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Teachers' Retirement Board

Connecticut State Teachers' Retirement System
Annual Actuarial Valuation
as of June 30, 2010

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November 3, 2010

Board of Trustees
Connecticut State Teachers' Retirement System
765 Asylum Avenue
Hartford, CT 06105

Members of the Board:

The laws governing the operation of the Connecticut State Teachers' Retirement System provide that actuarial valuations of the assets and liabilities of the System shall be made at least once every two years. We have conducted the biennial actuarial valuation of the System as of June 30, 2010 and the results of the valuation are contained in the following report.

In performing the valuation, we relied on data supplied by the System and performed limited tests on the data for consistency and reasonableness. The valuation was prepared in accordance with the funding objectives of the System as set forth in Chapter 167a, Section 10-183z of the Connecticut General Statutes. The normal cost and accrued liability of the System are developed using the entry age normal cost method. Under this method, the normal cost is the level percent of payroll necessary to fully fund the expected benefits to be earned over the career of each individual active member. The normal cost is partially funded with active member contributions with the remainder funded by employer contributions.

In determining the System's liabilities, future events, such as investment returns, salary increases, deaths, retirements, etc., are anticipated based upon the set of actuarial assumptions as approved by the Board. The assets of the system for valuation purposes are developed using an asset smoothing technique which spreads the recognition of the unexpected portion market related gains and losses over a period of years with the goal of dampening the impact of market volatility upon valuation results.

An unfunded accrued liability exists in the amount equal to the excess of accrued liability over valuation assets. The accrued liability contribution was determined in accordance with subsections (b) and (c) of Section 10-183z of the Statutes. In our opinion, the System continues to operate on an actuarially sound basis.

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Future actuarial results may differ significantly from the current results presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; and changes in plan provisions or applicable law. Since the potential impact of such factors is outside the scope of a normal annual actuarial valuation, an analysis of the range of results is not presented herein.

This is to certify that the independent consulting actuary is a member of the American Academy of Actuaries and has experience in performing valuations for public retirement systems, that the valuation was prepared in accordance with principles of practice prescribed by the Actuarial Standards Board, and that the actuarial calculations were performed by qualified actuaries in accordance with accepted actuarial procedures, based on the current provisions of the retirement system and on actuarial assumptions and methods that are internally consistent and reasonably based on the actual experience of the System.

Respectfully submitted,

John J. Garrett, ASA, FCA, MAAA
Principal and Consulting Actuary

Cathy Turcot
Principal and Managing Director

TABLE OF CONTENTS

Section I: Board Summary

The table below summarizes the results of the June 30, 2010 actuarial valuation as compared with the prior year.

Table I-1: Comparative Summary of Principal Results	June 30, 2008	June 30, 2010
Membership		
Active Members		
Number	51,738	51,368
Annual Payroll	$3,399,305	$3,645,974
Retirees and Beneficiaries		
Number	28,787	30,493
Annual Benefits	$1,231,069	$1,364,689
Inactive Members		
Vested	1,394	1,315
Non-Vested	10,597	11,315
Assets		
Market Value	$14,551,467	$12,273,604
Actuarial Value	$15,271,013	$14,430,187
Return on Market Value	(4.77)%	13.45%
Return on Actuarial Value	7.70%	1.17%
Ratio of Actuarial to Market Value	104.94%	117.57%
Actuarial Information		
Unfunded Actuarial Liability (UAL)	$6,530,008	$9,065,729
Funded Ratio	70.05%	61.42%
Computed Contribution Rates		
Normal Cost	10.40%	10.11%
Unfunded Accrued Liability	10.81%	15.09%
Total	21.21%	25.20%
Member	6.00%	6.00%
State	15.21%	19.20%
State Contribution Amount for Fiscal Year Ending		
June 30, 2010	$559,224	
June 30, 2011	$581,593	
June 30, 2012		$757,246
June 30, 2013		$787,536
All dollar amounts are in thousands.		

Summary of Key Findings

The employer contribution rate for the System is used to pay the employer's portion of the normal cost and to amortize the unfunded actuarial accrued liability (UAAL).

The actuarially determined employer normal cost contribution rate decreased from 10.40% as of June 30, 2008 to 10.11% as of June 30, 2010. The unfunded actuarial accrued liability increased from $6.530 billion to $9.066 billion over the two year period. The unfunded actuarial accrued liability rate increased from 10.81% to 15.09%. We note the following key findings:

- The UAAL grew by $1.189 billion due to interest and decreased by $834.8 million due to the amortization payments over the two year period.

- The System experienced actuarial losses on plan assets of $1.054 billion for fiscal year 2009 and $1.069 billion for fiscal year 2010 as a result of the investment return on the actuarial value of assets being less than the assumed rate. Table III-3 provides the calculation of the investment losses for the two- year period.

