

North Carolina State Health Plan

**Actuarial Valuation and Review of Other
Postemployment Benefits (OPEB) Measured
at June 30, 2019, with a Reporting Date of
June 30, 2020, in accordance with GASB
Statement No. 75**

This report has been prepared at the request of the Committee on Actuarial Valuation of Retired Employees' Health Benefits (OPEB) to assist in administering the Plan. This valuation report may not otherwise be copied or reproduced in any form without the consent of the Committee and may only be provided to other parties in its entirety. The measurements shown in this actuarial valuation may not be applicable for other purposes.



2727 Paces Ferry Road SE, Building 1, Suite 1400, Atlanta, GA 30339-4053
T 678.306.3100 www.segalco.com

January 29, 2020

Committee on Actuarial Valuation of Retired Employees'
Health Benefits (OPEB)
State of North Carolina
430 N. Salisbury St.
Raleigh, North Carolina 27603

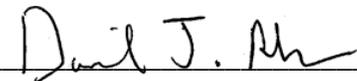
Dear Committee Members:

We are pleased to submit this Actuarial Valuation and Review of Other Postemployment Benefits (OPEB) as of June 30, 2019 under Governmental Accounting Standards Board Statement No. 75. The report summarizes the actuarial data used in the valuation, discloses the Net OPEB Liability (NOL), and analyzes the preceding year's experience. This report was based on the census data provided by the Department of the State Treasurer, the financial information prepared by the Department of the State Treasurer, and the terms of the Plan. The actuarial calculations were completed under the supervision of David A. Berger, FCA, ASA, MAAA, EA, Vice President and Consulting Actuary, and Peter Wang, PhD, ASA, MAAA, Associate Actuary.

The actuarial valuation has been completed in accordance with generally accepted actuarial principles and practices. To the best of our knowledge, the information supplied in this actuarial valuation is complete and accurate. The demographic assumptions were prescribed by the OPEB Valuation Committee to be consistent with the TSERS Pension Valuation. In our opinion, the assumptions used in this valuation and described in Section 3, Exhibit II are reasonably related to the experience of and the expectations for the Plan. The actuarial projections are based on these assumptions and the plan of benefits as summarized in Section 3, Exhibit III.

Sincerely,

Segal Consulting, a Member of The Segal Group, Inc.

By: 

Daniel J. Rhodes, FSA, MAAA
Vice President and Consulting Actuary



Table of Contents

Section 1: Executive Summary

Exhibit A Important Information about Actuarial Valuations.....	4
Exhibit B Purpose.....	7
Exhibit C Highlights of the Valuation.....	7
Exhibit D Summary of Key Valuation Results.....	8
Exhibit E Actuarial Certification.....	9

Section 2: Valuation Results

Exhibit 1 General Information about the OPEB Plan.....	10
Exhibit 2 Net OPEB Liability.....	12
Exhibit 3 Sensitivity.....	14
Exhibit 4 Schedule of Changes in Net OPEB Liability – Last Two Fiscal Years.....	15
Exhibit 5 Schedule of Contributions – Last Ten Fiscal Years.....	18
Exhibit 6 Statement of Fiduciary Net Position – Unaudited.....	20
Exhibit 7 OPEB Expense – Total for All Employers.....	21
Exhibit 8 Deferred Outflows of Resources and Deferred Inflows of Resources.....	22

Section 3: Supporting Information

Exhibit I Summary of Participant Data.....	27
Exhibit II Actuarial Assumptions and Methods.....	28
Exhibit III Summary of Plan.....	40
Exhibit IV Definition of Terms.....	47
Exhibit V Accounting Requirements.....	48
Exhibit VI GASB 74/75 Concepts.....	49

Section 1: Executive Summary

EXHIBIT A Important Information about Actuarial Valuations

An actuarial valuation is a budgeting tool with respect to defining future uncertain obligations of a postretirement health plan. As such, it will never forecast the precise future stream of benefit payments. It is an estimated forecast – the actual cost of the plan will be determined by the benefits and expenses paid, not by the actuarial valuation.

In order to prepare a valuation, Segal Consulting (“Segal”) relies on a number of input items. These include:

Plan of benefits	Plan provisions define the rules that will be used to determine benefit payments, and those rules, or the interpretation of them, may change over time. Even where they appear precise, outside factors may change how they operate. For example, a plan may provide health benefits to post-65 retirees that coordinates with Medicare. If so, changes in the Medicare law or administration may change the plan’s costs without any change in the terms of the plan itself. It is important for the State to keep Segal informed with respect to plan provisions and administrative procedures, and to review the plan summary included in our report to confirm that Segal has correctly interpreted the plan of benefits.
Participant data	An actuarial valuation for a plan is based on data provided to the actuary by the plan. Segal does not audit such data for completeness or accuracy, other than reviewing it for obvious inconsistencies compared to prior data and other information that appears unreasonable. It is not necessary to have perfect data for an actuarial valuation: the valuation is an estimated forecast, not a prediction. The uncertainties in other factors are such that even perfect data does not produce a “perfect” result. Notwithstanding the above, it is important for Segal to receive the best possible data and to be informed about any known incomplete or inaccurate data.
Assets	Part of the cost of a plan will be paid from existing assets – the balance will need to come from future contributions and investment income. The valuation is based on the asset values as of the valuation date, typically reported by the auditor. Some plans include assets, such as private equity holdings, real estate, or hedge funds that are not subject to valuation by reference to transactions in the marketplace. A snapshot as of a single date may not be an appropriate value for determining a single year’s contribution requirement, especially in volatile markets. Plan sponsors often use an “actuarial value of assets” that differs from market value to reflect gradually year-to-year changes in the market value of assets in determining the contribution requirements.

Actuarial assumptions

In preparing an actuarial valuation, Segal starts by developing a forecast of the benefits to be paid on behalf of existing plan participants for the rest of their lives and the lives of their beneficiaries. To determine the future costs of benefits, Segal collects claims, premiums, and enrollment data in order to establish a baseline cost for the valuation measurement, and then develops short- and long-term health care cost trend rates to project increases in costs in future years. This forecast also requires actuarial assumptions as to the probability of death, disability, withdrawal, and retirement of each participant for each year, as well as forecasts of the plan's benefits for each of those events. The forecasted benefits are then discounted to a present value, typically based on an estimate of the rate of return that will be achieved on the plan's assets or, if there are no assets, a rate of return based on a yield or index rate for 20-year, tax-exempt general obligation municipal bonds with an average rating of AA/Aa or higher (or equivalent quality on another rating scale). All of these factors are uncertain and unknowable. Thus, there will be a range of reasonable assumptions, and the results may vary materially based on which assumptions the actuary selects within that range. That is, there is no right answer (except with hindsight). It is important for any user of an actuarial valuation to understand and accept this constraint. The actuarial model necessarily uses approximations and estimates that may lead to significant changes in our results but will have no impact on the actual cost of the plan. In addition, the actuarial assumptions may change over time, and while this can have a significant impact on the reported results, it does not mean that the previous assumptions or results were unreasonable or wrong.

The user of Segal's actuarial valuation (or other actuarial calculations) should keep the following in mind:

- The actuarial valuation is prepared for use by the State financial officers. It includes information for compliance with accounting standards and for the plan's auditor. Segal is not responsible for the use or misuse of its report, particularly by any other party.
- If the State is aware of any event or trend that was not considered in this valuation that may materially change the results of the valuation, Segal should be advised, so that we can evaluate it.
- An actuarial valuation is a measurement at a specific date – it is not a prediction of a plan's future financial condition. Accordingly, Segal did not perform an analysis of the potential range of financial measurements, except where otherwise noted. The actual long-term cost of the plan will be determined by the actual benefits and expenses paid and the actual investment experience of the plan.
- Sections of this report include actuarial results that are not rounded, but that does not imply precision.
- Critical events for a plan include, but are not limited to, decisions about changes in benefits and contributions. The basis for such decisions needs to consider many factors such as the risk of changes in plan enrollment, emerging claims experience, health care trend, and investment losses, not just the current valuation results.
- Segal does not provide investment, legal, accounting, or tax advice. Segal's valuation is based on our understanding of applicable guidance in these areas and of the plan's provisions, but they may be subject to alternative interpretations. The State should look to their other advisors for expertise in these areas.
- While Segal maintains extensive quality assurance procedures, an actuarial valuation involves complex computer models and numerous inputs. In the event that an inaccuracy is discovered after presentation of Segal's valuation, Segal may revise that valuation or make an appropriate adjustment in the next valuation.
- Segal's report shall be deemed to be final and accepted by the State upon delivery and review. The State should notify Segal immediately of any questions or concerns about the final content.

As Segal Consulting has no discretionary authority with respect to the management or assets of the Plan, it is not a fiduciary in its capacity as actuaries and consultants with respect to the Plan.

EXHIBIT B

Purpose

This report presents the results of our actuarial OPEB valuation of the North Carolina State Health Plan as of June 30, 2019, required by Governmental Accounting Standards Board (GASB) Statement No. 75, *Accounting and Financial Reporting for Postemployment Benefits Other than Pensions*. The actuarial computations made are for purposes of fulfilling plan accounting requirements. Determinations for purposes other than meeting financial accounting requirements may be significantly different from the results reported here.

EXHIBIT C

Highlights of the Valuation

Accounting and Financial Reporting

- For GASB 75 reporting as of June 30, 2020, the Net OPEB Liability (NOL) was measured as of June 30, 2019. The Plan's Fiduciary Net Position (plan assets) and the Total OPEB Liability (TOL) were valued as of the measurement date. Consistent with the provisions of GASB 75, the assets and liabilities measured as of June 30, 2019 are not adjusted or rolled forward to the June 30, 2020 reporting date.
- The collective NOL as of the beginning of the employer fiscal year ending June 30, 2019 is \$28,488,185,479, based on a measurement as of June 30, 2018. The NOL as of the employer fiscal year ending June 30, 2020 is \$31,639,499,497, based on a measurement as of June 30, 2019.
- The collective GASB 75 OPEB expense of -\$467,045,916 is based on the change in the NOL during the employers' fiscal year ending June 30, 2020, corresponding with a Measurement Period of July 1, 2018 to June 30, 2019. The expense is the change in the NOL, excluding changes related to employer contributions and adjusted to reflect the effect of deferred recognition of certain changes in the liability and assets. A summary of the calculation of the OPEB expense and a summary of the outstanding deferred outflows and inflows can be found in Exhibits 7 and 8 in Section 2.
- As of the fiscal year ending June 30, 2020 the ratio of assets to the Total OPEB Liability (the funded ratio) is 4.40%. This is based on the market value of assets at the Measurement Date of June 30, 2019.
- For the purposes of applying the cost-sharing provisions of GASB 75, the proportionate share for each employer is determined based on the present value of future salary for current employees as of the Measurement Date based on the demographic assumptions, salary increase assumptions, and discount rate assumption used for the corresponding measurement of the Total OPEB Liability. Tables of the proportionate share calculations and allocated results in accordance with these proportionate shares are provided in the appendix to this report.

