



**Government Accounting Standards  
(GASB) Statements 67 and 68  
Crossover Testing Report for  
Measurement Date June 30, 2023  
based on June 30, 2022 Valuations**

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## Introduction

This report describes CalPERS approach for crossover testing to fulfill Government Accounting Standards Board Statements 67 and 68 reporting requirements on discount rates used for measuring Total Pension Liabilities as of the measurement date June 30, 2023 based on census information as of our last valuation date on June 30, 2022.

## Background

### History

The Government Accounting Standards Board adopted Statements 67 and 68 on June 25, 2012.

Statement 68 (Accounting and Financial Reporting for Pensions) paragraphs 26 to 31 contain requirements for determining the discount rate to be used in a pension plan. A 100-year cash flow projection for each agent plan is among the requirements.

### CalPERS Structure

The California Public Employees' Retirement System (CalPERS) provides retirement benefit services to more than 2.2 million members.

Led by a 13-member Board of Administration ("CalPERS Board") consisting of member-elected, appointed, and ex officio members, CalPERS membership consists of 1,446,497 active and inactive members and 791,514 retirees, beneficiaries, and survivors as of June 30, 2023.

## Public Employees Retirement Fund

The Public Employees Retirement Fund (PERF) provides retirement benefits to State of California, schools and other California public agency employees. The PERF benefits are funded by member and employer contributions and by earnings on investments.

The PERF is comprised of and reported as three separate entities for accounting purposes:

- PERF A is comprised of agent-multiple-employer plans, which includes State of California and most public agencies' rate plans with more than 100 active members.
- PERF B is a cost-sharing multiple-employer plan of Schools Pooled employers consisting of non-teaching and non-certified employees.
- PERF C is a cost-sharing multiple-employer plan of public agencies' plans with generally less than 100 active members.

In addition to the PERF, there are three other defined benefit plans:

- Legislators' Retirement Fund (LRF) provides retirement benefits to California Legislators elected to office before November 7, 1990, and to constitutional and statutory officers elected or appointed prior to January 1, 2013. The number of LRF members has been declining as eligible incumbent Legislators leave office and are replaced by those who are ineligible to participate in the LRF.
- Judges' Retirement Fund (JRF) provides retirement benefits to California Supreme and Appellate Court Justices and Superior Court Judges appointed or elected before November 9, 1994. The State of California does not pre-fund for this fund. The benefits are funded on a pay-as-you-go basis.
- Judges' Retirement Fund II (JRF II) provides retirement benefits to California Supreme and Appellate Court Justices and Superior Court Judges first appointed or elected on or after November 9, 1994.

## CalPERS Long-Term Expected Rate of Return

CalPERS used the following methodology to set the long-term expected rate of return pertaining to the ACFR as of June 30, 2023.

The expected long-term rate of return on pension plan investments was determined using a building-block method in which expected future real rates of return (expected returns, net of pension plan investment expense and inflation) are developed for each major asset class.

In determining the long-term expected rate of return, CalPERS took into account both the short-term and long-term market return expectations as well as the expected pension fund cash flows. Using historical returns of all funds' asset classes, expected compound (geometric) returns were calculated over the short term (first 10 years) and the long term (11+ years) using a building-block approach. Using the expected nominal returns for both short term and long term, the present value of benefits was calculated for each fund. The expected rate of return was set by calculating the rounded single equivalent expected return that arrived at the same present value of benefits for cash flows as the one calculated using both short-term and long-term returns. The expected rate of return was then set equal to the single equivalent rate calculated above and adjusted to account for assumed administrative expenses.

## CalPERS Retirement Fund Discount Rates

The discount rates used in the actuarial valuations used to measure the total pension liability as of June 30, 2023, reflect the long-term expected rates of return for the respective plans. This excludes the JRF I, which is funded on a pay-as-you-go basis and does not have assets accumulated to pay future benefits.

The discount rates used to measure the total pension liability as of June 30, 2023, for the PERF A, PERF B, LRF, and JRF II were 6.90 percent, 6.90 percent, 4.85 percent, and 6.15 percent, respectively. The financial reporting discount rates are consistent with the expected long-term investment rate of return used to determine Actuarially Determined Contributions after adjustments for administrative expense assumptions.

## CalPERS Funding Policy

The CalPERS Board of Administration adopts these actuarial policies to ensure the proper funding of member benefits.

- [Actuarial Amortization Policy \(PDF\)](#)
- [Actuarial Assumptions Policy \(PDF\)](#)
- [Actuarial Cost Method Policy \(PDF\)](#)
- [Contribution Allocation Policy \(PDF\)](#)

## CalPERS Amortization Methods and Actuarial Assumptions

### Amortization Methods

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

The unfunded liability is amortized as a “level percent of pay”. All new 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. 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 established on or after June 30, 2019 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 fixed period of five years.

### Actuarial Assumptions

The actuarial assumptions used in determining actuarial liabilities and required employer contributions include both economic and non-economic assumptions. These assumptions represent the actuary’s best estimate of anticipated future experiences and are reviewed in depth periodically.

Actuarial assumptions used in the crossover testing of individual plans are assumptions adopted by the Board in November of 2021 for the PERF defined benefit plans as well as for the LRF and JRS II plans. For more details, please refer to the 2021 experience study report which can be found on the CalPERS website.

# Approach

## Crossover Testing

CalPERS conducted cash flow projections to determine if assets would run out under the assumed discount rate. CalPERS refers to these projections as “crossover tests”.

Each crossover test requires running multiple valuations, completing additional calculations and verifying the results. CalPERS cannot currently support crossover testing for the approximately 4,000 public agency rate plans it administers. Instead, CalPERS chose representative plans that had a higher likelihood of a crossover event (see Selection of Plans for more details).

CalPERS performed crossover tests on the following plans within the PERF as of the measurement date on June 30, 2023:

- PERF A
  - California Highway Patrol
  - State Miscellaneous (Tiers 1 and 2)
  - State Peace Officers and Fire Fighters (POFF)
  - One Public Agency Miscellaneous Plan
  - One Public Agency Safety Plan
- PERF B
  - Schools Pool
- PERF C
  - No plans were selected (see Selection of Plans section)

CalPERS also performed crossover tests on the following additional defined benefit plans as of the measurement date on June 30, 2023:

- Legislators’ Retirement Fund
- Judges’ Retirement Fund II

## Selection of Plans

For PERF A, CalPERS tested a combination of State and Public Agency agent multiple-employer plans with the lowest funded status and lowest active to retiree ratio.

Funded status is one of several indicators of the financial health of a plan. Active to retiree ratio indicates how many actives a plan has to fund for future benefits. Plans with low measures in these two areas tend to have a higher probability of a crossover event compared to other CalPERS agencies' plans.

For PERF B, CalPERS conducted a crossover test on the Schools Pool (a cost-sharing multiple-employer plan).

For PERF C, by demonstrating crossover event does not occur for plans which have a lower funded status and active to retiree ratio within the PERF C risk pools, is sufficient to validate crossover event has a very low probability to occur for the entire PERF C risk pools. As of June 30, 2022, the funded status and active to retiree ratio for the PERF C Miscellaneous pool are 76.1 percent and 80.9 percent, respectively; and for the PERF C Safety pool are 73.4 percent and 49.8 percent.

CalPERS conducted crossover tests on LRS and JRS II.

CalPERS did not perform a crossover test on the Judges' Retirement Fund I (JRF) because the State adopted a pay-as-you-go funding policy. Under the pay-as-you-go method, the pension plan's fiduciary net position, if any, was projected not to be sufficient to cover the projected future benefit payments of current active and inactive employees. Therefore, the discount rate used to measure Total Pension Liability was based on a yield rate or index for the 20-year tax-exempt General Obligation Municipal Bonds with an average rating of AA/Aa or higher (Fidelity Municipal 20-year AA General Obligation Bond Index was used).

The table below shows the funded status and active to retiree ratios for the plans tested for a crossover event.

