



Cavanaugh Macdonald  
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**CONNECTICUT STATE EMPLOYEES  
RETIREMENT SYSTEM**

**REPORT OF THE ACTUARY ON THE VALUATION  
PREPARED AS OF JUNE 30, 2011**



# Cavanaugh Macdonald

CONSULTING, LLC

*The experience and dedication you deserve*

February 8, 2012

State of Connecticut  
State Employees Retirement Commission  
55 Elm Street  
Hartford, CT 06106

Members of the Commission:

Connecticut General Statutes Section 5-155a governs the operation of the Connecticut State Employees Retirement System (SERS). The actuary makes periodic valuations of the contingent assets and liabilities of the Retirement System at the direction of the Commission. We have submitted the report giving the results of the actuarial valuation of the Retirement System prepared as of June 30, 2011. This report is requested to update the contribution calculations as determined in the June 30, 2010 actuarial valuation. The report indicates that annual employer contributions at the rate of 28.86% of compensation for the fiscal year ending June 30, 2012 are sufficient to support the benefits of the System.

In preparing the valuation, the actuary relied on data provided by the Comptroller's Office. While not verifying data at the source, the actuary performed tests for consistency and reasonableness. This valuation also includes changes to the plan provisions as contained in the Revised 2011 SEBAC Agreement. Further, we reviewed and incorporated additional data pertaining to retirements that occurred after June 30, 2011 through October 1, 2011 that were largely due to the SEBAC Agreement.

The System is funded on an actuarial reserve basis. The actuarial assumptions recommended by the actuary and adopted by the Board are reasonably related to the experience under the System and to reasonable expectations of anticipated experience under the System. The assumptions and methods used for funding purposes meet the parameters set for the disclosures presented in the financial section by Governmental Accounting Standards Board (GASB) Statement Nos. 25 and 27. The funding objective of the plan is that contribution rates over time will remain level as a percent of payroll. The valuation method used is the projected unit credit method. Gains and losses are reflected in the unfunded accrued liability which is being amortized as a level percent of payroll within a 20-year period. This period is based on the funding policy of SERS that amortizes the unfunded accrued liability over a declining period of years, starting with 40 years as of July 1, 1991.

This is to certify 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 that are internally consistent and reasonably based on the actual experience of the System.

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Members of the Commission  
February 8, 2012  
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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; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law. 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.

The undersigned meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

Sincerely yours,

A handwritten signature in cursive script, appearing to read 'Thomas J. Cavanaugh'.

Thomas J. Cavanaugh, FSA, FCA, MAAA, EA  
Chief Executive Officer

A handwritten signature in cursive script, appearing to read 'John J. Garrett'.

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

A handwritten signature in cursive script, appearing to read 'Edward J. Koebel'.

Edward J. Koebel, FCA, MAAA, EA  
Principal and Consulting Actuary

TJC/KC



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**CONNECTICUT STATE EMPLOYEES RETIREMENT SYSTEM  
REPORT OF THE ACTUARY  
ON THE VALUATION  
PREPARED AS OF JUNE 30, 2011**

**SECTION I - SUMMARY OF PRINCIPAL RESULTS**

1. As the purpose of the June 30, 2011 actuarial valuation is to update the contribution calculations from those determined in the June 30, 2010 actuarial valuation, we determine the contribution amounts for the same fiscal years as determined in that valuation. For convenience of reference, the principal results of the current and preceding valuations are summarized below:

<b>Valuation Date</b>	<b>June 30, 2011</b>	<b>June 30, 2010</b>
Number of active members	47,778	50,064
Annual compensation	\$ 3,210,665,659	\$ 3,295,665,691
Retired members and beneficiaries:		
Number	44,051	41,782
Annual allowances	\$ 1,391,091,420	\$ 1,264,025,423
Deferred Vested Members:		
Number	1,589	1,602
Annual allowances	\$ 23,237,927	\$ 24,526,551
Assets:		
Market Value	\$ 8,984,875,027	\$ 7,791,337,413
Actuarial Value	\$ 10,122,765,430	\$ 9,349,604,896
Unfunded actuarial accrued liability	\$ 11,003,960,062	\$ 11,704,591,788
Amortization period (years)	20	21
Funded Ratio	47.9%	44.4%
<b>For Fiscal Year Ending</b>	<b>June 30, 2012</b>	<b>June 30, 2012</b>
Annual Required Employer Contribution (ARC):		
Normal	\$ 229,111,675	\$ 296,567,797
Accrued liability	<u>697,260,027</u>	<u>726,883,275</u>
Total	\$ 926,371,702	\$ 1,023,451,072
Annual Required Employer Contribution Rates (ARC):		
Normal	7.14%	9.00%
Accrued liability	<u>21.72%</u>	<u>22.06%</u>
Total	28.86%	31.06%



2. All amounts shown that were developed as a result of valuations prior to June 30, 2010 were developed and/or reported by the prior actuarial firm. The results of the valuation are given in Schedule A.
3. Comments on the valuation results are given in Section IV, comments on the experience and actuarial gains and losses during the valuation year are given in Section VII and the rates of contribution payable by employers are given in Section V.
4. There were no changes made to the actuarial assumptions or actuarial methods as presented in the last valuation. However, this valuation includes changes to the plan provisions as contained in the Revised 2011 SEBAC Agreement and recommends an additional assumption concerning the COLA rate of increase provided to post-October 1, 2011 retirees. The following summarizes the changes:
  - a. For members retiring on or after October 2, 2011, the minimum COLA shall be 2.0% and the maximum COLA shall be 7.5%. Our assumption for this group is 2.5%.
  - b. For members retiring on or after October 2, 2011, the early retirement reduction factor shall be changed to 6.0% for each year before the individual would be eligible to take unreduced Normal Retirement.
  - c. For current Non-Hazardous members who are eligible to retire after July 1, 2022, the Normal Retirement Eligibility increases from Age 60 with 25 years of benefit service or Age 62 with 10 years of benefit service to Age 63 with 25 years of benefit service or Age 65 with 10 years of benefit service. This change affects all years of benefit service earned on or after July 1, 2011.
  - d. For all active members, no increases in salary will occur for fiscal years ending 2012 and 2013. In addition, increases in salary of 3% plus step increases, annual increments or their equivalent will occur in fiscal years ending 2014, 2015 and 2016. Then in fiscal year 2017 and beyond, increases in salary will match our current assumptions.
  - e. A new retirement Tier III and Hybrid Plan Option for ARP members were established for individuals hired on or after July 1, 2011. Although there is no impact on this valuation



due to these changes, we have summarized these plan provisions in Schedule F of this report.

Further, we reviewed and incorporated additional data pertaining to retirements that occurred after June 30, 2011 through October 1, 2011 that were largely due to the SEBAC Agreement.

5. The calculation of the projected required contributions for the fiscal year ending June 30, 2013 is found in Section V of this report. Since this valuation is an update of the results provided in the 2010 valuation, we have provided a comparison of the results. In addition, we have included the projected required contributions for the fiscal year ending June 30, 2013 based upon the proposed elimination of the SEBAC IV and V adjustments.
6. Schedule B of this report presents the development of the actuarial value of assets. Schedule D details the actuarial assumptions and methods employed. Schedule F gives a summary of the benefit and contribution provisions of the plan.
7. The table on the following page provides a history of some pertinent figures.





**Connecticut State Employees Retirement System  
Comparative Schedule\***

Valuation Date June 30	Active Members				Retired Lives				Valuation Results (\$ thousands)		
	Number	Payroll (\$ thousands)	Average Salary	% increase from previous year	Number	Active/ Retired Ratio	Annual Benefits (\$ thousands)	Benefits as % of Payroll	Accrued Liability	Valuation Assets	UAAL
2005	48,919	\$2,980,104	\$60,919	3.7	36,705	1.3	\$906,226	30.4%	\$15,987,547	\$8,517,679	\$7,469,868
2006	50,605	3,107,928	61,415	0.8	36,964	1.4	942,054	30.3	16,830,349	8,951,393	7,878,956
2007	52,438	3,310,351	63,129	2.8	37,420	1.4	988,914	29.9	17,888,065	9,584,970	8,303,095
2008	53,196	3,497,445	65,746	4.1	38,093	1.4	1,047,479	29.9	19,243,373	9,990,247	9,253,126
2010	50,064	3,295,666	65,829	0.1	41,782	1.2	1,264,025	38.4	21,054,197	9,349,605	11,704,592
2011	47,778	3,210,666	67,200	2.1	44,051	1.1	1,391,091	43.3	21,126,725	10,122,765	11,003,960

\*All amounts prior to 2010 reported by prior actuarial firm.