EXHIBIT D

Summary of Key Valuation Results

	June 30, 2019	June 30, 2018
Total OPEB Liability	\$33,095,182,920	\$29,798,358,029
Plan Fiduciary Net Position (Assets)	1,455,683,423	1,310,172,550
Net OPEB Liability	31,639,499,497	28,488,185,479
Plan Fiduciary Net Position as a percentage of Total OPEB Liability	4.40%	4.40%
	June 30, 2019	June 30, 2018
Annual OPEB Expense	(\$467,045,916)	(\$385,366,906)
Service Cost at Beginning of Year	1,539,091,679	1,753,384,309
Covered Payroll ¹	17,622,000,000	16,838,000,000

Exhibits relating to GASB 74 information in this report are consistent with Exhibits 1-6 of the report dated November 18, 2019, with one exception. The total contributions were \$1,104,901,608 (see Exhibit 5 of the GASB 74 report). A portion of the contribution was not allocated to employers, due to timing differences. As such, in this report the contributions appear as \$1,103,026,709 (page 15), and the \$1,874,899 difference is included in Other Changes.

¹ Estimated for years ending June 30, 2018 and June 30, 2019

EXHIBIT E
Actuarial Certification

December 16, 2019

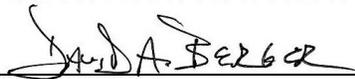
This is to certify that Segal Consulting, a Member of The Segal Group, Inc., has conducted an actuarial valuation of certain benefit obligations of State Health Plan of North Carolina OPEB Fund's other postemployment benefit programs as of June 30, 2019, in accordance with generally accepted actuarial principles and practices. The actuarial calculations presented in this report have been made on a basis consistent with our understanding of GASB Statements 75 for the determination of the liability for postemployment benefits other than pensions.

The actuarial valuation is based on the plan of benefits verified by the State and reliance on participant, premium, claims and expense data provided by the State or from vendors employed by the State. Segal Consulting does not audit the data provided. The accuracy and comprehensiveness of the data is the responsibility of those supplying the data. Segal, however, does review the data for reasonableness and consistency.

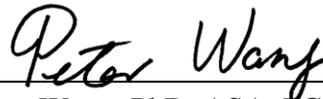
The actuarial computations made are for purposes of fulfilling plan accounting and funding requirements. Determinations for purposes other than meeting financial accounting and funding requirements may be significantly different from the results reported here. Accordingly, additional determinations may be needed for other purposes, such as judging benefit security at termination of the plan, or determining short-term cash flow requirements.

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 or rates of return on assets 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); 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. The scope of the assignment did not include performing an analysis of the potential change of such future measurements except where noted.

To the best of our knowledge, this report is complete and accurate and in our opinion presents the information necessary to comply with GASB Statement 75 with respect to the benefit obligations addressed. The signing actuaries are members of the Society of Actuaries, the American Academy of Actuaries, and other professional actuarial organizations and collectively meet the "General Qualification Standards for Statements of Actuarial Opinions" to render the actuarial opinion contained herein.



David A. Berger, FCA, ASA, MAAA, EA
Vice President and Consulting Actuary
Certifying Liability Calculations



Peter Wang, PhD, ASA, FCA, MAAA
Associate Actuary
Certifying Claims and Medical Trend Calculations

Section 2: Valuation Results

EXHIBIT 1

General Information about the OPEB Plan

Plan Description

Plan administration. The State administers the OPEB plan—a multiple employer, cost-sharing OPEB plan that is used to provide postemployment benefits other than pensions for permanent full-time State employees. Management of the OPEB plan is governed by North Carolina General Statutes.

Plan membership. Plan membership consisted of the following:

	As of December 31, 2018	As of December 31, 2017
Number of retirees	205,490	201,052
Number of spouses	17,523	16,552
Number of surviving spouses	2,973	2,053
Number of inactive vested	43,908	41,471
Number of actives	<u>346,173</u>	<u>344,411</u>
Total number of participants and spouses	616,067	605,539

Benefits provided. The Plan benefits employees and former employees of the State, the University of North Carolina System, community colleges, and certain other component units. In addition, Local Education Agencies (LEAs), charter schools, and some select local governments that are not part of the financial reporting entity also participate.

Health benefit programs and premium rates are determined by the State Treasurer upon approval of the Board of Trustees. Plan benefits received by retired employees and disabled employees are other postemployment benefits (OPEB). The healthcare benefits for retired and disabled employees who are not eligible for Medicare are the same as for active employees. The plan options change when former employees

become eligible for Medicare. Medicare retirees have the option of selecting one of two fully insured Medicare Advantage/Prescription Drug Plan (MA-PDP) options or the self-funded 70/30 Preferred Provider Organization (PPO) plan option that is also offered to non-Medicare members. If the 70/30 Plan is selected by a Medicare retiree, the self-funded State Health Plan coverage is secondary to Medicare.

State Contributions. The Plan is funded by both employer contributions and premiums charged to retirees and their spouses and dependents. A percent of pay is charged to each participating employer; the rate was 6.05% for fiscal 2018, and is 6.27% for fiscal 2019. Premiums are charged to retirees, and vary based on the coverage selected. The premiums for spouses are much higher than the premiums for retirees.

Clear Pricing Project. The Clear Pricing Project (CPP) sets the price of services equal to a fixed percentage above the price that Medicare pays for the same services. It applies to pre-65 medical costs. There have been issues surrounding the implementation of the CPP. If the CPP's provisions had been reflected as of the Measurement Date, the reduction to the Net OPEB Liability was estimated to be \$400 million, assuming that the pre-65 medical trend was 6% for one year, then 5% thereafter. The CPP has been modified after the June 30, 2019 Measurement Date. The effect on the Net OPEB Liability is unknown at this time, and we have therefore excluded its impact from the expected claim costs or trends in this valuation.

EXHIBIT 2 Net OPEB Liability

Reporting Date for Employer under GASB 75	June 30, 2020	June 30, 2019
Measurement Date	June 30, 2019	June 30, 2018
Components of the Net OPEB Liability		
Total OPEB Liability	\$33,095,182,920	\$29,798,358,029
Plan Fiduciary Net Position	1,455,683,423	1,310,172,550
Net OPEB Liability	31,639,499,497	28,488,185,479
Plan Fiduciary Net Position as a percentage of the Total OPEB Liability	4.40%	4.40%

The Net OPEB Liability was measured as of June 30, 2019 and 2018. Plan Fiduciary Net Position (plan assets) was valued as of the measurement dates and the Total OPEB Liability was determined from actuarial valuations using data as of December 31, 2018 and 2017, respectively.

Actuarial assumptions. The total OPEB liability was measured by an actuarial valuation as of December 31, 2018 using the following actuarial assumptions, applied to all periods included in the measurement, unless otherwise specified:

Inflation	3.00%
Salary increases based on service	Teachers: 7.55% grading down to 3.50% Law Enforcement Officers: 8.10% grading down to 3.50% General Employees: 5.50% grading down to 3.50%
Discount rate	3.50% for fiscal 2019, 3.87% for fiscal 2018
Healthcare cost trend rates	
Medical	6.50% grading down to 5.00% by 2024 for non-MA and MA coverage
Prescription drug	9.50% grading down to 5.00% by 2028
Administrative costs	3.00%
Post-Retirement Mortality rates	RP-2014 Healthy Annuitant Mortality Table for males and females, adjusted for Collar for some Participants, further adjusted with scaling factors varying before and after age 78, and projected for mortality improvement using Scale MP-2015

The actuarial assumptions used in the June 30, 2019 measurement valuation were based on the results of an actuarial experience study performed by Buck (formerly known as Buck Consultants and Conduent HR Services) for the period ending December 31, 2014.

The Plan does not have a funding policy that covers both the Normal Cost and a payment toward the unfunded liability. The plan is funded based on contributions set each year to target the projected benefit payments for the year and investment returns and current plan assets do not fund a material portion of long-term projected benefits. As such, we have not created a blended discount rate.

Detailed information regarding all actuarial assumptions can be found in Section 3, Exhibit II.

EXHIBIT 3 Sensitivity

The following presents the NOL of State as well as what the State's NOL would be if it were calculated using a discount rate that is 1-percentage-point lower (2.50%) or 1-percentage-point higher (4.50%) than the current rate. Also, shown is the NOL as if it were calculated using healthcare cost trend rates that were 1-percentage-point lower or 1-percentage-point higher than the current healthcare trend rates.

	1% Decrease in Discount Rate (2.50%)	Current Discount Rate (3.50%)	1% Increase in Discount Rate (4.50%)
Net OPEB Liability (Asset)	\$37,599,165,191	\$31,639,499,497	\$26,867,565,630
	1% Decrease in Health Care Cost Trend Rates	Current Health Care Cost Trend Rates	1% Increase in Health Care Cost Trend Rates
Net OPEB Liability (Asset)	\$26,052,734,911	\$31,639,499,497	\$38,985,221,346

EXHIBIT 4

Schedule of Changes in Net OPEB Liability – Last Two Fiscal Years

Reporting Date for Employer under GASB 75	June 30, 2020	June 30, 2019
Measurement Date	June 30, 2019	June 30, 2018
Total OPEB Liability		
• Service cost	\$ 1,539,091,679	\$ 1,753,384,309
• Interest	1,192,810,301	1,261,878,071
• Change of benefit terms	(72,358,137)	0
• Differences between expected and actual experience	(156,654,727)	(80,950,466)
• Changes of assumptions	1,824,891,986	(6,141,972,342)
• Benefit payments, including refunds of member contributions	<u>(1,030,956,211)</u>	<u>(977,176,114)</u>
Net change in Total OPEB Liability	\$ 3,296,824,891	\$ (4,184,836,542)
Total OPEB Liability – beginning	<u>29,798,358,029</u>	<u>33,983,194,571</u>
Total OPEB Liability – ending	<u>\$ 33,095,182,920</u>	<u>\$ 29,798,358,029</u>
Plan Fiduciary Net Position		
• Contributions – employer	\$ 1,103,026,709	\$ 1,018,581,302
• Contributions – employee	0	0
• Net investment income	71,780,132	72,383,854
• Benefit payments, including refunds of member contributions	(1,030,956,211)	(977,176,114)
• Administrative expense	(214,656)	(297,812)
• Other changes ¹	<u>1,874,899</u>	<u>111,213</u>
Net change in Plan Fiduciary Net Position	\$ 145,510,873	\$ 113,602,443
Plan Fiduciary Net Position – beginning	<u>1,310,172,550</u>	<u>1,196,570,107</u>
Plan Fiduciary Net Position – ending	\$ 1,455,683,423	\$ 1,310,172,550
Net OPEB Liability – ending	<u>\$ 31,639,499,497</u>	<u>\$ 28,488,185,479</u>
Plan Fiduciary Net Position as a percentage of the Total OPEB Liability	4.40%	4.40%
Covered employee payroll ²	\$ 17,622,000,000	\$16,838,000,000
Plan Net OPEB Liability as a percentage of covered employee payroll	179.55%	169.19%

¹ The difference between the total contributions to the Plan and the amount attributable to each employer may be different due to timing issues and employers that drop off. The GASB 74 contribution is the total of the Employer Contribution and the Other line, presented here.

