

**CONNECTICUT STATE TEACHERS' RETIREMENT SYSTEM**  
REPORT ON THE ACTUARIAL VALUATION AS OF JUNE 30, 2008



November 12, 2008

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

Dear Members of the Board:

Submitted in this report are the results of the June 30, 2008, actuarial valuation of the Connecticut State Teachers' Retirement System.

The necessary statistical data on which the valuation was based was furnished by your Administrator and her Staff. Their efforts and cooperation in furnishing the materials needed for this valuation are acknowledged with appreciation.

Public Act 07-186 took effect July 1, 2007, and had the following effects relating to the actuarial valuation as of June 30, 2008:

1. An additional \$2 billion was deposited to the System's assets through the sale of state general obligation bonds. This increase in System assets reduced the unfunded liability as of June 30, 2008, and resulted in required unfunded liability contributions that are lower than those reported in the actuarial valuation as of June 30, 2006.
2. It eliminated the cost-of-living reserve account (CLARA). The provisions for determining the percentage increase for each retired member who was hired before July 1, 2007, and retired on or after September 1, 1992, have remained the same. However, the cost-of-living adjustment for members who retired on or after September 1, 1992, is no longer contingent on having a sufficient CLARA balance to pay for the increase in liability.
3. A new set of COLA provisions was enacted for members hired on or after July 1, 2007. The new COLA provisions are described in Section D of the report.
4. Items 2 and 3 made it necessary to include an assumption for future COLA increases for members retiring after September 1, 1992, in the valuation of the liabilities. This cost of living increase assumption was initially set at 2.0 percent per year. It will be reconsidered at the time of the next experience study.

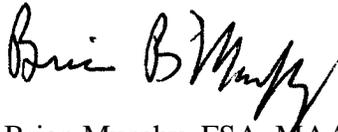
With the exception of the cost-of-living provisions and assumption, there have been no additional changes in actuarial methods, assumptions, or plan provisions since the last valuation, which was as of June 30, 2006.

The computed State Contribution Rate has decreased slightly since the last valuation. Although an additional \$2 billion was deposited into the System's assets, there was a net increase in the Actuarial Accrued Liability as a result of Public Act 07-186. In addition, the Normal Cost Rate increased as a result of the new cost-of-living provisions. The net effect of the changes in Public Act 07-186 and plan experience decreased the computed State Contribution Rate from 15.28% to 15.21%.

The valuation was completed using generally accepted actuarial principles and in accordance with standards of practice prescribed by the Actuarial Standards Board. To the best of our knowledge, this report is complete and accurate, and the methods and assumptions produced results which are reasonable.

Both of the undersigned are Members of the American Academy of Actuaries (M.A.A.A.) and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

Respectfully submitted,

A handwritten signature in black ink that reads "Brian B. Murphy". The signature is written in a cursive style with a large, prominent "B" at the beginning.

Brian Murphy, FSA, MAAA, EA

A handwritten signature in black ink that reads "Amy Williams". The signature is written in a cursive style with a large, prominent "A" at the beginning.

Amy Williams, ASA, MAAA

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# INTRODUCTION



## SUMMARY OF KEY VALUATION RESULTS

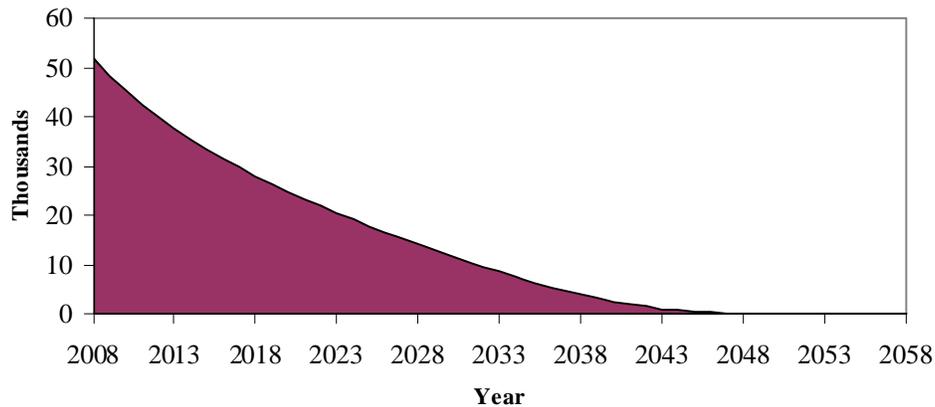
	As of June 30, 2006	As of June 30, 2008
<b>System Members</b>		
Retired Members and Beneficiaries		
Number	26,695	28,787
Annual Payments	\$ 1,010,782,904	\$ 1,231,069,350
Inactive Members		
Vested	1,341	1,394
Non-Vested	9,391	10,597
Active Members		
Number	51,015	51,738
Annual Payroll	\$ 3,137,684,279	\$ 3,399,305,134
<b>Actuarial Accrued Liabilities</b>		
CLARA Balance <sup>1</sup>	\$ 1,591,025,496	N/A
Retired Members and Beneficiaries	9,274,542,228	12,432,710,537
Inactive Members	330,569,529	388,731,357
Active Members	7,507,655,642	8,979,579,097
Total	\$ 18,703,792,895	\$ 21,801,020,991
<b>Actuarial Value of Assets</b>	\$ 11,781,338,002	\$ 15,271,012,785
<b>Unfunded Actuarial Accrued Liability</b>	\$ 6,922,454,893	\$ 6,530,008,206
<b>Funded Ratios</b>		
Including CLARA Balance	62.99%	70.05%
Excluding CLARA Balance	59.55%	70.05%
<b>Computed State Contribution Rate</b>		
Normal Cost	2.89%	4.40%
Unfunded Accrued Liability	12.39%	10.81%
Total	15.28%	15.21%
<b>State Contribution Amount</b>		
For Fiscal Year Ending:		
June 30, 2008	\$518,560,263	N/A
June 30, 2009	\$539,302,674	N/A
June 30, 2010	N/A	\$559,224,245
June 30, 2011	N/A	\$581,593,215

<sup>1</sup>P.A. 07-186 repealed 10-183(g)(l) eliminating the CLARA. Assumed future cost-of-living adjustments for members retiring on or after September 1, 1992 are included in the actuarial accrued liabilities. CLARA assets were rolled into the system assets.

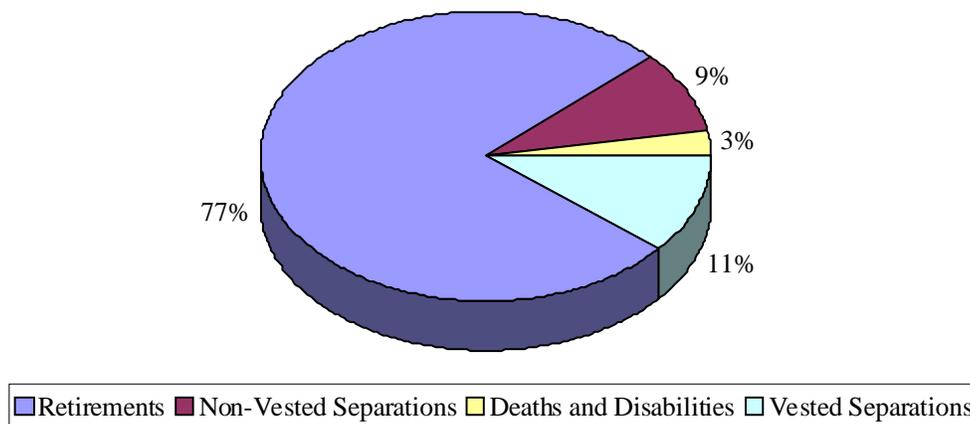
# EXPECTED DEVELOPMENT OF PRESENT ACTIVE POPULATION JUNE 30, 2008

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### Closed Group Population Projection



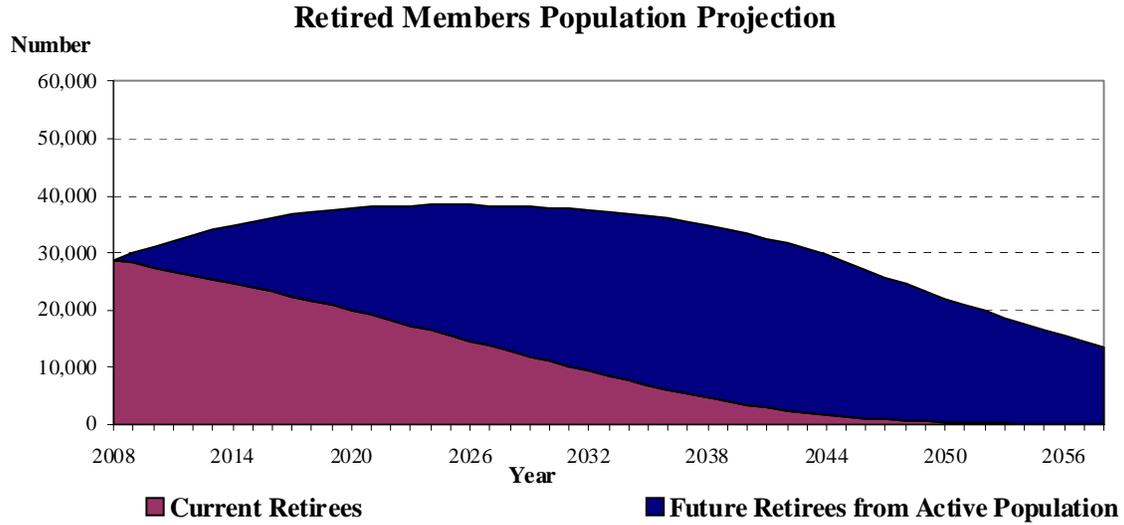
### Expected Terminations from Active Employment for Current Active Members



The charts above show the expected future development of the present population in simplified terms. The retirement system presently covers 51,738 active members. Eventually, 9% of the population is expected to terminate covered employment prior to retirement and forfeit eligibility for an employer-provided benefit. About 88% of the present population is expected to receive monthly retirement benefits either by retiring directly from active service, or by retiring from vested deferred status. 3% of the present population is expected to become eligible for death-in-service or disability benefits. Within 12 years, over half of the covered membership is expected to consist of new hires.

