



Cavanaugh Macdonald
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CONNECTICUT STATE TEACHERS' RETIREMENT SYSTEM
RETIREE HEALTH INSURANCE PLAN
FINANCIAL ACCOUNTING REPORT
PREPARED AS OF JUNE 30, 2018
FOR JUNE 30, 2019 FINANCIAL REPORTING





Cavanaugh Macdonald

CONSULTING, LLC

The experience and dedication you deserve

April 25, 2019

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

**Re: June 30, 2018 GASB 75 Report for the Retiree Health Insurance Plan
of the Connecticut State Teachers' Retirement System**

Members of the Board:

This financial accounting report provides the information that the Connecticut State Teachers' Retirement System (the System) should use to satisfy the requirements described in Governmental Accounting Standards Board (GASB) Statement No. 75 for the System's Retiree Health Insurance Plan (the Plan). This report has been prepared by the System's actuary, Cavanaugh Macdonald Consulting (CMC), as of June 30, 2018 (Measurement Date) for financial reporting as of June 30, 2019.

GASB Statement No. 75 (GASB 75) establishes accounting and financial reporting requirements for governmental employers who sponsor or participate in other postemployment benefits (OPEB) plans. In general, the GASB 75 rules that apply to postretirement benefit plans are designed to help plan sponsors adequately and systematically account for plan costs, facilitate comparisons of plan sponsor financial information by standardizing certain aspects of postretirement benefit plan asset and liability measurement, and improve the utility of financial statement information by requiring that plan sponsors provide certain information about their OPEB plans.

Additional Information and Disclosures

The information contained in this report is intended to be used by the System for financial accounting purposes for the fiscal year ending on June 30, 2019 and its use for other purposes may not be appropriate. Calculations for purposes other than satisfying the requirements of GASB 75 may produce significantly different results. This report supersedes all June 30, 2019 financial reporting results, including draft versions of this document, issued prior to the date of this report. The System should rely only on the June 30, 2019 (as of FYE 2018) financial accounting information provided herein.

The results contained in this report were prepared by qualified actuaries according to generally accepted actuarial principles and practices, and in compliance with Actuarial Standards of Practice issued by the Actuarial Standards Board. The financial accounting information provided in this report reflects our current understanding of GASB Statement Nos. 74 and 75 (GASB accounting rules), including any applicable guidance provided by the System or its audit partners as of the date of this report.



The biennial actuarial valuation used as the basis for much of the information presented in this report was performed as of June 30, 2018 (Valuation Date). The census data for active and retired members as of the Valuation Date, changes in plan provisions since the prior Valuation Date, the net benefits and administrative expenses paid during the fiscal year beginning on July 1, 2017 and ending on June 30, 2018, and pertinent financial information was provided by the System for actuarial valuation and financial accounting purposes. We did not audit the supplied information, but it was reviewed for reasonableness and consistency. In certain situations, the supplied information was adjusted to account for normal differences in collection dates and/or methods. As a result, we have no reason to doubt the substantial accuracy or completeness of the information and believe that it is reliable for the purposes stated herein. The results and conclusions contained in this report depend on the integrity of this information, and if any of the supplied information or analyses change, our results and conclusions may be different and this report may need to be revised. Likewise, this information may need to be revised to reflect any significant event that affects the Plan subsequent to the Valuation Date.

All assumptions used for GASB 75 purposes—including, but not limited to, discount rates, expected rates of return on assets, expected annual per capita claims, long-term health care cost trend rates, and expected active employee and retired member health care coverage election assumptions—have been selected by the System and should reflect best estimates of anticipated Plan experience. The discount rate selected by the System was determined based on the methods prescribed by GASB accounting rules. Other than the discount rate required under GASB 75, we believe that those assumptions selected by the System for financial accounting and reporting purposes as of June 30, 2018 and June 30, 2019, respectively, are reasonable for their intended purposes.

The actuarial cost method, the asset valuation method, and the amortization methods are prescribed under GASB rules for financial accounting purposes as of the Measurement Date. Actuarial methods, such as the actuarial cost method, asset valuation method, and amortization methods, used in the cost allocation procedure (for financial accounting purposes) are designed to recognize changes in an orderly fashion over a period of years. In certain situations, the actuarial methods used in an allocation procedure may have the effect of deferring changes in amounts into later years. Likewise, the use of these methods could produce deferred gains or losses if any material underlying assumption is not met over an extended period of time.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: retiree group benefits program experience differing from that anticipated by the assumptions; changes in 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 retiree group benefits program provisions or applicable law. Retiree group benefits models necessarily rely on the use of approximations and estimates, and are sensitive to changes in these approximations and estimates. Small variations in these approximations and estimates may lead to significant changes in actuarial measurements. Since an assessment of the potential impact of variations in factors other than discount rates and health care cost trend rates is outside the scope of typical financial reporting requirements, we have not performed any analysis of the potential range of such future differences. **This report does not consider all possible scenarios.**

The funded status measurements included in this report are based on the assumptions and methods used to determine the Plan's obligations and asset values as of the Valuation and/or Measurement Date(s). Funded status measurements for financial accounting purposes may not be appropriate for assessing the sufficiency of Plan assets to cover the estimated cost of settling the Plan's benefit obligations. Likewise,



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funded status measurements for financial accounting purposes may not be appropriate for assessing the need for or the amount of future actuarially determined contributions.

CMC does not provide legal, investment, or accounting advice. Thus, the information in this report is not intended to supersede or supplant the advice and interpretations of the System or its affiliated legal, investing, or accounting partners.

The undersigned is familiar with the near-term and long-term aspects of other postemployment benefit plan valuations and meets the Qualification Standards of the American Academy of Actuaries necessary to render the actuarial opinions contained in this report. All sections of this report, including any appendices and attachments, are considered an integral part of the actuarial opinions.

To the best of our knowledge, no executive or employee of CMC providing services to the System has any direct financial interest or indirect material interest in the System. As a result, we believe that there is no relationship existing that might affect our capacity to prepare and certify these estimates for the System's Plan as of June 30, 2018.

Please call us at 678-388-1700 if you have any questions.

Respectfully submitted,

A handwritten signature in blue ink, appearing to read 'Jeffrey Gann', is positioned above the typed name.

Jeffrey Gann, FSA, MAAA, FCA, EA
Senior Actuary

JG:nh



Connecticut State Teachers' Retirement System

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Section I — Board Summary

GASB 75 FISCAL YEAR END DISCLOSURE INFORMATION FOR THE SYSTEM'S RETIREE HEALTH INSURANCE PLAN

(\$ in Thousands)		
Principal Results for Financial Reporting as of	June 30, 2019	June 30, 2018
Valuation Date (VD):	June 30, 2018	June 30, 2016
Measurement Date (MD):	June 30, 2018	June 30, 2017
Discount Rate:		
Long-Term Expected Rate of Return at MD	3.00%	2.75%
Municipal Bond Index Rate at MD	3.87%	3.56%
Year in which Plan Fiduciary Net Position is Projected to be Depleted	2019	2018
Single Equivalent Interest Rate at MD	3.87%	3.56%
Collective Net OPEB Liability (NOL) as of the MD:		
Collective Total OPEB Liability (TOL)	\$ 2,671,315	\$ 3,538,772
Plan Fiduciary Net Position (PFNP)	<u>39,736</u>	<u>63,428</u>
Collective Net OPEB Liability (NOL = TOL – PFNP)	\$ 2,631,579	\$ 3,475,344
PFNP as a percentage of TOL	1.49%	1.79%
NOL as a percentage of covered compensation	64.56%	81.20%
Collective OPEB Expense / (Income) for the Measurement Period:		
	\$ (874,209)	\$ 161,065
Collective Deferred Outflows / (Inflows) of Resources as of the MD:		
Total Collective Deferred Outflows of Resources	\$ 191,777	\$ 1,210
Total Collective Deferred (Inflows) of Resources	\$ (448,996)	\$ (324,172)



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Section II — Introduction

The Governmental Accounting Standards Board issued Statement No. 75 (GASB 75), “*Accounting and Financial Reporting for Postemployment Benefit Plans Other Than Pensions*” in June 2015. GASB 75 is effective for employer fiscal years beginning after June 15, 2017. For the purposes of reporting under GASB 75, the Plan is assumed to be a cost-sharing, other than insured, defined benefit OPEB plan with a special funding situation where assets are accumulated in a trust that meets the criteria in paragraph 4 of GASB 75. Additionally, we have assumed that the System will not restate results for any period prior to the adoption of GASB 75 based on the guidance in paragraph 244 of that Standard.

This report, prepared as of June 30, 2018 (Measurement Date or MD), presents information to assist the System in meeting the requirements of GASB 75. Much of the material provided in this report is based on the data, assumptions, plan provisions, and results of the actuarial valuation of the Plan as of June 30, 2018 (Valuation Date or VD).

GASB 75 establishes accounting and financial reporting requirements for governmental employers who sponsor or participate in other postemployment benefits (OPEB) plans. In general, the GASB 75 rules that apply to postretirement benefit plans are designed to help plan sponsors adequately and systematically account for plan costs, facilitate comparisons of plan sponsor financial information by standardizing certain aspects of postretirement benefit plan asset and liability measurement, and improve the utility of financial statement information by requiring that plan sponsors provide certain information about their postretirement benefit plans. GASB 75 replaces GASB 45, and also represents a significant departure from the requirements of the prior statement. GASB 45 required employers providing benefits through OPEB plans to report items consistent with the results of the plan’s actuarial valuations, as long as those valuations met certain parameters. GASB 75 creates disclosure and reporting requirements that may or may not be consistent with the basis used for funding the Plan. In fact, GASB 75 paragraph B10 states:

“The Board concluded that it is not within the scope of its activities to set standards that establish a specific method of financing OPEB (that being a policy decision for government officials or other responsible authorities to make) or to regulate a government’s compliance with the financing policy or method it adopts. Accordingly, the Board established standards in this Statement within the context of accounting and financial reporting, not within the context of the funding of OPEB.”

GASB 75 also requires the use of the Entry Age Normal (EAN) (Level Percentage of Pay) actuarial cost method in the determination of the Collective Total OPEB Liability (TOL) for the Plan. If the TOL was measured on a valuation date that does not exactly coincide with either the prior or current measurement date, the TOL can be projected—in other words, rolled backward or forward—to the relevant measurement date. The plan provisions recognized in the determination of the TOL are summarized in Schedule D.

If a financial accounting asset exists, a Collective Net OPEB Liability / (Asset) (NOL), which is equal to the difference between the actual/projected TOL and the Plan’s Fiduciary Net Position (PFNP)—the market value of the financial accounting asset—must be determined as of the Measurement Date.



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The discount rate is an important assumption used in the measurement of the TOL, and the guidance concerning discount rate selection provided in GASB 75 varies based on whether or not the plan has a financial accounting asset. The environment for yields on 20-year tax-exempt municipal bonds (rating AA/Aa or higher) on the measurement date (Municipal Bond Index Rate) could affect discount rates in either case, so the plan sponsor must choose an appropriate basis for these Municipal Bond Index Rates. The Municipal Bond Index Rate selected by the System for this purpose is the 20-Bond average General Obligation 20-year Municipal Bond Rate published at the end of the last week during the month of June by The Bond Buyer (www.bondbuyer.com).