² Estimated for June 30 2018, and June 30, 2019 measurement dates

Notes to Schedule:**Benefit Changes reflected in the June 30, 2019 Net OPEB Liability:**

- OOP maximum for 80/20 Plan increased from \$4,350/\$10,300 (individual/family) for in-network and \$8,700/\$26,100 for out-of-network to \$4,890/\$14,670 for in-network and \$9,780/\$29,340 for out-of-network.
- In-network Specialist copay for the 80/20 Plan decreased from \$85 to \$80.
- For the 80/20 Plan, in-network inpatient hospitalization changed from \$450 plus deductible and coinsurance or \$0 plus deductible and coinsurance for designated Blue Options hospitals in 2018 to \$300 plus deductible and coinsurance for all hospitals in 2019.

Changes in assumptions reflected in the June 30, 2019 Net OPEB Liability:

- The discount rate changed from 3.87% to 3.50%, in accordance with the State's policy for determining the discount rate.
- Disability rates were adjusted to the non-grandfathered assumptions used in the TSERS pension valuation, to better align with anticipated incidence of disability.
- The medical and prescription drug claims cost were changed based on most recent experience.
- Medical and prescription drug trend rates were changed to the current schedule.
- Enrollment assumptions were updated to model expected migrations among plan options over the next four years.

Benefit Changes reflected in the June 30, 2018 Net OPEB Liability:

- Prior to the June 30, 2018 Measurement Date the eligibility for retirement for Law Enforcement Officers was amended to a reduced pension eligibility at 25 years of service, while the unreduced pension remains available at 30 years of service. At this time, the State has decided not to amend the early retirement assumption until the next time retirement is studied.

Changes in assumptions reflected in the June 30, 2018 Net OPEB Liability:

- The discount rate changed from 3.58% to 3.87%, in accordance with the State's policy for determining the discount rate.
- The medical and prescription drug claims costs changed based on most recent experience.
- Medical and prescription drug trend rates were changed.
- Enrollment assumptions were updated to model expected migrations among plan options over the next few years.
- Non-teacher education employees were valued using the "Other" demographic assumptions rather than the "Teacher" demographic assumptions.
- 2019 Medicare Advantage Premiums and Retiree Contribution changes were known as of the date the report was signed. These items have been reflected in our trend assumptions.
- The inflation rate was changed from 2.75% to 3.00%.
- The long-term rate of return was changed from 7.25% for measurement as of June 30, 2016 to 7.20% for measurement as of June 30, 2017, to 7.00% for measurement as of June 30, 2018.

Benefit changes reflected in the June 30, 2017 Net OPEB Liability:

- The CDHP Plan was discontinued effective January 1, 2018. This change was reflected in the “migration assumptions” in the June 30, 2017 measurement.

Changes in assumptions reflected in the June 30, 2017 Net OPEB Liability:

- There are three general groups of demographic assumptions. Which demographic assumptions applied to the individual were based on agency code in the prior valuation. This year we refined the process, and non-teachers at schools and universities are mapped to demographic assumptions by agency and job code. This better aligns with the pension valuations.
- This year the medical and prescription drug claims costs were changed based on most recent experience.
- Medical and prescription drug trend rates were updated.
- Enrollment assumptions were updated to model expected migrations among plan options over the next few years.
- 2018 contribution changes were known as of the June 30, 2017 measurement date. The 2018 contribution changes were reflected into the June 30, 2017 measurement assumptions.

EXHIBIT 5
Schedule of Contributions – Last Ten Fiscal Years

Year Ended June 30:	Actuarially Determined Contributions ¹	Contributions in Relation to the Actuarially Determined Contributions	Contribution Deficiency/ (Excess)	Covered-Employee Payroll ²	Contributions as a Percentage of Covered Employee Payroll
2010	\$3,001,667,000	\$678,769,000	\$2,322,898,000	\$15,083,756,000	4.50%
2011	2,926,070,000	743,659,000	2,182,411,000	15,176,714,000	4.90%
2012	2,371,490,000	710,027,000	1,661,463,000	14,200,540,000	5.00%
2013	2,072,951,000	813,223,000	1,259,728,000	15,343,830,000	5.30%
2014	2,226,586,000	815,157,000	1,411,429,000	15,095,500,000	5.40%
2015	2,211,436,000	854,383,000	1,357,053,000	15,562,532,000	5.49%
2016	2,516,706,000	880,847,000	1,635,859,000	15,729,411,000	5.60%
2017	2,728,064,000	950,812,690	1,777,251,310	16,365,112,000	5.81%
2018	2,613,258,000	1,018,692,516	1,594,565,484	16,838,000,000	6.05%
2019	2,971,069,000	1,104,901,608	1,866,167,392	17,622,000,000	6.27%

See accompanying notes to this schedule on next page.

- ¹ All "Actuarially Determined Contributions" through June 30, 2017, were determined as the "Annual Required Contribution" under GASB 43 and 45.
- ² Covered employee payroll represents earnable and pensionable compensation. Only earnable and pensionable compensation that would possibly go into the determination of the retirement benefits are included.

Notes to Schedule:

Methods and assumptions used to determine contribution rates for the years ended June 30, 2017 and earlier:

Valuation date	December 31 prior to the fiscal year end
Actuarial cost method	Projected Unit Credit
Amortization method	Open 30-year level pay
Remaining amortization period	30 years
Asset valuation method	Market value
Discount Rate	4.25%, except for 2017 which was 3.58%

Methods and assumptions used to determine contribution rates for the years ended June 30, 2018 and later:

Valuation date	December 31 prior to fiscal year end
Actuarial cost method	Entry Age
Amortization method	Open 30-year level pay
Remaining amortization period	30 years
Asset valuation method	Market value
Discount Rate	Discount rate of 3.87% for 2018 and 3.50% for 2019
Timing and payroll adjustment	This includes interest, rounding, and an adjustment for the difference between valuation payroll and covered payroll
Payroll increase assumption	3.50%

EXHIBIT 6
Statement of Fiduciary Net Position

	June 30, 2019	June 30, 2018
Assets		
Cash and deposits	\$307,663,939	\$233,780,889
Receivables		
• Contributions	\$57,549,990	\$53,334,037
• Investment income	<u>465,942</u>	<u>277,667</u>
Total receivables	\$58,015,932	\$53,611,704
Investments	\$1,090,003,552	\$1,022,779,957
Total Assets	\$1,455,683,423	\$1,310,172,550
Liabilities	\$0	\$0
Net position restricted for OPEB	\$1,455,683,423	\$1,310,172,550

EXHIBIT 7

OPEB Expense – Total for All Employers

Reporting Date for Employer under GASB 75	June 30, 2020	June 30, 2019
Measurement Date	June 30, 2019	June 30, 2018
Components of OPEB Expense		
• Service cost	\$1,539,091,679	\$1,753,384,309
• Interest on the Total OPEB Liability	1,192,810,301	1,261,878,071
• Expensed portion of current-period changes in proportion and differences between employer's contributions and proportionate share of contributions ¹	103	43
• Current-period benefit changes	(72,358,137)	--
• Expensed portion of current-period difference between expected and actual experience in the Total OPEB Liability	(26,109,122)	(13,491,746)
• Expensed portion of current-period changes of assumptions or other inputs	304,148,666	(1,023,662,057)
• Member contributions	--	--
• Projected earnings on plan investments ²	(94,292,654)	(87,636,917)
• Expensed portion of current-period differences between actual and projected earnings on plan investments	4,502,506	3,050,611
• Administrative expense	214,656	297,812
• Other ³	(1,874,899)	(111,213)
• Recognition of beginning of year deferred outflows of resources as OPEB expense	3,050,613	--
• Recognition of beginning of year deferred inflows of resources as OPEB expense	(3,316,229,628)	(2,279,075,827)
• Net amortization of deferred amounts from changes in proportion and differences between employer's contributions and proportionate share of contributions	<u>0</u>	<u>8</u>
OPEB Expense	(\$467,045,916)	(\$385,366,906)

¹ Aggregate net result of rounding individually allocated deferred inflow and outflow balances for changes in proportion and differences between employer's contributions and proportionate share of contributions. Derivation of the amortization periods based on Average Expected Future Service are presented on page 27.

² Calculated based on expected return of 7.00% applied to beginning of year assets of \$1,310,172,550 and net external cash flows (contributions, benefits, administrative expenses, and other income) of \$73,730,741, assumed to occur mid-year.

³ Results from Other cash flows on the reconciliation of the Fiduciary Net Position. This results from the difference between the total contributions recorded by the Plan and the total of the contributions recorded from participating employers allocated Net OPEB Liability Recognition periods for deferred inflows and outflows are based on the average service lifetime for the population rounded to the nearest integer increment. For the employer fiscal year ending June 30, 2019 this is six years.

EXHIBIT 8

Deferred Outflows of Resources and Deferred Inflows of Resources

The following charts reflect the deferred inflows and outflows of resources related to OPEB. Deferred inflows and outflows are differences between actual and expected experience that are not reflected in the current year's expenses.

Reporting Date for Employer under GASB 75	June 30, 2020	June 30, 2019
Measurement Date	June 30, 2019	June 30, 2018
Deferred Outflows of Resources		
Changes in proportion and differences between employer's contributions and proportionate share of contributions ¹	\$1,653,733,682	\$1,472,337,817
Changes of assumptions or other inputs	1,520,743,320	0
Net difference between projected and actual earnings on OPEB plan investments	21,069,392	3,063,757
Difference between expected and actual experience in the Total OPEB Liability	<u>0</u>	<u>0</u>
Total Deferred Outflows of Resources	\$3,195,546,394	\$1,475,401,574
Deferred Inflows of Resources		
Changes in proportion and differences between employer's contributions and proportionate share of contributions ¹	\$1,653,733,820	\$1,472,337,827
Changes of assumptions or other inputs	9,512,220,241	12,341,739,636
Net difference between projected and actual earnings on OPEB plan investments	0	0
Difference between expected and actual experience in the Total OPEB Liability	<u>1,595,029,350</u>	<u>1,948,147,746</u>
Total Deferred Inflows of Resources	\$12,760,983,411	\$15,762,225,209
Deferred outflows of resources and deferred inflows of resources related to OPEB will be recognized as follows:		
Net Deferrals to be Recognized in Expense under GASB 75 for the following June 30 Reporting Dates:		
2020	N/A	(\$3,313,179,015)
2021	(\$3,030,636,994)	(3,313,179,015)
2022	(3,030,636,993)	(3,313,179,014)
2023	(3,027,590,759)	(3,310,132,780)
2024	(754,611,788)	(1,037,153,801)
2025	278,039,517	0
Thereafter	0	0

(1) Calculated in accordance with Paragraphs 54 and 55 of GASB 75.

