



# North Carolina State Health Plan

**Actuarial Valuation and Review of Other  
Postemployment Benefits (OPEB)  
Measured as of June 30, 2018,  
with a Reporting Date of June 30, 2019  
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 on Actuarial Valuation of Retired Employees' Health Benefits (OPEB) 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.

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February 15, 2019

Committee on Actuarial Valuation of Retired Employees' Health Benefits (OPEB)  
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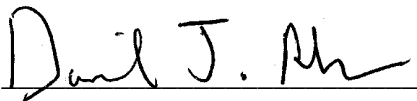
Dear Board Members:

We are pleased to submit this Actuarial Valuation and Review of Other Postemployment Benefits (OPEB) measured as of June 30, 2018 under Governmental Accounting Standards Board Statement No. 75. The report summarizes the actuarial data used in the valuation, discloses the Net OPEB Liability (NOL) measured as of June 30, 2018, and analyzes the preceding year's experience. This report was based on the census data provided by Office of the Treasurer, the financial information prepared by the Office of the 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 mortality tables and the projection scale were prescribed by the State. In our opinion, the other 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



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Vice President and Consulting Actuary

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# 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:

<b>Plan of benefits</b>	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.
<b>Participant data</b>	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.
<b>Assets</b>	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” for purposes of determining the Actuarially Determined Contribution that differs from market value to reflect gradually year-to-year changes in the market value of assets in determining the contribution requirements.

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**Actuarial assumptions**

In preparing an actuarial valuation, Segal starts by developing a forecast of the benefits to be paid to 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-term 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.

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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's finance 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 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 valuation of the North Carolina State OPEB plan measured as of June 30, 2018, required by Governmental Accounting Standards Board (GASB) Statement No. 75, *Financial Reporting for Postemployment Benefits Other than Pensions*. The actuarial computations made are for purposes of fulfilling the State's 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, 2019, the Net OPEB Liability (NOL) was measured as of June 30, 2018. 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, 2018 are not adjusted or rolled forward to the June 30, 2019 reporting date.
- The collective NOL as of the beginning of the employer fiscal year ending June 30, 2018 is \$32,786,624,464, based on a measurement as of June 30, 2017. The NOL as of the employer fiscal year ending June 30, 2019 is \$28,488,185,479, based on a measurement as of June 30, 2018.
- The collective GASB 75 OPEB expense of -\$385,366,903 is based on the change in the NOL during the employers' fiscal year ending June 30, 2019, corresponding with a Measurement Period of July 1, 2017 to June 30, 2018. 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, 2019 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, 2018.
- 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, 2018	June 30, 2017
Total OPEB Liability	\$29,798,358,029	\$33,983,194,571
Plan Fiduciary Net Position (Assets)	1,310,172,550	1,196,570,107
Net OPEB Liability	28,488,185,479	32,786,624,464
Plan Fiduciary Net Position as a percentage of Total OPEB Liability	4.40%	3.52%
	June 30, 2018	June 30, 2017
Annual OPEB Expense	(\$385,366,903)	\$1,625,508,163
Service Cost at Beginning of Year	1,753,384,309	2,650,983,801
Covered Payroll <sup>(1)</sup>	16,838,000,000	16,365,112,000

<sup>1</sup> Estimated for year ending June 30, 2018

Exhibits relating to GASB 74 information in this report (Exhibits 1-6) are consistent with the report dated August 30, 2018, with one exception. The total contributions were \$1,018,692,515 (see Exhibit 5 of the GASB 74 report, and page 15 of this report). A portion of the contribution was not allocated to employers, due to timing differences. As such, in this report the contributions appears as \$1,018,581,302 and the \$111,213 difference is included in Other Changes on page 15.



## EXHIBIT E ACTUARIAL CERTIFICATION

**February 15, 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 North Carolina State Health Plan's other postemployment benefit programs as of June 30, 2018, 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 74 and 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.

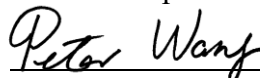
The actuarial computations made are for purposes of fulfilling plan accounting and funding requirements. Determinations for purposes other than meeting financial accounting and funding requirements may be significantly different from the results reported here. Accordingly, additional determinations may 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 Statements 74 and 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



Peter Wang, Ph.D, ASA, FCA, MAAA  
Associate Actuary

## 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, 2017	As of December 31, 2016
Number of retirees	201,052	200,341
Number of spouses	16,552	10,969
Number of surviving spouses	2,053	2,115
Number inactive vested	41,471	39,230
Number of actives	344,411	338,158
Total number of participants and spouses	605,539	590,813

*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 Traditional 70/30 Preferred Provider Organization (PPO) plan option that is also offered to non-Medicare members. If the Traditional 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 5.81% for fiscal 2017, and is 6.05% for fiscal 2018. Premiums are charged to retirees, and vary based on the coverage selected. The premiums for spouses are much higher than the premiums for retirees.

## EXHIBIT 2 NET OPEB LIABILITY

Reporting Date for Employer under GASB 75	June 30, 2019	June 30, 2018
Measurement Date	June 30, 2018	June 30, 2017
<b>Components of the Net OPEB Liability</b>		
Total OPEB Liability	\$29,798,358,029	\$33,983,194,571
Plan Fiduciary Net Position	1,310,172,550	1,196,570,107
Net OPEB Liability	28,488,185,479	32,786,624,464
Plan Fiduciary Net Position as a percentage of the Total OPEB Liability	4.40%	3.52%

The Net OPEB Liability was measured as of June 30, 2018 and 2017. 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, 2017 and 2016, respectively.

