State of North Carolina

Debt Affordability Study

February 1, 2018

Debt Affordability Advisory Committee

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STATE OF NORTH CAROLINA
DEBT AFFORDABILITY ADVISORY COMMITTEE

February 1, 2018

To: Governor Roy Cooper
Lieutenant Governor Daniel J. Forest, President of the North Carolina Senate
Senator Phil Berger, President Pro Tempore of the North Carolina Senate
Representative Tim Moore, Speaker of the North Carolina House of Representatives
Members of the 2017 General Assembly through the Fiscal Research Division

Attached is the February 1, 2018 report of the Debt Affordability Advisory Committee submitted to you pursuant to North Carolina General Statute §142-101. The report was created to serve as a tool for sound debt management practices by the State of North Carolina.

The report provides the Governor and the General Assembly with a basis for assessing the impact of future debt issuance on the State's fiscal position and enables informed decision-making regarding both financing proposals and capital spending priorities. A secondary purpose of the report is to provide a methodology for measuring, monitoring and managing the State's debt levels, thereby protecting North Carolina's bond ratings of AAA/Aaa/AAA. The methodology used by the Committee to analyze the State's debt position incorporates trends in debt levels and peer group comparisons, and provides recommendations within adopted guidelines. The analysis includes the projected issuance of the remaining $1.8 billion of Connect NC General Obligation Bonds.

The Committee is reiterating its recommendation that the State recognize the magnitude of its unfunded pension and other post-employment obligations (OPEB) that cover retiree healthcare costs and to begin to fund these liabilities using principles of gradualism that are appropriate for a State with a long history of good fiscal management and high financial rating. That recommendation identifies the totality of the State's unfunded liabilities for pensions and healthcare and begins an annual process to devote significant additional funds toward it while at the same time offering additional debt capacity up to 4.50% of revenues with relatively low risk. I believe that the recommendation begins to address our unfunded liabilities and represents action to preserve and protect the State's "AAA" rating.

Respectfully submitted,

Dale R. Folwell, CPA,
State Treasurer of North Carolina
Chair, Debt Affordability Advisory Committee

Debt Affordability Advisory Committee Membership

Mr. Dale R. Folwell, CPA, State Treasurer, Chair

Mr. Ronald Penny, Secretary of Revenue

Dr. Linda M. Combs, State Controller

Mr. Charles Perusse, State Budget Director

Ms. Beth Wood, State Auditor

Mr. Frank H. Aikmus, Senate Appointee

Mr. Bradford B. Briner, Senate Appointee

Mr. Eugene W. “Gene” Chianelli, Jr., House Appointee

Mr. Cecil T. “Tom” Turner, House Appointee

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SUMMARY

Background and Context

A study of debt affordability is an essential management tool that helps to provide a comprehensive assessment of a government's ability to issue debt for its capital needs. Standard & Poor's Ratings Services ("S&P"), one of the three major bond rating agencies, has stated that "Most of the 'AAA' states have a clearly articulated debt management policy. Evaluating the impact of new or authorized but unissued bond programs on future operating budgets as well as unfunded liabilities are an important element of debt management and assessing debt affordability." Control of debt burden is one of the key factors used by rating agencies' analysts in assessing credit quality. Other factors include economic vitality and diversity, fiscal performance and flexibility and administrative capabilities of government.

The Debt Affordability Advisory Committee (the "Committee" or "DAAC") is required to annually advise the Governor and the General Assembly of the estimated debt capacity of the General, Highway and Highway Trust Funds for the upcoming ten fiscal years. The legislation also directs the Committee to recommend other debt management policies it considers desirable and consistent with the sound management of the State's debt. The Committee hereby presents its study for 2018.

Debt Controls and Ratings

Debt capacity is a limited and scarce resource. It should be used only after evaluating the expected results and foregone opportunities. The Study enables the State to structure its future debt issuances within existing and future resource constraints by providing a comparison of its current debt position to relevant industry and peer group standards. The Study can thus be used to help develop and implement the State's capital budget and is premised on the concept that resources, not only needs, should guide the State's debt issuance program. The Committee's adopted guidelines attempt to strike a balance between providing sufficient debt capacity to allow for the funding of essential capital projects and imposing sufficient discipline so that the State does not create a situation that results in loss of future budgetary flexibility and a deteriorating credit position.

The State's ratings were affirmed in 2017 at Aaa (Moody's), AAA (Standard & Poor's or "S&P") and AAA (Fitch). All of the State's debt ratios remain **in line** or below the median levels for the State's peer group comprised of all twelve states currently rated "triple A" by all three rating agencies. North Carolina's debt is considered manageable at current levels. In affirming the State's rating, Fitch stated that "The State has low liabilities and strong debt management practices, including an affordability planning process."

The Committee has adopted the ratio of debt service as a percentage of revenues as the controlling metric that determines the State's debt capacity. Over the ten year planning horizon the State's revenue picture is positive overall, reflecting a continued economic recovery. Debt service projections incorporate the future issuance of the remaining $1.8 billion of Connect NC Bonds. The model results show that the State's General Fund has debt capacity of approximately $194 million in each of the next 10 years after incorporating the committee's policy that directs resources to unfunded Pension and OPEB liabilities. The actual ratio of debt service to revenues is projected to peak at 3.32% in FY 2020.

The ratio of transportation debt service to revenues peaked at 3.56% in fiscal year 2015 versus the limit of 6%. Transportation debt capacity equals approximately $1.521 billion in the current fiscal year and totals nearly $2.4 billion through fiscal year 2022. The Committee also notes that the State has provided significant financial support for transportation projects through the issuance of Grant

Anticipation Revenue Vehicle Bonds, direct debt service support for the North Carolina Turnpike Authority revenue bonds and contractual payments supporting Public Private Partnerships ("P3") projects. On a combined basis, the General Fund and Transportation Fund's debt service is projected to peak at approximately 3.26% of combined revenues in fiscal 2020.

Table 1

General Fund - 2017 Policy

Alternate Debt Capacity using 4.5% debt service/revenues target ratio

(In millions of dollars)

Fiscal Year	2018	2019	2020	2021	2022
$ to Unfunded Liabilities	$200.0	$162.2	$158.7	$194.3	$267.4
Total Additional Debt Capacity per Year *	$1,315.4	$24.3	$47.6	$53.6	$55.7
Debt Capacity Available each and every Year	$194.0	$194.0	$194.0	$194.0	$194.0

* In addition to that already authorized but unissued. Assumes additional debt capacity is authorized and issued in stated fiscal year.

Table 2

Transportation

Net Tax-Supported Debt Capacity using 6.0% debt service/revenues target ratio

(In millions of dollars)

Fiscal Year	2018	2019	2020	2021	2022
Total Additional Debt Capacity per Year *	$1,521.2	$0.0	$868.8	$0.0	$0.0
Debt Capacity Available Each and Every Year	$284.6	$284.6	$284.6	$284.6	$284.6

* In addition to that already authorized but unissued. Assumes additional debt capacity is authorized and issued in stated fiscal year.
GAP Funding for North Carolina Turnpike Authority projects assumed to total $49 million annually.

