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March 26, 2013

Teachers' Retirement Board
California State Teachers' Retirement System

Re: Cash Balance Benefit Program
Actuarial Valuation as of June 30, 2012

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 Plan as of June 30, 2012. Details about the actuarial valuation are contained in the following report.

We certify that the information included in this report is complete and accurate to the best of our knowledge and belief. Please refer to Section 2 of this report for our full actuarial certification statement.

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. The Teachers' Retirement Board has sole authority to determine the actuarial assumptions and methods used for the valuation of the DBS Program. The Board adopted the actuarial methods and assumptions used in the 2012 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. 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:

(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.

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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 pension actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

We would like express our appreciation to the CalSTRS staff who gave substantial assistance in supplying the data on which this report is based.

Respectfully submitted,

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

Mark C. Olleman, FSA, EA, MAAA
Consulting Actuary

NJC/MCO/nlo

California State Teachers' Retirement System
Cash Balance Benefit Program - 2012 Actuarial Valuation

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Section 1 Summary of the Findings

The Cash Balance Benefit (CBB) Program was established on July 1, 1996 (as the CB Plan). The number of participants has increased over the years, as shown below.

Date of Valuation	Total Number of Non-retired Participants	Accumulated Account Balances
June 30, 2007	24,115	$ 76,120,285
June 30, 2008	26,664	97,802,319
June 30, 2009	28,461	114,338,203
June 30, 2010	29,149	129,075,283
June 30, 2011	29,798	143,705,744
June 30, 2012	30,337	156,609,547

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, as measured using uniform cash flow throughout the year, was about -0.2% net of investment and administrative expenses.

($ Thousands)	Year Ended June 30, 2012	Year Ended June 30, 2011
Additions		
Contributions	$ 11,846	$ 12,889
Earnings	(199)	27,823
Total Additions	$ 11,647	$ 40,712
Deductions		
Benefits	$ 4,742	$ 3,768
Expenses	133	114
Total Deductions	$ 4,875	$ 3,882
Net Increase (Decrease)	$ 6,772	$ 36,830
Net Assets		
Beginning of Year	$ 151,248	$ 114,418
Accounting Adjustments		
Net Increase (Decrease)	6,772	36,830
End of Year	$ 158,020	$ 151,248
Estimated Net Rate of Return	(0.2)%	23.3%

Summary of the Findings (continued)

As of June 30, 2012 the Actuarial Value of Assets of the CBB Program exceeds the Actuarial Obligation by $34,000. This number is the negative Unfunded Actuarial Obligation (sometimes referred to as an Actuarial Surplus). If the experience had emerged as assumed, the Actuarial Surplus was expected to increase, from $6,786,000 to $7,261,000. The difference between the actual and expected Unfunded Actuarial Obligation is the actuarial gain or loss for the year.

- There was an actuarial loss of $11,168,000 due to the actual investment return being less than last year's assumed long-term return of 7.00%.
- There was an actuarial gain of $3,941,000 due primarily to the current year interest credits being less than 7.00% during the year. The Minimum Interest Rate for 2011-12 was 4.25%.
- The net actuarial loss was $7,227,000 which reduced the Funded Ratio to 100.02%.

The valuation results are based on the June 30, 2012 fair market value of assets.

($ Thousands)	**June 30, 2012**	**June 30, 2011**
Actuarial Balance Sheet		
Actuarial Obligation	$ 157,986	$ 144,462
Actuarial Value of Assets	158,020	151,248
Unfunded Actuarial Obligation (Surplus)	$ (34)	$ (6,786)
Additional Earnings Credit	0	0
Additional Annuity Credit	0	0
Final Unfunded Actuarial Obligation or (Actuarial Surplus)	$ (34)	$ (6,786)
Funded Ratio		
Before Additional Credits	**100.02%**	**104.70%**
After Additional Credits	**100.02%**	**104.70%**
(Assets ÷ Actuarial Obligation)		
Actuarial (Gain) or Loss		
Investment Return on Assets	$ 11,168	$ (19,083)
Interest Credits on Accounts	(3,941)	(3,958)
Actuarial (Gain) or Loss	$ 7,227	$ (23,041)
Expected UAO (Surplus) at End of Year	(7,261)	16,255
Unfunded Actuarial Obligation (Surplus)	$ (34)	$ (6,786)

Summary of the Findings (continued)

The Board established a Policy on June 9, 2006 that was effective for the Additional Earnings Credit and Additional Annuity Credit decisions beginning in 2006.

