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August 18, 2010

Teachers' Retirement Board
California State Teachers' Retirement System

Re: **Defined Benefit Program**
Actuarial Valuation as of June 30, 2009

Dear Members of the Board:

At your request, we have performed an actuarial valuation of the Defined Benefit Program of the State Teachers' Retirement Plan as of June 30, 2009. The major findings of the actuarial valuation are contained in the following report, which reflects the benefit provisions and contribution rates in effect as of the valuation date.

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 3 of this report for our full actuarial certification statement.

Actuarial computations presented in this report are for purposes of assessing the funding of CalSTRS. The calculations in the enclosed report have been made on a basis consistent with our understanding of CalSTRS' funding. Determinations for other purposes may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes. We will provide information for financial reporting under GASB Statement Number 25 in a separate letter.

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.

The consultants who worked on this assignment are pension actuaries. Milliman's advice is not intended to be a substitute for qualified legal or accounting counsel.

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.

This work product was prepared solely to provide assistance to CalSTRS. It may not be appropriate to use for other purposes.
Milliman does not intend to benefit and assumes no duty or liability to other parties who receive this work.



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 that reads 'Nick Collier'.

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**California State Teachers' Retirement System
Defined Benefit Program – 2009 Actuarial Valuation**

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California State Teachers' Retirement System Defined Benefit Program – 2009 Actuarial Valuation

Section 1 Summary of the Findings

The primary purpose of the actuarial valuation is to analyze the sufficiency of future contributions from members, employers, and the State to meet the current and future obligations of the Defined Benefit (DB) Program. By using the actuarial methods and assumptions adopted by the Teachers' Retirement Board, this actuarial valuation provides the best estimate of the long-term financing of the DB Program.

The key findings of this Actuarial Valuation are:

Funding Sufficiency

Our findings indicate that, as of June 30, 2009, the future revenue from contributions and appropriations for the DB Program is **not** expected to be sufficient to finance its obligations. This is consistent with our projections in all of the Actuarial Valuations since 2003, although the deficit is significantly greater this year.

The projected revenue shortfall is due primarily to investment return experience over the last decade that was significantly less than the long-term actuarial assumption of 8% per year. Based on the current DB Program assets, current revenues, and all future experience emerging as assumed, the Unfunded Actuarial Obligation will not be amortized over any future period.

<i>(Percent of Earned Salaries)</i>	2009 Valuation	2008 Valuation
Amortization Period based on Current Revenues		
Total Level Rate over the Amortization Period	17.951%	17.845%
Normal Cost Rate	<u>17.314</u>	<u>17.328</u>
Amortization Rate	0.637%	0.517%
<i>Amortization Period (Based on current revenue projections)</i>	<i>Does not amortize</i>	<i>Does not amortize</i>
Calculated Contribution Rate for 30-Year Funding Period		
Normal Cost Rate	17.314%	17.328%
Amortization Rate	<u>14.545</u>	<u>4.235</u>
Total Level Rate over the Amortization Period	31.859%	21.563%
Estimated Additional Revenue Needed <i>(Assumes no supplemental State EC 22955b contributions)</i>	13.908%*	3.718%

*For 2009, the additional revenue needed reflects the expected future recognition of asset losses currently being deferred in the June 30, 2009 Actuarial Value of Assets. Under the old method, the estimated additional revenue needed would have been 6.943% of earned salaries.

Funding Sufficiency (continued)

Based on the current valuation results, the DB Program assets, and assumptions about future experience, we find that a level contribution rate of 31.859% beginning on the valuation date is projected to amortize the Unfunded Actuarial Obligation (UAO) over a 30-year period. This is equivalent to an **increase of 13.908% of Earned Salaries** for a period of 30 years from the valuation date.

In calculating the needed additional contributions, we have used the 30-year amortization period, as it is the period CalSTRS uses to assess funding sufficiency. The calculation should be viewed as an estimate, as there are a number of factors, including those discussed below, which will impact this estimate. Milliman has developed a model so that we can work with CalSTRS staff to address any specific proposals.

Several key points should be noted about this calculation:

- The 13.908% increase in contribution rate discussed in this report is based on a specific point in time (June 30, 2009) and numerous assumptions about the future. Even if this increase were implemented, actual investment returns and other assumptions will vary from what is assumed to some degree. If experience is worse than assumed, particularly if investment returns are less than expected, it is likely additional contributions would be needed in the future to maintain the 30-year amortization. Setting a higher contribution rate (i.e., an increase greater than 13.908% of payroll) would provide some buffer for possible future adverse experience.
- In the projection of the Actuarial Value of Assets (AVA), current asset losses are reflected as they would be expected to be recognized in the future assuming an 8% investment return on the Fair Market Value of Assets. Therefore, the amortization of the UAO reflects the full extent of the asset losses that have occurred over the last decade. Note that this differs from the 2008 valuation which showed the additional revenue needed assuming an 8% return on the AVA. Given the large magnitude of the losses that occurred in the 2008-09 fiscal year, we believe the recognition of the deferred losses at June 30, 2009 in the amortization calculation provides a more complete picture of the revenue projected to be needed to amortize the unfunded obligation of the system. Under the old method, the estimated additional revenue needed would have been 6.943% of earned salaries (as opposed to 13.908%).

Funding Sufficiency (continued)

- As discussed in the following section, no supplemental contributions are required based on the June 30, 2009 actuarial valuation. However, it is highly probable that these contributions will be required with the next valuation. The amortization calculation does not take into account any potential supplemental State contributions. To the extent supplemental contributions are expected to be made, they are already included as part of the calculated additional contribution rate of 13.908%.
- The amortization calculation assumes that the full 13.908% of total payroll will be used to fund the UAO. A 1% increase in the contribution by the State or members is actually worth less than 1% of pay, because the State contributes based on payroll that is two years old and a portion of any increase in member's contributions is expected to be refunded. Therefore, the additional revenue needed may be higher as a percent of payroll depending on the source.

Supplemental Contributions

The Legislature has established a test for the funded status of the benefit structure in effect in 1990. Under State law EC §22955(b), additional funds are required to be contributed by the State if at least one of the following two separate conditions is met:

1. Additional funding is required if the sum of the 8% contribution from the members and the 8% contribution from the employers is not sufficient to pay the Normal Cost of the benefits in effect as of July 1, 1990.
2. Additional funding is required if the Actuarial Value of Assets associated with the benefit provisions in effect as of July 1, 1990 is less than the Actuarial Obligation for those benefits.

We found that revenue is sufficient to finance the Normal Costs associated with the 1990 Benefit Structure and there was a small Actuarial Surplus as of June 30, 2009 related only to the 1990 Benefit Structure. Therefore, no additional supplemental contributions are called for at this time under the current law with respect to the benefit structure in effect in 1990.

The above calculation is based on the June 30, 2009 Actuarial Value of Assets. This value reflects only a portion of the significant asset losses that occurred during the 2008-2009 year. Large deferred losses still exist and will be recognized in future valuations. This makes it highly probable that the next actuarial valuation will indicate that supplemental contributions will be required under EC §22955(b).

Supplemental

It should be noted that even if the supplemental contributions are



**Contributions
(continued)**

triggered, this would only make a relatively small improvement to the overall funding picture. If supplemental contributions were to start July 1, 2011, they would be equivalent to 1.133% of payroll paid over a 30-year period starting with the valuation date. In comparison to additional revenue needed of 13.908% of payroll, the supplemental contributions are under the following schedule:

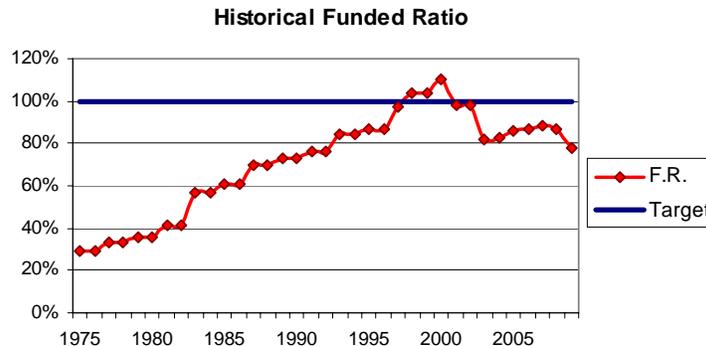
Supplemental Contributions Schedule Under 22955(b)	
Year	% of Payroll
1	0.524%
2	0.774%
3	1.024%
4	1.274%
5 & Later	1.505%

Funding Progress

The Funded Status of a retirement plan is equal to the difference between its Actuarial Value of Assets and its Actuarial Obligation. The Funded Ratio is equal to the Actuarial Value of Assets divided by the Actuarial Obligation.

(\$Millions)	2009 Valuation	2008 Valuation
Actuarial Obligation	\$ 185,683	\$ 177,734
Actuarial Value of Assets	<u>145,142</u>	<u>155,215</u>
Unfunded Actuarial Obligation	\$ 40,541	\$ 22,519
Funded Ratio	78%	87%

Overall, the DB Program is in a significantly worse funded status compared to one year ago as measured by the Funded Ratio. The following graph shows a historical perspective of CalSTRS' funding. It shows the significant funding progress CalSTRS achieved from 1975 to 2000 and also the negative impact of the economic environment over the last decade.



**Funding Progress
(continued)**

Based on the 2008 Actuarial Valuation, the Unfunded Actuarial Obligation was expected to grow from \$22.5 billion to \$24.7 billion by June 30, 2009. The actual Unfunded Actuarial Obligation of \$40.5 billion was determined including the impact of a net actuarial loss of \$15.8 billion from the expected level. A brief summary of the actuarial gains and losses for the year is shown below and described more fully in Section 6 of this report.

<i>(\$Millions)</i>	2009 Valuation
Unfunded Actuarial Obligation	
Amount on June 30, 2008	\$ 22,519
Increase due to interest and under-funding	<u>1,856</u>
Expected Amount on June 30, 2009	\$ 24,375
Actuarial (Gains) and Losses by Source	
Investment return on the Actuarial Value of Assets, including recognition of prior deferred investment losses	\$ 18,003
Salary increases less than assumed	(2,968)
Contributions (in excess of) or less than assumed	168
Change in SBMA and THBF Reserves	733
All other sources combined	<u>230</u>
Net Actuarial (Gains) and Losses	\$ 16,166
Unfunded Actuarial Obligation June 30, 2009	\$ 40,541

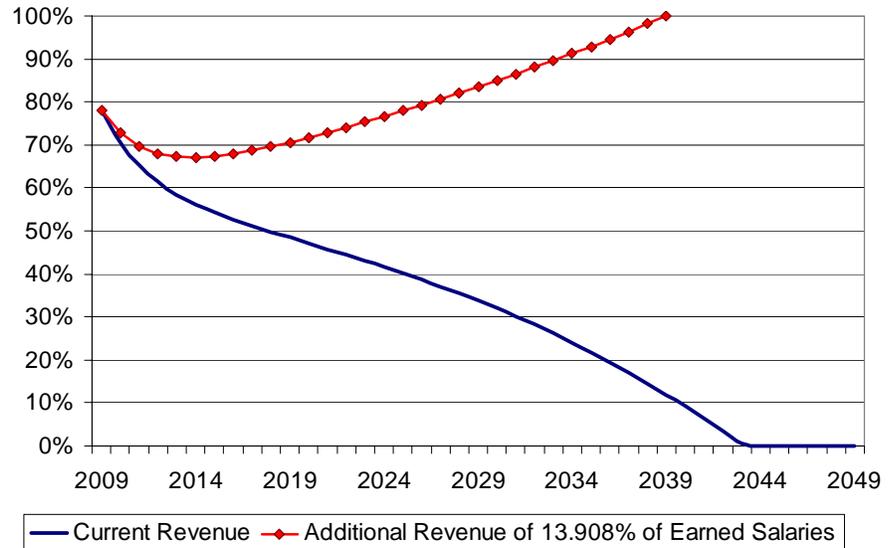
Looking Ahead

As previously noted, CalSTRS needs a significant increase in revenue to make progress towards its funding target. Still, the DB Program assets are sufficient to make benefit payments for a number of years. However, the projected time horizon before the assets are depleted (and benefits would have to be paid on a “pay-as-you-go” basis) has shortened significantly – if CalSTRS is not able to secure additional funding.

