Milliman

Cash Balance Benefit Program of the California State Teachers' Retirement System

June 30, 2023 Actuarial Valuation

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Teachers' Retirement Board
California State Teachers' Retirement System

Re: Cash Balance Benefit Program Actuarial Valuation as of June 30, 2023

Dear Members of the Board:

At your request, we have performed an actuarial valuation of the Cash Balance Benefit (CBB) Program of the State Teachers' Retirement System as of June 30, 2023. Details about the actuarial valuation are contained in the following report. The major findings of the 2023 Actuarial Valuation are contained in this report. This report reflects the benefit provisions and contribution rates in effect as of the valuation date.

Actuarial Certification

To the best of our knowledge and belief, this report is complete and accurate and contains sufficient information to fully and fairly disclose the funded condition of the CBB Program as of June 30, 2023.

In preparing this report, 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. The valuation results depend on the integrity of this information. If any of this information is inaccurate or incomplete, our results may be different and our calculations may need to be revised.

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 experience affecting CalSTRS. Further, in our opinion, each actuarial assumption used is reasonably related to the experience of CalSTRS and to reasonable expectations which, in combination, represent a reasonable estimate of anticipated experience and are expected to have no significant bias.

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.

This valuation report is only an estimate of the System's financial condition as of a single date. It can neither predict the System's future condition nor guarantee future financial soundness. Actuarial valuations do not affect the ultimate cost of System benefits, only the timing of System contributions. While the valuation is based on an array of individually reasonable assumptions, other assumption sets may also be reasonable and valuation results based on those assumptions would be different. No one set of assumptions is uniquely correct. Determining results using alternative assumptions is outside the scope of our engagement.

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; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the Plan's funded status); 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 CBB Program. The board adopted the actuarial methods and assumptions used in the 2023 valuation. There were no changes in plan provisions (except that results are shown with and without an Additional Earnings Credit as of June 30, 2023) or methods that affected the 2023 CBB Program valuation. The assumptions have been updated since the last valuation.

Actuarial computations presented in this report are for purposes of assessing the funding of the CBB Program. The calculations in the enclosed report have been made on a basis consistent with our understanding of the CBB Program funding structure. Determinations for other purposes may be significantly different from the results contained in this report. 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:

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(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.

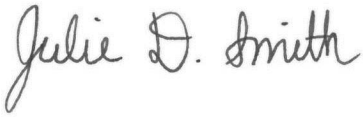
On the basis of the foregoing, we hereby certify that to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices which are consistent with the principles prescribed by the Actuarial Standards Board and the Code of Professional Conduct 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 would like to express our appreciation to the CalSTRS staff who gave substantial assistance in supplying the data on which this report is based. We respectfully submit the following report and we look forward to discussing it with you.

Sincerely,

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

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



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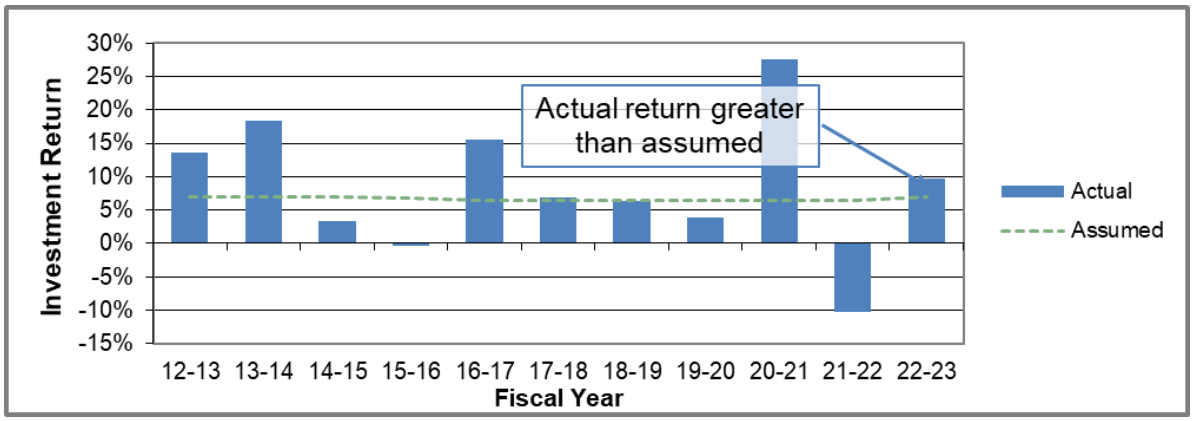
1. Summary of the Findings

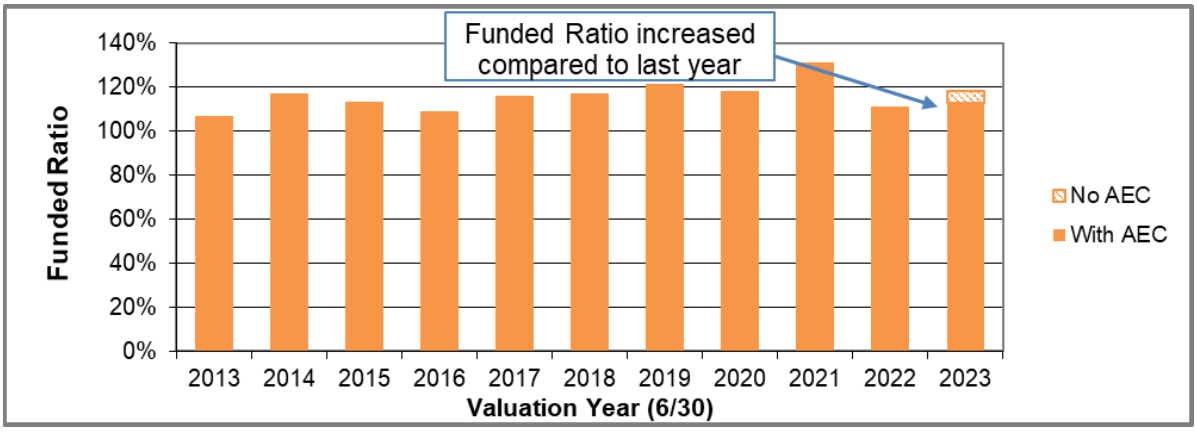
The primary purpose of the actuarial valuation is to determine the financial condition of the CBB Program through the measurement of the Gain and Loss Reserve. By using the actuarial methods and assumptions adopted by the Teachers' Retirement Board, this actuarial valuation provides an estimate of the financial condition of the CBB Program. The assumptions and methods were adopted at the January 2024 Teachers' Retirement Board meeting. The assumptions have been updated since the last valuation including increasing the investment return assumption from 6.5% to 7.0%.

