Judges' Retirement System II
Actuarial Valuation

As of June 30, 2020

CalPERS

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Actuarial Certification

February 2021

To the best of our knowledge, this report is complete and accurate and contains sufficient information to fully and fairly disclose the actuarial funded condition of the Judges' Retirement System II. This valuation is based on the member and financial data as of June 30, 2020 provided by the various CalPERS databases and the benefits under 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, and in accordance with the standards of practice prescribed by the Actuarial Standards Board. 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 Employee's 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 opinion 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, 2020 for the Judges' Retirement System II. The actuarial valuation is used to set the fiscal year 2021-22 required employer contribution rates. The System began on November 9, 1994 to provide retirement and ancillary benefits to judges elected or appointed on or after that date. The employer contribution rate from the inception of the plan until June 30, 1996 was set by State statute. Subsequently, the employer contribution rate was determined through an actuarial valuation process.

On January 1, 2013, the Public Employees' Pension Reform Act of 2013 (PEPRA) took effect. For more information on PEPRA, please refer to the CalPERS website.

Purpose of Report

This actuarial valuation of the Judges' Retirement System II of the State of California was performed by CalPERS staff actuaries as of June 30, 2020 in order to:

- Set forth the assets, accrued liabilities, and funded status of this plan as of June 30, 2020.
- Establish the Required Employer Contribution for the system for the fiscal year July 1, 2021 through June 30, 2022.
- Provide actuarial information as of June 30, 2020, to the CalPERS Board of Administration 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 for an Agent Employer Defined Benefit Pension Plan. 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:

- A "Scenario Test," projecting future results under different investment income returns.
- A "Sensitivity Analysis," showing the impact on current valuation results using alternative discount rates of 5.5 percent and 7.5 percent, and inflation rate of 1.5 percent and 3.5 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 2017.
- Plan maturity measures indicating how sensitive a plan may be to the risks noted above.

Highlights and Executive Summary

Required Employer Contribution

This actuarial valuation sets the employer contribution rate for the fiscal year July 1, 2021 through June 30, 2022. The Required Employer Contribution is shown as a percentage of projected payroll and as an estimated dollar amount for current and previous valuation.

Required Employer Contribution

	Fiscal Year 2020-21	Fiscal Year 2021-22
1) Contribution in Projected Dollars		
a) Total Normal Cost	$120,823,884	$123,258,972
b) Employee Contribution	34,391,682	35,693,899
c) Employer Normal Cost [(1a) – (1b)]	86,432,202	87,565,073
d) Unfunded Accrued Liability Payment	2,006,937	2,373,291
e) Required Employer Contribution [(1c) + (1d)]	**$88,439,139**	**$89,938,364**
Projected Annual Payroll for Contribution Year	$362,399,174	$371,038,447
2) Contribution as a Percentage of Payroll		
a) Total Normal Cost	33.34%	33.22%
b) Employee Contribution[1]	9.49%	9.62%
c) Employer Normal Cost [(2a) – (2b)]	23.85%	23.60%
d) Unfunded Accrued Liability Payment	0.55%	0.64%
e) Required Employer Contribution Rate [(2c) + (2d)][2]	**24.40%**	**24.24%**

(1) This is the expected average contribution rate between Classic and PEPRA members.

(2) Required Employer Contribution Rate reflects minimum PEPRA law requirement of paying the Employer Normal Cost

Plan's Funded Status

The table below summarizes the funded status of the Judges' Retirement System II as of June 30, 2020.

	June 30, 2019	June 30, 2020
1) Present Value of Projected Benefits	$2,513,409,434	$2,681,671,589
2) Entry Age Normal Accrued Liability	1,725,877,206	1,913,087,688
3) Market Value of Assets (MVA)	1,715,056,468	1,885,403,709
4) Unfunded Accrued Liability [(2) - (3)]	**$10,820,738**	**$27,683,978**
5) Funded Ratio [(3) / (2)]	**99.4%**	**98.6%**

This measure of funded status is an assessment of the need for future employer contributions. The Unfunded Accrued 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 & Assumptions

No changes were made since the prior valuation.

A complete description of the actuarial methods and assumptions used in the June 30, 2020 valuation may be found in Appendix A of this report.

Plan Provisions

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

Subsequent Events

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 have been calculated and paid. Any remaining payments will be reflected in future valuations as they are claimed and paid.

CalPERS will be completing an Asset Liability Management (ALM) process in November 2021 that will review the capital market assumptions and the strategic asset allocation and ascertain whether a change in the discount rate and other economic assumptions is warranted. As part of the ALM process the Actuarial Office will be completing an Experience Study to review the demographic experience of the retirement system and make recommendations to modify future assumptions where appropriate.

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, 2020.

	Market Value
Beginning Balance as of June 30, 2019	$1,715,056,468
Prior Period Adjustment	0
Adjusted Beginning Balance as of June 30, 2019	1,715,056,468
Member Contributions	35,795,461
Employer Contributions	91,147,446
Benefit Payments	(34,546,846)
Refunds	206
Administration Costs	(2,122,813)
Investment Earnings[1]	80,073,788
Ending Balance as of June 30, 2020	**$1,885,403,709**

(1) Net Fund return for the FY 2019-20 is 4.4%.