## Plan Characteristics (as of June 30, 2022)

Plan	Funded Status (based on 06/30/2022 funding valuation results)	Active to Retiree Ratio
<b>PERF A - Agency</b>		
California Highway Patrol	66.2%	0.67
State Miscellaneous (Tiers 1 and 2)	69.7%	0.86
State POFF	69.5%	0.87
PA Miscellaneous Plan	56.0%	0.57
PA Safety Plan	59.1%	0.43
<b>PERF B – Cost-Sharing Schools</b>		
Schools	67.9%	1.28
<b>PERF C – Cost-Sharing Agency</b>		
Pooled Miscellaneous Plan	76.1%	0.81
Pooled Safety Plan	73.4%	0.50
<b>Other Defined Benefit Plans</b>		
Legislators' Retirement Fund	109.8%	0.01
Judges' II Retirement Fund	99.2%	3.66

## Crossover Testing Methodology

This report was prepared in accordance with generally accepted actuarial principles and practices and based on the following testing methodologies:

- Benefit provisions provided by CalPERS's Retirement Benefit Service division, as administered by the Board. Included plan amendments (if any) adopted before the measurement date of June 30, 2023.
- Census information of covered active, transfer, separated, retired and beneficiaries' members are as of June 30, 2022 provided by Retirement Benefit Service division of CalPERS.
- Unaudited fair value of assets of the Plan as of June 30, 2023, provided by Financial Reporting & Accounting Services division of CalPERS.
- Economic assumptions regarding inflation, future salary increases, and investment returns adopted by the Board for the June 30, 2022 actuarial valuations.
- Other actuarial assumptions, regarding employee terminations, retirements, disabilities, deaths, etc. adopted by the Board for the June 30, 2022 valuations.

## Crossover Testing Assumptions

The following assumptions are used in performing the crossover tests.

- Plan's projected fiduciary net position amounts shown have not been adjusted for the time value of money.
- Projected total contributions include employee and employer normal cost contributions based on closed group projections (actual contributions were used in Fiscal Year 2022-23, contributions beginning Fiscal Year 2023-24 were based on covered active members as of June 30, 2022); plus, annual employer contributions to the unfunded actuarial accrued liability; plus, any additional discretionary payments to the unfunded liability in Fiscal Year 2022-23, if exist. Contributions and benefit payments are assumed to occur in the middle of the year.
- Projected benefit payments (actual benefit payments were used in Fiscal Year 2022-23) beginning Fiscal Year 2023-24 have been determined in accordance with paragraph 39 of GASB Statement No. 67, and are based on the closed group of active, transfers, inactive vested, retired members, and beneficiaries as of June 30, 2022.
- Benefit payments are assumed to occur halfway through the year, on average in accordance with paragraph 31.b.(1)(e) of GASB Statement No. 67.
- The long-term expected rate of return on Plan investments of 6.90 percent per annum for PERF A & B (LRF, and JRF II's long-term expected rate of return are 4.85 percent and 6.15 percent, respectively) was applied to all periods of projected benefit payments to determine the discount rate to the extent Plan's beginning of the year's FNP was projected to be available to make projected future benefit payments and administrative expenses in that year. Otherwise, yield rate of 3.86 percent for the 20-year tax-exempt General Obligation Municipal Bonds was used.

- Projected administrative expenses (actual administrative expenses were used in Fiscal Year 2022-23) are calculated as approximately 0.10 percent for the PERF (0.15 percent for JRF II, 0.35 percent for LRF) of the average cash flow of Fiduciary Net Position amount during the year.

## Results

### Crossover Testing Results

Projected cash flows are used to develop the projected Fiduciary Net Position for each pension plan. The pension plan's projected Fiduciary Net Position is compared to the projected benefit payments in each period. A crossover event occurs if the projected benefit payments exceed the projected beginning of year Fiduciary Net Position in any given year.

There is no crossover event that is projected to occur for any CalPERS plan tested (plans include in PERF A, PERF B, LRF and JRF II). This report summarizes the findings for each plan tested by displaying the year in which the projected Fiduciary Net Position is at its lowest value and above zero. Therefore, no crossover event is expected to occur. It also presents the projected Fiduciary Net Position, projected benefit payments, and "funded" portion and "unfunded" portion of benefit payments for the periods within two years of that point, in addition to the first five (5) years and the 100<sup>th</sup> year of the crossover testing data. Detailed projections and calculations used to identify a potential crossover event for each plan are shown in Appendix A of this report.

Crossover testing results are very sensitive to the long-term expected rate of return. Initially, Fiduciary Net Position increases as contributions plus investment earnings exceed projected benefit payments. When active payroll decreases, Fiduciary Net Position decreases as contributions plus investment earnings not enough to cover projected benefit payments. As time progress, retiree population decreases lead to projected benefit payments of the closed group decrease. At a certain point, expected investment earnings will exceed benefit payments plus administration expenses and the Trust will be cashflow positive. Therefore, no crossover event is expected to occur thereafter.

## California Highway Patrol Crossover Test Results (PERF A)

A crossover event did not occur.

As illustrated in the following Exhibit and Appendix A-4, the Plan's fiduciary net position was projected to be available to make all projected future benefit payments for current Plan members plus administrative expenses. There is no projected "cross-over date" when projected benefits are not covered by projected assets. Therefore, the long-term expected rate of return on Plan investments of 6.90 percent per annum was applied to all periods of projected benefit payments to determine the total pension liability as of June 30, 2023, pursuant to paragraph 44 of GASB Statement No. 67.

Year	Projected Beginning Fiduciary Net Position (\$)	Projected Benefit Payments (\$)	"Funded" Portion of Benefit Payments (\$)	Unfunded Portion of Benefit Payments (\$)
1	\$11,013,584,736	\$794,792,719	\$794,792,719	\$0
2	11,686,186,002	823,291,073	823,291,073	0
3	12,456,351,617	869,395,979	869,395,979	0
4	13,209,798,943	918,247,430	918,247,430	0
5	13,992,500,446	969,377,715	969,377,715	0
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
58	7,598,986,780	599,626,084	599,626,084	0
59	7,496,039,789	543,609,898	543,609,898	0
60	7,443,981,817	489,775,897	489,775,897	0
61	7,444,018,159	438,381,216	438,381,216	0
62	7,497,170,335	389,662,176	389,662,176	0
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
100	68,468,928,785	5,226	5,226	0

## State Miscellaneous (Tier 1 and 2) Crossover Test Results (PERF A)

A crossover event did not occur.

As illustrated in the following Exhibit and Appendix A-7, the Plan's fiduciary net position was projected to be available to make all projected future benefit payments for current Plan members plus administrative expenses. There is no projected "cross-over date" when projected benefits are not covered by projected assets. Therefore, the long-term expected rate of return on Plan investments of 6.90 percent per annum was applied to all periods of projected benefit payments to determine the total pension liability as of June 30, 2023, pursuant to paragraph 44 of GASB Statement No. 67.

Year	Projected Beginning Fiduciary Net Position (\$)	Projected Benefit Payments (\$)	"Funded" Portion of Benefit Payments (\$)	Unfunded Portion of Benefit Payments (\$)
1	\$95,432,373,155	\$7,569,641,578	\$7,569,641,578	\$0
2	101,081,537,108	7,993,869,220	7,993,869,220	0
3	105,851,674,314	8,339,841,811	8,339,841,811	0
4	110,478,590,870	8,683,871,794	8,683,871,794	0
5	115,238,864,396	9,027,110,150	9,027,110,150	0
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
59	53,303,859,380	3,931,654,085	3,931,654,085	0
60	52,865,389,861	3,529,942,238	3,529,942,238	0
61	52,812,249,848	3,145,315,969	3,145,315,969	0
62	53,152,984,815	2,780,006,092	2,780,006,092	0
63	53,894,415,911	2,436,016,037	2,436,016,037	0
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
100	489,827,449,303	102,720	102,720	0

## State POFF Crossover Test Results (PERF A)

A crossover event did not occur.

As illustrated in the following Exhibit and Appendix A-10, the Plan's fiduciary net position was projected to be available to make all projected future benefit payments for current Plan members plus administrative expenses. There is no projected "cross-over date" when projected benefits are not covered by projected assets. Therefore, the long-term expected rate of return on Plan investments of 6.90 percent per annum was applied to all periods of projected benefit payments to determine the total pension liability as of June 30, 2023, pursuant to paragraph 44 of GASB Statement No. 67.

Year	Projected Beginning Fiduciary Net Position (\$)	Projected Benefit Payments (\$)	"Funded" Portion of Benefit Payments (\$)	Unfunded Portion of Benefit Payments (\$)
1	\$42,536,733,695	\$2,956,623,926	\$2,956,623,926	\$0
2	46,103,000,060	3,105,885,945	3,105,885,945	0
3	48,643,954,507	3,286,194,435	3,286,194,435	0
4	51,092,194,185	3,470,440,050	3,470,440,050	0
5	53,587,071,687	3,662,278,388	3,662,278,388	0
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
62	24,723,820,419	1,943,513,992	1,943,513,992	0
63	24,396,533,447	1,755,637,644	1,755,637,644	0
64	24,241,150,054	1,574,251,759	1,574,251,759	0
65	24,262,652,174	1,400,421,668	1,400,421,668	0
66	24,465,259,557	1,235,177,524	1,235,177,524	0
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
100	175,983,980,865	99,062	99,062	0

## PA Miscellaneous Plan (PERF A)

A crossover event did not occur.