The key findings of this actuarial valuation are:

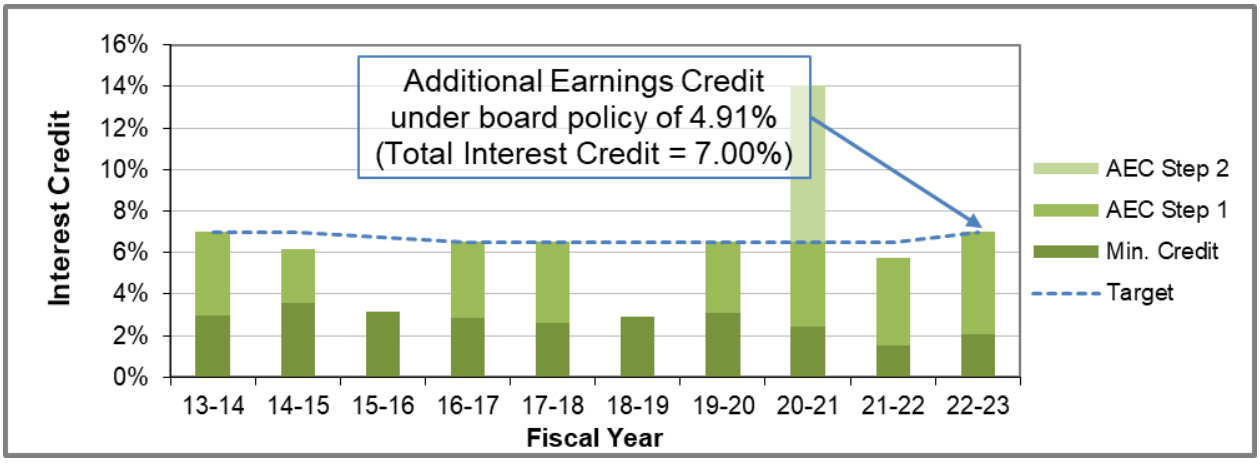
- The **investment return** for the 2022-23 fiscal year was calculated to be 9.7%, greater than the assumed 6.5% in the previous valuation, and was the primary factor affecting the results in this valuation.



- The **Funded Ratio** increased from 111.0% to 112.8% due to the investment return being greater than the assumed 6.5% return for the prior fiscal year. The Funded Ratio of 112.8% is after granting the Additional Earnings Credit (AEC) pursuant to board policy. The following table also shows the Funded Ratio of 118.2% as of June 30, 2023 prior to granting the AEC for the year.



- Under board policy, an **Additional Earnings Credit** of 4.91% is calculated for June 30, 2023 account balances for non-retired members. The total amount of this credit is $19,134,000. The following chart shows the minimum interest rate credited each year as well as the additional credit granted under Step 1 and Step 2 of the policy through the 2022-23 fiscal year. The dotted line (target) is the return assumption for each fiscal year. The details of the Step 1 and Step 2 additional credit calculations are described on page 8 of the report.



Results

As of June 30, 2023, the Actuarial Value of Assets of the Cash Balance Benefit (CBB) Program exceeds the Actuarial Obligation by $73,470,000. This number is a negative Unfunded Actuarial Obligation (UAO), sometimes referred to as an Actuarial Surplus. Consistent with its policy, the board granted an Additional Earnings Credit of 4.91% as of June 30, 2023, as discussed in this report.

($ Thousands)	June 30, 2023	June 30, 2022
Actuarial Balance Sheet		
Actuarial Obligation (before Add'l Credit)		
Active Members	$ 198,968	$ 190,945
Inactive Members	190,719	174,512
Retirees and Beneficiaries	14,803	13,936
Total	404,490	379,393
Actuarial Value of Assets	477,960	438,121
Unfunded Actuarial Obligation / (Actuarial Surplus)	$ (73,470)	$ (58,728)
Additional Earnings Credit	19,134	15,313
Final Unfunded Actuarial Obligation / (Actuarial Surplus)	$ (54,336)	$ (43,415)
Funded Ratio (Assets ÷ Actuarial Obligation)		
Before Additional Credit	**118.16%**	**115.48%**
After Additional Credit	**112.83%**	**111.00%**

The Actuarial Value of Assets for this valuation is the Fair Market Value as provided to us by CalSTRS. The actual return for the year for the CBB Program, as measured using uniform cash flow throughout the year, was about 9.7% net of investment and administrative expenses.

($ Thousands)	Year Ended June 30, 2023	Year Ended June 30, 2022
Additions		
Contributions	$ 18,497	$ 17,952
Earnings	43,361	(48,377)
Change in GASB Adjustment	(35)	(100)
Total Additions	$ 61,823	$ (30,525)
Deductions		
Benefits	$ 20,954	$ 13,298
Expenses	1,030	1,039
Total Deductions	21,984	14,337
Net Increase (Decrease)	$ 39,839	$ (44,862)
Net Assets		
Beginning of Year	$ 438,121	$ 482,983
Net Increase (Decrease)	39,839	(44,862)
End of Year	$ 477,960	$ 438,121
Estimated Net Rate of Return	9.7%	-10.2%

If the experience had emerged as assumed, the Actuarial Surplus would have increased from $43,415,000 to $46,237,000. The difference between the actual and expected UAO is the actuarial gain or loss for the year.

- There was an actuarial gain of $13,898,000 due to the actual investment return being greater than last year's assumed long-term return of 6.50%.
- There was an actuarial gain of $13,335,000 on the Actuarial Obligation. This consisted of a gain of $12,720,000 primarily due to the interest credit being less than the assumed 6.50% for the prior year. The Minimum Interest Rate for the 2022-23 fiscal year was 2.09%. It also includes a gain of $615,000 due updated mortality assumptions and updating the long-term return assumption from 6.50% to 7.00% based on the 2024 Experience Analysis.
- The net actuarial gain was $27,233,000, resulting in a Funded Ratio of 118.16% prior to granting an Additional Earnings Credit.
- The Actuarial Obligation increased by $19,134,000 due to an Additional Earnings Credit adopted effective June 30, 2023.

A summary of the actuarial (gains) and losses for the last two years is shown in the following table.

($ Thousands)	June 30, 2023	June 30, 2022
Actuarial (Gain) or Loss		
Investment Return on Assets	$ (13,898)	$ 81,061
Assumption & Method Changes	(615)	0
Interest Credit on Accounts	(12,720)	(17,365)
Total Actuarial (Gain) or Loss	$ (27,233)	$ 63,696
Expected UAO at End of Year	(46,237)	(122,424)
Total Unfunded Actuarial Obligation / (Actuarial Surplus) Before Add'l Credit	$ (73,470)	$ (58,728)

The board established a policy ("Additional Credit Policy") on June 9, 2006 that was effective for the Additional Earnings Credit and Additional Annuity Credit decisions beginning in 2006. The board's Additional Credit Policy calls for a two-step determination of the allocation as shown in detail in this report. This policy was updated at the board's April 2015 meeting to increase the thresholds needed to be met to grant an Additional Earnings Credit and to remove the Additional Annuity Credit.

At the May 2024 meeting, the board granted an Additional Earnings Credit of 4.91% as of June 30, 2023, pursuant to board policy.

The following table shows a history of prior board actions.