Table 3

General Fund and Transportation Funds
Combined Debt Service / Revenue Percentages

Fiscal Year	2018	2019	2020	2021	2022
General Fund	3.11%	3.29%	3.32%	3.20%	2.94%
Transportation *	2.82%	2.81%	2.90%	1.26%	1.12%
Combined	3.07%	3.22%	3.26%	2.92%	2.68%

Note: Percentages are based on forecasted revenues and debt service.

* GAP Funding for North Carolina Turnpike Authority projects assumed to total $49 million annually.

Over the past year, the State has refunded approximately $1.053 billion of outstanding debt, achieving budgetary savings of over $135 million. Since 2009, nearly 70% of the State's debt has been refinanced to achieve debt service savings. Although additional refunding opportunities are being monitored, additional savings are not likely to be realized during the coming year due to modest increases in interest rates and the prohibition on advance refundings enacted in the Tax Reform legislation (see Appendix D for more information).

Tax Reform

The Tax Cuts and Jobs Act that was signed into law in late 2017 will have an effect on the municipal debt markets, although analysts are mixed as to the magnitude of the impact. As discussed further in Appendix D, the changes by themselves, are unlikely to have a significant impact on the demand for State's upcoming debt issues but will limit the State's ability to advance refund debt for savings.

Interest Rate Increases

The Federal Reserve has raised interest rates a total of six times beginning in December 2015 although the target rate is still a low 1.25%-1.50%. Most analysts expect further gradual increases over the next year. Longer term interest rates have also risen, but not in a manner directly correlated with Fed action. Analysts note that the 10-year benchmark Treasury yield at approximately 2.65% has risen to levels not seen since mid-2014. Nonetheless, yields are still near historic lows and the DAAC recommendations on debt capacity, using very conservative interest rate assumptions, do not appear aggressive. See page 15 for sensitivity information.

Other Recommendations

(See Appendices A and C for further discussion)

- **Unfunded Pension and Other Post-Employment Benefits (OPEB) Obligations**
  The State currently has unfunded Pension and OPEB obligations totaling at least $40.7 billion and the bond rating agencies are thankfully scrutinizing these liabilities more carefully. The

Committee recommends that the General Assembly adopt policies to address these liabilities. See General Fund Analysis-Other and Appendix A for more detail.

- **Control of Debt Authorization Authority and Management**
  Centralized debt authorization, issuance and management are considered one of North Carolina's credit strengths. Sponsoring agencies whose mission is to provide a particular service or assets are not in the best position to make decisions that prioritize the use of the State's debt capacity. In the Committee's view, the prioritization of capital projects and the issuance of obligations or entering into financial arrangements that create debt or debt-like obligations that increase the State's debt burden should remain the prerogative of the General Assembly.

- **State-Aid Intercept**
  The Committee strongly opposes proposals that would utilize a back-up pledge of State appropriations to provide support for debt issued by other entities.

- **Structural Budget Balance and Continued Replenishment of Reserves Should Continue to be a Priority**
  These are key ratings drivers contributing to the State's "AAA" rating.

- **Consider General Obligation Bonds as the Preferred Financing Vehicle**
  The Committee recommends that the State consider General Obligation ("GO") Bonds generally approved by voters as the preferred, but not exclusive, financing vehicle to provide funding for the State's capital projects.

National Recognition for North Carolina's Debt Affordability Study

In 2017, Pew Charitable Trusts published a study on the debt affordability processes for all 50 states. Pew found that North Carolina is one of nine states they considered as " leading the way by producing studies that give policymakers a clear understanding of their states' debt levels through, among other things, careful projections, smart benchmarking comparisons, multiple descriptive metrics, and analysis." The Office of State Treasurer wishes to thank the DAAC Committee and all of the contributors to the study without whose participation the production of the Study would not be possible.

SECTION I
GENERAL FUND DEBT AFFORDABILITY

Review of General Fund Debt

Outstanding Debt

The State issues two kinds of tax-supported debt: GO Bonds and various kinds of "Special

Indebtedness," which are also known as non-GO debt or appropriation-supported debt. GO Bonds are secured by the full faith, credit and taxing power of the State. The payments on all other kinds of long-term debt, including Limited Obligation Bonds, Certificates of Participation ("COPs"), lease-purchase revenue bonds, capital lease obligations and installment purchase contracts are subject to appropriation by the General Assembly. Appropriation-supported debt may sometimes also be secured by a lien on facilities or equipment.

Debt that is determined to be self-supporting or supported by non-General Fund tax revenues does not constitute net tax-supported debt, but is included in the definition of "gross" tax-supported debt used by some rating analysts.

The State's outstanding debt positions as of June 30, 2017 are shown below.

Chart 1

State of North Carolina Outstanding Net Tax-Supported Debt

The State's total outstanding debt at June 30, 2017 totaled approximately $7.3 billion of which $5.6 billion was tax-supported.

Tax-Supported	**Amounts ($millions)**
☐ General Obligation Debt	$2,851.7
○ General Fund ($2,705.1)	
○ Highway Fund ($146.6)	
☐ Special Indebtedness	$1,990.8
☐ NCTA Gap-Funded Appropriation Bonds	$723.1
☐ Installment Purchase / Equipment & Capital Leases (1)	$33.3
Total General Fund Tax-Supported Debt	$4,729.2
Total Highway Tax-Supported Debt	$869.7
Total Tax-Supported Debt	$5,598.9
Non Tax-Supported	
☐ GARVEEs	$607.7
☐ NC Turnpike Authority (includes TIFIA)	$833.8
☐ Guaranteed Energy Savings Contracts (2)	$236.5
Total Debt	$7,276.9

(1) Lease information - OSC and other sources.
(2) Total GESCs entered into through June 30, 2017.

Trends in Amounts of General Fund Debt

After showing substantial growth in the early 2000s, the State's outstanding net tax-supported debt peaked in FY 2013 at approximately $6.2 billion and declined by over $1.5 billion by June 30, 2017.

The amount of outstanding debt is projected to rise modestly as the Connect NC Bonds are issued over the next four years. Chart 2 below illustrates the outstanding amounts of General Fund net tax-supported debt over the last five years and projects the amount outstanding through FY 2022. Absent additional authorizations, the absolute level of General Fund tax-supported debt is not projected to greatly exceed $5.0 billion over the projection period, well below its peak.

