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September 12, 2008

Teachers' Retirement Board  
California State Teachers' Retirement System

**Re: Defined Benefit Supplement Program  
Actuarial Valuation as of June 30, 2007**

Dear Members of the Board:

At your request, we have performed an actuarial valuation of the Defined Benefit Supplement Program of the State Teachers' Retirement Plan as of June 30, 2007. 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.

Milliman's work product was prepared exclusively for CalSTRS for a specific and limited purpose. It is a complex, technical analysis that assumes a high level of knowledge concerning CalSTRS operations, and uses CalSTRS data, which Milliman has not audited. It is not for the use or benefit of any third party for any purpose. Any third party recipient of Milliman's work product who desires professional guidance should not rely upon Milliman's work product, but should engage qualified professionals for advice appropriate to its own specific needs.

Milliman has been engaged by CalSTRS as an independent actuary. Any distribution of this report must be provided in its entirety including this cover letter, unless prior written consent is obtained from Milliman.

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,

A handwritten signature in black ink, appearing to read "Mark O. Johnson".

Mark O. Johnson, FSA, MAAA  
Consulting Actuary

A handwritten signature in black ink, appearing to read "Nick J. Collier".

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

# California State Teachers' Retirement System

## Defined Benefit Supplement Program - 2007 Actuarial Valuation

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# California State Teachers' Retirement System

## Defined Benefit Supplement Program - 2007 Actuarial Valuation

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### Section 1

#### Summary of the Findings

The Defined Benefit Supplement (DBS) Program was established on January 1, 2001. All contributing members of the Defined Benefit Program participate in the DBS Program.

Date of Valuation	Number of Non- Retired Participants		Accumulated Account Balances
	Active	Total	
June 30, 2003	447,620	476,262	\$ 1,358,634,402
June 30, 2004	444,315	488,213	2,025,399,713
June 30, 2005	449,773	506,007	2,722,431,556
June 30, 2006	453,131	521,930	3,460,291,326
June 30, 2007	455,453	535,524	4,308,179,023

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 18.6% net of investment and administrative expenses.

<i>(\$Thousands)</i>	Year Ended June 30, 2007	Year Ended June 30, 2006
<b>Additions</b>		
Contributions	\$ 749,844	\$ 703,104
Earnings	<u>798,120</u>	<u>339,018</u>
Total Additions	\$1,547,964	\$1,042,122
<b>Deductions</b>		
Benefits	\$ 115,247	\$ 112,029
Expenses	<u>2,464</u>	<u>1,952</u>
Total Deductions	\$ 117,711	\$ 113,981
<b>Net Increase (Decrease)</b>	\$1,430,253	\$ 928,141
<b>Net Assets</b>		
Beginning of Year	\$3,951,327	\$3,023,177
Accounting Adjustments	5	9
Net Increase (Decrease)	<u>1,430,253</u>	<u>928,141</u>
End of Year	\$5,381,585	\$3,951,327
<b>Estimated Net Rate of Return</b>	18.6%	10.2%

## California State Teachers' Retirement System Defined Benefit Supplement Program - 2007 Actuarial Valuation

The DBS Program continues to have an Actuarial Surplus. As of June 30, 2007 the Actuarial Value of Assets of the DBS Program exceeded the Actuarial Obligation by \$954,762,000. If the experience had emerged as assumed, the Actuarial Surplus was expected to grow from \$335,068,000 to \$361,873,000. The difference between the actual and expected Actuarial Surplus is the actuarial gain or loss for the year.

- There was an actuarial gain of \$454,171,000 due to the actual investment return being greater than the assumed long-term return of 8%, and
- There was an actuarial gain of 138,718,000 due primarily to the current year interest credits being less than 8% during the year. The Minimum Interest Rate for 2006-07 was 4.75%.
- The net actuarial gain was \$592,889,000, which brought the Funded Ratio to 121.57%.

(\$Thousands)	June 30, 2007	June 30, 2006
<b>Actuarial Balance Sheet</b>		
Actuarial Obligation (before Add'l Credits)	\$ 4,426,823	\$ 3,528,058
Actuarial Value of Assets	<u>5,381,585</u>	<u>3,951,327</u>
Unfunded Actuarial Obligation (Surplus)	\$ (954,762)	\$ (423,269)
Additional Earnings Credit	*	86,284
Additional Annuity Credit	<u>*</u>	<u>1,917</u>
Final Unfunded Actuarial Obligation or (Actuarial Surplus)	\$ *	\$ (335,068)
<b>Funded Ratio</b>		
<b>Before Add'l Credits</b>	<b>121.57%</b>	<b>112.00%</b>
<b>After Add'l Credits</b>	<b>*</b>	<b>109.50%</b>
(Assets ÷ Actuarial Obligation)		
<b>Actuarial (Gain) or Loss</b>		
Investment Return on Assets	\$ (454,171)	\$ (71,578)
Interest Credits on Accounts	<u>(138,718)</u>	<u>(63,355)</u>
Actuarial (Gain) or Loss	\$ (592,889)	\$ (134,933)
Expected UAO at End of Year	<u>(361,873)</u>	<u>(288,336)</u>
Total Unfunded Actuarial Obligation or (Actuarial Surplus)	\$ (954,762)	\$ (423,269)
* Prior to action by the Teachers' Retirement Board on June 5, 2008.		

