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June, 2004

Retirement Board
California State Teachers' Retirement System

**Re: Cash Balance Benefit Program
Actuarial Valuation as of June 30, 2003**

Dear Members of the Board:

At your request, we have performed an actuarial valuation of the Cash Balance Benefit Program of the State Teachers' Retirement Plan as of June 30, 2003. Details about the actuarial valuation are contained in the following report.

I certify that the information included in this report is complete and accurate to the best of my knowledge and belief. All calculations have been prepared in accordance with generally recognized and accepted actuarial principles and practices that are consistent with the applicable Standards of Practice adopted by the American Academy of Actuaries.

Milliman has been engaged by CalSTRS as an independent actuary. The undersigned is a Fellow of the Society of Actuaries, a Member of the American Academy of Actuaries, and an Enrolled Actuary, and is experienced in performing actuarial valuations for large public employee retirement systems.

Any distribution of this report must be in its entirety unless prior written consent is obtained from Milliman, Inc.

Respectfully submitted,

Mark O. Johnson, F.S.A., M.A.A.A., E.A.
Principal and Consulting Actuary

MOJ:j



California State Teachers' Retirement System

Cash Balance Benefit Program - 2003 Actuarial Valuation

TABLE OF CONTENTS

	PAGE
LETTER OF TRANSMITTAL	
SECTION 1 SUMMARY OF THE FINDINGS	1
SECTION 2 FINDINGS OF THE ACTUARIAL VALUATION	3
Table 1 Statement of Program Assets	
Table 2 Statement of Change in Program Assets	
Table 3 Actuarial Balance Sheet	
Table 4 Actuarial Gains and Losses	
Table 5 Gain and Loss Reserve	
Table 6 History of Cash Flow	
Table 7 Schedule of Funding Progress	
Table 8 Schedule of Employer Contributions	
SECTION 3 OUTLINE OF THE PROVISIONS OF GOVERNING LAW	14
SECTION 4 ACTUARIAL METHODS AND ASSUMPTIONS	17
Table 9 List of Major Valuation Assumptions	
Table 10 Mortality	
Table 11 Service Retirement	
Table 12 Disability Retirement	
Table 13 Withdrawal	
Table 14 Merit Salary Increases	
SECTION 5 VALUATION DATA	25
Table 15 Summary of Statistical Information	
Table 16 Active Participants by Age Group and Years of Service	
SECTION 6 GLOSSARY OF ACTUARIAL TERMINOLOGY	28



California State Teachers' Retirement System Cash Balance Benefit Program - 2003 Actuarial Valuation

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 steadily increased in the first few plan years, as shown in the following chart.

Date of Valuation	Total Number of Participants	Accumulated Account Balances
June 30, 1997	495	\$ 164,078
June 30, 1998	3,505	1,727,705
June 30, 1999	6,412	5,000,613
June 30, 2000	9,552	10,350,720
June 30, 2001	12,015	16,938,474
June 30, 2002	14,554	25,080,056
June 30, 2003	16,347	33,836,853

The actuarial value of assets for this valuation is the Fair Market Value as certified to us by CalSTRS. The actual return for the year, as measured using uniform cash flow throughout the year, was about 5.5%.

<i>(\$Thousands)</i>	Year Ended June 30, 2003	Year Ended June 30, 2002
Additions		
Contributions	\$ 7,171	\$ 7,121
Earnings	<u>1,381</u>	<u>(943)</u>
Total Additions	\$ 8,552	\$ 6,178
Deductions		
Benefits	\$ 320	\$ 195
Expenses	<u>17</u>	<u>11</u>
Total Deductions	\$ 337	\$ 206
Net Increase (Decrease)	\$ 8,215	\$ 5,972
Net Assets		
Beginning of Year	\$ 21,748	\$ 15,768
Accounting Adjustments	0	8
Net Increase (Decrease)	<u>8,215</u>	<u>5,972</u>
End of Year	\$ 29,963	\$ 21,748
Estimated Net Rate of Return	5.5%	-4.9%



