led to a contribution increase of \$118.0 million. The payroll growth for the year ranges from a 1.7% increase for California Highway Patrol to a 5.8% increase for State Peace Officers & Firefighters.

The Public Employees' Pension Reform Act of 2013 (PEPRA) requires lower benefits for new members as defined by PEPRA who are hired on or after January 1, 2013. The normal cost for all plans is lower due to the enrollment of new hires into the lower benefit level. PEPRA membership ranges from a high of 47% of active members (41% by payroll) for State Safety to a low of 22% of active members (19% by payroll) for California Highway Patrol.

The plans in aggregate experienced a non-investment loss due to demographic sources offset by a gain due to actual contributions being greater than expected. The net effect was a non-investment experience loss that will be amortized over 20 years beginning in 2021-22.

Additional Contributions per Government Code Section 20683.2

One of the provisions of pension reform added Government Code section 20683.2, which changed the contribution rates of many State members effective July 1, 2013, July 1, 2014, and July 1, 2015. Government Code section 20683.2 also stipulates that "savings realized by the state employer as a result of the employee contribution rate increases required by this section shall be allocated to any unfunded liability, subject to appropriation in the annual Budget Act." Under the California Constitution, the board has plenary authority over the actuarial function at CalPERS consistent with the fiduciary duties of a trustee. This includes authority to set employer contribution rates. By statute, the State may pay additional contributions in addition to the actuarially required contribution rates set by the board and CalPERS will generally accept these payments.

The table below shows the actuarially required contribution rate (set by the board based on staff recommendation), the additional contributions under Government Code section 20683.2, and the resulting total contribution rate for fiscal year 2021-22 to be paid by the State for each plan.

| Plan | Actuarially Required Employer Contribution FY 2021-22 | Additional Statutory Contribution per GC §20683.2 | Total Contribution FY 2021-22 |
|-------------------------------------|---|---|-------------------------------|
| State Miscellaneous | 29.12% | 0.10% | 29.22% |
| State Industrial | 16.46% | 0.88% | 17.34% |
| State Safety | 18.29% | 1.18% | 19.47% |
| State Peace Officers & Firefighters | 31.19% | 1.65% | 32.84% |
| California Highway Patrol | 61.46% | 1.32% | 62.78% |

In all cases, the savings are less than the actual increase in member contributions. This is because the additional member contributions increase the value of the benefit in some circumstances. One example is when a member terminates and takes a refund of his/her accumulated contributions with interest. Another example is Tier 2 members, who are assumed to elect to convert to a Tier 1 benefit with an actuarial equivalent reduction to offset missed Tier 1 contributions; because the members will make additional contributions, a smaller reduction will apply in the future.

The rates and information shown in the remainder of this report reflect the rates set by the board at its September 2021 meeting (shown above as the actuarially required employer contribution). The additional contribution pursuant to Government Code section 20683.2 will be realized in future valuations as actuarial gains.

Highlights and Executive Summary

Subsequent Events

This actuarial valuation report reflects statutory and regulatory changes and fund investment return through July 2021 and board actions through September 2021.

Pursuant to Government Code section 20825.12, the State contributed an additional \$243 million to the California Highway Patrol plan in August 2020. Furthermore, contributions from the Motor Vehicle Account of \$25 million were made in August 2020 and August 2021.

Also, pursuant to Government Code section 20825.13, the State contributed an additional \$1.88 billion to the State plans excluding California Highway Patrol in July 2021.

As those payments were made after June 30, 2020, they will not be recognized in the market value of assets or funded status until future valuations. The unfunded accrued liability contribution rates determined in this valuation have not been adjusted to reflect the additional contributions.

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

Projected Future Contribution Rates

The State plans contribution rates for fiscal year 2022-23 will be based on the June 30, 2021 actuarial valuation. At the time of publication of this report, key actuarial assumptions to be used in that valuation, particularly the discount rate, are not yet known. The discount rate is a key driver of pension plan cost and therefore meaningful estimates of the contribution rate for fiscal year 2022-23 and future years will be unavailable until the final discount rate is known.

The discount rate is presently undergoing review as part of the periodic Asset Liability Management (ALM) study currently in progress. Other economic assumptions and demographic assumptions are also currently undergoing review as part of the CalPERS Experience Study conducted every four years. Revised assumptions resulting from these studies will be incorporated into the June 30, 2021 actuarial valuation.

The CalPERS Funding Risk Mitigation Policy has recently triggered an automatic decrease of 0.20% in the discount rate assumption due to the investment return in fiscal year 2020-21. However, the board may choose to further alter the discount rate as a result of the current ALM process.

It is currently anticipated that both economic and demographic assumptions will be finalized by the end of the 2021 calendar year.

Once assumptions are finalized, we will perform projections of employer contribution rates for the next five fiscal years reflecting both the new assumptions as well as actual fiscal year 2020-21 investment return (approximately 21.3% before reduction for administrative expenses). The projections will also reflect that, all other changes aside, the employer rates will increase in fiscal year 2022-23 due to the expiration of the State's supplanting payments under Government Code section 20825.1. See Appendix D for details on the supplanting payments. Results of the projections will be released in an addendum to this report.

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Assets

Reconciliation of Market Value of Assets

| | State Miscellaneous | State Industrial | State Safety | State Peace Officers and Firefighters | California Highway Patrol |
|--|------------------------|------------------|------------------|---|------------------------------|
| 1) Market Value of Assets as of June 30, 2019 Including Receivables for Tier 1 Conversion and Service Buybacks | \$83,816,851,738 | \$3,822,261,757 | \$11,386,348,364 | \$35,358,588,464 | \$9,082,325,286 |
| 2) Receivables for Tier 1 Conversion and Service Buybacks as of June 30, 2019 | 215,739,167 | 12,409,713 | 14,272,163 | 65,775,675 | 10,279,309 |
| 3) Market Value of Assets as of June 30, 2019 [(1) - (2)] | \$83,601,112,571 | \$3,809,852,044 | \$11,372,076,201 | \$35,292,812,789 | \$9,072,045,977 |
| 4) Employer Contributions Received in 2019-20 | 5,008,536,956 | 244,772,701 | 747,440,924 | 3,220,739,648 | 559,585,119 |
| 5) Employee Contributions Received in 2019-20 | 958,708,924 | 61,932,883 | 265,144,641 | 449,242,664 | 100,508,361 |
| 6) Benefit Payments in 2019-20 | (6,473,467,958) | (217,777,265) | (660,253,420) | (2,345,957,536) | (649,549,038) |
| 7) Refunds in 2019-20 | (40,448,265) | (3,135,068) | (17,108,915) | (13,982,913) | (2,282,744) |
| 8) Transfers In/(Out) | (4,212,987) | (1,036,506) | 3,906,896 | 734,548 | 637,490 |
| 9) SCP Payment and Interest | 55,454,388 | 2,849,331 | 4,048,640 | 18,159,988 | 3,828,753 |
| 10) Miscellaneous Adjustments | 0 | 0 | 0 | 0 | 0 |
| 11) Investment Return | 3,804,214,092 | 176,803,230 | 530,590,749 | 1,672,197,080 | 414,571,615 |
| 12) Administrative Expense | (64,771,481) | (2,981,823) | (8,947,118) | (27,552,813) | (7,085,450) |
| 13) Market Value of Assets as of June 30, 2020 [(3) + (4) + (5) + (6) + (7) + (8) + (9) + (10) + (11) + (12)] | \$86,845,126,240 | \$4,071,279,528 | \$12,236,898,599 | \$38,266,393,455 | \$9,492,260,084 |
| 14) Receivables for Tier 1 Conversion and Service Buybacks as of June 30, 2020 | 201,747,207 | 12,515,269 | 12,900,845 | 60,743,140 | 9,100,933 |
| 15) Market Value of Assets as of June 30, 2020 Including Receivables for Tier 1 Conversion and Service Buybacks | \$87,046,873,448 | \$4,083,794,798 | \$12,249,799,444 | \$38,327,136,595 | \$9,501,361,017 |

Assets

Asset Allocation

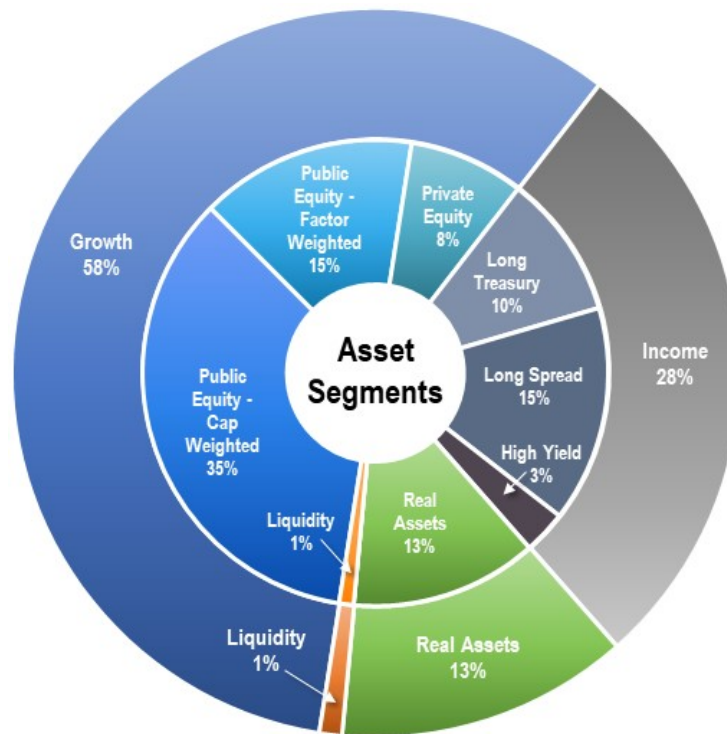
CalPERS adheres to an Asset Allocation Strategy that sets asset class allocation policy targets and ranges and manages those asset class allocations within their policy ranges. CalPERS Investment Belief No. 6 recognizes that strategic asset allocation is the dominant determinant of portfolio risk and return. On December 19, 2017, the board adopted changes to the current asset allocation as shown in the Policy Target Allocation below, expressed as a percentage of total assets.

The asset allocation shown below reflect the values of the Public Employees' Retirement Fund (PERF) in its entirety as of June 30, 2020. The assets of the State plans are part of the PERF and are invested accordingly.

| Asset Class | Actual Allocation | Policy Target Allocation |
|----------------------------|-------------------|--------------------------|
| Public Equity | 53.0% | 50.0% |
| Private Equity | 6.3% | 8.0% |
| Global Fixed Income | 28.3% | 28.0% |
| Real Assets | 11.3% | 13.0% |
| Liquidity | 0.9% | 1.0% |
| Inflation Sensitive Assets | 0.0% | 0.0% |
| Trust Level ¹ | 0.2% | 0.0% |
| Total Fund | 100.0% | 100.0% |

¹ Trust Level includes Multi-Asset Class, Completion Overlay, Risk Mitigation, Absolute Return Strategies, Plan Level Transition, and other Total Fund level portfolios

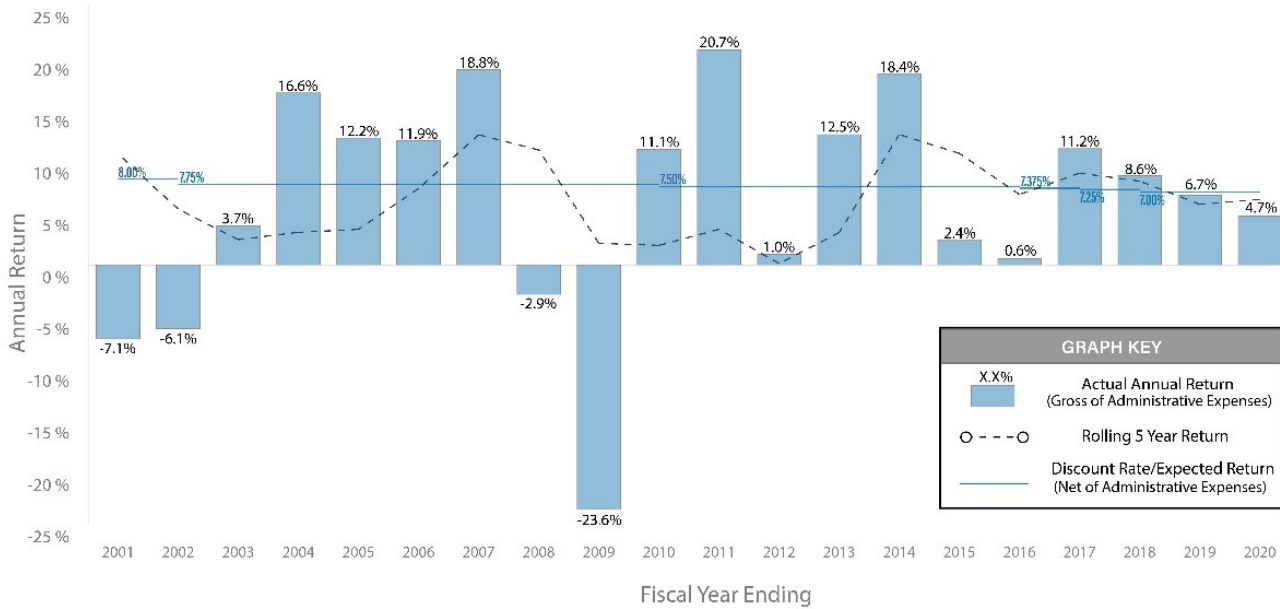
Strategic Asset Allocation Policy Targets



CalPERS History of Investment Returns

Following is a chart with the 20-year historical annual returns of the PERF for each fiscal year ending on June 30. Beginning in 2002, investment returns reported are net of investment expenses but without reduction for administrative expenses.

History of Investment Returns (2001 - 2020)



The table below shows annualized investment returns of the PERF for various time periods ending on June 30, 2020 (figures reported are net of investment expenses but without reduction for administrative expenses). These returns are the annual rates of return that if compounded over the indicated number of years would equate to the actual time-weighted investment performance of the PERF. It should be recognized that in any given year the rate of return is volatile. The portfolio has an expected volatility of 11.4% per year based on the most recent Asset Liability Management study. The volatility is a measure of the risk of the portfolio expressed in the standard deviation of the fund's total return distribution, expressed as a percentage. Due to their volatile nature, when looking at investment returns, it is more instructive to look at returns over longer time horizons.

History of CalPERS Geometric Rates of Return and Volatilities

| | 1 Year | 5 Year | 10 Year | 20 Year | 30 Year |
|------------------|--------|--------|---------|---------|---------|
| Geometric Return | 4.7% | 6.3% | 8.5% | 5.5% | 8.0% |
| Volatility | - | 7.3% | 7.1% | 8.6% | 8.6% |

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Liabilities and Employer Contributions

Key Results

Key results of the current and prior valuations are shown below.

State Miscellaneous

Participant Information

| | June 30, 2019 | June 30, 2020 |
|---|------------------|------------------|
| Members Included in the Valuation | | |
| Active Members | 176,842 | 178,628 |
| Transfers from State Miscellaneous | 37,822 | 30,130 |
| Vested Terminations ¹ | 63,003 | 64,394 |
| Receiving Payments | 197,691 | 202,078 |
| Total | 475,358 | 475,230 |
| Average Entry Age of Active Members | 34.9 | 34.9 |
| Average Age for Active Members | 46.9 | 46.7 |
| Average Age of Retired Members | 72.3 | 72.5 |
| Average Pay | \$72,935 | \$75,760 |
| Covered Payroll in Fiscal Year Ending on Valuation Date | \$12,898,034,530 | \$13,532,810,988 |
| Projected Payroll for Contribution Rate | \$13,617,180,568 | \$14,287,349,781 |

Funded Status

| | June 30, 2019 | June 30, 2020 |
|--------------------------------------|-------------------|-------------------|
| Present Value of Benefits | \$137,912,712,583 | \$143,390,494,888 |
| Accrued Liability | 120,101,465,581 | 124,694,577,728 |
| Market Value of Assets | 83,816,851,738 | 87,046,873,448 |
| Unfunded Accrued Liability/(Surplus) | 36,284,613,843 | 37,647,704,280 |
| Funded Ratio | 69.8% | 69.8% |

Employer Contribution

| | June 30, 2019 | June 30, 2020 |
|--|------------------------|------------------------|
| Contribution Required in Dollars | | |
| Total Normal Cost | \$2,263,175,410 | \$2,354,555,244 |
| Employee Contribution | 953,202,640 | 1,017,259,304 |
| Employer Normal Costs | 1,309,972,770 | 1,337,295,940 |
| Amortization of Unfunded Accrued Liability ² | 3,014,815,796 | 2,819,989,697 |
| Group Term Life Benefits | 0 | 2,857,470 |
| Total² | \$4,324,788,566 | \$4,160,143,107 |
| Section 20825.1 Contribution ² | (339,222,800) | - |
| Total (Includes State Contribution under Section 20825.1)² | \$3,985,565,766 | \$4,160,143,107 |
| Contribution Required (Percent of Payroll) | | |
| Total Normal Cost | 16.62% | 16.48% |
| Employee Contribution | 7.00% | 7.12% |
| Employer Normal Costs | 9.62% | 9.36% |
| Amortization of Unfunded Accrued Liability ² | 22.14% | 19.74% |
| Group Term Life Benefits | 0.00% | 0.02% |
| Total² | 31.76% | 29.12% |
| Section 20825.1 Contribution ² | (2.49%) | - |
| Total (Includes State Contribution under Section 20825.1)² | 29.27% | 29.12% |

¹ Includes non-vested terminated participants with employee contributions remaining in the plan.

² For the June 30, 2020 valuation, the effect of the supplanting payment associated with the State contribution under Section 20825.1 is incorporated in the Unfunded Accrued Liability Rate. See Appendix D for more information.

Liabilities and Employer Contributions

Key Results (continued)

State Industrial

Participant Information

| | June 30, 2019 | June 30, 2020 |
|---|---------------|---------------|
| Members Included in the Valuation | | |
| Active Members | 11,795 | 11,899 |
| Transfers from State Industrial | 8,974 | 7,840 |
| Vested Terminations ¹ | 3,730 | 3,705 |
| Receiving Payments | 15,345 | 16,050 |
| Total | 39,844 | 39,494 |
| Average Entry Age of Active Members | 35.7 | 35.6 |
| Average Age for Active Members | 45.1 | 45.0 |
| Average Age of Retired Members | 68.6 | 68.9 |
| Average Pay | \$61,865 | \$64,323 |
| Covered Payroll in Fiscal Year Ending on Valuation Date | \$729,693,522 | \$765,383,759 |
| Projected Payroll for Contribution Rate | \$770,378,496 | \$808,058,687 |

Funded Status

| | June 30, 2019 | June 30, 2020 |
|--------------------------------------|-----------------|-----------------|
| Present Value of Benefits | \$6,067,437,245 | \$6,399,770,897 |
| Accrued Liability | 4,945,680,604 | 5,226,527,840 |
| Market Value of Assets | 3,822,261,757 | 4,083,794,798 |
| Unfunded Accrued Liability/(Surplus) | 1,123,418,847 | 1,142,733,042 |
| Funded Ratio | 77.3% | 78.1% |

Employer Contribution

| | June 30, 2019 | June 30, 2020 |
|--|----------------------|----------------------|
| Contribution Required in Dollars | | |
| Total Normal Cost | \$139,669,621 | \$145,369,758 |
| Employee Contribution | 62,169,545 | 65,937,589 |
| Employer Normal Costs | 77,500,076 | 79,432,169 |
| Amortization of Unfunded Accrued Liability ² | 89,034,575 | 53,548,170 |
| Group Term Life Benefits | 0 | 0 |
| Total² | \$166,534,651 | \$132,980,339 |
| Section 20825.1 Contribution ² | (33,172,000) | - |
| Total (Includes State Contribution under Section 20825.1)² | \$133,362,651 | \$132,980,339 |
| Contribution Required (Percent of Payroll) | | |
| Total Normal Cost | 18.13% | 17.99% |
| Employee Contribution | 8.07% | 8.16% |
| Employer Normal Costs | 10.06% | 9.83% |
| Amortization of Unfunded Accrued Liability ² | 11.56% | 6.63% |
| Group Term Life Benefits | 0.00% | 0.00% |
| Total² | 21.62% | 16.46% |
| Section 20825.1 Contribution ² | (4.31%) | - |
| Total (Includes State Contribution under Section 20825.1)² | 17.31% | 16.46% |

¹ Includes non-vested terminated participants with employee contributions remaining in the plan.

² For the June 30, 2020 valuation, the effect of the supplanting payment associated with the State contribution under Section 20825.1 is incorporated in the Unfunded Accrued Liability Rate. See Appendix D for more information.

Liabilities and Employer Contributions

Key Results (continued)

State Safety

Participant Information

| | June 30, 2019 | June 30, 2020 |
|---|-----------------|-----------------|
| Members Included in the Valuation | | |
| Active Members | 28,953 | 29,307 |
| Transfers from State Safety | 6,216 | 5,449 |
| Vested Terminations ¹ | 7,706 | 8,095 |
| Receiving Payments | 26,866 | 27,905 |
| Total | 69,741 | 70,756 |
| Average Entry Age of Active Members | 38.4 | 38.2 |
| Average Age for Active Members | 46.7 | 46.5 |
| Average Age of Retired Members | 69.0 | 69.3 |
| Average Pay | \$83,555 | \$84,207 |
| Covered Payroll in Fiscal Year Ending on Valuation Date | \$2,419,167,291 | \$2,467,855,569 |
| Projected Payroll for Contribution Rate | \$2,554,050,987 | \$2,605,453,941 |

Funded Status

| | June 30, 2019 | June 30, 2020 |
|--------------------------------------|------------------|------------------|
| Present Value of Benefits | \$18,788,878,108 | \$19,760,856,662 |
| Accrued Liability | 14,482,873,130 | 15,352,141,590 |
| Market Value of Assets | 11,386,348,364 | 12,249,799,444 |
| Unfunded Accrued Liability/(Surplus) | 3,096,524,766 | 3,102,342,146 |
| Funded Ratio | 78.6% | 79.8% |

Employer Contribution

| | June 30, 2019 | June 30, 2020 |
|--|----------------------|----------------------|
| Contribution Required in Dollars | | |
| Total Normal Cost | \$584,877,677 | \$596,909,498 |
| Employee Contribution | 269,707,784 | 275,657,027 |
| Employer Normal Costs | 315,169,893 | 321,252,471 |
| Amortization of Unfunded Accrued Liability ² | 238,128,200 | 154,683,694 |
| Group Term Life Benefits | 0 | 521,091 |
| Total² | \$553,298,093 | \$476,457,256 |
| Section 20825.1 Contribution ² | (73,770,800) | - |
| Total (Includes State Contribution under Section 20825.1)² | \$479,527,293 | \$476,457,256 |
| Contribution Required (Percent of Payroll) | | |
| Total Normal Cost | 22.90% | 22.91% |
| Employee Contribution | 10.56% | 10.58% |
| Employer Normal Costs | 12.34% | 12.33% |
| Amortization of Unfunded Accrued Liability ² | 9.32% | 5.94% |
| Group Term Life Benefits | 0.00% | 0.02% |
| Total² | 21.66% | 18.29% |
| Section 20825.1 Contribution ² | (2.89%) | - |
| Total (Includes State Contribution under Section 20825.1)² | 18.77% | 18.29% |

¹ Includes non-vested terminated participants with employee contributions remaining in the plan.

² For the June 30, 2020 valuation, the effect of the supplanting payment associated with the State contribution under Section 20825.1 is incorporated in the Unfunded Accrued Liability Rate. See Appendix D for more information.

Liabilities and Employer Contributions

Key Results (continued)

State Peace Officers and Firefighters

Participant Information

| | June 30, 2019 | June 30, 2020 |
|---|-----------------|-----------------|
| Members Included in the Valuation | | |
| Active Members | 41,144 | 41,787 |
| Transfers from State POFF | 6,289 | 5,322 |
| Vested Terminations ¹ | 7,545 | 7,408 |
| Receiving Payments | 41,657 | 43,525 |
| Total | 96,635 | 98,042 |
| Average Entry Age of Active Members | 29.7 | 29.5 |
| Average Age for Active Members | 41.7 | 41.4 |
| Average Age of Retired Members | 64.4 | 64.8 |
| Average Pay | \$88,060 | \$91,766 |
| Covered Payroll in Fiscal Year Ending on Valuation Date | \$3,623,159,227 | \$3,834,616,755 |
| Projected Payroll for Contribution Rate | \$3,825,172,999 | \$4,048,420,605 |

Funded Status

| | June 30, 2019 | June 30, 2020 |
|--------------------------------------|------------------|------------------|
| Present Value of Benefits | \$60,336,281,625 | \$63,722,940,433 |
| Accrued Liability | 51,218,664,150 | 54,101,543,037 |
| Market Value of Assets | 35,358,588,464 | 38,327,136,595 |
| Unfunded Accrued Liability/(Surplus) | 15,860,075,686 | 15,774,406,442 |
| Funded Ratio | 69.0% | 70.8% |

Employer Contribution

| | June 30, 2019 | June 30, 2020 |
|--|------------------------|------------------------|
| Contribution Required in Dollars | | |
| Total Normal Cost | \$1,130,721,137 | \$1,183,353,343 |
| Employee Contribution | 440,277,412 | 470,426,474 |
| Employer Normal Costs | 690,443,725 | 712,926,869 |
| Amortization of Unfunded Accrued Liability ² | 1,181,397,767 | 549,943,795 |
| Group Term Life Benefits | 0 | 0 |
| Total² | \$1,871,841,492 | \$1,262,870,664 |
| Section 20825.1 Contribution ² | (553,834,400) | - |
| Total (Includes State Contribution under Section 20825.1)² | \$1,318,007,092 | \$1,262,870,664 |
| Contribution Required (Percent of Payroll) | | |
| Total Normal Cost | 29.56% | 29.23% |
| Employee Contribution | 11.51% | 11.62% |
| Employer Normal Costs | 18.05% | 17.61% |
| Amortization of Unfunded Accrued Liability ² | 30.88% | 13.58% |
| Group Term Life Benefits | 0.00% | 0.00% |
| Total² | 48.93% | 31.19% |
| Section 20825.1 Contribution ² | (14.48%) | - |
| Total (Includes State Contribution under Section 20825.1)² | 34.45% | 31.19% |

¹ Includes non-vested terminated participants with employee contributions remaining in the plan.

² For the June 30, 2020 valuation, the effect of the supplanting payment associated with the State contribution under Section 20825.1 is incorporated in the Unfunded Accrued Liability Rate. See Appendix D for more information.

Liabilities and Employer Contributions

Key Results (continued)

California Highway Patrol

Participant Information

| | June 30, 2019 | June 30, 2020 |
|---|---------------|---------------|
| Members Included in the Valuation | | |
| Active Members | 7,267 | 7,027 |
| Transfers from CHP | 264 | 261 |
| Vested Terminations ¹ | 482 | 532 |
| Receiving Payments | 9,301 | 9,519 |
| Total | 17,314 | 17,339 |
| Average Entry Age of Active Members | 27.6 | 27.6 |
| Average Age for Active Members | 40.9 | 41.2 |
| Average Age of Retired Members | 68.8 | 68.9 |
| Average Pay | \$125,307 | \$131,769 |
| Covered Payroll in Fiscal Year Ending on Valuation Date | \$910,605,298 | \$925,937,291 |
| Projected Payroll for Contribution Rate | \$961,377,235 | \$977,564,082 |

Funded Status

| | June 30, 2019 | June 30, 2020 |
|--------------------------------------|------------------|------------------|
| Present Value of Benefits | \$16,622,228,745 | \$17,285,877,581 |
| Accrued Liability | 14,087,273,224 | 14,785,866,497 |
| Market Value of Assets | 9,082,325,286 | 9,501,361,017 |
| Unfunded Accrued Liability/(Surplus) | 5,004,947,938 | 5,284,505,480 |
| Funded Ratio | 64.5% | 64.3% |

Employer Contribution

| | June 30, 2019 | June 30, 2020 |
|--|----------------------|----------------------|
| Contribution Required in Dollars | | |
| Total Normal Cost | \$284,279,248 | \$286,035,250 |
| Employee Contribution | 101,617,574 | 113,006,408 |
| Employer Normal Costs | 182,661,674 | 173,028,842 |
| Amortization of Unfunded Accrued Liability | 391,558,773 | 427,323,565 |
| Group Term Life Benefits | 288,413 | 488,782 |
| Total | \$574,508,860 | \$600,841,189 |
| Contribution Required (Percent of Payroll) | | |
| Total Normal Cost | 29.57% | 29.26% |
| Employee Contribution | 10.57% | 11.56% |
| Employer Normal Costs | 19.00% | 17.70% |
| Amortization of Unfunded Accrued Liability | 40.73% | 43.71% |
| Group Term Life Benefits | 0.03% | 0.05% |
| Total | 59.76% | 61.46% |

¹ Includes non-vested terminated participants with employee contributions remaining in the plan.

Liabilities and Employer Contributions

Accrued and Unfunded Liabilities

The following table shows the development of the accrued liabilities and unfunded liability.

| | State Miscellaneous | State Industrial | State Safety | State Peace Officers and Firefighters | California Highway Patrol |
|--|--------------------------|------------------------|-------------------------|---|------------------------------|
| 1) Present Value of Benefits | | | | | |
| a) Actives and Inactives | \$68,113,990,318 | \$3,669,226,179 | \$11,169,358,545 | \$29,662,810,123 | \$8,116,620,381 |
| b) Retired | 75,276,504,570 | 2,730,544,718 | 8,591,498,117 | 34,060,130,310 | 9,169,257,200 |
| c) Total | \$143,390,494,888 | \$6,399,770,897 | \$19,760,856,662 | \$63,722,940,433 | \$17,285,877,581 |
| 2) Present Value of Future Employee Contributions | \$8,684,792,430 | \$584,186,364 | \$2,196,812,508 | \$4,160,131,980 | \$962,223,768 |
| 3) Present Value of Future Employer Normal Costs | 10,011,124,730 | 589,056,693 | 2,211,902,564 | 5,461,265,416 | 1,537,787,316 |
| 4) Accrued Liability [(1c) – (2) – (3)] | 124,694,577,728 | 5,226,527,840 | 15,352,141,590 | 54,101,543,037 | 14,785,866,497 |
| 5) Market Value of Assets | \$87,046,873,448 | 4,083,794,798 | 12,249,799,444 | 38,327,136,595 | 9,501,361,017 |
| 6) Unfunded Accrued Liability/(Surplus) [(4) – (5)] | \$37,647,704,280 | \$1,142,733,042 | \$3,102,342,146 | \$15,774,406,442 | \$5,284,505,480 |
| 7) Funded Ratio [(5) ÷ (4)] | 69.8% | 78.1% | 79.8% | 70.8% | 64.3% |

Employer Contribution Rates

The following table shows the development of the employer contribution rates.

| | State Miscellaneous | State Industrial | State Safety | State Peace Officers and Firefighters | California Highway Patrol |
|---|------------------------|----------------------|----------------------|---|------------------------------|
| Employer Contribution Amount | | | | | |
| Normal Cost | \$1,337,295,940 | \$79,432,169 | \$321,252,471 | \$712,926,869 | \$173,028,842 |
| Payment on the Unfunded Accrued Liability | 2,819,989,697 | 53,548,170 | 154,683,694 | 549,943,795 | 427,323,565 |
| Payment for Term Life Benefits ¹ | 2,857,470 | 0 | 521,091 | 0 | 488,782 |
| Total Employer Contribution Amount | \$4,160,143,107 | \$132,980,339 | \$476,457,256 | \$1,262,870,664 | \$600,841,189 |
| Projected Payroll | \$14,287,349,781 | \$808,058,687 | \$2,605,453,941 | \$4,048,420,605 | \$977,564,082 |
| Employer Contribution (as a percent of payroll) | | | | | |
| Normal Cost | 9.36% | 9.83% | 12.33% | 17.61% | 17.70% |
| Payment on the Unfunded Accrued Liability | 19.74% | 6.63% | 5.94% | 13.58% | 43.71% |
| Payment for Term Life Benefits ¹ | 0.02% | 0.00% | 0.02% | 0.00% | 0.05% |
| Total Employer Contribution Rate | 29.12% | 16.46% | 18.29% | 31.19% | 61.46% |

¹ Government Code §21600-21605

Liabilities and Employer Contributions

Schedule of Amortization Bases

The schedules below show the development of payments on the amortization bases used to determine employer contribution rates. Each row of each schedule gives a brief description of a base (or portion of the Unfunded Actuarial Liability), the date the base was established, the balance of the base on the valuation date, and the number of years remaining in the amortization period. The schedules also show the expected payment for the year immediately following the valuation date, the balance on the date a year after the valuation date, and the scheduled payment for fiscal year 2021-22. Please refer to Appendix A for an explanation of how amortization periods are determined.

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

- The assets, liabilities, and funded status of the plan are measured as of the valuation date (June 30, 2020).
- The required employer contributions determined by the valuation are for the fiscal year beginning one year after the valuation date (fiscal year 2021-22).

This one-year lag is necessary due to the amount of time required to extract and test the membership and financial data as well as the need to provide employers with their required employer contribution 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 one year from the valuation date to the first day of the fiscal year for which the contribution is being determined. The UAL is rolled forward each year by subtracting the expected payment on the UAL for the fiscal year and adjusting for interest. The expected payment on the UAL for a fiscal year is equal to the Expected Employer Contribution for the fiscal year, plus any additional discretionary payments made during the year, minus the Expected Normal Cost for the year. The Employer Contribution for the first fiscal year is determined by the actuarial valuation one year ago. The Normal Cost Rate for the fiscal year is assumed to be the same as the rate determined by the current valuation. Expected dollar amounts are determined by multiplying the rate by the expected payroll for the applicable fiscal year, based on payroll as of the valuation date.

Liabilities and Employer Contributions

Schedule of Amortization Bases (continued)

State Miscellaneous

| Reason for Base | Date Established | Remaining Amortization Period | Balance on 6/30/2020 | Expected Payment in 2020-21 | Balance on 6/30/2021 | Scheduled Payment for Fiscal Year 2021-2022 | Payment as Percentage of Payroll |
|---|------------------|-------------------------------|-------------------------|-----------------------------|-------------------------|---|----------------------------------|
| (Gain)/Loss | Various | 23 | 317,847,349 | 20,997,259 | 318,376,930 | 21,574,684 | 0.15% |
| Payment (Gain)/Loss | Various | 23 | 371,606,511 | 24,548,634 | 372,225,662 | 25,223,721 | 0.18% |
| (Gain)/Loss Prior to 2009 | Various | 12 | 9,628,673,284 | 965,927,197 | 9,303,517,552 | 992,490,195 | 6.95% |
| Assumption Change | 6/30/2003 | 3 | 408,805,674 | 112,229,223 | 321,331,260 | 115,315,527 | 0.81% |
| Benefit Change (SB 1801) | 6/30/2003 | 3 | (1,193,248) | (327,582) | (937,922) | (336,590) | 0.00% |
| Actuarial Equivalent Reduction Benefits | 6/30/2004 | 4 | 148,172,591 | 33,187,956 | 124,214,784 | 34,100,624 | 0.24% |
| New Rate Stabilization Policies | 6/30/2004 | 4 | (106,824,132) | (23,926,656) | (89,551,896) | (24,584,639) | (0.17%) |
| Reclass of BU 7 Members | 6/30/2005 | 5 | (56,772,420) | (10,805,455) | (49,569,240) | (11,102,605) | (0.08%) |
| (Gain)/Loss | 6/30/2009 | 19 | 1,143,895,725 | 84,619,582 | 1,136,437,250 | 86,946,621 | 0.61% |
| Assumption Change | 6/30/2009 | 9 | 1,743,708,674 | 214,998,700 | 1,643,371,897 | 220,911,165 | 1.55% |
| (Gain)/Loss | 6/30/2010 | 20 | (44,585,993) | (3,196,610) | (44,400,413) | (3,284,517) | (0.02%) |
| (Gain)/Loss | 6/30/2011 | 21 | 23,595,618 | 1,643,077 | 23,547,699 | 1,688,261 | 0.01% |
| Assumption Change | 6/30/2011 | 11 | 1,546,309,382 | 164,958,779 | 1,483,916,351 | 169,495,146 | 1.19% |
| Assumption Change | 6/30/2013 | 13 | 4,995,544,262 | 501,537,905 | 4,826,437,517 | 515,330,197 | 3.61% |
| (Gain)/Loss | 6/30/2014 | 24 | 4,852,057,722 | 329,148,973 | 4,851,227,417 | 338,200,569 | 2.37% |
| (Gain)/Loss | 6/30/2015 | 25 | 4,109,943,117 | 271,777,747 | 4,116,510,048 | 279,251,635 | 1.95% |
| (Gain)/Loss | 6/30/2016 | 26 | 4,134,130,800 | 216,231,920 | 4,199,847,919 | 277,722,872 | 1.94% |
| (Gain)/Loss | 6/30/2017 | 27 | (2,967,975,404) | (116,637,454) | (3,055,082,962) | (159,793,312) | (1.12%) |
| Method Change | 6/30/2018 | 18 | 1,059,486,959 | 38,634,632 | 1,093,687,072 | 59,545,626 | 0.42% |
| Assumption Change | 6/30/2018 | 18 | 3,339,280,316 | 121,768,243 | 3,447,071,888 | 187,675,305 | 1.31% |
| (Gain)/Loss | 6/30/2018 | 28 | 190,131,457 | 5,054,012 | 198,212,748 | 7,789,495 | 0.05% |
| Investment (Gain)/Loss | 6/30/2019 | 19 | 512,405,661 | 11,203,226 | 536,685,350 | 22,406,452 | 0.16% |
| Non-Investment (Gain)/Loss | 6/30/2019 | 19 | 561,542,522 | 51,242,488 | 547,844,857 | 51,242,488 | 0.36% |
| Investment (Gain)/Loss | 6/30/2020 | 20 | 2,095,588,530 | - | 2,242,279,727 | 49,025,155 | 0.34% |
| Non-Investment (Gain)/Loss ¹ | 6/30/2020 | 20 | (357,670,677) | (256,012,775) | (117,885,951) | (436,844,378) | (3.06%) |
| Total | | | \$37,647,704,280 | \$2,758,803,021 | \$37,429,315,544 | \$2,819,989,697 | 19.74% |

¹ Reflects the State contribution under Section 20825.1.

Liabilities and Employer Contributions

Schedule of Amortization Bases (continued)

State Industrial

| Reason for Base | Date Established | Remaining Amortization Period | Balance on 6/30/2020 | Expected Payment in 2020-21 | Balance on 6/30/2021 | Scheduled Payment for Fiscal Year 2021-22 | Payment as Percentage of Payroll |
|---|------------------|-------------------------------|------------------------|-----------------------------|------------------------|---|----------------------------------|
| (Gain)/Loss | Various | 23 | 98,119,549 | 6,481,859 | 98,283,030 | 6,660,110 | 0.82% |
| Payment (Gain)/Loss | Various | 23 | (1,481,713) | (97,883) | (1,484,182) | (100,575) | (0.01%) |
| Assumption Change | 6/30/2003 | 3 | 43,790,953 | 12,021,909 | 34,420,760 | 12,352,511 | 1.53% |
| New Rate Stabilization Policies | 6/30/2004 | 4 | (3,667,229) | (821,392) | (3,074,281) | (843,981) | (0.10%) |
| Actuarial Equivalent Reduction Benefits | 6/30/2004 | 4 | 6,661,035 | 1,491,950 | 5,584,022 | 1,532,979 | 0.19% |
| (Gain)/Loss | 6/30/2009 | 19 | 39,558,062 | 2,926,304 | 39,300,134 | 3,006,777 | 0.37% |
| Assumption Change | 6/30/2009 | 9 | 57,738,975 | 7,119,196 | 54,416,550 | 7,314,974 | 0.91% |
| (Gain)/Loss | 6/30/2010 | 20 | 5,447,611 | 390,569 | 5,424,936 | 401,309 | 0.05% |
| (Gain)/Loss | 6/30/2011 | 21 | (7,385,378) | (514,279) | (7,370,380) | (528,422) | (0.07%) |
| Assumption Change | 6/30/2011 | 11 | 56,778,392 | 6,057,064 | 54,487,404 | 6,223,633 | 0.77% |
| Assumption Change | 6/30/2013 | 13 | 154,426,837 | 15,503,999 | 149,199,254 | 15,930,359 | 1.97% |
| (Gain)/Loss | 6/30/2014 | 24 | 151,773,500 | 10,295,857 | 151,747,528 | 10,578,993 | 1.31% |
| (Gain)/Loss | 6/30/2015 | 25 | 172,789,538 | 11,426,034 | 173,065,624 | 11,740,250 | 1.45% |
| (Gain)/Loss | 6/30/2016 | 26 | 259,436,094 | 13,569,567 | 263,560,151 | 17,428,413 | 2.16% |
| Assumption Change | 6/30/2017 | 17 | 11,533,959 | 627,965 | 11,691,764 | 860,312 | 0.11% |
| (Gain)/Loss | 6/30/2017 | 27 | (170,040,431) | (6,682,361) | (175,030,973) | (9,154,835) | (1.13%) |
| (Gain)/Loss | 6/30/2018 | 28 | 6,278,305 | 166,888 | 6,545,156 | 257,216 | 0.03% |
| Assumption Change | 6/30/2018 | 18 | 148,930,505 | 5,430,813 | 153,737,964 | 8,370,240 | 1.04% |
| Method Change | 6/30/2018 | 18 | 51,914,976 | 1,893,101 | 53,590,785 | 2,917,742 | 0.36% |
| Investment (Gain)/Loss | 6/30/2019 | 19 | 23,166,067 | 506,502 | 24,263,762 | 1,013,005 | 0.13% |
| Non-Investment (Gain)/Loss | 6/30/2019 | 19 | 13,598,584 | 1,240,913 | 13,266,874 | 1,240,913 | 0.15% |
| Investment (Gain)/Loss | 6/30/2020 | 20 | 95,882,590 | - | 102,594,371 | 2,243,121 | 0.28% |
| Non-Investment (Gain)/Loss ¹ | 6/30/2020 | 20 | (72,517,739) | (30,194,053) | (46,361,009) | (45,896,874) | (5.68%) |
| Total | | | \$1,142,733,042 | \$58,840,522 | \$1,161,859,244 | \$53,548,170 | 6.63% |

¹ Reflects the State contribution under Section 20825.1.

Liabilities and Employer Contributions

Schedule of Amortization Bases (continued)

State Safety

| Reason for Base | Date Established | Remaining Amortization Period | Balance on 6/30/2020 | Expected Payment in 2020-21 | Balance on 6/30/2021 | Scheduled Payment for Fiscal Year 2021-22 | Payment as Percentage of Payroll |
|---|------------------|-------------------------------|------------------------|-----------------------------|------------------------|---|----------------------------------|
| (Gain)/Loss | Various | 23 | 847,509,801 | 55,987,200 | 848,921,877 | 57,526,848 | 2.21% |
| Payment (Gain)/Loss | Various | 23 | (43,926,205) | (2,901,801) | (43,999,393) | (2,981,601) | (0.11%) |
| Benefit Change (Arnett) | 6/30/2002 | 2 | 40,328,629 | 14,472,657 | 28,181,000 | 14,870,655 | 0.57% |
| Assumption Change | 6/30/2003 | 3 | (1,587,863) | (435,915) | (1,248,099) | (447,903) | (0.02%) |
| New Rate Stabilization Policies | 6/30/2004 | 4 | (4,137,442) | (926,711) | (3,468,466) | (952,196) | (0.04%) |
| Assumption Change | 6/30/2009 | 9 | 223,239,715 | 27,525,383 | 210,394,017 | 28,282,331 | 1.09% |
| (Gain)/Loss | 6/30/2009 | 19 | 148,875,280 | 11,013,035 | 147,904,578 | 11,315,894 | 0.43% |
| (Gain)/Loss | 6/30/2010 | 20 | (112,110,577) | (8,037,811) | (111,643,941) | (8,258,850) | (0.32%) |
| (Gain)/Loss | 6/30/2011 | 21 | (10,270,096) | (715,156) | (10,249,240) | (734,823) | (0.03%) |
| Assumption Change | 6/30/2011 | 11 | 155,740,506 | 16,614,246 | 149,456,432 | 17,071,137 | 0.66% |
| Assumption Change | 6/30/2013 | 13 | 489,310,860 | 49,125,367 | 472,746,945 | 50,476,314 | 1.94% |
| (Gain)/Loss | 6/30/2014 | 24 | 191,009,324 | 12,957,497 | 190,976,638 | 13,313,828 | 0.51% |
| (Gain)/Loss | 6/30/2015 | 25 | 476,181,055 | 31,488,371 | 476,941,905 | 32,354,301 | 1.24% |
| (Gain)/Loss | 6/30/2016 | 26 | 475,459,161 | 24,868,455 | 483,017,172 | 31,940,422 | 1.23% |
| (Gain)/Loss | 6/30/2017 | 27 | (516,927,907) | (20,314,574) | (532,099,302) | (27,830,966) | (1.07%) |
| Assumption Change | 6/30/2017 | 17 | 199,069,495 | 10,838,308 | 201,793,127 | 14,848,483 | 0.57% |
| Assumption Change | 6/30/2018 | 18 | 434,631,390 | 15,849,014 | 448,661,240 | 24,427,293 | 0.94% |
| Non-Investment (Gain)/Loss | 6/30/2018 | 28 | (94,489,406) | (2,511,686) | (98,505,556) | (3,871,136) | (0.15%) |
| Method Change | 6/30/2018 | 18 | 157,187,623 | 5,731,912 | 162,261,621 | 8,834,309 | 0.34% |
| Non-Investment (Gain)/Loss | 6/30/2019 | 19 | (43,561,108) | (3,975,086) | (42,498,525) | (3,975,086) | (0.15%) |
| Investment (Gain)/Loss | 6/30/2019 | 19 | 67,485,201 | 1,475,495 | 70,682,901 | 2,950,990 | 0.11% |
| Investment (Gain)/Loss | 6/30/2020 | 20 | 286,209,812 | - | 306,244,499 | 6,695,723 | 0.26% |
| Non-Investment (Gain)/Loss ¹ | 6/30/2020 | 20 | (262,885,102) | (75,823,319) | (202,854,808) | (111,172,273) | (4.27%) |
| Total | | | \$3,102,342,146 | \$162,304,881 | \$3,151,616,622 | \$154,683,694 | 5.94% |

¹ Reflects the State contribution under Section 20825.1.