If the plan does not have a financial accounting asset, the plan sponsor must select a discount rate based solely on the Municipal Bond Index Rate. However, if the plan has assets that are accumulated in a Trust that meets the criteria in paragraph 4 of GASB 75, the plan sponsor must select a discount rate based on the Single Equivalent Interest Rate (SEIR) for the plan.

To determine the SEIR, the PFNP must be projected into the future for as long as there are anticipated benefits payable to members and beneficiaries under the relevant plan provisions in effect on the measurement date. Future contributions must be projected in accordance with the plan's funding policy and/or the application of professional judgment in situations where the recent contribution history of the contributing entities warrants detailed consideration. If the PFNP is not projected to be depleted at any point in the future, the SEIR will be equal to the long term expected rate of return on plan investments selected by the plan sponsor on the measurement date (and the Municipal Bond Index Rate is not a factor).

Conversely, if the PFNP is projected to be depleted on any future measurement date, the SEIR will be equal to the single rate that generates a present value of benefit payments equal to the sum of the present value determined by discounting all projected benefit payments through the date of depletion based on the long-term expected rate of return on plan investments, and the present value determined by discounting those benefits after the date of depletion by the Municipal Bond Index Rate selected by the plan sponsor on the measurement date.

The changes reflected in the TOL and PFNP during the measurement period are shown in Section III. Differences between expected and actual experience and changes of assumptions or other inputs, if any, are recorded as Collective Deferred Outflows of Resources if the change increases the Plan's TOL, or Collective Deferred Inflows of Resources if the change reduces the Plan's TOL.

Schedule A shows the development of the Plan's projected earnings on plan investments, and the determination of the difference between actual and projected earnings on plan investments during the measurement period. Differences between actual and projected earnings on plan investments, if any, are recorded as Collective Deferred Outflows of Resources if the change lowers the PFNP, or Collective Deferred Inflows of Resources if the change increases the PFNP.

Collective Deferred Outflows of Resources and Collective Deferred Inflows of Resources are usually recognized on a level dollar basis without any adjustments for interest. The unrecognized portions of the Collective Deferred Outflows of Resources and Collective Deferred Inflows of Resources that must be included on the Statement of Net Position are provided in Section IV.



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GASB 75 requires the determination and disclosure of the Collective OPEB Expense / (Income) (OE) for the Plan in the notes to financial statements. Generally speaking, OE includes the following components:

COMPONENTS OF COLLECTIVE OPEB EXPENSE / (INCOME)	
+ Service Cost (SC)	This is equal to the Normal Cost determined using the Entry Age Normal (Level Percentage of Pay) actuarial cost method.
- Active Member Contributions	The total amount of active employee payroll deductions for OPEB benefits, if applicable.
+ Administrative Expenses	The amount, if any, paid during the measurement period for OPEB costs not directly related to the payment of benefits. This amount would include costs such as actuarial fees, audit fees, trust fees, salaries associated with staff time spent on OPEB related tasks, etc.
+ / - Changes of Benefit Terms	Benefit changes during the period are recognized immediately. Plan amendments increase OE if the change improves benefits for existing Plan members. Likewise, changes that reduce benefits for existing Plan members lower OE.
+ Interest on the Collective Total OPEB Liability (IOT)	IOT is determined based on the Discount Rate that was used to measure the Plan's TOL as of the Prior Measurement Date. Please note that the SC component may include interest to the end of the measurement period, or this interest adjustment may be included with IOT.
- Projected Earnings on Plan Investments (XR)	If the Plan has a financial accounting asset, XR is determined based on the long-term expected rate of return assumption at the end of the prior measurement period.
+ / - Other	Miscellaneous and non-standard expense items are included in this component.



COMPONENTS OF COLLECTIVE OPEB EXPENSE / (INCOME)

+ / – Recognition of Current Period

Collective Deferred Outflows / (Inflows) of Resources for:

- Differences Between Expected and Actual Experience
- Changes of Assumptions or Other Inputs
- Differences Between Actual and Projected Earnings on Plan Investments

Please note that the results provided in this report reflect the following conventions: Experience losses (“positive amounts”) increase the balances of Collective Deferred Outflows of Resources, and amounts recognized increase OPEB expense. Experience gains (“negative amounts”) decrease the balances of Collective Deferred Inflows of Resources, and amounts recognized decrease OPEB expense.

For differences between expected and actual experience and changes of assumptions or other inputs, the amounts that must be recognized during the current period are determined by spreading the total changes over the average expected remaining service lives (AERSL) of the entire Plan membership at the beginning of the measurement period. The active member AERSL is the average number of years that the active members are expected to remain in covered employment. AERSL is equal to zero for inactive members. The AERSL of the entire Plan membership is the weighted average of these two values, but cannot be less than one year¹. The development of the AERSL as of the Prior Measurement Date is shown in Schedule A.

For differences between actual and projected earnings on plan investments, if any, the amount that must be recognized during the current period is determined by amortizing the total change over five (5) years.

+ Recognition of Prior Period Collective Deferred Outflows of Resources

The amounts that must be recognized during the current year for those Collective Deferred Outflows of Resources established before the current measurement period.

– Recognition of Prior Period Collective Deferred (Inflows) of Resources

The amounts that must be recognized during the current year for those Collective Deferred (Inflows) of Resources established before the current measurement period.

The development of the OE is shown in Section V.

Generally speaking, each contributing entity must report an allocation (proportionate share) of the collective financial accounting amounts associated with a cost-sharing defined benefit OPEB plan. However, the State of Connecticut (State) makes all contributions to the Plan on behalf of the employees of the participating districts. Therefore, our understanding is that the participating districts (employers) are considered to be in a special funding situation as defined by GASB 75 and the State is treated as a

¹ Based on the guidance in GASB Implementation Guide 2017-3, paragraph 4.264.



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governmental non-employer contributing entity in the System. Since employers do not contribute directly to the Plan, we believe that the participating districts would not be required to report proportionate shares of the Plan's NOL or Collective Deferred Outflows or (Inflows) of Resources in their financial statements. However, each employer must disclose its share of the NOL (i.e. the non-employer contributing entities' total proportionate share of the NOL that is associated with the employer) in the notes to its financial statements, and would also be required to provide information about the Plan in its note disclosures and schedules of Required Supplementary Information (RSI). Additionally, each district must recognize expense and record revenue equal to the district's share of the OE for the Plan (i.e. the non-employer contributing entities' total proportionate share of the Collective OPEB Expense / (Income) associated with the district). The State—as the sole (non-employer) contributing entity—would report the entire NOL, Collective Deferred Outflows and Inflows of Resources, and OE for the Plan.

Section VI provides the actuarial information for the Plan that must be disclosed for financial reporting purposes. Section VII provides the RSI for the reporting entity's financial statements.

Section VIII 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, 2018. Section VIII 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 NOL associated with each participating employer and the employer OE and revenue for State support for each participating employer for the year ending June 30, 2018. These amounts are also provided in Section VIII.

The appendices (Schedules) contain additional details and in-depth information. As a final reminder, please keep in mind that any information that may be included in this report for periods prior to June 30, 2010 was produced by the prior actuarial consulting firm.



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Section III — Schedule of Changes in the Collective Net OPEB Liability / (Asset)

The tables below provide the changes in the Collective Total OPEB Liability (TOL), the Plan Fiduciary Net Position (PFNP), and the Collective Net OPEB Liability / (Asset) (NOL) during the current measurement period that must be disclosed under GASB accounting rules, as well as the most recent five years of the 10-year schedule of changes in the TOL, PFNP, NOL, and related ratios that must be included in Required Supplementary Information (RSI). We have assumed that the System will not restate results for any period prior to the adoption of GASB 74 or 75, so only results for the years since adoption are shown. Additional periods within the five year window will be added in the future.

Reconciliation of Changes in the Plan's Collective Total OPEB Liability (TOL)

(\$ in Thousands)					
Fiscal Years Ending on June 30	2018	2017	2016	2015	2014
Collective Total OPEB Liability (TOL)					
Service Cost	\$ 132,392	\$ 148,220			
Interest on the TOL	133,597	111,129			
Changes of benefit terms	(1,044,628)	0			
Difference between expected and actual experience	217,853	0			
Changes of assumptions or other inputs	(196,049)	(370,549)			
Net benefit payments	<u>(110,622)</u>	<u>(84,071)</u>			
Net change in TOL	\$ (867,457)	\$ (195,271)			
TOL—beginning of period	\$ 3,538,772	\$ 3,734,043			
TOL—end of period	\$ 2,671,315	\$ 3,538,772			



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Reconciliation of Changes in the Plan's Fiduciary Net Position (PFNP) and Collective Net OPEB Liability / (Asset) (NOL)

(\$ in Thousands)						
Fiscal Years Ending on June 30		2018	2017	2016	2015	2014
TOL—end of period	(a)	\$ 2,671,315	\$ 3,538,772			
Plan Fiduciary Net Position (PFNP)						
Contributions – State of Connecticut		\$ 35,299	\$ 19,922			
Contributions – active member		51,484	50,436			
Net investment income		411	369			
Net benefit payments		(110,622)	(84,071)			
Administrative expenses		(264)	(150)			
Other		<u>0</u>	<u>42</u>			
Net change in PFNP		\$ (23,692)	\$ (13,452)			
PFNP—beginning of period		\$ 63,428	\$ 76,880			
PFNP—end of period	(b)	\$ 39,736	\$ 63,428			
PFNP as a percentage of the TOL	[(b) / (a)]	1.49%	1.79%			
Collective Net OPEB Liability / (Asset) (NOL)						
NOL—end of period	[(a) – (b)]	\$ 2,631,579	\$ 3,475,344			
Covered Payroll¹		\$ 4,075,939	\$ 4,279,755			
NOL as a percentage of Covered Payroll		64.56%	81.20%			

¹ Covered Payroll provided by the System for active employees who would be eligible for benefits at retirement.



Section IV — Balances of Collective Deferred Outflows / (Inflows) of Resources

The following tables provide the balances of Collective Deferred Outflows and (Inflows) of Resources that are reported for current and prior period differences between expected and actual experience, changes of assumptions or other inputs, and differences between actual and projected earnings on plan investments. The information in the tables reflects the assumptions and other conventions listed below. This presentation is designed to facilitate the development of Collective OPEB Expense / (Income) (OE), and should not be used for financial reporting purposes without appropriate adjustments. Please note that the contributing entities may be required to report Collective Deferred Outflows / (Inflows) of Resources for contributions made subsequent to the measurement date and prior to the end of the reporting period; however, CMC will not provide or incorporate these amounts in the tables included in this section of the report.