California State Teachers' Retirement System Cash Balance Benefit Program - 2003 Actuarial Valuation

As of June 30, 2003 the Actuarial Obligation of the CBB Program exceeded the Fair Market Value of Assets by \$3,874,000. If the experience had emerged as assumed, the Unfunded Actuarial Obligation was expected to grow from \$3,332,000 to \$3,598,000. 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 \$650,000 due to the actual investment return being less than the assumed long-term return of 8%, and
- There was an actuarial gain of \$374,000 due to the current year interest credits being less than 8% during the year.
- The net actuarial loss was \$276,000. Because the actual return was close to the actual interest credit for the year, the net actual loss was relatively small.

<i>(\$Thousands)</i>	June 30, 2003	June 30, 2002
Actuarial Balance Sheet		
Actuarial Obligation	\$ 33,837	\$ 25,080
Actuarial Value of Assets	<u>29,963</u>	<u>21,748</u>
Unfunded Actuarial Obligation	\$ 3,874	\$ 3,332
Additional Earnings Credit	0 *	0
Additional Annuity Credit	<u>0</u>	<u>0</u>
Final Unfunded Actuarial Obligation	\$ 3,874 *	\$ 3,332
Actuarial (Gain) or Loss		
Investment Return on Assets	\$ 650	\$ 2,484
Interest Credits on Accounts	<u>(374)</u>	<u>(416)</u>
Actuarial (Gain) or Loss	\$ 276	\$ 2,068
Expected UA0 at End of Year	<u>3,598</u>	<u>1,264</u>
Total Unfunded Actuarial Obligation	\$ 3,874	\$ 3,332
<i>* Determined by the Teachers' Retirement Board on June 3, 2004.</i>		

Because the CBB Program currently has an Unfunded Actuarial Obligation, we recommended that no Additional Earnings Credit be granted for the year ended June 30, 2003. The Teachers' Retirement Board did not adopt an Additional Earnings Credit, therefore, the ending balance in the Gain and Loss Reserve is a negative balance of \$3,874,000. This negative balance will need to be offset by investment earnings in excess of the Minimum Interest Rate before future Additional Earnings Credits will be recommended.



California State Teachers' Retirement System Cash Balance Benefit Program - 2003 Actuarial Valuation

SECTION 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 certain disclosure information in accordance with the Governmental Accounting Standards Board 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 our best 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**.

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 Actuarial Obligation is equivalent to the current sum of the Participants' Account Balances. **TABLE 3** shows the Actuarial Obligation for this and the prior valuation.

The excess of the Actuarial Obligation over the Actuarial Value of Assets is called the Unfunded Actuarial Obligation. If the Assets exceed the Actuarial Obligation, the difference is called the Actuarial Surplus.

Under normal conditions, the CBB Program should have an Actuarial Surplus. In the first two years of operation, the CB Plan had an Unfunded Actuarial Obligation because the administrative start-up costs far exceeded the investment return. With the merger of the CB Plan with the DB Plan, specifically with the sharing of administrative expenses in proportion to invested assets, the future expenses allocated to the CBB Program should be minimal each year. Therefore, to retain an Actuarial Surplus, the investment returns over a long period of time must exceed the combination of the Minimum Interest Rates,



California State Teachers' Retirement System Cash Balance Benefit Program - 2003 Actuarial Valuation

the Additional Earnings Credits, and the Additional Annuity Credits. Although we expect this to be the case, the investment performance for the past several years has been below the long-term assumption.

ACTUARIAL GAINS AND LOSSES

The Minimum Interest Rate for the year ending on the valuation date was 5.5%. Since the assumed total earnings rate is 8% per year, the Actuarial Obligation was less than expected by about \$374,000.

The assumed earnings rate on the invested assets is 8% per year. The actual return for the year was about 5.5% (assuming uniform cash flow through the year, which is slightly different than how interest is actually posted), which produced an investment loss of \$650,000.

The net actuarial loss due to these causes was \$276,000 as shown in **TABLE 4**.

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.

