

**THE CALIFORNIA STATE
TEACHERS' RETIREMENT
SYSTEM**

**ACTUARIAL VALUATION
AS OF JUNE 30, 1998**

MARCH 1999



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December 1, 1999

Teachers' Retirement Board
California State Teachers' Retirement System
7667 Folsom Boulevard
Sacramento, CA 95826-2614

RE: Actuary's Certification of the Actuarial Valuation as of June 30, 1998

We certify that the information included herein and contained in the 1998 Actuarial Valuation Report is accurate and fairly presents the actuarial position of the California State Teachers' Retirement System as of June 30, 1998.

All calculations have been made in conformity with generally accepted actuarial principles and practices, and with the Actuarial Standards of Practice issued by the Actuarial Standards Board. In our opinion, the results presented comply with the requirements of the California statutes and, where applicable, the Internal Revenue Code, ERISA, and the Statements of the Governmental Accounting Standards Board.

The undersigned are independent actuaries. They are Enrolled Actuaries and Members of the American Academy of Actuaries, and are experienced in performing valuations for large public retirement systems.

Actuarial Valuations

The primary purpose of the valuation report is to determine the adequacy of the current contribution rates through measuring the resulting funding period, to describe the current financial condition of the System, and to analyze changes in the System's condition. In addition, the report provides information required by the System in connection with Governmental Accounting Standards Board Statement No. 25 (GASB No. 25), and it provides various summaries of the data.

This June 30, 1998 valuation is a special valuation. Valuations are normally prepared every two years, as of June 30 of each odd-numbered year, the last day of the System's plan and fiscal year.



Financing Objective of the Plan

Contribution rates are established by statute that, over time, are intended to remain level as a percent of payroll. The employee, employer and State contribution rates have been set to provide for the Normal Cost plus the level percentage of payroll required to amortize the Unfunded Actuarial Accrued Liability as follows:

Sources of Income	Comments	Percent of Current Fiscal Year Salaries
(1)	(2)	(3)
EC 22901	Paid by Members; permanent	8.000%
EC 22950	Paid by Employers; permanent	8.000%
Subtotal		16.000%
EC 22955	Elder Full Funding	3.786% ¹
EC 22951	Paid by Employers; unused sick leave credit	0.250%
EC 22952	Funding for ad hoc retiree benefit increase	0.307%
Total Level Contribution Rate		20.343%

The Normal Cost of the System as of June 30, 1998 is 15.758%. We understand that the excess of the 16.000% contributed by Members and Employers will be reserved pending future action for redistribution.

Progress Toward Realization of Financing Objective

The Actuarial Accrued Liability, the Unfunded Actuarial Accrued Liability, and the calculation of the resulting funding period illustrate the progress toward the realization of financing objectives. Based on this actuarial valuation as of June 30, 1998, there is no Unfunded Actuarial Accrued Liability. The plan's actuarial value of assets exceeds the Actuarial Accrued Liability by \$3.056 billion. Even though there is no Unfunded Actuarial Accrued Liability, 4.343% of pay will be contributed in addition to the 16.000% Normal Cost contribution as specified under various provisions of the Teachers' Retirement Law.

Plan Provisions

The plan provisions used in the actuarial valuation are described in Table 20 of the valuation report.

This report does not reflect the following benefit improvements or funding changes that were enacted after June 30, 1998:

¹ 4.05% based on prior calendar year salaries.



- For Members retiring on or after January 1, 1999, increase the service retirement factor to an ultimate rate of 2.4% at age 63.
- For Members retiring on or after January 1, 1999, with at least 30 years of service, increase the service retirement factor by 0.2%, with the total factor not to exceed 2.4%.
- For Members retiring on or after January 1, 1999, regardless of hire date, extend the eligibility for unused sick leave credit.
- Amendment of EC 22955 from 4.3% to 0.524% effective October 1, 1998 for amortization of unfunded liabilities for benefits in place as of July 1, 1990, and 3.102% effective July 1, 1999 for liabilities for benefits enacted as of January 1, 1999.

Data

In preparing the June 30, 1998 actuarial valuation, we have relied upon Member and asset data provided by the California State Teachers' Retirement System. We have not subjected this data to any auditing procedures, but have examined the data for reasonableness and for consistency with data for the prior valuation.

Actuarial Methods and Assumptions

The actuarial methods and assumptions have been selected by the Teachers' Retirement Board. These assumptions and methods are detailed in Table 21 of the valuation report. The Board has sole authority to determine the actuarial assumptions used for the plan. The actuarial methods and assumptions are the same as those used for the June 30, 1997 valuation.

In our opinion, the actuarial assumptions used are appropriate for purposes of the valuation and are internally consistent and reasonably related to the experience of the System and to reasonable expectations.

Respectfully submitted,

Sharon A. Bronzwaer, FSA, EA, MAAA
Consulting Actuary

W. Michael Carter, FSA, EA, MAAA
Vice President

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EXECUTIVE SUMMARY

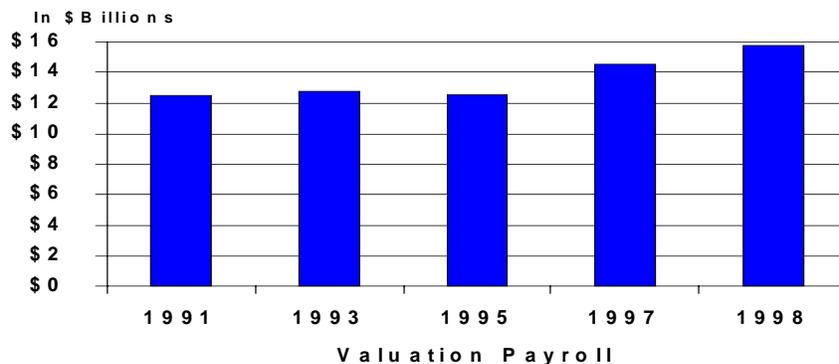
The actuarial valuation of the State Teachers' Retirement System (STRS) as of June 30, 1998, indicates that the System has no Unfunded Actuarial Accrued Liability (UAAL). The UAAL as of the last valuation was \$1.872 billion with a three-year funding period. As of this valuation, the actuarial value of assets of the System exceed the Actuarial Accrued Liability by \$3.056 billion. The primary reason for this material change was very favorable investment performance since the last valuation.

The key results of this valuation as of June 30, 1998, and a comparison to the June 30, 1997 valuation results follow. In addition, we have included graphs showing historical information regarding some key valuation results.

Membership

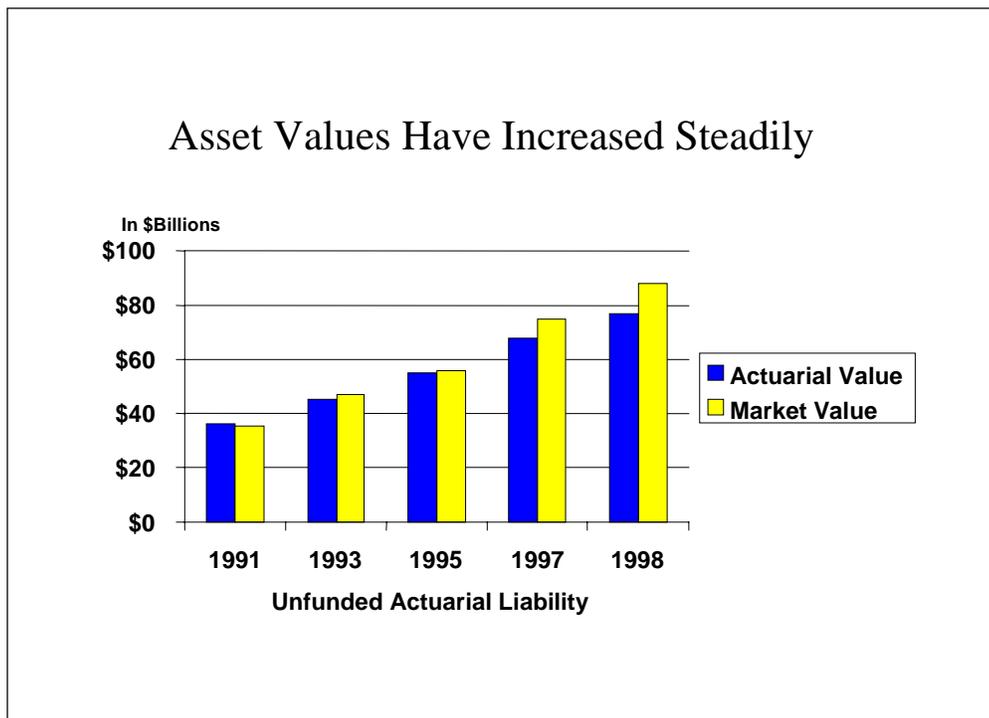
	1998	1997
	(1)	(2)
Actives	385,530	364,000
Inactives	61,848	59,385
Service retirees	139,193	135,809
Disabled retirees	5,758	5,676
Survivor benefit recipients	12,796	12,154
Valuation payroll	\$15.741 billion	\$14.521 billion