Schedule of Recognition of Changes in Total Net OPEB Liability

**Increase (Decrease) in OPEB Expense Arising from the Recognition of the
Effects of Differences between Expected and Actual Experience on Total OPEB Liability**

Reporting Date for Employer under GASB 75 Year Ended June 30 2020:

Reporting Date for Employer under GASB 75 Year Ended June 30	Differences between Expected and Actual Experience	Recognition Period (Years)	2019	2020	2021	2022	2023	2024	2025	Thereafter
2018	(\$2,821,033,540)	6.00	(\$470,172,257)	(\$470,172,257)	(\$470,172,257)	(\$470,172,257)	(\$470,172,255)	\$0	\$0	\$0
2019	(80,950,466)	6.00	(13,491,746)	(13,491,744)	(13,491,744)	(13,491,744)	(13,491,744)	(13,491,744)	0	0
2020	(156,654,727)	6.00	N/A	<u>(26,109,122)</u>	<u>(26,109,121)</u>	<u>(26,109,121)</u>	<u>(26,109,121)</u>	<u>(26,109,121)</u>	<u>(26,109,121)</u>	<u>0</u>
Net increase (decrease) in OPEB expense			N/A	(\$509,773,123)	(\$509,773,122)	(\$509,773,122)	(\$509,773,120)	(\$39,600,865)	(\$26,109,121)	\$0

**Increase (Decrease) in OPEB Expense Arising from the
Recognition of the Effects of Assumption Changes**

Reporting Date for Employer under GASB 75 Year Ended June 30 2020:

Reporting Date for Employer under GASB 75 Year Ended June 30	Differences Due to Assumption Changes	Recognition Period (Years)	2019	2020	2021	2022	2023	2024	2025	Thereafter
2018	(\$10,835,144,027)	6.00	(\$1,805,857,338)	(\$1,805,857,338)	(\$1,805,857,338)	(\$1,805,857,338)	(\$1,805,857,337)	\$0	\$0	\$0
2019	(6,141,972,342)	6.00	(1,023,662,057)	(1,023,662,057)	(1,023,662,057)	(1,023,662,057)	(1,023,662,057)	(1,023,662,057)	0	0
2020	1,824,891,986	6.00	N/A	<u>304,148,666</u>	<u>304,148,664</u>	<u>304,148,664</u>	<u>304,148,664</u>	<u>304,148,664</u>	<u>304,148,664</u>	<u>0</u>
Net increase (decrease) in OPEB expense			N/A	(\$2,525,370,729)	(\$2,525,370,731)	(\$2,525,370,731)	(\$2,525,370,730)	(\$719,513,393)	\$304,148,664	\$0

Increase (Decrease) in OPEB Expense Arising from the Recognition of Differences between Projected and Actual Earnings on Investments

Reporting Date for Employer under GASB 75 Year Ended June 30 2020:

Reporting Date for Employer under GASB 75 Year Ended June 30	Differences Due to Investment Gains and Losses	Recognition Period (Years)	2019	2020	2021	2022	2023	2024	2025	Thereafter
2018	(\$15,231,159)	5.00	(\$3,046,232)	(\$3,046,232)	(\$3,046,232)	(\$3,046,231)	\$0	\$0	\$0	\$0
2019	15,523,063	5.00	3,050,611	3,050,613	3,050,613	3,050,613	3,050,613	0	0	0
2020	22,512,522	5.00	N/A	<u>4,502,506</u>	<u>4,502,504</u>	<u>4,502,504</u>	<u>4,502,504</u>	<u>4,502,504</u>	<u>0</u>	<u>0</u>
Net increase (decrease) in OPEB expense			N/A	\$4,506,887	\$4,506,885	\$4,506,886	\$7,553,117	\$4,502,504	\$0	\$0

Total Increase (Decrease) in OPEB Expense¹

Reporting Date for Employer under GASB 75 Year Ended June 30 2020:

Reporting Date for Employer under GASB 75 Year Ended June 30	Total Amount	2019	2020	2021	2022	2023	2024	2025	Thereafter
2018	(\$13,671,408,726)	(\$2,279,075,827)	(\$2,279,075,827)	(\$2,279,075,827)	(\$2,279,075,826)	(\$2,276,029,592)	\$0	\$0	\$0
2019	(6,207,399,745)	(1,034,103,192)	(1,034,103,188)	(1,034,103,188)	(1,034,103,188)	(1,034,103,188)	(1,037,153,801)	0	0
2020	1,690,749,781	N/A	<u>282,542,050</u>	<u>282,542,047</u>	<u>282,542,047</u>	<u>282,542,047</u>	<u>282,542,047</u>	<u>278,039,543</u>	<u>0</u>
Net increase (decrease) in OPEB expense		N/A	(\$3,030,636,965)	(\$3,030,636,968)	(\$3,030,636,967)	(\$3,027,590,733)	(\$754,611,754)	\$278,039,543	\$0

¹ Projected recognition of changes in proportion and differences between employers' contributions and proportionate share of contributions is not included. These items are included in individual employers' projected recognition and the aggregate recognition of these inflows and outflows nets to nearly zero in each projection year. As a result, figures shown here are slightly different than those shown on p. 22.

Section 3: Supporting Information

EXHIBIT I SUMMARY OF PARTICIPANT DATA

	As of December 31, 2018	As of December 31, 2017
Number of retirees	205,490	201,052
Average age of retirees	70.7	70.3
Number of spouses	17,523	16,552
Average age of spouses	68.6	68.2
Number of surviving spouses	2,973	2,053
Average age	80.0	80.8
Number inactive vested	43,908	41,471
Average age	48.5	48.0
Number of actives	346,173	344,411
Average age	45.0	45.0
Average service	10.4	10.3
Total Future Service for Active Participants	3,478,643	3,463,958
Total Number of Participants (excludes spouses)	595,571	588,987
GASB 75 Amortization Period for recognition of liability gains and losses and assumption changes (rounded)¹	6 years	6 years

¹ The amortization period for recognition of investment gains and losses is fixed at 5 years, as mandated by GASB 75

EXHIBIT II

ACTUARIAL ASSUMPTIONS AND METHODS

Data:	Detailed census data, premium data and/or claim experience, and summary plan descriptions for OPEB were provided by the State.
Actuarial Cost Method:	Entry Age, Level Percentage of Pay. Decrements are assumed to occur mid-year.
Asset Valuation Method:	Market Value
Basis for Demographic Assumptions:	The demographic assumptions are based on a study performed by Buck (formerly known as Buck Consultants and Conduent HR Services) for the period ending December 31, 2014. The study was presented to the Board of Trustees for the Teachers' and State Employees' Retirement System (TSERS) of North Carolina in October 2015 and was approved for use. Participants in the Consolidated Judicial Retirement System, the Legislative Retirement System, the University Employees' Optional Retirement Program, and eligible local governments are valued using the General Employees' Assumptions. All demographic assumptions were prescribed by the OPEB Valuation Committee to be consistent with the TSERS pension valuation.
Census Valuation Date:	December 31, 2018. Employees that become participants after the valuation date are excluded. Participating employers for sake of the valuation are determined at the beginning of the fiscal year (i.e., included in the total OPEB liability). Allocations to employers are determined based on whether the employer has made contributions during the fiscal year and prior to the valuation date.
Measurement Date:	Liabilities were rolled forward to June 30, 2019. The Entry Age Actuarial Accrued Liability was adjusted from the Valuation Date to the Measurement Date using half the service cost, half the interest cost, and half the expected benefit payments. Financial data was collected as of this date.
Allocations to Employers:	Pro rata allocation of the NOL based on the Present Value of Future Salaries for Employers that made contributions to the Trust during the fiscal year.
Discount Rate:	3.50% - The discount rate is based on the Bond Buyer 20-year GO index as of June 30, 2019. The Plan does not have a funding policy that covers both the unfunded liability and the Plan is less than 5% funded. As such, a blended discount rate is not applicable.
Salary increases based on service:	Teachers: 7.55% grading down to 3.50% Law Enforcement Officers: 8.10% grading down to 3.50% General Employees: 5.50% grading down to 3.50%
Investment Return:	7.20% for the measurement as of June 30, 2017 and 7.00% for the measurements as of June 30, 2018 and June 30, 2019. This rate is provided by the State and the Building Blocks table used for GASB disclosures is provided by the Investment Management Division of the Department of the State Treasurer.

Pre- Retirement Mortality: Teachers and other education employees use RP-2014 White Collar Employee. All other employees use the RP-2014 Employee table without adjustment.

Post-Disablement Mortality: RP-2014 Mortality tables for disabled annuitants multiplied by 103% for males and by 99% for females.

Retirees	Adjustments to the RP-2014 Healthy Annuitant Base Table	
	Prior to Age 78	After Age 78
Male General	108% of Male	124% of Male
Female General	81% of Female	113% of Female
Male Teachers	92% of White Collar Male	120% of White Collar Male
Female Teachers	78% of White Collar Female	108% of White Collar Female
Male Other	92% of White Collar Male	120% of White Collar Male
Female Other	78% of White Collar Female	108% of White Collar Female
Male Law Enforcement	100% of Male	100% of Male
Female Law Enforcement	100% of Female	100% of Female
Spouses	123% of the Male and Female Retiree Tables	

Mortality Projection Scale: MP-2015

Age	Rate	
	Male	Female
20-24	0.000621	0.000779
25-29	0.000684	0.000889
30-34	0.000802	0.001186
35-39	0.001045	0.001766
40-44	0.001529	0.002309
45-49	0.002649	0.003444
50-54	0.004826	0.005307
55-59	0.008551	0.007696
60-64	0.012054	0.009040

These rates are the non-grandfathered rates used in the TSERS pension valuation. The number of members eligible for transitional disability coverage provisions under G.S. 135-112 (“grandfathered”) is a relatively small group of individuals.

Turnover Rates:

Teachers - Male							Teachers - Female						
Age	Service						Age	Service					
	0	1	2	3	4	≥5		0	1	2	3	4	≥5
<=24	0.190	0.160	0.140	0.120	0.095	0.080	<=24	0.170	0.145	0.135	0.120	0.100	0.090
25 to 29	0.190	0.160	0.140	0.120	0.095	0.080	25 to 29	0.170	0.145	0.135	0.120	0.100	0.090
30 to 34	0.190	0.160	0.140	0.120	0.095	0.070	30 to 34	0.170	0.145	0.135	0.120	0.100	0.075
35 to 39	0.190	0.160	0.140	0.120	0.095	0.045	35 to 39	0.170	0.145	0.135	0.120	0.100	0.045
40 to 44	0.190	0.160	0.140	0.120	0.095	0.035	40 to 44	0.170	0.145	0.135	0.120	0.100	0.034
45 to 49	0.190	0.160	0.140	0.120	0.095	0.0325	45 to 49	0.170	0.145	0.135	0.120	0.100	0.0325
>=50	0.190	0.160	0.140	0.120	0.095	0.0325	>=50	0.170	0.145	0.135	0.120	0.100	0.0325

General - Male							General - Female						
Age	Service						Age	Service					
	0	1	2	3	4	≥5		0	1	2	3	4	≥5
<=24	0.180	0.155	0.130	0.110	0.090	0.080	<=24	0.195	0.170	0.145	0.115	0.100	0.110
25 to 29	0.180	0.155	0.130	0.110	0.090	0.080	25 to 29	0.195	0.170	0.145	0.115	0.100	0.110
30 to 34	0.180	0.155	0.130	0.110	0.090	0.070	30 to 34	0.195	0.170	0.145	0.115	0.100	0.085
35 to 39	0.180	0.155	0.130	0.110	0.090	0.0525	35 to 39	0.195	0.170	0.145	0.115	0.100	0.060
40 to 44	0.180	0.155	0.130	0.110	0.090	0.040	40 to 44	0.195	0.170	0.145	0.115	0.100	0.045
45 to 49	0.180	0.155	0.130	0.110	0.090	0.035	45 to 49	0.195	0.170	0.145	0.115	0.100	0.0375
>=50	0.180	0.155	0.130	0.110	0.090	0.035	>=50	0.195	0.170	0.145	0.115	0.100	0.0375