Asset Allocation

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

Asset Type	Value as of June 30, 2020
Cash	$1,660
Investments at Market Value	
Short-Term Investments	9,791,303
Global Equity Securities	1,231,609,779
Global Debt Securities	635,274,614
Real Assets	—
Private Equity	—
Capital Assets, Net & Other Assets	—
Accounts Receivable	9,392,742
Total Liabilities	(666,388)
Fund Balance at Market Value on June 30, 2020	**$1,885,403,709**

Liabilities and Employer Contributions

Liabilities and Required 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, 2019	June 30, 2020
1) Members Included in the Valuation		
a) Active Members	1,645	1,627
b) Inactive Members	1	2
c) Receiving Payments	264	303
d) Total	**1,910**	**1,932**
2) Payroll		
a) Covered Annual Payroll	$343,260,269	$351,443,287
b) Projected Covered Annual Payroll	$362,399,174	$371,038,447
c) Average Covered Annual Payroll [(2a) / (1a)]	208,669	216,007
3) Age and Service for Actives		
a) Average Attained Age for Actives	58.81	59.33
b) Average Service for Actives	9.61	10.25
4) Present Value of Benefits at Valuation Date		
a) Active Members	$2,135,630,591	$2,236,919,981
b) Inactive Members	46,708	923,195
c) Receiving Benefits	377,732,136	443,098,893
d) Total	**$2,513,409,434**	**$2,681,671,589**
5) Present Value of Future Employee Contributions	**$243,020,907**	**$242,301,468**
6) Present Value of Future Employer Normal Cost	**$544,511,321**	**$526,282,433**
7) Accrued Actuarial Liability		
a) Active Members	$1,348,098,363	$1,468,336,080
b) Inactive Members	46,708	923,195
c) Receiving Benefits	$377,732,136	$443,098,893
d) Total	**$1,725,877,206**	**$1,913,087,688**
8) Assets		
a) Market Value of Assets	1,715,056,468	1,885,403,709
b) Unfunded Accrued Actuarial Liability [(7d) – (8a)]	10,820,738	27,683,978
c) Funded Ratio [(8a) / (7d)]	99.4%	98.6%

Liabilities and Required 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.

(Gain)/Loss	
1) Total (Gain)/Loss for the Year	
a) Unfunded Accrued Liability (UAL) as of 6/30/2019	$10,820,738
b) Expected Payment on UAL During FY 2019-20	2,826,689
c) Interest through 6/30/2020 [.065 X 1a - $(1.0650)^{1/2}$ – 1) X 1b]	612,928
d) Expected UAL Before All Other Changes [1a – 1b + 1c]	8,606,977
e) Change Due to Revised Actuarial Methods	0
f) Change Due to New Actuarial Assumptions	0
g) Expected UAL After All Changes [1d + 1e + 1f]	8,606,977
h) Actual Unfunded Accrued Liability as of 6/30/2020	27,683,978
i) Total (Gain)/Loss for FY 2019-20 [1h – 1g]	**19,077,001**
2) Contribution (Gain)/Loss for the Year	
a) Expected Contribution (Employer and Employee)	$120,415,282
b) Interest on Expected Contributions [($(1.0650)^{1/2}$ – 1) x 2a]	3,851,889
c) Actual Contribution	126,942,907
d) Interest on Actual Contributions [($(1.0650)^{1/2}$ – 1) x 2c]	4,060,697
e) Contribution (Gain)/Loss [(2a + 2b) – (2c + 2d)]	**($6,736,433)**
3) Asset (Gain)/Loss for the Year	
a) Market Value of Assets as of 6/30/2019	$1,715,056,468
b) Contributions Received	126,942,907
c) Benefits, Refunds Paid and Administrative Costs	(34,546,640)
d) Transfers, SCP, and Miscellaneous Adjustments	0
e) Expected Interest [0.0650 x 3a + (($1.0650)^{1/2}$ – 1) x (3b + 3c + 3d)]	114,434,277
f) Expected Assets as of 6/30/2020 [3a + 3b + 3c + 3d + 3e]	1,921,887,012
g) Actual Market Value of Assets as of 6/30/2020	1,885,403,709
h) Asset (Gain)/Loss [3f - 3g]	**$36,483,302**
4) Liability (Gain)/Loss for the Year	
a) Total (Gain)/Loss (1i)	$19,077,001
b) Contribution (Gain)/Loss (2e)	(6,736,433)
c) Asset (Gain)/Loss (3h)	36,483,302
d) Liability (Gain)/Loss [4a – 4b – 4c]	**($10,669,868)**

Liabilities and Required Employer Contributions

Schedule of Amortization Bases

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

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

This one-year lag is necessary due to the amount of time needed to extract and test the membership and financial data, and the need to provide public agencies with their required employer contribution well in advance of the start of the fiscal year.

The Unfunded Accrued Liability (UAL) is used to determine the employer contribution and therefore must be rolled forward one year from the valuation date to the first day of the fiscal year for which the contribution is being determined. The UAL is rolled forward one year by subtracting the expected payment on the UAL for the prior fiscal year and adjusting for interest. The expected payment on the UAL for the prior fiscal year is equal to the Expected Employer Contribution for that fiscal year minus the Expected Normal Cost for the year. The Employer Contribution for the prior fiscal year is determined by the actuarial valuation one year ago. The Normal Cost Rate for the prior fiscal year is assumed to be the same as the rate determined by the current valuation. All expected dollar amounts are determined by multiplying the rate by the expected payroll for the applicable fiscal year, based on payroll as of the valuation date.

The schedule below shows the development of the payment on the Amortization Bases. Please refer to Appendix A for an explanation of how amortization periods are determined. For this valuation, the individual amortization bases were combined into a single amount and amortized over twenty years.

Reason for Base	Date Established	Amortization Period	Balance on 6/30/2020	Expected Payment on UAL 2020- 21	Balance on 6/30/2021	Scheduled Payment Fiscal Year 2021-2022	% of Projected Payroll
Fresh Start	6/30/2020	20	$27,683,978	$2,419,423	$26,291,543	$2,373,291	0.64%
Total			**$27,683,978**	**$2,419,423**	**$26,291,543**	**$2,373,291**	**0.64%**

The Judges' Retirement System II funded status decreased from 99.4 percent as of June 30, 2019 to 98.6 percent as of June 30, 2020. The funded status decrease was driven by the asset loss.

