

California Public Employees' Retirement System

Parallel Valuation and Certification Report 1959 Survivor Benefit Program Valuation

As of June 30, 2016

September 2017

August 1, 2017

Board of Administration California Public Employees' Retirement System (CalPERS) P.O. Box 942701 Sacramento, CA 94229-2701 **David L. Driscoll**Principal, Consulting Actuary

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Members of the Board:

As provided in Contract 2015-8123, we have reviewed valuations prepared by the CalPERS professional actuarial staff in order to certify that such work satisfies applicable standards of the actuarial profession. In the following pages, we report the results of our review of the June 30, 2016 annual actuarial valuation prepared for the 1959 Survivor Benefit Program.

We reviewed the assumptions, methods and procedures used by CalPERS staff to perform the 1959 Survivor Benefit Program valuation we examined, and in our opinion they conform to applicable Actuarial Standards of Practice.

In addition, we completed a parallel actuarial valuation for the 1959 Survivor Benefit Program using the same assumptions and census, asset and benefit provision data that were used by CalPERS staff to prepare their June 30, 2016 valuation of the plan. We compared key results of our parallel valuations to those in the valuation report published by CalPERS.

Each actuarial organization has its own valuation model and applies actuarial assumptions and methods in its preferred way. There is rarely a single "right" answer when it comes to actuarial calculations. For a pension or retiree group benefits actuarial valuation, we consider one actuary's calculations to reasonably match another actuary's calculations when the present values (liabilities), normal cost contributions, and total employer contributions computed by the two actuaries are within 5% of each other.

For the 1959 Survivor Benefit Program, our computations of the contribution rates matched those prepared by CalPERS staff within 5%, which was the target tolerance level specified by CalPERS. Our analysis also included a comparison of present value of future benefits, accrued liabilities and normal costs, which also matched within the required 5% threshold. We view the differences between our calculations as immaterial.

The Table of Contents, which immediately follows, outlines the material contained in the report.

Future actuarial measurements may differ significantly from current measurements due to plan experience differing from that anticipated by the economic and demographic assumptions, changes expected as part of the natural operation of the methodology used for these measurements, and changes in plan provisions, applicable law or regulations. An analysis of the potential range of such future differences is beyond the scope of this study.

This report was prepared for the Board and professional staff of CalPERS for their use in evaluating the preparation of actuarial valuations by the System. Use of this report for any other purpose or by other parties may not be appropriate and may result in mistaken conclusions because of failure to understand applicable assumptions, methods, or inapplicability of the report for other purposes. No one may make any representations or warranties based on any statements or conclusions contained in this report without the prior written consent of Conduent HR Consulting, LLC (Conduent).

The undersigned are Fellows of the Society of Actuaries, Members of the American Academy of Actuaries and Enrolled Actuaries. We individually meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained in this report. This report has been prepared in accordance with all applicable Actuarial Standards of Practice, and we are available to answer questions about it.

Respectfully submitted,

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Section I - Introduction

Under the California Constitution, the Board of Administration has plenary authority and fiduciary responsibility to provide for actuarial services. The CalPERS Chief Actuary advises the Board and directs the activities of the CalPERS professional actuarial staff. The Board also retains the services of an outside actuarial firm to review the work of the CalPERS professional actuarial staff and to certify that such work satisfies actuarial professional standards.

Buck Consultants, LLC was contracted to provide parallel valuation and certification services to the Board. Please note that in 2017, Buck Consultants, LLC has changed its name to Conduent HR Consulting, LLC. The name change does not impact our services to the Board – the same employees will continue to provide the same services and all terms and conditions still apply.

This report summarizes our review of the 1959 Survivor Benefit Program's actuarial valuation results as of June 30, 2016.

We first reviewed the actuarial assumptions and methods used for the June 30, 2016 1959 Survivor Benefit Program valuation. Our review reflects recent changes in the Actuarial Standards of Practice (ASOP) applicable to the selection of economic assumptions (ASOP 27) and the selection of demographic assumptions (ASOP 35). The results of our review are discussed in Section II.

