Milliman

February 16, 2024

Teachers' Retirement Board
California State Teachers' Retirement System
P.O. Box 15275
Sacramento, CA 95851

Re: Lump Sum Death Benefit Level

Dear Members of the Board:

Under certain conditions, lump sum death benefits are payable to the beneficiaries of Defined Benefit Program members. The lump sum death benefit levels were established in 1992 without an automatic cost-of-living adjustment. The benefit structure was specifically designed to address the Older Workers' Benefit Protection Act and to be "cost neutral" between Coverage A and Coverage B. An automatic escalation of the lump sum payments was not included at that time because of the actuarial cost of such a provision. Therefore, the ad hoc approach was developed so that an increase could be granted after each actuarial valuation at the discretion of the Retirement Board.

It is our understanding that CalSTRS is considering a policy that would give the board direction on whether (and how much) to increase the lump-sum death benefit level each year. At CalSTRS request, we have studied the cost of two potential increases to the lump sum death benefit amount. Note that based on our understanding of the CalSTRS Funding Plan, any increases in the lump sum death benefit would have to be funded by state contributions.

Death Benefit

Upon death of an active Coverage A employee or a Coverage A or B retiree, a lump sum death benefit of $6,903 is paid. For active Coverage B members, the lump sum death benefit equals four times the active Coverage A amount, which is equal to $27,612. Coverage B members consist of members hired on or after October 16, 1992 or Coverage A members who elected Coverage B before April 1993.

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Findings

Education Code Sections 23801(c), 23851(c), and 23880(b) provide that the Retirement Board "may adjust the death payment amount following each actuarial valuation based on changes in the All Urban California Consumer Price Index." Our understanding is that CalSTRS is considering a policy that would give the board direction to increase the death benefit each year if the Defined Benefit Program Funded Ratio is ahead of the projected Funded Ratio at the time the Funding Plan was originally implemented and is on track to reach a 100% Funded Ratio by 2046.

We studied two options for the policy, both with increases being tied to actual inflation: one where increases are capped at 2% each year, and one capped at 2.75% (the valuation assumption for inflation). There would also be a catch-up provision, so if inflation was higher than the capped amount one year and less than cap amount in a succeeding year, the excess inflation from the one year could be used to catch up the amount in the succeeding year which had low inflation. For purposes of this analysis, we have assumed that inflation would equal the assumption every year.

Based on our analysis, a summary of the results is shown in the following table. The estimates are based on the results of the 2022 Actuarial Valuation of the DB Program and use the new assumptions adopted as part of the 2024 Experience Analysis. Further details are provided in the remainder of the letter.

| | 2022 Valuation with New Assumptions | Impact of Potential Change | |
		2.00% Increases	2.75% Increases
Unfunded Actuarial Obligation ($millions)	$ 83,730	$ +403	$ +615
Funded Ratio	75.46 %	-0.08 %	-0.13 %
Level Percentage Funding Rate for Lump Sum Death Benefits Only[1]	0.233 %	+0.138 %	+0.213 %

1. The level percentage funding rate shown in the 2022 valuation column is based on a 24-year amortization of the actuarial obligation. The cost of the increase reflects a 15-year amortization of the increase in the active actuarial obligation and a 10-year amortization of the increase in the actuarial obligation for inactive members and retirees.

Note that projections based on the 2022 valuation, with the newly adopted assumptions and reflecting either of the proposed lump-sum death benefit policies, show that in each future year the projected Funded Ratio is ahead of the projected values at the time the Funding Plan was implemented, and the Funded Ratio is projected to be at least 100% by 2046. Therefore, for purposes of this study, we have assumed the increase to the lump-sum death benefit level would occur every year in the future.