*Actuarial assumptions.* The Total OPEB Liability was measured by an actuarial valuation as of December 31, 2017 using the following actuarial assumptions, applied to all periods included in the measurement, unless otherwise specified:

<b>Inflation</b>	3.00%
<b>Salary increases based on service</b>	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%
<b>Discount rate</b>	3.87%
<b>Healthcare cost trend rates</b>	
<b>Medical</b>	6.50% grading down to 5.00% by 2024 for non-MA coverage, and 5.00% for MA coverage
<b>Prescription drug</b>	7.25% grading down to 5.00% by 2027
<b>Administrative costs</b>	3.00%
<b>Post-Retirement Mortality Rates</b>	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, 2018 measurement valuation were based on the results of an actuarial experience study performed by Conduent HR Services (formerly known as Buck Consultants) for the period ending December 31, 2014 where applicable. Other assumptions have been discussed with the State in a pre-valuation meeting specifically for that purpose.

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 one-percentage-point lower (2.87%) or one-percentage-point higher (4.87%) than the current rate. Also, shown is the NOL as if it were calculated using healthcare cost trend rates that were one-percentage-point lower or one-percentage-point higher than the current healthcare trend rates.

	1% Increase in Discount Rate (4.87%)	Current Discount Rate (3.87%)	1% Decrease in Discount Rate (2.87%)
Net OPEB Liability (Asset)	\$24,343,159,920	\$28,488,185,479	\$33,659,078,649
	1% Increase in Health Care Cost Trend Rates	Current Health Care Cost Trend Rates	1% Decrease in Health Care Cost Trend Rates
Net OPEB Liability (Asset)	\$35,034,055,342	\$28,488,185,479	\$23,502,011,418

**EXHIBIT 4**  
**SCHEDULE OF CHANGES IN NET OPEB LIABILITY – LAST TWO FISCAL YEARS**

Reporting Date for Employer under GASB 75 Measurement Date	June 30, 2019 June 30, 2018	June 30, 2018 June 30, 2017
<b>Total OPEB Liability</b>		
• Service cost	\$ 1,753,384,309	\$ 2,650,983,801
• Interest	1,261,878,071	1,332,873,995
• Change of benefit terms	0	0
• Differences between expected and actual experience	(80,950,466)	(2,821,033,540)
• Changes of assumptions	(6,141,972,342)	(10,835,144,027)
• Benefit payments, including refunds of member contributions	(977,176,114)	(922,020,892)
<b>Net change in Total OPEB Liability</b>	<b>\$ (4,184,836,542)</b>	<b>\$ (10,594,340,663)</b>
<b>Total OPEB Liability – beginning</b>	<b>\$ 33,983,194,571</b>	<b>\$ 44,577,535,234</b>
<b>Total OPEB Liability – ending</b>	<b>\$ 29,798,358,029</b>	<b>\$ 33,983,194,571</b>
<b>Plan Fiduciary Net Position</b>		
• Contributions – employer	\$ 1,018,581,302	\$ 949,949,851
• Contributions – employee	0	0
• Net investment income	72,383,854	94,131,980
• Benefit payments, including refunds of member contributions	(977,176,114)	(922,020,892)
• Administrative expense	(297,812)	(489,904)
• Other <sup>(2)</sup>	111,213	862,839
<b>Net change in Plan Fiduciary Net Position</b>	<b>\$ 113,602,443</b>	<b>\$ 122,433,874</b>
<b>Plan Fiduciary Net Position – beginning</b>	<b>\$ 1,196,570,107</b>	<b>\$ 1,074,136,233</b>
<b>Plan Fiduciary Net Position – ending</b>	<b>\$ 1,310,172,550</b>	<b>\$ 1,196,570,107</b>
<b>Net OPEB Liability – ending</b>	<b>\$ 28,488,185,479</b>	<b>\$ 32,786,624,464</b>
Plan Fiduciary Net Position as a percentage of the Total OPEB Liability	4.40%	3.52%
Covered Payroll <sup>(1)</sup>	\$ 16,838,000,000	16,365,112,000
Plan Net OPEB Liability as a percentage of Covered Payroll	169.19%	200.34%

<sup>1</sup> Estimated for June 30, 2018 Measurement Date

<sup>2</sup> 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.

## **Notes to Schedule:**

### **Benefit changes (2017):**

*Effective January 1, 2018*

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

### **Changes in assumptions (2017):**

- 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 changed to current schedule.
- Enrollment assumptions were updated to model expected migrations among plan options over the next few years.
- 2018 contribution changes were known as of the date the report was signed. These items have been reflected in our trend assumptions.

### **Benefit changes (2018):**

- 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 not decided to amend the early retirement assumption until the next time retirement is studied.
- Segal is not aware of any other legislation that might impact the valuation results.

### **Changes in assumptions (2018):**

- 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 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 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.