# POPULATION PROJECTIONS

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The projected retired population levels shown in the graph are developed from the current retired population, the addition of new retired members from the active population, and mortality assumptions. The projection indicates that around 2025 the retired population will peak. Note that this graph does not include future retirements of active members that will be hired in the future. If it did, the graph would not be a “hill”, but would plateau around 2025.

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**SECTION A**  
FINANCIAL PRINCIPLES

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## FINANCIAL PRINCIPLES AND OPERATIONAL TECHNIQUES

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***Promises Made and To Be Paid For.*** As each year is completed, the System in essence hands an “IOU” to each member then acquiring a year of service credit. The “IOU” says: “The Connecticut State Teachers’ Retirement System (CSTRS) owes you one year’s worth of retirement benefits, payments in cash commencing when you qualify for retirement.”

The related ***key financial questions*** are:

***Which generation of taxpayers contributes the money to cover the IOU?***

***The present taxpayers***, who receive the benefit of the member’s present year of service?

***Or the future taxpayers***, who happen to be in Connecticut at the time the IOU becomes a cash demand?

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A sound financial objective for the CSTRS is that this year’s taxpayers contribute the money to cover the IOUs being handed out this year so that ***the employer contribution rate will remain approximately level from generation to generation*** -- our children and our grandchildren will not have to contribute greater percents of payroll than we contribute now.

(There are systems which have ***a design for deferring contributions to future taxpayers***, lured by a lower contribution rate now and putting aside the fact that the contribution rate must then relentlessly grow much greater over decades of time -- consume now, and let your children face higher contribution rates after you retire.)

Translated to actuarial terminology, this level percent-of-payroll objective means that the contribution rate must be at least the following:

***Normal Cost*** (the current value of benefits likely to be paid as a result of members’ service rendered in the current year)

...plus...

***Amortization of Unfunded Actuarial Accrued Liability*** (the difference between the actuarial accrued liability for service already rendered and current plan assets).

## **FINANCIAL PRINCIPLES AND OPERATIONAL TECHNIQUES (CONT'D)**

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An inevitable byproduct of the level percent-of-payroll design is the accumulation of reserve assets for decades and the income produced when the assets are invested. *Investment income* becomes the *third and (often) the largest contributor* for benefits to employees, and is interlocked with the contribution amounts required from employees and employers.

*Computing Contributions to Support System Benefits.* From a given schedule of benefits and from the employee data and asset data furnished, the actuary determines the contribution rates to support the benefits, by means of *an actuarial valuation*.

An actuarial valuation has a number of components such as: the rate of investment return which plan assets will earn; the rates of withdrawal of active members who leave covered employment before qualifying for any monthly benefit; the rates of mortality; the rates of disability; the rates of pay increases; and the assumed age or ages at actual retirement.

In an actuarial valuation, assumptions must be made as to what the above rates will be, for the next year and for decades in the future. Only the subsequent actual experience of the System can indicate the degree of accuracy of the assumptions.

*Reconciling Differences Between Assumed Experience and Actual Experience.* Once actual experience has occurred and been observed, it will not coincide exactly with assumed experience, regardless of the accuracy of the various financial assumptions or the skill of the actuary and the precision of the calculations made. The System copes with these continually changing differences by having regular actuarial valuations. Each actuarial valuation is a complete recalculation of assumed future experience, taking into account all past differences between assumed and actual experience. The result is continual adjustments in financial position.

## THE ACTUARIAL VALUATION PROCESS

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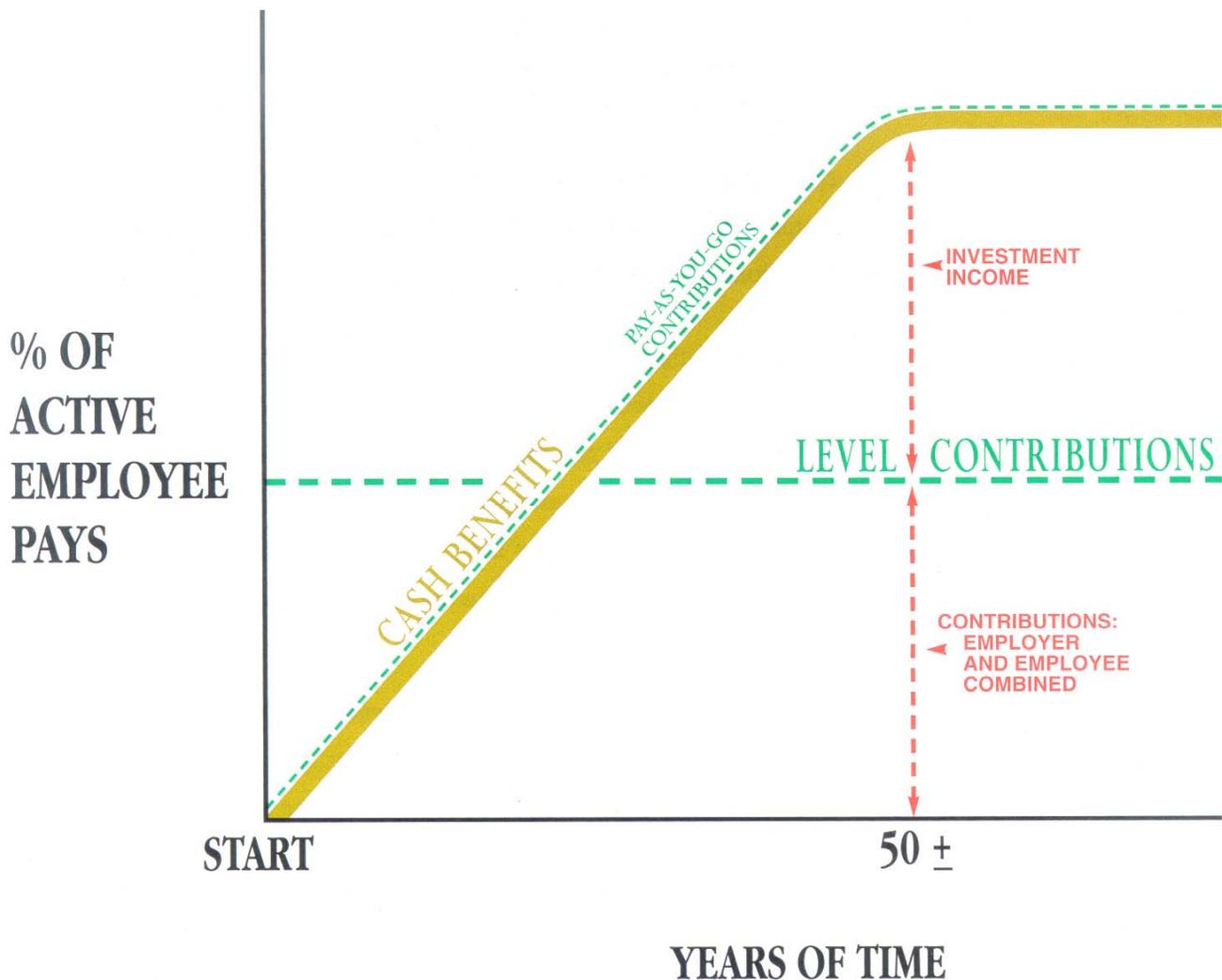
*The financing diagram* on the next page shows the relationship between the two fundamentally different philosophies of paying for retirement benefits: the method where contributions match cash benefit payments (or barely exceed cash benefit payments, as in the Federal Social Security program), and is thus an *increasing contribution method*; and the *level contribution method* which equalizes contributions between the generations.

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*The actuarial valuation* is the mathematical process by which the level contribution rate is determined, and the flow of activity constituting the valuation may be summarized as follows:

- A. ***Covered Person Data***, furnished by the plan administrator
  - Retired members and beneficiaries now receiving benefits
  - Former employees with vested benefits not yet payable
  - Active employees
- B. + ***Asset data*** (cash and investments), furnished by the plan administrator
- C. + ***Benefit provisions*** that establish eligibility and amounts of payments to members
- D. + ***Estimates of future experience (actuarial assumptions)***, which are established by the Board of Trustees after consulting with the actuary
- E. + ***The funding method*** for employer contributions (the long-term planned pattern for employer contributions)
- F. + ***Mathematically combining the assumptions, the funding method, and the data***
- G. = Determination of:
  - Plan financial position***, and/or
  - New Employer Contribution Rate***

## THE ACTUARIAL VALUATION PROCESS (CONT'D)



**CASH BENEFITS LINE.** This relentlessly increasing line is the fundamental reality of retirement plan financing. It happens each time a new benefit is added for future retirements (and happens regardless of the design for contributing for benefits).