As illustrated in the following Exhibit and Appendix A-13, the Plan's fiduciary net position was projected to be available to make all projected future benefit payments for current Plan members plus administrative expenses. There is no projected "cross-over date" when projected benefits are not covered by projected assets. Therefore, the long-term expected rate of return on Plan investments of 6.90 percent per annum was applied to all periods of projected benefit payments to determine the total pension liability as of June 30, 2023, pursuant to paragraph 44 of GASB Statement No. 67.

Year	Projected Beginning Fiduciary Net Position (\$)	Projected Benefit Payments (\$)	"Funded" Portion of Benefit Payments (\$)	Unfunded Portion of Benefit Payments (\$)
1	\$113,604,295	\$12,256,868	\$12,256,868	\$0
2	117,253,603	12,633,134	12,633,134	0
3	121,120,967	13,136,817	13,136,817	0
4	125,632,053	13,636,562	13,636,562	0
5	129,897,002	14,183,841	14,183,841	0
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
57	41,223,862	3,160,318	3,160,318	0
58	40,761,083	2,903,530	2,903,530	0
59	40,532,210	2,650,843	2,650,843	0
60	40,548,910	2,402,641	2,402,641	0
61	40,823,249	2,159,741	2,159,741	0
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
100	394,757,909	0	0	0

## PA Safety Plan (PERF A)

A crossover event did not occur.

As illustrated in the following Exhibit and Appendix A-16, the Plan's fiduciary net position was projected to be available to make all projected future benefit payments for current Plan members plus administrative expenses. There is no projected "cross-over date" when projected benefits are not covered by projected assets. Therefore, the long-term expected rate of return on Plan investments of 6.90 percent per annum was applied to all periods of projected benefit payments to determine the total pension liability as of June 30, 2023, pursuant to paragraph 44 of GASB Statement No. 67.

Year	Projected Beginning Fiduciary Net Position (\$)	Projected Benefit Payments (\$)	"Funded" Portion of Benefit Payments (\$)	Unfunded Portion of Benefit Payments (\$)
1	\$301,234,573	\$27,341,492	\$27,341,492	\$0
2	313,908,941	28,578,305	28,578,305	0
3	328,827,144	29,897,652	29,897,652	0
4	345,581,820	31,323,044	31,323,044	0
5	362,805,796	33,080,100	33,080,100	0
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
61	132,608,820	10,099,226	10,099,226	0
62	131,189,268	9,026,112	9,026,112	0
63	130,782,186	8,012,642	8,012,642	0
64	131,394,783	7,060,375	7,060,375	0
65	133,033,148	6,169,850	6,169,850	0
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
100	1,057,001,933	0	0	0

## Schools Crossover Test Results (PERF B)

A crossover event did not occur.

As illustrated in the following Exhibit and Appendix A-19, the Plan's fiduciary net position was projected to be available to make all projected future benefit payments for current Plan members plus administrative expenses. There is no projected "cross-over date" when projected benefits are not covered by projected assets. Therefore, the long-term expected rate of return on Plan investments of 6.90 percent per annum was applied to all periods of projected benefit payments to determine the total pension liability as of June 30, 2023, pursuant to paragraph 44 of GASB Statement No. 67.

Year	Projected Beginning Fiduciary Net Position (\$)	Projected Benefit Payments (\$)	"Funded" Portion of Benefit Payments (\$)	Unfunded Portion of Benefit Payments (\$)
1	\$79,385,508,859	\$5,676,166,261	\$5,676,166,261	\$0
2	84,314,661,436	6,164,040,638	6,164,040,638	0
3	89,291,002,111	6,496,322,857	6,496,322,857	0
4	94,439,286,356	6,832,949,192	6,832,949,192	0
5	99,705,516,771	7,175,630,590	7,175,630,590	0
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
55	76,299,891,853	5,801,506,032	5,801,506,032	0
56	75,492,771,147	5,360,542,236	5,360,542,236	0
57	75,086,476,236	4,927,832,985	4,927,832,985	0
58	75,099,732,689	4,505,582,389	4,505,582,389	0
59	75,550,261,597	4,095,884,235	4,095,884,235	0
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
100	794,878,293,118	100,953	100,953	0

## Legislators' Retirement Fund (LRF)

A crossover event did not occur.

As illustrated in the following Exhibit and Appendix A-22, the Plan's fiduciary net position was projected to be available to make all projected future benefit payments for current Plan members plus administrative expenses. There is no projected "cross-over date" when projected benefits are not covered by projected assets. Therefore, the long-term expected rate of return on Plan investments of 4.85 percent per annum was applied to all periods of projected benefit payments to determine the total pension liability as of June 30, 2023, pursuant to paragraph 44 of GASB Statement No. 67.

Year	Projected Beginning Fiduciary Net Position (\$)	Projected Benefit Payments (\$)	"Funded" Portion of Benefit Payments (\$)	Unfunded Portion of Benefit Payments (\$)
1	\$102,624,587	\$7,088,189	\$7,088,189	\$0
2	95,668,783	6,951,212	6,951,212	0
3	92,867,985	6,854,193	6,854,193	0
4	90,040,329	6,734,860	6,734,860	0
5	87,207,417	6,593,884	6,593,884	0
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
33	37,067,867	1,782,963	1,782,963	0
34	36,913,283	1,669,607	1,669,607	0
35	36,867,621	1,567,259	1,567,259	0
36	36,924,530	1,476,472	1,476,472	0
37	37,076,806	1,397,457	1,397,457	0
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
100	285,844,850	0	0	0

## Judges' II Retirement Fund (JRF II)

A crossover event did not occur.

As illustrated in the following Exhibit and Appendix A-25, the Plan's fiduciary net position was projected to be available to make all projected future benefit payments for current Plan members plus administrative expenses. There is no projected "cross-over date" when projected benefits are not covered by projected assets. Therefore, the long-term expected rate of return on Plan investments of 6.15 percent per annum was applied to all periods of projected benefit payments to determine the total pension liability as of June 30, 2023, pursuant to paragraph 44 of GASB Statement No. 67.

Year	Projected Beginning Fiduciary Net Position (\$)	Projected Benefit Payments (\$)	"Funded" Portion of Benefit Payments (\$)	Unfunded Portion of Benefit Payments (\$)
1	\$2,134,388,062	\$83,867,767	\$83,867,767	\$0
2	2,328,781,645	88,238,890	88,238,890	0
3	2,498,739,455	100,567,499	100,567,499	0
4	2,656,159,824	113,869,117	113,869,117	0
5	2,802,169,647	128,805,702	128,805,702	0
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
56	165,625,874	13,071,167	13,071,167	
57	162,105,837	10,130,110	10,130,110	
58	161,402,601	7,708,915	7,708,915	
59	163,149,943	5,753,018	5,753,018	
60	167,015,846	4,204,214	4,204,214	
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.
100	1,599,472,002	0	0	0

## Conclusion

### Public Employees Retirement Fund

CalPERS selected plans from the PERF that were the likeliest candidates for a crossover event. As no crossover event occurred on any of the tested plans, CalPERS has determined that using the 6.90 percent long-term expected rate of return gross of administrative expenses to determine the total pension liability as of June 30, 2023 for all plans in the PERF is appropriate, pursuant to paragraph 44 of GASB Statement no. 67.

### Legislators' Retirement Fund

As no crossover event occurred on the Legislators' Retirement Fund, CalPERS has determined that using the 4.85 percent long-term expected rate of return gross of administrative expenses to determine the total pension liability as of June 30, 2023 for the plan in the LRF is appropriate, pursuant to paragraph 44 of GASB Statement no. 67.

### Judges' Retirement Fund

CalPERS did not perform a crossover test on the Judges' Retirement Fund because the State adopted a pay-as-you-go funding policy for the Plan. Therefore, the discount rate used to determine total pension liability as of June 30, 2023 was based on the yields of 20-year tax-exempt General Obligation Municipal Bonds with an average rating of AA/Aa or higher, (Fidelity Municipal 20-year AA General Obligation Bond Index as of June 30, 2023 at 3.86 percent was used).