## SECTION II - MEMBERSHIP

Data regarding the membership of the System for use as a basis for the valuation were furnished by the Comptroller's office. The following tables summarize the membership of the Retirement System as of June 30, 2011 upon which the valuation was based. Detailed tabulations of the data are given in Schedule G.

### **Active Members**

Group	Number	Payroll	Group Averages		
			Salary	Age*	Service*
Tier I – Hazardous	102	\$10,431,448	\$102,269	55.1	27.0
Tier I – Plan B	3,119	266,694,056	85,506	55.2	29.4
Tier I – Plan C	125	9,876,655	79,013	57.4	30.9
Tier II – Hazardous	3,680	316,578,781	86,027	47.7	17.9
Tier II – Others	14,088	1,069,131,787	75,890	51.4	20.2
Tier IIA – Hazardous	6,441	426,820,136	66,266	39.6	7.2
Tier IIA – Others	20,223	1,111,132,796	54,944	43.6	6.2
<b>Total</b>	<b>47,778</b>	<b>\$3,210,665,659</b>	<b>\$67,200</b>	<b>46.5</b>	<b>13.0</b>

\*Years

Of the 47,778 active members, 35,614 are vested and 12,164 are non-vested.



### Retired Lives

Type of Benefit Payment	No *	Annual Benefits	Group Averages	
			Benefit	Age**
Retired - Pre 1980	1,860	\$30,713,835	\$16,513	87.9
Retired – 1980 - 1997	15,393	430,895,058	27,993	77.8
Retired – 1997+	26,798	929,482,527	34,685	63.2
<b>Total</b>	<b>44,051</b>	<b>\$1,391,091,420</b>	<b>\$31,579</b>	<b>69.3</b>

\*The retired count includes 1,496 members with annual benefits of \$57,336,952 that retired after June 30, 2011.

\*\*Years

This valuation also includes 1,589 deferred vested members with estimated annual benefits of \$23,237,927.



### **SECTION III - ASSETS**

1. As of June 30, 2011, the total market value of assets amounted to \$8,984,875,027 as reported by the Comptroller's Office. This amount includes \$2,509,578 of receivables as of the valuation date. The actuarial value of assets used for the current valuation was \$10,122,765,430. Schedule B shows the development of the actuarial value of assets as of June 30, 2011.
2. Schedule C shows receipts and disbursements of the System for the two years preceding the valuation date and a reconciliation of the fund balances at market value.

### **SECTION IV – COMMENTS ON VALUATION**

1. Schedule A of this report outlines the results of the valuation of the Retirement System as of June 30, 2011. The valuation was prepared in accordance with the actuarial assumptions and methods set forth in Schedule D and the actuarial cost method which is described in Schedule E.
2. The valuation shows that the System has a total actuarial accrued liability of \$21,126,725,492, of which \$15,663,379,708 is for the benefits payable on account of present retired members, beneficiaries of deceased members, and inactive members entitled to deferred vested benefits, and \$5,463,345,784 is for the benefits expected to be payable on account of present active members, based on service to the valuation date. Against these liabilities, the System has total present assets for valuation purposes of \$10,122,765,430 as of June 30, 2011. When this amount is deducted from the actuarial accrued liability of \$21,126,725,492, there remains \$11,003,960,062 as the unfunded actuarial accrued liability.
3. The employer's contributions to the System consist of normal cost contributions and accrued liability contributions. The normal cost represents the ultimate cost of the benefits and the accrued liability contribution is an addition (reduction in case of a surplus) due to the amortization of the unfunded accrued liability. The valuation indicates that annual employer normal contributions at the rate of



7.14% of active members' compensation are required to provide the currently accruing benefits of the System. The decrease in the employer normal cost rate is primarily due to the changes to the plan provisions included in the latest SEBAC agreement, including the lowering of the COLA assumption and the increase to the early retirement reduction factor for members who retire on or after October 2, 2011, the change in Normal Retirement Eligibility for members who are eligible to retire after July 1, 2022 and also the changes in the salary assumption for the next 5 fiscal years.

4. Accrued liability contributions of 21.72% of payroll are required to be made to amortize the unfunded accrued liability within 20 years from the valuation date.

**SECTION V – CONTRIBUTIONS PAYABLE BY EMPLOYER**

The following table shows the amount and rate of contribution payable by the employer as determined from the present valuation for the 2011/2012 fiscal year.

Contribution for	Contribution Amount	Contribution Rate
A. Normal Cost:		
Service retirement benefits	\$286,269,009	8.92%
Disability benefits	2,119,280	0.07%
Survivor benefits	<u>2,992,716</u>	<u>0.09%</u>
Total Normal Cost	\$291,381,005	9.08%
B. Less Member Contributions	(62,269,330)	(1.94)%
C. Employer Normal Cost	\$229,111,675	7.14%
D. Unfunded Actuarial Accrued Liabilities (20 year level percent of payroll amortization)	\$815,907,371	25.41%
E. SEBAC IV Adjustment	(49,181,653)	(1.53)%
F. SEBAC V Adjustment	(69,465,691)	(2.16)%
G. Net Unfunded Actuarial Accrued Liabilities	\$697,260,027	21.72%
H. Total (C. + G.)	\$926,371,702	28.86%



The following table shows a breakdown by group of the normal cost amount and rate payable by the employer as determined from the present valuation for the 2011/2012 fiscal year.

Group	Normal Cost	Normal Rate
Tier I – Hazardous	\$ 0	0.00%
Tier I – Plan B	32,888,205	12.33
Tier I – Plan C	877,103	8.88
Tier II – Hazardous	42,959,308	13.57
Tier II – Others	82,678,301	7.73
Tier IIA – Hazardous	29,414,048	6.89
Tier IIA – Others	40,294,710	3.63
<b>Total</b>	<b>\$ 229,111,675</b>	<b>7.14%</b>

As the June 30, 2011 valuation is an update of the results provided in the June 30, 2010 valuation report, the table on the following page provides the projected required contributions for the fiscal year ending June 30, 2013 based upon the June 30, 2011 valuation as compared with the results of the June 30, 2010 valuation. In addition, we have included the projected required contributions for the fiscal year ending June 30, 2013 based upon the proposed elimination of the SEBAC IV and V adjustments.



Projected Contributions Required for Fiscal Year Ending June 30, 2013	June 30, 2011 Valuation with the Elimination of SEBAC IV and V		June 30, 2011 Valuation before the Elimination of SEBAC IV and V		June 30, 2010 Valuation	
	As % of Pay	\$	As % of Pay	\$	As % of Pay	\$
Employer Normal Cost	7.40%	\$ 237,513,943	7.40%	\$ 237,513,943	8.83%	\$ 302,692,046
Unfunded Actuarial Accrued Liabilities	24.62%	822,137,989	20.93%	698,744,751	21.66%	742,302,976
Total	32.02%	\$1,059,651,932	28.33%	\$ 936,258,694	30.49%	\$1,044,995,022



**SECTION VI – ACCOUNTING 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:

**NUMBER OF ACTIVE AND RETIRED MEMBERS  
AS OF JUNE 30, 2011**

GROUP	NUMBER
Retirees and beneficiaries currently receiving benefits	44,051
Terminated employees entitled to benefits but not yet receiving benefits	1,589
Active plan members	<u>47,778</u>
Total	93,418

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

**SCHEDULE OF FUNDING PROGRESS**  
(Dollar amounts in thousands)

Actuarial Valuation Date	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) - PUC (b)	Unfunded AAL (UAAL) (b - a)	Funded Ratio (a / b)	Covered Payroll (c)	UAAL as a Percentage of Covered Payroll ((b - a) / c)
6/30/2006	\$8,951,393	\$16,830,349	\$7,878,956	53.2%	\$3,107,928	253.5%
6/30/2007	9,584,970	17,888,065	8,303,095	53.6	3,310,351	250.8
6/30/2008	9,990,247	19,243,373	9,253,126	51.9	3,497,445	264.6
6/30/2010	9,349,605	21,054,197	11,704,592	44.4	3,295,666	355.2
6/30/2011	10,122,765	21,126,725	11,003,960	47.9	3,210,666	342.7

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).

<b>Fiscal Year Ending June 30</b>	<b>Valuation Date Ending June 30</b>	<b>Annual Required Contribution</b>	<b>Actual Contribution</b>	<b>Percentage Contributed</b>
2010	2008	\$ 897,428	\$ 720,527	80.3%
2011	2008	944,077	825,801	87.5
2012	2010	1,023,451	N/A	N/A
2012	2011	926,372	N/A	N/A

All figures before the fiscal year ending 6/30/2010 were reported by the prior actuarial firm.

4. The information presented in the required supplementary schedules was determined as part of the actuarial valuation at June 30, 2011. Additional information as of the latest actuarial valuation follows.

