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**GASB STATEMENT NO. 68 REPORT**

**FOR THE**

**CONNECTICUT STATE TEACHERS' RETIREMENT SYSTEM**

**PREPARED AS OF JUNE 30, 2016**





# Cavanaugh Macdonald

CONSULTING, LLC

*The experience and dedication you deserve*

March 6, 2017

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

Members of the Board:

Presented in this report is information to assist the Connecticut State Teachers' Retirement System in meeting the requirements of the Governmental Accounting Standards Board (GASB) Statement No. 68 and to identify the information to be provided by the actuary, Cavanaugh Macdonald Consulting (CMC). The information is presented for the period ending June 30, 2016 (the Measurement Date).

GASB Statement Number 68 establishes accounting and financial reporting requirements for governmental employers that provide pension benefits to their employees through a trust.

The annual actuarial valuation used as a basis for much of the information presented in this report, including the Net Pension Liability, was performed as of June 30, 2016. The valuation was based upon data, furnished by the Retirement System staff, for active, inactive and retired members along with pertinent financial information. The schedules contained within this report for participating employers are based on the expected contribution effort as measured June 30, 2016, the date of the latest biennial valuation.

The actuarial calculations were performed by qualified actuaries according to generally accepted actuarial procedures and methods. The calculations are based on the current provisions of the System, and on actuarial assumptions that are internally consistent and individually reasonable based on the actual experience of the System. In addition, the calculations were completed in compliance with the laws governing the System and, in our opinion, meet the requirements of GASB 68. The undersigned are members of the American Academy of Actuaries and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

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Board of Directors  
March 6, 2017  
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These results are only for financial reporting and may not be appropriate for funding purposes or other types of analysis. Calculations for purposes other than satisfying the requirements of GASB 67 and GASB 68 may produce significantly different results. Future actuarial results may differ significantly from the current results presented in this report due to such factors as changes in plan experience or changes in economic or demographic assumptions.

Sincerely yours,

A handwritten signature in blue ink that reads 'John J. Garrett'.

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

A handwritten signature in blue ink that reads 'Cathy Turcot'.

Cathy Turcot  
Principal and Managing Director

A handwritten signature in blue ink that reads 'Jonathan Craven'.

Jonathan Craven ASA, EA, FCA, MAAA  
Consulting Actuary

A handwritten signature in blue ink that reads 'Ben Mobley'.

Ben Mobley ASA, ACA, MAAA  
Actuary



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**REPORT OF THE ANNUAL GASB STATEMENT NO. 68  
REQUIRED INFORMATION FOR THE  
EMPLOYERS PARTICIPATING IN THE  
CONNECTICUT STATE TEACHERS' RETIREMENT SYSTEM**

**PREPARED AS OF JUNE 30, 2016**

**SECTION I – INTRODUCTION**

The Governmental Accounting Standards Board issued Statement No. 68 (GASB 68), “*Accounting and Financial Reporting For Pensions*” in June 2012. GASB 68’s effective date is for an employer’s fiscal year beginning after June 15, 2014. The Connecticut State Teachers’ Retirement System (System) is a cost-sharing multiple employer defined benefit pension plan with a special funding situation.

This report, prepared as of June 30, 2016 (the Measurement Date), presents information to assist the employers participating in System in meeting the requirements of GASB 68 for the fiscal year ending June 30, 2017 (Reporting Date). Much of the material provided in this report is based on the data, assumptions and results of the annual actuarial valuation of the System as of June 30, 2016. The results of that valuation were detailed in a report dated November 2, 2016.

The Net Pension Liability (NPL) shown in the GASB Statement No. 67 Report for the Connecticut State Teachers’ Retirement System prepared as of June 30, 2016 and submitted March 7, 2017 is the collective NPL used for purposes of GASB 68. Please refer to that report for the derivation of the collective NPL.

Pension Expense (PE) includes amounts for service cost (the normal cost under the Entry Age Normal actuarial cost method for the year), interest on the Total Pension Liability (TPL), changes in benefit structure, amortization of increases/decreases in liability due to actuarial experience and actuarial assumption changes, and amortization of investment gains/losses. The actuarial experience and assumption change impacts are amortized over the average expected remaining service life of the Plan membership as of the Measurement Date, and investment gains/losses are amortized over five years. The development of the collective PE is shown in Section IV.

The unamortized portions of each year’s experience, assumption changes and investment gains/losses are used to develop deferred inflows and outflows, which also must be included in the employer’s and non-employer contributing entities’ financial statements. The development of the collective deferred inflows and outflows is shown in Section III.



The State makes all contributions to the System on behalf of employees of the participating districts. Therefore, participating employers are considered to be in a special funding situation as defined by GASB 68 and the State is treated as a non-employer contributing entity in the System. Since the districts do not contribute directly to the System, there is no NPL or deferred inflows or outflows to report in the financial statements of the districts. However, the notes to the financial statements must disclose the portion of the non-employer contributing entities' total proportionate share of the collective NPL that is associated with the employer. In addition, each district must recognize the total PE associated with the district as well as revenue in an amount equal to the non-employer contributing entities' total proportionate share of the collective PE associated with the district. The State, as a non-employer contributing entity, would report the entire collective amounts of the NPL, Deferred Inflows and Outflows and PE.

Schedule A of this report shows the total amount of employer contributions from the State as support provided to the districts for the year ending June 30, 2016. Schedule A also shows the proportionate share percentages that have been determined based on these contributions.

Based on these percentages we have determined the proportionate share amounts of the NPL associated with each participating employer and the employer PE and revenue for State support for each participating employer. These amounts are shown in Schedule B.

Section II of this report is a summary of the principal results of the collective amounts under GASB 68. Section III provides the results of all the necessary calculations, presented in the order laid out in GASB 68 for note disclosure and Section V shows the Required Supplementary Information (RSI).



