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August 12, 2009

Teachers' Retirement Board
California State Teachers' Retirement System

**Re: Defined Benefit Program
Actuarial Valuation as of June 30, 2008**

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, 2008. 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's funding. Determinations for other purposes may be significantly different from the results contained in this report. Accordingly, additional determinations may be needed for other purposes.

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

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



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

Respectfully submitted,

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

Mark O. Johnson, FSA, MAAA
Consulting Actuary

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

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

A handwritten signature in black ink, appearing to read "Mark C. Olleman".

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**CALIFORNIA STATE TEACHERS' RETIREMENT SYSTEM
DEFINED BENEFIT PROGRAM - 2008 ACTUARIAL VALUATION**

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**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, 2008, 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.

The projected revenue shortfall is due primarily to investment return experience for the fiscal years ending in 2001, 2002, 2003 and 2008 that was significantly less than the long-term actuarial assumption of 8% per year. Based on the current Actuarial Value of Assets 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>	2008 Valuation	2007 Valuation
Amortization Period based on Current Revenues		
Total Level Rate over the Amortization Period	17.845%	17.745%
Normal Cost Rate	<u>17.328</u>	<u>17.285</u>
Amortization Rate	0.517%	0.460%
<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	17.328%	17.285%
Amortization Rate	<u>4.235</u>	<u>4.071</u>
Total Level Rate over the Amortization Period	21.563%	21.356%
Estimated Additional Revenue Needed <i>(Based on current valuation assumptions)</i>	3.718%	3.611%

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Based on the current valuation results, the actuarial value of assets and assumptions about future experience, we find that a level contribution rate of 21.563% will amortize the Unfunded Actuarial Obligation (UAO) over a 30-year period. This is equivalent to an **increase of 3.718% of Earned Salaries** for a period of 30 years from the valuation date.

The above calculation is based on the June 30, 2008 actuarial value of assets. This value does not reflect the current deferred losses or any investment losses that have occurred since that date which have been significant. This will likely result in a considerable increase in the contribution rate needed to amortize the UAO in the future.

The excess of the expected total contribution over the current Normal Cost Rate represents a relatively small margin to finance the Unfunded Actuarial Obligation.

◆ 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 an Actuarial Surplus as of June 30, 2008 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, 2008 actuarial value of assets. This value does not reflect the current deferred losses or any investment losses that have occurred since that date which have been significant.

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◆ **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.

<i>(\$Millions)</i>	2008 Valuation	2007 Valuation
Actuarial Obligation*	\$ 177,734	\$ 167,129
Actuarial Value of Assets	<u>155,215</u>	<u>146,419</u>
Unfunded Actuarial Obligation	\$ 22,519	\$ 20,710
Funded Ratio	87%	88%

* 2008 value includes \$625 million commitment to fund the MPP Program.

Overall, the DB Program is in a slightly worse funded status than one year ago as measured by the Funded Ratio as of June 30, 2008.

Based on the 2007 Actuarial Valuation, the Unfunded Actuarial Obligation was expected to grow from \$20.7 billion to \$22.7 billion by June 30, 2008. The actual Unfunded Actuarial Obligation of \$22.5 billion was determined including the impact of a net actuarial gain of \$213 million 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>	2008 Valuation
Unfunded Actuarial Obligation	
Amount on July 1, 2007	\$ 20,710
Increase due to interest and under-funding	<u>2,022</u>
Expected Amount on July 1, 2008	\$ 22,732
Actuarial (Gains) and Losses by Source	
Investment return on the Actuarial Value of Assets, including recognition of prior deferred investment losses	\$ 763
Salary increases less than assumed	(694)
Contributions in excess of assumed	(158)
Change in SBMA and THBF Reserves	1,024
Change in THBF allocation method	(1,236)
All other sources combined	<u>88</u>
Net Actuarial (Gains) and Losses	\$ (213)
Unfunded Actuarial Obligation July 1, 2008	\$ 22,519

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◆ **Changes since the 2007 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.

In the 2007 valuation, approximately \$2,008 million dollars was allocated to fund future benefits payable under the Medicare Premium Payment Program (MPPP) and excluded from the DB Program assets used in the valuation. The allocated value decreased to \$1,866 million as of June 30, 2008. This amount significantly exceeds the current estimated value of MPPP benefits as of June 30, 2008 of \$630 million. The Board adopted a resolution in April of 2009 to make a one-time credit to the Teachers Health Benefit Fund (THBF) and reflect the decreased future obligations in the funding of the DB Program. The net impact of this change is a reduction in the Unfunded Actuarial Obligation of \$1,236 million and is reflected in this valuation.

◆ **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.

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Summary of Key Valuation Results

	2008 Valuation	2007 Valuation	Percentage Change
1. Total Membership			
A. Active Members	461,378	455,693	1.2%
B. Inactive Members	147,997	141,450	4.6%
C. Retired Members and Beneficiaries	<u>223,968</u>	<u>215,641</u>	3.9%
D. Total Membership	833,343	812,784	2.5%
2. Earned Salaries as of Valuation Date (All Members)			
A. Annual Total (\$Millions)	\$ 27,118	\$ 25,906	4.7%
B. Annual Average per Active Member	\$ 58,777	\$ 56,849	3.4%
3. Average Annual Allowance Payable			
A. Service Retirement	\$ 36,252	\$ 34,536	5.0%
4. Actuarial Obligation (\$Millions)			
A. Active Members	\$ 90,297	86,999	3.8%
B. Inactive Members	4,828	4,518	6.9%
C. Retired Members and Beneficiaries	81,984	75,612	8.4%
D. Existing MPPP Unfunded Obligation	<u>625</u>	<u>0</u>	
E. Total	\$ 177,734	\$ 167,129	6.3%
5. Value of System Assets (\$Millions)			
A. Fair Value	\$ 155,763	\$ 166,903	(6.7)%
B. Deferred Investment (Gains) or Losses	<u>4,022</u>	<u>(15,076)</u>	
C. Actuarial Value	\$ 159,785	\$ 151,827	5.2%
D. Ratio of Actuarial Value to Fair Value	103%	91%	
E. Less SBMA Reserve	(4,570)	(3,400)	34.4%
F. Less THBF Allocation	<u>0</u>	<u>(2,008)</u>	(100.0)%
G. Net Actuarial Value	\$ 155,215	\$ 146,419	6.0%
6. Funded Status			
A. Unfunded Actuarial Obligation (\$Millions)	\$ 22,519	\$ 20,710	8.7%
B. Funded Ratio (5G ÷ 4E)	87%	88%	
7. Contribution Rates (percent of salaries)			
A. 30-Year Projected Revenue	17.845%	17.745%	0.6%
B. Normal Cost Rate	<u>17.328</u>	<u>17.285</u>	0.2%
C. Available for Amortization of UAO (7A – 7B)	0.517%	0.460%	12.4%
D. Period to Amortize	Does not amortize	Does not amortize	
E. Projected 30-Year Level Funding Rate	21.563%	21.356%	1.0%
F. Projected Shortfall (Surplus) (7E – 7A)	3.718%	3.611%	3.0%

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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, 2008.