Liabilities and Employer Contributions

Schedule of Amortization Bases (continued)

State Peace Officers and Firefighters

| Reason for Base | Date Established | Remaining Amortization Period | Balance on 6/30/2020 | Expected Payment in 2020-21 | Balance on 6/30/2021 | Scheduled Payment for Fiscal Year 2021-22 | Payment as Percentage of Payroll |
|---|------------------|-------------------------------|-------------------------|-----------------------------|-------------------------|---|----------------------------------|
| Payment (Gain)/Loss | Various | 23 | (2,607,032) | (172,223) | (2,611,375) | (176,959) | 0.00% |
| (Gain)/Loss | Various | 23 | 4,708,223,757 | 311,029,162 | 4,716,068,353 | 319,582,464 | 7.89% |
| Assumption Change | 6/30/2003 | 3 | 171,520,907 | 47,087,551 | 134,819,629 | 48,382,459 | 1.20% |
| Benefit Change (SB 183) | 6/30/2004 | 4 | 9,986,809 | 2,236,863 | 8,372,057 | 2,298,377 | 0.06% |
| New Rate Stabilization Policies | 6/30/2004 | 4 | (30,602,985) | (6,854,510) | (25,654,834) | (7,043,009) | (0.17%) |
| Benefit Change (SB 65) | 6/30/2006 | 6 | 193,957,447 | 32,261,185 | 174,163,239 | 33,148,367 | 0.82% |
| Assumption Change | 6/30/2009 | 9 | 579,016,316 | 71,392,519 | 545,698,462 | 73,355,814 | 1.81% |
| (Gain)/Loss | 6/30/2009 | 19 | 370,882,225 | 27,435,979 | 368,463,983 | 28,190,468 | 0.70% |
| (Gain)/Loss | 6/30/2010 | 20 | 44,235,431 | 3,171,476 | 44,051,311 | 3,258,692 | 0.08% |
| Assumption Change | 6/30/2011 | 11 | 655,631,260 | 69,942,105 | 629,176,772 | 71,865,512 | 1.78% |
| (Gain)/Loss | 6/30/2011 | 21 | 299,920,181 | 20,884,889 | 299,311,097 | 21,459,223 | 0.53% |
| Assumption Change | 6/30/2013 | 13 | 2,295,571,390 | 230,468,595 | 2,217,862,819 | 236,806,481 | 5.85% |
| (Gain)/Loss | 6/30/2014 | 24 | 1,660,949,774 | 112,673,827 | 1,660,665,545 | 115,772,357 | 2.86% |
| (Gain)/Loss | 6/30/2015 | 25 | 1,645,761,417 | 108,829,080 | 1,648,391,040 | 111,821,880 | 2.76% |
| (Gain)/Loss | 6/30/2016 | 26 | 1,895,797,456 | 99,157,947 | 1,925,933,500 | 127,355,988 | 3.15% |
| Assumption Change | 6/30/2017 | 17 | 160,015,567 | 8,712,023 | 162,204,870 | 11,935,472 | 0.29% |
| (Gain)/Loss | 6/30/2017 | 27 | (968,380,045) | (38,056,037) | (996,801,177) | (52,136,771) | (1.29%) |
| Non-Investment (Gain)/Loss | 6/30/2018 | 28 | (197,359,589) | (5,246,147) | (205,748,104) | (8,085,625) | (0.20%) |
| Assumption Change | 6/30/2018 | 18 | 1,632,886,999 | 59,543,903 | 1,685,596,397 | 91,772,040 | 2.27% |
| Method Change | 6/30/2018 | 18 | 462,049,643 | 16,848,832 | 476,964,551 | 25,968,263 | 0.64% |
| Non-Investment (Gain)/Loss | 6/30/2019 | 19 | 62,151,442 | 5,671,511 | 60,635,386 | 5,671,511 | 0.14% |
| Investment (Gain)/Loss | 6/30/2019 | 19 | 200,294,609 | 4,379,237 | 209,785,314 | 8,758,474 | 0.22% |
| Investment (Gain)/Loss | 6/30/2020 | 20 | 871,578,729 | - | 932,589,240 | 20,390,111 | 0.50% |
| Non-Investment (Gain)/Loss ¹ | 6/30/2020 | 20 | (947,075,266) | (505,536,721) | (490,439,284) | (740,407,794) | (18.29%) |
| Total | | | \$15,774,406,442 | \$675,861,046 | \$16,179,498,791 | \$549,943,795 | 13.58% |

¹ Reflects the State contribution under Section 20825.1.

Liabilities and Employer Contributions

Schedule of Amortization Bases (continued)

California Highway Patrol

| Reason for Base | Date Established | Remaining Amortization Period | Balance on 6/30/2020 | Expected Payment in 2020-21 | Balance on 6/30/2021 | Scheduled Payment for Fiscal Year 2021-22 | Payment as Percentage of Payroll |
|---------------------------------|------------------|-------------------------------|------------------------|-----------------------------|------------------------|---|----------------------------------|
| Payment (Gain)/Loss | Various | 23 | (21,245,232) | (1,403,478) | (21,280,629) | (1,442,073) | (0.15%) |
| (Gain)/Loss Prior to 2009 | Various | 17 | 1,534,336,640 | 121,730,018 | 1,515,821,695 | 125,077,593 | 12.79% |
| (Gain)/Loss | Various | 23 | 220,580,903 | 14,571,757 | 220,948,424 | 14,972,481 | 1.53% |
| Benefit Change (AB 2621) | 6/30/2001 | 1 | 753,327 | 397,518 | 394,864 | 408,450 | 0.04% |
| Benefit Change (Arnett) | 6/30/2002 | 2 | 749,325 | 268,909 | 523,616 | 276,304 | 0.03% |
| Assumption Change | 6/30/2003 | 3 | 28,172,228 | 7,734,108 | 22,144,060 | 7,946,796 | 0.81% |
| Benefit Change (SB 1801) | 6/30/2003 | 3 | 4,463,285 | 1,225,303 | 3,508,252 | 1,259,000 | 0.13% |
| New Rate Stabilization Policies | 6/30/2004 | 4 | (10,436,098) | (2,337,495) | (8,748,701) | (2,401,777) | (0.25%) |
| Benefit Change (SB 439) | 6/30/2005 | 5 | 107,073,181 | 20,379,163 | 93,487,934 | 20,939,591 | 2.14% |
| Benefit Change (AB 2936) | 6/30/2008 | 8 | (161,764,235) | (21,745,246) | (150,594,274) | (22,343,240) | (2.29%) |
| Assumption Change | 6/30/2009 | 9 | 141,548,118 | 17,452,836 | 133,403,132 | 17,932,789 | 1.83% |
| (Gain)/Loss | 6/30/2009 | 19 | 300,265,363 | 22,212,103 | 298,307,560 | 22,822,936 | 2.33% |
| (Gain)/Loss | 6/30/2010 | 20 | 100,595,955 | 7,212,265 | 100,177,247 | 7,410,603 | 0.76% |
| (Gain)/Loss | 6/30/2011 | 21 | (44,714,666) | (3,113,698) | (44,623,858) | (3,199,325) | (0.33%) |
| Assumption Change | 6/30/2011 | 11 | 170,005,685 | 18,136,041 | 163,146,016 | 18,634,782 | 1.91% |
| Assumption Change | 6/30/2013 | 13 | 816,164,699 | 81,940,528 | 788,536,287 | 84,193,892 | 8.61% |
| (Gain)/Loss | 6/30/2014 | 24 | 479,877,109 | 32,553,417 | 479,794,990 | 33,448,636 | 3.42% |
| (Gain)/Loss | 6/30/2015 | 25 | 556,424,353 | 36,794,611 | 557,313,416 | 37,806,462 | 3.87% |
| (Gain)/Loss | 6/30/2016 | 26 | 362,463,014 | 18,958,296 | 368,224,811 | 24,349,561 | 2.49% |
| (Gain)/Loss | 6/30/2017 | 27 | (233,676,619) | (9,183,178) | (240,534,829) | (12,580,954) | (1.29%) |
| (Gain)/Loss | 6/30/2018 | 28 | (73,720,398) | (1,959,611) | (76,853,788) | (3,020,251) | (0.31%) |
| Method Change | 6/30/2018 | 18 | 110,310,142 | 4,022,505 | 113,870,940 | 6,199,686 | 0.63% |
| Assumption Change | 6/30/2018 | 18 | 448,542,306 | 16,356,281 | 463,021,199 | 25,209,119 | 2.58% |
| Non-Investment (Gain)/Loss | 6/30/2019 | 19 | 89,643,801 | 8,180,273 | 87,457,127 | 8,180,274 | 0.84% |
| Investment (Gain)/Loss | 6/30/2019 | 19 | 53,766,398 | 1,175,547 | 56,314,051 | 2,351,095 | 0.24% |
| Investment (Gain)/Loss | 6/30/2020 | 20 | 227,994,997 | - | 243,954,647 | 5,333,819 | 0.55% |
| Non-Investment (Gain)/Loss | 6/30/2020 | 20 | 76,331,899 | (1,103,980) | 82,817,098 | 7,557,316 | 0.77% |
| Total | | | \$5,284,505,480 | \$390,454,793 | \$5,250,531,287 | \$427,323,565 | 43.71% |

Liabilities and Employer Contributions

(Gain)/Loss Analysis

To calculate the required cost 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. Deviations between expected and actual experience result in actuarial gains or losses, as shown below.

| | State Miscellaneous | State Industrial | State Safety |
|---|------------------------|-----------------------|------------------------|
| 1) Total (Gain)/Loss for the Year | | | |
| a) Unfunded Accrued Liability/(Surplus) as of June 30, 2019 | \$36,284,613,843 | \$1,123,418,847 | \$3,096,524,766 |
| b) Expected Payment on Unfunded Accrued Liability During 2019-20 | 2,817,795,556 | 79,939,421 | 226,471,616 |
| c) Interest through June 30, 2020 $[.07 \times (1a) - ((1.07)^{1/2} - 1) \times (1b)]$ | 2,442,968,140 | 75,888,765 | 208,964,286 |
| d) Expected Unfunded Accrued Liability as of June 30, 2020 $[(1a) - (1b) + (1c)]$ | \$35,909,786,427 | \$1,119,368,191 | \$3,079,017,436 |
| e) Change Due to Method Change | 0 | 0 | 0 |
| f) Change Due to Assumption Change | 0 | 0 | 0 |
| g) Expected Unfunded Accrued Liability After All Other Changes $[(1d) + (1e) + (1f)]$ | \$35,909,786,427 | \$1,119,368,191 | \$3,079,017,436 |
| h) Actual Unfunded Accrued Liability as of June 30, 2020 | 37,647,704,280 | 1,142,733,042 | 3,102,342,146 |
| i) Total (Gain)/Loss for 2019-20 $[(1h) - (1g)]$ | \$1,737,917,853 | \$23,364,851 | \$23,324,710 |
| 2) Contribution (Gain)/Loss for the Year | | | |
| a) Expected Contributions for 2019-20 ¹ | \$5,020,399,360 | \$215,870,926 | \$795,695,632 |
| b) Interest on Expected Contributions for 2019-20 | 172,742,118 | 7,427,696 | 27,378,330 |
| c) Actual Contributions for 2019-20 ¹ | 5,151,573,088 | 226,942,380 | 835,201,160 |
| d) Interest on Actual Contributions for 2019-20 | 177,255,550 | 7,808,643 | 28,737,638 |
| e) Expected Contributions with Interest for 2019-20 $[(2a) + (2b)]$ | 5,193,141,478 | 223,298,622 | 823,073,962 |
| f) Actual Contributions with Interest for 2019-20 $[(2c) + (2d)]$ | 5,328,828,638 | 234,751,023 | 863,938,798 |
| g) Contribution (Gain)/Loss for 2019-20 $[(2e) - (2f)]$ | \$(135,687,160) | \$(11,452,401) | \$(40,864,836) |
| 3) Investment (Gain)/Loss for the Year | | | |
| a) Market Value of Assets as of June 30, 2019 | \$83,816,851,738 | \$3,822,261,757 | \$11,386,348,364 |
| b) Receivables as of June 30, 2019 | (215,739,166) | (12,409,713) | (14,272,163) |
| c) Receivables as of June 30, 2020 | 201,747,207 | 12,515,269 | 12,900,845 |
| d) Contributions Received During 2019-20 | 5,967,245,880 | 306,705,585 | 1,012,585,565 |
| e) Benefits and Refunds Paid During 2019-20 | (6,513,916,222) | (220,912,332) | (677,362,335) |
| f) Transfers, SCP Payments and Interest, and Miscellaneous Adjustments During 2019-20 | 51,241,401 | 1,812,825 | 7,955,536 |
| g) Expected Interest for 2019-20 $[0.07 \times (3a + 3b) + ((1.07)^{1/2} - 1) \times ((3d) + (3e) + (3f))]$ | 5,835,031,140 | 269,703,997 | 807,853,444 |
| h) Expected Assets as of June 30, 2020 $[(3a) + (3b) + (3c) + (3d) + (3e) + (3f) + (3g)]$ | 89,142,461,977 | 4,179,677,387 | 12,536,009,256 |
| i) Actual Market Value of Assets as of June 30, 2020 | 87,046,873,448 | 4,083,794,798 | 12,249,799,444 |
| j) Investment (Gain)/Loss for 2019-20 $[(3h) - (3i)]$ | \$2,095,588,530 | \$95,882,590 | \$286,209,812 |
| 4) Liability (Gain)/Loss for the Year | | | |
| a) Total (Gain)/Loss for 2019-20 (1i) | \$1,737,917,853 | \$23,364,851 | \$23,324,710 |
| b) Contribution (Gain)/Loss for 2019-20 (2g) | (135,687,160) | (11,452,401) | (40,864,836) |
| c) Asset (Gain)/Loss for 2019-20 (3j) | 2,095,588,530 | 95,882,590 | 286,209,812 |
| d) Liability (Gain)/Loss for 2019-20 $[(4a) - (4b) - (4c)]$ | \$(221,983,517) | \$(61,065,338) | \$(222,020,266) |

¹ Excludes State contribution under Government Code Section 20825.1 made on July 29, 2019.

Liabilities and Employer Contributions

(Gain)/Loss Analysis (continued)

| | State Peace Officers and Firefighters | California Highway Patrol |
|---|---------------------------------------|---------------------------|
| 1) Total (Gain)/Loss for the Year | | |
| a) Unfunded Accrued Liability/(Surplus) as of June 30, 2019 | \$15,860,075,686 | \$5,004,947,938 |
| b) Expected Payment on Unfunded Accrued Liability During 2019-20 | 1,083,110,299 | 362,638,043 |
| c) Interest through June 30, 2020 $[.07 \times (1a) - ((1.07)^{1/2} - 1) \times (1b)]$ | 1,072,937,592 | 337,868,689 |
| d) Expected Unfunded Accrued Liability as of June 30, 2020 $[(1a) - (1b) + (1c)]$ | \$15,849,902,979 | \$4,980,178,584 |
| e) Change Due to Method Change | 0 | 0 |
| f) Change Due to Assumption Change | 0 | 0 |
| g) Expected Unfunded Accrued Liability After All Other Changes $[(1d) + (1e) + (1f)]$ | \$15,849,902,979 | \$4,980,178,584 |
| h) Actual Unfunded Accrued Liability as of June 30, 2020 | 15,774,406,442 | 5,284,505,480 |
| i) Total (Gain)/Loss for 2019-20 $[(1h) - (1g)]$ | \$(75,496,537) | \$304,326,896 |
| 2) Contribution (Gain)/Loss for the Year | | |
| a) Expected Contributions for 2019-20 ¹ | \$2,183,568,828 | \$639,308,844 |
| b) Interest on Expected Contributions for 2019-20 | 75,132,331 | 21,997,366 |
| c) Actual Contributions for 2019-20 ¹ | 2,338,268,608 | 660,093,480 |
| d) Interest on Actual Contributions for 2019-20 | 80,455,247 | 22,712,525 |
| e) Expected Contributions with Interest for 2019-20 $[(2a) + (2b)]$ | 2,258,701,159 | 661,306,210 |
| f) Actual Contributions with Interest for 2019-20 $[(2c) + (2d)]$ | 2,418,723,855 | 682,806,005 |
| g) Contribution (Gain)/Loss for 2019-20 $[(2e) - (2f)]$ | \$(160,022,696) | \$(21,499,795) |
| 3) Investment (Gain)/Loss for the Year | | |
| a) Market Value of Assets as of June 30, 2019 | \$35,358,588,464 | \$9,082,325,286 |
| b) Receivables as of June 30, 2019 | (65,775,675) | (10,279,309) |
| c) Receivables as of June 30, 2020 | 60,743,140 | 9,100,933 |
| d) Contributions Received During 2019-20 | 3,669,982,312 | 660,093,480 |
| e) Benefits and Refunds Paid During 2019-20 | (2,359,940,449) | (651,831,782) |
| f) Transfers, SCP Payments and Interest, and Miscellaneous Adjustments During 2019-20 | 18,894,536 | 4,466,243 |
| g) Expected Interest for 2019-20 $[0.07 \times (3a + 3b) + ((1.07)^{1/2} - 1) \times ((3d) + (3e) + (3f))]$ | 2,516,222,996 | 635,481,162 |
| h) Expected Assets as of June 30, 2020 $[(3a) + (3b) + (3c) + (3d) + (3e) + (3f) + (3g)]$ | 39,198,715,324 | 9,729,356,014 |
| i) Actual Market Value of Assets as of June 30, 2020 | 38,327,136,595 | 9,501,361,017 |
| j) Investment (Gain)/Loss for 2019-20 $[(3h) - (3i)]$ | \$871,578,729 | \$227,994,997 |
| 4) Liability (Gain)/Loss for the Year | | |
| a) Total (Gain)/Loss for 2019-20 (1i) | \$(75,496,537) | \$304,326,896 |
| b) Contribution (Gain)/Loss for 2019-20 (2c) | (160,022,696) | (21,499,795) |
| c) Asset (Gain)/Loss for 2019-20 (3j) | 871,578,729 | 227,994,997 |
| d) Liability (Gain)/Loss for 2019-20 $[(4a) - (4b) - (4c)]$ | \$(787,052,570) | \$97,831,694 |

¹ Excludes State contribution under Government Code Section 20825.1 made on July 29, 2019.

Liabilities and Employer Contributions

Group Term Life Insurance (GTLI) Contributions

| | State Miscellaneous | State Industrial | State Safety | State Peace Officers and Firefighters | California Highway Patrol |
|--|------------------------|------------------|-----------------|---|------------------------------|
| 1) GTLI Market Value of Assets as of June 30, 2019 | \$5,707,184 | \$1,011,588 | \$1,305,715 | \$3,002,891 | \$101,681 |
| 2) Contributions Received for GTLI During Fiscal Year 2019-20 | 21,886 | 641 | (1,812) | 1,044 | 56,682 |
| 3) Benefits Paid for GTLI During Fiscal Year 2019-20 | (3,181,057) | (98,985) | (631,484) | (927,794) | (249,945) |
| 4) Investment Return During Fiscal Year 2019-20 | 241,546 | 40,495 | 69,340 | 118,716 | (4,576) |
| 5) GTLI Market Value of Assets as of June 30, 2020 | \$2,789,560 | \$953,739 | \$741,760 | \$2,194,857 | \$(96,158) |
| 6) Expected GTLI Benefit Payments for Fiscal Year 2020-21 | 3,344,654 | 206,865 | 738,334 | 1,027,022 | 244,768 |
| 7) Closed Group Projected Payroll for Fiscal Year 2020-21 | 13,087,182,819 | 746,774,883 | 2,381,158,488 | 3,767,587,051 | 916,314,165 |
| 8) Required GTLI Contribution Rate [(1.5 x (6) - (5), but not less than zero) ÷ (7)] | 0.02% | 0.00% | 0.02% | 0.00% | 0.05% |
| 9) Projected Payroll for Contributions | \$14,287,349,781 | \$808,058,687 | \$2,605,453,941 | \$4,048,420,605 | \$977,564,082 |
| 10) Required GTLI Contribution for Fiscal Year 2021-22 ¹ [(8) x (9)] | \$2,857,470 | \$0 | \$521,091 | \$0 | \$488,782 |

¹ The Required GTLI Contribution for Miscellaneous Tier 1 and Tier 2 is divided equally between the two groups as a percentage of payroll.

Liabilities and Employer Contributions

Reconciliation of Employer Contribution Rates

Change in Normal Cost Rate from 2020-21 to 2021-22

| | State Miscellaneous | State Industrial | State Safety | State Peace Officers and Firefighters | California Highway Patrol |
|---|------------------------|------------------|--------------|---|------------------------------|
| 2020-2021 Normal Cost Rate | 9.62% | 10.06% | 12.34% | 18.05% | 19.00% |
| Effect of Changes in Demographic Results | (0.20%) | (0.23%) | (0.01%) | (0.44%) | (0.37%) |
| Effect of Change in Member Contribution Rates | (0.06%) | 0.00% | 0.00% | 0.00% | (0.93%) |
| 2021-2022 Normal Cost Rate | 9.36% | 9.83% | 12.33% | 17.61% | 17.70% |

Change in Unfunded Accrued Liability Amortization Rate from 2020-21 to 2021-22

| | State Miscellaneous | State Industrial | State Safety | State Peace Officers and Firefighters | California Highway Patrol |
|--|------------------------|------------------|--------------|---|------------------------------|
| 2020-2021 Rate to Amortize the UAL | 22.14% | 11.56% | 9.32% | 30.88% | 40.73% |
| Effect of Progression of Amortization Bases and Change in Payroll | 0.31% | 0.47% | 0.63% | 0.48% | 1.66% |
| Effect of Investment (Gain)/Loss | 0.34% | 0.28% | 0.26% | 0.50% | 0.55% |
| Effect of Non-Investment (Gain)/Loss | 0.28% | 0.09% | (0.29%) | 0.93% | 0.77% |
| Effect of Section 20825.1 Contribution | (3.33%) | (5.77%) | (3.98%) | (19.21%) | 0.00% |
| 2021-2022 Rate to Amortize the UAL | 19.74% | 6.63% | 5.94% | 13.58% | 43.71% |

Change in Group Term Life Insurance Rate from 2020-21 to 2021-22

| | State Miscellaneous | State Industrial | State Safety | State Peace Officers and Firefighters | California Highway Patrol |
|--|------------------------|------------------|--------------|---|------------------------------|
| 2020-2021 Group Term Life Insurance Rate | 0.00% | 0.00% | 0.00% | 0.00% | 0.03% |
| Effect of (Gain)/Loss and Other Changes | 0.02% | 0.00% | 0.02% | 0.00% | 0.02% |
| 2021-2022 Group Term Life Insurance Rate | 0.02% | 0.00% | 0.02% | 0.00% | 0.05% |

Change in Total Rate from 2020-21 to 2021-22

| | State Miscellaneous | State Industrial | State Safety | State Peace Officers and Firefighters | California Highway Patrol |
|--|------------------------|------------------|--------------|---|------------------------------|
| 2020-2021 Employer Rate | 31.76% | 21.62% | 21.66% | 48.93% | 59.76% |
| Effect of Progression of Amortization Bases and Change in Payroll | 0.31% | 0.47% | 0.63% | 0.48% | 1.66% |
| Effect of (Gain)/Loss | 0.44% | 0.14% | (0.02%) | 0.99% | 0.97% |
| Effect of Change in Member Contribution Rates | (0.06%) | 0.00% | 0.00% | 0.00% | (0.93%) |
| Effect of Section 20825.1 Contribution | (3.33%) | (5.77%) | (3.98%) | (19.21%) | 0.00% |
| 2021-2022 Employer Rate | 29.12% | 16.46% | 18.29% | 31.19% | 61.46% |

Liabilities and Employer Contributions

Reconciliation of Employer Contributions

Change in Normal Cost Contribution from 2020-21 to 2021-22

| | State Miscellaneous | State Industrial | State Safety | State Peace Officers and Firefighters | California Highway Patrol |
|---|------------------------|------------------|---------------|---|------------------------------|
| 2020-2021 Normal Cost Contribution | \$1,309,972,770 | \$77,500,076 | \$315,169,892 | \$690,443,725 | \$182,661,674 |
| Effect of Change in Payroll | 64,470,278 | 3,790,627 | 6,343,125 | 40,296,193 | 3,075,501 |
| Effect of Changes in Demographic Results | (28,574,698) | (1,858,534) | (260,546) | (17,813,049) | (3,616,987) |
| Effect of Change in Member Contribution Rates | (8,572,410) | 0 | 0 | 0 | (9,091,346) |
| 2021-2022 Normal Cost Contribution | \$1,337,295,940 | \$79,432,169 | \$321,252,471 | \$712,926,869 | \$173,028,842 |

Change in Unfunded Accrued Liability Amortization Contribution from 2020-21 to 2021-22

| | State Miscellaneous | State Industrial | State Safety | State Peace Officers and Firefighters | California Highway Patrol |
|---|------------------------|------------------|---------------|---|------------------------------|
| 2020-2021 Amortization of the UAL | \$3,014,815,796 | \$89,034,575 | \$238,128,200 | \$1,181,397,767 | \$391,558,773 |
| Effect of Progression of Amortization Bases | 192,993,124 | 8,167,348 | 21,032,044 | 88,563,711 | 22,873,657 |
| Effect of Investment (Gain)/Loss | 49,025,155 | 2,243,121 | 6,695,723 | 20,390,111 | 5,333,819 |
| Effect of Non-Investment (Gain)/Loss | 39,605,614 | 694,331 | (7,558,668) | 37,471,510 | 7,557,316 |
| Effect of Section 20825.1 Contribution | (476,449,992) | (46,591,205) | (103,613,605) | (777,879,304) | 0 |
| 2021-2022 Amortization of the UAL | \$2,819,989,697 | \$53,548,170 | \$154,683,694 | \$549,943,795 | \$427,323,565 |

Change in Group Term Life Insurance Contribution from 2020-21 to 2021-22

| | State Miscellaneous | State Industrial | State Safety | State Peace Officers and Firefighters | California Highway Patrol |
|--|------------------------|------------------|--------------|---|------------------------------|
| 2020-2021 Group Term Life Insurance Contribution | \$0 | \$0 | \$0 | \$0 | \$288,413 |
| Effect of (Gain)/Loss and Other Changes | 2,857,470 | 0 | 521,091 | 0 | 200,369 |
| 2021-2022 Group Term Life Insurance Contribution | \$2,857,470 | \$0 | \$521,091 | \$0 | \$488,782 |

Change in Total Contribution from 2020-21 to 2021-22

| | State Miscellaneous | State Industrial | State Safety | State Peace Officers and Firefighters | California Highway Patrol |
|--|------------------------|------------------|---------------|---|------------------------------|
| 2020-2021 Employer Contribution | \$4,324,788,566 | \$166,534,651 | \$553,298,092 | \$1,871,841,492 | \$574,508,860 |
| Effect of Change in Payroll and Progression of Amortization Bases | 257,463,402 | 11,957,975 | 27,375,169 | 128,859,904 | 25,949,158 |
| Effect of (Gain)/Loss | 62,913,541 | 1,078,918 | (602,400) | 40,048,572 | 9,474,517 |
| Effect of Change in Member Contribution Rates | (8,572,410) | 0 | 0 | 0 | (9,091,346) |
| Effect of Section 20825.1 Contribution | (476,449,992) | (46,591,205) | (103,613,605) | (777,879,304) | 0 |
| 2021-2022 Employer Contribution | \$4,160,143,107 | \$132,980,339 | \$476,457,256 | \$1,262,870,664 | \$600,841,189 |

Liabilities and Employer Contributions

History of Employer Contribution Rates

The table below provides a 30-year history of contribution rates. In cases where the contribution rate changed during the course of a fiscal year, the entry shown is the weighted average of the rates effective during the fiscal year.

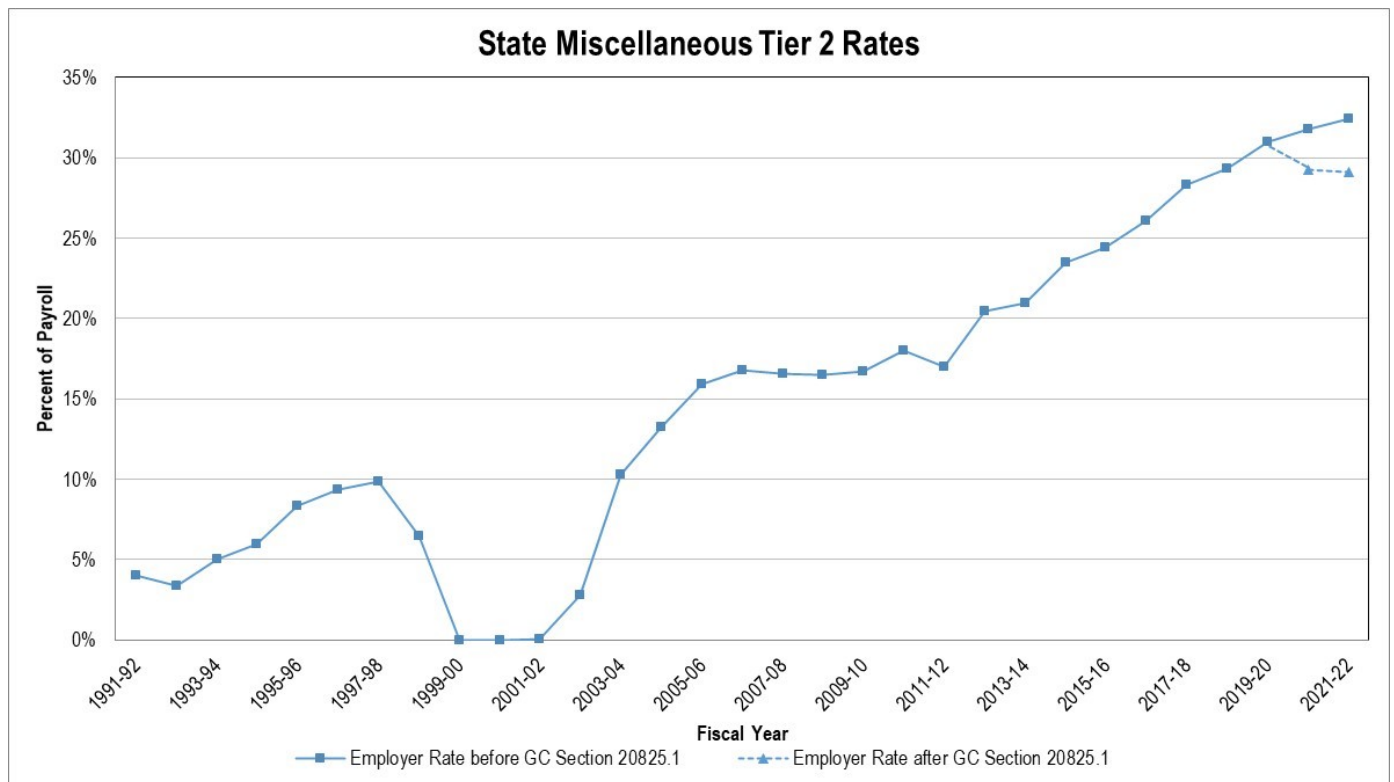
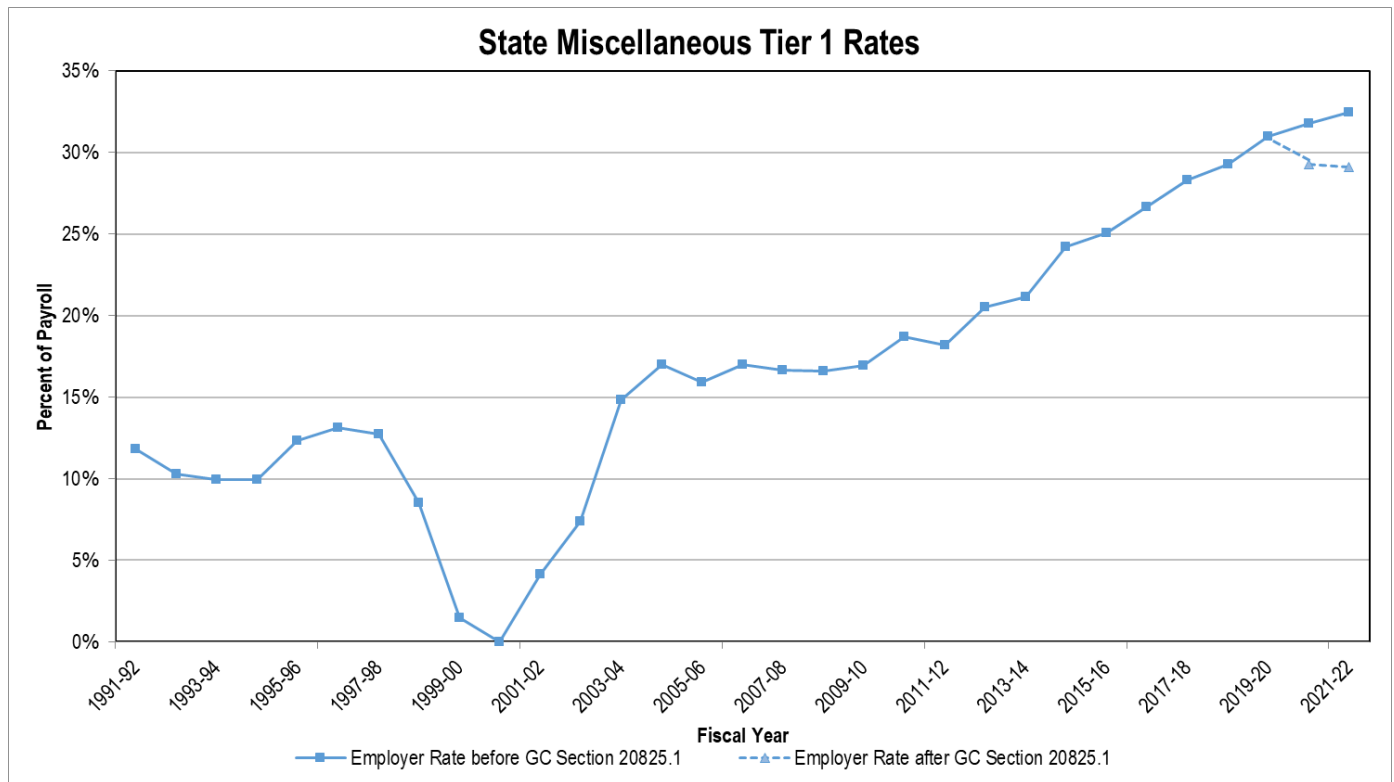
| Fiscal Year | State Miscellaneous | | State Industrial | State Safety | State Peace Officers and Firefighters | California Highway Patrol |
|----------------------|---------------------|---------|------------------|--------------|---------------------------------------|---------------------------|
| | Tier 1 | Tier 2 | | | | |
| 2021-22 ¹ | 29.12% | 29.12% | 16.46% | 18.29% | 31.19% | 61.46% |
| 2020-21 ² | 31.76% | 31.76% | 21.62% | 21.66% | 48.93% | 59.76% |
| 2019-20 | 30.977% | 30.977% | 20.823% | 21.526% | 47.198% | 57.811% |
| 2018-19 | 29.298% | 29.298% | 19.550% | 20.352% | 43.724% | 53.805% |
| 2017-18 | 28.325% | 28.325% | 19.527% | 19.402% | 42.598% | 52.785% |
| 2016-17 | 26.646% | 26.095% | 18.365% | 18.753% | 40.276% | 48.719% |
| 2015-16 | 25.068% | 24.389% | 17.775% | 18.082% | 37.338% | 45.406% |
| 2014-15 | 24.198% | 23.510% | 17.286% | 18.156% | 35.180% | 42.175% |
| 2013-14 | 21.121% | 20.992% | 15.682% | 17.205% | 30.495% | 34.616% |
| 2012-13 | 20.503% | 20.457% | 16.302% | 17.503% | 30.297% | 33.728% |
| 2011-12 | 18.175% | 17.025% | 14.934% | 16.428% | 27.415% | 31.264% |
| 2010-11 | 18.725% | 18.032% | 16.433% | 18.187% | 28.722% | 31.291% |
| 2009-10 | 16.917% | 16.737% | 17.251% | 18.099% | 25.848% | 28.438% |
| 2008-09 | 16.574% | 16.470% | 17.236% | 18.411% | 26.064% | 32.149% |
| 2007-08 | 16.633% | 16.565% | 17.345% | 18.835% | 25.552% | 32.212% |
| 2006-07 | 16.997% | 16.778% | 17.861% | 19.294% | 24.505% | 31.463% |
| 2005-06 | 15.942% | 15.890% | 17.147% | 19.026% | 23.563% | 26.396% |
| 2004-05 | 17.022% | 13.216% | 16.386% | 20.773% | 23.841% | 33.434% |
| 2003-04 | 14.843% | 10.265% | 11.099% | 21.930% | 20.325% | 32.653% |
| 2002-03 | 7.413% | 2.813% | 2.858% | 17.055% | 13.925% | 23.076% |
| 2001-02 | 4.166% | 0.036% | 0.350% | 12.923% | 9.638% | 16.897% |
| 2000-01 | 0.000% | 0.000% | 0.026% | 6.808% | 2.729% | 13.711% |
| 1999-00 | 1.491% | 0.000% | 0.026% | 7.487% | 0.000% | 13.345% |
| 1998-99 | 8.541% | 6.437% | 4.583% | 9.440% | 9.591% | 13.541% |
| 1997-98 | 12.721% | 9.822% | 9.048% | 13.754% | 15.270% | 15.515% |
| 1996-97 | 13.106% | 9.345% | 9.260% | 14.656% | 15.401% | 15.851% |
| 1995-96 | 12.350% | 8.326% | 8.981% | 14.228% | 14.350% | 14.778% |
| 1994-95 | 9.934% | 5.947% | 10.597% | 13.927% | 12.817% | 15.552% |
| 1993-94 | 9.939% | 5.005% | 11.765% | 15.485% | 15.202% | 16.940% |
| 1992-93 | 10.266% | 3.391% | 11.995% | 15.698% | 15.560% | 17.074% |

¹ Rates for fiscal year 2021-22 include reduction due to State contribution under Government Code section 20825.1.

² Rates for fiscal year 2020-21 are prior to reduction due to State contribution under Government Code section 20825.1.

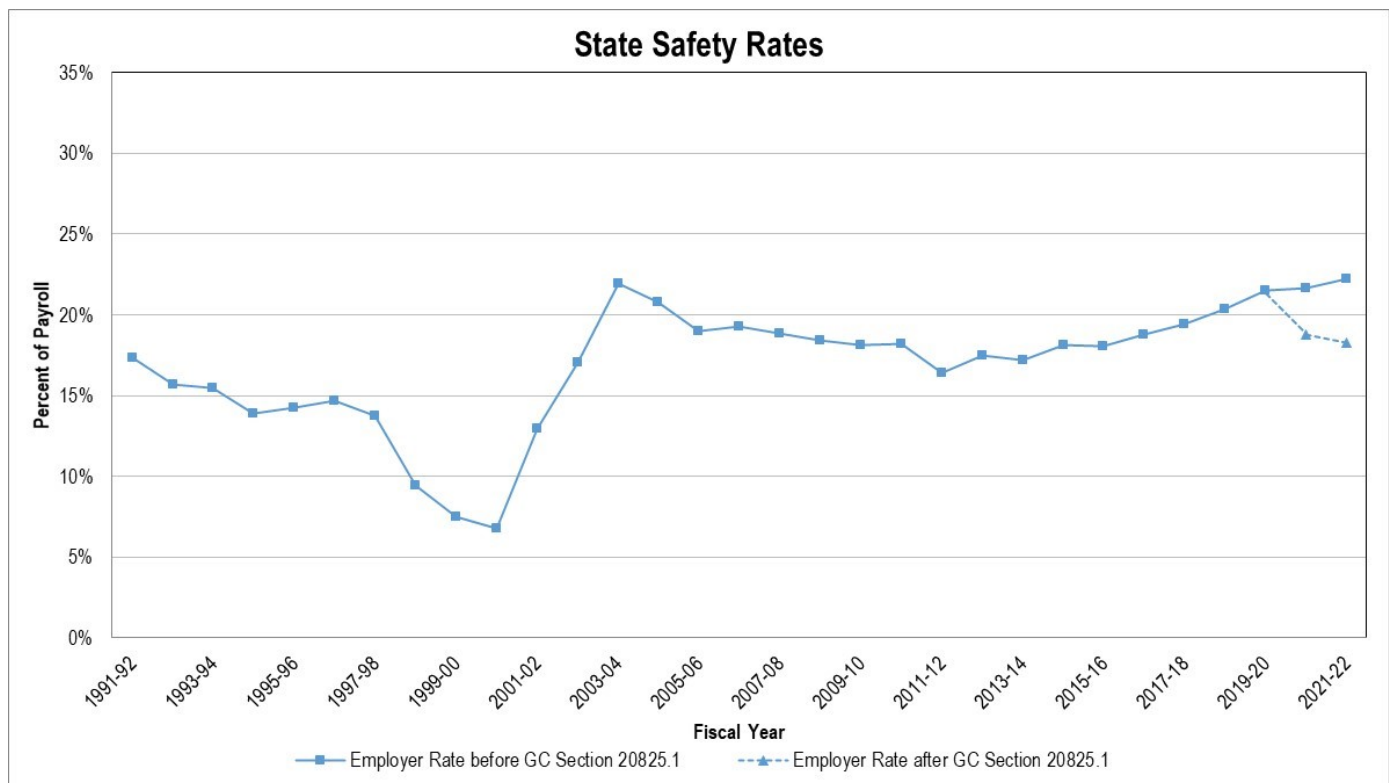
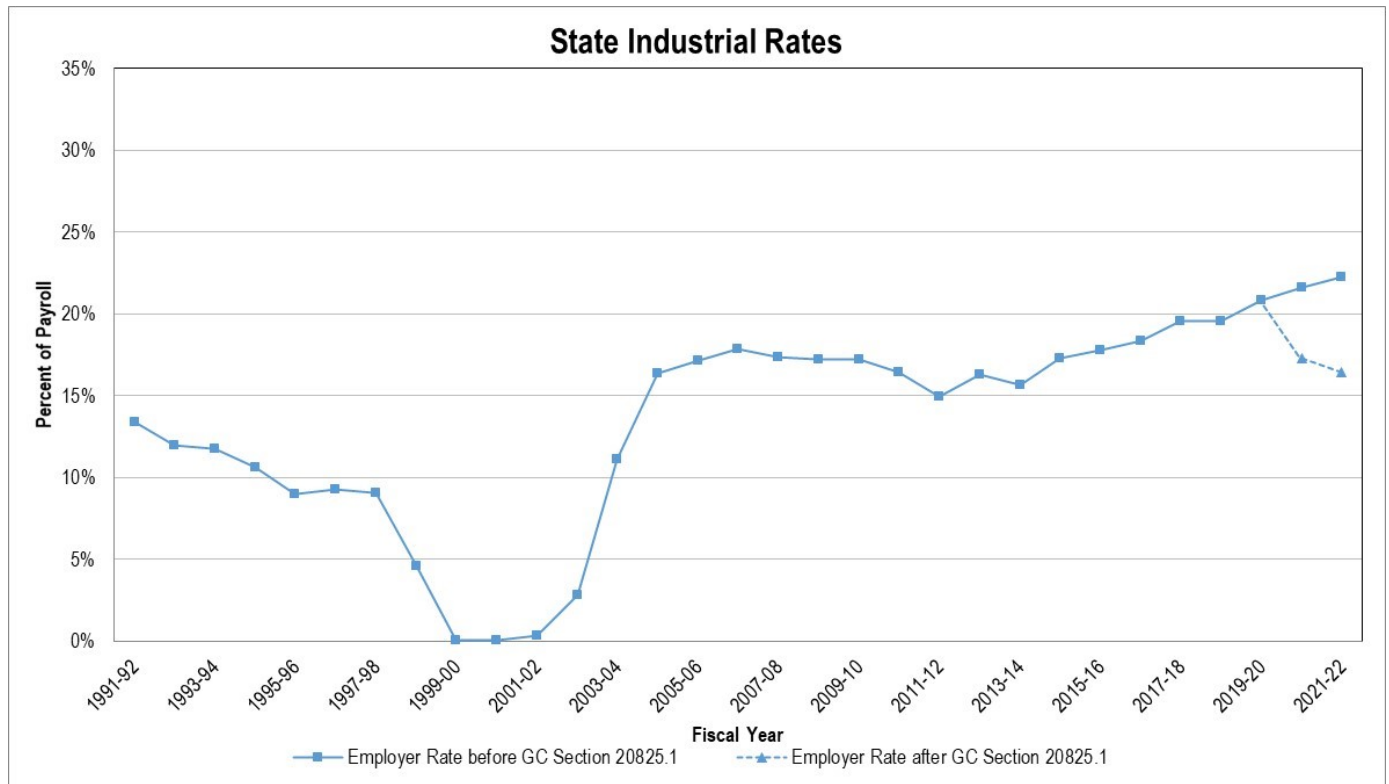
Liabilities and Employer Contributions

History of Employer Contribution Rates (continued)



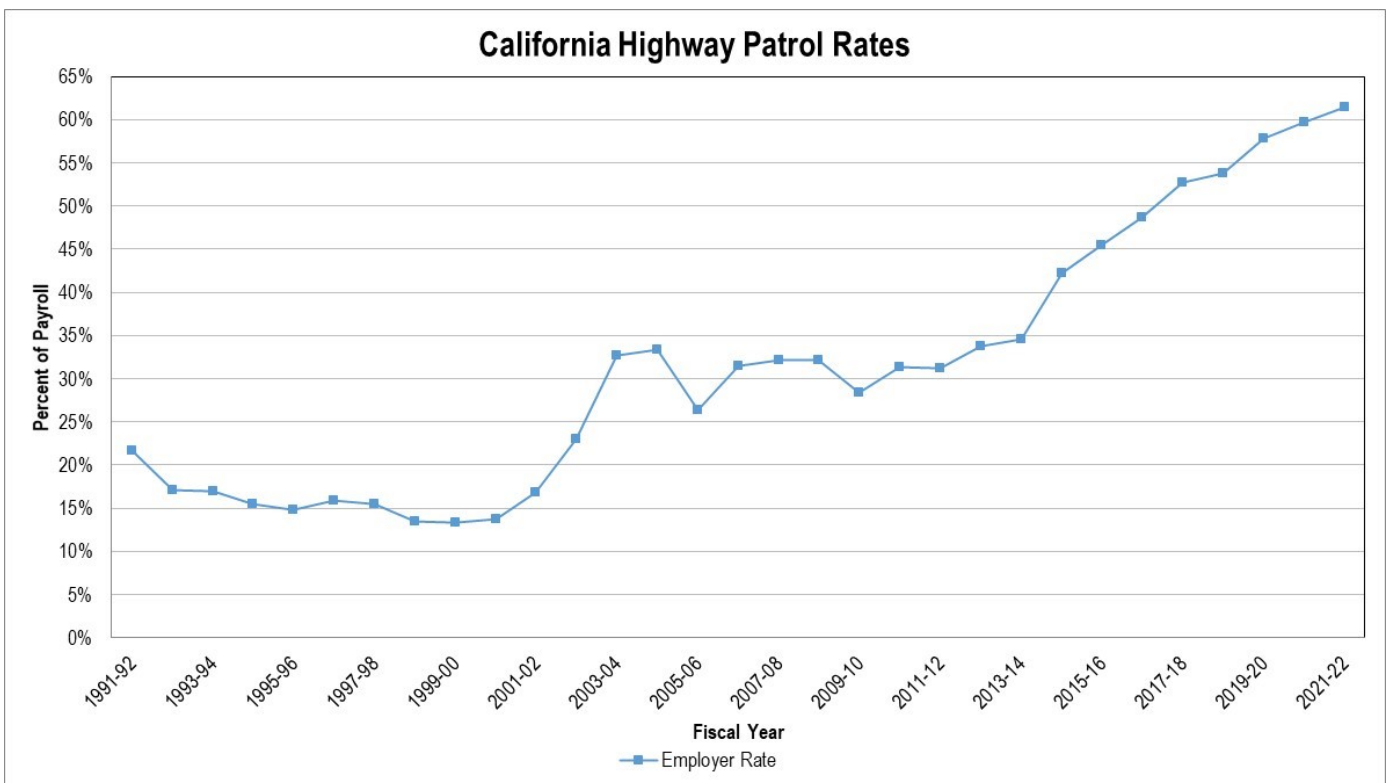
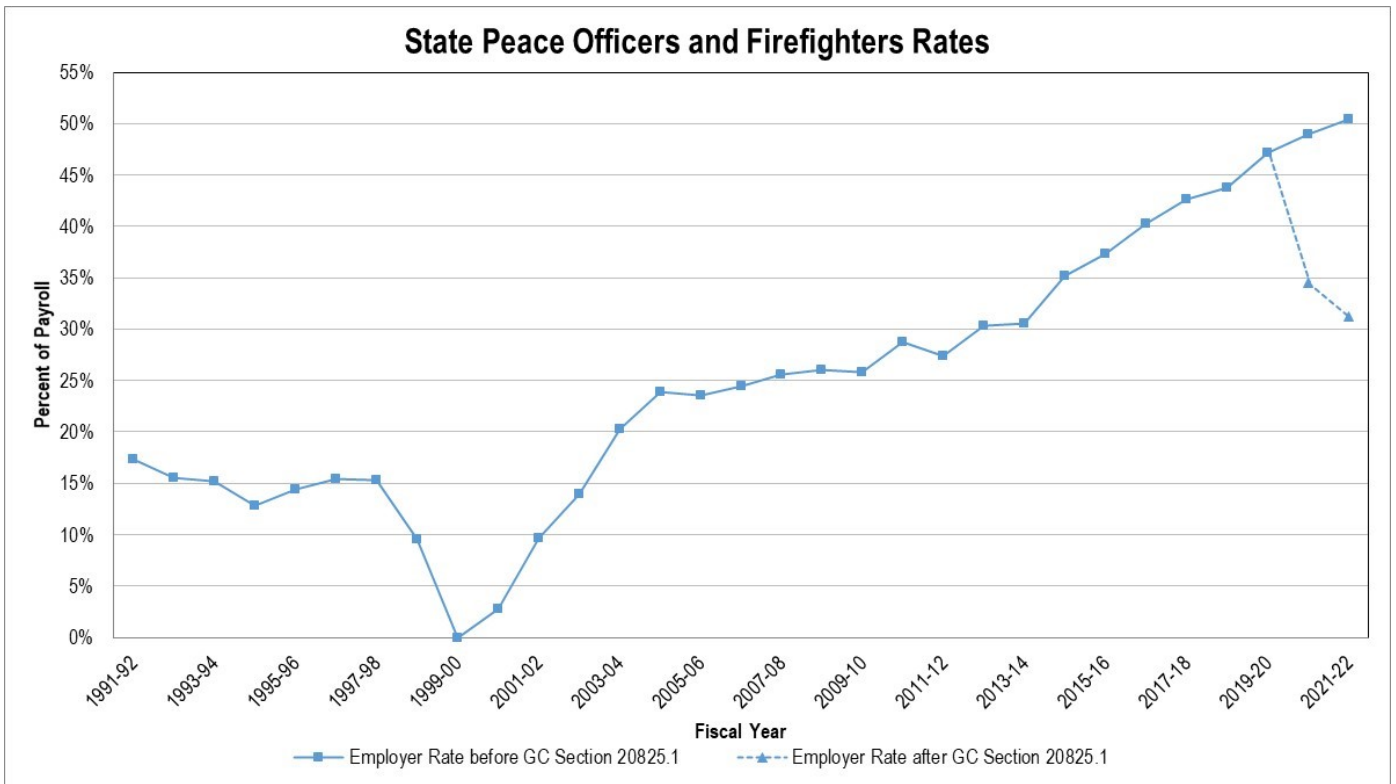
Liabilities and Employer Contributions

History of Employer Contribution Rates (continued)



Liabilities and Employer Contributions

History of Employer Contribution Rates (continued)



Liabilities and Employer Contributions

History of Funded Status and Funding Progress

Shown below is a 30-year history of funding progress for the plans on a market value of assets basis.