**SECTION II - SUMMARY OF COLLECTIVE AMOUNTS**  
**(\$ IN THOUSANDS)**

<b>Valuation Date (VD):</b>	June 30, 2016
<b>Measurement Date (MD):</b>	June 30, 2016
<b>Reporting Date (RD):</b>	June 30, 2017
<b>Single Equivalent Interest Rate (SEIR):</b>	
Long-Term Expected Rate of Return	8.00%
Municipal Bond Index Rate at Measurement Date	3.01%
Fiscal Year in which Plan's Fiduciary Net Position is projected to be depleted from future benefit payments for current members	N/A
Single Equivalent Interest Rate	8.00%
<b>Collective Net Pension Liability:</b>	
Total Pension Liability (TPL)	\$ 29,839,923
Fiduciary Net Position (FNP)	<u>15,594,872</u>
Net Pension Liability (NPL = TPL – FNP)	\$ 14,245,051
FNP as a percentage of TPL	52.26%
<b>Collective Pension Expense (PE):</b>	\$1,553,474
<b>Collective Deferred Outflows of Resources:</b>	\$3,094,621
<b>Collective Deferred Inflows of Resources:</b>	\$320,621



### SECTION III –NOTES TO FINANCIAL STATEMENTS

The material presented herein will follow the order presented in GASB 68. Paragraph numbers are provided for ease of reference. Amounts are shown in aggregate. Please refer to Schedule B of this report for the proportionate share of certain pension amounts as required by GASB 68.

**Paragraphs 77 and 78(a)-(f):** These paragraphs require information to be disclosed regarding the actuarial assumptions used to measure the TPL. The actuarial assumptions used in the June 30, 2016 valuation were based on the results of an actuarial experience study for the period July 1, 2010 – June 30, 2015. The complete set of actuarial assumptions utilized in developing the TPL are outlined in Schedule D. The TPL was determined by an actuarial valuation as of June 30, 2014, using the following key actuarial assumptions:

Inflation	2.75 percent
Salary increases, including inflation	3.25 – 6.50
Long-Term Investment Rate of Return, net of pension plan investment expense, including inflation	8.00 percent

Mortality rates were based on the RPH-2014 White Collar table with employee and annuitant rates blended from ages 50 to 80, projected to the year 2020 using the BB improvement scale, and further adjusted to grade in increases (5% for females and 8% for males) to rates over age 80 for the period after service retirement and for dependent beneficiaries as well as for active members. The RPH-2014 Disabled Mortality Table projected to 2017 with Scale BB is used for the period after disability retirement.

The long-term expected rate of return on pension plan investments was determined using a log-normal distribution analysis in which best-estimate ranges of expected future real rates of return (expected returns, net of pension plan investment expense and inflation) are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. The target asset allocation and best estimates of arithmetic real rates of return for each major asset class are summarized in the following table:



Asset Class	Target Allocation	Long-Term Expected Real Rate of Return
Large Cap U.S. Equities	25.0%	5.8%
Developed Non-U.S. Equities	20.0	6.6
Emerging Markets (Non-U.S.)	9.0	8.3
Real Estate	5.0	5.1
Private Equity	10.0	7.6
Alternative Investment	8.0	4.1
Fixed Income (Core)	13.0	1.3
High Yield Bonds	2.0	3.9
Emerging Market Bond	4.0	3.7
Inflation Linked Bonds	6.0	1.0
Cash	6.0	0.4

*Discount rate.* The discount rate used to measure the total pension liability was 8.00 percent. The projection of cash flows used to determine the discount rate assumed that plan member contributions will be made at the current contribution rate and that State contributions will be made at the actuarially determined rates in future years. Based on those assumptions, the pension plan’s fiduciary net position was projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

**Paragraph 78 (g):** This paragraph requires disclosure of the sensitivity of the net pension liability to changes in the discount rate. The following presents the net pension liability of the System, calculated using the discount rate of 8.00 percent, as well as what the System’s net pension liability would be if it were calculated using a discount rate that is 1-percentage-point lower (7.00 percent) or 1-percentage-point higher (9.00 percent) than the current rate (\$ thousands):

	1% Decrease (7.00%)	Current Discount Rate (8.00%)	1% Increase (9.00%)
Collective net pension liability	\$17,574,399	\$14,245,051	\$11,430,611



**Paragraph 80(a):** This paragraph requires disclosure of the employer's proportionate share of the collective NPL and if an employer has a special funding situation the portion of the non-employer contributing entities' proportional share of the collective NPL that is associated with the employer. These amounts are shown in Schedule B.

**Paragraph 80(b):** This paragraph requires disclosure of the employer's proportion (percentage) of the collective NPL and the changes in proportion since the prior measurement date. 100% of the collective NPL is allocated to the State.

**Paragraph 80(c):** June 30, 2016 is the actuarial valuation date upon which the TPL is based.

**Paragraph 80(d) and (e):** Since the prior measurement date rates of withdrawal, disability, retirement, mortality, and assumed rates of salary increase were adjusted to more closely reflect actual and anticipated experience. These assumptions were recommended as part of the Experience Study for the System for the five year period ended June 30, 2015. There were no changes in benefits that affected the measurement of the TPL since the prior measurement date.

**Paragraph 80(f):** Not applicable.

**Paragraph 80(g):** Please see Section IV of this report for the development of the collective pension expense. The PE for each employer is shown in Schedule B.

**Paragraph 80(h):** Since certain expense items are amortized over closed periods each year, the deferred portions of these items must be tracked annually. If the amounts serve to reduce collective pension expense they are labeled deferred inflows. If they will increase collective pension expense they are labeled deferred outflows. The amortization of these amounts is accomplished on a level dollar basis, with no interest included in the deferred amounts. Experience gains/losses and the impact of changes in actuarial assumptions, if any, are amortized over the average expected remaining service life of the active and inactive Plan members at the beginning of the fiscal year. Investment gains and losses are amortized over a fixed five year period.