**Looking Ahead
(continued)**

The following projection shows the projected Funded Ratio if the DB Program earns 8.0% in each future year and all other assumptions are met. It also assumes that the State supplemental contributions commence in the fiscal year beginning in 2011. As shown in the graph, the DB Program is projected to have its assets depleted in about 35 years (the year the Funded Ratio goes to 0%) if additional funding is not secured.

Projected Funded Ratio Based on Actuarial Value of Assets



Impact of Delay

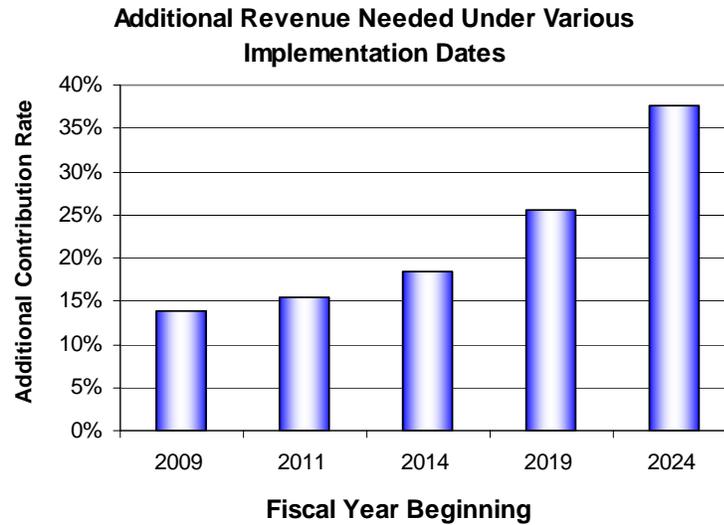
The additional revenue needed is a hypothetical calculation based on the June 30, 2009 valuation date. In particular, it assumes additional contributions will commence on that date. The reality is that increased contributions will not begin until some later date and may only increase gradually. The longer it takes for the additional contributions to begin, the greater they will need to be. The following chart shows the impact on the additional revenue needed based on the actual implementation date. Specifically, the longer it takes to implement a funding solution, the more expensive it is likely to be.

Note the significance of just a two-year difference in the implementation of the increased contribution rates. Based on a July 1, 2011 date, the additional revenue needed is about 15.5% of payroll, as compared to the 13.9% based on the valuation date. All figures shown are calculated to fully pay off the UAO by June 30, 2039 (30 years from the valuation date).

Impact of Delay (continued)

These calculations are based on the same provisions as the main additional revenue calculation except for the implementation date:

- All experience is consistent with valuation assumptions.
- Current deferred asset losses are reflected as they are expected to be recognized in the asset smoothing method.
- The entire additional contribution goes to funding the UAO.
- Any future State supplemental contributions are included as part of the additional revenue.



Investment Return Assumption

We have spent a considerable amount of time over the last year discussing the investment return assumption with the Board. Two of the key points are as follows:

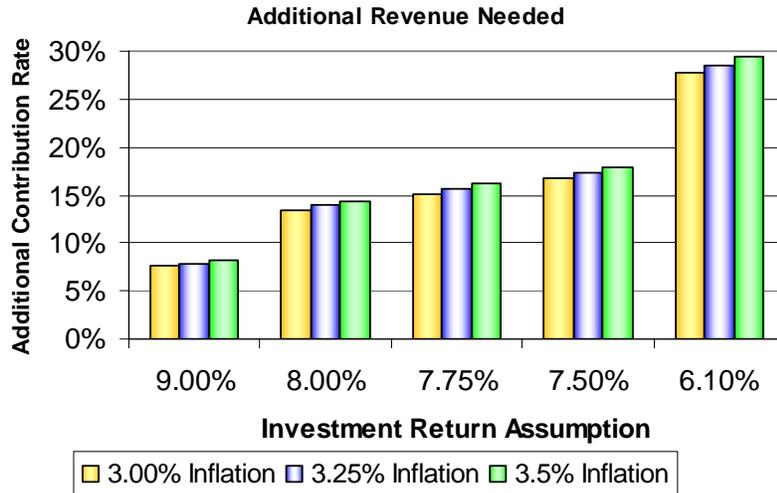
- Future investment returns will have a material impact on the contributions needed.
- Recent forecasts from investment consultants are predicting lower investment returns.

To illustrate the sensitivity to future investment returns, we have performed an analysis of the impact of various investment return and inflation assumptions. We have shown the additional revenue needed under the valuation investment return assumption of 8.00%, as well as 7.75% and 7.50%, two alternative assumptions that we have discussed with the Board.

We have also shown 9.0% and 6.1% investment return assumptions. These are the expected returns for the 25th and 75th percentiles respectively for a 30-year period, as discussed in our May 17, 2010 Analysis of Investment Return Assumption report. This indicates the likelihood the actual future returns will deviate significantly from the current 8.00% assumption. Specifically, based on this analysis, there is a 25% chance the return will be greater than 9.0%, but also a 25% chance the return will be less than 6.1% over a 30-year period.

Investment Return Assumption (continued)

In addition, we have analyzed the impact of alternative inflation assumptions. Note that the lower (or higher) inflation assumption does not directly impact the valuation. However, we have reflected lower (or higher) assumed increases in wages in this analysis based on the inflation assumption, as we believe there is a strong correlation between the two assumptions. As can be seen from the graph, the investment return assumption has a greater impact.



Changes since the 2008 Valuation

There were no legislative changes since the prior report that had an impact on this valuation.

The actuarial assumptions and actuarial methods used in this valuation were based on the 2007 Actuarial Experience Analysis adopted by the Board on April 3, 2008. There have been no changes in the assumptions or methods since the prior valuation.

There have been three modifications to the calculation techniques used in this valuation:

1. Since no valuation of the Medical Premium Payment Program was performed this year, the value of future payments included in the DB Program Actuarial Obligation was estimated based on the prior year value and actual premium payments.
2. As discussed earlier in this section, the additional revenue needed was determined by taking into account the future recognition of assets losses currently being determined.
3. The adjustment for benefit payments from the DBS Program used in the calculation of the assets available for the 1990 benefit structure was modified to reflect only 75% of the actual refunds of contributions. Details of this are shown in Exhibit 9.

Further Information

Details of our findings are included in later sections of this report. The Appendices include supporting documentation on the benefit

and eligibility provisions used to project future benefits, the actuarial methods and assumptions used to value the projected benefits, and the underlying census data provided by CalSTRS for this valuation.

California State Teachers' Retirement System Defined Benefit Program – 2009 Actuarial Valuation

Summary of Key Valuation Results

	2009 Valuation	2008 Valuation	Percent Change
1. Total Membership			
A. Active Members	459,009	461,378	(0.5) %
B. Inactive Members	156,207	147,997	5.5 %
C. Retired Members and Beneficiaries	232,617	223,968	3.9 %
D. Total Membership	847,833	833,343	1.7 %
2. Earned Salaries as of Valuation Date (All Members)			
A. Annual Total (\$Millions)	27,327	27,118	0.8 %
B. Annual Average per Active Member	59,536	58,777	1.3 %
3. Average Annual Allowance Payable			
A. Service Retirement	37,968	36,252	4.7 %
4. Actuarial Obligation (\$Millions)			
A. Active Members	91,006	90,297	0.8 %
B. Inactive Members	5,105	4,828	5.7 %
C. Retired Members and Beneficiaries	88,927	81,984	8.5 %
D. Existing MPPP Unfunded Obligation	645	625	3.2 %
E. Total	185,683	177,734	4.5 %
5. Value of System Assets (\$Millions)			
A. Fair Market Value	113,192	155,763	(27.3) %
B. Deferred Investment (Gains) or Losses	37,253	4,022	
C. Actuarial Value	150,445	159,785	(5.8) %
D. Ratio of Actuarial Value to Fair Value	133%	103%	
E. Less SBMA Reserve	(5,303)	(4,570)	16.0 %
F. Net Actuarial Value	145,142	155,215	(6.5) %
6. Funded Status			
A. Unfunded Actuarial Obligation (\$Millions)	40,541	22,519	80.0 %
B. Funded Ratio (5F ÷ 4E)	78%	87%	
7. Contribution Rates (percent of salaries)			
A. 30-Year Projected Revenue	17.951%	17.845%	0.6 %
B. Normal Cost Rate	17.314%	17.328%	(0.1) %
C. Available for Amortization of UAO (7A – 7B)	0.637%	0.517%	23.2 %
D. Period to Amortize	Does not amortize	Does not amortize	
E. Projected 30-Year Level Funding Rate	31.859% *	21.563%	47.7 %
F. Projected Shortfall (Surplus) (7E – 7A)	13.908% *	3.718%	274.1 %

* For 2009, the additional revenue needed reflects the expected future recognition of asset losses currently being deferred in the June 30, 2009 Actuarial Value of Assets.

California State Teachers' Retirement System Defined Benefit Program – 2009 Actuarial Valuation

Section 2 Scope of the Report



This report presents the actuarial valuation of the Defined Benefit Program of the State Teachers' Retirement Plan as of June 30, 2009.

In reading our Actuarial Certification in Section 3, please pay particular attention to the guidelines employed in the preparation of this report. We also comment on the sources and reliability of both the data and the actuarial assumptions upon which our findings depend. Those comments are the basis for our certification that this report is complete and accurate to the best of our knowledge and belief.

A summary of the key results of this valuation is presented in the previous section. The remainder of this report is arranged as follows.

Section 4 describes the benefit obligations of CalSTRS including the development of the Normal Cost and the Actuarial Obligation.

Section 5 outlines the Fair Market Value of Assets of the DB Program and the determination of the Actuarial Value of Assets as of June 30, 2009. All of the assets of the Program are available to finance future DB Program benefits and expenses, except those allocated for the Supplemental Benefit Maintenance Account (SBMA) and for future payments from the Medical Premium Payment Program (MPPP).

Section 6 shows the relationship between the Actuarial Value of Assets and the Actuarial Obligation, also called the Funded Status.

Section 7 discusses the calculations used to determine if a supplemental contribution is required from the State in accordance with EC §22955(b). The key elements of this calculation pertain to an evaluation of the assets and obligations associated with the benefits in effect in 1990.

The funding sufficiency of the current projected revenue stream for the DB Program is tested in Section 8.

This report includes several appendices:

Appendix A A summary of the current benefit structure, as determined by the provisions of governing law on June 30, 2009.

Appendix B A summary of the actuarial methods and assumptions used to estimate actuarial obligations and the funding sufficiency.

In our opinion, the assumptions used in the valuation are reasonably related to the past experience of the DB Program, are internally consistent, and represent a reasonable estimate of future conditions affecting the Program. Nevertheless, the emerging costs of the Program will vary from those presented in this report to the extent that actual experience differs from that projected by the actuarial assumptions.

Appendix C Schedules of valuation data classified by various categories of plan members. We relied upon the membership and beneficiary data supplied by CalSTRS. We compared the data for this and the prior valuation and tested for reasonableness. Based on these tests, we believe the data to be sufficient for the purposes of our calculations.

Appendix D A glossary of actuarial terms used in this report.

California State Teachers' Retirement System Defined Benefit Program – 2009 Actuarial Valuation

Section 3 Actuarial Certification

The major findings of the 2009 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 Program as of June 30, 2009.

In preparing this report, we relied, without audit, on information (some oral and some in writing) supplied by CalSTRS' staff. This information includes, but is not limited to, statutory provisions, employee data, and financial information. In our examination of these data, we have found them to be reasonably consistent and comparable with data used for other purposes. Since the valuation results are dependent on the integrity of the data supplied, the results can be expected to differ if the underlying data is incomplete or missing. It should be noted that if any data or other information is inaccurate or incomplete, our calculations may need to be revised.

The findings have been determined according to actuarial assumptions and methods that were chosen on the basis of recent experience of the DB 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. We believe the assumptions represent a reasonable estimate of future conditions affecting the DB Program. The Teachers' Retirement Board has sole authority to determine the actuarial assumptions and methods used for the valuation of the DB Program. The Board adopted all of the actuarial methods and assumptions used in the 2009 valuation.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the Plan's funded status); and changes in plan provisions or applicable law. Due to the limited scope of our assignment, we did not perform an analysis of the potential range of future measurements.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles. We are members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

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

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



California State Teachers' Retirement System Defined Benefit Program – 2009 Actuarial Valuation

Section 4 Actuarial Obligation



In this section, the discussion will focus on the commitments of CalSTRS for retirement benefits, which are referred to as its actuarial obligation.

