Judges' Retirement System
Actuarial Valuation

As of June 30, 2018

CalPERS

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Actuarial Certification

February 2019

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, 2018 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.

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Highlights and Executive Summary

Highlights and Executive Summary

Introduction

This is the actuarial valuation report as of June 30, 2018 for the Judges' Retirement System. This actuarial valuation is used to recommend the Fiscal Year 2019-20 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, 2018 in order to:

- Set forth the assets, accrued liabilities and funded status of the System as of June 30, 2018;
- Provide expected benefit payouts and funding alternatives;
- Provide actuarial information as of June 30, 2018, 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.

California Actuarial Advisory Panel Recommendations

This report includes all the basic disclosure elements as described in the *Model Disclosure Elements for Actuarial Valuation Reports* recommended in 2011 by the California Actuarial Advisory Panel (CAAP) that would be applicable to a pay-as-you-go plan.

- A "Sensitivity Analysis," showing the impact on current valuation results using a 1 percent plus or minus change in the discount rate and inflation rate.
- 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 2017. 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 his/her 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 2017-18	Fiscal Year 2018-19
Estimated Employer Pay-as-You-Go Cost (PAYG)	$207,313,847	210,045,751

The average expected remaining service for current actives is approximately 4.0 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 4 years may not be feasible 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.

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 11.1. 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

	Fiscal Year 2019-20			
	Pay-as-You-Go	Funding, 15-Year Amortization	Funding, 10-Year Amortization	Funding, 5-Year Amortization
Total Normal Cost	N/A	21,358,907	21,358,907	21,358,907
Less Estimated Employee Contributions	N/A	(2,083,532)	(2,083,532)	(2,083,532)
Unfunded Accrued Liability Payment	N/A	282,655,218	395,573,201	736,798,120
Total	210,045,751	301,930,593	414,848,576	756,073,495
Expected Total Payout over the Life of the Plan (Employer and Employee)	4,852,986,746	4,333,559,564	4,049,463,307	3,777,721,892

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% 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, 2018.

	June 30, 2017	June 30, 2018
1) Present Value of Projected Benefits	$3,416,716,154	$3,411,517,939
2) Entry Age Normal Accrued Liability	3,315,731,052	3,320,530,020
3) Market Value of Assets (MVA)	48,274,516	44,491,530
4) Unfunded Accrued Liability [(2) - (3)]	$3,267,456,536	$3,276,038,490
5) Funded Ratio [(3) / (2)]	1.5%	1.3%

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

CalPERS has implemented a new actuarial valuation software system for the June 30, 2018 valuation. With this new system we have refined and improved some of our calculation methodology. Any difference in liability between the old software and new software calculations is captured as a method change line item.

A complete description of the actuarial methods and assumptions used in the June 30, 2018 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 fiscal years 2008-09, 2009-10, 2010-11 and 2013-14 plus 10 percent interest per annum for each year that the judicial salaries were not increased within those fiscal years. The increases and amounts owed have not yet been calculated. We anticipate the impact of this lawsuit to be reflected in the June 30, 2019 valuation.

Assets

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, 2018.

	Market Value
Beginning Balance as of June 30, 2017.	48,274,516
Prior Period Adjustment	-
Adjusted Beginning Balance as of June 30, 2017.	48,274,516
Contributions (Employer plus Employee)	8,099,923
Other Income	2,533,066
Transfer from General Fund	194,202,000
Investment Earnings Credit	848,370
Less Other Investment Expenses	(2,544)
Contribution Refund	(8,139)
Administrative Costs	(1,641,269)
Benefit Payments	(207,814,393)
Ending Balance as of June 30, 2018.	44,491,530