**Valuation Payroll Increased
 8.4% from 1997 to 1998**



Plan Assets

	1998 (1)	1997 (2)
Market Value	\$87.885 billion ¹	\$74.664 billion ²
Actuarial Value	\$77.290 billion ¹	\$67.980 billion ²



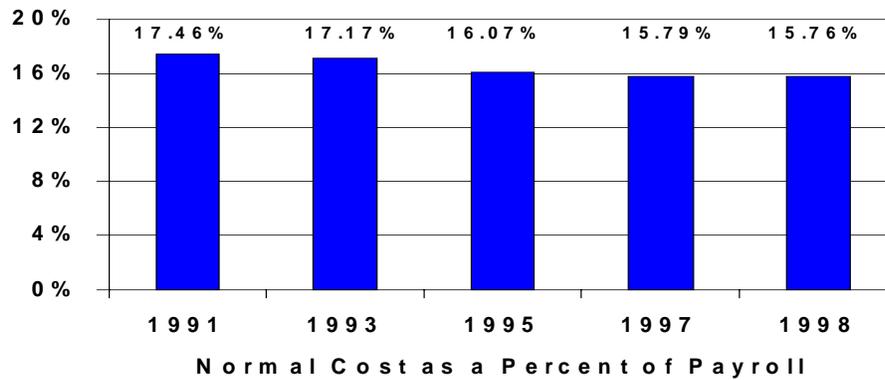
¹ Excludes Supplemental Benefit Maintenance Account (Market Value: \$313 million, Actuarial Value: \$275 million).

² Excludes Supplemental Benefit Maintenance Account (Market Value: \$114 million, Actuarial Value: \$104 million).

Valuation Results

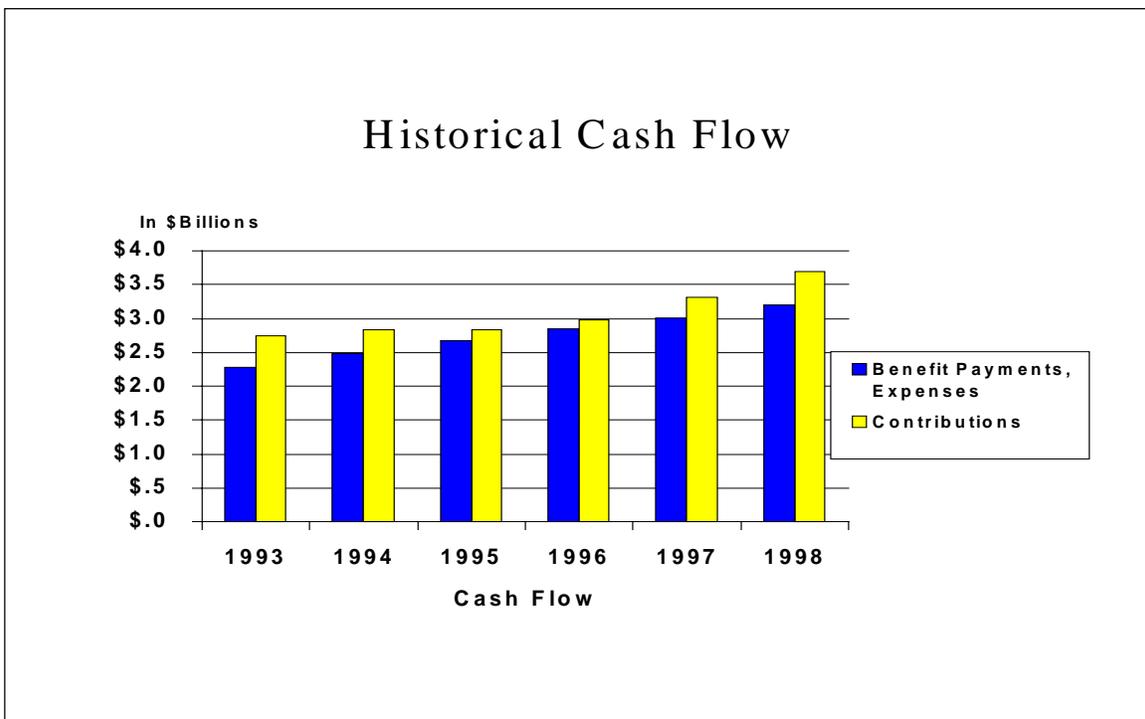
	1998	1997
	(1)	(2)
Normal Cost Rate	15.758%	15.790%
Unfunded Actuarial Accrued Liability	\$(3.056) billion	\$1.872 billion
Actuarial Assets as % of Actuarial Accrued Liability	104.1%	97.3%
Funding Period	N/A	3 years

Normal Cost Has Decreased Since 1991



Cash Flow

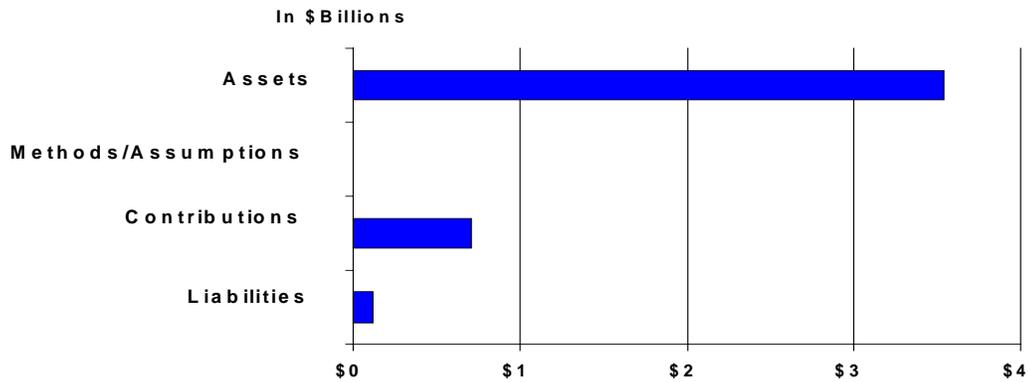
	1998	1997
	(1)	(2)
Employee contribution rate	8.000%	8.000%
Employer contribution rate	8.250%	8.250%
State contribution rate	4.093%	4.237%
Employee contributions during year	\$ 1.303 billion	\$ 1.196 billion
Employer contributions during year	\$ 1.371 billion	\$ 1.250 billion
State contributions during year	\$ 1.005 billion	\$ 0.872 billion
Benefit, refund, and expense payments	\$ 3.209 billion	\$ 3.015 billion
Net external cash flow	\$ 0.470 billion	\$ 0.303 billion



System Experience

	1998 (1)	1997 (2)
Actuarial gains/(losses) due to		
— Assets	\$ 3.545 billion	\$ 3.239 billion
— Technical/assumption changes	0.000 billion	1.075 billion
— Contributions different from assumed	0.704 billion	0.354 billion
— Liability experience	<u>0.119 billion</u>	<u>1.692 billion</u>
— Total	\$ 4.368 billion	\$ 6.360 billion

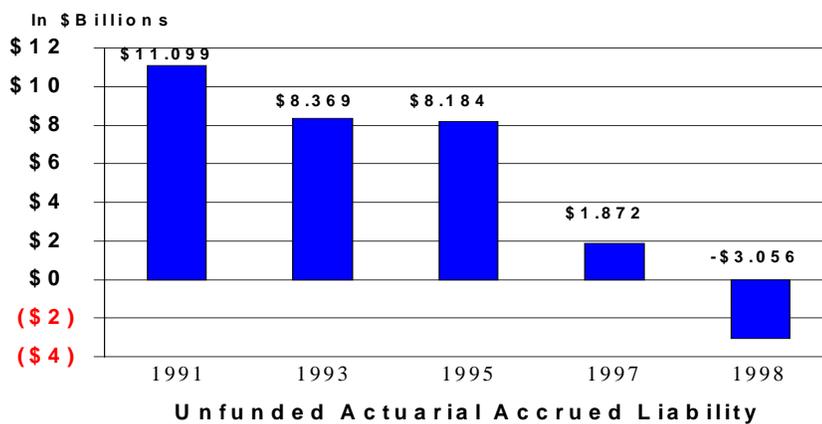
**Actuarial Gains Totaled
 \$4.368 Billion From 1997-1998**