**EXHIBIT 5**  
**SCHEDULE OF CONTRIBUTIONS – LAST TEN FISCAL YEARS**

Year Ended June 30:	Actuarially Determined Contributions	Contributions in Relation to the Actuarially Determined Contributions	Contribution Deficiency / (Excess)	Covered Payroll	Contributions as a Percentage of Covered Payroll
2009	\$2,713,290,000	\$635,685,000	\$2,077,605,000	\$15,504,512,000	4.10%
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%

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

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

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

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

**EXHIBIT 6**  
**STATEMENT OF FIDUCIARY NET POSITION – UNAUDITED**

	June 30, 2018 Unaudited	June 30, 2017
<b>Assets</b>		
Cash and deposits	\$233,780,889	\$193,102,980
<b>Receivables</b>		
• Contributions	\$53,334,037	\$50,331,013
• Investment income	<u>277,667</u>	<u>163,843</u>
Total receivables	\$53,611,704	\$50,494,856
<b>Investments:</b>	\$1,022,779,957	\$952,972,271
<b>Total Assets</b>	<b>\$1,310,172,550</b>	<b>\$1,196,570,107</b>
<b>Liabilities</b>	<b>\$0</b>	<b>\$0</b>
<b>Net position restricted for OPEB</b>	<b>\$1,310,172,550</b>	<b>\$1,196,570,107</b>

## EXHIBIT 7

### OPEB EXPENSES – TOTAL FOR ALL EMPLOYERS

Reporting Date for Employer under GASB 75	June 30, 2019	June 30, 2018
Measurement Date	June 30, 2018	June 30, 2017
<b>Components of OPEB Expense</b>		
• Service cost	\$1,753,384,309	\$2,650,983,801
• Interest on the Total OPEB Liability	1,261,878,071	1,332,873,995
• Expensed portion of current-period changes in proportion and differences between employer's contributions and proportionate share of contributions <sup>1</sup>	43	(50)
• Current-period benefit changes	0	0
• Expensed portion of current-period difference between expected and actual experience in the Total OPEB Liability	(13,491,746)	(470,172,257)
• Expensed portion of current-period changes of assumptions or other inputs	(1,023,662,057)	(1,805,857,338)
• Member contributions	0	0
• Projected earnings on plan investments <sup>2</sup>	(87,636,917)	(78,900,821)
• Expensed portion of current-period differences between actual and projected earnings on plan investments	3,050,611	(3,046,232)
• Administrative expense	297,812	489,904
• Other <sup>3</sup>	(111,213)	(862,839)
• Recognition of beginning of year deferred outflows of resources as OPEB expense	0	0
• Recognition of beginning of year deferred inflows of resources as OPEB expense	(2,279,075,827)	0
• Net amortization of deferred amounts from changes in proportion and differences between employer's contributions and proportionate share of contributions	<u>8</u>	<u>0</u>
<b>OPEB Expense</b>	<b>(385,366,903)</b>	<b>1,625,508,163</b>

<sup>1</sup> 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 26.

<sup>2</sup> Calculated based on expected return of 7.20% applied to beginning of year assets of \$1,196,570,107 and net external cash flows (contributions, benefits, administrative expenses, and other income) of \$41,218,589, assumed to occur mid-year.

<sup>3</sup> 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, 2018 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, 2019	June 30, 2018
Measurement Date	June 30, 2018	June 30, 2017
<b>Deferred Outflows of Resources</b>		
• Changes in proportion and differences between employer's contributions and proportionate share of contributions <sup>(1)</sup>	\$1,472,337,817	\$1,069,202,808
• Changes of assumptions or other inputs	0	0
• Net difference between projected and actual earnings on OPEB plan investments	3,063,757	0
• Difference between expected and actual experience in the Total OPEB Liability	<u>0</u>	<u>0</u>
Total Deferred Outflows of Resources	\$1,475,401,574	\$1,069,202,808
<b>Deferred Inflows of Resources</b>		
• Changes in proportion and differences between employer's contributions and proportionate share of contributions <sup>(1)</sup>	\$1,472,337,827	\$1,069,202,770
• Changes of assumptions or other inputs	12,341,739,636	9,029,286,689
• Net difference between projected and actual earnings on OPEB plan investments	0	12,184,928
• Difference between expected and actual experience in the Total OPEB Liability	<u>1,948,147,746</u>	<u>2,350,861,283</u>
Total Deferred Inflows of Resources	\$15,762,225,209	\$12,461,535,670
<b>Deferred outflows of resources and deferred inflows of resources related to OPEB will be recognized as follows <sup>(2)</sup>:</b>		
Net Deferrals to be Recognized in Expense under GASB 75 for the following June 30 Reporting Dates:		
2019	N/A	(\$2,279,075,827)
2020	(\$3,313,179,015)	(2,279,075,827)
2021	(3,313,179,015)	(2,279,075,827)
2022	(3,313,179,014)	(2,279,075,826)
2023	(3,310,132,780)	(2,276,029,592)
2024	(1,037,153,801)	0
Thereafter	0	0

<sup>(1)</sup> Calculated in accordance with Paragraphs 54 and 55 of GASB 75.

<sup>(2)</sup> 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.