Reconciliation of Required Employer Contributions

This table illustrates how the Required Employer Contribution is calculated and, more importantly, why the Required Employer Contribution differs this year from the previous year.

	Percentage of Projected Payroll	Estimated $ Based on Projected Payroll
1) FY 2020-21 Required Employer Contribution (from prior year annual report)	24.40%	$88,439,139
2) Effect of Changes Since the Prior Annual Valuation		
a) Effect of Change in Payroll	—	$2,880,334
b) Effect of (Gain)/Loss	(0.16%)	($1,381,109)
c) Effect of Plan Changes	—	—
d) Effect of Method Changes	—	—
e) Effect of Assumption Changes	—	—
f) Net Effect of Changes [Sum of a – e]	(0.16%)	$1,499,225
3) FY 2021-22 Required Employer Contribution	**24.24%**	**$89,938,364**

Liabilities and Required Employer Contributions

Required Employer Contribution Rate History

This table provides the 10-year history of Required Employer Contributions for the Judges' Retirement System II.

Fiscal Year	Required Employer Contribution Rate
2021-22	24.24%
2020-21	24.40%
2019-20	24.964%
2018-19	24.660%
2017-18	24.409%
2016-17	23.185%
2015-16	23.370%
2014-15	24.615%
2013-14	22.687%
2012-13	N/A

Funding History

The Funding History below shows the recent history of the Actuarial Accrued Liability, the Market Value of Assets, Funded Ratio and the Annual Covered Payroll.

Valuation Date	Entry Age Normal Accrued Liability	Market Value of Assets (MVA)	Funded Ratio (MVA)	Projected Annual Covered Payroll
6/30/20	$1,913,087,688	$1,885,403,709	98.6%	$371,038,447
6/30/19	1,725,877,206	1,715,056,468	99.4%	362,399,174
6/30/18	1,554,347,674	1,531,542,896	98.5%	327,594,817
6/30/17	1,365,862,092	1,356,099,297	99.3%	307,629,600
6/30/16	1,272,750,990	1,172,952,527	92.2%	299,830,339
6/30/15	1,081,824,423	1,084,141,932	100.2%	289,305,463
6/30/14	950,642,328	1,013,839,948	106.6%	266,907,427
6/30/13	837,197,578	795,966,486	95.1%	256,724,949
6/30/12	702,732,271	655,383,900	93.3%	244,788,249
6/30/11	609,562,110	575,978,052	94.5%	243,635,717

Normal Cost by Benefit Group

The table below displays the Total Normal Cost broken out by benefit group for Fiscal Year 2021-22. The Total Normal Cost is the annual cost of service accrual for the fiscal year for active employees and can be viewed as the long-term contribution rate for the benefits contracted. Generally, the normal cost for a benefit group subject to more generous benefit provisions will exceed the normal cost for a group with less generous benefits. However, based on the characteristics of the members (particularly when the number of actives is small), this may not be the case. Future measurements of the Total Normal Cost for each group may differ significantly from the current values due to such factors as: changes in the demographics of the group, changes in economic and demographic assumptions, changes in plan benefits or applicable law.

Rate Plan Identifier	Benefit Group Name	Total Normal Cost FY 2021-22	Number of Actives	Payroll on 6/30/2020
10000	JRS II	32.93%	1,315	$284,114,286
29000	JRS II PEPRA	34.36%	312	$67,329,001
	Plan Total	**33.22%**	**1,627**	**$351,443,287**

Liabilities and Required Employer Contributions

PEPRA Member Contribution Rates

The California Public Employees' Pension Reform Act of 2013 ("PEPRA") established new benefit formulas, final compensation period, and contribution requirements for "new" employees (generally those first hired into a CalPERS-covered position on or after January 1, 2013). In accordance with Government Code Section 7522.30(b), "new members … shall have an initial contribution rate of at least 50 percent of the normal cost rate." The normal cost for the plan is dependent on the benefit levels, actuarial assumptions and demographics of the plan, particularly members' entry age into the plan. Should the total normal cost of the plan change by one percent or more from the base total normal cost established for the plan, the new member rate shall be 50 percent of the new normal cost rounded to the nearest quarter percent.

The table below shows the determination of the PEPRA member contribution rates effective July 1, 2021, based on 50 percent of the Total Normal Cost for each respective plan as of the June 30, 2020 valuation.

		Basis for Current Rate		Rates Effective July 1, 2021			
Rate Plan Identifier	Benefit Group Name	Total Normal Cost	Member Rate	Total Normal Cost	Change	Change Needed	Member Rate
29000	JRS II PEPRA	32.10%	16.00%	32.62%	0.52%	No	16.00%

For purposes of setting member rates, it is preferable to determine total normal cost using a large active population so that the rate remains relatively stable. While each CalPERS non-pooled plan has a sufficiently large active population for this purpose, the PEPRA active population by itself may not be sufficiently large. The total PEPRA normal cost will be determined based on the plan's PEPRA membership only if the number of members covered under the PEPRA formula meets either:

- 50 percent of the active population, or
- 25 percent of the active population and 100 or more PEPRA members

Until one of these conditions is met, the plan's total PEPRA normal cost will be determined using the entire active plan population (both PEPRA and Classic) based on the PEPRA benefit provisions. For this reason, the PEPRA member contribution rate determined in the table above may not equal 50 percent of the total normal cost of the PEPRA group shown on the "Total Normal Cost by Group" page.

Risk Analysis

Risk Analysis

Future Investment Return Scenarios

Analysis was performed to determine the effects of various future investment returns on required employer contributions. The projections below provide a range of results based on five investment return scenarios assumed to occur during the next four fiscal years (2020-21, 2021-22, 2022-23 and 2023-24). The projections also assume that all other actuarial assumptions will be realized and that no further changes to assumptions, contributions, benefits, or funding will occur.