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 was 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 Value of Assets of the DB Program and the determination of the Actuarial Value of Assets as of June 30, 2008. All of the assets of the Program are available to finance future benefits and expenses, except those allocated for the Supplemental Benefit Maintenance Account (SBMA) and the Teachers' Health Benefits Fund (THBF).

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.

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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, 2008.

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 our best estimate of future conditions affecting the Program. Nevertheless, the emerging costs of the Program will vary from those presented in this report to the extent that actual experience differs from that projected by the actuarial assumptions.

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.

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**Section 3
Actuarial Certification**

The major findings of the 2008 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, 2008.

In preparing the valuation report, we relied without audit on information furnished by CalSTRS. Although we did not audit this data, we compared the data for this and the prior valuation and tested for reasonableness. Based on these tests, we believe the data to be sufficiently accurate for the purposes of our calculations. Since the valuation results are dependent on the integrity of the data supplied, the results can be expected to differ if the underlying data is incomplete or missing. It should be noted that if any data or other information is inaccurate or incomplete, our calculations may need to be revised.

The findings have been determined according to actuarial assumptions and methods that were chosen on the basis of recent experience of the 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. The assumptions represent our best 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 2008 valuation.

Future actuarial measurements of the DB Program will vary from those presented in this report due to such factors as the following: actual experience differs from that projected by the assumptions, actuarial assumptions are revised in the future, or changes are made to the benefit or contribution provisions in the applicable law. Due to the limited scope of our assignment, we did not perform an analysis of the potential range of future measurements.

On the basis of the foregoing, we hereby certify that, to the best of our knowledge and belief, this report is complete and accurate and has been prepared in accordance with generally recognized and accepted actuarial principles and practices which are consistent with Actuarial Standards of Practice promulgated by the Actuarial Standards Board and applicable Guides to Professional Conduct, amplifying Opinions, and supporting Recommendations of the American Academy of Actuaries.

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



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



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

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Section 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 increased from 17.285% to 17.328% since the last valuation. **Table 1** provides more details on the calculation of the Normal Cost and Normal Cost Rates.

	(\$Millions)		
	Earned Salaries	Normal Cost	Normal Cost Rate
June 30, 2007	\$ 26,202	\$ 4,529	17.285%
June 30, 2008	\$ 27,384	\$ 4,745	17.328%

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.

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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>	2008 Valuation	2007 Valuation
Benefits Being Paid	\$ 81,984	\$ 75,612
Inactive Deferred Benefits	4,828	4,518
Active Members' Benefits	146,707	140,703
Existing MPPP Unfunded Obligation	<u>625</u>	<u>0</u>
Present Value of Projected Benefits	\$ 234,144	\$ 220,833
Present Value of Future Normal Costs	<u>56,410</u>	<u>53,704</u>
Actuarial Obligation	\$ 177,734	\$ 167,129

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.

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Table 1 Normal Cost

<i>(\$Millions)</i>	2008	2007
Estimated Annual Earned Salaries ⁽¹⁾	\$ 27,384	\$ 26,202
Present Value of Future Normal Costs for Current Active Members	\$ 56,410	\$ 53,704
Present Value of Future Earned Salaries for Current Active Members	\$325,543	\$310,698
 Normal Cost		
Retirement	\$ 4,329	\$ 4,139
Disability	205	187
Death	57	55
Withdrawal	<u>154</u>	<u>148</u>
Total Normal Cost	\$ 4,745	\$ 4,529
 Normal Cost Rate Percent of Earned Salaries		
Retirement	15.809%	15.796%
Disability	0.749	0.714
Death	0.208	0.210
Withdrawal	<u>0.562</u>	<u>0.565</u>
Total Normal Cost	17.328%	17.285%

Note:

- (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.

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Table 2 Actuarial Obligation

<i>(\$Millions)</i>	2008	2007
Present Value of Projected Benefits to All Current Members		
Benefits Currently Being Paid		
Service Retirement	\$ 75,854	\$ 69,836
Disability	2,178	2,048
Survivors	<u>3,952</u>	<u>3,728</u>
Total	81,984	75,612
Benefits to Inactive Members	4,828	4,518
Benefits to Active Members		
Retirement	141,266	135,723
Disability	3,582	3,177
Death	1,251	1,228
Withdrawal	<u>608</u>	<u>575</u>
Total	146,707	140,703
Existing MPPP Unfunded Obligation	625	0
Total Present Value of Benefits	\$234,144	\$220,833
Present Value of Future Normal Costs	<u>56,410</u>	<u>53,704</u>
Actuarial Obligation	\$177,734	\$167,129

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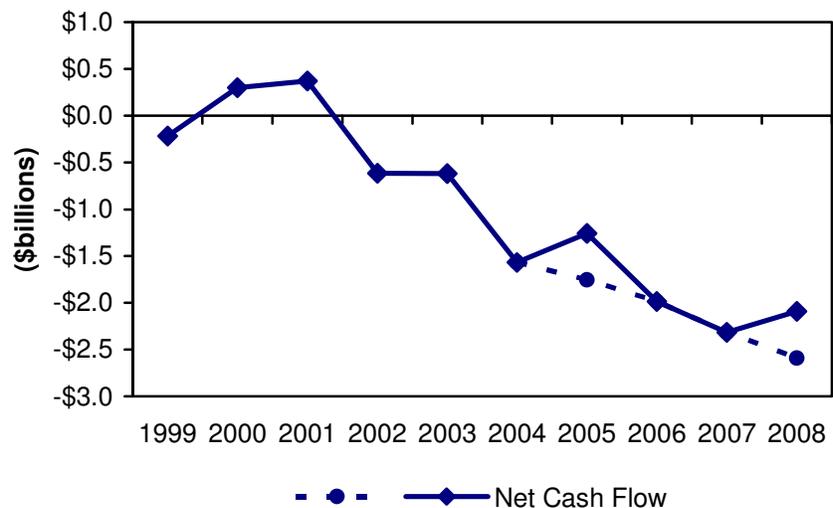
Section 5 Valuation Assets



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, 2008. 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 \$155,763 million as of June 30, 2008, down from \$166,903 million as of June 30, 2007. **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 negative. As illustrated in the following graph, 2004 was inconsistent with the trend over the last few years, due to a \$500 million reduction in the State's contribution to the SBMA, 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 is 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

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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.