## 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, 2019:

Reporting Date for Employer under GASB 75 Year Ended June 30	Differences between Expected and Actual Experience	Recognition Period (Years)	2018	2019	2020	2021	2022	2023	2024	Thereafter
2018	(\$2,821,033,540)	6.00	(\$470,172,257)	(\$470,172,257)	(\$470,172,257)	(\$470,172,257)	(\$470,172,257)	(\$470,172,255)	\$0	\$0
2019	(80,950,466)	6.00	N/A	<u>(13,491,746)</u>	<u>(13,491,744)</u>	<u>(13,491,744)</u>	<u>(13,491,744)</u>	<u>(13,491,744)</u>	<u>(13,491,744)</u>	<u>0</u>
Net increase (decrease) in OPEB expense			N/A	(\$483,664,003)	(\$483,664,001)	(\$483,664,001)	(\$483,664,001)	(\$483,663,999)	(\$13,491,744)	\$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, 2019:**

Reporting Date for Employer under GASB 75 Year Ended June 30	Effect of Assumption Change	Recognition Period (Years)	2018	2019	2020	2021	2022	2023	2024	Thereafter
2018	(\$10,835,144,027)	6.00	(\$1,805,857,338)	(\$1,805,857,338)	(\$1,805,857,338)	(\$1,805,857,338)	(\$1,805,857,338)	(\$1,805,857,337)	\$0	\$0
2019	(\$6,141,972,342)	6.00	N/A	<u>(1,023,662,057)</u>	<u>(1,023,662,057)</u>	<u>(1,023,662,057)</u>	<u>(1,023,662,057)</u>	<u>(1,023,662,057)</u>	<u>(1,023,662,057)</u>	<u>0</u>
Net increase (decrease) in OPEB expense			N/A	(\$2,829,519,395)	(\$2,829,519,395)	(\$2,829,519,395)	(\$2,829,519,395)	(\$2,829,519,394)	<u>(\$1,023,662,057)</u>	\$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, 2019:**

Reporting Date for Employer under GASB 75 Year Ended June 30	Differences between Projected and Actual Earnings on Investments	Recognition Period (Years)	2018	2019	2020	2021	2022	2023	2024	Thereafter
2018	(\$15,231,159)	5.00	(\$3,046,232)	(\$3,046,232)	(\$3,046,232)	(\$3,046,232)	(\$3,046,231)	\$0	\$0	\$0
2019	\$15,253,063	5.00	N/A	<u>3,050,611</u>	<u>3,050,613</u>	<u>3,050,613</u>	<u>3,050,613</u>	<u>3,050,613</u>	<u>0</u>	<u>0</u>
Net increase (decrease) in OPEB expense			N/A	\$4,379	\$4,381	\$4,381	\$4,382	\$3,050,613	\$0	\$0



## Total Increase (Decrease) in OPEB Expense

**Reporting Date for Employer under GASB 75 Year Ended June 30, 2019:**

Reporting Date for Employer under GASB 75 Year Ended June 30	Total Amount	2018	2019	2020	2021	2022	2023	2024	Thereafter
2018	(\$13,671,408,726)	(\$2,279,075,827)	(\$2,279,075,827)	(\$2,279,075,827)	(\$2,279,075,827)	(\$2,279,075,826)	(\$2,276,029,592)	0	0
2019	(6,207,669,745)	N/A	<u>(1,034,103,192)</u>	<u>(1,034,103,188)</u>	<u>(1,034,103,188)</u>	<u>(1,034,103,188)</u>	<u>(1,034,103,188)</u>	<u>(\$1,037,153,801)</u>	<u>\$0</u>
Net increase (decrease) in OPEB expense		N/A	(\$3,313,179,019)	(\$3,313,179,015)	(\$3,313,179,015)	(\$3,313,179,014)	(\$3,310,132,780)	(\$1,037,153,801)	\$0

## Section 3: Supporting Information

### EXHIBIT I SUMMARY OF PARTICIPANT DATA

	As of December 31, 2017	As of December 31, 2016
Number of retirees	201,052	200,341
Average age of retirees	70.3	69.9
Number of spouses	16,552	10,969
Average age of spouses	68.2	66.1
Number of surviving spouses	2,053	2,115
Average age	80.8	80.6
Number inactive vested	41,471	39,230
Average age	48.0	47.8
Number of actives	344,411	338,158
Average age	45.0	44.8
Average service	10.3	10.2
Total Future Service for Active Participants	3,463,958	3,402,979
Total Number of Participants (excludes spouses)	588,987	579,844
GASB 75 Amortization Period for recognition of liability gains and losses and assumption changes (rounded) <sup>(1)</sup>	6 years	6 years