State Miscellaneous (Dollars in Millions)

| Valuation Date | Actuarial Accrued Liabilities | Market Value of Assets | Funded Ratio | Unfunded Accrued Liability/(Surplus) | Projected Payroll for Contribution | UAL/(Surplus) as a % of Payroll |
|----------------|-------------------------------|------------------------|--------------|--------------------------------------|------------------------------------|---------------------------------|
| 6/30/20 | \$124,695 | \$87,047 | 69.8% | \$37,648 | \$14,287 | 263.5% |
| 6/30/19 | 120,101 | 83,817 | 69.8% | 36,285 | 13,617 | 266.5% |
| 6/30/18 | 115,469 | 80,223 | 69.5% | 35,246 | 12,935 | 272.5% |
| 6/30/17 | 106,956 | 72,204 | 67.5% | 34,752 | 12,396 | 280.4% |
| 6/30/16 | 102,444 | 66,608 | 65.0% | 35,836 | 11,995 | 298.7% |
| 6/30/15 | 97,831 | 68,080 | 69.6% | 29,751 | 11,558 | 257.4% |
| 6/30/14 | 94,442 | 68,359 | 72.4% | 26,084 | 10,854 | 240.3% |
| 6/30/13 | 90,277 | 60,029 | 66.5% | 30,248 | 10,014 | 302.1% |
| 6/30/12 | 83,524 | 55,371 | 66.3% | 28,152 | 10,254 | 274.6% |
| 6/30/11 | 81,271 | 57,452 | 70.7% | 23,819 | 10,426 | 228.5% |
| 6/30/10 | 76,980 | 48,646 | 63.2% | 28,335 | 10,515 | 269.5% |
| 6/30/09 | 74,763 | 44,094 | 59.0% | 30,669 | 10,465 | 293.1% |
| 6/30/08 | 69,648 | 59,979 | 86.1% | 9,669 | 10,241 | 94.4% |
| 6/30/07 | 65,342 | 64,442 | 98.6% | 900 | 9,530 | 9.4% |
| 6/30/06 | 61,299 | 55,051 | 89.8% | 6,248 | 8,956 | 69.8% |
| 6/30/05 | 58,267 | 50,231 | 86.2% | 8,036 | 8,897 | 90.3% |
| 6/30/04 | 54,701 | 45,460 | 83.1% | 9,241 | 9,079 | 101.8% |
| 6/30/03 | 51,559 | 39,324 | 76.3% | 12,235 | 9,207 | 132.9% |
| 6/30/02 | 48,118 | 39,530 | 82.2% | 8,588 | 9,238 | 93.0% |
| 6/30/01 | 45,261 | 43,933 | 97.1% | 1,328 | 8,816 | 15.1% |
| 6/30/00 | 42,386 | 49,208 | 116.1% | (6,822) | 8,246 | (82.7%) |
| 6/30/99 | 35,771 | 46,176 | 129.1% | (10,405) | 7,332 | (141.9%) |
| 6/30/98 | 34,169 | 42,011 | 122.9% | (7,842) | 6,592 | (119.0%) |
| 6/30/97 | 32,557 | 35,959 | 110.4% | (3,401) | 6,624 | (51.4%) |
| 6/30/96 | 31,742 | 30,452 | 95.9% | 1,290 | 6,881 | 18.8% |
| 6/30/95 | 29,960 | 27,088 | 90.4% | 2,872 | 7,009 | 41.0% |
| 6/30/94 | 27,821 | 24,278 | 87.3% | 3,542 | 6,827 | 51.9% |
| 6/30/93 | 26,162 | 24,715 | 94.5% | 1,447 | 6,310 | 22.9% |
| 6/30/92 | 24,887 | 22,979 | 92.3% | 1,908 | 6,243 | 30.6% |
| 6/30/91 | 23,153 | 22,441 | 96.9% | 711 | 6,303 | 11.3% |

Liabilities and Employer Contributions

History of Funded Status and Funding Progress (continued)

State Industrial (Dollars in Millions)

| Valuation Date | Actuarial Accrued Liabilities | Market Value of Assets | Funded Ratio | Unfunded Accrued Liability/(Surplus) | Projected Payroll for Contribution | UAL/(Surplus) as a % of Payroll |
|----------------|-------------------------------|------------------------|--------------|--------------------------------------|------------------------------------|---------------------------------|
| 6/30/20 | \$5,227 | \$4,084 | 78.1% | \$1,143 | \$808 | 141.4% |
| 6/30/19 | 4,946 | 3,822 | 77.3% | 1,123 | 770 | 145.8% |
| 6/30/18 | 4,670 | 3,590 | 76.9% | 1,080 | 738 | 146.3% |
| 6/30/17 | 4,210 | 3,215 | 76.4% | 995 | 690 | 144.2% |
| 6/30/16 | 3,970 | 2,898 | 73.0% | 1,072 | 672 | 159.6% |
| 6/30/15 | 3,669 | 2,885 | 78.6% | 785 | 636 | 123.3% |
| 6/30/14 | 3,458 | 2,825 | 81.7% | 633 | 581 | 108.9% |
| 6/30/13 | 3,236 | 2,418 | 74.7% | 818 | 532 | 153.7% |
| 6/30/12 | 2,968 | 2,168 | 73.0% | 800 | 578 | 138.4% |
| 6/30/11 | 2,832 | 2,180 | 77.0% | 652 | 616 | 105.7% |
| 6/30/10 | 2,614 | 1,785 | 68.3% | 830 | 616 | 134.7% |
| 6/30/09 | 2,467 | 1,556 | 63.1% | 912 | 574 | 158.9% |
| 6/30/08 | 2,235 | 2,034 | 91.0% | 201 | 522 | 38.5% |
| 6/30/07 | 2,044 | 2,119 | 103.7% | (76) | 440 | (17.2%) |
| 6/30/06 | 1,870 | 1,776 | 95.0% | 94 | 381 | 24.6% |
| 6/30/05 | 1,754 | 1,586 | 90.4% | 168 | 380 | 44.2% |
| 6/30/04 | 1,602 | 1,415 | 88.3% | 187 | 378 | 49.5% |
| 6/30/03 | 1,462 | 1,201 | 82.1% | 261 | 381 | 68.5% |
| 6/30/02 | 1,295 | 1,200 | 92.7% | 95 | 390 | 24.4% |
| 6/30/01 | 1,196 | 1,325 | 110.8% | (129) | 390 | (33.1%) |
| 6/30/00 | 1,079 | 1,463 | 135.6% | (384) | 379 | (101.3%) |
| 6/30/99 | 880 | 1,360 | 154.5% | (480) | 344 | (139.5%) |
| 6/30/98 | 790 | 1,226 | 155.2% | (436) | 297 | (147.1%) |
| 6/30/97 | 741 | 1,042 | 140.7% | (302) | 285 | (106.0%) |
| 6/30/96 | 721 | 861 | 119.4% | (140) | 294 | (47.7%) |
| 6/30/95 | 659 | 751 | 113.9% | (91) | 271 | (33.7%) |
| 6/30/94 | 619 | 665 | 107.5% | (46) | 235 | (19.7%) |
| 6/30/93 | 597 | 668 | 111.8% | (71) | 278 | (25.4%) |
| 6/30/92 | 540 | 610 | 113.0% | (70) | 268 | (26.2%) |
| 6/30/91 | 492 | 579 | 117.6% | (87) | 256 | (33.8%) |

Liabilities and Employer Contributions

History of Funded Status and Funding Progress (continued)

State Safety (Dollars in Millions)

| Valuation Date | Actuarial Accrued Liabilities | Market Value of Assets | Funded Ratio | Unfunded Accrued Liability/(Surplus) | Projected Payroll for Contribution | UAL/(Surplus) as a % of Payroll |
|----------------|-------------------------------|------------------------|--------------|--------------------------------------|------------------------------------|---------------------------------|
| 6/30/20 | \$15,352 | \$12,250 | 79.8% | \$3,102 | \$2,605 | 119.1% |
| 6/30/19 | 14,483 | 11,386 | 78.6% | 3,097 | 2,554 | 121.2% |
| 6/30/18 | 13,591 | 10,551 | 77.6% | 3,039 | 2,445 | 124.3% |
| 6/30/17 | 12,204 | 9,327 | 76.4% | 2,877 | 2,293 | 125.5% |
| 6/30/16 | 11,288 | 8,288 | 73.4% | 3,000 | 2,245 | 133.6% |
| 6/30/15 | 10,255 | 7,859 | 76.6% | 2,396 | 2,135 | 112.2% |
| 6/30/14 | 9,551 | 7,562 | 79.2% | 1,990 | 2,038 | 97.6% |
| 6/30/13 | 8,834 | 6,327 | 71.6% | 2,507 | 1,881 | 133.3% |
| 6/30/12 | 7,827 | 5,524 | 70.6% | 2,303 | 1,899 | 121.3% |
| 6/30/11 | 7,224 | 5,390 | 74.6% | 1,835 | 1,984 | 92.5% |
| 6/30/10 | 6,436 | 4,196 | 65.2% | 2,239 | 2,004 | 111.7% |
| 6/30/09 | 6,006 | 3,514 | 58.5% | 2,492 | 2,048 | 121.7% |
| 6/30/08 | 5,146 | 4,365 | 84.8% | 781 | 1,914 | 40.8% |
| 6/30/07 | 4,467 | 4,342 | 97.2% | 126 | 1,530 | 8.2% |
| 6/30/06 | 3,907 | 3,486 | 89.2% | 421 | 1,226 | 34.3% |
| 6/30/05 | 3,473 | 3,000 | 86.4% | 473 | 1,107 | 42.7% |
| 6/30/04 | 3,087 | 2,509 | 81.3% | 579 | 889 | 65.1% |
| 6/30/03 | 2,788 | 2,049 | 73.5% | 739 | 891 | 82.9% |
| 6/30/02 | 2,476 | 1,926 | 77.8% | 551 | 876 | 62.9% |
| 6/30/01 | 2,179 | 2,000 | 91.8% | 180 | 850 | 21.1% |
| 6/30/00 | 1,865 | 2,122 | 113.8% | (257) | 759 | (33.9%) |
| 6/30/99 | 1,364 | 1,927 | 141.3% | (563) | 682 | (82.6%) |
| 6/30/98 | 1,285 | 1,672 | 130.1% | (386) | 511 | (75.7%) |
| 6/30/97 | 1,086 | 1,404 | 129.2% | (318) | 414 | (76.8%) |
| 6/30/96 | 947 | 1,123 | 118.6% | (176) | 474 | (37.2%) |
| 6/30/95 | 914 | 936 | 102.5% | (23) | 408 | (5.5%) |
| 6/30/94 | 761 | 762 | 100.1% | (1) | 385 | (0.2%) |
| 6/30/93 | 644 | 722 | 112.0% | (77) | 265 | (29.2%) |
| 6/30/92 | 602 | 680 | 112.8% | (77) | 263 | (29.4%) |
| 6/30/91 | 548 | 637 | 116.2% | (89) | 262 | (33.8%) |

Liabilities and Employer Contributions

History of Funded Status and Funding Progress (continued)

State Peace Officers and Firefighters (Dollars in Millions)

| Valuation Date | Actuarial Accrued Liabilities | Market Value of Assets | Funded Ratio | Unfunded Accrued Liability/(Surplus) | Projected Payroll for Contribution | UAL/(Surplus) as a % of Payroll |
|----------------|-------------------------------|------------------------|--------------|--------------------------------------|------------------------------------|---------------------------------|
| 6/30/20 | \$54,102 | \$38,327 | 70.8% | \$15,774 | \$4,048 | 389.6% |
| 6/30/19 | 51,219 | 35,359 | 69.0% | 15,860 | 3,825 | 414.6% |
| 6/30/18 | 48,792 | 33,327 | 68.3% | 15,466 | 3,719 | 415.9% |
| 6/30/17 | 44,619 | 29,424 | 65.9% | 15,194 | 3,616 | 420.2% |
| 6/30/16 | 41,485 | 26,622 | 64.2% | 14,863 | 3,434 | 432.9% |
| 6/30/15 | 39,394 | 26,973 | 68.5% | 12,420 | 3,335 | 372.4% |
| 6/30/14 | 37,466 | 26,591 | 71.0% | 10,875 | 3,206 | 339.2% |
| 6/30/13 | 35,271 | 22,919 | 65.0% | 12,352 | 3,087 | 400.1% |
| 6/30/12 | 31,336 | 20,526 | 65.5% | 10,810 | 3,132 | 345.2% |
| 6/30/11 | 30,127 | 20,801 | 69.0% | 9,326 | 3,393 | 274.8% |
| 6/30/10 | 27,712 | 17,199 | 62.1% | 10,512 | 3,455 | 304.3% |
| 6/30/09 | 26,291 | 15,083 | 57.4% | 11,208 | 3,592 | 312.0% |
| 6/30/08 | 24,004 | 19,734 | 82.2% | 4,270 | 3,589 | 119.0% |
| 6/30/07 | 22,250 | 20,539 | 92.3% | 1,711 | 3,420 | 50.0% |
| 6/30/06 | 19,737 | 16,973 | 86.0% | 2,764 | 3,058 | 90.4% |
| 6/30/05 | 17,753 | 14,985 | 84.4% | 2,769 | 2,860 | 96.8% |
| 6/30/04 | 15,668 | 12,999 | 83.0% | 2,670 | 2,604 | 102.5% |
| 6/30/03 | 14,220 | 11,038 | 77.6% | 3,182 | 2,507 | 126.9% |
| 6/30/02 | 12,827 | 10,731 | 83.7% | 2,095 | 2,407 | 87.1% |
| 6/30/01 | 11,949 | 11,574 | 96.9% | 375 | 2,304 | 16.3% |
| 6/30/00 | 10,720 | 12,668 | 118.2% | (1,947) | 2,227 | (87.4%) |
| 6/30/99 | 8,091 | 11,685 | 144.4% | (3,594) | 2,018 | (178.1%) |
| 6/30/98 | 7,016 | 10,322 | 147.1% | (3,306) | 1,540 | (214.6%) |
| 6/30/97 | 6,495 | 8,436 | 129.9% | (1,941) | 1,410 | (137.7%) |
| 6/30/96 | 6,129 | 6,860 | 111.9% | (731) | 1,654 | (44.2%) |
| 6/30/95 | 5,552 | 5,892 | 106.1% | (340) | 1,592 | (21.4%) |
| 6/30/94 | 4,884 | 5,032 | 103.0% | (148) | 1,505 | (9.8%) |
| 6/30/93 | 4,476 | 4,867 | 108.7% | (392) | 1,348 | (29.1%) |
| 6/30/92 | 4,193 | 4,232 | 100.9% | (39) | 1,332 | (2.9%) |
| 6/30/91 | 3,773 | 3,854 | 102.1% | (81) | 1,320 | (6.1%) |

Liabilities and Employer Contributions

History of Funded Status and Funding Progress (continued)

California Highway Patrol (Dollars in Millions)

| Valuation Date | Actuarial Accrued Liabilities | Market Value of Assets | Funded Ratio | Unfunded Accrued Liability/(Surplus) | Projected Payroll for Contribution | UAL/(Surplus) as a % of Payroll |
|----------------|-------------------------------|------------------------|--------------|--------------------------------------|------------------------------------|---------------------------------|
| 6/30/20 | \$14,786 | \$9,501 | 64.3% | \$5,285 | \$978 | 540.6% |
| 6/30/19 | 14,087 | 9,082 | 64.5% | 5,005 | 961 | 520.6% |
| 6/30/18 | 13,384 | 8,541 | 63.8% | 4,843 | 921 | 526.2% |
| 6/30/17 | 12,322 | 7,417 | 60.2% | 4,904 | 900 | 545.1% |
| 6/30/16 | 11,471 | 6,706 | 58.5% | 4,765 | 848 | 562.2% |
| 6/30/15 | 10,942 | 6,735 | 61.6% | 4,207 | 852 | 493.9% |
| 6/30/14 | 10,329 | 6,645 | 64.3% | 3,684 | 801 | 460.0% |
| 6/30/13 | 9,775 | 5,760 | 58.9% | 4,014 | 767 | 523.5% |
| 6/30/12 | 8,659 | 5,220 | 60.3% | 3,439 | 773 | 445.0% |
| 6/30/11 | 8,193 | 5,336 | 65.1% | 2,857 | 780 | 366.4% |
| 6/30/10 | 7,704 | 4,440 | 57.6% | 3,264 | 767 | 425.4% |
| 6/30/09 | 7,300 | 3,932 | 53.9% | 3,368 | 734 | 459.1% |
| 6/30/08 | 6,609 | 5,238 | 79.3% | 1,371 | 675 | 203.2% |
| 6/30/07 | 6,249 | 5,546 | 88.8% | 703 | 613 | 114.6% |
| 6/30/06 | 5,744 | 4,682 | 81.5% | 1,062 | 556 | 191.0% |
| 6/30/05 | 5,349 | 4,249 | 79.4% | 1,100 | 546 | 201.4% |
| 6/30/04 | 4,742 | 3,734 | 78.7% | 1,008 | 509 | 198.2% |
| 6/30/03 | 4,421 | 3,230 | 73.1% | 1,191 | 476 | 250.3% |
| 6/30/02 | 4,138 | 3,159 | 76.3% | 979 | 461 | 212.3% |
| 6/30/01 | 3,981 | 3,466 | 87.1% | 515 | 455 | 113.2% |
| 6/30/00 | 3,635 | 3,443 | 94.7% | 192 | 433 | 44.4% |
| 6/30/99 | 2,983 | 3,249 | 108.9% | (266) | 402 | (66.1%) |
| 6/30/98 | 2,756 | 2,901 | 105.3% | (145) | 367 | (39.5%) |
| 6/30/97 | 2,621 | 2,912 | 111.1% | (291) | 371 | (78.6%) |
| 6/30/96 | 2,328 | 2,496 | 107.2% | (168) | 343 | (49.0%) |
| 6/30/95 | 2,134 | 2,207 | 103.4% | (73) | 302 | (24.2%) |
| 6/30/94 | 1,971 | 1,968 | 99.9% | 2 | 288 | 0.8% |
| 6/30/93 | 1,773 | 1,941 | 109.5% | (168) | 279 | (60.2%) |
| 6/30/92 | 1,733 | 1,956 | 112.9% | (224) | 282 | (79.2%) |
| 6/30/91 | 1,629 | 1,916 | 117.6% | (287) | 288 | (99.7%) |

Normal Cost Information

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Normal Cost Information

Normal Cost by Group

The table below displays normal cost broken out by benefit group. 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. Generally, the normal cost for a benefit group subject to more generous benefit provisions will be greater than 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 Total Normal Cost for each group may differ significantly from the current values due to such factors as changes in demographics of the group, changes in economic and demographic assumptions, and changes in plan benefits or applicable law.

The employee contribution rate and breakpoint information shown here reflects membership data as stored in our system and is for informational purposes only. Please refer to the Public Employees' Retirement Law and/or applicable Memoranda of Understanding for the latest rate information. FAC means Final Average Compensation.

| | State Plans | Total Normal Cost | Employee Contribution | Range of Breakpoints ² | Average Effective Member Rate ^{3,4} | Employer Normal Cost |
|---|---|-------------------|-----------------------|-----------------------------------|--|----------------------|
| P | State Miscellaneous (Including CSU) - 2% @ 62 | 15.0% | 6% - 11% | \$0 - \$513 | 7.4% | 7.6% |
| E | State Miscellaneous - 2nd Tier 2% @ 62 ⁴ | 10.8% | 3.75% | \$0 | 3.8% | 7.0% |
| P | State Industrial - 2% @ 62 | 15.6% | 6% - 11% | \$317 - \$513 | 8.1% | 7.5% |
| R | State Industrial - 2nd Tier 2% @ 62 ⁴ | 10.7% | 3.75% | \$0 | 3.8% | 6.9% |
| A | State Safety - 2% @ 57 | 19.9% | 11% - 11.5% | \$0 - \$317 | 10.5% | 9.4% |
| | State POFF - 2.5% @ 57 | 24.4% | 12% - 13% | \$0 - \$863 | 11.3% | 13.1% |
| | State POFF - 2.7% @ 57 | 24.3% | 13% | \$863 | 10.4% | 13.9% |
| | CHP - 2.7% @ 57 | 22.8% | 12.5% | \$863 | 11.3% | 11.5% |
| C | State Miscellaneous - 2% @ 60 & 3 Year FAC | 16.6% | 5% - 10% | \$317 - \$513 | 6.8% | 9.8% |
| L | State Miscellaneous - 2% @ 55 ¹ | 17.5% | 5% - 11% | \$317 - \$513 | 6.9% | 10.6% |
| A | State Miscellaneous - 2nd Tier 2% @ 55 ⁴ | 12.5% | 3.75% | \$0 | 3.8% | 8.7% |
| S | State Industrial - 2% @ 60 & 3 Year FAC | 17.9% | 9% - 11% | \$317 - \$513 | 8.4% | 9.5% |
| S | State Industrial - 2% @ 55 ¹ | 19.5% | 5% - 11% | \$317 - \$513 | 8.3% | 11.2% |
| I | State Industrial - 2nd Tier 2% @ 55 ⁴ | 15.1% | 3.75% | \$0 | 3.8% | 11.3% |
| C | State Safety - 2% @ 55 ¹ | 21.1% | 11% - 11.5% | \$317 | 10.5% | 10.6% |
| | State Safety - 2.5% @ 60 & 3 Year FAC | 23.5% | 11% - 11.5% | \$0 - \$317 | 10.8% | 12.7% |
| | State Safety - 2.5% @ 55 ¹ | 25.5% | 11% - 11.5% | \$317 | 10.6% | 14.9% |
| | State POFF - 2.5% @ 55 & 3 Year FAC | 28.2% | 8% - 13% | \$238 - \$863 | 11.4% | 16.8% |
| | State POFF - 3% @ 55 ¹ | 31.5% | 8% - 13% | \$238 - \$863 | 11.2% | 20.3% |
| | State POFF - 3% @ 50 ¹ | 31.4% | 8% - 13% | \$0 - \$863 | 11.7% | 19.7% |
| | CHP - 3% @ 55 & 3 Year FAC | 29.3% | 12.5% | \$863 | 11.5% | 17.8% |
| | CHP - 3% @ 50 ¹ | 30.9% | 12.5% | \$863 | 11.6% | 19.3% |
| B | State Miscellaneous | 16.48% | 3.75% - 11% | \$0 - \$513 | 7.12% | 9.36% |
| L | State Industrial | 17.99% | 3.75% - 11% | \$0 - \$513 | 8.16% | 9.83% |
| N | State Safety | 22.91% | 11% - 11.5% | \$0 - \$317 | 10.58% | 12.33% |
| D | State POFF | 29.23% | 8% - 13% | \$0 - \$863 | 11.62% | 17.61% |
| D | CHP | 29.26% | 12.5% | \$863 | 11.56% | 17.70% |

¹ Most Classic employees have benefits based on a final one-year compensation period while new hires' benefits are based on a final three-year compensation period.

² Employees make contributions to the pension plan based only on monthly compensation above the breakpoint.

³ The average effective member rate was calculated based on data as of June 30, 2020 and is reflective of the different breakpoints and contribution rates paid by members within the same plans. For example, a member earning \$6,000 a month with an 8% contribution rate and a breakpoint of \$513 will contribute \$438.96 and have an effective contribution rate of 7.316% of salary. This is calculated as $(\$6,000 - \$513) \times 8\%$ divided by \$6,000.

⁴ Reflects the Total Normal Cost assuming conversion to Tier 1 benefits for members with Tier 2 service.

Normal Cost Information

PEPRA Member Contribution Rates

PEPRA members are required to contribute at least 50% of the total normal cost of their pension benefit. According to Government Code section 7522.30, State employees are excluded from this requirement except for employees of the Legislature, California State University (CSU), and the judicial branch.

The total normal cost of PEPRA members' benefits is remeasured annually as part of the actuarial valuation based on the active PEPRA population in the plan. If the total normal cost changes by more than 1% from the base total normal cost basis established for the plan, the member rate is revised to equal 50% of the new total normal cost rounded to the nearest quarter percent.

The table below shows the determination of the member contribution rates effective July 1, 2021, based on 50% of the total normal cost for each respective plan as of the June 30, 2020 valuation.

| | Basis for Current Rate | | | Rates Effective July 1, 2021 | | | |
|---|------------------------|--------------------------|-------------|------------------------------|--------|---------------|-------------|
| | Total Normal Cost | Actuarial Valuation Date | Member Rate | Total Normal Cost | Change | Change Needed | Member Rate |
| State Miscellaneous – CSU, Legislature and Judicial | 14.61% | 6/30/2017 | 7.25% | 15.03% | 0.42% | No | 7.25% |
| State POFF – CSU, Legislature and Judicial | 24.09% | 6/30/2018 | 12.00% | 24.20% | 0.11% | No | 12.00% |

Normal Cost Information

State Bargaining Units 5, 9, 16, and 18 Member Contribution Rates

Pursuant to Government Code section 20683, members of State Bargaining Units 5, 9, 16, and 18 are required to contribute at least 50% of the total annual normal cost of their pension benefit. The total normal cost is remeasured annually as part of the actuarial valuation. Initially, if the total normal cost of the category changes¹ by more than 1% from the total normal cost determined as of June 30, 2015, the new member rate shall be 50% of the new normal cost rounded to the nearest quarter percent. Subsequently, if the total normal cost of the category changes¹ by more than 1% from the basis at that time, the member rate will be revised to equal 50% of the new total normal cost rounded to the nearest quarter percent.

The table below shows the determination of the member contribution rates effective July 1, 2021 based on 50% of the total normal cost for each respective plan as of the June 30, 2020 valuation.

| | Basis for Current Rate | | | Rates Effective July 1, 2021 | | | |
|--|------------------------|--------------------------|-------------|------------------------------|---------|---------------|-------------|
| | Total Normal Cost | Actuarial Valuation Date | Member Rate | Total Normal Cost | Change | Change Needed | Member Rate |
| BU 5 | | | | | | | |
| State Miscellaneous ² | 15.48% | 6/30/2015 | 8.00% | 16.48% | 1.00% | Yes | 8.25% |
| California Highway Patrol ³ | 26.45% | 6/30/2015 | 11.50% | 29.26% | 2.81% | Yes | 12.50% |
| BU 9⁴ | | | | | | | |
| State Miscellaneous ² | 16.88% | 6/30/2018 | 8.00% | 16.48% | (0.40%) | Yes | 8.50% |
| State Industrial ² | 18.02% | 6/30/2015 | 9.00% | 17.99% | (0.03%) | No | 9.00% |
| State Safety | 23.19% | 6/30/2018 | 11.00% | 22.91% | (0.28%) | Yes | 11.50% |
| BU 16 | | | | | | | |
| State Miscellaneous ² | 15.48% | 6/30/2015 | 10.00% | 16.48% | 1.00% | No | 10.00% |
| State Industrial ² | 18.02% | 6/30/2015 | 10.00% | 17.99% | (0.03%) | No | 10.00% |
| State Safety | 23.19% | 6/30/2018 | 11.50% | 22.91% | (0.28%) | No | 11.50% |
| BU 18 | | | | | | | |
| State Miscellaneous ² | 15.48% | 6/30/2015 | 10.00% | 16.48% | 1.00% | No | 10.00% |
| State Industrial ² | 18.02% | 6/30/2015 | 10.00% | 17.99% | (0.03%) | No | 10.00% |
| State Safety | 21.73% | 6/30/2015 | 11.00% | 22.91% | 1.18% | Yes | 11.50% |

¹ Provisions by Bargaining Unit:

- BU 5: the member rate will initially be adjusted if the Total Normal Cost increases by 1% or more; subsequently, the member rate will be adjusted if the Total Normal Cost increases or decreases by 1% or more. The increase or decrease in member rate is limited to 1.00% per year.
- BU 9: the July 1, 2021 member rate reverts back to what to what it was in fiscal year 2019-20, prior to the expiration of the initial 50% of normal cost agreement.
- BU 16: the member rate will initially be adjusted if the Total Normal Cost increases by 1% or more; subsequently, the member rate will be adjusted if the Total Normal Cost increases or decreases by more than 1%.
- BU 18: the member rate will initially be adjusted if the Total Normal Cost increases by 1% or more; subsequently, the member rate will be adjusted if the Total Normal Cost increases or decreases by more than 1%.

² The member rate shown here is for a member who participates in Social Security. The member rate for members of these groups who do not participate in Social Security is currently 1% higher than the rate shown here.

³ Assuming the total normal cost does not increase or decrease by more than 1% from 29.26% in the upcoming valuations, the member rate is scheduled to increase to 13.50% effective July 1, 2022, 14.50% effective July 1, 2023, and 14.75% effective July 1, 2024.

⁴ The 50% of normal cost sharing expired June 30, 2020. Member rates reverted on July 1, 2020 to previous levels. The 50% of normal cost sharing was reinstated effective July 1, 2021.

Risk Analysis

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Projected Contribution Rates and Future Investment Return Scenarios

The State Plans contribution rates for fiscal year 2022-23 will be based on the June 30, 2021 actuarial valuation. At the time of publication of this report, key actuarial assumptions to be used in that valuation, particularly the discount rate, are not yet known. The discount rate is a key driver of pension plan cost and therefore meaningful estimates of the contribution rate for fiscal year 2022-23 and future years will be unavailable until the final discount rate is known.

The discount rate is presently undergoing review as part of the periodic Asset Liability Management (ALM) study currently in progress. Other economic assumptions and demographic assumptions are also currently undergoing review as part of the CalPERS Experience Study conducted every four years. Revised assumptions resulting from these studies will be incorporated into the June 30, 2021 actuarial valuation.

The CalPERS Funding Risk Mitigation Policy has recently triggered an automatic decrease of 0.20% in the discount rate assumption due to the investment return in fiscal year 2020-21. However, the board may choose to further alter the discount rate as a result of the current ALM process.

It is currently anticipated that both economic and demographic assumptions will be finalized by the end of the 2021 calendar year.

Once assumptions are finalized, we will perform projections of employer contribution rates for the next four fiscal years reflecting both the new assumptions as well as fiscal year 2020-21 investment return (approximately 21.3% before reduction for administrative expenses). The projections will also reflect that, all other changes aside, the employer rates will increase in fiscal year 2022-23 due to the expiration of the State's supplanting payments under Government Code section 20825.1. See Appendix D for details on the supplanting payments. As in prior years, projected employer contribution rates will be developed under various scenarios of investment return over the projection period. Results of the projections will be released in an addendum to this report.

Discount Rate Sensitivity and Government Code Section 20229

This section illustrates the sensitivity of employer contribution rates to a change in the discount rate assumption. The discount rate reflects expectations of what the markets will deliver in the future. It is calculated based on two components: expected price inflation and real rate of return. A change in either component over the long term would necessitate further evaluation of the discount rate.

For purposes of this analysis, the discount rate is changed by varying the real rate of return assumption while keeping the price inflation assumption unchanged. For information on sensitivity to changes in the underlying price inflation assumption, see the Inflation Rate Sensitivity section.

Government Code section 20229 requires the board to annually disclose contribution rates and liabilities calculated under specified scenarios, including:

- Investment return and discount rate assumptions that are 2% above and 2% below the current investment return and discount rate assumptions set by the board
- An amortization period equal to the estimated average remaining service periods (EARSP) of the employees covered by the contributions

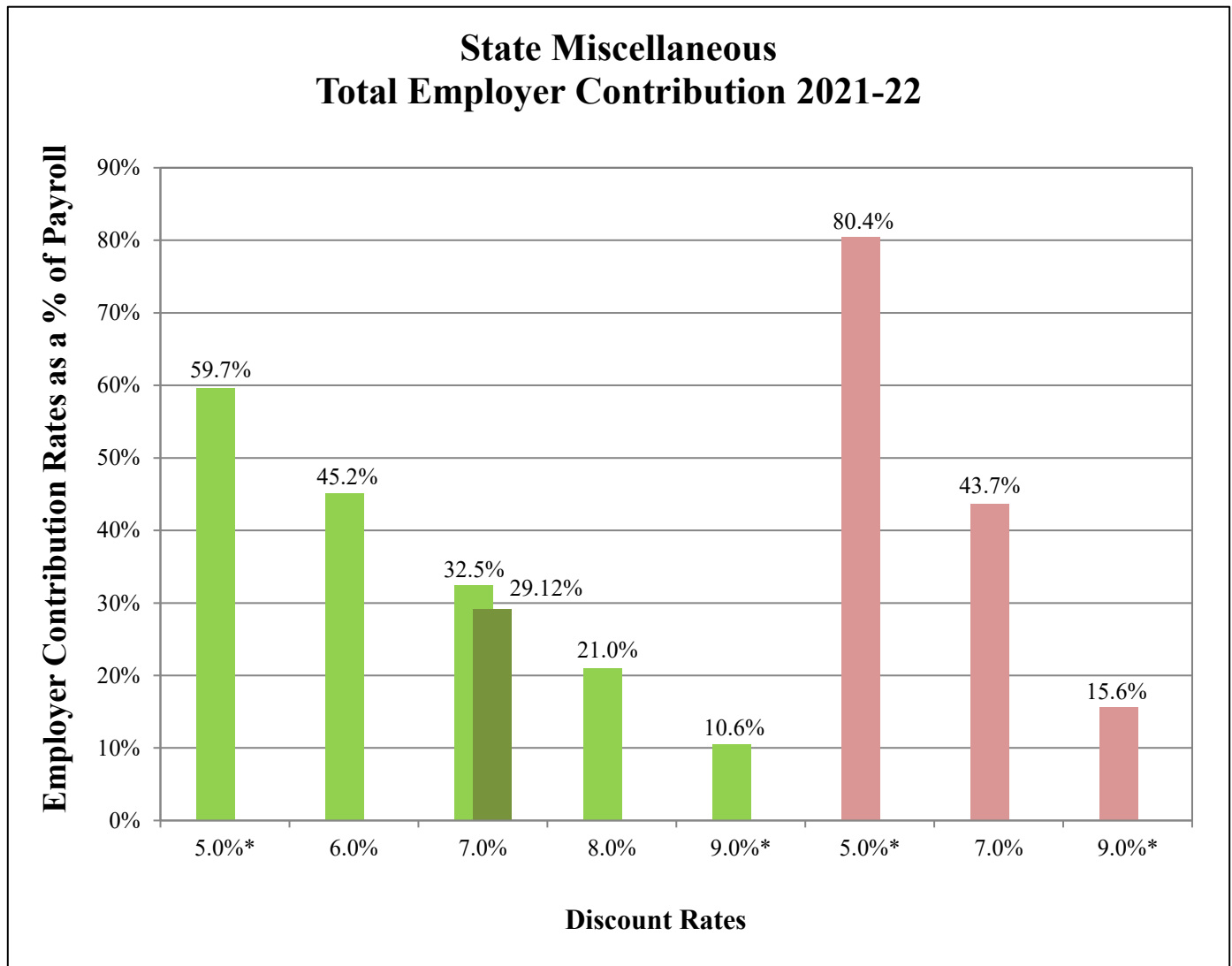
On the following pages, contribution rates and other key results are shown for the following discount rates:

- 5% (current discount rate -2%)
- 6% (current discount rate -1%)
- 7% (current discount rate)
- 8% (current discount rate +1%)
- 9% (current discount rate +2%)

The discount rates of 6% and 8% were selected as they reflect a 1% decrease or increase to the current rate of 7%. This shows the potential plan impacts if the PERF were to realize investment returns of 6% or 8% over the long term. The discount rates of 5% and 9% are shown in order to meet the requirements G.C. 20229. To further satisfy G.C. 20229, in the 5% and 9% discount rate scenarios, contribution rates for the current fiscal year are shown using both the current amortization method and amortization over the EARSP of the employees covered by the contributions.

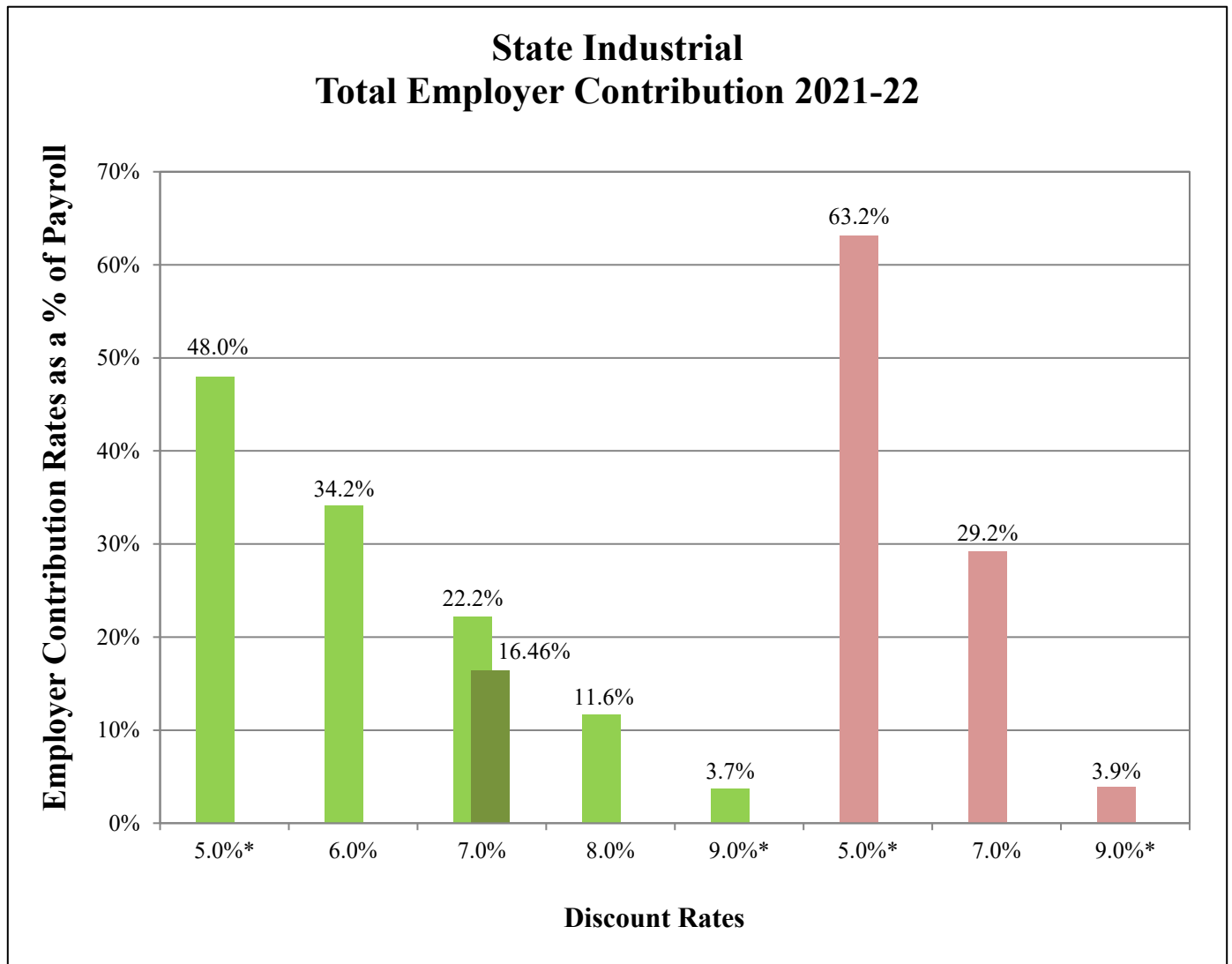
The results of the analysis are displayed in both graphical and tabular form. The reader may interpolate between the data points to estimate other data points of interest.