The Board's Policy calls for a two-step determination of the allocation as shown in detail in this report. Based on the Board's Policy, we recommend that no Additional Earnings Credit or Additional Annuity Credits be granted as of June 30, 2012. This report assumes the Board will adopt this recommendation.

The following chart shows a history of prior Board actions.

($ Thousands) Valuation Date	Available Reserves and Unallocated Gains (Losses)	Additional Earnings Credit Adopted	Final Gain and Loss Reserve
June 30, 2002	$ (3,332)	$ 0	$ (3,332)
June 30, 2003	(3,874)	0	(3,874)
June 30, 2004	250	0	250
June 30, 2005	2,137	0	2,137
June 30, 2006	6,641	733	5,908
June 30, 2007	16,879	3,579	13,300
June 30, 2008	861	0	861
June 30, 2009	(22,887)	0	(22,887)
June 30, 2010	(15,156)	0	(15,156)
June 30, 2011	6,786	0	6,786
June 30, 2012	34	0	34

Future Funding

As noted, the CBB Program has a slightly negative UAO, since the value of assets is greater than the current value of the Actuarial Obligation. Beginning with the 2011 actuarial valuation, it is assumed that the Program assets will earn 7.00% (previously, 7.25% was assumed); whereas, accounts are currently being credited a much lower interest rate. To the extent that these assets earn more than the accounts are credited in the future, the funding surplus will continue to grow. Therefore, 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 DBS Program according to the California Education Code. The funding situation should be monitored closely going forward.

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Section 2 Actuarial Certification

The major findings of the 2012 Actuarial Valuation are contained in this report. This report reflects the benefit provisions and contribution rates in effect as of the valuation date. 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 Cash Balance Benefit Program as of June 30, 2012.

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. 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 inaccurate or incomplete, 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. 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 2012 valuation.

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.

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. We are members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

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

Mark C. Olleman, FSA, EA, MAAA
Consulting Actuary

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Section 3 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 certain disclosure information in accordance with the Governmental Accounting Standards Board (GASB) Statement No. 25.

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 2011-12 was calculated to be (0.2)% 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 your investment advisors.

Actuarial Balance Sheet

Under the Traditional Unit Credit Actuarial Cost Method, when the assumed investment return is equal to the assumed interest crediting rate, the Normal Cost is equal to the contributions made during the year and the Actuarial Obligation is equivalent to the current sum of the Participants' Account Balances plus a reserve for current annuity payments. **Table 3** shows the Actuarial Obligation for this and the prior valuation.

For the purpose of this valuation, the account information was provided to us by CalSTRS. We checked the information for reasonableness by reviewing the individual participant records supplied to us. We independently calculated the value of the annuitized benefits.

Actuarial Balance Sheet (continued)

The excess of the Actuarial Obligation over the Actuarial Value of Assets is called the Unfunded Actuarial Obligation. 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 or Additional Annuity Credits. This is because 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, the Additional Earnings Credits and the Additional Annuity Credits.

Although we expect this to be the case, investment performance for several prior years was below the long-term assumption.

Actuarial Gains and Losses

The Minimum Interest Rate for the year ending on the valuation date was 4.25%. Since the assumed total earnings rate last year was 7.00% per year, the increase in the Actuarial Obligation was less than expected. The total actuarial gain on the Actuarial Obligation was $3,941,000.

Last year, the assumed earnings rate on the invested assets was 7.00% per year. The actual return for the year was about (0.2)% (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 loss of $11,168,000.

The assumed earnings rate for the future years will be 7.00%, as adopted by the Board in February 2012.