- The 1997 actuarial valuation determined the CB Plan had an Unfunded Actuarial Obligation of \$557,000. The Board did not adopt an Additional Earnings Credit after the 1997 valuation, so the Gain and Loss Reserve stood at \$(557,000).
- The 1998 actuarial valuation determined that the CB Plan had an Unfunded Actuarial Obligation of \$938,000. However, the Unfunded Actuarial Obligation was reduced by \$1,293,000 as of June 30, 1998, to reflect the value of the loan from the DB Plan which would be discharged due to the merger on January 1, 1999. Therefore, with an adjustment to reflect the merger, the CBB Program had an Actuarial Surplus of \$355,000. After the 1998 actuarial valuation was adopted, the Board allocated \$8,916 as Additional Earnings Credit, with the remainder of the Surplus remaining in the Gain and Loss Reserve.
- The 1999 actuarial valuation determined the Actuarial Surplus to be \$223,000 as of June 30, 1999. Therefore, with a Gain and Loss Reserve of \$346,000 there was an unallocated actuarial loss for the year of \$123,000. One reason for the change in the funding status of the CBB Program was the method used to charge expenses to the CB Plan. The level of expenses in the CB Plan during 1998-99 reflected a method of allocating administrative expenses



California State Teachers' Retirement System Cash Balance Benefit Program - 2003 Actuarial Valuation

that will no longer be applied. As a result, a principal cause of the 1998-99 actuarial loss will not occur in the future.

After the 1999 actuarial valuation, the Board allocated \$58,000 as Additional Earnings Credit, with the remainder of the Surplus remaining in the Gain and Loss Reserve.

- After the 2000 actuarial valuation, the Board did not adopt an Additional Earnings Credit. The entire unallocated gain of \$352,000 was distributed to the Gain and Loss Reserve, bringing the end of the year Gain and Loss Reserve to \$517,000.
- After the 2001 actuarial valuation, the Board did not adopt an Additional Earnings Credit. The entire unallocated loss of \$1,687,000 was distributed to the Gain and Loss Reserve, bringing the end of the year Gain and Loss Reserve to \$(1,170,000).
- After the 2002 actuarial valuation, the Board did not adopt an Additional Earnings Credit. The entire unallocated loss of \$2,162,000 was distributed to the Gain and Loss Reserve, bringing the end of the year Gain and Loss Reserve to \$(3,332,000).
- On June 3, 2004, The Teachers' Retirement Board decided not to adopt an Additional Earnings Credit for the year ended in 2003. Therefore, the end of the year Gain and Loss Reserve is equal to \$(3,874,000).

ACCOUNTING DISCLOSURES

The Governmental Accounting Standards Board (GASB) has issued Statement No. 25 that describes the information to be disclosed in the System's financial reports. The required actuarial disclosures are shown in **TABLES 6, 7, AND 8**.



California State Teachers' Retirement System
Cash Balance Benefit Program - 2003 Actuarial Valuation

TABLE 1
STATEMENT OF PROGRAM ASSETS

<i>(\$Thousands)</i>	June 30, 2003	June 30, 2002
Invested Assets		
Short-term investments	\$ 972	\$ 299
Pooled Domestic Securities	9,815	6,547
Pooled Domestic Equity	<u>18,951</u>	<u>14,297</u>
Total Investments	\$ 29,738	\$ 21,143
Receivables	228	607
Liabilities	<u>(3)</u>	<u>(2)</u>
Fair Market Value of Net Assets	\$ 29,963	\$ 21,748



California State Teachers' Retirement System
Cash Balance Benefit Program - 2003 Actuarial Valuation