- The System experienced a net actuarial loss of $198.0 million as of June 30, 2009 and a net actuarial gain of $139.7 million as of June 30 2010 on plan liabilities due to non-investment related experience. Table IV-2 provides the reconciliation of the UAAL which is summarized as follows:

    1. There was an increase in the UAAL of $163.4 million due to the transition from the prior actuarial firm. This is primarily due to a difference in the allocation of liabilities between normal cost and accrued liability.

    2. The System provides post-retirement Cost-of-Living Adjustments based upon certain criteria set forth in the statutes. For purposes of the valuation, the benefits paid to eligible retirees and beneficiaries are expected to increase at a rate of 3.00% annually for members retired before September 1992 and 2.0% for members retired on and after September 1, 1992. The actual COLAs granted for members retired on and after September 1, 1992 were 1.5% for 2009 and there was no COLA granted for 2010. This resulted in a $46.4 million gain to the System in 2009 and $190.2 million gain to the system in 2010.

3. The System experienced a $24.9 million loss due to salary experience for 2009 and a $42.1 million gain due to salary experience for 2010.

4. In addition, there were other losses primarily attributable to the System turnover experience. The loss for 2009 was $56.1 million and the loss for 2010 increased plan liabilities by $92.5 million.

Section II of the report provides summarized information on the membership data used in the valuation. Section III of the report covers the System's assets and Section IV of the report covers the System's liabilities. The results of the valuation are provided in Section V of the report and the accounting information is in Section VI. The appendices provide additional information on: A) the System members; B) the actuarial assumptions and methods; and C) the summary of plan provisions. In addition, Appendix D provides a glossary of actuarial terminology. It should be noted that all information contained in this report for periods prior to June 30, 2009 was produced by a prior actuarial consulting firm.

Section II: Membership Data

Data regarding the membership of the System for use in the valuation were furnished by the Retirement Systems. The following table summarizes the membership data as of June 30, 2010 and is compared with that reported for the prior valuation.

Table II-1: Summary of Membership Data		
	June 30, 2008	June 30, 2010
Active Members		
Total Number of Active Members	51,738	51,368
Total Annual Compensation	$3,399,305	$3,645,974
Retirees and Beneficiaries		
Number of Service Retirements	28,475	28,616
Total Annual Benefit Payments	$1,222,866	$1,317,047
Number of Disability Retirements	312	274
Total Annual Benefit Payments	$8,203	$6,979
Number of Beneficiaries	*	1,603
Total Annual Benefit Payments	*	$40,663
Inactive Members		
Number of Non-vested Inactive Members	10,597	11,315
Number of Vested Inactive Members	1,394	1,315
All dollar amounts are in thousands.		

* included with service retirements

Section III: System Assets

The following tables provide information on the System's assets.

Table III-1: Market Value Reconciliation

	2008 - 2009	2009 - 2010
Net Market Value as of July 1	$14,551,467	$11,397,053
Additions		
State Contributions	539,303	559,224
ERIP Contributions	1,573	857
Employee Contributions	241,552	253,206
Change in Net Appreciation	(2,967,064)	648,184
Interest and Dividends	401,106	340,899
Gain on Sale of Securities	24,937	502,467
Total Additions	(1,758,593)	2,304,837
Deductions		
Benefit Payments	($1,395,821)	($1,428,286)
Net Increase	($3,154,414)	$876,551
Net Market Value as of June 30	$11,397,053	$12,273,604

All dollar amounts are in thousands.

Development of Actuarial Value of Assets

The Actuarial Value of Assets represents a "smoothed" value developed with the purpose to dampen the impact of market volatility on the assets used in determining valuation results. The Actuarial Value of Assets has been calculated by spreading the recognition of excess investment income over four years. The amount of excess investment income in each year is the difference between expected investment income on actuarial value and the actual market value investment income. Table III-2 provides the development of the actuarial value of assets over the two year period since the previous valuation.

