



**Government Accounting Standards
(GASB) Statements 67 and 68
Crossover Testing Report for
Measurement Date June 30, 2019
based on June 30, 2018 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 for measurement date June 30, 2019 based on data from valuation date June 30, 2018.

Background

History

The Government Accounting Standards Board approved 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 2.0 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 1,294,254 active and inactive members and 712,115 retirees, beneficiaries, and survivors as of June 30, 2019.

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 school 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 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 in the FY 2018-19 CAFR:

The long-term expected 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 short-term and long-term market return expectations as well as the expected pension fund cash flows. Using historical returns of all of the 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, 2019, reflect the long-term expected rates of return for the respective plans. This excludes the JRF, 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, 2019, for the PERF B, PERF C, LRF, and JRF II were 7.15%, 7.15%, 5.25%, and 6.65%, respectively. The financial reporting discount rates are consistent with the long-term funding discount rates. These discount rates are not adjusted for administrative expenses.

CalPERS Amortization Methods and Actuarial Assumptions

Amortization Methods

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%, 40%, 60% and 80% of the “full” payment which begins in year five. The 5-year ramp down means that the reverse is true in the final four years of the amortization period.

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 experience and are reviewed in depth periodically.

The assumptions used in the crossover testing of individual plans are the same assumptions adopted by the Board in December of 2017 for the PERF defined benefit plans, and in February of 2018 for the LRF and JRS II plans. For more details, please refer to the experience study report that 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 for valuation date June 30, 2018:

- 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 for valuation date June 30, 2018:

- 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 ratio of actives to retirees.

Funded status is one of the fundamental indicators of a plan's financial health. Active to retiree ratio indicates how many actives a plan has to fund retiree benefits. Plans with low measures in these two areas indicate that they have a higher probability of a crossover event than other CalPERS contracting agencies.

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

For PERF C, CalPERS believes that demonstrating that a crossover event does not occur for other contracting public agencies plans, which have a lower funded status and active to retiree ratio than the PERF C risk pools, is sufficient proof that no crossover event will occur in PERF C risk pools. The funded status and active to retiree ratio for the PERF C Miscellaneous pool are 75.4% and 0.91, respectively, and for the PERF C Safety pool are 71.2% and 0.56.

CalPERS conducted a crossover test on LRS and JRS II.

CalPERS did not perform a crossover test on the Judges' Retirement Fund because the State funds the JRF benefit obligations using the pay-as-you-go method. Under the pay-as-you-go method, the pension plan's fiduciary net position was not projected to be sufficient to make projected future benefit payments of current active and inactive employees. Therefore, the discount rate will be set upon a range of yields on 20-year tax-exempt General Obligation Municipal Bonds with an average rating of AA (as reported in Fidelity Index's "20-Year Municipal GO AA Index").

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, 2018)

Plan	Funded Status (on a Funding Basis)	Active to Retiree Ratio
PERF A - Agent		
California Highway Patrol	63.8%	0.80
State Miscellaneous (Tiers 1 and 2)	69.5%	0.90
State POFF	68.3%	1.03
PA Miscellaneous Plan	57.2%	0.47
PA Safety Plan	60.8%	0.46
PERF B – Cost-Sharing Schools		
Schools	70.4%	1.39
Other Defined Benefit Plans		
Legislators' Retirement Fund	116.7%	0.03
Judges' II Retirement Fund	98.5%	7.09

Crossover Testing Methodology

The crossover tests are conducted using a mixture of assumptions, plan information and cash flow projections generated from CalPERS Actuarial Valuation System (AVS).

Crossover Testing Assumptions

The assumptions below are used as an input to the crossover testing. The first two assumptions are set by CalPERS Board. The last assumption is based upon available municipal bond rates.

- Discount Rate Assumption
- Employee Payroll Growth Rate
- Municipal Bond Index Rate (in case of a crossover event)

Plan Information

The following plan information is used as an input to the crossover testing:

- Total Plan Payroll
- Beginning Fiduciary Net Position
- Unfunded Actuarial Liability Payment Schedules and Percentages
- Employee and Employer Future Normal Cost Contribution Rates

Cash Flow Projections from AVS

The following cash flow projection data is generated from AVS:

- Future Closed Group Employee Payroll
- Future Closed Group Benefit Payments

Results

Crossover Testing Results

For each plan, the following data was calculated to determine if a crossover event occurred:

- Projection of Contributions
- Projection of the Pension Plan's Fiduciary Net Position
- Actuarial Present Values of Projected Benefit Payments

In this crossover testing, projected cash flows into and out of the pension plan are assumed to be:

- total contributions to the pension plan
- benefit payments, pension plan administrative expense, and pension plan investment earnings

These projected cash flows are used to develop the Projected Beginning Fiduciary Net Position for each pension plan. The pension plan's Projected Beginning 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 Fiduciary Net Position in a given year.

No crossover event occurred for any CalPERS plan tested. The report summarizes the findings for each plan by displaying the year containing the closest point to a crossover event. It also presents the streams of Projected Beginning Fiduciary Net Position, Projected Benefit Payments, "Funded" Portion of Benefit Payments, 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 100th year of the crossover testing data. The detailed projections and calculations used to identify a potential crossover event for each plan are shown in Appendix A.

The crossover testing results are very sensitive to the discount rate. As the retiree population reduces over time, benefit payments to the closed population decrease. Eventually in each crossover test, a point occurs where the benefit payments and administration expenses are less than the amount of interest that the balance accrues. After this point, the balance increases very rapidly as interest compounds the excess balance and benefit payments decrease due to members exiting the plan. This results in a large balance at the end of the crossover test.

California Highway Patrol Crossover Test Results (PERF A)

A crossover event did not occur at any point. The beginning of Year 70 is the closest point to a crossover event.