($ Thousands) Valuation Date	Funded Ratio	Available Reserves and Unallocated Gains (Losses)	Additional Credit Adopted	Final Gain and Loss Reserve
June 30, 2013	107.1%	$ 17,972	$ 5,544	$ 12,428
June 30, 2014	117.1%	41,310	7,492	33,818
June 30, 2015	113.2%	34,557	5,552	29,005
June 30, 2016	108.8%	20,837	0	20,837
June 30, 2017	115.9%	50,324	8,859	41,465
June 30, 2018	117.3%	58,365	10,045	48,320
June 30, 2019	121.6%	63,442	0	63,442
June 30, 2020	117.9%	67,051	10,036	57,015
June 30, 2021	131.2%	152,056	37,104	114,952
June 30, 2022	111.0%	58,728	15,313	43,415
June 30, 2023	112.8%	73,470	19,134	54,336

Future Funding

As of June 30, 2023, the CBB Program has an Actuarial Surplus (negative UAO) since the value of assets is greater than the current value of the Actuarial Obligation. If all assumptions are met, the funding surplus will slowly grow in the future (prior to reflecting the potential Additional Earnings Credit). If future experience is worse than assumed, a UAO (shortfall between assets and liabilities) may develop. For example, if an Additional Earnings Credit is adopted this year and the CBB Program has a negative investment return of -9% or less for the fiscal year ended June 30, 2024, we project that a UAO would emerge in the next valuation. Alternatively, a longer period with less-than-expected returns not as severe as the -9% investment return could cause a UAO to develop.

There is currently no provision in the Education Code to increase contributions to make up for any future shortfalls if they were to occur. However, the assumed return on investments exceeds the current Minimum Interest Rate. To the extent that the assets earn more than the accounts are credited in the future, this may be sufficient to make up any potential shortfall.

The actuarially determined contribution in accordance with the funding policy is equal to the actual contributions that will be required to be made to the CBB Program according to the California Education Code.

Conclusion

The CBB Program is currently in a surplus funded position; that is, the assets exceed the value of the Actuarial Obligation based on the actuarial assumptions. Given the current funded position, it is consistent with its policy for the board to grant an Additional Earnings Credit. However, it should be noted that future experience will not exactly conform to the assumptions. To the extent future experience is worse than assumed, it is possible that a UAO could develop in the future.

The board granted an Additional Earnings Credit of 4.91% to active and inactive member accounts, consistent with its policy. The estimated value of the Additional Earnings Credit is $19,134,000.

2. Findings of the Actuarial Valuation

An actuarial valuation is performed as of June 30 of each year, the last day of the Program's plan year. The primary purpose of the valuation is to determine the financial condition of the CBB Program through the measurement of the Gain and Loss Reserve. We also describe recent changes in the Program's financial condition and provide additional disclosure information.

The findings have been determined according to actuarial assumptions that were adopted on the basis of recent experience and current expectations of future experience. In our opinion, the assumptions used in the valuation are reasonably related to the past experience of the CBB Program and represent a reasonable estimate of future conditions affecting the Program. Nevertheless, the emerging costs of the Program will vary from those presented in this report to the extent that actual experience differs from that projected by the actuarial assumptions.

Actuarial Value of Assets

The Actuarial Value of Assets for this valuation is the Fair Market Value as reported by CalSTRS. A Statement of Program Assets for the last two plan years is shown in **Table 1**, and the Statement of Change in Program Assets is shown in **Table 2**.

The investment return for the 2022-23 fiscal year was calculated to be 9.7% net of all investment and administrative expenses and assuming uniform cash flow throughout the year. This is an estimate only for the purpose of comparing investment experience from one year to the next and will likely differ from information provided by CalSTRS investment staff.

Actuarial Balance Sheet

Under the Traditional Unit Credit Actuarial Cost Method, when the assumed investment return is equal to the assumed interest crediting rate, then the Normal Cost is equal to the contributions made during the year and the Actuarial Obligation is equivalent to the current sum of the Members' Account Balances plus a reserve for the present value of the current annuity payments.

Table 3 shows the Actuarial Obligation for this valuation and the prior valuation.

For the purpose of this valuation, the account information was provided to us by CalSTRS, reflecting all Additional Earnings Credits previously granted. We checked the information for reasonableness by reviewing the individual member records supplied to us. We independently calculated the value of the annuitized benefits.

The excess of the Actuarial Obligation over the Actuarial Value of Assets is called the Unfunded Actuarial Obligation (UAO). If the Actuarial Value of Assets exceeds the Actuarial Obligation, the difference is called the Actuarial Surplus.

If all experience emerged as assumed every year, the CBB Program would have an Actuarial Surplus at the end of each year before any Additional Earnings Credit, assuming the Minimum Interest Rate is less than the assumed earnings rate. In order to retain an Actuarial Surplus, the investment returns over a long period of time must exceed the combination of the Minimum Interest Rates and Additional Earnings Credits.

Although this relationship is projected to hold, there have been situations in the past, such as after the Great Recession of 2008, where investment performance for several prior years was below the long-term assumption and a UAO emerged.

Actuarial Gains and Losses

The Minimum Interest Rate for the year ending on the valuation date was 2.09%. Since the assumed total earnings rate last year was 6.50% per year, the increase in the Actuarial Obligation was less than projected. The total actuarial gain on the Actuarial Obligation, primarily due to the interest credit being less than assumed, was $12,720,000.

New mortality assumptions and a new assumed earnings rate of 7.00% were adopted in January 2024 based on the 2024 Experience Analysis. The new assumptions had no impact on the active and inactive members as the non-retired group is valued based on the account values and not affected by the assumptions. The new assumptions had a modest impact on retirees, decreasing the Actuarial Obligation by $615,000.

Last year, the assumed earnings rate on the invested assets was 6.50% per year. The actual return for the year was about 9.7% (net of investment and administrative expenses and assuming uniform cash flow through the year, which is slightly different than how interest is actually posted), which produced an investment gain of $13,898,000.

The assumed earnings rate is 7.00% in all future years, as adopted by the board in January 2024.

The total actuarial gain due to all causes was $27,233,000 as shown in **Table 4**.

Contributions and Normal Costs

Table 4 shows that the Normal Costs of the CBB Program are equal to the actual contributions. They are shown as the actual dollar amount of contributions. The timing in **Table 4** is therefore consistent with the fact that contributions are spread over the entire year and correspond to payroll timing. The total contributions of $18,497,000 were made up of $9,288,000 in member contributions and $9,209,000 in employer contributions.

Gain and Loss Reserve

Table 5 shows the derivation of the Gain and Loss Reserve. After each actuarial valuation, the Teachers' Retirement Board decides on the adjustment to the prior year's Gain and Loss Reserve and the Additional Earnings Credit, if any.

This report assumes the Teachers' Retirement Board will allocate any unallocated gain or loss to funding.

Additional Credit Based on Board Policy

Based on the board's policy, an Additional Earnings Credit of $19,134,000 was granted as of June 30, 2023.

The board's policy calls for a two-step determination of the allocation.

The first step in the process allocates the excess of the Actuarial Surplus over 1 times the Standard Deviation of the Expected Long-Term Rate of Return on the investment portfolio, but limited by the long-term assumed rate of earnings.

First Allocation	
Long-term Expected Net Investment Return	7.00%
Minimum Interest Rate (year prior to valuation)	2.09
Maximum Available in First Allocation (1)	4.91%
Actuarial Surplus	18.16%
First Threshold (1x Portfolio Std. Deviation)	11.30
Maximum credit such that resulting Funded Ratio is not less than 100% + Std. Deviation (2)	6.40%*
First Allocation [lesser of (1) and (2)]	**4.91%**
First Allocation Amount	$19,134,000

** The result is not a simple subtraction of the Actuarial Surplus and the First Threshold, because the maximum credit is determined based on a division of the Actuarial Value of Assets and the Actuarial Obligation with the First Allocation.*

The second step in the process allocates 50% of the remaining Actuarial Surplus over 2 times the Standard Deviation of the Expected Long-Term Rate of Return on the investment portfolio.