Table III-2: Development of Actuarial Value of Assets		
	June 30, 2009	**June 30, 2010**
1. Actuarial Value Beginning of Year	$15,271,013	$14,875,428
2. Market Value End of Year	11,397,053	12,273,604
3. Market Value Beginning of Year	14,551,467	11,397,053
4. Cash Flow		
a. Contributions	782,427	813,278
b. Disbursements	(1,395,821)	(1,428,286)
c. Net: 4a + 4b	(613,393)	(615,008)
5. Investment Income		
a. Market Total: 2 – 3 – 4c	(2,541,021)	1,491,559
b. Assumed Rate of Return	8.50%	8.50%
c. Amount for Immediate Recognition: (1 x 5b) + (4c x 5b x 0.5)	1,271,967	1,238,274
d. Amount for Phased-In Recognition: 5a – 5c	(3,812,988)	253,286
6. Phased-In Recognition of Investment Income		
a. Current Year: 5d * .25	(953,247)	63,321
b. First Prior Year	(440,053)	(953,247)
c. Second Prior Year	261,472	(440,053)
d. Third Prior Year	77,670	261,472
e. Total Recognized Investment Gain	(1,054,158)	(1,068,506)
7. Total Recognized Investment Return: 5c + 6e	217,809	169,767
8. Actuarial Value End of Year: 1 + 4c + 7	14,875,428	14,430,187
9. Difference Between Market & Actuarial Values: 2 – 8	(3,478,375)	(2,156,583)
10. Rate of Return on Actuarial Value	1.46%	1.17%

All dollar amounts are in thousands.

Section III: System Assets

The actuarial valuation assumes the investment income on the assets of the System is 8.50% annually. This assumption is based upon the reasonable long-term expected return on the assets. In each year, the System will experience actuarial gains and losses due to the actual investment return of the assets.

Table III-3: Calculation of Actuarial Investment Gain/(Loss)

	June 30, 2009	June 30, 2010
1. Actuarial Value of Assets at Beginning of Year	$15,271,013	$14,875,428
2. Total Net Cash Flow	(613,393)	(615,008)
3. Expected Return on Actuarial Value of Assets (1 x 8.50% + 2 x 8.50% x .5)	1,271,967	1,238,274
4. Expected Actuarial Value of Assets at End of Year (1 + 2 + 3)	$15,929,586	$15,498,694
5. Actual Actuarial Value of Assets at End of Year	$14,875,428	$14,430,187
6. Actuarial Gain/(Loss) Due to Investment Experience (5 - 4)	($1,054,158)	($1,068,506)

All dollar amounts are in thousands.

Section IV: System Liabilities

The present value of benefits is the value as of the valuation date of all future benefits expected to be paid to current members of the System. An actuarial cost method allocates each individual's present value of benefits to past and future years of service. The actuarial accrued liability includes the portion of the active member present value of benefits allocated to past service as well as the entire present value of benefits for retirees, beneficiaries and inactive members. The unfunded actuarial accrued liability (UAAL) is the difference between the actuarial accrued liability and the actuarial value of assets. Table IV-1 shows the allocation of the present value of future benefits into components for future normal cost contributions and actuarial accrued liabilities and the determination of the UAAL as of the valuation date.

Table IV-1: Calculation and Allocation of Present Value of Future Benefits

		Entry Age Actuarial Cost Method	
	(1) Present Value of Future Benefits	(2) Portion Covered By Future Normal Cost Contributions	(3) Actuarial Accrued Liabilities (1) - (2)
Active Members			
Service Retirement	$12,195,453	$2,849,031	$9,346,422
Disability Retirement	154,813	106,593	48,220
Survivors' Benefits	184,527	56,469	128,058
Termination	483,403	450,535	32,868
Total for Active Members	13,018,196	3,462,628	9,555,568
Inactive Members			
Non-Vested (Refund only)	200,781	0	200,781
Vested	155,203	0	155,203
Total for Inactive Members	355,985	0	355,985
Retirees and Beneficiaries			
Service Retirements	13,146,159	0	13,146,159
Disability Retirements	75,078	0	75,078
Beneficiaries	363,127	0	363,127
Total for Retirees and Beneficiaries	13,584,363	0	13,584,363
Total	$26,958,544	$3,462,628	$23,495,916
Actuarial Value of Assets			$14,430,187
Unfunded Actuarial Accrued Liability			$9,065,729
Funded Ratio			61.42%

All dollar amounts are in thousands.

The funded ratio of the System is the ratio of the actuarial value of assets divided by the actuarial accrued liability as of the valuation date. As of June 30, 2010, the funded ratio of the System is 61.42% as compared to the ratio in the prior valuation of 70.05%. The decline in the funded ratio is primarily attributable to the investment experience during the past two years. The ratio is a commonly used measure of the funding progress of a System and can be useful in reviewing the historical trend of a System's funding progress. Such a review should also consider the impact to this measure over the historical period due to changes to plan benefits, changes to the actuarial assumptions and methods, and the significant impact that investment experience can have on the ratio over short-term periods. We caution that no single "point in time" measure can provide a universal basis for comparing one System to another.

Although the terminology used to describe the excess of the System's actuarial accrued liability over the System's actuarial value of assets is called the "unfunded" actuarial accrued liability, there is a dedicated source of funding for this liability. The scheduled employer and employee contributions are expected to completely fund the System's liabilities (pay off the UAAL) based on statutory funding requirements.