Asset Allocation

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

	June 30, 2018
Cash	5,748
Investments at Market Value	
Investment in Short Term Domestic Securities	42,033,474
Accounts Receivable	
Member, Agency, State, School and Other	2,420,773
Due from PERF	211,860
Accrued Interest Receivable	139,504
Subtotal of Accounts Receivable	2,772,137
Accounts Payable	
Retirement Benefits in Process of Payment	(120)
Due to General Fund	(26,742)
Due to Other Funds	(142,381)
Other Program Liabilities	(150,586)
Subtotal of Accounts Payable	(319,829)
Fund Balance at Market Value on 6/30/2018.	44,491,530

Liabilities and Employer Contributions

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, 2017	June 30, 2018
Members Included in the Valuation		
Active Members	192	170
Deferred Vested Terminated Members & QDRO's	8	4
Receiving Payments	1,861	1,796
Total	2,061	1,970
Payroll		
Covered Annual Payroll	$38,330,347	$35,335,347
Projected Covered Annual Payroll	35,500,875	31,964,016
Average Covered Annual Payroll [(2a) / (1a)]	$199,637	$207,855
Age and Service for Actives		
Average Attained Age for Actives	70.4	71.3
Average Service for Actives	29.69	29.61
Average Future Service for Actives	4.19	3.96
Present Value of Benefits at Valuation Date		
Active Members	$501,862,438	$456,464,524
Deferred Vested Terminated Members & QDRO's	10,689,041	6,343,607
Receiving Benefits	2,904,164,675	2,948,709,808
Total	$3,416,716,154	$3,411,517,939
Present Value of Future Normal Costs at Valuation Date		
Member Contributions	$12,909,443	$11,221,653
Employer Normal Costs	88,075,659	79,766,266
Unfunded Accrued Actuarial Liability		
Accrued Actuarial Liability		
Active Members	$400,877,336	$365,476,605
Deferred Vested Terminated Members & QDRO's	10,689,041	6,343,607
Receiving Benefits	2,904,164,675	2,948,709,808
Total	$3,315,731,052	$3,320,530,020
Assets (Market Value)	$48,274,516	44,491,530
Unfunded Actuarial Liability [(6 a iv) – (6b)]	$3,267,456,536	$3,276,038,490
Funded Ratio [(6b) / (6 a iv)]	1.5%	1.3%
Normal Cost	$22,244,349	$20,736,803
Employer Contributions		
Recommended 10-Year Funding		
Normal Cost [(7) * (1 + Interest Rate)]	$22,911,679	21,358,907
Estimated Employee Contributions	2,338,924	2,083,532
Payment on Unfunded Liability	394,536,953	$395,573,201
Total [(8 a i) – (8 a ii) + (8 a iii)]	$415,109,708	$414,848,576
Estimated Pay-as-You-Go Costs (PAYG)		
Estimated Benefit Payments	$209,652,771	$212,129,283
Estimated Employee Contributions	2,338,924	2,083,532
Estimated Employer Contributions [(10 b i) – (10 b ii)]	$207,313,847	$210,045,751

Liabilities and Employer Contributions (continued)

(Gain)/Loss Analysis

Shown below is an analysis of the (Gain)/Loss for the fiscal year ending on the valuation date. The Gain or Loss is shown separately for contributions, assets, and liabilities.

