BUCK

California Public Employees' Retirement System

Parallel Valuation and Certification Report
1959 Survivor Benefit Program Valuation

as of June 30, 2019

August 2020

110 West Berry Street
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August 1, 2020

Board of Administration
California Public Employees' Retirement System (CalPERS)
P.O. Box 942701
Sacramento, CA 94229-2701

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, 2019 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 we confirm that they conform to applicable Actuarial Standards of Practice.

In addition, we completed a parallel actuarial valuation of 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, 2019 valuation of the plan. We compared the 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 key calculations matched those prepared by CalPERS staff within 5%, which was the target tolerance level specified by CalPERS. We view the differences as not material.

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. Because of the risk of misinterpretation of actuarial results, Buck recommends requesting its advance review of any statement, document, or filing to be based on information contained in this report. Buck will accept no liability for any such statement, document or filing made without its prior review.

This report was prepared under the supervision of David L. Driscoll, a Fellow of the Society of Actuaries, a Member of the American Academy of Actuaries and an Enrolled Actuary, and Peer Reviewed by Kelly L. Adams, an Associate of the Society of Actuaries, a Member of the American Academy of Actuaries and an Enrolled Actuary. We 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,

Buck Global, LLC (Buck

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Table of Contents

Section

Schedules

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 was contracted to provide parallel valuation and certification services to the Board.

This report summarizes our review of the 1959 Survivor Benefit Program's actuarial valuation results as of June 30, 2019. We did not audit or review the final valuation data provided to us by CalPERS for this parallel valuation, as review of the data is explicitly excluded from the scope of this assignment.

We first reviewed the actuarial assumptions and methods used for the June 30, 2019 1959 Survivor Benefit Program valuation. Our review is based on 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 also reviewed the report for the 1959 Survivor Benefit Program in light of ASOP 6, the standard of practice for measuring retiree group benefits obligations and determining retiree group benefits plan costs or contributions.

We also reviewed the report for the 1959 Survivor Benefit Program based on the requirements of ASOP 4, the standard of practice for measuring pension obligations and determining pension plan costs or contributions. The results of our review are shown in Section V.

Finally, we reviewed compliance with ASOP 51, which applies to funding calculations such as those presented in the June 30, 2019 1959 Survivor Benefit Program valuation report and requires certain disclosures of potential risks. We found that the risks associated with this plan were thoroughly and appropriately addressed.

Schedule C lists the recommendations contained in our previous parallel valuation and certification report for the 1959 Survivor Benefit Program, as well as our observations related to CalPERS's action on these recommendations.

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: 7.00%
- 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 long-term annual rate of return on plan assets of 7.00% 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.

Recommendations

1. **Add information to the report to meet ASOP 27 communication requirements.**

   We note the following items may be considered for inclusion in future reports to more completely fulfill the requirements of ASOP 27.

   a.) In accordance with section 4.1.1, a statement that the return on investment assumption represents an estimate of future experience.

   b.) In accordance with section 4.1.2, a disclosure of the rationale for the return on investment assumption.

Section III – Parallel Actuarial Valuation Methodology

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

The 1959 Survivor Benefit Program consists of seven 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, 2019 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.
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. **Revise the treatment of the new element of the projection of the unfunded liability (UAL) labeled "Changes in Contributions due to Contribution (Gain)/Loss."**

   The projected UAL is the base that is amortized as part of the required contribution determination. The element in question was added to "reflect differences in calculated Normal Costs from the prior year and the current year, as well as differences in Actual and Estimated members." The idea is to anticipate contributions that deviate from expectation due to the realization of head counts or changes in the normal cost rate, e.g., if actual head counts are greater than expected, then more contributions would be made than expected, resulting in a contribution gain. According to the indicated formula, a positive number serves to reduce the projected UAL and a negative number serves to increase the projected UAL. However, it appears that the reverse case should be applied.

   Consider, for example, PA 1st Level Pool. The prior valuation assumed 7,300 actives, but there were really 7,290. The lower head count would result in decreased contributions, which is a loss. A loss would increase the projected UAL, but in the projection on page 14, it is lowering it.

   It should be noted that the amortization treatment appears to be correct, and the resulting premium amounts are therefore unaffected. The two pools for which explicit amortization is applicable are as follows:

   - State 5th Level –The "Projected Balance 6/30/2020" of $38,741,015 shown on page 16 does not equal the projected UAL developed on page 13 (line 3h, $38,276,781). On page 13, the "Changes in Contributions due to Contribution (Gain)/Loss" of $224,395 reduced the projected UAL. On page 16, it was added to the amortization base as a loss.
   - Public Agency 4th Level—the amortization is not explicitly described, but the report indicates that the amortization period is 30 years. The projected UAL shown on page 14 is ($7,234,369) and reflects a "Changes in Contributions due to Contribution (Gain)/Loss" of ($207,106). The amortization amount shown on page 14 (line 4d) is ($596,979). This should be a 30-year amortization of the projected UAL, adjusted to mid-year with interest. Using this information to solve for the amortization base obtains ($7,662,830). This can be shown to be the result of "reversing the signs", i.e., increasing the projected UAL by $207,106, but reducing the amortization base by $207,106.