The table below provides a summary in the difference between projected and actual earnings on plan investments.

<b>Investment Earnings (Gain)/Loss as of June 30, 2016</b>		
<b>(\$ thousands)</b>		
a	Expected asset return rate	8.50%
b	Beginning of year market value assets (BOY)	\$16,120,053
c	End of year market value assets (EOY)	15,594,872
d	Expected return on BOY for plan year ( a x b)	1,370,205
	External Cash Flow	
	Contributions - employer	975,578
	Contributions - member	293,493
	Refunds of contributions	0
	Benefits paid	(1,738,131)
	Admin expenses	0
	Other changes	<u>(37,648)</u>
e	Net cash flow	(506,708)
f	Expected return on net cash flow (a x 0.5 x e)	(21,535)
g	Projected earnings for plan year (d + f)	1,348,670
h	Net investment income (c - b - e)	(18,473)
	<b>Investment earnings (gain)/loss (g -h)</b>	<b>1,367,143</b>

\*Other changes are comprised of participating employer contributions for Early Retirement Incentive Plans, service purchases, etc.

The table below provides a summary of the determination of the average expected remaining service life for the entire Plan membership determined at the beginning of the year.

Category	Number (1)	Average Years of Working Lifetime (2)
a. Active Members	51,433	13.08
b. Inactive Members	47,321	0.00
c. Total	98,754	
Weighted Average Years of Working Lifetime [(a1 * a2) + (b1 * b2)]/c1		6.81



The table below provides a summary of the collective deferred inflows and outflows as of the Measurement Date. 100% of these amounts are allocated to the State.

	Deferred Outflows of Resources	Deferred Inflows of Resources
Differences between expected and actual experience	\$0	\$320,621
Changes of assumptions	1,888,199	0
Net difference between projected and actual earnings on plan investments	1,206,422	0
Employer contributions subsequent to the Measurement Date	<u>0</u>	<u>0</u>
Total	<u>\$3,094,621</u>	<u>\$320,621</u>

**Paragraph 80(i):** Collective amounts reported as deferred outflows of resources and deferred inflows of resources related to pensions will be recognized in the collective pension expense as follows. 100% of these amounts are allocated to the State.

<b>Deferred Amounts to be Recognized in Fiscal Years Following the Reporting Date:</b>	
Year 1	\$509,415
Year 2	509,417
Year 3	723,584
Year 4	543,234
Year 5	269,807
Year 6	218,543
Year 7	0
Thereafter	0

**Paragraph 80(j):** The amount of revenue recognized for the support provided by non-employer contributing entities for the participating employers is provided in Schedule B.



## **SECTION IV – COLLECTIVE PENSION EXPENSE**

As noted earlier, the collective Pension Expense (PE) consists of a number of different items. GASB 68 refers to the first as Service Cost which is the Normal Cost using the Entry Age Normal actuarial funding method. The second item is interest on the beginning Total Pension Liability (TPL) and the cash flow during the year at the 8.50% rate of return in effect as of the previous measurement date. The next three items refer to any changes that occurred in the TPL due to:

- benefit changes, or
- actual versus expected experience, or
- changes in actuarial assumptions.

Benefit changes, which are reflected immediately in PE, can be positive, if there is a benefit improvement for existing Plan members, or negative if there is a benefit reduction. For the year ended June 30, 2016, there were no benefit changes to be recognized.

The next item to be recognized is the portion of current year changes in TPL due to actual versus expected Plan experience for the year. The portion to recognize in the current year is determined by spreading the total change over the average expected remaining service life of the entire Plan membership determined at the beginning of the year. The average expected remaining service life of active members is the average number of years the active members are expected to remain active. For the year ended June 30, 2014 this number of years for the active members is 13.08. The average expected remaining service life of the inactive members is, of course, zero. Therefore, the number of years to use for the amortization is the weighted average for all active and inactive members, or 6.81 years.

The last item under changes in TPL are changes in actuarial assumptions. Since the prior measurement date rates of withdrawal, disability, retirement, mortality, and assumed rates of salary increase were adjusted to more closely reflect actual and anticipated experience. These assumptions were recommended as part of the Experience Study for the System for the five year period ended June 30, 2015. The change in TPL due to changes in actuarial assumptions will be spread over the average expected remaining service life of the plan membership.

Member contributions for the year and projected earnings on the Fiduciary Net Position (FNP), again at the discount rate used to calculate the liabilities, are subtracted from the amount determined thus far. One-fifth of current period differences between projected and actual investment earnings on the FNP are recognized in the pension expense.



The current year portions of previously determined experience, assumption and earnings amounts, recognized as deferred outflows and inflows (see Section III) are included also. Deferred outflows are added to the PE while deferred inflows are subtracted from the PE. Finally, administrative expenses and other miscellaneous items are included.

The calculation of the Collective Pension Expense determined as of the measurement date is shown in the following table:

<b>Collective Pension Expense Determined as of the Measurement Date (\$ thousands)</b>	
Service Cost at end of year	\$419,616
Interest on the TPL and net cash flow	2,228,958
Current-period benefit changes	0
Expensed portion of current-period difference between expected and actual experience in the total pension liability	(55,184)
Expensed portion of current-period changes of assumptions	324,991
Member contributions	(293,493)
Projected earnings on plan investments	(1,348,670)
Expensed portion of current-period differences between projected and actual earnings on plan investments	273,429
Administrative expense	0
Other	37,648
Recognition of beginning deferred outflows of resources as pension expense	0
Recognition of beginning deferred inflows of resources as pension expense	<u>(33,821)</u>
<b>Collective Pension Expense</b>	<b><u>\$1,553,474</u></b>



**SECTION V – REQUIRED SUPPLEMENTARY INFORMATION**

**Paragraphs 81(a)-(b):** CMC was not required to supply this information.

**Paragraph 82:**

*Changes of assumptions.* In 2016, rates of withdrawal, disability, retirement, mortality and assumed rates of salary increase were adjusted to more closely reflect actual and anticipated experience. These assumptions were recommended as part of the Experience Study for the System for the five year period ended June 30, 2015.