Other - Male							Other - Female						
Age	Service						Age	Service					
	0	1	2	3	4	≥5		0	1	2	3	4	≥5
<=24	0.190	0.160	0.130	0.115	0.100	0.080	<=24	0.165	0.135	0.120	0.100	0.085	0.120
25 to 29	0.190	0.160	0.130	0.115	0.100	0.080	25 to 29	0.165	0.135	0.120	0.100	0.085	0.120
30 to 34	0.190	0.160	0.130	0.115	0.100	0.060	30 to 34	0.165	0.135	0.120	0.100	0.085	0.070
35 to 39	0.190	0.160	0.130	0.115	0.100	0.045	35 to 39	0.165	0.135	0.120	0.100	0.085	0.045
40 to 44	0.190	0.160	0.130	0.115	0.100	0.040	40 to 44	0.165	0.135	0.120	0.100	0.085	0.040
45 to 49	0.190	0.160	0.130	0.115	0.100	0.040	45 to 49	0.165	0.135	0.120	0.100	0.085	0.0375
>=50	0.190	0.160	0.130	0.115	0.100	0.040	>=50	0.165	0.135	0.120	0.100	0.085	0.0375

Law Enforcement - Male and Female						
Age	Service					
	0	1	2	3	4	≥5
<=24	0.130	0.100	0.090	0.060	0.060	0.040
25 to 29	0.130	0.100	0.090	0.060	0.060	0.040
30 to 34	0.130	0.100	0.090	0.060	0.060	0.035
35 to 39	0.130	0.100	0.090	0.060	0.060	0.030
40 to 44	0.130	0.100	0.090	0.060	0.060	0.030
45 to 49	0.130	0.100	0.090	0.060	0.060	0.040
>=50	0.130	0.100	0.090	0.060	0.060	0.040

Active Retirement Rates:

Age	General - Male										
	Service										
	<=3	4	5	6 to 19	20 to 23	24	25	26 to 28	29	30	>=31
<=48	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
49	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.325	0.350	0.200
50	0.000	0.000	0.000	0.000	0.035	0.035	0.080	0.080	0.350	0.350	0.200
51	0.000	0.000	0.000	0.000	0.035	0.035	0.080	0.080	0.350	0.350	0.200
52	0.000	0.000	0.000	0.000	0.035	0.035	0.080	0.080	0.250	0.250	0.200
53	0.000	0.000	0.000	0.000	0.035	0.035	0.080	0.080	0.250	0.300	0.200
54	0.000	0.000	0.000	0.000	0.035	0.035	0.080	0.080	0.300	0.300	0.150
55	0.000	0.000	0.000	0.000	0.050	0.050	0.100	0.100	0.325	0.350	0.200
56	0.000	0.000	0.000	0.000	0.050	0.050	0.100	0.100	0.300	0.275	0.175
57	0.000	0.000	0.000	0.000	0.050	0.050	0.100	0.100	0.225	0.275	0.200
58	0.000	0.000	0.000	0.000	0.050	0.050	0.100	0.100	0.275	0.275	0.200
59	0.000	0.000	0.000	0.000	0.050	0.050	0.100	0.100	0.275	0.275	0.200
60	0.000	0.000	0.085	0.085	0.085	0.225	0.275	0.275	0.350	0.300	0.225
61	0.000	0.000	0.135	0.135	0.135	0.250	0.300	0.275	0.275	0.275	0.275
62	0.000	0.000	0.260	0.260	0.260	0.350	0.350	0.350	0.350	0.350	0.350
63	0.000	0.000	0.195	0.195	0.195	0.275	0.275	0.275	0.275	0.275	0.275
64	0.000	0.000	0.195	0.195	0.195	0.200	0.200	0.275	0.275	0.275	0.275
65	0.000	0.200	0.250	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275
66	0.000	0.175	0.325	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250
67	0.000	0.175	0.325	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200
68	0.000	0.175	0.325	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200
69 to 74	0.000	0.175	0.325	0.225	0.225	0.225	0.225	0.225	0.225	0.225	0.225
>=75	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Age	General - Female										
	Service										
	<=3	4	5	6 to 19	20 to 23	24	25	26 to 28	29	30	>=31
<=48	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
49	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.275	0.350	0.300
50	0.000	0.000	0.000	0.000	0.035	0.035	0.060	0.060	0.275	0.400	0.300
51	0.000	0.000	0.000	0.000	0.035	0.035	0.060	0.060	0.275	0.300	0.225
52	0.000	0.000	0.000	0.000	0.035	0.035	0.060	0.060	0.250	0.275	0.225
53	0.000	0.000	0.000	0.000	0.035	0.035	0.060	0.060	0.250	0.275	0.225
54	0.000	0.000	0.000	0.000	0.035	0.035	0.060	0.060	0.250	0.275	0.225
55 to 59	0.000	0.000	0.000	0.000	0.050	0.050	0.080	0.080	0.300	0.325	0.225
60	0.000	0.000	0.095	0.095	0.095	0.250	0.250	0.325	0.450	0.300	0.200
61	0.000	0.000	0.120	0.120	0.120	0.275	0.275	0.250	0.250	0.250	0.250
62	0.000	0.000	0.215	0.215	0.215	0.425	0.425	0.400	0.400	0.400	0.400
63	0.000	0.000	0.180	0.180	0.180	0.275	0.375	0.275	0.275	0.275	0.275
64	0.000	0.000	0.195	0.195	0.195	0.325	0.325	0.250	0.250	0.250	0.250
65	0.000	0.150	0.400	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300
66	0.000	0.150	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275
67	0.000	0.150	0.400	0.225	0.225	0.225	0.225	0.225	0.225	0.225	0.225
68	0.000	0.150	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250
69	0.000	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250
70 to 74	0.000	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200
>=75	0	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

**Active Retirement Rates
(continued):**

Age	Teachers - Male										
	Service										
	<=3	4	5	6 to 19	20 to 23	24	25	26 to 28	29	30	>=31
<=48	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
49	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.300	0.300	0.300
50	0.000	0.000	0.000	0.000	0.025	0.025	0.065	0.065	0.300	0.300	0.300
51	0.000	0.000	0.000	0.000	0.025	0.025	0.065	0.065	0.300	0.300	0.300
52	0.000	0.000	0.000	0.000	0.025	0.025	0.065	0.065	0.325	0.325	0.250
53	0.000	0.000	0.000	0.000	0.025	0.025	0.065	0.065	0.325	0.325	0.250
54	0.000	0.000	0.000	0.000	0.025	0.025	0.065	0.065	0.325	0.325	0.250
55	0.000	0.000	0.000	0.000	0.045	0.045	0.090	0.090	0.325	0.325	0.250
56	0.000	0.000	0.000	0.000	0.045	0.045	0.090	0.090	0.325	0.325	0.250
57	0.000	0.000	0.000	0.000	0.045	0.045	0.090	0.090	0.325	0.325	0.250
58	0.000	0.000	0.000	0.000	0.045	0.045	0.090	0.090	0.325	0.325	0.250
59	0.000	0.000	0.000	0.000	0.045	0.045	0.090	0.090	0.350	0.300	0.250
60	0.000	0.000	0.120	0.120	0.120	0.300	0.300	0.300	0.400	0.250	0.250
61	0.000	0.000	0.140	0.140	0.140	0.250	0.250	0.250	0.250	0.250	0.250
62	0.000	0.000	0.225	0.225	0.225	0.400	0.350	0.350	0.350	0.350	0.350
63	0.000	0.000	0.180	0.180	0.180	0.500	0.250	0.250	0.250	0.250	0.250
64	0.000	0.000	0.210	0.210	0.210	0.400	0.250	0.150	0.150	0.150	0.150
65	0.000	0.300	0.300	0.325	0.325	0.325	0.200	0.200	0.200	0.200	0.200
66	0.000	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275
67	0.000	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250
68	0.000	0.225	0.250	0.225	0.225	0.225	0.225	0.225	0.225	0.225	0.225
69 to 74	0.000	0.225	0.225	0.225	0.225	0.225	0.225	0.225	0.225	0.225	0.225
>=75	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Age	Teachers - Female										
	Service										
	<=3	4	5	6 to 19	20 to 23	24	25	26 to 28	29	30	>=31
<=48	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
49	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.275	0.275	0.275
50	0.000	0.000	0.000	0.000	0.035	0.035	0.055	0.055	0.275	0.275	0.275
51	0.000	0.000	0.000	0.000	0.035	0.035	0.055	0.055	0.275	0.275	0.275
52	0.000	0.000	0.000	0.000	0.035	0.035	0.055	0.055	0.325	0.400	0.250
53	0.000	0.000	0.000	0.000	0.035	0.035	0.055	0.055	0.325	0.350	0.250
54	0.000	0.000	0.000	0.000	0.035	0.035	0.055	0.055	0.325	0.400	0.300
55	0.000	0.000	0.000	0.000	0.060	0.060	0.095	0.095	0.325	0.400	0.300
56	0.000	0.000	0.000	0.000	0.060	0.060	0.095	0.095	0.325	0.400	0.275
57	0.000	0.000	0.000	0.000	0.060	0.060	0.095	0.095	0.325	0.450	0.300
58	0.000	0.000	0.000	0.000	0.060	0.060	0.095	0.095	0.325	0.450	0.325
59	0.000	0.000	0.000	0.000	0.060	0.060	0.095	0.095	0.450	0.375	0.300
60	0.000	0.000	0.135	0.135	0.135	0.300	0.450	0.450	0.450	0.500	0.325
61	0.000	0.000	0.150	0.150	0.150	0.300	0.400	0.350	0.350	0.350	0.350
62	0.000	0.000	0.250	0.250	0.250	0.500	0.500	0.425	0.425	0.425	0.425
63	0.000	0.000	0.190	0.190	0.190	0.500	0.500	0.325	0.325	0.325	0.325
64	0.000	0.000	0.225	0.225	0.225	0.500	0.500	0.325	0.325	0.325	0.325
65	0.000	0.150	0.350	0.375	0.375	0.375	0.350	0.350	0.350	0.350	0.350
66	0.000	0.150	0.375	0.375	0.375	0.375	0.375	0.375	0.375	0.375	0.375
67	0.000	0.150	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300
68	0.000	0.150	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275
69	0.000	0.150	0.325	0.325	0.325	0.325	0.325	0.325	0.325	0.325	0.325
70 to 74	0.000	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300
>=75	0.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