- No differences between expected and actual experience, changes of assumptions or other inputs, or differences between actual and projected earnings on plan investments during measurement periods ending prior to June 30, 2017 are being recognized.
Experience losses are presented as positive amounts. Experience gains are presented as negative amounts.
Collective Deferred Outflows of Resources are presented as positive amounts. Collective Deferred (Inflows) of Resources are presented as negative amounts.
Experience losses ("positive amounts") increase the balances of Collective Deferred Outflows of Resources, and amounts recognized increase OE. Experience gains ("negative amounts") decrease the balances of Collective Deferred (Inflows) of Resources, and amounts recognized decrease OE.

The table below provides a summary of the unrecognized balances of Collective Deferred Outflows of Resources and (Inflows) of Resources by source as of June 30, 2018:

Table with 3 columns: (\$ in Thousands), Collective Deferred Outflows of Resources, and Collective Deferred (Inflows) of Resources. Rows include: Differences between expected and actual experience, Changes of assumptions or other inputs, Differences between projected and actual earnings on plan investments, and Total unrecognized balance as of June 30, 2018.



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Balances of Collective Deferred Outflows / (Inflows) of Resources by Source and Year

(\$ Thousands)	(a)	(b)	(c)	(d)	Balances as of June 30, 2018	
Measurement Period Ending	Initial Experience (Gain) / Loss Amount	Initial Recognition Period (Years)	Initial Recognition Amount [(a) ÷ (b)]	Amounts Recognized in Collective OPEB Expense through June 30, 2018	Collective Deferred Outflows of Resources [(a) – (d), > 0]	Collective Deferred (Inflows) of Resources [(a) – (d), < 0]
Collective Deferred Outflows / (Inflows) of Resources for Differences Between Expected and Actual Experience:						
2017	\$ 0	7.99	\$ 0	\$ 0	\$ 0	\$ 0
2018	\$ 217,853	7.89	<u>\$ 27,611</u>	\$ 27,611	<u>\$ 190,242</u>	<u>\$ 0</u>
			\$ 27,611		\$ 190,242	\$ 0
Collective Deferred Outflows / (Inflows) of Resources for Changes in Assumptions or Other Inputs:						
2017	\$ (370,549)	7.99	\$ (46,377)	\$ (92,754)	\$ 0	\$ (277,795)
2018	\$ (196,049)	7.89	<u>\$ (24,848)</u>	\$ (24,848)	<u>\$ 0</u>	<u>\$ (171,201)</u>
			\$ (71,225)		\$ 0	\$ (448,996)
Collective Deferred Outflows / (Inflows) of Resources for Differences Between Projected and Actual Earnings on Plan Investments:						
2017	\$ 1,512	5.00	\$ 302	\$ 604	\$ 908	\$ 0
2018	\$ 784	5.00	<u>\$ 157</u>	\$ 157	<u>\$ 627</u>	<u>\$ 0</u>
			\$ 459		\$ 1,535	\$ 0



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Section V — Collective OPEB Expense / (Income)

The development of the Collective OPEB Expense / (Income) for the financial reporting period ending on June 30, 2019 is shown in the following table:

Collective OPEB Expense / (Income) For the Fiscal Year Ending on June 30, 2019 (\$ in Thousands)	
Service cost	\$ 132,392
Active member contributions	(51,484)
Administrative costs*	264
Changes of benefit terms during the current period	(1,044,628)
Interest on the TOL	133,597
Projected earnings on plan investments	(1,195)
Other	0
Recognition of current period Collective Deferred Outflows / (Inflows) of Resources:	
Difference between expected and actual experience	27,611
Changes of assumptions or other inputs	(24,848)
Difference between actual and projected earnings on plan investments	157
Recognition of prior period Collective Deferred Outflows of Resources	302
Recognition of prior period Collective Deferred (Inflows) of Resources	<u>(46,377)</u>
Collective OPEB Expense / (Income)	\$ (874,209)

* Administrative costs are based on the administrative expenses paid from the Plan's trust during the fiscal year ending on June 30, 2018.



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Section VI — Financial Statement Note Disclosures

This section contains financial accounting information that may be used to satisfy the reporting requirements for employers and governmental nonemployer contributing entities (GNCEs) under Governmental Accounting Standards Board Statement No. 75 (GASB 75) for the year ending on June 30, 2019, based on a June 30, 2018 valuation date. The Plan is assumed to be cost-sharing, other than insured, defined benefit OPEB plan with a special funding situation where assets are accumulated in a trust that meets the criteria in paragraph 4 of GASB 75. Additionally, we have assumed that the System will not restate results for any period prior to the adoption of GASB 75 based on the guidance in paragraph 244 of that Standard. Amounts are shown in aggregate. This report does not include any non-actuarial items that may need to be reported or disclosed.

Summary of Key Actuarial Assumptions, Methods, and Other Inputs

The TOL was determined by an actuarial valuation as of June 30, 2018, using the key actuarial assumptions, methods, and other inputs listed below. Please note that the complete set of actuarial assumptions, methods, and other inputs that were used to develop the TOL are provided in Schedule B.

Inflation	2.75%
Real Wage Growth	0.50%
Wage Inflation	3.25%
Salary Increases, Including Wage Inflation	3.25% - 6.50%
Long-term Investment Rate of Return, Net of OPEB Plan Investment Expense, Including Inflation	3.00%
Municipal Bond Index Rate	3.87%
Year PFNP is Projected to be Depleted	2019
Single Equivalent Interest Rate, Net of OPEB Plan Investment Expense, Including Price Inflation	3.87%
Health Care Cost Trend Rates	
Medicare Supplement Plan Options	
Claims / Member Contributions	5.95% for 2018, decreasing to an ultimate rate of 4.75% by 2025
Medicare Advantage Plan Options	
Claims	5.00% for 2018, decreasing to an ultimate rate of 4.75% by 2028
Member Contributions	0.00% for 2018 and 2019, increasing to 5.00% for 2020, and decreasing to an ultimate rate of 4.75% by 2028
Local School District Subsidies	0.00% for members / dependents who are receiving the maximum subsidy; Otherwise, 5.95% for 2018, decreasing to an ultimate rate of 0.00% when the maximum subsidy is reached



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Health care cost trend rates are set on an annual basis based on published annual health care inflation surveys in conjunction with actual plan experience (if credible), building block models and heuristics developed by health plan actuaries and administrators, and the views of experts who are familiar with the System's Plan and/or similar plan offerings. Effective June 30, 2018, the health care cost trend rates for the Medicare Supplement and Medicare Advantage medical and prescription drug options were revised to reflect current expectations of future increases in health care claim costs for those options.

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 2020 with Scale BB is used for the period after disability retirement.

The demographic actuarial assumptions for retirement, disability incidence, and withdrawal used in the June 30, 2018 valuation were based on the results of an actuarial experience study for the period July 1, 2010 – June 30, 2015.

The remaining actuarial assumptions (e.g., initial per capita costs, rates of plan participation, rates of plan election, etc.) used in the June 30, 2018 valuation are based on a review of recent plan experience that was performed concurrently with the June 30, 2018 valuation and/or based on anticipated changes in participant behavior following the change of benefit terms, effective July 1, 2018, that was adopted by the System on January 11, 2018, and communicated to members prior to June 30, 2018.

The long-term expected return on plan assets is reviewed as part of the GASB 75 valuation process. Several factors are considered in evaluating the long-term rate of return assumption, including the Plan's current asset allocations and a log-normal distribution analysis using the best-estimate ranges of expected future real rates of return (expected return, net of investment expense and inflation) for each major asset class compiled by Horizon Actuarial Services, LLC in its "Survey of Capital Market Assumptions, 2018 Edition". The long-term expected rate of return was determined by weighting the expected future real rates of return by the target asset allocation percentage and then adding expected inflation. The assumption is not expected to change absent a significant change in the asset allocation, a change in the inflation assumption, or a fundamental change in the market that alters expected returns in future years.

The target asset allocation and best estimates of geometric real rates of return for each major asset class are summarized in the following table:

Asset Class	Target Allocation	Expected 10-Year Geometric Real Rate of Return	Standard Deviation
U.S. Treasuries (Cash Equivalents)	100.00%*	0.27%	2.74%
Price Inflation		2.75%	
Expected Rate of Return		$1.0027 \times 1.0275 - 1 = 3.03\%$	
Expected Rate of Return (Rounded Nearest 0.25%)		3.00%	

*All of the Plan's assets are assumed to be invested in cash equivalents given the need for liquidity.



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DEVELOPMENT OF THE DISCOUNT RATE (SEIR)

The projection of cash flows used to determine the discount rate was performed in accordance with GASB 75. The basis for this projection was the actuarial valuation performed as of June 30, 2018. In addition to the actuarial methods and assumptions of the June 30, 2018 actuarial valuation, the following actuarial methods and assumptions were used in the projection of cash flows:

- Total payroll for the initial projection year consists of the payroll of the active membership present on the Valuation Date. In subsequent projection years, total payroll was assumed to increase annually at a rate of 3.25%.
- Employee contributions were assumed to be made at the current member contribution rate, and were first applied to reduce applicable service costs for these members.
- No future State contributions were assumed to be made.

Based on these assumptions, the Plan's PFPN was projected to be depleted in 2019 and, as a result, the Municipal Bond Index Rate was used in the determination of the SEIR. In this analysis, the long-term expected rate of return on Plan investments equal to 3.00% was applied to periods through 2019 and the Municipal Bond Index Rate as of the Measurement Date (3.87%) was applied to periods on or after 2019, resulting in an SEIR equal to 3.87% as of the Measurement Date. The System selected the 3.87% discount rate used to measure the TOL as of the Measurement Date.

Please note that the PFPN projections are based upon the Plan's financial status on the Valuation Date, the indicated set of methods and assumptions, and the requirements of GASB 75. As such, the PFPN projections are not reflective of the cash flows and asset accumulations that would occur on an ongoing plan basis, reflecting the impact of future members. Therefore, the results of this test do not necessarily indicate whether or not the fund will actually run out of money, the financial condition of the Plan, or the Plan's ability to make benefit payments in future years.

Sensitivity of the Collective Net OPEB Liability / (Asset) to Health Care Cost Trend Rates

The sensitivity of the NOL to changes in health care cost trend rates must be disclosed under GASB accounting rules. The table below provides the NOL of the Plan determined using current health care cost trend rates, as well as what the Plan's NOL would be if health care cost trend rates were 1-percentage-point lower or 1-percentage-point higher than current health care cost trend rates.

Sensitivity of the Collective Net OPEB Liability / (Asset) to Health Care Cost Trend Rates (\$ in Thousands)			
	1% Lower Trend Rates	Current Trend Rates	1% Higher Trend Rates
Initial Health Care Trend Rates	4.95% / 4.00%	5.95% / 5.00%	6.95% / 6.00%
Ultimate Health Care Trend Rate	3.75%	4.75%	5.75%
Collective Net OPEB Liability / (Asset)	\$ 2,205,344	\$ 2,631,579	\$ 3,197,374



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Please keep in mind that the estimates provided in the table above were prepared using streamlined calculation techniques, and they are intended to provide an “order of magnitude” indication of the NOL's sensitivity to changes in these assumptions. Results based on more refined calculations may yield findings and conclusions different than those suggested by the methodology required under GASB accounting rules, as shown above.