<sup>1</sup>. 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

<b>Data:</b>	Detailed census data, premium data and/or claim experience, and summary plan descriptions for OPEB were provided by the State.
<b>Actuarial Cost Method:</b>	Entry Age, Level Percentage of Pay.
<b>Asset Valuation Method:</b>	Market Value
<b>Basis for Demographic Assumptions:</b>	<p>The demographic assumptions are based on a study performed by Conduent HR Services (formerly known as Buck Consultants) for the period ending December 31, 2014. The study was presented to the Board of Trustees for the Teachers' and State Employees' Retirement System of North Carolina in October 2015 and was approved for use.</p> <p>The mortality tables and projection scale were prescribed by the State.</p>
<b>Census Valuation Date:</b>	December 31, 2017. 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.
<b>Measurement Date:</b>	Liabilities were rolled forward to June 30, 2018. 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.
<b>Allocations to Employers:</b>	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.
<b>Discount Rate:</b>	3.87% - The discount rate is based on the Bond Buyer 20-year GO index as of June 30, 2018. 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.
<b>Salary increases based on service:</b>	<p>Teachers: 7.55% grading down to 3.50%</p> <p>Law Enforcement Officers: 8.10% grading down to 3.50%</p> <p>General Employees: 5.50% grading down to 3.50%</p>
<b>Investment Return:</b>	7.25% for the measurement as of June 30, 2016, 7.20% for the measurement as of June 30, 2017, and 7.00% for the measurement as of June 30, 2018. This rate is provided by the State and the Building Blocks table used for GASB disclosures is provided by IMD.
<b>Pre- Retirement Mortality:</b>	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.								
Post-Retirement Mortality:		Retirees		<u>Adjustments to the RP-2014 Healthy Annuitant Base Table</u>					
				<u>Prior to 78</u>			<u>After 78</u>		
		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								
Disability Rates:		Rate							
		General Employees		Teachers		Other		Law Enforcement	
		Age	Male	Female	Male	Female	Male	Female	Unisex
		25	0.0002	0.0002	0.0001	0.0002	0.0001	0.0002	0.0033
		30	0.0004	0.0004	0.0001	0.0003	0.0001	0.0003	0.0043
		35	0.0010	0.0010	0.0003	0.0006	0.0003	0.0006	0.0060
		40	0.0030	0.0018	0.0007	0.0010	0.0007	0.0010	0.0079
		45	0.0050	0.0032	0.0014	0.0018	0.0014	0.0018	0.0110
		50	0.0084	0.0050	0.0023	0.0032	0.0023	0.0032	0.0176
		55	0.0144	0.0088	0.0047	0.0055	0.0047	0.0055	0.0000
		60	0.0240	0.0138	0.0077	0.0102	0.0077	0.0102	0.0000
		65	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	69	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	

## Turnover Rates:

Teachers - Male							Teachers - Female						
Service							Service						
Age	0	1	2	3	4	≥5	Age	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						
Service							Service						
Age	0	1	2	3	4	≥5	Age	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						
Service							Service						
Age	0	1	2	3	4	≥5	Age	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						
Service						
Age	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:

General - Male											
Service											
Age	<=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

General - Female											
Service											
Age	<=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 rates above include our assumption that members will have one extra year of eligibility service prior to the member's service retirement eligibility. For example, we assume that general employees are eligible for service retirement at age 29 years of service, age 60 with 24 years of service, or age 65 with 4 years of service.

**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:**

Assumed to be 3.50%.

<b>Data Adjustments:</b>	<p>Since child records under split contract were reported as subscribers, we assumed retirees under age 27 were children.</p> <p>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.</p>																																																																																	
<b>Per Capita Cost Development:</b>	<p><i>Medical and Prescription Drug:</i> Per capita claims costs were based on actual incurred claim experience for the periods January 1, 2016 through December 31, 2017. Claims were separated by Medicare and Non-Medicare participants, then adjusted as follows:</p> <ul style="list-style-type: none"><li>➤ total claims were divided by the number of adult members to yield a per capita claim,</li><li>➤ 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</li><li>➤ Actuarial factors were then applied to the per capita claims to estimate individual retiree and spouse costs by age and by gender.</li><li>➤ Medicare Advantage plans were valued by actuarially adjusting the insured premium rates by age and gender.</li></ul> <p><i>Administrative Expenses:</i> Administrative expenses were based on a recent quarterly projection prepared by Segal.</p>																																																																																	
<b>Per Capita Health Costs:</b>	<p>2018 medical and prescription drug claims costs, excluding assumed expenses, are shown in the table below for retirees and for spouses at selected ages. These costs are net of deductibles and other benefit plan cost sharing provisions.</p>																																																																																	
<b>Non-Medicare</b>	<table><tr><th></th><th colspan="4">Medical Traditional</th><th colspan="4">Traditional Prescription Drug</th></tr><tr><th></th><th colspan="2">Retiree</th><th colspan="2">Spouse</th><th colspan="2">Retiree</th><th colspan="2">Spouse</th></tr><tr><th>Age</th><th>Male</th><th>Female</th><th>Male</th><th>Female</th><th>Male</th><th>Female</th><th>Male</th><th>Female</th></tr><tr><td>40</td><td>\$3,799</td><td>\$4,886</td><td>\$2,362</td><td>\$3,925</td><td>\$1,202</td><td>\$1,545</td><td>\$747</td><td>\$1,241</td></tr><tr><td>45</td><td>4,518</td><td>5,667</td><td>2,802</td><td>4,230</td><td>1,429</td><td>1,792</td><td>886</td><td>1,338</td></tr><tr><td>50</td><td>5,362</td><td>6,108</td><td>3,745</td><td>4,904</td><td>1,696</td><td>1,932</td><td>1,185</td><td>1,551</td></tr><tr><td>55</td><td>6,368</td><td>6,575</td><td>5,012</td><td>5,676</td><td>2,014</td><td>2,079</td><td>1,585</td><td>1,795</td></tr><tr><td>60</td><td>7,563</td><td>7,087</td><td>6,709</td><td>6,584</td><td>2,392</td><td>2,241</td><td>2,122</td><td>2,082</td></tr><tr><td>64</td><td>8,677</td><td>7,518</td><td>8,470</td><td>7,410</td><td>2,744</td><td>2,378</td><td>2,679</td><td>2,344</td></tr></table>		Medical Traditional				Traditional Prescription Drug					Retiree		Spouse		Retiree		Spouse		Age	Male	Female	Male	Female	Male	Female	Male	Female	40	\$3,799	\$4,886	\$2,362	\$3,925	\$1,202	\$1,545	\$747	\$1,241	45	4,518	5,667	2,802	4,230	1,429	1,792	886	1,338	50	5,362	6,108	3,745	4,904	1,696	1,932	1,185	1,551	55	6,368	6,575	5,012	5,676	2,014	2,079	1,585	1,795	60	7,563	7,087	6,709	6,584	2,392	2,241	2,122	2,082	64	8,677	7,518	8,470	7,410	2,744	2,378	2,679	2,344
	Medical Traditional				Traditional Prescription Drug																																																																													
	Retiree		Spouse		Retiree		Spouse																																																																											
Age	Male	Female	Male	Female	Male	Female	Male	Female																																																																										
40	\$3,799	\$4,886	\$2,362	\$3,925	\$1,202	\$1,545	\$747	\$1,241																																																																										
45	4,518	5,667	2,802	4,230	1,429	1,792	886	1,338																																																																										
50	5,362	6,108	3,745	4,904	1,696	1,932	1,185	1,551																																																																										
55	6,368	6,575	5,012	5,676	2,014	2,079	1,585	1,795																																																																										
60	7,563	7,087	6,709	6,584	2,392	2,241	2,122	2,082																																																																										
64	8,677	7,518	8,470	7,410	2,744	2,378	2,679	2,344																																																																										