**LEVEL CONTRIBUTION LINE.** Determining the level contribution line requires detailed assumptions concerning a variety of experiences in future decades, including:

Economic Risk Areas

- Rates of investment return
- Rates of pay increase
- Changes in active member group size

Non-Economic Risk Areas

- Ages at actual retirement
- Rates of mortality
- Rates of withdrawal of active members (turnover)
- Rates of disability

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**SECTION B**

VALUATION RESULTS AND ASSET INFORMATION

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## COMMENTS

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**COMMENT A:** The computed State Contribution Rate has decreased slightly since the last valuation as of June 30, 2006, from 15.28% to 15.21%. As can be seen on page 1, the Normal Cost Rate increased from 2.89% to 4.40%, but the amortization payment on the Unfunded Actuarial Accrued Liability decreased from 12.39% to 10.81%. The increase in the Normal Cost Rate is due to the recognition of future cost-of-living adjustments that are not contingent on the CLARA balance, as passed in Public Act 07-186. The decrease in the amortization payment on the Unfunded Actuarial Accrued Liability is mainly attributable to the additional contribution of \$2 billion as a result of the General Obligation (GO) Bonds. The decrease in the amortization payment as a result of the GO bond proceeds was partially offset by the net increase in the Actuarial Accrued Liability as a result of Public Act 07-186 which modified the provisions for cost-of-living increases for members retiring on or after September 1, 1992.

**COMMENT B:** For many years, the actual State contributions fell short of the calculated contributions. Fiscal year ending June 30, 2006, was the first year in which actual State contributions met the calculated contribution requirements. The GO bond proceeds of \$2 billion which were deposited in fiscal year ending June 30, 2008, in addition to continuing this trend of making sufficient contributions to the fund will help create a funding situation in which investment returns will be able to keep up with growing benefit payments.

<b>Fiscal Year</b>	<b>Calculated</b>	<b>Actual</b>
<b>Ending June 30</b>	<b>State Contribution</b>	<b>State Contribution</b>
2005	\$281,366,266	\$185,348,143
2006	396,248,625	396,248,844
2007	412,098,570	412,101,958
2008	518,560,263	2,518,560,263

**COMMENT C:** The development of the actuarial gain or loss on page B-4 shows the actuarial value of assets increased \$494.3 million more than expected, and liabilities increased \$187.6 million more than expected. As a result, the unfunded actuarial accrued liability increased \$ 306.7 million less than expected as a result of plan experience.

**COMMENT D:** Page E-3 contains a comparison of the Annual Required Contributions determined in accordance with GASB parameters with the contributions actually deposited into the fund.

**COMMENT E:** Investment return was well below assumptions for the period ended June 30, 2008. In fact, over \$700 Million of deferred losses need to be recognized over the next 3 years. In addition, there has been a very significant downturn in the investment markets since this valuation was prepared. The effects of the downturn were not taken into account in preparing the figures in this report. Unless there is a significant improvement in the markets in the next 18 months or so, higher contribution rates than shown in this valuation can be expected for fiscal 2012 and beyond. We would be pleased to prepare projections illustrating potential fiscal 2012 contribution rates under various investment return scenarios, or updated financial information.

**STATE CONTRIBUTION RATE COMPUTED AS OF JUNE 30, 2008  
FOR THE TWO-YEAR PERIOD BEGINNING JULY 1, 2009**

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<b>Computed Contributions for</b>	<b>Percents of Active Member Payroll</b>	
	<b>Prior Valuation</b>	<b>Current Valuation</b>
Normal Cost		
Age and service annuities	7.15 %	8.31 %
Separation benefits	1.41 %	1.47 %
Disability annuities	0.24 %	0.44 %
Death-in-service annuities	0.09 %	0.18 %
Total	8.89 %	10.40 %
Member Contributions	6.00 %	6.00 %
State Normal Cost	2.89 %	4.40 %
Unfunded Actuarial Accrued Liabilities:		
Plan in effect 6/30/91 (23 years)	17.09 %	13.59 %
Public Act 82-91 (4 years)	0.14 %	0.14 %
Public Act 87-381 (9 years)	0.01 %	0.01 %
Public Act 92-205 (14 years)	(4.87)%	(4.86)%
Public Act 98-251 (19 years)	0.02 %	0.02 %
Public Act 07-186 (29 years)		1.91 %
Total	12.39 %	10.81 %
<b>State Contribution Rate</b>	<b>15.28 %</b>	<b>15.21 %</b>

Based on a projected member payroll of \$3,676,688,000 for the 2009-2010 Fiscal Year, the computed State contribution dollar amount for that Fiscal Year is \$559,224,245. Based on a projected member payroll of \$3,823,755,520 for the 2010-2011 Year, the computed State contribution dollar amount for that Fiscal Year is \$581,593,215.

*The length of an amortization period is a matter of judgment*, not a matter of solving an algebraic equation. No one amortization period is “correct” – there is a range of reasonable judgment. As specified in Chapter 167a, Section 10-183z of the Connecticut General Statutes, the Unfunded Actuarial Accrued Liability (UAAL) resulting from the plan provisions in effect as of June 30, 1991 is to be amortized over a 40-year period, while subsequent changes in the UAAL are to be amortized over 30 years.

For fiscal years through June 30, 2006, the Governmental Accounting Standards Board (GASB) Statement No. 25 requires that the net effective amortization period not exceed 40 years. Effective July 1, 2006 the GASB requirement for the net effective amortization period decreases to 30 years. The net effective amortization period for the computed State contribution amounts for the Fiscal Years ending June 30, 2010, and June 30, 2011, is 29.2 years. The State contribution amounts are large enough to meet the GASB requirement.

**COMPUTED ACTUARIAL LIABILITIES  
AS OF JUNE 30, 2008**

<b>Actuarial Present Value of</b>	<b>(1) Total Present Value</b>	<b>Entry Age Actuarial Cost Method</b>	
		<b>(2) Portion Covered By Future Normal Cost Contributions</b>	<b>(3) Actuarial Accrued Liabilities (1) - (2)</b>
Age and service allowances based on total service likely to be rendered by present active members	\$ 11,341,382,576	\$2,561,759,731	\$ 8,779,622,845
Separation benefits (refunds of contributions, and deferred allowances) likely to be paid present active members	503,579,599	457,299,401	46,280,198
Disability benefits likely to be paid present active members	164,673,417	132,932,335	31,741,082
Death-in-service benefits likely to be paid on behalf of present active members	176,077,537	54,142,565	121,934,972
Contributions due to members not receiving a vested benefit	193,304,150	0	193,304,150
Benefits payable to present retirees and beneficiaries	12,432,710,537	0	12,432,710,537
Deferred benefits payable to members who terminated with vested rights	195,427,207	0	195,427,207
Future Cost-of-Living Adjustments to be paid from the Cost-of-Living Adjustment Reserve Account (CLARA) <sup>1</sup>	0	0	0
<b>Total</b>	<b>\$25,007,155,023</b>	<b>\$3,206,134,032</b>	<b>\$21,801,020,991</b>
Applicable assets including CLARA Balance <sup>1</sup>			<u>15,271,012,785</u>
Unfunded Actuarial Accrued Liability			<b>\$ 6,530,008,206</b>

<sup>1</sup>P.A. 07-186 repealed 10-183(g)(l) eliminating the CLARA. Assumed future cost-of-living adjustments for members retiring on or after September 1, 1992 are included in the actuarial accrued liabilities and future normal cost contributions. CLARA assets were rolled into the system assets.

## DEVELOPMENT OF GAINS AND LOSSES

	Valuation as of June 30	
	2006	2008
Unfunded Actuarial Accrued Liability, Prior Valuation	\$ 5,223,799,619	\$ 6,922,454,893
Normal Cost - Year 1	274,630,804	290,097,738
Normal Cost - Year 2	285,616,036	301,701,647
Contributions - Year 1	(403,382,496)	(651,179,353)
Contributions - Year 2	(653,437,146)	(752,531,898)
General Obligation Bond		(2,000,000,000)
Increase in UAL due to P.A. 07-186		1,150,516,394
Interest <sup>1</sup>	919,022,755	1,575,672,541
Expected UAL	5,646,249,573	6,836,731,962
Actual UAL at June 30	6,922,454,893	6,530,008,206
Gain/(Loss) for Two Year Period	\$ (1,276,205,320)	\$ 306,723,756
Actuarial Value of Assets, Prior Valuation	\$11,306,878,529	\$11,781,338,002
Benefits Paid - Year 1	(972,618,167)	(1,160,079,375)
Benefits Paid - Year 2	(1,064,136,984)	(1,283,265,011)
Contributions - Year 1	403,382,496	651,179,353
Contributions - Year 2	653,437,146	752,531,898
General Obligation Bond		2,000,000,000
Interest	1,912,664,104	2,035,023,488
Expected Assets	12,239,607,124	14,776,728,355
Actual Assets at June 30	11,781,338,002	15,271,012,785
Asset Gain/(Loss) for Two Year Period	\$ (458,269,122)	\$ 494,284,430
Actuarial Accrued Liability, Prior Valuation	\$16,530,678,148	\$18,703,792,895
Normal Cost - Year 1	274,630,804	290,097,738
Normal Cost - Year 2	285,616,036	301,701,647
Benefits Paid - Year 1	(972,618,167)	(1,160,079,375)
Benefits Paid - Year 2	(1,064,136,984)	(1,283,265,011)
Increase in AAL due to P.A. 07-186		1,150,516,394
Interest <sup>1</sup>	2,831,686,859	3,610,696,029
Expected AAL	17,885,856,697	21,613,460,317
Actual AAL at June 30	18,703,792,895	21,801,020,991
Non-Investment Gain/(Loss) for Two Year Period	\$ (817,936,198)	\$ (187,560,674)

<sup>1</sup>Interest includes \$705,265,259 credited to CLARA for FY 2007 before the CLARA was eliminated.

