

Judges' Retirement System Actuarial Valuation *As of June 30, 2021*



Table of Contents

Actuarial Certification	1
Highlights and Executive Summary	2
Introduction	3
Purpose of Report	3
Employer Contribution	4
Pay-As-You-Go Employer Contributions	4
Prefunded Employer Contributions	4
Plan's Funded Status.....	5
Changes Since the Prior Year's Valuation	5
Subsequent Events.....	5
Assets.....	6
Reconciliation of the Market Value of Assets.....	7
Asset Allocation	7
Liabilities and Required Employer Contributions.....	8
Comparison of Current and Prior Year Results.....	9
(Gain)/Loss Analysis.....	10
Funding History.....	11
Projections of Contributions and Payouts.....	12
10-Year Projection of Contributions and Benefits	13
Projected Benefit Payouts.....	13
Risk Analysis.....	14
Future Investment Return Scenarios & Discount Rate Sensitivity	15
Mortality Rate Sensitivity & Plan Maturity Measures.....	16
Appendix A – Statement of Actuarial Methods and Assumptions	A-1
Appendix B – Summary of Principal Plan Provisions	B-1
Appendix C – Participant Data.....	C-1
Appendix D – Glossary of Actuarial Terms.....	D-1

Actuarial Certification



April 2022

To the best of our knowledge, this report is complete and accurate and contains sufficient information to fully and fairly disclose the actuarial funded condition of the Judges' Retirement System. This valuation is based on the member and financial data as of June 30, 2021 provided by the various CalPERS databases and the benefits under this plan with CalPERS as of the date this report was produced. In our opinion, this valuation has been performed in accordance with generally accepted actuarial principles, in accordance with standards of practice prescribed by the Actuarial Standards Board, and that the assumptions and methods are internally consistent and reasonable for this plan, as prescribed by the CalPERS Board of Administration according to provisions set forth in the California Public Employees' Retirement Law.

The undersigned are actuaries for CalPERS, who are members of the American Academy of Actuaries and the Society of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

Stuart Bennett, ASA, MAAA
Senior Pension Actuary, CalPERS

Tony Cuny, ASA, MAAA
Senior Pension Actuary, CalPERS

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

Highlights and Executive Summary

- 3 Introduction
- 3 Purpose of Report
- 4 Employer Contribution
- 4 Pay-As-You-Go Employer Contributions
- 4 Prefunded Employer Contributions
- 5 Plan's Funded Status
- 5 Changes Since the Prior Year's Valuation
- 5 Subsequent Events

Highlights and Executive Summary

Introduction

This is the actuarial valuation report as of June 30, 2021 for the Judges' Retirement System. This actuarial valuation is used to recommend the fiscal year 2022-23 employer contributions. The Judges' Retirement System provides retirement and ancillary benefits to judges elected or appointed prior to November 9, 1994. The employer and member contribution rates for the plan are set by State statute and are each equal to 8 percent of payroll. The State currently funds the System using a pay-as-you-go approach since the 8 percent of payroll contributions made by both the State and members are ***not adequate to meet the System's current benefit payouts***.

Purpose of Report

This actuarial valuation of the Judges' Retirement System of the State of California was performed by CalPERS staff actuaries as of June 30, 2021 in order to:

- Set forth the assets, accrued liabilities, and funded status of the System as of June 30, 2021.
- Provide expected benefit payouts and funding alternatives.
- Provide actuarial information as of June 30, 2021, to the CalPERS Board of Administration and other interested parties.

The pension funding information presented in this report should not be used in financial reports subject to Governmental Accounting Standards Board (GASB) Statement No. 68. A separate accounting valuation report for such purposes is available from CalPERS. The measurements shown in this actuarial valuation may not be applicable for other purposes.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions, changes in economic or demographic assumptions, changes in actuarial policies, and changes in plan provisions or applicable law.

Assessment and Disclosure of Risk

This report includes the following risk disclosures consistent with the recommendations of Actuarial Standards of Practice No. 51 and recommended by the California Actuarial Advisory Panel (CAAP) in the Model Disclosure Elements document that would be applicable to a pay-as-you-go plan:

- A "Sensitivity Analysis," showing the impact on current valuation results using alternative discount rates of 2 percent and 4 percent and inflation rates of 1.3 percent and 3.3 percent.
- A "Sensitivity Analysis," showing the impact on current valuation results assuming rates of mortality are 10 percent lower or 10 percent higher than our current mortality assumptions adopted in 2021. This type of analysis highlights the impact on the plan of improving or worsening mortality over the long-term.

Highlights and Executive Summary

Employer Contribution

The State contributes to the plan on a pay-as-you-go basis. In other words, member contributions plus employer contributions are designed to cover only benefit payments and expenses each year, with nothing left over for pre-funding. A pay-as-you-go approach is easy to understand. However, from an accounting viewpoint, pensions in the aggregate are considered a form of deferred wages and should generally be charged over the period of employment. Also, from the member's point of view, it is generally not satisfactory that their future benefit payments are dependent upon the continued willingness and ability of the employer to cover the benefit payments each year.

Pay-As-You-Go Employer Contributions

A comparison of the pay-as-you-go costs reduced by expected member contributions for the prior and current valuation is shown below.

	Fiscal Year 2021-22	Fiscal Year 2022-23
Estimated Employer Pay-as-You-Go Cost (PAYG)	\$210,757,479	\$198,557,517

The average expected remaining service for current actives is approximately 5.9 years. Some believe that pensions should be funded over a period similar to the remaining service life. CalPERS recognizes that making contributions equal to the entire Unfunded Actuarial Liability (UAL) within 6 years is not realistic at this time. However, the lack of any accumulation of assets remains a serious concern. Advance funding of the System's benefits enables the pension assets to grow with investment earnings and would reduce future contribution requirements needed on a pay-as-you-go basis. It is recommended that the State consider some form of advanced funding.

Prefunded Employer Contributions

In the following table, we have shown three possible funding amounts, equal to the Normal Cost plus a 15-year, a 10-year and a 5-year level dollar amortization of the UAL, in addition to the PAYG amount. We recommend a 10-year or shorter amortization, since most, if not all, active members would be expected to retire within that time and the duration of benefit payments is 10.2. We have also shown the expected total amount of payments expected to be made over the life of the plan under each scenario. This demonstrates the amount of savings that can be realized when assets are invested.