With CalPERS assumed discount rate, the amount of interest accumulated in Year 70 exceeds benefit payments and administration expenses by \$6,257,868. In Year 71, the amount of interest accumulated exceeds benefit payments and administrative expenses and administration expenses by \$25,905,909. This trend continues with each subsequent year as the benefit payments decline to zero.

Year	Projected Beginning Fiduciary Net Position (\$)	Projected Benefit Payments (\$)	"Funded" Portion of Benefit Payments (\$)	Unfunded Portion of Benefit Payments (\$)
1	8,534,221,687	611,821,558	611,821,558	0
2	9,055,316,698	642,577,273	642,577,273	0
3	9,666,492,173	675,971,508	675,971,508	0
4	10,314,685,367	711,974,704	711,974,704	0
5	10,992,031,459	752,002,405	752,002,405	0
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68	1,541,154,171	140,997,561	140,997,561	0
69	1,503,185,952	116,238,016	116,238,016	0
70	1,488,171,429	94,657,165	94,657,165	0
71	1,494,429,297	76,086,166	76,086,166	0
72	1,520,335,206	60,320,665	60,320,665	0
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100	8,792,323,765	3,871	3,871	0

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

A crossover event did not occur at any point. The beginning of Year 51 is the closest point to a crossover event.

With CalPERS assumed discount rate, the amount of interest accumulated in Year 51 exceeds benefit payments and administration expenses by \$177,200,377. In Year 52, the amount of interest accumulated exceeds benefit payments and administration expenses by \$550,817,828. This trend continues with each subsequent year as the benefit payments decline to zero.

Year	Projected Beginning Fiduciary Net Position (\$)	Projected Benefit Payments (\$)	"Funded" Portion of Benefit Payments (\$)	Unfunded Portion of Benefit Payments (\$)
1	80,103,318,731	6,379,269,939	6,379,269,939	0
2	83,394,658,078	6,586,597,862	6,586,597,862	0
3	87,271,727,821	6,968,980,998	6,968,980,998	0
4	91,184,853,717	7,340,798,952	7,340,798,952	0
5	95,099,908,913	7,703,285,833	7,703,285,833	0
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49	78,798,986,850	5,823,065,366	5,823,065,366	0
50	78,292,689,687	5,467,693,513	5,467,693,513	0
51	78,117,941,081	5,115,062,385	5,115,062,385	0
52	78,295,320,886	4,765,870,360	4,765,870,360	0
53	78,846,138,714	4,421,257,711	4,421,257,711	0
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100	1,263,952,720,286	29,732	29,732	0

State POFF Crossover Test Results (PERF A)

A crossover event did not occur at any point. The beginning of Year 68 is the closest point to a crossover event.

With CalPERS assumed discount rate, the amount of interest accumulated in Year 68 exceeds benefit payments and administration expenses by \$8,742,108. In Year 69, the amount of interest accumulated exceeds benefit payments and administration expenses by \$96,423,790. This trend continues with each subsequent year as the benefit payments decline to zero.

Year	Projected Beginning Fiduciary Net Position (\$)	Projected Benefit Payments (\$)	"Funded" Portion of Benefit Payments (\$)	Unfunded Portion of Benefit Payments (\$)
1	33,301,641,357	2,240,366,065	2,240,366,065	0
2	35,219,316,485	2,369,337,311	2,369,337,311	0
3	37,422,504,874	2,531,233,036	2,531,233,036	0
4	39,687,549,043	2,698,523,477	2,698,523,477	0
5	41,993,164,131	2,872,557,719	2,872,557,719	0
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66	7,908,114,561	706,508,802	706,508,802	0
67	7,730,864,192	602,982,273	602,982,273	0
68	7,648,294,972	509,120,693	509,120,693	0
69	7,657,037,081	424,947,204	424,947,204	0
70	7,753,460,870	350,353,709	350,353,709	0
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100	49,348,028,831	18,616	18,616	0

PA Miscellaneous Plan (PERF A)

A crossover event did not occur at any point. The beginning of Year 65 is the closest point to a crossover event.

With CalPERS assumed discount rate, the amount of interest accumulated in Year 65 exceeds benefit payments and administration expenses by \$36,663. In Year 66, the amount of interest accumulated exceeds benefit payments and administration expenses by \$105,241. This trend continues with each subsequent year as the benefit payments decline to zero.

Year	Projected Beginning Fiduciary Net Position (\$)	Projected Benefit Payments (\$)	"Funded" Portion of Benefit Payments (\$)	Unfunded Portion of Benefit Payments (\$)
1	103,261,847	10,561,058	10,561,058	0
2	105,471,143	10,743,103	10,743,103	0
3	108,715,548	11,235,552	11,235,552	0
4	112,093,450	11,707,686	11,707,686	0
5	115,606,639	12,182,938	12,182,938	0
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63	6,264,451	530,833	530,833	0
64	6,153,864	450,434	450,434	0
65	6,118,702	378,619	378,619	0
66	6,155,365	314,803	314,803	0
67	6,260,606	258,581	258,581	0
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100	49,727,105	0	0	0

PA Safety Plan (PERF A)

A crossover event did not occur at any point. The beginning of Year 63 is the closest point to a crossover event.

With CalPERS assumed discount rate, the amount of interest accumulated in Year 63 exceeds benefit payments and administration expenses by \$23,228. In Year 64, the amount of interest accumulated exceeds benefit payments and administration expenses by \$852,483. This trend continues with each subsequent year as the benefit payments decline to zero.