**Active Retirement Rates
(continued):**

Other - Male

Age	Service									
	<=3	4	5	6 to 19	20 to 23	24	25 to 28	29	30	>=31
<=48	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
49	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.300	0.300	0.150
50	0.000	0.000	0.000	0.000	0.035	0.035	0.080	0.300	0.300	0.150
51	0.000	0.000	0.000	0.000	0.035	0.035	0.080	0.300	0.300	0.150
52	0.000	0.000	0.000	0.000	0.035	0.035	0.080	0.250	0.250	0.175
53	0.000	0.000	0.000	0.000	0.035	0.035	0.080	0.250	0.250	0.200
54	0.000	0.000	0.000	0.000	0.035	0.035	0.080	0.150	0.250	0.200
55	0.000	0.000	0.000	0.000	0.040	0.040	0.100	0.250	0.250	0.200
56	0.000	0.000	0.000	0.000	0.040	0.040	0.100	0.250	0.250	0.150
57	0.000	0.000	0.000	0.000	0.040	0.040	0.100	0.250	0.250	0.200
58	0.000	0.000	0.000	0.000	0.040	0.040	0.100	0.250	0.250	0.250
59	0.000	0.000	0.000	0.000	0.040	0.040	0.100	0.250	0.250	0.200
60	0.000	0.000	0.090	0.090	0.090	0.225	0.225	0.250	0.250	0.250
61	0.000	0.000	0.125	0.125	0.125	0.225	0.225	0.225	0.225	0.225
62	0.000	0.000	0.280	0.280	0.280	0.400	0.400	0.400	0.400	0.400
63	0.000	0.000	0.220	0.220	0.220	0.300	0.300	0.300	0.300	0.300
64	0.000	0.000	0.190	0.190	0.190	0.300	0.300	0.300	0.300	0.300
65	0.000	0.150	0.275	0.300	0.300	0.300	0.275	0.275	0.275	0.275
66	0.000	0.150	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250
67	0.000	0.150	0.175	0.175	0.175	0.175	0.175	0.175	0.175	0.175
68	0.000	0.150	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200
69	0.000	0.150	0.225	0.225	0.225	0.225	0.225	0.225	0.225	0.225
70 to 74	0.000	0.225	0.225	0.225	0.225	0.225	0.225	0.225	0.225	0.225
>=75	0	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Other - Female

Age	Service										
	<=3	4	5	6 to 19	20 to 23	24	25	26 to 28	29	30	>=31
<=48	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
49	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.175	0.325	0.225
50	0.000	0.000	0.000	0.000	0.040	0.040	0.055	0.055	0.175	0.325	0.225
51	0.000	0.000	0.000	0.000	0.040	0.040	0.055	0.055	0.175	0.325	0.225
52	0.000	0.000	0.000	0.000	0.040	0.040	0.055	0.055	0.225	0.225	0.225
53	0.000	0.000	0.000	0.000	0.040	0.040	0.055	0.055	0.150	0.300	0.225
54	0.000	0.000	0.000	0.000	0.040	0.040	0.055	0.055	0.225	0.225	0.225
55	0.000	0.000	0.000	0.000	0.050	0.050	0.090	0.090	0.225	0.225	0.225
56 to 59	0.000	0.000	0.000	0.000	0.050	0.050	0.090	0.090	0.250	0.250	0.250
60	0.000	0.000	0.110	0.110	0.110	0.200	0.250	0.275	0.250	0.250	0.250
61	0.000	0.000	0.150	0.150	0.150	0.275	0.275	0.275	0.275	0.275	0.275
62	0.000	0.000	0.270	0.270	0.270	0.375	0.400	0.400	0.400	0.400	0.400
63	0.000	0.000	0.175	0.175	0.175	0.375	0.400	0.300	0.300	0.300	0.300
64	0.000	0.000	0.195	0.195	0.195	0.375	0.400	0.300	0.300	0.300	0.300
65	0.000	0.150	0.250	0.275	0.275	0.275	0.350	0.350	0.350	0.350	0.350
66	0.000	0.150	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275	0.275
67	0.000	0.150	0.200	0.225	0.225	0.225	0.225	0.225	0.225	0.225	0.225
68	0.000	0.150	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250
69	0.000	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200	0.200
70 to 74	0.000	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250	0.250
>=75	0	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

**Active Retirement Rates
(continued):**

Law Enforcement - Male and Female

Age	Service					
	<=3	4	5 to 14	15 to 28	29	>=30
<=48	0.000	0.000	0.000	0.000	0.000	0.000
49	0.000	0.000	0.000	0.000	0.750	0.600
50 to 54	0.000	0.000	0.000	0.090	0.750	0.600
55	0.000	0.500	0.500	0.500	0.750	0.500
56 to 59	0.000	0.150	0.175	0.175	0.750	0.500
60 to 64	0.000	0.200	0.200	0.200	0.750	0.500
65	0.000	0.250	0.250	0.250	0.250	0.250
66 to 74	0.000	0.300	0.300	0.300	0.300	0.300
>=75	0.000	1.000	1.000	1.000	1.000	1.000

The eligibility for retirement is determined as of the timing of the assumed decrement (middle of the year), rather than as of the anniversary of the Valuation Date (the beginning of the year). This creates assumed retirements for participants with 4.5, 24.5, and 29.5 years of service as of the anniversary of the Valuation Date.

**Inactive Vested Retirement
Expected Enrollment Age:**

Age 55 with 20 or more years of service; age 63 with 5 or more years of service, but less than 20 years of service.

Missing Participant Data:

Actives and terminated vested who do not have plan code are assumed to be enrolled in plans based on enrollment assumptions.
 Missing date of birth or invalid date of birth are assumed an average value of the group. Invalid gender codes are replaced with the default of male.
 Any other missing census item for a given participant was assumed to equal the average value of that item over all other participants of the same status for whom the item is known.

**Participation and Coverage
Election:**

100% of employees eligible to retire and receive subsidized postretirement welfare coverage were assumed to elect medical and prescription drug coverage. All participants are assumed to be enrolled in plans based on enrollment assumptions.

Dependents:

Demographic data was available for spouses of current retirees. For future retirees, husbands were assumed to be four years older than their wives. 10% of future retirees who elect to continue their health coverage at retirement were assumed to have an eligible spouse who also opts for health coverage at that time.

Payroll Increases:

3.50%.

Data Adjustments:

Since child records under split contract were reported as subscribers, we assumed retirees under age 27 were children.

Matching spouses of retirees to retirees when they were covered under split contracts (one Medicare eligible and the other not) was problematic. Additionally, surviving spouses who are not receiving survivor benefits under the retirement plan were not readily distinguishable from retirees. We believe that there are spouses of retirees that we have valued as retirees without paying the spouse premium. No adjustment has been made to the valuation liabilities.

Per Capita Cost Development:

Medical and Prescription Drug: Per capita claims costs were based on actual incurred claim experience for the periods January 1, 2017 through December 31, 2018. Claims were separated by Medicare and Non-Medicare participants, then adjusted as follows:

- total claims were divided by the number of adult members to yield a per capita claim,
- the per capita claim was trended to the midpoint of the valuation year at assumed trend rates, and the per capita claim was adjusted for the effect of any plan changes
- Actuarial factors were then applied to the per capita claims to estimate individual retiree and spouse costs by age and by gender.
- Medicare Advantage plans were valued by actuarially adjusting the insured premium rates by age and gender.

Administrative Expenses: Administrative expenses were based on a recent quarterly projection prepared by Segal.

**Per Capita Health Costs
Non-Medicare**

70/30 Plan	Medical				Prescription Drug			
	Retiree		Spouse		Retiree		Spouse	
	Age	Male	Female	Male	Female	Male	Female	Male
40	\$3,838	\$4,936	\$2,386	\$3,965	\$1,166	\$1,500	\$725	\$1,205
45	4,564	5,725	2,831	4,273	1,387	1,739	860	1,298
50	5,417	6,170	3,783	4,954	1,646	1,875	1,150	1,505
55	6,433	6,641	5,063	5,734	1,955	2,018	1,538	1,742
60	7,639	7,159	6,777	6,650	2,321	2,175	2,059	2,021
65	9,073	7,712	9,073	7,712	2,757	2,343	2,757	2,343
70	10,515	8,311	10,515	8,311	3,195	2,525	3,195	2,525
75	11,332	8,946	11,332	8,946	3,443	2,718	3,443	2,718
80	12,203	9,644	12,203	9,644	3,708	2,930	3,708	2,930



Per Capita Health Costs Non-Medicare (continued):	80/20 Plan	Medical				Prescription Drug			
		Retiree		Spouse		Retiree		Spouse	
	Age	Male	Female	Male	Female	Male	Female	Male	Female
	40	\$4,969	\$6,390	\$3,089	\$5,133	\$1,512	\$1,945	\$940	\$1,562
45	5,908	7,412	3,665	5,532	1,798	2,256	1,115	1,684	
50	7,012	7,987	4,898	6,413	2,134	2,431	1,491	1,952	
55	8,328	8,598	6,554	7,423	2,535	2,617	1,995	2,259	
60	9,890	9,268	8,774	8,610	3,010	2,821	2,670	2,620	
65	11,746	9,984	11,746	9,984	3,575	3,039	3,575	3,039	
70	13,614	10,759	13,614	10,759	4,143	3,275	4,143	3,275	
75	14,671	11,581	14,671	11,581	4,465	3,525	4,465	3,525	
80	15,798	12,486	15,798	12,486	4,808	3,800	4,808	3,800	

Medicare – Non Medicare Advantage	70/30 Plan	Medical				Prescription Drug			
		Retiree		Spouse		Retiree		Spouse	
	Age	Male	Female	Male	Female	Male	Female	Male	Female
	40	\$397	\$511	\$247	\$410	\$1,166	\$1,500	\$725	\$1,205
45	472	592	293	442	1,387	1,739	860	1,298	
50	560	638	391	512	1,646	1,875	1,150	1,505	
55	665	687	524	593	1,955	2,018	1,538	1,742	
60	790	740	701	688	2,321	2,175	2,059	2,021	
65	938	798	938	798	2,757	2,343	2,757	2,343	
70	1,088	860	1,088	860	3,195	2,525	3,195	2,525	
75	1,172	925	1,172	925	3,443	2,718	3,443	2,718	
80	1,262	998	1,262	998	3,708	2,930	3,708	2,930	

Per Capita Health Costs (continued): Medicare – Medicare Advantage	Medicare Advantage (Basic)				Medicare Advantage (Enhanced)				
		Retiree		Spouse		Retiree		Spouse	
	Age	Male	Female	Male	Female	Male	Female	Male	Female
	40	\$417	\$536	\$259	\$430	\$736	\$947	\$458	\$761
	45	495	621	307	464	876	1,098	543	820
	50	588	670	411	538	1,039	1,184	726	950
	55	698	721	549	622	1,234	1,274	971	1,100
	60	829	777	736	722	1,466	1,373	1,300	1,276
	65	985	837	985	837	1,741	1,480	1,741	1,480
	70	1,141	902	1,141	902	2,017	1,594	2,017	1,594
	75	1,230	971	1,230	971	2,174	1,716	2,174	1,716
	80	1,324	1,047	1,324	1,047	2,341	1,850	2,341	1,850

Health Care Cost Trend Rates:

Health care trend measures the anticipated overall rate at which health plan costs are expected to increase in future years. The rates shown below are “net” and are applied to the net per capita costs shown above. The trend shown for a particular plan year is the rate that is applied to that year’s cost to yield the next year’s projected cost.