The calculation of the System's actuarial assets and liabilities require the use of several assumptions concerning the future experience of the System and its members. In each valuation, the latest year of actual experience is compared to that expected by the prior valuation. The differences are actuarial gains and losses which decrease or increase the UAAL. Table IV-2 provides for the reconciliation of the UAAL and shows the primary sources of this year's gains and losses due to actuarial experience.

Table IV-2: Reconciliation of the UAAL	
1. UAAL as of June 30, 2008	$6,530,008
2. Expected Amortization Payment	(437,301)
3. Expected Interest (1 x 8.50% + 2 x 8.50% x .5)	536,465
4. Expected End of Year UAAL (1 + 2 + 3)	$6,629,172
5. Actuarial Experience (Gain)/Loss	
Change due to Transition	$163,398
COLA	(46,435)
Salary Experience	24,948
Turnover and Other	56,129
Asset Experience	1,054,158
Total Actuarial (Gain)/Loss	$1,252,198
6. UAAL as of June 30, 2009 (4 + 5)	$7,881,370
7. Expected Amortization Payment	(397,450)
8. Expected Interest (6 x 8.50% + 7 x 8.50% x .5)	653,025
9. Expected End of Year UAAL (6 + 7 + 8)	$8,136,945
10. Actuarial Experience (Gain)/Loss	
COLA	(190,164)
Salary Experience	(42,096)
Turnover and Other	92,538
Asset Experience	1,068,506
Total Actuarial (Gain)/Loss	$928,784
11. UAAL as of June 30, 2010 (8 + 10)	$9,065,729

All dollar amounts are in thousands.

Section V: Actuarial Valuation Results

Section IV of this report presented the System's total present value of future benefits allocated between the present value of future normal cost contributions and actuarial accrued liability. The portion of the active members' present value of benefits allocated to future years of service is funded through annual normal cost contributions comprised of both active member and employer contributions. The System's annual normal cost rate is calculated as a percent of covered payroll which is expected to remain level over all future years of service. The portion of the total normal cost rate in excess of the active member contribution rate is the state normal cost rate. The normal cost rate developed as of the valuation date is presented in Table V-1. Table V-1 also shows the state contribution rates necessary to amortize the UAAL in accordance with the funding requirements in the statutes.

Table V-1: State Contribution Rate	
Normal Cost Rate of Active Members by Expected Benefit Type	
Service Retirement	8.32%
Termination	1.30%
Disability Retirement	0.32%
Survivors' Benefits	0.17%
Total Normal Cost Rate for Active Members	10.11%
Less: Active Member Contribution Rate	6.00%
State Normal Cost Rate	4.11%
Unfunded Actuarial Accrued Liabilities	
Plan in effect 6/30/1991 (21 years)	17.87%
Public Act 82-91 (2 years)	0.14%
Public Act 87-381 (7 years)	0.01%
Public Act 92-205 (12 years)	(4.86)%
Public Act 98-251 (17 years)	0.02%
Public Act 07-186 (27 years)	1.91%
Total	15.09%
State Contribution Rate	19.20%

Section VI: Accounting Statement Information

1. Governmental Accounting Standards Board Statements 25 and 27 set forth certain items of required supplementary information to be disclosed in the financial statements of the System and the employer. One such item is a distribution of the number of employees by type of membership, as follows:

Table VI-1: Number of Active and Retired Members as of June 30, 2010	
Retired members and beneficiaries currently receiving benefits	30,493
Vested inactive members	1,315
Non-Vested inactive members	11,315
Active members	51,368
Total	94,491

2. Another such item is the schedule of funding progress as shown below

Table VI-2: Schedule of Funding Progress

Actuarial Valuation as of June 30	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) (b)	Unfunded AAL (UAAL) (b) - (a)	Funded Ratio (a) / (b)	Covered Payroll (c)	UAAL as a % of Active Member Payroll [(b) - (a)] / (c)
1996	$6,648.2	$9,626.8	2,978.6	69.1%	2,151.6	138.4%
1998	7,721.1	10,970.1	3,249.0	70.4%	2,298.9	141.3%
2000	9,605.9	11,797.6	2,191.7	81.4%	2,501.5	87.6%
2002	10,387.3	13,679.9	3,292.6	75.9%	2,698.3	122.0%
2004	9,846.7	15,070.5	5,223.8	65.3%	2,930.8	178.2%
2006	10,190.3	17,112.8	6,922.5	59.5%	3,137.7	220.6%
2008	15,271.0	21,801.0	6,530.0	70.0%	3,399.3	192.1%
2010	14,430.2	23,495.9	9,065.7	61.4%	3,646.0	248.6%

All dollar amounts are in millions.