1) Total (Gain)/Loss for the Year	
a) Unfunded Accrued Liability (UAL) as of 6/30/2017	$3,267,456,536
b) Expected Normal Cost During FY 2017-18	22,244,349
c) Contributions During FY 2017-18	202,301,923
d) Interest Through FY 2017-18	95,678,922
e) Expected UAL Before All Other Changes [1a + 1b - 1c + 1d]	$3,183,077,884
f) Change Due to Revised Actuarial Methods	5,704,909
g) Change due to New Actuarial Assumptions	0
h) Expected UAL After All Changes [1e + 1f + 1g]	$3,188,782,793
i) Actual Unfunded Accrued Liability as of 6/30/2018	$3,276,038,490
j) Total (Gain)/Loss for FY 2017-18 [1i – 1h]	$87,255,698
2) Asset (Gain)/Loss for the Year	
a) Market Value of Assets as of 6/30/2017	$48,274,516
b) Contributions Received	202,301,923
c) Other Income	2,533,066
d) Benefits, Refunds Paid and Administrative Costs	(209,466,346)
e) Expected Interest [0.0300 x 2a + ((1.0300)$^{1/2}$ – 1) x (2b + 2c)]	1,379,278
f) Expected Assets as of 6/30/2017 [2a + 2b + 2c + 2d]	$45,022,438
g) Actual Market Value of Assets as of 6/30/2018	$44,491,530
h) Asset (Gain)/Loss [2e – 2f]	$530,908
3) Liability (Gain)/Loss for the Year	
a) Total (Gain)/Loss (1j)	$87,255,698
b) Asset (Gain)/Loss (2g)	530,908
c) Liability (Gain)/Loss [3a – 3b]	$86,724,790

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 Cost (PAYG).

Valuation Date	Entry Age Normal Accrued Liability	Market Value of Assets (MVA)	Unfunded Accrued Liability	Funded Ration (MVA)	Payroll	PAYG
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
6/30/11	3,296,537,803	54,383,026	3,242,154,777	1.6%	75,919,674	212,005,561
6/30/10	3,429,380,904	63,828,344	3,365,552,560	1.9%	85,947,377	210,566,972
6/30/09	3,582,992,463	41,390,491	3,541,601,972	1.2%	96,648,907	206,226,920

Projections of Contributions & 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.

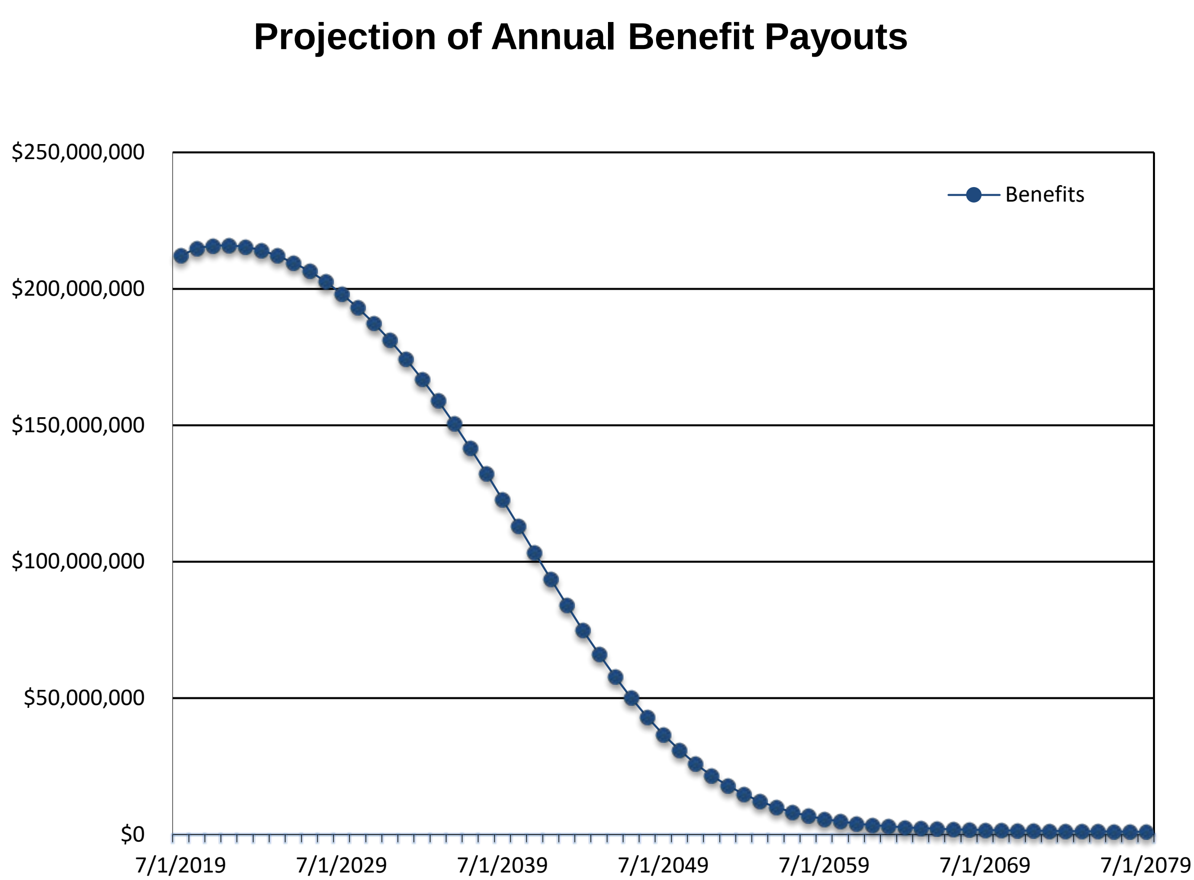
Fiscal Years Beginning July 1	State Statutory Contributions[1]	Member Statutory Contributions[1]	Future Benefits Payouts
2019	$2,083,532	$2,083,532	$212,119,607
2020	1,671,856	1,671,856	214,812,129
2021	1,347,955	1,347,955	215,770,148
2022	1,080,925	1,080,925	215,925,160
2023	859,939	859,939	215,411,214
2024	682,561	682,561	214,191,681
2025	540,662	540,662	212,217,687
2026	423,782	423,782	209,628,732
2027	327,254	327,254	206,535,281
2028	250,961	250,961	202,684,138