<i>(\$Millions)</i>	June, 2008	June, 2007
Fair Market Value	\$ 155,763	\$ 166,903
Actuarial Value of Assets	\$ 159,785	\$ 151,827
Deferred Investment Gains or (Losses)	\$ (4,022)	\$ 15,076
Ratio of AVA to FMV	103%	91%

Due to the asset smoothing method, there are investment losses of \$4,022 million that have not yet been recognized (the difference between the Actuarial and Fair Market Value of Assets). This means the investment loss incurred in the prior fiscal year was large enough to more than offset the entire asset smoothing reserve from the prior year. Absent investment returns in future years 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 \$4,022 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.

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Table 3 Statement of Program Assets

<i>(\$Millions)</i>	June, 2008	June, 2007
Invested Assets		
Short-term	\$ 1,915	\$ 1,718
Debt Securities	30,281	34,096
Equity	88,157	101,876
Alternative	16,577	12,635
Real Estate	<u>20,412</u>	<u>18,013</u>
Total Investments ⁽¹⁾	\$ 157,342	\$ 168,338
Cash and Cash Equivalents	259	425
Receivables	4,826	4,037
Liabilities ⁽¹⁾	<u>(6,664)</u>	<u>(5,897)</u>
Fair Market Value of Net Assets	\$ 155,763	\$ 166,903

Note:

⁽¹⁾ Excludes offsetting entries from Securities Lending Collateral and Obligation

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Table 4 Statement of Changes in Program Assets

<i>(\$Millions)</i>	June, 2008	June, 2007
Contributions		
Members	\$ 1,820	\$ 1,691
Employers	2,328	2,168
State of California	<u>1,630</u>	<u>1,084</u>
Total Contributions	5,778	4,943
Benefits and Expenses		
Retirement, Death, and Survivors	(7,451)	(6,840)
Refunds of Member Contributions	(84)	(87)
Purchasing Power Benefits	(230)	(230)
Administrative Expenses	<u>(106)</u>	<u>(103)</u>
Total Benefits and Expenses	(7,871)	(7,260)
Net Cash Flow	\$ (2,093)	\$ (2,317)
Investment Income		
Realized Income	\$ 4,882	\$ 4,670
Net Appreciation	(14,129)	24,424
Net Securities Lending Income	215	80
Investment Expenses	(208)	(146)
Other (Expense) Income	<u>193</u>	<u>(0)</u>
Net Investment Return	(9,047)	29,028
Net Increase (Decrease)	\$ (11,140)	\$ 26,711
Fair Market Value of Net Assets		
Beginning of Year	<u>166,903</u>	<u>140,192</u>
End of Year	\$ 155,763	\$ 166,903
Estimated Net Rate of Return ⁽¹⁾	(5.5)%	20.9%

Note:

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

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Table 5 Actuarial Value of Assets

<i>(\$Millions)</i>	June, 2008	June, 2007
Actuarial Value at Beginning of Year	\$ 151,827	\$ 135,832
Contributions	5,778	4,943
Benefits and Expenses	(7,871)	(7,260)
Expected Return at 8%	<u>12,062</u>	<u>10,774</u>
Expected Actuarial Value End of Year	\$ 161,796	\$ 144,289
 Fair Market Value	 <u>155,763</u>	 <u>166,903</u>
Difference between Fair Market Value and Expected Actuarial Value	\$ (6,033)	\$ 22,614
Recognition Factor	One-third	One-third
Recognized Gain or Loss	\$ (2,011)	\$ 7,538
Actuarial Value at End of Year	\$ 159,785	\$ 151,827
Deferred Investment Gains or (Losses)	\$ (4,022)	\$ 15,076
 <i>Ratio of Actuarial Value of Assets to Fair Market Value of Assets</i>	 <i>103%</i>	 <i>91%</i>
Estimated Net Rate of Return ⁽¹⁾	6.7%	13.6%

Note:

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

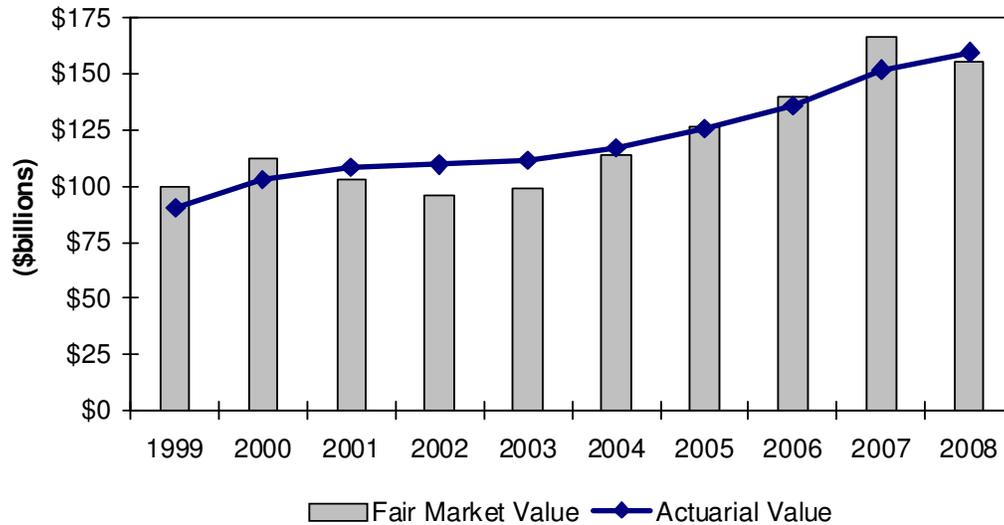
**CALIFORNIA STATE TEACHERS' RETIREMENT SYSTEM
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Table 6 History of Actuarial Value of Assets

<i>(\$Millions)</i>				
June 30 ⁽¹⁾	Fair Market Value	Estimated Return ⁽²⁾	Actuarial Value	Ratio of Actuarial to Market
1999	\$ 99,780	13.4%	\$ 90,265	90%
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

Note:

- (1) Asset Method adopted for 1999 valuation with retroactive calculation to July 1, 1993
- (2) Estimated return on Fair Market Value basis, net of all investment expenses and assuming uniform cash flow throughout the year



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**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>	2008 Valuation	2007 Valuation
Actuarial Obligation*	\$ 177,734	\$ 167,129
Actuarial Value of Assets		
From Table 5	159,785	151,827
Less SBMA Reserve	(4,570)	(3,400)
Less THBF Allocation	<u>0</u>	<u>(2,008)</u>
Net for Funding	155,215	146,419
Unfunded Actuarial Obligation	\$ 22,519	\$ 20,710
Funded Ratio (on A.V.A.)	87%	88%
<i>Alternate Funded Ratio (based on Fair Market Value)</i>	<i>85%</i>	<i>97%</i>

* 2008 value includes \$625 million commitment to fund the MPP Program.