Sensitivity of the Collective Net OPEB Liability / (Asset) to Discount Rates

The sensitivity of the NOL to changes in the discount rate must also be disclosed under GASB accounting rules. The table below provides the NOL of the Plan determined using the current discount rate of 3.87%, as well as what the Plan's NOL would be if the discount rate was 1-percentage-point lower or 1-percentage-point higher than the current rate:

Sensitivity of the Collective Net OPEB Liability / (Asset) to Discount Rates			
(\$ in Thousands)			
	1% Decrease (2.87%)	Current Discount Rate (3.87%)	1% Increase (4.87%)
Collective Net OPEB Liability / (Asset)	\$ 3,124,805	\$ 2,631,579	\$ 2,237,942

Please keep in mind that the estimates provided in the table above were prepared using streamlined calculation techniques, and they are intended to provide an “order of magnitude” indication of the NOL's sensitivity to changes in these assumptions. Results based on more refined calculations may yield findings and conclusions different than those suggested by the methodology required under GASB accounting rules, as shown above. For example, one possible refinement would consider the impact of similar changes in bond yields on Plan assets, including (but not limited to) the valuations of certain fixed income investments held by the Plan. However, as required by GASB accounting rules, we have not made any attempt to adjust the Plan's PFPN to reflect a potentially related change in fixed income asset pricing.

Schedule of the Recognition of Collective Deferred Outflows / (Inflows) of Resources in Collective OPEB Expense / (Income)

Amounts reported as Collective Deferred Outflows of Resources and Collective Deferred (Inflows) of Resources related to OPEB benefits will be recognized in Collective OPEB Expense / (Income) as follows:

Reporting Period Ending:	Net Amount Recognized
	(\$ in Thousands)
June 30, 2020	\$ (43,155)
June 30, 2021	\$ (43,154)
June 30, 2022	\$ (43,154)
June 30, 2023	\$ (43,458)
June 30, 2024	\$ (43,614)
Thereafter	\$ (40,684)



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Section VII — Required Supplementary Information

Under GASB 75, the reporting entity may need to incorporate one or more of the following items in the Required Supplementary Information (RSI) that must be included in its financial statements.

Details Concerning Plan Amendments and Assumption Changes

Information about changes to benefit terms and changes to assumptions or other inputs should be provided in RSI. The information should be listed by the date for which the indicated change was first reflected in reported amounts. We have only provided relevant details for the measurement period ending on June 30, 2018.

CHANGES TO BENEFIT TERMS

June 30, 2018 (Valuation Date: June 30, 2018)

- The Plan was amended by the Board, effective July 1, 2018, during the January 11, 2018 meeting. The Board action added the Anthem Medicare Advantage Plan to the available options under the Plan, changed the “base plan” to the Medicare Advantage Plan for the purposes of determining retiree subsidies and/or cost sharing amount(s), and introduced a two year waiting period for re-enrollment in a System-sponsored health care plan for those who cancel their coverage or choose not to enroll in a health care coverage option on or after the effective date. These changes were communicated to retired members during the months leading up to a special open enrollment period that preceded the July 1, 2018 implementation date.

CHANGES TO ASSUMPTIONS OR OTHER INPUTS

June 30, 2018 (Valuation Date: June 30, 2018)

- The expected rate of return on assets was changed from 2.75% to 3.00% to better reflect the anticipated returns on cash and other high quality short-term fixed income investments;
- Based on the procedure described in GASB 75, the discount rate used to measure Plan obligations for financial accounting purposes as of June 30, 2018 was updated to equal the Municipal Bond Index Rate as of June 30, 2018. The System selected the 3.87% discount rate used to measure the TOL as of the June 30, 2018 measurement date;
- Expected annual per capita claims costs were updated to better reflect anticipated medical and prescription drug claim experience both before and after the plan change that became effective on July 1, 2018;
- The assumed age related annual percentage increases in expected annual per capita health care claim costs were updated to better reflect the expected differences between the Medicare Supplement and Medicare Advantage Plan amounts as part of the plan change that became effective on July 1, 2018;
- Long-term health care cost trend rates were updated to better reflect the anticipated impact of changes in medical inflation, utilization, leverage in the plan design, improvements in technology, and fees and charges on expected claims and retiree contributions in future periods;
- The percentage of retired members who are not currently participating in the Plan, but are expected to elect coverage for themselves and their spouses under a System-sponsored health care plan option in the future, was updated to better reflect anticipated plan experience;



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- The percentages of participating retirees who are expected to enroll in the Medicare Supplement Plan and the Medicare Advantage Plan options, as well as the portion who are expected to migrate to the Medicare Advantage Plan over the next several years, were updated to better reflect anticipated plan experience after the plan change that became effective on July 1, 2018;
- The post-disablement mortality table was updated to extend the period of projected mortality improvements from 2017 to 2020. This change was made to better reflect anticipated post-disablement plan experience; and,
- The percentages of deferred vested members who will become ineligible for future health care benefits because they are expected to withdraw their contributions from the System was updated to better reflect anticipated plan experience.



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Methods and Assumptions Used in the Determination of Actuarially Determined Contributions

The actuarially determined contribution (ADC) rates, as a percentage of payroll, used to determine the actuarially determined State contribution amounts for the measurement period ending on June 30, 2018 that are shown in the following "Schedule of Governmental Nonemployer Contributing Entity Contributions" are calculated as of June 30, 2016. The following actuarial methods and assumptions as of June 30, 2016 were used to determine the actuarially determined State contribution amounts reported in that schedule for the fiscal year ending on June 30, 2018:

Actuarial Cost Method	Entry Age Normal (Level Percent of Pay)
Amortization Method	Level Percent of Pay Over an Open Period
Amortization Period	30 Years
Asset Valuation Method	Market Value of Assets
Long-term Investment Rate of Return, Net of OPEB Plan Investment Expense, Including Price Inflation	4.25%
Price Inflation	2.75%
Real Wage Growth	0.50%
Wage Inflation	3.25%
Salary Increases, Including Wage Inflation	3.25% to 6.50%
Initial Health Care Cost Trend Rates	
Medicare Supplement Plan	7.25%
Local School District Subsidies	0.00% or 7.25%
Ultimate Health Care Cost Trend Rates	
Medicare Supplement Plan	5.00%
Local School District Subsidies	0.00% When Maximum is Reached
Year Ultimate Trend Rates Reached	
Medicare Supplement Plan	2022
Local School District Subsidies	Varies
Basis for Postretirement Mortality Rates	RP-2014 Headcount-Weighted
Basis for Postretirement Mortality Improvement Rates	Scale BB
Projection of Mortality Improvements for Healthy / Disabled Lives	Static Projection to 2020 / 2017



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REQUIRED SUPPLEMENTARY INFORMATION— SCHEDULE OF GOVERNMENTAL NONEMPLOYER CONTRIBUTING ENTITY CONTRIBUTIONS

(\$ in Thousands)										
Fiscal Year Ending on June 30	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009
Actuarially Determined State Contribution	\$ 172,223	\$ 166,802	\$ 130,331	\$ 125,620	\$ 187,227	\$ 180,460	\$ 184,145	\$ 177,063	\$ 121,334	\$ 116,667
Contributions in relation to the Actuarially Determined Contribution	<u>35,299</u>	<u>19,922</u>	<u>19,960</u>	<u>25,145</u>	<u>25,955</u>	<u>27,040</u>	<u>49,486</u>	<u>5,312</u>	<u>12,108</u>	<u>22,433</u>
Annual Contribution Deficiency (Excess)	\$ 136,924	\$ 146,880	\$ 110,371	\$ 100,475	\$ 161,272	\$ 153,420	\$ 134,659	\$ 171,751	\$ 109,226	\$ 94,234
Covered Payroll	\$4,075,939	\$4,279,755	\$4,125,066	\$4,078,367	\$3,930,957	\$4,101,750	\$3,943,990	\$3,823,754	\$3,676,686	\$3,529,470
Actual Contributions as a Percentage of Covered Payroll	0.87%	0.47%	0.48%	0.62%	0.66%	0.66%	1.25%	0.14%	0.33%	0.64%



Connecticut State Teachers' Retirement System

Section VIII — Schedule of Employer Allocations as of June 30, 2018

Employer	Expected Employer Contribution Effort at FYE 2018	Employer Allocation Percentage at FYE 2018	State's Proportionate Share of the NOL Associated With the Employer at FYE 2018	Employer OPEB Expense and Revenue
Andover	\$ 16,019	0.0453809%	\$ 1,194,234	\$ (396,724)
Ansonia	116,332	0.3295617%	8,672,677	(2,881,057)
Ashford	27,007	0.0765092%	2,013,400	(668,850)
Avon	240,676	0.6818210%	17,942,658	(5,960,541)
Barkhamsted	14,208	0.0402504%	1,059,221	(351,873)
Berlin	188,286	0.5334032%	14,036,927	(4,663,059)
Bethany	27,091	0.0767472%	2,019,663	(670,931)
Bethel	176,712	0.5006147%	13,174,071	(4,376,419)
Highville Chtr	16,140	0.0457237%	1,203,255	(399,721)
Bloomfield	126,995	0.3597694%	9,467,616	(3,145,136)
Bolton	58,022	0.1643729%	4,325,603	(1,436,963)
Bozrah	16,178	0.0458313%	1,206,087	(400,661)
Branford	226,235	0.6409105%	16,866,066	(5,602,897)
Bridgeport	1,039,011	2.9434573%	77,459,404	(25,731,969)
Bristol	485,613	1.3757132%	36,202,980	(12,026,609)
Brookfield	172,161	0.4877220%	12,834,790	(4,263,710)
Brooklyn	49,117	0.1391456%	3,661,726	(1,216,423)
Cldrn Ctr Com Prog	2,570	0.0072807%	191,597	(63,649)
Canaan	7,573	0.0214539%	564,576	(187,552)
Canterbury	30,371	0.0860393%	2,264,192	(752,163)
Canton	102,436	0.2901952%	7,636,716	(2,536,913)
Chaplin	12,808	0.0362843%	954,850	(317,201)
Cheshire	290,142	0.8219553%	21,630,403	(7,185,607)
Chester	13,013	0.0368651%	970,134	(322,278)
Clinton	137,708	0.3901187%	10,266,282	(3,410,453)
Colchester	159,496	0.4518428%	11,890,600	(3,950,050)
Amistad Acd	22,129	0.0626902%	1,649,742	(548,043)
Colebrook	8,065	0.0228477%	601,255	(199,737)
Columbia	36,323	0.1029009%	2,707,919	(899,568)
Cornwall	8,764	0.0248279%	653,366	(217,048)
Coventry	112,195	0.3178419%	8,364,261	(2,778,602)
Cromwell	121,614	0.3445253%	9,066,455	(3,011,871)
Danbury	654,820	1.8550667%	48,817,546	(16,217,160)
Darien	393,583	1.1149976%	29,342,043	(9,747,409)
Deep River	14,266	0.0404147%	1,063,545	(353,309)