### Judges' II Retirement Fund

As no crossover event occurred on the Judges' II Retirement Fund, CalPERS has determined that using the 6.15 percent long-term expected rate of return gross of administrative expenses to determine the total pension liability as of June 30, 2023 for the plan in the JRF II is appropriate, pursuant to paragraph 44 of GASB Statement no. 67.

## Appendix A

### Plan Specific Projections and Calculations

- **California Highway Patrol (PERF A)**
- **State Miscellaneous (Tier 1 and 2) (PERF A)**
- **State POFF (PERF A)**
- **PA Miscellaneous Plan (PERF A)**
- **PA Safety Plan (PERF A)**
- **Schools (PERF B)**
- **Legislators' Retirement Fund**
- **Judges' II Retirement Fund**

The tables in this Appendix show the projections and calculations to identify a crossover event and to determine the discount rate according to the Government Accounting Standards Board Statements 67 and 68. The tables for each plan include:

- Projection of Contributions (Table 1)
- Projection of the Pension Plan's Fiduciary Net Position (Table 2)
- Actuarial Present Values of Projected Benefit Payments (Table 3)

Projected values in the tables are displayed for each plan as following:

- The first five (5) years of crossover testing data.
- The two (2) years preceding the closest point to a crossover event.
- The closest point to a crossover event.
- The two (2) years after the closest point to a crossover event.
- The 100th year of the crossover test.

## California Highway Patrol (PERF A)

Table 1. Projection of Contributions for California Highway Patrol (PERF A)

Year	Closed Group Employee Payroll (a)	Total Employee Payroll (b)	Contributions to Total Normal Cost (c)	Unfunded Actuarial Contribution as a percent of Payroll (d)	Contributions to the Unfunded Actuarial Liability (e) = (b) * (d)	Additional Discretionary Payments (f)	Total Contributions (g) = (c) + (e) + (f)
1	\$934,575,862	\$939,537,269	\$363,568,843	43.510%	\$408,792,666	\$25,000,000	\$797,361,509
2	925,616,169	965,844,313	339,053,203	47.682%	460,535,467	0	799,588,669
3	911,948,290	992,887,954	295,206,781	48.710%	483,632,895	0	778,839,676
4	894,719,755	1,020,688,816	288,189,233	50.773%	518,232,905	0	806,422,138
5	874,658,827	1,049,268,103	280,144,476	49.696%	521,447,436	0	801,591,912
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
58	0	4,534,417,950	0	0.000%	0	0	0
59	0	4,661,381,653	0	0.000%	0	0	0
60	0	4,791,900,339	0	0.000%	0	0	0
61	0	4,926,073,549	0	0.000%	0	0	0
62	0	5,064,003,608	0	0.000%	0	0	0
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
100	0	14,462,133,411	0	0.000%	0	0	0

**Table 2. Projection of the Pension Plan's Fiduciary Net Position for California Highway Patrol (PERF A)**

Year	Projected Beginning Fiduciary Net Position (a)	Projected Total Contributions (b)	Projected Benefit Payments (c)	Projected Administrative Expenses (d)	Projected Investment Earnings (e)	Projected Ending Fiduciary Position (f) = (a) + (b) - (c) - (d) + (e)	Projected Investment Earnings (e) - {Projected Benefit Payments (c) + Projected Administrative Expenses (d)}
1	\$11,013,584,736	\$797,361,509	\$794,792,719	\$8,098,873	\$678,131,349	\$11,686,186,002	(\$124,760,243)
2	11,686,186,002	799,588,669	823,291,073	11,674,721	805,542,740	12,456,351,617	(29,423,054)
3	12,456,351,617	778,839,676	869,395,979	12,412,549	856,416,179	13,209,798,943	(25,392,350)
4	13,209,798,943	806,422,138	918,247,430	13,155,708	907,682,503	13,992,500,446	(23,720,636)
5	13,992,500,446	801,591,912	969,377,715	13,911,341	959,790,471	14,770,593,773	(23,498,585)
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
58	7,598,986,780	0	\$599,626,084	7,308,943	503,988,036	7,496,039,789	\$(102,946,992)
59	7,496,039,789	0	\$543,609,898	7,233,092	498,785,018	7,443,981,817	\$(52,057,972)
60	7,443,981,817	0	\$489,775,897	7,207,074	497,019,313	7,444,018,159	\$36,342
61	7,444,018,159	0	\$438,381,216	7,231,970	498,765,362	7,497,170,335	\$53,152,176
62	7,497,170,335	0	\$389,662,176	7,308,688	504,085,634	7,604,285,106	\$107,114,771
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
100	68,468,928,785	0	5,226	68,468,926	4,724,355,909	73,124,810,542	4,655,881,756

**Table 3. Actuarial Present Values of Projected Benefit Payments for California Highway Patrol (PERF A)**

Year (a)	Projected Beginning Fiduciary Net Position (b)	Projected Benefit Payments (c)	"Funded" Portion of Benefit Payments (d)	"Unfunded" Portion of Benefit Payments (e)	Present Value of 'Funded' Benefit Payments (f) = (d) ÷ (1 + 6.90%)^(a)	Present Value of 'Unfunded' Benefit Payments (g) = (e) ÷ (1 + 3.86%)^(a)	Present Value of Benefit Payments Using the Single Discount Rate (h) = (c) ÷ (1 + 6.90%)^(a)
1	\$11,013,584,736	\$794,792,719	\$794,792,719	\$0	\$768,714,419	\$0	\$768,714,419
2	11,686,186,002	823,291,073	823,291,073	0	744,880,918	0	744,880,918
3	12,456,351,617	869,395,979	869,395,979	0	735,823,010	0	735,823,010
4	13,209,798,943	918,247,430	918,247,430	0	727,005,595	0	727,005,595
5	13,992,500,446	969,377,715	969,377,715	0	717,948,608	0	717,948,608
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
58	7,598,986,780	599,626,084	599,626,084	0	12,931,904	0	12,931,904
59	7,496,039,789	543,609,898	543,609,898	0	10,967,095	0	10,967,095
60	7,443,981,817	489,775,897	489,775,897	0	9,243,234	0	9,243,234
61	7,444,018,159	438,381,216	438,381,216	0	7,739,284	0	7,739,284
62	7,497,170,335	389,662,176	389,662,176	0	6,435,160	0	6,435,160
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
100	68,468,928,785	5,226	5,226	0	7	0	7
Total					\$19,031,796,354	\$0	\$19,031,796,354

**State Miscellaneous (Tier 1 and 2) (PERF A)**

**Table 1. Projection of Contributions for State Miscellaneous (Tier 1 and 2) (PERF A)**

Year	Closed Group Employee Payroll (a)	Total Employee Payroll (b)	Contributions to Total Normal Cost (c)	Unfunded Actuarial Contribution as a percent of Payroll (d)	Contributions to the Unfunded Actuarial Liability (e) = (b) * (d)	Additional Discretionary Payments (f)	Total Contributions (g) = (c) + (e) + (f)
1	\$14,657,845,278	\$15,075,468,519	\$3,039,581,928	20.170%	\$3,040,722,000	\$1,333,958,000	\$7,414,261,928
2	14,153,136,428	15,497,581,638	2,646,636,512	21.370%	3,311,889,023	0	5,958,525,535
3	13,713,770,359	15,931,513,923	2,397,578,472	21.683%	3,454,460,301	0	5,852,038,773
4	13,297,363,861	16,377,596,313	2,316,267,811	22.619%	3,704,393,369	0	6,020,661,179
5	12,889,544,575	16,836,169,010	2,235,433,716	23.215%	3,908,505,839	0	6,143,939,555
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
59	0	74,794,810,875	0	0.000%	0	0	0
60	0	76,889,065,580	0	0.000%	0	0	0
61	0	79,041,959,416	0	0.000%	0	0	0
62	0	81,255,134,280	0	0.000%	0	0	0
63	0	83,530,278,040	0	0.000%	0	0	0
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
100	0	232,054,059,034	0	0.000%	0	0	0