Second Allocation	
Remaining Actuarial Surplus (3)	12.83%
Second Threshold (2 x Portfolio Std. Deviation) (4)	22.60
Target Second Threshold Surplus [Average of (3) and (4), but not less than Second Threshold]	22.60%
Available for Second Allocation	**0.00%**

The total available is the sum of the two steps, or 4.91% of the Actuarial Obligation for active and inactive member accounts as of June 30, 2023.

Details of the calculation are shown in **Table 6**.

Historical Information

A history of the CBB Program's cash flow and funded status are shown in **Tables 7 and 8**.

Supplemental Information

Supplemental information that is recommended to be disclosed by the California Actuarial Advisory Panel is shown in **Tables 9, 10, and 11**.

Table 1
Statement of Program Assets

($ Thousands)	June 30, 2023	June 30, 2022
Invested Assets		
Cash	$ 474	$ 434
Debt Securities	115,380	122,145
Equity Securities	264,925	235,181
Alternative Investments	107,732	94,477
Derivative Instruments	(1,001)	(847)
Securities Lending Collateral	58,211	53,213
Bond Proceeds Investment	(49)	89
Other Investments	1,305	1,005
Total Investments	$ 546,977	$ 505,697
Receivables	14,115	24,237
Liabilities	(84,476)	(93,192)
Valuation Adjustment (GASB Expenses)	1,344	1,379
Fair Market Value of Net Assets	$ 477,960	$ 438,121

Table 2
Statement of Change in Program Assets

($ Thousands)	Year Ended June 30, 2023	Year Ended June 30, 2022
Additions		
Contributions		
Members	$ 9,288	$ 9,026
Employers	9,209	8,926
Total Contributions	18,497	17,952
Net Earnings	43,361	(48,377)
Total Additions	$ 61,858	$ (30,425)
Deductions		
Benefit Payments		
Retirement, Death and Survivor	$ 12,653	$ 11,803
Refunds of Participant Contributions	8,301	1,495
Total Benefits	20,954	13,298
Expenses	1,030	1,039
Total Deductions	$ 21,984	$ 14,337
Net Increase (Decrease)	$ 39,874	$ (44,762)
Fair Market Value of Net Assets		
Beginning of Year	$ 438,121	$ 482,983
Valuation Adjustment (GASB Expenses)	(35)	(100)
Net Increase (Decrease)	39,874	(44,762)
End of Year	$ 477,960	$ 438,121
Estimated Net Rate of Return - Assuming uniform cash flow through the year - Net of investment and administrative expenses	9.7%	-10.2%

Table 3
Actuarial Balance Sheet

($ Thousands)	June 30, 2023		June 30, 2022
	Without Additional Credit	With Additional Credit Adopted	
Total Requirements			
Actuarial Obligation			
Retirees and Beneficiaries	$ 14,803	$ 14,803	$ 13,936
Inactive Members	190,719	200,083	181,824
Active Members	198,968	208,738	198,946
Total Requirements	$ 404,490	$ 423,624	$ 394,706
Total Resources			
Actuarial Value of Assets	$ 477,960	$ 477,960	$ 438,121
Unfunded Actuarial Obligation or (Actuarial Surplus)	(73,470)	(54,336)	(43,415)
Total Resources	$ 404,490	$ 423,624	$ 394,706
Funded Ratio	118.16%	112.83%	111.00%

Table 4
Actuarial Gains and Losses*

($ Thousands)	Actuarial Obligation	Actuarial Value of Assets	Unfunded Actuarial Obligation / (Surplus)
Balance at June 30, 2022	$ 394,706	$ 438,121	$ (43,415)
Expected Changes			
Actual Contributions	18,497	18,497	0
Actual Benefits Paid	(20,954)	(20,954)	0
Expected Earnings/Credit	25,576	28,398	(2,822)
Expected Balance at June 30, 2023	$ 417,825	$ 464,062	$ (46,237)
Actuarial Gains or Losses			
(Gain)/Loss on Actuarial Obligation	(13,335)**		
Gain/(Loss) on Assets		13,898	
Net (Gain) or Loss			(27,233)
Actual Balance at June 30, 2023	$ 404,490	$ 477,960	$ (73,470)

** Prior to Additional Earnings Credit.*

*** Includes impact of change in assumptions.*

Table 5
Gain and Loss Reserve

($ Thousands)	June 30, 2023		June 30, 2022
	Without Additional Credit	With Additional Credit Adopted	
Unfunded Actuarial Obligation or (Actuarial Surplus) **(prior to any Additional Earnings Credit)**	$ (73,470)	$ (73,470)	$ (58,728)
Additional Earnings Credit	0	19,134	15,313
Unfunded Actuarial Obligation or (Actuarial Surplus)	(73,470)	(54,336)	(43,415)
Gain and Loss Reserve			
Beginning of Year	$ 43,415	$ 43,415	$ 114,952
Allocated to Funding	30,055	10,921	(71,537)
End of Year Gain and Loss Reserve	73,470	54,336	43,415
Unallocated Gains and (Losses)	$ 0	$ 0	$ 0

($ Thousands) Valuation Date	Available Reserves and Unallocated Gains (Losses)	Additional Credit Adopted	Final Gain and Loss Reserve
June 30, 2010	$ (15,156)	$ 0	$ (15,156)
June 30, 2011	6,786	0	6,786
June 30, 2012	34	0	34
June 30, 2013	17,972	5,544	12,428
June 30, 2014	41,310	7,492	33,818
June 30, 2015	34,557	5,552	29,005
June 30, 2016	20,837	0	20,837
June 30, 2017	50,324	8,859	41,465
June 30, 2018	58,365	10,045	48,320
June 30, 2019	63,442	0	63,442
June 30, 2020	67,051	10,036	57,015
June 30, 2021	152,056	37,104	114,952
June 30, 2022	58,728	15,313	43,415
June 30, 2023	73,470	19,134	54,336

Table 6
Additional Earnings Credit Based on Board Policy

	June 30, 2023	June 30, 2022
Funded Ratio before Additional Earnings Credit	118.16%	115.48%
Actuarial Surplus	18.16%	15.48%
First Threshold	11.30%	11.00%
Second Threshold	22.60%	22.00%
First Allocation		
Long-term Net Investment Return	7.00%	6.50%
Minimum Interest Rate (year prior to valuation)	2.09	1.53
Maximum Available in First Allocation (1)	4.91%	4.97%
First Threshold (1 x Std. Deviation of Portfolio Return)	11.30	11.00
Maximum credit such that resulting Funded Ratio is not less than 100% + Std. Deviation (2)	6.40%*	4.19%*
First Allocation [lesser of (1) and (2)]	**4.91%**	**4.19%**
Second Allocation		
Remaining Actuarial Surplus after First Allocation	$54,336	$43,415
Total Actuarial Obligation after First Allocation	$423,624	$394,706
Remaining Actuarial Surplus % (3)	12.83%	11.00%
Second Threshold (2 x Std. Deviation of Portfolio Return) (4)	22.60%	22.00%
Target Second Threshold Surplus [Average of (3) and (4), but not less than Second Threshold]	22.60%	22.00%
Maximum Credit to meet Target Surplus	$0	$0
Non-Retired Actuarial Obligation [Prior to First Allocation]	$389,687	$365,457
Available for Second Allocation	**0.00%**	**0.00%**
Additional Earnings Credit based on Board Policy		
As a percentage of Actuarial Obligation (actives and inactives only) as of the valuation date	4.91%	4.19%
As a dollar amount ($ Thousands)	**$ 19,134**	**$ 15,313**