Next, we completed parallel actuarial valuations for the 1959 Survivor Benefit Program in order to compare our key valuation results with those published in the valuation report prepared for the plan. CalPERS requested that we reconcile any differences of more than 5% between the two sets of valuation results. Section III contains a summary of our parallel valuation methodology. The results of our analysis are summarized in Section IV.

We have also reviewed the report for the 1959 Survivor Benefit Program in light of the most recent guidance incorporated in ASOP 6, the standard of practice for measuring retiree group benefits obligations and determining retiree group benefits plan costs or contributions. ASOP 6 was significantly updated in late 2014 for valuations made on or after March 31, 2015.

Section II - Review of Actuarial Assumptions and Methods

We have reviewed the actuarial assumptions and methods used in the 1959 Survivor Benefit Program valuation. The key valuation assumptions include the following:

- Expected rate of return on investments, net of expenses: 7.375%
- Decrement assumptions including mortality, and, for the PA Indexed Level Pool, rates of termination and retirement: based on the most recent experience study adopted by the Board

Actuarial Standard of Practice (ASOP) 27 discusses the selection of economic assumptions for the measurement of retiree group benefits liabilities. Similarly, ASOP 35 discusses the selection of demographic assumptions for the measurement of retiree group benefits liabilities. In our opinion, the assumptions used in the 1959 Survivor Benefit Program valuation are reasonable and the methodology used to select these assumptions is appropriate and consistent with the guidance provided in ASOP 27 and ASOP 35.

We have reviewed the assumed annual rate of return on plan assets of 7.375% using our own economic modeling tool and determined that it is a reasonable assumed long-term expected rate of return for the plan covered by this report.

Section III – Parallel Actuarial Valuation Methodology

The steps followed in our parallel actuarial valuation are described below.

The 1959 Survivor Benefit Program consists of 7 groups:

State 5th Level Pool

Schools 5th Level Pool

PA 1st Level Pool

PA 2nd Level Pool

PA 3rd Level Pool

PA 4th Level Pool

PA Indexed Level Pool

We requested a copy of the final June 30, 2016 valuation report for the 1959 Survivor Benefit Program, and completed the following steps:

- 1. For each group we requested:
 - a) The complete decrement tables used by CalPERS to prepare the valuation
 - b) The final participant data used in generating the valuation report
 - c) The key actuarial results presented in each valuation report (normal cost, actuarial accrued liability, present value of benefits, etc.).
- 2. Using the information provided in the valuation report and in 1(a) and 1(b) above, we produced a valuation for active participants in the PA Indexed Level Pool using ProVal[®], a commercially available valuation system used worldwide by actuaries and investment professionals. As is the practice at CalPERS, due to the nature of the 1959 Survivor Program calculations, we valued the remainder of the members using Excel. We generated the key actuarial results for comparison to results published in the actuarial valuation report.

- 3. We have communicated preliminary results to CalPERS via email and telephone discussions.
- 4. In our Summary of Findings in the next section, we provide the following:
 - · A recap of issues found in the actuarial review
 - A discussion of how issues were resolved
 - · A description of any outstanding issues

Section IV - Summary of Findings

Schedule B summarizes the results for the 1959 Survivor Benefit Program.

In our parallel valuation and review, we compared present values of future benefits, actuarial accrued liabilities, and total normal costs. We then used these key valuation results to compute and compare the total employer contribution rate. We are happy to report that our calculation of the employer contribution rates differed by less than 5% from the corresponding results reported by CalPERS.

Section V - Additional Comments and Recommendations

Our review has indicated that the actuarial process followed by CalPERS is thorough, complete, and complies with applicable Actuarial Standards of Practice. In this section, we provide some additional comments and recommendations.