Chart 2

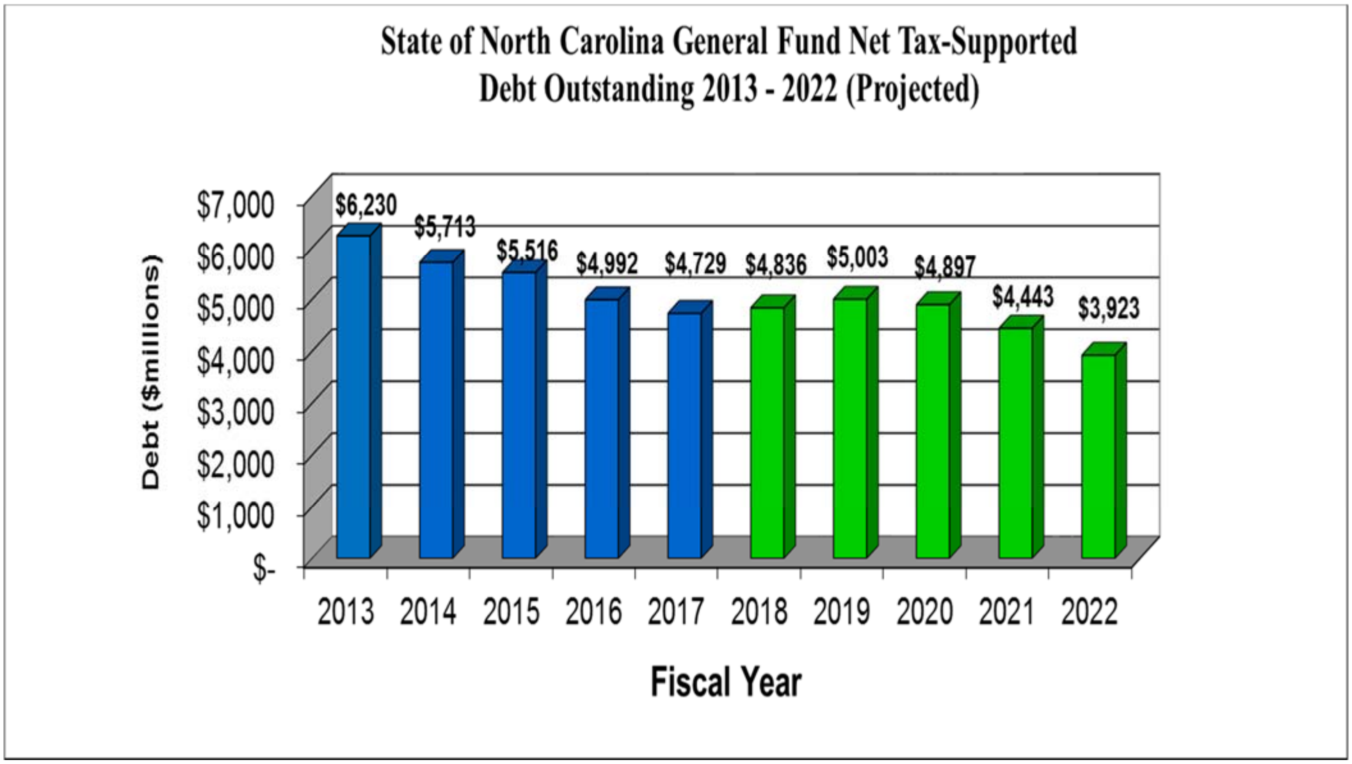
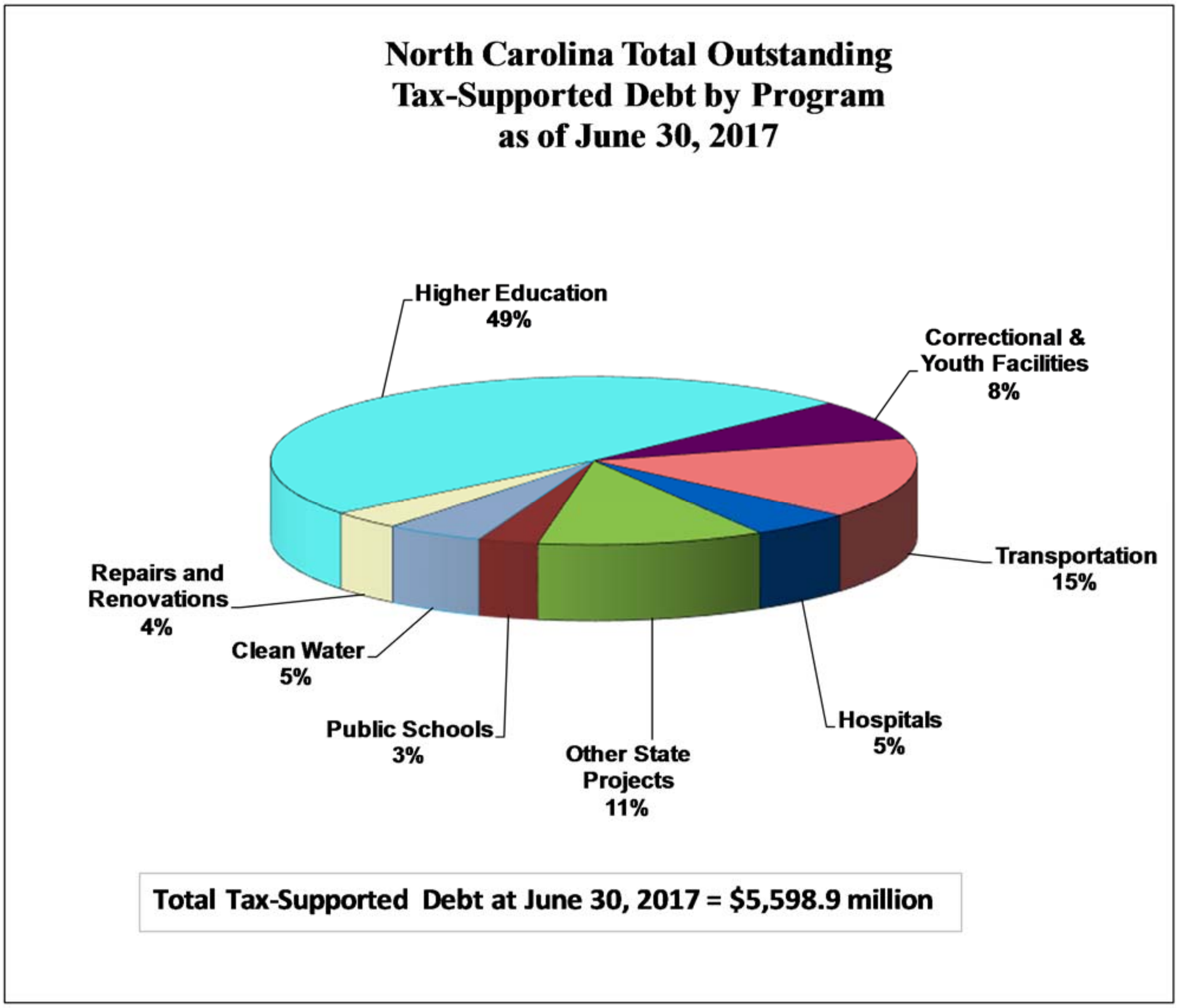


Chart 2 above incorporates all of the State's currently outstanding and all authorized, but unissued, debt including the Connect NC Bonds. The State issues debt on a cash flow basis and bond issues are timed to provide funds as they are actually needed typically creating a lag between when debt is authorized and when it is actually issued. As of December 31, 2017, the State did not have any authorized but unissued tax-supported debt except for the Connect NC Bonds.