Valuation date	6/30/2011
Actuarial cost method	Projected Unit Credit
Amortization method	Level percent of payroll, closed
Remaining amortization period	20 years
Asset valuation method	5-year smoothed actuarial value
Actuarial assumptions:	
Investment rate of return*	8.25%
Projected salary increases*	4.00% - 20.00%
Cost-of-living adjustments	2.50% - 3.60%
Social Security Wage Base	3.50%
*Includes inflation at	4.00%



### SECTION VII – EXPERIENCE

Actual experience will never (except by coincidence) coincide exactly with assumed experience. It is assumed that gains and losses will be in balance over a period of years, but sizable year to year fluctuations are common. Detail on the derivation of the experience gain/(loss) for the year ended June 30, 2011 is shown below. Schedule H provides detailed gain/(loss) by source.

	<u>\$ Millions</u>
(1) UAAL* as of June 30, 2010	\$ 11,704.6
(2) Total Normal cost from last valuation	359.8
(3) Actual Employer and Employee contributions	893.5
(4) Interest accrual: $(1) \times .0825 + [(2) - (3)] \times .0404$	<u>944.1</u>
(5) Expected UAAL as of June 30, 2011: $(1) + (2) - (3) + (4)$	12,115.0
(6) Actual UAAL as of June 30, 2011	\$ 11,004.0
(7) Gain/(loss): $(5) - (6)$	1,111.0
(8) Gain/(loss) as percent of actuarial accrued liabilities at June 30, 2010 (\$21,054.2)	5.3%

\*Unfunded actuarial accrued liability.

Valuation Date June 30	Actuarial Gain/(Loss) as a % of Beginning Accrued Liabilities
2010	(9.9)%
2011	5.3%



**SCHEDULE A**  
**RESULTS OF VALUATION**  
**PREPARED AS OF JUNE 30, 2011**

<b>JUNE 30, 2011</b>	
<b>1. ACTUARIAL ACCRUED LIABILITY</b>	
Present value of prospective benefits payable in respect of:	
(a) Present active members	
- Tier I – Hazardous Duty	\$ 64,437,469
- Tier I – Plan B	1,232,873,143
- Tier I – Plan C	47,184,111
- Tier II – Hazardous Duty	1,121,820,462
- Tier II – All Others	1,998,223,466
- Tier IIA – Hazardous Duty	440,607,783
- Tier IIA – All Others	<u>558,199,350</u>
- Total actives	\$ 5,463,345,784
(b) Present inactive members and members entitled to deferred vested benefits:	231,659,145
(c) Present annuitants and beneficiaries	<u>15,431,720,563</u>
(d) Total actuarial accrued liability [1(a) + 1(b) + 1(c)]	\$ 21,126,725,492
<b>2. ACTUARIAL VALUE OF ASSETS</b>	<u>\$ 10,122,765,430</u>
<b>3. UNFUNDED ACTUARIAL ACCRUED LIABILITY [1(d) – 2]</b>	\$ 11,003,960,062



**SCHEDULE B**

**DEVELOPMENT OF ACTUARIAL VALUE OF ASSETS**

	June 30, 2011	June 30, 2010
(1) Actuarial Value Beginning of Year*	\$10,175,800,311	\$10,396,915,613
(2) Market Value End of Year**	8,984,875,027	7,791,337,413
(3) Market Value Beginning of Year	7,791,337,413	7,322,633,689
(4) Cash Flow		
(a) Contributions**	895,989,754	788,276,952
(b) Disbursements	<u>(1,323,592,948)</u>	<u>(1,272,121,344)</u>
(c) Net: (4)(a) + (4)(b)	(427,603,194)	(483,844,392)
(5) Investment Income		
(a) Market Total: (2) – (3) – (4)(c)	1,621,140,808	952,548,116
(b) Assumed Rate	8.25%	8.25%
(c) Amount for Immediate Recognition: [(1) x (5)(b)] + [(4)(c) less Receivable**] x (5)(b) x 0.5	821,761,374	837,700,832
(d) Amount for Phased-In Recognition: (5)(a) – (5)(c)	799,379,434	114,847,284
(6) Phased-In Recognition of Investment Income		
(a) Current Year: (5)(d) x 0.20	159,875,887	22,969,457
(b) First Prior Year	22,969,457	(511,332,736)
(c) Second Prior Year	(511,332,736)	(261,611,703)
(d) Third Prior Year	(261,611,703)	142,906,034
(e) Fourth Prior Year	<u>142,906,034</u>	<u>32,097,206</u>
(f) Total Recognized Investment Gain	(447,193,061)	(574,971,742)
(7) Preliminary Actuarial Value End of Year: (1) + (4)(c) + (5)(c) + (6)(f)	10,122,765,430	10,175,800,311
(8) Final Actuarial Value End of Year Using 20% Corridor: Greater of [(7) and .8 x (2)], but no more than 1.2 x (2)	10,122,765,430	9,349,604,896
(9) Difference Between Market & Actuarial Values: (2) – (8)	\$(1,137,890,403)	\$(1,558,267,483)
(10) Rate of Return on Preliminary Actuarial Value	3.74%	2.57%

\* Before corridor constraints, if applicable and adjusted.

\*\* Includes receivables of: \$2,509,578 at 6/30/2011 and \$2,087,879 at 6/30/2010.



**SCHEDULE C**

**SUMMARY OF RECEIPTS AND DISBURSEMENTS  
(Market Value)**

	YEAR ENDING	
	June 30, 2011	June 30, 2010
<u>Receipts for the Year</u>		
Contributions:		
Members	\$ 67,679,263	\$ 65,662,494
State	645,766,057	548,509,904
Federal (Net of Transfers)	<u>180,034,856</u>	<u>172,016,675</u>
Subtotal	\$ 893,480,176	\$ 786,189,073
Amount Receivable	2,509,578	2,087,879
Investment Earnings (net of expenses)	<u>1,621,140,808</u>	<u>952,548,116</u>
TOTAL	\$ 2,517,130,562	\$ 1,740,825,068
<u>Disbursements for the Year</u>		
Benefit Payments	\$ 1,315,660,456	\$ 1,263,784,641
Refunds to Members	<u>7,932,492</u>	<u>8,336,703</u>
TOTAL	\$ 1,323,592,948	\$ 1,272,121,344
<u>Excess of Receipts over Disbursements</u>	\$ 1,193,537,614	\$ 468,703,724
<u>Reconciliation of Asset Balances</u>		
Asset Balance as of the Beginning of Year	\$ 7,791,337,413	\$ 7,322,633,689
Excess of Receipts over Disbursements	<u>1,193,537,614</u>	<u>468,703,724</u>
Asset Balance as of the End of Year	\$ 8,984,875,027	\$ 7,791,337,413
Rate of Return	21.39%	13.45%



**SCHEDULE D**

**OUTLINE OF ACTUARIAL ASSUMPTIONS AND METHODS**

Adopted or reaffirmed by the Commission for the June 30, 2010 and later valuations.

**VALUATION INTEREST RATE:** 8.25% per annum, compounded annually, net of expenses.

**SALARY INCREASES:**

No salary increases are assumed for the 2012 & 2013 fiscal years. From fiscal year 2014 through 2016 salary increases are assumed to be 1% less than the table below. After the 2016 fiscal year, salary increases are assumed to continue using the same service schedule prior to 2012, which are as follows:

<b>Years of Service</b>	<b>Rate</b>
0	10.00%
1	20.00%
2	10.00%
3	6.25%
4	6.00%
5	5.75%
6	5.50%
7	5.50%
8	5.50%
9	5.50%
10	5.00%
11	5.00%
12	5.00%
13	5.00%
14	5.00%
15+	4.00%

**COST OF LIVING ADJUSTMENTS:**

<b>Group</b>	<b>Rate</b>
Pre July 1, 1980 Retirees	3.60%
July 1, 1980 – June 30, 1997 Retirees	3.00%
July 1, 1997 – October 1, 2011 Retirees	2.70%
Post October 1, 2011 Retirees	2.50%

**SOCIAL SECURITY WAGE BASE INCREASES:** 3.50% per annum.

**PAYROLL GROWTH ASSUMPTION:** 4.00% per annum.



**IMPACT OF LONGLEY DECISION:** Benefits for members retiring from service on or after the *Longley* decision date are assumed to increase by 0.084% as a result of the revised treatment of longevity pay. Retroactive application of *Longley* has been reflected in this valuation to the extent impacted retiree benefits have been recalculated.