TABLE 2
STATEMENT OF CHANGE IN PROGRAM ASSETS

<i>(\$Thousands)</i>	Year Ended June 30, 2003	Year Ended June 30, 2002
Additions		
Contributions		
Participants	\$ 3,581	\$ 3,535
Employers	<u>3,590</u>	<u>3,586</u>
Total Contributions	7,171	7,121
Net Earnings	<u>1,381</u>	<u>(943)</u>
Total Additions	\$ 8,552	\$ 6,178
Deductions		
Benefit Payments		
Retirement, death, and survivor	\$ 0	\$ 0
Refunds of Participant contributions	<u>320</u>	<u>195</u>
Total Benefits	320	195
Expenses	<u>17</u>	<u>11</u>
Total Deductions	\$ 337	\$ 206
Net Increase (Decrease)	\$ 8,215	\$ 5,972
Fair Market Value of Net Assets		
Beginning of Year	\$ 21,748	\$ 15,768
Accounting Adjustments	0	8
Net Increase (Decrease)	<u>8,215</u>	<u>5,972</u>
End of Year	\$ 29,963	\$ 21,748
Estimated Net Rate of Return (assuming uniform cash flow through the year)	5.5%	-4.9%



California State Teachers' Retirement System
Cash Balance Benefit Program - 2003 Actuarial Valuation

TABLE 3
ACTUARIAL BALANCE SHEET

<i>(\$Thousands)</i>	June 30, 2003	June 30, 2002
Total Requirements		
Actuarial Obligation		
Retirees and Beneficiaries	\$ 0	\$ 0
Inactive Participants	7,779	4,315
Active Participants	<u>26,058</u>	<u>20,765</u>
Total Requirements	\$ 33,837	\$ 25,080
Total Resources		
Actuarial Value of Assets	\$ 29,963	\$ 21,748
Unfunded Actuarial Obligation	<u>3,874</u>	<u>3,332</u>
Total Resources	\$ 33,837	\$ 25,080
Funded Ratio	89%	87%



California State Teachers' Retirement System
Cash Balance Benefit Program - 2003 Actuarial Valuation

TABLE 4
ACTUARIAL GAINS AND LOSSES

<i>(\$Thousands)</i>	Actuarial Obligation	Actuarial Value of Assets	Unfunded Actuarial Obligation
Balance at June 30, 2002	\$ 25,080	\$ 21,748	\$ 3,332
Expected Changes			
Actual Contributions	7,171	7,171	0
Actual Benefits Paid	(320)	(320)	0
Expected Earnings / Credits	<u>2,280</u>	<u>2,014</u>	<u>266</u>
Expected Balance at June 30, 2003	\$ 34,211	\$ 30,613	\$ 3,598
Actuarial Gains or Losses			
(Gain) on Actuarial Obligation	(374)		
Loss on Assets	<u> </u>	<u>650</u>	
Net (Gain) or Loss	(374)	650	276
Actual Balance at June 30, 2003	\$ 33,837	\$ 29,963	\$ 3,874



**California State Teachers' Retirement System
Cash Balance Benefit Program - 2003 Actuarial Valuation**

**TABLE 5
GAIN AND LOSS RESERVE**

<i>(\$Thousands)</i>	June 30, 2003	June 30, 2002
Unfunded Actuarial Obligation	\$ 3,874	\$ 3,332
Gain and Loss Reserve		
Beginning of Year	\$ (3,332)	\$ (1,170)
Additional Earnings Credit	0 ⁽¹⁾	0
Additional Annuity Credit	0	0
Allocated to Funding	<u>(542) ⁽¹⁾</u>	<u>(2,162)</u>
End of Year Gain and Loss Reserve	\$ (3,874)	\$ (3,332)
Unallocated Gains and (Losses)	\$ 0	\$ 0

<i>(\$Thousands)</i>	Available Reserves and Unallocated Gains (Losses)	Additional Earnings Credit Adopted	Final Gain and Loss Reserve
Valuation Date			
June 30, 1997	\$ (557)	\$ 0	\$ (557)
June 30, 1998	355	9	346
June 30, 1999	223	58	165
June 30, 2000	517	0	517
June 30, 2001	(1,170)	0	(1,170)
June 30, 2002	(3,332)	0	(3,332)
June 30, 2003	(3,874)	0 ⁽¹⁾	(3,874)

Notes:

⁽¹⁾ Determined by the Teachers' Retirement Board on June 3, 2004.