The total actuarial loss due to all causes was $7,227,000 as shown in **Table 4**.

Contributions and Normal Costs

As shown in Table 4, the Normal Costs of the Cash Balance Benefit 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 $11,846,000 were made up of $5,824,000 in employee contributions, and $6,022,000 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 the unallocated loss to funding and that none of the current Gain and Loss Reserve will be used for Additional Earnings Credits or Additional Annuity Credits.

Additional Credits Based on Board Policy

Based on the Board's Policy, we recommended that no Additional Earnings Credit or Additional Annuity Credit be granted as of June 30, 2012.

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 twice the Minimum Interest Rate in the year after the valuation date, but limited by the long-term assumed rate of earnings.

First Allocation

Long-term Net Investment Return	7.00%
Minimum Interest Rate (year prior to valuation)	4.25
Maximum Available in First Allocation (1)	2.75%
Actuarial Surplus	0.02%
First Threshold (2012-13 MIR x 2)	7.50
Actuarial Surplus in excess of First Threshold (2)	0.00%
First Allocation (lesser of (1) and (2))	**0.00%**

- The second step is not necessary this year.

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

Accounting Disclosures

GASB has issued statements that describe the information to be disclosed in the System's financial reports. The required actuarial disclosures are shown in **Tables 7, 8 and 9**.

Supplemental Information

Supplemental information that is recommended to be disclosed by the California Actuarial Advisory Panel is shown in **Tables 10, 11 and 12**.

Table 1
Statement of Program Assets

($ Thousands)	June 30, 2012	June 30, 2011
Invested Assets		
Short-term Investments	$ 4,008	$ 1,443
Pooled Domestic Securities	40,936	36,341
Pooled Domestic Equity	111,478	109,288
Absolute Return	474	3,748
Overlay	915	0
Total Investments	$ 157,811	$ 150,820
Receivables	247	429
Liabilities	(38)	(1)
Fair Market Value of Net Assets	$ 158,020	$ 151,248

Table 2
Statement of Change in Program Assets

($ Thousands)	Year Ended June 30, 2012	Year Ended June 30, 2011
Additions		
Contributions		
Participants	$ 5,824	$ 6,386
Employers	6,022	6,503
Total Contributions	11,846	12,889
Net Earnings	(199)	27,823
Total Additions	$ 11,647	$ 40,712
Deductions		
Benefit Payments		
Retirement, Death and Survivor	$ 3,582	$ 2,463
Refunds of Participant Contributions	1,160	1,305
Total Benefits	4,742	3,768
Expenses	133	114
Total Deductions	$ 4,875	$ 3,882
Net Increase (Decrease)	$ 6,772	$ 36,830
Fair Market Value of Net Assets		
Beginning of Year	$ 151,248	$ 114,418
Accounting Adjustments	0	0
Net Increase (Decrease)	6,772	36,830
End of Year	$ 158,020	$ 151,248
Estimated Net Rate of Return - Assuming uniform cash flow through the year - Net of investment and administrative expenses	(0.2)%	23.3%

Table 3
Actuarial Balance Sheet

($ Thousands)	June 30, 2012	June 30, 2011
Total Requirements		
Actuarial Obligation		
Retirees and Beneficiaries	$ 1,386	$ 767
Inactive Participants	60,558	51,952
Active Participants	96,042	91,743
Total Requirements	$ 157,986	$ 144,462
Total Resources		
Actuarial Value of Assets	$ 158,020	$ 151,248
Unfunded Actuarial Obligation or (Actuarial Surplus)	(34)	(6,786)
Total Resources	$ 157,986	$ 144,462
Funded Ratio	100.02%	104.70%