Connecticut State Teachers' Retirement System

Employer	Expected Employer Contribution Effort at FYE 2018	Employer Allocation Percentage at FYE 2018	State's Proportionate Share of the NOL Associated With the Employer at FYE 2018	Employer OPEB Expense and Revenue
Derby	80,867	0.2290915%	6,028,724	(2,002,739)
Eastford	11,216	0.0317743%	836,166	(277,774)
East Granby	70,554	0.1998754%	5,259,879	(1,747,329)
East Haddam	81,747	0.2315845%	6,094,329	(2,024,533)
East Hampton	135,999	0.3852772%	10,138,874	(3,368,128)
East Hartford	465,215	1.3179269%	34,682,288	(11,521,436)
East Haven	173,139	0.4904926%	12,907,700	(4,287,930)
East Lyme	183,733	0.5205048%	13,697,495	(4,550,300)
Easton	63,861	0.1809145%	4,760,908	(1,581,571)
East Windsor	92,855	0.2630528%	6,922,442	(2,299,631)
Ellington	163,234	0.4624324%	12,169,274	(4,042,626)
Enfield	323,982	0.9178220%	24,153,211	(8,023,683)
Essex	18,684	0.0529307%	1,392,913	(462,725)
Fairfield	744,370	2.1087566%	55,493,596	(18,434,940)
Farmington	284,796	0.8068104%	21,231,853	(7,053,209)
Franklin	11,167	0.0316355%	832,513	(276,560)
Glastonbury	408,263	1.1565852%	30,436,453	(10,110,972)
Granby	120,798	0.3422137%	9,005,624	(2,991,663)
Greenwich	840,717	2.3817020%	62,676,370	(20,821,053)
Griswold	108,747	0.3080739%	8,107,208	(2,693,210)
Groton	316,989	0.8980113%	23,631,877	(7,850,496)
Guilford	228,296	0.6467492%	17,019,716	(5,653,940)
Hamden	403,920	1.1442817%	30,112,677	(10,003,414)
Hampton	9,310	0.0263747%	694,071	(230,570)
Hartford	1,194,975	3.3852942%	89,086,691	(29,594,547)
Hartland	13,746	0.0389416%	1,024,779	(340,431)
Hebron	47,674	0.1350577%	3,554,150	(1,180,687)
Kent	16,958	0.0480410%	1,264,237	(419,979)
Killingly	138,335	0.3918950%	10,313,027	(3,425,981)
Lebanon	70,460	0.1996091%	5,252,871	(1,745,001)
Ledyard	154,051	0.4364175%	11,484,671	(3,815,201)
Lisbon	26,940	0.0763194%	2,008,405	(667,191)
Litchfield	74,326	0.2105612%	5,541,084	(1,840,745)
Madison	212,121	0.6009264%	15,813,853	(5,253,353)
Manchester	443,996	1.2578147%	33,100,388	(10,995,929)
Mansfield	98,133	0.2780050%	7,315,921	(2,430,345)
Marlborough	34,637	0.0981246%	2,582,226	(857,814)



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Employer	Expected Employer Contribution Effort at FYE 2018	Employer Allocation Percentage at FYE 2018	State's Proportionate Share of the NOL Associated With the Employer at FYE 2018	Employer OPEB Expense and Revenue
Meriden	482,285	1.3662852%	35,954,874	(11,944,188)
Middletown	313,647	0.8885436%	23,382,727	(7,767,728)
Milford	442,403	1.2533018%	32,981,627	(10,956,477)
Monroe	237,367	0.6724468%	17,695,969	(5,878,590)
Montville	160,483	0.4546389%	11,964,182	(3,974,494)
Naugatuck	254,196	0.7201224%	18,950,590	(6,295,375)
New Britain	629,773	1.7841100%	46,950,264	(15,596,850)
New Canaan	359,141	1.0174254%	26,774,353	(8,894,424)
New Fairfield	170,116	0.4819287%	12,682,334	(4,213,064)
New Hartford	27,776	0.0786878%	2,070,732	(687,896)
New Haven	1,291,179	3.6578343%	96,258,800	(31,977,116)
Newington	279,193	0.7909374%	20,814,143	(6,914,446)
New London	195,208	0.5530128%	14,552,969	(4,834,488)
New Milford	239,650	0.6789144%	17,866,169	(5,935,131)
Newtown	298,347	0.8451996%	22,242,095	(7,388,811)
Norfolk	7,248	0.0205332%	540,347	(179,503)
North Branford	117,483	0.3328225%	8,758,487	(2,909,564)
North Canaan	17,182	0.0486756%	1,280,937	(425,526)
North Haven	220,010	0.6232754%	16,401,985	(5,448,730)
No. Stonington	54,336	0.1539307%	4,050,808	(1,345,676)
Norwalk	796,754	2.2571574%	59,398,880	(19,732,273)
Norwich	169,597	0.4804584%	12,643,642	(4,200,211)
NFA	139,841	0.3961614%	10,425,300	(3,463,279)
Old Saybrook	104,745	0.2967365%	7,808,855	(2,594,097)
Orange	84,146	0.2383807%	6,273,176	(2,083,946)
Oxford	111,540	0.3159863%	8,315,429	(2,762,381)
Plainfield	124,887	0.3537976%	9,310,463	(3,092,930)
Plainville	151,428	0.4289867%	11,289,124	(3,750,240)
Plymouth	86,704	0.2456274%	6,463,879	(2,147,297)
Pomfret	24,287	0.0688036%	1,810,621	(601,487)
Portland	83,461	0.2364401%	6,222,108	(2,066,981)
Preston	30,423	0.0861866%	2,268,068	(753,451)
Putnam	75,238	0.2131448%	5,609,074	(1,863,331)
Redding	86,661	0.2455055%	6,460,671	(2,146,231)
RSD 1	56,738	0.1607354%	4,229,879	(1,405,163)
RSD 4	61,575	0.1744384%	4,590,484	(1,524,956)
RSD 5	168,707	0.4779371%	12,577,292	(4,178,169)



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Employer	Expected Employer Contribution Effort at FYE 2018	Employer Allocation Percentage at FYE 2018	State's Proportionate Share of the NOL Associated With the Employer at FYE 2018	Employer OPEB Expense and Revenue
RSD 6	68,355	0.1936457%	5,095,940	(1,692,868)
RSD 7	68,438	0.1938808%	5,102,126	(1,694,923)
RSD 8	99,891	0.2829854%	7,446,984	(2,473,884)
Ridgefield	373,309	1.0575625%	27,830,593	(9,245,307)
Rocky Hill	179,929	0.5097283%	13,413,903	(4,456,091)
Salem	26,931	0.0762939%	2,007,734	(666,968)
Salisbury	21,462	0.0608006%	1,600,016	(531,524)
Scotland	9,312	0.0263804%	694,221	(230,620)
Seymour	138,770	0.3931273%	10,345,455	(3,436,754)
Sharon	14,585	0.0413185%	1,087,329	(361,210)
Shelton	320,173	0.9070314%	23,869,248	(7,929,350)
Sherman	28,971	0.0820731%	2,159,818	(717,490)
Simsbury	297,649	0.8432222%	22,190,058	(7,371,524)
Somers	97,514	0.2762515%	7,269,776	(2,415,015)
Southington	380,176	1.0770163%	28,342,535	(9,415,373)
S. Windsor	293,724	0.8321029%	21,897,445	(7,274,318)
Sprague	16,745	0.0474376%	1,248,358	(414,704)
Stafford	98,262	0.2783705%	7,325,540	(2,433,540)
Stamford	1,198,250	3.3945721%	89,330,847	(29,675,655)
SDE	301,474	0.8540582%	22,475,216	(7,466,254)
DCF Recq Home	13,310	0.0377065%	992,276	(329,634)
Sterling	19,562	0.0554180%	1,458,368	(484,469)
Stonington	140,617	0.3983597%	10,483,150	(3,482,496)
Stratford	457,550	1.2962124%	34,110,853	(11,331,605)
Suffield	155,575	0.4407349%	11,598,287	(3,852,944)
Thomaston	56,957	0.1613558%	4,246,205	(1,410,587)
Thompson	63,970	0.1812233%	4,769,034	(1,584,270)
Tolland	140,788	0.3988442%	10,495,900	(3,486,732)
Torrington	249,480	0.7067622%	18,599,006	(6,178,579)
Trumbull	468,951	1.3285107%	34,960,809	(11,613,960)
Union	5,216	0.0147766%	388,858	(129,178)
Vernon	215,456	0.6103742%	16,062,479	(5,335,946)
Voluntown	19,838	0.0561999%	1,478,945	(491,305)
Wallingford	443,875	1.2574719%	33,091,366	(10,992,933)
Waterbury	1,000,222	2.8335704%	74,567,644	(24,771,327)
Waterford	200,571	0.5682059%	14,952,787	(4,967,307)
Watertown	152,883	0.4331086%	11,397,595	(3,786,274)



Connecticut State Teachers' Retirement System

Employer	Expected Employer Contribution Effort at FYE 2018	Employer Allocation Percentage at FYE 2018	State's Proportionate Share of the NOL Associated With the Employer at FYE 2018	Employer OPEB Expense and Revenue
Westbrook	68,794	0.1948894%	5,128,669	(1,703,741)
W.Hartford	653,566	1.8515142%	48,724,059	(16,186,104)
West Haven	369,153	1.0457888%	27,520,758	(9,142,380)
Weston	196,475	0.5566022%	14,647,427	(4,865,867)
Westport	483,379	1.3693844%	36,036,432	(11,971,282)
Wethersfield	231,965	0.6571433%	17,293,245	(5,744,806)
Willington	32,170	0.0911357%	2,398,308	(796,716)
Wilton	323,589	0.9167087%	24,123,914	(8,013,950)
Winchester	43,302	0.1226720%	3,228,211	(1,072,410)
Windham	213,565	0.6050171%	15,921,503	(5,289,114)
Windsor	268,408	0.7603841%	20,010,108	(6,647,346)
Windsor Locks	136,862	0.3877220%	10,203,211	(3,389,501)
Winsted/Gilbert	34,569	0.0979320%	2,577,158	(856,130)
Wolcott	140,190	0.3971501%	10,451,319	(3,471,922)
Woodbridge	56,547	0.1601943%	4,215,640	(1,400,433)
Woodstock	42,019	0.1190374%	3,132,563	(1,040,636)
Woodstock Ad	66,919	0.1895776%	4,988,884	(1,657,304)
UCONN	12,733	0.0360718%	949,258	(315,343)
RSD 9	79,781	0.2260149%	5,947,761	(1,975,843)
CCI Somers		0.0000000%		
RSD 10	152,817	0.4329216%	11,392,674	(3,784,640)
Supervision District	29,319	0.0830590%	2,185,763	(726,109)
NWCTC	3,410	0.0096603%	254,218	(84,451)
MCTC	9,148	0.0259157%	681,992	(226,557)
Norwalk CTC	5,294	0.0149976%	394,674	(131,110)
WCSU	10,470	0.0296609%	780,550	(259,298)
CCSU	25,768	0.0729992%	1,921,032	(638,166)
ESCU	7,464	0.0211451%	556,450	(184,852)
SCSU	22,716	0.0643531%	1,693,503	(562,581)
RSD 11	19,495	0.0552282%	1,453,374	(482,810)
CCTC	1,021	0.0028924%	76,116	(25,286)
Hou CTC	9,384	0.0265843%	699,587	(232,402)
Naug CTC	10,843	0.0307176%	808,358	(268,536)
MCTC	3,003	0.0085073%	223,876	(74,372)
Ed Connection	21,779	0.0616986%	1,623,647	(539,375)
RSD 12	71,448	0.2024080%	5,326,526	(1,769,469)
Gateway CTC	14,665	0.0415451%	1,093,292	(363,191)