** The result is not a simple subtraction of the Actuarial Surplus and the First Threshold, because the maximum credit is determined based on a division of the Actuarial Value of Assets and the Actuarial Obligation with the First Allocation.*

Table 7
History of Cash Flow

($ Thousands)

Year End	Contributions for the Year	Expenditures During the Year				External Cash Flow	Fair Market Value of Assets
		Benefit Payments	Contribution Refunds	Expenses	Total		
2003	$ 7,171	$ 0	$ 320	$ 17	$ 337	$ 6,834	$ 29,963
2004	7,712	580	197	28	805	6,907	42,253
2005	8,639	1,235	245	34	1,514	7,125	53,918
2006	10,605	1,330	472	34	1,836	8,769	68,797
2007	11,884	884	664	44	1,592	10,292	93,182
2008	14,418	1,053	608	52	1,713	12,705	98,892
2009	14,970	1,222	1,054	65	2,341	12,629	91,793
2010	13,199	2,019	1,091	112	3,222	9,977	114,418
2011	12,889	2,463	1,305	114	3,882	9,007	151,248
2012	11,846	3,582	1,160	133	4,875	6,971	158,020
2013	13,425	3,329	1,692	161	5,182	8,243	188,551
2014	13,831	4,200	1,987	185	6,372	7,459	231,671
2015	15,861	4,332	2,001	203	6,536	9,325	248,699
2016	16,021	4,669	2,376	273	7,318	8,703	256,675
2017	18,066	6,007	6,495	359	12,861	5,205	302,448
2018	18,821	6,955	6,714	315	13,984	4,837	328,022
2019	18,440	7,930	3,798	992	12,720	5,720	357,273
2020	17,916	9,681	4,066	885	14,632	3,284	375,450
2021	16,937	7,930	5,451	1,153	14,534	2,403	482,983
2022	17,952	11,803	1,495	1,039	14,337	3,615	438,121
2023	18,497	12,653	8,301	1,030	21,984	(3,487)	477,960

Table 8
Schedule of Funding Progress

($ Thousands)

Year End	Actuarial Value of Assets	Actuarial Accrued Liability	Unfunded Actuarial Accrued Liability	Funded Ratio Assets/AAL	Estimated Covered Payroll	Coverage Ratio UAAL/Pay
2003	$ 29,963	$ 33,837	$ 3,874	89%	$ 81,080	5%
2004	42,253	42,003	(250)	101%	96,199	(0)%
2005	53,918	51,781	(2,137)	104%	106,951	(2)%
2006	68,797	62,889	(5,908)	109%	122,316	(5)%
2007	93,182	79,882	(13,300)	117%	144,516	(9)%
2008	98,892	98,031	(861)	101%	181,104	(0)%
2009	91,793	114,680	22,887	80%	182,030	13%
2010	114,418	129,574	15,156	88%	162,546	9%
2011	151,248	144,462	(6,786)	105%	157,871	(4)%
2012	158,020	157,986	(34)	100%	150,686	(0)%
2013	188,551	176,123	(12,428)	107%	150,678	(8)%
2014	231,671	197,853	(33,818)	117%	174,342	(19)%
2015	248,699	219,694	(29,005)	113%	192,277	(15)%
2016	256,675	235,838	(20,837)	109%	209,220	(10)%
2017	302,448	260,983	(41,465)	116%	217,721	(19)%
2018	328,022	279,702	(48,320)	117%	231,621	(21)%
2019	357,273	293,831	(63,442)	122%	228,618	(28)%
2020	375,450	318,435	(57,015)	118%	225,023	(25)%
2021	482,983	368,031	(114,952)	131%	208,274	(55)%
2022	438,121	394,706	(43,415)	111%	221,581	(20)%
2023	477,960	423,624	(54,336)	113%	231,461	(23)%

Table 9
Reconciliation of Changes in Unfunded Actuarial Obligation

($ Thousands)

Year End	Beginning of Year UAO	Expected Earnings/ Credits	(G)/L on Actuarial Obligation	(G)/L on Assets	Additional Credit	End of Year UAO
2012	$ (6,786)	$ (475)	$ (3,941)	$ 11,168	$ 0	$ (34)
2013	(34)	(3)	(7,164)	(10,771)	5,544	(12,428)
2014	(12,428)	(870)	(6,002)	(22,010)	7,492	(33,818)
2015	(33,818)	(2,367)	(7,422)	9,050	5,552	(29,005)
2016	(29,005)	(2,030)	(8,525)*	18,723	0	(20,837)
2017	(20,837)	(1,406)	(5,385)*	(22,696)	8,859	(41,465)
2018	(41,465)	(2,696)	(13,609)	(595)	10,045	(48,320)
2019	(48,320)	(3,141)	(10,982)	999*	0	(63,442)
2020	(63,442)	(4,123)	(8,836)	9,350	10,036	(57,015)
2021	(57,015)	(3,706)	(11,878)	(79,457)	37,104	(114,952)
2022	(114,952)	(7,472)	(17,365)	81,061	15,313	(43,415)
2023	(43,415)	(2,822)	(13,335)*	(13,898)	19,134	(54,336)

** Includes impact of changes in assumptions and methods.*

Table 10
Changes in Economic Assumptions

Year	Price Inflation	Wage Inflation	Investment Return
2012	3.00%	3.75%	7.00%
2013	3.00%	3.75%	7.00%
2014	3.00%	3.75%	7.00%
2015	3.00%	3.75%	7.00%
2016	2.75%	3.50%	6.75%
2017	2.75%	3.50%	6.50%
2018	2.75%	3.50%	6.50%
2019	2.75%	3.50%	6.50%
2020	2.75%	3.50%	6.50%
2021	2.75%	3.50%	6.50%
2022	2.75%	3.50%	6.50%
2023	2.75%	3.50%	7.00%

Table 11
Smoothing and Volatility Ratios

Year	Asset Smoothing Ratio AVA/MVA	Asset Volatility Ratio MVA/Payroll	Liability Volatility Ratio AAL/Payroll
2003	100%	37.0%	41.7%
2004	100%	43.9%	43.7%
2005	100%	50.4%	48.4%
2006	100%	56.2%	51.4%
2007	100%	64.5%	55.3%
2008	100%	54.6%	54.1%
2009	100%	50.4%	63.0%
2010	100%	70.4%	79.7%
2011	100%	98.8%	91.5%
2012	100%	104.9%	104.8%
2013	100%	125.1%	116.9%
2014	100%	132.9%	113.5%
2015	100%	129.3%	114.3%
2016	100%	122.7%	112.7%
2017	100%	138.9%	119.9%
2018	100%	141.6%	120.8%
2019	100%	156.3%	128.5%
2020	100%	166.8%	141.5%
2021	100%	231.9%	176.7%
2022	100%	197.7%	178.1%
2023	100%	206.5%	183.0%

Risk Disclosures

The results of any actuarial valuation are based on a set of assumptions. Although we believe the current assumptions provide a reasonable estimate of future expectations, it is almost certain that future experience will differ from the assumptions to some extent.