**SEPARATIONS BEFORE SERVICE RETIREMENT:** Representative values of the assumed annual rates of separation before service retirement are as follows:

**WITHDRAWAL**

<b>Annual Rates of Non-Hazardous Withdrawal*</b>								
Age	Years of Service							
	0	1	2	3	4	5	6-9	10+
<b>Men</b>								
20	30%	60%	60%	20%	20%	15%	5%	5.0%
25	30	30	20	10	10	8	4	5.0
30	25	25	18	10	10	8	4	4.0
35	25	25	16	10	10	8	4	3.0
40	25	25	14	10	10	6	4	2.5
45	25	25	12	10	10	6	4	2.2
50	25	25	12	10	10	6	4	1.5
55+	25	25	12	10	10	6	4	0.0
<b>Women</b>								
20	30%	50%	30%	20%	20%	15%	5%	5.0%
25	25	30	20	16	11	10	5	5.0
30	20	20	16	12	11	9	5	4.0
35	20	20	12	9	10	8	4	3.0
40	15	18	10	9	7	5	4	2.5
45	15	18	10	9	7	5	3	2.0
50	15	18	10	9	7	5	3	1.5
55+	15	18	10	9	7	5	3	0.0

\* For Hazardous Male Employees, multiply male rates by 35%

\* For Hazardous Female Employees, multiply female rates by 55%

**DISABILITY**

<b>Annual Rates of Disability</b>		
	<b>Hazardous</b>	<b>All Others</b>
In Service	0.45% at all ages	0.14% at all ages
Non Service	30% of 1975 Social Security Table	



**RETIREMENT:** The assumed annual rates of retirement are shown below.

<b>Annual Rates of Retirement</b>			
<b>Hazardous Employees</b>			
<b>Age</b>	<b>First Year Eligible For</b>		<b>All Other Ages</b>
Less than 44	18.0%		10.0%
45-48	25.0%		10.0%
49-59	10.0%		10.0%
60-69	25.0%		15.0%
70-79	100.0%		20.0%
80	100.0%		100.0%
<b>Non-Hazardous Employees</b>			
<b>First Year Eligible For</b>			
<b>Age</b>	<b>Reduced Benefits</b>	<b>Unreduced Benefits*</b>	<b>All Other Ages</b>
55	15.0%	15.0%	12.5%
56-59	10.0%	15.0%	12.5%
60	10.0%	25.0%	12.5%
61	20.0%	25.0%	15.0%
62	20.0%	10.0%	30.0%
63	20.0%	35.0%	25.0%
64	20.0%	45.0%	25.0%
65-69	50.0%	65.0%	25.0%
70-79	50.0%	100.0%	20.0%
80	100.0%	100.0%	100.0%

\* These rates also apply for Tier I Plan B and Tier I Plan C members upon attainment of age 60 with at least 10 years of service.





**DEATHS AFTER RETIREMENT:** The RP2000 Mortality Table for Annuitants and Non-Annuitants projected with Scale AA 15 years for men and 25 years for women is used for the period after retirement and for dependent beneficiaries. Representative values of the assumed annual rates of mortality are as follows:

Age	Men	Women	Age	Men	Women
40	.096%	.048%	65	1.031%	.856%
45	.124	.075	70	1.770	1.477
50	.163	.109	75	3.062	2.299
55	.272	.222	80	5.536	3.849
60	.530	.446	85	9.968	6.663

In our opinion, the projection of the mortality rates with Scale AA continues to provide a sufficient margin in the assumed rates of mortality to allow for additional improvement in mortality experience.

75% (men) and 115% (women) of the RP-2000 Disability Mortality Table is used for the period after disability.

**ASSET METHOD:** Actuarial Value, as developed in Schedule B. The actuarial value of assets recognizes a portion of the difference between the market value of assets and the expected value of assets, based on the assumed valuation rate of return. The amount recognized each year is 1/5 of the difference between market value and expected actuarial value. In addition, the actuarial value of assets cannot be less than 80% or more than 120% of the market value of assets.

**VALUATION METHOD:** Projected Unit Credit cost method. See Schedule E for a brief description of this method.

**SPOUSES:** For members who have elected spouse coverage, husbands are assumed to be three years older than their wives.

**PERCENT MARRIED:** 80% of active members are assumed to be married with an average of two children who are on average age 12.

**OTHER ASSUMPTIONS:**

- 20% of Pre-Retirement deaths are assumed to be service related,
- 50% of Tier I Hazardous Employees are assumed to State Police,
- To take into account State Police Supplemental Benefits and the offset of Workers Compensation, Social Security, and Non-Rehabilitation Earnings, the following minimum and maximum benefits as a percent of salary are assumed for disability benefits:

	<u>Minimum</u>	<u>Maximum</u>
Tier I State Police	60%	80%
All Other Members	40%	60%



## SCHEDULE E

### **ACTUARIAL COST METHOD**

The valuation is prepared on a projected benefit basis, under which the present value, at the interest rate assumed to be earned in the future (currently 8.25%), of each member's expected benefits at retirement or death is determined, based on age, service and sex. The calculations take into account the probability of a member's death or termination of employment prior to becoming eligible for a benefit, as well as the possibility of his terminating with a service, disability or survivor's benefit. Future salary increases are also anticipated. The present value of the expected benefits payable on account of the active members is added to the present value of the expected future payments to retired members, beneficiaries and members entitled to deferred vested benefits to obtain the present value of all expected benefits payable from the System on account of the present group of members and beneficiaries.

The Projected Unit Credit cost method is used to develop employer contributions. The employer contributions required to support the benefits of the System consist of a normal contribution and an unfunded actuarial accrued liability contribution.

The Actuarial Accrued Liability is determined as the present value of benefits accrued to the valuation date, where the accrued benefit for each active member is the pro-rata portion (based on service to the valuation date) of the projected benefit payable at termination, death, disability or retirement. The Actuarial Accrued Liability for deferred vested and inactive members is the present value as of the valuation date of their remaining benefit payments.

The normal contribution is determined as the present value of the portion of the projected benefit attributable to the year following the valuation date.

The Unfunded Actuarial Accrued Liability is determined by subtracting the Actuarial Value of Assets from the Actuarial Accrued Liability.



## SCHEDULE F

### **SUMMARY OF MAIN SYSTEM PROVISIONS AS INTERPRETED FOR VALUATION PURPOSES**

The Connecticut State Employees Retirement System (CT SERS) is a defined benefit pension plan established by the Connecticut General Assembly for the purpose of providing retirement allowances and other benefits for State employees in Connecticut, and their survivors and other beneficiaries.

#### **Eligibility Requirements**

Tier I	All State Employees, Elected Officials and their Appointees hired prior to July 1, 1984. Those employees hired between July 1, 1982 and January 1, 1984 could elect to move to Tier II.
Tier II	All State Employees, Elected Officials and their Appointees hired on or after July 1, 1984.
Tier IIA	All State Employees, Elected Officials and their Appointees hired on or after July 1, 1997.
Tier III	All State Employees, Elected Officials and their Appointees hired on or after July 1, 2011.

#### **Final Average Earnings (FAE)**

Tier I, II, and IIA	Average Salary of the three highest paid years of service. Effective January 1, 1986, no one year's earnings can be greater than 130% of the average of the two preceding years in calculating the Final Average Earnings.
Tier III	Average Salary of the five highest paid years of service. No one year's earnings can be greater than 130% of the average of the two preceding years in calculating the Final Average Earnings.

#### **Normal Retirement Benefit**

Eligibility	<p><u>Tier I Hazardous</u> – 20 years of credited service.</p> <p><u>Tier I Plans B and C</u> – Earliest of age 55 with 25 years of service, age 60 with 10 years of service, or age 70 with 5 years of service.</p> <p><u>Tier II Hazardous</u> – 20 years of credited service.</p> <p><u>Tier II and IIA</u> – For those who will be eligible for retirement on or before July 1, 2022, the earliest of age 62 with 10 years of vesting service (effective July 1, 1992), age 60 with 25</p>
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years of vesting service, age 70 with 5 years of vesting service, or age 62 with 5 years of actual state service for terminations on or after July 1, 1997.

For those who will not be eligible for retirement on or before July 1, 2022, the earliest of age 65 with 10 years of vesting service, age 63 with 25 years of vesting service, age 70 with 5 years of vesting service.

Tier III Hazardous – Earlier of Age 50 and 20 years of benefit service or 25 years of benefit service.

Tier III – Age 63 and 25 years of benefit service or Age 65 and 10 years of benefit service.

Benefit

Tier I Hazardous – 50% of FAE plus 2% for each year of service in excess of 20.

Tier I Plan B – 2% of FAE times years of service up to age 65. Thereafter, 1% of FAE up to \$4,800, plus 2% of FAE in excess of \$4,800 times years of service. At age 70, greater of 1.25% of FAE up to \$4,800 plus 2.5% of FAE in excess of \$4,800 times years of service (maximum 20 years) or 1.0% of FAE up to \$4,800 plus 2% of FAE in excess of \$4,800 times year of service. Minimum benefit with 25 years is \$833.34 per month.

