

North Carolina State Health Plan

**Actuarial Valuation and Review of Other
Postemployment Benefits (OPEB) for
Reporting Date of June 30, 2017
In accordance with GASB Statement No. 74**



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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September 21, 2017

*Committee on Actuarial Valuation
Of Retired Employees' Health Benefits (OPEB)
State of North Carolina
4901 Glenwood Avenue, Suite 300
Raleigh, North Carolina 27612*

Dear Committee Members:

We are pleased to submit this Actuarial Valuation and Review of Other Postemployment Benefits (OPEB) as of December 31, 2016 under Governmental Accounting Standards Board Statement No. 74. The report summarizes the actuarial data used in the valuation, disclosures the Net OPEB Liability (NOL) as of June 30, 2017, 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 Office of the Treasurer, and the terms of the Plan. The actuarial calculations were completed under the supervision of Daniel J. Rhodes, FSA, MAAA, EA, Vice President and Consulting Actuary, and Peter Wang, Ph.D, ASA, MAAA, EA, 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. Further, in our opinion, the assumptions used in this valuation and described in Section 4, Exhibit I 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 4, Exhibit II.

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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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 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- 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

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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.

Given the above, the user of Segal's actuarial valuation (or other actuarial calculations) needs to keep the following in mind:

- The actuarial valuation is prepared for use by the State Finance Department. 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. 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.

Purpose

This report presents the results of our actuarial valuation of the North Carolina State (the “Employer”) OPEB plan as of June 30, 2017, required by Governmental Accounting Standards Board (GASB) Statement No. 74, *Financial Reporting for Postemployment Benefit Plans Other than Pension Plan*. 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.

Highlights of the Valuation

ACCOUNTING AND FINANCIAL REPORTING

- This report presents the results for the Accounting Standards change from GASB 43 to GASB 74. This change affects plan reporting only. As a result of the upcoming change from GASB 45 to GASB 75, the Net OPEB Obligation will be replaced by the Net OPEB Liability (NOL), and the NOL will appear on the State’s balance sheet in fiscal 2018.
- The NOL as of June 30, 2017 is \$32,786,624,464. As of the same date, the Net OPEB Obligation under GASB 45 is \$19,241,121,146.
- The GASB 45 report as of December 31, 2016 documents the experience changes. The primary differences in the benefit liabilities under GASB 45 and GASB 74 are:
 - The funding method changed from Projected Unit Credit to Entry Age Normal.
 - The GASB 74 liabilities are adjusted from the valuation date of December 31, 2016 to the measurement date of June 30, 2017 while the GASB 45 liability are reported as of December 31, 2016.
- As of June 30, 2017 the ratio of assets to the Total OPEB Liability (the funded ratio) is 3.52%. This is based on the market value of assets at the Measurement Date.

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Summary of Key Valuation Results

	GASB 74 Results	
	June 30, 2017	June 30, 2016
Discount Rate	3.58%	2.85%
Total OPEB Liability	\$33,983,194,571	\$44,577,535,234
Plan Fiduciary Net Position (Assets)	\$1,196,570,107	\$1,074,136,233
Net OPEB Liability	\$32,786,624,464	\$43,503,399,001
Plan Fiduciary Net Position as a percentage of Total OPEB Liability	3.52%	2.41%

September 21, 2017

Actuarial Certification

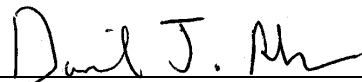
This is to certify that Segal Consulting, a Member of The Segal Group, Inc. has conducted an actuarial valuation of certain benefit obligations of the State of North Carolina's other postemployment benefit programs as of June 30, 2016, in accordance with generally accepted actuarial principles and practices. The actuarial calculations presented in this report have been made on a basis consistent with our understanding of GASB Statements 74 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 Employer and reliance on participant, premium, claims and expense data provided by the Employer or from vendors employed by the Employer. 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.

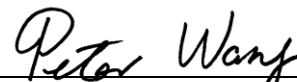
The actuarial computations made are for purposes of fulfilling plan accounting and funding requirements. Determinations for purposes other than meeting financial accounting and funding requirements may be significantly different from the results reported here. Accordingly, additional determinations may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



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



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

Section 2: Valuation Results for the North Carolina State OPEB Plan June 30, 2017 Measurement Under GASB 74

EXHIBIT 1

General Information about the OPEB Plan

Plan Description

Plan administration. The State Treasurer, the Board of Trustees, and the Executive Administrator administer the OPEB plan – a multiple-employer, cost-sharing OPEB plan that is used to provide postemployment benefits other than pensions (OPEB). The OPEB plan is operated pursuant to North Carolina General Statutes.