## **DEVELOPMENT OF FUNDING VALUE OF ASSETS**

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The next two pages show the development of the Funding, or Actuarial, Value of System Assets. Each year, the assumed investment return is fully recognized. Then, to dampen the effects of year-to-year changes in the market value returns, 25% of the difference between the assumed return and the market return is also recognized in a given year. This occurs regardless of whether that difference is positive (a gain) or negative (a loss). One-third of the remaining 75% of the gain or (loss) is recognized over the next three years until the full amount of the gain/(loss) has been recognized.

**DEVELOPMENT OF FUNDING VALUE OF ASSETS  
(4 YEAR SMOOTHING)**

<b>Valuation Date June 30</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>
A. Funding Value Beginning of Year	\$12,762,156,866			
B. Market Value End of Year	14,551,467,434			
C. Market Value Beginning of Year	13,744,769,795			
D. Non-Investment Net Cash Flow	1,469,266,887			
E. Investment Return				
E1. Market Total: B-C-D	(662,569,248)			
E2. Assumed Rate	8.50%			
E3. Amount for Immediate Recognition	1,097,643,843			
E4. Amount for Phased In Recognition: E1-E3	(1,760,213,091)			
F. Phased-In Recognition of Investment Return				
F1. Current Year: 0.25 x E4	(440,053,273)			
F2. First Prior Year	261,472,435	\$(440,053,273)		
F3. Second Prior Year	77,669,601	261,472,435	\$(440,053,273)	
F4. Third Prior Year	42,856,425	77,669,601	261,472,435	\$(440,053,273)
F5. Total Recognized Investment Gain	(58,054,812)	(100,911,237)	(178,580,838)	(440,053,273)
G. Total Recognized Investment Return: E3+F5	1,039,589,031			
H. Funding Value End of Year: A+D+G	15,271,012,785			
I. Difference Between Market and Funding Values	(719,545,351)			
J. Recognized Rate of Return	7.70%			
K. Rate of Return (Market Value Basis)	(4.77%)			

The Funding Value of Assets recognizes assumed investment return (line E3) fully each year. Differences between actual and assumed investment return (Line E4) are phased in over a closed 4-year period. During periods when investment performance exceeds the assumed rate, Funding Value of Assets will tend to be less than market value. During periods when investment performance is less than the assumed rate, Funding Value of Assets will tend to be greater than market value. If assumed rates are exactly realized for 3 consecutive years, funding value will become equal to market value. Currently, the Funding Value of Assets represents 104.9% of the Market Value of Assets. If the System continues to experience asset losses, it may be necessary to implement a corridor in the development of the Funding Value of Assets in the next actuarial valuation.

## FUNDING VALUE OF ASSETS – COMPARATIVE STATEMENT

Valuation Date June 30	2005	2006	2007	2008
A. Funding Value Beginning of Year	\$11,306,878,529	\$11,210,905,948	\$11,781,338,002	\$12,762,156,866
B. Market Value End of Year	11,392,543,770	12,227,994,598	13,744,769,795	14,551,467,434
C. Market Value Beginning of Year	10,853,461,575	11,392,543,770	12,227,994,598	13,744,769,795
D. Non-Investment Net Cash Flow	(569,235,671)	(410,699,839)	(508,900,022)	1,469,266,887
E. Investment Return				
E1. Market Total: B-C-D	1,108,317,865	1,246,150,667	2,025,675,219	(662,569,248)
E2. Assumed Rate	8.50%	8.50%	8.50%	8.50%
E3. Amount for Immediate Recognition	936,892,159	935,472,262	979,785,479	1,097,643,843
E4. Amount for Phased In Recognition: E1-E3	171,425,706	310,678,405	1,045,889,740	(1,760,213,091)
F. Phased-In Recognition of Investment Return				
F1. Current Year: 0.25 x E4	42,856,427	77,669,601	261,472,435	(440,053,273)
F2. First Prior Year	127,934,944	42,856,427	77,669,601	261,472,435
F3. Second Prior Year	(202,801,341)	127,934,944	42,856,427	77,669,601
F4. Third Prior Year	(431,619,099)	(202,801,342)	127,934,944	42,856,425
F5. Total Recognized Investment Gain	(463,629,069)	45,659,630	509,933,407	(58,054,812)
G. Total Recognized Investment Return: E3+F5	473,263,090	981,131,892	1,489,718,886	1,039,589,031
H. Funding Value End of Year: A+D+G	11,210,905,948	11,781,338,002	12,762,156,866	15,271,012,785
I. Difference Between Market and Funding Values	181,637,822	446,656,596	982,612,929	(719,545,351)
J. Recognized Rate of Return	4.29%	8.91%	12.92%	7.70%
K. Rate of Return (Market Value Basis)	10.49%	11.08%	17.47%	(4.77%)

## RECONCILIATION OF MARKET VALUE ASSETS

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	Asset Reconciliation	
	2006-2007	2007-2008
Net Market Value as of July 1 <sup>1</sup>	\$ 12,227,994,598	\$ 13,744,769,795
Adjustment Due to Restatement of Assets	(38,139,262)	-
Revised Net Market Value as of July 1 <sup>1</sup>	12,189,855,336	13,744,769,795
Additions		
State Contributions	412,101,958	2,518,560,263
ERIP Contributions	2,659,720	1,667,810
Employee Contributions	236,417,675	232,303,825
Change in Net Appreciation	930,055,372	(1,367,686,518)
Interest and Dividends	483,062,666	517,036,554
Gain on Sale of Securities	650,696,443	188,080,716
Total Additions	\$ 2,714,993,834	\$ 2,089,962,650
Deductions		
Benefits (pensions, contribution refunds, reimbursements, and adjustments)	(1,160,079,375)	(1,283,265,011)
Net Increase	1,554,914,459	806,697,639
Net Market Value as of June 30 <sup>2</sup>	\$ 13,744,769,795	\$ 14,551,467,434

During Fiscal 2008, \$2 Billion worth of bond proceeds were deposited into the fund in addition to the normal State contribution.

<sup>1</sup> Market value as of July 1, 2006, was restated from \$12,227,994,598 as reported in the valuation as of June 30, 2006.

<sup>2</sup> Value as reported on State Street statements for the fiscal year end.

## RECONCILIATION OF MARKET VALUE ASSETS (CONT'D)

*The market value of the assets* of the Retirement System, as of June 30, 2008, was \$14,551,467,434.

Assets	June 30, 2006	June 30, 2008
Market value of plan assets	\$12,227,994,598	\$14,551,467,434
Market value adjustment	(446,656,596)	719,545,351
Funding value of assets prior to adjustment for CLARA Balance	\$11,781,338,002	\$15,271,012,785
CLARA Balance <sup>1</sup>	(1,591,025,496)	N/A
Net funding value of plan assets	\$10,190,312,506	\$15,271,012,785

*In financing* the Retirement System actuarial accrued liabilities, the applicable assets of \$15,271,012,785 were applied as follows:

Account	Assets Applied to		Totals
	Retiree and Beneficiary Liabilities	Active and Inactive Member Liabilities	
Computed Actuarial Accrued Liabilities	\$12,432,710,537	\$9,368,310,454	\$21,801,020,991
Valuation Assets	12,432,710,537	2,838,302,248	15,271,012,785
Unfunded Actuarial Accrued Liabilities	\$ 0	\$6,530,008,206	\$ 6,530,008,206

<sup>1</sup>P.A. 07-186 repealed 10-183(g)(l) eliminating the CLARA. Assumed future cost-of-living adjustments for members retiring on or after September 1, 1992 are included in the actuarial accrued liabilities. CLARA assets were rolled into the system assets.

## COST-OF-LIVING ADJUSTMENT RESERVE ACCOUNT BALANCE AS OF JULY 1, 2007

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Pursuant to PA 92-205, a special reserve account, originally known as the “Excess Earnings Account” was established within the assets for the Teachers' Retirement System. Beginning in 1992, the Account will be charged with the actuarial present value of cost-of-living adjustments to the pensions of any member whose date of retirement is on or after September 1, 1992. In any fiscal year that the rate of investment return exceeds 11.5%, the Account is credited with the dollar amount of investment return in excess of 11.5%. The Account is now referred to as the “Cost-of-Living Adjustment Reserve Account”, or CLARA.

Following is a development of the Cost-of-Living Adjustment Reserve Account from June 30, 2006 to July 1, 2007.

		<u>Eligible Pensioners</u>	<u>Rate of Return</u>
<b>1. CLARA Balance, June 30, 2006</b>	<b>\$ 1,591,025,496</b>		
Actuarial Liability for July 1, 2006 COLA = 4.1%	(242,359,569)	14,859	
Applicable Investment Return for FY 2006	0		11.08%
Actuarial Liability for January 1, 2007 COLA = 3.3%	(20,353,437)	1,924	
<b>2. CLARA Balance, June 30, 2007</b>	<b>1,328,312,490</b>		
Applicable Investment Return for FY 2007	705,265,259		17.47%
<b>3. CLARA Balance, July 1, 2007</b>	<b>2,033,577,749</b>		
Transfer to System Assets	(2,033,577,749)		
<b>4. CLARA Balance June 30, 2008</b>	<b>\$0</b>		

Effective July 1, P.A. 07-186 repealed 10-183(g)(1), eliminating the CLARA. Assumed future cost-of-living adjustments for members retiring on or after September 1, 1992 are included in the actuarial accrued liabilities. CLARA assets were rolled into the system assets.