California State Teachers' Retirement System
Cash Balance Benefit Program - 2003 Actuarial Valuation

TABLE 6
HISTORY OF CASH FLOW

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

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



California State Teachers' Retirement System
Cash Balance Benefit Program - 2003 Actuarial Valuation

TABLE 7
SCHEDULE OF FUNDING PROGRESS

<i>(\$Thousands)</i>						
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%



California State Teachers' Retirement System
Cash Balance Benefit Program - 2003 Actuarial Valuation

TABLE 8
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%



California State Teachers' Retirement System

Cash Balance Benefit Program - 2003 Actuarial Valuation

SECTION 3

OUTLINE OF THE 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, 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.



California State Teachers' Retirement System Cash Balance Benefit Program - 2003 Actuarial Valuation

Minimum Interest Rate:	Annual rate determined for the plan year by the Retirement 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 twelve 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 Minimum Interest Rate 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 Minimum Interest Rate 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.
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California State Teachers' Retirement System Cash Balance Benefit Program - 2003 Actuarial Valuation

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.



California State Teachers' Retirement System Cash Balance Benefit Program - 2003 Actuarial Valuation

SECTION 4

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 Defined Benefit Program and on current expectations as to future economic conditions.

The assumptions are intended to estimate the future experience of the Participants 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.

TABLE 9 includes a list of all of the major methods and assumptions used in this actuarial valuation. The demographic assumptions are illustrated at selected ages and duration combinations in **TABLES 10 – 14**.

Please refer to the 2003 Actuarial Experience Analysis for further information on the revisions made to the actuarial assumptions. The following method and assumptions were revised since the last valuation:

Actuarial Methods

- ◆ None

Economic Assumptions

- ◆ Annual inflation rate from 3.50% to 3.25% per year
- ◆ Real wage growth rate from 0.75% to 1.00% per year

Demographic Assumptions

- ◆ Rates of service retirement by age, gender, and service
- ◆ Rates of disablement
- ◆ Rates of withdrawal



California State Teachers' Retirement System Cash Balance Benefit Program - 2003 Actuarial Valuation

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 Participant 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.

The assumptions are intended to estimate the future experience of the Participants 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 Program's benefits.



**California State Teachers' Retirement System
Cash Balance Benefit Program - 2003 Actuarial Valuation**

**TABLE 9
LIST OF MAJOR VALUATION ASSUMPTIONS**

I. Economic Assumptions			
A.	Investment Return (net of investment and administrative expenses)	8.00%	
B.	Interest on Participant Accounts	8.00%	
C.	Wage Growth	4.25%	
D.	Inflation	3.25%	
II. Demographic Assumptions			
A.	Mortality		
	(1) Active		
	- Male	1999 CalSTRS Retired – M (-2 years)	Table 10
	- Female	1999 CalSTRS Retired – F (-2 years)	Table 10
	(2) Retired *		
	- Male	1999 CalSTRS Retired – M	Table 10
	- Female	1999 CalSTRS Retired – F	Table 10
	(3) Beneficiary *		
	- Male	1999 CalSTRS Beneficiary – M	Table 10
	- Female	1999 CalSTRS Beneficiary – F	Table 10
	(4) Disabled *		
	- Male	1994 GAM-M (minimum 2.5% with select rates in first three years)	Table 10
	- Female	1994 GAM-F (minimum 2.2% with select rates in first three years)	Table 10
	<i>* Future retirees and beneficiaries are valued with a 2-year age setback</i>		
B.	Service Retirement	Experience Tables	Table 11
C.	Disability Retirement	Experience Tables	Table 12
D.	Withdrawal	Experience Tables	Table 13
E.	Merit Salary Increases	Experience Tables	Table 14



**California State Teachers' Retirement System
Cash Balance Benefit Program - 2003 Actuarial Valuation**

**TABLE 10
MORTALITY**

<u>Age</u>	<u>Active Participants</u>	
	<u>Male</u>	<u>Female</u>
25	0.051%	0.029%
30	0.066	0.029
35	0.080	0.037
40	0.085	0.051
45	0.107	0.077
50	0.158	0.103
55	0.258	0.157
60	0.443	0.256
65	0.798	0.509