Year	Projected Beginning Fiduciary Net Position (\$)	Projected Benefit Payments (\$)	"Funded" Portion of Benefit Payments (\$)	Unfunded Portion of Benefit Payments (\$)
1	257,917,644	22,960,341	22,960,341	0
2	267,599,034	23,549,774	23,549,774	0
3	279,785,491	24,506,176	24,506,176	0
4	292,811,257	25,491,751	25,491,751	0
5	306,659,052	26,543,145	26,543,145	0
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61	93,351,345	7,932,684	7,932,684	0
62	91,680,307	6,994,762	6,994,762	0
63	90,862,490	6,126,350	6,126,350	0
64	90,885,718	5,326,252	5,326,252	0
65	91,738,201	4,593,569	4,593,569	0
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100	772,874,177	0	0	0

Schools Crossover Test Results (PERF B)

A crossover event did not occur at any point. Year 58 is the closest point to a crossover event.

With CalPERS assumed discount rate, the amount of interest accumulated in Year 58 exceeds benefit payments and administration expenses by \$173,224,393. In Year 59, the amount of interest accumulated exceeds benefit payments and administration expenses by \$511,629,983. This trend continues with each subsequent year as the benefit payments decline to zero.

Year	Projected Beginning Fiduciary Net Position (\$)	Projected Benefit Payments (\$)	"Funded" Portion of Benefit Payments (\$)	Unfunded Portion of Benefit Payments (\$)
1	64,796,135,561	5,163,708,009	5,163,708,009	0
2	67,224,211,104	4,802,773,943	4,802,773,943	0
3	70,800,211,671	5,141,933,929	5,141,933,929	0
4	74,695,478,148	5,481,930,012	5,481,930,012	0
5	78,696,071,904	5,824,597,369	5,824,597,369	0
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56	50,476,325,058	3,871,635,676	3,871,635,676	0
57	50,004,816,729	3,533,529,966	3,533,529,966	0
58	49,850,042,081	3,205,967,485	3,205,967,485	0
59	50,023,266,474	2,890,540,817	2,890,540,817	0
60	50,534,896,457	2,588,811,808	2,588,811,808	0
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100	565,149,941,547	28,047	28,047	0

Legislators' Retirement Fund (Other Defined Benefit Plan)

A crossover event did not occur at any point. Year 21 is the closest point to a crossover event.

With CalPERS assumed discount rate, the amount of interest accumulated in Year 21 exceeds benefit payments and administration expenses by \$55,746. In Year 22, the amount of interest accumulated exceeds benefit payments and administration expenses by \$278,632. This trend continues with each subsequent year as the benefit payments decline to zero.

Year	Projected Beginning Fiduciary Net Position (\$)	Projected Benefit Payments (\$)	"Funded" Portion of Benefit Payments (\$)	Unfunded Portion of Benefit Payments (\$)
1	115,484,165	7,335,011	7,335,011	0
2	116,404,288	7,386,820	7,386,820	0
3	114,780,042	7,284,202	7,284,202	0
4	113,166,305	7,205,180	7,205,180	0
5	111,555,227	7,152,695	7,152,695	0
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19	93,249,036	4,893,232	4,893,232	0
20	92,897,417	4,683,689	4,683,689	0
21	92,742,934	4,470,990	4,470,990	0
22	92,798,680	4,256,195	4,256,195	0
23	93,077,312	4,040,378	4,040,378	0
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100	2,376,098,800	0	0	0

Judges' II Retirement Fund (Other Defined Benefit Plan)

A crossover event did not occur at any point. Year 60 is the closest point to a crossover event.

With CalPERS assumed discount rate, the amount of interest accumulated in Year 60 exceeds benefit payments and administration expenses by \$289,520. In Year 61, the amount of interest accumulated exceeds benefit payments and administration expenses by \$984,196. This trend continues with each subsequent year as the benefit payments decline to zero.

Year	Projected Beginning Fiduciary Net Position (\$)	Projected Benefit Payments (\$)	"Funded" Portion of Benefit Payments (\$)	Unfunded Portion of Benefit Payments (\$)
1	1,525,515,361	43,922,513	43,922,513	0
2	1,685,209,002	56,672,765	56,672,765	0
3	1,834,978,464	66,246,768	66,246,768	0
4	1,978,254,643	76,864,859	76,864,859	0
5	2,115,672,122	88,750,166	88,750,166	0
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58	41,459,929	4,191,501	4,191,501	0
59	39,829,244	3,061,304	3,061,304	0
60	39,258,914	2,192,185	2,192,185	0
61	39,548,434	1,537,277	1,537,277	0
62	40,532,630	1,054,570	1,054,570	0
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100	415,503,380	0	0	0

Conclusion

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 7.15% long-term expected rate of return gross of administrative expenses for all plans in the PERF is appropriate and compliant with GASB Statement 68 reporting requirements for measurement date June 30, 2019 based on data from June 30, 2018 valuations.

As no crossover event occurred on the Legislators' Retirement Fund, CalPERS has determined that using the 5.25% long-term expected rate of return gross of administrative expenses for the LRF is appropriate and compliant with GASB Statement 68 reporting requirements for measurement date June 30, 2019 based on data from June 30, 2018.

CalPERS did not perform a crossover test on the Judges' Retirement Fund because the State funds the JRF benefit obligations using the pay-as-you-go method. Under the pay-as-you-go method, the pension plan's fiduciary net position was not projected to be sufficient to make projected future benefit payments of current active and inactive employees. Therefore, the discount rate will be set upon a range of yields on 20-year tax-exempt General Obligation Municipal Bonds with an average rating of AA (as reported in Fidelity Index's "20-Year Municipal GO AA Index").

As no crossover event occurred on the Judges' II Retirement Fund, CalPERS has determined that using the 6.65% long-term expected rate of return gross of administrative expenses for the JRF II is appropriate and compliant with GASB Statement 68 reporting requirements for measurement date June 30, 2019 based on data from June 30, 2018.