In an active system with new entrants, the actuarial obligation, or liabilities, will generally exceed the actuarial value of assets. This deficiency has to be provided by future contributions, net actuarial gains due to experience more favorable than assumed or, to some extent, net growth in the number of active members. An actuarial valuation method sets out a schedule of future contributions and determines if they will amortize any deficiency in an orderly fashion.

Normal Cost

The **Normal Cost** represents the cost assigned to an average member for a given year such that it would meet the continuing costs of a particular benefit if contributed each year starting with the date of membership. The Entry Age Actuarial Cost Method is designed to produce a Normal Cost that remains a level percentage of Earned Salaries, so it is best expressed as a rate.

The following chart shows the Normal Cost Rate has decreased from 17.328% to 17.314% since the last valuation. **Table 1** provides more details on the calculation of the Normal Cost and Normal Cost Rates.

	(\$Millions)		
	Annualized Earned Salaries	Normal Cost	Normal Cost Rate
June 30, 2008	\$ 27,384	\$ 4,745	17.328%
June 30, 2009	\$ 27,550	\$ 4,770	17.314%

The Normal Cost Rate is expected to remain fairly stable as a percentage of Earned Salaries as long as the benefit provisions are not amended, membership experience emerges as assumed, and the demographic characteristics of the membership remain reasonably consistent. The change in the Normal Cost Rate reported in this valuation is well within expected levels of fluctuation.

Actuarial Obligation

The next step in the actuarial valuation process is to project all future DB Program benefit payments for current members and retirees. The level of benefits currently being paid is known, but assumptions are needed to estimate how long they will be paid, and the amount and timing of the payment of future benefits for active and inactive members who are not currently receiving payments. The summation of the discounted values of all of the projected benefit payments for all current members at the assumed rate of return is called the **Actuarial Present Value of Projected Benefits**.

Details are shown in **Table 2** and summarized below.

<i>(\$Millions)</i>	2009 Valuation	2008 Valuation
Benefits Being Paid	\$ 88,927	\$ 81,984
Inactive Deferred Benefits	5,105	4,828
Active Members' Benefits	147,714	146,707
Existing MPPP Unfunded Obligation	<u>645</u>	<u>625</u>
Present Value of Projected Benefits	\$ 242,391	\$ 234,144
Present Value of Future Normal Costs	<u>56,708</u>	<u>56,410</u>
Actuarial Obligation	\$ 185,683	\$ 177,734

The **Actuarial Present Value of Future Normal Costs** is the value of all remaining Normal Costs expected to be received over the future working lifetime of current active members. The **Actuarial Obligation** is the difference between the Actuarial Present Value of Projected Benefits and the Actuarial Present Value of Future Normal Costs. The Actuarial Obligation is equal to the assets that would exist if the current Normal Cost Rate had been paid for all members since entry into the Program, and if all experience had emerged as assumed.

**California State Teachers' Retirement System
Defined Benefit Program – 2009 Actuarial Valuation**

**Table 1
Normal Cost**

<i>(\$Millions)</i>	2009	2008
Estimated Annual Earned Salaries ⁽¹⁾	\$ 27,550	\$ 27,384
Present Value of Future Normal Costs for Current Active Members	\$ 56,708	\$ 56,410
Present Value of Future Earned Salaries for Current Active Members	\$327,527	\$325,543
 Normal Cost		
Retirement	\$ 4,353	\$ 4,329
Disability	206	205
Death	57	57
Withdrawal	<u>154</u>	<u>154</u>
Total Normal Cost	\$ 4,770	\$ 4,745
 Normal Cost Rate Percent of Earned Salaries		
Retirement	15.800%	15.809%
Disability	0.748	0.749
Death	0.207	0.208
Withdrawal	<u>0.559</u>	<u>0.562</u>
Total Normal Cost	17.314%	17.328%

(1) Annual rate of Earned Salaries for active members on the valuation date, excluding active members over age 70 on the valuation date who are assumed to retire immediately and, therefore, do not generate a Normal Cost. Earned salaries for new entrants who have only worked a partial year have been annualized.

**California State Teachers' Retirement System
Defined Benefit Program – 2009 Actuarial Valuation**

**Table 2
Actuarial Obligation**

<i>(\$Millions)</i>	2009	2008
Present Value of Projected Benefits to All Current Members		
Benefits Currently Being Paid		
Service Retirement	\$ 82,422	\$ 75,854
Disability	2,297	2,178
Survivors	<u>4,208</u>	<u>3,952</u>
Total	88,927	81,984
Benefits to Inactive Members	5,105	4,828
Benefits to Active Members		
Retirement	142,217	141,266
Disability	3,632	3,582
Death	1,257	1,251
Withdrawal	<u>608</u>	<u>608</u>
Total	147,714	146,707
Existing MPPP Unfunded Obligation	645	625
Total Present Value of Benefits	\$242,391	\$234,144
Present Value of Future Normal Costs	<u>56,708</u>	<u>56,410</u>
Actuarial Obligation	\$185,683	\$177,734

California State Teachers' Retirement System Defined Benefit Program – 2009 Actuarial Valuation

Section 5 Valuation Assets

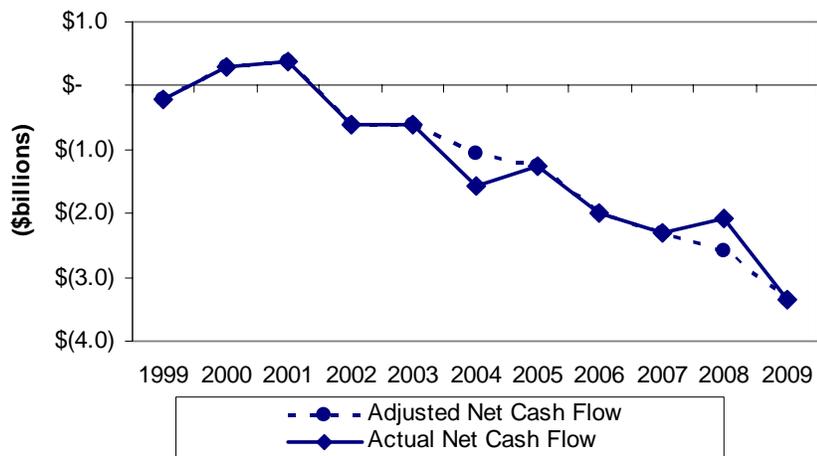


In many respects, an actuarial valuation can be thought of as an inventory process. The inventory is taken as of the actuarial valuation date, which for this valuation is June 30, 2009. On that date, the assets available for the payment of retirement benefits are appraised.

The next step in the valuation process is to calculate the **Actuarial Value of Assets** that will be used to determine the funding status of the Program. As shown in **Table 3**, the Fair Market Value of assets was reported as \$113,192 million as of June 30, 2009, down from \$155,763 million as of June 30, 2008. **Table 4** shows the asset changes for the period.

As shown in Table 4, the net cash flow (contributions less benefits and expenses) continues to be increasingly negative. This is a typical pattern for a mature retirement system where it is expected that contributions will be less than benefits and that the system will begin drawing on the fund that has been built up over prior years. This trend will continue absent a significant increase in contributions.

As illustrated in the following graph, 2004 and 2008 were inconsistent with the trend over the last few years, due to a \$500 million reduction in the State's contribution to the SBMA for the 2003-04 fiscal year, repaid in the 2007-08 fiscal year. The dotted line adjusts the cash flow trend for the deferral of this contribution.



Because the underlying calculations in the actuarial valuation are long-term in nature, it may be advantageous to use an asset smoothing method to lessen the impact of short-term fluctuations in the value of assets. The asset smoothing method projects an expected Actuarial Value of Assets from the Actuarial Value of Assets as of the previous year. The projection uses the assumed rate of investment return, then recognizes only one-third of the difference between the expected value and the Fair Market Value to arrive at the Actuarial Value of Assets. The calculation of the Actuarial Value of Assets is shown in **Table 5** and the result is shown below.

(\$Millions)	June, 2009	June, 2008
Fair Market Value	\$ 113,192	\$ 155,763
Actuarial Value of Assets	\$ 150,445	\$ 159,785
Deferred Investment Gains or (Losses)	\$ (37,253)	\$ (4,022)
Ratio of AVA to FMV	133%	103%

Due to the asset smoothing method, there are investment losses of \$37,253 million that have not yet been recognized (the difference between the Actuarial and Fair Market Value of Assets). Absent investment returns in future years significantly greater than the assumed rate to offset the deferred investment losses, the current losses will gradually be reflected in the Actuarial Value of Assets.

If the future returns on the Fair Market Value of Assets are 8% each year, then as the current deferred losses flow through the smoothing method and are recognized, future valuations will show an actuarial loss. The result will be a slow decrease in the DB Program's funded status, ultimately increasing the Unfunded Actuarial Obligation by the \$37,253 million of currently deferred investment losses.

Table 6 shows a history of the Actuarial Value of Assets compared to the Fair Market Value of Assets.

**California State Teachers' Retirement System
Defined Benefit Program – 2009 Actuarial Valuation**

**Table 3
Statement of Program Assets**

<i>(\$Millions)</i>	June, 2009	June, 2008
Invested Assets		
Short-term	\$ 2,888	\$ 1,915
Debt Securities	24,611	30,281
Equity	58,783	88,157
Alternative	15,171	16,577
Real Estate	<u>12,395</u>	<u>20,412</u>
Total Investments ⁽¹⁾	\$ 113,848	\$ 157,342
Cash and Cash Equivalents	425	259
Receivables	3,653	4,826
Liabilities ⁽¹⁾	<u>(4,734)</u>	<u>(6,664)</u>
Fair Market Value of Net Assets	\$ 113,192	\$ 155,763

(1) 2009 value includes net liability due to Securities Lending Obligation exceeding Securities Lending Collateral.

**California State Teachers' Retirement System
Defined Benefit Program – 2009 Actuarial Valuation**

**Table 4
Statement of Changes in Program Assets**

<i>(\$Millions)</i>	June, 2009	June, 2008
Contributions		
Members	\$ 1,792	\$ 1,820
Employers	2,332	2,328
State of California	<u>1,140</u>	<u>1,630</u>
Total Contributions	5,264	5,778
Benefits and Expenses		
Retirement, Death, and Survivors	(8,095)	(7,451)
Refunds of Member Contributions	(75)	(84)
Purchasing Power Benefits	(348)	(230)
Administrative Expenses	<u>(109)</u>	<u>(106)</u>
Total Benefits and Expenses	(8,627)	(7,871)
Net Cash Flow	\$ (3,363)	\$ (2,093)
Investment Income		
Realized Income	\$ 3,568	\$ 4,882
Net Appreciation	(41,677)	(14,129)
Net Securities Lending Income	(931)	215
Investment Expenses	(160)	(208)
Other (Expense) Income	<u>(8)</u>	<u>193</u>
Net Investment Return	(39,208)	(9,047)
Net Increase (Decrease)	\$ (42,571)	\$ (11,140)
Fair Market Value of Net Assets		
Beginning of Year	<u>155,763</u>	<u>166,903</u>
End of Year	\$ 113,192	\$ 155,763
Estimated Net Rate of Return ⁽¹⁾	(25.4)%	(5.5)%

(1) *Estimated return on a Fair Market Value basis, net of all investment expenses and assuming uniform cash flow throughout the year*

**California State Teachers' Retirement System
Defined Benefit Program – 2009 Actuarial Valuation**

**Table 5
Actuarial Value of Assets**

<i>(\$Millions)</i>	June, 2009	June, 2008
Actuarial Value at Beginning of Year	\$ 159,785	\$ 151,827
Contributions	5,264	5,778
Benefits and Expenses	(8,627)	(7,871)
Expected Return at 8%	<u>12,649</u>	<u>12,062</u>
Expected Actuarial Value End of Year	\$ 169,071	\$ 161,796
Fair Market Value	<u>113,192</u>	<u>155,763</u>
Difference between Fair Market Value and Expected Actuarial Value	\$ (55,879)	\$ (6,033)
Recognition Factor	One-third	One-third
Recognized Gain or Loss	\$ (18,626)	\$ (2,011)
Actuarial Value at End of Year	\$ 150,445	\$ 159,785
Deferred Investment Gains or (Losses)	\$ (37,253)	\$ (4,022)
<i>Ratio of Actuarial Value of Assets to Fair Market Value of Assets</i>	133%	103%
Estimated Net Rate of Return ⁽¹⁾	(3.8)%	6.7%