For fiscal years 2020-21, 2021-22, 2022-23 and 2023-24, each scenario assumes an alternate fixed annual return. The fixed return assumptions for the five scenarios are 1.0 percent, 4.0 percent, 6.5 percent, 8.0 percent and 11.0 percent.

These alternate investment returns were chosen based on stochastic analysis of future investment returns over the four-year period ending June 30, 2024. Using the expected returns and volatilities of the asset classes in which the funds are invested, we generated five thousand stochastic outcomes for this period based on the most recently completed Asset Liability Management process. We then selected annual returns that approximate the 5th, 25th, 50th, 75th, and 95th percentiles for these outcomes. For example, of all the four-year outcomes generated in the stochastic analysis, approximately 25 percent had an average annual return of 4.0 percent or less.

Required contributions outside of this range are also possible. In particular, whereas it is unlikely that investment returns will average less than 1.0 percent or greater than 11.0 percent over a four-year period, the likelihood of a single investment return less than 1.0 percent or greater than 11.0 percent in any given year is much greater.

Assumed Annual Return from 2020-21 through 2023-24	Projected Employer Contributions			
	2022-23	2023-24	2024-25	2025-26
1.00% (5th Percentile)	24.6%	25.8%	27.4%	29.5%
4.00% (25th Percentile)	24.3%	24.8%	25.4%	26.3%
6.50%	24.1%	23.9%	23.7%	23.5%
8.00% (75th Percentile)	23.4%	23.3%	23.1%	22.9%
11.00% (95th Percentile)	23.4%	23.3%	23.1%	22.9%

The projected normal cost percentages reflect that normal cost will decline over time as new employees are hired into PEPRA or other lower-cost benefit tiers.

Risk Analysis

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 4.00 percent and 2.50 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, 2019 assuming alternate discount rates by changing the two components independently. Results are shown using the current discount rate of 6.5 percent as well as alternate discount rates of 5.5 percent and 7.5 percent. The rates of 5.5 percent and 7.5 percent were selected since they illustrate the impact of a 1.0 percent increase or decrease to the 6.5 percent assumption. This type of analysis gives the reader a sense of the long-term risk to the Funded Status and to the FY 2021-22 employer contribution rates.

Sensitivity to the Real Rate of Return Assumption

As of June 30, 2020	1% Lower Real Return Rate	Current Real Return Rate	1% Higher Real Return Rate
Discount Rate	**5.5%**	**6.5%**	**7.5%**
Inflation	2.5%	2.5%	2.5%
Real Rate of Return	**3.0%**	**4.0%**	**5.0%**
a) Total Normal Cost	39.76%	33.22%	28.03%
b) Accrued Liability	$2,145,696,396	$1,913,087,688	$1,723,198,281
c) Market Value of Assets	1,885,403,709	1,885,403,709	1,885,403,709
d) Unfunded Liability (Surplus) [(b)-(c)]	260,292,686	27,683,978	(162,205,429)
e) Funded Status	87.9%	98.6%	109.4%

Sensitivity to the Price Inflation Assumption

As of June 30, 2020	1% Lower Inflation Rate	Current Inflation Rate	1% Higher Inflation Rate
Discount Rate	**5.5%**	**6.5%**	**7.5%**
Inflation	**1.5%**	**2.5%**	**3.5%**
Real Rate of Return	4.0%	4.0%	4.0%
a) Total Normal Cost	33.38%	33.22%	31.68%
b) Accrued Liability	$1,913,067,033	$1,913,087,688	$1,834,039,275
c) Market Value of Assets	1,885,403,709	1,885,403,709	1,885,403,709
d) Unfunded Liability (Surplus) [(b)-(c)]	27,663,323	27,683,978	(51,364,435)
e) Funded Status	98.6%	98.6%	102.8%

Mortality Rate Sensitivity

The following table looks at the change in the June 30, 2020 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, 2020	10% Lower Mortality Rates	Current Mortality	10% Higher Mortality Rates
a) Total Normal Cost	34.01%	33.22%	32.51%
b) Accrued Liability	$1,960,872,271	$1,913,087,688	$1,869,889,493
c) Market Value of Assets	1,885,403,709	1,885,403,709	1,885,403,709
d) Unfunded Liability (Surplus) [(b)-(c)]	75,468,561	27,683,978	(15,514,217)
e) Funded Status	96.2%	98.6%	100.8%

Risk Analysis

Maturity Measures

As pension plans mature, they become more sensitive to risks. 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 increases. A mature plan will often have a ratio above 60-65 percent.

Ratio of Retiree Accrued Liability to Total Accrued Liability	June 30, 2019	June 30, 2020
1. Retiree Accrued Liability	$377,732,136	$443,098,893
2. Total Accrued Liability	$1,725,877,206	$1,913,087,688
3. Ratio of Retiree AL to Total AL [(1) / (2)]	21.9%	23.2%

Another measure of the maturity level of CalPERS and its plans is the ratio of actives to retirees, also called Support Ratio. A pension plan in its infancy will have a very high ratio of active to retired members. As the plan matures, and members retire, the ratio declines. A mature plan will often have a ratio near or below one. The average support ratio for CalPERS public agency plans is 1.25.

Support Ratio	June 30, 2019	June 30, 2020
1. Number of Actives	1,645	1,627
2. Number of Retirees	264	303
3. Support Ratio [(1) / (2)]	6.2	5.4

The actuarial calculations supplied in this communication are based on various assumptions about long-term demographic and economic behavior. Unless these assumptions (e.g., terminations, deaths, disabilities, retirements, salary growth, investment return) are exactly realized each year, there will be differences on a year-to-year basis. The year-to-year differences between actual experience and the assumptions are called actuarial gains and losses and serve to lower or raise required employer contributions from one year to the next. Therefore, employer contributions will inevitably fluctuate, especially due to the ups and downs of investment returns.