Funded Status

	1998	1997
	(1)	(2)
GASB 25 Disclosure		
— Actuarial Accrued Liability (AAL)	\$ 74.234 billion	\$ 69.852 billion
— Unfunded AAL	\$ (3.056) billion	\$ 1.872 billion
— GASB Net Assets as % of AAL	104.1%	97.3%
— Unfunded AAL as % of Payroll	(19.4%)	12.9%

Funded Status Improvements Since 1991



INTRODUCTION

The valuation of the State Teachers' Retirement System (STRS) as of June 30, 1998, reflects the following contribution rates applied to fiscal year Earned Salaries:

Sources of Income	Comments	Percent of Current Fiscal Year Salaries
(1)	(2)	(3)
EC 22901	Paid by Members; permanent	8.000%
EC 22950	Paid by Employers; permanent	8.000%
Subtotal		16.000%
EC 22955	Elder Full Funding	3.786%
EC 22951	Paid by Employers; unused sick leave credit	0.250%
EC 22952	Funding for ad hoc retiree benefit increase	0.307%
Total Level Contribution Rate		20.343%

The annual rate for the Elder Full Funding contribution is 4.05% based on prior calendar year salaries. The equivalent rate when applied to current fiscal year salaries is 3.786%.

In preparing this valuation, Watson Wyatt Worldwide ("Watson Wyatt") has relied on employee data and asset information provided by the staff of the State Teachers' Retirement System. While not verifying the data at their source, Watson Wyatt has performed certain tests for consistency and reasonableness and is satisfied with the appropriateness of the data supplied to us.

Section A contains an executive summary of the most significant valuation results. More details on the results of the valuation are covered in Section C. Section D contains the necessary disclosure items required by the Governmental Accounting Standards Board (GASB). Section E provides analysis and discussion of changes in assets. Section F produces a determination of actuarial gains and losses and an analysis of the change in the funding period since the last valuation. Section G summarizes the findings of the valuation, and Section H provides the tables supporting the report.

This valuation utilizes the same actuarial assumptions and methods as were used in the June 30, 1997 valuation of the System.

This report does not reflect the following benefit improvements and funding changes which were enacted after June 30, 1998:

- For Members retiring on or after January 1, 1999, increase the service retirement factor to an ultimate rate of 2.4% at age 63.
- For Members retiring on or after January 1, 1999, with at least 30 years of service, increase the service retirement factor by 0.2%, with the total factor not to exceed 2.4%.
- For Members retiring on or after January 1, 1999, regardless of hire date, extend the eligibility for unused sick leave credit.
- Amendment of EC 22955 from 4.3% to 0.524% effective October 1, 1998 for amortization of unfunded liabilities for benefits in place as of July 1, 1990, and 3.102% effective July 1, 1999 for liabilities for benefits enacted as of January 1, 1999.

FUNDED STATUS OF THE SYSTEM

The Normal Cost of this Plan is developed based on the valuation method known as the Entry Age Normal actuarial cost method. The total normal cost rate for the Retirement System is 15.758% of pay. This amount will be funded by 8.00% contributed by the Members and 8.00% contributed by employers. Since the Normal Cost is less than 16.00% as of June 30, 1998, a portion of the 16.00% of pay contributed by Members and employers will be reserved pending future action for redistribution.

The key components of this funding method are as follows:

- The "Normal Cost" for the System is equal to the annual cost of benefits for "average" newly hired participants.
- The "Actuarial Accrued Liability" for benefits payable in the future is the portion of the total actuarial liability that will not be funded by future normal cost contributions.
- The portion of the Actuarial Accrued Liability that is not covered by current assets is the "Unfunded Actuarial Accrued Liability" (UAAL), referred to as the "Unfunded Actuarial Obligation" in the STRS statutes.
- Funding of the Unfunded Actuarial Accrued Liability (UAAL) is a function of the rate of future growth in total covered payroll.

Table 5 develops the funding period using this approach for both the current valuation and for the prior valuation.

As shown in Table 3, the Normal Cost for the System will be funded by the 8.00% of pay contributed by the Members plus the 8.00% of pay contributed by employers. The additional 4.343% of pay will be contributed by the employers and the State under various provisions of the Teachers' Retirement Law.

The UAAL equals the difference between the Actuarial Accrued Liability and current actuarial assets, as shown on Table 1. As of June 30, 1998, actuarial assets exceed the Actuarial Accrued Liability by \$3.056 billion. As of June 30, 1997, the plan had a UAAL of \$1.872 billion.

The actuarial value of assets is developed in Table 4. It should be remembered that the intent of the actuarial asset valuation method is to smooth out year-to-year fluctuations in market rates of return. It accomplishes this smoothing effect by recognizing 25% of the excess or shortfall in total market return over the expected return each year.

After careful consideration of all aspects of the California State Teachers' Retirement System, it is our opinion that the System remains actuarially sound and that the rates of contribution required under current law will be sufficient to fund the benefit payments which are specified in the law.

GASB 25 DISCLOSURE

The Governmental Accounting Standards Board (GASB) has issued Statement No. 25 which provides the manner in which the actuarial condition of a public sector retirement plan is to be disclosed. It replaces GASB No. 5.

The required actuarial disclosure tables under GASB No. 25 are represented by Tables 11-13.

CHANGE IN ASSETS DURING THE YEAR

Table 6 provides an analysis of the change in the Plan Net Assets during the year, and Table 7 calculates an estimate of the yield on mean assets of the System. The estimated yield is shown both on a market value basis and on the actuarial value basis.

To determine estimated yield on "mean assets", the traditional insurance company formula for yield rates is used. The estimated yield is derived by dividing the appropriate income by the corresponding mean assets.

The estimated yields on mean market and actuarial value for the last three years are as follows:

	Annual Yield		
	1995-1996	1996-1997	1997-1998
Market Value	13.35%	17.32%	17.26%
Actuarial Value	9.67%	11.67%	13.19%

ACTUARIAL GAINS/(LOSSES) AND THE FUNDING PERIOD

The purpose of this section is to determine the source of the gains and losses and the impact of those gains and losses on the funding period. As of the prior valuation (June 30, 1997) the funding period was three years.

The value of actuarial assets as of the valuation date is \$77.290 billion (after adjustment for the SBMA Reserve). The asset gain for the year ending June 30, 1998 is \$3.545 billion. This asset gain is a direct reflection of the estimated annual yield of 13.19% based on the value of actuarial assets (as shown in Table 7).

Table 8 develops the total actuarial gain/(loss) for the year and separates it between the asset gain/(loss) and the liability gain/(loss). The total actuarial gain for the year is \$4.368 billion.

Part of this year's gain was due to contributions being larger than anticipated, amounting to \$0.704 billion. The remaining gain, due to changes in System liability, is \$0.119 billion. This liability experience gain is the net impact of actual demographic changes different from the actuarial assumptions. This gain also reflects wage inflation and payroll growth different from assumed.

In general, the actual liability experience closely matches the assumed experience. The actual Actuarial Accrued Liability is within about 0.2% of the expected accrued liability.

Table 9 traces the changes in the funding period from the 3 years as of June 30, 1997, to zero years as of June 30, 1998.

SUMMARY AND CLOSING COMMENTS

To summarize the results of the actuarial valuation of the California State Teachers' Retirement System as of June 30, 1998, it is our opinion that the System is actuarially sound and that the present assets plus future required contributions will be sufficient to provide the benefits specified in the law, based on the current actuarial assumptions.