Discount Rate Sensitivity and Government Code Section 20229 (continued)



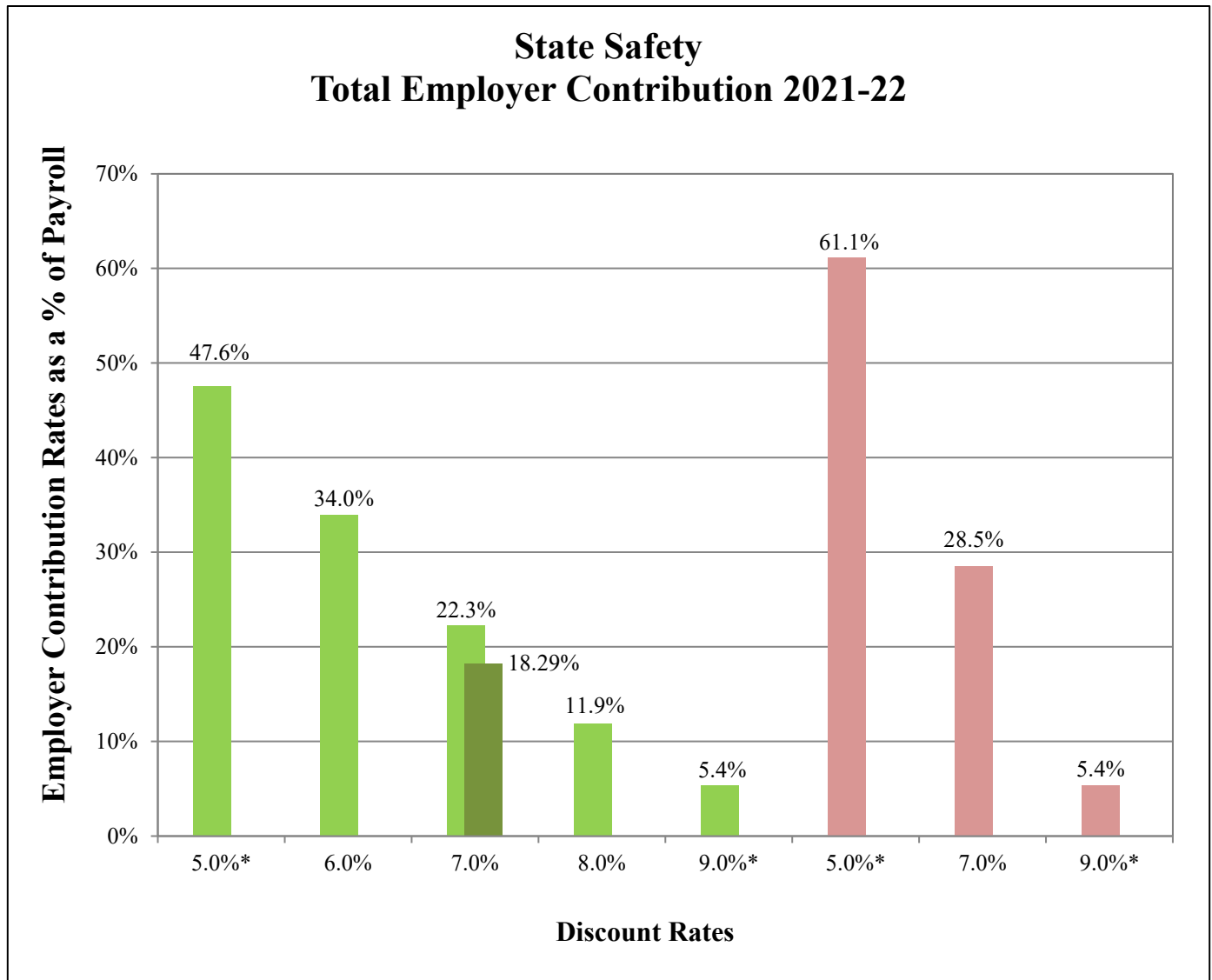
| | |
|---|---|
| | Analysis of discount rate sensitivity based on current amortization method (varies from 3 to 28 years) or normal cost if in a surplus position, excludes Section 20825.1 contribution |
| | Actuarially required contribution rate for 2021-22 adopted by the board, includes Section 20825.1 contribution |
| | Analysis of discount rate sensitivity based on amortization of UAL over EARSP (11 years) |
| * | Required by Government Code section 20229 |

Discount Rate Sensitivity and Government Code Section 20229 (continued)



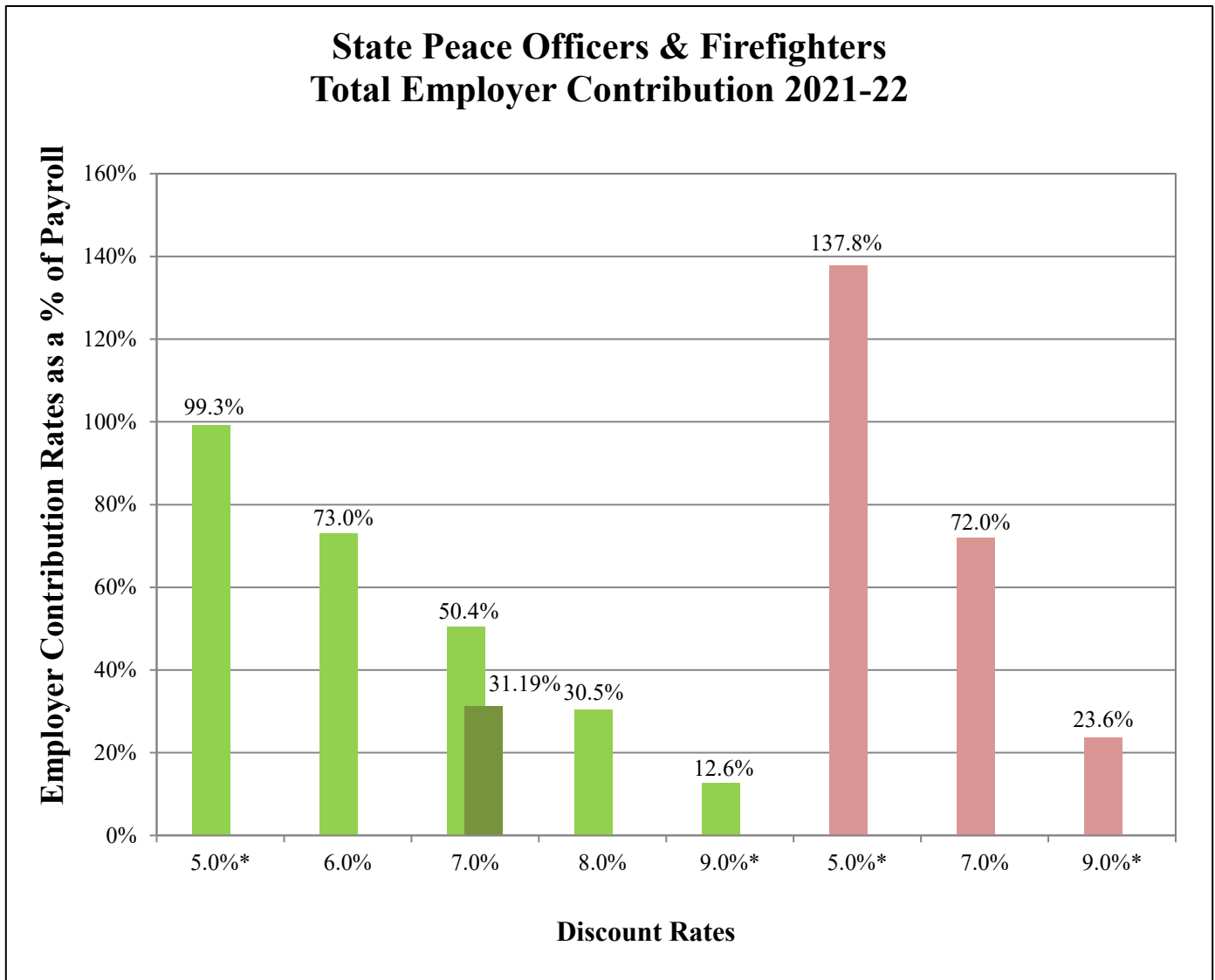
| | |
|---|---|
| | Analysis of discount rate sensitivity based on current amortization method (varies from 3 to 28 years) or normal cost if in a surplus position, excludes Section 20825.1 contribution |
| | Actuarially required contribution rate for 2021-22 adopted by the board, includes Section 20825.1 contribution |
| | Analysis of discount rate sensitivity based on amortization of UAL over EARSP (11 years) |
| * | Required by Government Code section 20229 |

Discount Rate Sensitivity and Government Code Section 20229 (continued)



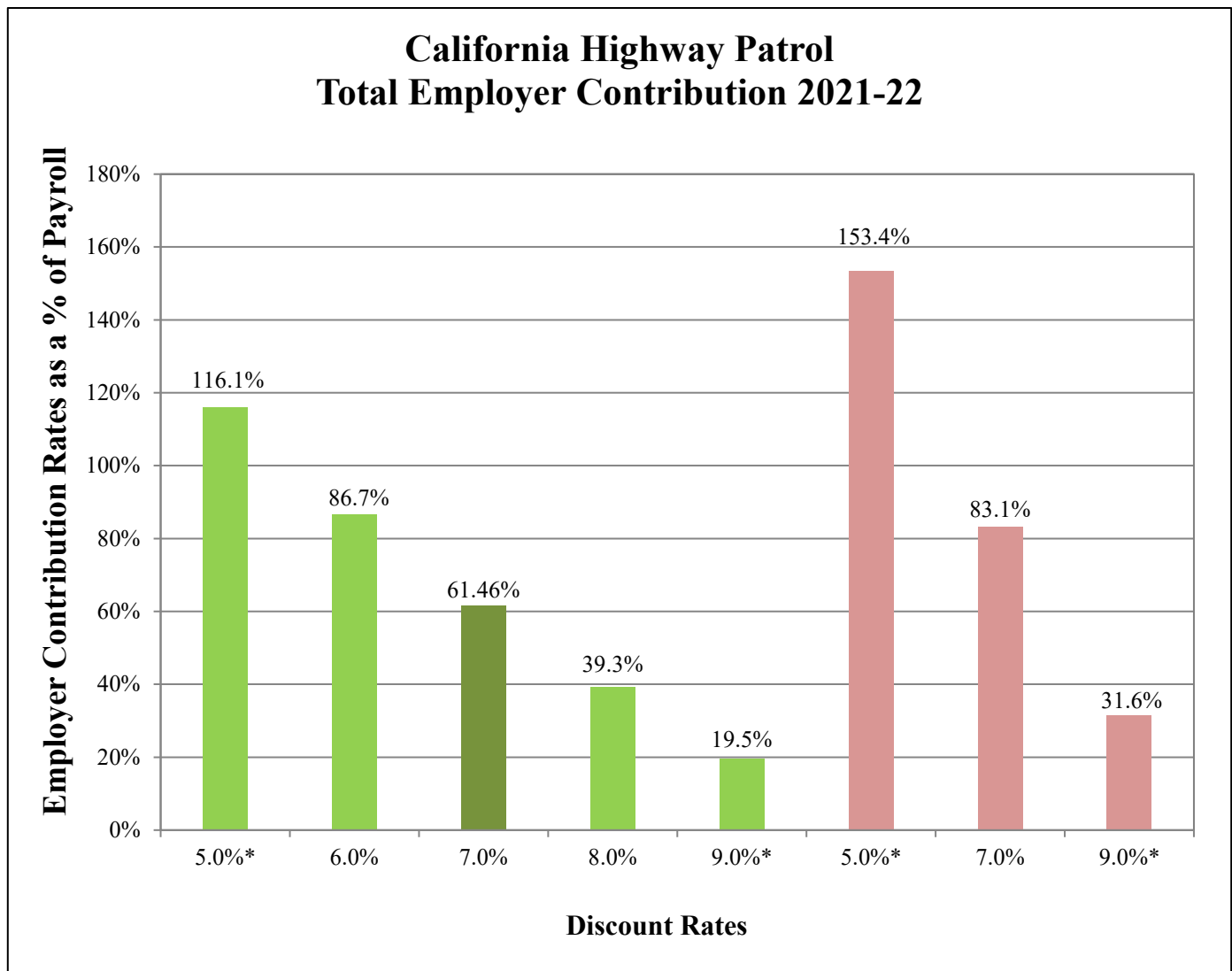
| | |
|---|---|
| | Analysis of discount rate sensitivity based on current amortization method (varies from 2 to 28 years) or normal cost if in a surplus position, excludes Section 20825.1 contribution |
| | Actuarially required contribution rate for 2021-22 adopted by the board, includes Section 20825.1 contribution |
| | Analysis of discount rate sensitivity based on amortization of UAL over EARSP (11 years) |
| * | Required by Government Code section 20229 |

Discount Rate Sensitivity and Government Code Section 20229 (continued)



| | |
|---|---|
| | Analysis of discount rate sensitivity based on current amortization method (varies from 2 to 28 years) or normal cost if in a surplus position, excludes Section 20825.1 contribution |
| | Actuarially required contribution rate for 2021-22 adopted by the board, includes Section 20825.1 contribution |
| | Analysis of discount rate sensitivity based on amortization of UAL over EARSP (11 years) |
| * | Required by Government Code section 20229 |

Discount Rate Sensitivity and Government Code Section 20229 (continued)



| | |
|---|--|
| | Analysis of discount rate sensitivity based on current amortization method (varies from 1 to 28 years) or normal cost if in a surplus position |
| | Actuarially required contribution rate for 2021-22 adopted by the board |
| | Analysis of discount rate sensitivity based on amortization of UAL over EARSP (12 years) |
| * | Required by Government Code section 20229 |

Risk Analysis

Discount Rate Sensitivity and Government Code Section 20229 (continued)

State Miscellaneous

Discount Rate Sensitivity (+/- 1% Change in Discount Rate)

| Sensitivity Analysis | | | | | | | |
|------------------------------|----------------------|----------|---------------------------|---------------------|-------------------|----------------------------|--------------|
| As of June 30, 2020 | Employer Normal Cost | UAL Rate | Group Term Life Insurance | Total Employer Rate | Accrued Liability | Unfunded Accrued Liability | Funded Ratio |
| 6.0% | 13.8% | 31.4% | 0.0% | 45.2% | 139,891,521,939 | 52,844,648,491 | 62.2% |
| 7.0% (current discount rate) | 9.4% | 23.1% | 0.0% | 32.5% | 124,694,577,728 | 37,647,704,280 | 69.8% |
| 8.0% | 6.0% | 15.0% | 0.0% | 21.0% | 111,969,357,695 | 24,922,484,247 | 77.7% |

Government Code Section 20229 (+/- 2% Change in Discount Rate)

| Current Amortization Method | | | | | | | |
|------------------------------|----------------------|----------|---------------------------|---------------------|-------------------|----------------------------|--------------|
| As of June 30, 2020 | Employer Normal Cost | UAL Rate | Group Term Life Insurance | Total Employer Rate | Accrued Liability | Unfunded Accrued Liability | Funded Ratio |
| 5.0% | 19.6% | 40.0% | 0.0% | 59.7% | 158,185,889,870 | 71,139,016,422 | 55.0% |
| 7.0% (current discount rate) | 9.4% | 23.1% | 0.0% | 32.5% | 124,694,577,728 | 37,647,704,280 | 69.8% |
| 9.0% | 3.5% | 7.1% | 0.0% | 10.6% | 101,232,320,767 | 14,185,447,319 | 86.0% |

| Amortization of Unfunded Accrued Liability over EARSP (11 Years) | | | | | | | |
|--|----------------------|----------|---------------------------|---------------------|-------------------|----------------------------|--------------|
| As of June 30, 2020 | Employer Normal Cost | UAL Rate | Group Term Life Insurance | Total Employer Rate | Accrued Liability | Unfunded Accrued Liability | Funded Ratio |
| 5.0% | 19.6% | 60.7% | 0.0% | 80.4% | 158,185,889,870 | 71,139,016,422 | 55.0% |
| 7.0% (current discount rate) | 9.4% | 34.3% | 0.0% | 43.7% | 124,694,577,728 | 37,647,704,280 | 69.8% |
| 9.0% | 3.5% | 12.1% | 0.0% | 15.6% | 101,232,320,767 | 14,185,447,319 | 86.0% |

- To illustrate the sensitivity of employer contribution rates due to different discount rate scenarios, the unfunded accrued liability rates do not include the effect of the State contribution under Section 20825.1.
- The change in accrued liability due to the change in discount rate of +/-1% or +/-2% was amortized over 20 years as a level dollar amount (except for the "Amortization of Unfunded Accrued Liability over EARSP").
- In the case of a surplus, rates were calculated to equal the employer normal cost rate. This is based on a provision in the Public Employees' Pension Reform Act of 2013 (PEPRA) that requires a minimum employer contribution rate in combination with employee contributions shall not be less than the normal cost rate.
- Numbers may not add due to rounding.

Risk Analysis

Discount Rate Sensitivity and Government Code Section 20229 (continued)

State Industrial

Discount Rate Sensitivity (+/- 1% Change in Discount Rate)

| Sensitivity Analysis | | | | | | | |
|------------------------------|----------------------|----------|---------------------------|---------------------|-------------------|----------------------------|--------------|
| As of June 30, 2020 | Employer Normal Cost | UAL Rate | Group Term Life Insurance | Total Employer Rate | Accrued Liability | Unfunded Accrued Liability | Funded Ratio |
| 6.0% | 14.3% | 19.8% | 0.0% | 34.2% | 5,943,684,506 | 1,859,889,708 | 68.7% |
| 7.0% (current discount rate) | 9.8% | 12.4% | 0.0% | 22.2% | 5,226,527,840 | 1,142,733,042 | 78.1% |
| 8.0% | 6.4% | 5.3% | 0.0% | 11.6% | 4,635,998,000 | 552,203,202 | 88.1% |

Government Code Section 20229 (+/- 2% Change in Discount Rate)

| Current Amortization Method | | | | | | | |
|------------------------------|----------------------|----------|---------------------------|---------------------|-------------------|----------------------------|--------------|
| As of June 30, 2020 | Employer Normal Cost | UAL Rate | Group Term Life Insurance | Total Employer Rate | Accrued Liability | Unfunded Accrued Liability | Funded Ratio |
| 5.0% | 20.3% | 27.7% | 0.0% | 48.0% | 6,823,059,852 | 2,739,265,054 | 59.9% |
| 7.0% (current discount rate) | 9.8% | 12.4% | 0.0% | 22.2% | 5,226,527,840 | 1,142,733,042 | 78.1% |
| 9.0% | 3.7% | 0.0% | 0.0% | 3.7% | 4,145,283,858 | 61,489,060 | 98.5% |

| Amortization of Unfunded Accrued Liability over EARSP (11 Years) | | | | | | | |
|--|----------------------|----------|---------------------------|---------------------|-------------------|----------------------------|--------------|
| As of June 30, 2020 | Employer Normal Cost | UAL Rate | Group Term Life Insurance | Total Employer Rate | Accrued Liability | Unfunded Accrued Liability | Funded Ratio |
| 5.0% | 20.3% | 42.9% | 0.0% | 63.2% | 6,823,059,852 | 2,739,265,054 | 59.9% |
| 7.0% (current discount rate) | 9.8% | 19.4% | 0.0% | 29.2% | 5,226,527,840 | 1,142,733,042 | 78.1% |
| 9.0% | 3.7% | 0.2% | 0.0% | 3.9% | 4,145,283,858 | 61,489,060 | 98.5% |

- To illustrate the sensitivity of employer contribution rates due to different discount rate scenarios, the unfunded accrued liability rates do not include the effect of the State contribution under Section 20825.1.
- The change in accrued liability due to the change in discount rate of +/-1% or +/-2% was amortized over 20 years as a level dollar amount (except for the "Amortization of Unfunded Accrued Liability over EARSP").
- In the case of a surplus, rates were calculated to equal the employer normal cost rate. This is based on a provision in the Public Employees' Pension Reform Act of 2013 (PEPRA) that requires a minimum employer contribution rate in combination with employee contributions shall not be less than the normal cost rate.
- Numbers may not add due to rounding.

Risk Analysis

Discount Rate Sensitivity and Government Code Section 20229 (continued)

State Safety

Discount Rate Sensitivity (+/- 1% Change in Discount Rate)

| Sensitivity Analysis | | | | | | | |
|------------------------------|----------------------|----------|---------------------------|---------------------|-------------------|----------------------------|--------------|
| As of June 30, 2020 | Employer Normal Cost | UAL Rate | Group Term Life Insurance | Total Employer Rate | Accrued Liability | Unfunded Accrued Liability | Funded Ratio |
| 6.0% | 17.4% | 16.6% | 0.0% | 34.0% | 17,385,506,974 | 5,135,707,530 | 70.5% |
| 7.0% (current discount rate) | 12.3% | 9.9% | 0.0% | 22.3% | 15,352,141,590 | 3,102,342,146 | 79.8% |
| 8.0% | 8.4% | 3.5% | 0.0% | 11.9% | 13,670,267,929 | 1,420,468,485 | 89.6% |

Government Code Section 20229 (+/- 2% Change in Discount Rate)

| Current Amortization Method | | | | | | | |
|------------------------------|----------------------|----------|---------------------------|---------------------|-------------------|----------------------------|--------------|
| As of June 30, 2020 | Employer Normal Cost | UAL Rate | Group Term Life Insurance | Total Employer Rate | Accrued Liability | Unfunded Accrued Liability | Funded Ratio |
| 5.0% | 23.9% | 23.6% | 0.0% | 47.6% | 19,867,033,966 | 7,617,234,522 | 61.7% |
| 7.0% (current discount rate) | 12.3% | 9.9% | 0.0% | 22.3% | 15,352,141,590 | 3,102,342,146 | 79.8% |
| 9.0% | 5.4% | 0.0% | 0.0% | 5.4% | 12,266,797,337 | 16,997,893 | 99.9% |

| Amortization of Unfunded Accrued Liability over EARSP (11 Years) | | | | | | | |
|--|----------------------|--------------------|---------------------------|---------------------|-------------------|----------------------------|--------------|
| As of June 30, 2020 | Employer Normal Cost | UAL Liability Rate | Group Term Life Insurance | Total Employer Rate | Accrued Liability | Unfunded Accrued Liability | Funded Ratio |
| 5.0% | 23.9% | 37.2% | 0.0% | 61.1% | 19,867,033,966 | 7,617,234,522 | 61.7% |
| 7.0% (current discount rate) | 12.3% | 16.2% | 0.0% | 28.5% | 15,352,141,590 | 3,102,342,146 | 79.8% |
| 9.0% | 5.4% | 0.0% | 0.0% | 5.4% | 12,266,797,337 | 16,997,893 | 99.9% |

- To illustrate the sensitivity of employer contribution rates due to different discount rate scenarios, the unfunded accrued liability rates do not include the effect of the State contribution under Section 20825.1.
- The change in accrued liability due to the change in discount rate of +/-1% or +/-2% was amortized over 20 years as a level dollar amount (except for the "Amortization of Unfunded Accrued Liability over EARSP").
- In the case of a surplus, rates were calculated to equal the employer normal cost rate. This is based on a provision in the Public Employees' Pension Reform Act of 2013 (PEPRA) that requires a minimum employer contribution rate in combination with employee contributions shall not be less than the normal cost rate.
- Numbers may not add due to rounding.

Risk Analysis

Discount Rate Sensitivity and Government Code Section 20229 (continued)

State Peace Officers and Firefighters

Discount Rate Sensitivity (+/- 1% Change in Discount Rate)

| Sensitivity Analysis | | | | | | | |
|------------------------------|----------------------|----------|---------------------------|---------------------|-------------------|----------------------------|--------------|
| As of June 30, 2020 | Employer Normal Cost | UAL Rate | Group Term Life Insurance | Total Employer Rate | Accrued Liability | Unfunded Accrued Liability | Funded Ratio |
| 6.0% | 25.5% | 47.5% | 0.0% | 73.0% | 61,592,735,463 | 23,265,598,868 | 62.2% |
| 7.0% (current discount rate) | 17.6% | 32.8% | 0.0% | 50.4% | 54,101,543,037 | 15,774,406,442 | 70.8% |
| 8.0% | 11.7% | 18.9% | 0.0% | 30.5% | 47,958,832,524 | 9,631,695,929 | 79.9% |

Government Code Section 20229 (+/- 2% Change in Discount Rate)

| Current Amortization Method | | | | | | | |
|------------------------------|----------------------|----------|---------------------------|---------------------|-------------------|----------------------------|--------------|
| As of June 30, 2020 | Employer Normal Cost | UAL Rate | Group Term Life Insurance | Total Employer Rate | Accrued Liability | Unfunded Accrued Liability | Funded Ratio |
| 5.0% | 36.1% | 63.2% | 0.0% | 99.3% | 70,828,460,161 | 32,501,323,566 | 54.1% |
| 7.0% (current discount rate) | 17.6% | 32.8% | 0.0% | 50.4% | 54,101,543,037 | 15,774,406,442 | 70.8% |
| 9.0% | 7.1% | 5.5% | 0.0% | 12.6% | 42,870,007,462 | 4,542,870,867 | 89.4% |

| Amortization of Unfunded Accrued Liability over EARSP (11 Years) | | | | | | | |
|--|----------------------|----------|---------------------------|---------------------|-------------------|----------------------------|--------------|
| As of June 30, 2020 | Employer Normal Cost | UAL Rate | Group Term Life Insurance | Total Employer Rate | Accrued Liability | Unfunded Accrued Liability | Funded Ratio |
| 5.0% | 36.1% | 101.7% | 0.0% | 137.8% | 70,828,460,161 | 32,501,323,566 | 54.1% |
| 7.0% (current discount rate) | 17.6% | 54.4% | 0.0% | 72.0% | 54,101,543,037 | 15,774,406,442 | 70.8% |
| 9.0% | 7.1% | 16.5% | 0.0% | 23.6% | 42,870,007,462 | 4,542,870,867 | 89.4% |

- To illustrate the sensitivity of employer contribution rates due to different discount rate scenarios, the unfunded accrued liability rates do not include the effect of the State contribution under Section 20825.1.
- The change in accrued liability due to the change in discount rate of +/-1% or +/-2% was amortized over 20 years as a level dollar amount (except for the "Amortization of Unfunded Accrued Liability over EARSP").
- In the case of a surplus, rates were calculated to equal the employer normal cost rate. This is based on a provision in the Public Employees' Pension Reform Act of 2013 (PEPRA) that requires a minimum employer contribution rate in combination with employee contributions shall not be less than the normal cost rate.
- Numbers may not add due to rounding.

Risk Analysis

Discount Rate Sensitivity and Government Code Section 20229 (continued)

California Highway Patrol

Discount Rate Sensitivity (+/- 1% Change in Discount Rate)

| Sensitivity Analysis | | | | | | | |
|------------------------------|----------------------|----------|---------------------------|---------------------|-------------------|----------------------------|--------------|
| As of June 30, 2020 | Employer Normal Cost | UAL Rate | Group Term Life Insurance | Total Employer Rate | Accrued Liability | Unfunded Accrued Liability | Funded Ratio |
| 6.0% | 26.4% | 60.3% | 0.1% | 86.7% | 16,869,938,390 | 7,368,577,373 | 56.3% |
| 7.0% (current discount rate) | 17.7% | 43.7% | 0.1% | 61.5% | 14,785,866,497 | 5,284,505,480 | 64.3% |
| 8.0% | 11.2% | 28.1% | 0.1% | 39.3% | 13,080,735,803 | 3,579,374,786 | 72.6% |

Government Code Section 20229 (+/- 2% Change in Discount Rate)

| Current Amortization Method | | | | | | | |
|------------------------------|----------------------|----------|---------------------------|---------------------|-------------------|----------------------------|--------------|
| As of June 30, 2020 | Employer Normal Cost | UAL Rate | Group Term Life Insurance | Total Employer Rate | Accrued Liability | Unfunded Accrued Liability | Funded Ratio |
| 5.0% | 38.0% | 78.0% | 0.1% | 116.1% | 19,445,787,492 | 9,944,426,475 | 48.9% |
| 7.0% (current discount rate) | 17.7% | 43.7% | 0.1% | 61.5% | 14,785,866,497 | 5,284,505,480 | 64.3% |
| 9.0% | 6.3% | 13.1% | 0.1% | 19.5% | 11,670,961,109 | 2,169,600,092 | 81.4% |

| Amortization of Unfunded Accrued Liability over EARSP (12 Years) | | | | | | | |
|--|----------------------|----------|---------------------------|---------------------|-------------------|----------------------------|--------------|
| As of June 30, 2020 | Employer Normal Cost | UAL Rate | Group Term Life Insurance | Total Employer Rate | Accrued Liability | Unfunded Accrued Liability | Funded Ratio |
| 5.0% | 38.0% | 115.3% | 0.1% | 153.4% | 19,445,787,492 | 9,944,426,475 | 48.9% |
| 7.0% (current discount rate) | 17.7% | 65.4% | 0.1% | 83.1% | 14,785,866,497 | 5,284,505,480 | 64.3% |
| 9.0% | 6.3% | 25.2% | 0.1% | 31.6% | 11,670,961,109 | 2,169,600,092 | 81.4% |

- The change in accrued liability due to the change in discount rate of +/-1% or +/-2% was amortized over 20 years as a level dollar amount (except for the "Amortization of Unfunded Accrued Liability over EARSP").
- In the case of a surplus, rates were calculated to equal the employer normal cost rate. This is based on a provision in the Public Employees' Pension Reform Act of 2013 (PEPRA) that requires a minimum employer contribution rate in combination with employee contributions shall not be less than the normal cost rate.
- Numbers may not add due to rounding.

Risk Analysis

Mortality Rate Sensitivity

The following tables show key valuation results under two alternate longevity scenarios, namely assuming rates of mortality are 10% lower or 10% higher than the current mortality assumption. This type of analysis highlights the impact on the plans of improving or worsening mortality over the long term.

State Miscellaneous

| As of June 30, 2020 | Accrued Liability | Market Value of Assets | Unfunded Accrued Liability/(Surplus) | Funded Ratio | Total Normal Cost |
|----------------------------|-------------------|------------------------|--------------------------------------|--------------|-------------------|
| 10% lower mortality rates | \$127,561,396,740 | \$87,046,873,448 | \$40,514,523,292 | 68.2% | 16.77% |
| Current mortality rates | 124,694,577,728 | 87,046,873,448 | 37,647,704,280 | 69.8% | 16.48% |
| 10% higher mortality rates | 122,065,859,981 | 87,046,873,448 | 35,018,986,533 | 71.3% | 16.21% |

State Industrial

| As of June 30, 2020 | Accrued Liability | Market Value of Assets | Unfunded Accrued Liability/(Surplus) | Funded Ratio | Total Normal Cost |
|----------------------------|-------------------|------------------------|--------------------------------------|--------------|-------------------|
| 10% lower mortality rates | \$5,332,843,884 | \$4,083,794,798 | \$1,249,049,086 | 76.6% | 18.29% |
| Current mortality rates | 5,226,527,840 | 4,083,794,798 | 1,142,733,042 | 78.1% | 17.99% |
| 10% higher mortality rates | 5,128,584,689 | 4,083,794,798 | 1,044,789,891 | 79.6% | 17.71% |

State Safety

| As of June 30, 2020 | Accrued Liability | Market Value of Assets | Unfunded Accrued Liability/(Surplus) | Funded Ratio | Total Normal Cost |
|----------------------------|-------------------|------------------------|--------------------------------------|--------------|-------------------|
| 10% lower mortality rates | \$15,656,850,628 | \$12,249,799,444 | \$3,407,051,184 | 78.2% | 23.25% |
| Current mortality rates | 15,352,141,590 | 12,249,799,444 | 3,102,342,146 | 79.8% | 22.91% |
| 10% higher mortality rates | 15,071,400,095 | 12,249,799,444 | 2,821,600,651 | 81.3% | 22.59% |

State Peace Officers & Firefighters

| As of June 30, 2020 | Accrued Liability | Market Value of Assets | Unfunded Accrued Liability/(Surplus) | Funded Ratio | Total Normal Cost |
|----------------------------|-------------------|------------------------|--------------------------------------|--------------|-------------------|
| 10% lower mortality rates | \$54,969,231,894 | \$38,327,136,595 | \$16,642,095,299 | 69.7% | 29.59% |
| Current mortality rates | 54,101,543,037 | 38,327,136,595 | 15,774,406,442 | 70.8% | 29.23% |
| 10% higher mortality rates | 53,296,835,613 | 38,327,136,595 | 14,969,699,018 | 71.9% | 28.90% |

California Highway Patrol

| As of June 30, 2020 | Accrued Liability | Market Value of Assets | Unfunded Accrued Liability/(Surplus) | Funded Ratio | Total Normal Cost |
|----------------------------|-------------------|------------------------|--------------------------------------|--------------|-------------------|
| 10% lower mortality rates | \$15,024,500,571 | \$9,501,361,017 | \$5,523,139,554 | 63.2% | 29.62% |
| Current mortality rates | 14,785,866,497 | 9,501,361,017 | 5,284,505,480 | 64.3% | 29.26% |
| 10% higher mortality rates | 14,564,865,184 | 9,501,361,017 | 5,063,504,167 | 65.2% | 28.93% |

Risk Analysis

Inflation Rate Sensitivity

The following tables show key valuation results under two alternate inflation rate scenarios, namely assuming the price inflation rate is 1% lower or 1% higher than the current assumption of 2.5%. For this analysis, the real rate of return is held constant at the current assumption of 4.5%. This type of analysis highlights the impact on the plans of higher or lower inflation over the long term.

State Miscellaneous

| As of June 30, 2020 | Accrued Liability | Market Value of Assets | Unfunded Accrued Liability/(Surplus) | Funded Ratio | Total Normal Cost |
|------------------------|-------------------|------------------------|--------------------------------------|--------------|-------------------|
| -1% inflation rate | \$130,849,843,470 | \$87,046,873,448 | \$43,802,970,022 | 66.5% | 17.62% |
| Current inflation rate | 124,694,577,728 | 87,046,873,448 | 37,647,704,280 | 69.8% | 16.48% |
| +1% inflation rate | 115,236,894,687 | 87,046,873,448 | 28,190,021,239 | 75.5% | 14.98% |

State Industrial

| As of June 30, 2020 | Accrued Liability | Market Value of Assets | Unfunded Accrued Liability/(Surplus) | Funded Ratio | Total Normal Cost |
|------------------------|-------------------|------------------------|--------------------------------------|--------------|-------------------|
| -1% inflation rate | \$5,505,567,856 | \$4,083,794,798 | \$1,421,773,058 | 74.2% | 19.28% |
| Current inflation rate | 5,226,527,840 | 4,083,794,798 | 1,142,733,042 | 78.1% | 17.99% |
| +1% inflation rate | 4,810,788,553 | 4,083,794,798 | 726,993,755 | 84.9% | 16.31% |

State Safety

| As of June 30, 2020 | Accrued Liability | Market Value of Assets | Unfunded Accrued Liability/(Surplus) | Funded Ratio | Total Normal Cost |
|------------------------|-------------------|------------------------|--------------------------------------|--------------|-------------------|
| -1% inflation rate | \$16,183,183,796 | \$12,249,799,444 | \$3,933,384,352 | 75.7% | 24.53% |
| Current inflation rate | 15,352,141,590 | 12,249,799,444 | 3,102,342,146 | 79.8% | 22.91% |
| +1% inflation rate | 14,130,568,326 | 12,249,799,444 | 1,880,768,882 | 86.7% | 20.79% |

State Peace Officers & Firefighters

| As of June 30, 2020 | Accrued Liability | Market Value of Assets | Unfunded Accrued Liability/(Surplus) | Funded Ratio | Total Normal Cost |
|------------------------|-------------------|------------------------|--------------------------------------|--------------|-------------------|
| -1% inflation rate | \$57,232,381,476 | \$38,327,136,595 | \$18,905,244,881 | 67.0% | 31.42% |
| Current inflation rate | 54,101,543,037 | 38,327,136,595 | 15,774,406,442 | 70.8% | 29.23% |
| +1% inflation rate | 49,652,759,267 | 38,327,136,595 | 11,325,622,672 | 77.2% | 26.46% |

California Highway Patrol

| As of June 30, 2020 | Accrued Liability | Market Value of Assets | Unfunded Accrued Liability/(Surplus) | Funded Ratio | Total Normal Cost |
|------------------------|-------------------|------------------------|--------------------------------------|--------------|-------------------|
| -1% inflation rate | \$15,640,837,249 | \$9,501,361,017 | \$6,139,476,232 | 60.7% | 31.40% |
| Current inflation rate | 14,785,866,497 | 9,501,361,017 | 5,284,505,480 | 64.3% | 29.26% |
| +1% inflation rate | 13,586,513,054 | 9,501,361,017 | 4,085,152,037 | 69.9% | 26.52% |

Risk Analysis

Maturity Measures

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

One measure of a plan's maturity is the ratio of retiree liability to total liability. A pension plan in its infancy will have a very low ratio of retiree liability to total liability. As the plan matures, the ratio increases. A mature plan will often have a ratio above 60-65 percent. For both CalPERS and many other retirement systems in the United States, these ratios have been steadily increasing in recent years.

Ratio of Retiree Accrued Liability to Total Accrued Liability

| Plan | June 30, 2019 | | | June 30, 2020 | | |
|-------------------------------------|---------------------------|-------------------------|-------|---------------------------|-------------------------|-------|
| | Retiree Accrued Liability | Total Accrued Liability | Ratio | Retiree Accrued Liability | Total Accrued Liability | Ratio |
| State Miscellaneous | \$71,929,750,290 | \$120,101,465,581 | 59.9% | \$75,276,504,570 | \$124,694,577,728 | 60.4% |
| State Industrial | 2,548,612,377 | 4,945,680,604 | 51.5% | 2,730,544,718 | 5,226,527,840 | 52.2% |
| State Safety | 8,015,373,155 | 14,482,873,130 | 55.3% | 8,591,498,117 | 15,352,141,590 | 56.0% |
| State Peace Officers & Firefighters | 32,045,744,847 | 51,218,664,150 | 62.6% | 34,060,130,310 | 54,101,543,037 | 63.0% |
| California Highway Patrol | 8,633,928,267 | 14,087,273,224 | 61.3% | 9,169,257,200 | 14,785,866,497 | 62.0% |

Another measure of maturity is the ratio of actives to retirees, also called the Support Ratio. A pension plan in its infancy will have a 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.

Support Ratio

| Plan | June 30, 2019 | | | June 30, 2020 | | |
|-------------------------------------|-------------------|--------------------|---------------|-------------------|--------------------|---------------|
| | Number of Actives | Number of Retirees | Support Ratio | Number of Actives | Number of Retirees | Support Ratio |
| State Miscellaneous | 176,842 | 197,691 | 89.5% | 178,628 | 202,078 | 88.4% |
| State Industrial | 11,795 | 15,345 | 76.9% | 11,899 | 16,050 | 74.1% |
| State Safety | 28,953 | 26,866 | 107.8% | 29,307 | 27,905 | 105.0% |
| State Peace Officers & Firefighters | 41,144 | 41,657 | 98.8% | 41,787 | 43,525 | 96.0% |
| California Highway Patrol | 7,267 | 9,301 | 78.1% | 7,027 | 9,519 | 73.8% |

Volatility ratios, presented in the following section, are another measure for assessing plan maturity.

Risk Analysis

Volatility Ratios

The actuarial calculations supplied in this communication are based on a number of assumptions about long-term demographic and economic behavior. Unless these assumptions (e.g., terminations, deaths, disabilities, retirements, salary growth, and 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 the employer's rates from one year to the next. Therefore, the rates will inevitably fluctuate, especially due to fluctuations in investment return.

Asset Volatility Ratio

Plans that have higher asset-to-payroll ratios produce more volatile employer rates due to investment return. For example, a plan with an asset-to-payroll ratio of 8 may experience twice the contribution volatility due to investment return volatility than a plan with an asset-to-payroll ratio of 4. Shown below is the asset volatility ratio, a measure of the plan's current rate volatility. It should be noted that this ratio is a current measure. It increases over time but generally tends to stabilize as the plan matures.

Liability Volatility Ratio

Plans that have higher liability-to-payroll ratios produce more volatile employer rates due to investment return and changes in liability. For example, a plan with a liability-to-payroll ratio of 12 is expected to have twice the contribution volatility of a plan with a liability-to-payroll ratio of 6. The liability volatility ratio is also included in the table below. It should be noted that this ratio indicates a longer-term potential for contribution volatility. The asset volatility ratio, described above, will tend to move closer to the liability volatility ratio as the plan matures.

Rate Volatility

| | Market Value of Assets without Receivables | Annual Covered Payroll | Asset Volatility Ratio | Accrued Liability | Liability Volatility Ratio |
|-------------------------------------|--|---------------------------|------------------------|-------------------|-------------------------------|
| Plan | (1) | (2) | (1)÷(2) | (3) | (3)÷(2) |
| State Miscellaneous | \$86,845,126,240 | \$13,532,810,988 | 6.4 | \$124,694,577,728 | 9.2 |
| State Industrial | 4,071,279,528 | 765,383,759 | 5.3 | 5,226,527,840 | 6.8 |
| State Safety | 12,236,898,599 | 2,467,855,569 | 5.0 | 15,352,141,590 | 6.2 |
| State Peace Officers & Firefighters | 38,266,393,455 | 3,834,616,755 | 10.0 | 54,101,543,037 | 14.1 |
| California Highway Patrol | 9,492,260,084 | 925,937,291 | 10.3 | 14,785,866,497 | 16.0 |

Appendices

A-1 Appendix A – Statement of Actuarial Methods and Assumptions

B-1 Appendix B – Principal Plan Provisions

C-1 Appendix C – Participant Data

D-1 Appendix D – Employer Rate for Fiscal Years 2020-21 and 2021-22 Adjusted for
Supplanting Payments

E-1 Appendix E – Glossary of Actuarial Terms

Appendix A – Statement of Actuarial Methods and Assumptions

Actuarial Data

As stated in the Actuarial Certification, the data, which serves as the basis for this valuation, has been obtained from various CalPERS databases. We have reviewed the valuation data and believe that it is reasonable and appropriate in aggregate. We are unaware of any potential data issues that would have a material effect on the results of this valuation, except that data does not always contain the latest salary information for 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 when they do occur, they generally do not have a material impact on the employer contribution rates.

Actuarial Methods

Actuarial Cost Method

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

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

CalPERS uses an in-house proprietary actuarial model for calculating plan costs. We believe this model is fit for its intended purpose and meets all applicable Actuarial Standards of Practice. Furthermore, the actuarial results of our model are independently confirmed periodically by outside auditing actuaries. The actuarial assumptions used are internally consistent and the generated results reasonable. A further refinement to the actuarial model will be the introduction of generational mortality in the June 30, 2021 actuarial valuation.

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 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.

Appendix A – Statement of Actuarial Methods and Assumptions

Actuarial Methods (continued)

Prior Policy (Bases Established 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 will be amortized over a period of five years. Bases established prior to June 30, 2013 may be amortized differently. A summary is provided in the following table:

| | Source | | | | |
|---------------------|-------------|--------------------|---------------------------------|-------------------|---------------------|
| | (Gain)/Loss | | Assumption/ Method Change | Benefit Change | Golden Handshake |
| | Investment | Non- investment | | | |
| Amortization Period | 30 Years | 30 Years | 20 Years | 20 Years | 5 Years |
| Escalation Rate | | | | | |
| - Active Plans | 2.75% | 2.75% | 2.75% | 2.75% | 2.75% |
| - Inactive Plans | 0% | 0% | 0% | 0% | 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 percent, 40 percent, 60 percent, and 80 percent 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 | | Assumption/ Method Change | Benefit Change | Golden Handshake |
| | Investment | Non- investment | | | |
| Amortization Period | 20 Years | 20 Years | 20 Years | 20 Years | 5 Years |
| Escalation Rate | 0% | 0% | 0% | 0% | 0% |
| Ramp Up | 5 | 0 | 0 | 0 | 0 |
| Ramp Down | 0 | 0 | 0 | 0 | 0 |

Appendix A – Statement of Actuarial Methods and Assumptions

Actuarial Methods (continued)

Exceptions for Inconsistencies

An exception to the amortization rules above is used whenever their application results in inconsistencies. In these cases, a “fresh start” approach is used. This means that the current unfunded accrued 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 accrued liability; or
- When the payment would completely amortize the total unfunded accrued 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.

By State statute for California Highway Patrol only, a portion of the assets in excess of the Entry Age Actuarial Accrued Liability can be applied as a direct offset to required employer and employee contributions.

The 1959 Survivor Program valuation is not provided in this report. A separate report for that program is available.

The Term Insurance Method is used for the State Group Term Life Insurance Program. The required contribution for the coming fiscal year is the difference between the reserves for that benefit and one and one-half times the expected benefit payments, but not less than zero.

Purchasing Power Protection Act (PPPA) Method

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

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

Internal Revenue Code Section 415

The valuation reflects the limitations on benefits imposed by Internal Revenue Code section 415. The current valuation is based on the IRC 415(b) dollar limit for 2020 of \$230,000, up from the 2019 limit of \$225,000 used in the prior valuation.

Internal Revenue Code Section 401(a)(17)

The valuation reflects the limitations on pensionable compensation imposed by Internal Revenue Code section 401(a)(17). The current valuation is based on the IRC 401(a)(17) limit for 2020 of \$285,000, up from the 2019 limit of \$280,000 used in the prior valuation.

Appendix A – Statement of Actuarial Methods and Assumptions

Actuarial Methods (continued)

PEPRA Assumptions

The Public Employees' Pension Reform Act of 2013 (PEPRA) mandated new benefit formulas and member contributions for members hired on or after January 1, 2013, as defined by PEPRA. Different assumptions for PEPRA members are disclosed below.

Asset Valuation Method

Market value of assets plus accounts receivable.

It is the policy of the board to use professionally accepted amortization methods to eliminate a surplus or an unfunded accrued liability in a manner that maintains benefit security for the members of the System while minimizing substantial variations in required employer contribution rates. As stated in the "Amortization of Unfunded Actuarial Accrued Liability" section above, CalPERS' policy in effect for this valuation amortizes all actuarial investment gains and losses over a fixed 20-year period. The increase or decrease in the rate is then spread directly over a 5-year period. This method is referred to as "direct rate smoothing." The direct rate smoothing method is equivalent to a method using a 5-year asset smoothing period with no actuarial value of asset corridor and a 15-year amortization period for gains and losses.

Accounts Receivable

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

Actuarial Assumptions

In 2017, CalPERS completed its most recent asset liability management study incorporating actuarial assumptions and strategic asset allocation. In December 2017, the board adopted relatively modest changes to the asset allocation that reduced 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 7.0%. The board also approved several changes to the demographic assumptions that more closely aligned with actual experience. These new actuarial assumptions were first used in the June 30, 2017 valuation to set the fiscal year 2018-19 contribution for the State plans.

On December 21, 2016, the board lowered the discount rate from 7.5% to 7.0% using a three-year phase-in beginning with the June 30, 2016 actuarial valuations. The required employer contributions for fiscal year 2021-22 determined in this valuation were calculated using a discount rate of 7.0%. The decision to reduce the discount rate was primarily based on reduced capital market assumptions provided by external investment consultants and CalPERS investment staff. The specific decision adopted by the board reflected recommendations from CalPERS staff and additional input from employer and employee stakeholder groups. Based on the investment allocation adopted by the board and capital market assumptions, the reduced discount rate schedule provides a more realistic assumption for the long-term investment return of the fund.

Notwithstanding the board's decision to phase into a 7.0% discount rate, subsequent analysis of the expected investment return of CalPERS assets or changes to the investment allocation may result in a further change to the discount rate.

For more details and additional rationale for the selection of the actuarial assumptions, please refer to the CalPERS Experience Study and Review of Actuarial Assumptions report from December 2017 that can be found on the CalPERS website under "Forms and Publications." Click on "View All" and search for "Experience Study."

All actuarial assumptions used in this valuation represent estimates of future experience rather than observations of estimates inherent in market data.

Appendix A – Statement of Actuarial Methods and Assumptions

Actuarial Assumptions (continued)

Economic Assumptions

Discount Rate

The discount rate assumption adopted by the board is 7.0% compounded annually (net of investment and administrative expenses).

Salary Growth

Annual increases vary by entry age and duration of service. A sample of assumed increases is shown below. Wage inflation assumption in the valuation year (2.75% for 2020) is added to these factors for total salary growth.

State Miscellaneous Tier 1 & Tier 2

| Duration of Service | Entry Age | | |
|---------------------|-----------|------|------|
| | 20 | 30 | 40 |
| 0 | 6.4% | 5.6% | 4.4% |
| 3 | 5.3% | 4.4% | 3.1% |
| 5 | 4.3% | 3.6% | 2.4% |
| 10 | 2.3% | 1.8% | 1.2% |
| 15 | 1.5% | 1.2% | 0.8% |
| 20 | 1.0% | 0.9% | 0.6% |
| 25 | 0.7% | 0.6% | 0.4% |
| 30 | 0.5% | 0.4% | 0.3% |

State Industrial

| Duration of Service | Entry Age | | |
|---------------------|-----------|------|------|
| | 20 | 30 | 40 |
| 0 | 7.3% | 7.0% | 6.4% |
| 3 | 5.1% | 4.7% | 3.9% |
| 5 | 4.0% | 3.6% | 2.8% |
| 10 | 2.7% | 2.2% | 1.4% |
| 15 | 1.8% | 1.5% | 1.1% |
| 20 | 1.2% | 1.0% | 0.8% |
| 25 | 0.8% | 0.7% | 0.6% |
| 30 | 0.5% | 0.5% | 0.4% |

State Safety, POFF and CHP

| Duration of Service | State Safety | POFF | CHP |
|---------------------|--------------|-------|------|
| 0 | 5.0% | 14.7% | 6.8% |
| 3 | 3.1% | 6.7% | 4.0% |
| 5 | 2.1% | 4.0% | 2.4% |
| 10 | 0.8% | 1.2% | 1.0% |
| 15 | 0.7% | 0.5% | 1.0% |
| 20 | 0.6% | 1.4% | 1.8% |
| 25 | 0.5% | 1.5% | 2.0% |
| 30 | 0.5% | 1.0% | 1.0% |

Appendix A – Statement of Actuarial Methods and Assumptions

Economic Assumptions (continued)

Overall Payroll Growth

2.75% compounded annually (used in projecting the payroll over which unfunded accrued liability is amortized for amortization bases established prior to June 30, 2019). For the State Miscellaneous plan, the payroll of Tier 2 members is assumed to decrease in accordance with actuarial assumptions based on the assumption that all new State Miscellaneous entrants will elect Tier 1. The payroll of Tier 1 members is assumed to grow at the rate necessary for the overall payroll of the State Miscellaneous plan to grow annually at a rate of 2.75%.

Inflation

2.50% compounded annually.

Appendix A – Statement of Actuarial Methods and Assumptions

Demographic Assumptions

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.

| Age | Healthy Recipients | | Non-Industrial Disabled (Not Job-Related) | | Industrial Disabled (Job-Related) | |
|-----|--------------------|---------|--|---------|--------------------------------------|---------|
| | Male | Female | Male | Female | Male | Female |
| 50 | 0.00372 | 0.00346 | 0.01183 | 0.01083 | 0.00372 | 0.00346 |
| 55 | 0.00437 | 0.00410 | 0.01613 | 0.01178 | 0.00437 | 0.00410 |
| 60 | 0.00671 | 0.00476 | 0.02166 | 0.01404 | 0.00671 | 0.00476 |
| 65 | 0.00928 | 0.00637 | 0.02733 | 0.01757 | 0.01113 | 0.00765 |
| 70 | 0.01339 | 0.00926 | 0.03358 | 0.02183 | 0.01607 | 0.01111 |
| 75 | 0.02316 | 0.01635 | 0.04277 | 0.02969 | 0.02779 | 0.01962 |
| 80 | 0.03977 | 0.03007 | 0.06272 | 0.04641 | 0.04773 | 0.03609 |
| 85 | 0.07122 | 0.05418 | 0.09793 | 0.07847 | 0.08547 | 0.06501 |
| 90 | 0.13044 | 0.10089 | 0.14616 | 0.13220 | 0.14348 | 0.11098 |
| 95 | 0.21658 | 0.17698 | 0.21658 | 0.21015 | 0.21658 | 0.17698 |
| 100 | 0.32222 | 0.28151 | 0.32222 | 0.32226 | 0.32222 | 0.28151 |
| 105 | 0.46691 | 0.43491 | 0.46691 | 0.43491 | 0.46691 | 0.43491 |
| 110 | 1.00000 | 1.00000 | 1.00000 | 1.00000 | 1.00000 | 1.00000 |

The post-retirement mortality rates above include 15 years of projected ongoing mortality improvement using 90% of Scale MP-2016 published by the Society of Actuaries.

Marital Status

For active members, it is assumed the following are married upon retirement.

| Plan | Percent Married |
|-------------------------------------|-----------------|
| State Miscellaneous | 70% |
| State Industrial | 70% |
| State Safety | 70% |
| State Peace Officers & Firefighters | 80% |
| California Highway Patrol | 90% |

Age of Spouse

It is assumed that female spouses are 3 years younger than male spouses.

Terminated Members

Terminated members who are not vested are assumed to refund immediately. Terminated members who are vested are assumed to retire at age 59 (State Miscellaneous and Industrial) or age 54 (State Safety, State Peace Officers and Firefighters, and California Highway Patrol).

Appendix A – Statement of Actuarial Methods and Assumptions

Miscellaneous Loading Factors

Credit for Unused Sick Leave

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

Norris Decision (Best Factors)

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

Miscellaneous Assumptions

Tier 2 Members electing Tier 1 benefits

In general, Tier 2 members of both the State Miscellaneous and State Industrial plans have the right to convert their Tier 2 service to Tier 1 service provided they make up the shortfall in their accumulated contributions with interest. In this valuation, we have assumed that all Tier 2 members eligible to convert their Tier 2 service to Tier 1 service will elect to do so.