Tier I Plan C – 2% of FAE times years of service. At age 70, greater of 2.5% of FAE times years of service (maximum 20 years) or 2.0% of FAE times years of service. Minimum benefit with 25 years is \$833.34 per month.

Tier II, IIA and III Hazardous – 2.5% of FAE times years of service up to 20 years plus 2.0% of FAE times years of service in excess of 20 years, if any. Minimum benefit with 25 years is \$360 per month.

Tier II, IIA and III All Others – 1.333% of FAE plus 0.50% of FAE in excess of year's breakpoint\*, times years of service from October 1, 1982 up to 35 years plus 1.625% of FAE times years of service in excess of 35 years, if any. Minimum benefit with 25 years is \$360 per month.

\* \$10,700 increased by 6% each year after 1982, rounded to nearest \$100 but not greater than Social Security Covered Compensation.



## Early Retirement Benefit

### Eligibility

Hazardous – None.

Tier I – Age 55 with 10 years of service.

Tier II and IIA – Age 55 with 10 years of service.

Tier III – Age 58 with 10 years of service.

### Benefit

Tier I – Benefit is Normal Retirement Benefit reduced for retirement prior to age 60 with less than 25 years of service.

Tier II, IIA and III – Benefit is Normal Retirement Benefit reduced 0.25% (effective July 1, 1991) for each month prior to age 60 if at least 25 years of service or age 62 if at least 10 but less than 25 years of service.

For those who retire on or after October 2, 2011 but prior to meeting the age and service requirements for a normal retirement, will be subject to a benefit reduced by 0.50% for each month prior to Normal Retirement.

## Disability Retirement Benefit

### Tier I

For non-service disabilities occurring prior to age 60 with at least 5 years of service, benefit is 3% of FAE times years of service; maximum benefit is 1.667% of FAE times year of service projected to age 65.

For service disabilities occurring prior to age 60, benefit is 1.667% of Salary times years of service projected to age 65 (maximum 30 years).

Exception: State Police benefit is equal to the normal retirement benefit if more than 20 years of service. State Police also receives an additional benefit of \$360 per month plus \$300 to spouse plus \$300 to a surviving dependent child.

### Tier II, IIA and III

Prior to age 65 for service related disability or at any age with at least 10 years of service, benefit is 1.333% of FAE plus 0.50% of FAE in excess of the year's breakpoint, times service projected to age 65 (maximum 30 years).



## Deferred Vested Retirement Benefit

### Eligibility

Tier I - 10 years of service.

Tier II and IIA – Effective July 1, 1997, 5 years of actual state service, 10 years of vesting service, or age 70 with 5 years of service.

Tier III – 10 years of benefit service.

### Benefit

Tier I – Benefit is payable at Normal Retirement Age or an Early Retirement Benefit is payable at age 55.

Tier II and IIA – Benefit is payable at Normal Retirement Age or an Early Retirement Benefit is payable at age 55.

Tier III – Benefit is payable at Normal Retirement Age or an Early Retirement Benefit is payable at age 58.

## Pre-Retirement Spouse's Benefit

### Tier I

State Police – Survivor benefits to spouse of \$670 per month plus \$300 to a surviving dependent child.

If eligible for early or normal retirement, 50% of the average of the Life Benefit and the 50% Joint & Survivor Benefit the member would have received.

If not eligible for retirement but with 25 years of service, the same benefit calculated as though age 55 using service and earnings at death.

If not eligible for retirement, return of contributions (5% interest).

### Tier II, IIA and III

If eligible for early or normal retirement, 50% of the 50% Joint & Survivor Benefit the member would have received.

If not eligible for retirement but with 25 years of service, the same benefit calculated as though age 55 using service and earnings at death.

If not eligible for retirement, return of contributions (5% interest).

### Tiers I, II, IIA and III

If death is due to employment and there are dependent children under age 18, spouse will be paid \$100,000 in 10 annual installments while living and not remarried. In addition, \$50 per month will be paid to each child while under age 18.



If death is due to employment and there are no dependent children under age 18, spouse will be paid \$50,000 in not less than 10 annual installments.

**Payment Options**

50% or 100% Joint and Survivor (Normal Form if married).  
Straight life annuity (Normal Form if not married).  
10 or 20 year certain and life annuity.

**Cost of Living Adjustments (COLA)**

Annual adjustments each July 1 of up to 5% for retirements prior to July 1, 1980; 3% for retirements after July 1, 1980. For members (and beneficiaries) not covered by Social Security and age 62 and over, the maximum increase is 6%.

For employees retiring after June 30, 1999, the annual adjustment will be 60% of the increase in CPI up to 6% and 75% of the increase in the CPI over 6%. This adjustment will be no less than 2.5% and no greater than 6%.

Employees retiring between July 1, 1997 and June 30, 1999 made an irrevocable choice between the above formula and a fixed 3% annual adjustment.

An employee from Tier IIA must have at least 10 years of actual state service or directly make the transition into retirement in order to be eligible for annual adjustments.

For employees retiring on or after October 2, 2011, the minimum COLA shall be 2.0% and the maximum COLA shall be 7.5%.

**Member Contributions**

Tier I – Hazardous	4% of earnings up to Social Security Taxable Wage Base plus 5% of earnings above that level.
Tier I – Plan B	2% of earnings up to Social Security Taxable Wage Base plus 5% of earnings above that level.
Tier I – Plan C	5% of earnings.
Tier II – Hazardous	4% of earnings.
Tier II – All Others	None.
Tier IIA & III – Hazardous	5% of earnings.
Tier IIA & III – All Others	2% of earnings.



**Hybrid Defined Benefit/Defined  
Contribution Plan for Employees  
of Higher Learning**

Individuals hired on or after July 1, 2011 otherwise eligible for the Alternate Retirement Plan ("ARP") shall be eligible to be members of the new Hybrid Plan in addition to their existing choices. Individuals who are currently members of the ARP shall be eligible to join the Hybrid Plan on a one time option at the full actuarial cost. The Hybrid Plan shall have defined benefits identical to Tier II/IIA and Tier III for individuals hired on or after July 1, 2011, but shall require employee contributions 3% higher than the contribution required from the Applicable Tier II/IIA/III Plan. An employee shall have the option, upon leaving state service, of accepting the defined benefit amount, or electing to receive a return of his/her contributions to the Hybrid Plan, plus a 5% employer match, plus 4% interest ("cash out option"). In the event the employee elects the cash out option, he/she shall permanently waive any entitlement they may have to health insurance as a retired state employee unless they convert the cash out option to a periodic payment as would be required under the current ARP Plan.





**SCHEDULE G**

**TABLES OF MEMBERSHIP DATA**

**STATUS RECONCILIATION OF ACTIVE MEMBERS**

	<b>Total</b>
As of June 30, 2010	50,064
Retirements	(2,754)
Disability	(195)
Terminated Vested	(49)
Terminated Non-Vested	(14)
Deaths	(79)
Rehires	9
New Participants	2,939
Refunds	(2,143)
As of June 30, 2011	47,778

**STATUS RECONCILIATION OF INACTIVE MEMBERS**

	<b>Retirees</b>	<b>Disability</b>	<b>Survivor</b>	<b>Deferred Vested</b>	<b>Total</b>
As of June 30, 2010	33,894	3,875	4,013	1,602	43,384
Retirements	121	(7)		(114)	0
Disability					0
Deaths	(583)	(63)	109		(537)
Rehires				(9)	(9)
Refunds				(11)	(11)
Certain Period Ended			(9)		(9)
Data Corrections	(243)	(3)	(39)	72	(213)
From Active	2,754	195	37	49	3,035
As of June 30, 2011	35,943	3,997	4,111	1,589	45,640