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.

## California State Teachers' Retirement System Defined Benefit Supplement Program - 2007 Actuarial Valuation

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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 recommended that an Additional Earnings Credit and Additional Annuity Credit be granted as of June 30, 2007 equivalent to 4.41% of the Actuarial Obligation as of June 30, 2007. The dollar amount of \$195,223,000 will be allocated to all participants and annuitants.

The following chart shows a history of prior Board actions.

<i>(\$Thousands)</i>	<b>Available Reserves and Unallocated Gains (Losses)</b>	<b>Additional Credits Adopted</b>	<b>Final Gain and Loss Reserve</b>
<b>Valuation Date</b>			
June 30, 2001	\$ (6,253)	\$ 0	\$ (6,253)
June 30, 2002	(51,292)	0	(51,292)
June 30, 2003	(47,366)	0	(47,366)
June 30, 2004	168,630	0	168,630
June 30, 2005	266,978	0	266,978
June 30, 2006	423,269	88,201	335,068
June 30, 2007	954,762	195,223	759,539

# California State Teachers' Retirement System

## Defined Benefit Supplement Program - 2007 Actuarial Valuation

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### Section 2

#### Actuarial Certification

The major findings of the 2007 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 Defined Benefit Supplement Program as of June 30, 2007.

In preparing the valuation report, we relied without audit on information 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 our calculations. 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.

The findings have been determined according to actuarial assumptions and methods that were chosen on the basis of recent experience of the DBS Program and of current expectations concerning future economic conditions. In our opinion, the assumptions used in the actuarial valuation are appropriate for purposes of the valuation, are internally consistent, and reflect reasonable expectations. The assumptions represent our best estimate of future conditions affecting the DBS Program. 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 all of the actuarial methods and assumptions used in the 2007 valuation.

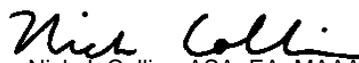
Future actuarial measurements of the DBS Program will vary from those presented in this report due to such factors as the following: actual experience differs from that projected by the assumptions, actuarial assumptions are revised in the future, or changes are made to the benefit or contribution provisions in the 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 and practices which are consistent with Actuarial Standards of Practice promulgated by the Actuarial Standards Board and applicable Guides to Professional Conduct, amplifying Opinions, and supporting Recommendations of the American Academy of Actuaries.

I, Mark Johnson, am a member of the American Academy of Actuaries and a Fellow of the Society of Actuaries, and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

I, Nick Collier, am a member of the American Academy of Actuaries and an Associate of the Society of Actuaries, and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

  
Mark O. Johnson, FSA, MAAA  
Consulting Actuary

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

# California State Teachers' Retirement System

## Defined Benefit Supplement Program - 2007 Actuarial Valuation

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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 DBS 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 DBS 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**.

The investment return for 2006-07 was calculated to be 18.6% 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 differs 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 Members' 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 member records supplied to us. We independently calculated the value of the annuitized benefits.

## **California State Teachers' Retirement System Defined Benefit Supplement Program - 2007 Actuarial Valuation**

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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 DBS Program would have an Actuarial Surplus at the end of each year before any Additional Earnings Credit or Additional Annuity Credit. 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, prior to last year, investment performance for several prior years was below the long-term assumption. This is the fourth consecutive year there has been an Actuarial Surplus.

### **Actuarial Gains and Losses**

The Minimum Interest Rate for the year ending on the valuation date was 4.75%. Since the assumed total earnings rate was 8% per year, the Actuarial Obligation was less than expected. The total actuarial gain on the Actuarial Obligation was \$138,718,000.

The assumed earnings rate on the invested assets was 8% per year. The actual return for the year was about 18.6% (net of investment and administrative expenses and assuming uniform cash flow through the year, which is slightly different than how interest is actually posted), which produced an investment gain of \$454,171,000.

The net actuarial gain due to all causes was \$592,889,000 as shown in **TABLE 4**.

### **Additional Credits based on Board Policy**

Based on the Board's Policy, we recommended that an Additional Earnings Credit and Additional Annuity Credit be granted as of June 30, 2007 equivalent to 4.41% of the Actuarial Obligation as of June 30, 2007. The dollar amount of \$195,223,000 will be allocated to all participants and annuitants.

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.