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**SECTION C**

EMPLOYEE CENSUS DATA

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**TOTAL ACTIVE MEMBERS IN VALUATION JUNE 30, 2008  
BY ATTAINED AGE AND YEARS OF SERVICE**

Attained Age	Years of Service to Valuation Date							Totals	
	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll
Under 20	3	0	0	0	0	0	0	3	\$ 171,911
20-24	1,147	1	0	0	0	0	0	1,148	44,364,485
25-29	4,840	1,244	2	0	0	0	0	6,086	275,845,444
30-34	2,202	3,670	570	0	0	0	0	6,442	348,620,736
35-39	1,318	2,441	2,438	300	1	0	0	6,498	405,072,656
40-44	1,094	1,404	1,412	1,056	363	0	0	5,329	351,208,850
45-49	940	1,321	998	740	1,316	320	0	5,635	384,272,282
50-54	707	1,214	1,117	927	1,090	1,384	790	7,229	530,107,032
55-59	364	840	985	1,026	1,342	1,044	3,010	8,611	675,687,666
60	59	94	124	164	214	167	463	1,285	102,933,091
61	42	104	102	122	212	149	381	1,112	89,962,291
62	19	47	74	78	109	102	210	639	51,672,377
63	19	40	40	57	95	79	161	491	39,796,676
64	15	28	37	43	64	41	126	354	27,926,923
65	10	29	24	37	69	39	87	295	23,699,846
66	4	11	16	18	44	24	63	180	14,740,940
67	2	6	9	9	26	24	52	128	10,560,663
68	2	2	6	8	9	16	19	62	5,130,987
69	1	2	5	5	8	7	32	60	4,892,397
70 & Over	3	9	8	14	31	18	68	151	12,637,882.95
<b>Totals</b>	<b>12,791</b>	<b>12,507</b>	<b>7,967</b>	<b>4,604</b>	<b>4,993</b>	<b>3,414</b>	<b>5,462</b>	<b>51,738</b>	<b>\$3,399,305,134</b>

While not used in the financial computations, the following group averages are computed and shown because of their general interest.

Age: 44.8 years  
Service: 13.3 years  
Annual Pay: \$65,702

**MALE, FEMALE, AND TOTAL MEMBERS IN VALUATION JUNE 30, 2008  
BY YEARS OF SERVICE**

Service Years	Active Member Count			Active Member Pays	
	Males	Females	Total	Total	Average
0	219	791	1,010	\$ 27,861,042	\$27,585
1	706	2,484	3,190	145,413,989	45,584
2	647	2,305	2,952	141,217,283	47,838
3	721	2,158	2,879	142,646,363	49,547
4	671	2,089	2,760	141,580,468	51,297
5	590	1,794	2,384	127,093,924	53,311
6	605	1,955	2,560	143,693,667	56,130
7	648	1,977	2,625	154,406,152	58,821
8	658	1,901	2,559	156,994,905	61,350
9	623	1,756	2,379	150,693,658	63,343
10	561	1,484	2,045	136,555,330	66,775
11	487	1,272	1,759	121,918,726	69,311
12	419	1,143	1,562	112,730,185	72,170
13	328	1,054	1,382	102,269,661	74,001
14	295	924	1,219	92,953,150	76,254
15 & Up	4,395	14,078	18,473	1,501,276,633	81,269
<b>Totals</b>	<b>12,573</b>	<b>39,165</b>	<b>51,738</b>	<b>\$3,399,305,134</b>	<b>\$65,702</b>

**FORMER ACTIVE MEMBERS AND BENEFICIARIES  
IN PAY STATUS BY PLAN CODE**

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*Number in Each Plan Code*

<b>Plan</b>	<b>Retirees and Beneficiaries*</b>	<b>Disabled</b>	<b>Total</b>
A (Life Annuity)	186	4	190
B (100% Cash Refund)	231	0	231
C (Period Certain and Life)	1,231	4	1,235
D (Joint and Survivor)	5,351	0	5,351
N (25% Cash Refund)	21,057	4	21,061
S (Survivor)	418	0	418
W (Disability)	1	300	301
<b>Total</b>	<b>28,475</b>	<b>312</b>	<b>28,787</b>

*Monthly Benefits Paid in Each Plan Code*

<b>Plan</b>	<b>Retirees and Beneficiaries*</b>	<b>Disabled</b>	<b>Total</b>
A (Life Annuity)	\$ 383,935	\$ 3,750	\$ 387,685
B (100% Cash Refund)	505,680	0	505,680
C (Period Certain and Life)	3,475,526	5,380	3,480,906
D (Joint and Survivor)	20,445,447	0	20,445,447
N (25% Cash Refund)	76,877,735	5,768	76,883,503
S (Survivor)	216,930	0	216,930
W (Disability)	300	668,663	668,963
<b>Total</b>	<b>\$101,905,553</b>	<b>\$683,561</b>	<b>\$102,589,114</b>

\* Beneficiaries category includes 418 Surviving Spouses and Dependents combined.

**RETIREES, BENEFICIARIES, SURVIVING SPOUSES AND DEPENDENTS  
BY FISCAL YEAR BENEFITS COMMENCED**

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<b>Year Ending</b>	<b>Number</b>	<b>Monthly Annuity and Pension</b>	<b>Monthly Voluntary</b>	<b>Total</b>	<b>Average</b>
1952	1	\$ 539	\$ 0	\$ 539	\$ 539
1959	2	600	0	600	300
1960	2	730	0	730	365
1961	2	788	0	788	394
1962	2	2,723	0	2,723	1,362
1963	5	6,200	2	6,202	1,240
1964	1	1,330	0	1,330	1,330
1965	3	5,361	2	5,363	1,788
1966	4	1,380	0	1,380	345
1967	4	5,492	7	5,499	1,375
1968	12	11,769	24	11,793	983
1969	17	23,493	38	23,531	1,384
1970	21	30,084	31	30,115	1,434
1971	27	36,975	74	37,049	1,372
1972	31	49,917	162	50,079	1,615
1973	59	103,342	436	103,778	1,759
1974	54	101,936	236	102,172	1,892
1975	84	170,900	513	171,413	2,041
1976	100	198,165	599	198,764	1,988
1977	112	220,634	814	221,448	1,977
1978	152	310,759	946	311,705	2,051
1979	170	330,124	2,072	332,196	1,954
1980	209	420,307	2,442	422,749	2,023
1981	232	461,255	2,812	464,067	2,000
1982	295	609,438	4,099	613,537	2,080
1983	341	726,811	3,963	730,774	2,143
1984	352	795,203	7,103	802,306	2,279
1985	436	1,053,852	11,446	1,065,298	2,443
1986	491	1,262,272	21,525	1,283,797	2,615
1987	503	1,350,211	24,980	1,375,191	2,734
1988	480	1,299,118	23,570	1,322,688	2,756
1989	499	1,491,430	27,400	1,518,830	3,044
1990	745	2,490,717	49,288	2,540,005	3,409
1991	781	2,677,204	41,629	2,718,833	3,481
1992	835	3,165,893	46,080	3,211,973	3,847
1993	1,693	6,988,126	107,932	7,096,058	4,191
1994	562	1,758,960	26,803	1,785,763	3,178
1995	975	3,530,804	54,447	3,585,251	3,677
1996	943	3,362,944	51,029	3,413,973	3,620
1997	955	3,417,401	53,275	3,470,676	3,634
1998	1,049	3,727,842	51,469	3,779,311	3,603
1999	968	3,389,152	46,495	3,435,647	3,549
2000	1,517	5,737,349	52,854	5,790,203	3,817
2001	1,381	5,081,310	51,851	5,133,161	3,717
2002	1,363	5,007,593	51,715	5,059,308	3,712
2003	1,542	5,696,934	95,231	5,792,165	3,756
2004	1,522	5,845,608	98,485	5,944,093	3,905
2005	2,000	7,846,041	160,769	8,006,810	4,003
2006	1,715	6,745,445	134,373	6,879,818	4,012
2007	1,761	6,700,641	133,724	6,834,365	3,881
2008	1,777	6,691,773	201,493	6,893,266	3,879
<b>TOTAL</b>	<b>28,787</b>	<b>\$ 100,944,875</b>	<b>\$1,644,239</b>	<b>\$102,589,114</b>	<b>\$3,564</b>

**INACTIVE MEMBERS, VESTED AND NON-VESTED  
BY AGE**

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Age	Vested		
	Counts	Accumulated Contributions	Average Vested Benefit
20-29	0	\$ 0	\$ 0
30-39	141	8,812,893	12,866
40-49	411	43,573,037	15,912
50-59	671	95,820,729	16,746
60 and over	171	30,248,300	15,952
<b>Totals</b>	<b>1,394</b>	<b>\$178,454,960</b>	<b>\$16,011</b>

Age	Non-Vested	
	Counts	Accumulated Contributions
Under 20	1	\$ 3,715
20-29	893	5,313,056
30-39	4,277	66,576,012
40-49	2,566	54,170,143
50-59	1,907	45,676,370
60 and over	953	21,564,854
<b>Totals</b>	<b>10,597</b>	<b>\$193,304,150</b>

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**SECTION D**  
BENEFIT SUMMARY

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# SUMMARY OF PROVISIONS

## JUNE 30, 2008

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

### **1. 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.

### **2. Salary**

Amount paid to a teacher as specified in a contract of employment excluding amounts paid for extra duty assignments, coaching, unused sick time, unused vacation or terminal pay.