*Method and assumptions used in calculations of actuarially determined contributions.* The actuarially determined contributions in the schedule of employer contributions are calculated as of June 30 each biennium for the fiscal years ending two and three years after the valuation date. The following actuarial methods and assumptions were used to determine the most recent contributions reported in that schedule:

Actuarial cost method	Entry age
Amortization method	Level percent of pay, closed
Single equivalent amortization period	20.4 years
Asset valuation method	4-year smoothed market
Inflation	3.00 percent
Salary increase	3.75-7.00 percent, including inflation
Investment rate of return	8.50 percent, net of investment related expense



**SCHEDULE A**

**CONNECTICUT STATE TEACHERS' RETIREMENT SYSTEM**  
**Schedule of Employer Allocations as of June 30, 2016**

<b>Employers</b>	<b>2016 Expected Employer Contribution Effort for Allocation Purposes</b>	<b>Employer Allocation Percentage</b>
Andover	\$ 512,383	0.052521%
Ansonia	3,151,871	0.323077%
Ashford	747,642	0.076636%
Avon	6,555,089	0.671918%
Barkhamsted	399,492	0.040949%
Berlin	5,476,492	0.561359%
Bethany	804,534	0.082467%
Bethel	5,347,015	0.548087%
Highville Chtr	375,105	0.038450%
Bloomfield	4,307,502	0.441533%
Bolton	1,648,401	0.168967%
Bozrah	416,592	0.042702%
Branford	6,253,739	0.641029%
Bridgeport	29,691,588	3.043487%
Bristol	13,798,311	1.414373%
Brookfield	4,610,822	0.472625%
Brooklyn	74,900	0.007678%
Cldrn Ctr Com Prog	88,429	0.009064%
Canaan	205,950	0.021111%
Canterbury	837,981	0.085896%
Canton	2,708,577	0.277638%
Chaplin	411,998	0.042231%
Cheshire	7,955,971	0.815514%
Chester	304,986	0.031262%
Clinton	3,919,055	0.401716%
Colchester	4,555,794	0.466984%
Amistad Acd	806,342	0.082653%
Colebrook	216,446	0.022186%
Columbia	985,289	0.100995%
Cornwall	261,812	0.026837%
Coventry	2,974,563	0.304903%
Cromwell	3,319,427	0.340252%
Danbury	17,632,263	1.807366%
Darien	10,403,863	1.066431%
Deep River	407,213	0.041741%
Derby	2,150,772	0.220461%
Eastford	342,680	0.035126%
East Granby	1,907,852	0.195561%



Employers	2016 Expected Employer Contribution Effort for Allocation Purposes	Employer Allocation Percentage
East Haddam	\$ 2,246,368	0.230260%
East Hampton	3,526,709	0.361499%
East Hartford	12,898,444	1.322134%
East Haven	5,347,006	0.548086%
East Lyme	5,044,737	0.517102%
Easton	1,627,187	0.166792%
East Windsor	2,477,028	0.253904%
Ellington	4,316,658	0.442472%
Enfield	9,173,808	0.940346%
Essex	549,939	0.056371%
Fairfield	20,584,027	2.109931%
Farmington	7,693,202	0.788579%
Franklin	324,222	0.033234%
Glastonbury	11,672,294	1.196449%
Granby	3,434,543	0.352052%
Greenwich	22,728,847	2.329783%
Griswold	2,978,205	0.305276%
Groton	9,102,337	0.933020%
Guilford	6,457,730	0.661939%
Hamden	10,974,201	1.124892%
Hampton	213,622	0.021897%
Hartford	38,219,419	3.917618%
Hartland	389,870	0.039963%
Hebron	1,336,168	0.136962%
Kent	468,100	0.047982%
Killingly	3,761,808	0.385598%
Lebanon	1,668,126	0.170988%
Ledyard	4,464,227	0.457598%
Lisbon	770,448	0.078973%
Litchfield	2,100,676	0.215326%
Madison	5,908,216	0.605612%
Manchester	12,587,374	1.290248%
Mansfield	2,709,887	0.277772%
Marlborough	978,678	0.100318%
Meriden	13,218,326	1.354922%
Middletown	8,512,446	0.872554%
Milford	12,384,692	1.269472%
Monroe	6,826,831	0.699773%
Montville	4,557,269	0.467135%
Naugatuck	6,410,149	0.657062%
New Britain	17,356,036	1.779052%
New Canaan	9,507,009	0.974500%
New Fairfield	4,754,424	0.487344%



Employers	2016 Expected Employer Contribution Effort for Allocation Purposes	Employer Allocation Percentage
New Hartford	\$ 832,064	0.085289%
New Haven	36,338,131	3.724780%
Newington	7,735,505	0.792915%
New London	5,091,356	0.521881%
New Milford	5,740,996	0.588471%
Newtown	8,404,317	0.861471%
Norfolk	202,701	0.020778%
North Branford	3,281,814	0.336397%
North Canaan	451,878	0.046319%
North Haven	5,896,367	0.604397%
No.Stonington	1,518,928	0.155695%
Norwalk	21,671,319	2.221382%
Norwich	5,522,316	0.566056%
NFA	3,749,924	0.384380%
Old Saybrook	2,884,413	0.295662%
Orange	2,283,913	0.234109%
Oxford	3,002,723	0.307789%
Plainfield	3,563,820	0.365303%
Plainville	4,204,726	0.430998%
Plymouth	2,595,577	0.266055%
Pomfret	678,756	0.069575%
Portland	2,193,157	0.224806%
Preston	865,249	0.088691%
Putnam	150,430	0.015420%
Redding	2,324,256	0.238244%
RSD 1	1,686,448	0.172867%
RSD 4	1,630,754	0.167158%
RSD 5	4,624,027	0.473978%
RSD 6	1,698,458	0.174098%
RSD 7	1,916,304	0.196428%
RSD 8	2,846,366	0.291762%
Ridgefield	10,224,627	1.048058%
Rocky Hill	4,798,188	0.491830%
Salem	719,638	0.073765%
Salisbury	581,797	0.059636%
Scotland	252,852	0.025918%
Seymour	3,825,072	0.392083%
Sharon	430,838	0.044162%
Shelton	8,539,339	0.875311%
Sherman	723,370	0.074148%
Simsbury	8,051,440	0.825299%
Somers	2,567,375	0.263164%
Southington	10,378,055	1.063785%