Plan membership. Plan membership consisted of the following:

	As of December 31, 2016	As of December 31, 2015
Retired members or beneficiaries currently receiving benefits	224,404	207,884
Vested terminated members entitled to but not yet receiving benefits	39,230	37,118
Active members	<u>338,158</u>	<u>342,044</u>
Total	601,792	587,046

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 5.60% during 2016, and is now 6.02% for calendar 2017. Premiums are charged to retirees, and vary based on the coverage selected. The premiums for spouses are much higher than the premiums for retirees.

Section 2: Valuation Results for the North Carolina State OPEB Plan June 30, 2017 Measurement Under GASB 74

EXHIBIT 2 Net OPEB Liability

Reporting Date for Plan under GASB 74	June 30, 2017	June 30, 2016
Measurement Date for Plan under GASB 74	June 30, 2017	June 30, 2016
Valuation Date for Plan under GASB 74	December 31, 2016	December 31, 2015
The components of the Net OPEB Liability are as follows:		
Total OPEB Liability	\$ 33,983,194,571	\$ 44,577,535,234
Plan Fiduciary Net Position	<u>1,196,570,107</u>	<u>1,074,136,233</u>
Net OPEB Liability	\$ 32,786,624,464	\$ 43,503,399,001
Plan Fiduciary Net Position as a percentage of the Total OPEB Liability	3.52%	2.41%

The Net OPEB Liability was measured as of June 30, 2016 and 2015. Plan Fiduciary Net Position (plan assets) was valued as of the measurement dates and the Total OPEB Liability was determined from actuarial valuations as of June 30, 2016 and June 30, 2015, respectively.

Actuarial assumptions. The total OPEB liability was measured by an actuarial valuation as of June 30, 2016 used the following actuarial assumptions, applied to all periods included in the measurement, unless otherwise specified:

<i>Inflation</i>	2.75%
<i>Salary increases based on service</i>	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%
<i>Discount Rate</i>	3.58%
<i>Healthcare costs trend rates</i>	
<i>Medical</i>	6.50% grading down to 5.00% by 2023 for non-MA coverage, and 4.00% for 2017-2020, then 5.00% for MA coverage
<i>Prescription drug</i>	7.25% grading down to 5.00% by 2026
<i>Administrative costs</i>	3.00%
<i>Post-Retirement Mortality Rates</i>	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

Section 2: Valuation Results for the North Carolina State OPEB Plan June 30, 2017 Measurement Under GASB 74

The actuarial assumptions used in the June 30, 2017 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.

The Plan does not have a funding policy that covers both the Normal Cost and a payment toward the unfunded liability. The plan is less than 4% funded. As such, we have not created a blended discount rate.

Detailed information regarding all actuarial assumptions can be found in Section 4, Exhibit I.

Section 2: Valuation Results for the North Carolina State OPEB Plan June 30, 2017 Measurement Under GASB 74

**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 (2.58%) or 1-percentage-point higher (4.58%) 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 (2.58%)	Current Discount Rate (3.58%)	1% Increase in Discount Rate (4.58%)
Net OPEB Liability (Asset)	\$39,112,559,843	\$32,786,624,464	\$27,769,260,011
		Current Trend Rate (6.50% Medical, 7.25% Rx, 3.00% Admin Expenses)	
	1% Decrease in Trend Rates	1% Increase in Trend Rate	
Net OPEB Liability (Asset)	\$26,783,652,672	\$32,786,624,464	\$40,765,341,393

Section 2: Valuation Results for the North Carolina State OPEB Plan June 30, 2017 Measurement Under GASB 74