### **3. Average Annual Salary**

Average of annual salary received during three years of highest salary.

### **4. 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 of the cost.

### **5. 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% times years of Credited Service times Average Annual Salary (maximum percent is 75%)

plus

any additional amounts derived from the accumulation of 6th percent contributions made prior to July 1, 1989 and voluntary contributions by the teacher.

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.

## SUMMARY OF PROVISIONS

### JUNE 30, 2008 (CONT'D)

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#### **6. Early Retirement**

Eligibility: At any age after the completion of 25 years of Credited Service including 20 years of Connecticut service or at or after age 55 and the completion of 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.

#### **7. Proratable Retirement**

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

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

#### **8. Disability Retirement**

Eligibility: Disability after 5 years of Credited Service in Connecticut if not incurred in the performance of duty and without regard to service if incurred in the performance of duty.

Benefit: 2% times Credited Service to date of disability times Average Annual Salary, but not less than 15% times Average Annual Salary, nor more than 50% of Average Annual Salary. In addition, in no case will a disability benefit under this plan (without regard to any cost-of-living adjustments) plus any initial award of Social Security benefits and workers' compensation exceed the Average Annual Salary.

#### **9. Termination of Employment**

With less than 5 years of Credited Service: Return of 6% contributions with interest.

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

With 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 of 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.

## SUMMARY OF PROVISIONS JUNE 30, 2008 (CONT'D)

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### 10. Pre-Retirement Death Benefits

A lump sum plus one of the following: survivor's benefit, return of all contributions with interest, surviving spouse's benefit, or automatic 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 has been increased from \$600 to \$1,500 per month. Each minor child is entitled to \$300 per month. The surviving spouse's benefit will be \$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: the 50% co-participant option plus dependent children's benefits as described in the "Survivor Benefit" paragraph.
- Automatic 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 automatically covered by a 100% Plan D co-participant option in the event of his or her death prior to retirement.

### 11. Form of Annuity

Normal: 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 benefit commencement, the difference is paid to the Member's beneficiary.

Optional Forms: 5-, 10-, 20-, or 25-year certain and life. 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.

### 12. 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.

## **SUMMARY OF PROVISIONS**

### **JUNE 30, 2008 (CONT'D)**

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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 3.0%, and if the return on assets in the previous year was less than 8.5%, the maximum increase is 1.0%.

#### **13. Teachers' Required Contribution**

Effective July 1, 1992, each teacher is required to contribute 6% of annual salary for the pension benefit. An additional 1.25% of annual salary is contributed for health insurance of retired teachers, except for the first \$500,000 of such total.

#### **14. State Contribution**

The State's contribution requirement to fund the balance of the liability for benefits with annual contributions (currently paid in installments at the beginning of each quarter) is determined in accordance with Section 10-183z (which reflects Public Act 79-436 as amended).

#### **15. Early Retirement Incentive**

A local or regional board of education may establish a retirement incentive plan. The plan shall provide 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 additional credited service and payment by the member of the remaining percentage 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.

## SAMPLE BENEFIT COMPUTATIONS FOR A MEMBER RETIRING JUNE 30, 2008

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The data for the sample member is shown below.

A.	\$40,000	Average Annual Salary
B.	32	Total Credited Service (all in Connecticut for the purpose of this example)
C.	60	Age of Retiree
D.	55	Age of Spouse
E.	100%	Percentage of Retirement Allowance to Continue to Spouse after Retiree's Death (Retiree Chooses this Percentage)

The computations that would be made for this case are:

	<u>Annual Amount</u>
F. Formula Benefit: $2\% \times A \times B$	\$25,600
G. Adjustment for Line E election $(1 - .864) \times \$25,600$	<u>3,482</u>
H. Net Annual Benefit Payable	\$22,118

This benefit could be increased by a Cost-of-Living adjustment (COLA). The amount of the COLA in a given year depends on the Teachers' Retirement Fund investment returns and the rate of increases in Social Security benefits.

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## **SECTION E**

### **DISCLOSURE REQUIRED BY GASB STATEMENT NO.25**

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**This information is presented in draft form for review by the System's auditor. Please let us know if there are any items that the auditor changes so that we may maintain consistency with the System's financial statements.**

## **INFORMATION FOR COMPLIANCE WITH GASB STATEMENT NO. 25**

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The information in this section of the report is provided to assist the Connecticut Teachers' Retirement System (CTRS) with the requirements of Governmental Accounting Standards Board Statement No. 25 (GASB 25). The GASB 25 requirements include:

1. Schedule of Funding Progress – This provides a six-year history of the following:
  - The actuarial value of plan assets,
  - The actuarial accrued liability,
  - The relationship between the assets and the liability, and
  - The relationship between the unfunded actuarial accrued liability and member payroll.
  
2. Schedule of Employer Contributions – This provides a history of the State's Annual Required Contribution (ARC) and a comparison of the ARC with the actual contributions made each year by the State.
  
3. A reconciliation of the changes in the market value of plan assets since the last annual valuation. This appears on page B-8.

Summary of Actuarial Methods and Assumptions – This states the assumptions made with regard to rates of return, salary increases, amortization periods and the actuarial cost method used.

## SUMMARY OF ACTUARIAL METHODS AND ASSUMPTIONS

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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, 2008	
Actuarial cost method	Entry age actuarial cost method using level percent of payroll funding	
Amortization method	Level percent of payroll	
Remaining amortization periods	Plan in effect 6/30/91	23 years
	Public Act 82-91	4 years
	Public Act 87-381	9 years
	Public Act 92-205	14 years
	Public Act 98-251	19 years
	Public Act 07-186	29 years
	(All of these are closed periods.)	
Equivalent single amortization period		29.2 years
Asset valuation method	4-year smoothed market	
Actuarial assumptions:		
Investment rate of return*		8.5%
Projected salary increases*		4.0% - 7.5%
*Includes wage inflation at		4.0%
Cost-of-living adjustments for retirements prior to September 1, 1992		3.0%
Cost-of-living adjustments for retirements on or after September 1, 1992		2.0%

Membership of the System consisted of the following at June 30, 2008, the date of the latest actuarial valuation:

	<b>Totals</b>
Retired Members and Beneficiaries Receiving Benefits	28,787
Inactive Members	
Vested	1,394
Non-Vested	10,597
Active Members	51,738
<b>Totals</b>	<b>92,516</b>

## SCHEDULE OF FUNDING PROGRESS

(DOLLAR AMOUNTS IN MILLIONS)

Actuarial Valuation Date	Actuarial Value of Assets (a)*	Actuarial Accrued Liability (AAL) - Entry Age (b)*	Unfunded AAL (UAAL) (b)-(a)	Funded Ratio (a)/(b)	Covered Payroll (c)	UAAL as a Percent of Covered Payroll [(b)-(a)]/(c)
6/30/1994	\$ 5,602.1	\$ 8,222.6	\$2,620.5	68.1%	\$2,030.4	129.1%
6/30/1996	6,648.2	9,626.8	2,978.6	69.1%	2,151.6	138.4%
6/30/1998	7,721.1	10,970.1	3,249.0	70.4%	2,298.9	141.3%
6/30/2000	9,605.9	11,797.6	2,191.7	81.4%	2,501.5	87.6%
6/30/2002	10,387.3	13,679.9	3,292.6	75.9%	2,698.3	122.0%
6/30/2004	9,846.7	15,070.5	5,223.8	65.3%	2,930.8	178.2%
6/30/2006	10,190.3	17,112.8	6,922.5	59.5%	3,137.7	220.6%
6/30/2008	15,271.0	21,801.0	6,530.0	70.0%	3,399.3	192.1%

\* *The Actuarial Value of Assets and Entry Age Actuarial Accrued Liabilities exclude the EEA Balance for valuation years 1994 through 2000; the CLARA Balance is excluded for valuation years 2002 through 2006; the CLARA was eliminated effective July 1, 2007, and replaced with cost-of-living adjustments that are included in the Entry Age Actuarial Accrued Liabilities.*

Note: Since the State adopted a biennial budgeting process, formal actuarial valuations have only been prepared as of June 30 of even-numbered years.

## SCHEDULE OF STATE CONTRIBUTIONS

Fiscal Year Ended June 30	Annual Required Contribution	Actual Contributions	Percent Contributed
1999	\$221,569,693	\$188,334,000	85.0%
2000	240,524,050	204,445,443	85.0%
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%

*During Fiscal 2008, bond proceeds amounting to \$2 Billion were deposited into the fund, in addition to the normal State contribution.*

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## **SECTION F**

ACTUARIAL ASSUMPTIONS, METHODS, AND DEFINITIONS

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**SUMMARY OF THE NEW ASSUMPTIONS USED IN THIS ACTUARIAL  
VALUATION FOR  
THE CONNECTICUT STATE TEACHERS' RETIREMENT SYSTEM  
ADOPTED BY BOARD OF TRUSTEES IN 2006  
AFTER CONSULTING WITH ACTUARY**

---

***Economic Assumptions***

***The investment return rate*** used in making the valuation was 8.5% per year, compounded annually (net after administrative expenses). This rate of return is not the assumed real rate of return. The real rate of return is the portion of investment return which is more than the inflation rate. Considering wage inflation recognition of 4.0%, the 8.5% rate translates to an assumed real rate of return of 4.5%. No specific price inflation is required to perform this valuation; however, a price inflation assumption on the order of 3.0% or so would be consistent with the other economic assumptions. This rate was first used for the ***June 30, 2002***, valuation.