## California State Teachers' Retirement System Defined Benefit Supplement Program - 2007 Actuarial Valuation

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### First Allocation

Current Long-term Net Investment Return	7.75%
Minimum Interest Rate (year prior to valuation)	<u>4.75</u>
Maximum Available in First Allocation (1)	3.00%
Actuarial Surplus	21.57%
First Threshold (2007-08 MIR x 2)	<u>10.50</u>
Actuarial Surplus in excess of First Threshold (2)	11.07%
<b>First Allocation (lesser of (1) and (2))</b>	<b>3.00%</b>

- The second step allocates 50% of the remaining Actuarial Surplus over three times the Minimum Interest Rate in the year after the valuation date.

### Second Allocation

Remaining Actuarial Surplus	18.57%
Second Threshold (2007-08 MIR x 3)	<u>15.75%</u>
Actuarial Surplus in excess of Second Threshold	2.82%
Less, 50%	<u>(1.41)</u>
<b>Available for Second Allocation</b>	<b>1.41%</b>

- The total available is the sum of the two steps, or **4.41%** of the Actuarial Obligation as of June 30, 2007.

Details of the calculation are shown in **TABLE 5**.

### Gain and Loss Reserve

**TABLE 6** 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.

On June 5, 2008, the Teachers' Retirement Board allocated \$195,223,000 from the current Gain and Loss Reserve to Additional Earnings Credits and Additional Annuity Credits.

# California State Teachers' Retirement System

## Defined Benefit Supplement Program - 2007 Actuarial Valuation

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### Accounting Disclosures

The Governmental Accounting Standards Board (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**.

**California State Teachers' Retirement System**  
**Defined Benefit Supplement Program - 2007 Actuarial Valuation**

**Table 1      Statement of Program Assets**

<i>(\$Thousands)</i>	<b>June 30, 2007</b>	<b>June 30, 2006</b>
<b>Invested Assets</b>		
Short-term investments	\$ 6,214	\$ 9,789
Pooled Domestic Securities	1,276,415	951,653
Pooled Domestic Equity	<u>3,867,929</u>	<u>2,771,552</u>
Total Investments	\$5,150,558	\$3,732,994
<b>Receivables</b>	235,010	223,335
<b>Liabilities</b>	<u>(3,983)</u>	<u>(5,002)</u>
<b>Fair Market Value of Net Assets</b>	\$5,381,585	\$3,951,327

**California State Teachers' Retirement System**  
**Defined Benefit Supplement Program - 2007 Actuarial Valuation**

**Table 2 Statement of Change in Program Assets**

<i>(\$Thousands)</i>	<b>Year Ended June 30, 2007</b>	<b>Year Ended June 30, 2006</b>
<b>Additions</b>		
Contributions		
Members	\$ 638,469	\$ 599,148
Employers	<u>111,375</u>	<u>103,956</u>
Total Contributions	749,844	703,104
Net Earnings	<u>798,120</u>	<u>339,018</u>
Total Additions	\$1,547,964	\$1,042,122
<b>Deductions</b>		
Benefit Payments		
Retirement, death, and survivor	\$ 97,221	\$ 97,997
Refunds of Member contributions	<u>18,026</u>	<u>14,032</u>
Total Benefits	115,247	112,029
Expenses	<u>2,464</u>	<u>1,952</u>
Total Deductions	\$ 117,711	\$ 113,981
<b>Net Increase (Decrease)</b>	<b>\$1,430,253</b>	<b>\$ 928,141</b>
<b>Fair Market Value of Net Assets</b>		
Beginning of Year	\$3,951,327	\$3,023,177
Accounting Adjustments	5	9
Net Increase (Decrease)	<u>1,430,253</u>	<u>928,141</u>
<b>End of Year</b>	<b>\$5,381,585</b>	<b>\$3,951,327</b>
<b>Estimated Net Rate of Return</b>	18.6%	10.2%
assuming uniform cash flow through the year net of investment and administrative expenses		

**California State Teachers' Retirement System**  
**Defined Benefit Supplement Program - 2007 Actuarial Valuation**

**Table 3      Actuarial Balance Sheet**  
**Prior to Additional Credits**

<i>(\$Thousands)</i>	<b>June 30, 2007</b>	<b>June 30, 2006</b>
<b>Total Requirements</b>		
Actuarial Obligation		
Retirees and Beneficiaries	\$ 118,644	\$ 67,767
Inactive Members	158,169	109,084
Active Members	<u>4,150,010</u>	<u>3,351,207</u>
Total Requirements	\$4,426,823	\$3,528,058
<b>Total Resources</b>		
Actuarial Value of Assets	\$5,381,585	\$3,951,327
Unfunded Actuarial Obligation or (Actuarial Surplus)	<u>(954,762)</u>	<u>(423,269)</u>
Total Resources	\$4,426,823	\$3,528,058
<b>Funded Ratio</b>	121.57%	112.00%