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)

The data in the tables is 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 % of Payroll (d)	Contributions to the Unfunded Actuarial Liability (e) = (b) * (d)	Additional Discretionary Payments (f)	Total Contributions (g) = (c) + (e) + (f)
1	892,643,913	895,872,237	251,779,142	36.091%	323,329,249		575,108,391
2	892,590,905	920,508,723	266,420,533	38.480%	354,215,017		620,635,551
3	890,835,060	945,822,713	265,357,446	40.504%	383,099,525		648,456,971
4	885,198,308	971,832,838	263,084,895	41.745%	405,694,202		668,779,097
5	873,966,089	998,558,241	259,106,565	42.438%	423,769,716		682,876,281
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68	0	5,516,056,738	0	0	0	0	0
69	0	5,667,748,299	0	0	0	0	0
70	0	5,823,611,377	0	0	0	0	0
71	0	5,983,760,690	0	0	0	0	0
72	0	6,148,314,109	0	0	0	0	0
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100	0	13,141,571,498	0	0	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	8,534,221,687	575,108,391	611,821,558	12,774,723	570,582,900	9,055,316,698	(54,013,380)
2	9,055,316,698	620,635,551	642,577,273	13,567,072	646,684,269	9,666,492,173	(9,460,076)
3	9,666,492,173	648,456,971	675,971,508	14,479,796	690,187,526	10,314,685,367	(263,778)
4	10,314,685,367	668,779,097	711,974,704	15,440,720	735,982,419	10,992,031,459	8,566,995
5	10,992,031,459	682,876,281	752,002,405	16,437,945	783,501,652	11,689,969,042	15,061,303
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
68	1,541,154,171	0	140,997,561	2,209,536	105,238,878	1,503,185,952	(37,968,220)
69	1,503,185,952	0	116,238,016	2,170,530	103,394,024	1,488,171,429	(15,014,523)
70	1,488,171,429	0	94,657,165	2,163,650	103,078,682	1,494,429,297	6,257,868
71	1,494,429,297	0	76,086,166	2,186,497	104,178,571	1,520,335,206	25,905,909
72	1,520,335,206	0	60,320,665	2,236,782	106,584,731	1,564,362,489	44,027,283
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
100	8,792,323,765	0	3,871	13,188,483	628,651,013	9,407,782,424	615,458,659

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

Year	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 + 7.15%)^(a)	Present Value of 'Unfunded' Benefit Payments (g) = (e) ÷ (1 + 3.62%)^(a)	Present Value of Benefit Payments Using the Single Discount Rate (h) = (c) ÷ (1 + 7.15%)^(a)
1	8,534,221,687	611,821,558	611,821,558	0	591,056,078	0	591,056,078
2	9,055,316,698	642,577,273	642,577,273	0	579,344,779	0	579,344,779
3	9,666,492,173	675,971,508	675,971,508	0	568,784,762	0	568,784,762
4	10,314,685,367	711,974,704	711,974,704	0	559,103,164	0	559,103,164
5	10,992,031,459	752,002,405	752,002,405	0	551,130,493	0	551,130,493
.
.
68	1,541,154,171	140,997,561	140,997,561	0	1,332,723	0	1,332,723
69	1,503,185,952	116,238,016	116,238,016	0	1,025,378	0	1,025,378
70	1,488,171,429	94,657,165	94,657,165	0	779,287	0	779,287
71	1,494,429,297	76,086,166	76,086,166	0	584,598	0	584,598
72	1,520,335,206	60,320,665	60,320,665	0	432,539	0	432,539
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.
100	8,792,323,765	3,871	3,871	0	4	0	4

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 % of Payroll (d)	Contributions to the Unfunded Actuarial Liability (e) = (b) * (d)	Additional Discretionary Payments (f)	Total Contributions (g) = (c) + (e) + (f)
1	12,253,759,548	12,588,501,998	1,977,271,828	19.920%	2,507,629,598	0	4,484,901,426
2	11,699,208,506	12,934,685,803	1,966,091,309	21.069%	2,725,165,218	0	4,691,256,527
3	11,262,888,371	13,290,389,662	1,885,422,661	22.277%	2,960,706,465	0	4,846,129,125
4	10,813,414,189	13,655,875,378	1,804,172,147	23.073%	3,150,832,746	0	4,955,004,893
5	10,386,213,909	14,031,411,951	1,724,700,247	23.459%	3,291,652,691	0	5,016,352,938
.
49	8,036,834	46,291,570,974	1,159,511	0.000%	0	0	1,159,511
50	3,948,500	47,564,589,176	569,663	0.000%	0	0	569,663
51	1,243,760	48,872,615,379	179,428	0.000%	0	0	179,428
52	-	50,216,612,302	0	0.000%	0	0	0
53	-	51,597,569,140	0	0.000%	0	0	0
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100	0	184,661,040,117	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	80,103,318,731	4,484,901,426	6,379,269,939	118,781,943	5,304,489,802	83,394,658,078	(1,193,562,079)
2	83,394,658,078	4,691,256,527	6,586,597,862	123,718,247	5,896,129,325	87,271,727,821	(814,186,783)
3	87,271,727,821	4,846,129,125	6,968,980,998	129,368,952	6,165,346,720	91,184,853,717	(933,003,230)
4	91,184,853,717	4,955,004,893	7,340,798,952	135,048,061	6,435,897,316	95,099,908,913	(1,039,949,697)
5	95,099,908,913	5,016,352,938	7,703,285,833	140,702,379	6,705,243,899	98,977,517,538	(1,138,744,312)
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49	78,798,986,850	1,159,511	5,823,065,366	113,978,772	5,429,587,463	78,292,689,687	(507,456,675)
50	78,292,689,687	569,663	5,467,693,513	113,476,472	5,405,851,716	78,117,941,081	(175,318,269)
51	78,117,941,081	179,428	5,115,062,385	113,469,652	5,405,732,414	78,295,320,886	177,200,377
52	78,295,320,886	-	4,765,870,360	113,988,686	5,430,676,874	78,846,138,714	550,817,828
53	78,846,138,714	-	4,421,257,711	115,064,687	5,482,167,571	79,791,983,887	945,845,173
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100	1,263,952,720,286	0	29,732	1,895,929,059	90,372,618,456	1,352,429,379,951	88,476,659,665