Overall, the DB Program is in a slightly worse financial condition than one year ago as measured by the Funded Ratio. However, due to the significant investment losses for the 2007-08 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.

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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, 2008, only a relatively small amount of \$4 million resides in the THBF, while the remaining unfunded amount of \$625 million is added to the DB Program obligation.

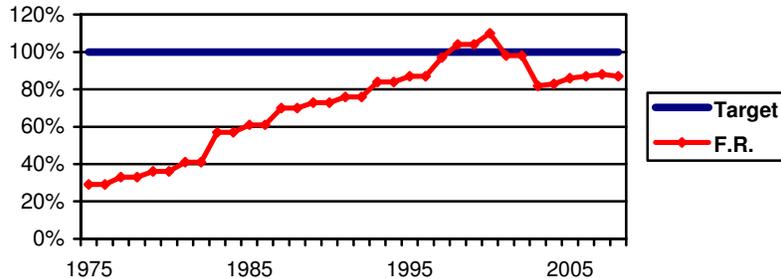
The following table shows a history of the Funded Status of the DB Program.

<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%

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.

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Historical Funded Ratio



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**.

<i>(\$Millions)</i>	Expected Results	Actual Results	(Gain) or Loss
Actuarial Obligation	\$ 177,715	\$ 177,734	\$ 19
Act. Value of Assets	<u>154,983</u>	<u>155,215</u>	<u>(232)</u>
Unfunded Act. Oblig.	\$ 22,732	\$ 22,519	\$ (213)
Actuarial (Gains) or Losses by Source			
Salaries increased less than assumed			\$ (694)
Change in THBF allocation method			625
All other non-investment sources			<u>88</u>
(Gain) or Loss on the Actuarial Obligation			19
Investment Return on Actuarial Value of Assets			763
Contributions in excess of assumed			(158)
Change in the SBMA Reserve			1,170
Change in the Health Benefit Fund Allocation			(146)
Change in THBF allocation method			<u>(1,861)</u>
(Gain) or Loss on the Actuarial Value of Assets			(232)
Total Actuarial (Gain) or Loss			\$ (213)

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<i>(\$Millions)</i>	(Gain) or Loss	Percent of Act. Oblig.
Actuarial (Gains) or Losses on the Actuarial Obligation		
Salaries increased less than assumed	\$ (694)	(0.4)%
Change in THBF allocation method	625	0.3
All other non-investment sources	<u>88</u>	<u>0.1</u>
(Gain) or Loss on the Actuarial Obligation	\$ 19	0.0%
Actuarial (Gains) or Losses on the Actuarial Value of Assets		
Return on Actuarial Value of Assets	\$ 763	0.4%
Contributions in excess of assumed	(158)	(0.1)
Change in the SBMA Reserve	1,170	0.8
Change in the THBF Allocation	(146)	(0.1)
Change in THBF allocation method	<u>(1,861)</u>	<u>(1.2)</u>
(Gain) or Loss on the Actuarial Value of Assets	\$ 232	(0.2)%

These net gains and losses are within a reasonable range for variances in a single year.

Based on the 2007 Actuarial Valuation, the Unfunded Actuarial Obligation was expected to increase to \$22,732 million (See Table 14, 2007 report). The actual Unfunded Actuarial Obligation of \$22,519 million represents a net actuarial gain of \$213 million.

- Salaries increased less than the current actuarial assumptions, causing the Actuarial Obligation to decrease by \$694 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. There was a corresponding \$1,558 million actuarial loss in the 2007 actuarial valuation. We expect to continue to see these fluctuations from year to year.
- All other non-investment experience represents only a relatively small portion of the expected Actuarial Obligation, except for the change in Board policy with respect to the MPPP which is discussed in the last bullet point. These relatively minor net gains and losses indicate

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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. Although the return on Fair Market Value was estimated at -5.5%, the return on the Actuarial Value of Assets was estimated at 6.7% 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 \$1,170 million over the year. A portion of this was due to the payment of \$500 million from the State delayed from a prior year. Any increase in this value results in an actuarial loss in the subsequent DB Program valuation.
- The Board revised its policy with respect to the allocation of funds for future costs associated with the MPPP (payable from the THBF) which decreased the allocation by \$1,861 million (of the total \$2,008 million decrease). The amount allocated to the THBF in 2007 was based on the accumulated reserve. The amount allocated to the THBF in this 2008 valuation (\$625 million) is based on an actuarial calculation of the present value of future MPPP benefits less any assets currently in the THBF, and is included with the actuarial obligation.

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Table 7 Funded Status

<i>(\$Millions)</i>	2008	2007
Actuarial Obligation* <i>(Table 2)</i>	\$177,734	\$167,129
Actuarial Value of Assets		
Calculated <i>(Table 5)</i>	159,785	151,827
Less SBMA Reserve	(4,570)	(3,400)
Less THBF Allocation	<u>0</u>	<u>(2,008)</u>
Program Assets	155,215	146,419
Unfunded Actuarial Obligation	\$ 22,519	\$ 20,710
Funded Ratio	87%	88%

** 2008 value includes \$625 million commitment to fund the MPP Program.*

**CALIFORNIA STATE TEACHERS' RETIREMENT SYSTEM
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Table 8 Actuarial Gains and Losses

<i>(\$Millions)</i>	Expected	Actual	(Gain) Loss
Actuarial Obligation			
Actuarial Obligation June 30, 2007	\$167,129		
Normal Cost for 2007-08	4,855		
Benefits Paid (Excludes Purchasing Power)	(7,535)		
Expected Interest at 8%	<u>13,266</u>		
Actuarial Obligation June 30, 2008	\$177,715	\$177,734	\$ 19
<i>By Source:</i>			
<i>Rehired Members</i>			68
<i>Retiree Mortality</i>			(128)
<i>Active Member Mortality</i>			(10)
<i>Service Retirements</i>			108
<i>Terminations</i>			41
<i>Disablement</i>			49
<i>Salary increases less than assumed</i>			(694)
<i>Change in THBF allocation</i>			625
<i>All Other Non-investment Sources</i>			<u>(40)</u>
<i>Total (Gain) Loss on the Actuarial Obligation</i>			\$ 19
Actuarial Value of Assets			
Actuarial Value of Assets June 30, 2007	\$146,419		
Expected Contributions for 2007-08	4,504		
Benefits Paid (Excludes Purchasing Power)	(7,535)		
Expected Interest at 8% on A.V.A.	<u>11,595</u>		
Actuarial Value of Assets June 30, 2008	\$154,983	\$155,215	\$ (232)
<i>By Source: Investment Return on Actuarial Value of Assets (including the recognition of prior deferred investment gains and losses)</i>			
			\$ 1,302
<i>Contributions in excess of assumed (including service purchases)</i>			(697)
<i>Change in SBMA Reserve</i>			1,170
<i>Change in Allocation for future THBF costs</i>			(146)
<i>Change in THBF allocation method</i>			<u>(1,861)</u>
<i>Total (Gain) Loss on the Actuarial Value of Assets</i>			\$ (232)
Unfunded Actuarial Obligation	\$ 22,732	\$ 22,519	\$ (213)

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**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.