Prefunded Employer Contributions

	Pay-as-You-Go	Fiscal Year 2022-23		
		Funding, 15-Year Amortization	Funding, 10-Year Amortization	Funding, 5-Year Amortization
Total Normal Cost	N/A	\$12,221,387	\$12,221,387	\$12,221,387
Less Estimated Employee Contributions	N/A	(1,673,303)	(1,673,303)	(1,673,303)
Unfunded Accrued Liability Payment	N/A	216,200,386	302,570,316	563,570,129
Total Annual	\$198,557,517	\$226,748,470	\$313,118,401	\$574,118,213
Expected Total Payout over the Life of the Plan (Employer and Employee costs including the estimated PAYG costs for fiscal year 2021-22)	\$3,998,259,475	\$3,539,915,149	\$3,322,612,526	\$3,114,760,008

CalPERS is ready to work with the Administration in establishing an acceptable advance-funding basis that satisfies both the recommendation for advanced funding and current fiscal limitations. The funding schedules above are based on a 3 percent discount rate. This 3 percent discount rate used in the valuation represents an expected return on a fixed income portfolio consistent with the capital market assumptions used by CalPERS in its most recent Asset Liability Management review.

Highlights and Executive Summary

Plan's Funded Status

The table below summarizes the funded status of the Judges' Retirement System as of June 30, 2021, and the prior valuation year.

	June 30, 2020	June 30, 2021
1) Present Value of Projected Benefits	\$3,175,841,005	\$2,889,125,579
2) Entry Age Normal Accrued Liability	3,105,001,091	2,803,229,924
3) Market Value of Assets (MVA)	48,020,033	65,882,450
4) Unfunded Accrued Liability [(2) - (3)]	\$3,056,981,058	\$2,737,347,474
5) Funded Ratio [(3) / (2)]	1.5%	2.4%

This measure of funded status is an assessment of the need for future employer contributions. The Unfunded Liability, if positive, is the present value of future employer contributions for service that has already been earned and is in addition to future normal cost contributions for active members. This measure of funded status is not appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the employer's benefit obligations.

Changes Since the Prior Year's Valuation

Actuarial Methods and Assumptions

There are changes to actuarial methods or assumptions for the June 30, 2021 actuarial valuation. New pre-retirement and post-retirement mortality rates are proposed with the adoption of Generational Mortality calculation methodology to capture future improvements in longevity. The mortality rates are those from the CalPERS most recent experience study adopted in November 2021. There is insufficient data to perform a Judges only mortality study and the actuary has determined that mortality rates from this study are reasonable for this plan. In addition, new service retirement rates are used in this valuation based upon an experience study review of recent actual retirement patterns.

There is no change to the assumed discount rate of 3.0% for the plan and Capital Market Assumptions approved for CalPERS affiliate plans at the March 2022 Board meeting support a 3 percent hypothetical fixed income allocation which is appropriate for funding. The inflation assumption was lowered from 2.5% to 2.3%. The individual salary and overall payroll increase assumptions were increased from 2.75% to 2.8%. Retirement benefits are fully adjusted for increases in salaries for the active judges of the same court from which the member retired. Therefore, the Cost-of-Living Adjustment is increased to 2.8%.

A complete description of the actuarial methods and assumptions used in the June 30, 2021 valuation may be found in Appendix A of this report.

Plan Provisions

There were no plan changes since the prior valuation. A description of the principal plan provisions may be found in Appendix B of this report.

Subsequent Events

Plan Data

In the case of Robert M. Mallano, et al. v. John Chiang, Controller of the State of California (SCO), the Judges' Retirement System (JRS), and the Judges' Retirement System II (JRS II), the judge issued a Statement of Decision which orders judicial salary increases to be given to the judges for the FY 2008-09, FY 2009-10, FY 2010-11, FY 2013-14, FY 2014-15 and FY 2015-16 plus 10 percent interest per year for each year that the judicial salaries were not increased. Based on the increased judicial salaries, adjustments to the defined benefit and lump sum payments are currently being calculated and paid. Any remaining payments will be reflected in future valuations as they are claimed and paid.

Assets

- 7 Reconciliation of the Market Value of Assets
- 7 Asset Allocation

Assets

Reconciliation of the Market Value of Assets

The following displays the change in the Market Value of Assets from the prior valuation date to June 30, 2021.

Changes	Market Value
Beginning Balance as of June 30, 2020.	\$48,020,033
Prior Period Adjustment	0
Adjusted Beginning Balance as of June 30, 2020.	48,020,033
Contributions (Employer plus Employee)	5,019,652
Other Income	2,462,284
Transfer from General Fund	222,950,000
Investment Income ¹	162,529
Contribution Refund	0
Administrative Costs	(1,781,412)
Benefit Payments	(210,950,637)
Ending Balance as of June 30, 2021.	\$65,882,450

(1) Net Fund return for the FY 2020- 21 is 2.9%

Asset Allocation

Shown below is the Market Value of Assets, by asset type, as of the valuation date.

Investment Type	Value as of June 30, 2021
Cash	\$3,360,970
Investments at Market Value	
Short-Term Investments	65,188,998
Global Equity Securities	0
Global Debt Securities	0
Real Assets	0
Private Equity	0
Capital Assets, Net & Other Assets	0
Accounts Receivable	\$1,893,206
Total Liabilities	\$(4,560,725)
Fund Balance at Market Value on June 30, 2021	\$65,882,450

Liabilities and Employer Contributions

- 9 Comparison of Current and Prior Year Results
- 10 (Gain)/Loss Analysis
- 11 Funding History

Liabilities and Employer Contributions

Comparison of Current and Prior Year Results

Shown below are the comparisons of key valuation results for the current valuation date compared to corresponding values from the prior valuation date.