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

Year	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 + 7.15%)^(a)	Present Value of 'Unfunded' Benefit Payments (g) = (e) ÷ (1 + 3.62%)^(a)	Present Value of Benefit Payments Using the Single Discount Rate (h) = (c) ÷ (1 + 7.15%)^(a)
1	80,103,318,731	6,379,269,939	6,379,269,939	0	6,162,754,848	0	6,162,754,848
2	83,394,658,078	6,586,597,862	6,586,597,862	0	5,938,447,013	0	5,938,447,013
3	87,271,727,821	6,968,980,998	6,968,980,998	0	5,863,930,872	0	5,863,930,872
4	91,184,853,717	7,340,798,952	7,340,798,952	0	5,764,620,424	0	5,764,620,424
5	95,099,908,913	7,703,285,833	7,703,285,833	0	5,645,614,549	0	5,645,614,549
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49	78,798,986,850	5,823,065,366	5,823,065,366	0	204,423,660	0	204,423,660
50	78,292,689,687	5,467,693,513	5,467,693,513	0	179,139,551	0	179,139,551
51	78,117,941,081	5,115,062,385	5,115,062,385	0	156,403,360	0	156,403,360
52	78,295,320,886	4,765,870,360	4,765,870,360	0	136,001,968	0	136,001,968
53	78,846,138,714	4,421,257,711	4,421,257,711	0	117,748,836	0	117,748,836
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100	1,263,952,720,286	29,732	29,732	0	31	0	31

State POFF (PERF A)

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

Year	Closed Group Employee Payroll (a)	Total Employee Payroll (b)	Contributions to Total Normal Cost (c)	Unfunded Actuarial Contribution as a % of Payroll (d)	Contributions to the Unfunded Actuarial Liability (e) = (b) * (d)	Additional Discretionary Payments (f)	Total Contributions (g) = (c) + (e) + (f)
1	3,582,228,982	3,619,520,066	1,022,511,441	26.592%	962,502,776	0	1,985,014,217
2	3,500,059,848	3,719,056,868	1,046,307,891	28.760%	1,069,586,142	0	2,115,894,033
3	3,414,017,040	3,821,330,931	1,013,654,971	30.744%	1,174,839,844	0	2,188,494,815
4	3,320,592,847	3,926,417,532	979,210,443	32.154%	1,262,517,143	0	2,241,727,586
5	3,218,532,234	4,034,394,014	942,586,494	32.911%	1,327,767,102	0	2,270,353,596
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66	0	21,109,112,489	0	0.000%	0	0	0
67	0	21,689,613,083	0	0.000%	0	0	0
68	0	22,286,077,442	0	0.000%	0	0	0
69	0	22,898,944,572	0	0.000%	0	0	0
70	0	23,528,665,548	0	0.000%	0	0	0
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100	0	53,094,827,342	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	33,301,641,357	1,985,014,217	2,240,366,065	49,767,383	2,222,794,360	35,219,316,485	(67,339,088)
2	35,219,316,485	2,115,894,033	2,369,337,311	52,645,279	2,509,276,946	37,422,504,874	87,294,356
3	37,422,504,874	2,188,494,815	2,531,233,036	55,885,341	2,663,667,731	39,687,549,043	76,549,354
4	39,687,549,043	2,241,727,586	2,698,523,477	59,200,239	2,821,611,219	41,993,164,131	63,887,503
5	41,993,164,131	2,270,353,596	2,872,557,719	62,553,270	2,981,354,093	44,309,760,832	46,243,105
.
66	7,908,114,561	0	706,508,802	11,350,095	540,608,529	7,730,864,192	(177,250,368)
67	7,730,864,192	0	602,982,273	11,159,256	531,572,309	7,648,294,972	(82,569,220)
68	7,648,294,972	0	509,120,693	11,103,433	528,966,234	7,657,037,081	8,742,108
69	7,657,037,081	0	424,947,204	11,177,555	532,548,548	7,753,460,870	96,423,790
70	7,753,460,870	0	350,353,709	11,376,255	542,063,531	7,933,794,436	180,333,566
.
100	49,348,028,831	0	18,616	74,022,030	3,528,383,407	52,802,371,593	3,454,342,762

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

Year	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 + 7.15%)^(a)	Present Value of 'Unfunded' Benefit Payments (g) = (e) ÷ (1 + 3.62%)^(a)	Present Value of Benefit Payments Using the Single Discount Rate (h) = (c) ÷ (1 + 7.15%)^(a)
1	33,301,641,357	2,240,366,065	2,240,366,065	0	2,164,327,104	0	2,164,327,104
2	35,219,316,485	2,369,337,311	2,369,337,311	0	2,136,183,865	0	2,136,183,865
3	37,422,504,874	2,531,233,036	2,531,233,036	0	2,129,863,110	0	2,129,863,110
4	39,687,549,043	2,698,523,477	2,698,523,477	0	2,119,110,420	0	2,119,110,420
5	41,993,164,131	2,872,557,719	2,872,557,719	0	2,105,251,448	0	2,105,251,448
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66	7,908,114,561	706,508,802	706,508,802	0	7,667,082	0	7,667,082
67	7,730,864,192	602,982,273	602,982,273	0	6,106,957	0	6,106,957
68	7,648,294,972	509,120,693	509,120,693	0	4,812,258	0	4,812,258
69	7,657,037,081	424,947,204	424,947,204	0	3,748,616	0	3,748,616
70	7,753,460,870	350,353,709	350,353,709	0	2,884,367	0	2,884,367
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100	49,348,028,831	18,616	18,616	0	19	0	19