Connecticut State Teachers' Retirement System

Employer	Expected Employer Contribution Effort at FYE 2018	Employer Allocation Percentage at FYE 2018	State's Proportionate Share of the NOL Associated With the Employer at FYE 2018	Employer OPEB Expense and Revenue
RSD 13	132,490	0.3753364%	9,877,274	(3,281,225)
RSD 14	126,281	0.3577467%	9,414,387	(3,127,454)
CCI Cheshire	474	0.0013428%	35,337	(11,739)
Shared Svcs	13,575	0.0384572%	1,012,032	(336,196)
CREC	680,681	1.9283294%	50,745,512	(16,857,629)
RSD 15	246,912	0.6994872%	18,407,558	(6,114,980)
RSD 16	135,526	0.3839372%	10,103,611	(3,356,414)
TRCC (Mohegan)	3,904	0.0110598%	291,047	(96,686)
Tunxis CTC	4,399	0.0124621%	327,950	(108,945)
QVCC	1,274	0.0036092%	94,979	(31,552)
Odyssey	15,876	0.0449758%	1,183,574	(393,182)
CES	100,543	0.2848324%	7,495,590	(2,490,030)
ACES	187,862	0.5322020%	14,005,316	(4,652,558)
Project Learn	134,354	0.3806170%	10,016,237	(3,327,388)
RSD 17	137,496	0.3895181%	10,250,477	(3,405,202)
Asnun CTC	1,384	0.0039208%	103,179	(34,276)
Project O		0.0000000%		
RSD 18	106,747	0.3024080%	7,958,105	(2,643,678)
DCF Mental Health		0.0000000%		
EASTCONN	60,765	0.1721437%	4,530,097	(1,504,896)
BSBE	9,271	0.0262642%	691,163	(229,604)
RSD 19	83,512	0.2365846%	6,225,911	(2,068,244)
UConn Health	9,241	0.0261792%	688,926	(228,861)
CCI Suffield		0.0000000%		
CCI Niantic	591	0.0016743%	44,061	(14,637)
Children's CTR	9,315	0.0263888%	694,442	(230,693)
Bridges Academy	12,625	0.0357659%	941,208	(312,669)
Common Ground	11,287	0.0319754%	841,458	(279,532)
Explorations	8,236	0.0233321%	614,003	(203,971)
Intergrated Day	15,066	0.0426811%	1,123,187	(373,122)
Isaac	13,721	0.0388708%	1,022,916	(339,812)
Jumoke Academy	26,415	0.0748321%	1,969,266	(654,189)
Side by Side	9,741	0.0275957%	726,203	(241,244)
Trailblazers Academy	8,217	0.0232783%	612,587	(203,501)
New Beginnings	19,140	0.0542225%	1,426,908	(474,018)
Elm City CP	13,616	0.0385733%	1,015,087	(337,211)
Stamford Academy	5,248	0.0148673%	391,245	(129,971)



Connecticut State Teachers' Retirement System

Employer	Expected Employer Contribution Effort at FYE 2018	Employer Allocation Percentage at FYE 2018	State's Proportionate Share of the NOL Associated With the Employer at FYE 2018	Employer OPEB Expense and Revenue
Park City	13,919	0.0394317%	1,037,676	(344,715)
AF Bridgeport Academy	12,940	0.0366583%	964,692	(320,470)
SERC	887	0.0025128%	66,126	(21,967)
AF Hartford Acad	29,255	0.0828777%	2,180,992	(724,524)
Brass City	5,458	0.0154622%	406,900	(135,172)
Path Academy	5,011	0.0141959%	373,576	(124,102)
Great Oaks Charter	5,555	0.0157370%	414,132	(137,574)
Booker T. Washington (BTW)	8,650	0.0245049%	644,866	(214,224)
Capitol Prep Harbor	9,057	0.0256580%	675,211	(224,305)
Stamford Charter Excellence	5,467	0.0154877%	407,571	(135,395)
Totals	\$ 35,299,000	100.0000000%	\$ 2,631,579,000	\$ (874,209,000)



Connecticut State Teachers' Retirement System

Schedule A — Additional Supporting Information

Development of the Projected Earnings on Plan Investments as of June 30, 2018

The development of the projected earnings on plan investments component of Collective OPEB Expense / (Income) as of the June 30, 2018 measurement date is shown in the following table:

Projected Earnings on Plan Investments For the Measurement Period Ending on June 30, 2018 (\$ in Thousands)	
(a) Expected rate of return on assets at June 30, 2017	2.75%
(b) Beginning of year market value of assets	\$ 63,428
(c) Expected return on assets at the beginning of the year [(b) x (a)]	\$ 1,744
(d) External cash flow (mid-year payments assumed):	
Contributions—State of Connecticut ¹	\$ 19,199
Contributions—active members	51,484
Refunds of contributions	0
Net benefit payments	(110,622)
Administrative expenses	(264)
Other	<u>0</u>
Total external cash flow	\$ (40,203)
(e) Expected return on external cash flow [(d) x ((1 + (a)) ^{1/2} - 1)]	\$ (549)
(f) Projected earnings on plan investments [(c) + (e)]	\$ 1,195

Development of the Collective Deferred Outflow / (Inflow) of Resources for the Difference Between Projected and Actual Earnings on Plan Investments at June 30, 2018

The determination of the Collective Deferred Outflow / (Inflow) of Resources for the difference between projected and actual earnings on plan investments at June 30, 2018 is shown in the following table:

Difference Between Projected and Actual Earnings on Plan Investments at June 30, 2018 (\$ in Thousands)	
(a) Projected earnings on plan investments at June 30, 2018	\$ 1,195
(b) Net investment income ²	\$ 411
(c) Difference between projected and actual earnings on plan investments [(a) - (b)]	\$ 784

¹ Excludes the \$16,100,000 contribution for the fiscal year ending on June 30, 2018 made by the State in accordance with Section 22 of Public Act No. 18-81 (Senate Bill 543) on September 1, 2018.

² See "Reconciliation of Changes in the Plan's Fiduciary Net Position (PFNP) and Collective Net OPEB Liability / (Asset) (NOL)" on page 8.



Connecticut State Teachers' Retirement System

Development of the Average Expected Remaining Service Lives at July 1, 2017

The determination of the average expected remaining service lives for the entire Plan membership at the beginning of the measurement period is provided in the following table:

Membership Category	(1) Number	(2) Average Remaining Service Lives (in Years)
(a) Active Members	50,877	12.49
(b) Inactive Members	<u>29,642</u>	<u>0.00</u>
(c) Total Membership [((1a) × (2a)) + ((1b) × (2b))] / (1c)	80,519	7.89



**Schedule B —
Summary of Actuarial Assumptions and Methods for GASB Accounting Purposes**

ECONOMIC ASSUMPTIONS

Discount Rate

3.87% per year for all periods after June 30, 2018 (adopted June 30, 2018).

Municipal Bond Index Rate Basis

The System selected the 20-Bond average General Obligation 20-year Municipal Bond Rate published at the end of the last week during the month of June by The Bond Buyer (www.bondbuyer.com) and prescribed it for use as the 20-year tax-exempt municipal bond (rating AA/Aa or higher) rate required under GASB rules.

Expected Long-term Rate of Return on Assets

3.00% per year, net of investment expenses, for all periods after June 30, 2018 (adopted June 30, 2018).

Expected Long-term Rates of Inflation

CPI: 2.75% per year for all periods after June 30, 2018.

MEDICAL CPI: 3.25% per year for all periods after June 30, 2018.

Expected Long-term Real Wage Growth

0.50% per year for all periods after June 30, 2018.

Expected Long-term Wage Inflation

3.25% per year for all periods after June 30, 2018. This rate does not reflect any expected future increase in the number of active members.

Expected Administrative Expenses Included in Service Cost

None.



Connecticut State Teachers' Retirement System

Long-term Health Care Cost Trend Rates

Annual per capita health care claims costs are expected to increase in future years as a result of medical inflation, utilization, leverage in the plan design, and improvements in technology adjusted for any implicit and/or explicit cost containment features. Initial health care cost trend rates were selected based on an analysis of national average health trend surveys specific to similarly structured plans for Medicare-eligible participants.

The assumed annual assumed rates of increases in retiree expected health care claims costs and contributions¹ during each period subsequent to the measurement date are shown in the table below (adopted June 30, 2018).

Fiscal Year Beginning July 1,	Medicare Supplement Plan Claims / Contributions	Medicare Advantage Plan Claims	Medicare Advantage Plan Contributions
2018	5.95%	5.00%	0.00%
2019	5.90%	5.00%	0.00%
2020	5.80%	5.00%	5.00%
2021	5.70%	5.00%	5.00%
2022	5.60%	5.00%	5.00%
2023	5.35%	5.00%	5.00%
2024	5.10%	5.00%	5.00%
2025	4.75%	5.00%	5.00%
2026	4.75%	4.95%	4.95%
2027	4.75%	4.85%	4.85%
2028+	4.75%	4.75%	4.75%

¹ A 7.00% trend rate for the fiscal year ending on the valuation date, and a 7.25% trend rate for all periods prior to July 1, 2017, were used to project health care claim costs and contributions backward from the valuation year to entry year in measurements of benefit obligations based on the Entry Age Normal (Level Percentage of Pay) actuarial cost method.



Connecticut State Teachers' Retirement System

DEMOGRAPHIC ASSUMPTIONS

The demographic actuarial assumptions for retirement, disability incidence, and withdrawal were developed based on the results of an actuarial experience study for the five-year period from July 1, 2010 to June 30, 2015, adopted by the Board, and prescribed for use in the Plan's June 30, 2018 actuarial valuation.

Expected Annual Subsidies for Local School District Coverage

FUTURE RETIREES AND DEPENDENTS

The lesser of \$1,320 per year (\$110 per month) and the Maximum Annual Subsidy for all future retired members and dependents who are expected to be covered under local school district OPEB plans in future periods.

CURRENT RETIREES AND DEPENDENTS

The lesser of the annualized actual monthly subsidy amounts provided by the System for retired members and dependents who are covered under local school district OPEB plans as of June 30, 2018 and the applicable Maximum Annual Subsidy. Reported subsidies are expected to increase each year based on the assumed long-term health care cost trend rates for Medicare Supplement Plans until the Maximum Annual Subsidy is reached.

The following table provides Maximum Annual Subsidy amounts for Medicare-ineligible and Medicare-eligible members and dependents who are receiving health care coverage under a local school district OPEB plan:

Medicare Status	Maximum Annual Subsidy
Ineligible	\$1,320 per year (\$110 per month)
Eligible	\$2,640 per year (\$220 per month) for those without "premium free" Medicare Part A, and contribute at least \$220 per month for coverage under a local school district plan; \$1,320 per year (\$110 per month), otherwise.