EXHIBIT 4

Schedule of Changes in Net OPEB Liability

Reporting Date for Plan under GASB 74	June 30, 2017	June 30, 2016
Measurement Date for Plan under GASB 74	June 30, 2017	June 30, 2016
Valuation Date for Plan under GASB 74	December 31, 2016	December 31, 2015
Total OPEB Liability		
Service cost	\$2,650,983,801	\$1,730,233,169
Interest	1,332,873,995	1,349,102,482
Change of benefit terms	-	(482,796,535)
Differences between expected and actual experience	(2,821,033,540)	(119,874,189)
Changes of assumptions	(10,835,144,027)	8,760,448,396
Benefit payments, including refunds of member contributions	<u>(922,020,892)</u>	<u>(864,083,622)</u>
Net change in Total OPEB Liability	(10,594,340,663)	10,373,029,701
Total OPEB Liability – beginning	<u>\$44,577,535,234</u>	<u>\$34,204,505,533</u>
(a) Total OPEB Liability – ending	\$33,983,194,571	\$44,577,535,234
Plan Fiduciary Net Position		
Contributions – employer	\$950,812,690	\$880,612,500
Contributions – employee	0	0
Net investment income	94,131,980	7,879,692
Benefit payments, including refunds of member contributions	(922,020,892)	(864,083,622)
Administrative expense	(489,904)	(518,980)
Other	<u>0</u>	<u>234,210</u>
Net change in Plan Fiduciary Net Position	122,433,874	24,123,800
Plan Fiduciary Net Position – beginning	<u>\$1,074,136,233</u>	<u>\$1,050,012,433</u>
(b) Plan Fiduciary Net Position – ending	<u>\$1,196,570,107</u>	<u>\$1,074,136,233</u>
(c) Net OPEB Liability – ending (a) – (b)	\$32,786,624,464	\$43,503,399,001
Plan Fiduciary Net Position as a percentage of the Total OPEB Liability	3.52%	2.41%
Covered Payroll	\$16,365,112,000	\$15,729,411,000
Plan Net OPEB Liability as percentage of Covered Payroll	200.34%	276.57%

Section 2: Valuation Results for the North Carolina State OPEB Plan June 30, 2017 Measurement Under GASB 74

EXHIBIT 4

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

Notes to Schedule:

Benefit changes (2016):

Effective January 1, 2016

Enhanced Plan:

- Maximum copay for Tier 5 drugs increased from \$125 to \$132.

Traditional Plan:

- Prescription drug Out-of-Pocket maximum increased from \$2,500 to \$3,294.
- Copays for prescription drugs increased from \$12/\$40/\$64/25% (\$125 maximum) to \$15/\$46/\$72/25% (\$132 maximum).
- Deductible increased from \$933 to \$1,054 for In-Network and from \$1,866 to \$2,108 for Out-of-Network.
- Medical Coinsurance Maximum increased from \$3,793 to \$4,282 for In-Network and from \$7,586 to \$8,564 for Out-of-Network.
- Office visit copays increased from \$35 to \$39 and from \$81 to \$92 for Primary Care and Specialist respectively.
- Emergency room and hospital inpatient copay increased from \$291 to \$329.

CDHP:

- HRA funding increased from \$500 to \$600 per person.
- Out-of-Pocket maximum increased from \$3,000 to \$3,500 for In-Network and from \$6,000 to \$7,000 for Out-of-Network.

Effective January 1, 2017:

Enhanced Plan:

- Deductible increased from \$700 for Medical to \$1,250 for combined Medical and Prescription Drug.
- Medical coinsurance maximum of \$3,210 is replaced with Out-of-Pocket maximum of \$4,350.
- Primary Care copays decreased from \$15 to \$10 and from \$30 to \$25 for selected and non-selected providers respectively.
- Specialist copays changed from \$60 to \$45 for selected providers and from \$70 to \$85 for non-selected providers.
- Non-Blue Option hospital inpatient copay increased from \$233 to \$450.
- Emergency room copay increased from \$233 to \$300.
- Copays for prescription drugs Tiers 1-3 changed from \$12/\$40/\$64 to \$5/\$30/deductible+coinsurance.
- Tiers 4 and 5 in 2016 became Tiers 5 and 6 in 2017.
- Tier 4 (low cost/generic specialty) of prescription drugs was introduced with a copay of \$100.
- Copays for prescription drugs Tier 5 went from 25% (\$100 maximum) to \$250 copay and copays for prescription drugs Tier 6 went from 25% (\$132 maximum) to deductible+coinsurance.

Section 2: Valuation Results for the North Carolina State OPEB Plan June 30, 2017 Measurement Under GASB 74

EXHIBIT 4

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

Traditional Plan:

- Deductible increased from \$1,054 to \$1,080.
- Coinsurance maximum for medical services increased from \$4,282 to \$4,388.
- Pharmacy maximum increased from \$3,294 to \$3,360.
- Office visit copays increased from \$39 to \$40 and from \$92 to \$94 for Primary Care and Specialist respectively.
- Emergency room and hospital inpatient copays increased from \$329 to \$337.
- Copays for prescription drugs Tiers 1-3 increased from \$15/\$46/\$72 to \$16/\$47/\$74.
- Tiers 4 and 5 in 2016 became Tiers 5 and 6 in 2017.
- Tier 4 of prescription drugs was introduced with coinsurance of 10% (\$100 maximum).
- Maximums for prescription drugs Tiers 5 and 6 increased from \$100 and \$132 to \$103 and \$133 respectively.