**Table 2. Projection of the Pension Plan's Fiduciary Net Position for State Miscellaneous (Tier 1 and 2) (PERF A)**

Year	Projected Beginning Fiduciary Net Position (a)	Projected Total Contributions (b)	Projected Benefit Payments (c)	Projected Administrative Expenses (d)	Projected Investment Earnings (e)	Projected Ending Fiduciary Position (f) = (a) + (b) - (c) - (d) + (e)	Projected Investment Earnings (e) - {Projected Benefit Payments (c) + Projected Administrative Expenses (d)}
1	\$95,432,373,155	\$7,414,261,928	\$7,569,641,578	\$70,176,487	\$5,874,720,090	\$101,081,537,108	(\$1,765,097,975)
2	101,081,537,108	5,958,525,535	7,993,869,220	100,097,026	6,905,577,917	105,851,674,314	(1,188,388,329)
3	105,851,674,314	5,852,038,773	8,339,841,811	104,648,306	7,219,367,899	110,478,590,870	(1,225,122,217)
4	110,478,590,870	6,020,661,179	8,683,871,794	109,190,376	7,532,674,516	115,238,864,396	(1,260,387,654)
5	115,238,864,396	6,143,939,555	9,027,110,150	113,844,253	7,853,671,344	120,095,520,891	(1,287,283,060)
.	.	.	.	.	.	.	.
59	53,303,859,380	0	3,931,654,085	51,402,089	3,544,586,654	52,865,389,861	(438,469,520)
60	52,865,389,861	0	3,529,942,238	51,157,931	3,527,960,156	52,812,249,848	(53,140,012)
61	52,812,249,848	0	3,145,315,969	51,290,837	3,537,341,773	53,152,984,815	340,734,967
62	53,152,984,815	0	2,780,006,092	51,808,275	3,573,245,463	53,894,415,911	741,431,096
63	53,894,415,911	0	2,436,016,037	52,716,097	3,636,073,921	55,041,757,698	1,147,341,787
.	.	.	.	.	.	.	.
100	489,827,449,303	-	102,720	489,827,400	33,798,090,517	523,135,609,701	33,308,160,398

**Table 3. Actuarial Present Values of Projected Benefit Payments for State Miscellaneous (Tier 1 and 2) (PERF A)**

Year (a)	Projected Beginning Fiduciary Net Position (b)	Projected Benefit Payments (c)	"Funded" Portion of Benefit Payments (d)	"Unfunded" Portion of Benefit Payments (e)	Present Value of 'Funded' Benefit Payments (f) = (d) ÷ (1 + 6.90%)^(a)	Present Value of 'Unfunded' Benefit Payments (g) = (e) ÷ (1 + 3.86%)^(a)	Present Value of Benefit Payments Using the Single Discount Rate (h) = (c) ÷ (1 + 6.90%)^(a)
1	\$95,432,373,155	\$7,569,641,578	\$7,569,641,578	\$0	\$7,321,270,677	\$0	\$7,321,270,677
2	101,081,537,108	7,993,869,220	7,993,869,220	0	7,232,533,952	0	7,232,533,952
3	105,851,674,314	8,339,841,811	8,339,841,811	0	7,058,518,382	0	7,058,518,382
4	110,478,590,870	8,683,871,794	8,683,871,794	0	6,875,296,544	0	6,875,296,544
5	115,238,864,396	9,027,110,150	9,027,110,150	0	6,685,733,611	0	6,685,733,611
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
59	53,303,859,380	3,931,654,085	3,931,654,085	0	79,319,423	0	79,319,423
60	52,865,389,861	3,529,942,238	3,529,942,238	0	66,618,391	0	66,618,391
61	52,812,249,848	3,145,315,969	3,145,315,969	0	55,528,139	0	55,528,139
62	53,152,984,815	2,780,006,092	2,780,006,092	0	45,911,013	0	45,911,013
63	53,894,415,911	2,436,016,037	2,436,016,037	0	37,633,410	0	37,633,410
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
100	489,827,449,303	102,720	102,720	0	134	0	134
Total					\$157,583,857,021	\$0	\$157,583,857,021

**State POFF (PERF A)**

**Table 1. Projection of Contributions for State POFF (PERF A)**

<b>Year</b>	<b>Closed Group Employee Payroll (a)</b>	<b>Total Employee Payroll (b)</b>	<b>Contributions to Total Normal Cost (c)</b>	<b>Unfunded Actuarial Contribution as a percent of Payroll (d)</b>	<b>Contributions to the Unfunded Actuarial Liability (e) = (b) * (d)</b>	<b>Additional Discretionary Payments (f)</b>	<b>Total Contributions (g) = (c) + (e) + (f)</b>
1	\$4,072,409,290	\$4,158,732,625	\$1,380,264,500	27.540%	\$1,145,314,965	\$1,338,038,000	\$3,863,617,465
2	3,991,575,872	4,275,177,139	1,386,673,458	26.768%	1,144,385,632	0	2,531,059,090
3	3,906,618,724	4,394,882,099	1,201,402,456	28.512%	1,253,056,689	0	2,454,459,146
4	3,813,663,831	4,517,938,797	1,164,540,387	30.062%	1,358,199,853	0	2,522,740,240
5	3,709,281,674	4,644,441,084	1,124,394,554	31.093%	1,444,107,643	0	2,568,502,197
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
62	0	22,415,116,152	0	0.000%	0	0	0
63	0	23,042,739,404	0	0.000%	0	0	0
64	0	23,687,936,108	0	0.000%	0	0	0
65	0	24,351,198,319	0	0.000%	0	0	0
66	0	25,033,031,871	0	0.000%	0	0	0
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
100	0	64,014,646,372	0	0.000%	0	0	0

Table 2. Projection of the Pension Plan's Fiduciary Net Position for State POFF (PERF A)

Year	Projected Beginning Fiduciary Net Position (a)	Projected Total Contributions (b)	Projected Benefit Payments (c)	Projected Administrative Expenses (d)	Projected Investment Earnings (e)	Projected Ending Fiduciary Position (f) = (a) + (b) - (c) - (d) + (e)	Projected Investment Earnings (e) - {Projected Benefit Payments (c) + Projected Administrative Expenses (d)}
1	\$42,536,733,695	\$3,863,617,465	\$2,956,623,926	\$31,279,517	\$2,690,552,343	\$46,103,000,060	(\$297,351,100)
2	46,103,000,060	2,531,059,090	3,105,885,945	45,824,952	3,161,606,255	48,643,954,507	9,895,357
3	48,643,954,507	2,454,459,146	3,286,194,435	48,241,638	3,328,216,606	51,092,194,185	(6,219,468)
4	51,092,194,185	2,522,740,240	3,470,440,050	50,633,785	3,493,211,098	53,587,071,687	(27,862,737)
5	53,587,071,687	2,568,502,197	3,662,278,388	53,058,004	3,660,402,068	56,100,639,561	(54,934,324)
.	.	.	.	.	.	.	.
62	24,723,820,419	0	1,943,513,992	23,783,728	1,640,010,748	24,396,533,447	(327,286,972)
63	24,396,533,447	0	1,755,637,644	23,547,318	1,623,801,570	24,241,150,054	(155,383,393)
64	24,241,150,054	0	1,574,251,759	23,479,673	1,619,233,552	24,262,652,174	21,502,120
65	24,262,652,174	0	1,400,421,668	23,585,258	1,626,614,308	24,465,259,557	202,607,383
66	24,465,259,557	0	1,235,177,524	23,867,795	1,646,200,053	24,852,414,291	387,154,734
.	.	.	.	.	.	.	.
100	175,983,980,865	0	99,062	175,983,933	12,142,891,319	187,950,789,189	11,966,808,324

**Table 3. Actuarial Present Values of Projected Benefit Payments for State POFF (PERF A)**

Year (a)	Projected Beginning Fiduciary Net Position (b)	Projected Benefit Payments (c)	"Funded" Portion of Benefit Payments (d)	"Unfunded" Portion of Benefit Payments (e)	Present Value of 'Funded' Benefit Payments (f) = (d) ÷ (1 + 6.90%)^(a)	Present Value of 'Unfunded' Benefit Payments (g) = (e) ÷ (1 + 3.86%)^(a)	Present Value of Benefit Payments Using the Single Discount Rate (h) = (c) ÷ (1 + 6.90%)^(a)
1	\$42,536,733,695	\$2,956,623,926	\$2,956,623,926	0	\$2,859,612,814	0	\$2,859,612,814
2	46,103,000,060	3,105,885,945	3,105,885,945	0	2,810,081,693	0	2,810,081,693
3	48,643,954,507	3,286,194,435	3,286,194,435	0	2,781,307,410	0	2,781,307,410
4	51,092,194,185	3,470,440,050	3,470,440,050	0	2,747,657,387	0	2,747,657,387
5	53,587,071,687	3,662,278,388	3,662,278,388	0	2,712,387,165	0	2,712,387,165
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
62	24,723,820,419	1,943,513,992	1,943,513,992	0	32,096,583	0	32,096,583
63	24,396,533,447	1,755,637,644	1,755,637,644	0	27,122,412	0	27,122,412
64	24,241,150,054	1,574,251,759	1,574,251,759	0	22,750,446	0	22,750,446
65	24,262,652,174	1,400,421,668	1,400,421,668	0	18,932,015	0	18,932,015
66	24,465,259,557	1,235,177,524	1,235,177,524	0	15,620,311	0	15,620,311
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
100	175,983,980,865	99,062	99,062	0	130	0	130
Total					\$71,321,440,397	\$0	\$71,321,440,397