Asset Volatility Ratio (AVR)

Shown in the table below is the asset volatility ratio (AVR), which is the ratio of market value of assets to payroll. Plans that have a higher AVR experience more volatile employer contributions (as a percentage of payroll) due to investment return. For example, a plan with AVR of 8 may experience twice the contribution volatility due to investment return volatility than a plan with AVR of 4. It should be noted that this ratio is a measure of the current situation. It increases over time but generally tends to stabilize as a plan matures.

Risk Analysis

Liability Volatility Ratio (LVR)

Also shown in the table below is the liability volatility ratio (LVR), which is the ratio of accrued liability to payroll. Plans that have a higher LVR experience more volatile employer contributions (as a percentage of payroll) due to investment return and changes in liability. For example, a plan with LVR ratio of 8 is expected to have twice the contribution volatility of a plan with LVR of 4. It should be noted that this ratio indicates a longer-term potential for contribution volatility. The AVR, described above, will tend to move closer to the LVR as a plan matures.

Contribution Volatility	June 30, 2019	June 30, 2020
1. Market Value of Assets without Receivables	$1,715,056,468	$1,885,403,709
2. Payroll	$343,260,269	$351,443,287
3. Asset Volatility Ratio (AVR) [(1) / (2)]	5.0	5.4
4. Accrued Liability	$1,725,877,206	$1,913,087,688
5. Liability Volatility Ratio (LVR) [(4) / (2)]	5.0	5.4

Maturity Measures History	June 30, 2018	June 30, 2019	June 30, 2020
Ratio of Retiree AL to Total AL	19.6%	21.9%	23.0%
Support Ratio	7.1	6.2	5.4
Asset Volatility Ratio	4.9	5.0	5.4
Liability Volatility Ratio	5.0	5.0	5.4

Appendices

Appendix A – Statement of Actuarial Methods and Assumptions

Appendix B – Summary of Principal Plan Provisions

Appendix C – Participant Data

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 Cost Method

The actuarial funding method used for the Retirement Program is the Entry Age Normal Cost Method. Under this method, projected benefits are determined for all members and the associated liabilities are spread in a manner that produces level annual cost as a 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
1997-Current	Entry Age Normal

Amortization of Unfunded Actuarial Accrued Liability

The excess of the total actuarial accrued liability over the market value of plan assets is called the unfunded actuarial accrued liability (UAL). Funding requirements are determined by adding the normal cost and a payment toward the UAL. The UAL payment is equal to the sum of individual amortization payments, each representing a different source of UAL for a given measurement period.

Amortization payments are determined according to the CalPERS amortization policy. The CalPERS Board adopted a new policy effective for the June 30, 2020 actuarial valuation. The new policy applies prospectively only; amortization bases (sources of UAL) established prior to the June 30, 2020 valuation will continue to be amortized according to the prior policy.

Prior Policy (Bases Established prior to June 30, 2020)

Amortization payments are determined as a level percentage of payroll whereby the payment increases each year at an escalation rate. Gains or losses are amortized over a fixed 30-year period with a 5-year ramp up at the beginning and a 5-year ramp down at the end of the amortization period. All changes in liability due to plan amendments (other than golden handshakes) are amortized over a 20-year period with no ramp. Changes in actuarial assumptions or changes in actuarial methodology are amortized over a 20-year period with a 5-year ramp up at the beginning and a 5-year ramp down at the end of the amortization period. Changes in unfunded accrued liability due to a Golden Handshake will be amortized over a period of five years. Bases established prior to June 30, 2013 may be amortized differently. A summary is provided in the table below:

The 5-year ramp up means that the payments in the first four years of the amortization period are 20 percent, 40 percent, 60 percent and 80 percent of the “full” payment which begins in year five. The 5-year ramp down means that the reverse is true in the final four years of the amortization period.

Appendix A - Statement of Actuarial Methods and Assumptions

Current Policy (Bases Established on or after June 30, 2019)

Amortization payments are determined as a level dollar amount. Investment gains or losses are amortized over a fixed 20-year period with a 5-year ramp up at the beginning of the amortization period. Non-investment gains or losses are amortized over a fixed 20-year period with no ramps. All changes in liability due to plan amendments (other than golden handshakes) are amortized over a 20-year period with no ramps. Changes in actuarial assumptions or changes in actuarial methodology are amortized over a 20-year period with no ramps. Changes in unfunded accrued liability due to a Golden Handshake are amortized over a period of five years. A summary is provided in the table below:

Driver	Source				
	(Gain)/Loss		Assumption/Method Change	Benefit Change	Golden Handshake
	Investment	Non-investment			
Amortization Period	20 Years	20 Years	20 Years	20 Years	5 Years
Escalation Rate	0%	0%	0%	0%	0%
Ramp Up	5	0	0	0	0
Ramp Down	0	0	0	0	0

Exceptions for Inconsistencies

If a surplus exists (i.e. the Market Value of Assets exceeds the plan's accrued liability) any prior amortization layers shall be considered fully amortized, and the surplus shall not be amortized.

In the event of any subsequent unfunded liability a Fresh Start shall be used with an amortization period of 20 years or less.

It should be noted that the actuary may determine that a fresh start is necessary under other circumstances. In all cases of a fresh start, the period is set by the actuary at what is deemed appropriate; however, the period will not be greater than 20 years.

Exceptions for Small Amounts

Where small unfunded liabilities are identified in annual valuations which result in small payment amounts, the actuary may shorten the remaining period for these bases.