All figures prior to 6/30/2010 were reported by the prior actuarial firm.

3. The following shows the schedule of employer contributions (all dollar amounts are in thousands).

Table VI-3: Schedule of Employer Contributions

Fiscal Year Ending June 30	Annual Required Contribution	Actual Contributions	Percent Contributed
2001	$252,547,880	$214,665,698	85.0%
2002	210,701,421	204,511,460	97.1%
2003	221,236,492	179,823,603	81.3%
2004	270,544,487	185,348,144	68.5%
2005	281,366,266	185,348,143	65.9%
2006	396,248,625	396,248,844	100.0%
2007	425,285,724	412,101,958	96.9%
2008	518,560,263	2,518,560,263	485.7%
2009	539,302,674	539,302,674	100.0%
2010	559,224,245	559,224,244	100.0%

For fiscal year ending June 30, 2008, bond proceeds amounting to $2 billion were deposited into the fund, in addition to the normal State contribution.

4. The information presented in the required supplementary schedules was determined as part of the actuarial valuation at June 30, 2010. Additional information as of the latest actuarial valuation follows.

Table VI-4: Additional Information	
Valuation date	6/30/2010
Actuarial cost method	Entry Age
Amortization period	Level percent closed
Remaining amortization periods	
Plan in effect 6/30/1991	21 years
Public Act 82-91	2 years
Public Act 87-381	7 years
Public Act 92-205	12 years
Public Act 98-251	17 years
Public Act 07-186	27 years
Equivalent single amortization period	25.3 years
Asset valuation method	Four-year smoothed market value
Actuarial assumptions:	
Investment rate of return (includes inflation)	8.50%
Projected salary increases (includes inflation)	4.00% - 7.50%
Inflation	4.0%
Cost-of-living adjustments	
Retirements prior to September 1, 1992	3.0%
Retirements on or after September 1, 1992	2.0%

Appendix A: Additional Membership Data

Table A-1: Schedule of Active Participant Data as of June 30, 2010									
	Years of Service								
AGE	Under 5	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 & up	Total
Under 25	501								501
Avg. Pay	39,851								39,851
25 to 29	4,030	1,188							5,218
Avg. Pay	46,805	52,829							48,176
30 to 34	2,004	4,039	837						6,880
Avg. Pay	51,083	58,450	68,857						57,570
35 to 39	903	2,170	2,992	343					6,408
Avg. Pay	55,277	62,307	73,233	83,359					67,545
40 to 44	839	1,492	2,208	1,531	252				6,322
Avg. Pay	54,529	63,874	75,249	83,543	84,554				72,194
45 to 49	703	1,213	1,207	891	1,181	329			5,524
Avg. Pay	52,582	64,812	75,510	83,535	85,345	85,864			74,257
50 to 54	451	1,053	1,226	792	948	1,170	509		6,149
Avg. Pay	54,234	64,568	75,119	83,461	84,423	85,446	87,826		77,306
55 to 59	324	737	1,175	1,032	1,171	896	1,860	731	7,926
Avg. Pay	59,338	67,033	75,787	83,034	86,553	86,551	87,877	89,433	82,147
60 to 64	111	349	570	642	883	714	706	1,155	5,130
Avg. Pay	70,978	75,612	78,453	84,342	86,687	86,323	89,145	90,493	85,530
65 to 69	24	66	126	121	178	187	173	234	1,109
Avg. Pay	65,475	75,224	82,969	84,583	86,477	88,594	88,258	91,976	86,543
70 & up	3	6	16	18	32	32	29	65	201
Avg. Pay	110,927	76,503	78,946	82,909	90,347	89,856	92,527	90,974	89,107
Total	9,893	12,313	10,357	5,370	4,645	3,328	3,277	2,185	51,368
Avg. Pay	50,243	61,494	74,502	83,537	85,751	86,193	88,203	90,311	70,978

Table A-2: Comparative Summary of Active Data		
	Prior Valuation	Current Valuation
Average Age	44.8 years	45.0 years
Average Service	13.3 years	13.6 years
Average Pay	$65,702	$70,978

Appendix A: Additional Membership Data

Table A-3: Number of Monthly Retirement Allowances Of Benefit Recipients as of June 30, 2010		
Payee Type	**Number**	**Monthly Retirement Allowances**
Service Retirement		
A (Life Annuity)	122	$269,900
B (100% Cash Refund)	159	375,394
C (Period Certain and Life)	901	2,741,135
D (Joint and Survivor)	5,025	21,403,413
N (25% Cash Refund)	22,409	84,964,148
S (Survivor)	0	0
W (Disability)	0	0
Total	**28,616**	**$109,753,991**
Disability Retirement		
A (Life Annuity)	0	$0
B (100% Cash Refund)	0	0
C (Period Certain and Life)	3	4,483
D (Joint and Survivor)	0	0
N (25% Cash Refund)	2	3,898
S (Survivor)	0	0
W (Disability)	269	573,188
Total	**274**	**$581,569**
Beneficiaries	**1,603**	**$3,388,551**
GRAND TOTAL	**30,493**	**$113,724,111**

Appendix B: Actuarial Assumptions and Methods

Investment Rate of Return

Assumed annual rate of 8.50% net of investment and administrative expenses.