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SUMMARY OF SIGNIFICANT VALUATION RESULTS¹

	Valuation as of June 30, 1998		Valuation as of June 30, 1997	
	Amount (1)	As % of Pay ² (2)	Amount (3)	As % of Pay ² (4)
1. Participants				
a. Active Members	385,530		364,000	
b. Inactive Members with deferred benefits	61,848		59,385	
c. Retired Members and Beneficiaries	157,747		153,639	
d. Total	605,125		577,024	
2. Averages for Active Members				
a. Average age	44.3		44.5	
b. Average years of service	11.0		11.3	
c. Average valuation pay ²	\$40,830		\$39,893	
3. Valuation payroll ²	\$15.741 billion		\$14.521 billion	
4. Present value of future earned salaries	\$198.388 billion		\$182.787 billion	
5. Normal Cost rate				
a. Normal Cost for benefits	15.508%		15.540%	
b. Expense load	0.250%		0.250%	
c. Total Normal Cost	15.758%		15.790%	
6. Total contribution rate	20.343%		20.487%	
7. Funding period	N/A		3 years	
8. Present value of future benefits ³	\$105.000 billion	667.0%	\$98.257 billion	676.7%
9. Present value of future normal costs ³ (employee plus employer)	\$30.766 billion	195.5%	\$28.405 billion	195.6%
10. Actuarial Accrued Liability	\$74.234 billion	471.6%	\$69.852 billion	481.0%
11. Actuarial value of assets	\$77.290 billion	491.0%	\$67.980 billion	468.1%
12. Unfunded Actuarial Accrued Liability (UAAL)	\$(3.056) billion	(19.4)%	\$1.872 billion	12.9%
13. Relative size of Unfunded Actuarial Accrued Liability				
a. As % of actuarial assets	(4.0)%		2.8%	
b. As % of covered payroll	(19.4)%		12.9%	
c. As % of present value of future benefits	(2.9)%		1.9%	
14. GASB 25 funded ratio	104.1%		97.3%	

¹ There may be minimal variances between participant counts and payroll information shown here compared to that in internal STRS reports, as data reported for valuation purposes is based on a snapshot data collection date.

² Estimated Earned Salaries

³ Excludes expenses

**NORMAL COST AND
 ACTUARIAL PRESENT VALUE OF FUTURE BENEFITS
 (In \$Billions)**

	June 30	
	1998 (1)	1997 (2)
A. Normal Cost		
1. Retirement	\$2.115	\$1.933
2. Disability	0.101	0.094
3. Death	0.079	0.074
4. Withdrawal	0.146	0.156
5. Total	\$2.441	\$2.257
B. Present Value of Future Benefits		
1. Present Value of Benefits Presently Being Paid		
a. Service retirement benefits	\$28.564	\$26.717
b. Disability retirement benefits	1.009	0.954
c. Survivors and contingent survivors	1.585	1.456
d. Total present value of benefits presently being paid	\$31.158	\$29.127
2. Present Value of Benefits Payable in the Future to Present Active Members		
a. Service retirement	\$68.100	\$63.433
b. Disability		
(1) Coverage A	0.871	0.869
(2) Coverage B	1.109	0.965
(3) Total disability benefits	1.981	1.834
c. Refunds of contributions on withdrawal	1.278	1.530
d. Death and survivor benefits	1.438	1.329
e. Total active Member liabilities	\$72.796	\$68.126

**NORMAL COST AND
 ACTUARIAL PRESENT VALUE OF FUTURE BENEFITS
 (In \$Billions)**

	June 30	
	1998	1997
	(1)	(2)
3. Present Value of Benefits Payable in the Future to Present Inactive Members	\$1.046	\$1.004
4. Total Actuarial Present Value of Future Benefits (1+2+3)	\$105.000	\$98.257

STATUTORY SOURCES OF INCOME

Sources of Income	Comments	Percent of Current Fiscal Year Salaries	
		As of June 30, 1998	As of June 30, 1997
(1)	(2)	(3)	(4)
A. Normal Cost Funding			
1. EC 22901	Paid by Members; permanent	8.000%	8.000%
2. EC 22950	Paid by Employers; permanent	8.000%	8.000%
3. EC 22955	Elder Full Funding ¹	-	-
4. Total		16.000%	16.000%
B. Normal Cost Rate		15.758%	15.790%
C. Amortization of Unfunded Actuarial Liability			
1. EC 22955	Elder Full Funding ¹	3.786%	3.930%
2. EC 22951	Paid by Employers; unused sick leave	0.250%	0.250%
3. EC 22952	Ad hoc retiree benefit increase	0.307%	0.307%
4. Total Amortization		4.343%	4.487%
D. Total Contribution Rate (A+C)		20.343%	20.487%
E. Funding Period		N/A	3 years

¹ 4.05% based on prior calendar year salaries as of June 30, 1998; 4.30% as of June 30, 1997.

DEVELOPMENT OF ACTUARIAL VALUE OF ASSETS
(In \$Billions)

	Plan Year Ending June 30, 1998	Plan Year Ending June 30, 1997
	(1)	(2)
Beginning of Year Actuarial Value	\$68.084	\$60.683
Contributions	3.679	3.318
Benefit Payments	(3.209)	(3.015)
Assumed Earnings	5.466	4.867
Expected Value of Assets (EV)	\$74.020	\$65.853
Fair Value of Assets (FV)	88.198	74.778
Difference (FV - EV)	\$14.178	\$8.925
25% of Difference	3.545	2.231
Expected Value of Assets	74.020	65.853
Plus 25% of Difference	3.545	2.231
Actuarial Value of Assets (AV) Before SBMA Adjustment	\$77.565	\$68.084
AV / FV Ratio	88%	91%
SBMA Reserve	\$0.313	\$0.114
Adjusted SBMA	\$0.275	\$0.104
Actuarial Value of Assets	\$77.290	\$67.980

**DEVELOPMENT OF YEARS TO FUND THE UNFUNDED
 ACTUARIAL ACCRUED LIABILITY**
 (In \$Billions)

	As of June 30, 1998 <u>(1)</u>	As of June 30, 1997 <u>(2)</u>
1. Valuation payroll	\$15.741	\$14.521
2. Total contribution rate	20.343%	20.487%
3. Normal Cost rate	15.758%	15.790%
4. Contribution rate available to fund the Unfunded Actuarial Accrued Liability ¹	4.343% ²	4.487% ¹
5. Amortization payment as of valuation date	N/A	\$0.652
6. Unfunded Actuarial Accrued Liability	\$(3.056)	\$1.872
7. Years to fund Unfunded Actuarial Accrued Liability	N/A	3 years

¹ For 1998, the employee plus employer contribution rates exceed the Normal Cost rate by 0.242% of pay. This difference is not used to fund the UAAL, but instead will be reserved pending future action for redistribution.

² For 1998, although actuarial assets exceed Actuarial Accrued Liability, other contributions are still required under EC 22955, EC 22951 and EC 22952.

CHANGE IN PLAN NET ASSETS¹
(In \$Thousands)

	Year Ending June 30, 1998	Year Ending June 30, 1997
	(1)	(2)
I. Additions		
A. Contributions		
1. Members	\$1,302,802	\$1,195,850
2. Employers	1,371,404	1,250,000
3. State of California	1,004,569	872,374
4. Total Contributions	<u>\$3,678,775</u>	<u>\$3,318,224</u>
B. Investment Income		
1. Net appreciation (realized and unrealized) in fair value of investments	9,973,501	8,163,203
2. Interest, dividends and other investment income	2,967,177	2,849,924
3. Securities lending income	1,066,103	1,142,068
4. Less investment expenses		
a. Cost of lending securities	(1,016,704)	(1,093,044)
b. Other	(40,577)	(43,433)
5. Net investment income	<u>\$12,949,500</u>	<u>\$11,018,718</u>
C. Other Income	748	729
D. Total Additions (A+B+C)	<u>\$16,629,023</u>	<u>\$14,337,671</u>
II. Deductions		
A. Benefit Payments		
1. Retirement, death and survivor benefits	\$2,923,753	\$2,752,930
2. Refunds of Member contributions	69,047	65,903
3. Purchasing power benefits	179,385	159,383
B. Expenses	<u>36,339</u>	<u>37,101</u>
C. Total Deductions	\$3,208,524	\$3,015,317
III. Net increase (decrease) (I-II)	\$13,420,499	\$11,322,354
IV. Net assets (deficit) held in trust for pension benefits		
A. Beginning of year	\$74,777,836	\$63,455,482
B. End of year (IVA+III)	\$88,198,335	\$74,777,836

¹ Includes Supplemental Benefit Maintenance Account

ESTIMATION OF YIELDS AND ASSET GAIN/(LOSS)
(In \$Billions)

	Market Value	Actuarial Value
	(1)	(2)
A. Estimated yield from July 1, 1997 to June 30, 1998		
1. Beginning assets	\$74.778	\$68.084
2. Investment income	\$12.950	\$9.011
3. Ending assets	\$88.198	\$77.565
4. Estimated yield	17.26%	13.19%
B. Calculation of Asset Gain/(Loss) from July 1, 1997 to June 30, 1998		
1. Assets at prior valuation	\$74.778	\$68.084
2. Contributions	3.679	3.679
3. Benefits and Expenses	(3.209)	(3.209)
4. Assumed earnings	6.001	5.466
5. SBMA adjustment	(0.313)	(0.275)
6. Expected value	\$80.936	\$73.745
7. Actual value	87.885	77.290
8. Asset Gain/(Loss)	\$6.949	\$3.545

ACTUARIAL GAINS AND LOSSES
(In \$Billions)