- When the balance of a single amortization base has an absolute value less than $250, the amortization period is reduced to one year.
- When the entire unfunded liability is a small amount the actuary may perform a Fresh Start and use an appropriate amortization period.

Appendix A - Statement of Actuarial Methods and Assumptions

Asset Valuation Method

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

Actuarial Assumptions

The actuarial assumptions used in the valuation are shown below.

The demographic assumptions used in the valuation, with the exception of the mortality assumption, have been in place for many years and have not produced significant experience gains or losses for the plan. The actuary has concluded that the continued use 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 2017 experience study performed by CalPERS staff based on the Public Employees' Retirement Fund (PERF) and adopted by the CalPERS Board of Administration in December 2017.

The discount rate (investment return assumption) for this valuation is 6.5 percent. It was reduced from 7.0 percent to 6.5 percent as of the June 30, 2016 valuation. The decision was primarily based on reduced capital market assumptions provided by external investment consultants and CalPERS investment staff in December 2016.

Economic Assumptions

The following table identifies the economic assumptions used in the valuation.

June 30, 2020	Percentage
Gross Investment Return	6.65%
Less Administrative Expense	0.15%
Net Investment Return compounded annually	6.50%
Individual Salary Increases, compounded annually	2.75%
Overall Payroll Growth, compounded annually[1]	2.75%
Inflation	2.50%

(1) The Overall Payroll Growth assumption is used in projecting the payroll over which the unfunded liability is amortized.

Interest Rate

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

Valuation Year	Investment Return
2016-Current	6.50%
2011-2015	7.00%
2003-2010	7.25%
1998-2002	7.75%
1997	8.50%

Inflation, Individual Salary Increase, and Payroll Growth

The following table provides a brief history of the Inflation, Individual Salary Increase, and Payroll Growth Assumptions.

Valuation Year	Inflation	Individual Salary Increase	Payroll Growth
2017-Current	2.50%	2.75%	2.75%
2011-2016	2.75%	3.00%	3.00%
2003-2010	3.00%	3.25%	3.25%
1998-2002	3.50%	3.75%	3.75%
1997	4.50%	5.75%	4.50%

Appendix A - Statement of Actuarial Methods and Assumptions

Demographic Assumptions

Service Retirement

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

Service Greater than 20 Years	
Age	Rate
Below 65	0.000
65	0.750
66	0.400
67	0.300
68	0.350
69	0.500
70[1]	1.000

(1) For Judges age 70 and older with 5 or more years of service the probability of retirement is 100 percent.

Withdrawal

Rates vary by age and years of service as shown in the table below.

	Years of Service					
Entry Age	0- 1	1 - 2	2 - 3	3 - 4	4 - 5	5 or more
35	0.00525	0.00525	0.00525	0.00525	0.00525	0.00225
40	0.00450	0.00450	0.00450	0.00450	0.00450	0.00375
45	0.00375	0.00375	0.00375	0.00375	0.00375	0.00750
50	0.00375	0.00375	0.00375	0.00375	0.00375	0.00900
55	0.00000	0.00000	0.00000	0.00000	0.00000	0.00825
60	0.00000	0.00000	0.00000	0.00000	0.00000	0.00750

Pre-Retirement Non-Industrial Disability

Rates vary by age as shown in the table below.

Attained Age	Male	Female
35	0.00000	0.00000
40	0.00100	0.00100
45	0.00190	0.00190
50	0.00320	0.00320
55	0.00540	0.00540
60	0.00850	0.00850
65	0.01220	0.01220
70	0.00000	0.00000

The mortality assumptions are based on mortality rates resulting from the most recent CalPERS Experience Study adopted by the CalPERS Board. For purposes of the mortality rates, the 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.

Appendix A - Statement of Actuarial Methods and Assumptions

Demographic Assumptions (continued)

Pre-Retirement Mortality

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

Post-Retirement Mortality

	Standard		Non-Industrial 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

Industrial Mortality

Rates are zero.

Industrial Disability

Rates are zero.

Marital Status

Probability of being married at service retirement or disability retirement is 90 percent.

Age of Spouse

Assumes that female spouses are three years younger than male spouses are.

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.

Retirement Benefit Payable at Service Retirement

For each contingency under which a Service Retirement benefit is payable, the value of the Monetary Service Account and the value of the defined benefit are compared, and the member is assumed to elect the benefit with the larger value. Monetary Service Accounts are assumed to be paid as lump sums.

Appendix B – Summary of Principal Plan Provisions

Background

Judges' Retirement System II (JRS II) was established in 1994 to create a fully funded, actuarially sound retirement system for judges appointed or elected on or after November 9, 1994. This system provides a unique combination of two basic types of retirement allowances: a defined benefit plan and a monetary credit plan. The defined benefit plan provides a lifetime monthly retirement allowance of up to 75 percent of final compensation. The monetary credit plan allows for a refund of member contributions, employer contributions (see below) and interest at retirement.

Membership

The JRS II provides retirement, death, withdrawal and disability benefits for Supreme and Appellate Court Justices, Superior Court Judges, and Municipal Court Judges who are appointed or elected on or after November 9, 1994, and their beneficiaries.

Membership Contributions

Classic members - Members contribute 8 percent of their annual compensation to the plan.

PEPRA members - The Base Total Normal Cost rate for PEPRA members is re-determined in each annual valuation. The employee contribution for the PEPRA group will only change in any given year once the change to the total normal cost is greater than 1 percent from the Base Total Normal Cost. The PEPRA member rate should be 50 percent of the new normal cost rounded to the nearest quarter percentage.