	2008 Valuation	2007 Valuation
Normal Cost Deficit – 1990 Benefit Structure		
Normal Cost Rate	14.676%	14.590%
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 don't 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.

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The Actuarial Obligation related to the 1990 Benefit Structure is \$144.3 billion. This compares to the Actuarial Obligation for the DB Program of \$177.1 billion.

<i>(\$Millions)</i>	2008 Valuation	2007 Valuation
Actuarial Obligation – 1990 Benefit Structure		
Value of Projected Benefits	\$ 192,275	\$ 183,686
Value of Future Normal Costs	<u>48,000</u>	<u>45,498</u>
Actuarial Obligation	\$ 144,275	\$ 138,188

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, 2008. 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.

<i>(\$Millions)</i>	June, 2008	June, 2007
Asset Adjustment – 1990 Benefit Structure		
Actuarial Value for DB Program	\$ 155,215	\$ 146,419
Adjustments per Table 9	4,282	3,155
Board's THBF allocation	<u>0</u>	<u>2,008</u>
Actuarial Value of Assets*	\$ 159,498	\$ 151,582

** Numbers may not add up exactly due to rounding.*

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

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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>	2008 Valuation	2007 Valuation
Funded Status – 1990 Benefit Structure		
Actuarial Obligation	\$ 144,275	\$ 138,188
Actuarial Value of Assets	<u>159,498</u>	<u>151,582</u>
Unfunded Actuarial Obligation	\$ (15,223)	\$ (13,394)
Funded Ratio	111%	110%

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 2008 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, 2008 actuarial value of assets. This value does not reflect the current deferred losses or any investment losses that have occurred since that date which have been significant. Absent future investment gains, it is likely that the current funding for the 1990 Benefit Structure will become insufficient within the next few years.

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Table 9 Asset Adjustment for 1990 Benefit Structure

<i>(\$Millions)</i>	2008	2007
Assets Allocated to Post-1990 Benefit Increases		
Allocated Market Value at Beginning of Year	\$ 3,468	\$ 2,232
Contributions During the Year		
EC \$22951 at 0.250% of Earned Salaries	(71)	(66)
EC \$22955 at 2.017% of second preceding fiscal year Earned Salaries	(501)	(481)
2% DBS redirection reallocated to DB Program	596	555
THBF costs reallocated to DB Program	<u>33</u>	<u>32</u>
Total Adjustment to Contributions	57	40
Benefits Paid During the Year		
Post-1990 Benefits Paid During the Year	1,017	784
2% DBS redirection reallocated to DB Program	<u>(157)</u>	<u>(115)</u>
Total Adjustment to Benefits Paid	860	669
Estimated Investment Earnings for the Year ⁽¹⁾	<u>(211)</u>	<u>527</u>
Total Allocated Market Value at End of Year	\$ 4,174	\$ 3,468
Ratio of Actuarial Value to Market Value ⁽²⁾	102.582%	90.967%
Actuarial Value of Assets for Post-1990 Benefit Increases	\$ 4,282	\$ 3,155

Note:

⁽¹⁾ Based on Fair Market Value and uniform cash flow for contributions, benefits, and expenses. The rates of return used in these calculations were 20.88% for 2006-07 and -5.45% for 2007-08.

⁽²⁾ Developed from Table 5.

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Table 10 Funding Sufficiency for 1990 Benefit Structure

<i>(\$Millions)</i>	2008	2007
Actuarial Obligation		
Present Value of Projected Benefits		
Benefits Currently Being Paid	\$ 69,541	\$ 66,161
Benefits to Inactive Members	4,689	4,387
Benefits to Active Members	<u>118,045</u>	<u>113,138</u>
Total	\$192,275	\$183,686
Present Value of Future Normal Costs	<u>48,000</u>	<u>45,498</u>
Actuarial Obligation	\$144,275	\$138,188
Actuarial Value of Assets		
Actuarial Value of Assets <i>(Table 7)</i>	\$155,215	\$146,419
Plus, Asset Adjustment <i>(Table 9)</i>	4,282	3,155
Plus, Allocation to Health Benefits	<u>0</u>	<u>2,008</u>
Net Assets Available	\$159,498	\$151,582
Funded Status		
Actuarial Obligation	\$144,275	\$138,188
Actuarial Value of Assets	<u>159,498</u>	<u>151,582</u>
Unfunded Actuarial Obligation (Surplus)	\$ (15,223)	\$ (13,394)
Funded Ratio	111%	110%
Amortization Period		
Revenue for 1990 Benefits	16.000%	16.000%
Normal Cost Rate for 1990 Benefits	(14.676)	(14.590)
EC 22955(b)	<u>0.000</u>	<u>0.000</u>
Revenue Available for Amortization	1.324%	1.410%
Amortization Period	<i>Amortization Not Required</i>	<i>Amortization Not Required</i>

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Table 11 Amortization of 1990 Unfunded Actuarial Obligation

<i>(\$Millions)</i>		Beginning Unfunded Act. Oblig.	Amortization Payment			Interest Charge at 8%	Ending Unfunded Act. Oblig.
Year	FYE		16% Contrib.	Normal Cost	Available Amtzn.		
1	2009	\$(15,223)	\$ 4,697	\$ 4,308	\$ 389	\$ (1,223)	\$(16,845)
2	2010	(16,845)					

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**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)	(0.258)
Employers	8.000	8.000
Employers	0.250	0.250
State	2.017	1.853
State – 1990 Benefit Structure	0.000	<u>0.000</u>
Equivalent Level Contribution Rate over 30 Years		17.845%

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 only 0.258% 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 2008-09 will be equal to 2.017% of the 2006-07 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 1.853% of current Earned Salaries.

As demonstrated in Tables 10 and 11, the supplemental contribution from the State for the 1990 benefit structure is not needed at this time.