Changes in assumptions (2016):

- 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 few years.
- Demographic assumption changes included changes to mortality, retirement, turnover, and disability. These were based on a study for the period ended December 31, 2014 by Buck Consulting, and approved by the Teachers' and State Employees' Retirement System of North Carolina in October 2015.
- The Excise Tax of 40% on health care plans that are above the thresholds set by the Affordable Care Act are effective in 2020 and have been reflected here.
- 2017 Plan and Contribution changes were known as of the date the report was signed. These items have been reflected in our trend assumptions.

Benefit changes (2017):

Effective January 1, 2018

- The CDHP Plan will be discontinued.

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 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 few years.
- 2018 contribution changes were known as of the date the report was signed. These items have been reflected in our trend assumptions.

Section 2: Valuation Results for the North Carolina State OPEB Plan June 30, 2017 Measurement Under GASB 74

EXHIBIT 5

Schedule of Contributions – Last Ten Fiscal Years (000's)

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
2008	\$2,638,677	\$601,032	\$2,037,645	\$14,659,317	4.10%
2009	2,713,290	635,685	2,077,605	15,504,512	4.10%
2010	3,001,667	678,769	2,322,898	15,083,756	4.50%
2011	2,926,070	743,659	2,182,411	15,176,714	4.90%
2012	2,371,490	710,027	1,661,463	14,200,540	5.00%
2013	2,072,951	813,223	1,259,728	15,343,830	5.30%
2014	2,226,586	815,157	1,411,429	15,095,500	5.40%
2015	2,211,436	854,383	1,357,053	15,562,532	5.49%
2016	2,516,706	880,847	1,635,859	15,729,411	5.60%
2017	2,728,064	950,813	1,777,251	16,365,112	5.81%

Section 2: Valuation Results for the North Carolina State OPEB Plan June 30, 2017 Measurement Under GASB 74

Notes to EXHIBIT 5

Methods and assumptions used to establish “actuarially determined contribution” rates:	Actuarially determined contribution rates are calculated as of June 30, one year prior to the end of the fiscal year in which contributions are reported.
Valuation date	December 31, 2016
Measurement date	June 30, 2017
Actuarial cost method	Projected Unit Credit used for actuarially determined contributions
Amortization method	Open 30-year level pay
Remaining amortization period	30 years
Asset valuation method	Market Value
Timing Adjustment	The preliminary ADC is developed, and the ADC as a percentage of valuation compensation is determined. Then, actual covered payroll for the fiscal year is multiplied by the ADC as a percentage of valuation compensation to account for timing, new participants, and new covered employers (if any). For fiscal 2017 and fiscal 2016, the covered payroll exceeded the valuation compensation.
Historical Information	Covered Payroll and Actuarially Determined Contributions prior to 2017 were provided by the State.

Section 2: Valuation Results for the North Carolina State OPEB Plan June 30, 2017 Measurement Under GASB 74

EXHIBIT 6

Statement of Net Fiduciary Position – Unaudited

	June 30, 2017	June 30, 2016
Assets¹		
Cash and deposits	\$193,102,980	\$162,151,648
Receivables:		
Contributions	50,331,013	51,596,351
Investment income	<u>163,843</u>	<u>94,829</u>
Total receivables	50,494,856	51,691,180
Investments	<u>952,972,271</u>	<u>860,293,405</u>
Total assets	<u>\$1,196,570,107</u>	<u>\$1,074,136,233</u>
Total liabilities	\$0	\$0
Net position restricted for OPEB	<u>\$1,196,570,107</u>	<u>\$1,074,136,233</u>

¹ As provided by the State Treasurer's office.

Section 3: Supplemental Valuation Details for the North Carolina State OPEB Plan June 30, 2017 Measurement Under GASB 74

CHART A
Summary of Participant Data

Retirees	December 31, 2016	December 31, 2015
Number of retirees	211,320	195,670
Average age of retirees	69.9	69.9
Number of spouses	10,969	8,654
Average age of spouses	66.1	66.6
Surviving Spouses		
Number	2,115	3,560*
Average age	80.6	74.0
Inactive Vesteds		
Number of inactive vested	39,230	37,118
Average age of inactive vested	47.8	48.1
Average expected retirement age	63.0	63.1
Active Participants		
Number	338,158	342,044
Average age	44.8	45.0
Average years of service	10.2	10.0
Average expected retirement age	60.2	60.0

**Prior year surviving spouse counts includes spouses of current retirees where the retiree and spouse are receiving coverage under split contracts.*

Section 4: Supporting Information for the North Carolina State OPEB Plan June 30, 2017 Measurement Under GASB 74

EXHIBIT I

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 Normal, Level Percentage of Pay.