**California State Teachers' Retirement System**  
**Defined Benefit Supplement Program - 2007 Actuarial Valuation**

**Table 4      Actuarial Gains and Losses**  
**Prior to Additional Credits**

<i>(\$Thousands)</i>	<b>Actuarial Obligation</b>	<b>Actuarial Value of Assets</b>	<b>Unfunded Actuarial Obligation (Surplus)</b>
<b>Balance at June 30, 2006</b>	\$3,616,259	\$3,951,327	\$(335,068)
<b>Expected Changes</b>			
Actual Contributions	749,844	749,844	0
Actual Benefits Paid	(115,247)	(115,247)	0
Expected Earnings / Credits	<u>314,685</u>	<u>341,490</u>	<u>(26,805)</u>
<b>Expected Balance at June 30, 2007</b>	\$4,565,541	\$4,927,414	\$(361,873)
<b>Actuarial Gains or Losses</b>			
(Gain) on Actuarial Obligation	(138,718)		
(Gain) on Assets	<u>                  </u>	<u>(454,171)</u>	
Net (Gain) or Loss	(138,718)	(454,171)	(592,889)
<b>Actual Balance at June 30, 2007</b>	\$4,426,823	\$5,381,585	\$(954,762)

**California State Teachers' Retirement System**  
**Defined Benefit Supplement Program - 2007 Actuarial Valuation**

**Table 5 Additional Credits**

	June 30, 2007	June 30, 2006
Funded Ratio before Additional Credits	121.57%	112.00%
Actuarial Surplus	21.57%	12.00%
Minimum Interest Rate (year following valuation date)	5.25%	4.75%
First Threshold	10.50%	9.50%
Second Threshold	15.75%	14.25%
<b>First Allocation</b>		
Long-term Net Investment Return	7.75%	8.00%
Minimum Interest Rate (year prior to valuation)	<u>4.75</u>	<u>5.00</u>
Maximum Available in First Allocation (1)	3.00%	3.00%
Actuarial Surplus	21.57%	12.00%
First Threshold	<u>10.50</u>	<u>9.50</u>
Actuarial Surplus in excess of First Threshold (2)	11.07%	2.50%
<b>First Allocation (lesser of (1) and (2))</b>	<b>3.00%</b>	<b>2.50%</b>
<b>Second Allocation</b>		
Remaining Actuarial Surplus	18.57%	9.50%
Second Threshold	<u>15.75%</u>	<u>14.25%</u>
Actuarial Surplus in excess of Second Threshold	2.82%	0.00
Less, 50%	<u>(1.41)</u>	<u>(0.00)</u>
<b>Available for Second Allocation</b>	<b>1.41%</b>	<b>0.00%</b>
<b>Recommended Additional Earnings Credit and Additional Annuity Credit based on Policy</b>		
As a percentage of Actuarial Obligation as of the valuation date of June 30, 2007	4.41%	2.50%
As a dollar amount (\$000)	<b>\$ 195,223</b>	<b>\$ 88,201</b>

**California State Teachers' Retirement System**  
**Defined Benefit Supplement Program - 2007 Actuarial Valuation**

**Table 6      Gain and Loss Reserve**

<i>(\$Thousands)</i>	<b>June 30, 2007</b>	<b>June 30, 2006</b>
<b>Unfunded Actuarial Obligation or (Actuarial Surplus)</b>	\$(954,762)	\$(423,269)
<b>Gain and Loss Reserve</b>		
Beginning of Year	\$ 335,068	\$ 266,978
Additional Earnings Credit	(189,991)	(86,284)
Additional Annuity Credit	(5,232)	(1,917)
Allocated to Funding	<u>619,694</u>	<u>156,291</u>
End of Year Gain and Loss Reserve	\$ 759,539	\$ 335,068

<i>(\$Thousands)</i>	<b>Available Reserves and Unallocated Gains (Losses)</b>	<b>Additional Earnings Credit Adopted</b>	<b>Final Gain and Loss Reserve</b>
<b>Valuation Date</b>			
June 30, 2001	\$ (6,253)	\$ 0	\$ (6,253)
June 30, 2002	(51,292)	0	(51,292)
June 30, 2003	(47,366)	0	(47,366)
June 30, 2004	168,630	0	168,630
June 30, 2005	266,978	0	266,978
June 30, 2006	423,269	88,201	335,068
June 30, 2007	954,762	195,223*	759,539

\* Determined by the Teachers' Retirement Board on June 5, 2008.