The Maximum Annual Subsidies provided in the table above have not increased since July of 1996. Our understanding is that these types of benefit improvements would not be considered "substantially automatic" (as that term is defined in GASB 74 and 75) based on the Plan's history of such changes. As a result, the Maximum Annual Subsidy Amounts shown above are not expected to increase in any future period.



Connecticut State Teachers' Retirement System

Expected Annual Per Capita Health Care Claims Costs

MEDICAL AND PRESCRIPTION DRUGS

Assumed annual per capita health care claims costs were developed for the Medicare Supplement Plan and the Medicare Advantage Plan based on the medical and prescription drug premium / premium equivalent rates for each plan and period provided by the System. Our understanding is that these premium / premium equivalent rates include all relevant medical, prescription drug, and/or third-party administrative costs, and represent the amounts paid by the System as “the full contribution amount” for each coverage provided.

Age-adjusted health care premium / premium equivalent rates for covered adults were trended forward to the midpoint of the measurement period. The expected annual age 65 per capita health care claims costs for the Medicare Supplement Plan—both before and after the July 1, 2018 plan change—and Medicare Advantage Plan—after the July 1, 2018 plan change—for the year following the valuation date are shown below:

Expected Annual Age 65 Per Capita Claims Cost for	Before the July 1, 2018 Plan Change	After the July 1, 2018 Plan Change
Medicare Supplement Plans	\$2,926	\$3,593
Medicare Advantage Plans	N/A	\$2,049

Future experience may differ significantly from the cost estimates presented in this report due to unforeseen and random events, including, but not limited to, any event that would affect one or more insurers' ability to provide coverage under the terms of the Plan, any significant change to existing Department of Health and Human Services (HHS) and/or Centers for Medicare & Medicaid Services (CMS) regulations, and/or any insolvency of Social Security and/or Medicare Trust Funds on any future date. As such, these results should be viewed as having a likely range of variability.

AFFORDABLE CARE ACT (ACA)

The impact of the Affordable Care Act (ACA) was addressed in this valuation. A review of the information currently available did not identify any specific provisions of the ACA that are anticipated to significantly impact results. While the impact of certain provisions—if applicable—such as the future implementation of the excise tax on high-value health insurance plans, mandated benefits, and participation changes due to the individual mandate should be recognized in the determination of liabilities, overall future plan costs and the resulting liabilities are driven by amounts employers and retirees can afford (i.e., trend). As stated previously, the trend assumption forecasts the anticipated increase to initial per capita costs, taking into account health care cost inflation, increases in benefit utilization, plan changes, government-mandated benefits, and technological advances. Given the uncertainty regarding the ACA's implementation, continued monitoring of the ACA's impact on the Plan's liability will be required.

AGE RELATED MORBIDITY

Expected annual age 65 per capita health care claims costs are adjusted to reflect anticipated age-related cost changes. The assumed annual percentage increases in expected annual per capita health care costs/net incurred claims that were used to adjust Medicare Supplement and Medicare Advantage Plan amounts from one age to the next are provided in the following table for both retirees and their dependents (post plan change rates adopted June 30, 2018):



Connecticut State Teachers' Retirement System

Payment Age	Before July 1, 2018	After June 30, 2018	
	Medicare Supplement Annual Increase	Medicare Supplement Annual Increase	Medicare Advantage Annual Increase
Under 30	0.000%	0.000%	0.000%
30 – 34	1.000%	0.329%	0.329%
35 – 39	1.500%	-0.077%	-0.077%
40 – 44	2.000%	1.566%	1.566%
45 – 49	2.600%	3.992%	3.992%
50 – 54	3.300%	5.076%	5.076%
55 – 59	3.600%	3.928%	3.928%
60 – 64	4.200%	0.141%	0.141%
65 – 69	3.000%	2.468%	4.741%
70 – 74	2.500%	1.764%	2.239%
75 – 79	2.000%	1.123%	1.090%
80 – 84	1.000%	0.129%	0.000%
85 – 89	0.500%	0.000%	0.000%
Over 89	0.000%	0.000%	0.000%

Mortality and Mortality Improvement Rates

PRE-RETIREMENT

The table below provides pre-retirement mortality rates for males and females at sample ages:

Annual Rates of Pre-Retirement Mortality					
Age	Male	Female	Age	Male	Female
20	0.0377%	0.0147%	45	0.0818%	0.0622%
25	0.0412%	0.0162%	50	0.1476%	0.1116%
30	0.0404%	0.0205%	55	0.2800%	0.1927%
35	0.0448%	0.0272%	60	0.4557%	0.2914%
40	0.0539%	0.0375%	64	0.6572%	0.4272%

POSTRETIREMENT

RPH-2014 White Collar mortality table with healthy employee and annuitant rates blended from ages 50 to 80 with projected mortality improvements to the year 2020 using Scale BB and further adjusted to grade-in increases (5% for females and 8% for males) to rates over age 80.

POST-DISABLEMENT

RPH-2014 disabled retiree mortality table with projected mortality improvements to the year 2020 using Scale BB (adopted June 30, 2018).



Connecticut State Teachers' Retirement System

Retirement Rates

The following table contains age and service based annual rates of retirement at sample ages:

Age	Annual Rates of Retirement					
	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%		

Withdrawal Rates

The following table contains service based annual rates of withdrawal (separation from service for causes other than death, disability, or retirement) for males and females:

Years of Service	Annual Rates of Withdrawal					
				10 or More 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%				



Connecticut State Teachers' Retirement System

Disability Rates

The table below provides age based annual rates of disability for males and females at sample ages:

Annual Rates of Disability		
Age	Male	Female
20	0.0341%	0.0500%
25	0.0341%	0.0500%
30	0.0341%	0.0410%
35	0.0341%	0.0410%
40	0.0536%	0.0720%
45	0.1219%	0.1200%
50	0.2438%	0.2630%
55	0.5363%	0.4380%
60	0.9604%	0.5000%

Rates of Annual Salary Increases

Rates of annual salary increases are constructed geometrically based on the expected long-term rate of inflation (currently, 2.75%), an expected productivity component (currently, 0.50%), and a variable expected merit component that is dependent on years of service. The following table provides a sample of the service-based rates of salary increases that are used to project a member's total salary as of the valuation date to future years.

Years of Service	Total Increase (Next Year)
Under 2	6.50%
2 – 9	6.25%
10 – 11	5.50%
12 – 14	5.00%
15	4.75%
16	4.50%
17	4.25%
18	4.00%
19	3.75%
20	3.50%
Over 20	3.25%



Connecticut State Teachers' Retirement System

Decrement Timing and Adjustment

Decrements—retirement, withdrawal, death, and disability—are assumed to occur at the middle of the year, except that 100% retirement is assumed to occur at the beginning of the year. Decrement rates (or “probabilities”) are assumed to be uniformly distributed throughout the year, and reflect multiple decrement effects.

Subsidized Local School District Coverage and System-Sponsored Health Care Plan Participation Rates¹

FUTURE RETIREES AND DEPENDENTS

The table below provides the percentage of future retired members and dependents who are expected to be covered under local school district OPEB plans or the System-sponsored health care plan options in future periods.

Membership Class	Subsidized Local School District Coverage	System-Sponsored Health Care Plans
Pre-65 Members	60.0%	N/A
Post-64 Members	20.0%	60.0%
Pre 65 Spouses/Survivors*	45.0%	N/A
Post-64 Spouses/Survivors*	40.0%	45.0%

* Percentage of participating members electing spouse coverage.

CURRENT RETIREES AND DEPENDENTS—ENROLLED

All current retirees and dependents who are eligible for Medicare as of the valuation date are assumed to continue current coverage. For retirees and surviving spouses who are not eligible for Medicare and are covered under local school district OPEB plans as of the valuation date, the following table shows the assumed migration from subsidized local school district coverage to a System-sponsored health care plan option at age 65:

Membership Class	Assumed Percentage Electing Subsidized Local School District Coverage On or After Age 65	Assumed Percentage Electing System-Sponsored Health Care Plans On or After Age 65
Pre-65 Members	25.0%	75.0%
Pre-65 Spouses/Survivors*	47.1%	52.9%

* Percentage of participating members electing spouse coverage.

¹ Long-term Plan participation and spouse coverage election and enrollment rates are uncertain due to the recent plan change that became effective on July 1, 2018, and future experience may differ significantly from the assumptions that were used to measure Plan obligations as of June 30, 2018. As such, these assumptions will need to be reviewed as experience evolves, and the results provided in this report should be viewed as having a likely range of variability.



Connecticut State Teachers' Retirement System

CURRENT RETIREES AND DEPENDENTS—NOT ENROLLED

50% of retired members who are not eligible for Medicare, are currently receiving a retirement or disability benefit, but are not participating in the Plan, are expected to be covered under a System-sponsored health care plan option at age 65. Of these participants, 50% are assumed to cover a spouse (adopted June 30, 2018).

Of those participating, the percentage of current and future retirees and surviving spouses who are assumed to enroll in the coverage options available on July 1, 2018 are shown in the table below. In each future year that begins on or after July 1, 2019, 50% of the current and future retirees and surviving spouses are expected to choose the Medicare Advantage Plan in lieu of their existing Medicare Supplement Plan coverage (adopted June 30, 2018). The first five years of the aforementioned progression are illustrated in the table below.

Initial Enrollment Percentages Beginning on	Grandfathered Members		All Other Members	
	Medicare Supplement Plan	Medicare Advantage Plan	Medicare Supplement Plan	Medicare Advantage Plan
July 1, 2018	25.00%	75.00%	15.00%	85.00%
July 1, 2019	12.50%	87.50%	7.50%	92.50%
July 1, 2020	6.25%	93.75%	3.75%	96.25%
July 1, 2021	3.13%	96.87%	1.88%	98.12%
July 1, 2022	1.56%	98.44%	0.94%	99.06%
...

Assumed Eligibility for “Premium Free” Medicare Part A Benefits

FUTURE RETIREES AND DEPENDENTS

100% of future Medicare-eligible retirees and dependents are expected to be eligible for “premium free” Medicare Part A benefits.

CURRENT RETIREES AND DEPENDENTS

0% of retired members and dependents who are currently receiving a subsidy equal to \$2,640 per year (\$220 per month) as of June 30, 2018 are expected to be eligible for “premium free” Medicare Part A benefits. Otherwise, 100% of retired members and dependents are expected to be eligible for these benefits when they reach age 65 or, if they are older, their attained age on the valuation date.



Connecticut State Teachers' Retirement System

Assumed Commencement Age for Eligible Deferred Vested Members

Eligible deferred vested members and their dependents are expected to begin receiving health care benefits when members reach age 60 or, if they are older, the member's attained age on the valuation date.