Rates of Annual Salary Increase

Rates of Annual Salary Increase Assumption	
Years of Service	**Annual Rate of Increase**
0	7.50%
1	7.50%
2	7.50%
3	7.50%
4	7.50%
5	6.50%
6	6.50%
7	6.50%
8	6.50%
9	6.50%
10	5.50%
11	5.50%
12	5.50%
13	5.50%
14	5.50%
15+	4.00%

Appendix B: Actuarial Assumptions and Methods

Active Member Decrement Rates

a. Table below provides a summary of the assumed rates of service retirement.

Annual Rates of Retirement						
Age	**Unreduced**		**Proratable**		**Reduced**	
	Male	Female	Male	Female	Male	Female
50	27.5%	15.0%			2.0%	2.0%
55	38.5%	30.0%			5.0%	7.5%
60	22.0%	20.0%	6.0%	5.4%		
65	36.3%	30.0%	20.0%	13.5%		
70	100.0%	40.0%	35.0%	10.8%		
75	100.0%	40.0%	40.0%	18.0%		
80	100.0%	100.0%	40.0%	18.0%		

b. Table below provides a summary of the assumed rates of mortality while actively employed and disability.

Annual Rates of Death and Disability				
Age	**Pre-Retirement Mortality**		**Disability**	
	Male	Female	Male	Female
20	0.0164%	0.0108%	0.0455%	0.0500%
25	0.0210%	0.0109%	0.0455%	0.0500%
30	0.0268%	0.0140%	0.0455%	0.0410%
35	0.0431%	0.0249%	0.0455%	0.0410%
40	0.0645%	0.0343%	0.0715%	0.0720%
45	0.0790%	0.0527%	0.1625%	0.1200%
50	0.1027%	0.0761%	0.3250%	0.2630%
55	0.1489%	0.1316%	0.7150%	0.4380%
60	0.2911%	0.2675%	1.2805%	0.5000%
64	0.4928%	0.4539%	1.2805%	0.5000%

c. Table below provides a summary of the assumed rates of withdrawal for active members prior to eligibility for retirement.

Annual Rates of Withdrawal					
			10 or more years of service		
Years of Service	Male	Female	Age	Male	Female
0-1	0.140	0.120	25	0.0120	0.0350
1-2	0.085	0.090	30	0.0120	0.0350
2-3	0.055	0.070	35	0.0120	0.0350
3-4	0.045	0.060	40	0.0120	0.0230
4-5	0.035	0.055	45	0.0126	0.0130
5-6	0.025	0.050	50	0.0196	0.0125
6-7	0.024	0.045	55	0.0336	0.0160
7-8	0.023	0.035	60	0.0400	0.0190
8-9	0.022	0.030			
9-10	0.021	0.025			

Post-Retirement Mortality

For healthy retirees and beneficiaries, the RP-2000 Combined Mortality Table projected forward 19 years using scale AA, with a two-year setback for males and females. A separate table of mortality rates is used for disabled retirees. The following are sample rates for the retirees and beneficiaries:

Annual Rates of Death				
	Healthy		Disabled	
Age	Male	Female	Male	Female
50	0.1369%	0.1015%	0.3881%	0.3567%
55	0.1986%	0.1755%	0.7659%	0.6953%
60	0.3881%	0.3567%	1.3671%	1.2224%
65	0.7659%	0.6953%	2.2802%	2.0100%
70	1.3671%	1.2224%	4.1439%	3.2898%
75	2.2802%	2.0100%	7.7020%	5.4696%
80	4.1439%	3.2898%	13.6910%	9.9435%
85	7.7020%	5.4696%	22.0697%	16.4072%

Marriage Assumption

85% of males and 75% of females assumed to be married, with female spouses being 3 years younger than males.

Asset Valuation Method

The actuarial value of assets recognizes a portion of the difference between the actual market value of assets and the expected actuarial value of assets, based on the assumed rate of investment return. The amount recognized each year is 25% of the difference between market value and expected actuarial value.