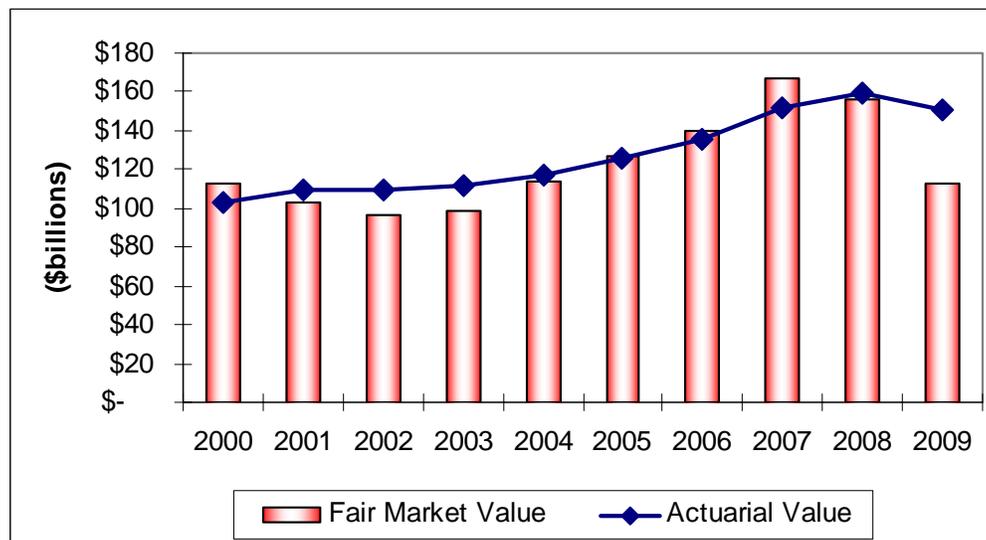
(1) *Estimated return on an Actuarial Value basis, net of all investment expenses and assuming uniform cash flow throughout the year*

California State Teachers' Retirement System Defined Benefit Program – 2009 Actuarial Valuation

**Table 6
History of Actuarial Value of Assets**

(\$Millions)				
June 30	Fair Market Value	Estimated Return ⁽¹⁾	Actuarial Value	Ratio of Actuarial to Market
2000	\$112,771	12.7%	\$102,790	91%
2001	102,915	(9.1)	108,571	105
2002	96,028	(6.1)	109,755	114
2003	99,031	3.8	111,604	113
2004	113,815	16.6	117,206	103
2005	126,447	12.3	125,665	99
2006	140,192	12.5	135,832	97
2007	166,903	20.9	151,827	91
2008	155,763	(5.5)	159,785	103
2009	113,192	(25.4)	150,445	133

(1) Estimated return on a Fair Market Value basis, net of all investment expenses and assuming uniform cash flow throughout the year



California State Teachers' Retirement System Defined Benefit Program – 2009 Actuarial Valuation

Section 6 Funded Status



The **Unfunded Actuarial Obligation** is the excess of the Actuarial Obligation over the Actuarial Value of Assets, which represents a liability that must be funded over time. Contributions in excess of the Normal Cost are used to amortize the Unfunded Actuarial Obligation. An **Actuarial Surplus** exists if the Actuarial Value of Assets exceeds the Actuarial Obligation.

The **Funded Ratio** is equal to the Actuarial Value of Assets divided by the Actuarial Obligation. A Funded Ratio of 100% means the Value of Assets equals the Actuarial Obligation, and the DB Program could be financed by contributions equal to the Normal Cost, if all future experience emerges as assumed. The Funded Ratio is shown below and in **Table 7**.

<i>(\$Millions)</i>	2009 Valuation	2008 Valuation
Actuarial Obligation	\$ 185,683	\$ 177,734
Actuarial Value of Assets		
From Table 5	150,445	159,785
Less SBMA Reserve	<u>(5,303)</u>	<u>(4,570)</u>
Net for Funding	145,142	155,215
Unfunded Actuarial Obligation	\$ 40,451	\$ 22,519
Funded Ratio (on A.V.A.)	78%	87%
<i>Alternate Funded Ratio (based on Fair Market Value)</i>	58%	85%

Overall, the DB Program is in worse financial condition than it was one year ago as measured by the Funded Ratio. However, due to the significant investment losses for the 2008-09 year, the Alternate Funded Ratio using the Fair Market Value of assets has decreased even more.

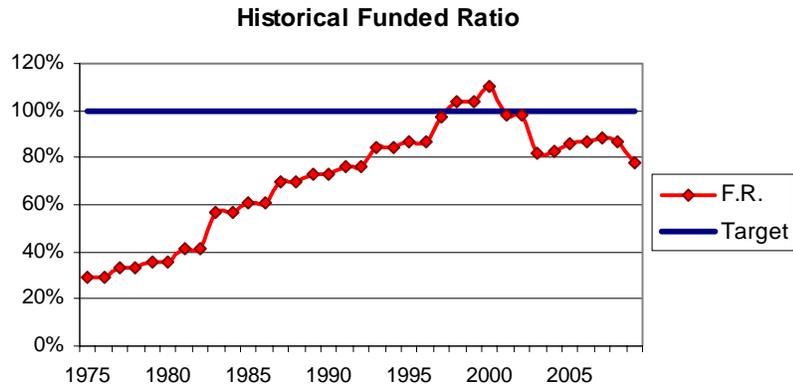
Future benefits provided through the Supplemental Benefits Maintenance Account (SBMA) are not part of the projected benefits included in this valuation. Therefore, the SBMA Reserve is subtracted from the DB Program assets to arrive at the value available to support the benefits included in this valuation.

In addition, the Teachers' Retirement Board has established a policy of allocating funds for future costs associated with the Teachers' Health Benefits Fund (THBF). This policy was revised in April of 2009 to make a one-time credit to the THBF and "true up" the future MPPP obligations (payable from the THBF) in the funding of the DB Program. As of June 30, 2009, only a relatively small amount of \$5 million resides in the THBF, while the remaining unfunded amount of \$645 million is added to the DB Program obligation.

The following table shows a history of the Funded Status of the DB Program.

<i>(\$Millions)</i>				
YE	Actuarial Obligation	Actuarial Value of Assets	Unfunded Actuarial Obligation	Funded Ratio
1975	\$ 12,834	\$ 3,775	\$ 9,059	29%
1977	15,203	5,019	10,184	33%
1979	17,971	6,488	11,483	36%
1981	22,545	9,345	13,200	41%
1983	26,553	15,023	11,530	57%
1985	28,401	17,457	10,944	61%
1987	34,637	24,401	10,236	70%
1989	40,266	29,327	10,939	73%
1991	47,100	36,001	11,099	76%
1993	53,581	45,212	8,369	84%
1995	63,391	55,207	8,184	87%
1997	69,852	67,980	1,872	97%
1998	74,234	77,290	(3,056)	104%
1999	86,349	90,001	(3,652)	104%
2000	93,124	102,225	(9,101)	110%
2001	109,881	107,654	2,227	98%
2003	131,777	108,667	23,110	82%
2004	138,254	114,094	24,160	83%
2005	142,193	121,882	20,311	86%
2006	150,872	131,237	19,635	87%
2007	167,129	146,419	20,710	88%
2008	177,734	155,215	22,519	87%
2009	185,683	145,142	40,541	78%

The historical Funded Ratios are plotted in the following graph. In years in which a valuation was not performed, the Funded Ratio from the previous year is used.



Actuarial Gains and Losses

Comparing the Unfunded Actuarial Obligation as of two valuation dates does not provide enough information to determine if there were actuarial gains or losses. The correct comparison is between the Unfunded Actuarial Obligation on the valuation date and the Expected Unfunded Actuarial Obligation projected from the prior valuation date using the actuarial assumptions in effect since the previous valuation.

The actuarial gains and losses since the last report are summarized in the following table and shown in **Table 8**.

(\$Millions)	Expected Results	Actual Results	(Gain) or Loss
Actuarial Obligation	\$ 188,421	\$ 185,683	\$ (2,738)
Act. Value of Assets	<u>164,046</u>	<u>145,142</u>	<u>18,904</u>
Unfunded Act. Oblig.	\$ 24,375	\$ 40,541	\$ 16,166
Actuarial (Gains) or Losses by Source			
Salaries increased less than assumed			\$ (2,968)
All other non-investment sources			<u>230</u>
(Gain) or Loss on the Actuarial Obligation			(2,738)
Investment Return on Actuarial Value of Assets			18,003
Contributions (in excess of) or less than assumed			168
Change in the SBMA Reserve			<u>733</u>
(Gain) or Loss on the Actuarial Value of Assets			18,904
Total Actuarial (Gain) or Loss			\$ 16,166

(\$Millions)		
Actuarial (Gains) or Losses on the Actuarial Obligation	(Gain) or Loss	Percent of Act. Oblig.
Salaries increased less than assumed	\$ (2,968)	(1.6)%
All other non-investment sources	<u>230</u>	<u>0.1</u>
(Gain) or Loss on the Actuarial Obligation	\$ (2,738)	(1.5)%
Actuarial (Gains) or Losses on the Actuarial Value of Assets	(Gain) or Loss	Percent of AVA
Return on Actuarial Value of Assets	\$ 18,003	12.4%
Contributions less than assumed	168	0.1
Change in the SBMA Reserve	<u>733</u>	<u>0.5</u>
(Gain) or Loss on the Actuarial Value of Assets	\$ 18,904	13.0%

These net gains and losses are within a reasonable range for variances in a single year given the significant market decline that is reflected in the Actuarial Value of Assets.

Based on the 2008 Actuarial Valuation, the Unfunded Actuarial Obligation was expected to increase to \$24,375 million. The actual Unfunded Actuarial Obligation of \$40,541 million represents a net actuarial loss of \$16,166 million.

- Salaries increased less than the current actuarial assumptions, causing the Actuarial Obligation to decrease by \$2,968 million more than expected. As history has shown, salary increases less than those assumed are often offset in future years by actual salary increases greater than those assumed. Given the recessionary economic environment, smaller-than-expected salary increases have been common among public agencies in recent years. We expect to continue to see salary increase fluctuations from year to year.
- All other non-investment experience represents only a relatively small portion of the expected Actuarial Obligation. These relatively minor net gains and losses indicate that the census is consistent from the prior period, and the actual experience tracked closely with the actuarial assumptions.
- On the asset side, there are a number of sources of the actuarial gain or loss. First, we identified an investment return on the Actuarial Value of Assets less than the 8% assumption. The return on Fair Market Value was estimated at -25.4%, while the return on the Actuarial Value of Assets was estimated at -3.8% due to the recognition of only a portion of the current investment losses.

- We do not predict future changes in the SBMA Reserve allocation in the DB Program valuation. The amount allocated to the SBMA Reserve increased by \$733 million over the year. Any increase in this value results in an actuarial loss in the subsequent DB Program valuation.

