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May 15, 2003

Retirement Board
California State Teachers' Retirement System

**Re: Cash Balance Benefit Program
Actuarial Valuation as of June 30, 2002**

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, 2002. 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 USA 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.

Respectfully submitted,

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

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California State Teachers' Retirement System

Cash Balance Benefit Program - 2002 Actuarial Valuation

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California State Teachers' Retirement System Cash Balance Benefit Program - 2002 Actuarial Valuation

SECTION 1 EXECUTIVE SUMMARY

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

The actuarial value of assets for this valuation is the Fair Market Value as certified to us by CalSTRS.

<i>(\$Thousands)</i>	Year Ended June 30, 2002	Year Ended June 30, 2001
Additions		
Contributions	\$ 7,121	\$ 5,972
Earnings	<u>(943)</u>	<u>(942)</u>
Total Additions	\$ 6,178	\$ 5,030
Deductions		
Benefits	\$ 195	\$ 119
Expenses	<u>11</u>	<u>8</u>
Total Deductions	\$ 206	\$ 127
Net Increase (Decrease)	\$ 5,972	\$ 4,903
Net Assets		
Beginning of Year	\$15,768	\$10,868
Accounting Adjustments	8	(3)
Net Increase (Decrease)	<u>5,972</u>	<u>4,903</u>
End of Year	\$21,748	\$15,768



California State Teachers' Retirement System Cash Balance Benefit Program - 2002 Actuarial Valuation

As of June 30, 2002, the Actuarial Obligation of the CBB Program exceeded the Fair Market Value of Assets by \$3,332,000. If the experience had emerged as assumed, the Unfunded Actuarial Obligation was expected to grow from \$1,170,000 to \$1,264,000.

The difference between the actual and expected Unfunded Actuarial Obligation is the actuarial loss for the year. There was an actuarial loss of \$2,484,000 due to investment returns less than 8%, and an actuarial gain of \$416,000 due to interest credits less than 8% during the year. The net actuarial loss was \$2,068,000.

(\$Thousands)	June 30, 2002	June 30, 2001
Actuarial Balance Sheet		
Actuarial Obligation	\$25,080	\$ 16,938
Actuarial Value of Assets	<u>21,748</u>	<u>15,768</u>
Unfunded Actuarial Obligation	\$ 3,332	\$ 1,170
Additional Earnings Credit	*	0
Additional Annuity Credit	<u>0</u>	<u>0</u>
Final Unfunded Actuarial Obligation	\$ *	\$ 1,170
Actuarial (Gain) or Loss		
Investment Return on Assets	\$ 2,484	\$ 2,057
Interest Credits on Accounts	<u>(416)</u>	<u>(328)</u>
Actuarial (Gain) or Loss	\$ 2,068	\$ 1,729
Expected UAO (Surplus) at End of Year	<u>1,264</u>	<u>(559)</u>
Total Unfunded Actuarial Obligation	\$ 3,332	\$ 1,170
* To be determined by the Teachers' Retirement Board after the actuarial valuation.		

If no Additional Earnings Credit is adopted, the ending balance in the Gain and Loss Reserve will be a negative balance of \$3,332,000. 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.

Recommendation: Because the CBB Program currently has an Unfunded Actuarial Obligation, we recommend that no Additional Earnings Credit be granted at this time.



California State Teachers' Retirement System

Cash Balance Benefit Program - 2002 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 - 2002 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 significantly below the long-term assumption.

ACTUARIAL GAINS AND LOSSES

The Minimum Interest Rate for last year was 6.0% and the Board did not adopt an Additional Earnings Credit. Since the assumed total earnings rate is 8% per year, the Actuarial Obligation was less than expected by about \$416,000.

The assumed earnings rate on the invested assets is 8% per year. The actual return for the year was about -4.9% (assuming uniform cash flow through the year), which produced an investment loss of \$2,484,000.

The net actuarial loss due to these causes was \$2,068,000 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 that will no longer be applied. As a result, a principal cause of the 1998-99



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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 adoption of the 2002 actuarial valuation, the Board will decide how to allocate this actuarial loss. If no Additional Earnings Credit is adopted, the end of the year Gain and Loss Reserve will be equal to \$(3,332,000).