**California State Teachers' Retirement System**  
**Defined Benefit Supplement Program - 2007 Actuarial Valuation**

**Table 7 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		
2001	\$ 210,205	\$ 0	\$ 0	\$ 113	\$ 113	\$ 210,092	\$ 206,916
2002	487,185	0	4,982	255	5,237	481,948	660,148
2003	604,853	0	17,102	580	17,682	587,171	1,311,269
2004	691,081	41,991	3,078	1,206	46,275	644,806	2,203,682
2005	669,706	75,426	8,599	1,740	85,765	583,941	3,023,177
2006	703,104	97,997	14,032	1,952	113,981	589,123	3,951,327
2007	749,844	97,221	18,026	2,464	117,711	632,133	5,381,585

**California State Teachers' Retirement System**  
**Defined Benefit Supplement Program - 2007 Actuarial Valuation**

**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
2001	\$206,916	\$ 213,169	\$ 6,253	97%	\$ 20,494,152	0%
2002	660,148	711,440	51,292	93%	21,731,775	0%
2003	1,311,269	1,358,635	47,366	97%	23,865,497	0%
2004	2,203,682	2,035,052	(168,630)	108%	23,762,587	(1)%
2005	3,023,177	2,756,199	(266,978)	110%	23,262,586	(1)%
2006	3,951,327	3,616,259	(335,068)	109%	24,239,054	(1)%
2007	5,381,585	4,622,046	(759,539)	116%	25,906,262	(3)%

**California State Teachers' Retirement System**  
**Defined Benefit Supplement Program - 2007 Actuarial Valuation**

**Table 9      Schedule of Employer Contributions**

*(\$Thousands)*

<b>Year End</b>	<b>Annual Required Contribution</b>	<b>Contributed by Employers</b>	<b>Contributed by the State</b>	<b>Total Contributed</b>	<b>Percentage Contributed</b>
2001	\$ 0	\$ 0	\$ 0	\$ 0	100%
2002	0	0	0	0	100%
2003	72,243	72,243	0	72,243	100%
2004	125,288	125,288	0	125,288	100%
2005	95,596	95,596	0	95,596	100%
2006	103,956	103,956	0	103,956	100%
2007	111,375	111,375	0	111,375	100%

# California State Teachers' Retirement System

## Defined Benefit Supplement Program - 2007 Actuarial Valuation

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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 Defined Benefit Supplement (DBS) Program of the State Teachers' Retirement Plan as contained in Part 13 of the California Education Code. The provisions used in this valuation are summarized below for reference purposes.

#### Membership

Eligibility Requirement:	All members of the Defined Benefit Program who perform creditable service and earn creditable compensation after December 31, 2000, have a DBS Account.
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, a Minimum Interest Rate, and Additional Earnings Credits.
Contributions:	One-quarter (2% of compensation) of the DB Program Member contributions on creditable compensation is allocated to the Member's DBS Account through December 31, 2010.  In addition, member and employer contributions will be credited to the Member's DBS Account for service greater than one year (ESC) and compensation for limited term enhancements and retirement incentives (LTE).
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%.

## **California State Teachers' Retirement System**

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**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:** Receipt of a corresponding benefit under the DB Program.

**Benefit:** The DBS Account Balance at the benefit effective date subject to limits imposed under Internal Revenue Code Section 415.

**Form of Payment:** The normal form of payment is a lump sum distribution. Annuity options are available if the DBS Account equals or exceeds \$3,500.

#### **Early Retirement**

**Eligibility Requirement:** Same as Normal Retirement.

**Benefit and Form:** Same as Normal Retirement.

#### **Late Retirement**

**Benefit and Form:** Same as Normal Retirement.

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

#### **Deferred Retirement**

**Benefit:** A Member must receive a DBS benefit when the corresponding benefit is received under the DB Program.

## **California State Teachers' Retirement System** **Defined Benefit Supplement Program - 2007 Actuarial Valuation**

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### **Disability Benefit**

Eligibility Requirement:	Receipt of a corresponding benefit under the DB Program.
Benefit:	The DBS Account Balance at the date the disability benefit becomes payable. An annuity benefit is discontinued upon the termination of the corresponding DB Program benefit.
Form of Payment:	Same as Normal Retirement.

### **Death Before Retirement**

Eligibility Requirement:	Deceased Member has a DBS Account Balance.
Benefit:	The DBS 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:	Termination of all CalSTRS-covered employment.
Benefit:	Lump sum distribution of the DBS Account Balance as of the date of distribution. The benefit is payable one year from the termination of creditable service.

# California State Teachers' Retirement System

## Defined Benefit Supplement Program - 2007 Actuarial Valuation

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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 DBS Program and of the DBS 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 DBS Program's benefits.

Please refer to the 2007 Actuarial Experience Analysis report for further information on the revisions made to the actuarial assumptions for this 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 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.

## California State Teachers' Retirement System Defined Benefit Supplement Program - 2007 Actuarial Valuation

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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 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 **Tables B.2 – B.7**.