**California State Teachers' Retirement System
Defined Benefit Program – 2009 Actuarial Valuation**

**Table 7
Funded Status**

<i>(\$Millions)</i>	2009	2008
Actuarial Obligation <i>(Table 2)</i>	\$185,683	\$177,734
Actuarial Value of Assets		
Calculated <i>(Table 5)</i>	150,445	159,785
Less SBMA Reserve	<u>(5,303)</u>	<u>(4,570)</u>
Program Assets	145,142	155,215
Unfunded Actuarial Obligation	\$ 40,541	\$ 22,519
Funded Ratio	78%	87%

Table 8
Actuarial Gains and Losses

(\$Millions)	Expected	Actual	(Gain) / Loss
Actuarial Obligation			
Actuarial Obligation June 30, 2008	\$177,734		
Normal Cost for 2008-09	4,772		
Benefits Paid (Excludes Purchasing Power)	(8,170)		
Expected Interest at 8%	<u>14,085</u>		
Actuarial Obligation June 30, 2009	\$188,421	\$185,683	\$ (2,738)
<i>By Source:</i>			
<i>Rehired Members</i>			38
<i>Retiree Mortality</i>			(51)
<i>Active Member Mortality</i>			(8)
<i>Service Retirements</i>			(44)
<i>Terminations</i>			200
<i>Disablement</i>			80
<i>Salary increases less than assumed</i>			(2,968)
<i>All Other Non-investment Sources</i>			<u>15</u>
<i>Total (Gain) Loss on the Actuarial Obligation</i>			\$ (2,738)
Actuarial Value of Assets			
Actuarial Value of Assets June 30, 2008	\$155,215		
Expected Contributions for 2008-09	4,719		
Benefits Paid (Excludes Purchasing Power)	(8,170)		
Expected Interest at 8% on A.V.A.	<u>12,282</u>		
Actuarial Value of Assets June 30, 2009	\$164,046	\$145,142	\$ 18,904
<i>By Source:</i>			
<i>Investment Return on Actuarial Value of Assets (including the recognition of prior deferred investment gains and losses)</i>			\$ 18,003
<i>Contributions (in excess of) or less than assumed (including service purchases)</i>			168
<i>Change in SBMA Reserve</i>			<u>733</u>
<i>Total (Gain) Loss on the Actuarial Value of Assets</i>			\$ 18,904
Unfunded Actuarial Obligation	\$ 24,375	\$ 40,541	\$ 16,166

California State Teachers' Retirement System Defined Benefit Program – 2009 Actuarial Valuation

Section 7 Supplemental Contributions



Under State law EC §22955(b), additional funds are required to be contributed by the State if at least one of the following two separate conditions is met.

1. Additional funding is required if the sum of the 8% contribution from the members and the 8% contribution from the employers is not sufficient to pay the Normal Cost of the benefits in effect as of July 1, 1990.
2. Additional funding is required if the Actuarial Value of Assets associated with the benefit provisions in effect as of July 1, 1990 is less than the Actuarial Obligation for those benefits.

Normal Cost Deficit: Since the Normal Cost Rate for the 1990 Benefit Structure is less than the 16% rate cited in the statute, there is no Normal Cost Deficit.

	2009 Valuation	2008 Valuation
Normal Cost Deficit – 1990 Benefit Structure		
Normal Cost Rate	14.653%	14.676%
Revenue for 1990 Benefits	<u>16.000</u>	<u>16.000</u>
Normal Cost Deficit	0.000%	0.000%

1990 Unfunded Actuarial Obligation: The Actuarial Obligation for the DB Program is recalculated using the benefit provisions in place during 1990. CalSTRS provides us with separate census data for this determination. The process has limitations since we do not know, for example, if members who retired would have done so if the post-1990 benefit enhancements had not been enacted. However, we believe we are using a reasonable process to estimate what the Actuarial Obligation would be if only the 1990 benefits were currently in place.

There were no benefit improvements enacted between 1990 and 1998 that had a material cost. All benefit enhancements enacted with effective dates from July 1, 1990 to December 31, 1998 have been presumed to be cost-neutral. Due to the enhanced retirement benefits enacted since 1990, we are using a separate set of retirement probabilities to evaluate the 1990 Benefit Structure.

The Actuarial Obligation related to the 1990 Benefit Structure is \$150.6 billion. This compares to the Actuarial Obligation for the DB Program of \$185.7 billion.

(\$Millions)	2009 Valuation	2008 Valuation
Actuarial Obligation – 1990 Benefit Structure		
Value of Projected Benefits	\$ 198,868	\$ 192,275
Value of Future Normal Costs	<u>48,259</u>	<u>48,000</u>
Actuarial Obligation	\$ 150,609	\$ 144,275

The Actuarial Value of Assets needs to be adjusted to reflect the contributions started on October 1, 1998, and an estimate of the additional benefits paid out due to the post-1990 benefit increases up to June 30, 2009. This task also has some limitations since we do not have precise data regarding the portion of, or the timing of, benefit payments that would be attributable to only the 1990 benefits.

The most significant adjustments to the assets are:

- ◆ Eliminate contributions in excess of 16.00%,
- ◆ Add back the member contributions that were directed to the DBS Program,
- ◆ Add back the benefit enhancements that have been paid, and
- ◆ Adjust for interest.

See **Table 9** for the details of the asset adjustment.

(\$Millions)	June, 2009	June, 2008
Asset Adjustment – 1990 Benefit Structure		
Actuarial Value for DB Program	\$ 145,142	\$ 155,215
Adjustments per Table 9	6,048	4,282
Board's THBF allocation	<u>0</u>	<u>0</u>
Actuarial Value of Assets*	\$ 151,190	\$ 159,498

* Numbers may not add up exactly due to rounding.

For purposes of testing the funding sufficiency of the 1990 Benefit Structure, note that we did not reserve the Board's allocation of assets for future THBF costs because it was established subsequent to 1990.

The following table summarizes the Funded Status of the 1990 Benefit Structure as detailed in **Table 10**. The 1990 Benefit Structure has an Actuarial Surplus.

<i>(\$Millions)</i>	2009 Valuation	2008 Valuation
Funded Status – 1990 Benefit Structure		
Actuarial Obligation	\$ 150,609	\$ 144,275
Actuarial Value of Assets	<u>151,190</u>	<u>159,498</u>
Unfunded Actuarial Obligation	\$ (581)	\$ (15,223)
Funded Ratio	100%	111%

Supplemental State Contributions: The statute calls for a supplemental State contribution if one of the two conditions described above is met. Since neither triggering condition is met in the 2009 Actuarial Valuation, additional funding from the State under this statutory provision is not required at this time.

The funded status of the 1990 Benefit Structure in future years is difficult to predict with certainty because the Actuarial Value of Assets for the 1990 Benefit Structure includes adjustments for contributions and benefits paid in excess of those in place in 1990. The benefits paid may vary considerably depending on demographic experience. In addition, the Actuarial Obligation can only be assessed accurately when current census data is evaluated along with current asset information.

Note the above calculation is based on the June 30, 2009 actuarial value of assets. This value reflects only a portion of the significant asset losses that occurred during the 2008-2009 year. These large deferred losses will be recognized in future valuations. It is very likely that the current funding for the 1990 Benefit Structure will become insufficient in the next valuation. **Table 11** illustrates this situation. It shows that even with the supplemental contributions, the total contribution rate is not expected to be sufficient to fund the 1990 Benefit Structure, assuming an 8% investment return in the future. The same would be true if the investment return assumption were lower.

**California State Teachers' Retirement System
Defined Benefit Program – 2009 Actuarial Valuation**

**Table 9
Asset Adjustment for 1990 Benefit Structure**

(\$Millions)	2009	2008
Assets Allocated to Post-1990 Benefit Increases		
Allocated Market Value at Beginning of Year	\$ 4,282	\$ 3,468
Adjustment for prior DBS Program benefit payments	445 ⁽³⁾	0
Contributions During the Year		
EC §22951 at 0.250% of Earned Salaries	(71)	(71)
EC §22955 at 2.017% of second preceding fiscal year Earned Salaries	(536)	(501)
2% DBS redirection reallocated to DB Program	597	596
THBF costs reallocated to DB Program	<u>30</u>	<u>33</u>
Total Adjustment to Contributions	21	57
Benefits Paid During the Year		
Post-1990 Benefits Paid During the Year	1,158	1,017
2% DBS redirection reallocated to DB Program	<u>(22)</u>	<u>(157)</u>
Total Adjustment to Benefits Paid	1,136	860
Estimated Investment Earnings for the Year ⁽¹⁾	<u>(1,333)</u>	<u>(211)</u>
Total Allocated Market Value at End of Year	\$ 4,551	\$ 4,174
 Ratio of Actuarial Value to Market Value ⁽²⁾	 132.911%	 102.582%
 Actuarial Value of Assets for Post-1990 Benefit Increases	 \$ 6,048	 \$ 4,282

(1) Based on Fair Market Value and uniform cash flow for contributions, benefits, and expenses. The rates of return used in these calculations were -5.45% for 2007-08 and -25.45% for 2008-09.

(2) Developed from Table 5.

(3) An adjustment was made in 2009 to isolate only the benefit payments made from the DBS Program that were directly attributable to the 2% redirection of member contributions and that would have otherwise been refunded from the DB Program. For purposes of this calculation, 75% of the refund of contribution payments from the DBS Program are assumed to be related to the 2% redirection.

**California State Teachers' Retirement System
Defined Benefit Program – 2009 Actuarial Valuation**

**Table 10
Funding Sufficiency for 1990 Benefit Structure**

(\$Millions)	2009	2008
Actuarial Obligation		
Present Value of Projected Benefits		
Benefits Currently Being Paid	\$ 74,959	\$ 69,541
Benefits to Inactive Members	4,957	4,689
Benefits to Active Members	<u>118,952</u>	<u>118,045</u>
Total	\$198,868	\$192,275
Present Value of Future Normal Costs	<u>48,259</u>	<u>48,000</u>
Actuarial Obligation	\$150,609	\$144,275
Actuarial Value of Assets		
Actuarial Value of Assets (Table 7)	\$145,142	\$155,215
Plus, Asset Adjustment (Table 9)	6,048	4,282
Plus, Allocation to Health Benefits	<u>0</u>	<u>0</u>
Net Assets Available	\$151,190	\$159,498
Funded Status		
Actuarial Obligation	\$150,609	\$144,275
Actuarial Value of Assets	<u>151,190</u>	<u>159,498</u>
Unfunded Actuarial Obligation (Surplus)	\$ (581)	\$ (15,223)
Funded Ratio	100%	111%
Amortization Period		
Revenue for 1990 Benefits	16.000%	16.000%
Normal Cost Rate for 1990 Benefits	(14.653)	(14.676)
EC 22955(b)	<u>0.000</u>	<u>0.000</u>
Revenue Available for Amortization	1.347%	1.324%
Amortization Period	<i>Amortization Not Required</i>	<i>Amortization Not Required</i>

California State Teachers' Retirement System Defined Benefit Program – 2009 Actuarial Valuation

Table 11
Amortization of 1990 Unfunded Actuarial Obligation
(if Deferred Losses were Recognized)⁽¹⁾

(\$Millions)		Beginning Unfunded Act. Oblig.	Amortization Payment				Interest Charge at 8%	Recognition of Deferred Asset Losses	Ending Unfunded Act. Oblig.
Year	FYE		16% Contrib.	Supp. Contrib.	Normal Cost	Available Amtzn.			
1	2010	(\$581)	\$4,725	\$0	\$4,327	\$398	(\$62)	\$13,950	\$12,909
2	2011	12,909	4,925	0	4,511	414	1,016	10,044	23,555
3	2012	23,555	5,134	155	4,702	587	1,861	7,232	32,061
4	2013	32,061	5,353	238	4,902	689	2,538	5,207	39,117
5	2014	39,117	5,580	329	5,111	798	3,098	3,749	45,166
6	2015	45,166	5,818	426	5,328	916	3,577	2,699	50,526
7	2016	50,526	6,065	525	5,554	1,036	4,001	1,943	55,434
8	2017	55,434	6,323	547	5,790	1,080	4,392	1,399	60,145
9	2018	60,145	6,592	570	6,036	1,126	4,768	1,007	64,794
10	2019	64,794	6,871	595	6,293	1,173	5,138	725	69,484
11	2020	69,484	7,163	620	6,560	1,223	5,511	522	74,294
12	2021	74,294	7,468	646	6,839	1,275	5,894	376	79,289
13	2022	79,289	7,785	674	7,130	1,329	6,291	271	84,522
14	2023	84,522	8,117	702	7,433	1,386	6,708	195	90,039
15	2024	90,039	8,461	732	7,749	1,444	7,147	140	95,882
16	2025	95,882	8,821	763	8,078	1,506	7,612	101	102,089
17	2026	102,089	9,195	796	8,421	1,570	8,106	73	108,698
18	2027	108,698	9,586	830	8,779	1,637	8,632	52	115,745
19	2028	115,745	9,994	865	9,152	1,707	9,193	38	123,269
20	2029	123,269	10,418	902	9,541	1,779	9,792	27	131,309
21	2030	131,309	10,861	940	9,947	1,854	10,432	20	139,907
22	2031	139,907	11,323	980	10,370	1,933	11,117	14	149,105
23	2032	149,105	11,804	1,022	10,810	2,016	11,849	10	158,948
24	2033	158,948	12,306	1,065	11,270	2,101	12,633	7	169,487
25	2034	169,487	12,829	1,110	11,749	2,190	13,473	5	180,775
26	2035	180,775	13,374	1,158	12,248	2,284	14,372	4	192,867
27	2036	192,867	13,942	1,207	12,769	2,380	15,336	3	205,826
28	2037	205,826	14,535	1,258	13,311	2,482	16,369	2	219,715
29	2038	219,715	15,153	1,311	13,877	2,587	17,476	1	234,605
30	2039	234,605	15,797	1,367	14,467	2,697	18,663	1	250,572

(1) There is currently no Unfunded Actuarial Obligation based on the 1990 Benefit Structure, so no supplemental contributions are required. When an additional portion of the current deferred asset losses are recognized next year, it is highly probable the 16% contribution rate will no longer be sufficient to amortize the 1990 UAO. This table illustrates the projected amortization if supplemental contributions are required in next year's valuation.