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

Graph of Projected Benefit Payouts

The graph below shows a projection of future annual benefit payouts from the System. Total benefit payments from the System are projected to decline from a peak of $216 million during fiscal year 2022-2023. Total projected benefit payments over the remaining life of the plan are $4.85 billion.

Annual Benefit Payouts



Risk Analysis

Risk Analysis

Discount Rate Sensitivity

The following analysis looks at the fiscal year 2019-20 employer contribution rates under two different discount rate scenarios. Shown below are the employer contribution rates assuming discount rates that are 1 percent lower and 1 percent higher than the current valuation discount rate.

This type of analysis gives the reader a sense of the long-term risk to the employer contribution rates.

As of June 30, 2018	Accrued Liability	Unfunded Accrued Liability	Funded Status
2.00% Discount Rate (-1%)	$3,683,581,878	$3,639,090,348	1.22%
3.00% Return (Assumed Rate)	$3,320,530,020	$3,276,038,490	1.36%
4.00% Discount Rate (+1%)	$3,012,887,569	$3,012,887,569	1.50%

Mortality Rate Sensitivity

The following looks at the change in the June 30, 2018 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 adopted in 2017. This type of analysis highlights the impact on the plan of improving or worsening mortality over the long-term.

As of June 30, 2018	10% Lower Mortality Rates	Current Mortality Rates	10% Higher Mortality Rates
a) Accrued Liability	$3,468,525,791	$3,320,530,020	$3,190,279,049
b) Market Value of Assets	$44,491,530	$44,491,530	$44,491,530
c) Unfunded Liability (Surplus) [(a)-(b)]	$3,424,034,261	$3,276,038,490	$3,145,787,519
d) Funded Ratio	1.30%	1.34%	1.41%

A 10 percent increase in assumed mortality rates over the long-term would result in a 4.5 percent decrease in accrued liability, while a 10 percent decrease in assumed mortality rates would result in a 3.9 percent increase in accrued liability.

Inflation Rate Sensitivity

The following analysis looks at the change in the June 30, 2018 plan costs and funded ratio under two different inflation rate scenarios, namely assuming the liability inflation rate is 1 percent lower or 1 percent higher than the current valuation inflation rate assumption of 2.50%. This type of analysis highlights the impact on the plan of increased or decreased inflation of active salaries and retiree COLAs over the long-term.