Table 4
Actuarial Gains and Losses

($ Thousands)	Actuarial Obligation	Actuarial Value of Assets	Unfunded Actuarial Obligation (Surplus)
Balance at June 30, 2011	$ 144,462	$ 151,248	$ (6,786)
Expected Changes			
Actual Contributions	11,846	11,846	0
Actual Benefits Paid	(4,742)	(4,742)	0
Expected Earnings / Credits	10,361	10,836	(475)
Expected Balance at June 30, 2012	$ 161,927	$ 169,188	$ (7,261)
Actuarial Gains or Losses			
(Gain)/Loss on Actuarial Obligation	(3,941)		
Gain/(Loss) on Assets		(11,168)	
Net (Gain) or Loss			7,227
Actual Balance at June 30, 2012	$ 157,986	$ 158,020	$ (34)

Table 5
Gain and Loss Reserve

($ Thousands)	June 30, 2012	June 30, 2011
Unfunded Actuarial Obligation or (Actuarial Surplus)	$ (34)	$ (6,786)
Gain and Loss Reserve		
Beginning of Year	$ 6,786	$ (15,156)
Additional Earnings Credit	0	0
Additional Annuity Credit	0	0
Allocated to Funding	(6,752)	21,942
End of Year Gain and Loss Reserve	$ 34	$ 6,786
Unallocated Gains and (Losses)	$ 0	$ 0

($ Thousands) Valuation Date	Available Reserves and Unallocated Gains (Losses)	Additional Credits Adopted	Final Gain and Loss Reserve
June 30, 2002	$ (3,332)	$ 0	$ (3,332)
June 30, 2003	(3,874)	0	(3,874)
June 30, 2004	250	0	250
June 30, 2005	2,137	0	2,137
June 30, 2006	6,641	733	5,908
June 30, 2007	16,879	3,579	13,300
June 30, 2008	861	0	861
June 30, 2009	(22,887)	0	(22,887)
June 30, 2010	(15,156)	0	(15,156)
June 30, 2011	6,786	0	6,786
June 30, 2012	34	0	34

Table 6
Additional Credits Based on Board Policy

	June 30, 2012	June 30, 2011
Funded Ratio before Additional Credits	100.02%	104.70%
Actuarial Surplus	0.02%	4.70%
Minimum Interest Rate (year following valuation date)	3.75%	4.25%
First Threshold	7.50%	8.50%
Second Threshold	11.25%	12.75%
First Allocation		
Long-term Net Investment Return	7.00%	7.00%
Minimum Interest Rate (MIR) (year prior to valuation)	4.25	4.50
Maximum Available in First Allocation (1)	2.75%	2.50%
Actuarial Surplus	0.02%	4.70%
First Threshold (2 x MIR for year following valuation date)	7.50	8.50
Actuarial Surplus in excess of First Threshold (2)	0.00%	0.00%
First Allocation [lesser of (1) and (2)]	**0.00%**	**0.00%**
Second Allocation		
Remaining Actuarial Surplus	0.02%	4.70%
Second Threshold (3 x MIR for year following valuation date)	11.25%	12.75%
Actuarial Surplus in excess of Second Threshold	0.00%	0.00%
Less 50%	(0.00)	(0.00)
Available for Second Allocation	**0.00%**	**0.00%**
Recommended Additional Earnings Credit and Additional Annuity Credit based on Policy		
As a percentage of Actuarial Obligation as of the valuation date	0.00%	0.00%
As a dollar amount ($ Thousands)	**$ 0**	**$ 0**

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		
1997	$ 148	$ 0	$ 0	$ 428	$ 428	$ (280)	$ (393)
1998	1,544	0	0	466	466	1,078	790
1999	3,082	0	15	430	445	2,637 [(1)]	5,224
2000	4,955	0	59	4	63	4,892	10,868
2001	5,972	0	119	8	127	5,845	15,768
2002	7,121	0	195	11	206	6,915	21,748
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

[(1)]Excludes write-off of loan from the DB Plan of $1,417,000 as of January 1, 1999.