California State Teachers' Retirement System Defined Benefit Program – 2009 Actuarial Valuation

Section 8 Funding Sufficiency



The contributions to fund the DB Program include those listed below and described in **Table 12**, including reference to the appropriate section of the California Education Code. Since each contribution is not paid uniformly over time as a percentage of Earned Salaries, we have calculated an equivalent rate over a 30-year period, the period used to test the sufficiency of the statutory revenue stream.

Source of Revenue	Current Rate	Equivalent Rate
Members	8.000%	8.000%
Directed to DBS Accounts	(2.000)	(0.158)
Employers	8.000	8.000
Employers	0.250	0.250
State	2.017	1.859
State – 1990 Benefit Structure	0.000	<u>0.000</u>
Equivalent Level Contribution Rate over 30 Years		17.951%

Twenty-five percent of the members' contributions are temporarily directed to the Defined Benefit Supplement Program (DBS) through December of 2010. When converted to a level percentage over a 30-year period, this is equal to a reduction in the value of contributions of 0.158% of future salaries.

The State contribution rate will be 2.017% of the second preceding fiscal year Earned Salaries which is equivalent to a lesser percentage of current Earned Salaries. For example, the State contribution for the 2009-10 will be equal to 2.017% of the 2007-08 Earned Salaries. Based on two years of known future contributions and projections for the other years, the equivalent rate for the 30-year period is 1.859% of current Earned Salaries.

As demonstrated in Tables 10 and 11, the supplemental contribution from the State for the 1990 benefit structure is not required at this time. Therefore, the equivalent contribution rate does not reflect any supplemental contributions.

The calculation of the equivalent rates in **Table 13** results in 17.951% of Earned Salaries over a 30-year period.

Table 14 shows the amortization of the Unfunded Actuarial Obligation on a year-by-year basis. Based on the current Actuarial Value of Assets and all future experience emerging as assumed, the Unfunded Actuarial Obligation will not be amortized over the next 30 years. This is consistent with our projections from prior valuations.

Table 15 summarizes these findings. Note that the potential supplemental contributions under EC §22955(b) are not reflected in either table as they are not yet required.

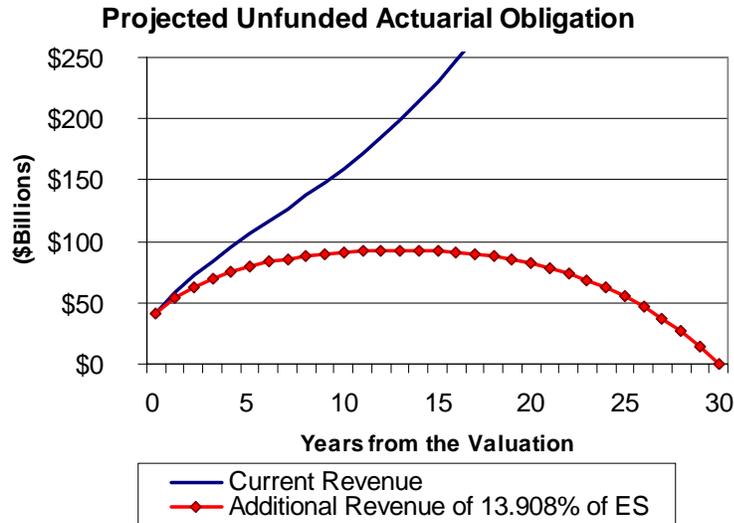
	2009 Valuation	2008 Valuation
Normal Cost Rate	17.314%	17.328%
Amortization Rate	<u>14.545*</u>	<u>4.235</u>
Total Level Rate over a 30-Year Period	31.859%	21.563%
Projected Revenue	17.951%*	17.845%
Estimated Additional Revenue Needed	13.908%*	3.718%

**For 2009, the additional revenue needed reflects the expected future recognition of asset losses currently being deferred in the June 30, 2009 Actuarial Value of Assets.*

The DB Program has a worse funded status than one year ago and the future 30-year funding requirement is significantly higher. It is clear that based on the current data, methods, and assumptions, the projected revenue for the DB Program is not sufficient.

Table 16 (in the same format as Table 14) shows the amortization of the Unfunded Actuarial Obligation over a 30-year period **if contribution revenue were increased by 13.908% of current year Earned Salaries** on the valuation date. We did not address the source of the additional revenue as it is not relevant to the amortization schedule, except as previously noted an increase in the State and member contribution rates would have to be greater than 1.0% of payroll to be equivalent to a 1.0% contribution to pay off the UAO.

The following graph illustrates the expected amortization of the Unfunded Actuarial Obligation with and without the additional revenue stream. This is based on a future investment return of 8.0% each year going forward and all other assumptions being met.



One of the future contingencies that may lessen the impact of the funding shortage is the potential growth of the active DB Program membership. An increase in the number of active members will improve the financial condition of the DB Program because the additional revenue should exceed the expected Normal Cost Rate (the Normal Cost Rate is the expected total cost for a new member).

The excess of revenue over the Normal Cost Rate for additional members will provide added resources to finance the current Unfunded Actuarial Obligation. However, as the total current contribution rate is only slightly greater than the Normal Cost Rate, an increasing active population would not be expected to have a significant impact based on the current contribution level.

Conversely, a declining active population could have a negative impact on the additional revenue percentage needed.

**California State Teachers' Retirement System
Defined Benefit Program – 2009 Actuarial Valuation**

**Table 12
Contributions**

		Current Rate	Equivalent Rate ⁽¹⁾
EC 22901	Members	8.000%	8.000%
EC 22901.5	Directed to DBS Accounts ⁽²⁾	(2.000)	(0.158)
EC 22950 & 22951	Employers	8.250	8.250
EC 22950 (c)	Employers for THBF ⁽³⁾	<i>as needed</i>	0.000
EC 22955 (a)	State ⁽⁴⁾	2.017	1.859
EC 22955 (b)	State ⁽⁵⁾	0.000	<u>0.000</u>
Equivalent Level Contribution Rate over 30-Year Period			17.951%

- (1) *Equivalent level contribution rate payable over the next 30 years. See Table 13 for details.*
- (2) *25% of Member Contributions will be directed to Defined Benefit Supplement Accounts through December 31, 2010.*
- (3) *The Teachers' Health Benefit Fund is financed by a redirection of employer contributions. The Teachers' Retirement Board has set aside DB Program assets to finance these future costs. This is reflected in the valuation by adding the unfunded obligation for future THBF benefits to the Actuarial Obligation of the DB Program. See Table 2.*
- (4) *The State's contribution of 2.017% is paid quarterly based on second prior fiscal year salaries.*
- (5) *Additional funding is provided only if the Normal Cost Rate is greater than 16.000% of salaries for benefits in effect on July 1, 1990 or there is an Unfunded Actuarial Obligation (related to the 1990 Benefit Structure). Under these two criteria, the 1990 Benefit Structure was adequately funded as of June 30, 2009.*

**California State Teachers' Retirement System
Defined Benefit Program – 2009 Actuarial Valuation**

**Table 13
30-Year Projection of Contributions**

FYE	Projected Salaries	Member		Employer		State 22955(b)	Total Contrib.
		Member 22901	DBS 22901.5	22950 & 22951	State 22955(a)		
2010	\$29,528	\$2,362	(\$591)	\$2,436	\$562	\$0	\$4,769
2011	30,783	2,463	(308)	2,540	573	0	5,268
2012	32,092	2,567	0	2,648	596	0	5,811
2013	33,456	2,676	0	2,760	621	0	6,057
2014	34,877	2,790	0	2,877	647	0	6,314
2015	36,360	2,909	0	3,000	675	0	6,584
2016	37,905	3,032	0	3,127	703	0	6,862
2017	39,516	3,161	0	3,260	733	0	7,154
2018	41,195	3,296	0	3,399	765	0	7,460
2019	42,946	3,436	0	3,543	797	0	7,776
2020	44,771	3,582	0	3,694	831	0	8,107
2021	46,674	3,734	0	3,851	866	0	8,451
2022	48,658	3,893	0	4,014	903	0	8,810
2023	50,726	4,058	0	4,185	941	0	9,184
2024	52,882	4,231	0	4,363	981	0	9,575
2025	55,129	4,410	0	4,548	1,023	0	9,981
2026	57,472	4,598	0	4,741	1,067	0	10,406
2027	59,915	4,793	0	4,943	1,112	0	10,848
2028	62,461	4,997	0	5,153	1,159	0	11,309
2029	65,116	5,209	0	5,372	1,208	0	11,789
2030	67,883	5,431	0	5,600	1,260	0	12,291
2031	70,768	5,661	0	5,838	1,313	0	12,812
2032	73,776	5,902	0	6,086	1,369	0	13,357
2033	76,911	6,153	0	6,345	1,427	0	13,925
2034	80,180	6,414	0	6,615	1,488	0	14,517
2035	83,588	6,687	0	6,896	1,551	0	15,134
2036	87,140	6,971	0	7,189	1,617	0	15,777
2037	90,844	7,267	0	7,495	1,686	0	16,448
2038	94,704	7,576	0	7,813	1,758	0	17,147
2039	98,729	7,898	0	8,145	1,832	0	17,875
PV ⁽¹⁾	\$534,857	\$42,789	(\$843)	\$44,126	\$9,941	\$0	\$96,013
Level Rate ⁽²⁾		8.000%	(0.158%)	8.250%	1.859%	0.000% ⁽³⁾	17.951%

(1) Present Value, as of the valuation date, of 30-year series of contributions and appropriations.

(2) Equivalent level rate payable over the 30-year period.

(3) Supplemental State contributions under EC §22955(b) are not shown as they are not required based on the current valuation; however, it is highly probable they will be required in the future. If supplemental contributions begin July 30, 2011, the equivalent 30-year rate would be 1.133% of payroll.

**California State Teachers' Retirement System
Defined Benefit Program – 2009 Actuarial Valuation**

**Table 14
Amortization of Unfunded Actuarial Obligation ^{(1) (2)}**

(\$Millions)		Beginning Unfunded Act. Oblig.	Amortization Payment			Interest Charge at 8%	Recognition of Deferred Asset Losses	Ending Unfunded Act. Oblig.
Year	FYE		Total Contrib.	Normal Cost	Available Amtzn.			
1	2010	\$40,541	\$4,770	\$5,113	(\$343)	\$3,257	\$13,411	\$57,552
2	2011	57,552	5,268	5,330	(62)	4,607	9,656	71,877
3	2012	71,877	5,810	5,556	254	5,740	6,952	84,315
4	2013	84,315	6,057	5,792	265	6,735	5,006	95,791
5	2014	95,791	6,315	6,039	276	7,652	3,604	106,771
6	2015	106,771	6,583	6,295	288	8,530	2,595	117,608
7	2016	117,608	6,863	6,563	300	9,397	1,868	128,573
8	2017	128,573	7,155	6,842	313	10,274	1,345	139,879
9	2018	139,879	7,459	7,133	326	11,177	969	151,699
10	2019	151,699	7,776	7,436	340	12,122	697	164,178
11	2020	164,178	8,106	7,752	354	13,120	502	177,446
12	2021	177,446	8,451	8,081	370	14,181	362	191,619
13	2022	191,619	8,810	8,425	385	15,314	260	206,808
14	2023	206,808	9,184	8,783	401	16,529	187	223,123
15	2024	223,123	9,575	9,156	419	17,833	135	240,672
16	2025	240,672	9,982	9,545	437	19,237	97	259,569
17	2026	259,569	10,406	9,951	455	20,748	70	279,932
18	2027	279,932	10,848	10,374	474	22,376	50	301,884
19	2028	301,884	11,309	10,815	494	24,131	36	325,557
20	2029	325,557	11,790	11,274	516	26,024	26	351,091
21	2030	351,091	12,291	11,753	538	28,066	19	378,638
22	2031	378,638	12,813	12,253	560	30,269	14	408,361
23	2032	408,361	13,358	12,774	584	32,646	10	440,433
24	2033	440,433	13,925	13,316	609	35,211	7	475,042
25	2034	475,042	14,517	13,882	635	37,978	5	512,390
26	2035	512,390	15,134	14,472	662	40,965	4	552,697
27	2036	552,697	15,777	15,087	690	44,189	3	596,199
28	2037	596,199	16,448	15,729	719	47,668	2	643,150
29	2038	643,150	17,147	16,397	750	51,422	1	693,823
30	2039	693,823	17,876	17,094	782	55,475	1	748,517

(1) Based on the actuarial value of assets with projected recognition of deferred known asset losses as of June 30, 2009.