	As of June 30, 1998	As of June 30, 1997
	(1)	(2)
A. Calculation of Total Gain/(Loss)		
1. Unfunded Actuarial Accrued Liability as of prior valuation	\$1.872	\$8.184
2. Expected increases and decreases		
a. Normal Cost	2.293	4.313
b. Expected contributions	(2.975)	(5.529)
c. Interest	0.122	1.264
d. Expected net increases and decreases	\$(0.560)	\$0.048
3. Expected Unfunded Actuarial Accrued Liability at June 30 (1+2)	\$1.312	\$8.232
4. Unfunded Actuarial Accrued Liability	\$(3.056)	\$1.872
5. Actuarial gains/(losses) (3-4)	\$4.368	\$6.360
B. Sources of Actuarial Gains/(Losses)		
1. Change in methods	\$0	\$1.075
2. Change in economic assumptions	0	0
3. Change in demographic assumptions	0	0
4. Investment return	3.545	3.239
5. Contribution different than assumed	0.704	0.354
6. Liability gains/(losses)	0.119	1.692
7. Net actuarial gains/(losses)	\$4.368	\$6.360

ANALYSIS OF CHANGE IN FUNDING PERIOD

Basis	UAAL (\$Billions)	Normal Cost Rate	Total Contribution Rate	Funding Period	Change in Funding Period
(1)	(2)	(3)	(4)	(5)	(6)
1. 1997 valuation	\$1.872	15.790%	20.487%	3 years	
2. Expected at 1998	1.312	15.790%	20.487%	2 years	(1.0) years
3. Investment return	(2.233)	15.790%	20.343%	0 years	(2.0) years
4. Contribution differences	(2.937)	15.790%	20.343%	0 years	(0.0) years
5. Liability gains	(3.056)	15.758%	20.343%	0 years	(0.0) years

HISTORY OF CASH FLOW
 (In \$Billions)

Year Ending June 30	Contributions for the Year	Expenditures During the Year				(3+4+5) Total	(2-6) External Cash Flow for the Year	Market Value of Assets ¹	(7 ÷ 8) External Cash Flow as Percent of Market Value
		Benefit Payments	Refund of Contributions	Expenses					
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
1998	\$3.679	\$3.104	\$0.069	\$0.036	\$3.209	\$0.470	\$87.885	0.53%	
1997	3.318	2.912	0.066	0.037	3.015	0.303	74.664	0.41%	
1996	2.985	2.750	0.069	0.036	2.855	0.130	63.455	0.20%	
1995	2.831	2.567	0.067	0.034	2.668	0.163	55.862	0.29%	
1994	2.830	2.391	0.061	0.031	2.483	0.347	47.631	0.73%	
1993	2.750	2.182	0.068	0.031	2.281	0.469	47.122	1.00%	

¹ Net of Supplemental Benefit Maintenance Account

SCHEDULE OF FUNDING PROGRESS
 (As Required by GASB No. 25)
 (In \$Billions)

Actuarial Valuation Date as of June 30 ¹	Actuarial Value of Assets	Actuarial Accrued Liability (AAL)	Unfunded AAL (UAAL)	Funded Ratio	Covered Payroll ²	UAAL as a % of Covered Payroll
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1998	\$77.290	\$74.234	\$(3.056)	104%	\$15.741	(19%)
1997	67.980	69.852	1.872	97%	14.521	13%
1995	55.207	63.391	8.184	87%	12.688	65%
1993	45.212	53.581	8.369	84%	11.994	70%
1991	36.001	47.100	11.099	76%	11.816	94%
1989	29.327	40.266	10.939	73%	9.926	110%

¹ No actuarial report is prepared in even-numbered years prior to June 30, 1998. No estimate was made in years between valuations.

² All Covered Payroll amounts prior to 1998 are as reported in the 1996 Comprehensive Annual Financial Report.

SCHEDULE OF EMPLOYER CONTRIBUTIONS
 (As Required by GASB No. 25)
 (In \$Thousands)

Year Ended June 30	Annual Required Contribution	Contributed by Employers ¹	Contributed by the State ²	Total Contributed	Percentage Contributed
(1)	(2)	(3)	(4)	(5)	(6)
1998	\$1,911,466	\$1,419,212	\$586,946	\$2,006,158	105%
1997	1,835,329	1,299,163	550,117	1,849,280	101%
1996	1,725,955	1,195,768	530,187	1,725,955	100%
1995	1,588,892	1,110,979	518,816	1,629,795	103%
1994	1,586,360	1,125,971	517,944	1,643,915	104%
1993	1,583,832	1,084,249	510,757	1,595,006	101%
1992	1,396,612	1,081,274	366,978	1,488,252	104%

¹ Includes additional employer contributions under Sections 22950, 22951, 22952, and 22953 (for years prior to 1997).

² Includes SB 1370 (Elder Full Funding Act) representing additional amounts to maintain the full value of the contribution schedule required by statute.

NOTES TO REQUIRED SUPPLEMENTARY INFORMATION
(As Required by GASB No. 25)

The information presented in the required supplementary schedules was determined as part of the actuarial valuations at the dates indicated. Additional information as of the latest actuarial valuation follows:

Valuation date	June 30, 1998
Actuarial cost method	Entry Age Normal
Amortization method	Level percent, open
Remaining amortization period	0 years
Asset valuation method	Expected value with 25% adjustment to market value
Actuarial assumptions:	
Investment rate of return	8.00%
Wage inflation	5.50%
Interest on Member accounts	6.00%
Consumer Price Inflation	4.50%
Administrative expenses	0.25% of payroll

STATISTICAL INFORMATION

	June 30	
	1998	1997
	(1)	(2)
A. Number		
1. Active Members		
a. Total Active Members	385,530	364,000
b. Average age	44.3 years	44.5 years
c. Average service	11.0 years	11.3 years
2. Inactive Members	61,848	59,385
B. Annualized Salaries ¹		
1. Active Members		
a. Total salary	\$15.741 billion	\$14.521 billion
b. Average annual salary	\$40,830	\$39,893
C. Accumulated Members Contribution		
1. Total Active Members	\$17.726 billion	\$16.362 billion
2. Inactive Members	\$0.725 billion	\$0.679 billion
D. Persons Receiving Benefits		
1. Number		
a. Service Retirees	139,193	135,809
b. Disabled Retirees	5,758	5,676
c. Survivors	12,796	12,154
d. Total	<u>157,747</u>	<u>153,639</u>
2. Annual Pensions Payable		
a. Service Retirees	\$2.735 billion	\$2.552 billion
b. Disabled Retirees	\$0.096 billion	\$0.090 billion
c. Survivors	\$0.154 billion	\$0.139 billion
d. Total	<u>\$2.985 billion</u>	<u>\$2.781 billion</u>
3. Average Monthly Annuities		
a. Service Retirees	\$1,638	\$1,566
b. Disabled Retirees	\$1,383	\$1,322
c. Survivors	\$1,003	\$953
d. All Retirees	\$1,577	\$1,509

¹ Estimated Earned Salaries; total earnable is \$16.892 billion and \$15.643 billion as of June 30, 1998 and June 30, 1997, respectively.

STATEMENT OF PLAN NET ASSETS
(In \$Thousands)

	As of June 30, 1998 <u>(1)</u>	As of June 30, 1997 <u>(2)</u>
I. Assets (including Supplemental Benefit Maintenance Account)		
A. Investments, at fair value		
1. Short term	\$1,725,028	\$1,980,386
2. Debt securities		
a. Directly held:		
Domestic	17,752,345	17,183,281
International	603,994	496,988
b. Pooled – domestic	8,529,149	8,066,999
3. Equities		
a. Directly held:		
Domestic	11,835,091	10,188,197
International	18,525,360	16,141,691
b. Pooled – domestic	24,896,824	17,155,432
4. Alternative	1,983,165	1,366,122
5. Real estate	2,061,342	1,953,949
6. Securities lending collateral	16,996,456	18,647,550
7. Total investments	<u>104,908,754</u>	<u>93,180,595</u>
B. Cash and cash equivalents	4,409	5,134
C. Receivables		
1. Investments sold	292,493	235,198
2. Foreign exchange contracts	2,250,123	2,744,409
3. Interest and dividends	481,709	472,421
4. Member/employer and other	313,363	299,136
5. Supplemental Benefit Maintenance Account	--	--
6. Total receivables	<u>3,337,688</u>	<u>3,751,164</u>
D. Other assets	534	3,950
E. Total assets (A+B+C+D)	<u>108,251,385</u>	<u>96,940,843</u>
II. Liabilities		
A. Payable for investments purchased	438,784	389,720
B. Payable for foreign exchange contracts	2,204,647	2,744,650
C. Benefits in process of payment	295,666	269,271
D. Other liabilities	117,497	111,816
E. Securities lending obligation	16,996,456	18,647,550
F. Total liabilities	<u>20,053,050</u>	<u>22,163,007</u>
III. Net assets (deficit) held in trust for pension benefits (I-II)	<u>\$88,198,335</u>	<u>\$74,777,836</u>