Uses of Total Outstanding Tax-Supported Debt

The following chart illustrates the uses for which the State has issued tax-supported debt, including that used for transportation purposes, calculated on the amount outstanding at June 30, 2017. The State has used the proceeds of its debt programs for many purposes with the two largest being to provide facilities and infrastructure for higher education (49%) and transportation (15%).

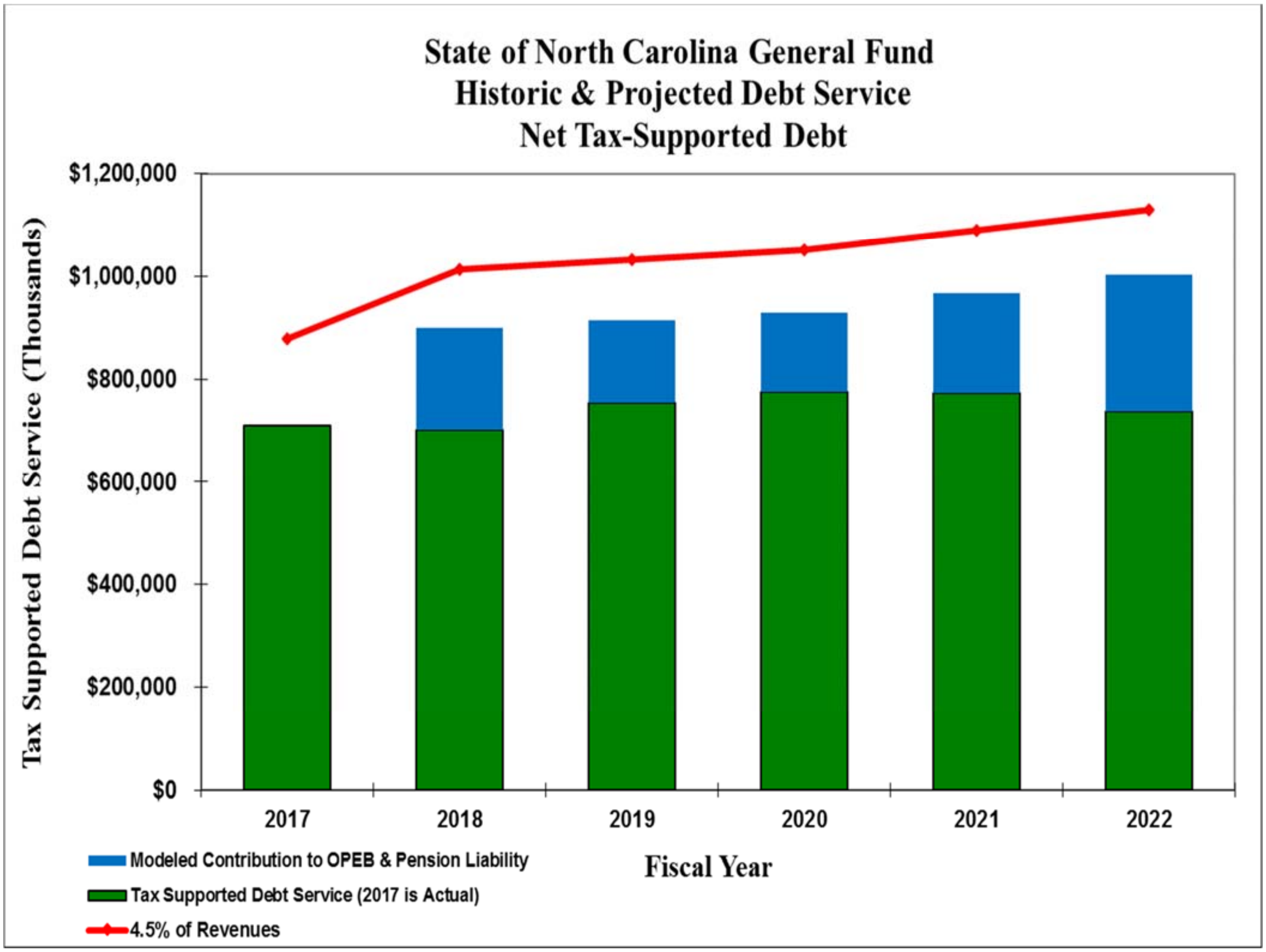
Chart 3



Debt Service

General Fund debt service as a percentage of revenues is projected to peak in FY 2020 at 3.32%. The absolute amount of annual debt service peaks at approximately $776 million in FY 2020. As stated previously, this includes the debt service for the Connect NC Bonds using the assumptions contained in Appendix A. The State's projected debt service is illustrated below in Chart 4. This chart also illustrates the amount of capacity for additional debt service that exists while remaining under the 4.5%. Even after providing for Pension and OPEB liabilities, there is capacity to issue additional debt in each and every year. The model calculates the additional debt that could be serviced by this capacity.

Chart 4



General Obligation Bonds versus Special Indebtedness

General Obligation ("GO") indebtedness is usually considered to be the highest quality of all the various types of debt or debt-like instruments and usually carries the highest credit rating because the full faith and credit of the State is pledged to its repayment. Several factors contribute to the high rating, including the legal protections inherent in constitutionally permitted debt, investor confidence in the pledge of the full faith and credit of the State and the presumption of the availability of the government's full resources. GO bonds are generally the most transparent of the various types of State debt obligations and typically carry the lowest interest cost. The Fiscal Research Division estimates that the costs of holding a GO bond referendum to be extremely modest and does not add substantially to the cost of the projects being financed.