## PA Miscellaneous Plan (PERF A)

Table 1. Projection of Contributions for PA Miscellaneous Plan (PERF A)

Year	Closed Group Employee Payroll (a)	Total Employee Payroll (b)	Contributions to Total Normal Cost (c)	Unfunded Actuarial Contribution as a percent of Payroll (d)	Contributions to the Unfunded Actuarial Liability (e) = (b) * UAL Rate	Additional Discretionary Payments (f)	Total Contributions (g) = (c) + (e) + (f)
1	\$10,866,852	\$11,141,164	\$2,051,662	60.763%	\$6,769,654	\$0	\$8,821,316
2	10,370,005	11,453,116	2,093,704	57.333%	6,566,410	0	8,660,114
3	9,909,981	11,773,804	1,960,194	64.312%	7,572,024	0	9,532,218
4	9,471,314	12,103,470	1,863,860	63.065%	7,633,086	0	9,496,946
5	9,040,337	12,442,367	1,767,748	65.091%	8,098,808	0	9,866,556
.	.	.	.		.	.	.
.	.	.	.		.	.	.
57	0	52,305,214	0	0.000%	0	0	0
58	0	53,769,760	0	0.000%	0	0	0
59	0	55,275,313	0	0.000%	0	0	0
60	0	56,823,022	0	0.000%	0	0	0
61	0	58,414,066	0	0.000%	0	0	0
.	.	.	.		.	.	.
.	.	.	.		.	.	.
100	0	171,493,993	0	0.000%	0	0	0

January 6, 2024

**Table 2. Projection of the Pension Plan's Fiduciary Net Position for PA Miscellaneous Plan (PERF A)**

Year	Projected Beginning Fiduciary Net Position (a)	Projected Total Contributions (b)	Projected Benefit Payments (c)	Projected Administrative Expenses (d)	Projected Investment Earnings (e)	Projected Ending Fiduciary Position (f) = (a) + (b) - (c) - (d) + (e)	Projected Investment Earnings (e) - {Projected Benefit Payments (c) + Projected Administrative Expenses (d)}
1	\$113,604,295	\$8,932,203	\$12,256,868	\$83,539	\$7,057,512	\$117,253,603	(\$5,282,895)
2	117,253,603	8,660,114	12,633,134	115,332	7,955,716	121,120,967	(4,792,750)
3	121,120,967	9,532,218	13,136,817	119,377	8,235,062	125,632,053	(5,021,132)
4	125,632,053	9,496,963	13,636,562	123,630	8,528,178	129,897,002	(5,232,014)
5	129,897,002	9,866,582	14,183,841	127,809	8,816,432	134,268,366	(5,495,218)
.	.	.	.	.	.	.	.
57	41,223,862	0	3,160,318	\$39,695	2,737,234	40,761,083	(462,779)
58	40,761,083	0	2,903,530	\$39,357	2,714,014	40,532,210	(228,873)
59	40,532,210	0	2,650,843	\$39,250	2,706,794	40,548,910	16,700
60	40,548,910	0	2,402,641	\$39,387	2,716,366	40,823,249	274,339
61	40,823,249	0	2,159,741	\$39,779	2,743,536	41,367,265	544,017
.	.	.	.	.	.	.	.
100	394,757,909	0	0	394,758	27,238,296	421,601,447	26,843,538

January 6, 2024

Table 3. Actuarial Present Values of Projected Benefit Payments for PA Miscellaneous Plan (PERF A)

Year (a)	Projected Beginning Fiduciary Net Position (b)	Projected Benefit Payments (c)	"Funded" Portion of Benefit Payments (d)	"Unfunded" Portion of Benefit Payments (e)	Present Value of 'Funded' Benefit Payments (f) = (d) ÷ (1 + 6.90%)^(a)	Present Value of 'Unfunded' Benefit Payments (g) = (e) ÷ (1 + 3.86%)^(a)	Present Value of Benefit Payments Using the Single Discount Rate (h) = (c) ÷ (1 + 6.90%)^(a)
1	\$113,604,295	\$12,256,868	\$12,256,868	\$0	\$11,854,702	\$0	\$11,854,702
2	117,253,603	12,633,134	12,633,134	0	11,429,955	0	11,429,955
3	121,120,967	13,136,817	13,136,817	0	11,118,492	0	11,118,492
4	125,632,053	13,636,562	13,636,562	0	10,796,499	0	10,796,499
5	129,897,002	14,183,841	14,183,841	0	10,504,955	0	10,504,955
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
57	41,223,862	3,160,318	3,160,318	0	72,860	0	72,860
58	40,761,083	2,903,530	2,903,530	0	62,619	0	62,619
59	40,532,210	2,650,843	2,650,843	0	53,480	0	53,480
60	40,548,910	2,402,641	2,402,641	0	45,344	0	45,344
61	40,823,249	2,159,741	2,159,741	0	38,129	0	38,129
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
100	394,757,909	0	0	0	0	0	0
Total					\$217,213,541		\$217,213,541

January 6, 2024

**PA Safety Plan (PERF A)**

**Table 1. Projection of Contributions for PA Safety Plan (PERF A)**

<b>Year</b>	<b>Closed Group Employee Payroll (a)</b>	<b>Total Employee Payroll (b)</b>	<b>Contributions to Total Normal Cost (c)</b>	<b>Unfunded Actuarial Contribution as a percent of Payroll (d)</b>	<b>Contributions to the Unfunded Actuarial Liability (e) = (b) * UAL Rate</b>	<b>Additional Discretionary Payments (f)</b>	<b>Total Contributions (g) = (c) + (e) + (f)</b>
1	\$24,497,808	\$24,750,372	\$7,348,341	57.343%	\$14,192,566	\$0	\$21,540,907
2	23,920,101	25,443,382	8,297,883	55.263%	14,060,807	0	22,358,690
3	23,246,703	26,155,797	8,052,658	62.781%	16,420,813	0	24,473,471
4	22,427,302	26,888,159	7,719,253	65.201%	17,531,274	0	25,250,527
5	21,410,626	27,641,028	7,321,578	67.171%	18,566,621	0	25,888,199
.	.	.	.		.	.	.
.	.	.	.		.	.	.
61	0	129,768,297	0	0.000%	0	0	0
62	0	133,401,809	0	0.000%	0	0	0
63	0	137,137,060	0	0.000%	0	0	0
64	0	140,976,897	0	0.000%	0	0	0
65	0	144,924,250	0	0.000%	0	0	0
.	.	.	.		.	.	.
.	.	.	.		.	.	.
100	0	380,978,156	0	0.000%	0	0	0

**Table 2. Projection of the Pension Plan's Fiduciary Net Position for PA Safety Plan (PERF A)**

Year	Projected Beginning Fiduciary Net Position (a)	Projected Total Contributions (b)	Projected Benefit Payments (c)	Projected Administrative Expenses (d)	Projected Investment Earnings (e)	Projected Ending Fiduciary Position (f) = (a) + (b) - (c) - (d) + (e)	Projected Investment Earnings (e) - {Projected Benefit Payments (c) + Projected Administrative Expenses (d)}
1	\$301,234,573	\$21,540,907	\$27,341,492	\$221,514	\$18,696,467	\$313,908,941	(\$8,866,539)
2	313,908,941	22,358,690	28,578,305	310,900	21,448,719	328,827,144	(7,440,487)
3	328,827,144	24,473,471	29,897,652	326,203	22,505,060	345,581,820	(7,718,795)
4	345,581,820	25,250,527	31,323,044	342,644	23,639,138	362,805,796	(8,026,551)
5	362,805,796	25,888,199	33,080,100	359,327	24,789,618	380,044,185	(8,649,810)
.	.	.	.	.	.	.	.
61	132,608,820	0	10,099,226	\$127,724	8,807,397	131,189,268	(1,419,553)
62	131,189,268	0	9,026,112	126,823	8,745,853	130,782,186	(407,082)
63	130,782,186	0	8,012,642	126,906	8,752,145	131,394,783	612,597
64	131,394,783	0	7,060,375	127,980	8,826,720	133,033,148	1,638,365
65	133,033,148	0	6,169,850	130,049	8,969,978	135,703,227	2,670,079
.	.	.	.	.	.	.	.
100	1,057,001,933	0	0	1,057,002	72,933,133	1,128,878,064	71,876,131