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)	Contributions to the Unfunded Actuarial Liability (e) = (b) * UAL Rate	Additional Discretionary Payments (f)	Total Contributions (g) = (c) + (e) + (f)
1	8,191,348	8,502,351	1,418,660	4,730,257	0	6,148,917
2	7,715,546	8,746,794	1,432,160	5,310,032	0	6,742,192
3	7,262,244	8,987,331	1,426,886	5,717,257	0	7,144,143
4	6,839,994	9,234,482	1,339,624	6,178,852	0	7,518,477
5	6,437,844	9,488,431	1,256,853	6,591,628	0	7,848,481
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63	0	45,765,747	0	0	0	0
64	0	47,024,305	0	0	0	0
65	0	48,317,474	0	0	0	0
66	0	49,646,204	0	0	0	0
67	0	51,011,475	0	0	0	0
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100	0	124,872,926	0	0	0	0

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	103,261,847	6,148,917	10,561,058	151,695	6,773,133	105,471,143	(3,939,620)
2	105,471,143	6,742,192	10,743,103	155,307	7,400,623	108,715,548	(3,497,787)
3	108,715,548	7,144,143	11,235,552	160,108	7,629,419	112,093,450	(3,766,241)
4	112,093,450	7,518,477	11,707,686	165,104	7,867,503	115,606,639	(4,005,287)
5	115,606,639	7,848,481	12,182,938	170,268	8,113,593	119,215,507	(4,239,613)
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63	6,264,451	0	530,833	9,012	429,259	6,153,864	(110,587)
64	6,153,864	0	450,434	8,904	424,176	6,118,702	(35,162)
65	6,118,702	0	378,619	8,904	424,185	6,155,365	36,663
66	6,155,365	0	314,803	9,005	429,049	6,260,606	105,241
67	6,260,606	0	258,581	9,203	438,549	6,431,371	170,765
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100	49,727,105	0	0	74,591	3,555,488	53,208,002	3,480,897

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

Year	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 + 7.15%)^(a)	Present Value of 'Unfunded' Benefit Payments (g) = (e) ÷ (1 + 3.62%)^(a)	Present Value of Benefit Payments Using the Single Discount Rate (h) = (c) ÷ (1 + 7.15%)^(a)
1	103,261,847	10,561,058	10,561,058	0	10,202,612	0	10,202,612
2	105,471,143	10,743,103	10,743,103	0	9,685,934	0	9,685,934
3	108,715,548	11,235,552	11,235,552	0	9,453,965	0	9,453,965
4	112,093,450	11,707,686	11,707,686	0	9,193,872	0	9,193,872
5	115,606,639	12,182,938	12,182,938	0	8,928,680	0	8,928,680
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63	6,264,451	530,833	530,833	0	7,087	0	7,087
64	6,153,864	450,434	450,434	0	5,612	0	5,612
65	6,118,702	378,619	378,619	0	4,403	0	4,403
66	6,155,365	314,803	314,803	0	3,416	0	3,416
67	6,260,606	258,581	258,581	0	2,619	0	2,619
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100	49,727,105	0	0	0	0	0	0

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

Year	Closed Group Employee Payroll (a)	Total Employee Payroll (b)	Contributions to Total Normal Cost (c)	Contributions to the Unfunded Actuarial Liability (e) = (b) * UAL Rate	Additional Discretionary Payments (f)	Total Contributions (g) = (c) + (e) + (f)
1	20,990,356	21,153,181	6,560,116	9,413,216	0	15,973,332
2	20,752,705	21,761,335	6,531,291	10,690,733	0	17,222,024
3	20,444,476	22,359,772	6,594,366	11,570,774	0	18,165,140
4	20,069,306	22,974,665	6,445,915	12,618,013	0	19,063,928
5	19,590,455	23,606,469	6,266,284	13,557,744	0	19,824,028
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61	0	107,848,358	0	0	0	0
62	0	110,814,188	0	0	0	0
63	0	113,861,578	0	0	0	0
64	0	116,992,771	0	0	0	0
65	0	120,210,073	0	0	0	0
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100	0	310,674,014	0	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	257,917,644	15,973,332	22,960,341	381,812	17,050,212	267,599,034	(6,291,942)
2	267,599,034	17,222,024	23,549,774	396,812	18,911,019	279,785,491	(5,035,568)
3	279,785,491	18,165,140	24,506,176	415,082	19,781,884	292,811,257	(5,139,374)
4	292,811,257	19,063,928	25,491,751	434,558	20,710,177	306,659,052	(5,216,132)
5	306,659,052	19,824,028	26,543,145	455,119	21,690,061	321,174,878	(5,308,203)
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61	93,351,345	0	7,932,684	134,277	6,395,923	99,297,200	(1,671,038)
62	91,680,307	0	6,994,762	132,451	6,309,396	95,887,084	(817,817)
63	90,862,490	0	6,126,350	131,853	6,281,432	93,351,345	23,228
64	90,885,718	0	5,326,252	132,468	6,311,203	91,680,307	852,483
65	91,738,201	0	4,593,569	134,278	6,397,896	90,862,490	1,670,049
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100	772,874,177	0	0	1,159,311	55,260,504	826,975,369	54,101,192