(2) Supplemental State contributions under EC §22955(b) are not included as they are not required based on the current valuation; however, it is highly probable they will be required in the future.

**California State Teachers' Retirement System
Defined Benefit Program – 2009 Actuarial Valuation**

**Table 15
Funding Sufficiency**

<i>(\$Millions)</i>	June, 2009	June, 2008
Funded Status (Table 7)		
Actuarial Obligation	\$ 185,683	\$ 177,734
Actuarial Value of Assets	<u>145,142</u>	<u>155,215</u>
Unfunded Actuarial Obligation	\$ 40,541	\$ 22,519
Funded Ratio	78%	87%
Level Contributions over 30 Years (Table 12)	17.951%	17.845%
Amortization Period based on Current Revenues		
Total Level Rate over the Amortization Period	17.951%	17.845%
Normal Cost Rate	<u>17.314</u>	<u>17.328</u>
Amortization Rate	0.637%	0.517%
<i>Amortization Period (Based on current revenue projections)</i>	<i>Does not amortize</i>	<i>Does not amortize</i>
Calculated Contribution Rate for 30-Year Funding Period		
Normal Cost Rate	17.314%	17.328%
Amortization Rate	<u>14.545</u>	<u>4.235</u>
Total Level Rate over the Amortization Period	31.859%	21.563%
Estimated Additional Revenue Needed <i>(Based on current valuation assumptions)</i>	13.908%*	3.718%

*For 2009, the additional revenue needed reflects the expected future recognition of asset losses currently being deferred in the June 30, 2009 Actuarial Value of Assets.

**California State Teachers' Retirement System
Defined Benefit Program – 2009 Actuarial Valuation**

**Table 16
Amortization of Unfunded Actuarial Obligation ⁽¹⁾
Including Sufficient Additional Contributions ^{(2) (3)}**

(\$Millions)		Beginning Unfunded Act. Oblig.	Amortization Payment			Interest Charge at 8%	Recognition of Deferred Asset Losses	Ending Unfunded Act. Oblig.
Year	FYE		Total Contrib.	Normal Cost	Available Amtzn.			
1	2010	\$40,541	\$8,876	\$5,113	\$3,763	\$3,096	\$13,411	\$53,285
2	2011	53,285	9,549	5,330	4,219	4,097	9,656	62,819
3	2012	62,819	10,274	5,556	4,718	4,840	6,952	69,893
4	2013	69,893	10,710	5,792	4,918	5,399	5,006	75,380
5	2014	75,380	11,165	6,039	5,126	5,829	3,604	79,687
6	2015	79,687	11,640	6,295	5,345	6,165	2,595	83,102
7	2016	83,102	12,135	6,563	5,572	6,430	1,868	85,828
8	2017	85,828	12,650	6,842	5,808	6,638	1,345	88,003
9	2018	88,003	13,188	7,133	6,055	6,803	969	89,720
10	2019	89,720	13,749	7,436	6,313	6,930	697	91,034
11	2020	91,034	14,333	7,752	6,581	7,024	502	91,979
12	2021	91,979	14,942	8,081	6,861	7,089	362	92,569
13	2022	92,569	15,577	8,425	7,152	7,125	260	92,802
14	2023	92,802	16,239	8,783	7,456	7,131	187	92,664
15	2024	92,664	16,929	9,156	7,773	7,108	135	92,134
16	2025	92,134	17,649	9,545	8,104	7,053	97	91,180
17	2026	91,180	18,399	9,951	8,448	6,963	70	89,765
18	2027	89,765	19,181	10,374	8,807	6,836	50	87,844
19	2028	87,844	19,996	10,815	9,181	6,667	36	85,366
20	2029	85,366	20,846	11,274	9,572	6,454	26	82,274
21	2030	82,274	21,732	11,753	9,979	6,190	19	78,504
22	2031	78,504	22,655	12,253	10,402	5,872	14	73,988
23	2032	73,988	23,618	12,774	10,844	5,493	10	68,647
24	2033	68,647	24,622	13,316	11,306	5,048	7	62,396
25	2034	62,396	25,668	13,882	11,786	4,529	5	55,144
26	2035	55,144	26,759	14,472	12,287	3,929	4	46,790
27	2036	46,790	27,897	15,087	12,810	3,240	3	37,223
28	2037	37,223	29,082	15,729	13,353	2,454	2	26,326
29	2038	26,326	30,318	16,397	13,921	1,560	1	13,966
30	2039	13,966	31,607	17,094	14,515	548	1	0

(1) Based on the actuarial value of assets.

(2) An additional contribution of 13.908% of Earned Salaries is included for each of the 30 years. This schedule is for illustrative purposes only since any legislated increase in contributions would likely be effective after the valuation date.

(3) Supplemental State contributions under EC §22955(b) are not included as they are not required based on the current valuation; however, it is highly probable they will be required in the future.

California State Teachers' Retirement System Defined Benefit Program – 2009 Actuarial Valuation

Appendix A Provisions of Governing Law

All of the actuarial calculations contained in this report are based upon our understanding of the CalSTRS DB Program as contained in Part 13 of the California Education Code. The provisions used in this valuation are summarized below for reference purposes.

Member Contributions

Contribution Rate:	8.0% of creditable compensation. The employer can pay all or a portion of a member's contributions. 25% of this contribution is redirected to the member's Defined Benefit Supplement account through December 31, 2010.
Interest Rate:	Interest is credited at the end of each fiscal year based on rates adopted by the Teachers' Retirement Board. Currently, rates are approximately equal to two-year Treasury notes.

Normal Retirement

Eligibility Requirement:	Age 60 with five years of credited service.
Allowance:	Two percent of final compensation for each year of credited service.
Final Compensation:	Average salary earnable for the highest three consecutive years of credited service for one position. For members with 25 years of service, the calculation is based on the highest average compensation earnable in a consecutive 12-month period.
Credited Service:	For each year of membership, credited service is granted based on the ratio of salary earned to full-time salary earnable for one position.
Sick Leave Service Credit:	Credited service is granted for unused sick leave at the time of retirement. Sick Leave Service Credit up to 0.2 years of Credited Service may be used for eligibility for One-Year Final Compensation or to attain the Career Factor or the Longevity Bonus.
Career Factor:	If a member has 30 years of credited service, the age factor is increased by 0.2%. However, the maximum age factor is 2.4%.
Longevity Bonus:	For members attaining 30 years of service by January 1, 2011, a longevity bonus of \$200 per month is added to the unmodified allowance. The bonus is increased to \$300 per month with 31 years of service, and \$400 per month with 32 or more years of service.

IRC Section 415: Benefits are subject to limits imposed under Internal Revenue Code (IRC) Section 415. However, no limits are imposed in the valuation of the DB Program in order to address the potential pay-as-you-go funding needs of the Teachers' Replacement Benefits Program Fund.

IRC Section 401(a)(17): Compensation is limited under IRC Section 401(a)(17) and assumed to increase at the rate of inflation for valuation purposes.

Early Retirement

Eligibility Requirement: Age 55 with five years of credited service, or age 50 with 30 years of credited service.

Benefit Reduction: A 1/2% reduction in the normal retirement allowance for each full month or partial month the member is younger than age 60, plus a reduction of 1/4% for each full month or partial month the member is younger than age 55.

Late Retirement

Allowance: Members continue to earn additional service credit after age 60. The 2% age factor increases by 0.033% for each quarter year of age that the member is over age 60, up to a maximum of 2.4%.

Deferred Retirement

Allowance: Any time after satisfying the minimum service requirement, a member may cease active service, leave the accumulated contributions on deposit, and later retire upon attaining the minimum age requirement.

Post-Retirement Benefit Adjustment

Benefit Improvement: 2% simple increase on September 1 following the first anniversary of the effective date of the allowance, applied to all continuing allowances.

Disability Allowance - Coverage A

Eligibility Requirement: Member has five years of credited California service and has not attained age 60.

Allowance: 50% of final compensation

or

5% of final compensation for each year of service credit if over age 45 with less than 10 years of service credit.

Children's Benefit: 10% for each eligible dependent child, up to a maximum of 40% of final compensation. The increment for each eligible child continues until the child marries or attains age 22.

Offsets: Allowance, including children's increment, is reduced by disability benefits payable under Social Security, Workers' Compensation and district-paid income protection plan.

Disability Allowance - Coverage B

Eligibility Requirement: Member has five years of credited California service.

Allowance: 50% of final compensation, regardless of age and service credit.

Children's Benefit: 10% for each eligible child up to four children, for a maximum of 40% of final compensation. The increment for each child continues until the child attains age 21, regardless of student, marital, or employment status.

Offsets: The member's allowance is reduced by disability benefits payable under Workers' Compensation.

Death Before Retirement - Coverage A

Eligibility Requirement: One or more years of service credit for active members or members receiving a disability allowance.

Lump Sum Payment: \$6,163 lump sum to the designated beneficiary. If there is no surviving spouse, domestic partner or eligible children, the contributions and interest are paid to the designated beneficiary.

Allowance: The surviving spouse or domestic partner with eligible children will receive a family benefit of 40% of final compensation for as long as there is at least one eligible child. An additional 10% of final compensation is payable for each eligible child up to a maximum benefit of 90%.

If there is no surviving spouse or domestic partner, an allowance of 10% of final compensation is payable to eligible children up to a maximum benefit of 50%.

When there are no eligible children, the spouse or domestic partner may elect to receive one half of a 50% joint and survivor allowance projected to age 60, or take a lump sum payment of the remaining contributions and interest.

Death Before Retirement - Coverage B

Eligibility:	One or more years of service credit for active members.
Lump Sum Payment:	\$24,652 lump sum to the designated beneficiary. If there is no surviving spouse or domestic partner, the contributions and interest are paid to the designated beneficiary.
Allowance:	A lump sum payment of the contributions and interest. or One-half of a 50% joint and survivor allowance, beginning on the member's 60th birthday, or immediately with a reduction based on the member and spouse's (or domestic partner's) age at the time the benefit begins. If the surviving spouse or domestic partner elects a monthly allowance, each eligible child would receive 10% of the member's final compensation, with a maximum benefit of 50%.

Death After Retirement

Lump Sum Payment:	\$6,163 lump sum to the designated beneficiary.
Annuity Form:	If the retiree had elected one of the joint and survivor options, the retirement allowance would be modified in accordance with the option selected. If no option had been elected, payment of the unpaid contributions and interest, if any, remaining in the retiree's account.

Termination from the Program

Refund:	Refund of contributions with interest as credited to the member's account to date of withdrawal. A refund terminates membership and all rights to future benefits from the System.
Re-entry After Refund:	Former members who re-enter the System, may redeposit all amounts previously refunded plus regular interest. The member must earn one year of credited service after re-entry before becoming eligible for System benefits.

California State Teachers' Retirement System Defined Benefit Program – 2009 Actuarial Valuation

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

Actuarial Cost Method

The accruing costs of all benefits are measured by the Entry Age Actuarial Cost Method. The projected revenue in excess of the Normal Cost is tested for sufficiency to amortize the Unfunded Actuarial Obligation created by this method. Amortization is calculated on a level percentage of salary including general wage inflation but no increase or decrease in the number of active members.