January 6, 2024

Table 3. Actuarial Present Values of Projected Benefit Payments for PA Safety Plan (PERF A)

Year (a)	Projected Beginning Fiduciary Net Position (b)	Projected Benefit Payments (c)	"Funded" Portion of Benefit Payments (d)	"Unfunded" Portion of Benefit Payments (e)	Present Value of 'Funded' Benefit Payments (f) = (d) ÷ (1 + 6.90%)^(a)	Present Value of 'Unfunded' Benefit Payments (g) = (e) ÷ (1 + 3.86%)^(a)	Present Value of Benefit Payments Using the Single Discount Rate (h) = (c) ÷ (1 + 6.90%)^(a)
1	\$301,234,573	\$27,341,492	\$27,341,492	\$0	\$26,444,378	\$0	\$26,444,378
2	313,908,941	28,578,305	28,578,305	0	25,856,510	0	25,856,510
3	328,827,144	29,897,652	29,897,652	0	25,304,212	0	25,304,212
4	345,581,820	31,323,044	31,323,044	0	24,799,447	0	24,799,447
5	362,805,796	33,080,100	33,080,100	0	24,500,060	0	24,500,060
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
61	132,608,820	10,099,226	10,099,226	0	178,294	0	178,294
62	131,189,268	9,026,112	9,026,112	0	149,064	0	149,064
63	130,782,186	8,012,642	8,012,642	0	123,785	0	123,785
64	131,394,783	7,060,375	7,060,375	0	102,034	0	102,034
65	133,033,148	6,169,850	6,169,850	0	83,409	0	83,409
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
100	1,057,001,933	0	0	0	0	0	0
Total					\$569,187,525		\$569,187,525

Schools (PERF B)

Table 1. Projection of Contributions for Schools (PERF B)

Year	Closed Group Employee Payroll (a)	Total Employee Payroll (b)	Contributions to Total Normal Cost (c)	Unfunded Actuarial Contribution as a percent of Payroll (d)	Contributions to the Unfunded Actuarial Liability (e) = (b) * (d)	Additional Discretionary Payments (f)	Total Contributions (g) = (c) + (e) + (f)
1	\$15,829,120,951	\$16,255,741,871	\$3,263,530,351	15.550%	\$2,527,767,861	0	\$5,791,298,212
2	15,076,866,975	16,710,902,644	2,601,513,396	16.935%	2,829,968,335	0	5,431,481,732
3	14,416,199,104	17,178,807,918	2,482,037,000	18.166%	3,120,665,391	0	5,602,702,390
4	13,808,398,313	17,659,814,540	2,370,487,738	18.937%	3,344,215,497	0	5,714,703,236
5	13,228,585,355	18,154,289,347	2,261,823,524	19.450%	3,531,036,865	0	5,792,860,389
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
55	0	72,216,258,828	0	0.000%	0	0	0
56	0	74,238,314,076	0	0.000%	0	0	0
57	0	76,316,986,870	0	0.000%	0	0	0
58	0	78,453,862,502	0	0.000%	0	0	0
59	0	80,650,570,652	0	0.000%	0	0	0
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
100	0	250,221,801,008	0	0.000%	0	0	0

**Table 2. Projection of the Pension Plan's Fiduciary Net Position for Schools (PERF B)**

Year	Projected Beginning Fiduciary Net Position (a)	Projected Total Contributions (b)	Projected Benefit Payments (c)	Projected Administrative Expenses (d)	Projected Investment Earnings (e)	Projected Ending Fiduciary Position (f) = (a) + (b) - (c) - (d) + (e)	Projected Investment Earnings (e) - {Projected Benefit Payments (c) + Projected Administrative Expenses (d)}
1	\$79,385,508,859	\$5,791,298,212	\$5,676,166,261	\$58,578,742	\$4,872,599,368	\$84,314,661,436	(\$862,145,635)
2	84,314,661,436	5,431,481,732	6,164,040,638	83,960,317	5,792,859,899	89,291,002,111	(455,141,056)
3	89,291,002,111	5,602,702,390	6,496,322,857	88,858,751	6,130,763,463	94,439,286,356	(454,418,146)
4	94,439,286,356	5,714,703,236	6,832,949,192	93,898,382	6,478,374,754	99,705,516,771	(448,472,821)
5	99,705,516,771	5,792,860,389	7,175,630,590	99,036,661	6,832,770,784	105,056,480,692	(441,896,467)
.	.	.	.	.	.	.	.
55	76,299,891,853	0	5,801,506,032	73,493,660	5,067,878,987	75,492,771,147	(807,120,706)
56	75,492,771,147	0	5,360,542,236	72,899,837	5,027,147,161	75,086,476,236	(406,294,911)
57	75,086,476,236	0	4,927,832,985	72,702,847	5,013,792,284	75,099,732,689	13,256,452
58	75,099,732,689	0	4,505,582,389	72,920,349	5,029,031,646	75,550,261,597	450,528,908
59	75,550,261,597	0	4,095,884,235	73,569,052	5,074,016,971	76,454,825,281	904,563,685
.	.	.	.	.	.	.	.
100	794,878,293,118	0	100,953	794,878,244	54,846,598,800	848,929,912,721	54,051,619,603

**Table 3. Actuarial Present Values of Projected Benefit Payments for Schools (PERF B)**

Year (a)	Projected Beginning Fiduciary Net Position (b)	Projected Benefit Payments (c)	"Funded" Portion of Benefit Payments (d)	"Unfunded" Portion of Benefit Payments (e)	Present Value of 'Funded' Benefit Payments (f) = (d) ÷ (1 + 6.90%) <sup>(a)</sup>	Present Value of 'Unfunded' Benefit Payments (g) = (e) ÷ (1 + 3.86%) <sup>(a)</sup>	Present Value of Benefit Payments Using the Single Discount Rate (h) = (c) ÷ (1 + 6.90%) <sup>(a)</sup>
1	\$79,385,508,859	\$5,676,166,261	\$5,676,166,261	0	\$5,489,923,027	0	\$5,489,923,027
2	84,314,661,436	6,164,040,638	6,164,040,638	0	5,576,978,053	0	5,576,978,053
3	89,291,002,111	6,496,322,857	6,496,322,857	0	5,498,235,499	0	5,498,235,499
4	94,439,286,356	6,832,949,192	6,832,949,192	0	5,409,862,453	0	5,409,862,453
5	99,705,516,771	7,175,630,590	7,175,630,590	0	5,314,475,377	0	5,314,475,377
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
55	76,299,891,853	5,801,506,032	5,801,506,032	0	152,846,611	0	152,846,611
56	75,492,771,147	5,360,542,236	5,360,542,236	0	132,113,161	0	132,113,161
57	75,086,476,236	4,927,832,985	4,927,832,985	0	113,609,758	0	113,609,758
58	75,099,732,689	4,505,582,389	4,505,582,389	0	97,170,153	0	97,170,153
59	75,550,261,597	4,095,884,235	4,095,884,235	0	82,632,695	0	82,632,695
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
100	794,878,293,118	100,953	100,953	0	132	0	132
Total					\$137,228,879,461		\$137,228,879,461

**Legislators' Retirement Fund**

**Table 1. Projection of Contributions for Legislators' Retirement Fund**

Year	Closed Group Employee Payroll (a)	Total Employee Payroll (b)	Contributions to Total Normal Cost (c)	Unfunded Actuarial Contribution as a percent of Payroll (d)	Contributions to the Unfunded Actuarial Liability (e) = (b) * (d)	Additional Discretionary Payments (f)	Total Contributions (g) = (c) + (e) + (f)
1	\$155,024	\$302,792	\$54,789	0.000%	\$0	\$0	\$54,789
2	0	0	0	0.000%	0	0	0
3	0	0	0	0.000%	0	0	0
4	0	0	0	0.000%	0	0	0
5	0	0	0	0.000%	0	0	0
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
33	0	0	0	0.000%	0	0	0
34	0	0	0	0.000%	0	0	0
35	0	0	0	0.000%	0	0	0
36	0	0	0	0.000%	0	0	0
37	0	0	0	0.000%	0	0	0
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
100	0	0	0	0.000%	0	0	0