Appendix A – Statement of Actuarial Methods and Assumptions

PLAN SPECIFIC ACTUARIAL ASSUMPTIONS

State Miscellaneous Tier 1

Service Retirement - Classic Members

Rates vary by age and service. See sample rates in the table below.

| Attained Age | Years of Service | | | | | | |
|--------------|------------------|-------|-------|-------|-------|-------|-------|
| | 5 | 10 | 15 | 20 | 25 | 30 | 35 |
| 50 | 0.007 | 0.010 | 0.014 | 0.019 | 0.019 | 0.022 | 0.029 |
| 52 | 0.013 | 0.012 | 0.013 | 0.018 | 0.020 | 0.023 | 0.031 |
| 54 | 0.011 | 0.017 | 0.020 | 0.030 | 0.035 | 0.039 | 0.049 |
| 56 | 0.023 | 0.035 | 0.043 | 0.062 | 0.083 | 0.106 | 0.165 |
| 58 | 0.027 | 0.043 | 0.047 | 0.074 | 0.089 | 0.121 | 0.170 |
| 60 | 0.037 | 0.062 | 0.075 | 0.119 | 0.141 | 0.175 | 0.246 |
| 62 | 0.087 | 0.127 | 0.152 | 0.221 | 0.263 | 0.310 | 0.356 |
| 65 | 0.090 | 0.158 | 0.175 | 0.245 | 0.249 | 0.301 | 0.344 |
| 70 | 0.140 | 0.176 | 0.184 | 0.223 | 0.276 | 0.299 | 0.299 |
| 75 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

Service Retirement - PEPRA Members

Rates vary by age and service. See sample rates in the table below.

| Attained Age | Years of Service | | | | | | |
|--------------|------------------|-------|-------|-------|-------|-------|-------|
| | 5 | 10 | 15 | 20 | 25 | 30 | 35 |
| 50 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 52 | 0.009 | 0.008 | 0.009 | 0.013 | 0.014 | 0.016 | 0.022 |
| 54 | 0.008 | 0.012 | 0.014 | 0.021 | 0.025 | 0.027 | 0.034 |
| 56 | 0.016 | 0.025 | 0.030 | 0.043 | 0.058 | 0.074 | 0.116 |
| 58 | 0.020 | 0.032 | 0.035 | 0.056 | 0.067 | 0.091 | 0.128 |
| 60 | 0.030 | 0.050 | 0.060 | 0.095 | 0.113 | 0.140 | 0.197 |
| 62 | 0.070 | 0.102 | 0.122 | 0.177 | 0.210 | 0.248 | 0.285 |
| 65 | 0.081 | 0.142 | 0.158 | 0.221 | 0.224 | 0.271 | 0.310 |
| 70 | 0.140 | 0.176 | 0.184 | 0.223 | 0.276 | 0.299 | 0.299 |
| 75 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

Termination with Refund

Rates vary by entry age and service. See sample rates in the table below.

| Duration of Service | Entry Age | | | | |
|---------------------|-----------|---------|---------|---------|---------|
| | 20 | 25 | 30 | 35 | 40 |
| 0 | 0.16570 | 0.16570 | 0.15120 | 0.13660 | 0.12920 |
| 1 | 0.13660 | 0.13660 | 0.12160 | 0.10660 | 0.09650 |
| 2 | 0.11060 | 0.11060 | 0.09650 | 0.08250 | 0.07190 |
| 3 | 0.08770 | 0.08770 | 0.07600 | 0.06430 | 0.05540 |
| 4 | 0.06790 | 0.06790 | 0.06000 | 0.05200 | 0.04680 |
| 5 | 0.02720 | 0.02720 | 0.02230 | 0.01740 | 0.01600 |
| 10 | 0.00480 | 0.00480 | 0.00430 | 0.00370 | 0.00270 |
| 15 | 0.00160 | 0.00160 | 0.00120 | 0.00080 | 0.00070 |
| 20 | 0.00110 | 0.00110 | 0.00080 | 0.00050 | 0.00050 |
| 25 | 0.00080 | 0.00080 | 0.00060 | 0.00040 | 0.00030 |
| 30 | 0.00060 | 0.00060 | 0.00040 | 0.00020 | 0.00020 |

Appendix A – Statement of Actuarial Methods and Assumptions

PLAN SPECIFIC ACTUARIAL ASSUMPTIONS (continued)

State Miscellaneous Tier 1 (continued)

Termination with Vested Benefits

Rates vary by entry age and service. See sample rates in the table below.

| Duration of Service | Entry Age | | | | |
|---------------------|-----------|---------|---------|---------|---------|
| | 20 | 25 | 30 | 35 | 40 |
| 5 | 0.04410 | 0.04410 | 0.03940 | 0.03460 | 0.02890 |
| 6 | 0.03970 | 0.03970 | 0.03570 | 0.03180 | 0.02610 |
| 7 | 0.03550 | 0.03550 | 0.03220 | 0.02890 | 0.02330 |
| 8 | 0.03170 | 0.03170 | 0.02880 | 0.02600 | 0.02060 |
| 9 | 0.02820 | 0.02820 | 0.02570 | 0.02320 | 0.01800 |
| 10 | 0.02510 | 0.02510 | 0.02270 | 0.02040 | 0.01560 |
| 14 | 0.01610 | 0.01610 | 0.01370 | 0.01130 | 0.00850 |
| 15 | 0.01460 | 0.01460 | 0.01220 | 0.00970 | 0.00740 |
| 19 | 0.01040 | 0.01040 | 0.00790 | 0.00540 | 0.00430 |
| 20 | 0.00950 | 0.00950 | 0.00710 | 0.00470 | 0.00380 |
| 24 | 0.00580 | 0.00580 | 0.00370 | 0.00170 | 0.00130 |
| 25 | 0.00500 | 0.00500 | 0.00290 | 0.00080 | 0.00070 |
| 29 | 0.00290 | 0.00290 | 0.00150 | 0.00000 | 0.00000 |
| 30 | 0.00260 | 0.00260 | 0.00130 | 0.00000 | 0.00000 |

- When a member is eligible to retire, the termination with vested benefits probability is set to zero.
- After termination with vested benefits, a miscellaneous member is assumed to retire at age 59 and a safety member at age 54.

Non-Industrial (Not Job-Related) Death and Disability

Rates vary by age and gender. See sample rates in the table below.

| Attained Age | Non-Industrial Death (Not Job-Related) | | Non-Industrial Disability (Not Job-Related) | |
|--------------|---|----------|--|----------|
| | Male | Female | Male | Female |
| 20 | 0.000216 | 0.000069 | 0.000190 | 0.000390 |
| 25 | 0.000289 | 0.000109 | 0.000190 | 0.000390 |
| 30 | 0.000379 | 0.000155 | 0.000190 | 0.000460 |
| 35 | 0.000491 | 0.000270 | 0.000360 | 0.000960 |
| 40 | 0.000637 | 0.000366 | 0.001030 | 0.001860 |
| 45 | 0.000795 | 0.000543 | 0.002040 | 0.003260 |
| 50 | 0.001161 | 0.000794 | 0.002740 | 0.004050 |
| 55 | 0.001717 | 0.001204 | 0.002380 | 0.003100 |
| 60 | 0.002550 | 0.001657 | 0.002000 | 0.002560 |

Appendix A – Statement of Actuarial Methods and Assumptions

PLAN SPECIFIC ACTUARIAL ASSUMPTIONS (continued)

State Miscellaneous Tier 2

Service Retirement - Classic Members

Rates vary by age and service. See sample rates in the table below.

| Attained Age | Years of Service | | | | | | |
|--------------|------------------|-------|-------|-------|-------|-------|-------|
| | 5 | 10 | 15 | 20 | 25 | 30 | 35 |
| 50 | 0.007 | 0.010 | 0.014 | 0.019 | 0.019 | 0.022 | 0.029 |
| 52 | 0.013 | 0.012 | 0.013 | 0.018 | 0.020 | 0.023 | 0.031 |
| 54 | 0.011 | 0.017 | 0.020 | 0.030 | 0.035 | 0.039 | 0.049 |
| 56 | 0.023 | 0.035 | 0.043 | 0.062 | 0.083 | 0.106 | 0.165 |
| 58 | 0.027 | 0.043 | 0.047 | 0.074 | 0.089 | 0.121 | 0.170 |
| 60 | 0.037 | 0.062 | 0.075 | 0.119 | 0.141 | 0.175 | 0.246 |
| 62 | 0.087 | 0.127 | 0.152 | 0.221 | 0.263 | 0.310 | 0.356 |
| 65 | 0.090 | 0.158 | 0.175 | 0.245 | 0.249 | 0.301 | 0.344 |
| 70 | 0.140 | 0.176 | 0.184 | 0.223 | 0.276 | 0.299 | 0.299 |
| 75 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

Service Retirement - PEPRA Members

Rates vary by age and service. See sample rates in the table below.

| Attained Age | Years of Service | | | | | | |
|--------------|------------------|-------|-------|-------|-------|-------|-------|
| | 5 | 10 | 15 | 20 | 25 | 30 | 35 |
| 50 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 52 | 0.009 | 0.008 | 0.009 | 0.013 | 0.014 | 0.016 | 0.022 |
| 54 | 0.008 | 0.012 | 0.014 | 0.021 | 0.025 | 0.027 | 0.034 |
| 56 | 0.016 | 0.025 | 0.030 | 0.043 | 0.058 | 0.074 | 0.116 |
| 58 | 0.020 | 0.032 | 0.035 | 0.056 | 0.067 | 0.091 | 0.128 |
| 60 | 0.030 | 0.050 | 0.060 | 0.095 | 0.113 | 0.140 | 0.197 |
| 62 | 0.070 | 0.102 | 0.122 | 0.177 | 0.210 | 0.248 | 0.285 |
| 65 | 0.081 | 0.142 | 0.158 | 0.221 | 0.224 | 0.271 | 0.310 |
| 70 | 0.140 | 0.176 | 0.184 | 0.223 | 0.276 | 0.299 | 0.299 |
| 75 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

Termination with Refund

Rates vary by entry age and service. See sample rates in the table below.

| Duration of Service | Entry Age | | | | |
|---------------------|-----------|--------|--------|--------|--------|
| | 20 | 25 | 30 | 35 | 40 |
| 0 | 0.1496 | 0.1433 | 0.1370 | 0.1307 | 0.1244 |
| 1 | 0.1365 | 0.1302 | 0.1239 | 0.1176 | 0.1113 |
| 2 | 0.1234 | 0.1172 | 0.1109 | 0.1046 | 0.0983 |
| 3 | 0.1104 | 0.1041 | 0.0978 | 0.0915 | 0.0852 |
| 4 | 0.0973 | 0.0910 | 0.0848 | 0.0785 | 0.0722 |
| 5 | 0.0843 | 0.0780 | 0.0717 | 0.0654 | 0.0591 |
| 6 | 0.0792 | 0.0729 | 0.0666 | 0.0603 | 0.0540 |
| 7 | 0.0741 | 0.0678 | 0.0615 | 0.0553 | 0.0490 |
| 8 | 0.0691 | 0.0628 | 0.0565 | 0.0502 | 0.0439 |
| 9 | 0.0640 | 0.0577 | 0.0514 | 0.0451 | 0.0388 |

Appendix A – Statement of Actuarial Methods and Assumptions

PLAN SPECIFIC ACTUARIAL ASSUMPTIONS (continued)

State Miscellaneous Tier 2 (continued)

Termination with Vested Deferred Benefits

Rates vary by entry age and service. See sample rates in the table below.

| Duration of Service | Entry Age | | | | |
|---------------------|-----------|--------|--------|--------|--------|
| | 20 | 25 | 30 | 35 | 40 |
| 10 | 0.0589 | 0.0526 | 0.0463 | 0.0400 | 0.0000 |
| 14 | 0.0480 | 0.0417 | 0.0354 | 0.0291 | — |
| 15 | 0.0453 | 0.0390 | 0.0327 | — | — |
| 19 | 0.0344 | 0.0281 | 0.0218 | — | — |
| 20 | 0.0317 | 0.0254 | — | — | — |
| 24 | 0.0208 | 0.0145 | — | — | — |
| 25 | 0.0180 | — | — | — | — |
| 29 | 0.0071 | — | — | — | — |
| 30 | — | — | — | — | — |

- When a member is eligible to retire, the termination with vested benefits probability is set to zero.
- After termination with vested benefits, a miscellaneous member is assumed to retire at age 59 and a safety member at age 54.

Non-Industrial (Not Job-Related) Death and Disability

Rates vary by age and gender. See sample rates in the table below.

| Attained Age | Non-Industrial Death (Not Job-Related) | | Non-Industrial Disability (Not Job-Related) | |
|--------------|---|----------|--|----------|
| | Male | Female | Male | Female |
| 20 | 0.000216 | 0.000069 | 0.000190 | 0.000390 |
| 25 | 0.000289 | 0.000109 | 0.000190 | 0.000390 |
| 30 | 0.000379 | 0.000155 | 0.000190 | 0.000460 |
| 35 | 0.000491 | 0.000270 | 0.000360 | 0.000960 |
| 40 | 0.000637 | 0.000366 | 0.001030 | 0.001860 |
| 45 | 0.000795 | 0.000543 | 0.002040 | 0.003260 |
| 50 | 0.001161 | 0.000794 | 0.002740 | 0.004050 |
| 55 | 0.001717 | 0.001204 | 0.002380 | 0.003100 |
| 60 | 0.002550 | 0.001657 | 0.002000 | 0.002560 |

Appendix A – Statement of Actuarial Methods and Assumptions

PLAN SPECIFIC ACTUARIAL ASSUMPTIONS (continued)

State Industrial

Service Retirement - Classic Members

Rates vary by age and years of service. See sample rates in the table below.

| Attained Age | Years of Service | | | | | | |
|--------------|------------------|-------|-------|-------|-------|-------|-------|
| | 5 | 10 | 15 | 20 | 25 | 30 | 35 |
| 50 | 0.006 | 0.008 | 0.013 | 0.019 | 0.026 | 0.029 | 0.036 |
| 52 | 0.007 | 0.009 | 0.015 | 0.023 | 0.031 | 0.034 | 0.043 |
| 54 | 0.014 | 0.020 | 0.030 | 0.046 | 0.062 | 0.069 | 0.086 |
| 56 | 0.028 | 0.040 | 0.062 | 0.094 | 0.126 | 0.140 | 0.174 |
| 58 | 0.029 | 0.041 | 0.064 | 0.098 | 0.131 | 0.145 | 0.181 |
| 60 | 0.042 | 0.060 | 0.093 | 0.142 | 0.191 | 0.211 | 0.262 |
| 62 | 0.079 | 0.113 | 0.176 | 0.266 | 0.357 | 0.398 | 0.493 |
| 65 | 0.081 | 0.117 | 0.182 | 0.276 | 0.371 | 0.413 | 0.511 |
| 70 | 0.097 | 0.139 | 0.217 | 0.329 | 0.443 | 0.493 | 0.611 |
| 75 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

Service Retirement - PEPRA Members

Rates vary by age and years of service. See sample rates in the table below.

| Attained Age | Years of Service | | | | | | |
|--------------|------------------|-------|-------|-------|-------|-------|-------|
| | 5 | 10 | 15 | 20 | 25 | 30 | 35 |
| 50 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 52 | 0.005 | 0.006 | 0.011 | 0.016 | 0.022 | 0.024 | 0.030 |
| 54 | 0.010 | 0.014 | 0.021 | 0.032 | 0.043 | 0.048 | 0.060 |
| 56 | 0.020 | 0.028 | 0.043 | 0.066 | 0.088 | 0.098 | 0.122 |
| 58 | 0.022 | 0.031 | 0.048 | 0.074 | 0.098 | 0.109 | 0.136 |
| 60 | 0.034 | 0.048 | 0.074 | 0.114 | 0.153 | 0.169 | 0.210 |
| 62 | 0.063 | 0.090 | 0.141 | 0.213 | 0.286 | 0.318 | 0.394 |
| 65 | 0.073 | 0.105 | 0.164 | 0.248 | 0.334 | 0.372 | 0.460 |
| 70 | 0.097 | 0.139 | 0.217 | 0.329 | 0.443 | 0.493 | 0.611 |
| 75 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

Termination with Refund

Rates vary by years of service. See sample rates in the table below.

| Duration of Service | | | | | | | | | |
|---------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0 | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 |
| 0.0912 | 0.0190 | 0.0029 | 0.0016 | 0.0010 | 0.0006 | 0.0004 | 0.0002 | 0.0001 | 0.0001 |

Appendix A – Statement of Actuarial Methods and Assumptions

PLAN SPECIFIC ACTUARIAL ASSUMPTIONS (continued)

State Industrial (continued)

Termination with Vested Deferred Benefits

Rates vary by entry age and years of service. See sample rates in the table below.

| Duration of Service | Entry Age | | | | |
|---------------------|-----------|--------|--------|--------|--------|
| | 20 | 25 | 30 | 35 | 40 |
| 5 | 0.0496 | 0.0449 | 0.0405 | 0.0356 | 0.0311 |
| 6 | 0.0470 | 0.0421 | 0.0377 | 0.0328 | 0.0281 |
| 7 | 0.0442 | 0.0393 | 0.0346 | 0.0297 | 0.0250 |
| 8 | 0.0414 | 0.0365 | 0.0316 | 0.0267 | 0.0220 |
| 9 | 0.0384 | 0.0335 | 0.0285 | 0.0234 | 0.0187 |
| 10 | 0.0353 | 0.0302 | 0.0253 | 0.0201 | — |
| 14 | 0.0311 | 0.0257 | 0.0206 | 0.0152 | — |
| 15 | 0.0302 | 0.0246 | 0.0194 | — | — |
| 19 | 0.0248 | 0.0190 | 0.0136 | — | — |
| 20 | 0.0232 | 0.0176 | — | — | — |
| 24 | 0.0173 | 0.0115 | — | — | — |
| 25 | 0.0159 | — | — | — | — |
| 29 | 0.0091 | — | — | — | — |
| 30 | — | — | — | — | — |

- When a member is eligible to retire, the termination with vested benefits probability is set to zero.
- After termination with vested benefits, a miscellaneous member is assumed to retire at age 59 and a safety member at age 54.

Non-Industrial (Not Job-Related) Death

Rates vary by age and gender. See sample rates in the table below.

Non-Industrial (Not Job-Related) Disability, Industrial (Job-Related) Disability and Industrial (Job-Related) Death

Rates vary by age. See sample rates in the table below.

| Attained Age | Non-Industrial Death | | Non-Industrial Disability | Industrial Death | Industrial Disability |
|--------------|----------------------|----------|---------------------------|------------------|-----------------------|
| | Male | Female | Male and Female | Male and Female | Male and Female |
| 20 | 0.000216 | 0.000069 | 0.000430 | 0.000040 | 0.000150 |
| 25 | 0.000289 | 0.000109 | 0.000430 | 0.000060 | 0.000150 |
| 30 | 0.000379 | 0.000155 | 0.001060 | 0.000070 | 0.000150 |
| 35 | 0.000491 | 0.000270 | 0.001840 | 0.000090 | 0.000290 |
| 40 | 0.000637 | 0.000366 | 0.002950 | 0.000100 | 0.000290 |
| 45 | 0.000795 | 0.000543 | 0.004480 | 0.000120 | 0.000440 |
| 50 | 0.001161 | 0.000794 | 0.006010 | 0.000130 | 0.000440 |
| 55 | 0.001717 | 0.001204 | 0.007710 | 0.000150 | 0.000580 |
| 60 | 0.002550 | 0.001657 | 0.007710 | 0.000160 | 0.000580 |

Appendix A – Statement of Actuarial Methods and Assumptions

PLAN SPECIFIC ACTUARIAL ASSUMPTIONS (continued)

State Safety

Service Retirement - Classic Members

Rates vary by age and years of service. See sample rates in the table below.

| Attained Age | Years of Service | | | | | | |
|--------------|------------------|-------|-------|-------|-------|-------|-------|
| | 5 | 10 | 15 | 20 | 25 | 30 | 35 |
| 50 | 0.008 | 0.013 | 0.020 | 0.030 | 0.032 | 0.039 | 0.045 |
| 52 | 0.008 | 0.017 | 0.017 | 0.030 | 0.030 | 0.035 | 0.044 |
| 54 | 0.016 | 0.023 | 0.023 | 0.034 | 0.041 | 0.054 | 0.099 |
| 56 | 0.032 | 0.039 | 0.058 | 0.109 | 0.138 | 0.171 | 0.231 |
| 58 | 0.035 | 0.047 | 0.069 | 0.109 | 0.132 | 0.179 | 0.256 |
| 60 | 0.048 | 0.056 | 0.090 | 0.154 | 0.158 | 0.201 | 0.257 |
| 62 | 0.084 | 0.095 | 0.140 | 0.239 | 0.253 | 0.308 | 0.356 |
| 65 | 0.111 | 0.138 | 0.172 | 0.249 | 0.257 | 0.311 | 0.359 |
| 70 | 0.137 | 0.167 | 0.214 | 0.281 | 0.309 | 0.373 | 0.401 |
| 75 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

Service Retirement - PEPRA Members

Rates vary by age and years of service. See sample rates in the table below.

| Attained Age | Years of Service | | | | | | |
|--------------|------------------|-------|-------|-------|-------|-------|-------|
| | 5 | 10 | 15 | 20 | 25 | 30 | 35 |
| 50 | 0.007 | 0.011 | 0.017 | 0.026 | 0.027 | 0.033 | 0.038 |
| 52 | 0.007 | 0.014 | 0.014 | 0.026 | 0.026 | 0.030 | 0.037 |
| 54 | 0.012 | 0.017 | 0.017 | 0.026 | 0.031 | 0.041 | 0.074 |
| 56 | 0.024 | 0.029 | 0.044 | 0.082 | 0.104 | 0.128 | 0.173 |
| 58 | 0.028 | 0.038 | 0.055 | 0.087 | 0.106 | 0.143 | 0.205 |
| 60 | 0.043 | 0.050 | 0.081 | 0.139 | 0.142 | 0.181 | 0.231 |
| 62 | 0.067 | 0.076 | 0.112 | 0.191 | 0.202 | 0.246 | 0.285 |
| 65 | 0.100 | 0.124 | 0.155 | 0.224 | 0.231 | 0.280 | 0.323 |
| 70 | 0.137 | 0.167 | 0.214 | 0.281 | 0.309 | 0.373 | 0.401 |
| 75 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

Termination with Refund

Rates vary by service. See sample rates in the table below.

| Duration of Service | | | | | | | | | | |
|---------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0 | 1 | 2 | 3 | 4 | 5 | 10 | 15 | 20 | 25 | 30 |
| 0.1408 | 0.1014 | 0.0723 | 0.0533 | 0.0444 | 0.0155 | 0.0033 | 0.0019 | 0.0011 | 0.0006 | 0.0004 |

Termination with Vested Deferred Benefits

Rates vary by service. See sample rates in the table below.

| Duration of Service | | | | | | | | | | |
|---------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 5 | 6 | 7 | 8 | 9 | 10 | 15 | 20 | 25 | 30 | 35 |
| 0.0246 | 0.0218 | 0.0194 | 0.0173 | 0.0155 | 0.0141 | 0.0097 | 0.0073 | 0.0050 | 0.0034 | 0.0000 |

- When a member is eligible to retire, the termination with vested benefits probability is set to zero.
- After termination with vested benefits, a miscellaneous member is assumed to retire at age 59 and a safety member at age 54.

Appendix A – Statement of Actuarial Methods and Assumptions

PLAN SPECIFIC ACTUARIAL ASSUMPTIONS (continued)

State Safety (continued)

Non-Industrial (Not Job-Related) Death

Rates vary by age and gender. See sample rates in the table below.

Non-Industrial (Not Job-Related) Disability, Industrial (Job-Related) Disability and Industrial (Job-Related) Death

Rates vary by age. See sample rates in the table below.

| Attained Age | Non-Industrial Death | | Non-Industrial Disability | Industrial Death | Industrial Disability |
|--------------|----------------------|----------|---------------------------|------------------|-----------------------|
| | Male | Female | Male and Female | Male and Female | Male and Female |
| 20 | 0.000216 | 0.000069 | 0.000360 | 0.000040 | 0.000020 |
| 25 | 0.000289 | 0.000109 | 0.000540 | 0.000060 | 0.000760 |
| 30 | 0.000379 | 0.000155 | 0.000630 | 0.000070 | 0.001700 |
| 35 | 0.000491 | 0.000270 | 0.000720 | 0.000090 | 0.002640 |
| 40 | 0.000637 | 0.000366 | 0.000720 | 0.000100 | 0.003600 |
| 45 | 0.000795 | 0.000543 | 0.001080 | 0.000120 | 0.004570 |
| 50 | 0.001161 | 0.000794 | 0.002010 | 0.000130 | 0.005570 |
| 55 | 0.001717 | 0.001204 | 0.002400 | 0.000150 | 0.006580 |
| 60 | 0.002550 | 0.001657 | 0.003200 | 0.000160 | 0.007620 |

State Peace Officers and Firefighters

Service Retirement - Classic Members

Rates vary by age and years of service. See sample rates in the table below.

| Attained Age | Years of Service | | | | | | |
|--------------|------------------|-------|-------|-------|-------|-------|-------|
| | 5 | 10 | 15 | 20 | 25 | 30 | 35 |
| 50 | 0.012 | 0.030 | 0.044 | 0.109 | 0.224 | 0.449 | 0.467 |
| 52 | 0.012 | 0.026 | 0.041 | 0.096 | 0.145 | 0.255 | 0.257 |
| 54 | 0.021 | 0.042 | 0.053 | 0.118 | 0.162 | 0.292 | 0.306 |
| 56 | 0.031 | 0.044 | 0.057 | 0.135 | 0.213 | 0.335 | 0.345 |
| 58 | 0.020 | 0.065 | 0.070 | 0.158 | 0.224 | 0.354 | 0.354 |
| 60 | 0.035 | 0.066 | 0.094 | 0.179 | 0.276 | 0.360 | 0.367 |
| 62 | 0.067 | 0.104 | 0.130 | 0.221 | 0.324 | 0.415 | 0.440 |
| 65 | 0.065 | 0.081 | 0.127 | 0.231 | 0.342 | 0.427 | 0.453 |
| 70 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

Service Retirement - PEPR Members – 2.5% @ 57

Rates vary by age and years of service. See sample rates in the table below.

| Attained Age | Years of Service | | | | | | |
|--------------|------------------|-------|-------|-------|-------|-------|-------|
| | 5 | 10 | 15 | 20 | 25 | 30 | 35 |
| 50 | 0.008 | 0.021 | 0.031 | 0.076 | 0.157 | 0.314 | 0.327 |
| 52 | 0.008 | 0.018 | 0.029 | 0.067 | 0.102 | 0.179 | 0.180 |
| 54 | 0.016 | 0.032 | 0.040 | 0.089 | 0.122 | 0.219 | 0.230 |
| 56 | 0.025 | 0.035 | 0.046 | 0.108 | 0.170 | 0.268 | 0.276 |
| 58 | 0.018 | 0.059 | 0.063 | 0.142 | 0.202 | 0.319 | 0.319 |
| 60 | 0.033 | 0.063 | 0.089 | 0.170 | 0.262 | 0.342 | 0.349 |
| 62 | 0.067 | 0.104 | 0.130 | 0.221 | 0.324 | 0.415 | 0.440 |
| 65 | 0.065 | 0.081 | 0.127 | 0.231 | 0.342 | 0.427 | 0.453 |
| 70 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

Appendix A – Statement of Actuarial Methods and Assumptions

PLAN SPECIFIC ACTUARIAL ASSUMPTIONS (continued)

State Peace Officers and Firefighters (continued)

Service Retirement - PEPRA Members – 2.7% @ 57

Rates vary by age and years of service. See sample rates in the table below.

| Attained Age | Years of Service | | | | | | |
|--------------|------------------|-------|-------|-------|-------|-------|-------|
| | 5 | 10 | 15 | 20 | 25 | 30 | 35 |
| 50 | 0.008 | 0.021 | 0.031 | 0.076 | 0.157 | 0.314 | 0.327 |
| 52 | 0.009 | 0.020 | 0.031 | 0.072 | 0.109 | 0.191 | 0.193 |
| 54 | 0.017 | 0.034 | 0.042 | 0.094 | 0.130 | 0.234 | 0.245 |
| 56 | 0.026 | 0.037 | 0.048 | 0.115 | 0.181 | 0.285 | 0.293 |
| 58 | 0.020 | 0.065 | 0.070 | 0.158 | 0.224 | 0.354 | 0.354 |
| 60 | 0.035 | 0.066 | 0.094 | 0.179 | 0.276 | 0.360 | 0.367 |
| 62 | 0.067 | 0.104 | 0.130 | 0.221 | 0.324 | 0.415 | 0.440 |
| 65 | 0.065 | 0.081 | 0.127 | 0.231 | 0.342 | 0.427 | 0.453 |
| 70 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

Termination with Refund

Rates vary by years of service. See sample rates in the table below.

| Duration of Service | | | | | | | | | | |
|---------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0 | 1 | 2 | 3 | 4 | 5 | 10 | 15 | 20 | 25 | 30 |
| 0.1217 | 0.0779 | 0.0431 | 0.0353 | 0.0275 | 0.0056 | 0.0039 | 0.0025 | 0.0015 | 0.0006 | 0.0003 |

Termination with Vested Deferred Benefits

Rates vary by years of service. See sample rates in the table below.

| Duration of Service | | | | | | | | | | |
|---------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 5 | 6 | 7 | 8 | 9 | 10 | 15 | 20 | 25 | 30 | 35 |
| 0.0117 | 0.0115 | 0.0112 | 0.0108 | 0.0103 | 0.0098 | 0.0069 | 0.0049 | 0.0031 | 0.0020 | 0.0000 |

- When a member is eligible to retire, the termination with vested benefits probability is set to zero.
- After termination with vested benefits, a miscellaneous member is assumed to retire at age 59 and a safety member at age 54.

Non-Industrial (Not Job-Related) Death

Rates vary by age and gender. See sample rates in the table below.

Non-Industrial (Not Job-Related) Disability, Industrial (Job-Related) Disability and Industrial (Job-Related) Death

Rates vary by age. See sample rates in the table below.

| Attained Age | Non-Industrial Death | | Non-Industrial Disability | Industrial Death | Industrial Disability |
|--------------|----------------------|----------|---------------------------|------------------|-----------------------|
| | Male | Female | Male and Female | Male and Female | Male and Female |
| 20 | 0.000216 | 0.000069 | 0.000300 | 0.000040 | 0.000390 |
| 25 | 0.000289 | 0.000109 | 0.000300 | 0.000060 | 0.000870 |
| 30 | 0.000379 | 0.000155 | 0.000300 | 0.000070 | 0.001670 |
| 35 | 0.000491 | 0.000270 | 0.000300 | 0.000090 | 0.002890 |
| 40 | 0.000637 | 0.000366 | 0.000400 | 0.000100 | 0.004640 |
| 45 | 0.000795 | 0.000543 | 0.000600 | 0.000120 | 0.007060 |
| 50 | 0.001161 | 0.000794 | 0.000980 | 0.000130 | 0.010270 |
| 55 | 0.001717 | 0.001204 | 0.001430 | 0.000150 | 0.014420 |
| 60 | 0.002550 | 0.001657 | 0.001880 | 0.000160 | 0.019660 |

Appendix A – Statement of Actuarial Methods and Assumptions

PLAN SPECIFIC ACTUARIAL ASSUMPTIONS (continued)

California Highway Patrol

Service Retirement - Classic Members

Rates vary by age and years of service. See sample rates in the table below.

| Attained Age | Years of Service | | | | | | |
|--------------|------------------|-------|-------|-------|-------|-------|-------|
| | 5 | 10 | 15 | 20 | 25 | 30 | 35 |
| 50 | 0.038 | 0.038 | 0.038 | 0.049 | 0.107 | 0.418 | 0.453 |
| 52 | 0.027 | 0.027 | 0.027 | 0.027 | 0.093 | 0.315 | 0.383 |
| 54 | 0.038 | 0.038 | 0.038 | 0.038 | 0.124 | 0.309 | 0.404 |
| 56 | 0.051 | 0.051 | 0.051 | 0.084 | 0.139 | 0.350 | 0.380 |
| 58 | 0.049 | 0.049 | 0.049 | 0.049 | 0.171 | 0.338 | 0.350 |
| 60 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

Service Retirement - PEPRA Members

Rates vary by age and years of service. See sample rates in the table below.

| Attained Age | Years of Service | | | | | | |
|--------------|------------------|-------|-------|-------|-------|-------|-------|
| | 5 | 10 | 15 | 20 | 25 | 30 | 35 |
| 50 | 0.027 | 0.027 | 0.027 | 0.034 | 0.075 | 0.293 | 0.317 |
| 52 | 0.020 | 0.020 | 0.020 | 0.020 | 0.070 | 0.236 | 0.287 |
| 54 | 0.030 | 0.030 | 0.030 | 0.030 | 0.099 | 0.247 | 0.323 |
| 56 | 0.043 | 0.043 | 0.043 | 0.071 | 0.118 | 0.298 | 0.323 |
| 58 | 0.044 | 0.044 | 0.044 | 0.044 | 0.154 | 0.304 | 0.315 |
| 60 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

Termination with Refund

Rates vary by service. See sample rates in the table below.

| Duration of Service | | | | | | | | | | |
|---------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 0 | 1 | 2 | 3 | 4 | 5 | 10 | 15 | 20 | 25 | 30 |
| 0.1050 | 0.0243 | 0.0152 | 0.0091 | 0.0054 | 0.0029 | 0.0005 | 0.0003 | 0.0002 | 0.0002 | 0.0002 |

Termination with Vested Deferred Benefits

Rates vary by service. See sample rates in the table below.

| Duration of Service | | | | | | | | | | |
|---------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 5 | 6 | 7 | 8 | 9 | 10 | 15 | 20 | 25 | 30 | 35 |
| 0.0090 | 0.0084 | 0.0079 | 0.0075 | 0.0071 | 0.0067 | 0.0049 | 0.0034 | 0.0023 | 0.0010 | 0.0000 |

- When a member is eligible to retire, the termination with vested benefits probability is set to zero.
- After termination with vested benefits, a miscellaneous member is assumed to retire at age 59 and a safety member at age 54.

Appendix A – Statement of Actuarial Methods and Assumptions

PLAN SPECIFIC ACTUARIAL ASSUMPTIONS (continued)

California Highway Patrol (continued)

Non-Industrial (Not Job-Related) Death

Rates vary by age and gender. See sample rates in the table below.

Non-Industrial (Not Job-Related) Disability, Industrial (Job-Related) Disability and Industrial (Job-Related) Death

Rates vary by age. See sample rates in the table below.

| Attained Age | Non-Industrial Death | | Non-Industrial Disability | Industrial Death | Industrial Disability |
|--------------|----------------------|----------|---------------------------|------------------|-----------------------|
| | Male | Female | Male and Female | Male and Female | Male and Female |
| 20 | 0.000216 | 0.000069 | 0.000100 | 0.000040 | 0.000156 |
| 25 | 0.000289 | 0.000109 | 0.000100 | 0.000060 | 0.000348 |
| 30 | 0.000379 | 0.000155 | 0.000100 | 0.000070 | 0.000684 |
| 35 | 0.000491 | 0.000270 | 0.000100 | 0.000090 | 0.001224 |
| 40 | 0.000637 | 0.000366 | 0.000100 | 0.000100 | 0.002022 |
| 45 | 0.000795 | 0.000543 | 0.000200 | 0.000120 | 0.003162 |
| 50 | 0.001161 | 0.000794 | 0.000200 | 0.000130 | 0.012138 |
| 55 | 0.001717 | 0.001204 | 0.000200 | 0.000150 | 0.054066 |
| 60 | 0.002550 | 0.001657 | 0.000200 | 0.000160 | 0.204306 |

Appendix B – Principal Plan Provisions

State Miscellaneous Tier 1

The following is a summary of the major plan provisions for the most representative group used in calculating the liabilities of this plan. Many of the statements in this summary are general in nature and intended to provide a summary of the complex Public Employees' Retirement Law. The law itself governs in all situations.

RETIREMENT PROGRAM

Service Retirement

Eligibility

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

Benefit

The Service Retirement benefit calculated for service earned by this group of employees is a monthly allowance equal to the product of the *benefit factor*, *years of service*, and *final compensation*, where

- The *benefit factor* for this group of employees comes from the **2% at 55** benefit factor table. New Classic members hired on or after January 15, 2011 are subject to the **2% at 60** benefit factor table. New PEPRA members hired on or after January 1, 2013 are subject to the **2% at 62** benefit factor table. The factor depends on the member's age at retirement. Listed below are the factors for retirement at whole year ages:

| Retirement Age | 2% @ 55 Factor | 2% @ 60 Factor | 2% @ 62 Factor |
|----------------|----------------|----------------|----------------|
| 50 | 1.100% | 1.092% | N/A |
| 51 | 1.280% | 1.156% | N/A |
| 52 | 1.460% | 1.224% | 1.000% |
| 53 | 1.640% | 1.296% | 1.100% |
| 54 | 1.820% | 1.376% | 1.200% |
| 55 | 2.000% | 1.460% | 1.300% |
| 56 | 2.064% | 1.552% | 1.400% |
| 57 | 2.126% | 1.650% | 1.500% |
| 58 | 2.188% | 1.758% | 1.600% |
| 59 | 2.250% | 1.874% | 1.700% |
| 60 | 2.314% | 2.000% | 1.800% |
| 61 | 2.376% | 2.134% | 1.900% |
| 62 | 2.438% | 2.272% | 2.000% |
| 63 | 2.500% | 2.418% | 2.100% |
| 64 | 2.500% | 2.418% | 2.200% |
| 65 | 2.500% | 2.418% | 2.300% |
| 66 | 2.500% | 2.418% | 2.400% |
| 67 & Up | 2.500% | 2.418% | 2.500% |

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

Appendix B – Principal Plan Provisions

State Miscellaneous Tier 1 (continued)

- The *final compensation* is the monthly average of the member's highest 12 consecutive months' full-time equivalent monthly pay (no matter which CalPERS employer paid this compensation). For some new members hired after July 1, 2006 and for all new members hired on or after January 15, 2011, final compensation is based on the monthly average of the member's highest 36 consecutive months' full-time equivalent monthly pay. PEPRA members have a cap on the annual salary used to calculate final compensation based on the Social Security Contribution and Benefit Base. For employees who participate in Social Security this cap is \$126,291 for 2020 and for those employees who do not participate in Social Security the cap for 2020 is \$151,549. Adjustments to the caps are permitted annually based on changes to the CPI for All Urban Consumers.
- Employees may or may not be covered by Social Security. For employees covered by Social Security, the final compensation is offset by \$133.33 (or by one third if the final compensation is less than \$400). For some PEPRA members, the final compensation is not offset.
- The Service Retirement benefit is not capped.

Vested Deferred Retirement

Eligibility for Deferred Status

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

Eligibility to Start Receiving Benefits

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

Benefit

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

Non-Industrial (Non-Job Related) Disability Retirement

Eligibility

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

Benefit

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

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

Appendix B – Principal Plan Provisions

State Miscellaneous Tier 1 (continued)

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.

Post-Retirement Death Benefit

Lump Sum Payment

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

Form of Payment for Retirement Allowance

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

For retirement allowances with respect to service earned by employment in this group, 25% of the retirement allowance will automatically be continued to certain statutory beneficiaries upon the death of the retiree, *without* a reduction in the retiree's allowance. This additional benefit is often referred to as *post retirement survivor allowance* (PRSA) or simply as *survivor continuance*.

In other words, 25% of the allowance, the *continuance portion*, is paid to the retiree for as long as he or she is alive, and that same amount is continued to the retiree's spouse (or if no eligible spouse, to unmarried children until they attain age 18; or, if no eligible children, to a qualifying dependent parent) for the rest of his or her lifetime.

The remaining 75% 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. 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

Group Term Life Insurance

Eligibility

An employee's beneficiary (or estate) will receive the Group Term Life Insurance benefit if the member dies while actively employed. A CalPERS member who is no longer actively employed with **any** CalPERS employer is not eligible for this benefit. This benefit is in addition to other pre-retirement death benefits.

Benefit

The benefit is a lump sum payment of \$5,000 plus an additional amount equal to 50% of the annual compensation earned by the deceased member during the 12 months immediately preceding the member's death. The additional amount will not be paid if the member is eligible for service retirement or the Alternate Death Benefit.

Appendix B – Principal Plan Provisions

State Miscellaneous Tier 1 (continued)

For members with less than 20 years of service credit and not age-eligible to retire:

Basic Death Benefit

Eligibility

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

Benefit

The Basic Death Benefit is a lump sum in the amount of the member's accumulated contributions, where interest is credited at the greater of 6% or the prevailing discount rate. In addition, a lump sum in the amount of six months' salary shall be paid only if the member is eligible for service retirement or eligible for the Alternate Death Benefit. 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.

For members with more than 20 years of service credit and not age-eligible to retire:

In addition to the above pre-retirement death benefits, members are eligible for:

Alternate Death Benefit

Eligibility

This benefit may be received in lieu of the lump sum Basic Death Benefit if there is a surviving spouse or minor child of the member. The member must have died before reaching the minimum retirement age and must have been credited with at least 20 years of state service.

Benefit

The Alternate Death Benefit is calculated as though the member were the minimum retirement age and elected an optional form of benefit that provided 100 percent continuance to the member's spouse. If the member did not have a spouse at the time of death, one-half of the formula benefit would be paid to the surviving child. If the benefit is payable to a surviving child, the benefit will be discontinued upon death or the attainment of age 18.

For members who are age-eligible to retire:

In addition to the above pre-retirement death benefits, members are eligible for:

1957 Survivor Benefit

Eligibility

An employee's *eligible survivor(s)* may receive the 1957 Survivor benefit if the member dies while actively employed, has attained at least age 50 for Classic and Safety PEPRA members and age 52 for Miscellaneous PEPRA members, and has at least five years of credited service (total service across all CalPERS employers and with certain other Retirement Systems with which CalPERS has reciprocity agreements). A CalPERS member who is no longer actively employed with **any** CalPERS employer is not eligible for this benefit. An *eligible survivor* means the surviving spouse to whom the member was married at least one year before death or, if there is no eligible spouse, to the member's unmarried children under age 18. A member's survivor may choose this benefit in lieu of the Basic Death benefit or the Optional Settlement 2W Death benefit.

Appendix B – Principal Plan Provisions

State Miscellaneous Tier 1 (continued)

Benefit

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

Optional Settlement 2W Death Benefit

Eligibility

An employee's *eligible survivor* may receive the Optional Settlement 2W Death benefit if the member dies while actively employed, has attained at least age 50 for Classic and Safety PEPRA members and age 52 for Miscellaneous PEPRA members, and has at least five years of credited service (total service across all CalPERS employers and with certain other Retirement Systems with which CalPERS has reciprocity agreements). A CalPERS member who is no longer actively employed with **any** CalPERS employer is not eligible for this benefit. An *eligible survivor* means the surviving spouse to whom the member was married at least one year before death. A member's survivor may choose this benefit in lieu of the Basic Death benefit or the 1957 Survivor benefit.

Benefit

The Optional Settlement 2W 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 his or her death and elected Optional Settlement 2W. (A retiree who elects Optional Settlement 2W receives an allowance that has been reduced so that it will continue to be paid after his or her death to a surviving beneficiary.) The allowance is payable as long as the surviving spouse lives. Upon the death of the surviving spouse, the benefit shall be continued to minor children. There is a guarantee that the total amount paid will at least equal the Basic Death Benefit.

Cost-of-Living Adjustments

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

Purchasing Power Protection Allowance (PPPA)

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

Appendix B – Principal Plan Provisions

State Miscellaneous Tier 1 (continued)

Employee Contributions

Each employee contributes toward his or her retirement based upon one of the following schedules. The employer may choose to “pick up” these contributions for the employees. For employees covered by Social Security, the monthly compensation breakpoint is \$513, and the contribution schedule is as follows:

- The percent contributed below the monthly compensation breakpoint is 0%.
- The percent contributed above the monthly compensation breakpoint ranges from 5% to 10%.

There are a small number of employees not covered by Social Security in this plan. For those employees, the monthly compensation breakpoint is \$317, and contributions are as follows:

- The percent contributed below the monthly compensation breakpoint is 0%.
- The percent contributed above the monthly compensation breakpoint is 1% greater than the contribution paid by those covered by Social Security.

For some new PEPRA members, the monthly compensation breakpoint is \$0, and contributions are as follows:

- The percent contributed below the monthly compensation breakpoint is 0%.
- The percent contributed above the monthly compensation breakpoint is half of the total normal cost. See the “PEPRA Member Contribution Rates” section of this report for more information.

Refund of Employee Contributions

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

1959 Survivor Benefits Program

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

State Miscellaneous Tier 2

The following is a summary of the major plan provisions applicable to State Miscellaneous Tier 2 members. Many of the statements in this summary are general in nature and intended to provide an easily understood summary of the complex Public Employees’ Retirement Law. The law itself governs in all situations.

RETIREMENT PROGRAM

Tier 2 Members electing Tier 1 benefits

In general, State Miscellaneous Tier 2 members have the right to convert their Tier 2 service to Tier 1 service provided they make up the shortfall in their accumulated contributions with interest. In this valuation, we have assumed that all State Miscellaneous Tier 2 members eligible to convert their Tier 2 service to Tier 1 service will elect to do so.

Service Retirement

Eligibility

A member becomes eligible for Service Retirement upon attainment of age 55 with at least 10 years of credited service (total service across all CalPERS employers, and with certain other Retirement Systems with which CalPERS has reciprocity agreements).

Appendix B – Principal Plan Provisions

State Miscellaneous Tier 2 (continued)

Benefit

The Service Retirement benefit calculated for service earned by this group of employees is a monthly allowance equal to the product of the *benefit factor*, *years of service*, and *final compensation*, where

- The *benefit factor* for Classic employees comes from the **1.25% at 65** Tier 2 benefit factor table. New PEPRA members hired on or after January 1, 2013 are subject to the **1.25% at 67** benefit factor table. The factor depends on the member's age at retirement. Listed below are the factors for retirement at whole year ages:

| Retirement Age | 1.25% @ 65 Tier 2 Factor | 1.25% @ 67 Tier 2 Factor |
|----------------|-----------------------------|-----------------------------|
| 50 | 0.500% | N/A |
| 51 | 0.550% | N/A |
| 52 | 0.600% | 0.650% |
| 53 | 0.650% | 0.690% |
| 54 | 0.700% | 0.730% |
| 55 | 0.750% | 0.770% |
| 56 | 0.800% | 0.810% |
| 57 | 0.850% | 0.850% |
| 58 | 0.900% | 0.890% |
| 59 | 0.950% | 0.930% |
| 60 | 1.000% | 0.970% |
| 61 | 1.050% | 1.010% |
| 62 | 1.100% | 1.050% |
| 63 | 1.150% | 1.090% |
| 64 | 1.200% | 1.130% |
| 65 | 1.250% | 1.170% |
| 66 | 1.250% | 1.210% |
| 67 & Up | 1.250% | 1.250% |

- 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. Any unused sick leave accumulated at the time of retirement will be converted to credited service at the rate of 0.004 years of service for each day of sick leave.
- The *final compensation* is the monthly average of the member's highest 12 consecutive months' full-time equivalent monthly pay (no matter which CalPERS employer paid this compensation). For some new members hired after July 1, 2006 and for all new members hired on or after January 15, 2011, final compensation is based on the monthly average of the member's highest 36 consecutive months' full-time equivalent monthly pay. PEPRA members have a cap on the annual salary used to calculate final compensation based on the Social Security Contribution and Benefit Base. For employees who participate in Social Security this cap is \$126,291 for 2020 and for those employees who do not participate in Social Security the cap for 2020 is \$151,549. Adjustments to the caps are permitted annually based on changes to the CPI for All Urban Consumers
 - Employees may or may not be covered by Social Security. The final compensation is not offset by a dollar amount.
 - The Service Retirement benefit is not capped.

Vested Deferred Retirement

Eligibility for Deferred Status

A member becomes eligible for a deferred vested retirement benefit when he or she leaves employment, keeps his or her contribution account balance on deposit with CalPERS, and has earned at least 10 years of credited service (total service across all CalPERS employers, and with certain other Retirement Systems with which CalPERS has reciprocity agreements).

Appendix B – Principal Plan Provisions

State Miscellaneous Tier 2 (continued)

Eligibility to Start Receiving Benefits

The member becomes eligible to receive a deferred retirement benefit upon satisfying the eligibility requirements for Deferred Status and upon attainment of age 55. Members with five years of service before January 1, 1985 are eligible at age 50.

Benefit

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

Non-Industrial (Non-Job Related) Disability Retirement

Eligibility

A CalPERS member is eligible for Non-Industrial Disability Retirement if he or she becomes disabled and has at least 10 years of credited service (total service across all PERS employers, and with certain other Retirement Systems with which CalPERS has reciprocity agreements). There is no special age requirement. Disabled means the member is unable to perform his or her job because of an illness or injury which is expected to be permanent or to last indefinitely. The illness or injury does not have to be job related. A CalPERS member must be actively working with any CalPERS employer at the time of disability in order to be eligible for this benefit. Members with five years of service before January 1, 1985 are also eligible.