	June 30, 2020	June 30, 2021
1) Members Included in the Valuation		
a) Active Members	130	110
b) Deferred Vested Terminated Members & QDRO's	2	2
c) Receiving Payments	1,730	1,697
d) Total Members Included in the Valuation	1,862	1,809
2) Payroll		
a) Covered Annual Payroll	\$29,137,115	\$24,752,164
b) Projected Covered Annual Payroll	20,807,596	20,916,289
c) Average Covered Annual Payroll [(2a) / (1a)]	224,132	225,020
3) Age and Service for Actives		
a) Average Attained Age for Actives	73.44	73.94
b) Average Service for Actives	31.65	32.70
c) Average Future Service for Actives	3.69	5.88
4) Present Value of Benefits at Valuation Date		
a) Active Members	\$345,168,856	\$254,584,067
b) Deferred Vested Terminated Members & QDRO's	4,462,086	4,634,241
c) Receiving Benefits	2,826,210,063	2,629,907,271
d) Total Present Value of Benefits at Valuation Date	\$3,175,841,005	\$2,889,125,579
5) Present Value of Future Normal Costs at Valuation Date		
a) Member Contributions	\$8,660,635	\$11,718,066
b) Employer Normal Costs	62,179,279	74,177,589
6) Unfunded Accrued Actuarial Liability		
a) Accrued Actuarial Liability		
i. Active Members	\$274,328,942	\$168,688,412
ii. Deferred Vested Terminated Members & QDRO's	4,462,086	4,634,241
iii. Receiving Benefits	2,826,210,063	2,629,907,271
iv. Total Accrued Actuarial Liability	\$3,105,001,091	\$2,803,229,924
b) Assets (Market Value)	48,020,033	65,882,450
c) Unfunded Actuarial Liability [(6 a iv) – (6b)]	3,056,981,058	2,737,347,474
d) Funded Ratio [(6b) / (6 a iv)]	1.5%	2.4%
7) Normal Cost	\$13,639,379	\$12,221,387
8) Employer Contributions		
a) Recommended 10-Year Funding		
i. Normal Cost	\$13,639,379	\$12,221,387
ii. Estimated Employee Contributions	1,664,608	1,673,303
iii. Payment on Unfunded Liability	340,906,596	302,570,316
iv. Total Recommended Employer Contribution [(8 a i) – (8 a ii) + (8 a iii)]	\$352,881,367	\$313,118,401
b) Estimated Pay-as-You-Go Costs (PAYG)		
i. Estimated Benefit Payments	\$212,422,086	\$200,230,820
ii. Estimated Employee Contributions	1,664,608	1,673,303
iii. Estimated Employer Contributions [(8 b i) – (8 b ii)]	\$210,757,479	\$198,557,517

Liabilities and Employer Contributions

(Gain)/Loss Analysis

To calculate the cost requirements of the plan, assumptions are made about future events that affect the amount and timing of benefits to be paid and assets to be accumulated. Each year, actual experience is compared to the expected experience based on the actuarial assumptions. This results in actuarial gains or losses, as shown below.

1) Total (Gain)/Loss for the Year	Amount
a)Unfunded Accrued Liability (UAL) as of 6/30/2020	\$3,056,981,058
b)Expected Pay as You Go Excluding Normal Cost	197,118,099
c)Interest through 6/30/2021 $[0.03 \times 1a - ((1.03)^{1/2} - 1) \times 1b]$	91,437,154
d)Expected UAL Before All Other Changes $[1a - 1b + 1c]$	2,951,300,113
e)Change Due to Revised Actuarial Methods	0
f)Change Due to New Actuarial Assumptions	(111,490,991)
g)Expected UAL After All Changes $[1d + 1e + 1f]$	2,839,809,122
h)Actual Unfunded Accrued Liability as of 6/30/2021	2,737,347,474
i) Total (Gain)/Loss for FY 2020-21 [1h - 1g]	(\$102,461,648)
2) Contribution (Gain)/Loss for the Year	Amount
a)Expected Contribution (Employer and Employee)	\$210,757,479
b)Interest on Expected Contributions $[((1.03)^{1/2} - 1) \times 2a]$	3,138,001
c)Actual Contribution	227,969,652
d)Interest on Actual Contributions $[((1.03)^{1/2} - 1) \times 2c]$	3,394,276
e)Contribution (Gain)/Loss [(2a + 2b) - (2c + 2d)]	(\$17,468,449)
3) Asset (Gain)/Loss for the Year	Amount
a)Market Value of Assets as of 6/30/2020	\$48,020,033
b)Contributions Received	227,969,652
c)Benefits and Refunds Paid	(210,950,637)
d)Transfers, SCP, and Miscellaneous Adjustments	2,462,284
e)Expected Interest $[0.03 \times 3a + ((1.03)^{1/2} - 1) \times (3b + 3c + 3d)]$	1,730,661
f)Expected Assets as of 6/30/2021 $[3a + 3b + 3c + 3d + 3e]$	69,231,994
g)Actual Market Value of Assets as of 6/30/2021	65,882,450
h)Asset (Gain)/Loss [3f - 3g]	\$3,349,544
4) Liability (Gain)/Loss for the Year	Amount
a)Total (Gain)/Loss (1i)	(\$102,461,648)
b)Contribution (Gain)/Loss (2e)	(17,468,449)
c)Asset (Gain)/Loss (3h)	3,349,544
d)Liability (Gain)/Loss [4a - 4b - 4c]	(\$88,342,743)

Liabilities and Employer Contributions

Funding History

The Funding History below shows the recent history of the Actuarial Accrued Liability, the Market Value of Assets, Funded Ratio, the Annual Covered Payroll and the Pay-As-You-Go (PAYG) Cost.

Valuation Date	Entry Age Normal Accrued Liability	Market Value of Assets (MVA)	Unfunded Accrued Liability	Funded Ratio (MVA)	Annual Covered Payroll	PAYG Cost
6/30/21	\$2,803,229,924	\$65,882,450	\$2,737,347,474	2.4%	\$24,752,164	\$198,557,517
6/30/20	3,105,001,091	48,020,033	3,056,981,058	1.5%	29,137,115	210,757,479
6/30/19	3,173,229,040	14,080,882	3,159,148,158	0.4%	31,511,394	209,344,866
6/30/18	3,320,530,020	44,491,530	3,276,038,490	1.3%	35,335,347	210,045,751
6/30/17	3,315,731,052	48,274,516	3,267,456,536	1.5%	38,330,347	207,313,847
6/30/16	3,428,743,441	39,793,891	3,388,949,550	1.2%	42,429,926	208,334,913
6/30/15	3,322,609,989	41,177,519	3,281,432,470	1.2%	44,284,467	227,341,695
6/30/14	3,414,779,730	57,198,659	3,357,581,071	1.7%	52,335,325	225,157,030
6/30/13	3,383,309,964	53,819,947	3,329,490,017	1.6%	60,593,543	217,464,586
6/30/12	3,172,276,086	72,693,177	3,099,582,909	2.3%	69,227,033	213,556,754