Asset Valuation Method: Market Value

Basis for Demographic Assumptions: 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.

The mortality tables approved are based on standard tables created for corporate pension plans. The post-retirement mortality tables are adjusted by separate factors for ages before and after age 78. This creates a mortality table that is not smooth (continuous) at age 78. Typically a single adjustment is made to a table, rather than having multiple adjustments. Segal does not have a clear understanding of why there are multiple factors – it could be linked to the geographic area, or typical of governmental employees, or any other number of factors. The Society of Actuaries sent out a request for proposal in 2016 to study public pension plan mortality because government employees do not exhibit the same mortality as corporate employees. As of the date of the valuation we find it difficult to assess whether having this segmented approach is warranted.

Measurement Date: December 31, 2016

Discount Rate: 3.58% - The discount rate is based on the Bond Buyer 20-year GO index as of June 30, 2017.

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%

Section 4: Supporting Information for the North Carolina State OPEB Plan June 30, 2017 Measurement Under GASB 74

Investment Return: 7.25% for fiscal 2016 and 7.20% for fiscal 2017. This rate is provided by the State and the Building Blocks table used for GASB disclosures is provided by IMD.

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.

Post-Retirement Mortality:

Retirees

Adjustments to the RP-2014 Healthy Annuitant Base Table

Prior to 78

After 78

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 General	108% of Male	124% of Male
Female General	81% of Female	113% of 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:

Age	Rate				
	General Employees		Teachers		Law Enforcement
	Male	Female	Male	Female	Unisex
25	0.0002	0.0002	0.0001	0.0002	0.0033
30	0.0004	0.0004	0.0001	0.0003	0.0043
35	0.0010	0.0010	0.0003	0.0006	0.0060
40	0.0030	0.0030	0.0007	0.0010	0.0079
45	0.0050	0.0050	0.0014	0.0018	0.0110
50	0.0084	0.0084	0.0023	0.0032	0.0176
55	0.0144	0.0144	0.0047	0.0055	0.0307
60	0.0240	0.0240	0.0077	0.0102	0.0601
65	0.0000	0.0000	0.0000	0.0000	0.0000
69	0.0000	0.0000	0.0000	0.0000	0.0000

Section 4: Supporting Information for the North Carolina State OPEB Plan June 30, 2017 Measurement Under GASB 74

Turnover rates:

Teachers - Male

Age	Service					
	0	1	2	3	4	>=5
<=24	0.190	0.160	0.140	0.120	0.095	0.080
25 to 29	0.190	0.160	0.140	0.120	0.095	0.080
30 to 34	0.190	0.160	0.140	0.120	0.095	0.070
35 to 39	0.190	0.160	0.140	0.120	0.095	0.045
40 to 44	0.190	0.160	0.140	0.120	0.095	0.035
45 to 49	0.190	0.160	0.140	0.120	0.095	0.0325
>=50	0.190	0.160	0.140	0.120	0.095	0.0325

Teachers - Female

Age	Service					
	0	1	2	3	4	>=5
<=24	0.170	0.145	0.135	0.120	0.100	0.090
25 to 29	0.170	0.145	0.135	0.120	0.100	0.090
30 to 34	0.170	0.145	0.135	0.120	0.100	0.075
35 to 39	0.170	0.145	0.135	0.120	0.100	0.045
40 to 44	0.170	0.145	0.135	0.120	0.100	0.034
45 to 49	0.170	0.145	0.135	0.120	0.100	0.0325
>=50	0.170	0.145	0.135	0.120	0.100	0.0325

General - Male

Age	Service					
	0	1	2	3	4	>=5
<=24	0.180	0.155	0.130	0.110	0.090	0.080
25 to 29	0.180	0.155	0.130	0.110	0.090	0.080
30 to 34	0.180	0.155	0.130	0.110	0.090	0.070
35 to 39	0.180	0.155	0.130	0.110	0.090	0.0525
40 to 44	0.180	0.155	0.130	0.110	0.090	0.040
45 to 49	0.180	0.155	0.130	0.110	0.090	0.035
>=50	0.180	0.155	0.130	0.110	0.090	0.035