# California State Teachers' Retirement System

## Defined Benefit Supplement Program - 2007 Actuarial Valuation

**Table B.1 List of Major Valuation Assumptions**

### I. Economic Assumptions

A.	Investment Return (net of investment and administrative expenses)	8.00%
B.	Interest on Member Accounts	6.00%
C.	Wage Growth	4.25%
D.	Inflation	3.25%

### II. Demographic Assumptions

A.	Mortality		
	(1) Active	- Male	2007 CalSTRS Retired – M (-2 years)
		- Female	2007 CalSTRS Retired – F (-2 years)
	(2) Retired & Beneficiary *	- Male	2007 CalSTRS Retired – M
		- Female	2007 CalSTRS Retired – F
	(3) Disabled *	- Male	RP 2000-M (minimum 2.5% with select rates in first three years)
		- Female	RP 2000-F (minimum 2.0% with select rates in first three years)

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

B.	Service Retirement	Experience Tables	Table B.3
C.	Disability Retirement	Experience Tables	Table B.4
D.	Withdrawal	Experience Tables	Table B.5
	Probability of Refund	Experience Tables	Table B.6
E.	Merit Salary Increases	Experience Tables	Table B.7
F.	Supplemental Assumptions		Table B.8

**California State Teachers' Retirement System**  
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**Table B.2      Mortality**

<b><u>Active Members</u></b>					
	<b><u>Age</u></b>	<b><u>Male</u></b>	<b><u>Female</u></b>		
	25	0.032%	0.019%		
	30	0.037	0.020		
	35	0.039	0.024		
	40	0.063	0.039		
	45	0.096	0.060		
	50	0.130	0.094		
	55	0.186	0.143		
	60	0.292	0.221		
	65	0.527	0.392		
	<b><u>Retired Members and Beneficiaries *</u></b>		<b><u>Disabled Members (After Year 3) *</u></b>		
<b><u>Age</u></b>	<b><u>Male</u></b>	<b><u>Female</u></b>	<b><u>Male</u></b>	<b><u>Female</u></b>	
50	0.151%	0.112%	2.500%	2.000%	
55	0.214	0.168	2.500	2.000	
60	0.362	0.272	2.500	2.000	
65	0.675	0.506	2.500	2.000	
70	1.274	0.971	2.728	2.067	
75	2.384	1.674	4.691	3.411	
80	4.355	3.257	8.049	5.629	
85	7.958	6.164	13.604	9.634	
90	14.262	11.915	21.661	15.762	
95	23.366	18.280	29.985	21.524	
<b>Select rates for disability:</b>					
	First year of disablement		6.0%	3.5%	
	Second year of disablement		4.8	3.0	
	Third year of disablement		3.5	2.5	

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

**California State Teachers' Retirement System**  
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**Table B.3 Service Retirement**

<u>Age</u>	<u>Only for the 1990 Benefit Structure</u>		<u>For the DB Program</u>			
	<u>Male</u>	<u>Female</u>	<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%	0.0%	0.0%	1.5%	2.5%
51	0.0	0.0	0.0	0.0	1.5	2.5
52	0.0	0.0	0.0	0.0	1.5	2.5
53	0.0	0.0	0.0	0.0	2.0	2.5
54	1.5	1.5	0.0	0.0	2.0	3.0
55	5.8	7.0	2.7	4.5	8.0	9.0
56	3.9	4.5	1.8	3.2	8.0	9.0
57	4.9	4.5	1.8	3.2	10.0	11.0
58	6.8	7.0	2.7	4.1	14.0	16.0
59	17.5	14.0	4.5	5.4	18.0	19.0
60	25.0	22.0	6.3	9.0	27.0	31.0
61	16.5	15.0	6.3	9.0	43.0	40.0
62	16.5	15.0	10.8	10.8	38.0	37.0
63	15.0	15.0	11.7	16.2	30.0	35.0
64	17.5	18.0	10.8	13.5	30.0	32.0
65	20.0	18.0	13.5	14.4	30.0	32.0
66	16.0	18.0	10.8	13.5	30.0	32.0
67	16.0	18.0	10.8	13.5	30.0	32.0
68	16.0	16.0	10.8	13.5	30.0	32.0
69	16.0	16.0	10.8	13.5	30.0	32.0
70	100.0	100.0	100.0	100.0	100.0	100.0

\* If service is equal to or greater than 25 but less than 28 years, the assumed retirement rates shown above for members with less than 30 years of service are increased by 50%. For members with 28 but less than 30 years, the assumed retirement rates shown above for members with less than 30 years of service are increased by 10%.

The assumptions shown above are for retirement from active status. We assume that all vested terminated members retire at age 60.