Year Ending June 30	Rate (%)			
	Medical Non-Medicare	Prescription Drug	Medicare Advantage	Admin.
2019	6.50%	9.50%	Varied ¹	3.00%
2020	6.50%	9.00%	6.50%	3.00%
2021	6.00%	8.50%	6.00%	3.00%
2022	6.00%	8.00%	6.00%	3.00%
2023	5.50%	7.50%	5.50%	3.00%
2024	5.00%	7.00%	5.00%	3.00%
2025	5.00%	6.50%	5.00%	3.00%
2026	5.00%	6.00%	5.00%	3.00%
2027	5.00%	5.50%	5.00%	3.00%
2028 & later ²	5.00%	5.00%	5.00%	3.00%

¹The Health Insurance Tax was estimated at \$26 per month for 2020 and added to the expected claims.

²The ultimate trend rate was used to roll claims backward from the valuation date for purposes of the Entry Age Normal Cost Method

**Health Care Cost Trend Rates:
(continued)**

The trend rate assumptions were based on the trends consistent with the Quarterly Financial Projections, and were developed using Segal’s internal guidelines. The guidelines are established each year using data sources such as the 2019 Segal Health Trend Survey, internal client results, trends from other published surveys prepared by the S&P Dow Jones Indices, consulting firms and brokers, and CPI statistics published by the Bureau of Labor Statistics.

Annual Expected MA Premiums	Base	Enhanced
2019	\$985	\$1,741
2020	\$1,297	\$2,053
2021	\$1,381	\$2,186

Medicare Part D Subsidy Assumption:

GASB guidelines prohibit the offset of OPEB obligations by the future value of Medicare Part D subsidies. Therefore, these calculations do not include an estimate for retiree prescription drug plan federal subsidies that the North Carolina State Health Plan may be eligible to receive.

Retiree Contribution Increase Rate:

Retiree contributions for medical and prescription drugs were assumed to increase at the same blended trend rate as medical and prescription drug cost. 2019 trend on contributions was adjusted to expected 2020 contribution rates, including anticipated wellness credits and enrollment migration.

Assumption for Tobacco Attestation

The percentage of participants in the 80/20 Plan that complete a Tobacco Attestation is assumed to be 98.5% in all years.

Administrative Expenses:

Administrative expense loads of \$342 per participant (retiree and spouse) for Non-Medicare retiree and of \$81 for Medicare retirees (blended MA & non-MA), increasing at 3.0% per year thereafter were added to projected incurred claims cost in developing the benefit obligations.

Plan Design:

Development of plan liabilities was based on the substantive plan of benefits in effect as described in Exhibit III.

Maximum Benefits:

There are no annual or lifetime maximum benefits assumed.

Plan Enrollment Assumptions	<p>Based on most recent financial report: Plan Enrollment Assumptions are valued by adjusting the trend for 2019-2022 for enrollment migration.</p> <table border="1"> <thead> <tr> <th><i>Non-Medicare Retiree</i></th> <th>2019</th> <th>2020</th> <th>2021</th> <th>2022</th> <th>2023</th> </tr> </thead> <tbody> <tr> <td>70/30 Plan</td> <td>47.627%</td> <td>48.220%</td> <td>48.813%</td> <td>49.407%</td> <td>50.000%</td> </tr> <tr> <td>80/20 Plan</td> <td>52.373%</td> <td>51.780%</td> <td>51.187%</td> <td>50.593%</td> <td>50.000%</td> </tr> <tr> <th><i>Med Retiree</i></th> <th></th> <th></th> <th></th> <th></th> <th></th> </tr> <tr> <td>70/30 Plan</td> <td>14.207%</td> <td>13.655%</td> <td>13.103%</td> <td>12.552%</td> <td>12.000%</td> </tr> <tr> <td>MA Base</td> <td>74.043%</td> <td>74.783%</td> <td>75.522%</td> <td>76.261%</td> <td>77.000%</td> </tr> <tr> <td>MA Enhanced</td> <td>11.750%</td> <td>11.562%</td> <td>11.375%</td> <td>11.187%</td> <td>11.000%</td> </tr> </tbody> </table>	<i>Non-Medicare Retiree</i>	2019	2020	2021	2022	2023	70/30 Plan	47.627%	48.220%	48.813%	49.407%	50.000%	80/20 Plan	52.373%	51.780%	51.187%	50.593%	50.000%	<i>Med Retiree</i>						70/30 Plan	14.207%	13.655%	13.103%	12.552%	12.000%	MA Base	74.043%	74.783%	75.522%	76.261%	77.000%	MA Enhanced	11.750%	11.562%	11.375%	11.187%	11.000%
<i>Non-Medicare Retiree</i>	2019	2020	2021	2022	2023																																						
70/30 Plan	47.627%	48.220%	48.813%	49.407%	50.000%																																						
80/20 Plan	52.373%	51.780%	51.187%	50.593%	50.000%																																						
<i>Med Retiree</i>																																											
70/30 Plan	14.207%	13.655%	13.103%	12.552%	12.000%																																						
MA Base	74.043%	74.783%	75.522%	76.261%	77.000%																																						
MA Enhanced	11.750%	11.562%	11.375%	11.187%	11.000%																																						
Health Care Reform Assumption:	<p>This valuation does not include the potential impact of any future changes due to the Patient Protection and Affordable Care Act (PPACA) and the Health Care and Education Reconciliation Act (HCERA) of 2010 other than the excise tax on high cost health plans beginning in 2022 (reflected with this valuation) and those previously adopted as of the valuation date.</p>																																										
Assumption Changes Since Prior Valuation:	<ul style="list-style-type: none"> ➤ The discount rate was updated, changing from 3.87% to 3.50%, in accordance with the State's policy for determining the discount rate. ➤ Disability rates were adjusted to the non-grandfathered assumptions used in the TSERS pension valuation, to better align with anticipated incidence of disability. ➤ The medical and prescription drug claims cost were changed based on most recent experience. ➤ Medical and prescription drug trend rates were changed to current schedule. ➤ Enrollment assumptions were updated to model expected migrations among plan options over the next four years. 																																										

EXHIBIT III SUMMARY OF PLAN

This exhibit summarizes the major benefit provisions as included in the valuation. To the best of our knowledge, the summary represents the substantive plans as of the measurement date. It is not intended to be, nor should it be interpreted as, a complete statement of all benefit provisions.

Eligibility:	<p>Participants in the North Carolina State Health Plan for Teachers and State Employees who retire from the State, the University of North Carolina System, community colleges, local school systems, and certain other component units are eligible to continue to participate in the State Health Plan in retirement if they meet certain criteria. Former employees who are eligible to receive medical benefits are long-term disability beneficiaries of the Disability Income Plan of North Carolina (DIPNC) and retirees of the Teachers' and State Employees' Retirement System (TSERS), the Consolidated Judicial Retirement system (CJRS), the Legislative Retirement System (LRS), the University Employees' Optional Retirement Program (UEORP), and a small number of local governments. General retirement requirements are as follows:</p> <p>Law Enforcement Officer:</p> <ul style="list-style-type: none"> • age 50 and 15 years of service; • age 55 and 5 years of service; or • any age with 25 or more years of service. <p>All Others:</p> <ul style="list-style-type: none"> • age 50 and 20 years of service; • age 60 and 5 years of service; or • any age with 30 or more years of service. <p>Members achieve vesting at any age with 5 years of service. Members who separate from service after becoming vested and do not withdraw their contributions from the Retirement System may later retire (and enroll in the plan) once they have attained the retirement eligibility age.</p>
Benefit Types:	70/30 and 80/20 Plans are offered to non-Medicare participants, and the 70/30 Plan, Medicare Advantage Base (MA Base) and Medicare Advantage Enhanced (MA Enhanced) plans are offered to Medicare eligible participants.
Duration of Coverage:	Lifetime for retirees and dependents
Dependent Benefits:	Same as retirees

Retiree Contributions:

Monthly contributions, effective January 1, 2019, are shown below.

For Retirees hired prior to October 1, 2006 (February 1, 2007 for legislators):

	Non-Medicare			Medicare		
	70/30 Plan	80/20 Plan		70/30 Plan	MA Base	MA Enhanced
		Tobacco Attest. Not Complete	Tobacco Attest. Complete			
Retiree	\$0.00	\$110.00	\$50.00	\$0.00	\$0.00	\$63.00
Spouse	\$590.00	\$650.00		\$425.00	\$89.00	\$152.00

For Retirees hired on or after October 1, 2006 (February 1, 2007 for legislators), contributions are defined as a percentage of the total premium costs based on the following service based schedule:

Years of Service at Retirement	Retiree Contribution Percentage	Spouse Contribution Percentage
5 – 9.99	100%	100%
10 – 19.99	50%	100%
20 or more	0%	100%

100% and 50% of the total premium costs are shown below:

	Non-Medicare			Medicare		
	70/30 Plan	80/20 Plan		70/30 Plan	MA Base	MA Enhanced
		Tobacco Attest. Not Complete	Tobacco Attest. Complete			
Retiree 100% of Premium	\$518.64	\$628.64	\$568.64	\$403.06	\$89.00	\$152.00
Retiree 50% of Premium	\$259.32	\$369.32	\$309.32	\$201.53	\$89.00	\$152.00
Spouse	\$590.00	\$650.00		\$425.00	\$89.00	\$152.00

Benefit Descriptions (as of January 1, 2019): PPO 70/30 Plan	PPO 70/30 Plan	In-Network	Out-Of-Network
	Medical		
<i>Annual Deductible</i>		\$1,080/\$3,240	\$2,160/\$6,480
<i>Coinsurance</i>		70%	50%
<i>Coinsurance Maximum</i>		\$4,388/\$13,164	\$8,776/\$26,328
<i>Lifetime Maximum</i>		Unlimited	Unlimited
<i>Office Visit copay</i>			
<i>Primary Care</i>		\$40	Ded. & coins.
<i>Specialist</i>		\$94	Ded. & coins.
<i>Urgent Care</i>		\$100	\$100
<i>Inpatient Hospitalization</i>		\$337 + ded. & coins.	\$337 + ded. & coins.
<i>Outpatient Hospitalization</i>		ded. & coins.	ded. & coins.
<i>Emergency Room</i>		\$337 + ded. & coins.	same as In-Network
<i>Chiropractic</i>		\$72	Ded. & coins.
<i>Physical, Occupational or Speech Therapy</i>		\$72	Ded. & coins.
<i>Outpatient Mental Health, Chemical Dependency</i>		\$40	Coinsurance

**Benefit Descriptions
(as of January 1, 2019): PPO 70/30 Plan
(continued)**

Prescription Drugs (up to 30 day supply)	
<i>Tier 1</i>	\$16
<i>Tier 2</i>	\$47
<i>Tier 3</i>	\$74
<i>Tier 4 - Generic Specialty</i>	10% coins., \$100 max.
<i>Tier 5 - Preferred Specialty</i>	25% coins., \$103 max.
<i>Tier 6 - Non-Preferred Specialty</i>	25% coins., \$133 max.
<i>Brand drug with a generic equivalent</i>	Tier 1 copay plus the difference in the cost to the Plan between the generic and brand name drug, not to exceed \$100 per 30-day supply of the brand name medication.
<i>Preferred diabetic testing supplies</i>	\$10
<i>Non-Preferred diabetic testing supplies</i>	\$74
<i>Out-of-Pocket Maximum</i>	\$3,360 (Individual) / \$10,080 (Family)

Coverage becomes secondary when former employees become eligible for Medicare.