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**.

REMAINDER OF THE REPORT

The remainder of this report includes a summary of the benefit and eligibility provisions of the CBB Program in **SECTION 3**, the Outline of the Provisions of Governing Law.

A description of the actuarial methods and assumptions is included in **SECTION 4**. The assumptions are intended to estimate the future experience of the Participants 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.

A summary of the participant data is shown in **SECTION 5**. The membership data for this actuarial valuation was supplied by CalSTRS and accepted without audit. We believe the membership data to be sufficient for the purposes of this valuation.

And finally, **SECTION 6** is the Glossary of Actuarial Terminology.



California State Teachers' Retirement System
Cash Balance Benefit Program - 2002 Actuarial Valuation

TABLE 1
STATEMENT OF PROGRAM ASSETS

<i>(\$Thousands)</i>	June 30, 2002	June 30, 2001
Invested Assets		
Short-term investments	\$ 299	\$ 0
Pooled Domestic Securities	6,547	6,737
Pooled Domestic Equity	<u>14,297</u>	<u>8,577</u>
Total Investments	\$ 21,143	\$ 15,314
Receivables	607	462
Liabilities	<u>(2)</u>	<u>(8)</u>
Fair Market Value of Net Assets	\$ 21,748	\$ 15,768



California State Teachers' Retirement System
Cash Balance Benefit Program - 2002 Actuarial Valuation

TABLE 2
STATEMENT OF CHANGE IN PROGRAM ASSETS

<i>(\$Thousands)</i>	Year Ended June 30, 2002	Year Ended June 30, 2001
Additions		
Contributions		
Participants	\$ 3,535	\$ 2,936
Employers	<u>3,586</u>	<u>3,036</u>
Total Contributions	7,121	5,972
Net Earnings	<u>(943)</u>	<u>(942)</u>
Total Additions	\$ 6,178	\$ 5,030
Deductions		
Benefit Payments		
Retirement, death, and survivor	\$ 0	\$ 0
Refunds of Member contributions	<u>195</u>	<u>119</u>
Total Benefits	195	119
Expenses	<u>11</u>	<u>8</u>
Total Deductions	\$ 206	\$ 127
Net Increase (Decrease)	\$ 5,972	\$ 4,903
Fair Market Value of Net Assets		
Beginning of Year	\$ 15,768	\$ 10,868
Accounting Adjustments	8	(3)
Net Increase (Decrease)	<u>5,972</u>	<u>4,903</u>
End of Year	\$ 21,748	\$ 15,768
Estimated Net Rate of Return (assuming uniform cash flow through the year)	-4.9%	-6.8%



California State Teachers' Retirement System
Cash Balance Benefit Program - 2002 Actuarial Valuation

TABLE 3
ACTUARIAL BALANCE SHEET

<i>(\$Thousands)</i>	June 30, 2002	June 30, 2001
Total Requirements		
Actuarial Obligation		
Retirees and Beneficiaries	\$ 0	\$ 0
Inactive Participants	4,315	1,045
Active Participants	<u>20,765</u>	<u>15,893</u>
Total Requirements	\$ 25,080	\$ 16,938
Total Resources		
Actuarial Value of Assets	\$ 21,748	\$ 15,768
Unfunded Actuarial Obligation	<u>3,332</u>	<u>1,170</u>
Total Resources	\$ 25,080	\$ 16,938
Funded Ratio	87%	93%



California State Teachers' Retirement System
Cash Balance Benefit Program - 2002 Actuarial Valuation