<u>Age</u>	<u>Retired Participants *</u>		<u>Beneficiaries *</u>		<u>Disabled (After Year 3) *</u>	
	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>
50	0.190%	0.121%	0.233%	0.121%	2.500%	2.200%
55	0.321	0.191	0.398	0.191	2.500	2.200
60	0.558	0.336	0.709	0.336	2.500	2.200
65	1.015	0.668	1.294	0.668	2.500	2.200
70	1.803	1.176	2.173	1.176	2.848	2.200
75	2.848	1.834	3.405	1.834	4.517	2.533
80	5.021	3.778	5.586	3.778	7.553	4.395
85	9.419	6.503	8.961	6.503	11.567	7.535
90	14.754	11.627	14.754	11.627	18.228	12.875
95	23.361	18.621	23.361	18.621	26.882	20.254
Select rates for disability:						
First year of disablement					11.4%	6.0%
Second year of disablement					7.7	3.8
Third year of disablement					6.2	3.0

* Future retirees and beneficiaries are valued with a 2-year age setback



California State Teachers' Retirement System
Cash Balance Benefit Program - 2003 Actuarial Valuation

TABLE 11
SERVICE RETIREMENT

Age	<u>Under 30 Years</u>		<u>30 or More Years</u>	
	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>
50	0.0%	0.0%	1.5%	1.5%
51	0.0	0.0	1.5	1.5
52	0.0	0.0	1.5	1.5
53	0.0	0.0	2.0	1.5
54	0.0	0.0	2.0	2.0
55	3.0	5.0	6.0	8.0
56	2.0	3.5	6.0	8.0
57	2.0	3.5	8.0	10.0
58	3.0	4.5	12.0	15.0
59	5.0	6.0	16.0	18.0
60	7.0	10.0	25.0	30.0
61	7.0	10.0	40.0	35.0
62	9.0	12.0	35.0	32.0
63	13.0	18.0	27.0	30.0
64	12.0	15.0	27.0	27.0
65	14.0	16.0	27.0	27.0
66	10.0	15.0	27.0	27.0
67	10.0	15.0	27.0	27.0
68	10.0	15.0	27.0	27.0
69	10.0	15.0	27.0	27.0
70	100.0	100.0	100.0	100.0



California State Teachers' Retirement System
Cash Balance Benefit Program - 2003 Actuarial Valuation

TABLE 12
DISABILITY RETIREMENT

<u>Age</u>	<u>Entry Ages - Male</u>		<u>Entry Ages - Female</u>	
	<u>Under 40</u>	<u>40 and Up</u>	<u>Under 40</u>	<u>40 and Up</u>
25	0.021%		0.030%	
30	0.030		0.030	
35	0.051		0.051	
40	0.120		0.090	
45	0.150	0.118%	0.141	0.139%
50	0.195	0.202	0.231	0.252
55	0.270	0.312	0.318	0.367
60	0.329	0.477	0.390	0.530
65	0.370	0.853	0.458	0.916



**California State Teachers' Retirement System
Cash Balance Benefit Program - 2003 Actuarial Valuation**

**TABLE 13
WITHDRAWAL**

<u>Year</u>	<u>Entry Ages - Male</u>					
	<u>Under 25</u>	<u>25 - 29</u>	<u>30 - 34</u>	<u>35 - 39</u>	<u>40 - 44</u>	<u>45 & Up</u>
1	12.5%	12.5%	12.5%	12.5%	12.5%	12.5%
2	7.7	7.7	7.7	7.7	7.7	8.6
3	6.3	5.4	5.4	5.4	5.4	6.3
4	4.4	4.4	4.4	4.4	4.4	4.4
5	3.9	3.0	3.0	3.0	3.0	3.6
10	2.0	2.0	2.0	2.0	2.4	
15	1.1	1.1	1.1	1.2		
20	0.6	0.6	0.6			
25	0.5	0.5				
30	0.0					
<u>Year</u>	<u>Entry Ages - Female</u>					
	<u>Under 25</u>	<u>25 - 29</u>	<u>30 - 34</u>	<u>35 - 39</u>	<u>40 - 44</u>	<u>45 & Up</u>
1	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%
2	8.3	7.2	7.2	7.2	7.2	7.2
3	7.7	6.3	5.8	5.3	4.9	4.9
4	7.1	5.8	5.4	4.9	3.9	3.9
5	5.5	5.8	4.2	2.9	2.5	2.5
10	2.3	2.0	1.7	1.4	1.6	
15	1.1	0.9	1.0	0.9		
20	0.6	0.7	0.9			
25	0.6	0.6				
30	0.0					