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

Year	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 + 7.15%)^(a)	Present Value of 'Unfunded' Benefit Payments (g) = (e) ÷ (1 + 3.62%)^(a)	Present Value of Benefit Payments Using the Single Discount Rate (h) = (c) ÷ (1 + 7.15%)^(a)
1	257,917,644	22,960,341	22,960,341	0	22,181,058	0	22,181,058
2	267,599,034	23,549,774	23,549,774	0	21,232,371	0	21,232,371
3	279,785,491	24,506,176	24,506,176	0	20,620,306	0	20,620,306
4	292,811,257	25,491,751	25,491,751	0	20,018,294	0	20,018,294
5	306,659,052	26,543,145	26,543,145	0	19,453,045	0	19,453,045
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61	93,351,345	7,932,684	7,932,684	0	121,589	0	121,589
62	91,680,307	6,994,762	6,994,762	0	100,059	0	100,059
63	90,862,490	6,126,350	6,126,350	0	81,788	0	81,788
64	90,885,718	5,326,252	5,326,252	0	66,362	0	66,362
65	91,738,201	4,593,569	4,593,569	0	53,414	0	53,414
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100	772,874,177	0	0	0	0	0	0

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 % of Payroll (d)	Contributions to the Unfunded Actuarial Liability (e) = (b) * (d)	Additional Discretionary Payments (f)	Total Contributions (g) = (c) + (e) + (f)
1	13,433,825,383	13,836,693,223	2,114,349,777	9.323%	1,289,994,909	0	3,404,344,686
2	12,752,499,632	14,234,498,153	2,039,379,741	11.741%	1,671,277,588	0	3,710,657,329
3	12,133,555,291	14,625,946,852	2,044,411,612	14.167%	2,072,058,191	0	4,116,469,803
4	11,550,198,798	15,028,160,391	1,937,800,052	15.683%	2,356,890,820	0	4,294,690,873
5	10,989,129,598	15,441,434,801	1,834,089,387	16.714%	2,580,886,407	0	4,414,975,793
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56	0	61,597,205,524	0	0.000%	0	0	0
57	0	63,291,128,676	0	0.000%	0	0	0
58	0	65,031,634,714	0	0.000%	0	0	0
59	0	66,820,004,669	0	0.000%	0	0	0
60	0	68,657,554,797	0	0.000%	0	0	0
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100	0	203,217,710,468	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	64,796,135,561	3,404,344,686	5,163,708,009	95,919,020	4,283,357,885	67,224,211,104	(976,269,143)
2	67,224,211,104	3,710,657,329	4,802,773,943	100,044,752	4,768,161,934	70,800,211,671	(134,656,761)
3	70,800,211,671	4,116,469,803	5,141,933,929	105,457,063	5,026,187,666	74,695,478,148	(221,203,326)
4	74,695,478,148	4,294,690,873	5,481,930,012	111,182,708	5,299,015,603	78,696,071,904	(294,097,117)
5	78,696,071,904	4,414,975,793	5,824,597,369	117,022,416	5,577,245,129	82,746,673,041	(364,374,655)
.
56	50,476,325,058	0	3,871,635,676	72,908,332	3,473,035,678	50,004,816,729	(471,508,330)
57	50,004,816,729	0	3,533,529,966	72,446,128	3,451,201,447	49,850,042,081	(154,774,647)
58	49,850,042,081	0	3,205,967,485	72,451,383	3,451,643,261	50,023,266,474	173,224,393
59	50,023,266,474	0	2,890,540,817	72,939,840	3,475,110,640	50,534,896,457	511,629,983
60	50,534,896,457	0	2,588,811,808	73,925,978	3,522,292,781	51,394,451,452	859,554,995
.
100	565,149,941,547	0	28,047	847,724,892	40,408,219,835	604,710,408,444	39,560,466,896

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

Year	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 + 7.15%)^(a)	Present Value of 'Unfunded' Benefit Payments (g) = (e) ÷ (1 + 3.62%)^(a)	Present Value of Benefit Payments Using the Single Discount Rate (h) = (c) ÷ (1 + 7.15%)^(a)
1	64,796,135,561	5,163,708,009	5,163,708,009	0	4,988,449,599	0	4,988,449,599
2	67,224,211,104	4,802,773,943	4,802,773,943	0	4,330,159,390	0	4,330,159,390
3	70,800,211,671	5,141,933,929	5,141,933,929	0	4,326,593,101	0	4,326,593,101
4	74,695,478,148	5,481,930,012	5,481,930,012	0	4,304,878,245	0	4,304,878,245
5	78,696,071,904	5,824,597,369	5,824,597,369	0	4,268,753,926	0	4,268,753,926
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56	51,252,488,842	4,218,681,430	4,218,681,430	0	97,859,541	0	97,859,541
57	50,476,325,058	3,871,635,676	3,871,635,676	0	83,816,351	0	83,816,351
58	50,004,816,729	3,533,529,966	3,533,529,966	0	71,392,217	0	71,392,217
59	49,850,042,081	3,205,967,485	3,205,967,485	0	60,451,771	0	60,451,771
60	50,023,266,474	2,890,540,817	2,890,540,817	0	50,867,085	0	50,867,085
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100	565,149,941,547	28,047	28,047	0	29	0	29