Projections of Contributions & Payouts

12 10-Year Projection of Contributions and Benefits

12 Projected Benefit Payouts

Projections of Contributions & Payouts

10-Year Projection of Contributions and Benefits

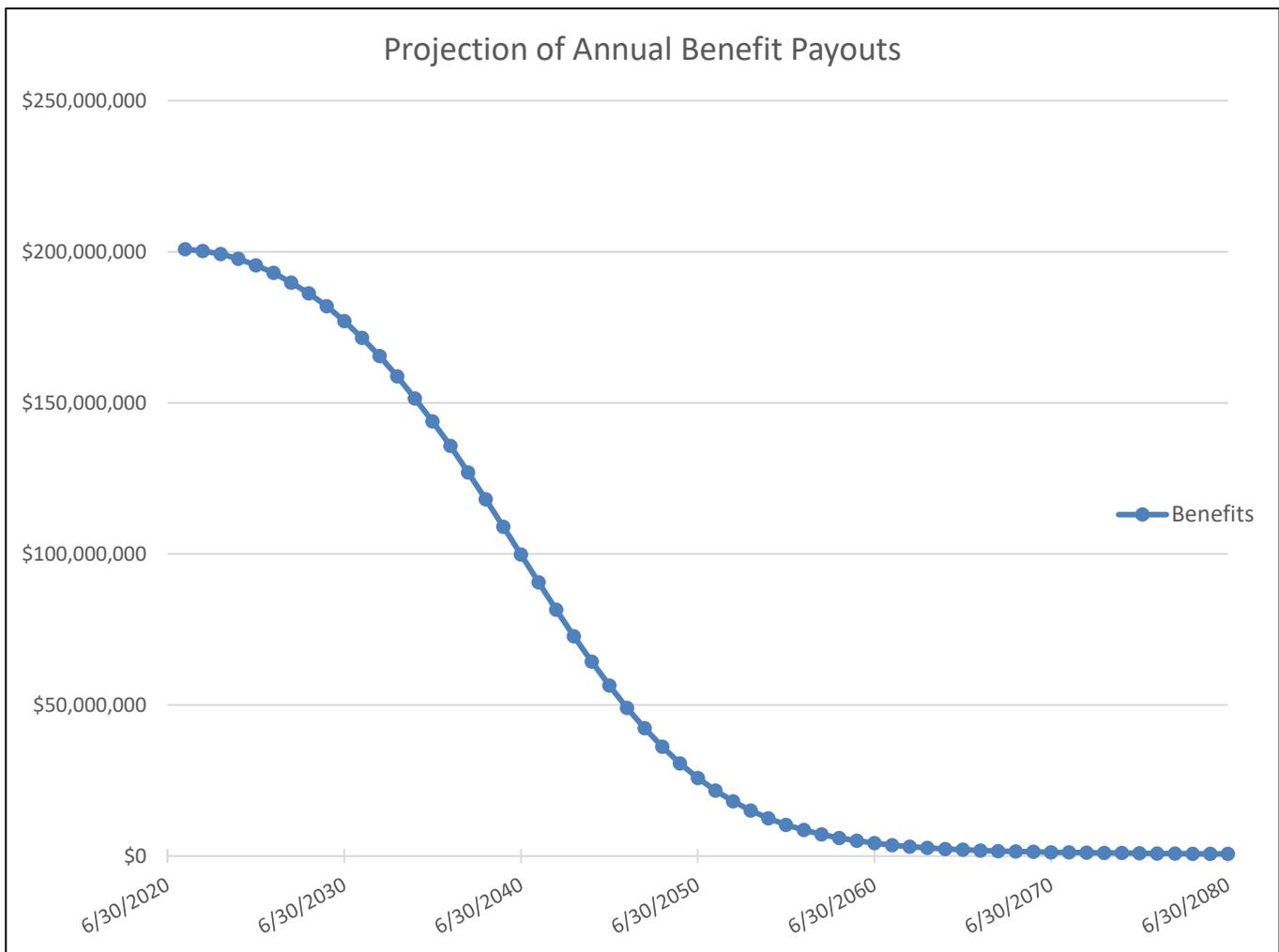
Shown below is a 10-year projection of expected State and member statutory contributions and expected benefit payouts.

Fiscal Years Beginning July 1	State Statutory Contributions ¹	Member Statutory Contributions ¹	Future Benefits Payouts
2022	\$1,673,303	\$1,673,303	\$200,230,820
2023	1,489,097	1,489,097	199,224,160
2024	1,321,195	1,321,195	197,662,663
2025	1,171,315	1,171,315	195,485,689
2026	1,029,748	1,029,748	193,043,774
2027	894,068	894,068	189,812,829
2028	768,516	768,516	186,266,098
2029	655,056	655,056	181,943,230
2030	554,768	554,768	177,033,499
2031	467,784	467,784	171,471,363

(1) Statutory State contributions and statutory member contributions both equal eight percent (8%) of pay.

Projected Benefit Payouts

The graph below shows a projection of future annual benefit payouts from the System. Total projected benefit payments over the remaining life of the plan are \$4.00 billion with projected annual benefit payments declining each year.



Risk Analysis

- 15 Future Investment Return Scenarios
- 15 Discount Rate Sensitivity
- 16 Mortality Rate Sensitivity
- 16 Plan Maturity Measures

Risk Analysis

Future Investment Return Scenarios

Analysis was not performed to determine the effects of various future investment returns on required employer contributions for this plan because the results of such analysis would not have a material impact on the funding of this plan. This is primarily due to the lack of prefunding, which results in a relatively low level of assets.

Discount Rate Sensitivity

The discount rate assumption is calculated as the sum of the assumed real rate of return and the assumed annual price inflation, currently 0.70 percent and 2.30 percent, respectively. Changing either the price inflation assumption or the real rate of return assumption will change the discount rate. The sensitivity of the valuation results to the discount rate assumption depends on which component of the discount rate is changed. Shown below are various valuation results as of June 30, 2021 assuming alternate discount rates by changing the two components independently. Results are shown using the current discount rate of 3.0 percent as well as alternate discount rates of 2.0 percent and 4.0 percent. The rates of 2.0 percent and 4.0 percent were selected since they illustrate the impact of a 1.0 percent increase or decrease to the 3.0 percent assumption. This type of analysis gives the reader a sense of the long-term risk to the FY 2022-23 employer contribution rates.

Sensitivity to the Real Rate of Return Assumption

As of June 30, 2021	1% Lower Real Return Rate	Current Real Return Rate	1% Higher Real Return Rate
Discount Rate	2.0%	3.0%	4.0%
Inflation	2.3%	2.3%	2.3%
Real Rate of Return	(0.3%)	0.7%	1.7%
a) Total Normal Cost	74.58%	58.43%	45.91%
b) Accrued Liability	\$3,080,057,616	\$2,803,229,924	\$2,565,178,211
c) Market Value of Assets	65,882,450	65,882,450	65,882,450
d) Unfunded Liability (Surplus) [(b)-(c)]	3,014,175,166	2,737,347,474	2,499,295,761
e) Funded Status	2.1%	2.4%	2.6%

(1) The -1% Inflation Rate results in the table below is a more realistic scenario than this combination of assumptions, which results in a negative real rate of return.