**DISTRIBUTION OF ACTIVE PARTICIPANTS
BY AGE/SERVICE/SALARY**

Attained Age	Years of Service												Total	
	0-1	1-2	2-3	3-4	4-5	5-9	10-14	15-19	20-24	25-29	30-34	Over 34		
Under 25	1,544	3,405	765	23	0	0	0	0	0	0	0	0	0	5,737
Average Salary	4,566	26,311	30,224	30,295	0	0	0	0	0	0	0	0	0	20,997
25 - 29	4,172	12,652	11,426	5,882	3,848	2,972	0	0	0	0	0	0	0	40,952
Average Salary	4,645	25,444	30,333	31,686	33,829	36,985	0	0	0	0	0	0	0	27,211
30 - 34	2,589	6,563	6,085	4,244	4,168	16,398	1,599	0	0	0	0	0	0	41,646
Average Salary	4,594	24,314	30,095	31,077	32,903	38,236	47,240	0	0	0	0	0	0	31,844
35 - 39	2,331	4,744	4,036	2,691	2,479	13,266	10,970	868	0	0	0	0	0	41,385
Average Salary	4,424	23,173	29,533	30,933	33,194	38,585	47,344	53,389	0	0	0	0	0	35,823
40 - 44	2,528	4,742	4,028	2,688	2,379	11,418	11,102	8,395	1,279	0	0	0	0	48,559
Average Salary	4,536	22,364	29,044	31,253	33,772	40,222	47,713	52,680	57,400	0	0	0	0	39,199
45 - 49	2,484	4,961	4,124	2,769	2,543	12,815	12,196	9,502	12,186	2,779	2	0	0	66,361
Average Salary	4,392	22,302	29,178	31,068	33,781	41,381	48,852	52,266	56,855	59,919	46,552	0	0	43,640
50 - 54	1,871	3,340	2,738	2,034	1,855	10,161	10,990	7,931	9,784	16,369	3,458	2	0	70,533
Average Salary	4,358	20,668	28,537	30,008	33,523	41,360	49,282	53,239	56,326	59,471	61,056	68,059	0	48,183
55 - 59	1,031	1,635	1,291	962	828	4,588	5,745	4,792	5,104	7,850	10,683	1,765	0	46,274
Average Salary	4,331	19,108	26,669	27,598	30,610	39,548	48,792	52,826	56,204	59,121	60,471	62,084	0	50,644
60 - 64	505	722	487	369	367	1,662	2,054	1,859	1,969	2,207	2,669	2,281	0	17,151
Average Salary	3,556	15,724	21,378	23,356	24,141	35,713	47,848	50,956	55,796	59,106	60,974	63,815	0	49,094
65 & up	324	418	303	259	192	754	737	689	705	720	832	999	0	6,932
Average Salary	3,383	11,129	13,590	14,615	16,865	27,788	45,028	49,428	54,865	58,521	59,789	63,508	0	43,146
Total	19,379	43,182	35,283	21,921	18,659	74,034	55,393	34,036	31,027	29,925	17,644	5,047	0	385,530
Average Salary	4,465	23,482	29,375	30,666	32,986	39,446	48,270	52,573	56,491	59,371	60,628	63,151	0	40,830
Average Age:	44.3													
Average Service:	11.0													

**DISTRIBUTION OF SERVICE RETIREMENT ANNUITIES
 BY AGE/RETIREMENT DATE**

Attained Age	Retirements in Plan Year Beginning in															Pre 1983	Total	Monthly Benefit Amount	
	1997	1996	1995	1994	1993	1992	1991	1990	1989	1988	1987	1986	1985	1984	1983				
Under 40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
40 - 44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
45 - 49	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
50 - 54	18	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	27	1,707
55 - 59	2,184	1,528	1,271	962	342	33	14	2	2	0	0	1	0	0	0	0	1	6,340	1,593
60 - 64	3,206	3,185	3,333	3,362	3,190	2,254	1,659	1,214	815	289	18	16	3	1	1	8	22,552	2,118	
65 - 69	903	1,104	1,444	1,872	2,552	3,634	3,582	3,787	2,689	2,727	1,825	1,552	1,182	808	327	38	30,026	2,055	
70 - 74	181	257	320	534	735	1,234	1,507	1,890	1,820	2,395	2,714	2,821	2,339	2,540	2,458	5,205	28,750	1,741	
75 - 79	39	40	70	125	161	257	318	475	440	698	818	1,117	1,253	1,579	2,000	13,353	22,739	1,353	
80 - 84	7	11	10	18	40	39	56	61	64	95	115	157	210	320	478	13,051	14,732	1,089	
85 - 89	4	3	0	4	3	4	7	6	8	9	6	5	11	14	36	8,578	8,698	855	
90 - 94	4	0	2	1	0	0	0	0	0	0	1	0	2	2	1	4,152	4,185	764	
Over 94	18	0	0	0	0	0	0	0	1	1	0	0	0	0	0	1,144	1,164	733	
Total	6,564	6,137	6,450	6,878	7,023	7,455	7,141	7,435	5,839	6,212	5,497	5,669	5,000	5,264	5,301	45,528	139,193	1,838	
Average Monthly Benefit Amount	2,139	2,149	2,101	2,118	2,151	2,201	2,181	2,158	1,958	1,869	1,822	1,740	1,096	1,502	1,373	966	1,638		

Average Monthly Benefit Amount: \$1,638
 Total Annual Benefits: \$2,735,142,450

**DISTRIBUTION OF DISABLED RETIREMENT ANNUITIES
 BY AGE/RETIREMENT DATE**

Attained Age	Retirements in Plan Year Beginning in															Pre 1983	Total	Monthly Benefit Amount	
	1997	1996	1995	1994	1993	1992	1991	1990	1989	1988	1987	1986	1985	1984	1983				
Under 40	21	10	9	11	2	2	3	0	0	0	0	0	0	0	0	0	0	58	1,682
40 - 44	21	18	22	18	11	7	4	1	3	0	0	0	1	0	0	1	1	107	1,907
45 - 49	79	52	32	41	26	23	15	9	8	6	5	3	3	7	2	1	312	1,866	
50 - 54	135	84	94	75	60	67	32	22	25	26	16	14	11	17	9	48	735	1,833	
55 - 59	101	114	128	100	94	87	40	40	34	35	19	20	21	25	11	92	959	1,774	
60 - 64	41	39	57	60	81	76	80	67	59	55	38	31	39	29	24	185	961	1,497	
65 - 69	14	17	17	28	32	32	9	24	28	42	44	43	53	54	47	327	811	1,251	
70 - 74	5	4	3	9	10	10	1	1	1	3	4	8	16	29	47	650	799	1,050	
75 - 79	1	3	1	1	1	1	0	0	0	0	0	0	0	0	1	582	591	856	
80 - 84	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	241	241	645	
85 - 89	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	78	79	455	
90 - 94	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	76	76	392	
Over 94	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	29	29	387	
Total	419	341	361	343	317	305	184	164	158	167	126	117	144	161	141	2,310	5,758	1,383	
Average Monthly Benefit Amount	1941	1886	1831	1817	1879	1789	1829	1611	1615	1534	1503	1515	1416	1313	1180	875	1383		