General - Female

Age	Service					
	0	1	2	3	4	>=5
<=24	0.195	0.170	0.145	0.115	0.100	0.110
25 to 29	0.195	0.170	0.145	0.115	0.100	0.110
30 to 34	0.195	0.170	0.145	0.115	0.100	0.085
35 to 39	0.195	0.170	0.145	0.115	0.100	0.060
40 to 44	0.195	0.170	0.145	0.115	0.100	0.045
45 to 49	0.195	0.170	0.145	0.115	0.100	0.0375
>=50	0.195	0.170	0.145	0.115	0.100	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

Section 4: Supporting Information for the North Carolina State OPEB Plan June 30, 2017 Measurement Under GASB 74

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	0.000	0.035	0.035	0.080	0.080	0.350	0.350
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	0.000	0.035	0.035	0.060	0.060	0.275	0.400
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

Section 4: Supporting Information for the North Carolina State OPEB Plan June 30, 2017 Measurement Under GASB 74

Active Retirement Rates (continued):

Teachers - 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	0.300	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

Teachers - 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	0.275	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

Section 4: Supporting Information for the North Carolina State OPEB Plan June 30, 2017 Measurement Under GASB 74

Active Retirement Rates (continued):

Age	Law Enforcement - Male and Female					
	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

Inactive Vested Retirement Rates: 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 2.75%.

Section 4: Supporting Information for the North Carolina State OPEB Plan June 30, 2017 Measurement Under GASB 74

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 with the retiree subsidy. 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, 2015 through December 31, 2016. 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.

Section 4: Supporting Information for the North Carolina State OPEB Plan June 30, 2017 Measurement Under GASB 74

Per Capita Health Costs:

2017 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.

Non-Medicare

Age	Medical Traditional				Traditional Prescription Drug			
	Retiree		Spouse		Retiree		Spouse	
	Male	Female	Male	Female	Male	Female	Male	Female
50	\$4,992	\$5,686	\$3,487	\$4,565	\$1,750	\$1,993	\$1,222	\$1,601
55	5,928	6,121	4,666	5,284	2,078	2,146	1,636	1,853
60	7,040	6,597	6,246	6,129	2,468	2,313	2,190	2,149
65	8,361	7,107	8,361	7,107	2,931	2,492	2,931	2,492
70	9,691	7,659	9,691	7,659	3,397	2,685	3,397	2,685
75	10,443	8,244	10,443	8,244	3,661	2,890	3,661	2,890
80	11,246	8,888	11,246	8,888	3,943	3,116	3,943	3,116

Age	Medical Enhanced				Enhanced Prescription Drug			
	Retiree		Spouse		Retiree		Spouse	
	Male	Female	Male	Female	Male	Female	Male	Female
50	\$5,801	\$6,607	\$4,052	\$5,305	\$2,104	\$2,396	\$1,470	\$1,924
55	6,889	7,112	5,422	6,141	2,499	2,580	1,966	2,227
60	8,181	7,666	7,258	7,122	2,967	2,780	2,632	2,583
65	9,716	8,259	9,716	8,259	3,524	2,995	3,524	2,995
70	11,261	8,900	11,261	8,900	4,084	3,228	4,084	3,228
75	12,136	9,580	12,136	9,580	4,401	3,475	4,401	3,475
80	13,068	10,328	13,068	10,328	4,740	3,746	4,740	3,746

Age	Medical and Rx CDHP			
	Retiree		Spouse	
	Male	Female	Male	Female
50	\$6,552	\$7,463	\$4,576	\$5,992
55	7,781	8,033	6,124	6,936
60	9,241	8,659	8,198	8,044
65	10,975	9,328	10,975	9,328
70	12,720	10,053	12,720	10,053
75	13,707	10,821	13,707	10,821
80	14,761	11,666	14,761	11,666

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Medicare – Non Medicare Advantage

Age	Medical Traditional				Prescription Drug			
	Retiree		Spouse		Retiree		Spouse	
	Male	Female	Male	Female	Male	Female	Male	Female
50	\$512	\$583	\$358	\$468	\$1,750	\$1,993	\$1,222	\$1,601
55	608	628	479	542	2,078	2,146	1,636	1,853
60	722	677	641	629	2,468	2,313	2,190	2,149
65	858	729	858	729	2,931	2,492	2,931	2,492
70	994	786	994	786	3,397	2,685	3,397	2,685
75	1,072	846	1,072	846	3,661	2,890	3,661	2,890
80	1,154	912	1,154	912	3,943	3,116	3,943	3,116