Benefit

The Non-Industrial Disability Retirement benefit is a monthly allowance equal to 1.125% 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 29.628 years of service; or
- Service is CalPERS credited service plus the additional number of years that the member would have worked until age 65, for members with at least 10 years but not more than 29.628 years of service. The maximum benefit in this case is 33-1/3% 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 who are eligible to retire and have attained the normal retirement age determined by their service retirement benefit formula will receive the same dollar amount for disability retirement that is payable for service retirement. For members who have earned service with multiple CalPERS employers, the benefit attributed to each employer is the total disability allowance multiplied by the ratio of service with a particular employer to the total CalPERS service.

Post-Retirement Death Benefit

Lump Sum Payment

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

Form of Payment for Retirement Allowance

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

Appendix B – Principal Plan Provisions

State Miscellaneous Tier 2 (continued)

For retirement allowances with respect to service earned by employment in this group, 25% of the retirement allowance will automatically be continued to certain statutory beneficiaries upon the death of the retiree, *without* a reduction in the retiree's allowance. This additional benefit is often referred to as post-retirement survivor allowance (PRSA) or simply as *survivor continuance*.

In other words, 25% of the allowance, the *continuance portion*, is paid to the retiree for as long as he or she is alive, and that same amount is continued to the retiree's spouse (or if no eligible spouse, to unmarried children until they attain age 18; or, if no eligible children, to a qualifying dependent parent) for the rest of his or her lifetime.

The remaining 75% 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. 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

Group Term Life Insurance

Eligibility

An employee's beneficiary (or estate) will receive the Group Term Life Insurance benefit if the member dies while actively employed. A CalPERS member who is no longer actively employed with **any** CalPERS employer is not eligible for this benefit. This benefit is in addition to other pre-retirement death benefits.

Benefit

The benefit is a lump sum payment of \$5,000 plus an additional amount equal to 50% of the annual compensation earned by the deceased member during the 12 months immediately preceding the member's death. The additional amount will not be paid if the member is eligible for service retirement or the Alternate Death Benefit.

For members with less than 20 years of service credit and not age-eligible to retire:

Basic Death Benefit

Eligibility

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

Benefit

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

Appendix B – Principal Plan Provisions

State Miscellaneous Tier 2 (continued)

For members with more than 20 years of service credit and not age-eligible to retire:

In addition to the above pre-retirement death benefits, members are eligible for:

Alternate Death Benefit

Eligibility

This benefit may be received in lieu of the lump sum Basic Death Benefit if there is a surviving spouse or minor child of the member. The member must have died before reaching the minimum retirement age and must have been credited with at least 20 years of state service.

Benefit

The Alternate Death Benefit is calculated as though the member were the minimum retirement age and elected an optional form of benefit that provided 100 percent continuance to the member's spouse. If the member did not have a spouse at the time of death, one-half of the formula benefit would be paid to the surviving child. If the benefit is payable to a surviving child, the benefit will be discontinued upon death or the attainment of age 18.

For members who are age-eligible to retire:

In addition to the above pre-retirement death benefits, members are eligible for:

1957 Survivor Benefit

Eligibility

An employee's *eligible survivor(s)* may receive the 1957 Survivor benefit if the member dies while actively employed and has attained retirement eligibility. A CalPERS member who is no longer actively employed with **any** CalPERS employer is not eligible for this benefit. An *eligible survivor* means the surviving spouse to whom the member was married at least one year before death or, if there is no eligible spouse, to the member's unmarried children under age 18. A member's survivor may choose this benefit in lieu of the Basic Death benefit or the Optional Settlement 2W Death benefit.

Benefit

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

Optional Settlement 2W Death Benefit

Eligibility

An employee's *eligible survivor* may receive the Optional Settlement 2W Death benefit if the member dies while actively employed and has attained retirement eligibility. 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 may choose this benefit in lieu of the Basic Death benefit or the 1957 Survivor benefit.

Benefit

The Optional Settlement 2W 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 his or her death and elected Optional Settlement 2W. (A retiree who elects Optional Settlement 2W receives an allowance that has been reduced so that it will continue to be paid after his or her death to a surviving beneficiary.) The allowance is payable as long as the surviving spouse lives. Upon the death of the surviving spouse, the benefit shall be continued to minor children. There is a guarantee that the total amount paid will at least equal the Basic Death Benefit.

Appendix B – Principal Plan Provisions

State Miscellaneous Tier 2 (continued)

Cost-of-Living Adjustments

Beginning the second calendar year after the year of retirement, retirement and survivor allowances will be annually adjusted on a compound basis by 3%.

Purchasing Power Protection Allowance (PPPA)

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

Employee Contributions

Each employee contributes toward his or her retirement based upon one of the following schedules. The employer may choose to “pick-up” these contributions for the employees.

- The percent contributed above the monthly compensation breakpoint is 3.75%.
- The monthly compensation breakpoint is \$0.
- The percent contributed below the monthly compensation breakpoint is 0%.

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 his or her employee contributions, which are credited annually with 6% interest.

1959 Survivor Benefits Program

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

State Industrial Tier 1

The following is a summary of the major plan provisions for the most representative group used in calculating the liabilities of the plan. Many of the statements in this summary are general in nature and intended to provide an easily understood summary of the complex Public Employees' Retirement Law. The law itself governs in all situations.

RETIREMENT PROGRAM

Service Retirement

Eligibility

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

Appendix B – Principal Plan Provisions

State Industrial Tier 1 (continued)

Benefit

The Service Retirement benefit calculated for service earned by this group of employees is a monthly allowance equal to the product of the *benefit factor*, *years of service*, and *final compensation*, where

- The *benefit factor* for this group of employees comes from the **2% at 55** benefit factor table. New Classic members hired on or after January 15, 2011 are subject to the **2% at 60** benefit factor table. New PEPRAs members hired on or after January 1, 2013 are subject to the **2% at 62** benefit factor table. The factor depends on the member's age at retirement. Listed below are the factors for retirement at whole year ages:

| Retirement Age | 2% @ 55 Factor | 2% @ 60 Factor | 2% @ 62 Factor |
|----------------|----------------|----------------|----------------|
| 50 | 1.100% | 1.092% | N/A |
| 51 | 1.280% | 1.156% | N/A |
| 52 | 1.460% | 1.224% | 1.000% |
| 53 | 1.640% | 1.296% | 1.100% |
| 54 | 1.820% | 1.376% | 1.200% |
| 55 | 2.000% | 1.460% | 1.300% |
| 56 | 2.064% | 1.552% | 1.400% |
| 57 | 2.126% | 1.650% | 1.500% |
| 58 | 2.188% | 1.758% | 1.600% |
| 59 | 2.250% | 1.874% | 1.700% |
| 60 | 2.314% | 2.000% | 1.800% |
| 61 | 2.376% | 2.134% | 1.900% |
| 62 | 2.438% | 2.272% | 2.000% |
| 63 | 2.500% | 2.418% | 2.100% |
| 64 | 2.500% | 2.418% | 2.200% |
| 65 | 2.500% | 2.418% | 2.300% |
| 66 | 2.500% | 2.418% | 2.400% |
| 67 & Up | 2.500% | 2.418% | 2.500% |

- The *years of service* is the amount credited by CalPERS to a member while he or she is employed in this group (or for other periods that are recognized under the employer's contract with CalPERS). For a member who has earned service with multiple CalPERS employers, the benefit from each employer is calculated separately according to each employer's contract, and then added together for the total allowance. Any unused sick leave accumulated at the time of retirement will be converted to credited service at the rate of 0.004 years of service for each day of sick leave.
- The *final compensation* is the monthly average of the member's highest 12 consecutive months' full-time equivalent monthly pay (no matter which CalPERS employer paid this compensation). For some new members hired after July 1, 2006 and for all new members hired on or after January 15, 2011, final compensation is based on the monthly average of the member's highest 36 consecutive months' full-time equivalent monthly pay. PEPRAs members have a cap on the annual salary used to calculate final compensation based on the Social Security Contribution and Benefit Base. For employees who participate in Social Security this cap is \$126,291 for 2020 and for those employees who do not participate in Social Security the cap for 2020 is \$151,549. Adjustments to the caps are permitted annually based on changes to the CPI for All Urban Consumers.
- Employees may or may not be covered by Social Security. For employees covered by Social Security, the final compensation is offset by \$133.33 (or by one third if the final compensation is less than \$400). For some PEPRAs members, the final compensation is not offset.
- The Service Retirement benefit is not capped.

Appendix B – Principal Plan Provisions

State Industrial Tier 1 (continued)

Vested Deferred Retirement

Eligibility for Deferred Status

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

Eligibility to Start Receiving Benefits

Classic members become eligible to receive the deferred benefit upon satisfying the eligibility requirements for Deferred Status and upon attainment of age 50. 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, then added together for the total allowance.

Non-Industrial (Non-Job Related) Disability Retirement

Eligibility

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

Benefit

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

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

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.

Appendix B – Principal Plan Provisions

State Industrial Tier 1 (continued)

Industrial (Job-Related) Disability Retirement

Eligibility

An employee is eligible for Industrial 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 in the next paragraph.

Benefit

The Industrial Disability Retirement benefit is a monthly allowance equal to 50% of final compensation. However, 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. 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 or annuitization of the accumulated member contributions with respect to employment in this group.

Post-Retirement Death Benefit

Lump Sum Payment

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

Form of Payment for Retirement Allowance

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

For retirement allowances with respect to service earned by employment in this group, 25% of the retirement allowance will automatically be continued to certain statutory beneficiaries upon the death of the retiree *without* a reduction in the retiree's allowance. This additional benefit is often referred to as post-retirement survivor allowance (PRSA) or simply as *survivor continuance*.

In other words, 25% of the allowance, the *continuance portion*, is paid to the retiree for as long as he or she is alive, and that same amount is continued to the retiree's spouse (or if no eligible spouse, to unmarried children until they attain age 18; or, if no eligible children, to a qualifying dependent parent) for the rest of his or her lifetime.

The remaining 75% 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*.

Appendix B – Principal Plan Provisions

State Industrial Tier 1 (continued)

Pre-Retirement Death Benefits

Group Term Life Insurance

Eligibility

An employee's beneficiary (or estate) will receive the Group Term Life Insurance benefit if the member dies while actively employed. A CalPERS member who is no longer actively employed with **any** CalPERS employer is not eligible for this benefit. This benefit is in addition to other pre-retirement death benefits.

Benefit

The benefit is a lump sum payment of \$5,000 plus an additional amount equal to 50 percent of the annual compensation earned by the deceased member during the 12 months immediately preceding the member's death. The additional amount will not be paid if the member is eligible for service retirement or the Alternate Death Benefit.

For members with less than 20 years of service credit and not age-eligible to retire:

Basic Death Benefit

Eligibility

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

Benefit

The Basic Death Benefit is a lump sum in the amount of the member's accumulated contributions, where interest is the greater of 6% or the prevailing discount rate. In addition, a lump sum in the amount of six months' salary shall be paid only if the member is eligible for service retirement or eligible for the Alternate Death Benefit. 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.

Special Death 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 children 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. The allowance will be increased whenever the compensation paid to active employees is increased but ceases 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 children under age 22. There is a guarantee that the total amount paid will at least equal the Basic Death Benefit.

Appendix B – Principal Plan Provisions

State Industrial Tier 1 (continued)

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 children (*eligible* means unmarried children 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

For members with more than 20 years of service credit and not age-eligible to retire:

In addition to the above pre-retirement death benefits, members are eligible for:

Alternate Death Benefit

Eligibility

This benefit may be received in lieu of the lump sum Basic Death Benefit if there is a surviving spouse or minor child of the member. The member must have died before reaching the minimum retirement age and must have been credited with at least 20 years of state service.

Benefit

The Alternate Death Benefit is calculated as though the member were the minimum retirement age and elected an optional form of benefit that provided 100% continuance to the member's spouse. If the member did not have a spouse at the time of death, one-half of the formula benefit would be paid to the surviving child. If the benefit is payable to a surviving child, the benefit will be discontinued upon death or the attainment of age 18.

For members who are age-eligible to retire:

In addition to the above pre-retirement death benefits, members are eligible for:

1957 Survivor Benefit

Eligibility

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

Benefit

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

Appendix B – Principal Plan Provisions

State Industrial Tier 1 (continued)

Optional Settlement 2W Death Benefit

Eligibility

An employee's *eligible survivor* may receive the Optional Settlement 2W Death benefit if the member dies while actively employed, has attained at least age 50 for Classic and Safety PEPRA members and age 52 for Miscellaneous PEPRA members, and has at least five years of credited service (total service across all CalPERS employers and with certain other Retirement Systems with which CalPERS has reciprocity agreements). A CalPERS member who is no longer actively employed with **any** CalPERS employer is not eligible for this benefit. An *eligible survivor* means the surviving spouse to whom the member was married at least one year before death. A member's survivor may choose this benefit in lieu of the Basic Death benefit or the 1957 Survivor benefit.

Benefit

The Optional Settlement 2W 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 his or her death and elected Optional Settlement 2W. (A retiree who elects Optional Settlement 2W receives an allowance that has been reduced so that it will continue to be paid after his or her death to a surviving beneficiary.) The allowance is payable as long as the surviving spouse lives. Upon the death of the surviving spouse, the benefit shall be continued to minor children. There is a guarantee that the total amount paid will at least equal the Basic Death Benefit.

Cost-of-Living Adjustments

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

Purchasing Power Protection Allowance (PPPA)

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

Employee Contributions

Each employee contributes toward his or her retirement based upon one of the following schedules. The employer may choose to "pick-up" these contributions for the employees. For employees covered by Social Security, the monthly compensation breakpoint is \$513 and the contribution schedule is as follows:

- The percent contributed below the monthly compensation breakpoint is 0%.
- The percent contributed above the monthly compensation breakpoint ranges from 5% to 10%.

There are a small number of employees not covered by Social Security in this plan. For those employees, the monthly compensation breakpoint is \$317 and contributions are as follows:

- The percent contributed below the monthly compensation breakpoint is 0%.
- The percent contributed above the monthly compensation breakpoint is 1% greater than those covered by Social Security.

Appendix B – Principal Plan Provisions

State Industrial Tier 1 (continued)

Refund of Employee Contributions

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

1959 Survivor Benefits Program

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

State Industrial Tier 2

The following is a summary of the major plan provisions applicable to State Industrial Tier 2 Members. Many of the statements in this summary are general in nature and intended to provide an easily understood summary of the complex Public Employees' Retirement Law. The law itself governs in all situations.

RETIREMENT PROGRAM

Tier 2 Members Electing Tier 1 Benefits

State Industrial Tier 2 members have the right to convert their Tier 2 service to Tier 1 service provided they make up the shortfall in their accumulated contributions with interest. In this valuation, we have assumed that all State Industrial Tier 2 members eligible to convert their Tier 2 service to Tier 1 service will elect to do so.

Service Retirement

Eligibility

A CalPERS member becomes eligible for Service Retirement upon attainment of age 55 with at least 10 years of credited service (total service across all CalPERS employers, and with certain other Retirement Systems with which CalPERS has reciprocity agreements). Members with 5 years of service before January 1, 1985 are also eligible.

Appendix B – Principal Plan Provisions

State Industrial Tier 2 (continued)

Benefit

The Service Retirement benefit calculated for service earned by this group of employees is a monthly allowance equal to the product of the *benefit factor*, *years of service*, and *final compensation*, where

- The benefit factor for Classic employees comes from the **1.25% at 65** Tier 2 benefit factor table. PEPRA members are subject to the **1.25% at 67** benefit factor table. The factor depends on the member's age at retirement. Listed below are the factors for retirement at whole year ages:

| Retirement Age | 1.25% @ 65 Tier 2 Factor | 1.25% @ 67 Tier 2 Factor |
|----------------|-----------------------------|-----------------------------|
| 50 | 0.500% | N/A |
| 51 | 0.550% | N/A |
| 52 | 0.600% | 0.650% |
| 53 | 0.650% | 0.690% |
| 54 | 0.700% | 0.730% |
| 55 | 0.750% | 0.770% |
| 56 | 0.800% | 0.810% |
| 57 | 0.850% | 0.850% |
| 58 | 0.900% | 0.890% |
| 59 | 0.950% | 0.930% |
| 60 | 1.000% | 0.970% |
| 61 | 1.050% | 1.010% |
| 62 | 1.100% | 1.050% |
| 63 | 1.150% | 1.090% |
| 64 | 1.200% | 1.130% |
| 65 | 1.250% | 1.170% |
| 66 | 1.250% | 1.210% |
| 67 & Up | 1.250% | 1.250% |

- 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. Any unused sick leave accumulated at the time of retirement will be converted to credited service at the rate of 0.004 years of service for each day of sick leave.
- The *final compensation* is the monthly average of the member's highest 12 consecutive months' full-time equivalent monthly pay (no matter which CalPERS employer paid this compensation). For some new members hired after July 1, 2006 and for all new members hired on or after January 15, 2011, final compensation is based on the monthly average of the member's highest 36 consecutive months' full-time equivalent monthly pay. PEPRA members have a cap on the annual salary used to calculate final compensation based on the Social Security Contribution and Benefit Base. For employees who participate in Social Security this cap is \$126,291 for 2020 and for those employees who do not participate in Social Security the cap for 2020 is \$151,549. Adjustments to the caps are permitted annually based on changes to the CPI for All Urban Consumers.
- The employees in this group may or may not be covered by Social Security. The final compensation is not offset by a dollar amount.
- The Service Retirement benefit is not capped.

Appendix B – Principal Plan Provisions

State Industrial Tier 2 (continued)

Vested Deferred Retirement

Eligibility for Deferred Status

A CalPERS member becomes eligible for a deferred vested retirement benefit when he or she leaves employment, keeps his or her contribution account balance on deposit with CalPERS, **and** has earned at least 10 years of credited service (total service across all CalPERS employers, and with certain other Retirement Systems with which CalPERS has reciprocity agreements). Members with five years of service before January 1, 1985 are also eligible.

Eligibility to Start Receiving Benefits

The CalPERS member becomes eligible to receive the deferred retirement benefit upon satisfying the eligibility requirements for Deferred Status and upon attainment of age 55. Members with five years of service before January 1, 1985 are eligible at age 50.

Benefit

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

Non-Industrial (Non-Job Related) Disability Retirement

Eligibility

A CalPERS member is eligible for Non-Industrial Disability Retirement if he or she becomes *disabled* and has at least 10 years of credited service (total service across all PERS employers, and with certain other Retirement Systems with which PERS has reciprocity agreements). There is no special age requirement. *Disabled* means the member is unable to perform his or her job because of an illness or injury which is expected to be permanent or to last indefinitely. The illness or injury does not have to be job-related. A CalPERS member must be actively working with any CalPERS employer at the time of disability in order to be eligible for this benefit. Members with five years of service before January 1, 1985 are also eligible.

Benefit

The Non-Industrial Disability Retirement benefit is a monthly allowance equal to 1.125% 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 29.628 years of service; or
- *Service* is CalPERS credited service plus the additional number of years that the member would have worked until age 65, for members with at least 10 years but not more than 29.628 years of service. The maximum benefit in this case is 33-1/3% 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 who are eligible to retire and 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.

Appendix B – Principal Plan Provisions

State Industrial Tier 2 (continued)

Industrial (Job-Related) Disability Retirement

Eligibility

An employee is eligible for Industrial 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 in the next paragraph.

Benefit

The Industrial Disability Retirement benefit is a monthly allowance equal to 50% of final compensation. However, 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. 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 or annuitization of the accumulated member contributions with respect to employment in this group.

Post-Retirement Death Benefit

Lump Sum Payment

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

Form of Payment for Retirement Allowance

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

For retirement allowances with respect to service earned by employment in this group, 25% of the retirement allowance will automatically be continued to certain statutory beneficiaries upon the death of the retiree, without a reduction in the retiree's allowance. This additional benefit is often referred to as post-retirement survivor allowance (PRSA) or simply as *survivor continuance*.

In other words, 25% of the allowance, the *continuance portion*, is paid to the retiree for as long as he or she is alive, and that same amount is continued to the retiree's spouse (or if no eligible spouse, to unmarried children until they attain age 18; or, if no eligible children, to a qualifying dependent parent) for the rest of his or her lifetime.

The remaining 75% 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*.

Appendix B – Principal Plan Provisions

State Industrial Tier 2 (continued)

Pre-Retirement Death Benefits

Group Term Life Insurance

Eligibility

An employee's beneficiary (or estate) will receive the Group Term Life Insurance benefit if the member dies while actively employed. A CalPERS member who is no longer actively employed with **any** CalPERS employer is not eligible for this benefit. This benefit is in addition to other pre-retirement death benefits.

Benefit

The benefit is a lump sum payment of \$5,000 plus an additional amount equal to 50% of the annual compensation earned by the deceased member during the 12 months immediately preceding the member's death. The additional amount will not be paid if the member is eligible for service retirement or the Alternate Death Benefit.

For members with less than 20 years of service credit and not age-eligible to retire:

Basic Death Benefit

Eligibility

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

Benefit

The Basic Death Benefit is a lump sum in the amount of the member's accumulated contributions, where interest is the greater of 6% or the prevailing discount rate. In addition, a lump sum in the amount of six months' salary shall be paid only if the member is eligible for service retirement or eligible for the Alternate Death Benefit. 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.

Special Death 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 children 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. The allowance will be increased whenever the compensation paid to active employees is increased but ceases 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 children under age 22. There is a guarantee that the total amount paid will at least equal the Basic Death Benefit.

Appendix B – Principal Plan Provisions

State Industrial Tier 2 (continued)

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 children (*eligible* means unmarried children 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

For members with more than 20 years of service credit and not age-eligible to retire:

In addition to the above pre-retirement death benefits, members are eligible for:

Alternate Death Benefit

Eligibility

This benefit may be received in lieu of the lump sum Basic Death Benefit if there is a surviving spouse or minor child of the member. The member must have died before reaching the minimum retirement age and must have been credited with at least 20 years of state service.

Benefit

The Alternate Death Benefit is calculated as though the member were the minimum retirement age and elected an optional form of benefit that provided 100% continuance to the member's spouse. If the member did not have a spouse at the time of death, one-half of the formula benefit would be paid to the surviving child. If the benefit is payable to a surviving child, the benefit will be discontinued upon death or the attainment of age 18.

For members who are age-eligible to retire:

In addition to the above pre-retirement death benefits, members are eligible for:

1957 Survivor Benefit

Eligibility

An employee's *eligible survivor(s)* may receive the 1957 Survivor benefit if the member dies while actively employed and has attained retirement eligibility. A CalPERS member who is no longer actively employed with **any** CalPERS employer is not eligible for this benefit. An *eligible survivor* means the surviving spouse to whom the member was married at least one year before death or, if there is no eligible spouse, to the member's unmarried children under age 18. A member's survivor may choose this benefit in lieu of the Basic Death benefit or the Special Death benefit.

Benefit

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

Appendix B – Principal Plan Provisions

State Industrial Tier 2 (continued)

Optional Settlement 2W Death Benefit

Eligibility

An employee's *eligible survivor* may receive the Optional Settlement 2W Death benefit if the member dies while actively employed and has attained retirement eligibility. 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 may choose this benefit in lieu of the Basic Death benefit or the 1957 Survivor benefit.

Benefit

The Optional Settlement 2W 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 his or her death and elected Optional Settlement 2W. (A retiree who elects Optional Settlement 2W receives an allowance that has been reduced so that it will continue to be paid after his or her death to a surviving beneficiary.) The allowance is payable as long as the surviving spouse lives. Upon the death of the surviving spouse, the benefit shall be continued to minor children. There is a guarantee that the total amount paid will at least equal the Basic Death Benefit.

Cost-of-Living Adjustments

Beginning the second calendar year after the year of retirement, retirement and survivor allowances will be annually adjusted on a compound basis by 3%.

Purchasing Power Protection Allowance (PPPA)

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

Employee Contributions

Each employee contributes toward his or her retirement based upon one of the following schedules. The employer may choose to "pick up" these contributions for the employees.

- The percent contributed above the monthly compensation breakpoint is 3.75%.
- The monthly compensation breakpoint is \$0.
- The percent contributed below the monthly compensation breakpoint is 0%.

Refund of Employee Contributions

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

1959 Survivor Benefits Program

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

Appendix B – Principal Plan Provisions

State Safety

The following is a summary of the major plan provisions for the most representative group used in calculating the liabilities of the plan. Many of the statements in this summary are general in nature and intended to provide an easily understood summary of the complex Public Employees' Retirement Law. The law itself governs in all situations.

RETIREMENT PROGRAM

Service Retirement

Eligibility

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

Benefit

The Service Retirement benefit calculated for service earned by this group of employees is a monthly allowance equal to the product of the *benefit factor*, *years of service*, and *final compensation*, where

- The *benefit factor* for this group of employees comes from the **2.5% at 55** Safety benefit factor table. Classic members hired on or after January 15, 2011 are subject to either the **2.5% at 60** Safety or the **2% at 55** Safety benefit factor table. PEPRAs members are subject to the **2% at 57** benefit factor table. The factor depends on the member's age at retirement. Listed below are the factors for retirement at whole year ages:

| Retirement Age | 2.5% @ 55 Factor | 2.5% @ 60 Factor | 2% @ 55 Factor | 2% @ 57 Factor |
|----------------|------------------|------------------|----------------|----------------|
| 50 | 1.700% | 1.426% | 1.426% | 1.426% |
| 51 | 1.800% | 1.522% | 1.522% | 1.508% |
| 52 | 1.900% | 1.628% | 1.628% | 1.590% |
| 53 | 2.000% | 1.742% | 1.742% | 1.672% |
| 54 | 2.250% | 1.866% | 1.866% | 1.754% |
| 55 | 2.500% | 2.000% | 2.000% | 1.836% |
| 56 | 2.500% | 2.100% | 2.000% | 1.918% |
| 57 | 2.500% | 2.200% | 2.000% | 2.000% |
| 58 | 2.500% | 2.300% | 2.000% | 2.000% |
| 59 | 2.500% | 2.400% | 2.000% | 2.000% |
| 60 & Up | 2.500% | 2.500% | 2.000% | 2.000% |

- The *years of service* is the amount credited by CalPERS to a member while he or she is employed in this group (or for other periods that are recognized under the employer's contract with CalPERS). For a member who has earned service with multiple CalPERS employers, the benefit from each employer is calculated separately according to each employer's contract, then added together for the total allowance. Any unused sick leave accumulated at the time of retirement will be converted to credited service at the rate of 0.004 years of service for each day of sick leave.
- The *final compensation* is the monthly average of the member's highest 12 consecutive months' full-time equivalent monthly pay (no matter which CalPERS employer paid this compensation). For some new members hired after July 1, 2006 and for all new members hired on or after January 15, 2011, final compensation is based on the monthly average of the member's highest 36 consecutive months' full-time equivalent monthly pay. PEPRAs members have a cap on the annual salary used to calculate final compensation based on the Social Security Contribution and Benefit Base. For employees who participate in Social Security this cap is \$126,291 for 2020 and for those employees who do not participate in Social Security the cap for 2020 is \$151,549. Adjustments to the caps are permitted annually based on changes to the CPI for All Urban Consumers.
- The employees in this group are not covered by Social Security. The final compensation is not offset by a dollar amount.
- The Service Retirement benefit for Classic members is capped at 80% of final compensation.

Appendix B – Principal Plan Provisions

State Safety (continued)

Vested Deferred Retirement

Eligibility for Deferred Status

A member becomes eligible for a deferred vested retirement benefit when he or she leaves employment, keeps his or her contribution account balance on deposit with CalPERS, **and** has earned at least five 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

A member becomes eligible to receive the deferred retirement benefit upon satisfying the eligibility requirements for Deferred Status and upon attainment of age 50.

Benefit

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

Non-Industrial (Non-Job Related) Disability Retirement

Eligibility

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

Benefit

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

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

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

Appendix B – Principal Plan Provisions

State Safety (continued)

Industrial (Job-Related) Disability Retirement

Eligibility

An employee is eligible for Industrial 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 in the next paragraph.

Benefit

The Industrial Disability Retirement benefit is a monthly allowance equal to 50% of final compensation. However, if a member is eligible for Service Retirement and the Service Retirement benefit is greater than the Industrial Disability Retirement benefit, the member may choose to receive the larger benefit. 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 or annuitization of the accumulated member contributions with respect to employment in this group.

Post-Retirement Death Benefit

Lump Sum Payment

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

Form of Payment for Retirement Allowance

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

For retirement allowances with respect to service earned by employment in this group, 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 often referred to as *post-retirement survivor allowance* (PRSA) or simply as *survivor continuance*.

In other words, 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 children until they attain age 18; or, if no eligible children, to a qualifying dependent parent) for the rest of his or her lifetime.

The remaining 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. 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*.

Appendix B – Principal Plan Provisions

State Safety (continued)

Pre-Retirement Death Benefits

Group Term Life Insurance

Eligibility

An employee's beneficiary (or estate) will receive the Group Term Life Insurance benefit if the member dies while actively employed. A CalPERS member who is no longer actively employed with **any** CalPERS employer is not eligible for this benefit. This benefit is in addition to other pre-retirement death benefits.

Benefit

The benefit is a lump sum payment of \$5,000 plus an additional amount equal to 50% of the annual compensation earned by the deceased member during the 12 months immediately preceding the member's death. The additional amount will not be paid if the member is eligible for service retirement or the Alternate Death Benefit.

For members with less than 20 years of service credit and not age-eligible to retire:

Basic Death Benefit

Eligibility

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

Benefit

The Basic Death Benefit is a lump sum in the amount of the member's accumulated contributions, where interest is the greater of 6% or the prevailing discount rate. In addition, a lump sum in the amount of six months' salary shall be paid only if the member is eligible for service retirement or eligible for the Alternate Death Benefit. 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.

Special Death 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 children 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. The allowance will be increased whenever the compensation paid to active employees is increased but ceases 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 children under age 22. There is a guarantee that the total amount paid will at least equal the Basic Death Benefit.

Appendix B – Principal Plan Provisions

State Safety (continued)

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 children (*eligible* means unmarried children 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

For members with more than 20 years of service credit and not age-eligible to retire:

In addition to the above pre-retirement death benefits, members are eligible for:

Alternate Death Benefit

Eligibility

This benefit may be received in lieu of the lump sum Basic Death Benefit if there is a surviving spouse or minor child of the member. The member must have died before reaching the minimum retirement age and must have been credited with at least 20 years of state service.

Benefit

The Alternate Death Benefit is calculated as though the member were the minimum retirement age and elected an optional form of benefit that provided 100% continuance to the member's spouse. If the member did not have a spouse at the time of death, one-half of the formula benefit would be paid to the surviving child. If the benefit is payable to a surviving child, the benefit will be discontinued upon death or the attainment of age 18.

For members who are age-eligible to retire:

In addition to the above pre-retirement death benefits, members are eligible for:

1957 Survivor Benefit

Eligibility

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

Benefit

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

Appendix B – Principal Plan Provisions

State Safety (continued)

Optional Settlement 2W Death Benefit

Eligibility

An employee's *eligible survivor* may receive the Optional Settlement 2W Death benefit if the member dies while actively employed, has attained at least age 50, and has at least five years of credited service (total service across all CalPERS employers and with certain other Retirement Systems with which CalPERS has reciprocity agreements). A CalPERS member who is no longer actively employed with **any** CalPERS employer is not eligible for this benefit. An *eligible survivor* means the surviving spouse to whom the member was married at least one year before death. A member's survivor may choose this benefit in lieu of the Basic Death benefit or the 1957 Survivor benefit.

Benefit

The Optional Settlement 2W 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 his or her death and elected Optional Settlement 2W. (A retiree who elects Optional Settlement 2W receives an allowance that has been reduced so that it will continue to be paid after his or her death to a surviving beneficiary.) The allowance is payable as long as the surviving spouse lives. Upon the death of the surviving spouse, the benefit shall be continued to minor children. There is a guarantee that the total amount paid will at least equal the Basic Death Benefit.

Cost-of-Living Adjustments

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

Purchasing Power Protection Allowance (PPPA)

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

Employee Contributions

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

The active population is subject to the following schedule:

- The percent contributed below the monthly compensation breakpoint is 0%.
- The monthly compensation breakpoint is \$317.
- The percent contributed above the monthly compensation breakpoint is 11%, or half of the normal cost, depending on bargaining unit.

Appendix B – Principal Plan Provisions

State Safety (continued)

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 his or her employee contributions, which are credited annually with 6% interest.

1959 Survivor Benefits Program

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

State Peace Officers and Firefighters

The following is a summary of the major plan provisions for the most representative group used in calculating the liabilities of this plan. Many of the statements in this summary are general in nature and intended to provide an easily understood summary of the complex Public Employees' Retirement Law. The law itself governs in all situations.

RETIREMENT PROGRAM

Service Retirement

Eligibility

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

Benefit

The Service Retirement benefit calculated for service earned by this group of employees is a monthly allowance equal to the product of the *benefit factor*, *years of service*, and *final compensation*, where

- The *benefit factor* for this group of employees comes from either the **3% at 55** or the **3% at 50** benefit factor table. New Classic members, except firefighters, hired on or after January 15, 2011 are subject to the **2.5% at 55** Safety benefit factor table. New Classic firefighters hired on or after October 31, 2010 are subject to the **3% at 55** benefit factor table. The factor depends on the member's age at retirement. PEPRA members are subject to the **2.5% at 57** or **2.7% at 57** benefit factor table. Listed below are the factors for retirement at whole year ages:

| Retirement Age | 3% @ 50 Factor | 3% @ 55 Factor | 2.5% @ 55 Factor | 2.5% @ 57 Factor | 2.7% @ 57 Factor |
|----------------|----------------|----------------|------------------|------------------|------------------|
| 50 | 3.000% | 2.400% | 2.000% | 2.000% | 2.000% |
| 51 | 3.000% | 2.520% | 2.100% | 2.071% | 2.100% |
| 52 | 3.000% | 2.640% | 2.200% | 2.143% | 2.200% |
| 53 | 3.000% | 2.760% | 2.300% | 2.214% | 2.300% |
| 54 | 3.000% | 2.880% | 2.400% | 2.286% | 2.400% |
| 55 | 3.000% | 3.000% | 2.500% | 2.357% | 2.500% |
| 56 | 3.000% | 3.000% | 2.500% | 2.429% | 2.600% |
| 57 & Up | 3.000% | 3.000% | 2.500% | 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, then added together for the total allowance. Any unused sick leave accumulated at the time of retirement will be converted to credited service at the rate of 0.004 years of service for each day of sick leave.

Appendix B – Principal Plan Provisions

State Peace Officers and Firefighters (continued)

- The *final compensation* is the monthly average of the member's highest 12 consecutive months' full-time equivalent monthly pay (no matter which CalPERS employer paid this compensation). For some new members hired after January 1, 2007 and for all new members hired on or after January 15, 2011, final compensation is based on the monthly average of the member's highest 36 consecutive months' full-time equivalent monthly pay. PEPRAs members have a cap on the annual salary used to calculate final compensation based on the Social Security Contribution and Benefit Base. For employees who participate in Social Security this cap is \$126,291 for 2020 and for those employees who do not participate in Social Security the cap for 2020 is \$151,549. Adjustments to the caps are permitted annually based on changes to the CPI for All Urban Consumers.
- The employees in this group are not covered by Social Security. The final compensation is not offset by a dollar amount.
- The Service Retirement benefit for Classic members is capped at 90% of final compensation.

Vested Deferred Retirement

Eligibility for Deferred Status

A CalPERS member becomes eligible for a deferred vested retirement benefit when he or she leaves employment, keeps his or her contribution account balance on deposit with CalPERS, **and** has earned at least five 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

Members become eligible to receive the deferred retirement benefit upon satisfying the eligibility requirements for Deferred Status and upon attainment of age 50.

Benefit

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

Non-Industrial (Non-Job Related) Disability Retirement

Eligibility

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

Benefit

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

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

Appendix B – Principal Plan Provisions

State Peace Officers and Firefighters (continued)

Members who are eligible for a larger service retirement benefit may choose to receive that benefit in lieu of a disability benefit. Members who are eligible to retire and have attained the normal retirement age 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 (Job-Related) Disability Retirement

Eligibility

An employee is eligible for Industrial 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 in the next paragraph.

Benefit

The Industrial Disability Retirement benefit is a monthly allowance equal to 50% of final compensation. However, 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. 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 or annuitization of the accumulated member contributions with respect to employment in this group.

Post-Retirement Death Benefit

Lump Sum Payment

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

Form of Payment for Retirement Allowance

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

For retirement allowances with respect to service earned by employment in this group, 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 often referred to as *post retirement survivor allowance* (PRSA) or simply as *survivor continuance*. In other words, 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 children until they attain age 18; or, if no eligible children, to a qualifying dependent parent) for the rest of his or her lifetime.

The remaining 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. 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*.

Appendix B – Principal Plan Provisions

State Peace Officers and Firefighters (continued)

Pre-Retirement Death Benefits

Group Term Life Insurance

Eligibility

An employee's beneficiary (or estate) will receive the Group Term Life Insurance benefit if the member dies while actively employed. A CalPERS member who is no longer actively employed with **any** CalPERS employer is not eligible for this benefit. This benefit is in addition to other pre-retirement death benefits.

Benefit

The benefit is a lump sum payment of \$5,000 plus an additional amount equal to 50% of the annual compensation earned by the deceased member during the 12 months immediately preceding the member's death. The additional amount will not be paid if the member is eligible for service retirement or the Alternate Death Benefit.

For members with less than 20 years of service credit and not age-eligible to retire:

Basic Death Benefit

Eligibility

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

Benefit

The Basic Death Benefit is a lump sum in the amount of the member's accumulated contributions, where interest is the greater of 6% or the prevailing discount rate. In addition, a lump sum in the amount of six months' salary shall be paid only if the member is eligible for service retirement or eligible for the Alternate Death Benefit. 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.

Special Death 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 children 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. The allowance will be increased whenever the compensation paid to active employees is increased but ceases 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 children under age 22. There is a guarantee that the total amount paid will at least equal the Basic Death Benefit.

Appendix B – Principal Plan Provisions

State Peace Officers and Firefighters (continued)

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 children (*eligible* means unmarried children 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

For members with more than 20 years of service credit and not age-eligible to retire:

In addition to the above pre-retirement death benefits, members are eligible for:

Alternate Death Benefit

Eligibility

This benefit may be received in lieu of the lump sum Basic Death Benefit if there is a surviving spouse or minor child of the member. The member must have died before reaching the minimum retirement age and must have been credited with at least 20 years of state service.

Benefit

The Alternate Death Benefit is calculated as though the member were the minimum retirement age and elected an optional form of benefit that provided 100% continuance to the member's spouse. If the member did not have a spouse at the time of death, one-half of the formula benefit would be paid to the surviving child. If the benefit is payable to a surviving child, the benefit will be discontinued upon death or the attainment of age 18.

For members who are age-eligible to retire:

In addition to the above pre-retirement death benefits, members are eligible for:

1957 Survivor Benefit

Eligibility

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

Benefit

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

Appendix B – Principal Plan Provisions

State Peace Officers and Firefighters (continued)

Optional Settlement 2W Death Benefit

Eligibility

An employee's *eligible survivor* may receive the Optional Settlement 2W Death benefit if the member dies while actively employed, has attained at least age 50, and has at least five years of credited service (total service across all CalPERS employers and with certain other Retirement Systems with which CalPERS has reciprocity agreements). A CalPERS member who is no longer actively employed with **any** CalPERS employer is not eligible for this benefit. An *eligible survivor* means the surviving spouse to whom the member was married at least one year before death. A member's survivor may choose this benefit in lieu of the Basic Death benefit or the 1957 Survivor benefit.

Benefit

The Optional Settlement 2W 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 his or her death and elected Optional Settlement 2W. (A retiree who elects Optional Settlement 2W receives an allowance that has been reduced so that it will continue to be paid after his or her death to a surviving beneficiary.) The allowance is payable as long as the surviving spouse lives. Upon the death of the surviving spouse, the benefit shall be continued to minor children. There is a guarantee that the total amount paid will at least equal the Basic Death Benefit.

Cost-of-Living Adjustments

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

Purchasing Power Protection Allowance (PPPA)

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

Employee Contributions

Each employee contributes toward his or her retirement based upon one of the following schedules. The employer may choose to "pick up" these contributions for the employees.

Most of the active population has a monthly compensation breakpoint of \$238, \$513, or \$863 and is subject to the following schedule:

- The percent contributed below the monthly compensation breakpoint is 0%.
- The percent contributed above the monthly compensation breakpoint is 13%.

A small portion of the Classic members have a monthly compensation breakpoint of \$238 and are subject to the following schedule:

- The percent contributed below the monthly compensation breakpoint is 0%.
- The percent contributed above the monthly compensation breakpoint is 8%.

Appendix B – Principal Plan Provisions

State Peace Officers and Firefighters (continued)

A small portion of the PEPRA members have a monthly compensation breakpoint of \$0 and are subject to the following schedule:

- The percent contributed below the monthly compensation breakpoint is 0%.
- The percent contributed above the monthly compensation breakpoint is half of the total normal cost. See the “PEPRA Member Contribution Rates” section of this report for more information.

Refund of Employee Contributions

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

1959 Survivor Benefits Program

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

California Highway Patrol

The following is a summary of the major plan provisions used in calculating the liabilities of the plan. Many of the statements in this summary are general in nature and intended to provide an easily understood summary of the complex Public Employees’ Retirement Law. The law itself governs in all situations.

RETIREMENT PROGRAM

Service Retirement

Eligibility

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

Benefit

The Service Retirement benefit calculated for service earned by this group of employees is a monthly allowance equal to the product of the *benefit factor*, *years of service*, and *final compensation*, where

- The *benefit factor* for this group of employees is **3% at 50**. Classic members hired on or after October 31, 2010 are subject to the **3% at 55** benefit factor table. PEPRA members are subject to the **2.7% at 57** benefit factor table.

| Retirement Age | 3% @ 50 Factor | 3% @ 55 Factor | 2.7% @ 57 Factor |
|----------------|----------------|----------------|------------------|
| 50 | 3.000% | 2.400% | 2.000% |
| 51 | 3.000% | 2.520% | 2.100% |
| 52 | 3.000% | 2.640% | 2.200% |
| 53 | 3.000% | 2.760% | 2.300% |
| 54 | 3.000% | 2.880% | 2.400% |
| 55 | 3.000% | 3.000% | 2.500% |
| 56 | 3.000% | 3.000% | 2.600% |
| 57 & Up | 3.000% | 3.000% | 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 including service at the CHP Academy for graduating members). 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. Any unused sick leave accumulated at the time of retirement will be converted to credited service at the rate of 0.004 years of service for each day of sick leave.

Appendix B – Principal Plan Provisions

California Highway Patrol (continued)

- The *final compensation* is the monthly average of the member's highest 12 consecutive months' full-time equivalent monthly pay (no matter which CalPERS employer paid this compensation). The *final compensation* for an employee hired on or after October 31, 2010 is the monthly average of the member's highest 36 consecutive months' full-time equivalent monthly pay. PEPRA members have a cap on the annual salary used to calculate final compensation based on the Social Security Contribution and Benefit Base. For employees who participate in Social Security this cap is \$126,291 for 2020 and for those employees who do not participate in Social Security the cap for 2020 is \$151,549. Adjustments to the caps are permitted annually based on changes to the CPI for All Urban Consumers.
- The employees in this group are not covered by Social Security. The final compensation is not offset by a dollar amount.
- The Service Retirement benefit for Classic members is capped at 90% of final compensation.

Vested Deferred Retirement

Eligibility for Deferred Status

A member becomes eligible for a deferred vested retirement benefit when he or she leaves employment, keeps his or her contribution account balance on deposit with CalPERS, **and** has earned at least five 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

Members become eligible to receive the deferred retirement benefit upon satisfying the eligibility requirements for Deferred Status and upon attainment of age 50.

Benefit

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

Non-Industrial (Non-Job Related) Disability Retirement

Eligibility

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

Benefit

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

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

Appendix B – Principal Plan Provisions

California Highway Patrol (continued)

Members who are eligible for a larger service retirement benefit may choose to receive that benefit in lieu of a disability benefit. Members who are eligible to retire and have attained the normal retirement age 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 (Job-Related) Disability Retirement

Eligibility

An employee is eligible for Industrial 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 in the next paragraph.

Benefit

The Industrial Disability Retirement benefit is a monthly allowance equal to 50% of final compensation. For members who, as a result of a single event, incur serious bodily injury, the benefit provided is equal to the greater of 50% of final compensation, or, 3% of final compensation multiplied by the number of years of service credited to the member, plus an annuity purchased with the accumulated additional contributions, if any. However, 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, plus an annuity purchased with the accumulated additional contributions, if any. 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 or annuitization of the accumulated member contributions with respect to employment in this group.

Post-Retirement Death Benefit

Lump Sum Payment

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

Form of Payment for Retirement Allowance

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

For retirement allowances with respect to service earned by employment in this group, 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 often referred to as *post retirement survivor allowance* (PRSA) or simply as *survivor continuance*.

In other words, 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 children until they attain age 18; or, if no eligible children, to a qualifying dependent parent) for the rest of his or her lifetime.

The remaining 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. 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.

Appendix B – Principal Plan Provisions

California Highway Patrol (continued)

Pre-Retirement Death Benefits

Group Term Life Insurance

Eligibility

An employee's beneficiary (or estate) will receive the Group Term Life Insurance benefit if the member dies while actively employed. A CalPERS member who is no longer actively employed with **any** CalPERS employer is not eligible for this benefit. This benefit is in addition to other pre-retirement death benefits.

Benefit

The benefit is a lump sum payment of \$5,000 plus an additional amount equal to 50% of the annual compensation earned by the deceased member during the 12 months immediately preceding the member's death. The additional amount will not be paid if the member is eligible for service retirement or the Alternate Death Benefit.

For members with less than 20 years of service credit and not age-eligible to retire:

Basic Death Benefit

Eligibility

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

Benefit

The Basic Death Benefit is a lump sum in the amount of the member's accumulated contributions, where interest is the greater of 6% or the prevailing discount rate. In addition, a lump sum in the amount of six months' salary shall be paid only if the member is eligible for service retirement or eligible for the Alternate Death Benefit. 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.

Special Death 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 children 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. It will be increased whenever the compensation paid to active employees is increased but ceases 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 children under age 22. There is a guarantee that the total amount paid will at least equal the Basic Death Benefit.

Appendix B – Principal Plan Provisions

California Highway Patrol (continued)

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 children (*eligible* means unmarried children 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

For members with more than 20 years of service credit and not age-eligible to retire:

In addition to the above pre-retirement death benefits, members are eligible for:

Alternate Death Benefit

Eligibility

This benefit may be received in lieu of the lump sum Basic Death Benefit if there is a surviving spouse or minor child of the member. The member must have died before reaching the minimum retirement age and must have been credited with at least 20 years of state service.

Benefit

The Alternate Death Benefit is calculated as though the member were the minimum retirement age and elected an optional form of benefit that provided 100% continuance to the member's spouse. If the member did not have a spouse at the time of death, one-half of the formula benefit would be paid to the surviving child. If the benefit is payable to a surviving child, the benefit will be discontinued upon death or the attainment of age 18.

For members who are age-eligible to retire:

In addition to the above pre-retirement death benefits, members are eligible for:

1957 Survivor Benefit

Eligibility

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

Benefit

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

Appendix B – Principal Plan Provisions

California Highway Patrol (continued)

Optional Settlement 2W Death Benefit

Eligibility

An employee's *eligible survivor* may receive the Optional Settlement 2W Death benefit if the member dies while actively employed, has attained at least age 50, and has at least five years of credited service (total service across all CalPERS employers and with certain other Retirement Systems with which CalPERS has reciprocity agreements). A CalPERS member who is no longer actively employed with **any** CalPERS employer is not eligible for this benefit. An *eligible survivor* means the surviving spouse to whom the member was married at least one year before death. A member's survivor may choose this benefit in lieu of the Basic Death benefit or the 1957 Survivor Benefit.

Benefit

The Optional Settlement 2W 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 his or her death and elected Optional Settlement 2W. (A retiree who elects Optional Settlement 2W receives an allowance that has been reduced so that it will continue to be paid after his or her death to a surviving beneficiary.) The allowance is payable as long as the surviving spouse lives. Upon the death of the surviving spouse, the benefit shall be continued to minor children. There is a guarantee that the total amount paid will at least equal the Basic Death Benefit.

Cost-of-Living Adjustments

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

Purchasing Power Protection Allowance (PPPA)

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

Employee Contributions

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

- The percent contributed below the monthly compensation breakpoint is 0%.
- The monthly compensation breakpoint is \$863.
- The percent contributed above the monthly compensation breakpoint is 11.5%. This rate was originally scheduled to increase 1%/year until it reached 50% of normal cost, but this gradual increase has been temporarily suspended.