Monetary Credit Account

Members accrue monthly monetary credits equal to 18 percent of monthly salary. These monetary credits are accumulated in a Monetary Credit Account for each member and also credited with earnings monthly at a rate, not less than zero, equal to the annual net earnings rate achieved by the Fund. The Monetary Credit Account provides an optional benefit at eligible retirement ages (described below) if the member chooses this option. If a member withdraws from the system before he or she has vested (accumulated at least five years of service), the member is paid the amount of his or her contributions to the system, but not the full Monetary Credit Account. After five years of service however, the member is vested in the Monetary Credit Account.

Service Retirement

Eligibility

Judges must be at least age 65 with 20 years or more of service or age 70 with a minimum of five years of service. Two types of service retirement are available: Defined Benefit Plan or Monetary Credit Plan. Election of a plan must be made within 30 days after retirement.

Defined Benefit Plan

Classic Members -This option provides a "defined benefit" of 3.75 percent of the highest 12-month average salary per year of service, up to 75 percent of final average pay for judges reaching age 65 with at least 20 years of service. The normal form of payment is a joint and 50 percent contingent annuity with the spouse as contingent annuitant. This provides a surviving spouse with a monthly allowance equal to 50 percent of the judge's allowance. Optional settlements are available which reduce a judge's normal retirement benefit.

Appendix B - Summary of Principal Plan Provisions

PEPRA Members -This option provides a "defined benefit" of 3.75 percent of the highest 36-month average salary per year of service, up to 75 percent of final average pay for judges reaching age 65 with at least 20 years of service. The normal form of payment is a joint and 50 percent contingent annuity with the spouse as contingent annuitant. This provides a surviving spouse with a monthly allowance equal to 50 percent of the judge's allowance. Optional settlements are available which reduce a judge's normal retirement benefit.

Monetary Credit Plan

This option provides a cash payment in a single lump sum or the member may elect to receive an annuity at retirement based on the value of his or her Monetary Credit Account.

Non-Industrial Disability Retirement (Non-Work Related)

Eligibility

Judges who have five years of service who become permanently disabled because of a mental or physical disability may apply to the Commission on Judicial Performance for disability retirement.

Benefit

An allowance, based upon the judge's age, equal to the lesser of the following:

- 3.75 percent of final compensation multiplied by the number of years of service the judge would have been credited had he or she continued to work until the age he or she would have first been eligible to retire, or
- 65 percent of the judge's average monthly salary during the 12 or 36 months preceding the retirement date.

The normal form of payment is a joint and 50 percent contingent annuity with the spouse as the contingent annuitant.

Industrial Disability Retirement (Work-Related)

Benefit

Judges receive 65 percent of their average monthly salary during the 12 or 36 months preceding the retirement date regardless of age or length of service.

The normal form of payment is a joint and 50 percent contingent annuity with the spouse as the contingent annuitant.

Appendix B - Summary of Principal Plan Provisions

Pre-Retirement Death Benefit

If Eligible for Service Retirement - Spouses receive either the monthly retirement allowance equal to one-half of the judge's "defined benefit" plan allowance or the judge's monetary credits.

If Not Eligible for Service Retirement - Spouses receive the judge's monetary credits or three times the annual salary at the time of death, whichever is greater. This is paid in 36 monthly installments. If there is no spouse, this benefit is paid to member children; or if none, to the designated beneficiary.

Pre-Retirement Death Benefit Optional Settlement Two

If a judge dies in office, is age 65 or older with a minimum of 20 years of service and elects to have this provision apply (one time irrevocable election while judge is in office) then a payment to the surviving spouse is payable upon death. The spouse would receive a monthly allowance equal to the Optional Settlement 2 allowance paid to the judge had he or she retired immediately preceding death. A spouse who receives this benefit is not entitled to any other Pre-Retirement Death Benefit.

Post Retirement Death Benefit

If the Judge elected the Defined Benefit Plan - The surviving spouse of a retired judge who elected an Optional Settlement in the defined benefit plan receives one of four options:

- Option 1 - return of unused accumulated contributions;
- Option 2 - 4 - the Optional Settlement Benefit amount varies based on the option chosen by the member.

If the Judge elected the Monetary Credit Plan - If the full amount of monetary credits was received in a lump sum, there are no survivor benefits. If the judge elected the Monetary Credit Plan with benefits paid as an annuity, the spouse receives the amount based on the option chosen at retirement.

Cost-of-Living Adjustments (COLA)

If the Judge elected the Defined Benefit Plan - The retirement allowance of retired judges who have elected the defined benefit plan will be adjusted every January after the judge has been retired six months. The adjustment is based on the United States city average of the "Consumer Price Index For All Urban Consumers," as published by the United States Bureau of Labor Statistics. No adjustment shall be made unless the cost-of-living increase equals or exceeds 1 percent. Further, the allowance shall not be increased more than 3 percent in a single year. Increases shall be compounded.

Appendix C – Participant Data

Summary of Valuation Data

The table below illustrates counts of records processed by the valuation.

	June 30, 2019	June 30, 2020
1) Active Members		
a) Counts	1,645	1,627
b) Average Attained Age	58.81	59.33
c) Average Entry Age	49.16	49.04
d) Average Years of Service	9.61	10.25
e) Average Annual Covered Pay	$208,669	$216,007
f) Annual Covered Payroll	$343,260,269	$351,443,287
g) Projected Annual Payroll for Contribution Year	$362,399,174	$371,038,447
h) Present Value of Future Payroll	$2,443,832,513	$2,394,934,341
2) Transferred and Vested Termination Members		
a) Counts	1	2
3) Retired Members and Beneficiaries		
a) Counts	264	303
b) Average Attained Age	72.47	73.24
c) Average Annual Benefits	$109,768	$113,825
4) Active to Retired Ratio [(1a) / (3a)]	6.2	5.4

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, 2020

	Actives	Inactive	Retirees and Beneficiaries	Total
As of June 30, 2019	**1,645**	**1**	**264**	**1,910**
New Entrants	29	—	—	29
Non-Vested Terminations				
Refund Paid	(3)	—	—	(3)
Refund Pending	(1)	1	—	—
Vested Terminations				
Monetary Credit Paid	(1)	—	—	(1)
Monetary Credit Pending	—	—	—	—
Disabilities	(1)	—	1	—
Retirements	(41)	—	41	—
Death with Beneficiary	—	—	—	—
Active Death Beneficiary	—	—	—	
Benefits Ceasing (Beneficiaries)	—	—	(3)	(3)
As of June 30, 2020	**1,627**	**2**	**303**	**1,932**

Appendix C - Participant Data

Distribution of Active Members

The following table displays the number of active participants by age and service as of June 30, 2020.