***Pay increase assumptions*** for individual active members are shown on page F-8. Part of the assumption is for a merit and/or seniority increase related to the member's years of service, and the other 4.0% recognizes wage inflation. These rates were first used for the ***June 30, 2006***, valuation. Active member pay is assumed to be the greater of the most recent and the previous year's pensionable pay.

The Active Member Group size is assumed to remain constant at its present level.

***Total active member payroll*** is assumed to increase 4.0% per year, which is the portion of the individual pay increase assumptions attributable to wage inflation. This rate was first used for the ***June 30, 2002***, valuation.

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%. This rate was first used for the ***June 30, 2008***, valuation.

***Non-Economic Assumptions***

The mortality table used to measure non-disabled retired life mortality was the ***2000 Retired Pensioners Combined Mortality Table projected forward 19 years using scale AA, with a two-year age setback for males and females***. Related values are shown on page F-3. Both the male and female non-disabled retired life mortality were then given a 10-year age set-forward to be used for disabled retiree mortality. Rates for active male and female members are 75 percent of their respective retired member rates. ***Pre-***

**SUMMARY OF THE NEW ASSUMPTIONS USED IN THIS ACTUARIAL  
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*retirement mortality rates* are shown on page F-6. These tables were first used for the *June 30, 2006* valuation.

*The probabilities of retirement* for members eligible to retire are shown on page F-4. These rates were first used in the *June 30, 2006* valuation.

*The probabilities of withdrawal* from service are shown for sample ages on page F-5. *Disability rates* are shown on page F-7. The withdrawal and disability rates were first used in the valuation as of *June 30, 2006*, and do not apply to members who are eligible for retirement.

The last experience study was performed for the period from July 1, 2001, through June 30, 2005. The assumptions were first adopted for use in the valuation as of June 30, 2006. The next experience study is expected to be performed for the period from July 1, 2005, through June 30, 2009.

*The entry age actuarial cost method with level percent of payroll funding* was used in determining the normal cost and actuarial accrued liabilities for the System.

Differences in the past between assumed experience and actual experience (“actuarial gains and losses”) become part of actuarial accrued liabilities.

Unfunded actuarial accrued liabilities are amortized to produce contribution amounts (the total of principal and interest) which are level percent of payroll contributions.

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*Asset Valuation Method.* A market value related asset method is used as described on page B-6. This method was first used in the June 30, 1996 valuation.

*The data about persons now covered and about present assets* was furnished by the System’s administrative staff. Although examined for general reasonableness, the data was not audited by the Actuary.

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The actuarial valuation computations were made by or under the supervision of a Member of the American Academy of Actuaries (M.A.A.A.)

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## POST-RETIREMENT MORTALITY PROBABILITIES

Age	% Dying Next Year		Age	% Dying Next Year	
	Male	Female		Male	Female
50	0.1369%	0.1015%	81	4.6947%	3.6320%
51	0.1440%	0.1098%	82	5.3179%	4.0147%
52	0.1514%	0.1210%	83	6.0671%	4.4435%
53	0.1701%	0.1363%	84	6.9094%	4.9260%
54	0.1817%	0.1544%	85	7.7020%	5.4696%
55	0.1986%	0.1755%	86	8.7312%	6.0831%
56	0.2177%	0.2003%	87	9.6919%	6.9078%
57	0.2517%	0.2332%	88	10.7454%	7.8529%
58	0.2974%	0.2756%	89	12.1344%	8.9273%
59	0.3388%	0.3162%	90	13.6910%	9.9435%
60	0.3881%	0.3567%	91	15.1302%	11.2543%
61	0.4376%	0.4038%	92	16.9960%	12.4375%
62	0.4966%	0.4596%	93	18.5121%	13.6580%
63	0.5760%	0.5286%	94	20.4586%	14.8872%
64	0.6571%	0.6052%	95	22.0697%	16.4072%
65	0.7659%	0.6953%	96	23.6783%	17.5976%
66	0.8629%	0.7836%	97	25.7507%	18.7249%
67	0.9744%	0.8824%	98	27.3309%	19.7713%
68	1.1237%	0.9959%	99	28.8660%	21.1187%
69	1.2537%	1.1058%	100	30.9359%	21.9730%
70	1.3671%	1.2224%	101	32.3989%	22.7030%
71	1.5149%	1.3510%	102	33.8068%	23.2996%
72	1.6663%	1.5221%	103	35.8628%	24.4834%
73	1.8437%	1.6572%	104	37.1685%	25.4498%
74	2.0471%	1.8432%	105	38.3040%	26.6044%
75	2.2802%	2.0100%	106	39.2003%	27.9055%
76	2.5438%	2.2277%	107	39.7886%	29.3116%
77	2.8943%	2.4128%	108	40.0000%	30.7811%
78	3.2259%	2.6583%	109	40.0000%	32.2725%
79	3.6581%	2.9844%	110	100.0000%	100.0000%
80	4.1439%	3.2898%	Ref	456 1.00 2	457 1.00 2

**PROBABILITIES OF AGE AND SERVICE RETIREMENT  
FOR MEMBERS ELIGIBLE TO RETIRE**

Age	% of Active Participants Retiring					
	Unreduced		Proratable		Reduced	
	Male	Female	Male	Female	Male	Female
50	27.5%	15.0%			2.0%	2.0%
51	27.5%	15.0%			2.0%	2.0%
52	27.5%	15.0%			3.0%	4.0%
53	27.5%	15.0%			3.0%	4.5%
54	27.5%	15.0%			5.0%	5.5%
55	38.5%	30.0%			5.0%	7.5%
56	38.5%	30.0%			7.0%	8.5%
57	38.5%	30.0%			10.0%	9.5%
58	38.5%	30.0%			11.0%	10.0%
59	38.5%	30.0%			12.0%	10.0%
60	22.0%	20.0%	6%	5.4%		
61	25.3%	22.5%	6%	7.2%		
62	25.3%	22.5%	15%	9.9%		
63	27.5%	22.5%	10%	7.2%		
64	27.5%	22.5%	10%	7.2%		
65	36.3%	30.0%	20%	13.5%		
66	27.5%	30.0%	20%	10.8%		
67	27.5%	30.0%	20%	13.5%		
68	27.5%	30.0%	20%	10.8%		
69	27.5%	30.0%	35%	10.8%		
70	100.0%	40.0%	35%	10.8%		
71	100.0%	40.0%	35%	10.8%		
72	100.0%	40.0%	35%	10.8%		
73	100.0%	40.0%	35%	10.8%		
74	100.0%	40.0%	35%	18.0%		
75	100.0%	40.0%	40%	18.0%		
76	100.0%	40.0%	40%	18.0%		
77	100.0%	40.0%	40%	18.0%		
78	100.0%	40.0%	40%	18.0%		
79	100.0%	40.0%	40%	18.0%		
80	100.0%	100.0%	40%	18.0%		
Tbl	804	805	806	807	1094	1095
Anch	50	50	60	60	45	45
Mult	1.1	1	1	0.9	1	1

**WITHDRAWAL RATES  
PRIOR TO ELIGIBILITY FOR RETIREMENT**

---

% of Active Participants Withdrawing					
Service-Based Withdrawal			Age-Based Withdrawal		
Service	Male	Female	Age	Male	Female
0-1	0.1400	0.1200	25	0.0120	0.0350
1-2	0.0850	0.0900	26	0.0120	0.0350
2-3	0.0550	0.0700	27	0.0120	0.0350
3-4	0.0450	0.0600	28	0.0120	0.0350
4-5	0.0350	0.0550	29	0.0120	0.0350
5-6	0.0250	0.0500	30	0.0120	0.0350
6-7	0.0240	0.0450	31	0.0120	0.0350
7-8	0.0230	0.0350	32	0.0120	0.0350
8-9	0.0220	0.0300	33	0.0120	0.0350
9-10	0.0210	0.0250	34	0.0120	0.0350
			35	0.0120	0.0350
			36	0.0120	0.0350
			37	0.0120	0.0350
			38	0.0120	0.0310
			39	0.0120	0.0270
			40	0.0120	0.0230
			41	0.0120	0.0190
			42	0.0120	0.0160
			43	0.0122	0.0150
			44	0.0124	0.0140
			45	0.0126	0.0130
			46	0.0128	0.0120
			47	0.0130	0.0110
			48	0.0152	0.0115
			49	0.0174	0.0120
			50	0.0196	0.0125
			51	0.0218	0.0130
			52	0.0240	0.0130
			53	0.0272	0.0140
			54	0.0304	0.0150
			55	0.0336	0.0160
			56	0.0368	0.0170
			57	0.0400	0.0180
			58	0.0400	0.0180
			59	0.0400	0.0190
Sw	407	408	Wx	735	736