Medicare – Medicare Advantage

Age	Medicare Advantage (Basic)				Medicare Advantage (Enhanced)			
	Retiree		Spouse		Retiree		Spouse	
	Male	Female	Male	Female	Male	Female	Male	Female
50	\$837	\$953	\$585	\$765	\$1,310	\$1,492	\$915	\$1,198
55	994	1,026	782	886	1,555	1,606	1,224	1,387
60	1,180	1,106	1,047	1,028	1,847	1,731	1,639	1,608
65	1,402	1,192	1,402	1,192	2,194	1,865	2,194	1,865
70	1,625	1,284	1,625	1,284	2,543	2,010	2,543	2,010
75	1,751	1,382	1,751	1,382	2,740	2,163	2,740	2,163
80	1,886	1,490	1,886	1,490	2,951	2,332	2,951	2,332

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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 December 31,	Rate (%)			
	Medical Non-Medicare	Prescription Drug	Medicare Advantage	Admin.
2017	6.50%	7.25%	4.00%	3.00%
2018	6.25%	7.00%	4.00%	3.00%
2019	6.00%	6.75%	4.00%	3.00%
2020	5.75%	6.50%	4.00%	3.00%
2021	5.50%	6.25%	5.00%	3.00%
2022	5.25%	6.00%	5.00%	3.00%
2023	5.00%	5.75%	5.00%	3.00%
2024	5.00%	5.50%	5.00%	3.00%
2025	5.00%	5.25%	5.00%	3.00%
2026 & later*	5.00%	5.00%	5.00%	3.00%

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

The trend rate assumptions were developed using Segal’s internal guidelines, which are established each year using data sources such as the 2017 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.

2017 Plan Changes and Plan Enrollment Assumptions are valued by adjusting the trend for 2017-2021 for enrollment migration. See page 37 for a description of the 2017 Plan Changes. The actual trend for 2017 was 7.24% for non-Medicare claims and 1.57% for Medicare claims.

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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. 2017 trend on contributions was adjusted to expected 2018 contribution rates, including anticipated wellness credits and enrollment migration. The average contribution increased by 14.8% from 2017 to 2018 in our valuation as a result of these adjustments.

Administrative Expenses:

An administrative expense load of \$260 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:

Based on most recent financial report:

<i>Non-Medicare Retiree</i>	2017	2018	2019	2020	2021+
Traditional Med	43.7%	44.7%	44.0%	43.2%	42.5%
Enhanced Med	52.8%	55.3%	56.0%	56.8%	57.5%
CDHP Med+Rx	3.5%	0.0%			
Traditional Rx	43.7%	44.7%	44.0%	43.2%	42.5%
Enhanced Rx	52.8%	55.3%	56.0%	56.8%	57.5%
<i>Med Retiree</i>					
Traditional Med	25.4%	24.4%	23.4%	22.4%	21.4%
Traditional Rx	25.4%	24.4%	23.4%	22.4%	21.4%
MA Base	62.6%	63.6%	64.6%	65.6%	66.6%
MA Enhanced	12.0%	12.0%	12.0%	12.0%	12.0%

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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 2020 (reflected with this valuation) and those previously adopted as of the valuation date.

Assumption Changes since Prior Valuation:

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 were mapped to demographic assumptions by agency and job code. This better aligns with the pension valuations.

This year 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 few years.

2018 Contribution changes were known as of the date the report was signed. These items have been reflected in our trend assumptions.

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EXHIBIT II

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: 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:

Law Enforcement Officer:

- age 50 and 15 years of service;
- age 55 and 5 years of service; or
- any age with 30 or more years of service.

All Others:

- age 50 and 20 years of service;
 - age 60 and 5 years of service; or
 - any age with 30 or more years of service.
-

Benefit Types: Traditional, Enhanced and CDHP are offered to non-Medicare participants, and Traditional, MA and MA+ are offered to Medicare eligible participants.

Duration of Coverage: Lifetime for retirees and dependents

Dependent Benefits: Same as retirees

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Retiree Contributions:

Monthly contributions, effective January 1, 2017, are shown below.

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

	Non-Medicare			Medicare		
	Traditional	Enhanced	CDHP	Traditional	MA	MA+
Retiree	\$0.00	\$105.04*	\$80.00 *	\$0.00	\$0.00	\$64.00
Spouse	562.10	668.48	505.90	408.08	124.80	188.80

* Reduced by Wellness incentive credits for those who participate.

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
5 – 9.99	100%
10 – 19.99	50%
20 or more	0%

100% of the total premium costs are show below:

	Non-Medicare			Medicare		
	Traditional	Enhanced	CDHP	Traditional	MA	MA+
Retiree	\$479.48	\$584.52*	\$559.48*	\$372.56	\$124.80	\$188.80
Spouse	562.10	668.48	505.90	408.08	124.80	188.80

* Reduced by Wellness incentive credits for those who participate.