**Per Capita Health Costs  
(continued):**

Medical Enhanced					Enhanced Prescription Drug			
	Retiree		Spouse		Retiree		Spouse	
Age	Male	Female	Male	Female	Male	Female	Male	Female
40	\$4,513	\$5,804	\$2,806	\$4,662	\$1,459	\$1,876	\$907	\$1,507
45	5,366	6,732	3,329	5,025	1,735	2,176	1,076	1,624
50	6,369	7,255	4,449	5,825	2,059	2,345	1,438	1,883
55	7,564	7,809	5,953	6,743	2,445	2,525	1,925	2,180
60	8,983	8,418	7,970	7,820	2,904	2,721	2,576	2,528
64	10,306	8,930	10,061	8,802	3,332	2,889	3,252	2,845

**Medicare – Non Medicare  
Advantage**

Medical Traditional					Traditional Prescription Drug			
	Retiree		Spouse		Retiree		Spouse	
Age	Male	Female	Male	Female	Male	Female	Male	Female
40	\$378	\$486	\$235	\$390	\$1,202	\$1,545	\$747	\$1,241
45	449	564	279	421	1,429	1,792	886	1,338
50	533	607	373	488	1,696	1,932	1,185	1,551
55	633	654	498	565	2,014	2,079	1,585	1,795
60	752	705	667	655	2,392	2,241	2,122	2,082
65	893	759	893	759	2,841	2,415	2,841	2,415
70	1,035	818	1,035	818	3,292	2,602	3,292	2,602
75	1,116	881	1,116	881	3,548	2,801	3,548	2,801
80	1,202	950	1,202	950	3,821	3,020	3,821	3,020

Medicare – Medicare Advantage	Medicare Advantage (Basic)					Medicare Advantage (Enhanced)			
	Retiree			Spouse		Retiree		Spouse	
	Age	Male	Female	Male	Female	Male	Female	Male	Female
	40	\$589	\$758	\$366	\$609	\$924	\$1,189	\$575	\$955
	45	701	879	435	656	1,099	1,379	682	1,029
	50	832	947	581	761	1,305	1,486	911	1,193
	55	988	1,020	777	880	1,549	1,600	1,219	1,381
	60	1,173	1,099	1,041	1,021	1,840	1,724	1,632	1,602
	65	1,393	1,184	1,393	1,184	2,185	1,857	2,185	1,857
	70	1,615	1,276	1,615	1,276	2,533	2,002	2,533	2,002
	75	1,740	1,374	1,740	1,374	2,729	2,155	2,729	2,155
	80	1,874	1,481	1,874	1,481	2,939	2,323	2,939	2,323

**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 Advantage	Prescription Drug	Medicare Advantage	Admin.
2018	6.50%	7.25%	5.00% <sup>2</sup>	3.00%
2019	6.25%	7.00%	5.00% <sup>3</sup>	3.00%
2020	6.00%	6.75%	5.00%	3.00%
2021	5.75%	6.50%	5.00%	3.00%
2022	5.50%	6.25%	5.00%	3.00%
2023	5.25%	6.00%	5.00%	3.00%
2024	5.00%	5.75%	5.00%	3.00%
2025	5.00%	5.50%	5.00%	3.00%
2026	5.00%	5.25%	5.00%	3.00%
2027 & later <sup>1</sup>	5.00%	5.00%	5.00%	3.00%

<sup>1</sup>The ultimate trend rate was used to roll claims backward from the valuation date for purposes of the Entry Age Normal Cost Method.

<sup>2</sup>Known MA Premiums were used for 2019.

<sup>3</sup>The Health Insurance Tax was estimated at \$26 per month for 2020 and added to the expected claims.