Method: The actuarial present value of projected benefits for each individual member included in the valuation is allocated on a level basis over the earnings of the individual between entry age and assumed exit ages. The portion of this actuarial present value allocated to a valuation year is called the Normal Cost. The Normal Cost is based on the benefit structure available to new entrants on the valuation date. The portion of this actuarial present value not provided for at a valuation date by the actuarial present value of future Normal Costs is called the Actuarial Obligation. 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.

Entry Age: The ages at entry of future active members are assumed to average the same as the entry ages of the present active members they replace. If the number of active members should increase (or decrease), it is further assumed that the average entry age of the larger (or smaller) group will be the same, from an actuarial standpoint, as that of the present active group. Under these assumptions, the Normal Cost Rate will not vary with the termination of the present active membership, or with an expansion or contraction of the active membership.

Asset Valuation Method

The assets are valued using a method that delays recognition of investment gains or losses. The expected actuarial value is the prior year's actuarial value increased with net cash flow of funds, and all increased with interest during the past year at the expected investment return assumption. One-third of the difference between the expected actuarial value of assets and the Fair Market Value of assets is added to the expected actuarial value of assets to arrive at the Actuarial Value of Assets.

The asset smoothing method was adopted for the 1999 actuarial valuation and is effective for the investment experience beginning in July of 1993.

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 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 Program – 2009 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)
	* <i>Future retirees and beneficiaries are valued with a 2-year age setback</i>		
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

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**Table B.2
Mortality**

<u>Active Members</u>				
<u>Age</u>	<u>Male</u>	<u>Female</u>		
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		

<u>Age</u>	<u>Retired Members and Beneficiaries *</u>		<u>Disabled Members (After Year 3) *</u>	
	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>
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

Select rates for disability:			
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

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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 11%.

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**

Entry Ages - Male						
Year	Under 25	25 - 29	30 - 34	35 - 39	40 - 44	45 & Up
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					

Entry Ages - Female						
Year	Under 25	25 - 29	30 - 34	35 - 39	40 - 44	45 & Up
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**

<u>Entry Ages - Male</u>					
<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				

<u>Entry Ages - Female</u>					
<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.	<u>Entry Age - Annual Increase in Salaries Due to Merit</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	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					

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**Table B.8
Supplemental Assumptions**

Unused Sick Leave: Credited Service is increased by 2.1%

Optional Forms: Active & Inactive: Based on single life annuity assumed
Retirees and Beneficiaries: Based on optional form in data

Probability of Marriage: Male: 90%
Female: 70%

Male spouses are assumed to be three years older than female spouses.

Number of Children: Married members are assumed to have the following number of children:

Member's Gender	Assumed No. of Children
Male	0.75
Female	0.50

Assumed Offsets: The following offsets, expressed as a percentage of Final Compensation, are assumed to cease at age 60:

	Coverage A		Coverage B	
	Male	Female	Male	Female
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 Program – 2009 Actuarial Valuation

Appendix C Valuation Data

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

Tables C.1 – C.6 summarize the census data used in this valuation.

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

	June 30, 2009	June 30, 2008
Number of Members		
Active Members ⁽¹⁾	459,009	461,378
Inactive Members ⁽¹⁾	156,207	147,997
Retirees and Beneficiaries		
Service Retirement	203,649	195,960
Disability Benefits	8,380	8,170
Benefits for Survivors	<u>20,588</u>	<u>19,838</u>
Total Benefit Recipients	232,617	223,968
 Total Membership in Valuation	 847,833	 833,343
 Active Member Statistics		
Earned Salaries	\$ 27,327 million	\$ 27,118 million
Average Salary	\$ 59,536	\$ 58,777
Average Age	44.8 years	44.7 years
Average Service	11.0 years	10.8 years

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

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**Table C.2
Age and Service Distribution – Active Male 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	378	542	1			
25 to 30	1,409	7,354	268			
30 to 35	798	8,056	5,898	341	1	
35 to 40	638	5,446	7,236	5,810	133	2
40 to 45	614	3,792	4,553	5,978	2,747	64
45 to 50	533	3,065	3,253	3,645	3,564	2,042
50 to 55	498	2,883	2,710	2,882	2,766	3,043
55 to 60	447	2,565	2,484	2,576	2,377	2,573
60 to 65	312	2,005	1,895	1,675	1,474	1,450
65 to 70	131	889	610	523	405	342
70 & Up	71	491	256	148	123	103
Unknown	1					
Total	5,830	37,088	29,164	23,578	13,590	9,619

<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						921
25 to 30						9,031
30 to 35						15,094
35 to 40						19,265
40 to 45						17,748
45 to 50	50					16,152
50 to 55	1,796	120				16,698
55 to 60	2,586	2,961	222	3		18,794
60 to 65	1,212	1,536	1,196	21		12,776
65 to 70	220	200	200	72	3	3,595
70 & Up	59	44	53	59	31	1,438
Unknown						1
Total	5,923	4,861	1,671	155	34	131,513

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**Table C.3
Age and Service Distribution – Active Female 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	1,688	2,391	6			
25 to 30	3,474	27,694	1,651			
30 to 35	1,683	21,050	20,518	1,271	1	0
35 to 40	1,436	11,916	17,596	14,485	387	2
40 to 45	1,324	9,051	10,257	12,274	6,366	321
45 to 50	1,215	8,241	8,380	8,458	7,443	5,380
50 to 55	1,001	7,040	7,679	8,390	6,666	6,442
55 to 60	670	5,063	6,422	7,837	7,169	6,528
60 to 65	384	2,928	3,474	4,244	4,362	4,282
65 to 70	134	982	924	1,009	942	946
70 & Up	60	438	300	256	163	186
Unknown		2	4			
Total	13,069	96,796	77,211	58,224	33,499	24,087

<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						4,085
25 to 30						32,819
30 to 35						44,523
35 to 40						45,822
40 to 45						39,593
45 to 50	212					39,329
50 to 55	4,353	259				41,830
55 to 60	5,667	5,102	350	2		44,810
60 to 65	2,873	2,411	1,648	54		26,660
65 to 70	579	348	198	140	14	6,216
70 & Up	138	119	64	49	30	1,803
Unknown						6
Total	13,822	8,239	2,260	245	44	327,496

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**Table C.4
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	2,066	2,933	7			
25 to 30	4,883	35,048	1,919			
30 to 35	2,481	29,106	26,416	1,612	2	
35 to 40	2,074	17,362	24,832	20,295	520	4
40 to 45	1,938	12,843	14,810	18,252	9,113	385
45 to 50	1,748	11,306	11,633	12,103	11,007	7,422
50 to 55	1,499	9,923	10,389	11,272	9,432	9,485
55 to 60	1,117	7,628	8,906	10,413	9,546	9,101
60 to 65	696	4,933	5,369	5,919	5,836	5,732
65 to 70	265	1,871	1,534	1,532	1,347	1,288
70 & Up	131	929	556	404	286	289
Unknown	1	2	4			
Total	18,899	133,884	106,375	81,802	47,089	33,706

<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						5,006
25 to 30						41,850
30 to 35						59,617
35 to 40						65,087
40 to 45						57,341
45 to 50	262					55,481
50 to 55	6,149	379				58,528
55 to 60	8,253	8,063	572	5		63,604
60 to 65	4,085	3,947	2,844	75		39,436
65 to 70	799	548	398	212	17	9,811
70 & Up	197	163	117	108	61	3,241
Unknown						7
Total	19,745	13,100	3,931	400	78	459,009

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**Table C.5
Inactive Members**

<u>Fiscal Year Ending June 30</u>	<u>Number Vested</u>	<u>Total Number</u>	<u>Male % of Total</u>	<u>Female % of Total</u>
2000	16,211	75,580	27.8%	72.2%
2001	18,469	87,146	28.1	71.9
2002	19,703	96,159	28.0	72.0
2003	20,627	104,617	28.3	71.7
2004	22,511	116,128	28.7	71.3
2005	24,113	124,394	28.8	71.2
2006	26,733	133,601	28.8	71.2
2007	28,922	141,450	28.9	71.1
2008	30,370	147,997	29.0	71.0
2009	31,661	156,207	29.0	71.0

<u>Fiscal Year Ending June 30</u>	<u>Average Account on Deposit</u>	<u>Average Age</u>	<u>Average Service Credit</u>	<u>Average Years Inactive</u>
2000	\$ 12,325	46.8	3.2	7.8
2001	12,889	50.7	3.2	8.2
2002	12,997	46.0	3.1	7.3
2003	12,691	46.0	3.0	7.4
2004	12,418	45.8	2.9	7.3
2005	12,177	45.9	2.9	7.4
2006	12,282	45.9	2.9	7.5
2007	12,440	46.0	3.0	7.7
2008	12,698	46.3	2.9	8.0
2009	12,717	46.5	2.9	8.2

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**Table C.6
Members Retired for Service**

Fiscal Year Ending June 30	<u>Total</u>	<u>Male % of Total</u>	<u>Female % of Total</u>
2000	145,415	38.1%	61.9%
2001	149,727	38.0	62.0
2002	154,884	37.8	62.2
2003	159,172	37.6	62.4
2004	169,022	37.2	62.8
2005	176,008	36.9	63.1
2006	181,833	36.5	63.5
2007	188,659	36.1	63.9
2008	195,960	35.7	64.3
2009	203,649	35.3	64.7

<u>Fiscal Year Ending June 30</u>	<u>Average Age at Retirement</u>	<u>Average Years of Service Credit</u>	<u>Final Average Compensation</u>	<u>Average Current Allowance Payable</u>
2000	60.7	25.0	\$ 3,175	\$ 1,824
2001	60.7	25.4	3,356	2,033
2002	60.7	25.7	3,539	2,183
2003	60.7	25.9	3,735	2,339
2004	60.7	26.0	3,931	2,488
2005	60.8	26.1	4,103	2,617
2006	60.8	26.2	4,264	2,741
2007	60.8	26.3	4,437	2,878
2008	60.8	26.3	4,620	3,021
2009	60.8	26.4	4,798	3,164

California State Teachers' Retirement System Defined Benefit Program – 2009 Actuarial Valuation

Appendix D Glossary

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

Actuarial Assumptions:	Assumptions as to the occurrence of future events affecting pension costs, such as mortality, withdrawal, disablement, and retirement, changes in compensation, rates of investment earnings and asset appreciation or depreciation, and procedures used to determine other relevant items.
Actuarial Cost Method:	A procedure for determining the Actuarial Present Value of pension plan benefits and expenses and for developing an actuarially equivalent allocation of such value to time periods, usually in the form of a Normal Cost and an Actuarial Obligation.
Actuarial Gain or Loss:	A measure of the difference between actual experience and that expected based upon a set of Actuarial Assumptions during the period between two Actuarial Valuation dates, as determined in accordance with a particular Actuarial Cost Method.
Actuarial Obligation:	That portion, as determined by a particular Actuarial Cost Method, of the Actuarial Present Value of pension plan benefits and expenses which is not provided for by future Normal Costs.
Actuarial Present Value:	The value of an amount or series of amounts payable or receivable at various times, determined as of a given date by the application of a particular set of Actuarial Assumptions.
Actuarial Surplus:	The excess, if any, of the Actuarial Value of Assets over the Actuarial Obligation.
Actuarial Valuation:	The determination, as of a Valuation Date, of the Normal Cost, Actuarial Obligation, Actuarial Value of Assets, and related Actuarial Present Values for a pension plan.
Actuarial Value of Assets:	The value of cash, investments and other property belonging to a pension plan, as used by the actuary for the purpose of an Actuarial Valuation.

Actuarial Equivalent:	Of equal Actuarial Present Value, determined as of a given date with each value based on the same set of Actuarial Assumptions.
Entry Age Cost Method:	An Actuarial Cost Method under which the Actuarial Present Value of Projected Benefits of each individual included in an Actuarial Valuation is allocated on a level basis over the earnings of the individual between entry age and assumed exit ages. The portion of this Actuarial Present Value allocated to a valuation year is called the Normal Cost. The portion of this Actuarial Present Value not provided for at a Valuation Date by the Actuarial Present Value of future Normal Costs is called the Actuarial Obligation.
Normal Cost:	The portion of the Actuarial Present Value of Projected Benefits which is allocated to a valuation year by the Actuarial Cost Method.
Unfunded Actuarial Obligation:	The excess, if any, of the Actuarial Obligation over the Actuarial Value of Assets.
Valuation Date:	June 30, 2009.