**SCHEDULE G  
(Continued)**

**TIER I – HAZARDOUS DUTY**

**The Number and Average Annual Compensation of Active Employees  
By Age and Service as of June 30, 2011**

Age	Years of Service									Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 & Up	
Under 25	0	0	0	0	0	0	0	0	0	0
Avg. Pay	0	0	0	0	0	0	0	0	0	0
25 to 29	0	0	0	0	0	0	0	0	0	0
Avg. Pay	0	0	0	0	0	0	0	0	0	0
30 to 34	0	0	0	0	0	0	0	0	0	0
Avg. Pay	0	0	0	0	0	0	0	0	0	0
35 to 39	0	0	0	0	0	0	0	0	0	0
Avg. Pay	0	0	0	0	0	0	0	0	0	0
40 to 44	0	0	0	0	0	0	0	0	0	0
Avg. Pay	0	0	0	0	0	0	0	0	0	0
45 to 49	0	0	1	0	0	0	4	0	0	5
Avg. Pay	0	0	\$83,683	0	0	0	\$96,227	0	0	\$93,718
50 to 54	0	1	3	3	1	2	21	14	0	45
Avg. Pay	0	\$95,915	\$72,395	\$79,349	\$94,310	\$70,721	\$116,240	\$85,971	0	\$98,479
55 to 59	0	0	0	0	5	3	13	17	3	41
Avg. Pay	0	0	0	0	\$86,307	\$135,085	\$113,574	\$102,160	\$94,445	\$105,690
60 to 64	0	1	0	0	2	0	1	0	2	6
Avg. Pay	0	\$158,654	0	0	\$68,004	0	\$107,112	0	\$164,163	\$121,683
65 to 69	0	0	0	0	2	0	0	1	1	4
Avg. Pay	0	0	0	0	\$70,560	0	0	\$119,515	\$123,387	\$96,006
70 & Up	0	0	0	0	0	0	0	1	0	1
Avg. Pay	0	0	0	0	0	0	0	\$83,898	0	\$83,898
Total	0	2	4	3	10	5	39	33	6	102
Avg. Pay	0	\$127,285	\$75,217	\$79,349	\$80,297	\$109,339	\$113,065	\$95,264	\$122,508	\$102,269

Average Age: 55.1  
Average Service: 27.0



**SCHEDULE G  
(Continued)**

**TIER I – PLAN B**

**The Number and Average Annual Compensation of Active Employees  
By Age and Service as of June 30, 2011**

Age	Years of Service									Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 & Up	
Under 25	0	0	0	0	0	0	0	0	0	0
Avg. Pay	0	0	0	0	0	0	0	0	0	0
25 to 29	0	0	0	0	0	0	0	0	0	0
Avg. Pay	0	0	0	0	0	0	0	0	0	0
30 to 34	0	0	0	0	0	0	0	0	0	0
Avg. Pay	0	0	0	0	0	0	0	0	0	0
35 to 39	0	0	0	0	0	0	0	0	0	0
Avg. Pay	0	0	0	0	0	0	0	0	0	0
40 to 44	0	0	0	0	0	0	0	0	0	0
Avg. Pay	0	0	0	0	0	0	0	0	0	0
45 to 49	0	3	5	7	10	6	187	29	0	247
Avg. Pay	0	\$39,654	\$56,621	\$70,435	\$67,547	\$80,108	\$73,835	\$69,914	0	\$72,412
50 to 54	2	12	26	27	36	50	588	725	20	1,486
Avg. Pay	\$69,477	\$60,871	\$69,297	\$70,039	\$79,397	\$82,606	\$84,418	\$75,962	\$77,473	\$79,280
55 to 59	4	3	20	25	25	40	234	465	65	881
Avg. Pay	\$59,618	\$83,398	\$72,496	\$70,690	\$77,609	\$76,294	\$90,456	\$91,214	\$83,634	\$88,213
60 to 64	0	3	10	9	12	11	76	165	56	342
Avg. Pay	0	\$88,167	\$85,601	\$94,475	\$93,322	\$93,664	\$95,505	\$104,677	\$103,743	\$100,762
65 to 69	0	1	2	0	2	1	15	39	38	98
Avg. Pay	0	\$78,903	\$77,511	0	\$95,382	\$43,242	\$103,102	\$118,214	\$130,293	\$118,122
70 & Up	0	0	0	0	1	0	13	17	34	65
Avg. Pay	0	0	0	0	\$65,007	0	\$101,338	\$100,719	\$122,088	\$111,471
Total	6	22	63	68	86	108	1,113	1,440	213	3,119
Avg. Pay	\$62,904	\$65,591	\$72,155	\$73,553	\$79,647	\$80,891	\$85,116	\$85,492	\$102,805	\$85,506

Average Age: 55.2  
Average Service: 29.4



**SCHEDULE G**  
**(Continued)**

**TIER I – PLAN C**

**The Number and Average Annual Compensation of Active Employees  
By Age and Service as of June 30, 2011**

Age	Years of Service									Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 & Up	
Under 25	0	0	0	0	0	0	0	0	0	0
Avg. Pay	0	0	0	0	0	0	0	0	0	0
25 to 29	0	0	0	0	0	0	0	0	0	0
Avg. Pay	0	0	0	0	0	0	0	0	0	0
30 to 34	0	0	0	0	0	0	0	0	0	0
Avg. Pay	0	0	0	0	0	0	0	0	0	0
35 to 39	0	0	0	0	0	0	0	0	0	0
Avg. Pay	0	0	0	0	0	0	0	0	0	0
40 to 44	0	0	0	0	0	0	0	0	0	0
Avg. Pay	0	0	0	0	0	0	0	0	0	0
45 to 49	0	0	0	0	0	0	7	2	0	9
Avg. Pay	0	0	0	0	0	0	\$77,855	\$76,050	0	\$77,454
50 to 54	0	0	1	1	0	0	12	32	1	47
Avg. Pay	0	0	\$58,238	\$84,614	0	0	\$73,381	\$72,999	\$78,531	\$73,147
55 to 59	0	0	1	3	0	1	10	19	4	38
Avg. Pay	0	0	\$78,505	\$78,879	0	\$64,395	\$91,540	\$68,948	\$116,268	\$80,790
60 to 64	0	0	0	0	0	0	4	7	3	14
Avg. Pay	0	0	0	0	0	0	\$79,190	\$74,103	\$66,822	\$73,996
65 to 69	0	0	0	1	0	0	1	1	3	6
Avg. Pay	0	0	0	\$104,702	0	0	\$130,551	\$102,282	\$80,933	\$96,722
70 & Up	0	0	0	0	0	1	1	4	5	11
Avg. Pay	0	0	0	0	0	\$50,836	\$110,693	\$77,996	\$116,365	\$95,940
Total	0	0	2	5	0	2	35	65	16	125
Avg. Pay	0	0	\$68,372	\$85,191	0	\$57,616	\$82,827	\$72,786	\$98,043	\$79,013

Average Age: 57.4  
Average Service: 30.9



**SCHEDULE G**  
**(Continued)**

**TIER II – HAZARDOUS DUTY**

**The Number and Average Annual Compensation of Active Employees  
By Age and Service as of June 30, 2011**

Age	Years of Service									Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 & Up	
Under 25	0	0	0	0	0	0	0	0	0	0
Avg. Pay	0	0	0	0	0	0	0	0	0	0
25 to 29	0	0	0	0	0	0	0	0	0	0
Avg. Pay	0	0	0	0	0	0	0	0	0	0
30 to 34	0	1	1	6	0	0	0	0	0	8
Avg. Pay	0	\$74,777	\$62,796	\$75,145	0	0	0	0	0	\$73,555
35 to 39	0	2	3	101	139	0	0	0	0	245
Avg. Pay	0	\$36,403	\$75,818	\$80,958	\$82,733	0	0	0	0	\$81,538
40 to 44	0	4	15	171	874	102	3	0	0	1,169
Avg. Pay	0	\$60,475	\$65,275	\$86,590	\$88,078	\$90,256	\$99,825	0	0	\$87,693
45 to 49	0	4	16	86	634	250	29	0	0	1,019
Avg. Pay	0	\$93,008	\$83,456	\$87,799	\$83,961	\$98,596	\$91,841	0	0	\$88,127
50 to 54	0	4	8	48	378	106	49	0	0	593
Avg. Pay	0	\$63,356	\$74,835	\$86,134	\$79,821	\$90,888	\$100,390	0	0	\$83,832
55 to 59	1	1	1	31	248	62	25	1	0	370
Avg. Pay	\$79,569	\$83,446	\$86,676	\$82,485	\$80,931	\$91,521	\$105,085	\$86,256	0	\$84,501
60 to 64	0	2	4	22	136	23	8	0	0	195
Avg. Pay	0	\$67,077	\$77,877	\$83,476	\$82,059	\$91,474	\$104,275	0	0	\$84,001
65 to 69	0	1	0	4	51	8	2	0	0	66
Avg. Pay	0	\$99,486	0	\$84,415	\$79,275	\$81,332	\$92,195	0	0	\$80,534
70 & Up	0	0	0	5	9	1	0	0	0	15
Avg. Pay	0	0	0	\$32,575	\$83,625	\$109,537	0	0	0	\$68,336
<b>Total</b>	<b>1</b>	<b>19</b>	<b>48</b>	<b>474</b>	<b>2,469</b>	<b>552</b>	<b>116</b>	<b>1</b>	<b>0</b>	<b>3,680</b>
<b>Avg. Pay</b>	<b>\$79,569</b>	<b>\$70,107</b>	<b>\$75,032</b>	<b>\$84,417</b>	<b>\$84,208</b>	<b>\$94,253</b>	<b>\$99,377</b>	<b>\$86,256</b>	<b>0</b>	<b>\$86,027</b>