	<p>The trend rate assumptions were developed using Segal’s internal guidelines, which are established each year using data sources such as the 2018 Segal Health Trend Survey, internal client results, trends from other published surveys prepared by the S&amp;P Dow Jones Indices, consulting firms and brokers, and CPI statistics published by the Bureau of Labor Statistics.</p> <p>Plan Enrollment Assumptions are valued by adjusting the trend for 2018-2022 for enrollment migration.</p> <table><tr><th>Annual Expected MA Premiums</th><th>Basic</th><th>Enhanced</th></tr><tr><td>2018</td><td>\$1,393</td><td>\$2,185</td></tr><tr><td>2019</td><td>\$987</td><td>\$1,743</td></tr><tr><td>2020</td><td>\$1,348</td><td>\$2,142</td></tr></table>	Annual Expected MA Premiums	Basic	Enhanced	2018	\$1,393	\$2,185	2019	\$987	\$1,743	2020	\$1,348	\$2,142																																					
Annual Expected MA Premiums	Basic	Enhanced																																																
2018	\$1,393	\$2,185																																																
2019	\$987	\$1,743																																																
2020	\$1,348	\$2,142																																																
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 for plan years beginning in 2006.																																																	
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. 2018 trend on contributions was adjusted to expected 2018 contribution rates, including anticipated wellness credits and enrollment migration.																																																	
Administrative Expenses:	An administrative expense load of \$264 per participant increasing at 3.0% per year thereafter was 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 II.																																																	
Maximum Benefits:	There are no annual or lifetime maximum benefits assumed.																																																	
Plan Enrollment Assumptions	<p>Based on most recent financial report:</p> <table><tr><th>Non-Medicare Retiree</th><th>2018</th><th>2019</th><th>2020</th><th>2021</th><th>2022</th><th>2023</th></tr><tr><td>Traditional</td><td>49.3%</td><td>48.0%</td><td>47.2%</td><td>46.4%</td><td>45.6%</td><td>44.8%</td></tr><tr><td>Enhanced</td><td>50.7%</td><td>52.0%</td><td>52.8%</td><td>53.6%</td><td>54.4%</td><td>55.2%</td></tr><tr><th>Med Retiree</th><th></th><th></th><th></th><th></th><th></th><th></th></tr><tr><td>Traditional</td><td>14.5%</td><td>14.0%</td><td>13.1%</td><td>12.1%</td><td>11.1%</td><td>10.2%</td></tr><tr><td>MA Base</td><td>72.7%</td><td>73.3%</td><td>74.3%</td><td>75.2%</td><td>76.2%</td><td>77.1%</td></tr><tr><td>MA Enhanced</td><td>12.8%</td><td>12.7%</td><td>12.7%</td><td>12.7%</td><td>12.7%</td><td>12.7%</td></tr></table>	Non-Medicare Retiree	2018	2019	2020	2021	2022	2023	Traditional	49.3%	48.0%	47.2%	46.4%	45.6%	44.8%	Enhanced	50.7%	52.0%	52.8%	53.6%	54.4%	55.2%	Med Retiree							Traditional	14.5%	14.0%	13.1%	12.1%	11.1%	10.2%	MA Base	72.7%	73.3%	74.3%	75.2%	76.2%	77.1%	MA Enhanced	12.8%	12.7%	12.7%	12.7%	12.7%	12.7%
Non-Medicare Retiree	2018	2019	2020	2021	2022	2023																																												
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MA Base	72.7%	73.3%	74.3%	75.2%	76.2%	77.1%																																												
MA Enhanced	12.8%	12.7%	12.7%	12.7%	12.7%	12.7%																																												
Health Care Reform Assumption:	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.																																																	

**Assumption Changes  
since Prior Valuation:**

- The discount rate was updated, changing from 3.58% to 3.87%, in accordance with the State's policy for determining the discount rate.
- 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.
- Non-teacher education employees were valued using the "Other" demographic assumptions rather than the "Teacher" demographic assumptions
- Enrollment assumptions were updated to model expected migrations among plan options over the next four years.
- 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.
- Inflation was updated 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.
- The cost method for the Actuarially Determined Contribution was changed from Projected Unit Credit to Entry Age.

## 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.

<b>Eligibility:</b>	<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><b>Law Enforcement Officer:</b></p> <ul style="list-style-type: none"> <li>• age 50 and 15 years of service;</li> <li>• age 55 and 5 years of service; or</li> <li>• any age with 25 or more years of service.</li> </ul> <p><b>All Others:</b></p> <ul style="list-style-type: none"> <li>• age 50 and 20 years of service;</li> <li>• age 60 and 5 years of service; or</li> <li>• any age with 30 or more years of service.</li> </ul> <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>
<b>Benefit Types:</b>	Traditional and Enhanced PPOs are offered to non-Medicare participants, and the Traditional PPO, Medicare Advantage Base (MA Base) and Medicare Advantage Enhanced (MA Enhanced) plans are offered to Medicare eligible participants.
<b>Duration of Coverage:</b>	Lifetime for retirees and dependents
<b>Dependent Benefits:</b>	Same as retirees

**Retiree Contributions:**

Monthly contributions, effective January 1, 2018, are shown below.