Refund of Employee Contributions

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

1959 Survivor Benefits Program

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

Appendix C – Participant Data

Source of Participant Information

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

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

Data Validation

Once the information is extracted from the various computer systems into the data warehouse, update queries are then run against this data to correct for flaws found in the data. This part of the process is intended to validate the participant data for all CalPERS plans. It is not specific to the State plans.

Checks on the data included:

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

As a result of the tests on the data, a number of adjustments were determined to be necessary, such as dates of hire and dates of entry being adjusted to be consistent with the service fields, the date of birth and each other.

Data Statement

The data does not contain information about reciprocal systems and hence salary information for terminated participants covered by reciprocal systems may not be up to date. This situation is not expected to have a material impact on the employer contribution rates since the total present value for all terminated participants represents less than 2% of the present value of benefits for all members. We are unaware of any other data issues that would have a material effect on the results of this valuation.

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

Reconciliation of Participants

State Miscellaneous¹

| | Active | Transfer | Terminated | Receiving | Total |
|--------------------------------------|----------------|---------------|---------------|----------------|----------------|
| As of June 30, 2019 | 176,842 | 37,822 | 63,003 | 197,691 | 475,358 |
| Retirements | (6,760) | (1,550) | (751) | 9,061 | - |
| Industrial Disabilities | - | (57) | (2) | 59 | - |
| Non-Industrial Disabilities | (205) | (39) | (10) | 254 | - |
| Deaths ² | (251) | (30) | (507) | (6,616) | (7,404) |
| New Survivors | n/a | n/a | n/a | 1,573 | 1,573 |
| Non-Vested Terminations ³ | (3,677) | (637) | 4,315 | (1) | - |
| Vested Terminations | (1,434) | (438) | 1,873 | (1) | - |
| Refunds of Contributions | (790) | (73) | (1,676) | - | (2,539) |
| Transfers | (1,303) | 2,016 | (709) | (4) | - |
| Redeposits/Rehires | 1,650 | (494) | (1,155) | (1) | - |
| First Year in Status | 14,582 | 234 | 687 | 30 | 15,533 |
| Data Corrections ⁴ | (26) | (6,624) | (674) | 33 | (7,291) |
| As of June 30, 2020 | 178,628 | 30,130 | 64,394 | 202,078 | 475,230 |

¹ Includes State Miscellaneous Tier 1 and Tier 2.

² Includes both deaths without survivors and deaths with survivors receiving a benefit.

³ Includes non-vested terminated participants with employee contributions left in the plan.

⁴ May include the combining of data records into a single record.

Reconciliation of Participants (continued)

State Industrial

| | Active | Transfer | Terminated | Receiving | Total |
|--------------------------------------|---------------|--------------|--------------|---------------|---------------|
| As of June 30, 2019 | 11,795 | 8,974 | 3,730 | 15,345 | 39,844 |
| Retirements | (417) | (436) | (50) | 899 | (4) |
| Industrial Disabilities | (3) | (18) | - | 22 | 1 |
| Non-Industrial Disabilities | (23) | (11) | (9) | 46 | 3 |
| Deaths ¹ | (16) | (10) | (26) | (313) | (365) |
| New Survivors | n/a | n/a | n/a | 84 | 84 |
| Non-Vested Terminations ² | (148) | (61) | 209 | - | - |
| Vested Terminations | (89) | (76) | 167 | (2) | - |
| Refunds of Contributions | (79) | (24) | (107) | - | (210) |
| Transfers | (558) | 659 | (91) | (10) | - |
| Redeposits/Rehires | 164 | (90) | (68) | (6) | - |
| First Year in Status | 1,321 | 63 | 52 | 30 | 1,466 |
| Data Corrections ³ | (48) | (1,130) | (102) | (45) | (1,325) |
| As of June 30, 2020 | 11,899 | 7,840 | 3,705 | 16,050 | 39,494 |

¹ Includes both deaths without survivors and deaths with survivors receiving a benefit.

² Includes non-vested terminated participants with employee contributions left in the plan.

³ May include the combining of data records into a single record.

State Safety

| | Active | Transfer | Terminated | Receiving | Total |
|--------------------------------------|---------------|--------------|--------------|---------------|---------------|
| As of June 30, 2019 | 28,953 | 6,216 | 7,706 | 26,866 | 69,741 |
| Retirements | (921) | (240) | (72) | 1,192 | (41) |
| Industrial Disabilities | (143) | (10) | (14) | 180 | 13 |
| Non-Industrial Disabilities | (38) | (4) | (5) | 50 | 3 |
| Deaths ¹ | (43) | (2) | (36) | (679) | (760) |
| New Survivors | n/a | n/a | n/a | 183 | 183 |
| Non-Vested Terminations ² | (585) | (76) | 660 | (1) | (2) |
| Vested Terminations | (323) | (72) | 396 | (2) | (1) |
| Refunds of Contributions | (260) | (20) | (318) | 0 | (598) |
| Transfers | (539) | 564 | (99) | (8) | (82) |
| Redeposits/Rehires | 305 | (89) | (189) | (14) | 13 |
| First Year in Status | 2925 | 166 | 186 | 158 | 3,435 |
| Data Corrections ³ | (24) | (984) | (120) | (20) | (1,148) |
| As of June 30, 2020 | 29,307 | 5,449 | 8,095 | 27,905 | 70,756 |

¹ Includes both deaths without survivors and deaths with survivors receiving a benefit.

² Includes non-vested terminated participants with employee contributions left in the plan.

³ May include the combining of data records into a single record.

Appendix C – Participant Data

Reconciliation of Participants (continued)

State Peace Officers and Firefighters

| | Active | Transfer | Terminated | Receiving | Total |
|--------------------------------------|---------------|--------------|--------------|---------------|---------------|
| As of June 30, 2019 | 41,144 | 6,289 | 7,545 | 41,657 | 96,635 |
| Retirements | (1450) | (171) | (116) | 1,697 | (40) |
| Industrial Disabilities | (304) | (34) | (24) | 368 | 6 |
| Non-Industrial Disabilities | (18) | (5) | (2) | 20 | (5) |
| Deaths ¹ | (53) | (5) | (16) | (598) | (672) |
| New Survivors | n/a | n/a | n/a | 294 | 294 |
| Non-Vested Terminations ² | (253) | (130) | 383 | 0 | 0 |
| Vested Terminations | (187) | (71) | 259 | (7) | (6) |
| Refunds of Contributions | (82) | (10) | (170) | 0 | (262) |
| Transfers | (288) | 380 | (172) | (4) | (84) |
| Redeposits/Rehires | 413 | (43) | (367) | (15) | (12) |
| First Year in Status | 2874 | 125 | 197 | 125 | 3,321 |
| Data Corrections ³ | (9) | (1003) | (109) | (12) | (1,133) |
| As of June 30, 2020 | 41,787 | 5,322 | 7,408 | 43,525 | 98,042 |

¹ Includes both deaths without survivors and deaths with survivors receiving a benefit.

² Includes non-vested terminated participants with employee contributions left in the plan.

³ May include the combining of data records into a single record.

California Highway Patrol

| | Active | Transfer | Terminated | Receiving | Total |
|--------------------------------------|--------------|------------|------------|--------------|---------------|
| As of June 30, 2019 | 7,267 | 264 | 482 | 9,301 | 17,314 |
| Retirements | (233) | (8) | (20) | 257 | (4) |
| Industrial Disabilities | (74) | (4) | 0 | 83 | 5 |
| Non-Industrial Disabilities | (1) | 0 | 0 | 0 | (1) |
| Deaths ¹ | (3) | 0 | (2) | (223) | (228) |
| New Survivors | n/a | n/a | n/a | 97 | 97 |
| Non-Vested Terminations ² | (13) | 0 | 13 | 0 | 0 |
| Vested Terminations | (61) | (6) | 68 | (1) | 0 |
| Refunds of Contributions | (10) | (1) | (8) | 0 | (19) |
| Transfers | (8) | 16 | (8) | 0 | 0 |
| Redeposits/Rehires | 6 | (1) | (4) | (1) | 0 |
| First Year in Status | 157 | 1 | 18 | 10 | 186 |
| Data Corrections ³ | 0 | 0 | (7) | (4) | (11) |
| As of June 30, 2020 | 7,027 | 261 | 532 | 9,519 | 17,339 |

¹ Includes both deaths without survivors and deaths with survivors receiving a benefit.

² Includes non-vested terminated participants with employee contributions left in the plan.

³ May include the combining of data records into a single record.

Appendix C – Participant Data

Active Members

Distribution of Active Members by Age and Years of Service

State Miscellaneous – As of June 30, 2020

| Attained Age | Years of Service at Valuation Date | | | | | | Total | Payroll |
|--------------|------------------------------------|---------------|---------------|---------------|---------------|---------------|----------------|-------------------------|
| | 0 - 4 | 5 - 9 | 10 - 14 | 15 - 19 | 20-24 | 25+ | | |
| 15 - 24 | 2,912 | 7 | 0 | 0 | 0 | 0 | 2,919 | \$121,749,441 |
| 25 - 29 | 11,400 | 1,365 | 6 | 0 | 0 | 0 | 12,771 | 662,189,972 |
| 30 - 34 | 12,495 | 6,327 | 1,045 | 23 | 0 | 0 | 19,890 | 1,239,029,552 |
| 35 - 39 | 10,088 | 7,040 | 4,422 | 850 | 68 | 2 | 22,470 | 1,615,316,282 |
| 40 - 44 | 7,304 | 5,553 | 4,935 | 3,090 | 1,078 | 80 | 22,040 | 1,700,929,877 |
| 45 - 49 | 5,722 | 4,482 | 4,633 | 4,106 | 3,185 | 930 | 23,058 | 1,869,988,646 |
| 50 - 54 | 4,725 | 3,883 | 4,247 | 4,364 | 3,945 | 4,135 | 25,299 | 2,117,942,380 |
| 55 - 59 | 3,972 | 3,471 | 3,653 | 3,694 | 3,663 | 6,055 | 24,508 | 2,065,969,081 |
| 60 - 64 | 2,400 | 2,520 | 2,658 | 2,657 | 2,426 | 3,917 | 16,578 | 1,381,277,542 |
| 65 and over | 1,308 | 1,482 | 1,644 | 1,504 | 1,176 | 1,981 | 9,095 | 758,418,215 |
| Total | 62,326 | 36,130 | 27,243 | 20,288 | 15,541 | 17,100 | 178,628 | \$13,532,810,988 |

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 Average Annual Salaries by Age and Years of Service

State Miscellaneous – As of June 30, 2020

| Attained Age | Years of Service at Valuation Date | | | | | | Average Salary |
|----------------|------------------------------------|-----------------|-----------------|-----------------|-----------------|------------------|-----------------|
| | 0 - 4 | 5 - 9 | 10 - 14 | 15 - 19 | 20 - 24 | 25+ | |
| 15 - 24 | \$41,704 | \$44,026 | \$0 | \$0 | \$0 | \$0 | \$41,709 |
| 25 - 29 | 50,777 | 60,799 | 57,942 | 0 | 0 | 0 | 51,851 |
| 30 - 34 | 57,855 | 68,673 | 76,397 | 78,444 | 0 | 0 | 62,294 |
| 35 - 39 | 63,776 | 74,990 | 82,853 | 83,618 | 94,028 | 82,707 | 71,888 |
| 40 - 44 | 64,208 | 77,811 | 85,657 | 86,384 | 93,970 | 111,506 | 77,175 |
| 45 - 49 | 63,820 | 76,424 | 86,303 | 88,814 | 95,934 | 99,156 | 81,099 |
| 50 - 54 | 63,328 | 74,006 | 84,042 | 87,857 | 95,214 | 100,460 | 83,716 |
| 55 - 59 | 62,482 | 72,494 | 80,258 | 87,185 | 93,582 | 100,434 | 84,298 |
| 60 - 64 | 61,945 | 71,139 | 78,631 | 84,287 | 92,797 | 100,909 | 83,320 |
| 65 and over | 56,830 | 70,220 | 80,265 | 85,537 | 95,217 | 104,715 | 83,388 |
| Average | \$58,902 | \$73,143 | \$82,964 | \$86,876 | \$94,508 | \$101,025 | \$75,760 |

Appendix C – Participant Data

Active Members (continued)

Distribution of Active Members by Age and Years of Service

State Industrial – As of June 30, 2020

| Attained Age | Years of Service at Valuation Date | | | | | | Total | Payroll |
|--------------|------------------------------------|--------------|--------------|------------|------------|------------|---------------|----------------------|
| | 0 - 4 | 5 - 9 | 10 - 14 | 15 - 19 | 20-24 | 25+ | | |
| 15 - 24 | 251 | 1 | 0 | 0 | 0 | 0 | 252 | \$9,318,793 |
| 25 - 29 | 920 | 122 | 1 | 0 | 0 | 0 | 1,043 | 46,625,316 |
| 30 - 34 | 958 | 389 | 145 | 1 | 0 | 0 | 1,493 | 83,207,374 |
| 35 - 39 | 749 | 454 | 404 | 53 | 0 | 0 | 1,660 | 102,681,468 |
| 40 - 44 | 542 | 361 | 416 | 147 | 52 | 2 | 1,520 | 103,004,025 |
| 45 - 49 | 485 | 342 | 392 | 199 | 159 | 49 | 1,626 | 114,591,100 |
| 50 - 54 | 368 | 319 | 418 | 221 | 204 | 154 | 1,684 | 121,912,384 |
| 55 - 59 | 268 | 270 | 371 | 181 | 173 | 158 | 1,421 | 99,869,553 |
| 60 - 64 | 160 | 143 | 235 | 114 | 92 | 74 | 818 | 56,277,487 |
| 65 and over | 57 | 93 | 95 | 59 | 48 | 30 | 382 | 27,896,259 |
| Total | 4,758 | 2,494 | 2,477 | 975 | 728 | 467 | 11,899 | \$765,383,759 |

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 Average Annual Salaries by Age and Years of Service

State Industrial – As of June 30, 2020

| Attained Age | Years of Service at Valuation Date | | | | | | Average Salary |
|----------------|------------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| | 0 - 4 | 5 - 9 | 10 - 14 | 15 - 19 | 20 - 24 | 25+ | |
| 15 - 24 | \$36,948 | \$44,766 | \$0 | \$0 | \$0 | \$0 | \$36,979 |
| 25 - 29 | 43,509 | 53,517 | 67,584 | 0 | 0 | 0 | 44,703 |
| 30 - 34 | 50,962 | 63,081 | 67,372 | 78,640 | 0 | 0 | 55,732 |
| 35 - 39 | 56,229 | 65,484 | 66,922 | 71,697 | 0 | 0 | 61,856 |
| 40 - 44 | 60,759 | 71,721 | 71,334 | 70,545 | 76,463 | 80,081 | 67,766 |
| 45 - 49 | 65,068 | 72,739 | 70,769 | 73,959 | 75,660 | 74,845 | 70,474 |
| 50 - 54 | 69,524 | 73,160 | 71,615 | 72,323 | 74,226 | 77,459 | 72,395 |
| 55 - 59 | 64,174 | 73,635 | 69,703 | 70,413 | 69,857 | 76,581 | 70,281 |
| 60 - 64 | 66,581 | 69,031 | 68,070 | 66,786 | 70,305 | 76,691 | 68,799 |
| 65 and over | 64,192 | 82,503 | 68,646 | 71,560 | 66,337 | 87,897 | 73,027 |
| Average | \$55,028 | \$69,115 | \$69,682 | \$71,313 | \$72,645 | \$77,448 | \$64,323 |

Appendix C – Participant Data

Active Members (continued)

Distribution of Active Members by Age and Years of Service

State Safety – As of June 30, 2020

| Attained Age | Years of Service at Valuation Date | | | | | | Total | Payroll |
|--------------|------------------------------------|--------------|--------------|--------------|--------------|------------|---------------|------------------------|
| | 0 - 4 | 5 - 9 | 10 - 14 | 15 - 19 | 20-24 | 25+ | | |
| 15 - 24 | 415 | 1 | 0 | 0 | 0 | 0 | 416 | \$18,941,266 |
| 25 - 29 | 1,613 | 174 | 0 | 0 | 0 | 0 | 1,787 | 103,304,694 |
| 30 - 34 | 2,210 | 958 | 169 | 3 | 0 | 0 | 3,340 | 238,133,684 |
| 35 - 39 | 1,954 | 1,212 | 621 | 95 | 2 | 0 | 3,884 | 299,588,914 |
| 40 - 44 | 1,547 | 1,086 | 972 | 280 | 35 | 0 | 3,920 | 327,218,265 |
| 45 - 49 | 1,388 | 1,050 | 1,120 | 509 | 151 | 12 | 4,230 | 381,604,538 |
| 50 - 54 | 1,201 | 937 | 1,037 | 585 | 300 | 87 | 4,147 | 373,384,611 |
| 55 - 59 | 939 | 783 | 955 | 537 | 258 | 107 | 3,579 | 319,571,099 |
| 60 - 64 | 473 | 607 | 745 | 429 | 200 | 101 | 2,555 | 244,723,610 |
| 65 and over | 186 | 286 | 475 | 266 | 163 | 73 | 1,449 | 161,384,888 |
| Total | 11,926 | 7,094 | 6,094 | 2,704 | 1,109 | 380 | 29,307 | \$2,467,855,569 |

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 Average Annual Salaries by Age and Years of Service

State Safety – As of June 30, 2020

| Attained Age | Years of Service at Valuation Date | | | | | | Average Salary |
|----------------|------------------------------------|-----------------|------------------|-----------------|------------------|------------------|-----------------|
| | 0 - 4 | 5 - 9 | 10 - 14 | 15 - 19 | 20 - 24 | 25+ | |
| 15 - 24 | \$45,452 | \$78,583 | \$0 | \$0 | \$0 | \$0 | \$45,532 |
| 25 - 29 | 57,336 | 62,191 | 0 | 0 | 0 | 0 | 57,809 |
| 30 - 34 | 68,679 | 76,603 | 75,608 | 63,017 | 0 | 0 | 71,298 |
| 35 - 39 | 72,546 | 83,168 | 80,841 | 70,137 | 84,744 | 0 | 77,134 |
| 40 - 44 | 74,563 | 86,799 | 92,820 | 88,260 | 76,336 | 0 | 83,474 |
| 45 - 49 | 75,500 | 91,202 | 104,550 | 95,322 | 94,570 | 96,048 | 90,214 |
| 50 - 54 | 77,950 | 88,192 | 103,378 | 89,966 | 96,886 | 94,616 | 90,037 |
| 55 - 59 | 75,686 | 87,611 | 98,229 | 92,242 | 101,621 | 96,662 | 89,291 |
| 60 - 64 | 79,851 | 91,474 | 107,798 | 94,728 | 100,264 | 103,259 | 95,782 |
| 65 and over | 97,406 | 99,883 | 122,039 | 110,022 | 117,499 | 113,888 | 111,377 |
| Average | \$70,904 | \$86,050 | \$100,031 | \$93,252 | \$100,641 | \$101,237 | \$84,207 |

Appendix C – Participant Data

Active Members (continued)

Distribution of Active Members by Age and Years of Service

State Peace Officers and Firefighters – As of June 30, 2020

| Attained Age | Years of Service at Valuation Date | | | | | | Total | Payroll |
|--------------|------------------------------------|--------------|--------------|--------------|--------------|--------------|---------------|------------------------|
| | 0 - 4 | 5 - 9 | 10 - 14 | 15 - 19 | 20-24 | 25+ | | |
| 15 - 24 | 1,376 | 2 | 0 | 0 | 0 | 0 | 1,378 | \$66,765,837 |
| 25 - 29 | 4,139 | 908 | 0 | 0 | 0 | 0 | 5,047 | 343,409,316 |
| 30 - 34 | 3,225 | 2,192 | 403 | 0 | 0 | 0 | 5,820 | 455,748,293 |
| 35 - 39 | 1,677 | 1,630 | 2,940 | 531 | 3 | 0 | 6,781 | 616,545,308 |
| 40 - 44 | 804 | 892 | 2,309 | 2,221 | 662 | 4 | 6,892 | 679,052,223 |
| 45 - 49 | 450 | 546 | 1,607 | 1,885 | 2,274 | 601 | 7,363 | 772,966,983 |
| 50 - 54 | 245 | 297 | 981 | 1,120 | 1,360 | 844 | 4,847 | 519,089,381 |
| 55 - 59 | 121 | 169 | 566 | 602 | 574 | 434 | 2,466 | 257,258,544 |
| 60 - 64 | 37 | 70 | 201 | 230 | 228 | 183 | 949 | 98,563,266 |
| 65 and over | 7 | 24 | 54 | 63 | 45 | 51 | 244 | 25,217,604 |
| Total | 12,081 | 6,730 | 9,061 | 6,652 | 5,146 | 2,117 | 41,787 | \$3,834,616,755 |

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 Average Annual Salaries by Age and Years of Service

State Peace Officers and Firefighters – As of June 30, 2020

| Attained Age | Years of Service at Valuation Date | | | | | | Average Salary |
|----------------|------------------------------------|-----------------|------------------|------------------|------------------|------------------|-----------------|
| | 0 - 4 | 5 - 9 | 10 - 14 | 15 - 19 | 20 - 24 | 25+ | |
| 15 - 24 | \$48,397 | \$85,753 | \$0 | \$0 | \$0 | \$0 | \$48,451 |
| 25 - 29 | 64,129 | 85,882 | 0 | 0 | 0 | 0 | 68,042 |
| 30 - 34 | 69,007 | 88,200 | 98,922 | 0 | 0 | 0 | 78,307 |
| 35 - 39 | 71,895 | 90,276 | 99,956 | 102,896 | 106,058 | 0 | 90,922 |
| 40 - 44 | 74,935 | 90,581 | 99,864 | 104,662 | 112,445 | 131,540 | 98,528 |
| 45 - 49 | 78,904 | 93,858 | 101,025 | 104,381 | 112,266 | 119,494 | 104,980 |
| 50 - 54 | 85,808 | 97,665 | 100,636 | 104,999 | 112,358 | 118,401 | 107,095 |
| 55 - 59 | 91,960 | 96,961 | 101,213 | 101,845 | 109,032 | 111,897 | 104,322 |
| 60 - 64 | 79,739 | 97,570 | 99,768 | 103,081 | 107,903 | 111,580 | 103,860 |
| 65 and over | 71,256 | 99,924 | 102,915 | 100,214 | 104,886 | 112,351 | 103,351 |
| Average | \$66,757 | \$89,941 | \$100,242 | \$104,146 | \$111,691 | \$116,667 | \$91,766 |

Appendix C – Participant Data

Active Members (continued)

Distribution of Active Members by Age and Years of Service

California Highway Patrol – As of June 30, 2020

| Attained Age | Years of Service at Valuation Date | | | | | | Total | Payroll |
|--------------|------------------------------------|------------|--------------|--------------|--------------|------------|--------------|----------------------|
| | 0 - 4 | 5 - 9 | 10 - 14 | 15 - 19 | 20-24 | 25+ | | |
| 15 - 24 | 83 | 0 | 0 | 0 | 0 | 0 | 83 | \$7,993,607 |
| 25 - 29 | 573 | 68 | 0 | 0 | 0 | 0 | 641 | 70,856,078 |
| 30 - 34 | 420 | 296 | 246 | 0 | 0 | 0 | 962 | 115,513,636 |
| 35 - 39 | 219 | 234 | 768 | 115 | 0 | 0 | 1,336 | 170,044,064 |
| 40 - 44 | 24 | 119 | 550 | 541 | 185 | 1 | 1,420 | 190,210,952 |
| 45 - 49 | 1 | 34 | 266 | 511 | 620 | 231 | 1,663 | 234,718,044 |
| 50 - 54 | 0 | 1 | 17 | 179 | 334 | 251 | 782 | 115,038,734 |
| 55 - 59 | 1 | 1 | 2 | 5 | 47 | 84 | 140 | 21,562,176 |
| 60 - 64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 65 and over | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 1,321 | 753 | 1,849 | 1,351 | 1,186 | 567 | 7,027 | \$925,937,291 |

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 Average Annual Salaries by Age and Years of Service

California Highway Patrol – As of June 30, 2020

| Attained Age | Years of Service at Valuation Date | | | | | | Average Salary |
|----------------|------------------------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| | 0 - 4 | 5 - 9 | 10 - 14 | 15 - 19 | 20 - 24 | 25+ | |
| 15 - 24 | \$96,309 | \$0 | \$0 | \$0 | \$0 | \$0 | \$96,309 |
| 25 - 29 | 108,780 | 125,373 | 0 | 0 | 0 | 0 | 110,540 |
| 30 - 34 | 110,780 | 126,209 | 128,571 | 0 | 0 | 0 | 120,077 |
| 35 - 39 | 112,445 | 127,169 | 130,047 | 137,259 | 0 | 0 | 127,278 |
| 40 - 44 | 113,939 | 127,226 | 129,283 | 136,763 | 146,184 | 198,024 | 133,951 |
| 45 - 49 | 62,440 | 126,834 | 130,009 | 134,677 | 146,117 | 157,353 | 141,141 |
| 50 - 54 | 0 | 128,773 | 135,665 | 134,122 | 146,816 | 157,606 | 147,108 |
| 55 - 59 | 173,688 | 89,904 | 150,822 | 142,518 | 147,203 | 159,117 | 154,016 |
| 60 - 64 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 65 and over | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Average | \$109,347 | \$126,576 | \$129,692 | \$135,688 | \$146,367 | \$157,798 | \$131,769 |

Appendix C – Participant Data

Transferred and Terminated Participants

Distribution by Age and Years of Service – Transfers to Other CalPERS Plans

State Miscellaneous – As of June 30, 2020

| Attained Age | Years of Service at Valuation Date | | | | | | Total | Average Salary |
|--------------|------------------------------------|--------------|--------------|--------------|------------|------------|---------------|-----------------|
| | 0 - 4 | 5 - 9 | 10 - 14 | 15 - 19 | 20-24 | 25+ | | |
| 15 - 24 | 189 | 0 | 0 | 0 | 0 | 0 | 189 | \$62,046 |
| 25 - 29 | 1,583 | 28 | 0 | 0 | 0 | 0 | 1,611 | 70,167 |
| 30 - 34 | 2,247 | 283 | 17 | 0 | 0 | 0 | 2,547 | 73,457 |
| 35 - 39 | 2,358 | 608 | 171 | 21 | 0 | 0 | 3,158 | 77,133 |
| 40 - 44 | 2,724 | 746 | 319 | 145 | 12 | 1 | 3,947 | 83,776 |
| 45 - 49 | 3,214 | 1,037 | 412 | 272 | 90 | 19 | 5,044 | 88,351 |
| 50 - 54 | 2,870 | 1,285 | 618 | 362 | 216 | 88 | 5,439 | 87,514 |
| 55 - 59 | 2,287 | 914 | 563 | 341 | 190 | 158 | 4,453 | 84,691 |
| 60 - 64 | 1,440 | 465 | 296 | 191 | 129 | 97 | 2,618 | 82,316 |
| 65 and over | 691 | 220 | 83 | 68 | 31 | 31 | 1,124 | 81,135 |
| Total | 19,603 | 5,586 | 2,479 | 1,400 | 668 | 394 | 30,130 | \$82,694 |

Distribution by Age and Years of Service – Terminated Participants with Funds on Deposit

State Miscellaneous – As of June 30, 2020

| Attained Age | Years of Service at Valuation Date | | | | | | Total | Average Salary |
|--------------|------------------------------------|--------------|--------------|--------------|------------|-----------|---------------|-----------------|
| | 0 - 4 | 5 - 9 | 10 - 14 | 15 - 19 | 20-24 | 25+ | | |
| 15 - 24 | 701 | 0 | 0 | 0 | 0 | 0 | 701 | \$32,575 |
| 25 - 29 | 4,077 | 64 | 0 | 0 | 0 | 0 | 4,141 | 37,404 |
| 30 - 34 | 6,611 | 564 | 21 | 0 | 0 | 0 | 7,196 | 42,374 |
| 35 - 39 | 7,909 | 1,279 | 241 | 19 | 0 | 0 | 9,448 | 45,420 |
| 40 - 44 | 7,483 | 1,487 | 478 | 140 | 12 | 0 | 9,600 | 48,456 |
| 45 - 49 | 6,084 | 1,647 | 640 | 237 | 65 | 10 | 8,683 | 52,434 |
| 50 - 54 | 5,238 | 1,648 | 843 | 266 | 118 | 32 | 8,145 | 53,053 |
| 55 - 59 | 4,684 | 1,270 | 678 | 233 | 75 | 29 | 6,969 | 49,559 |
| 60 - 64 | 3,841 | 811 | 452 | 158 | 38 | 17 | 5,317 | 45,875 |
| 65 and over | 3,360 | 478 | 253 | 70 | 22 | 11 | 4,194 | 42,554 |
| Total | 49,988 | 9,248 | 3,606 | 1,123 | 330 | 99 | 64,394 | \$47,087 |

Appendix C – Participant Data

Transferred and Terminated Participants (continued)

Distribution by Age and Years of Service – Transfers to Other CalPERS Plans

State Industrial – As of June 30, 2020

| Attained Age | Years of Service at Valuation Date | | | | | | Total | Average Salary |
|--------------|------------------------------------|--------------|------------|------------|-----------|-----------|--------------|-----------------|
| | 0 - 4 | 5 - 9 | 10 - 14 | 15 - 19 | 20-24 | 25+ | | |
| 15 - 24 | 35 | 0 | 0 | 0 | 0 | 0 | 35 | \$39,704 |
| 25 - 29 | 292 | 2 | 0 | 0 | 0 | 0 | 294 | 46,905 |
| 30 - 34 | 654 | 87 | 6 | 0 | 0 | 0 | 747 | 59,184 |
| 35 - 39 | 785 | 177 | 31 | 3 | 0 | 0 | 996 | 71,168 |
| 40 - 44 | 766 | 217 | 63 | 17 | 2 | 0 | 1,065 | 78,225 |
| 45 - 49 | 837 | 249 | 98 | 36 | 8 | 4 | 1,232 | 82,539 |
| 50 - 54 | 1,038 | 302 | 138 | 47 | 28 | 15 | 1,568 | 82,439 |
| 55 - 59 | 711 | 231 | 87 | 32 | 21 | 8 | 1,090 | 83,650 |
| 60 - 64 | 422 | 105 | 47 | 10 | 10 | 1 | 595 | 78,754 |
| 65 and over | 160 | 38 | 14 | 3 | 3 | 0 | 218 | 82,281 |
| Total | 5,700 | 1,408 | 484 | 148 | 72 | 28 | 7,840 | \$76,596 |

Distribution by Age and Years of Service – Terminated Participants with Funds on Deposit

State Industrial – As of June 30, 2020

| Attained Age | Years of Service at Valuation Date | | | | | | Total | Average Salary |
|--------------|------------------------------------|------------|------------|-----------|-----------|----------|--------------|-----------------|
| | 0 - 4 | 5 - 9 | 10 - 14 | 15 - 19 | 20-24 | 25+ | | |
| 15 - 24 | 32 | 0 | 0 | 0 | 0 | 0 | 32 | \$32,331 |
| 25 - 29 | 186 | 3 | 0 | 0 | 0 | 0 | 189 | 36,546 |
| 30 - 34 | 301 | 30 | 2 | 0 | 0 | 0 | 333 | 40,353 |
| 35 - 39 | 377 | 60 | 18 | 0 | 0 | 0 | 455 | 42,950 |
| 40 - 44 | 330 | 70 | 18 | 7 | 0 | 0 | 425 | 43,695 |
| 45 - 49 | 416 | 91 | 23 | 19 | 4 | 1 | 554 | 44,639 |
| 50 - 54 | 417 | 107 | 34 | 12 | 6 | 2 | 578 | 44,292 |
| 55 - 59 | 328 | 84 | 22 | 6 | 1 | 1 | 442 | 39,361 |
| 60 - 64 | 273 | 34 | 9 | 1 | 1 | 1 | 319 | 38,086 |
| 65 and over | 326 | 49 | 2 | 1 | 0 | 0 | 378 | 36,771 |
| Total | 2,986 | 528 | 128 | 46 | 12 | 5 | 3,705 | \$41,368 |

Appendix C – Participant Data

Transferred and Terminated Participants (continued)

Distribution by Age and Years of Service – Transfers to Other CalPERS Plans

State Safety – As of June 30, 2020

| Attained Age | Years of Service at Valuation Date | | | | | | Total | Average Salary |
|--------------|------------------------------------|------------|------------|-----------|-----------|----------|--------------|-----------------|
| | 0 - 4 | 5 - 9 | 10 - 14 | 15 - 19 | 20-24 | 25+ | | |
| 15 - 24 | 30 | 0 | 0 | 0 | 0 | 0 | 30 | \$45,368 |
| 25 - 29 | 264 | 4 | 0 | 0 | 0 | 0 | 268 | 58,343 |
| 30 - 34 | 448 | 53 | 3 | 0 | 0 | 0 | 504 | 68,028 |
| 35 - 39 | 571 | 142 | 33 | 3 | 0 | 0 | 749 | 78,343 |
| 40 - 44 | 623 | 174 | 55 | 1 | 1 | 0 | 854 | 84,282 |
| 45 - 49 | 634 | 163 | 90 | 17 | 1 | 0 | 905 | 87,952 |
| 50 - 54 | 564 | 174 | 70 | 27 | 9 | 0 | 844 | 92,179 |
| 55 - 59 | 448 | 131 | 64 | 24 | 8 | 1 | 676 | 93,259 |
| 60 - 64 | 303 | 98 | 42 | 10 | 3 | 4 | 460 | 90,639 |
| 65 and over | 107 | 36 | 10 | 3 | 3 | 0 | 159 | 85,971 |
| Total | 3,992 | 975 | 367 | 85 | 25 | 5 | 5,449 | \$84,004 |

Distribution by Age and Years of Service – Terminated Participants with Funds on Deposit

State Safety – As of June 30, 2020

| Attained Age | Years of Service at Valuation Date | | | | | | Total | Average Salary |
|--------------|------------------------------------|--------------|------------|-----------|----------|----------|--------------|-----------------|
| | 0 - 4 | 5 - 9 | 10 - 14 | 15 - 19 | 20-24 | 25+ | | |
| 15 - 24 | 86 | 0 | 0 | 0 | 0 | 0 | 86 | \$35,340 |
| 25 - 29 | 443 | 8 | 0 | 0 | 0 | 0 | 451 | 45,135 |
| 30 - 34 | 736 | 73 | 5 | 0 | 0 | 0 | 814 | 56,069 |
| 35 - 39 | 921 | 168 | 30 | 1 | 0 | 0 | 1,120 | 60,419 |
| 40 - 44 | 894 | 173 | 46 | 8 | 0 | 0 | 1,121 | 68,739 |
| 45 - 49 | 888 | 208 | 66 | 22 | 5 | 0 | 1,189 | 70,974 |
| 50 - 54 | 859 | 191 | 71 | 17 | 2 | 0 | 1,140 | 69,709 |
| 55 - 59 | 735 | 107 | 18 | 4 | 1 | 0 | 865 | 64,016 |
| 60 - 64 | 671 | 54 | 16 | 3 | 0 | 0 | 744 | 63,314 |
| 65 and over | 526 | 30 | 6 | 2 | 0 | 1 | 565 | 64,346 |
| Total | 6,759 | 1,012 | 258 | 57 | 8 | 1 | 8,095 | \$63,799 |

Appendix C – Participant Data

Transferred and Terminated Participants (continued)

Distribution by Age and Years of Service – Transfers to Other CalPERS Plans

State Peace Officers and Firefighters – As of June 30, 2020

| Attained Age | Years of Service at Valuation Date | | | | | | Total | Average Salary |
|--------------|------------------------------------|------------|------------|-----------|-----------|----------|--------------|-----------------|
| | 0 - 4 | 5 - 9 | 10 - 14 | 15 - 19 | 20-24 | 25+ | | |
| 15 - 24 | 63 | 0 | 0 | 0 | 0 | 0 | 63 | \$53,490 |
| 25 - 29 | 416 | 4 | 0 | 0 | 0 | 0 | 420 | 69,692 |
| 30 - 34 | 738 | 79 | 2 | 0 | 0 | 0 | 819 | 79,502 |
| 35 - 39 | 793 | 149 | 35 | 1 | 0 | 0 | 978 | 91,570 |
| 40 - 44 | 812 | 91 | 46 | 13 | 1 | 0 | 963 | 106,271 |
| 45 - 49 | 721 | 119 | 38 | 10 | 8 | 1 | 897 | 108,842 |
| 50 - 54 | 512 | 117 | 27 | 12 | 2 | 4 | 674 | 107,670 |
| 55 - 59 | 266 | 60 | 20 | 3 | 1 | 0 | 350 | 97,078 |
| 60 - 64 | 75 | 23 | 6 | 3 | 0 | 2 | 109 | 86,084 |
| 65 and over | 36 | 10 | 1 | 2 | 0 | 0 | 49 | 83,034 |
| Total | 4,432 | 652 | 175 | 44 | 12 | 7 | 5,322 | \$95,317 |

Distribution by Age and Years of Service – Terminated Participants with Funds on Deposit

State Peace Officers and Firefighters – As of June 30, 2020

| Attained Age | Years of Service at Valuation Date | | | | | | Total | Average Salary |
|--------------|------------------------------------|------------|------------|------------|-----------|-----------|--------------|-----------------|
| | 0 - 4 | 5 - 9 | 10 - 14 | 15 - 19 | 20-24 | 25+ | | |
| 15 - 24 | 199 | 0 | 0 | 0 | 0 | 0 | 199 | \$40,408 |
| 25 - 29 | 613 | 7 | 0 | 0 | 0 | 0 | 620 | 43,489 |
| 30 - 34 | 841 | 64 | 1 | 0 | 0 | 0 | 906 | 42,147 |
| 35 - 39 | 1,051 | 141 | 44 | 3 | 0 | 0 | 1,239 | 43,521 |
| 40 - 44 | 965 | 189 | 65 | 35 | 9 | 0 | 1,263 | 46,702 |
| 45 - 49 | 869 | 199 | 107 | 61 | 32 | 6 | 1,274 | 50,630 |
| 50 - 54 | 722 | 122 | 32 | 12 | 5 | 4 | 897 | 42,724 |
| 55 - 59 | 483 | 66 | 26 | 6 | 3 | 3 | 587 | 38,216 |
| 60 - 64 | 228 | 29 | 8 | 2 | 2 | 0 | 269 | 37,175 |
| 65 and over | 129 | 16 | 5 | 2 | 2 | 0 | 154 | 39,154 |
| Total | 6,100 | 833 | 288 | 121 | 53 | 13 | 7,408 | \$44,194 |

Appendix C – Participant Data

Transferred and Terminated Participants (continued)

Distribution by Age and Years of Service – Transfers to Other CalPERS Plans

California Highway Patrol – As of June 30, 2020

| Attained Age | Years of Service at Valuation Date | | | | | | Total | Average Salary |
|--------------|------------------------------------|-----------|-----------|----------|----------|----------|------------|------------------|
| | 0 - 4 | 5 - 9 | 10 - 14 | 15 - 19 | 20-24 | 25+ | | |
| 15 - 24 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | \$88,553 |
| 25 - 29 | 7 | 1 | 0 | 0 | 0 | 0 | 8 | 82,993 |
| 30 - 34 | 19 | 3 | 0 | 0 | 0 | 0 | 22 | 85,028 |
| 35 - 39 | 24 | 4 | 1 | 0 | 0 | 0 | 29 | 94,112 |
| 40 - 44 | 28 | 7 | 4 | 1 | 0 | 0 | 40 | 110,554 |
| 45 - 49 | 59 | 16 | 10 | 1 | 2 | 0 | 88 | 115,529 |
| 50 - 54 | 31 | 6 | 3 | 1 | 0 | 0 | 41 | 109,876 |
| 55 - 59 | 19 | 4 | 1 | 1 | 0 | 0 | 25 | 88,118 |
| 60 - 64 | 5 | 0 | 0 | 1 | 0 | 0 | 6 | 84,725 |
| 65 and over | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 82,116 |
| Total | 194 | 41 | 19 | 5 | 2 | 0 | 261 | \$104,365 |

Distribution by Age and Years of Service – Terminated Participants with Funds on Deposit

California Highway Patrol – As of June 30, 2020

| Attained Age | Years of Service at Valuation Date | | | | | | Total | Average Salary |
|--------------|------------------------------------|------------|-----------|-----------|-----------|----------|------------|-----------------|
| | 0 - 4 | 5 - 9 | 10 - 14 | 15 - 19 | 20-24 | 25+ | | |
| 15 - 24 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | \$73,967 |
| 25 - 29 | 20 | 3 | 0 | 0 | 0 | 0 | 23 | 80,403 |
| 30 - 34 | 30 | 18 | 4 | 0 | 0 | 0 | 52 | 90,683 |
| 35 - 39 | 38 | 18 | 11 | 1 | 0 | 0 | 68 | 90,988 |
| 40 - 44 | 44 | 41 | 21 | 15 | 2 | 0 | 123 | 97,117 |
| 45 - 49 | 57 | 52 | 35 | 15 | 12 | 0 | 171 | 93,223 |
| 50 - 54 | 33 | 15 | 4 | 1 | 0 | 1 | 54 | 71,185 |
| 55 - 59 | 14 | 8 | 1 | 0 | 0 | 1 | 24 | 70,538 |
| 60 - 64 | 6 | 4 | 3 | 0 | 0 | 0 | 13 | 56,239 |
| 65 and over | 3 | 0 | 0 | 0 | 0 | 0 | 3 | 33,074 |
| Total | 246 | 159 | 79 | 32 | 14 | 2 | 532 | \$88,495 |

Appendix C – Participant Data

Retired Members and Beneficiaries

Number of Retirees and Beneficiaries - by Age and Retirement Type

State Miscellaneous – As of June 30, 2020

| Attained Age | Service Retirement | Non-Industrial Disability | Industrial Disability | Non-Industrial Death | Industrial Death | Death After Retirement | Total |
|--------------|--------------------|---------------------------|-----------------------|----------------------|------------------|------------------------|----------------|
| Under 30 | 0 | 0 | 1 | 11 | 1 | 248 | 261 |
| 30-34 | 0 | 3 | 1 | 0 | 0 | 156 | 160 |
| 35-39 | 0 | 25 | 16 | 2 | 1 | 222 | 266 |
| 40-44 | 1 | 91 | 31 | 9 | 3 | 285 | 420 |
| 45-49 | 0 | 259 | 48 | 31 | 4 | 339 | 681 |
| 50-54 | 1,387 | 653 | 145 | 62 | 10 | 544 | 2,801 |
| 55-59 | 9,740 | 1,378 | 369 | 163 | 16 | 908 | 12,574 |
| 60-64 | 23,580 | 2,103 | 501 | 306 | 12 | 1,590 | 28,092 |
| 65-69 | 35,849 | 2,361 | 496 | 358 | 11 | 2,504 | 41,579 |
| 70-74 | 35,569 | 2,005 | 432 | 359 | 7 | 3,542 | 41,914 |
| 75-79 | 23,012 | 1,353 | 217 | 278 | 5 | 3,970 | 28,835 |
| 80-84 | 14,712 | 763 | 138 | 226 | 8 | 4,103 | 19,950 |
| 85 and Over | 15,516 | 581 | 85 | 274 | 4 | 8,085 | 24,545 |
| Total | 159,366 | 11,575 | 2,480 | 2,079 | 82 | 26,496 | 202,078 |

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

Annual Allowance Amounts for Retirees and Beneficiaries - by Age and Retirement Type

State Miscellaneous – Annual Amounts Including PPPA Payments – As of June 30, 2020

| Attained Age | Service Retirement | Non-Industrial Disability | Industrial Disability | Non-Industrial Death | Industrial Death | Death After Retirement | Total |
|--------------|------------------------|---------------------------|-----------------------|----------------------|------------------|------------------------|------------------------|
| Under 30 | \$0 | \$0 | \$184 | \$80,590 | \$402 | \$2,197,557 | \$2,278,734 |
| 30-34 | 0 | 26,767 | 124 | 0 | 0 | 1,420,682 | 1,447,573 |
| 35-39 | 0 | 234,962 | 4,341 | 58,239 | 166 | 2,168,472 | 2,466,178 |
| 40-44 | 20,712 | 1,129,183 | 39,894 | 154,365 | 34,746 | 3,364,753 | 4,743,652 |
| 45-49 | 0 | 3,884,299 | 200,285 | 636,075 | 31,647 | 4,578,776 | 9,331,081 |
| 50-54 | 18,602,681 | 10,213,213 | 598,158 | 1,410,384 | 56,746 | 8,486,573 | 39,367,756 |
| 55-59 | 293,885,946 | 22,792,445 | 1,475,855 | 4,071,205 | 156,883 | 15,361,213 | 337,743,547 |
| 60-64 | 850,550,826 | 36,464,985 | 2,831,303 | 8,309,523 | 150,725 | 31,098,517 | 929,405,878 |
| 65-69 | 1,299,031,172 | 42,138,167 | 2,344,239 | 9,513,671 | 98,713 | 56,944,842 | 1,410,070,805 |
| 70-74 | 1,289,680,594 | 34,892,946 | 2,132,507 | 10,826,056 | 61,241 | 92,058,233 | 1,429,651,578 |
| 75-79 | 853,604,544 | 25,102,267 | 1,166,860 | 8,220,188 | 26,216 | 112,252,184 | 1,000,372,259 |
| 80-84 | 541,541,237 | 13,830,776 | 830,802 | 6,708,725 | 12,299 | 124,758,666 | 687,682,504 |
| 85 and Over | 521,016,732 | 9,142,348 | 383,117 | 7,763,258 | 3,972 | 229,899,256 | 768,208,683 |
| Total | \$5,667,934,444 | \$199,852,357 | \$12,007,668 | \$57,752,279 | \$633,755 | \$684,589,724 | \$6,622,770,227 |

Counts of members do not include alternate payees receiving benefits while the member is still working. 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 C – Participant Data

Retired Members and Beneficiaries (continued)

Number of Retirees and Beneficiaries - by Years Retired and Retirement Type

State Miscellaneous – As of June 30, 2020

| Years Retired | Service Retirement | Non-Industrial Disability | Industrial Disability | Non-Industrial Death | Industrial Death | Death After Retirement | Total |
|---------------|--------------------|---------------------------|-----------------------|----------------------|------------------|------------------------|----------------|
| Under 5 Years | 41,238 | 1,418 | 298 | 325 | 9 | 8,872 | 52,160 |
| 5 - 9 | 36,841 | 1,877 | 341 | 374 | 7 | 6,303 | 45,743 |
| 10 - 14 | 29,917 | 1,389 | 288 | 362 | 16 | 4,308 | 36,280 |
| 15 - 19 | 24,577 | 1,995 | 455 | 299 | 9 | 3,052 | 30,387 |
| 20 - 24 | 12,774 | 2,279 | 395 | 234 | 12 | 1,838 | 17,532 |
| 25 - 29 | 8,313 | 1,338 | 368 | 191 | 6 | 1,124 | 11,340 |
| 30 and over | 5,706 | 1,279 | 335 | 294 | 23 | 999 | 8,636 |
| Total | 159,366 | 11,575 | 2,480 | 2,079 | 82 | 26,496 | 202,078 |

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

Annual Allowance Amounts for Retirees and Beneficiaries - by Years Retired and Retirement Type

State Miscellaneous – Annual Amounts Including PPPA Payments – As of June 30, 2020

| Years Retired | Service Retirement | Non-Industrial Disability | Industrial Disability | Non-Industrial Death | Industrial Death | Death After Retirement | Total |
|---------------|------------------------|---------------------------|-----------------------|----------------------|------------------|------------------------|------------------------|
| Under 5 Years | \$1,545,147,672 | \$23,348,802 | \$1,429,418 | \$8,676,356 | \$143,365 | \$252,774,496 | \$1,831,520,111 |
| 5 - 9 | 1,297,108,921 | 31,406,135 | 2,159,307 | 10,247,736 | 99,548 | 170,584,878 | 1,511,606,524 |
| 10 - 14 | 1,115,376,462 | 24,209,466 | 1,862,991 | 10,676,393 | 211,163 | 110,660,802 | 1,262,997,278 |
| 15 - 19 | 945,677,726 | 37,950,456 | 2,917,611 | 8,492,460 | 95,378 | 72,849,521 | 1,067,983,153 |
| 20 - 24 | 400,315,237 | 41,835,017 | 1,948,020 | 7,129,493 | 47,714 | 40,339,874 | 491,615,355 |
| 25 - 29 | 251,669,598 | 24,152,012 | 1,241,027 | 5,447,544 | 21,594 | 22,502,027 | 305,033,802 |
| 30 and over | 112,638,828 | 16,950,468 | 449,294 | 7,082,294 | 14,993 | 14,878,126 | 152,014,004 |
| Total | \$5,667,934,444 | \$199,852,357 | \$12,007,668 | \$57,752,279 | \$633,755 | \$684,589,724 | \$6,622,770,227 |