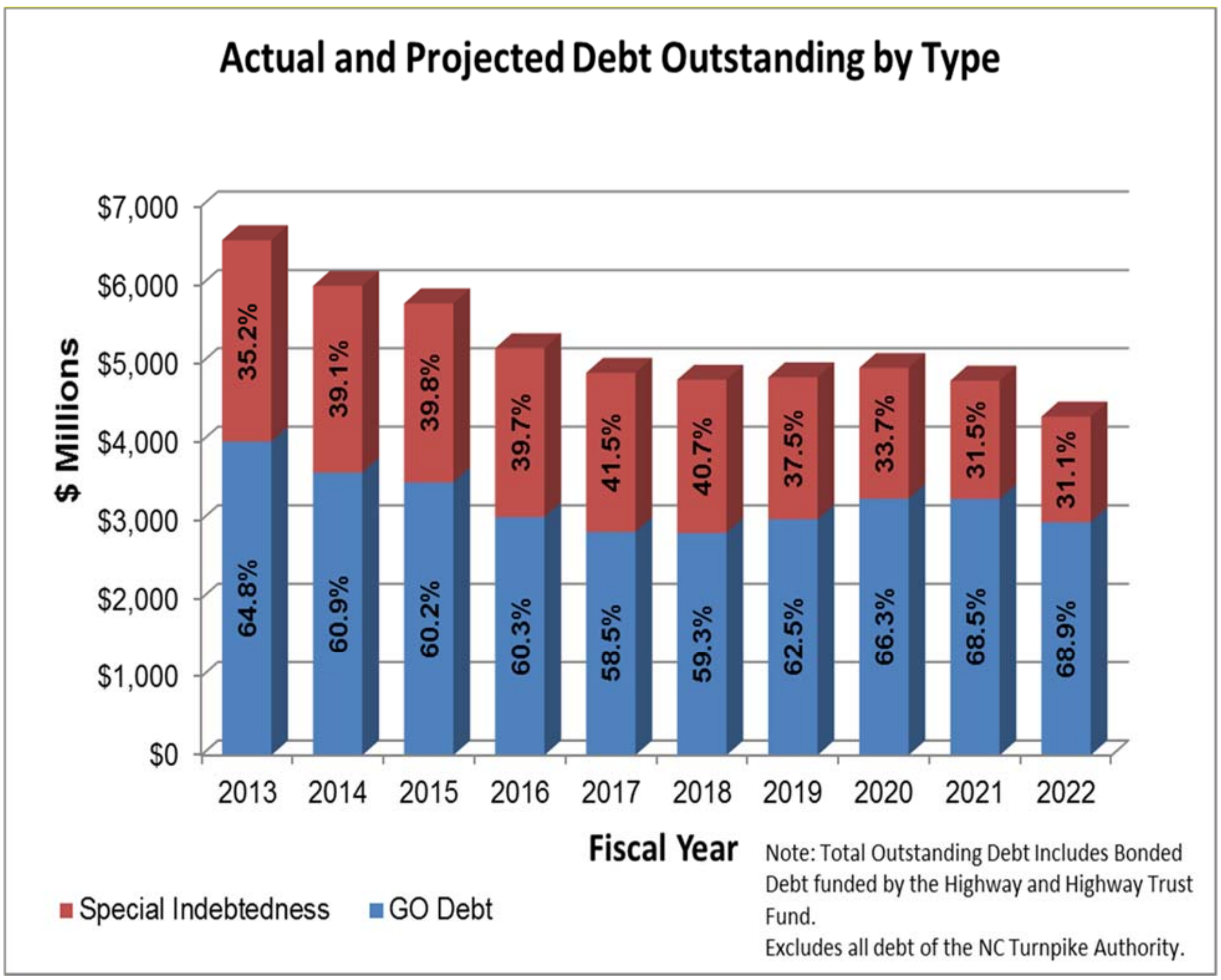
Special Indebtedness (as defined in G.S. §142-82), is a commonly-used financing vehicle employed by most states and localities. Sometimes issued on an unsecured basis or sometimes secured by a specific stream of revenues, a lease payment or financing agreement (and sometimes by a security interest in the project being financed), such obligations are paid from annual appropriated amounts for debt service. Depending upon market conditions, additional credit support and structure, the financial markets usually assess an interest rate **penalty** of approximately 25 basis points for the State's appropriation-supported debt when compared with the State's GO bonds. This translates into approximately $3.4 million of additional interest over the life of a typical $100 million debt issue. Although modest, the interest rate penalty does increase the cost of the projects being financed.

The rating agencies note that most states have incorporated alternative financing methods, including lease revenue, appropriation-supported or special-tax debt into their liability profile. GO debt represents only 52% of overall state debt according to Moody's, with eleven states having no GO debt at all. With the ongoing issuance of the Connect NC Bonds, the State will reverse a trend of increasing amounts of appropriation-supported debt as a percentage of the total debt portfolio.

The State is currently limited in the amount of Special Indebtedness it may issue by the provisions of S.L. 2013-78 that limits the amount of Special Indebtedness that may be authorized to 25% of the total general fund-supported debt authorized after January 1, 2013. Currently the State has the ability to authorize approximately $577 million of additional Special Indebtedness under these limits.

The amount of the State's historic and projected outstanding appropriation-supported debt is shown below in Chart 5, with the percentage of appropriation-supported debt to total debt (including transportation debt) noted.

Chart 5



Two-Thirds Bonds

North Carolina's Constitution permits the State to issue GO bonds without a referendum, to the extent of two-thirds of the amount that GO bonds have been paid down over the previous biennium. The current estimate is that approximately $411.7 million of Two-Thirds GO capacity is available for the biennium ending June 30, 2019. The ongoing issuance of the Connect NC or other newly authorized GO debt may reduce the two-thirds capacity depending upon the timing of the issuance.

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Review of State Credit Ratings and Comparative Ratios

Credit ratings are the rating agencies' assessment of a governmental entity's ability and willingness to repay debt on a timely basis. As a barometer of financial stress, credit ratings are an important factor in the public credit markets and can influence interest rates a borrower must pay.

Chart 6

North Carolina Credit Rating Matrix

State of North Carolina

General Obligation Bond Credit Ratings

Rating Agency	*Rating*	*Outlook*
Fitch Ratings	AAA	Stable
Moody's Investors Service	Aaa	Stable
Standard & Poor's Rating Services	AAA	Stable

The State's general obligation bonds are rated AAA with a "stable" outlook by Fitch, AAA with a "stable" outlook by S&P and Aaa with a "stable" outlook by Moody's Investors Service. These ratings are the highest ratings attainable from all three rating agencies.

Comparison of Debt Ratios to Selected Medians

A comparison to peer group medians is helpful because absolute values are more useful with a basis for comparison. In addition, the rating agencies combine General Fund and Transportation tax-supported debt in their comparative analysis. The sources for this information are reports issued by Moody's in 2017 and S&P in 2016.

How North Carolina compares with its peers is presented below. The peer group is composed of states rated "triple A" by all three credit rating agencies (often termed "triple-triple A" or "AAA"). Our peer group states are of a diverse nature but all demonstrate adherence to certain underlying core values including prudent use (in some cases, extremely modest use) of debt although not all have a formal debt affordability process. As shown in Chart 7, the State's debt ratios are roughly in line with or below the median levels for its peer group.