Sensitivity to the Price Inflation Assumption

As of June 30, 2021	1% Lower Inflation Rate	Current Inflation Rate	1% Higher Inflation Rate
Discount Rate	2.0%	3.0%	4.0%
Inflation	1.3%	2.3%	3.3%
Real Rate of Return	0.7%	0.7%	0.7%
a) Total Normal Cost	58.81%	58.43%	58.05%
b) Accrued Liability	\$2,817,501,408	\$2,803,229,924	\$2,789,135,392
c) Market Value of Assets	65,882,450	65,882,450	65,882,450
d) Unfunded Liability (Surplus) [(b)-(c)]	2,751,618,958	2,737,347,474	2,723,252,942
e) Funded Status	2.3%	2.4%	2.4%

Risk Analysis

Mortality Rate Sensitivity

The following looks at the change in the June 30, 2021 plan costs and funded ratio under two different longevity scenarios, namely assuming rates of mortality are 10 percent lower or 10 percent higher than our current mortality assumptions. This type of analysis highlights the impact on the plan of improving or worsening mortality over the long-term.

As of June 30, 2021	10% Lower Mortality Rates	Current Mortality	10% Higher Mortality Rates
a) Total Normal Cost	60.41%	58.43%	56.66%
b) Accrued Liability	\$2,938,088,155	\$2,803,229,924	\$2,684,582,620
c) Market Value of Assets	65,882,450	65,882,450	65,882,450
d) Unfunded Liability (Surplus) [(b)-(c)]	2,872,205,705	2,737,347,474	2,618,700,170
e) Funded Status	2.2%	2.4%	2.5%

Plan Maturity Measures

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

The Judges' Retirement plan closed to new entrants in 1994 and is a mature pension plan. For a plan that is closed to new entrants and does not prefund the pension benefits, plan maturity measures do not yield results that are very meaningful. For example, eventually there will be no payroll associated with this plan, so measuring contribution volatility with relation to payroll does not provide information consistent with plans that are open to new entrants. Additionally, eventually there will be no actives in this plan, so measuring the ratio of actives to retirees or retired to total accrued liability won't provide results that are consistent with plans open to new entrants. For these reasons, plan maturity measures have been omitted from this report.

Appendices

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

B-1 Appendix B – Summary of Principal Plan Provisions

C-1 Appendix C – Participant Data

D-1 Appendix D – Glossary of Actuarial Terms

Appendix A – Statement of Actuarial Methods and Assumptions

Actuarial Data

As stated in the Actuarial Certification, the data, which serves as the basis of this valuation, has been obtained from the various CalPERS databases. We have reviewed the valuation data and believe that it is reasonable and appropriate in aggregate.

Actuarial Funding Method

The method used to determine the optional funding schedules is the Entry Age Normal actuarial cost method. Under this funding method, projected benefits are determined for all members and the associated liabilities are spread in a manner that produces level annual cost as a percent of pay in each year from the age of hire (entry age) to the assumed retirement age. The cost allocated to the current fiscal year is called the normal cost.

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

The following table provides a brief history of the actuarial cost method.

Valuation Year June 30	Funding Method
2010 to Current	Entry Age Normal
1998 to 2009	Aggregate

Amortization Period

No formal amortization of the unfunded liability is currently in use, since contributions are being made on a pay-as-you-go basis. However, we have included a recommended contribution using an amortization period of 10 years.

Asset Valuation Method

The value of assets equals the market value of the fund.

Actuarial Assumptions

The actuarial assumptions used in the actuarial valuation are shown below.

The demographic assumptions used in the valuation are not expected to produce significant experience gains or losses for the plan. Service retirement and mortality assumptions were changed in this valuation based on an experience study review. The actuary has concluded that the adoption of these assumptions is reasonable for valuation purposes and all assumptions represent an estimate of future experience. More information on the mortality assumption is available in the mortality assumption section of this appendix.

The assumptions for inflation, individual salary increase and overall payroll growth are based on the 2021 experience study performed by CalPERS staff based on the Public Employees' Retirement Fund (PERF) and adopted by the CalPERS Board of Administration in November 2021. The discount rate is primarily based on reduced capital market assumptions provided by external investment consultants and CalPERS investment staff in March 2022. The discount rate (investment return assumption) for this valuation is 3.0 percent and is consistent with the expected 10-year return of a fixed income portfolio from the most recently approved Asset Liability Management process.

Appendix A - Statement of Actuarial Methods and Assumptions

Economic Assumptions

Investment Return: 3.00 percent per annum, compounded annually.

Salary Increases: 2.80 percent per annum, compounded annually.

Inflation: 2.30 percent per annum, compounded annually.

Cost-of-Living Adjustment: Benefits are fully adjusted for increases in wages for the active judges of the same court from which the member retired. Therefore, we assume that benefits will increase by 2.80 percent per annum compounded annually.

Extended Service Incentive Program (ESIP) Interest Crediting Rate: Based on the rate for 30-year U.S. Treasuries, or their equivalent, for the month of June of the valuation year. This rate for June 2021 equals 2.16 percent (a change from 1.49 percent as of June 2020).

Investment Return (Interest)

3.00 percent compounded per year, net of expenses.

The following table provides a brief history of the Investment Return Assumption.

Time Frame	Investment Return Assumption
7/1/2017 - Current	3.00%
7/1/2016 – 6/30/2017	3.25%
7/1/2011 – 6/30/2016	4.25%
7/1/2010 – 6/30/2011	4.50%
7/1/2003 – 6/30/2010	7.00%
7/1/1998 – 6/30/2003	7.50%

Individual Salary Increases

2.80 percent compounded per year.

Inflation

2.30 percent compounded per year. The current inflation assumption is based on the most recent CalPERS Experience Study adopted by the CalPERS Board in November 2021. The following table provides a brief history of the Inflation Return Assumption.

Time Frame	Inflation Assumption
7/1/2021 - Current	2.30%
7/1/2017 – 6/30/2020	2.50%
7/1/2011 - 6/30/2017	2.75%
7/1/2003 - 6/30/2010	3.00%
7/1/1998 – 7/1/2003	3.50%

Appendix A - Statement of Actuarial Methods and Assumptions

Demographic Assumptions

The following decrements apply to all members.