Employers	2016 Expected Employer Contribution Effort for Allocation Purposes	Employer Allocation Percentage
S. Windsor	\$ 8,115,891	0.831906%
Sprague	499,815	0.051233%
Stafford	2,807,338	0.287761%
Stamford	32,453,440	3.326586%
SDE	8,719,756	0.893804%
DCF Recq Home	439,679	0.045069%
Sterling	607,305	0.062251%
Stonington	4,049,572	0.415095%
Stratford	12,265,259	1.257230%
Suffield	4,339,550	0.444818%
Thomaston	1,532,464	0.157083%
Thompson	1,721,478	0.176457%
Tolland	4,281,441	0.438862%
Torrington	7,350,052	0.753405%
Trumbull	12,868,785	1.319093%
Union	136,336	0.013975%
Vernon	6,030,310	0.618127%
Voluntown	543,627	0.055724%
Wallingford	12,005,909	1.230646%
Waterbury	28,496,777	2.921015%
Waterford	5,439,493	0.557566%
Watertown	4,277,670	0.438475%
Westbrook	1,860,930	0.190752%
W.Hartford	17,996,592	1.844711%
West Haven	10,279,322	1.053665%
Weston	5,325,128	0.545843%
Westport	13,032,118	1.335836%
Wethersfield	6,344,699	0.650353%
Willington	883,072	0.090518%
Wilton	9,222,619	0.945349%
Winchester	1,066,710	0.109341%
Windham	5,637,765	0.577890%
Windsor	7,278,368	0.746057%
Windsor Locks	3,704,703	0.379744%
Winsted/Gilbert	1,019,995	0.104553%
Wolcott	3,956,505	0.405555%
Woodbridge	1,530,832	0.156915%
Woodstock	1,214,123	0.124452%
Woodstock Ad	1,681,810	0.172391%
UCONN	340,798	0.034933%
RSD 9	2,218,473	0.227401%
CCI Somers	15,212	0.001559%
RSD 10	4,154,990	0.425900%



Employers	2016 Expected Employer Contribution Effort for Allocation Purposes	Employer Allocation Percentage
Supervision District	\$ 797,331	0.081729%
NWCTC	78,017	0.007997%
MCTC	57,861	0.005931%
Norwalk CTC	59,439	0.006093%
WCSU	136,854	0.014028%
CCSU	310,441	0.031821%
ESCU	79,817	0.008181%
SCSU	362,270	0.037134%
RSD 11	573,779	0.058814%
CCTC	27,632	0.002832%
Hou CTC	38,449	0.003941%
Naug CTC	108,784	0.011151%
MCTC	80,716	0.008274%
Ed Connection	550,624	0.056441%
RSD 12	2,031,998	0.208287%
Gateway CTC	268,794	0.027552%
RSD 13	3,712,800	0.380574%
RSD 14	3,449,908	0.353627%
CCI Cheshire	37,468	0.003841%
Shared Svcs	354,846	0.036373%
CREC	18,862,234	1.933442%
RSD 15	6,946,124	0.712001%
RSD 16	3,603,561	0.369377%
TRCC (Mohegan)	29,578	0.003032%
Tunxis CTC	69,060	0.007079%
QVCC	-	0.000000%
Odyssey	439,748	0.045076%
CES	2,765,542	0.283477%
ACES	5,544,297	0.568309%
Project Learn	3,767,519	0.386183%
RSD 17	3,875,061	0.397207%
Asnun CTC	58,117	0.005957%
Project O	65,572	0.006721%
RSD 18	2,968,187	0.304249%
DCF Mental Health	27,666	0.002836%
EASTCONN	1,629,008	0.166979%
BSBE	238,905	0.024489%
RSD 19	2,388,609	0.244840%
UConn Health	181,211	0.018575%
CCI Suffield	-	0.000000%
CCI Niantic	16,071	0.001647%
Children's CTR	230,094	0.023585%
Bridges Academy	298,356	0.030583%



Employers	2016 Expected Employer Contribution Effort for Allocation Purposes	Employer Allocation Percentage
Common Ground	\$ 294,247	0.030161%
Explorations	197,202	0.020214%
Intergrated Day	460,127	0.047165%
Isaac	440,552	0.045158%
Jumoke Academy	703,657	0.072127%
Side by Side	347,538	0.035624%
Trailblazers Academy	198,218	0.020318%
New Beginnings	-	0.000000%
Elm City CP	372,007	0.038132%
Stamford Academy	152,412	0.015623%
Park City	325,906	0.033406%
AF Bridgeport Academy	267,965	0.027467%
SERC	50,095	0.005135%
AF Hartford Acad	894,795	0.091720%
Brass City	199,093	0.020408%
Path Academy	102,045	0.010460%
Booker T. Washington(BTW)	193,467	0.019831%
Total	\$ 975,578,000	100.000000%