Counts of members do not include alternate payees receiving benefits while the member is still working. 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 C – Participant Data

Retired Members and Beneficiaries (continued)

Number of Retirees and Beneficiaries - by Age and Retirement Type

State Industrial – As of June 30, 2020

| Attained Age | Service Retirement | Non-Industrial Disability | Industrial Disability | Non-Industrial Death | Industrial Death | Death After Retirement | Total |
|--------------|--------------------|---------------------------|-----------------------|----------------------|------------------|------------------------|---------------|
| Under 30 | 0 | 0 | 1 | 0 | 0 | 18 | 19 |
| 30-34 | 0 | 1 | 0 | 0 | 0 | 16 | 17 |
| 35-39 | 0 | 8 | 1 | 0 | 0 | 15 | 24 |
| 40-44 | 0 | 22 | 7 | 0 | 0 | 27 | 56 |
| 45-49 | 0 | 55 | 23 | 5 | 0 | 25 | 108 |
| 50-54 | 235 | 133 | 48 | 3 | 1 | 33 | 453 |
| 55-59 | 1,384 | 237 | 93 | 13 | 1 | 72 | 1,800 |
| 60-64 | 2,588 | 295 | 103 | 25 | 1 | 116 | 3,128 |
| 65-69 | 3,109 | 283 | 120 | 18 | 1 | 163 | 3,694 |
| 70-74 | 2,572 | 210 | 73 | 16 | 0 | 190 | 3,061 |
| 75-79 | 1,443 | 127 | 41 | 15 | 2 | 201 | 1,829 |
| 80-84 | 727 | 71 | 22 | 14 | 2 | 147 | 983 |
| 85 and Over | 570 | 28 | 16 | 6 | 4 | 254 | 878 |
| Total | 12,628 | 1,470 | 548 | 115 | 12 | 1,277 | 16,050 |

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

Annual Allowance Amounts for Retirees and Beneficiaries - by Age and Retirement Type

State Industrial – Annual Amounts Including PPPA Payments – As of June 30, 2020

| Attained Age | Service Retirement | Non-Industrial Disability | Industrial Disability | Non-Industrial Death | Industrial Death | Death After Retirement | Total |
|--------------|----------------------|---------------------------|-----------------------|----------------------|------------------|------------------------|----------------------|
| Under 30 | \$0 | \$0 | \$37 | \$0 | \$0 | \$74,506 | \$74,543 |
| 30-34 | 0 | 1,665 | 0 | 0 | 0 | 70,736 | 72,400 |
| 35-39 | 0 | 57,803 | 398 | 0 | 0 | 74,094 | 132,295 |
| 40-44 | 0 | 214,400 | 4,249 | 0 | 0 | 170,060 | 388,709 |
| 45-49 | 0 | 372,294 | 188,218 | 67,412 | 0 | 322,092 | 950,016 |
| 50-54 | 1,600,605 | 1,477,370 | 331,125 | 21,994 | 6,170 | 242,098 | 3,679,361 |
| 55-59 | 19,439,812 | 2,551,707 | 422,748 | 171,822 | 1,203 | 401,730 | 22,989,021 |
| 60-64 | 39,744,393 | 3,067,170 | 807,016 | 245,041 | 472 | 1,004,419 | 44,868,511 |
| 65-69 | 45,151,521 | 2,755,614 | 810,789 | 122,173 | 70 | 1,422,089 | 50,262,256 |
| 70-74 | 38,670,168 | 2,167,477 | 574,958 | 120,627 | 0 | 2,082,557 | 43,615,788 |
| 75-79 | 23,185,744 | 1,237,551 | 331,929 | 304,519 | 21,741 | 2,249,809 | 27,331,292 |
| 80-84 | 12,136,946 | 902,696 | 161,385 | 441,525 | 23,576 | 2,038,736 | 15,704,864 |
| 85 and Over | 9,798,193 | 453,869 | 91,628 | 151,989 | 106,212 | 4,163,802 | 14,765,694 |
| Total | \$189,727,383 | \$15,259,615 | \$3,724,479 | \$1,647,102 | \$159,445 | \$14,316,727 | \$224,834,752 |

Counts of members do not include alternate payees receiving benefits while the member is still working. 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 C – Participant Data

Retired Members and Beneficiaries (continued)

Number of Retirees and Beneficiaries - by Years Retired and Retirement Type

State Industrial – As of June 30, 2020

| Years Retired | Service Retirement | Non-Industrial Disability | Industrial Disability | Non-Industrial Death | Industrial Death | Death After Retirement | Total |
|---------------|--------------------|---------------------------|-----------------------|----------------------|------------------|------------------------|---------------|
| Under 5 Years | 3,962 | 247 | 103 | 33 | 2 | 449 | 4,796 |
| 5 - 9 | 3,369 | 355 | 105 | 21 | 1 | 325 | 4,176 |
| 10 - 14 | 2,536 | 184 | 72 | 17 | 1 | 227 | 3,037 |
| 15 - 19 | 1,628 | 299 | 124 | 18 | 0 | 124 | 2,193 |
| 20 - 24 | 662 | 220 | 61 | 11 | 1 | 84 | 1,039 |
| 25 - 29 | 298 | 108 | 47 | 10 | 0 | 42 | 505 |
| 30 and over | 173 | 57 | 36 | 5 | 7 | 26 | 304 |
| Total | 12,628 | 1,470 | 548 | 115 | 12 | 1,277 | 16,050 |

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

Annual Allowance Amounts for Retirees and Beneficiaries - by Years Retired and Retirement Type

State Industrial – Annual Amounts Including PPPA Payments – As of June 30, 2020

| Years Retired | Service Retirement | Non-Industrial Disability | Industrial Disability | Non-Industrial Death | Industrial Death | Death After Retirement | Total |
|---------------|----------------------|---------------------------|-----------------------|----------------------|------------------|------------------------|----------------------|
| Under 5 Years | \$63,064,964 | \$2,720,337 | \$643,406 | \$337,022 | \$6,642 | \$5,449,025 | \$72,221,395 |
| 5 - 9 | 49,110,638 | 3,605,125 | 933,533 | 279,587 | 70 | 3,731,169 | 57,660,122 |
| 10 - 14 | 38,779,712 | 1,996,566 | 597,634 | 379,594 | 1,203 | 2,215,593 | 43,970,302 |
| 15 - 19 | 24,719,474 | 3,174,641 | 762,725 | 234,987 | 0 | 1,416,742 | 30,308,569 |
| 20 - 24 | 8,092,332 | 2,181,617 | 308,373 | 185,433 | 84 | 939,021 | 11,706,860 |
| 25 - 29 | 3,872,177 | 999,146 | 305,669 | 182,327 | 0 | 307,340 | 5,666,659 |
| 30 and over | 2,088,086 | 582,184 | 173,140 | 48,151 | 151,445 | 257,838 | 3,300,844 |
| Total | \$189,727,383 | \$15,259,615 | \$3,724,479 | \$1,647,102 | \$159,445 | \$14,316,727 | \$224,834,752 |

Counts of members do not include alternate payees receiving benefits while the member is still working. 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 C – Participant Data

Retired Members and Beneficiaries (continued)

Number of Retirees and Beneficiaries - by Age and Retirement Type

State Safety – As of June 30, 2020

| Attained Age | Service Retirement | Non-Industrial Disability | Industrial Disability | Non-Industrial Death | Industrial Death | Death After Retirement | Total |
|--------------|--------------------|---------------------------|-----------------------|----------------------|------------------|------------------------|---------------|
| Under 30 | 0 | 0 | 0 | 2 | 1 | 46 | 49 |
| 30-34 | 0 | 1 | 19 | 1 | 0 | 15 | 36 |
| 35-39 | 0 | 1 | 56 | 0 | 1 | 31 | 89 |
| 40-44 | 0 | 18 | 105 | 3 | 0 | 31 | 157 |
| 45-49 | 0 | 30 | 183 | 1 | 1 | 44 | 259 |
| 50-54 | 299 | 66 | 285 | 13 | 2 | 65 | 730 |
| 55-59 | 1,796 | 108 | 549 | 31 | 6 | 144 | 2,634 |
| 60-64 | 3,577 | 156 | 766 | 56 | 10 | 288 | 4,853 |
| 65-69 | 4,729 | 196 | 934 | 74 | 17 | 404 | 6,354 |
| 70-74 | 4,311 | 157 | 863 | 60 | 14 | 503 | 5,908 |
| 75-79 | 2,328 | 81 | 458 | 27 | 6 | 545 | 3,445 |
| 80-84 | 1,158 | 34 | 234 | 27 | 13 | 380 | 1,846 |
| 85 and Over | 672 | 22 | 162 | 15 | 13 | 661 | 1,545 |
| Total | 18,870 | 870 | 4,614 | 310 | 84 | 3,157 | 27,905 |

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

Annual Allowance Amounts for Retirees and Beneficiaries - by Age and Retirement Type

State Safety – Annual Amounts Including PPPA Payments – As of June 30, 2020

| Attained Age | Service Retirement | Non-Industrial Disability | Industrial Disability | Non-Industrial Death | Industrial Death | Death After Retirement | Total |
|--------------|----------------------|---------------------------|-----------------------|----------------------|--------------------|------------------------|----------------------|
| Under 30 | \$0 | \$0 | \$0 | \$26,898 | \$28,277 | \$345,686 | \$400,861 |
| 30-34 | 0 | 10,932 | 598,687 | 36,867 | 0 | 169,182 | 815,668 |
| 35-39 | 0 | 4,973 | 1,868,304 | 0 | 34,223 | 364,516 | 2,272,016 |
| 40-44 | 0 | 284,596 | 3,244,695 | 86,594 | 0 | 323,730 | 3,939,614 |
| 45-49 | 0 | 402,020 | 5,955,477 | 26,314 | 31,048 | 575,390 | 6,990,249 |
| 50-54 | 4,681,125 | 845,413 | 9,141,237 | 380,580 | 80,425 | 825,018 | 15,953,798 |
| 55-59 | 43,879,547 | 1,385,002 | 16,683,799 | 616,162 | 192,842 | 2,364,879 | 65,122,232 |
| 60-64 | 90,313,662 | 2,276,431 | 22,813,631 | 903,560 | 349,095 | 5,003,398 | 121,659,777 |
| 65-69 | 121,755,304 | 3,011,307 | 28,834,785 | 1,444,897 | 455,913 | 7,604,502 | 163,106,708 |
| 70-74 | 109,142,343 | 2,241,534 | 25,138,601 | 1,285,043 | 449,845 | 9,160,711 | 147,418,078 |
| 75-79 | 55,680,560 | 1,144,314 | 13,497,526 | 488,508 | 222,802 | 10,224,819 | 81,258,528 |
| 80-84 | 26,636,756 | 743,215 | 7,048,622 | 525,019 | 425,961 | 6,322,461 | 41,702,035 |
| 85 and Over | 14,049,155 | 349,016 | 4,967,450 | 317,677 | 395,879 | 11,530,481 | 31,609,658 |
| Total | \$466,138,452 | \$12,698,754 | \$139,792,815 | \$6,138,117 | \$2,666,311 | \$54,814,773 | \$682,249,222 |

Counts of members do not include alternate payees receiving benefits while the member is still working. 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 C – Participant Data

Retired Members and Beneficiaries (continued)

Number of Retirees and Beneficiaries - by Years Retired and Retirement Type

State Safety – As of June 30, 2020

| Years Retired | Service Retirement | Non-Industrial Disability | Industrial Disability | Non-Industrial Death | Industrial Death | Death After Retirement | Total |
|---------------|--------------------|---------------------------|-----------------------|----------------------|------------------|------------------------|---------------|
| Under 5 Years | 5,834 | 236 | 900 | 68 | 6 | 1,150 | 8,194 |
| 5 - 9 | 5,368 | 238 | 1,013 | 58 | 3 | 854 | 7,534 |
| 10 - 14 | 4,023 | 118 | 596 | 70 | 8 | 487 | 5,302 |
| 15 - 19 | 2,291 | 117 | 733 | 61 | 14 | 284 | 3,500 |
| 20 - 24 | 845 | 93 | 417 | 27 | 9 | 180 | 1,571 |
| 25 - 29 | 306 | 35 | 280 | 5 | 6 | 117 | 749 |
| 30 and over | 203 | 33 | 675 | 21 | 38 | 85 | 1,055 |
| Total | 18,870 | 870 | 4,614 | 310 | 84 | 3,157 | 27,905 |

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

Annual Allowance Amounts for Retirees and Beneficiaries - by Years Retired and Retirement Type

State Safety – Annual Amounts Including PPPA Payments – As of June 30, 2020

| Years Retired | Service Retirement | Non-Industrial Disability | Industrial Disability | Non-Industrial Death | Industrial Death | Death After Retirement | Total |
|---------------|----------------------|---------------------------|-----------------------|----------------------|--------------------|------------------------|----------------------|
| Under 5 Years | \$170,439,552 | \$4,608,515 | \$33,293,763 | \$1,652,692 | \$205,675 | \$21,995,073 | \$232,195,270 |
| 5 - 9 | 138,273,297 | 4,000,818 | 35,496,553 | 1,386,166 | 204,043 | 14,787,982 | 194,148,859 |
| 10 - 14 | 97,298,220 | 1,687,995 | 18,616,548 | 1,227,156 | 392,979 | 8,400,993 | 127,623,891 |
| 15 - 19 | 41,620,924 | 1,164,375 | 19,963,868 | 968,468 | 345,741 | 4,353,611 | 68,416,987 |
| 20 - 24 | 10,820,961 | 770,323 | 10,649,139 | 446,557 | 336,958 | 2,318,206 | 25,342,144 |
| 25 - 29 | 3,941,824 | 198,383 | 6,251,279 | 81,926 | 217,769 | 1,690,532 | 12,381,714 |
| 30 and over | 3,743,674 | 268,344 | 15,521,665 | 375,153 | 963,146 | 1,268,375 | 22,140,357 |
| Total | \$466,138,452 | \$12,698,754 | \$139,792,815 | \$6,138,117 | \$2,666,311 | \$54,814,773 | \$682,249,222 |

Counts of members do not include alternate payees receiving benefits while the member is still working. 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 C – Participant Data

Retired Members and Beneficiaries (continued)

Number of Retirees and Beneficiaries - by Age and Retirement Type

State Peace Officers and Firefighters – As of June 30, 2020

| Attained Age | Service Retirement | Non-Industrial Disability | Industrial Disability | Non-Industrial Death | Industrial Death | Death After Retirement | Total |
|--------------|--------------------|---------------------------|-----------------------|----------------------|------------------|------------------------|---------------|
| Under 30 | 0 | 0 | 6 | 1 | 4 | 59 | 70 |
| 30-34 | 0 | 1 | 22 | 2 | 2 | 25 | 52 |
| 35-39 | 0 | 9 | 147 | 1 | 3 | 30 | 190 |
| 40-44 | 0 | 17 | 381 | 1 | 10 | 56 | 465 |
| 45-49 | 0 | 29 | 727 | 12 | 18 | 59 | 845 |
| 50-54 | 2,946 | 69 | 1,299 | 27 | 23 | 106 | 4,470 |
| 55-59 | 6,024 | 107 | 2,055 | 47 | 28 | 246 | 8,507 |
| 60-64 | 6,070 | 104 | 1,864 | 44 | 25 | 405 | 8,512 |
| 65-69 | 5,428 | 79 | 1,618 | 49 | 24 | 591 | 7,789 |
| 70-74 | 4,364 | 80 | 1,274 | 49 | 20 | 628 | 6,415 |
| 75-79 | 2,157 | 30 | 622 | 21 | 11 | 580 | 3,421 |
| 80-84 | 1,055 | 18 | 235 | 8 | 11 | 435 | 1,762 |
| 85 and Over | 559 | 6 | 97 | 9 | 2 | 354 | 1,027 |
| Total | 28,603 | 549 | 10,347 | 271 | 181 | 3,574 | 43,525 |

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

Annual Allowance Amounts for Retirees and Beneficiaries - by Age and Retirement Type

State Peace Officers and Firefighters – Annual Amounts Including PPPA Payments – As of June 30, 2020

| Attained Age | Service Retirement | Non-Industrial Disability | Industrial Disability | Non-Industrial Death | Industrial Death | Death After Retirement | Total |
|--------------|------------------------|---------------------------|-----------------------|----------------------|--------------------|------------------------|------------------------|
| Under 30 | \$0 | \$0 | \$152,755 | \$27,205 | \$60,055 | \$689,252 | \$929,267 |
| 30-34 | 0 | 14,642 | 701,730 | 73,727 | 60,636 | 417,432 | 1,268,167 |
| 35-39 | 0 | 106,746 | 5,337,532 | 49,649 | 84,616 | 500,652 | 6,079,194 |
| 40-44 | 0 | 376,628 | 14,420,283 | 33,590 | 431,328 | 1,470,990 | 16,732,819 |
| 45-49 | 0 | 622,475 | 28,225,276 | 531,707 | 950,295 | 1,633,839 | 31,963,593 |
| 50-54 | 197,913,030 | 2,143,124 | 58,721,699 | 1,690,135 | 1,102,210 | 3,450,515 | 265,020,713 |
| 55-59 | 400,843,015 | 2,644,818 | 94,843,922 | 2,292,253 | 1,267,900 | 9,649,324 | 511,541,232 |
| 60-64 | 397,077,046 | 2,857,516 | 83,070,454 | 2,099,717 | 1,037,934 | 17,332,107 | 503,474,773 |
| 65-69 | 339,753,949 | 2,382,786 | 75,471,845 | 2,202,985 | 924,745 | 24,758,479 | 445,494,788 |
| 70-74 | 261,696,152 | 2,464,566 | 60,068,616 | 2,092,873 | 772,730 | 27,577,027 | 354,671,964 |
| 75-79 | 118,093,383 | 885,132 | 28,308,150 | 968,760 | 444,315 | 24,726,528 | 173,426,268 |
| 80-84 | 52,593,725 | 642,034 | 10,224,209 | 313,946 | 404,269 | 17,476,616 | 81,654,799 |
| 85 and Over | 25,237,400 | 120,379 | 3,964,387 | 285,143 | 70,092 | 13,445,765 | 43,123,166 |
| Total | \$1,793,207,700 | \$15,260,846 | \$463,510,857 | \$12,661,688 | \$7,611,126 | \$143,128,525 | \$2,435,380,743 |

Counts of members do not include alternate payees receiving benefits while the member is still working. 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 C – Participant Data

Retired Members and Beneficiaries (continued)

Number of Retirees and Beneficiaries - by Years Retired and Retirement Type

State Peace Officers and Firefighters – As of June 30, 2020

| Years Retired | Service Retirement | Non-Industrial Disability | Industrial Disability | Non-Industrial Death | Industrial Death | Death After Retirement | Total |
|---------------|--------------------|---------------------------|-----------------------|----------------------|------------------|------------------------|---------------|
| Under 5 Years | 8,055 | 107 | 1,774 | 53 | 30 | 1,443 | 11,462 |
| 5 - 9 | 7,989 | 129 | 2,085 | 51 | 17 | 941 | 11,212 |
| 10 - 14 | 6,749 | 74 | 1,323 | 56 | 48 | 552 | 8,802 |
| 15 - 19 | 3,345 | 98 | 2,009 | 47 | 33 | 335 | 5,867 |
| 20 - 24 | 1,433 | 92 | 1,411 | 35 | 20 | 174 | 3,165 |
| 25 - 29 | 698 | 33 | 1,068 | 21 | 9 | 88 | 1,917 |
| 30 and over | 334 | 16 | 677 | 8 | 24 | 41 | 1,100 |
| Total | 28,603 | 549 | 10,347 | 271 | 181 | 3,574 | 43,525 |

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

Annual Allowance Amounts for Retirees and Beneficiaries - by Years Retired and Retirement Type

State Peace Officers and Firefighters – Annual Amounts Including PPPA Payments – As of June 30, 2020

| Years Retired | Service Retirement | Non-Industrial Disability | Industrial Disability | Non-Industrial Death | Industrial Death | Death After Retirement | Total |
|---------------|------------------------|---------------------------|-----------------------|----------------------|--------------------|------------------------|------------------------|
| Under 5 Years | \$505,709,117 | \$4,229,622 | \$93,190,052 | \$2,837,866 | \$1,280,066 | \$62,160,006 | \$669,406,730 |
| 5 - 9 | 499,113,807 | 3,385,377 | 99,746,556 | 2,469,247 | 918,549 | 39,296,265 | 644,929,801 |
| 10 - 14 | 470,291,495 | 2,692,324 | 69,934,238 | 2,814,054 | 2,360,369 | 20,542,048 | 568,634,528 |
| 15 - 19 | 199,535,720 | 2,071,577 | 86,688,982 | 2,007,061 | 1,241,737 | 11,931,183 | 303,476,261 |
| 20 - 24 | 68,515,905 | 1,934,489 | 53,533,171 | 1,435,730 | 690,437 | 5,461,211 | 131,570,943 |
| 25 - 29 | 35,501,129 | 621,238 | 40,307,298 | 829,562 | 343,790 | 2,595,923 | 80,198,939 |
| 30 and over | 14,540,526 | 326,220 | 20,110,560 | 268,168 | 776,177 | 1,141,890 | 37,163,542 |
| Total | \$1,793,207,700 | \$15,260,846 | \$463,510,857 | \$12,661,688 | \$7,611,126 | \$143,128,525 | \$2,435,380,743 |

Counts of members do not include alternate payees receiving benefits while the member is still working. 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 C – Participant Data

Retired Members and Beneficiaries (continued)

Number of Retirees and Beneficiaries - by Age and Retirement Type

California Highway Patrol – As of June 30, 2020

| Attained Age | Service Retirement | Non-Industrial Disability | Industrial Disability | Non-Industrial Death | Industrial Death | Death After Retirement | Total |
|--------------|--------------------|---------------------------|-----------------------|----------------------|------------------|------------------------|--------------|
| Under 30 | 0 | 0 | 0 | 0 | 4 | 15 | 19 |
| 30-34 | 0 | 0 | 3 | 0 | 2 | 3 | 8 |
| 35-39 | 0 | 0 | 19 | 0 | 8 | 7 | 34 |
| 40-44 | 0 | 2 | 40 | 0 | 4 | 6 | 52 |
| 45-49 | 0 | 2 | 84 | 0 | 14 | 8 | 108 |
| 50-54 | 562 | 2 | 188 | 6 | 21 | 15 | 794 |
| 55-59 | 934 | 3 | 373 | 2 | 20 | 41 | 1,373 |
| 60-64 | 956 | 8 | 446 | 7 | 12 | 78 | 1,507 |
| 65-69 | 578 | 4 | 398 | 6 | 7 | 122 | 1,115 |
| 70-74 | 499 | 5 | 551 | 8 | 15 | 231 | 1,309 |
| 75-79 | 512 | 4 | 692 | 5 | 13 | 310 | 1,536 |
| 80-84 | 246 | 4 | 405 | 4 | 14 | 278 | 951 |
| 85 and Over | 158 | 4 | 220 | 3 | 9 | 319 | 713 |
| Total | 4,445 | 38 | 3,419 | 41 | 143 | 1,433 | 9,519 |

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

Annual Allowance Amounts for Retirees and Beneficiaries - by Age and Retirement Type

California Highway Patrol – Annual Amounts Including PPPA Payments – As of June 30, 2020

| Attained Age | Service Retirement | Non-Industrial Disability | Industrial Disability | Non-Industrial Death | Industrial Death | Death After Retirement | Total |
|--------------|----------------------|---------------------------|-----------------------|----------------------|--------------------|------------------------|----------------------|
| Under 30 | \$0 | \$0 | \$0 | \$0 | \$190,728 | \$273,015 | \$463,743 |
| 30-34 | 0 | 0 | 171,040 | 0 | 112,035 | 47,328 | 330,403 |
| 35-39 | 0 | 0 | 1,088,693 | 0 | 627,497 | 89,189 | 1,805,379 |
| 40-44 | 0 | 15,730 | 2,120,411 | 0 | 357,293 | 83,134 | 2,576,568 |
| 45-49 | 0 | 44,290 | 4,520,064 | 0 | 997,051 | 126,184 | 5,687,589 |
| 50-54 | 57,520,660 | 10,186 | 14,178,275 | 453,351 | 1,519,883 | 810,850 | 74,493,206 |
| 55-59 | 96,422,153 | 69,739 | 27,550,722 | 188,786 | 1,308,804 | 2,603,524 | 128,143,728 |
| 60-64 | 97,410,481 | 283,904 | 32,641,401 | 586,053 | 739,581 | 4,463,404 | 136,124,824 |
| 65-69 | 52,210,460 | 51,995 | 28,506,656 | 476,937 | 275,304 | 5,410,482 | 86,931,834 |
| 70-74 | 35,808,197 | 372,989 | 38,664,254 | 519,921 | 412,086 | 9,619,562 | 85,397,010 |
| 75-79 | 30,146,421 | 184,523 | 38,091,518 | 260,564 | 375,413 | 11,917,707 | 80,976,146 |
| 80-84 | 11,977,146 | 64,673 | 18,854,638 | 152,314 | 426,792 | 9,094,749 | 40,570,313 |
| 85 and Over | 7,113,552 | 125,521 | 9,746,269 | 72,717 | 254,509 | 9,441,794 | 26,754,363 |
| Total | \$388,609,070 | \$1,223,552 | \$216,133,941 | \$2,710,644 | \$7,596,976 | \$53,980,922 | \$670,255,105 |

Counts of members do not include alternate payees receiving benefits while the member is still working. 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 C – Participant Data

Retired Members and Beneficiaries (continued)

Number of Retirees and Beneficiaries - by Years Retired and Retirement Type

California Highway Patrol – As of June 30, 2020

| Years Retired | Service Retirement | Non-Industrial Disability | Industrial Disability | Non-Industrial Death | Industrial Death | Death After Retirement | Total |
|---------------|--------------------|---------------------------|-----------------------|----------------------|------------------|------------------------|--------------|
| Under 5 Years | 1,178 | 2 | 308 | 4 | 38 | 475 | 2,005 |
| 5 - 9 | 927 | 5 | 295 | 3 | 11 | 325 | 1,566 |
| 10 - 14 | 1,005 | 2 | 398 | 6 | 27 | 216 | 1,654 |
| 15 - 19 | 533 | 5 | 588 | 9 | 6 | 157 | 1,298 |
| 20 - 24 | 440 | 10 | 473 | 7 | 6 | 110 | 1,046 |
| 25 - 29 | 204 | 4 | 482 | 3 | 5 | 62 | 760 |
| 30 and over | 158 | 10 | 875 | 9 | 50 | 88 | 1,190 |
| Total | 4,445 | 38 | 3,419 | 41 | 143 | 1,433 | 9,519 |

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

Annual Allowance Amounts for Retirees and Beneficiaries - by Years Retired and Retirement Type

California Highway Patrol – Annual Amounts Including PPPA Payments – As of June 30, 2020

| Years Retired | Service Retirement | Non-Industrial Disability | Industrial Disability | Non-Industrial Death | Industrial Death | Death After Retirement | Total |
|---------------|----------------------|---------------------------|-----------------------|----------------------|--------------------|------------------------|----------------------|
| Under 5 Years | \$123,119,515 | \$196,642 | \$28,350,182 | \$431,786 | \$2,872,996 | \$20,055,428 | \$175,026,549 |
| 5 - 9 | 90,273,820 | 60,964 | 26,014,883 | 214,646 | 721,610 | 14,530,820 | 131,816,742 |
| 10 - 14 | 96,885,761 | 262,569 | 36,562,830 | 416,091 | 1,827,644 | 7,900,668 | 143,855,564 |
| 15 - 19 | 37,034,898 | 242,444 | 47,898,267 | 804,680 | 269,451 | 5,079,150 | 91,328,890 |
| 20 - 24 | 25,035,403 | 225,099 | 27,597,348 | 397,073 | 278,966 | 2,944,283 | 56,478,171 |
| 25 - 29 | 9,650,132 | 45,859 | 22,290,440 | 166,051 | 207,169 | 1,500,467 | 33,860,119 |
| 30 and over | 6,609,542 | 189,975 | 27,419,991 | 280,317 | 1,419,141 | 1,970,106 | 37,889,071 |
| Total | \$388,609,070 | \$1,223,552 | \$216,133,941 | \$2,710,644 | \$7,596,976 | \$53,980,922 | \$670,255,105 |

Counts of members do not include alternate payees receiving benefits while the member is still working. 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 C – Participant Data

Retired Members and Beneficiaries (continued)

Number Counts and Benefits - by Year of Retirement – As of June 30, 2020

State Miscellaneous

| Year Retired | Total Retirement | Total Benefits | Average Benefits |
|-------------------|------------------|------------------------|------------------|
| 2020 ¹ | 3,898 | \$126,139,643 | \$32,360 |
| 2019 | 10,881 | 392,585,288 | 36,080 |
| 2018 | 10,809 | 380,499,268 | 35,202 |
| 2017 | 10,227 | 364,058,474 | 35,598 |
| 2016 | 9,830 | 332,600,000 | 33,835 |
| 2015 | 9,768 | 328,281,246 | 33,608 |
| 2014 | 9,733 | 322,705,943 | 33,156 |
| 2013 | 8,459 | 263,939,951 | 31,202 |
| 2012 | 9,132 | 302,951,603 | 33,175 |
| 2011 | 9,036 | 296,874,132 | 32,855 |
| 2010 | 9,630 | 349,372,617 | 36,280 |
| 2009 | 8,310 | 314,437,874 | 37,838 |
| 2008 | 7,082 | 253,663,830 | 35,818 |
| 2007 | 6,692 | 226,507,326 | 33,847 |
| 2006 | 6,336 | 198,365,183 | 31,308 |
| 2005 | 7,056 | 239,125,426 | 33,890 |
| 2004 | 7,926 | 285,096,284 | 35,970 |
| 2003 | 5,552 | 180,649,371 | 32,538 |
| 2002 | 5,335 | 179,242,264 | 33,597 |
| 2001 | 5,297 | 197,355,463 | 37,258 |
| 2000 | 6,558 | 245,819,222 | 37,484 |
| 1999 | 2,715 | 63,594,989 | 23,424 |
| 1998 | 3,599 | 95,278,548 | 26,474 |
| 1997 | 3,427 | 90,553,819 | 26,424 |
| 1996 | 3,137 | 85,786,064 | 27,347 |
| 1995 | 2,681 | 75,643,113 | 28,215 |
| 1994 | 2,527 | 67,603,831 | 26,753 |
| 1993 | 1,892 | 40,349,134 | 21,326 |
| 1992 | 2,648 | 74,675,095 | 28,201 |
| 1991 and Earlier | 11,905 | 249,015,227 | 20,915 |
| Total | 202,078 | \$6,622,770,228 | \$32,773 |

State Industrial

| Year Retired | Total Retirement | Total Benefits | Average Benefits |
|-------------------|------------------|----------------------|------------------|
| 2020 ¹ | 356 | \$5,366,549 | \$15,075 |
| 2019 | 1,044 | 16,440,911 | 15,748 |
| 2018 | 952 | 14,536,898 | 15,270 |
| 2017 | 908 | 13,436,724 | 14,798 |
| 2016 | 932 | 13,651,224 | 14,647 |
| 2015 | 916 | 12,844,681 | 14,023 |
| 2014 | 861 | 11,282,898 | 13,104 |
| 2013 | 764 | 10,020,233 | 13,115 |
| 2012 | 880 | 13,046,159 | 14,825 |
| 2011 | 799 | 11,101,768 | 13,895 |
| 2010 | 909 | 13,731,876 | 15,107 |
| 2009 | 764 | 11,072,522 | 14,493 |
| 2008 | 597 | 8,470,090 | 14,188 |
| 2007 | 488 | 6,924,487 | 14,190 |
| 2006 | 518 | 6,750,087 | 13,031 |
| 2005 | 506 | 7,644,704 | 15,108 |
| 2004 | 595 | 8,679,915 | 14,588 |
| 2003 | 406 | 5,000,057 | 12,315 |
| 2002 | 394 | 5,164,241 | 13,107 |
| 2001 | 362 | 5,301,221 | 14,644 |
| 2000 | 452 | 6,783,611 | 15,008 |
| 1999 | 161 | 1,708,177 | 10,610 |
| 1998 | 233 | 2,269,754 | 9,741 |
| 1997 | 194 | 2,058,242 | 10,609 |
| 1996 | 154 | 1,533,229 | 9,956 |
| 1995 | 150 | 1,584,001 | 10,560 |
| 1994 | 121 | 1,109,135 | 9,166 |
| 1993 | 101 | 934,637 | 9,254 |
| 1992 | 115 | 1,620,537 | 14,092 |
| 1991 and Earlier | 418 | 4,766,185 | 11,402 |
| Total | 16,050 | \$224,834,752 | \$14,008 |

¹ The numbers for 2020 represent the first 6 months of the calendar year only.

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

Appendix C – Participant Data

Retired Members and Beneficiaries (continued)

Number Counts and Benefits - by Year of Retirement – As of June 30, 2020 (continued)

State Safety

| Year Retired | Total Retirement | Total Benefits | Average Benefits |
|-------------------|------------------|----------------------|------------------|
| 2020 ¹ | 682 | \$20,561,000 | \$30,148 |
| 2019 | 1,715 | 49,267,232 | 28,727 |
| 2018 | 1,720 | 49,167,492 | 28,586 |
| 2017 | 1,571 | 43,521,923 | 27,703 |
| 2016 | 1,585 | 44,053,509 | 27,794 |
| 2015 | 1,541 | 40,905,004 | 26,544 |
| 2014 | 1,557 | 38,922,883 | 24,999 |
| 2013 | 1,433 | 37,118,012 | 25,902 |
| 2012 | 1,554 | 39,206,427 | 25,229 |
| 2011 | 1,441 | 37,849,814 | 26,266 |
| 2010 | 1,550 | 45,408,443 | 29,296 |
| 2009 | 1,296 | 35,009,858 | 27,014 |
| 2008 | 1,007 | 24,558,803 | 24,388 |
| 2007 | 935 | 20,382,091 | 21,799 |
| 2006 | 868 | 16,393,677 | 18,887 |
| 2005 | 903 | 17,978,248 | 19,909 |
| 2004 | 914 | 18,446,521 | 20,182 |
| 2003 | 669 | 12,915,370 | 19,305 |
| 2002 | 630 | 11,860,814 | 18,827 |
| 2001 | 597 | 11,531,703 | 19,316 |
| 2000 | 654 | 12,738,617 | 19,478 |
| 1999 | 324 | 5,257,477 | 16,227 |
| 1998 | 337 | 4,883,927 | 14,492 |
| 1997 | 280 | 4,616,575 | 16,488 |
| 1996 | 226 | 3,590,966 | 15,889 |
| 1995 | 188 | 2,706,519 | 14,396 |
| 1994 | 194 | 3,028,660 | 15,612 |
| 1993 | 118 | 2,126,967 | 18,025 |
| 1992 | 171 | 3,286,040 | 19,217 |
| 1991 and Earlier | 1,245 | 24,954,653 | 20,044 |
| Total | 27,905 | \$682,249,225 | \$24,449 |

State Peace Officers and Firefighters

| Year Retired | Total Retirement | Total Benefits | Average Benefits |
|-------------------|------------------|------------------------|------------------|
| 2020 ¹ | 1,057 | \$65,655,949 | \$62,115 |
| 2019 | 2,219 | 126,122,982 | 56,838 |
| 2018 | 2,324 | 135,905,342 | 58,479 |
| 2017 | 2,178 | 125,203,677 | 57,486 |
| 2016 | 2,099 | 117,444,749 | 55,953 |
| 2015 | 2,306 | 136,107,346 | 59,023 |
| 2014 | 2,254 | 126,338,289 | 56,051 |
| 2013 | 2,149 | 118,068,127 | 54,941 |
| 2012 | 2,448 | 144,802,113 | 59,151 |
| 2011 | 2,168 | 124,481,697 | 57,418 |
| 2010 | 2,343 | 145,498,798 | 62,099 |
| 2009 | 2,096 | 140,165,847 | 66,873 |
| 2008 | 1,498 | 98,243,462 | 65,583 |
| 2007 | 1,676 | 111,576,602 | 66,573 |
| 2006 | 1,886 | 121,308,847 | 64,321 |
| 2005 | 1,175 | 65,234,377 | 55,519 |
| 2004 | 1,336 | 69,745,668 | 52,205 |
| 2003 | 1,095 | 55,006,645 | 50,234 |
| 2002 | 1,208 | 62,768,411 | 51,961 |
| 2001 | 1,081 | 54,365,958 | 50,292 |
| 2000 | 1,378 | 75,583,281 | 54,850 |
| 1999 | 534 | 18,788,272 | 35,184 |
| 1998 | 613 | 22,237,440 | 36,276 |
| 1997 | 596 | 23,712,556 | 39,786 |
| 1996 | 537 | 23,051,366 | 42,926 |
| 1995 | 443 | 19,019,443 | 42,933 |
| 1994 | 417 | 16,198,499 | 38,845 |
| 1993 | 388 | 15,670,057 | 40,387 |
| 1992 | 437 | 18,651,164 | 42,680 |
| 1991 and Earlier | 1,586 | 58,423,780 | 36,837 |
| Total | 43,525 | \$2,435,380,744 | \$55,954 |

¹ The numbers for 2020 represent the first 6 months of the calendar year only.

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

Appendix C – Participant Data

Retired Members and Beneficiaries (continued)

Number Counts and Benefits - by Year of Retirement – As of June 30, 2020 (continued)

California Highway Patrol

| Year Retired | Total Retirement | Total Benefits | Average Benefits |
|-------------------|------------------|----------------------|------------------|
| 2020 ¹ | 128 | \$9,374,449 | \$73,238 |
| 2019 | 438 | 38,880,952 | 88,769 |
| 2018 | 391 | 31,686,605 | 81,040 |
| 2017 | 400 | 37,694,552 | 94,236 |
| 2016 | 352 | 29,137,952 | 82,778 |
| 2015 | 393 | 34,972,591 | 88,989 |
| 2014 | 294 | 25,014,130 | 85,082 |
| 2013 | 303 | 24,390,169 | 80,496 |
| 2012 | 367 | 31,762,521 | 86,546 |
| 2011 | 359 | 32,141,461 | 89,531 |
| 2010 | 368 | 33,769,889 | 91,766 |
| 2009 | 347 | 32,625,101 | 94,020 |
| 2008 | 265 | 23,212,671 | 87,595 |
| 2007 | 269 | 21,366,829 | 79,431 |
| 2006 | 298 | 22,986,546 | 77,136 |
| 2005 | 340 | 27,851,032 | 81,915 |
| 2004 | 256 | 18,871,950 | 73,719 |
| 2003 | 188 | 11,741,571 | 62,455 |
| 2002 | 269 | 18,387,064 | 68,353 |
| 2001 | 280 | 20,547,701 | 73,385 |
| 2000 | 395 | 26,767,581 | 67,766 |
| 1999 | 143 | 7,101,597 | 49,662 |
| 1998 | 177 | 8,868,763 | 50,106 |
| 1997 | 210 | 10,718,773 | 51,042 |
| 1996 | 229 | 12,961,697 | 56,601 |
| 1995 | 185 | 9,382,718 | 50,717 |
| 1994 | 163 | 7,168,599 | 43,979 |
| 1993 | 186 | 8,583,014 | 46,145 |
| 1992 | 142 | 5,658,693 | 39,850 |
| 1991 and Earlier | 1,384 | 46,627,934 | 33,691 |
| Total | 9,519 | \$670,255,105 | \$70,412 |

¹ The numbers for 2020 represent the first 6 months of the calendar year only.

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

Appendix D – Employer Rate for Fiscal Years 2020-21 and 2021-22 Adjusted for Supplanting Payments

Senate Bill 90 (SB 90), approved by the Governor in June 2019, established Government Code section 20825.1 and directed the State to contribute an additional \$2.5 billion to the State plans. The contribution was made July 29, 2019.

According to the original statute and direction from the Department of Finance, this payment was to be split between an advance payment for fiscal year 2019-20 and an additional paydown of Unfunded Accrued Liability (UAL). The advance payment portion was an acceleration of part of the UAL payment required for fiscal year 2019-20 with a corresponding reduction in the required employer rate for that fiscal year. The additional UAL paydown portion was intended to supplement the required payment, thereby reducing UAL more quickly and generating long-term savings.

Due to budget challenges caused by the COVID-19 pandemic, in order to capture all contribution savings over the next two fiscal years, in June 2020 the Department of Finance revised the application of the portion originally intended to be an additional UAL payment to instead be supplanting payments for fiscal years 2020-21 and 2021-22. The revised allocation of the July 2019 supplemental payment of \$2.5 billion among plans and fiscal years is as follows:

| Plan | Fiscal Year 2019-20 | Fiscal Year 2020-21 | Fiscal Year 2021-22 | Total Supplanting Payment |
|-------------------------------------|------------------------|------------------------|------------------------|------------------------------|
| State Miscellaneous | \$32,384,208 | \$339,222,800 | \$476,449,992 | \$848,057,000 |
| State Industrial | 3,166,795 | 33,172,000 | 46,591,205 | 82,930,000 |
| State Safety | 7,042,595 | 73,770,800 | 103,613,605 | 184,427,000 |
| State Peace Officers & Firefighters | 52,872,296 | 553,834,400 | 777,879,304 | 1,384,586,000 |
| California Highway Patrol | 0 | 0 | 0 | 0 |
| Total | \$95,465,894 | \$1,000,000,000 | \$1,404,534,106 | \$2,500,000,000 |

Appendix D – Employer Rate for Fiscal Years 2020-21 and 2021-22 Adjusted for Supplanting Payments

The tables below show the total employer contribution rate for fiscal years 2020-21 and 2021-22 reflecting both the supplanting payment and the additional statutory contribution under Government Code section 20683.2. For more information on the latter, see “Additional Contributions per Government Code section 20683.2” in the Highlights and Executive Summary section.

Total Employer Contribution for Fiscal Year 2020-21

| Plan | Preliminary Actuarially Required Employer Contribution for 2020-21 | Reduction due to Supplanting Payment per GC 20825.1 | Revised Actuarially Required Employer Contribution for 2020-21 | Additional Statutory Contribution per GC 20683.2 | Total Employer Contribution for 2020-21 |
|-------------------------------------|--|---|--|--|---|
| State Miscellaneous | 31.76% | (2.49%) | 29.27% | 0.10% | 29.37% |
| State Industrial | 21.62% | (4.31%) | 17.31% | 0.88% | 18.19% |
| State Safety | 21.66% | (2.89%) | 18.77% | 1.18% | 19.95% |
| State Peace Officers & Firefighters | 48.93% | (14.48%) | 34.45% | 1.65% | 36.10% |
| California Highway Patrol | 59.76% | - | 59.76% | 1.32% | 61.08% |

Total Employer Contribution for Fiscal Year 2021-22

| Plan | Preliminary Actuarially Required Employer Contribution for 2021-22 ¹ | Reduction due to Supplanting Payment per GC 20825.1 ¹ | Actuarially Required Employer Contribution for 2021-22 | Additional Statutory Contribution per GC 20683.2 | Total Employer Contribution for 2021-22 |
|-------------------------------------|---|--|--|--|---|
| State Miscellaneous | 32.45% | (3.33%) | 29.12% | 0.10% | 29.22% |
| State Industrial | 22.22% | (5.76%) | 16.46% | 0.88% | 17.34% |
| State Safety | 22.26% | (3.97%) | 18.29% | 1.18% | 19.47% |
| State Peace Officers & Firefighters | 50.41% | (19.22%) | 31.19% | 1.65% | 32.84% |
| California Highway Patrol | 61.46% | - | 61.46% | 1.32% | 62.78% |

¹ To illustrate the impact of State contribution under Section 20825.1.

Appendix E – Glossary of Actuarial Terms

Accrued Liability (*also called Actuarial Accrued Liability or Entry Age Actuarial Accrued Liability*): The total dollars needed as of the valuation date to fund all benefits earned in the past for current members.

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

Actuarial Methods: Procedures employed by actuaries to achieve certain funding goals of a pension plan. Actuarial methods include cost method, amortization policy and determination of asset value on which funding requirements are based.

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 to their plan provisions.

Amortization Bases: Separate payment schedules for different portions of the Unfunded Accrued Liability. The total Unfunded Accrued Liability of a plan can be segregated by "cause," creating "bases," and each such base will be separately amortized and paid for over a specific period of time. However, all bases are amortized using investment and payroll assumptions from the current valuation. This can be likened to a home having a first mortgage of 24 years remaining payments and a second mortgage that has 10 years remaining payments. Each base or each mortgage note has its own terms (payment period, principal, etc.).

Generally, in an actuarial valuation, the separate bases consist of changes in unfunded accrued liability due to contract amendments, actuarial assumption changes, actuarial methodology changes, and/or gains and losses. Amortization methodology is determined by board policy.

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

Classic Member (under PEPR): A classic member is a member who joined CalPERS prior to January 1, 2013 and who is not defined as a new member under PEPR. (See definition of new member below.)

Discount Rate: The assumed long-term rate of return on plan assets. This is the rate at which projected future cash flows are discounted to the valuation date to determine Accrued Liability. This assumption is called "investment return" in earlier CalPERS reports or "actuarial interest rate" in Section 20014 of the California Public Employees' Retirement Law (PERL).

Entry Age: The earliest age at which a plan member begins to accrue benefits under a defined benefit pension plan or risk pool. In most cases, this is the same as the date of hire.

Appendix E – Glossary of Actuarial Terms

Glossary of Actuarial Terms (continued)

Entry Age Actuarial Cost Method: An actuarial cost method designed to fund a member's total plan benefit in a level manner over the course of his or her career. The method as employed in this valuation yields a funding rate expressed as a level percentage of payroll.

The assumed retirement age less the entry age is the amount of time required to fund a member's total benefit. Generally, the older a member on the date of hire, the greater the entry age normal cost. This is mainly because there is less time to earn investment income to fund the future benefits.

Fresh Start: A Fresh Start is when multiple Amortization Bases are collapsed to one base and amortized together over a new Amortization Period.

Funded Ratio: Defined as Market Value of Assets divided by Accrued Liability. It is a measure of how well funded a rate plan is. A ratio greater than 100% means the rate plan has more assets than liabilities and the employer need only contribute the Normal Cost, and a ratio less than 100% means liabilities are greater than assets and contributions in addition to Normal Cost are required.

GASB 68: Statement No. 68 of the Governmental Accounting Standards Board, the accounting standard governing a state or local governmental employer's accounting and financial reporting for pensions. GASB 68 replaced GASB 27 effective the first fiscal year beginning after June 15, 2014.

New Member (under PEPPRA): A new member is an individual who becomes a member of a public retirement system in the State of California for the first time on or after January 1, 2013, was not a member of another public retirement system prior to that date, and is not subject to reciprocity with another public retirement system.

Normal Cost: The annual cost of service accrual for a given fiscal year for active employees. The normal cost as a percentage of payroll can be viewed as the long-term contribution rate.

Pension Actuary: A business professional who satisfies the Qualification Standards for Actuaries Issuing Statements of Actuarial Opinion in the United States with regard to pensions.

PEPPRA: 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 and expected to be earned in the future for current members.

Unfunded Accrued Liability (UAL): When a plan or pool's Market Value of Assets is less than its Accrued Liability, the difference is the plan or pool's Unfunded Accrued Liability. When an Unfunded Accrued Liability exists, the employer will have to pay contributions exceeding the Normal Cost.

Actuarial Office
P.O. Box 942709 Sacramento, CA 94229-2709
TTY - (877) 249-7442
(888) 225-7377
FAX (916) 795-2744

Available online at [CalPERS' Website](#)



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