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The applicable death benefit levels were established by statute, effective on October 16, 1992, and changed to the levels shown in the following table by the Retirement Board actions after subsequent actuarial valuations.

| Effective Date | Measurement Date | California CPI | Lump Sum Death Benefit Amounts | | |
| | | | Retired Members | Active Members | |
				Coverage A	Coverage B
Previously Adopted:					
October, 1992	October, 1992	147.5	$ 5,000	$ 5,000	$ 20,000
July, 1995	December, 1993	150.7	$ 5,110	$ 5,110	$ 20,440
January, 1997	December, 1995	154.2	$ 5,227	$ 5,227	$ 20,908
July, 1998	December, 1997	162.0	$ 5,493	$ 5,493	$ 21,974
July, 1999	December, 1998	165.1	$ 5,598	$ 5,598	$ 22,394
July, 2000	December, 1999	170.0	$ 5,763	$ 5,763	$ 23,052
July, 2001	December, 2000	177.3	$ 6,010	$ 6,010	$ 24,040
July, 2002	December, 2001	181.8	$ 6,163	$ 6,163	$ 24,652
July, 2018	December, 2017	265.652	$ 6,372	$ 6,372	$ 25,488
July, 2021	December, 2020	287.367	$ 6,480	$ 6,480	$ 25,920
July, 2022	December, 2021	306.109	$ 6,903	$ 6,903	$ 27,612

The costs for each of the following options are measured on a hypothetical 15-year payment of the increase in the Unfunded Actuarial Obligation (UAO) for active members. A 10-year amortization is used for the increase in UAO attributable to inactive members and retirees. These periods were selected to be consistent with actuarial guidance on amortizing unfunded liabilities due to increases in benefit levels. Please see the discussion on the impact of using a longer amortization period. Note that CalSTRS is targeting a 100% funded ratio by 2046, which means the effective amortization period used for the DB Program calculations was 24 years in the 2022 Actuarial Valuation.

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Option #1 – 2% Increase each year

Under this option, the lump sum death benefit amounts would be expected to increase by 2.0% each year, with the first increase effective July 1, 2024. The calculated amount for this option for July 1, 2024 is shown below:

$$\text{July 2024 Amount} \quad = \quad \$6,903 \quad x \quad 1.02 \quad = \quad \$7,041$$

By convention, the result is rounded to a whole dollar amount and the Coverage B level for active members is set to four times the Coverage A amount.

For purposes of this analysis, we have assumed the lump-sum amount would be further increased by 2% each year, although the actual increase (or no increase) would be a board decision each year. The following table shows what the future lump-sum amounts would be with 2% annual increases first effective in July of 2024.

Effective Date	Lump Sum Death Benefit Amounts (Assuming 2% Annual Increases)		
	Retired Members	Active Members	
		Coverage A	Coverage B
July, 2023	$ 6,903	$ 6,903	$ 27,612
July, 2024	$ 7,041	$ 7,041	$ 28,164
July, 2025	$ 7,182	$ 7,182	$ 28,728
:	:	:	:
July, 2035	$ 8,755	$ 8,755	$ 35,020
:	:	:	:
July, 2045	$ 10,672	$ 10,672	$ 42,688
:	:	:	:
July, 2055	$ 13,009	$ 13,009	$ 52,036

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If it is assumed the board adopts 2% increases to the death benefit levels for current and future retirees, we estimate the total Actuarial Obligation would increase by $403 million, and the level percentage funding rate for the lump sum death benefits would increase by 0.138% of Earned Salaries. The estimates are based on the results of the 2022 Actuarial Valuation of the DB Program and use the new assumptions adopted as part of the 2024 Experience Analysis.

Option #1 – 2% annual increases effective 7/1/2024			
$Millions	**Before Adjustment**	**Cost of Increase**	**After Adjustment**
Funded Status of DB Program as of June 30, 2022			
Present Value of Benefits	$ 430,437	$ 489	$ 430,926
Present Value of Future Normal Costs	89,170	86	89,256
Actuarial Obligation	$ 341,267	$ 403	$ 341,670
Actuarial Value of Assets	257,537	-	257,537
Unfunded Actuarial Obligation	$ 83,730	$ 403	$ 84,133
Funded Ratio	75.46 %	-0.08 %	75.38 %
Level Percentage Funding Rate for Lump Sum Death Benefits Only[1]			
Normal Cost	0.040 %	0.019 %	0.059 %
Unfunded Actuarial Obligation	0.193 [2]	0.119	0.312 [2]
Total Level Percentage Funding Rate	0.233 %	0.138 %	0.371 %

1. The level percentage funding rate before adjustment is based on a 24-year amortization of the actuarial obligation. The cost of the increase reflects a 15-year amortization of the increase in the active actuarial obligation and a 10-year amortization of the increase in the actuarial obligation for inactive members and retirees.