**SCHEDULE B**

**CONNECTICUT STATE TEACHERS' RETIREMENT SYSTEM  
Schedule of Pension Amounts by Employer as of June 30, 2016**

<b>Employers</b>	<b>State's Proportionate Share Of the Net Pension Liability Associated with the District</b>	<b>Pension Expense and Revenue For State Support</b>
Andover	\$ 7,481,645	\$ 815,900
Ansonia	46,022,526	5,018,922
Ashford	10,916,812	1,190,518
Avon	95,715,132	10,438,079
Barkhamsted	5,833,239	636,136
Berlin	79,965,829	8,720,561
Bethany	11,747,532	1,281,111
Bethel	78,075,252	8,514,387
Highville Chtr	5,477,159	597,304
Bloomfield	62,896,649	6,859,106
Bolton	24,069,374	2,624,852
Bozrah	6,082,935	663,366
Branford	91,314,924	9,958,221
Bridgeport	433,546,254	47,279,777
Bristol	201,478,144	21,971,916
Brookfield	67,325,617	7,342,100
Brooklyn	1,093,665	119,268
Cldrn Ctr Com Prog	1,291,207	140,811
Canaan	3,007,213	327,947
Canterbury	12,235,904	1,334,369
Canton	39,549,707	4,313,038
Chaplin	6,015,846	656,050
Cheshire	116,170,324	12,668,791
Chester	4,453,297	485,648
Clinton	57,224,684	6,240,557
Colchester	66,522,123	7,254,477
Amistad Acd	11,773,919	1,283,988
Colebrook	3,160,468	344,660
Columbia	14,386,846	1,568,937
Cornwall	3,822,885	416,899
Coventry	43,433,532	4,736,583
Cromwell	48,469,113	5,285,731
Danbury	257,460,172	28,076,957
Darien	151,913,587	16,566,723
Deep River	5,945,978	648,430
Derby	31,404,825	3,424,809
Eastford	5,003,694	545,671
East Granby	27,857,789	3,037,992



<b>Employers</b>	<b>State's Proportionate Share Of the Net Pension Liability Associated with the District</b>	<b>Pension Expense and Revenue For State Support</b>
East Haddam	\$ 32,800,687	\$ 3,577,033
East Hampton	51,495,781	5,615,800
East Hartford	188,338,593	20,539,000
East Haven	78,075,123	8,514,373
East Lyme	73,661,494	8,033,051
Easton	23,759,618	2,591,072
East Windsor	36,168,696	3,944,326
Ellington	63,030,340	6,873,685
Enfield	133,952,756	14,608,029
Essex	8,030,014	875,702
Fairfield	300,560,809	32,777,236
Farmington	112,333,460	12,250,367
Franklin	4,734,177	516,279
Glastonbury	170,434,778	18,586,525
Granby	50,149,997	5,469,037
Greenwich	331,878,731	36,192,568
Griswold	43,486,721	4,742,383
Groton	132,909,163	14,494,222
Guilford	94,293,524	10,283,048
Hamden	160,241,474	17,474,909
Hampton	3,119,234	340,164
Hartford	558,066,682	60,859,177
Hartland	5,692,739	620,814
Hebron	19,510,263	2,127,664
Kent	6,835,035	745,385
Killingly	54,928,619	5,990,163
Lebanon	24,357,391	2,656,261
Ledyard	65,185,087	7,108,668
Lisbon	11,249,813	1,226,833
Litchfield	30,673,339	3,345,038
Madison	86,269,713	9,408,022
Manchester	183,796,456	20,043,664
Mansfield	39,568,826	4,315,123
Marlborough	14,290,313	1,558,410
Meriden	193,009,397	21,048,368
Middletown	124,295,783	13,554,902
Milford	180,836,970	19,720,921
Monroe	99,683,015	10,870,791
Montville	66,543,656	7,256,825
Naugatuck	93,598,763	10,207,281
New Britain	253,426,801	27,637,103
New Canaan	138,818,045	15,138,607
New Fairfield	69,422,450	7,570,768



<b>Employers</b>	<b>State's Proportionate Share Of the Net Pension Liability Associated with the District</b>	<b>Pension Expense and Revenue For State Support</b>
New Hartford	\$ 12,149,511	\$ 1,324,948
New Haven	530,596,757	57,863,483
Newington	112,951,155	12,317,729
New London	74,342,205	8,107,285
New Milford	83,828,035	9,141,748
Newtown	122,716,922	13,382,721
Norfolk	2,959,766	322,773
North Branford	47,919,906	5,225,838
North Canaan	6,598,173	719,554
North Haven	86,096,709	9,389,156
No.Stonington	22,178,866	2,418,685
Norwalk	316,437,065	34,508,599
Norwich	80,634,937	8,793,530
NFA	54,755,082	5,971,238
Old Saybrook	42,117,198	4,593,032
Orange	33,348,904	3,636,818
Oxford	43,844,723	4,781,425
Plainfield	52,037,656	5,674,893
Plainville	61,395,946	6,695,448
Plymouth	37,899,711	4,133,100
Pomfret	9,910,958	1,080,826
Portland	32,023,723	3,492,302
Preston	12,634,071	1,377,791
Putnam	2,196,534	239,540
Redding	33,937,982	3,701,059
RSD 1	24,624,923	2,685,436
RSD 4	23,811,705	2,596,752
RSD 5	67,518,434	7,363,128
RSD 6	24,800,297	2,704,562
RSD 7	27,981,202	3,051,451
RSD 8	41,561,649	4,532,447
Ridgefield	149,296,449	16,281,314
Rocky Hill	70,061,472	7,640,455
Salem	10,507,911	1,145,925
Salisbury	8,495,197	926,432
Scotland	3,692,060	402,632
Seymour	55,852,374	6,090,902
Sharon	6,290,948	686,050
Shelton	124,688,459	13,597,724
Sherman	10,562,396	1,151,867
Simsbury	117,564,334	12,820,813
Somers	37,487,912	4,088,192
Southington	151,536,753	16,525,627