TABLE 4
ACTUARIAL GAINS AND LOSSES

<i>(\$Thousands)</i>	Actuarial Obligation	Actuarial Value of Assets	Unfunded Actuarial Obligation
Balance at June 30, 2001	\$ 16,938	\$ 15,768	\$ 1,170
Expected Changes			
Actual Contributions	7,121	7,121	0
Actual Benefits Paid	(195)	(195)	0
Expected Earnings / Credits	<u>1,632</u>	<u>1,538</u>	<u>94</u>
Expected Balance at June 30, 2002	\$ 25,496	\$ 24,232	\$ 1,264
Actuarial Gains or Losses			
(Gain) on Actuarial Obligation	(416)		(416)
(Loss) on Assets		(2,484)	<u>2,484</u>
Net (Gain) or Loss			2,068
Actual Balance at June 30, 2002	\$ 25,080	\$ 21,748	\$ 3,332



**California State Teachers' Retirement System
Cash Balance Benefit Program - 2002 Actuarial Valuation**

**TABLE 5
GAIN AND LOSS RESERVE**

<i>(\$Thousands)</i>	June 30, 2002	June 30, 2001
Unfunded Actuarial Obligation	\$ 3,332	\$ 1,170
Gain and Loss Reserve		
Beginning of Year	\$ (1,170)	\$ 517
Additional Earnings Credit	(1)	0
Additional Annuity Credit	0	0
Allocated to Funding	<u>(1)</u>	<u>(1,687)</u>
End of Year Gain and Loss Reserve	\$ (1,170)	\$ (1,170)
Unallocated Gains and (Losses)	\$ (2,162)	\$ 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)	(1)	(1)

Notes:

(1) To be determined by the Teachers' Retirement Board after the adoption of this Actuarial Valuation.



California State Teachers' Retirement System Cash Balance Benefit Program - 2002 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

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



California State Teachers' Retirement System
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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%



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Cash Balance Benefit Program - 2002 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%



California State Teachers' Retirement System

Cash Balance Benefit Program - 2002 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.

MEMBERSHIP

- Eligibility Requirement: Membership 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.
- Member: 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 Member. Accounts are credited with Contributions, Minimum Interest Rate, and Additional Earnings Credits.
- Contributions: Generally, Member 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 Member 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 - 2002 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 - 2002 Actuarial Valuation

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

DEFERRED RETIREMENT

Benefit: A Member 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 Member has a total and permanent disability.

Benefit: The Account Balance at the date of disability. An annuity benefit is discontinued if the Member 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 Member 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 Member was receiving an annuity.

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

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 - 2002 Actuarial Valuation

SECTION 4

ACTUARIAL METHODS AND ASSUMPTIONS

This section of the report describes the actuarial methods and assumptions used in this valuation. These procedures and assumptions have been chosen by the Teachers' Retirement Board based on our recommendations. The Board has the sole authority to select the methods and assumptions used in this actuarial valuation.

In our opinion, the current actuarial methods and actuarial assumptions are reasonable and appropriate for the CBB Program. The assumptions are intended to estimate the future experience of the Participants 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 demographic assumptions are illustrated at selected ages and duration combinations in Tables 10 through 14.

STANDARDS OF PRACTICE

- ◆ The economic assumptions have been developed in accordance with the Actuarial Standard of Practice No. 27, *Selection of Economic Assumptions for Measuring Pension Obligations*.
- ◆ Because the CBB Program is relatively new and significant data was not available to develop demographic assumptions, the demographic assumptions adopted for this program were developed from the experience of the DB Program. The demographic assumptions have been developed in accordance with the Actuarial Standard of Practice No. 35, *Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations*.
- ◆ We relied on the membership data furnished by the System. Although we did not audit this data, we compared the data for this and prior reports and tested for reasonableness. Based on these tests, we believe the data to be sufficiently accurate for the purposes of our calculations. Our review of the data was performed in accordance with the Actuarial Standard of Practice No. 23, *Data Quality*.
- ◆ Methods and assumptions have been developed in conformance with the Actuarial Standard of Practice No. 4, *Recommendations for Measuring Pension Obligations*.