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
1997	$ (393)	$ 164	$ 557	(240)%	$ 4,504	12%
1998	790	1,728	938	46%	18,838	5%
1999	5,224	5,001	(223)	104%	50,426	0%
2000	10,868	10,351	(517)	105%	70,605	(1)%
2001	15,768	16,938	1,170	93%	97,921	1%
2002	21,748	25,080	3,332	87%	89,871	4%
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)%

Table 9
Schedule of Employer Contributions

($ Thousands)

Year End	Annual Required Contribution	Contributed by Employers	Contributed by the State	Total Contributed	Percentage Contributed
1997	$ 74	$ 74	$ 0	$ 74	100%
1998	772	772	0	772	100%
1999	1,562	1,562	0	1,562	100%
2000	2,365	2,365	0	2,365	100%
2001	3,036	3,036	0	3,036	100%
2002	3,586	3,586	0	3,586	100%
2003	3,590	3,590	0	3,590	100%
2004	3,845	3,845	0	3,845	100%
2005	4,490	4,490	0	4,490	100%
2006	5,102	5,102	0	5,102	100%
2007	5,931	5,931	0	5,931	100%
2007	5,931	5,931	0	5,931	100%
2008	7,497	7,497	0	7,497	100%
2009	7,489	7,489	0	7,489	100%
2010	6,713	6,713	0	6,713	100%
2011	6,503	6,503	0	6,503	100%
2012	6,022	6,022	0	6,022	100%

Table 10
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	End of Year UAO
2010	$ 22,887	$ 1,774	$ (4,474)	$ (5,031)	$ 15,156
2011	$ 15,156	$ 1,099	$ (3,958)	$ (19,083)	(6,786)
2012	$ (6,786)	$ (475)	$ (3,941)	$ 11,168	(34)

Table 11
Changes in Economic Assumptions[(1)]

Year	Price Inflation	Wage Inflation	Investment Return
2010	3.00%	4.00%	7.25%
2011	3.00%	3.75%	7.00%
2012	3.00%	3.75%	7.00%

(1) These changes in assumptions did not have a material financial impact since the active account balances are assumed to adjust to actual experience, and retired liabilities have been small. Rationales are provided in the corresponding Investigation of Experience reports.

Table 12
Smoothing and Volatility Ratios

Year	Asset Smoothing Ratio AVA/MVA	Asset Volatility Ratio MVA/Payroll	Liability Volatility Ratio AAL/Payroll
2001	100%	16.1%	17.3%
2002	100%	24.2%	27.9%
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%

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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 Plan 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, community college district, or county office of education which has elected to offer the CBB Program.
Participant:	An eligible employee 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 Participant. Accounts are credited with Contributions, Minimum Interest Rate (MIR) 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 Employer contribution rate be less than 4% of salary. The Retirement 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.
Minimum Interest Rate:	Annual rate determined for the plan year by the Retirement Board in accordance with federal laws and regulations. The MIR 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 0.25%.
Additional Earnings Credit:	Annual rate determined for the plan year by the Retirement Board based on the actual earnings during the plan year, but only to the extent the earnings are sufficient to credit the MIR and provide any additions to the Gain and Loss Reserve deemed warranted by the Board.

Additional Annuity Credit:	Annual rate determined for the plan year by the Retirement Board based on the actual earnings during the plan year, but only to the extent the earnings are sufficient to credit the MIR and provide any additions to the Gain and Loss Reserve deemed warranted by the Board.

Normal Retirement

Eligibility Requirement:	Age 60.
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 employee 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 interest 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 Retirement 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.
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.

Death After Retirement

Eligibility Requirement:	The deceased Participant was receiving an annuity.
Benefit:	According to the terms of the annuity elected by the Participant.

Termination from the Program

Eligibility Requirement:	More 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 one year from the termination of credited service.

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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 DB Program and on current expectations as to future economic conditions.

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.

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 the System. 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 the System. In our opinion, the demographic assumptions have been developed in accordance with the Standard.