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

	Non-Medicare			Medicare		
	Traditional	Enhanced		Traditional	MA Base	MA Enhanced
		Tobacco Attest. Not Complete	Tobacco Attest. Complete			
Retiree	\$0.00	\$110.00	\$50.00	\$0.00	\$0.00	\$66.00
Spouse	590.00	650.00		425.00	124.00	190.00

For Retirees hired 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 show below:

	Non-Medicare			Medicare		
	Traditional	Enhanced		Traditional	MA Base	MA Enhanced
		Tobacco Attest. Not Complete	Tobacco Attest. Complete			
Retiree 100% of Premium	\$498.68	\$608.68	\$548.68	\$387.44	\$124.00	\$190.00
Retiree 50% of Premium	249.34	359.34	299.34	193.72	124.00	190.00
Spouse	590.00	650.00		425.00	124.00	190.00



Benefit Descriptions (as of January 1, 2018):	PPO Traditional	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>Mental Health, Chemical Dependency</i>		\$40	Ded. & coins.

### 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

Coverage becomes secondary when former employees become eligible for Medicare.

PPO Enhanced	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>	\$4,350/\$10,300	\$8,700/\$26,100
<i>Lifetime Maximum</i>	Unlimited	Unlimited
<i>Office Visit copay</i>		
<i>Primary Care</i>	\$25	Ded. & coins.
<i>Specialist</i>	\$85	Ded. & coins.
<i>Urgent Care</i>	\$70	\$70
<i>Inpatient Hospitalization</i>	\$450 + 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>Mental Health, Chemical Dependency</i>	\$25	Ded. & coins.

Prescription Drugs (up to 30 day supply)	
Tier 1	\$5
Tier 2	\$30
Tier 3	Ded. & 20% coins.
Tier 4 - Generic Specialty	\$100
Tier 5 - Preferred Specialty	\$250
Tier 6 - Non-Preferred Specialty	Ded. & 20% coins.
Brand drug with a generic equivalent	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.
Preferred diabetic testing supplies	\$5
Non-Preferred testing supplies	Ded. & 20% coins.
Out-of-Pocket Maximum	\$2,500

Coverage becomes secondary when former employees become eligible for Medicare.

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

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, 2018:

The CDHP option was discontinued.

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 to not amend the early retirement assumption until the next time retirement is studied.

## EXHIBIT IV DEFINITION OF TERMS

<b>Assumptions or Actuarial Assumptions:</b>	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.
<b>Total OPEB Liability:</b>	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.
<b>Service Cost:</b>	The amount of contributions required to fund the benefit allocated to the current year of service.
<b>Actuarially Determined Contribution:</b>	A target or recommended contribution to an OPEB plan for the reporting period based on the most recent measurement available.
<b>Valuation Date:</b>	The date at which the actuarial valuation is performed
<b>Covered Payroll:</b>	The payroll on which contributions to an OPEB plan are based. [GASBS 85, ¶13]
<b>Discount Rate:</b>	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
<b>Entry Age Actuarial Cost Method:</b>	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
<b>Healthcare Cost Trend Rates:</b>	The rate of change in per capita health costs over time
<b>Net OPEB Liability:</b>	The Total OPEB Liability less the Plan Fiduciary Net Position
<b>Plan Fiduciary Net Position:</b>	Market Value of Assets
<b>Real Rate of Return:</b>	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 3, 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 3. 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 3 contain a definition of terms as well as more information about GASB 74/75 concepts.

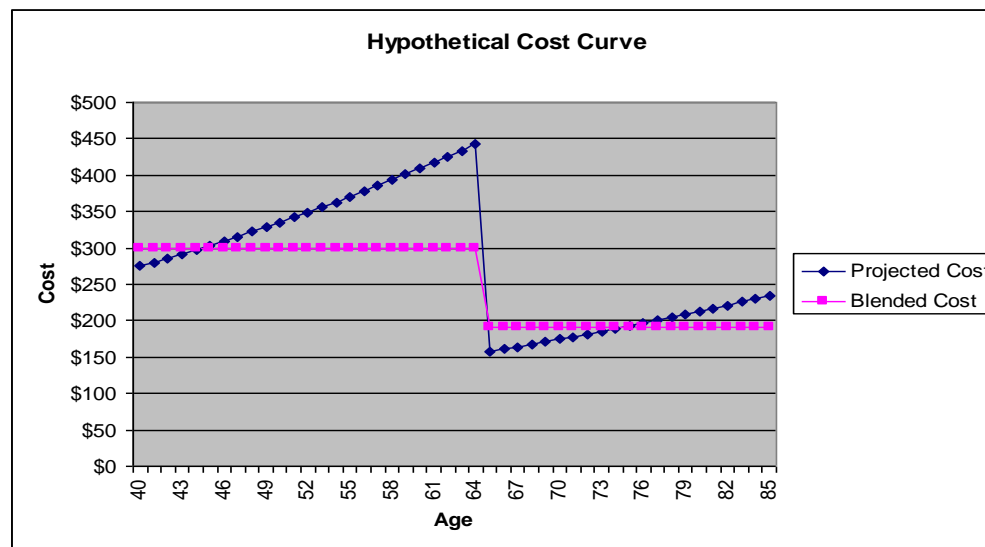
The calculation of an accounting obligation does not, in and of itself, imply that there is any legal liability to provide the benefits valued, nor is there any implication that the Employer is required to implement a funding policy to satisfy the projected expense.

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.



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