Note that the future costs associated with the Teachers' Health Benefit Fund (THBF) have been set aside through a reduction to the Actuarial Value of Assets. Therefore, it is not appropriate to deduct the expected annual costs of the THBF from the revenue intended to fund the DB Program benefits.

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The calculation of the equivalent rates in **Table 13** results in 17.845% 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 the previous four valuations. **Table 15** summarizes these findings.

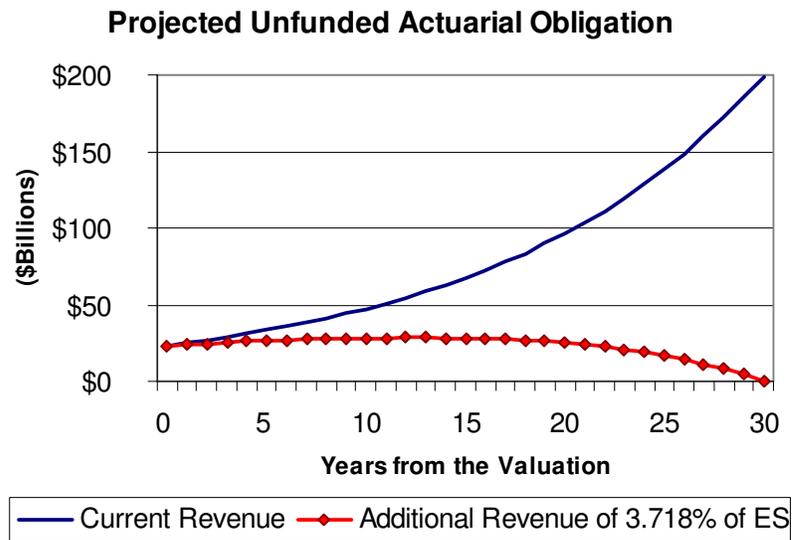
	2008 Valuation	2007 Valuation
Normal Cost Rate	17.328%	17.285%
Amortization Rate	<u>4.235</u>	<u>4.071</u>
Total Level Rate over a 30-Year Period	21.563%	21.356%
Projected Revenue	17.845%	17.745%
Estimated Additional Revenue Needed	3.718%	3.611%

The DB Program has a slightly worse funded status than one year ago and the future 30-year funding requirement is somewhat higher as a percentage of future salaries. 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 is increased by 3.718% of current year Earned Salaries.** We did not address the source of the additional revenue as it is not relevant to the amortization schedule.

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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.

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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)	(0.258)
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	1.853
EC 22955 (b)	State ⁽⁵⁾	0.000	<u>0.000</u>
Equivalent Level Contribution Rate over 30-Year Period			17.845%

Note:

- (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. See Table 7.
- (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). The 1990 Benefit Structure was adequately funded as of June 30, 2008.

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Table 13 30-Year Projection of Contributions

(\$Millions)							
FYE	Projected Salaries	Member 22901	Member DBS 22901.5	Employer 22950 & 22951	State 22955(a)	State 22955(b)	Total Contrib.
2009	\$ 29,356	\$ 2,349	\$ (587)	\$ 2,422	\$ 536	\$ 0	\$ 4,719
2010	30,604	2,448	(612)	2,525	562	0	4,923
2011	31,905	2,552	(319)	2,632	592	0	5,458
2012	33,261	2,661	0	2,744	617	0	6,022
2013	34,674	2,774	0	2,861	644	0	6,278
2014	36,148	2,892	0	2,982	671	0	6,545
2015	37,684	3,015	0	3,109	699	0	6,823
2016	39,286	3,143	0	3,241	729	0	7,113
2017	40,955	3,276	0	3,379	760	0	7,415
2018	42,696	3,416	0	3,522	792	0	7,731
2019	44,511	3,561	0	3,672	826	0	8,059
2020	46,402	3,712	0	3,828	861	0	8,402
2021	48,374	3,870	0	3,991	898	0	8,759
2022	50,430	4,034	0	4,161	936	0	9,131
2023	52,574	4,206	0	4,337	976	0	9,519
2024	54,808	4,385	0	4,522	1,017	0	9,923
2025	57,137	4,571	0	4,714	1,060	0	10,345
2026	59,566	4,765	0	4,914	1,105	0	10,785
2027	62,097	4,968	0	5,123	1,152	0	11,243
2028	64,736	5,179	0	5,341	1,201	0	11,721
2029	67,488	5,399	0	5,568	1,253	0	12,219
2030	70,356	5,628	0	5,804	1,306	0	12,739
2031	73,346	5,868	0	6,051	1,361	0	13,280
2032	76,463	6,117	0	6,308	1,419	0	13,844
2033	79,713	6,377	0	6,576	1,479	0	14,433
2034	83,101	6,648	0	6,856	1,542	0	15,046
2035	86,632	6,931	0	7,147	1,608	0	15,686
2036	90,314	7,225	0	7,451	1,676	0	16,352
2037	94,153	7,532	0	7,768	1,747	0	17,047
2038	98,154	7,852	0	8,098	1,822	0	17,772
PV ⁽¹⁾	\$531,741	\$ 42,539	\$ (1,373)	\$ 43,869	\$ 9,854	\$ 0	\$ 94,889
Level Rate ⁽²⁾		8.000%	(0.258)%	8.250%	1.853%	0.000%	17.845%

Note:

⁽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.

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Table 14 Amortization of Unfunded Actuarial Obligation ⁽¹⁾

(\$Millions)		Beginning Unfunded Act. Oblig.	Amortization Payment			Interest Charge at 8%	Ending Unfunded Act. Oblig.
Year	FYE		Total Contrib.	Normal Cost	Available Amtzn.		
1	2009	\$22,519	\$4,719	\$5,087	(\$368)	\$1,816	\$24,703
2	2010	24,703	4,923	5,303	(380)	1,991	27,074
3	2011	27,074	5,458	5,528	(70)	2,169	29,313
4	2012	29,313	6,022	5,763	259	2,335	31,389
5	2013	31,389	6,278	6,008	270	2,501	33,620
6	2014	33,620	6,545	6,264	281	2,679	36,018
7	2015	36,018	6,823	6,530	293	2,870	38,595
8	2016	38,595	7,113	6,807	306	3,076	41,365
9	2017	41,365	7,415	7,097	318	3,297	44,344
10	2018	44,344	7,731	7,398	333	3,534	47,545
11	2019	47,545	8,059	7,713	346	3,790	50,989
12	2020	50,989	8,402	8,041	361	4,065	54,693
13	2021	54,693	8,759	8,382	377	4,361	58,677
14	2022	58,677	9,131	8,739	392	4,679	62,964
15	2023	62,964	9,519	9,110	409	5,021	67,576
16	2024	67,576	9,923	9,497	426	5,389	72,539
17	2025	72,539	10,345	9,901	444	5,786	77,881
18	2026	77,881	10,785	10,322	463	6,212	83,630
19	2027	83,630	11,243	10,760	483	6,671	89,818
20	2028	89,818	11,721	11,218	503	7,166	96,481
21	2029	96,481	12,219	11,694	525	7,698	103,654
22	2030	103,654	12,739	12,191	548	8,271	111,377
23	2031	111,377	13,280	12,709	571	8,888	119,694
24	2032	119,694	13,844	13,250	594	9,552	128,652
25	2033	128,652	14,433	13,813	620	10,268	138,300
26	2034	138,300	15,046	14,400	646	11,039	148,693
27	2035	148,693	15,686	15,012	674	11,869	159,888
28	2036	159,888	16,352	15,650	702	12,763	171,949
29	2037	171,949	17,047	16,315	732	13,727	184,944
30	2038	184,944	17,772	17,008	764	14,765	198,945