**California State Teachers' Retirement System
Cash Balance Benefit Program - 2002 Actuarial Valuation**

**TABLE 9
OUTLINE OF METHODS AND ASSUMPTIONS**

I. Actuarial Methods

- | | |
|---------------------------|-------------------------|
| A. Cost Method | Traditional Unit Credit |
| B. Asset Valuation Method | Fair Market Value |

II. Economic Assumptions

- | | |
|---|-------|
| A. Investment Return
(net of investment and administrative expenses) | 8.00% |
| B. Interest on Member Accounts | 8.00% |
| C. Wage Growth | 4.25% |
| D. Inflation | 3.50% |

III. 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 |
| 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 - 2002 Actuarial Valuation**

**TABLE 10
MORTALITY RATES**

<u>Active Participants</u>		
<u>Age</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	2.500	2.200
75	2.848	1.834	3.405	1.834	3.721	2.269
80	5.021	3.778	5.586	3.778	6.203	3.940
85	9.419	6.503	8.961	6.503	9.724	6.774
90	14.754	11.627	14.754	11.627	15.293	11.627
95	23.361	18.621	23.361	18.621	23.361	18.621
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



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TABLE 11
SERVICE RETIREMENT

<u>Age</u>	<u>Male</u>	<u>Female</u>
54	1.5%	1.5%
55	5.0	6.0
56	3.5	4.0
57	4.0	4.0
58	6.0	6.0
59	15.0	9.0
60	20.0	12.0
61	14.0	13.0
62	14.0	17.0
63	25.0	25.0
64	25.0	25.0
65	20.0	19.0
66	16.0	16.0
67	16.0	16.0
68	16.0	16.0
69	16.0	16.0
70	100.0	100.0



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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	0.196%	0.141	0.231%
50	0.195	0.288	0.231	0.360
55	0.270	0.390	0.318	0.459
60	0.330	0.529	0.390	0.588
65	0.380	0.852	0.459	0.915



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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 and Up</u>
1	12.5%	12.5%	12.5%	12.5%	12.5%
2	9.5	9.5	9.2	9.2	9.5
3	7.7	6.8	6.8	6.8	7.2
4	5.8	5.8	5.8	5.8	6.2
5	5.0	4.2	4.2	4.2	4.2
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	0.3				
35	0.3				
40	0.3				

<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 and Up</u>
1	10.0%	10.0%	10.0%	10.0%	10.0%
2	8.3	8.3	8.3	7.5	6.8
3	7.7	7.3	6.5	5.5	5.3
4	7.1	7.1	5.6	4.5	4.0
5	5.5	5.8	4.2	3.5	3.0
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	0.3				
35	0.3				
40	0.3				



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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					



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SECTION 5 VALUATION DATA

The membership 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 membership data to be sufficient for the purposes of this valuation.

Tables 15 and 16 summarize the census data used in this valuation.

Note that prior to this year, active status was defined as a member with an "open" account. Beginning this year, active status is defined as a member with a balance and current year contributions.



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**TABLE 15
SUMMARY OF STATISTICAL INFORMATION**

	June 30, 2002	June 30, 2001
Number of Participants		
Active Participants	9,261	11,274
Inactive Participants	5,293	741
Retirees and Beneficiaries	<u>0</u>	<u>0</u>
Total Number of Participants	14,554	12,015
Accumulated Account Balances		
Member Contributions	\$ 12,541,528	\$ 8,513,463
Employer Contributions	<u>12,538,528</u>	<u>8,425,011</u>
	\$ 25,080,056	\$ 16,938,474
Active Member Statistics		
Annualized Salaries	\$89.9 million	\$97.9 million
Average Salary	\$ 9,704	\$ 8,686
Average Age	47.2 years	46.6 years
Average Service	2.2 years	2.1 years

**TABLE 16
ACTIVE PARTICIPANTS BY AGE GROUP AND YEARS OF SERVICE**

Age Group	June 30, 2002	Years	June 30, 2002
Under 25	96	Under 1	2,796
25 – 29	576	1 – 2	1,898
30 – 34	921	2 – 3	1,695
35 – 39	1,069	3 – 4	1,360
40 – 44	1,180	4 and Over	1,511
45 – 49	1,465	Unknown	<u>1</u>
50 – 54	1,470	Total	9,261
55 – 59	1,213		
60 – 64	696		
65 and Over	547		
Unknown	<u>28</u>		
Total	9,261		



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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.



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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 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, 2002.