2. Hypothetical rate assuming no assets allocated to pay lump sum death benefits.

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Option #2 – 2.75% Increase each year

Under this option, the lump sum death benefit amounts would be expected to increase by 2.75% each year on average, with the first increase effective July 1, 2024. The calculated amount for this option for July 1, 2024 is shown below:

$$\text{July 2024 Amount} = \$6{,}903 \times 1.0275 = \$7{,}093$$

By convention, the result is rounded to a whole dollar amount and the Coverage B level for active members is set to four times the Coverage A amount.

For purposes of this analysis, we have assumed the lump-sum amount would be further increased by 2.75% each year, although the actual increase (or no increase) would be a board decision each year. The following table shows what the future lump-sum amounts would be with 2.75% annual increases first effective in July of 2024.

| Effective Date | Lump Sum Death Benefit Amounts (Assuming 2.75% Annual Increases) | | |
| | Retired Members | Active Members | |
		Coverage A	Coverage B
July, 2023	$ 6,903	$ 6,903	$ 27,612
July, 2024	$ 7,093	$ 7,093	$ 28,372
July, 2025	$ 7,288	$ 7,288	$ 29,152
:	:	:	:
July, 2035	$ 9,559	$ 9,559	$ 38,236
:	:	:	:
July, 2045	$ 12,538	$ 12,538	$ 50,152
:	:	:	:
July, 2055	$ 16,445	$ 16,445	$ 65,780

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If it is assumed the board adopts full inflation-linked increases to the death benefit levels for current and future retirees and inflation is equal to the valuation assumption of 2.75%, we estimate the total Actuarial Obligation would increase by $615 million, and the level percentage funding rate for the lump sum death benefits would increase by 0.213% of Earned Salaries. The estimates are based on the results of the 2022 Actuarial Valuation of the DB Program and use the new assumptions adopted as part of the 2024 Experience Analysis.

Option #2 – Full inflation-linked increases (assumed to be 2.75% per year) effective 7/1/2024			
$Millions	Before Adjustment	Cost of Increase	After Adjustment
Funded Status of DB Program as of June 30, 2022			
Present Value of Benefits	$ 430,437	$ 756	$ 431,193
Present Value of Future Normal Costs	89,170	141	89,311
Actuarial Obligation	$ 341,267	$ 615	$ 341,882
Actuarial Value of Assets	257,537	-	257,537
Unfunded Actuarial Obligation	$ 83,730	$ 615	$ 84,345
Funded Ratio	75.46 %	-0.13 %	75.33 %
Level Percentage Funding Rate for Lump Sum Death Benefits Only[1]			
Normal Cost	0.040 %	0.031 %	0.071 %
Unfunded Actuarial Obligation	0.193 [2]	0.182	0.375 [2]
Total Level Percentage Funding Rate	0.233 %	0.213 %	0.446 %

1. The level percentage funding rate before adjustment is based on a 24-year amortization of the actuarial obligation. The cost of the increase reflects a 15-year amortization of the increase in the active actuarial obligation and a 10-year amortization of the increase in the actuarial obligation for inactive members and retirees.

2. Hypothetical rate assuming no assets allocated to pay lump sum death benefits.

Consideration

Since the law states the board "may" adjust the amounts, the drafters of the legislation clearly did not intend the adjustment to be automatic. By implication, our opinion is that the adjustment should be granted by the Retirement Board only if the System can afford to do so. For both of the policies considered in this analysis, we understand this consideration is addressed by requiring the two-pronged Funded Ratio test (described above) to be met prior to approving an adjustment. Based on the 2022 valuation with newly adopted assumptions and these actuarial calculations, adopting a policy that would provide increases under either of the two options would not significantly change the funded status of the DB Program, lowering the Funded Ratio by 0.08% for Option 1 and by 0.13% for Option 2. Note that this assumes projected future increases would be pre-recognized in the valuation, which would be our recommendation, even though the increases would still be subject to board action each year.

If the board adopts either one of these proposed lump sum death benefit policies, this cost will ultimately be passed on to the state or employers in the form of higher contributions. The lump sum death benefit, including past increases above $5,000, is treated as a benefit under the 1990 structure, so it is our understanding that the cost of future increases in the lump sum death benefit level would need to be funded by state contributions. The board should consider the comparative value of creating an established framework for future increases to the lump sum death benefit with the associated increase in costs.