2. **Refine the projected UAL calculation with a more precise application of interest on the projected employee contributions.**

   The premium employees pay is constant throughout the year; e.g., if the premium is $2 per employee per month, then $24 is collected for an active member over the course of the year. Thus, for purposes of determining funding requirements, the employee premium is a mid-year contribution, in effect. In instances where the projected UAL is reduced for employee contributions in excess of funding requirements, the report is adjusting the expected employee premiums paid (line 3e) by one-half year's interest, i.e., it is the product of the annualized prior year premium rate, the projected active count, and the interest adjustment equal to $1.07^{1/2}$. Since the premiums are effectively mid-year, then the interest adjustment actually increases the value to end of year. Thus, the interest applied to that value in line 3h is unwarranted.

   From a practical point of view, the only way this could have an effect is if the employee contributions only partially exceed the required contribution, which means that group would have to be nearly fully funded, but not entirely so. None of the seven groups are in this situation, thus, no group is affected this year since those groups for which the necessary condition applies (employee contributions are in excess of funding requirements) are so

Section V – Additional Comments and Recommendations (continued)

well-funded that the amortization is simply an offset of the normal cost; i.e., the UAL is not explicitly used in the amortization.

3. **Provide more detail on the development of normal cost for all groups except PA Indexed Level Pool.**

   The development of the normal costs should be more overt, including more detail on the historical information used to develop the normal cost. Also, for PA 1st, 2nd, 3rd and 4th Level Pools, we recommend furnishing more detail on how the grouping method, as explained in the footnote, was used to determine the normal cost for each individual pool.

Schedule A – Comparison of Active Member Data[1]

Plan		Number of Actives	Average Age	Average Service
PA Index Level Pool – Misc	CalPERS	5,203	44.1	8.2
	Buck	5,203	44.1	8.3
PA Index Level Pool – Safety	CalPERS	5,859	39.9	11.3
	Buck	5,859	39.9	11.3

[1] Detailed active demographic information is not published in the actuarial valuation report. Active member data shown for CalPERS above is from the data furnished by CalPERS.

Schedule B – Comparison of Key Valuation Results

Plan		Present Value of Benefits	Accrued Liability	Projected Normal Cost (ER+EE)[1]	Employer Contribution Monthly Premium[2]
State 5th Level Pool	CalPERS	151,352,423	151,352,423	n/a	$5.95
	Buck	151,245,602	151,245,602	n/a	$5.90
	Difference	-0.07%	-0.07%	-	-0.84%
Schools 5th Level Pool	CalPERS	15,546,665	15,546,665	n/a	$0.00
	Buck	15,031,107	15,031,107	n/a	$0.00
	Difference	-3.32%	-3.32%	-	-
PA 1st Level Pool	CalPERS	3,032,539	3,032,539	n/a	$0.00
	Buck	3,032,721	3,032,721	n/a	$0.00
	Difference	0.01%	0.01%	-	-
PA 2nd Level Pool	CalPERS	2,560,774	2,560,774	n/a	$0.00
	Buck	2,554,550	2,554,550	n/a	$0.00
	Difference	-0.24%	-0.24%	-	-
PA 3rd Level Pool	CalPERS	31,845,095	31,845,095	n/a	$0.00
	Buck	31,649,944	31,649,944	n/a	$0.00
	Difference	-0.61%	-0.61%	-	-
PA 4th Level Pool	CalPERS	145,555,960	145,555,960	n/a	$5.20
	Buck	145,237,585	145,237,585	n/a	$5.10
	Difference	-0.22%	-0.22%	-	-1.92%
PA Indexed Level Pool	CalPERS	28,019,006	19,880,662	1,144,605	$2.40
	Buck	28,377,035	19,678,492	1,123,833	$2.30
	Difference	1.28%	-1.02%	-1.81%	-4.17%

[1] Normal cost and employer contribution are projected to fiscal year 2020-21.

Schedule C – Previous Parallel Valuation and Certification Report 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)
Comment: The June 30, 2019 valuation report is the first valuation to reflect a change in the funding method; thus, this recommendation is no longer applicable as it strictly pertains to the June 30, 2016 report.

b) A statement regarding the impact of the funding policy on future contributions and funded status; 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 and funded status. (4.1(p) of ASOP 6)
Comment: This does not appear to have been specifically addressed

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)
Comment: This does not appear to have been specifically addressed.

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 discount rate, mortality assumptions, and future investment returns on contributions in near-term future years, a more general statement about the potential effect of experience differing from assumptions may be needed in light of this requirement of ASOP 6.
Comment: This does not appear to have been specifically addressed.