Chart 7

General Fund
North Carolina Net Tax-Supported Comparative Debt Ratios (1)

State	Ratings (Fitch/S&P/Moody's)	Debt to Personal Income % (1)	Debt per Capita (1)	Debt as % Of GDP (1)	Debt Service Ratio (2)
Iowa	AAA/AAA/Aaa (3)	0.5%	228	0.41%	1.50%
Tennessee	AAA/AAA/Aaa	0.8%	322	0.68%	2.00%
Texas	AAA/AAA/Aaa	0.8%	383	0.66%	2.40%
Indiana	AAA/AAA/Aaa (3)	0.8%	310	0.61%	1.00%
Missouri	AAA/AAA/Aaa	1.4%	579	1.20%	3.50%
South Dakota	AAA/AAA/Aaa (3)	1.4%	641	1.17%	1.30%
North Carolina	AAA/AAA/Aaa	1.6%	659	1.35%	3.20%
Utah	AAA/AAA/Aaa	2.1%	824	1.70%	4.90%
Georgia	AAA/AAA/Aaa	2.5%	992	2.05%	6.80%
Virginia	AAA/AAA/Aaa	2.9%	1,486	2.60%	3.40%
Maryland	AAA/AAA/Aaa	3.8%	2,122	3.49%	5.90%
Delaware	AAA/AAA/Aaa	5.4%	2,544	3.52%	5.50%
	Peer Group Median	1.5%	$650	1.28%	3.30%

Projected Tax-Supported Debt Ratios (4)

North Carolina	Debt to Personal Income %	Debt per Capita	Tax-Supported Debt Service as a % of DAAC Revenues
2017 (Actual)	1.1%	$462	3.12%
2018	1.1%	$465	3.11%
2019	1.0%	$474	3.29%
2020	1.0%	$457	3.32%

(1) Source: Moody's 2017 State Debt Medians.
(2) Source: S&P Report June 14, 2016. S&P did not update for 2017.
(3) Implied by all three rating agencies. Have not issued GO debt.
(4) North Carolina projections are based on February 1, 2018 DAAC Report.

General Fund Guidelines, Debt Affordability Model and Results

<u>General Fund Debt Capacity Recommendations</u>

The Committee has adopted targets and outside guidelines to analyze and/or serve as the basis for calculating the recommended amount of General Fund–supported debt that the State could prudently authorize and issue over the next 10 years. Each measure is discussed in more detail below.

1. Net Tax-Supported Debt Service after contributions to unfunded liabilities as a percentage of General Tax Revenues should be targeted at no more than 4.5% and not exceed 4.75%;
2. Net Tax-Supported Debt as a percentage of Personal Income should be targeted at no more than 2.5% and not exceed 3.0%; and
3. The amount of debt to be retired over the next ten years should be targeted at no less than 55% and not decline below 50%.

Net Tax-Supported Debt Service as a Percentage of General Tax Revenues (4.5% Target, 4.75% Ceiling)

The Committee has adopted the measure of annual debt service arising from net tax-supported debt as a percentage of general tax revenues as the basis to evaluate the State's existing and projected debt burden for the General Fund and as the basis for calculating how much additional debt the State can prudently incur. The Committee notes that policy makers control both variables that determine this ratio. In addition, the Committee believes that by measuring what portion of the State's resources is committed to debt-related fixed costs, this ratio is a measure of the State's budgetary flexibility and its ability to respond to economic downturns. In 2012, Moody's stated that "the debt service ratio (is incorporated into) our assessment of fiscal flexibility, which measures the extent to which a state's operating budget is burdened by fixed costs. The larger the fixed costs, the less flexibility a state has to structurally balance its budget in response to discretionary cost growth and revenue volatility…" "[S]tates with high fixed costs have lower budgetary flexibility and are more likely to rely on one-time budget solutions, creating structural budget imbalances that are difficult to reverse."

Because there is often a time lag, sometimes of multiple years, between when debt is authorized and when it is issued, the Committee determined that an optimized solution, whereby a fixed amount of debt could be authorized and issued each and every year over the model horizon provides a more useful management tool, and facilitates capital planning more effectively, than a measure that assumes that all available debt capacity is utilized in the year in which it is available. It provides decision makers with an estimate of how much debt could be issued annually (over the full 10 years) without exceeding the limits even if the amounts authorized at any one time are much larger. In practice, the limit imposed by the year(s) of the least capacity over the model horizon drives the calculation process.

<u>DAAC Revenues</u>

The model uses general tax revenues adjusted for one-time or non-recurring items plus certain investment income and miscellaneous revenues ("DAAC Revenues"). These revenue items are contained in the State's Comprehensive Annual Financial Report. The Office of State Budget and Management ("OSBM") has been consulted to provide actual projections through FY 2028. See Appendix A for more details on the specific revenue items utilized by the model and the revenue projections utilized throughout the model horizon.

Debt Used in the General Fund Model Calculation

The model uses a definition of net tax-supported debt that includes all outstanding and authorized, but unissued, GO Bonds, Special Indebtedness, Capital Lease Obligations, Installment/Equipment Leasing Obligations and any other such obligations that are owed to a third party over a predetermined schedule payable from General Fund tax revenues. The Connect NC Bonds have been included (see Appendix A for further discussion.) Excluded are obligations of Component Units, Highway Fund debt actually paid from Highway Fund revenues, unfunded amounts in the Pension Plans, Employment Security borrowings, OPEB liabilities and Energy Performance Contracts if the debt service is actually being paid from energy savings. See Appendix A for further details.

Debt Structuring Assumptions

The General Fund model uses a standard fixed-rate 20-year level principal or payment structure. See Appendix A for further details.

Model Solution

Illustrated below is the actual amount of new tax-supported debt that could be authorized and issued, by year after implementing the new policy regarding unfunded liabilities, and remain within the 4.5% target ratio.