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Benefit Descriptions (As of January 1, 2017):

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.

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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.

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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.

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Prescription Drugs (<i>up to 30 day supply</i>)	
<i>Tier 1</i>	\$5
<i>Tier 2</i>	\$30
<i>Tier 3</i>	Ded. & 20% coins.
<i>Tier 4 - Generic Specialty</i>	\$100
<i>Tier 5 - Preferred Specialty</i>	\$250
<i>Tier 6 - Non-Preferred Specialty</i>	Ded. & 20% 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. & 20% coins.
<i>Out-of-Pocket Maximum</i>	\$2,500

Coverage becomes secondary when former employees become eligible for Medicare.

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CDHP	In-Network	Out-Of-Network
Medical & Prescription Drug		
<i>Annual Deductible</i>	\$1,500/\$4,500	\$3,000/\$9,000
<i>Coinsurance</i>	85%	65%
<i>Out-of-Pocket Maximum</i>	\$3,500/\$10,500	\$7,000/\$21,000
<i>Lifetime Maximum</i>	Unlimited	Unlimited
<i>HRA</i>	\$600/\$1,800	\$600/\$1,800

MA	MA-PDP Basic	MA-PDP 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

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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, 2017 (reflected in the prior valuation):

Enhanced Plan:

- Deductible increased from \$700 for Medical to \$1,250 for combined Medical and Prescription Drug.
- Medical coinsurance maximum of \$3,210 is replaced with Out-of-Pocket maximum of \$4,350.
- Primary Care copays decreased from \$15 to \$10 and from \$30 to \$25 for selected and non-selected providers respectively.
- Specialist copays changed from \$60 to \$45 for selected providers and from \$70 to \$85 for non-selected providers.
- Non-Blue Option hospital inpatient copay increased from \$233 to \$450.
- Emergency room copay increased from \$233 to \$300.
- Copays for prescription drugs Tiers 1-3 changed from \$12/\$40/\$64 to \$5/\$30/deductible & coinsurance.
- Tiers 4 and 5 in 2016 became Tiers 5 and 6 in 2017.
- Tier 4 (low cost/generic specialty) of prescription drugs was introduced with a copay of \$100.

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- Copays for prescription drugs Tier 5 went from 25% (\$100 maximum) to \$250 copay and copays for prescription drugs Tier 6 went from 25% (\$132 maximum) to deductible & coinsurance.

Traditional (formerly Basic) Plan:

- Deductible increased from \$1,054 to \$1,080.
- Coinsurance maximum for medical services increased from \$4,282 to \$4,388.
- Pharmacy maximum increased from \$3,294 to \$3,360.
- Office visit copays increased from \$39 to \$40 and from \$92 to \$94 for Primary Care and Specialist respectively.
- Emergency room and hospital inpatient copays increased from \$329 to \$337.
- Copays for prescription drugs Tiers 1-3 increased from \$15/\$46/\$72 to \$16/\$47/\$74.
- Tiers 4 and 5 in 2016 became Tiers 5 and 6 in 2017.
- Tier 4 of prescription drugs was introduced with coinsurance of 10% (\$100 maximum).
- Maximums for prescription drugs Tiers 5 and 6 increased from \$100 and \$132 to \$103 and \$133 respectively.

Effective January 1, 2018:

The CDHP option will be discontinued.

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EXHIBIT III
Definition of Terms

The following list defines certain technical terms for the convenience of the reader:

Assumptions or Actuarial Assumptions:	The estimates on which the cost of the Plan is calculated including: <ul style="list-style-type: none">(a) <u>Investment return</u> — the rate of investment yield that the Plan will earn over the long-term future;(b) <u>Mortality rates</u> — the death rates of employees and pensioners; life expectancy is based on these rates;(c) <u>Retirement rates</u> — the rate or probability of retirement at a given age;(d) <u>Turnover rates</u> — 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]

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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 non 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 Net Fiduciary Position
Plan Net Fiduciary Position:	Market Value of Assets
Real Rate of Return:	The rate of return on an investment after removing inflation

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EXHIBIT IV
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 (OPEB) 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 health, prescription drug, 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 II 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 introduce an accrual-basis accounting requirement, thereby recognizing the employer cost of postemployment benefits over an employee’s career. The standards also introduce 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 I 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 Net Plan Fiduciary 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 III and V of Section 4 contain a definition of terms as well as more information about GASB 74/75 concepts.

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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.

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**EXHIBIT V
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.