Actuarial Cost Method

The Entry Age Normal actuarial cost method allocates the plan's actuarial present value of future benefits to various periods based upon service. The portion of the present value of future benefits allocated to years of service prior to the valuation date is the actuarial accrued liability, and the portion allocated to years following the valuation date is the present value of future normal costs. The normal cost is determined for each active member as the level percent of payroll necessary to fully fund the expected benefits to be earned over the career of each individual active member. The normal cost is partially funded with active member contributions with the remainder funded by employer contributions.

The unfunded accrued liability is determined by subtracting the actuarial value of assets from the actuarial accrued liability.

Future Cost-of-living Increases

Members who retired prior to September 1, 1992 are assumed to receive an annual Cost-of-Living Adjustment (COLA) of 3.0%. Members who retired on or after September 1, 1992 are assumed to receive an annual Cost-of-Living Adjustment (COLA) of 2.0%.

Administrative and Investment Expenses

The investment return assumption represents the expected return net of all administrative and investment expenses.

Payroll Growth Rate

The total annual payroll of active members is assumed to increase at an annual rate of 4.00%. This rate does not anticipate increases in the number of members.

Changes from Prior Valuation

None.

Appendix C: Summary of Plan Provisions

Outlined below are the principal provisions of the system which were reflected in the results shown in this report.

Covered Employees

Any teacher, principal, superintendent or supervisor engaged in service of public schools, plus professional employees at State schools of higher education if they choose to be covered.

Annual Salary

Annual Salary rate for service as a Connecticut teacher during a school year excluding amounts paid for extra duty assignments, coaching, unused sick time, unused vacation or terminal pay.

Average Annual Salary

Average of Annual Salary received during three years of highest salary.

Credited Service

One month for each month of service as a teacher in Connecticut public schools, maximum 10 months for each school year. Ten months of credited service constitutes one year of Credited Service. Certain other types of teaching service, State employment, or war-time military service may be purchased at retirement, if the Member pays one-half the cost.

Normal Retirement

Eligibility - Age 60 with 20 years of Credited Service in Connecticut, or 35 years of Credited Service including at least 25 years of service in Connecticut.

Benefit - 2% of Average Annual Salary times years of Credited Service (maximum benefit is 75% of Average Annual Salary)

In addition, amounts derived from the accumulation of 6^{th} percent contributions made prior to July 1, 1989 and voluntary contributions by the teacher are payable.

Minimum Benefit: Effective January 1, 1999, Public Act 98-251 provides a minimum monthly retirement benefit of $1,200 to teachers who retire under the Normal Retirement provisions and who have completed at least 25 years of full time Connecticut service at retirement.

Early Retirement

Eligibility - 25 years of Credited Service including 20 years of Connecticut service, or age 55 with 20 years of Credited Service including 15 years of Connecticut service, with the last 5 years in Connecticut.

Benefit - Reduced normal retirement benefit. The early retirement factors currently in effect are 6% per year for the first five years by which early retirement precedes the minimum normal retirement age and 4% per year for the next five years by which early retirement precedes the minimum normal retirement age. Effective July 1, 1999, the reduction for individuals with 30 or more years of service is 3% for each year by which early retirement precedes the minimum retirement age.

Proratable Retirement

Eligibility - Age 60 with 10 years of Credited Service, with the last 5 years in Connecticut.

Benefit - 2% less 0.1% for each year less than 20 years of Average Annual Salary times years of Credited Service in Connecticut, plus 1% of Average Annual Salary times years of additional Credited Service time.

Disability Retirement

Eligibility - 5 years of Credited Service in Connecticut if not incurred in the performance of duty and no service requirement if incurred in the performance of duty.

Benefit - 2% of Average Annual Salary times Credited Service to date of disability, but not less than 15% of Average Annual Salary, nor more than 50% of Average Annual Salary. In addition, disability benefit under this plan (without regard to any cost-of-living adjustments) plus any initial award of Social Security benefits and workers' compensation cannot exceed Average Annual Salary.

Termination of Employment

Less than 5 years of Credited Service - Return 6% contributions with interest.

5 or more years of Credited Service - Return 6% contributions with interest and 1% contributions made prior to July 1, 1989 without interest.

10 or more years of Credited Service - Member is 100% vested in the accrued benefit based on Credited Service and Average Annual Salary as of the date of termination of covered employment. Benefits are payable at age 60 and early retirement reductions are based on the number of years service the member would have had if they had continued to work until age 60.

Member may elect return of all contributions plus interest on 6% contributions in lieu of vested benefit.

Pre-Retirement Death Benefits

A lump sum plus one of the following: survivor's benefit, return of all contributions with interest, or surviving spouse's benefit.