The following is a general discussion of the potential risks to the CBB Program funding and is not intended to be a comprehensive analysis of all potential risks.

Factors Affecting Future Results

There are a number of factors that affect future valuation results. To the extent actual experience for these factors varies from the assumptions, this will likely cause either increases or decreases in the plan's future funding level. Examples of factors that can have a significant impact on valuation results are:

- Investment return
- Payroll variation
- Salary variation
- Mortality (how long retirees live)
- Service retirement
- Termination (members leaving active employment for reasons other than death, disability, or service retirement)
- Contribution limitations. There is no dedicated funding if a deficit develops between the Program's assets and the value of future benefits.

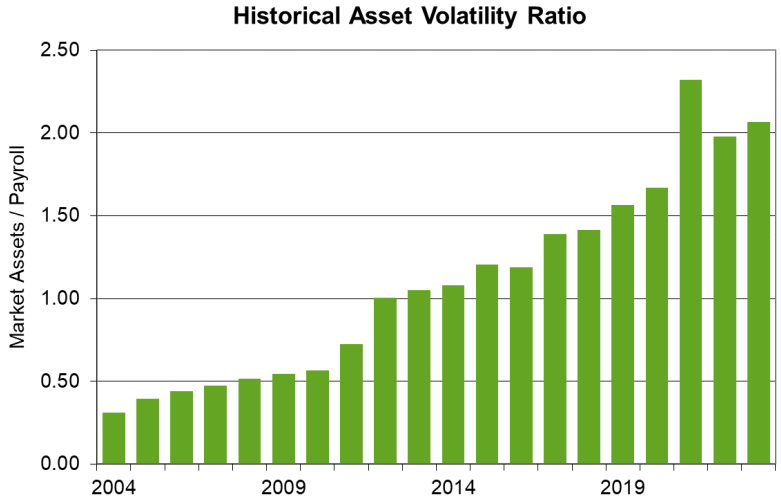
Of these factors, we believe the factor with the greatest potential risk is future investment returns. As an example of these risks, if actual investment returns fall materially short of the current assumption of 7.00% per year, this will cause a decrease in the Funded Ratio for the CBB Program, all other things being equal. Although, the CBB Program currently has a Funded Ratio of approximately 118%, if an Additional Earnings Credit is adopted for this year and the CalSTRS fiscal year 2023-24 return is -9% or less, the Funded Ratio would be projected to be less than 100% next year and a deficit would emerge.

Maturity Risk

The magnitude of any contribution rate increase needed to make up any funding deficit (if one were to occur) is affected by the Program's maturity level. As the CBB Program becomes more mature (i.e., the number of retirees grows compared to the number of actives, and the accumulated assets grow compared to payroll), it becomes more difficult to emerge from a deficit position (if one were to occur in the future). One indicator of this maturity is the Asset Volatility Ratio (AVR), which is equal to the Fair Market Value of Assets divided by total payroll for active CBB Program members. The AVR is a current measure since it is based on the current level of assets and will vary from year to year.

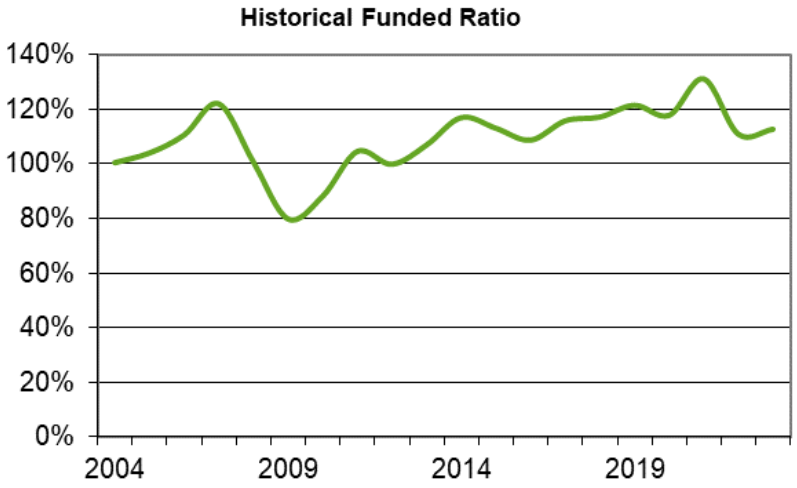
For the CBB Program, the current AVR is equal to 2.06. This means that for each 1% asset loss (in relation to the assumed investment return), there will need to be an increase in contributions equivalent to 2.06% of one-year's payroll to make up for this loss. However, this type of contribution increase would only be needed if the CBB Program were to move to a deficit position. It should be noted that there is no current mechanism to provide deficit reduction contributions to the CBB Program. Additionally, the CBB Program interest credit rates have historically been less than the assumed investment return, so it is possible the CBB Program could emerge from a deficit position without additional contributions.

The following graph shows how the CBB Program has matured over the last 20 years. There was a large increase in the 2021 valuation due to the significant increase in the market value of assets.



Historical Measures

One way to assess future risks is to look at historical measurements. The following graph shows how the CBB Program Funded Ratio has varied over the last 20 years. In particular, it reflects the significant impact that investment returns can have. The CBB Program had a Funded Ratio over 120% in 2007, but decreased to 80% in two years. The Funded Ratio has since recovered primarily due to strong returns. Note that the 2023 Funded Ratio includes the Additional Earnings Credit, as approved by the Teachers' Retirement Board.



Low-Default Risk Obligation Measure (LDROM)

Effective for measurement dates February 15, 2023 or later, Actuarial Standard of Practice 4 (ASOP 4) states that when performing a funding valuation, the actuary should calculate and disclose a low-default-risk obligation measure (LDROM) of the benefits accrued under the actuarial cost method used as of the measurement date. The actuary should select a discount rate derived from low-default-risk fixed income securities. We have used the Bond Buyer General Obligation 20-Bond Municipal Bond Index. The index is a 20-year high quality AA municipal bond rate. Based on Section 3.11.c. of ASOP 4, we believe this index meets the requirements for a discount rate for the LDROM, and the 20-year period is a reasonable approximation for the duration of the plan liabilities. The index was 3.65% as of June 30, 2023. Based on a discount rate of 3.65%, the Actuarial Obligation as of June 30, 2023 would be $427.3 million compared to $423.6 million using the investment return assumption of 7.0%.

The LDROM provides the plan sponsors and other interested parties with an additional funding metric for the CBB Program for informational purposes, but does not impact the funding of the CBB Program which is based on the valuation assumptions. The difference between the CBB Program Actuarial Obligation and the LDROM can be viewed as the additional cost to significantly lower risk by investing in low-default-risk securities. Alternatively, this difference could be viewed as representing the estimated savings gained by investing in a diversified portfolio compared to investing only in low-default-risk securities.