Employers	State's Proportionate Share Of the Net Pension Liability Associated with the District	Pension Expense and Revenue For State Support
S. Windsor	\$ 118,505,418	\$ 12,923,442
Sprague	7,298,118	795,886
Stafford	40,991,768	4,470,300
Stamford	473,873,849	51,677,646
SDE	127,322,852	13,885,015
DCF Recq Home	6,420,037	700,128
Sterling	8,867,652	967,049
Stonington	59,130,448	6,448,388
Stratford	179,093,051	19,530,741
Suffield	63,364,596	6,910,137
Thomaston	22,376,509	2,440,239
Thompson	25,136,424	2,741,217
Tolland	62,516,115	6,817,607
Torrington	107,322,905	11,703,948
Trumbull	187,905,525	20,491,773
Union	1,990,724	217,096
Vernon	88,052,492	9,602,441
Voluntown	7,937,848	865,651
Wallingford	175,306,117	19,117,762
Waterbury	416,100,038	45,377,204
Waterford	79,425,593	8,661,646
Watertown	62,461,044	6,811,601
Westbrook	27,172,657	2,963,276
W.Hartford	262,779,990	28,657,102
West Haven	150,095,086	16,368,408
Weston	77,755,663	8,479,534
Westport	190,290,456	20,751,858
Wethersfield	92,643,094	10,103,062
Willington	12,894,306	1,406,170
Wilton	134,665,484	14,685,755
Winchester	15,575,729	1,698,589
Windham	82,320,688	8,977,367
Windsor	106,276,198	11,589,801
Windsor Locks	54,094,788	5,899,231
Winsted/Gilbert	14,893,613	1,624,202
Wolcott	57,771,512	6,300,191
Woodbridge	22,352,681	2,437,640
Woodstock	17,728,204	1,933,324
Woodstock Ad	24,557,211	2,678,052
UCONN	4,976,214	542,674
RSD 9	32,393,372	3,532,614
CCI Somers	222,126	24,224
RSD 10	60,669,721	6,616,251



Employers	State's Proportionate Share Of the Net Pension Liability Associated with the District	Pension Expense and Revenue For State Support
Supervision District	\$ 11,642,347	\$ 1,269,640
NWCTC	1,139,173	124,231
MCTC	844,871	92,136
Norwalk CTC	867,905	94,648
WCSU	1,998,298	217,922
CCSU	4,532,954	494,335
ESCU	1,165,458	127,097
SCSU	5,289,737	576,865
RSD 11	8,378,128	913,665
CCTC	403,480	44,001
Hou CTC	561,423	61,225
Naug CTC	1,588,426	173,224
MCTC	1,178,586	128,529
Ed Connection	8,040,020	876,793
RSD 12	29,670,533	3,235,678
Gateway CTC	3,924,838	428,018
RSD 13	54,213,015	5,912,124
RSD 14	50,374,354	5,493,504
CCI Cheshire	547,089	59,662
Shared Svcs	5,181,337	565,043
CREC	275,419,794	30,035,518
RSD 15	101,424,888	11,060,749
RSD 16	52,617,940	5,738,175
TRCC (Mohegan)	431,891	47,099
Tunxis CTC	1,008,392	109,969
QVCC	-	-
Odyssey	6,421,050	700,239
CES	40,381,480	4,403,746
ACES	80,955,905	8,828,532
Project Learn	55,012,001	5,999,256
RSD 17	56,582,297	6,170,503
Asnun CTC	848,608	92,544
Project O	957,465	104,415
RSD 18	43,340,432	4,726,430
DCF Mental Health	403,976	44,055
EASTCONN	23,786,211	2,593,972
BSBE	3,488,411	380,424
RSD 19	34,877,636	3,803,532
UConn Health	2,645,973	288,553
CCI Suffield	-	-
CCI Niantic	234,658	25,590
Children's CTR	3,359,746	366,392
Bridges Academy	4,356,494	475,091



<b>Employers</b>	<b>State's Proportionate Share Of the Net Pension Liability Associated with the District</b>	<b>Pension Expense and Revenue For State Support</b>
Common Ground	\$ 4,296,489	\$ 468,548
Explorations	2,879,469	314,016
Intergrated Day	6,718,608	732,688
Isaac	6,432,791	701,519
Jumoke Academy	10,274,555	1,120,477
Side by Side	5,074,633	553,407
Trailblazers Academy	2,894,316	315,636
New Beginnings	-	-
Elm City CP	5,431,920	592,370
Stamford Academy	2,225,470	242,696
Park City	4,758,766	518,960
AF Bridgeport Academy	3,912,725	426,697
SERC	731,476	79,770
AF Hartford Acad	13,065,491	1,424,839
Brass City	2,907,084	317,028
Path Academy	1,490,032	162,493
Booker T. Washington(BTW)	2,824,942	308,070
Total	\$ <u>14,245,051,000</u>	\$ <u>1,553,474,000</u>



## **SCHEDULE C**

### **SUMMARY OF BENEFIT PROVISIONS EVALUATED**

#### **Covered Employees**

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

#### **Annual Salary**

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

#### **Average Annual Salary**

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

#### **Credited Service**

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

#### **Normal Retirement**

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

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

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

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

#### **Early Retirement**

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

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



### **Proratable Retirement**

Eligibility - Age 60 with 10 years of Credited Service.

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

### **Disability Retirement**

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

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

### **Termination of Employment**

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

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

10 or more years of Credited Service - Member is 100% vested in the accrued benefit based on Credited Service and Average Annual Salary as of the date of termination of covered employment. Benefits are payable at age 60 and early retirement reductions are based on the number of years 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.

### **Pre-Retirement Death Benefits**

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

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



## **Benefit Options**

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

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

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

## **Cost-of-Living Allowance**

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

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

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

## **Teachers' Required Contribution**

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

## **State Contribution**

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

## **Early Retirement Incentive**

A local or regional board of education may establish a retirement incentive plan. The plan shall 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 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.