Note:

⁽¹⁾ Based on the actuarial value of assets.

**CALIFORNIA STATE TEACHERS' RETIREMENT SYSTEM
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Table 15 Funding Sufficiency

<i>(\$Millions)</i>	June, 2008	June, 2007
Funded Status (Table 7)		
Actuarial Obligation	\$ 177,734	\$ 167,129
Actuarial Value of Assets	<u>155,215</u>	<u>146,419</u>
Unfunded Actuarial Obligation	\$ 22,519	\$ 20,710
Funded Ratio	87%	88%
Level Contributions over 30 Years (Table 12)	17.845%	17.745%
Amortization Period based on Current Revenues		
Total Level Rate over the Amortization Period	17.845%	17.745%
Normal Cost Rate	<u>17.328</u>	<u>17.285</u>
Amortization Rate	0.517%	0.460%
<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	17.328%	17.285%
Amortization Rate	<u>4.235</u>	<u>4.071</u>
Total Level Rate over the Amortization Period	21.563%	21.356%
Estimated Additional Revenue Needed <i>(Based on current valuation assumptions)</i>	3.718%	3.611%

CALIFORNIA STATE TEACHERS' RETIREMENT SYSTEM
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**Table 16 Amortization of Unfunded Actuarial Obligation ⁽¹⁾
Including Sufficient Additional Contributions ⁽²⁾**

(\$Millions)		Beginning Unfunded Act. Oblig.	Amortization Payment			Interest Charge at 8%	Ending Unfunded Act. Oblig.
Year	FYE		Total Contrib.	Normal Cost	Available Amtzn.		
1	2009	\$22,519	\$5,810	\$5,087	\$723	\$1,773	\$23,569
2	2010	23,569	6,061	5,303	758	1,856	24,667
3	2011	24,667	6,644	5,528	1,116	1,930	25,481
4	2012	25,481	7,259	5,763	1,496	1,980	25,965
5	2013	25,965	7,567	6,008	1,559	2,016	26,422
6	2014	26,422	7,889	6,264	1,625	2,050	26,847
7	2015	26,847	8,224	6,530	1,694	2,081	27,234
8	2016	27,234	8,574	6,807	1,767	2,109	27,576
9	2017	27,576	8,938	7,097	1,841	2,134	27,869
10	2018	27,869	9,318	7,398	1,920	2,154	28,103
11	2019	28,103	9,714	7,713	2,001	2,170	28,272
12	2020	28,272	10,127	8,041	2,086	2,180	28,366
13	2021	28,366	10,557	8,382	2,175	2,184	28,375
14	2022	28,375	11,006	8,739	2,267	2,181	28,289
15	2023	28,289	11,474	9,110	2,364	2,171	28,096
16	2024	28,096	11,961	9,497	2,464	2,151	27,783
17	2025	27,783	12,470	9,901	2,569	2,122	27,336
18	2026	27,336	13,000	10,322	2,678	2,082	26,740
19	2027	26,740	13,552	10,760	2,792	2,030	25,978
20	2028	25,978	14,128	11,218	2,910	1,964	25,032
21	2029	25,032	14,728	11,694	3,034	1,884	23,882
22	2030	23,882	15,354	12,191	3,163	1,786	22,505
23	2031	22,505	16,007	12,709	3,298	1,671	20,878
24	2032	20,878	16,687	13,250	3,437	1,535	18,976
25	2033	18,976	17,397	13,813	3,584	1,378	16,770
26	2034	16,770	18,136	14,400	3,736	1,195	14,229
27	2035	14,229	18,907	15,012	3,895	986	11,320
28	2036	11,320	19,710	15,650	4,060	746	8,006
29	2037	8,006	20,548	16,315	4,233	474	4,247
30	2038	4,247	21,421	17,008	4,414	167	0

Note:

⁽¹⁾ Based on the actuarial value of assets.

⁽²⁾ An additional contribution of 3.718% 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.

CALIFORNIA STATE TEACHERS' RETIREMENT SYSTEM

DEFINED BENEFIT PROGRAM - 2008 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.

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.

CALIFORNIA STATE TEACHERS' RETIREMENT SYSTEM

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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%.
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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.
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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.
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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.

CALIFORNIA STATE TEACHERS' RETIREMENT SYSTEM

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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.

CALIFORNIA STATE TEACHERS' RETIREMENT SYSTEM

DEFINED BENEFIT PROGRAM - 2008 ACTUARIAL VALUATION

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.

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.

CALIFORNIA STATE TEACHERS' RETIREMENT SYSTEM

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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
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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)	Table B.2
		- Female	2007 CalSTRS Retired – F (-2 years)	Table B.2
	(2) Retired & Beneficiary *	- Male	2007 CalSTRS Retired – M	Table B.2
		- Female	2007 CalSTRS Retired – F	Table B.2
	(3) Disabled *	- Male	RP 2000-M (minimum 2.5% with select rates in first three years)	Table B.2
		- Female	RP 2000-F (minimum 2.0% with select rates in first three years)	Table B.2
	* Future retirees and beneficiaries are valued with a 2-year age setback			
B.	Service Retirement		Experience Tables	Table B.3
C.	Disability Retirement		Experience Tables	Table B.4
D.	Withdrawal		Experience Tables	Table B.5
	Probability of Refund		Experience Tables	Table B.6
E.	Merit Salary Increases		Experience Tables	Table B.7
F.	Supplemental Assumptions			Table B.8