Average Monthly Benefit Amount: \$1,383
 Total Annual Benefits: \$95,559,768

**DISTRIBUTION OF SURVIVOR RETIREMENT ANNUITIES¹
 BY AGE/RETIREMENT DATE**

Attained Age	Retirements in Plan Year Beginning in															Pre 1983	Total	Monthly Benefit Amount
	1997	1996	1995	1994	1993	1992	1991	1990	1989	1988	1987	1986	1985	1984	1983			
Under 40	12	9	6	13	15	8	7	10	7	2	4	4	1	1	2	23	124	901
40 - 44	5	4	3	6	6	7	6	11	4	4	1	3	1	1	0	27	89	1,001
45 - 49	4	6	4	7	10	5	7	5	3	4	5	5	1	2	3	39	110	939
50 - 54	13	13	20	17	13	14	13	5	3	4	1	3	4	2	2	58	185	1,116
55 - 59	23	35	37	38	37	28	18	17	22	14	16	12	1	3	6	64	369	1,372
60 - 64	13	24	32	42	42	62	50	83	49	44	43	31	19	8	12	93	647	1,533
65 - 69	10	10	23	38	39	45	95	98	90	97	109	78	59	47	55	237	1,130	1,430
70 - 74	4	4	9	14	15	30	40	62	51	98	82	114	101	127	131	818	1,700	1,246
75 - 79	2	1	2	5	5	6	14	26	23	32	39	54	61	91	113	1,454	1,928	1,019
80 - 84	0	1	1	2	1	4	3	0	4	7	6	16	13	16	29	1,521	1,624	823
85 - 89	0	1	0	0	0	0	1	2	3	1	1	3	1	5	6	1,056	1,080	743
90 - 94	0	0	1	0	0	0	0	0	0	0	0	0	1	1	3	515	521	688
Over 94	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	152	152	606
Total	86	108	138	182	183	207	254	319	259	307	307	323	263	304	362	8,057	9,659	1,066
Average Monthly Benefit Amount	1,544	1,487	1,749	1,681	1,642	1,790	1,726	1,756	1,705	1,563	1,644	1,472	843	1,346	1,195	778	1,066	

Average Monthly Benefit Amount: \$1,066
 Total Annual Benefits: \$123,538,610

¹ This table does not include an additional 3,137 records from the family benefits file, with total annual benefits of approximately \$31 million.

**SUMMARY OF THE BENEFIT PROVISIONS OF THE
RETIREMENT SYSTEM AS OF JUNE 30, 1998**

The provisions of the California State Teachers' Retirement System used in this valuation are summarized below:

A. Normal Retirement

Eligibility	Age 60 with five years of credited California service.
Retirement Allowance	2% of final compensation for each year of credited service
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.
Final Compensation	Average salary earnable for the highest three consecutive years of credited California service for one position.
Limitation on Benefits	Benefits are subject to limits imposed under Internal Revenue Code (IRC) Section 415, except for benefits based on plan provisions in effect as of October 14, 1987, payable to Members with membership dates prior to 1990.
Sick Leave Service Credit	Service is granted for unused sick leave at the time of retirement under certain circumstances. New members on and after July 1, 1980, or any Members who refund and return to membership, will not receive credit for sick leave.

B. Early Retirement

Eligibility	Age 55 with five years of credited California service, or age 50 with 30 years of credited California service.
Early Retirement Allowance	Normal retirement benefit reduced ½% for each full month or partial month the Member is younger than age 60, and further reduced ¼% for each full month or partial month the Member is younger than age 55.

C. Late Retirement

Retirement Allowance Members continue to earn additional service credit after age 60, based on usual 2% benefit factor.

D. Deferred Retirement

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 requirements.

E. Post Retirement Benefit Adjustment

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

F. Disability Allowance - Coverage A

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

Disability 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 age 22, except beginning January 1, 2002, the amount will terminate if the child marries, attains age 18, or is no longer registered as a full-time student.

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

Benefit is converted to projected service retirement benefit when member reaches normal retirement age.

G. Disability Retirement - Coverage B

Eligibility	Member has five years of credited California service. These provisions apply to individuals who become Members on or after October 16, 1992, or Members as of October 16, 1992 who elect coverage under these provisions.
Disability 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 eligible 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.

H. Death Before Retirement - Coverage A

Eligibility	One or more years of service credit for active Members or Members receiving a disability allowance.
Lump Sum Payment	\$5,000 (adjusted with CPI) lump sum to the designated beneficiary. If there is no surviving spouse or eligible children, the contributions and interest are paid to the designated beneficiary.
Survivor Allowance	<p>The surviving spouse 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%</p> <p>If there is no surviving spouse, an allowance of 10% of final compensation is payable to each eligible child up to a maximum benefit of 50% for five or more children.</p> <p>When there are no eligible children, the spouse 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.</p>

I. Death Before Retirement - Coverage B

Eligibility	One or more years of service credit for active Members.
Lump Sum Payment	\$20,000 (adjusted with CPI) lump sum to the designated beneficiary. If there is no surviving spouse, the contributions and interest are paid to the designated beneficiary.
Survivor 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 60 th birthday, or immediately with a reduction based on the Member's and spouse's age at the time the benefit begins. If the surviving spouse elects a monthly allowance, each eligible child would receive 10% of the Member's final compensation, with a maximum benefit of 50%.

J. Death After Retirement

Lump Sum Payment	\$5,000 (adjusted with CPI) 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.

K. Termination From System

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.
Reentry After Refund	Former Members who reenter the System may redeposit all amounts previously refunded plus regular interest. The Member must earn one year of credited service after reentry before becoming eligible for benefits from the System.

L. Financing

Members	8.0% of salary.
Employer	8.0% of salary. plus 0.25% of salary to pay costs related to unused sick leave service credit (effective July 1, 1986). plus 0.307% of salary which covers the cost of ad hoc benefit adjustments.
State of California	The State's quarterly contribution to STRS is set at 1.075% of the prior calendar year teacher payroll (4.30% annual). This rate will continue until the Unfunded Obligation is eliminated and then will be reduced to the amount required to cover the Normal Cost of benefits in effect on July 1, 1990. Any required increase or decrease is limited to 0.25% per year and in no event will the annual contribution exceed 4.30%.

ACTUARIAL ASSUMPTIONS AND METHODS

I. Actuarial Methods

Actuarial Value of Assets:

The actuarial value of assets is equal to the expected value (based on the assumed rate of return) plus 25% of the excess (shortfall) between expected investment return and actual income. The resulting value cannot be less than 80% or more than 120% of the market value of assets.

Payroll Growth for Funding of Unfunded Actuarial Accrued Liability:

1. Total payroll growth rate: 5.50%.
2. Portion attributable to inflation: 4.50%.
3. Portion attributable to active member growth: No growth.

Actuarial Cost Method:

The funding period required to amortize the Unfunded Actuarial Accrued Liability (UAAL) is determined using the Entry Age Normal Actuarial Cost Method. This method assigns the plan's total unfunded liabilities (the actuarial present value of future benefits less the actuarial value of assets) to various periods. The Unfunded Actuarial Accrued Liability is assigned to years prior to the valuation, and the Normal Cost is assigned to the year following the valuation.

The Normal Cost is determined as the level percentage of payroll necessary to fund the Members' benefits from entry age. The Actuarial Accrued Liability is the difference between the total present value of future benefits and the actuarial present value of future normal costs. The Unfunded Actuarial Accrued Liability (UAAL) is the excess of the Actuarial Accrued Liability over the actuarial value of assets.

Since the State statutes governing the System establish the current employee, employer and State contribution rates, the actuarial valuation determines the number of years required to amortize (or fund) the UAAL on a level percentage of payroll basis, taking into account the payroll growth assumption and the Normal Cost expressed as a percent of pay.

Because of this amortization procedure, any change in the Unfunded Actuarial Accrued Liability due to (i) actuarial gains and losses, (ii) changes in actuarial assumptions, or (iii) amendments, affects the funding period.

II. Actuarial Economic Assumptions

A.	Consumer Price Index	4.5%
B.	Investment Yield	8.0%
C.	Wage Inflation/Payroll Growth Rate	5.5%
D.	Interest on Member Accounts	6.0%
E.	Administrative Expenses	0.25% of Payroll

III. Demographic Assumptions

Mortality			
Actives	Male	1983 GAM-M (-5)	Table 21a
	Female	1983 GAM-F (-3)	Table 21a
Retirees and Beneficiaries	Male	1983 GAM-M (-3)	Table 21b
	Female	1983 GAM-F (-1)	Table 21b
Pre-1972 Disabled Members	Male	1951 GAM-M (-1)	Table 21b
	Female	1951 GAM-F (-8)	Table 21b
Termination from Disability	Male	1983 GAM-M (min 3.5%)	Table 21c
	Female	1983 GAM-F (min 2.2%)	Table 21c
Service Retirement		Experience Tables	Table 21d
Disability Allowance		Experience Tables	Table 21e
Withdrawal			
Total Rate		Experience Tables	Table 21f
Probability of Refund		Experience Tables	Table 21g
Future Service Credits		Current Service Level from Prior Year	
Promotional Salary Increases		Experience Tables	Table 21h

MORTALITY RATES

Age	Active Members*	
	1983 GAM (-5)	1983 GAM (-3)
	Male	Female
25	0.04%	0.02%
30	0.05	0.03
35	0.06	0.04
40	0.09	0.05
45	0.12	0.08
50	0.22	0.12
55	0.39	0.19
60	0.61	0.31
65	0.92	0.52
70	1.56	0.87
75	2.75	1.62
80	4.46	3.07
85	7.41	5.27
90	11.48	8.45
95	16.63	13.56

*Mortality for before and after retirement for currently active members.