Table 4

General Fund - 2017 Policy

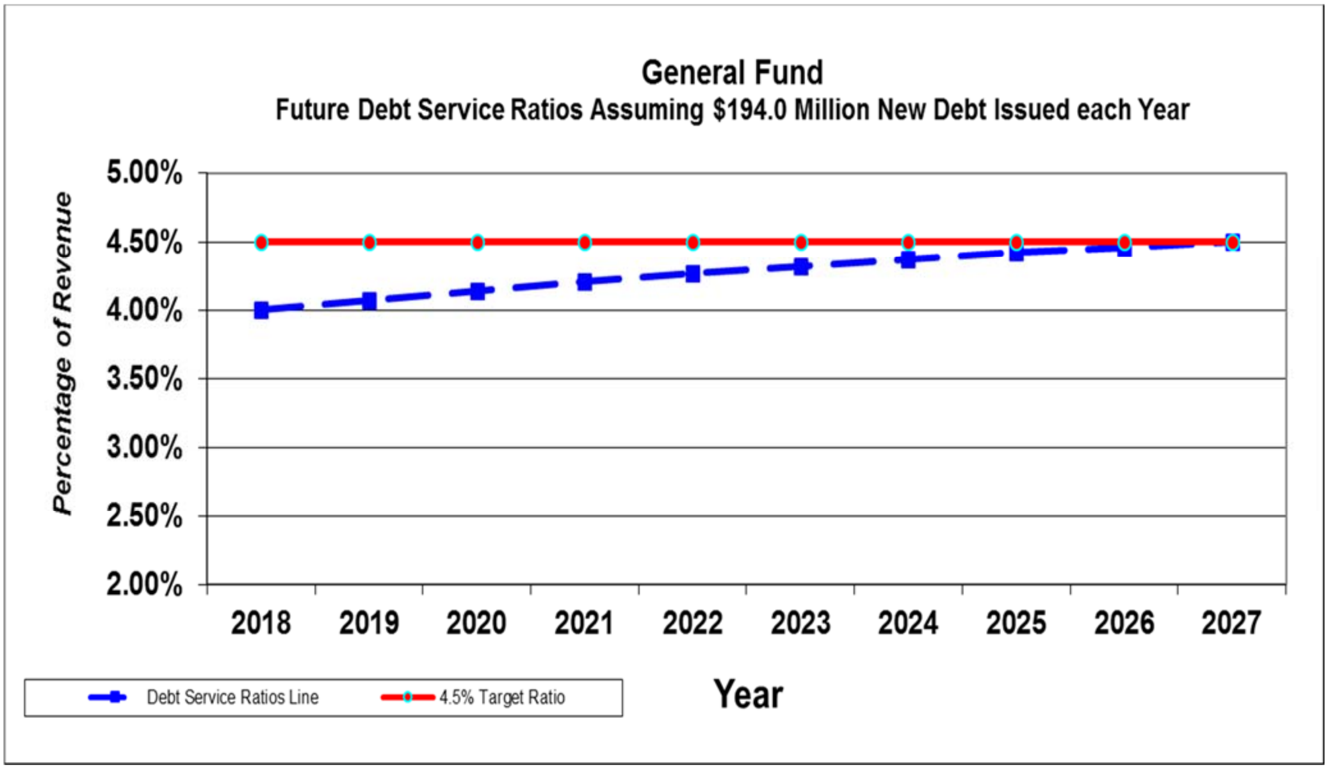
Alternate Debt Capacity using 4.5% debt service/revenues target ratio

(In millions of dollars)

Fiscal Year	2018	2019	2020	2021	2022
$ to Unfunded Liabilities	$200.0	$162.2	$158.7	$194.3	$267.4
Total Additional Debt Capacity per Year *	$1,315.4	$24.3	$47.6	$53.6	$55.7
Debt Capacity Available each and every Year	$194.0	$194.0	$194.0	$194.0	$194.0

* In addition to that already authorized but unissued. Assumes additional debt capacity is authorized and issued in stated fiscal year.

Chart 8



<u>Sensitivity Analysis Target Solution</u>

The model results are highly sensitive to changes in revenue and interest rate assumptions. A one percent change, either up or down, in general tax revenues in each and every year of the model horizon will change the amount of annual debt capacity each and every year by approximately $18 million. A variation in revenues of $100 million per year will impact the amount of new debt that may be prudently issued each and every year by approximately $7 million. A one percent change, either up or down, in the interest rate assumption for all incremental model debt will change the amount of annual debt capacity each and every year by approximately $30 million.

General Fund Analysis – Other

Pension and OPEB Unfunded Liabilities

It is very clear that all three rating agencies are placing Pension and OPEB liabilities under greater scrutiny and yet these liabilities do not yet rise to the level of tax-supported debt. Fitch notes that "OPEB is a legally softer obligation than debt or pensions..." Moody's does do a comparative analysis that they calculate and evaluate in the ratings process and S&P adds positive and negative score factors to a rating as a result of their analysis of pension and OPEB liabilities. Net Pension and OPEB Liabilities Total $40.7 billion as reported in the Comprehensive Annual Financial Report ("CAFR"). On a funding basis the combined total of the State's actuarially determined Pension and OPEB contributions are approaching 20% of the General Fund budget. It does not appear to be consistent with our leadership in this area to not begin to address these liabilities now.

Teachers' and State Employees' Retirement System

Although the State has fully funded the ARC for the TSERS in 75 of the last 76 years, the Net Pension Liability is $7.9 billion as reported in the CAFR. The plan's discount rate was reduced from 7.25% to 7.20% and investment returns were lower than expected last year. The Actuarially Determined Employer Contribution (ADEC) is approximately $1.6 billion.

The rating agencies have begun to explicitly account for pensions in their methodologies (using varying techniques) and The Center for Retirement Research at Boston College finds that "several governments have experienced downgrades that have been attributed, in part, to their pension challenges." These actions by the rating agencies highlight that pension plan assumptions continue to evolve and that for North Carolina to remain in the forefront of States in managing pension liability continuing analysis and potential change is necessary.

As part of the rating agencies' analyses, they are making certain changes to the information that states provide to standardize the data and make comparisons possible. The Fitch material for our "AAA" peer group is presented below. Of note, Fitch adjusts the **discount rate for pension liabilities to 6%**, well below the State's assumptions of 7.2% declining to 7% over the next 4 years. When the **adjusted net pension liability** was combined with the net tax-supported debt burden as a percentage of governmental revenues, Fitch found that North Carolina ranked 8th best when compared with all states and 4th best among our peer group.

Table 5

2017 Debt and Fitch-Adjusted Pensions Information - "AAA" Peer Group

State	Total NTSD ($000)	Fitch-Adj Total NPL ($000)	NTSD and Fitch-Adj NPL ($000)	NTSD and Fitch-Adj NPL as % of PI
South Dakota	535,277	568,279	1,103,556	2.7%
Iowa	849,490	2,363,117	3,212,607	2.2%
Indiana	1,952,253	14,744,575	16,696,828	5.8%
Tennessee	2,014,968	3,987,993	6,002,961	2.1%
Delaware	2,325,000	1,987,471	4,312,471	9.5%
Utah	2,513,136	2,299,651	4,812,786	3.9%
Missouri	3,198,631	10,494,423	13,693,054	5.2%
North Carolina	6,409,800	5,909,992	12,319,792	2.9%
Virginia	11,628,788	10,461,276	22,090,064	5.0%
Georgia	11,651,326	12,414,771	24,066,097	5.5%
Maryland	13,110,333	32,477,846	45,588,179	13.1%
Texas	17,763,256	71,883,011	89,646,267	7.0%
Median	$ 2,855,884	$ 8,185,634	$ 13,006,423	5.1%
Average	6,162,688	14,132,700	20,295,389	5.4%

Source - FitchRatings - 2017 State Pension Update (December 12, 2017).