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**Table B.4      Disability Retirement**

**Coverage A**

<u>Age</u>	<u>Male</u>	<u>Female</u>
25	0.021%	0.021%
30	0.030	0.030
35	0.051	0.060
40	0.081	0.090
45	0.111	0.110
50	0.159	0.220
55	0.210	0.280

**Coverage B**

<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	0.012%		0.021%	
30	0.018		0.021	
35	0.036		0.042	
40	0.090		0.078	
45	0.123	0.118%	0.126	0.139%
50	0.171	0.202	0.219	0.252
55	0.252	0.312	0.318	0.367
60	0.204	0.477	0.243	0.529
65	0.144	0.853	0.168	0.916

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**Table B.5      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 &amp; Up</u>
0	15.3%	15.3%	15.3%	15.3%	15.3%	18.0%
1	13.0	12.5	13.0	13.0	13.0	14.0
2	9.0	7.7	9.0	9.0	9.0	10.0
3	6.0	6.0	6.5	6.5	6.5	7.0
4	4.4	4.8	5.0	5.0	5.0	4.0
5	3.9	3.6	3.0	3.0	3.0	3.0
10	2.0	2.0	2.0	2.0	2.0	
15	1.1	1.1	1.1	1.1		
20	0.6	0.6	0.6			
25	0.4	0.5				
30	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 - 44</u>	<u>45 &amp; Up</u>
0	15.3%	15.3%	15.3%	15.3%	15.3%	15.3%
1	10.0	11.0	11.0	11.0	10.5	10.5
2	7.2	8.5	8.5	7.5	7.0	7.0
3	6.3	7.0	6.5	6.0	5.5	5.5
4	5.8	6.0	5.5	4.5	4.0	3.0
5	5.5	5.3	4.5	3.8	3.3	2.5
10	2.3	1.8	1.6	1.3	1.3	
15	1.0	0.9	0.9	0.9		
20	0.5	0.5	0.5			
25	0.3	0.4				
30	0.3					

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**Table B.6 Probability of Refund**

<b>Entry Ages - Male</b>					
<u>Year</u>	<u>Under 25</u>	<u>25 - 29</u>	<u>30 - 34</u>	<u>35 - 39</u>	<u>40 and Up</u>
Under 5	100%	100%	100%	100%	100%
10	46	46	38	36	36
15	38	38	31	21	
20	28	31	15		
25	15	15			
30	10				

<b>Entry Ages - Female</b>					
<u>Year</u>	<u>Under 25</u>	<u>25 - 29</u>	<u>30 - 34</u>	<u>35 - 39</u>	<u>40 and Up</u>
Under 5	100%	100%	100%	100%	100%
10	34	32	32	29	29
15	27	24	24	24	
20	19	14	14		
25	10	10			
30	10				

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**Table B.7 Merit Salary Increases**

Yr.	<b>Entry Age - Annual Increase in Salaries Due to Merit</b>					
	<u>Under 25</u>	<u>25 - 29</u>	<u>30 - 34</u>	<u>35 - 39</u>	<u>40 - 44</u>	<u>45 &amp; up</u>
1	5.6%	5.3%	5.1%	4.8%	4.8%	3.5%
2	5.6	5.1	4.9	4.7	4.7	3.3
3	5.6	5.0	4.8	4.6	4.6	3.0
4	5.5	4.8	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	1.1	1.1	0.8	0.8	0.6
25	1.1	0.9	0.8	0.5	0.5	
30	0.9	0.7	0.6	0.5		
35	0.8	0.7	0.6			
40	0.8	0.6				
45	0.8					

## California State Teachers' Retirement System Defined Benefit Supplement Program - 2007 Actuarial Valuation

**Table B.8 Supplemental Assumptions**

<b>Unused Sick Leave:</b>	Credited Service is increased by 2.1%				
<b>Optional Forms:</b>	Active & Inactive: Based on single life annuity assumed Retirees and Beneficiaries: Based on optional form in data				
<b>Probability of Marriage:</b>	Male:	90%			
	Female:	70%			
	Male spouses are assumed to be three years older than female spouses.				
<b>Number of Children:</b>	Married members are assumed to have the following number of children:				
	<b><u>Member's Gender</u></b>	<b><u>Assumed No. of Children</u></b>			
	Male	0.75			
	Female	0.50			
<b>Assumed Offsets:</b>	The following offsets, expressed as a percentage of Final Compensation, are assumed to cease at age 60:				
		<b><u>Coverage A</u></b>		<b><u>Coverage B</u></b>	
		<b><u>Male</u></b>	<b><u>Female</u></b>	<b><u>Male</u></b>	<b><u>Female</u></b>
	Death	8.0%	4.0%	0.0%	0.0%
	Disability	2.5%	4.0%	2.2%	3.0%

# California State Teachers' Retirement System

## Defined Benefit Supplement Program - 2007 Actuarial Valuation

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### Appendix C 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.

In preparing this report, we relied upon the membership 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.