Sensitivity to Assumptions

As noted in this report, the costs are based on the CalSTRS valuation assumptions that were adopted as part of the 2024 Experience Analysis. To the extent these assumptions are not met, it will affect the ultimate long-term costs of any change to the death benefit policy, possibly significantly. For example, if the costs were measured using a 6.75% investment return rather than 7.00%, it would increase the UAO for Option 1 by approximately $14 million from $403 million to $417 million, as well as increasing the expected value of benefits to be earned in the future.

Impact of Longer Amortization Period

CalSTRS funds its current UAO over a closed period ending 2046, a longer period than used in this analysis. For comparison, we have shown the level percent funding rate (including both the increased Normal Cost rate and UAO contribution rate) if it were measured over the 24-year period CalSTRS is using to fund its UAO. Based on past practice, the entire UAO, including any changes to the lump-sum death benefit policy, would be amortized over this declining period. Note that the length of the amortization period does not impact the estimated present value of the cost in dollar terms, but it does impact the rate at which the increased cost is funded.

Options (Change Effective July 1, 2024)	Cost of Increase	
	10-/15-Year Amort	24-Year Amort
Option #1 – 2% annual increases	0.138%	0.089%
Option #2 – Full inflation-linked increases (2.75% per year)	0.213%	0.139%

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Risk Discussion

The results of any actuarial valuation or study are based on a set of assumptions. Although we believe the newly adopted assumptions used in this analysis provide a reasonable estimate of future expectations, it is almost certain that future experience will differ from the assumptions to some extent. To the extent actual experience varies from the assumptions, this will likely cause either increases or decreases in the plan's future funding level and calculated contribution rates.

In particular, the ultimate cost of increasing the lump sum death benefit level, as discussed in this letter, is highly dependent on how closely actual experience follows the assumptions. If actual demographic experience or future demographic assumptions are different than assumed in this study, then the cost of the lump sum death benefit scenarios may be significantly different than shown in this report.

Examples of factors that can have a significant impact on the study results are:

- Inflation (to the extent the lump-sum death benefit level is related to inflation)
- Demographic experience (primarily mortality, but also termination, disability, retirement from employment, etc.)
- Investment return
- Payroll variation

Variations in mortality, inflation and the investment return assumption are most likely to have the greatest impact on the ultimate cost of the lump sum death benefit.

It should be noted that if future experience is worse than expectations and projected funding falls below the target causing future increases not to be adopted, this could actually reduce the estimated cost of the two options; however, the overall cost of the DB Program would increase under this scenario.

We have provided a simplified analysis showing the sensitivity to potentially lower investment returns in the Sensitivity to Assumptions section. This analysis shows a future annual investment return of just 0.25% lower than the 7.0% assumption would increase the anticipated cost of the Option 1 increase in the lump sum death benefit by 3% to 4%. Therefore, if future investment returns fall significantly short of 7.0%, this could significantly increase the cost of the various options. Conversely, if investment returns exceed 7.0%, this would reduce the cost.

The ultimate cost would be directly affected by actual levels of future inflation. If future inflation is less than 2.0% or 2.75%, the expected cost would be less. Including the caps on the increases should prevent actual inflation from causing a material increase in costs.

Risks specific to the DB Program are discussed in Milliman's 2022 DB Program valuation report and the "Review of Funding Level and Risks" produced each fall by CalSTRS actuarial staff. If CalSTRS wants additional analysis on these risks, Milliman can provide a detailed analysis.

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Assumptions and Methods

All data and methods are the same as those used in our June 30, 2022 Actuarial Valuation of the DB Program, except where noted. The assumptions used in this analysis are based on the new assumptions adopted as part of the 2024 Experience Analysis. Please refer to those reports for further details.

It should be noted that we have not made any changes in the demographic assumptions, as it is difficult to anticipate how plan changes will impact participant behavior, but changes in behavior could result. However, we do not expect that increasing the lump sum death benefit would significantly impact member behavior.