**Table 2. Projection of the Pension Plan's Fiduciary Net Position for Legislators' Retirement Fund**

Year	Projected Beginning Fiduciary Net Position (a)	Projected Total Contributions (b)	Projected Benefit Payments (c)	Projected Administrative Expenses (d)	Projected Investment Earnings (e)	Projected Ending Fiduciary Position (f) = (a) + (b) - (c) - (d) + (e)	Projected Investment Earnings (e) - {Projected Benefit Payments (c) + Projected Administrative Expenses (d)}
1	\$102,624,587	\$54,789	\$7,088,189	\$525,002	\$602,598	\$95,668,783	(\$7,010,593)
2	95,668,783	0	6,951,212	322,951	4,473,365	92,867,985	(2,800,798)
3	92,867,985	0	6,854,193	313,314	4,339,851	90,040,329	(2,827,656)
4	90,040,329	0	6,734,860	303,621	4,205,569	87,207,417	(2,832,912)
5	87,207,417	0	6,593,884	293,947	4,071,551	84,391,136	(2,816,280)
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
33	37,067,867	0	1,782,963	126,688	1,755,067	36,913,283	(154,584)
34	36,913,283	0	1,669,607	126,341	1,750,286	36,867,621	(45,662)
35	36,867,621	0	1,567,259	126,356	1,750,524	36,924,530	56,909
36	36,924,530	0	1,476,472	126,710	1,755,459	37,076,806	152,277
37	37,076,806	0	1,397,457	127,379	1,764,738	37,316,709	239,903
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
100	285,844,850	0	0	1,000,457	13,863,475	298,707,869	12,863,018

Table 3. Actuarial Present Values of Projected Benefit Payments for Legislators' Retirement Fund

Year (a)	Projected Beginning Fiduciary Net Position (b)	Projected Benefit Payments (c)	"Funded" Portion of Benefit Payments (d)	"Unfunded" Portion of Benefit Payments (e)	Present Value of 'Funded' Benefit Payments (f) = (d) ÷ (1 + 4.85%)^(a)	Present Value of 'Unfunded' Benefit Payments (g) = (e) ÷ (1 + 3.86%)^(a)	Present Value of Benefit Payments Using the Single Discount Rate (h) = (c) ÷ (1 + 4.85%)^(a)
1	\$102,624,587	\$7,088,189	\$7,088,189	\$0	\$6,922,310	\$0	\$6,922,310
2	95,668,783	6,951,212	6,951,212	0	6,474,525	0	6,474,525
3	92,867,985	6,854,193	6,854,193	0	6,088,849	0	6,088,849
4	90,040,329	6,734,860	6,734,860	0	5,706,096	0	5,706,096
5	87,207,417	6,593,884	6,593,884	0	5,328,235	0	5,328,235
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
33	37,067,867	1,782,963	1,782,963	0	382,532	0	382,532
34	36,913,283	1,669,607	1,669,607	0	341,642	0	341,642
35	36,867,621	1,567,259	1,567,259	0	305,865	0	305,865
36	36,924,530	1,476,472	1,476,472	0	274,818	0	274,818
37	37,076,806	1,397,457	1,397,457	0	248,079	0	248,079
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
100	285,844,850	0	0	0	0	0	0
Total					\$91,235,497	0	\$91,235,497

## Judges' II Retirement Fund

Table 1. Projection of Contributions for Judges' II Retirement Fund

Year	Closed Group Employee Payroll (a)	Total Employee Payroll (b)	Contributions to Total Normal Cost (c)	Unfunded Actuarial Contribution as a percent of Payroll (d)	Contributions to the Unfunded Actuarial Liability (e) = (b) * (d)	Additional Discretionary Payments (f)	Total Contributions (g) = (c) + (e) + (f)
1	\$373,139,868	\$378,327,761	\$128,336,857	0.079%	\$302,662	\$0	\$128,639,519
2	350,122,944	388,920,939	115,085,412	0.647%	2,516,334	0	117,601,746
3	328,425,177	399,810,725	107,848,259	0.000%	0	0	107,848,259
4	307,497,378	411,005,425	100,892,965	0.000%	0	0	100,892,965
5	287,103,026	422,513,577	94,120,985	0.000%	0	0	94,120,985
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
56	0	1,727,784,273	0	0.000%	0	0	0
57	0	1,776,162,233	0	0.000%	0	0	0
58	0	1,825,894,776	0	0.000%	0	0	0
59	0	1,877,019,829	0	0.000%	0	0	0
60	0	1,929,576,385	0	0.000%	0	0	0
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
100	0	5,823,533,280	0	0.000%	0	0	0

**Table 2. Projection of the Pension Plan's Fiduciary Net Position for Judges' II Retirement Fund**

Year	Projected Beginning Fiduciary Net Position (a)	Projected Total Contributions (b)	Projected Benefit Payments (c)	Projected Administrative Expenses (d)	Projected Investment Earnings (e)	Projected Ending Fiduciary Position (f) = (a) + (b) - (c) - (d) + (e)	Projected Investment Earnings (e) - {Projected Benefit Payments (c) + Projected Administrative Expenses (d)}
1	\$2,134,388,062	\$128,639,519	\$83,867,767	\$2,125,871	\$151,747,702	\$2,328,781,645	\$65,754,064
2	2,328,781,645	117,601,746	88,238,890	3,514,555	144,109,508	2,498,739,455	52,356,063
3	2,498,739,455	107,848,259	100,567,499	3,753,411	153,893,020	2,656,159,824	49,572,110
4	2,656,159,824	100,892,965	113,869,117	3,974,790	162,960,766	2,802,169,647	45,116,858
5	2,802,169,647	94,120,985	128,805,702	4,177,997	171,282,791	2,934,589,723	38,299,092
.	.	.	.	.	.	.	.
56	165,625,874	0	13,071,167	238,920	9,790,050	162,105,837	(3,520,037)
57	162,105,837	0	10,130,110	235,782	9,662,656	161,402,601	(703,236)
58	161,402,601	0	7,708,915	236,490	9,692,748	163,149,943	1,747,342
59	163,149,943	0	5,753,018	240,536	9,859,456	167,015,846	3,865,902
60	167,015,846	0	4,204,214	247,462	10,144,124	172,708,293	5,692,447
.	.	.	.	.	.	.	.
100	1,599,472,002	0	0	2,399,208	98,367,528	1,695,440,323	95,968,320

Table 3. Actuarial Present Values of Projected Benefit Payments for Judges' II Retirement Fund

Year (a)	Projected Beginning Fiduciary Net Position (b)	Projected Benefit Payments (c)	"Funded" Portion of Benefit Payments (d)	"Unfunded" Portion of Benefit Payments (e)	Present Value of 'Funded' Benefit Payments (f) = (d) ÷ (1 + 6.15%)^(a)	Present Value of 'Unfunded' Benefit Payments (g) = (e) ÷ (1 + 3.86%)^(a)	Present Value of Benefit Payments Using the Single Discount Rate (h) = (c) ÷ (1 + 6.15%)^(a)
1	\$2,134,388,062	\$83,867,767	\$83,867,767	\$0	\$81,402,001	\$0	\$81,402,001
2	2,328,781,645	88,238,890	88,238,890	0	80,682,628	0	80,682,628
3	2,498,739,455	100,567,499	100,567,499	0	86,627,873	0	86,627,873
4	2,656,159,824	113,869,117	113,869,117	0	92,402,976	0	92,402,976
5	2,802,169,647	128,805,702	128,805,702	0	98,467,995	0	98,467,995
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
56	165,625,874	13,071,167	13,071,167	0	476,162	0	476,162
57	162,105,837	10,130,110	10,130,110	0	347,644	0	347,644
58	161,402,601	7,708,915	7,708,915	0	249,226	0	249,226
59	163,149,943	5,753,018	5,753,018	0	175,217	0	175,217
60	167,015,846	4,204,214	4,204,214	0	120,627	0	120,627
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
100	1,599,472,002	0	0	0	0	0	0
Total					\$3,023,383,760		\$3,023,383,760