Average Age: 47.7  
Average Service: 17.9



**SCHEDULE G**  
**(Continued)**

**TIER II – ALL OTHERS**

**The Number and Average Annual Compensation of Active Employees  
By Age and Service as of June 30, 2011**

Age	Years of Service									Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 & Up	
Under 25	0	0	0	0	0	0	0	0	0	0
Avg. Pay	0	0	0	0	0	0	0	0	0	0
25 to 29	0	0	0	0	0	0	0	0	0	0
Avg. Pay	0	0	0	0	0	0	0	0	0	0
30 to 34	1	1	8	15	1	0	0	0	0	26
Avg. Pay	\$51,184	\$37,422	\$58,070	\$59,879	\$51,982	0	0	0	0	\$57,821
35 to 39	2	10	21	130	166	4	0	0	0	333
Avg. Pay	\$112,800	\$54,666	\$65,879	\$67,567	\$69,405	\$57,433	0	0	0	\$68,139
40 to 44	5	38	67	280	1,013	576	42	0	0	2,021
Avg. Pay	\$36,917	\$59,122	\$68,465	\$73,511	\$76,548	\$67,597	\$65,276	0	0	\$72,648
45 to 49	15	61	85	271	958	1,672	679	1	0	3,742
Avg. Pay	\$67,048	\$58,131	\$63,124	\$74,709	\$76,562	\$77,676	\$76,224	\$64,550	0	\$76,217
50 to 54	13	50	88	210	841	1,410	858	14	0	3,484
Avg. Pay	\$45,856	\$52,299	\$69,381	\$75,836	\$75,294	\$77,975	\$81,389	\$83,199	0	\$77,355
55 to 59	8	34	73	190	665	1,035	538	9	6	2,558
Avg. Pay	\$16,206	\$58,940	\$61,097	\$74,025	\$78,067	\$77,096	\$83,396	\$87,523	\$74,025	\$77,586
60 to 64	4	21	43	108	441	516	251	5	16	1,405
Avg. Pay	\$46,115	\$53,857	\$49,139	\$68,656	\$75,306	\$78,983	\$85,188	\$68,094	\$95,659	\$76,912
65 to 69	2	5	14	36	123	143	48	1	3	375
Avg. Pay	\$18,704	\$14,043	\$36,918	\$65,843	\$73,230	\$78,285	\$95,501	\$85,640	\$78,123	\$74,936
70 & Up	6	3	5	20	47	39	23	0	1	144
Avg. Pay	\$22,881	\$15,767	\$14,309	\$53,133	\$61,330	\$70,823	\$73,641	0	\$120,578	\$60,956
<b>Total</b>	<b>56</b>	<b>223</b>	<b>404</b>	<b>1,260</b>	<b>4,255</b>	<b>5,395</b>	<b>2,439</b>	<b>30</b>	<b>26</b>	<b>14,088</b>
<b>Avg. Pay</b>	<b>\$45,572</b>	<b>\$54,906</b>	<b>\$62,049</b>	<b>\$72,499</b>	<b>\$75,864</b>	<b>\$76,643</b>	<b>\$80,712</b>	<b>\$81,438</b>	<b>\$89,602</b>	<b>\$75,890</b>

Average Age: 51.4  
Average Service: 20.2



**SCHEDULE G  
(Continued)**

**TIER IIA – HAZARDOUS DUTY**

**The Number and Average Annual Compensation of Active Employees  
By Age and Service as of June 30, 2011**

Age	Years of Service									Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 & Up	
Under 25	37	28	1	0	0	0	0	0	0	66
Avg. Pay	\$36,485	\$50,084	\$61,758	0	0	0	0	0	0	\$42,637
25 to 29	133	587	96	1	0	0	0	0	0	817
Avg. Pay	\$39,930	\$57,824	\$61,897	\$51,141	0	0	0	0	0	\$55,381
30 to 34	73	518	510	142	0	0	0	0	0	1,243
Avg. Pay	\$42,793	\$58,869	\$64,906	\$72,832	0	0	0	0	0	\$61,997
35 to 39	35	340	454	570	1	0	0	0	0	1,400
Avg. Pay	\$50,825	\$61,810	\$67,404	\$77,481	\$60,471	0	0	0	0	\$69,729
40 to 44	43	244	350	557	1	0	0	0	0	1,195
Avg. Pay	\$43,714	\$62,361	\$66,049	\$77,887	\$96,202	0	0	0	0	\$70,035
45 to 49	33	165	245	297	0	0	0	0	0	740
Avg. Pay	\$43,749	\$62,799	\$72,100	\$72,676	0	0	0	0	0	\$68,993
50 to 54	11	105	163	206	0	0	0	0	0	485
Avg. Pay	\$40,475	\$64,558	\$75,080	\$76,589	0	0	0	0	0	\$72,658
55 to 59	4	45	75	129	0	0	0	0	0	253
Avg. Pay	\$42,706	\$61,487	\$72,745	\$70,526	0	0	0	0	0	\$69,136
60 to 64	2	12	48	80	0	0	0	0	0	142
Avg. Pay	\$48,684	\$69,660	\$81,690	\$72,130	0	0	0	0	0	\$74,823
65 to 69	2	6	21	43	0	0	0	0	0	72
Avg. Pay	\$69,615	\$65,122	\$65,563	\$60,145	0	0	0	0	0	\$62,403
70 & Up	0	0	5	23	0	0	0	0	0	28
Avg. Pay	0	0	\$86,737	\$45,507	0	0	0	0	0	\$52,870
<b>Total</b>	<b>373</b>	<b>2,050</b>	<b>1,968</b>	<b>2,048</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>6,441</b>
<b>Avg. Pay</b>	<b>\$42,197</b>	<b>\$60,100</b>	<b>\$68,046</b>	<b>\$75,099</b>	<b>\$78,337</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$66,266</b>

Average Age: 39.6  
Average Service: 7.2



**SCHEDULE G  
(Continued)**

**TIER IIA – ALL OTHERS**

**The Number and Average Annual Compensation of Active Employees  
By Age and Service as of June 30, 2011**

Age	Years of Service									Total
	Under 1	1 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 & Up	
Under 25	366	324	9	0	0	0	0	0	0	699
Avg. Pay	\$28,551	\$18,551	\$39,268	0	0	0	0	0	0	\$24,054
25 to 29	408	1,111	253	6	0	0	0	0	0	1,778
Avg. Pay	\$33,672	\$45,865	\$47,525	\$44,252	0	0	0	0	0	\$43,298
30 to 34	264	1,145	887	216	2	0	0	0	0	2,514
Avg. Pay	\$37,236	\$48,889	\$58,663	\$56,916	\$44,054	0	0	0	0	\$51,800
35 to 39	194	914	916	839	6	0	0	0	0	2,869
Avg. Pay	\$35,889	\$51,169	\$60,450	\$67,398	\$70,144	0	0	0	0	\$57,885
40 to 44	185	952	921	918	1	2	0	0	0	2,979
Avg. Pay	\$38,275	\$49,523	\$61,696	\$67,272	\$75,683	\$64,730	0	0	0	\$58,076
45 to 49	199	860	957	836	3	0	1	0	0	2,856
Avg. Pay	\$37,193	\$50,554	\$61,395	\$68,254	\$58,765	0	\$87,691	0	0	\$58,458
50 to 54	193	804	803	820	3	1	0	0	0	2,624
Avg. Pay	\$39,243	\$52,520	\$62,248	\$68,802	\$29,179	\$57,609	0	0	0	\$59,584
55 to 59	160	578	715	595	3	1	1	1	1	2,055
Avg. Pay	\$40,221	\$50,625	\$64,754	\$70,158	\$82,448	\$72,784	\$5,712	\$157,559	\$71,900	\$60,484
60 to 64	113	304	455	383	2	0	0	0	0	1,257
Avg. Pay	\$37,453	\$51,642	\$59,451	\$69,726	\$58,076	0	0	0	0	\$58,713
65 to 69	49	124	129	113	1	0	1	0	0	417
Avg. Pay	\$31,433	\$38,592	\$50,914	\$66,793	\$15,810	0	\$124,305	0	0	\$49,356
70 & Up	41	55	45	33	0	0	0	0	1	175
Avg. Pay	\$27,607	\$26,764	\$36,481	\$54,177	0	0	0	0	\$13,107	\$34,551
Total	2,172	7,171	6,090	4,759	21	4	3	1	2	20,223
Avg. Pay	\$35,164	\$47,940	\$60,247	\$67,687	\$58,466	\$64,963	\$72,569	\$157,559	\$42,504	\$54,944