Actuarial Certification

The cost estimates presented in this letter reflect the benefit provisions in effect as of June 30, 2022, except where noted. These cost estimates are subject to the uncertainties of a regular actuarial valuation; the costs are inexact because they are based on assumptions that are themselves necessarily inexact, even though we consider them reasonable. Thus, the emerging costs may vary from those presented in this letter to the extent actual experience differs from that projected by the actuarial assumptions.

In preparing the June 30, 2022 actuarial valuation upon which this letter is based, we relied, without audit, on information (some oral and some in writing) supplied by CalSTRS staff. This information includes, but is not limited to, statutory provisions, employee data, and financial information. In our examination of these data, we have found them to be reasonably consistent and comparable with data used for other purposes.

All costs, liabilities, rates of interest, and other factors for CalSTRS have been determined on the basis of actuarial assumptions and methods which are individually reasonable (taking into account the experience of CalSTRS and reasonable expectations); and which, in combination, offer a reasonable estimate of anticipated CalSTRS experience and are expected to have no significant bias. Further, in our opinion, each actuarial assumption used is reasonably related to the experience of the Plan and to reasonable expectations which, in combination, represent a reasonable estimate of anticipated experience.

The valuation results were developed using models employing standard actuarial techniques. We have reviewed the models, including their inputs, calculations, and outputs for consistency, reasonableness, and appropriateness to the intended purpose and in compliance with generally accepted actuarial practice and relevant actuarial standards of practice. We have incorporated other sources of economic data in assessing the reasonableness of the assumptions. Reliance on other experts is reflected in Milliman's capital market assumptions, and in Milliman's expected return model maintained by Milliman investment consultants. We have also considered CalSTRS investment policy, capital market assumptions, and expected return model in our assessment of the investment return assumption.

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Future actuarial measurements may differ significantly from the current measurements presented in this letter 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; increases or decreases expected as part of the natural operation of the methodology used for these measurements; and changes in plan provisions or applicable law. Due to the limited scope of our assignment, we did not perform an analysis of the potential range of future measurements. The Teachers' Retirement Board has sole authority to determine the actuarial assumptions and methods used for the valuation of the DB Program. The board adopted the actuarial assumptions and methods to be used in the 2023 valuation as indicated in Appendix A-1 of the 2024 Experience Analysis.

Actuarial computations presented in this letter are for purposes of determining the estimated cost of increasing the lump sum death benefit. The calculations in this letter have been made on a basis consistent with our understanding of CalSTRS current funding requirements. Determinations for purposes other than meeting these requirements may be significantly different from the results contained in this letter. Accordingly, additional determinations may be needed for other purposes.

Milliman's work is prepared solely for the internal business use of CalSTRS. To the extent that Milliman's work is not subject to disclosure under applicable public records laws, Milliman's work may not be provided to third parties without Milliman's prior written consent. Milliman does not intend to benefit or create a legal duty to any third party recipient of its work product. Milliman's consent to release its work product to any third party may be conditioned on the third party signing a Release, subject to the following exceptions:

(a) CalSTRS may provide a copy of Milliman's work, in its entirety, to CalSTRS professional service advisors who are subject to a duty of confidentiality and who agree to not use Milliman's work for any purpose other than to benefit CalSTRS.

(b) CalSTRS may provide a copy of Milliman's work, in its entirety, to other governmental entities, as required by law.

No third-party recipient of Milliman's work product should rely upon Milliman's work product. Such recipients should engage qualified professionals for advice appropriate to their own specific needs.

The consultants who worked on this assignment are actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

The signing actuaries are independent of the plan sponsor. We are not aware of any relationship that would impair the objectivity of our work.

On the basis of the foregoing, we hereby certify that to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices which are consistent with the principles prescribed by the Actuarial Standards Board and the *Code of Professional Conduct*

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and *Qualification Standards for Actuaries Issuing Statements of Actuarial Opinion* in the United States promulgated by the American Academy of Actuaries. We are members of the American Academy of Actuaries and meet its Qualification Standards to render the actuarial opinion contained herein.

We respectfully submit this letter, and we look forward to discussing it with you. If you have any questions, please contact us.

Sincerely,

Nick J. Collier, ASA, EA, MAAA
Principal and Consulting Actuary

Scott D. Preppernau, FSA, EA, MAAA
Principal and Consulting Actuary

Julie D. Smith, FSA, EA, MAAA
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