Probability of Termination and Disability

No pre-retirement termination or disability rates were assumed.

Service Retirement

The table below illustrates the new assumptions used in the valuation to determine the probability of a judge retiring out of the system.

Age	Rate
60	0.3
61-64	0.1
65-67	0.2
68-79	0.1
80 - 89	0.2
> 89	1.0

Mortality: The mortality assumptions are based on mortality rates resulting from the most recent CalPERS Experience Study adopted by the CalPERS Board in November 2021. For purposes of the mortality rates, the rates incorporate Generational Mortality to capture on-going mortality improvement using 80 percent of Scale MP 2020 published by the Society of Actuaries. Generational mortality explicitly assumes that members born more recently will live longer than the members born before them thereby capturing the mortality improvement seen in the past and expected continued improvement. For more details, please refer to the 2021 experience study report that can be found on the CalPERS website. Rates vary by age and gender are shown in the tables below. These tables only contain a sample of the 2017 base table rates for illustrative purposes.

Pre-Retirement Mortality

Attained Age	Male	Female
35	0.00058	0.00029
40	0.00075	0.00039
45	0.00093	0.00054
50	0.00134	0.00081
55	0.00198	0.00123
60	0.00287	0.00179
65	0.00403	0.00250
70	0.00594	0.00404
75	0.00933	0.00688
80	0.01515	0.01149

Appendix A - Statement of Actuarial Methods and Assumptions

Demographic Assumptions (continued)

Post-Retirement Mortality

Attained Age	Standard		Disability	
	Male	Female	Male	Female
35	0.00058	0.00029	0.00644	0.00504
40	0.00075	0.00039	0.00807	0.00730
45	0.00093	0.00054	0.01114	0.01019
50	0.00266	0.00199	0.01701	0.01439
55	0.00390	0.00325	0.02210	0.01734
60	0.00578	0.00455	0.02708	0.01962
65	0.00857	0.00612	0.03334	0.02276
70	0.01333	0.00996	0.04001	0.02910
75	0.02391	0.01783	0.05376	0.04160
80	0.04371	0.03403	0.07936	0.06111
85	0.08274	0.06166	0.11561	0.09385
90	0.14539	0.11086	0.16608	0.14396
95	0.24664	0.20364	0.24664	0.20364
100	0.36198	0.31582	0.36198	0.31582
105	0.52229	0.44679	0.52229	0.44679
110	1.00000	1.00000	1.00000	1.00000

Marital Status

90 percent of non-retired members are assumed to be married.

Age of Spouse

Female spouses are assumed to be four years younger than male spouses. For retired members receiving some form of joint and survivor annuity, the spouse's actual date of birth was used in the valuation if such information was furnished. Otherwise, wives were assumed to be four years younger than their husbands.

Form of Payment

For retired members for whom no optional form of payment was elected, the assumed form of payment was:

1. 50 percent joint and survivor if beneficiary information was provided, or
2. a life annuity if no beneficiary information was provided.

Internal Revenue Code Section 415

The limitations on benefits imposed by Internal Revenue Code Section 415 were taken into account in this valuation.

Internal Revenue Code Section 401(a)(17)

The limitations on compensation imposed by Internal Revenue Code Section 401(a) (17) were taken into account in this valuation.

Appendix B – Summary of Principal Plan Provisions

Eligibility of Membership

All Supreme Court, District Court of Appeal, Superior Court, and Municipal Court Judges and Justices were immediately eligible for membership, if elected or appointed before November 9, 1994.

Membership Contributions

8 percent of pay. Withdrawal of contributions results in forfeiture of all other benefits.

Service Retirement

Eligibility

To qualify for a Service Retirement, you must be at least age 60. The table below illustrates the percent of active judicial salary that the unmodified allowance is based upon given age and years of service.

Retirement Age	Minimum Required Years of Service	Percent of Active Judicial Salary
60+	20	75 percent
66	18	65 percent
67	16	65 percent
68	14	65 percent
69	12	65 percent
70+	10	65 percent

* At least 5 years of service must immediately precede retirement.

Benefit

Members retiring after age 60 with at least 20 years of service receive 75 percent of pay of the last judicial office held. With less than 20 years of service, the benefit percentage is 65 percent.

Form of Payment

50 percent of the retirement allowance will automatically be continued to the spouse upon the death of the retiree, without a reduction in the retiree's allowance. For post-January 1, 1980 judges, there is a one-year marriage requirement at benefit commencement. The remaining 50 percent, often referred to as the option portion, is paid to the retiree as an annuity for as long as he or she is alive. The retiree may choose to provide for some, or all, of the option portion to be paid to any designated beneficiary after the retiree's death, paid for by a reduction to the option portion of the allowance.

Termination Benefit

Eligibility

Completion of five years of service.

Benefit

3.75 percent of pay of last judicial office held had he or she remained continuously in service as a judge of a court of record multiplied by years of service to a maximum of 20 years. Benefit percentage is reduced by 0.25 percent for each year of service less than 12 years. Benefit begins at the earliest age that member would have been eligible for service retirement had he remained in service; and, the member is at least age 63, or age 60 with 20 years of service.

Appendix B - Summary of Principal Plan Provisions

Termination Benefit (continued)

Minimum benefit for pre-January 1, 1974 judges: 5 percent of pay of last judicial office held multiplied by years of service, to a maximum of 8 years. Benefit is payable at age 65.

Form of Payment: 50 percent contingent annuity with spouse as contingent annuitant. Minimum benefit is paid as life annuity only.

Disability Retirement

Eligibility

Four years of service (no service requirement is necessary for a work-related disability), two years of service for pre-January 1, 1989 judges. No service requirement for pre-January 1, 1980 judges.

Benefit

With 20 years of service, 75 percent of pay of last judicial office held, payable immediately. With less than 20 years of service, the benefit is 65 percent of pay.

Pre-Retirement Death Benefits

Spouses Benefit

25 percent of pay of last judicial office held, payable for spouse's lifetime if not eligible for retirement. If a member dies after being eligible to retire, the surviving spouse will receive a monthly allowance equal to 50 percent of the monthly allowance the member would have received, had they retired, for life.

Contributory Benefit

After 10 years of service, spouse or minor child receives 1.625 percent of pay of last judicial office held multiplied by years of service, to a maximum of 20 years. Spouse's benefit is payable for life. Child's benefit ceases at age 18, or at age 22 if a full-time student. Requires \$2 monthly contribution.

Benefit with No Spouse or Children

Refund of accumulated member contributions plus one month's pay multiplied by years of service, to a maximum of 6 years.