The following table contains the age based assumed percentages of deferred vested members who will become ineligible for future health care benefits because they are expected to withdraw their contributions from the System (adopted June 30, 2018):

Attained Ages on the Later of the Valuation Date or Date of Decrement					
Under Age 55	Age 56	Age 57	Age 58	Age 59	Over Age 59
30.00%	24.00%	18.00%	12.00%	6.00%	0.00%

Marital and Spouse Assumptions

FUTURE RETIREES

100% of future retired members are assumed to be married to a spouse of the opposite gender. Husbands are assumed to be three years older than their wives.

CURRENT RETIREES

Actual spouse age is used where available. If relevant spouse information is not available, husbands are assumed to be three years older than their wives.

Valuation Date

June 30, 2018

Measurement Date

June 30, 2018

Measurement Period

July 1, 2017 to June 30, 2018

Benefits Not Valued

Dental, vision, and hearing benefits for retirees and their dependents are paid by the retiree on a full cost basis, and without an implicit subsidy. As a result, no dental, vision, or hearing benefit liabilities are included in the Plan's GASB 75 results as of June 30, 2018.

Other Assumptions and Methods

Unless otherwise stated above, all other actuarial assumptions and methods are the same as those used for the purpose of preparing Plan financial accounting results as of June 30, 2018.

Please see the June 30, 2017 GASB 75 report for additional information about the data, assumptions, methods, and plan provisions used to prepare financial accounting results as of the June 30, 2017 measurement date.



Connecticut State Teachers' Retirement System

Changes in Assumptions and Methods Since the Prior Valuation

The June 30, 2018 measurements used in the development of June 30, 2018 financial accounting results for the Plan reflect the following prescribed changes in assumptions and methods:

- The expected rate of return on assets was changed from 2.75% to 3.00% to better reflect the anticipated returns on cash and other high quality short-term fixed income investments;
- Based on the procedure described in GASB 75, the discount rate used to measure Plan obligations for financial accounting purposes as of June 30, 2018 was updated to equal the Municipal Bond Index Rate as of June 30, 2018. The System selected the 3.87% discount rate used to measure the TOL as of the June 30, 2018 measurement date;
- Expected annual per capita claims costs were updated to better reflect anticipated medical and prescription drug claim experience both before and after the plan change that became effective on July 1, 2018;
- The assumed age related annual percentage increases in expected annual per capita health care claim costs were updated to better reflect the expected differences between the Medicare Supplement and Medicare Advantage Plan amounts as part of the plan change that became effective on July 1, 2018;
- Long-term health care cost trend rates were updated to better reflect the anticipated impact of changes in medical inflation, utilization, leverage in the plan design, improvements in technology, and fees and charges on expected claims and retiree contributions in future periods;
- The percentage of retired members who are not currently participating in the Plan, but are expected to elect coverage for themselves and their spouses under a System-sponsored health care plan option in the future, was updated to better reflect anticipated plan experience;
- The percentages of participating retirees who are expected to enroll in the Medicare Supplement Plan and the Medicare Advantage Plan options, as well as the portion who are expected to migrate to the Medicare Advantage Plan over the next several years, were updated to better reflect anticipated plan experience after the plan change that became effective on July 1, 2018;
- The post-disablement mortality table was updated to extend the period of projected mortality improvements from 2017 to 2020. This change was made to better reflect anticipated post-disablement plan experience; and,
- The percentages of deferred vested members who will become ineligible for future health care benefits because they are expected to withdraw their contributions from the System was updated to better reflect anticipated plan experience.

The aggregate effect of the changes described above was a reduction in the Plan's Total OPEB Liability and Service Cost measured as of June 30, 2018.



Schedule C — Summary of Actuarial Cost and Asset Valuation Methods

Actuarial Cost Method

The valuation is prepared on the projected benefit basis, under which the present value, at the interest rate assumed to be earned in the future (currently 3.87%), of each member's expected benefits at retirement is determined, based upon age, service, and gender. The calculations take into account the probability of a member's death or termination of employment prior to receiving benefits under the Plan. The present value of the expected benefits payable on account of active members is added to the present value of the expected future payments to retired members and beneficiaries to obtain the present value of all expected benefits payable by the Plan.

The actuarial cost method is a procedure for allocating the actuarial present value of postemployment benefits and expenses to time periods. The method used for the valuation is known as the Entry Age Normal (Level Percentage of Pay) actuarial cost method, and has the following characteristics:

- (i) The annual normal costs for each individual active participant are sufficient to accumulate the value of the participant's postemployment benefits at time of retirement.
- (ii) Each annual normal cost is a constant percentage of the participant's year-by-year projected covered compensation.

The Entry Age Normal (Level Percentage of Pay) actuarial cost method allocates the actuarial present value of each participant's projected benefits on a level basis over the participant's assumed compensation rates between the entry age of the participant and the assumed ages at which the participant will leave active service.

The portion of the actuarial present value allocated to the valuation year is called the service cost (SC). The portion of the actuarial present value of expected benefits not provided for by the actuarial present value of future service costs is called the Total OPEB Liability (TOL). The difference between the TOL and the Plan Fiduciary Net Position (PFNP) is the Net OPEB Liability / (Asset) (NOL).

The actuarial cost method is prescribed by GASB 74 and 75 for financial accounting purposes.

Asset Valuation Method

The Actuarial Asset Value for financial accounting purposes is equal to the Plan Fiduciary Net Position (PFNP)—the market value of the financial accounting asset—on the measurement date.

The asset valuation method is prescribed by GASB 74 and 75 for financial accounting purposes.

Changes in Actuarial Cost and Asset Valuation Methods Since the Previous Valuation

There were no changes in actuarial cost or amortization methods since the previous valuation on June 30, 2016.



Schedule D — Summary of Main Plan Provisions for Valuation Purposes

This summary of main plan provisions is intended to describe only the principal features of the Retiree Health Insurance Plan (RHIP, or the Plan), cost-sharing, other than insured, defined benefit OPEB plan with a special funding situation sponsored by the Connecticut State Teachers' Retirement System (the System) as interpreted for valuation purposes. All actual eligibility requirements and benefit amounts will be determined in accordance with the Plan document and any System practices, processes, and procedures.

Key Plan Terms

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.

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 wartime 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.

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.

PRORATABLE RETIREMENT

Eligibility—Age 60 with 10 years of Credited Service.

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.

TERMINATION OF EMPLOYMENT

Eligibility—10 or more years of Credited Service.

Teachers' Required Contribution

1.25% of annual salaries in excess of \$500,000 is contributed for health insurance of retired teachers.

State Contribution

The State pays for one third of the costs through an annual appropriation in the General Fund. Administrative costs of the Plan are financed by the State. Based upon Chapter 167a, Subsection D of Section 10-183t of the Connecticut statutes, it is assumed the State will pay for any long-term shortfall arising from insufficient active member contributions.



Connecticut State Teachers' Retirement System

Retiree Health Care Coverage

Any member who is currently receiving a retirement or disability benefit is eligible to participate in the Plan. There are two types of the health care benefits offered through the system. Subsidized Local School District Coverage provides a subsidy paid to members still receiving coverage through their former employer and the CTRB Sponsored Medical Plans provide coverage for those participating in Medicare, but not receiving Subsidized Local School District Coverage.

Any member who is not currently participating in Medicare Parts A & B is eligible to continue health care coverage with their former employer. A subsidy of up to \$110 per month for a retired member plus an additional \$110 per month for a spouse enrolled in a local school district plan is provided to the school district to first offset the retiree's share of the cost of coverage, any remaining portion is used to offset the district's cost. The subsidy amount is set by statute, and has not increased since July of 1996. A subsidy amount of \$220 per month may be paid for a retired member, spouse or the surviving spouse of a member who has attained the normal retirement age to participate in Medicare, is not eligible for Part A of Medicare without cost, and contributes at least \$220 per month towards coverage under a local school district plan.

Any member that is currently participating in Medicare Parts A & B is eligible to either continue health care coverage with their former employer, if offered, or enroll in the plan sponsored by the System. If they elect to remain in the plan with their former employer, the same subsidies as above will be paid to offset the cost of coverage.

If a member participating in Medicare Parts A & B so elects, they may enroll in one of the CTRB Sponsored Medicare Supplement Plan(s). Effective July 1, 2018, the System added a Medicare Advantage Plan option. Active members, retirees, and the State pay equally toward the cost of the basic coverage (medical and prescription drug benefits) under the Medicare Advantage plan. Retired members who choose to enroll in the Medicare Supplement Plan are responsible for the full difference in the premium cost between the two plans. Additionally, effective July 1, 2018, retired members who cancel their health care coverage(s) or elect not to enroll in a CTRB sponsored health care coverage option must wait two years to re-enroll.

Survivor Health Care Coverage

Survivors of former employees or retirees remain eligible to participate in the Plan and continue to be eligible to receive either the \$110 monthly subsidy or participate in the CTRB Sponsored Medicare Supplement or Medicare Advantage Plan options, as long as they do not remarry.

System Determined Monthly Retiree Contributions Since 2013

Eligible retirees who elect to enroll in a health care coverage option under the Plan contribute a monthly amount based on the coverages that they selected during the enrollment process. Effective January 1, 2015, new enrollees will only be able to elect the "all coverages" package (Medical with Prescription Drugs, Dental, Vision and Hearing). Existing retired members and dependents were grandfathered into the health care option elections that they had made prior to January 1, 2015.



Connecticut State Teachers' Retirement System

The following tables provide the monthly health care contributions for retiree and dependent coverage options during the periods beginning on January 1, 2013 and ending on July 1, 2018.

Monthly Funding Rates for the CTRB Sponsored Medicare Supplemental Plan Options							
Coverage	2013	2014	2015	2016	2017	Jan. 1 2018	July 1 2018
Medical with Prescriptions	\$117	\$97	\$91	\$95	\$92	\$101	\$199
Medical with Prescriptions and Dental	\$160	\$141	\$136	\$143	\$136	\$151	\$254
Medical with Prescriptions, Dental, Vision & Hearing	\$165	\$146	\$140	\$148	\$141	\$156	\$259

Monthly Funding Rates for the CTRB Sponsored Medicare Advantage Plan Options							
Coverage	2013	2014	2015	2016	2017	Jan. 1 2018	July 1 2018
Medical with Prescriptions	N/A	N/A	N/A	N/A	N/A	N/A	\$74
Medical with Prescriptions and Dental	N/A	N/A	N/A	N/A	N/A	N/A	\$129
Medical with Prescriptions, Dental, Vision & Hearing	N/A	N/A	N/A	N/A	N/A	N/A	\$134

Changes in Plan Provisions Since the Previous Valuation

The Plan was amended by the Board, effective July 1, 2018, during the January 11, 2018 meeting. The Board action added the Anthem Medicare Advantage Plan to the available options under the Plan, changed the "base plan" to the Medicare Advantage Plan for the purposes of determining retiree health care plan subsidies and/or cost sharing amount(s), and introduced a two year waiting period for re-enrollment in a System-sponsored health care plan for those who cancel their coverage or choose not to enroll in a health care coverage option on or after the effective date. These changes were communicated to retired members during the months leading up to a special open enrollment period that preceded the July 1, 2018 implementation date.

We have reflected these changes in the measurement of the Plan's benefit obligations for financial accounting purposes as of June 30, 2018.