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

**CALIFORNIA STATE TEACHERS' RETIREMENT SYSTEM
DEFINED BENEFIT PROGRAM - 2008 ACTUARIAL VALUATION**

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

<u>Year</u>	<u>Entry Ages - Male</u>					
	<u>Under 25</u>	<u>25 - 29</u>	<u>30 - 34</u>	<u>35 - 39</u>	<u>40 - 44</u>	<u>45 & Up</u>
0	15.3%	15.3%	15.3%	15.3%	15.3%	18.0%
1	13.0	12.5	13.0	13.0	13.0	14.0
2	9.0	7.7	9.0	9.0	9.0	10.0
3	6.0	6.0	6.5	6.5	6.5	7.0
4	4.4	4.8	5.0	5.0	5.0	4.0
5	3.9	3.6	3.0	3.0	3.0	3.0
10	2.0	2.0	2.0	2.0	2.0	
15	1.1	1.1	1.1	1.1		
20	0.6	0.6	0.6			
25	0.4	0.5				
30	0.3					

<u>Year</u>	<u>Entry Ages - Female</u>					
	<u>Under 25</u>	<u>25 - 29</u>	<u>30 - 34</u>	<u>35 - 39</u>	<u>40 - 44</u>	<u>45 & Up</u>
0	15.3%	15.3%	15.3%	15.3%	15.3%	15.3%
1	10.0	11.0	11.0	11.0	10.5	10.5
2	7.2	8.5	8.5	7.5	7.0	7.0
3	6.3	7.0	6.5	6.0	5.5	5.5
4	5.8	6.0	5.5	4.5	4.0	3.0
5	5.5	5.3	4.5	3.8	3.3	2.5
10	2.3	1.8	1.6	1.3	1.3	
15	1.0	0.9	0.9	0.9		
20	0.5	0.5	0.5			
25	0.3	0.4				
30	0.3					

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Table B.6 Probability of Refund

Entry Ages - Male					
Year	<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				

Entry Ages - Female					
Year	<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:				
	<u>Member's Gender</u>	<u>Assumed No. of Children</u>			
	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	
		<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>
	Death	8.0%	4.0%	0.0%	0.0%
	Disability	2.5%	4.0%	2.2%	3.0%

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**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.

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Table C.1 Summary of Statistical Information

	June 30, 2008	June 30, 2007
Number of Members		
Active Members ⁽¹⁾	461,378	455,693
Inactive Members ⁽¹⁾	147,997	141,450
Retirees and Beneficiaries		
Service Retirement	195,960	188,659
Disability Benefits	8,170	7,915
Benefits for Survivors	<u>19,838</u>	<u>19,067</u>
Total Benefit Recipients	223,968	215,641
 Total Membership in Valuation	 833,343	 812,784
 Active Member Statistics		
Earned Salaries	\$ 27,118 million	\$25,906 million
Average Salary	\$ 58,777	\$ 56,849
Average Age	44.7 years	44.7 years
Average Service	10.8 years	10.8 years

Note:

⁽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	440	625	1			
25 to 30	1,391	7,771	354			
30 to 35	866	8,246	6,323	345		
35 to 40	714	5,505	7,797	5,233	101	
40 to 45	603	3,791	4,614	5,253	2,503	69
45 to 50	537	3,216	3,435	3,320	3,525	1,959
50 to 55	503	3,092	2,910	2,729	2,816	2,951
55 to 60	441	2,734	2,653	2,511	2,497	2,375
60 to 65	310	2,066	1,850	1,480	1,344	1,228
65 to 70	129	859	571	464	380	290
70 & Up	70	471	230	125	98	90
Unknown						
Total	6,004	38,376	30,738	21,460	13,264	8,962

<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						1,066
25 to 30						9,516
30 to 35						15,780
35 to 40						19,350
40 to 45						16,833
45 to 50	66					16,058
50 to 55	1,919	153				17,073
55 to 60	2,864	3,517	231	3		19,826
60 to 65	1,171	1,807	1,217	22		12,495
65 to 70	204	202	200	74		3,373
70 & Up	49	56	58	51	35	1,333
Unknown						
Total	6,273	5,735	1,706	150	35	132,703

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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	1,911	2,902	2			
25 to 30	3,687	29,507	1,780	2		
30 to 35	1,784	20,802	21,249	1,170	1	1
35 to 40	1,631	12,031	17,952	13,056	350	
40 to 45	1,419	9,055	10,166	10,601	6,099	315
45 to 50	1,286	8,644	8,753	7,963	7,411	5,055
50 to 55	1,000	7,403	8,352	8,070	7,056	6,126
55 to 60	686	5,237	6,787	7,546	7,532	6,258
60 to 65	339	2,780	3,415	3,692	4,283	3,826
65 to 70	114	911	865	865	842	796
70 & Up	45	444	285	215	153	174
Unknown		5	4			
Total	13,902	99,721	79,610	53,180	33,727	22,551

<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						4,815
25 to 30						34,976
30 to 35						45,007
35 to 40						45,020
40 to 45						37,655
45 to 50	225					39,337
50 to 55	4,762	380	3			43,152
55 to 60	5,928	5,489	392	2		45,857
60 to 65	2,904	2,352	1,839	38		25,468
65 to 70	568	340	193	142	12	5,648
70 & Up	157	109	68	48	33	1,731
Unknown						9
Total	14,544	8,670	2,495	230	45	328,675

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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	2,351	3,527	3			
25 to 30	5,078	37,278	2,134	2		
30 to 35	2,650	29,048	27,572	1,515	1	1
35 to 40	2,345	17,536	25,749	18,289	451	
40 to 45	2,022	12,846	14,780	15,854	8,602	384
45 to 50	1,823	11,860	12,188	11,283	10,936	7,014
50 to 55	1,503	10,495	11,262	10,799	9,872	9,077
55 to 60	1,127	7,971	9,440	10,057	10,029	8,633
60 to 65	649	4,846	5,265	5,172	5,627	5,054
65 to 70	243	1,770	1,436	1,329	1,222	1,086
70 & Up	115	915	515	340	251	264
Unknown		5	4			
Total	19,906	138,097	110,348	74,640	46,991	31,513

<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						5,881
25 to 30						44,492
30 to 35						60,787
35 to 40						64,370
40 to 45						54,488
45 to 50	291					55,395
50 to 55	6,681	533	3			60,225
55 to 60	8,792	9,006	623	5		65,683
60 to 65	4,075	4,159	3,056	60		37,963
65 to 70	772	542	393	216	12	9,021
70 & Up	206	165	126	99	68	3,064
Unknown						9
Total	20,817	14,405	4,201	380	80	461,378

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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>
1999	15,421	69,112	27.7%	72.3%
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

<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>
1999	\$ 12,105	47.1	3.3	8.0
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

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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>
1999	142,309	38.3%	61.7%
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

<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>
1999	60.7	24.8	\$ 3,057	\$ 1,729
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

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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.

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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, 2008.