Recommendations

1. Add information to the reports to meet new ASOP 6 requirements.

Actuarial Standard of Practice 6 (ASOP 6), which provides guidance for measuring retiree group benefits obligations and determining retiree group benefits plan costs or contributions, was significantly revised in 2014 for measurements made as of dates on or after March 31, 2015. We have noted the following items that may be considered for inclusion in future reports in order to more completely fulfill the requirements of the current version of ASOP 6:

- a) An enhanced description of the contribution allocation procedure, including a more detailed description of what the five-year ramp up and ramp-down in amortizations entail. (4.1(n) of ASOP 6)
- **b)** A statement regarding the impact of the funding policy on future contributions; i.e., an explanation that the impact on funding associated with a current-year gain or loss will be increasing over the next five years before leveling out. This observation is similar to item (a) above but slightly different, as this is specifically addressed to the impact on future contributions. (4.1(p) of ASOP 6)
- c) Some additional comments about the appropriateness of reported measures of the funded status of the plan for various purposes. (4.1(t) of ASOP 6)
- d) In accordance with 4.1(w), a statement about future measurements and the fact that they may differ from current measurements. While some analysis was included in the report we reviewed regarding the impact of potential variations in future investment returns, a more general statement about the potential effect of experience differing from assumptions may be needed in light of this requirement of ASOP 6.

Schedule A – Comparison of Active Member Data#

Plan		Number of Actives	Average Age	Average Service	
PA Index Level Pool – Misc	CalPERS	4,523	45.6	9.7	
	Conduent	4,523	45.6	9.7	
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PA Index Level Pool – Safety	CalPERS	6,189	39.7	11.3	
	Conduent	6,189	39.7	11.3	

#Detailed active demographic information is not published in the actuarial valuation report. Active member data shown for CalPERS above is from the CalPERS "log files" of valuation results used for normal cost generation.

Schedule B – Comparison of Key Valuation Results

Plan	Present Va	Present Value of Benefits		Projected Normal Cost (ER+EE) [®]	Employer Contribution Monthly Premium ^{@#}
State 5th Level Pool	CalPERS	146,264,802	146,264,802	n/a	\$5.20
	Conduent	148,617,336	148,617,336	n/a	\$5.25
	Difference	1.61%	1.61%	-	0.96%
Schools 5th Level Pool	CalPERS	12,856,706	12,856,706	n/a	\$0.00
	Conduent	13,279,719	13,279,719	n/a	\$0.00
	Difference	3.29%	3.29%	-	-
PA 1st Level Pool	CalPERS	2,727,022	2,727,022	n/a	\$0.00
	Conduent	2,740,783	2,740,783	n/a	\$0.00
	Difference	0.50%	0.50%	-	-
PA 2nd Level Pool	CalPERS	2,487,505	2,487,505	n/a	\$0.00
	Conduent	2,479,226	2,479,226	n/a	\$0.00
	Difference	-0.33%	-0.33%	-	-

Under the Term Insurance Method, the present value of future benefits and the accrued liability are equal and reflect only current death benefit beneficiaries. This method is used for all pools except the PA Indexed Level Pool, for which the Entry Age Normal method is used and for which the results shown include provisions for active members and their potential future beneficiaries.

Normal cost and employer contribution are projected to fiscal year 2017-18.
 Member monthly premiums are additional.

Schedule B – Comparison of Key Valuation Results (continued)

Plan	Present Value of Benefits		Accrued Liability [*]	Projected Normal Cost (ER+EE) [®]	Employer Contribution Monthly Premium ^{®#}
PA 3rd Level Pool	CalPERS	28,559,335	28,559,335	n/a	\$0.00
	Conduent	28,652,294	28,652,294	n/a	\$0.00
	Difference	0.33%	0.33%	-	-
PA 4th Level Pool	CalPERS	130,143,117	130,143,117	n/a	\$5.20
	Conduent	130,353,286	130,353,286	n/a	\$5.20
	Difference	0.16%	0.16%	-	-
PA Indexed Level Pool	CalPERS	350,162,418	19,296,481	1,124,881	\$3.50
	Conduent	353,159,512	19,011,889	1,114,529	\$3.35
	Difference	0.86%	-1.47%	-0.92%	-4.3%

Under the Term Insurance Method, the present value of future benefits and the accrued liability are equal and reflect only current death benefit beneficiaries. This method is used for all pools except the PA Indexed Level Pool, for which the Entry Age Normal method is used and for which the results shown include provisions for active members and their potential future beneficiaries.

Normal cost and employer contribution are projected to fiscal year 2017-18.

Member monthly premiums are additional.