As of June 30, 2018	-1% Inflation Rate	Current Inflation Rate	+1% Inflation Rate
a) Accrued Liability	$3,024,444,034	$3,320,530,020	$3,661,885,120
b) Market Value of Assets	$44,491,530	$44,491,530	$44,491,530
c) Unfunded Liability (Surplus) [(a)-(b)]	$2,979,952,504	$3,276,038,490	$3,617,393,590
d) Funded Ratio	1.49%	1.36%	1.23%

A decrease of 1 percent in the liability inflation rate (2.50 percent to 1.50 percent) reduces the accrued liability by 8.9 percent. However, a 1 percent increase in the liability inflation rate (2.50 percent to 3.50 percent) increases the accrued liability by 10.3 percent.

Risk Analysis

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. One way to look at the maturity level of CalPERS and its plans is to look at the ratio of a plan's retiree liability to its total liability. A pension plan in its infancy will have a very low ratio of retiree liability to total liability. As the plan matures, the ratio starts increasing. A mature plan will often have a ratio above 60-65 percent. For both CalPERS and other retirement systems in the United States, these ratios have been steadily increasing in recent years. The Judges Retirement plan is very mature and closed to new entrants in 1994.

Ratio of Retiree Accrued Liabilities to Total Accrued Liabilities	As of June 30, 2017	As of June 30,2018
1. Retiree Accrued Liability	$2,904,164,675	$2,948,709,808
2. Total Accrued Liability	$3,315,731,052	$3,320,530,020
3. Ratio of Retiree AL to Total AL [(1) / (2)]	87.6%	88.8 %

Appendices

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 was the Entry Age Normal actuarial cost method.

Under this funding method the actuarial present value of projected pension benefits for members and beneficiaries are determined as of the valuation date using the actuarial assumptions set forth below.

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, for active members beyond the assumed retirement age, 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 excess of the total actuarial accrued liability over the value of plan assets is called the unfunded actuarial accrued liability. Funding requirements are determined by adding the normal cost and an amortization of the unfunded liability over the average remaining service for current active members.

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 June 30, 2018 actuarial valuation are shown below.

Economic Assumptions

Investment Return: 3.00 percent per annum, compounded annually.

Salary Increases: 2.75 percent per annum, compounded annually.

Inflation: 2.50 percent per annum, compounded annually.

Appendix A - Statement of Actuarial Methods and Assumptions

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 2.75 percent per annum compounded annually.

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 2018 equals 3.05 percent (a change from 2.80 percent as of June 2017).

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
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

2.75 percent compounded per year.

Inflation

2.50 percent compounded per year. The current inflation assumption is based on the most recent CalPERS Experience Study adopted by the CalPERS Board in December 2017. The following table provides a brief history of the Inflation Return Assumption.

Time Frame	Inflation
7/1/2017 - Current	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.

Probability of Service Retirement

Age	Rate	Age	Rate
60	0.2	68	0.2
61	0.2	69	0.3
62	0.2	70	0.1
63	0.2	71	0.1
64	0.2	72 - 79	0.2
65	0.2	80 - 84	0.3
66	0.2	85 - 89	0.5
67	0.2	> 89	1.0

Mortality: Pre-Retirement and Post-Retirement mortality rates include 15 years of projected on-going mortality improvement using 90 percent of Scale MP 2016 published by the Society of Actuaries. For more details, please refer to the experience study report that can be found on the CalPERS website.

Sample rates by age are shown in the table below.

Pre-Retirement Morality

Attained Age	Male	Female
35	0.00049	0.00027
40	0.00064	0.00037
45	0.00080	0.00054
50	0.00116	0.00079
55	0.00172	0.00120
60	0.00255	0.00166
65	0.00363	0.00233
70	0.00623	0.00388
75	0.01057	0.00623
80	0.01659	0.00939

Appendix A - Statement of Actuarial Methods and Assumptions

Demographic Assumptions (continued)

Sample rates by age are shown in the table below.