California State Teachers' Retirement System
Cash Balance Benefit Program - 2003 Actuarial Valuation

TABLE 14
MERIT SALARY INCREASES

Yr.	Entry Age - Annual Increase in Salaries Due to Merit					
	<u>Under 25</u>	<u>25 - 29</u>	<u>30 - 34</u>	<u>35 - 39</u>	<u>40 - 44</u>	<u>45 & up</u>
1	5.7%	5.3%	5.1%	4.9%	4.9%	3.5%
2	5.6	5.2	4.9	4.7	4.7	3.3
3	5.6	5.0	4.8	4.6	4.6	3.0
4	5.5	4.9	4.6	4.4	4.4	2.9
5	5.5	4.8	4.5	3.8	3.8	2.6
10	3.2	3.0	2.7	2.3	2.2	1.6
15	1.5	1.5	1.4	1.1	1.1	0.8
20	1.3	1.2	1.1	0.8	0.8	0.6
25	1.1	1.0	0.9	0.6	0.6	
30	0.9	0.7	0.6	0.5		
35	0.8	0.7	0.6			
40	0.8	0.7				
45	0.8					



California State Teachers' Retirement System Cash Balance Benefit Program - 2003 Actuarial Valuation

SECTION 5 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.

We believe the participant data to be sufficient for the purposes of this valuation.

TABLES 15 AND 16 summarize the census data used in this valuation.



California State Teachers' Retirement System
Cash Balance Benefit Program - 2003 Actuarial Valuation

TABLE 15
SUMMARY OF STATISTICAL INFORMATION

	June 30, 2003	June 30, 2002
Number of Participants		
Active Participants	8,980	9,261
Inactive Participants	7,367	5,293
Retirees and Beneficiaries	<u>0</u>	<u>0</u>
Total Number of Participants	16,347	14,554
Accumulated Account Balances		
Participant Contributions	\$ 16,888,397	\$ 12,541,528
Employer Contributions	<u>16,948,456</u>	<u>12,538,528</u>
Total Account Balances	\$ 33,836,853	\$ 25,080,056
Active Participant Statistics		
Annualized Salaries	\$ 81.1 million	\$89.9 million
Average Salary	\$ 9,029	\$ 9,704
Average Age	47.3 years	47.2 years
Average Service in CBB Program	2.7 years	2.2 years



California State Teachers' Retirement System
Cash Balance Benefit Program - 2003 Actuarial Valuation

TABLE 16
ACTIVE PARTICIPANTS BY AGE GROUP AND YEARS OF SERVICE

Age Group	June 30, 2003	Years	June 30, 2003
Under 25	97	Under 1	2,236
25 – 29	530	1 – 2	1,667
30 – 34	907	2 – 3	1,256
35 – 39	1,010	3 – 4	1,301
40 – 44	1,197	4 – 5	1,251
45 – 49	1,441	5 and Over	<u>1,269</u>
50 – 54	1,407	Total	8,980
55 – 59	1,203		
60 – 64	662		
65 and Over	<u>526</u>		
Total	8,980		



California State Teachers' Retirement System

Cash Balance Benefit Program - 2003 Actuarial Valuation

SECTION 6

GLOSSARY OF ACTUARIAL TERMINOLOGY

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, 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 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.



California State Teachers' Retirement System Cash Balance Benefit Program - 2003 Actuarial Valuation

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.
Actuarial Equivalent:	Of equal Actuarial Present Value, determined as of a given date with each value based on the same set of Actuarial Assumptions.
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, 2003.