MORTALITY RATES

Age	Retired Members and Beneficiaries		Pre-1972 Disabled Members	
	Male	Female	Male	Female
50	0.28%	0.15%	0.58%	0.25%
55	0.48	0.23	0.96	0.46
60	0.71	0.38	1.44	0.79
65	1.11	0.64	2.21	1.23
70	1.98	1.09	3.59	1.84
75	3.34	2.11	5.71	3.01
80	5.48	3.85	9.10	4.75
85	8.93	6.38	13.71	7.51
90	13.39	10.14	18.89	11.80
95	19.05	16.51	25.28	16.71
	1983 GAM (-3)	1983 GAM (-1)	1951 GAM (-1)	1951 GAM (-8)

TERMINATION RATES FROM DISABILITY ALLOWANCE*

<u>Age</u>	<u>Male</u>	<u>Female</u>
70 & under	3.50%	2.20%
75	4.46	2.40
80	7.41	4.29
85	11.48	6.99
90	16.63	11.18
95	23.41	18.24
	1983 GAM (min 3.5%)	1983 GAM (min 2.2%)

* Mortality plus recovery to inactive status.

RETIREMENT RATES

<u>Age</u>	<u>Male</u>	<u>Female</u>
54	2.5%	2.5%
55	6.3	6.8
56	5.8	5.8
57	7.2	7.0
58	10.4	8.6
59	22.2	17.4
60	26.1	19.8
61	21.4	17.4
62	21.4	17.4
63	21.4	18.2
64	27.6	23.8
65	28.3	24.6
66	26.1	23.0
67	23.0	22.2
68	25.3	23.0
69	25.3	26.1
70	100.0	100.0

DISABILITY RATES

Age	Coverage A					
	Male			Female		
25	0.02%			0.02%		
30	0.03			0.03		
35	0.05			0.06		
40	0.08			0.08		
45	0.11			0.13		
50	0.16			0.18		
55	0.21			0.23		

Age	Coverage B					
	Entry Ages - Male			Entry Ages - Female		
	<37	42	47	<37	42	47
25	0.02%			0.03%		
30	0.07			0.03		
35	0.12			0.05		
40	0.13			0.09		
45	0.16	0.23%		0.14	0.23%	
50	0.20	0.36	0.49%	0.23	0.36	0.40%
55	0.27	0.46	0.80	0.32	0.46	0.60%

WITHDRAWAL RATES

Duration	All Males	Entry Ages - Female			
		27	32	37	42
1	14.8%	14.8%	14.8%	14.8%	14.8%
2	8.8	8.8	8.6	7.7	6.6
3	6.8	7.7	6.8	5.4	5.1
4	5.8	6.8	5.8	4.4	4.3
5	5.0	5.9	5.0	3.8	3.6
10	2.5	2.5	2.2	1.9	1.6
15	1.3	1.2	1.2	1.2	
20	0.8	0.9	0.9		
25	0.5	0.8			

PROBABILITY OF REFUND

Duration	Entry Ages - Male			
	27	32	37	42
Under 5	100%	100%	100%	100%
10	60	50	50	45
15	50	45	45	
20	40	40		
25	30			

Duration	Entry Ages - Female			
	27	32	37	42
Under 5	100%	100%	100%	100%
10	40	40	40	35
15	35	35	35	
20	30	25		
25	20			

RATES OF PROMOTIONAL SALARY INCREASE

Duration	Entry Ages - Male			
	27	32	37	42
1	8.0%	9.5%	9.8%	8.9%
10	3.6	2.6	1.9	2.0
20	1.1	0.7	0.7	0.4
30	0.7	0.6		

Duration	Entry Ages - Female			
	27	32	37	42
1	7.2%	7.7%	8.5%	5.4%
10	3.1	2.5	2.7	2.6
20	0.7	0.6	0.9	1.0
30	0.3	0.4		

DEFINITION OF ACTUARIAL TERMS

In our report we have attempted to avoid the use of complex actuarial terminology, but we realize that different users of our reports may have differing opinions as to what constitutes an "actuarial term". Accordingly, we offer the following definitions of several terms contained in this report which might be considered actuarial in nature.

1. *Actuarial Accrued Liability* - for benefits payable in the future to present Members, it will equal the present value of benefits payable in the future to them less the present value of future normal costs.
2. *Actuarial Assumptions* - assumptions as to future experience under the System. Current actuarial assumptions are detailed in Table 21 of the current annual valuation report. Assumptions include future fund earning rates, rates of future salary increases, and rates of death (both before and after retirement), disability, retirement, and withdrawal.
3. *Actuarial Gain or Actuarial Loss* - a measure of the difference between actual experience and assumed experience of the System. Through the actuarial assumptions, rates of decrements, rates of salary increases, and rates of fund earnings have been forecasted. To the extent that actual experience differs from that assumed, actuarial liabilities emerge which may be the same as forecasted, or they may be larger or smaller than projected. Actuarial gains are due to favorable experience, e.g., the System's assets earn more than projected, salaries do not increase as fast as assumed, members retire later than assumed, etc. Favorable experience means actual results produce actuarial liabilities not as large as projected by the actuarial assumptions. On the other hand, actuarial losses are the result of unfavorable experience, i.e., actual results that produce actuarial liabilities which are larger than projected. Actuarial gains will shorten the time required for funding of the unfunded actuarial accrued liability while actuarial losses will lengthen the funding period.
4. *Actuarial Liabilities* - the actuarially determined present value of future benefits to be provided by the System. There are separate actuarially determined present values for retired Members and non-retired Members (either active or inactive). When applied to active Members, it takes into account benefits which will be earned through future service and future salary increases.
5. *Actuarial Value of Present Assets* - the value of present System assets for valuation purposes. This value is calculated by reflecting 25% of the excess (shortfall) between expected and actual income return on the market value of assets.

6. *Actuarially Determined* - values which have been determined utilizing the principles of actuarial science. An actuarially determined value is derived by application of the appropriate actuarial assumptions to specified values determined by provisions of the law.
7. *Actuarially Sound* - a condition existing when the Unfunded Actuarial Accrued Liability can reasonably be expected to be funded or amortized over a determinable number of years. Such funding or amortization is accomplished as a result of the excess of total contributions over the normal cost of expected benefits.
8. *Decrements* - those types of activities by Members of the System which cause them no longer to be Members, i.e., death, retirement, disability, and withdrawal. It is a general term referring to any or all of these membership terminating events.
9. *Defined Benefits* - in a retirement plan, benefits which are defined by a specific formula applied to specific Member compensation and/or specific years of service. The amount of the benefit is not a function of contributions or actual earnings on those contributions.
10. *Defined Contributions* - in a retirement plan, periodic contributions to the plan which are defined as a specific percent of compensation.
11. *Experience Study* - a periodic review and analysis of the actual experience of the System which may lead to a revision of one or more actuarial assumptions. Actual rates of decrement and salary increases are compared to the actuarially assumed values and modified as deemed appropriate by the Actuary.
12. *Funding Period* - the number of years in the future that will be required to fund (i.e., pay off or eliminate) the Unfunded Actuarial Accrued Liability, based on the actuarial assumptions and assuming no future actuarial gains or losses.
13. *Future Benefits* - benefits specified in the law which will become payable at some time in the future when the Member satisfies the requirement to receive such benefits.
14. *Future Contributions* - contributions to be made by the Member, the employer, or the State in the future, as required by the law.
15. *Normal Cost* - the actuarial cost to fund the benefits provided by the System were the funding to begin at date of hire. It is expressed as a percent of pay and is equal to the present value at hire of all possible benefits of the System divided by the present value of anticipated future compensation to be received by the new Member. In the aggregate, it must be less than the total future contribution to the System if the Unfunded Actuarial Accrued Liability is to be amortized.

16. *Present Value* - the actuarially determined lump sum value as of the valuation date of a series of payments to be made in the future, where the lump sum value is equal to the sum of the discounted value of each future payment. The discounted value of each payment is the product of (a) the amount of the payment, (b) the probability that the payment will be made (based on the current actuarial assumptions as to future experience), and (c) the time value of money (based on the current assumed interest rate).

17. *Unfunded Actuarial Accrued Liability* - that portion of the Actuarial Accrued Liability (including the present value of benefits presently being paid to retired Members) that exceeds the value of current assets. Referred to as the "Unfunded Actuarial Obligation" in STRS statutes.