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 % of Payroll (d)	Contributions to the Unfunded Actuarial Liability (e) = (b) * (d)	Additional Discretionary Payments (f)	Total Contributions (g) = (c) + (e) + (f)
1	709,129	1,128,147	322,760	0.000%	0	0	322,760
2	285,198	1,159,171	121,771	0.000%	0	0	121,771
3	291,351	1,191,048	108,664	0.000%	0	0	108,664
4	297,479	1,223,802	110,979	0.000%	0	0	110,979
5	154,189	1,257,456	57,531	0.000%	0	0	57,531
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19	0	1,838,394	0	0.000%	0	0	0
20	0	1,888,950	0	0.000%	0	0	0
21	0	1,940,896	0	0.000%	0	0	0
22	0	1,994,270	0	0.000%	0	0	0
23	0	2,049,113	0	0.000%	0	0	0
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100	0	16,548,811	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	115,484,165	322,760	7,335,011	280,161	8,212,535	116,404,288	597,363
2	116,404,288	121,771	7,386,820	282,154	5,922,957	114,780,042	(1,746,017)
3	114,780,042	108,664	7,284,202	278,202	5,840,004	113,166,305	(1,722,401)
4	113,166,305	110,979	7,205,180	274,267	5,757,390	111,555,227	(1,722,057)
5	111,555,227	57,531	7,152,695	270,238	5,672,784	109,862,609	(1,750,149)
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19	93,249,036	0	4,893,232	227,157	4,768,770	92,897,417	(351,619)
20	92,897,417	0	4,683,689	226,533	4,755,740	92,742,934	(154,482)
21	92,742,934	0	4,470,990	226,407	4,753,142	92,798,680	55,746
22	92,798,680	0	4,256,195	226,808	4,761,635	93,077,312	278,632
23	93,077,312	0	4,040,378	227,767	4,781,856	93,591,021	513,710
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100	2,376,098,800	0	0	5,940,247	124,745,187	2,494,903,740	118,804,940

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

Year	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 + 5.25%)^(a)	Present Value of 'Unfunded' Benefit Payments (g) = (e) ÷ (1 + 3.62%)^(a)	Present Value of Benefit Payments Using the Single Discount Rate (h) = (c) ÷ (1 + 5.25%)^(a)
1	115,484,165	7,335,011	7,335,011	0	7,149,731	0	7,149,731
2	116,404,288	7,386,820	7,386,820	0	6,841,076	0	6,841,076
3	114,780,042	7,284,202	7,284,202	0	6,409,538	0	6,409,538
4	113,166,305	7,205,180	7,205,180	0	6,023,757	0	6,023,757
5	111,555,227	7,152,695	7,152,695	0	5,681,594	0	5,681,594
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19	93,249,036	4,893,232	4,893,232	0	1,898,833	0	1,898,833
20	92,897,417	4,683,689	4,683,689	0	1,726,860	0	1,726,860
21	92,742,934	4,470,990	4,470,990	0	1,566,212	0	1,566,212
22	92,798,680	4,256,195	4,256,195	0	1,416,597	0	1,416,597
23	93,077,312	4,040,378	4,040,378	0	1,277,688	0	1,277,688
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100	2,376,098,800	0	0	0	0	0	0

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 % of Payroll (d)	Contributions to the Unfunded Actuarial Liability (e) = (b) * (d)	Additional Discretionary Payments (f)	Total Contributions (g) = (c) + (e) + (f)
1	299,792,221	318,827,073	98,478,747	0.626%	1,995,857	0	100,474,604
2	279,137,864	327,594,817	93,257,169	0.732%	2,399,444	0	95,656,613
3	268,341,742	336,603,675	88,690,924	0.242%	814,418	0	89,505,342
4	256,006,388	345,860,276	84,189,084	0.356%	1,232,972	0	85,422,056
5	242,161,869	355,371,433	79,235,851	0.472%	1,676,561	0	80,912,412
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58	0	1,496,647,529	0	0.000%	0	0	0
59	0	1,537,805,336	0	0.000%	0	0	0
60	0	1,580,094,983	0	0.000%	0	0	0
61	0	1,623,547,595	0	0.000%	0	0	0
62	0	1,668,195,153	0	0.000%	0	0	0
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100	0	4,676,882,036	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	1,525,515,361	100,474,604	43,922,513	2,329,358	105,470,907	1,685,209,002	59,219,036
2	1,685,209,002	95,656,613	56,672,765	2,556,135	113,341,750	1,834,978,464	54,112,850
3	1,834,978,464	89,505,342	66,246,768	2,769,365	122,786,969	1,978,254,643	53,770,836
4	1,978,254,643	85,422,056	76,864,859	2,973,599	131,833,881	2,115,672,122	51,995,424
5	2,115,672,122	80,912,412	88,750,166	3,167,814	140,435,785	2,245,102,340	48,517,805
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58	41,459,929	0	4,191,501	59,145	2,619,961	39,829,244	(1,630,685)
59	39,829,244	0	3,061,304	57,520	2,548,495	39,258,914	(570,330)
60	39,258,914	0	2,192,185	57,296	2,539,001	39,548,434	289,520
61	39,548,434	0	1,537,277	58,206	2,579,679	40,532,630	984,196
62	40,532,630	0	1,054,570	60,033	2,660,920	42,078,947	1,546,317
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100	415,503,380	0	0	623,255	27,630,975	442,511,100	27,007,720

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

Year	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 + 6.65%)^(a)	Present Value of 'Unfunded' Benefit Payments (g) = (e) ÷ (1 + 3.62%)^(a)	Present Value of Benefit Payments Using the Single Discount Rate (h) = (c) ÷ (1 + 6.65%)^(a)
1	1,525,515,361	43,922,513	43,922,513	0	42,531,113	0	42,531,113
2	1,685,209,002	56,672,765	56,672,765	0	51,455,655	0	51,455,655
3	1,834,978,464	66,246,768	66,246,768	0	56,397,850	0	56,397,850
4	1,978,254,643	76,864,859	76,864,859	0	61,357,100	0	61,357,100
5	2,115,672,122	88,750,166	88,750,166	0	66,427,102	0	66,427,102
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58	41,459,929	4,191,501	4,191,501	0	103,424	0	103,424
59	39,829,244	3,061,304	3,061,304	0	70,827	0	70,827
60	39,258,914	2,192,185	2,192,185	0	47,556	0	47,556
61	39,548,434	1,537,277	1,537,277	0	31,269	0	31,269
62	40,532,630	1,054,570	1,054,570	0	20,113	0	20,113
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100	415,503,380	0	0	0	0	0	0