**California State Teachers' Retirement System**  
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**Table C.1 Summary of Statistical Information**

	<b>June 30, 2007</b>	<b>June 30, 2006</b>
<b>Number of Members</b>		
Active Members <sup>(1)</sup>	455,693	453,365
Inactive Members <sup>(1)</sup>	80,071	68,799
Annuitants	<u>13,561</u>	<u>9,302</u>
Total Membership in Valuation	549,325	531,466
 <b>Active Member Statistics</b>		
Earned Salaries	\$25,906 million	\$24,240 million
Average Salary	\$ 56,849	\$ 53,466
Average Age	44.7 years	44.6 years
Average Service	10.8 years	10.8 years

Note:

<sup>(1)</sup> Some active members were reported with no Earnable Salaries, in which case their liabilities, if any, were included with inactive members

**California State Teachers' Retirement System**  
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**Table C.2 Age and Service Distribution**  
**All Active Members**

<u>Age</u>	<u>Service</u>					
	<u>Under 1</u>	<u>1 - 5</u>	<u>6 - 10</u>	<u>11 - 15</u>	<u>16 - 20</u>	<u>21 - 25</u>
Under 25	2,260	3,632	3			
25 to 30	4,879	36,488	2,375			
30 to 35	2,545	28,488	28,141	1,134	1	
35 to 40	2,232	17,584	26,504	15,516	492	1
40 to 45	1,820	12,974	14,946	13,651	8,649	432
45 to 50	1,755	12,156	12,702	10,284	10,756	6,692
50 to 55	1,461	10,863	12,127	10,327	10,297	8,821
55 to 60	1,059	8,295	10,025	9,247	10,529	8,168
60 to 65	611	4,693	4,870	4,408	5,430	4,448
65 to 70	215	1,626	1,342	1,051	1,099	921
70 & Up	102	889	462	273	270	213
Unknown	0	9	3	0	0	0
<b>Total</b>	<b>18,939</b>	<b>137,697</b>	<b>113,500</b>	<b>65,891</b>	<b>47,523</b>	<b>29,696</b>

<u>Age</u>	<u>Service</u>					<u>Total</u>
	<u>26 - 30</u>	<u>31 - 35</u>	<u>36 - 40</u>	<u>41 - 45</u>	<u>Over 45</u>	
Under 25						5,895
25 to 30						43,742
30 to 35						60,309
35 to 40						62,329
40 to 45						52,472
45 to 50	322	1				54,668
50 to 55	7,703	573	2			62,174
55 to 60	9,329	9,772	817	6		67,247
60 to 65	4,051	4,128	3,176	74		35,889
65 to 70	730	516	353	228	9	8,090
70 & Up	199	182	121	93	62	2,866
Unknown	0	0	0	0	0	12
<b>Total</b>	<b>22,334</b>	<b>15,172</b>	<b>4,469</b>	<b>401</b>	<b>71</b>	<b>455,693</b>

**California State Teachers' Retirement System**  
**Defined Benefit Supplement Program - 2007 Actuarial Valuation**

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**Table C.3     Inactive Members**

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<u>Fiscal Year Ending June 30</u>	<u>Number</u>	<u>Account Balances</u>
2005	56,234	\$ 67,353,000
2006	68,799	109,084,000
2007	80,071	158,169,000

**Table C.4     Annuitants**

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<u>Fiscal Year Ending June 30</u>	<u>Number</u>	<u>Accounts at Retirement</u>
2005	5,445	\$ 37,239,000
2006	9,302	76,888,000
2007	13,561	133,216,000

# California State Teachers' Retirement System

## Defined Benefit Supplement Program - 2007 Actuarial Valuation

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### Appendix D Glossary

<b>Account Balance:</b>	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.
<b>Actuarial Assumptions:</b>	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.
<b>Actuarial Cost Method:</b>	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.
<b>Actuarial Gain or Loss:</b>	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.
<b>Actuarial Obligation:</b>	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.
<b>Actuarial Present Value:</b>	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.
<b>Actuarial Surplus:</b>	The excess, if any, of the Actuarial Value of Assets over the Actuarial Obligation.

## California State Teachers' Retirement System Defined Benefit Supplement Program - 2007 Actuarial Valuation

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<b>Actuarial Valuation:</b>	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.
<b>Actuarial Value of Assets:</b>	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.
<b>Actuarial Equivalent:</b>	Of equal Actuarial Present Value, determined as of a given date with each value based on the same set of Actuarial Assumptions.
<b>Normal Cost:</b>	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.
<b>Traditional Unit Credit Actuarial Cost Method:</b>	A method under which the Actuarial Obligation is equal to the actuarial present value of benefits for service accrued to the valuation date.
<b>Unfunded Actuarial Obligation:</b>	The excess, if any, of the Actuarial Obligation over the Actuarial Value of Assets.
<b>Valuation Date:</b>	June 30, 2007