**SCHEDULE D**

**STATEMENT OF ACTUARIAL ASSUMPTIONS AND METHODS**

**Investment Rate of Return**

Assumed annual rate of 8.00% net of investment expenses.

**Rates of Annual Salary Increase**

<b>Rates of Annual Salary Increase Assumption</b>	
<b>Years of Service</b>	
<b>0</b>	6.50%
<b>1</b>	6.50
<b>2</b>	6.25
<b>3</b>	6.25
<b>4</b>	6.25
<b>5</b>	6.25
<b>6</b>	6.25
<b>7</b>	6.25
<b>8</b>	6.25
<b>9</b>	6.25
<b>10</b>	5.50
<b>11</b>	5.50
<b>12</b>	5.00
<b>13</b>	5.00
<b>14</b>	5.00
<b>15</b>	4.75
<b>16</b>	4.50
<b>17</b>	4.25
<b>18</b>	4.00
<b>19</b>	3.75
<b>20</b>	3.50
<b>21+</b>	3.25



**Active Member Decrement Rates**

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

Annual Rates of Retirement						
Age	Unreduced		Proratable		Reduced	
	Male	Female	Male	Female	Male	Female
50	27.5%	27.5%			1.00%	1.00%
55	38.5%	27.5%			4.00%	4.75%
60	22.0%	27.5%	6.0%	5.5%		
65	36.3%	32.5%	13.0%	12.5%		
70	100.0%	32.5%	30.0%	14.5%		
75	100.0%	32.5%	30.0%	18.0%		
80	100.0%	100.0%	100.0%	100.0%		

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

Annual Rates of Death and Disability				
Age	Pre-Retirement Mortality		Disability	
	Male	Female	Male	Female
20	0.0377%	0.0147%	0.0341%	0.0500%
25	0.0412%	0.0162%	0.0341%	0.0500%
30	0.0404%	0.0205%	0.0341%	0.0410%
35	0.0448%	0.0272%	0.0341%	0.0410%
40	0.0539%	0.0375%	0.0536%	0.0720%
45	0.0818%	0.0622%	0.1219%	0.1200%
50	0.1476%	0.1116%	0.2438%	0.2630%
55	0.2800%	0.1927%	0.5363%	0.4380%
60	0.4557%	0.2914%	0.9604%	0.5000%
64	0.6572%	0.4272%		



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

Annual Rates of Withdrawal					
10 or more years of service					
Years of Service	Male	Female	Age	Male	Female
0	14.00%	12.00%	25	1.50%	4.00%
1	11.00	10.50	30	1.50	4.00
2	8.00	8.75	35	1.50	3.50
3	6.50	7.50	40	1.50	2.30
4	4.50	6.75	45	1.59	1.50
5	3.50	6.00	50	2.04	2.00
6	3.00	5.25	55	3.44	2.50
7	2.75	4.75	59	4.00	2.90
8	2.50	4.25			
9	2.50	4.00			

### Post-Retirement Mortality

For healthy retirees and beneficiaries, the RPH-2014 White Collar table with employee and annuitant rates blended from ages 50 to 80 projected to the year 2020 using the BB improvement scale and further adjusted to grade in increases (5% for females and 8% for males) to rates over age 80. For disabled retirees, the RPH-2014 Disabled Mortality table projected to 2017 using the BB improvement scale. The following are sample rates for the retirees, beneficiaries, and disabled:

Annual Rates of Death				
Age	Healthy		Disabled	
	Male	Female	Male	Female
50	0.1476%	0.1116%	1.8406%	1.1487%
55	0.2800%	0.1927%	2.2661%	1.3727%
60	0.4557%	0.2914%	2.7070%	1.5886%
65	0.7214%	0.4747%	3.2573%	1.9356%
70	1.1906%	0.8584%	4.0909%	2.6165%
75	2.0499%	1.5897%	5.4230%	3.8159%
80	3.6764%	2.9756%	7.5768%	5.7047%
85	6.9254%	5.4419%	11.1066%	8.5219%

### Marriage Assumption

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

### Asset Valuation Method

Market value of assets is used for GASB 67 disclosure purposes.



## **Actuarial Cost Method**

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

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

## **Future Cost-of-living Increases**

Members who retired prior to September 1, 1992 are assumed to receive an annual Cost-of-Living Adjustment (COLA) of 3.0%. Members who retired on or after September 1, 1992 and were hired prior to July 1, 2007 are assumed to receive an annual Cost-of-Living Adjustment (COLA) of 2.0%. Members who retired on or after September 1, 1992 and were hired on or after July 1, 2007 are assumed to receive an annual Cost-of-Living Adjustment (COLA) of 1.75%.

## **Administrative and Investment Expenses**

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

## **Payroll Growth Rate**

The total annual payroll of active members is assumed to increase at an annual rate of 3.25%. This rate does not anticipate increases in the number of members.

## **Changes from Prior Valuation**

Since the prior valuation, the Board adopted new assumptions based on the 2015 Experience Study. The changes in assumptions are summarized below:

### **Economic Assumptions**

1. Reduce the inflation assumption from 3.00% to 2.75%.
2. Reduce the real rate of return assumption from 5.50% to 5.25% which, when combined with the inflation assumption change results in a decrease in the investment rate of return assumption from 8.50% to 8.00%.
3. Reduce the annual rate of wage increase assumption from 0.75% to 0.50%.
4. Slightly modify the merit portion of the salary scale.
5. Reduce the payroll growth assumption from 3.75% to 3.25%.

### **Demographic Assumptions**

6. Update mortality tables to projected versions of the RPH-2014 mortality tables.
7. Increase normal retirement rates for females at most ages and prorate retirement rates for males at most ages. Decrease early retirement rates for both males and females.
8. Increase rates of withdrawal.
9. Decrease rates of disability for males.