CalSTRS's investment policy and its target asset allocation reflect a balance of risk and return. CalSTRS analyzes the merits of different asset allocations every four years as part of the asset-liability-modeling process. The board has determined that investing in a diversified portfolio best serves its members and other stakeholders. The expected return based on CalSTRS's target allocation, and consequently the investment return assumption, is significantly higher than the discount rate based on the Bond Buyer Index.

Investing in asset classes with a low default risk would be expected to reduce future investment returns and therefore increase future contributions needed (or reduce future Additional Earnings Credits) and lower the current Funded Ratio. A portfolio with a lower default risk might provide more benefit security for member benefits that have already been earned if the associated liabilities could be adequately funded, but it would most likely reduce future accruals.

Appendix A Provisions of Governing Law

All of the actuarial calculations contained in this report are based upon our understanding of the Cash Balance Benefit (CBB) Program of the State Teachers' Retirement System as contained in Part 14 of the California Education Code. The provisions used in this valuation are summarized below for reference purposes.

Participation

Eligibility Requirement: Participation if employed at less than 50% of a full-time position for a California school district, or county office of education, or a temporary employee of a community college district, and the employer has elected to offer the CBB Program and the employee has elected to participate. In addition, a trustee of an employer that offers the CBB Program is eligible to participate.

Participant: An eligible employee or trustee with creditable service subject to coverage, who has contributions credited in the Program or is receiving an annuity from the Program.

Account Balance

Account Balance: Nominal accounts established for the purpose of determining benefits payable to the Member. Accounts are credited with Contributions, a Minimum Interest Rate and Additional Earnings Credits.

Contributions: Generally, Participant Contributions are 4% of salary and Employer Contributions are 4% of salary.

> Rules for Contribution rates may differ for Participants covered by a collective bargaining agreement, but the sum of the Participant and Employer contributions must equal or exceed 8% of salary, and in no event can the Employee contribution rate be less than 4% of salary.
>
> The board may adjust Employer Contributions for a fixed number of years, but the adjustment shall not exceed 0.25% of salaries in any plan year, up to a maximum mandatory Employer Contribution of 4.25%.

Minimum Interest Rate: Annual rate determined for the plan year by the board in accordance with federal laws and regulations. The Minimum Interest Rate is equal to the average of the yields on 30-year Treasuries for the 12 months ending in February preceding the beginning of the plan year, rounded to the next highest 0.01%.

Additional Earnings Credit: Annual rate determined for the plan year by the board pursuant to earnings credit policy adopted at the April 2015 meeting.

Additional Annuity Credit: No longer applies, per the board annuity credit policy adopted at the April 2015 meeting.

Normal Retirement

Eligibility Requirement: Age 60, or age 62 for a Participant subject to the Public Employees' Pension Reform Act.

Benefit: The Account Balance at the retirement date subject to limits imposed under Internal Revenue Code (IRC) Section 415.

Form of Payment: The normal form of payment is a lump sum distribution. Annuity options are available if the sum of the employer and Participant accounts equal or exceed $3,500.

Early Retirement

Eligibility Requirement: Age 55.

Benefit and Form: Same as Normal Retirement.

Late Retirement

Benefit and Form: Same as Normal Retirement.

Contributions and earnings continue to be credited to the Account Balances until distributed.

Deferred Retirement

Benefit: A Participant may cease active service, leave the accumulated Account Balance on deposit, and later retire upon attaining the minimum age requirement.

Disability Benefit

Eligibility Requirement: Determination by the board that the Participant has a total and permanent disability.

Benefit: The Account Balance at the date of disability. An annuity benefit is discontinued if the Participant is re-employed before age 60, and performs service creditable under the Program. The actuarial equivalent of the Participant's annuity as of the date creditable service is resumed is credited to the Participant's Account Balance.

Form of Payment: Same as Normal Retirement.

Death before Retirement

Eligibility Requirement: Deceased Participant has an Account Balance.

Benefit: The Account Balance at the date of death payable to the designated beneficiary.

Form of Payment: Same as Normal Retirement, except annuity options are limited to a Period Certain Annuity.

Death after Retirement

Eligibility Requirement: The deceased Member was receiving an annuity.

Benefit: According to the terms of the annuity elected by the Member.

Termination from the Program

Eligibility Requirement: Termination of all CalSTRS-covered service. A Participant may not apply for a Termination Payment if less than five years has elapsed since the most recent termination benefit, if any, has been paid.

Benefit: Lump-sum distribution of the Account Balance as of the date of distribution. The benefit is payable six months from the termination of creditable service.

Appendix B Actuarial Methods and Assumptions

This section of the report discloses the actuarial methods and assumptions used in this Actuarial Valuation. These methods and assumptions have been chosen on the basis of recent experience of the CBB Program and on current expectations as to future economic conditions. The assumptions were reviewed and changed for the June 30, 2023 actuarial valuation as a result of the 2024 Experience Analysis. Please refer to the Experience Analysis report dated December 22, 2023 for the data and rationale used in the recommendation of each assumption.

The assumptions are intended to estimate the future experience of the members of the CBB Program and of the CBB Program itself in areas that affect the projected benefit flow and anticipated investment earnings. Any variations in future experience from that expected from these assumptions will result in corresponding changes in estimated costs of the CBB Program's benefits.

Actuarial Cost Method

The accruing costs of all benefits are measured by the Traditional Unit Credit Actuarial Cost Method. Under this method, the projected benefits of each individual member are allocated by a consistent formula to valuation years. The actuarial present value of future projected benefits allocated to the current year is called the Normal Cost. The actuarial present value of future projected benefits allocated to periods prior to the valuation year is called the Actuarial Obligation.

The Actuarial Obligation is equal to the accumulated account balances and the Normal Cost is equal to the total annual contribution.

Asset Valuation Method

The assets are valued at Fair Market Value. The Fair Market Value excludes the liability for "Net Pension and OPEB Obligation," which are pre-recognized administrative expenses, from the Fiduciary Net Position reported for accounting purposes.

Actuarial Assumptions

The Actuarial Standards Board has adopted Actuarial Standard of Practice No. 27, *Selection of Economic Assumptions for Measuring Pension Obligations*. This Standard provides guidance on selecting economic assumptions under defined benefit retirement programs such as CalSTRS. In our opinion, the economic assumptions have been developed in accordance with the Standard.

The Actuarial Standards Board has adopted Actuarial Standard of Practice No. 35, *Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations*. This Standard provides guidance on selecting demographic assumptions under defined benefit retirement programs such as CalSTRS. In our opinion, the demographic assumptions have been developed in accordance with the Standard.

The assumptions are intended to estimate the future experience of the members of the CBB Program and of the System itself in areas that affect the projected benefit flow and anticipated investment earnings. Any variations in future experience from that expected from these assumptions will result in corresponding changes in estimated costs of the Program's benefits.

The economic and demographic assumptions are listed in **Table B.1** and illustrated at selected ages and duration combinations in **Table B.2**.