**Benefit Descriptions
(as of January 1, 2019): PPO 80/20 Plan**

PPO 80/20 Plan	In-Network	Out-Of-Network
Medical		
<i>Annual Deductible</i>	\$1,250/\$3,750	\$2,500/\$7,500
<i>Coinsurance</i>	80%	60%
<i>Out-of-Pocket Maximum</i>	\$4,890/\$14,670	\$9,780/\$29,340
<i>Lifetime Maximum</i>	Unlimited	Unlimited
<i>Office Visit copay</i>		
<i>Primary Care</i>	\$25 / \$10 when using PCP listed on ID card	Ded. & coins.
<i>Specialist</i>	\$80	Ded. & coins.
<i>Urgent Care</i>	\$70	\$70
<i>Inpatient Hospitalization</i>	\$300 + ded. & coins.	\$450 + ded. & coins.
<i>Outpatient Hospitalization</i>	ded. & coins.	ded. & coins.
<i>Emergency Room</i>	\$300 + ded. & coins.	same as In-Network
<i>Chiropractic</i>	\$52	Ded. & coins.
<i>Physical, Occupational or Speech Therapy</i>	\$52	Ded. & coins.
<i>Outpatient Mental Health, Chemical Dependency</i>	\$25	Coinsurance

**Benefit Descriptions
(as of January 1, 2019): PPO 80/20 Plan
(continued)**

Prescription Drugs (up to 30 day supply)	
<i>Tier 1</i>	\$5
<i>Tier 2</i>	\$30
<i>Tier 3</i>	Ded. & coins.
<i>Tier 4 - Generic Specialty</i>	\$100
<i>Tier 5 - Preferred Specialty</i>	\$250
<i>Tier 6 - Non-Preferred Specialty</i>	Ded. & coins.
<i>Brand drug with a generic equivalent</i>	Tier 1 copay plus the difference in the cost to the Plan between the generic and brand name drug, not to exceed \$100 per 30-day supply of the brand name medication.
<i>Preferred diabetic testing supplies</i>	\$5
<i>Non-Preferred testing supplies</i>	Ded. & coins.

Coverage becomes secondary when former employees become eligible for Medicare.

(as of January 1, 2019): Medicare Advantage Plans

Medicare Advantage	MA-PDP Basic (MA Base)	MA-PDP Enhanced (MA Enhanced)
Medical		
<i>Annual Deductible</i>	\$0	\$0
<i>Coinsurance</i>	80%	80%
<i>Coinsurance Maximum</i>	\$4,000	\$3,300
<i>Lifetime Maximum</i>	Unlimited	Unlimited
<i>Office Visit copay</i>		
<i>Primary Care</i>	\$20	\$15
<i>Specialist</i>	\$40	\$35
<i>Preventive Care</i>	\$0	\$0
<i>Emergency Room</i>	\$65	\$65

**Benefit Descriptions
(as of January 1, 2019): Medicare
Advantage Plans (continued)**

Prescription Drugs	MA-PDP Basic	MA-PDP Enhanced
<i>Retail (up to 31 day supply)</i>		
<i>Tier 1</i>	\$10	\$10
<i>Tier 2</i>	\$40	\$35
<i>Tier 3</i>	\$64	\$50
<i>Tier 4</i>	25% coins., \$100 max.	25% coins., \$100 max.
<i>Out-of-Pocket Maximum</i>	\$2,500	\$2,500
<i>Mail Order (up to 90 day supply)</i>		
<i>Tier 1</i>	\$24	\$20
<i>Tier 2</i>	\$80	\$70
<i>Tier 3</i>	\$128	\$100
<i>Tier 4</i>	25% coins., \$300 max.	25% coins., \$200 max.
<i>Out-of-Pocket Maximum (individual)</i>	\$2,500	\$2,500

Plan Changes

Effective January 1, 2019:

OOP maximum for 80/20 Plan increased from \$4,350/\$10,300 (individual/family) for in-network and \$8,700/\$26,100 for out-of-network to \$4,890/\$14,670 for in-network and \$9,780/\$29,340 for out-of-network.

In-network Specialist copay for the 80/20 Plan decreased from \$85/\$45 to \$80.

For the 80/20 Plan, in-network inpatient hospitalization changed from a) \$450 plus deductible and coinsurance or \$0 plus deductible and coinsurance for designated Blue Options hospitals in 2018; to b) \$300 plus deductible and coinsurance for all hospitals in 2019.

Plan Changes effective January 1, 2020 were known as of the time this report was drafted, and are expected to be cost neutral. They were not used in the development of the expected costs.

EXHIBIT IV DEFINITION OF TERMS

Assumptions or Actuarial Assumptions:	The estimates on which the cost of the Plan is calculated including: (a) Investment return — the rate of investment yield that the Plan will earn over the long-term future; (b) Mortality rates — the death rates of employees and pensioners; life expectancy is based on these rates; (c) Retirement rates — the rate or probability of retirement at a given age; (d) Turnover rates — the rates at which employees of various ages are expected to leave employment for reasons other than death, disability, or retirement.
Total OPEB Liability:	Present value of all future benefit payments for current retirees and active employees taking into account assumptions about demographics, turnover, mortality, disability, retirement, health care trends, and other actuarial assumptions.
Service Cost:	The amount of contributions required to fund the benefit allocated to the current year of service.
Actuarially Determined Contribution:	A target or recommended contribution to an OPEB plan for the reporting period based on the most recent measurement available.
Valuation Date:	The date at which the actuarial valuation is performed
Covered Payroll:	The payroll on which contributions to an OPEB plan are based. [GASBS 85, ¶13]
Discount Rate:	The single rate of return, that when applied to all projected benefit payments results in an actuarial present value that is the sum of the following: (1) the actuarial present value of projected benefit payments projected to be funded by plan assets using a long term rate of return, and (2) the actuarial present value of projected benefit payments that are not included in (1) using a yield or index rate for 20 year tax exempt general obligation municipal bonds with an average rating of AA/Aa or higher
Entry Age Actuarial Cost Method:	An actuarial cost method where the present value of the projected benefits for an individual is allocated on a level basis over the earnings or service of the individual between entry age and assumed exit age
Healthcare Cost Trend Rates:	The rate of change in per capita health costs over time
Net OPEB Liability:	The Total OPEB Liability less the Plan Fiduciary Net Position
Plan Fiduciary Net Position:	Market Value of Assets
Real Rate of Return:	The rate of return on an investment after removing inflation

EXHIBIT V ACCOUNTING REQUIREMENTS

The Governmental Accounting Standards Board (GASB) issued Statement Number 74 – Financial Reporting for Postemployment Benefit Plans Other Than Pension Plans, and Statement Number 75 – Accounting and Financial Reporting by Employers for Postemployment Benefits Other Than Pensions. Under these statements, all state and local government entities that provide other post-employment benefits are required to report the cost of these benefits on their financial statements. The accounting standards supplement cash accounting, under which the expense for postemployment benefits is equal to benefit and administrative costs paid on behalf of retirees and their dependents (i.e., a pay-as-you-go basis).

The statements cover postemployment benefits of medical, prescription drugs, dental, vision and life insurance coverage for retirees; long-term care coverage, life insurance and death benefits that are *not* offered as part of a pension plan; and long-term disability insurance for employees. The benefits valued in this report are limited to those described in Exhibit III of Section 4, which are based on those provided under the terms of the substantive plan in effect at the time of the valuation and on the pattern of sharing costs between the employer and plan members. The projection of benefits is not limited by legal or contractual limits on funding the plan unless those limits clearly translate into benefit limits on the substantive plan being valued.

The new standards prescribe an accrual-basis accounting requirement, thereby recognizing the employer cost of postemployment benefits over an employee’s career. The standards also prescribe a consistent accounting requirement for both pension and non-pension benefits.

The total cost of providing postemployment benefits is projected, taking into account assumptions about demographics, turnover, mortality, disability, retirement, health care trends, and other actuarial assumptions. These assumptions are summarized in Exhibit II of Section 4. This amount is then discounted to determine the Total OPEB Liability. The Net OPEB Liability (NOL) is the difference between the Total OPEB Liability and market value of assets in the Plan, called the Plan Fiduciary Net Position.

Once the NOL is determined, the Annual OPEB Expense is determined as the change in NOL from the prior year with deferred recognition of certain elements. In addition, Required Supplementary Information (RSI) must be reported, including historical information about the Net OPEB Liability and the contributions made to the Plan. Exhibits IV and VI of Section 4 contain a definition of terms as well as more information about GASB 74/75 concepts.

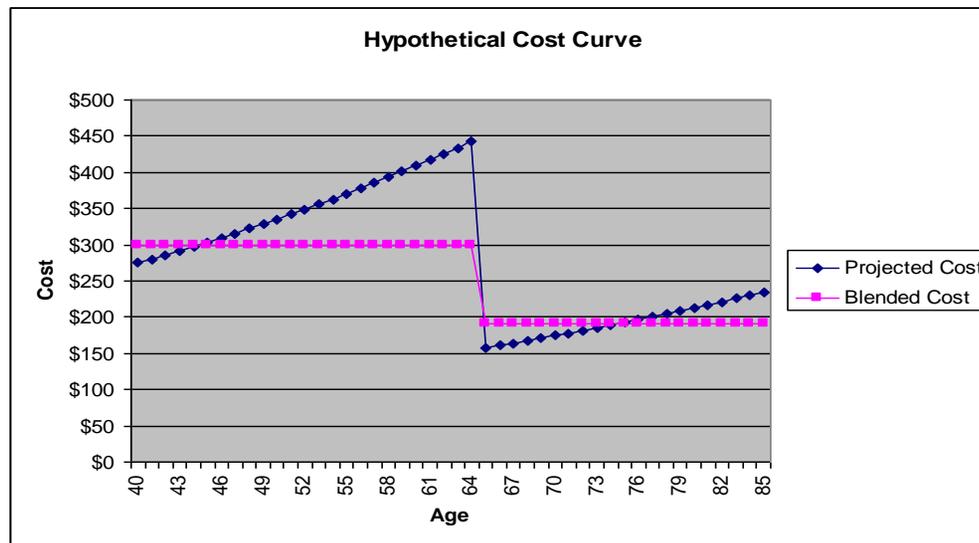
The calculation of an accounting obligation does not, in and of itself, imply that there is any legal liability to provide the benefits valued, nor is there any implication that the Employer is required to implement a funding policy to satisfy the projected expense.

Actuarial calculations reflect a long-term perspective, and the methods and assumptions use techniques designed to reduce short-term volatility in accrued liabilities and the actuarial value of assets, if any.

Actuarial valuations involve estimates of the value of reported amounts and assumptions about the probability of events far into the future, and the actuarially determined amounts are subject to continual revision as actual results are compared to past expectations and new estimates are made about the future.

EXHIBIT VI GASB 74/75 CONCEPTS

The following graph illustrates why a significant accounting obligation may exist even though the retiree contributes most or all of the blended premium cost of the plan. The average cost for retirees is likely to exceed the average cost for the whole group, leading to an implicit subsidy for these retirees. The accounting standard requires the employer to identify and account for this implicit subsidy as well as any explicit subsidies the employer may provide.



9032808v12/13399.066