- Lump Sum: $1,000 for the first 5 years of Connecticut service plus $200 per year thereafter. Maximum benefit: $2,000.
- Survivor's Benefit: For active teachers who die while in service, the family maximum benefit payable to survivors is $1,500 per month. Each minor child is entitled to $300 per month. The surviving spouse's benefit is $300 per month if the member has 12 or less years of service. For each additional year of service, the surviving spouse's monthly benefit is increased $25, up to a maximum of $600.
- Accumulated contributions with interest plus dependent children's benefits as described in the "Survivor's Benefit" paragraph.
- Surviving Spouse's Benefit: An active member who is eligible for immediate retirement and who has named his or her spouse as primary beneficiary will be covered by a 100% Plan D co-participant option in the event of his or her death prior to retirement.

Benefit Options

Normal form: Partial Refund Option – 75% of total benefit is paid as a life annuity. If 25% of the benefits paid prior to death do not exceed the Member's 6% contributions plus interest frozen at the date of the benefit commencement, the difference is paid to the Member's beneficiary.

Optional Forms: 5-, 10-, 20-, or 25-year certain and life and 33-1/3%, 50%, 66-2/3%, 75%, or 100% co-participant annuity (if co-participant dies first, benefit reverts to unreduced amount).

Amounts payable under the optional forms are determined on an actuarially equivalent basis. Actuarial equivalence is determined using mortality as described in Section F of the report, 8.5% interest, and 2% compound COLA. A unisex mortality blend of 60% male was used for certain benefit forms, and a blend of 80% male was used for co-participant annuity forms.

Cost-of-Living Allowance

For teachers who retired prior to September 1, 1992, pension benefit adjustments are made in accordance with increases in the Consumer Price Index, with a minimum of 3% and a maximum of 5% per annum.

For teachers who were members of the Teachers' Retirement System before July 1, 2007, and retire on or after September 1, 1992, pension benefit adjustments are made that are consistent with those provided for Social Security benefits on January 1 of the year granted, with a maximum of 6% per annum. If the return on assets in the previous year was less than 8.5%, the maximum increase is 1.5%.

For teachers who were members of the Teachers' Retirement System after July 1, 2007, pension benefit adjustments are made that are consistent with those provided for Social Security benefits on January 1 of the year granted, with a maximum of 5% per annum. If the return on assets in the previous year was less than 11.5%, the maximum increase is 3%, and if the return on the assets in the previous year was less than 8.5%, the maximum increase is 1.0%

Teachers' Required Contribution

Effective July 1, 1992, each teacher is required to contribute 6% of annual salary for the pension benefit.

State Contribution

The State's contribution requirement is determined in accordance with Section 10-183z (which reflects Public Act 79-436 as amended).

Early Retirement Incentive

A local or regional board of education may establish a retirement incentive plan. The plan shall provided for purchase of additional credited service by a board of education and a member of the system who chooses to participate in the plan, of additional credited service for such member and for payment by the board of education of not less than fifty per cent of the entire cost of such total cost. Any such plan shall specify a maximum number of years to be purchased, not to exceed five. Members must have attained age 50 and be eligible for retirement with the additional purchased service. The amount of service purchased cannot exceed the lesser of five years and one-fifth of the member's credited service.

Appendix D: Glossary

Actuarial Accrued Liability **-** The difference between the actuarial present value of future benefits payments and the actuarial present value of future normal costs. Also referred to as "accrued liability."

Actuarial Assumptions **-** Estimates of expected future experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and salary increases. Demographic estimates (rates of mortality, disability, turnover and retirement) are generally based on past experience, modified for projected changes in conditions. Fiscal estimates (salary increases, inflation and real investment return) consist of the underlying rates in an inflation-free environment plus a provision for a long-term average rate of inflation.

Actuarial Cost Method **-** A mathematical budgeting procedure for allocating the dollar amount of the "actuarial present value of future benefit payments" between future normal cost and actuarial accrued liability.

Actuarial Present Value **-** The amount of funds currently required to provide a payment or series of payments in the future. It is determined by discounting future payments at predetermined rates of interest and by probabilities of payment. Also referred to as "present value."

Actuarial Value of Assets **-** The value of current plan assets recognized for valuation purposes.

Amortization **-** Paying off an interest-discounted amount with periodic payments of interest and principal, as opposed to paying off with a lump sum payment.

Experience Gain (Loss) **-** A measure of difference between actual experience and that expected based upon a set of actuarial assumptions during the period between two actuarial valuation dates, in accordance with the actuarial cost method being used.

Normal Cost **-** The annual cost assigned, under the actuarial funding method, to current and subsequent plan years.

Unfunded Actuarial Accrued Liability **-** The difference between the actuarial accrued liability and actuarial value of assets. Also referred to as "unfunded accrued liability."