## PRE-RETIREMENT MORTALITY PROBABILITIES

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Age	% Dying Next Year	
	Male	Female
20	0.0164%	0.0108%
21	0.0173%	0.0107%
22	0.0180%	0.0106%
23	0.0190%	0.0104%
24	0.0198%	0.0105%
25	0.0210%	0.0109%
26	0.0220%	0.0113%
27	0.0233%	0.0118%
28	0.0253%	0.0127%
29	0.0260%	0.0133%
30	0.0268%	0.0140%
31	0.0281%	0.0148%
32	0.0303%	0.0164%
33	0.0340%	0.0198%
34	0.0383%	0.0225%
35	0.0431%	0.0249%
36	0.0479%	0.0269%
37	0.0527%	0.0289%
38	0.0574%	0.0307%
39	0.0616%	0.0324%
40	0.0645%	0.0343%
41	0.0670%	0.0365%
42	0.0695%	0.0398%
43	0.0721%	0.0436%
44	0.0753%	0.0479%
45	0.0790%	0.0527%
46	0.0833%	0.0579%
47	0.0882%	0.0620%
48	0.0927%	0.0662%
49	0.0976%	0.0704%
50	0.1027%	0.0761%
51	0.1080%	0.0823%
52	0.1136%	0.0908%
53	0.1276%	0.1022%
54	0.1363%	0.1158%
55	0.1489%	0.1316%
56	0.1633%	0.1502%
57	0.1888%	0.1749%
58	0.2231%	0.2067%
59	0.2541%	0.2372%
60	0.2911%	0.2675%
61	0.3282%	0.3029%
62	0.3725%	0.3447%
63	0.4320%	0.3965%
64	0.4928%	0.4539%
65	0.5744%	0.5215%
Ref	456 0.75.00 2	457 0.75 2

**DISABILITY RATES  
PRIOR TO ELIGIBILITY FOR RETIREMENT**

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Attained Age	% Becoming Disabled	
	Male	Female
20	0.0455%	0.0500%
21	0.0455%	0.0500%
22	0.0455%	0.0500%
23	0.0455%	0.0500%
24	0.0455%	0.0500%
25	0.0455%	0.0500%
26	0.0455%	0.0500%
27	0.0455%	0.0500%
28	0.0455%	0.0470%
29	0.0455%	0.0440%
30	0.0455%	0.0410%
31	0.0455%	0.0380%
32	0.0455%	0.0350%
33	0.0455%	0.0370%
34	0.0455%	0.0390%
35	0.0455%	0.0410%
36	0.0455%	0.0430%
37	0.0455%	0.0450%
38	0.0520%	0.0540%
39	0.0650%	0.0630%
40	0.0715%	0.0720%
41	0.0845%	0.0810%
42	0.1040%	0.0900%
43	0.1170%	0.1000%
44	0.1430%	0.1100%
45	0.1625%	0.1200%
46	0.1820%	0.1300%
47	0.2015%	0.1400%
48	0.2340%	0.1810%
49	0.2730%	0.2220%
50	0.3250%	0.2630%
51	0.3900%	0.3040%
52	0.4615%	0.3450%
53	0.5330%	0.3760%
54	0.6175%	0.4070%
55	0.7150%	0.4380%
56	0.8320%	0.4690%
57	0.9490%	0.5000%
58	1.0790%	0.5000%
59	1.2805%	0.5000%
60	1.2805%	0.5000%
Ref:	312 x 0.65	135 x 0.50

## PAY INCREASE ASSUMPTIONS FOR AN INDIVIDUAL MEMBER

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Service	% Increases in Salaries Next Year		
	Merit & Seniority	Base	Total
0	3.50%	4.00%	7.50%
1	3.50%	4.00%	7.50%
2	3.50%	4.00%	7.50%
3	3.50%	4.00%	7.50%
4	3.50%	4.00%	7.50%
5	2.50%	4.00%	6.50%
6	2.50%	4.00%	6.50%
7	2.50%	4.00%	6.50%
8	2.50%	4.00%	6.50%
9	2.50%	4.00%	6.50%
10	1.50%	4.00%	5.50%
11	1.50%	4.00%	5.50%
12	1.50%	4.00%	5.50%
13	1.50%	4.00%	5.50%
14	1.50%	4.00%	5.50%
15	0.00%	4.00%	4.00%
16	0.00%	4.00%	4.00%
17	0.00%	4.00%	4.00%
18	0.00%	4.00%	4.00%
19	0.00%	4.00%	4.00%
20	0.00%	4.00%	4.00%
21	0.00%	4.00%	4.00%
22	0.00%	4.00%	4.00%
23	0.00%	4.00%	4.00%
24	0.00%	4.00%	4.00%
25	0.00%	4.00%	4.00%
26	0.00%	4.00%	4.00%
27	0.00%	4.00%	4.00%
28	0.00%	4.00%	4.00%
29	0.00%	4.00%	4.00%
30	0.00%	4.00%	4.00%
31	0.00%	4.00%	4.00%
32	0.00%	4.00%	4.00%
33	0.00%	4.00%	4.00%
34	0.00%	4.00%	4.00%
35	0.00%	4.00%	4.00%
36	0.00%	4.00%	4.00%
37	0.00%	4.00%	4.00%
38	0.00%	4.00%	4.00%
39	0.00%	4.00%	4.00%
40	0.00%	4.00%	4.00%
Ref	4	4.00%	

## MISCELLANEOUS AND TECHNICAL ASSUMPTIONS

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<b>Marriage Assumption:</b>	85% of males and 75% of females are assumed to be married for purposes of valuing death-in-service benefits. The male spouse is assumed three years older than the female spouse.
<b>Pay Increase Timing:</b>	Beginning of (fiscal) year.
<b>Eligibility Testing:</b>	Eligibility for benefits is determined based upon the age nearest birthday and service on the date the decrement is assumed to occur.
<b>Benefit Service:</b>	Exact fractional years of service are used to determine the amount of benefit payable.
<b>Decrement Timing:</b>	Retirement decrements are assumed to occur at the beginning of the year, other decrements are assumed to occur mid-year.
<b>Decrement Relativity:</b>	Decrement rates are used directly from the experience study, without adjustment for multiple decrement table effects.
<b>Decrement Operation:</b>	Disability and turnover decrements do not operate after member reaches retirement eligibility.
<b>Incidence of Contributions:</b>	Contributions are assumed to be received continuously throughout the year based upon the computed percent of payroll shown in this report, and the actual payroll payable at the time contributions are made.
<b>Miscellaneous Loading Factors:</b>	None.

## GLOSSARY

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***Accrued Service.*** The service credited under the plan which was rendered before the date of the actuarial valuation.

***Accumulated Benefit Obligation.*** The actuarial present value of vested and non-vested benefits based on service to date and past and current salary levels.

***Actuarial Accrued Liability.*** The difference between (i) the actuarial present value of future plan benefits, and (ii) the actuarial present value of future normal cost. Sometimes referred to as “accrued liability” or “past service liability.”

***Actuarial Assumptions.*** Estimates of future plan experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and salary increases. Decrement assumptions (rates of mortality, disability, turnover and retirement) are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (salary increases and investment income) consist of an underlying rate 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 plan benefits” between the actuarial present value of future normal cost and the actuarial accrued liability. Sometimes referred to as the “actuarial funding method.”

***Actuarial Equivalent.*** A single amount or series of amounts of equal value to another single amount or series of amounts, computed on the basis of the rate(s) of interest and mortality tables used by the plan.

***Actuarial Present Value.*** The amount of funds presently required to provide a payment or series of payments in the future. It is determined by discounting the future payments at a predetermined rate of interest, taking into account the probability of payment.

***Actuarial Present Value of Credited Projected Benefits*** or Pension Benefit Obligation. The present value of future benefits based on service to date and the effect projected salary increases.

***Actuary.*** A person who is trained in the applications of probability and compound interest to problems in business and finance that involve payment of money in the future, contingent upon the occurrence of future events. Most actuaries in the United States are Members of the American Academy of Actuaries. The Society of Actuaries is an international research, education and membership organization for actuaries in the life and health insurance, employee benefits, and pension fields. It administers a series of examinations leading initially to Associateship and the designation A.S.A. and ultimately to Fellowship with the designation F.S.A.

**Amortization.** Paying off an interest-bearing liability by means of periodic payments of interest and principal, as opposed to paying it off with a lump sum payment.

**Experience Gain (Loss).** A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions during the period between two actuarial valuation dates, 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. Sometimes referred to as “current service cost.” Any payment toward the unfunded actuarial accrued liability is not part of the normal cost.

**Pension Benefit Obligation.** A standardized disclosure measure of the present value of pension benefits, adjusted for the effects of projected salary increases, estimated to be payable in the future as a result of employee service to date. The measure is the actuarial present value of credited projected benefits and is intended to (i) help users assess the plan’s funding status on a going-concern basis, (ii) assess progress being made in accumulating sufficient assets to pay benefits when due, and (iii) allow for comparisons among public employee retirement plans. The measure is independent of the actuarial funding method used to determine contributions to the plan.

**Plan Termination Liability.** The actuarial present value of future plan benefits based on the assumption that there will be no further accruals for future service and salary. The termination liability will generally be less than the liabilities computed on a “going concern” basis and is not normally determined in a routine actuarial valuation.

**Reserve Account.** An account used to indicate that funds have been set aside for a specific purpose and are not generally available for other uses.

**Unfunded Actuarial Accrued Liability.** The difference between the actuarial accrued liability and valuation assets. Sometimes referred to as “unfunded accrued liability.”

**Valuation Assets.** The value of current plan assets recognized for valuation purposes. Generally based on book value plus a portion of unrealized appreciation or depreciation.