Average Age: 43.6  
Average Service: 6.2





**SCHEDULE G**  
**(Continued)**

**NUMBER OF RETIRED MEMBERS  
AND THEIR BENEFITS BY AGE**

<b>Age</b>	<b>Number</b>	<b>Total Annual Benefits</b>	<b>Average Annual Benefits</b>
Under 50	1,546	\$ 62,742,052	\$ 40,583
50 – 54	1,488	62,226,158	41,819
55 – 59	4,771	187,976,406	39,400
60 – 64	7,141	267,513,760	37,462
65 – 69	7,386	248,362,443	33,626
70 – 74	5,494	170,530,521	31,039
75 – 79	4,563	132,249,760	28,983
80 – 84	3,762	99,668,445	26,493
85 – 89	2,409	55,153,817	22,895
90 – 94	1,081	21,690,146	20,065
95 & Over	299	5,502,148	18,402
Total	39,940	\$ 1,313,615,656	\$ 32,890

**NUMBER OF BENEFICIARIES  
AND THEIR BENEFITS BY AGE**

<b>Age</b>	<b>Number</b>	<b>Total Annual Benefits</b>	<b>Average Annual Benefits</b>
Under 50	299	\$ 5,254,452	\$ 17,573
50 – 54	121	2,995,850	24,759
55 – 59	190	4,657,155	24,511
60 – 64	296	7,089,053	23,950
65 – 69	407	8,835,362	21,709
70 – 74	501	9,787,273	19,535
75 – 79	609	10,926,233	17,941
80 – 84	666	11,649,823	17,492
85 – 89	621	10,574,179	17,028
90 – 94	310	4,360,807	14,067
95 & Over	91	1,345,577	14,787
Total	4,111	\$ 77,475,764	\$ 18,846



**SCHEDULE G**  
**(Continued)**

**NUMBER OF DEFERRED VESTED MEMBERS  
AND THEIR BENEFITS BY AGE**

<b>Age</b>	<b>Number</b>	<b>Total Annual Benefits</b>	<b>Average Annual Benefits</b>
Under 50	778	\$ 10,573,268	\$ 13,590
50 – 54	532	8,974,924	16,870
55 – 59	179	2,735,073	15,280
60 – 64	78	761,625	9,764
65 – 69	21	181,229	8,630
70 – 74	1	11,808	11,808
75 – 79	0	0	0
80 – 84	0	0	0
85 – 89	0	0	0
90 – 94	0	0	0
95 & Over	0	0	0
<b>Total</b>	<b>1,589</b>	<b>\$ 23,237,927</b>	<b>\$ 14,624</b>



## SCHEDULE H

### ANALYSIS OF FINANCIAL EXPERIENCE

#### Gains & Losses in Accrued Liabilities Resulting from Difference Between Assumed Experience & Actual Experience (\$ Millions)

Type of Activity	\$ Gain (or Loss) For One Year Period Ending 6/30/2011
<b>Age &amp; Service Retirements.</b> If members retire at older ages, there is a gain. If younger ages, a loss.	\$ (112.5)
<b>Disability Retirements.</b> If disability claims are less than assumed, there is a gain. If more claims, a loss.	( 41.1)
<b>Death-in Service Benefits.</b> If survivor claims are less than assumed, there is a gain. If more claims, there is a loss.	( 12.4)
<b>Withdrawal From Employment.</b> If more liabilities are released by withdrawals than assumed, there is a gain. If smaller releases, a loss.	( 20.7)
<b>Pay Increases.</b> If there are smaller pay increases than assumed, there is a gain. If greater increases, a loss.	60.1
<b>New Members.</b> Additional unfunded accrued liability will produce a loss.	( 28.6)
<b>Investment Income.</b> If there is a greater investment income than assumed, there is a gain. If less income, a loss.	447.1
<b>Death After Retirement.</b> If retirants live longer than assumed, there is a loss. If not as long, a gain.	( 22.4)
<b>Other.</b> Miscellaneous gains and losses resulting from changes in valuation software, data adjustments, timing of financial transactions, etc.*	<u>197.5</u>
<b>Gain (or Loss) During Year From Financial Experience</b>	<u>\$ 467.0</u>
<b>Non-Recurring Items.</b> Adjustments for plan amendments, assumption changes, or method changes.	<u>644.0</u>
<b>Composite Gain (or Loss) During Year</b>	<u>\$ 1,111.0</u>

\*Includes contribution shortfall



**SCHEDULE I**

**ACTUARIAL SURPLUS TEST**

Section 5-162(h) of the General Statutes of Connecticut provides that the Retirement Commission may grant additional Cost-of-Living Adjustments (COLAs) for retired members if an actuarial surplus exists. An actuarial surplus is deemed to exist if three criteria are met.

- I. **Investment Income:** The actual rate of return for the Fiscal Year ending on the valuation date must exceed the actuarial interest rate assumption.

Market Value of Assets on June 30, 2010: (A)	\$7,791,337,413
Market Value of Assets on June 30, 2011: (B)	\$8,984,875,027
Investment Income for FY 2010-2011: (I)	\$1,621,140,808
Actual Rate of Return for FY 2010-2011: $2I / (A + B - I)$	21.39%
Actuarial Interest Rate Assumption:	8.25%

Actual return of 21.39% is more than the assumed 8.25%, so the first criterion is met.

- II. **Assets vs. Liabilities:** Market value of assets must exceed 50% of specified liabilities.

Market Value of Assets on June 30, 2011:	\$8,984,875,027
Specified Liabilities on June 30, 2011:	
Liability for Retired Members	\$15,431,720,563
Liability for Terminated Vested Members	\$231,659,145
Liability for Member Contributions with Interest	\$681,225,480
Total	\$16,344,605,188
50% of Specified Liabilities	\$8,172,302,594

Market Value exceeds 50% of specified liabilities so the second criterion is met.

- III. **Unfunded Liability:** Actual unfunded liability must be less than the projected unfunded liability five years from the determination date.

Actual Unfunded Liability on June 30, 2011:	\$11,003,960,062
Projected Unfunded Liability on June 30, 2016 (see next page):	\$2,960,162,000

Actual Unfunded Liability is not less than Projected Unfunded Liability so the third criterion is not met and therefore, no actuarial surplus exists.



**SCHEDULE I**  
**(continued)**

**ACTUARIAL SURPLUS TEST  
PROJECTION OF UNFUNDED LIABILITY**

Section 5-162-h(b)(2) of the General Statutes of Connecticut specifies the means of calculating the Projected Unfunded Liability used in the third criterion of the Actuarial Surplus Test. The projection reflects the actual unfunded liability as of December 31, 1983 adjusted for changes in actuarial assumptions and cost methods through the determination date. No provision is made in the Statute for reflecting the impact of plan changes. The projection below reflects the following changes: data correction (June 30, 1987); change in actuarial assumptions (June 30, 1987); change in actuarial cost method (June 30, 1988); change in actuarial assumptions - interest rate only (June 30, 1989); change in actuarial cost method – amortization period only (June 30, 1992); change in actuarial assumptions (June 30, 1993); change in actuarial cost method – level percent amortization (June 30, 1997); change in actuarial methods and assumptions (June 30, 2000); change in actuarial assumptions (June 30, 2004); change in actuarial assumptions (June 30, 2008).

<b>Year</b>	<b>(\$000) June 30 Unfunded Liability</b>	<b>Year</b>	<b>(\$000) June 30 Unfunded Liability</b>	<b>Year</b>	<b>(\$000) June 30 Unfunded Liability</b>
1987	\$2,524,556	2002	\$2,360,589	2017	\$2,938,483
1988	1,954,257	2003	2,429,273	2018	2,904,380
1989	1,432,333	2004	2,502,591	2019	2,856,402
1990	1,939,758	2005	2,569,504	2020	2,792,963
1991	1,930,524	2006	2,634,814	2021	2,712,326
1992	1,920,505	2007	2,698,021	2022	2,612,594
1993	1,794,192	2008	2,823,251	2023	2,491,695
1994	1,787,586	2009	2,861,884	2024	2,347,364
1995	1,780,419	2010	2,895,933	2025	2,177,129
1996	1,772,643	2011	2,924,709	2026	1,978,295
1997	1,764,205	2012	2,947,454	2027	1,747,919
1998	1,835,087	2013	2,963,333	2028	1,482,794
1999	1,907,249	2014	2,971,431	2029	1,179,423
2000	2,222,296	2015	2,970,742	2030	833,996
2001	2,291,494	2016	2,960,162	2031	442,361
				2032	0