Post-Retirement Mortality

	Standard		Disability	
Attained Age	Male	Female	Male	Female
35	0.00049	0.00027	0.00049	0.00027
40	0.00064	0.00037	0.00064	0.00037
45	0.00080	0.00054	0.00080	0.00054
50	0.00372	0.00346	0.01183	0.01083
55	0.00437	0.00410	0.01613	0.01178
60	0.00671	0.00476	0.02166	0.01404
65	0.00928	0.00637	0.02733	0.01757
70	0.01339	0.00926	0.03358	0.02183
75	0.02316	0.01635	0.04277	0.02969
80	0.03977	0.03007	0.06272	0.04641
85	0.07122	0.05418	0.09793	0.07847
90	0.13044	0.10089	0.14616	0.13220
95	0.21658	0.17698	0.21658	0.21015
100	0.32222	0.28151	0.32222	0.32226
105	0.46691	0.43491	0.46691	0.43491
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.

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 (continued)

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 he/she 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 (continued)

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 he/she was unsuccessful in his/her 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 the valuation.

	June 30, 2017	June 30, 2018
1) Active Members		
a) Counts	192	170
b) Average Attained Age	70.40	71.34
c) Average Entry Age to Rate Plan	40.71	41.73
d) Average Years of Service	29.69	29.61
e) Average Annual Covered Pay	$199,637	$207,855
f) Annual Covered Payroll	$38,330,347	35,335,347
g) Projected Annual Payroll	$35,500,875	31,964,016
h) Present Value of Future Payroll	$161,367,962	140,270,672
2) Transferred and Vested Termination Members and QDRO's[1]		
a) Counts	8	4
3) Receiving Payments		
a) Counts	1,861	1,796
b) Average Attained Age	77.88	78.38
c) Average Monthly Benefits	$104,611	112,764
4) Active to Retired Ratio [(1a) / (3)]	0.10	0.09

Reconciliation of Participants

The table below provides a reconciliation of the member data over the course of the valuation year.

Reconciliation of Participants for the Fiscal Year Ending June 30, 2018.

					QDRO[1]		
	Actives Judges	Vested Terminated Judges	Retired Judges	Beneficiaries	Receiving Benefits	Not Receiving Benefits	Total Participants
As of June 30, 2017	192	3	1203	529	129	5	2,061
New Entrants	-	-	-	-	-	-	-
Rehires	-	-	-	-	-	-	-
Disability Retirements	-	-	-	-	-	-	-
Service Retirements	(21)	(2)	23	-	1	-	1
Vested Terminations	-	-	-	-	-	-	-
Termination with Refund	-	-	-	-	-	-	-
Died, With Beneficiaries' Benefit Payable	(1)	-	(39)	40	-	-	-
Divorce Settlements	-	-	-	-	2	(2)	-
Died, without Beneficiary; and Other Terminations	-	-	(14)	-	(3)	-	(17)
Beneficiary Deaths	-	-	-	(41)	-	-	(41)
Community Property Merge[2]	-	-	1	21	(56)	3	(34)
As of June 30, 2018	170	1	1,174	549	73	3	1,970

(1) Qualified Domestic Relations Order
(2) CalPERS implemented a new actuarial valuation software system for the June 30, 2018 valuation. Part of the new methodology required the community property payees to be merged with the corresponding affected members.

Appendix C - Participant Data (continued)

Distribution of Active Members

The following table displays the number of active members by age and service as of June 30, 2018.

Attained Age	Years of Service at Valuation Date[1]							Total	Valuation Payroll
	0 - 5	5 - 10	10 - 14	15-20	20-25	25-30	>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	-	-	-	-	2	2	-	4	856,185
60 - 64	-	-	-	4	3	10	1	18	3,658,508
65 - 69	-	-	-	5	10	22	14	51	10,519,778
70 - 74	-	-	-	0	4	21	30	55	11,508,463
75+	-	-	-	1	3	13	25	42	8,792,413
Total	-	-	-	10	22	68	70	170	35,335,347

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

Distribution of Average Annual Payroll

The following table displays the average annual payroll of active participants by age and service as of June 30, 2018.