	Years of Service at Valuation Date							
Attained Age	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30+	Total Count
15 - 19	0	0	0	0	0	0	0	0
20 - 24	-	-	-	-	-	-	-	-
25 - 29	-	-	-	-	-	-	-	-
30 - 34	-	-	-	-	-	-	-	-
35 - 39	10	-	-	-	-	-	-	10
40 - 44	65	4	-	-	-	-	-	69
45 - 49	102	55	10	-	-	-	-	167
50 - 54	90	94	62	3	-	-	-	249
55 - 59	76	80	99	53	14	1	-	323
60 - 64	63	80	96	82	47	5	-	373
65 - 69	21	56	99	92	23	2	-	293
70 - 74	6	25	24	30	22	2	-	109
75 - 79	1	3	1	9	14	-	-	28
80 - 84	-	-	-	2	4	-	-	6
85+	-	-	-	-	-	-	-	-
Total	**434**	**397**	**391**	**271**	**124**	**10**	**-**	**1,627**

Distribution of Average Annual Salaries

The following table displays the average salaries of active participants by age and service as of June 30, 2020.

	Years of Service at Valuation Date							
Attained Age	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30+	Average Valuation Payroll
15 - 19	$0	$0	$0	$0	$0	$0	$0	$0
20 - 24	-	-	-	-	-	-	-	-
25 - 29	-	-	-	-	-	-	-	-
30 - 34	-	-	-	-	-	-	-	-
35 - 39	214,601	-	-	-	-	-	-	214,601
40 - 44	215,554	226,438	-	-	-	-	-	216,185
45 - 49	215,054	219,702	214,601	-	-	-	-	216,558
50 - 54	215,289	215,919	215,101	214,601	-	-	-	215,472
55 - 59	214,601	215,375	215,227	215,770	214,601	245,578	-	215,272
60 - 64	215,093	216,924	215,010	217,056	217,237	214,601	-	216,159
65 - 69	214,601	215,154	215,227	217,631	221,335	214,601	-	216,398
70 - 74	214,601	214,601	215,892	214,601	220,233	230,090	-	216,306
75 - 79	214,601	224,927	214,601	214,601	221,239	-	-	219,026
80 - 84	-	-	-	214,601	214,601	-	-	214,601
85+	-	-	-	-	-	-	-	-
Average	**$215,064**	**$216,519**	**$215,177**	**$216,601**	**$218,598**	**$220,796**	**$0**	**$216,007**

Appendix C - Participant Data

Distribution of Retired Members and Beneficiaries

The following table displays the number of recipients by age and retirement type as of June 30, 2020.

Attained Age	Service Retirement	Non-Industrial Disability	Industrial Disability	Beneficiaries	Total Count of Participants Receiving Benefits
Under 30	0	0	0	0	0
30 - 34	-	-	-	-	-
35 - 39	-	-	-	-	-
40 - 44	-	-	-	-	-
45 - 49	-	-	-	-	-
50 - 54	-	-	-	2	2
55 - 59	-	1	-	3	4
60 - 64	-	4	1	4	9
65 - 69	49	4	2	3	58
70 - 74	112	7	-	5	124
75 - 79	67	1	-	6	74
80 - 84	19	1	1	4	25
85+	5	-	-	1	6
Total[1]	**252**	**18**	**4**	**28**	**302**

(1)Does not include 1 beneficiary receiving 36-month pre-retirement death benefit.

Distribution Annual Benefits for Retired Members and Beneficiaries

The following table displays the distribution of annual benefits for retirees, beneficiaries by age used in the June 30, 2020 valuation.

Attained Age	Service Retirement	Non-Industrial Disability	Industrial Disability	Beneficiaries	Annual Benefits
Under 30	$0	$0	$0	$0	$0
30 - 34	-	-	-	-	-
35 - 39	-	-	-	-	-
40 - 44	-	-	-	-	-
45 - 49	-	-	-	-	-
50 - 54	-	-	-	48,108	48,108
55 - 59	-	135,862	-	65,288	82,932
60 - 64	-	128,961	139,530	85,347	110,751
65 - 69	148,127	132,599	129,674	80,966	142,946
70 - 74	114,694	108,009	-	64,715	112,301
75 - 79	104,465	159,611	-	64,263	101,950
80 - 84	115,195	48,660	140,899	80,775	108,054
85+	83,441	-	-	89,243	84,408
Total	117,893	119,247	134,944	71,352	113,884
Average	**$117,893**	**$119,247**	**$134,944**	**$71,352**	**$113,884**

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

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

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

Classic Member (under PEPRA): A classic member is a member who joined The Judges’ Retirement System prior to January 1, 2013 and who is not defined as a new member under PEPRA. (See definition of new member below)

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 same as the date of hire.

Appendix D – Glossary of Actuarial Terms

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.)

Fresh Start: A Fresh Start is when multiple amortization bases are collapsed to one base and amortized together over a new funding period.

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% means the plan or risk pool has more assets than liabilities and a ratio less than 100% means liabilities are greater than assets.

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

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.

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

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