Actuarial Assumptions (continued)

The assumptions are intended to estimate the future experience of the members of the DB 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 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

I. Economic Assumptions

A.	Investment Return (net of investment and administrative expenses)	7.00%
B.	Interest on Member Accounts	7.00%
C.	Wage Growth	3.75%
D.	Inflation	3.00%

II. Demographic Assumptions

A. Mortality*

Retired & Beneficiary	- Male	2011 CalSTRS Retired – M	Table B.2
	- Female	2011 CalSTRS Retired – F	Table B.2
Disabled	- Male	2011 CalSTRS Disabled – M	Table B.2
	- Female	2011 CalSTRS Disabled – F	Table B.2
		(select rates in first three years for both Males and Females)	

** Assumptions for active members do not apply to the CBB Program valuation, as each active and inactive member's liabilities are equal to their account balance. Mortality rates shown include a margin for anticipated future mortality improvement.*

Table B.2
Mortality

	Retired Members and Beneficiaries		Disabled Members (After Year 3)	
Age	**Male**	**Female**	**Male**	**Female**
50	0.114%	0.073%	2.400%	1.750%
55	0.164	0.118	2.600	1.875
60	0.300	0.254	2.800	2.000
65	0.596	0.468	3.000	2.125
70	1.095	0.864	3.054	2.331
75	1.886	1.451	4.972	3.334
80	3.772	2.759	7.285	4.477
85	7.619	5.596	9.797	8.367
90	14.212	11.702	17.639	14.007
95	22.860	17.780	27.005	20.992
	Select rates for disability:			
	First year of disability		6.0%	3.5%
	Second year of disability		4.8	3.0
	Third year of disability		3.5	2.5

Appendix C Valuation Data

The participant data for this actuarial valuation was supplied by CalSTRS and accepted without audit. We have examined the data for reasonableness and consistency with prior valuations and periodic reports from the CalSTRS staff to the Teachers' Retirement Board.

In preparing this report, we relied upon the participant data furnished by CalSTRS. Although we did not audit this data, we compared the data for this and the prior valuation and tested for reasonableness. 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 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, 2012	June 30, 2011
Number of Participants		
Active Participants	9,273	9,923
Inactive Participants	21,064	19,875
Retirees and Beneficiaries	102	66
Total Number of Participants	30,439	29,864
Active Participant Statistics		
Annualized Salaries ($ millions)	$ 150.7	$ 157.9
Average Salary	$ 16,245	$ 15,910
Average Age	49.5 years	49.3 years
Average Service in CBB Program	6.0 years	5.6 years

Table C.2
Age and Service Distribution
All Active Participants

Age Group	
Under 25	38
25 – 29	482
30 – 34	958
35 – 39	1,031
40 – 44	1,115
45 – 49	1,129
50 – 54	1,147
55 – 59	1,216
60 – 64	1,020
65 and Over	1,137
Total	9,273

Years	
Under 1	1,279
1 – 2	829
2 – 3	589
3 – 4	753
4 – 5	1,117
5 – 9	2,806
10 and Over	1,900
Total	9,273

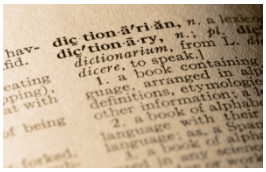
Table C.3
Inactive Members

Fiscal Year Ending June 30	Number	Account Balances
2005	10,534	$ 15,438,000
2006	12,101	19,307,000
2007	13,536	23,848,000
2008	15,037	28,543,000
2009	17,129	37,547,000
2010	18,771	44,154,000
2011	19,875	51,952,000
2012	21,064	60,558,000

Table C.4
Annuitants

Fiscal Year Ending June 30	Number	Accounts at Retirement
2005	4	$ 52,000
2006	13	141,000
2007	17	185,000
2008	24	311,000
2009	35	467,000
2010	50	599,000
2011	66	883,000
2012	102	1,626,000

Appendix D Glossary


dic tion ā'ri ān, n. a lexico
dic'tion a-ry, n.; pl. dic
dictionarium, from L. dic
dicere, to speak.]
1. a book containing
guage, arranged in alp
definitions, etymologie
other information; a l
2. a book of alphab
language; as, a Span
language; a book of alph
hav-
fid.
eating
pping),
at with
of being

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, disability and retirement, changes in compensation, rates of investment earnings and asset appreciation or depreciation, procedures used to determine the Actuarial Value of Assets and 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 Participant 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, 2012.