Post Retirement Adjustments

The retirement allowances of retired judges, beneficiaries and individuals receiving benefits under domestic relation orders will increase proportionately according to increases in judicial salary increases for the judicial office last held by the member.

Appendix B - Summary of Principal Plan Provisions

Extended Service Incentive Program (ESIP)

Eligibility

An active member shall automatically participate in the program if he/she has 20 or more years of creditable service and has attained the age of 60 or more on or after January 1, 2001.

Vesting

36 months of creditable service after the later of January 1, 2001 or the date the judge first becomes eligible to participate in the program. However, the 36 months of creditable service requirement is waived in the event of the member's death, disability, or because they were unsuccessful in their efforts to be reelected or retained in office.

Benefit

For the first 60 months of participation in the program, 20 percent of the judge's monthly salaries and 8 percent of the judge's monthly salaries for the 61st to the 120th months of participation plus interest based on market yield on 30-year constant maturity U.S. Treasury Bonds shall be credited to the judge. The benefit shall be paid in the form of a single, lump sum payment.

Appendix C – Participant Data

Summary of Valuation Data

The table below illustrates counts of records processed by this valuation and the previous year valuation.

	June 30, 2020	June 30, 2021
1) Active Members		
a) Counts	130	110
b) Average Attained Age	73.44	73.94
c) Average Entry Age to Rate Plan	40.28	39.54
d) Average Years of Service	31.65	32.70
e) Average Annual Covered Pay	\$224,132	\$225,020
f) Annual Covered Payroll	29,137,115	24,752,164
g) Projected Annual Payroll	20,807,596	20,916,289
h) Present Value of Future Payroll	108,257,943	146,475,813
2) Transferred and Vested Termination Members and QDRO's		
a) Counts	2	2
3) Receiving Payments		
a) Counts	1,730	1,697
b) Average Attained Age	79.38	79.84
c) Average Monthly Benefits	9,818	9,774
4) Active to Retired Ratio [(1a) / (3)]	0.08	0.06

Reconciliation of Participants

The table below illustrates a reconciliation of the participant data over the course of the valuation year. It identifies numerically who entered the plan, who left the plan and who remained in the plan in the same status as on the previous valuation date or who moved to a new status over the course of the year.

Reconciliation of Participants for the Fiscal Year Ending June 30, 2021.

	Actives Judges	Vested Terminated Judges	Retired Judges	Beneficiaries	QDRO ¹ Receiving Benefits	QDRO ¹ Not Receiving Benefits	Total Participants
As of June 30, 2020	130	1	1,126	530	74	1	1,862
New Entrants	-	-	-	-	-	-	-
Rehires	1	-	(1)	-	-	-	-
Disability Retirements	-	-	-	-	-	-	-
Service Retirements	(19)	-	19	-	-	-	-
Vested Terminations	-	-	-	-	-	-	-
Termination with Refund	-	-	-	-	-	-	-
Died, With Beneficiaries' Benefit Payable	(2)	-	(35)	40	-	-	3
Divorce Settlements	-	-	-	-	-	-	-
Died, without Beneficiary; and Other Terminations	-	-	(22)	(36)	-	-	(58)
Data Corrections ²	-	-	-	1	1	-	2
As of June 30, 2021	110	1	1,087	535	75	1	1,809

(1) Qualified Domestic Relations Order

(2) Data Corrections due to a change in QDRO grouping. Pre-Retirement Community Property Splits will now be valued with the corresponding Retired Judge.

Appendix C - Participant Data

Distribution of Active Members

The following table displays the number of active members and valuation payroll by age and service used in the June 30, 2021 valuation.

Attained Age	Years of Service at Valuation Date ¹							Total Count	Valuation Payroll
	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30+		
15 - 19	0	0	0	0	0	0	0	0	\$0
20 - 24	-	-	-	-	-	-	-	-	-
25 - 29	-	-	-	-	-	-	-	-	-
30 - 34	-	-	-	-	-	-	-	-	-
35 - 39	-	-	-	-	-	-	-	-	-
40 - 44	-	-	-	-	-	-	-	-	-
45 - 49	-	-	-	-	-	-	-	-	-
50 - 54	-	-	-	-	-	-	-	-	-
55 - 59	-	-	-	-	-	-	-	-	-
60 - 64	-	-	-	1	-	2	1	4	918,498
65 - 69	-	-	-	1	3	11	11	26	5,781,859
70 - 74	-	-	-	2	1	11	27	41	9,217,713
75 - 79	-	-	-	-	-	2	18	20	4,508,859
80 - 84	-	-	-	1	-	1	12	14	3,221,253
85+	-	-	-	-	-	-	5	5	1,103,982
Total	-	-	-	5	4	27	74	110	\$24,752,164

(1)Years of Service at Valuation Date may include service related to a Qualified Domestic Relations Order.

Distribution of Average Annual Salaries

The following table displays the average annual payroll of active participants by age and service used in the June 30, 2021 valuation.

Attained Age	Years of Service at Valuation Date ¹							Average Valuation Payroll
	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30+	
15 - 19	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
20 - 24	-	-	-	-	-	-	-	-
25 - 29	-	-	-	-	-	-	-	-
30 - 34	-	-	-	-	-	-	-	-
35 - 39	-	-	-	-	-	-	-	-
40 - 44	-	-	-	-	-	-	-	-
45 - 49	-	-	-	-	-	-	-	-
50 - 54	-	-	-	-	-	-	-	-
55 - 59	-	-	-	-	-	-	-	-
60 - 64	-	-	-	214,601	-	214,601	274,695	229,625
65 - 69	-	-	-	261,949	224,927	214,601	225,865	222,379
70 - 74	-	-	-	230,090	214,601	220,233	226,680	224,822
75 - 79	-	-	-	-	-	214,601	226,648	225,443
80 - 84	-	-	-	245,578	-	214,601	230,090	230,090
85+	-	-	-	-	-	-	220,796	220,796
Average	\$0	\$0	\$0	\$236,461	\$222,345	\$216,896	\$227,355	\$225,020

(1)Years of Service at Valuation Date may include service related to a Qualified Domestic Relations Order.