Attained Age	Years of Service at Valuation Date[1]								Average Valuation Payroll
	0 - 5	5 - 10	10 - 15	15 - 20	20 - 25	25 - 30	30 - 35	35+	
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	-	-	-	-	200,042	228,051	-	-	214,046
60 - 64	-	-	-	207,261	200,042	202,930	200,042	-	203,250
65 - 69	-	-	-	211,592	200,042	202,667	214,480	214,480	206,270
70 - 74	-	-	-	-	200,042	211,042	207,734	211,148	209,245
75+	-	-	-	228,918	200,042	200,042	214,598	214,480	209,343
Average	$0	$0	$0	$211,592	$200,042	$205,537	$211,013	$213,167	$207,855

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

Appendix C - Participant Data (continued)

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 as of June 30, 2018.

Attained Age	Years of Service at Valuation Date							
	0 - 5	5 - 10	10 - 15	15 - 20	20 - 25	25 - 30	30+	Total
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	-	1	1	-	-	-	-	2
65 - 69	-	-	-	-	-	-	-	-
70 - 74	-	-	-	-	-	-	-	-
75+	-	-	-	-	-	-	-	-
Total	1	2	1	0	0	0	0	4

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 as of as of June 30, 2018.

Attained Age	Service & Disability Retired Judges	Beneficiaries & QDRO's	Total
Under 30	0	2	2
30-34	-	-	-
35-39	-	1	1
40-44	-	-	-
45-49	-	4	4
50-54	-	5	5
55-59	-	3	3
60-64	20	25	45
65-69	164	43	207
70-74	276	83	359
75-79	292	115	407
80-84	222	123	345
85+	200	218	418
Total	1,174	622	1,796

Appendix C - Participant Data (continued)

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 as of as of June 30, 2018.

Attained Age	Service & Disability Retired Judges	Beneficiaries & QDRO's	Total
Under 30	$0	$54,265	$54,265
30-34	-	-	-
35-39	-	25,728	25,728
40-44	-	-	-
45-49	-	126,479	126,479
50-54	-	255,118	255,118
55-59	-	283,902	283,902
60-64	2,776,353	1,623,907	4,400,260
65-69	22,371,123	2,936,992	25,308,115
70-74	38,255,358	6,260,316	44,515,674
75-79	39,241,879	8,845,658	48,087,537
80-84	30,348,296	9,445,468	39,793,764
85+	27,247,195	15,068,911	42,316,106
Total[1]	$160,240,205	$44,926,744	$205,166,949
Average	$136,491	$72,229	$114,235

(1) Total does not include ESIP benefit payments.

Appendix D – Glossary of Actuarial Terms

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

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

Actuarial Methods: Procedures employed by actuaries to achieve certain funding goals of a pension plan. Actuarial methods include funding method, setting the length of time to fund the Accrued Liability and determining the Value of Assets.

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

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

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 Normal Cost Method: An actuarial cost method designed to fund a member's total plan benefit over the course of his or her career. This method is designed to yield a rate expressed as a level percentage of payroll.

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

Funded Status: A measure of how well funded, or how "on track" a plan or risk pool is with respect to assets versus accrued liabilities. A ratio greater than 100 percent means the plan or risk pool has more assets than liabilities and a ratio less than 100 percent means liabilities are greater than assets.

Normal Cost: The annual cost of service accrual for the upcoming fiscal year for active employees. The normal cost should be viewed as the long term contribution rate.

Pension Actuary: A business professional that is authorized by the Society of Actuaries, and the American Academy of Actuaries to perform the calculations necessary to properly fund a pension plan.

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

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