Table B.1
List of Major Valuation Assumptions

Economic Assumptions	
Investment Return (net of investment and administrative expenses)	7.00%
Interest on Member Accounts	7.00%
Wage Growth	3.50%
Inflation	2.75%
Standard Deviation of Portfolio	11.30%

Demographic Assumptions		
Mortality[1]		
Retired & Beneficiary - Male	2023 CalSTRS Service Retired Male	Table B-2
Retired & Beneficiary - Female	2023 CalSTRS Service Retired Female	Table B-2
Disabled - Male	2023 CalSTRS Disabled Retiree Male	Table B-2
Disabled - Female	2023 CalSTRS Disabled Retiree Female (select rates in first three years for both Males and Females)	Table B-2

1. The mortality assumption uses a generational mortality approach with a base year of 2023. Projected improvement is based on the MP-2021 Ultimate Projection Scale. The combined base tables and projection scale specified contain a margin for expected future mortality improvement.

Note: Assumptions for active and inactive members do not apply to the CBB Program valuation, as each active and inactive member's liabilities are equal to the member's account balance.

Table B.2
Mortality as of June 30, 2023

	Retired Members and Beneficiaries[1]		Disabled Members (After Year 3)[1]		Projection
Age	Male	Female	Male	Female	Scale
50	0.195%	0.141%	1.446%	0.929%	1.350%
55	0.312	0.226	1.971	1.187	1.350
60	0.445	0.289	2.447	1.397	1.350
65	0.575	0.369	2.720	1.577	1.310
70	0.903	0.602	3.573	2.016	1.240
75	1.754	1.195	4.981	3.206	1.170
80	3.482	2.416	7.139	5.421	1.100
85	6.893	5.007	10.794	9.021	0.870
90	12.924	9.999	16.596	14.059	0.630
95	22.529	17.907	24.286	20.081	0.400

Select minimum rates for disability:

First year of disability	4.0%	4.0%
Second year of disability	3.5	3.0
Third year of disability	3.0	2.0

1. The mortality assumption uses a generational mortality approach with a base year of 2023. Projected improvement is based on the MP-2021 Ultimate Projection Scale. The rates shown reflect mortality improvement through June 30, 2023. The projection scale does not apply to the select minimum rates.

Appendix C Valuation Data

The membership data for this actuarial valuation was supplied by CalSTRS. Although we did not audit this data, we compared the data for this and the prior valuation and tested for reasonableness, as well as for consistency with prior periodic reports from the CalSTRS staff. Based on these tests, we believe the data to be sufficiently accurate for the purposes of this valuation. Since the valuation results are dependent on the integrity of the data supplied, the results can be expected to differ if the underlying data is incomplete or missing. It should be noted that if any data or other information is materially inaccurate or incomplete, our calculations may need to be revised.

Tables C.1 through **C.4** summarize the census data used in this valuation.

Table C.1
Summary of Statistical Information

	June 30, 2023	June 30, 2022
Number of Members		
Active Members[1]	8,175	8,229
Inactive Members[1]	30,065	29,482
Retirees and Beneficiaries	550	519
Total Number of Members	38,790	38,230
Active Members Statistics		
Annualized Salaries ($ millions)	$ 231.5	$ 221.6
Average Salary	$ 28,313	$ 26,927
Average Age	49.9 years	50.0 years
Average Service in CBB Program	8.2 years	8.2 years

1. Actual members valued exclude some members over age 72 who are assumed to have taken a mandatory distribution.

Table C.2
Age and Service Distribution – All Active Members[1]

Age Group		Years of Service	
Under 25	40	Under 1	1,255
25 – 29	273	1 – 2	660
30 – 34	754	2 – 3	362
35 – 39	1,003	3 – 4	570
40 – 44	1,115	4 – 5	521
45 – 49	1,036	5 – 9	2,275
50 – 54	985	10 and Over	2,532
55 – 59	852	Total	8,175
60 – 64	827		
65 and Over	1,290		
Total	8,175		

1. Actual members valued exclude some members over age 72 who are assumed to have taken a mandatory distribution.

Table C.3
Inactive Members

Fiscal Year Ending June 30	Number	Account Balances[1]
2013	21,875	$70,666,000
2014	22,278	78,778,000
2015	23,084	88,378,000
2016	24,017	96,459,000
2017	25,115	111,715,000
2018	26,063	121,291,000
2019	27,154	124,541,000
2020	28,087	138,873,000
2021	29,542	173,354,000
2022	29,482	181,824,000
2023	30,065	200,083,000

1. Member balances include Additional Earnings Credit for given year. Additional Earnings Credit for the current year is subject to approval by the Teachers' Retirement Board. Actual members valued exclude some members over age 72 who are assumed to have taken a mandatory distribution which is reflected in the balances shown above.

Table C.4
Annuitants

Fiscal Year Ending June 30	Number	Accounts at Retirement
2013	123	$ 2,287,000
2014	158	3,799,000
2015	200	4,690,000
2016	252	6,020,000
2017	310	8,777,000
2018	370	10,901,000
2019	410	12,369,000
2020	458	13,856,000
2021	482	15,608,000
2022	519	17,886,000
2023	550	19,883,000

Appendix D Glossary

The following definitions are largely excerpts from a list adopted by the major actuarial organizations in the United States. In some cases, the definitions have been modified for specific applicability to the CalSTRS CBB Program. Defined terms are capitalized throughout this Appendix.

Account Balance

The nominal account amount of an individual's benefit as of a specific date, determined in accordance with the terms of the Plan. The Account Balance is accumulated with contributions and interest.

Actuarial Assumptions

Assumptions as to the occurrence of future events affecting pension costs, such as mortality, withdrawal, disablement and retirement, changes in compensation, rates of investment earnings and asset appreciation or depreciation, and procedures used to determine other relevant items.

Actuarial Cost Method

A procedure for determining the Actuarial Present Value of pension plan benefits and expenses and for developing an actuarially equivalent allocation of such value to time periods, usually in the form of a Normal Cost and an Actuarial Obligation.

Actuarial Equivalent

Of equal Actuarial Present Value, determined as of a given date with each value based on the same set of Actuarial Assumptions.

Actuarial Gain or Loss

A measure of the difference between actual experience and that expected based upon a set of Actuarial Assumptions during the period between two actuarial valuation dates, as determined in accordance with a particular Actuarial Cost Method.

Actuarial Obligation

That portion, as determined by a particular Actuarial Cost Method, of the Actuarial Present Value of pension plan benefits and expenses which is not provided for by future Normal Costs.

Actuarial Present Value

The value of an amount or series of amounts payable or receivable at various times, determined as of a given date by the application of a particular set of Actuarial Assumptions.

Actuarial Surplus

The excess, if any, of the Actuarial Value of Assets over the Actuarial Obligation.

Actuarial Valuation

The determination, as of a Valuation Date, of the Normal Cost, Actuarial Obligation, Actuarial Value of Assets, and related Actuarial Present Values for a pension plan.

Actuarial Value of Assets

The value of cash, investments and other property belonging to a pension plan, as used by the actuary for the purpose of an actuarial valuation.

Normal Cost

The Actuarial Present Value of benefits expected to accrue in the plan year subsequent to the valuation date. The Normal Cost is equivalent to the expected Member and Employer contributions for the next year.

Traditional Unit Credit Actuarial Cost Method

A method under which the Actuarial Obligation is equal to the Actuarial Present Value of benefits for service accrued to the valuation date.

Unfunded Actuarial Obligation

The excess, if any, of the Actuarial Obligation over the Actuarial Value of Assets.

Valuation Date

June 30, 2023.