Appendix C - Participant Data

Distribution of Terminated Vested Members & QDRO's Not Receiving Benefits

The following table displays the number of terminated vested members and QDRO's not receiving benefits by age and service used in the June 30, 2021 valuation

Attained Age	Years of Service at Valuation Date							Total Count
	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30+	
15 - 19	0	0	0	0	0	0	0	0
20 - 24	-	-	-	-	-	-	-	-
25 - 29	-	-	-	-	-	-	-	-
30 - 34	-	-	-	-	-	-	-	-
35 - 39	-	-	-	-	-	-	-	-
40 - 44	-	-	-	-	-	-	-	-
45 - 49	-	-	-	-	-	-	-	-
50 - 54	-	-	-	-	-	-	-	-
55 - 59	1	-	-	-	-	1	-	2
60 - 64	-	-	-	-	-	-	-	-
65 - 69	-	-	-	-	-	-	-	-
70 - 74	-	-	-	-	-	-	-	-
75 - 79	-	-	-	-	-	-	-	-
80 - 84	-	-	-	-	-	-	-	-
85+	-	-	-	-	-	-	-	-
Total	1	-	-	-	-	1	-	2

Distribution of Retired Judges, Beneficiaries & QDRO's Receiving Benefits

The following table displays the distribution of retired judges, beneficiaries & QDRO's receiving benefits by age used in the June 30, 2021 valuation.

Attained Age	Service Retirement	Non-Industrial Disability	Industrial Disability	Beneficiaries & QDRO	Total Count of Participants Receiving Benefits
Under 30	0	0	0	0	0
30 - 34	-	-	-	-	-
35 - 39	-	-	-	1	1
40 - 44	-	-	-	-	-
45 - 49	-	-	-	1	1
50 - 54	-	-	-	7	7
55 - 59	-	-	-	5	5
60 - 64	6	1	-	20	27
65 - 69	86	2	-	40	128
70 - 74	263	7	-	71	341
75 - 79	271	7	-	118	396
80 - 84	218	6	-	114	338
85+	215	5	-	233	453
Total	1,059	28	-	610	1,697

Appendix C - Participant Data

Distribution Annual Benefits for Retired Judges, Beneficiaries & QDRO's

The following table displays the distribution of annual benefits for retirees, beneficiaries & QDRO's by age used in the June 30, 2021 valuation.

Attained Age	Service Retirement	Non-Industrial Disability	Industrial Disability	Beneficiaries & QDRO	Annual Benefits Paid
Under 30	\$0	\$0	\$0	\$0	\$0
30 - 34	-	-	-	-	-
35 - 39	-	-	-	26,825	26,825
40 - 44	-	-	-	-	-
45 - 49	-	-	-	26,825	26,825
50 - 54	-	-	-	317,396	317,396
55 - 59	-	-	-	295,594	295,594
60 - 64	935,154	139,491	-	1,295,492	2,370,137
65 - 69	12,416,824	278,387	-	2,886,738	15,581,949
70 - 74	37,740,878	1,010,832	-	5,788,552	44,540,262
75 - 79	38,266,625	947,940	-	9,463,386	48,677,951
80 - 84	30,941,710	857,079	-	9,263,643	41,062,433
85+	30,700,599	718,913	-	17,363,822	48,783,334
Total¹	151,001,790	3,952,642	-	46,728,274	201,682,706
Average	\$142,589	\$141,166	\$0	\$76,604	\$118,847

(1) Total does not include ESIP benefit payments.

Appendix D – Glossary of Actuarial Terms

Accrued Liability (*Actuarial Accrued Liability*)

The portion of the Present Value of Benefits allocated to prior years. Based on CalPERS funding policies, the accrued liability is the target level of assets on any valuation date.

Actuarial Assumptions

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

Actuarial Methods

Procedures employed by actuaries to achieve certain funding goals of a pension plan. Actuarial methods include an actuarial cost method, an amortization policy, and an asset valuation method.

Actuarial Valuation

The determination as of a valuation date of the Normal Cost, Accrued Liability, and related actuarial present values for a pension plan. These valuations are performed annually or when an employer is contemplating a change in plan provisions.

Amortization Bases

Separate payment schedules for different portions of the Unfunded Accrued Liability (UAL). The total UAL of a rate plan can be segregated by cause. The impact of such individual causes on the UAL are quantified at the time of their occurrence, resulting in new amortization bases. Each base is separately amortized and paid for over a specific period of time. Generally, in an actuarial valuation, the separate bases consist of changes in UAL due to contract amendments, actuarial assumption changes, method changes, and/or gains and losses.

Amortization Period

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

Discount Rate

This is the rate used to discount the expected future benefit payments to the valuation date to determine the Projected Value of Benefits. The discount rate is based on the assumed long-term rate of return on plan assets, net of investment and administrative expenses. This rate is called the "actuarial interest rate" in Section 20014 of the California Public Employees' Retirement Law.

Entry Age

The earliest age at which a plan member begins to accrue benefits under a defined benefit pension plan. In most cases, this is the age of the member on their date of hire.

Entry Age Actuarial Cost Method

An actuarial cost method designed to fund a member's total plan benefit evenly over the course of his or her career. This method yields a total normal cost rate, expressed as a percentage of payroll, which is designed to remain level throughout the member's career.

Fresh Start

A Fresh Start is when multiple amortization bases are combined into a single base and amortized over a new Amortization Period.

Funded Ratio

Defined as the Market Value of Assets divided by the Accrued Liability. It is a measure of how well funded a rate plan is. A ratio greater than 100% means the rate plan has more assets than the target established by CalPERS funding policies on the valuation date and the employer need only contribute the Normal Cost. A ratio less than 100% means assets are less than the funding target and contributions in addition to Normal Cost are required.

GASB 68

Statement No. 68 of the Governmental Accounting Standards Board. The accounting standard governing a state or local governmental employer's accounting and financial reporting for pensions.

Appendix D – Glossary of Actuarial Terms

Normal Cost

The portion of the Present Value of Benefits allocated to the upcoming fiscal year for active employees. The normal cost plus the required amortization of the UAL, if any, make up the required contributions.

Pension Actuary

A business professional proficient in mathematics and statistics who performs the calculations necessary to properly fund a pension plan and allow the plan sponsor to disclose its liabilities. A pension actuary must satisfy the Qualification Standards for Actuaries Issuing Statements of Actuarial Opinion in the United States with regard to pensions.

PEPRA

The California Public Employees' Pension Reform Act of 2013

Present Value of Benefits (PVB)

The total dollars needed as of the valuation date to fund all benefits earned in the past or expected to be earned in the future for *current* members.

Unfunded Accrued Liability (UAL)

The Accrued Liability minus the Market Value of Assets. If the UAL for a rate plan is positive, the employer is required to make contributions in excess of the Normal Cost.

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

Available online at [CalPERS Website](#)