OPEB

Other Post-Employment Benefits that cover retiree healthcare costs (OPEB) plans administered by the State including the Retiree Health Benefit Fund. As reported in the CAFR, the State's Net OPEB Liability was $32.8 billion, a modest decrease from the prior year. The decrease is primarily attributable to a variety of factors including demographic changes, contribution experience and investment performance, as well as various assumption changes, including health claim costs. The Annual OPEB Cost is estimated to be $2.65 billion. There has been minimal accumulation of assets in the Retiree Health Benefit Fund (approximately $1.2 billion as reported in the CAFR) which represents the contributions in excess of actual costs

The rating agencies are also making strides in incorporating OPEB liabilities as part of a fixed cost burden measurement (debt plus pensions plus OPEB), although their belief that governments have greater legal flexibility to change retiree health benefits than they do to change debt service or pension benefits coupled with a lack of consistent OPEB data across the states hampers such analysis. As new GASB rules governing the disclosure of OPEB liabilities take effect, greater comparability and measurement will be possible. Still, the rating agency emphasis continues to be on determining the State's flexibility and plans to address and manage OPEB costs. S&P in particular notes that "Although (North Carolina's) OPEB liabilities are high… the state has made adjustments…to control costs and provide a mechanism to accumulate assets". A table showing how North Carolina compares with the "AAA" peer group based on information complied by S&P is shown below.

Table 6

North Carolina Comparative OPEB Position ($ in Millions)

State	Unfunded OPEB	Total OPEB Liab	Combined Funded Ratio - All OPEB [1]	Unfunded OPEB per Capita	Combined actuarial annual OPEB cost [2]	Combined actual annual payment	% of annual actuarial cost paid	Actual annual payment / total govt funds exp %	Valuation [2]
South Dakota [3]	$ -	$ -	$ -	$ -	$ -	$ -	0.0%	0.0%	N/A
Utah	185.0	399.0	53.7	61.0	31.0	37.0	120.9%	0.3%	12/31/2014
Iowa	218	218	-	70	23	12	52.6%	0.1%	7/1/2014
Indiana	339	476	28.8	51	34	42	121.5%	0.1%	6/30/2016
Tennessee	1,380	1,380	-	208	130	74	56.6%	0.3%	7/1/2015
Missouri	2,583	2,700	4.3	424	178	96	53.7%	0.4%	6/30/2016
Virginia	5,297	6,998	24.3	630	411	205	50.0%	0.6%	6/30/2015
Delaware	7,150	7,460	4.2	7,510	426	217	51.0%	2.7%	7/1/2016
Maryland	11,789	12,081	2.4	1,960	649	491	75.6%	1.4%	6/30/2016
Georgia	13,663	14,842	7.9	1,325	149	149	100.0%	0.4%	6/30/2015
North Carolina	32,467	33,868	4.1	3,200	2,575	943	36.6%	2.2%	12/31/2015
Texas	87,235	87,876	0.7	3,131	7,211	1,561	21.6%	1.4%	8/31/2016
Median	$ 5,297	$ 6,998	$ 4	$ 630	$ 178	$ 149	53.7%	0.4%	N/A
Average	$ 14,755	$ 15,300	$ 12	$ 1,688	$ 1,074	$ 348	67.3%	0.9%	N/A

[1] Funded ratio for all OPEB plans combined for a given state.

[2] Actuarial annual OPEB costs combined for all OPEB plans for a given state based on the dated acturial valuation report noted.

[3] South Dakota does not offer OPEB benefits.

Source - S&P Global Ratings report dated October 18, 2017.

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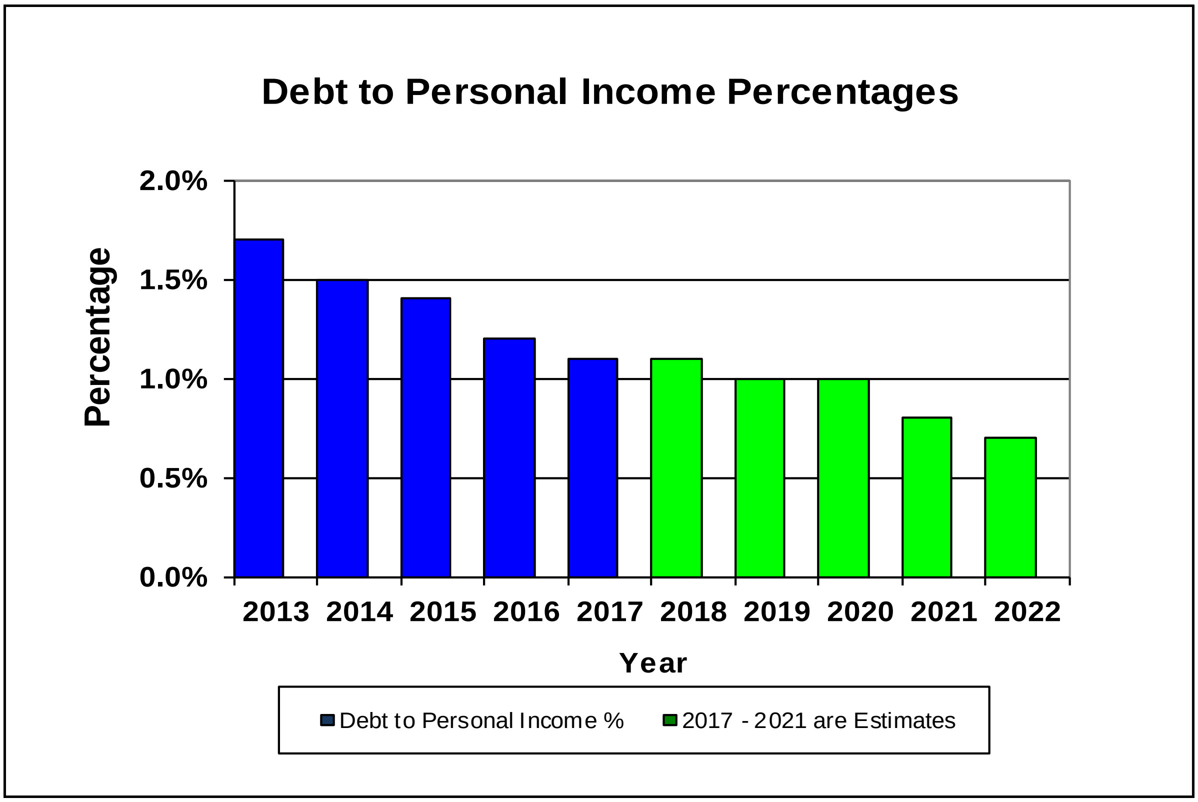
Net Tax-Supported Debt to Personal Income (2.5% Target, 3% Ceiling)

As required by statute, the Committee has also established guidelines for evaluating the State's debt burden as a measure of personal income.

The ratio of debt to personal income actually peaked at 1.8% over 5 years ago and is anticipated to further decline from the 1.1% projected for this fiscal year. Chart 9 below shows the amount of tax-supported debt as a percentage of personal income.

Chart 9

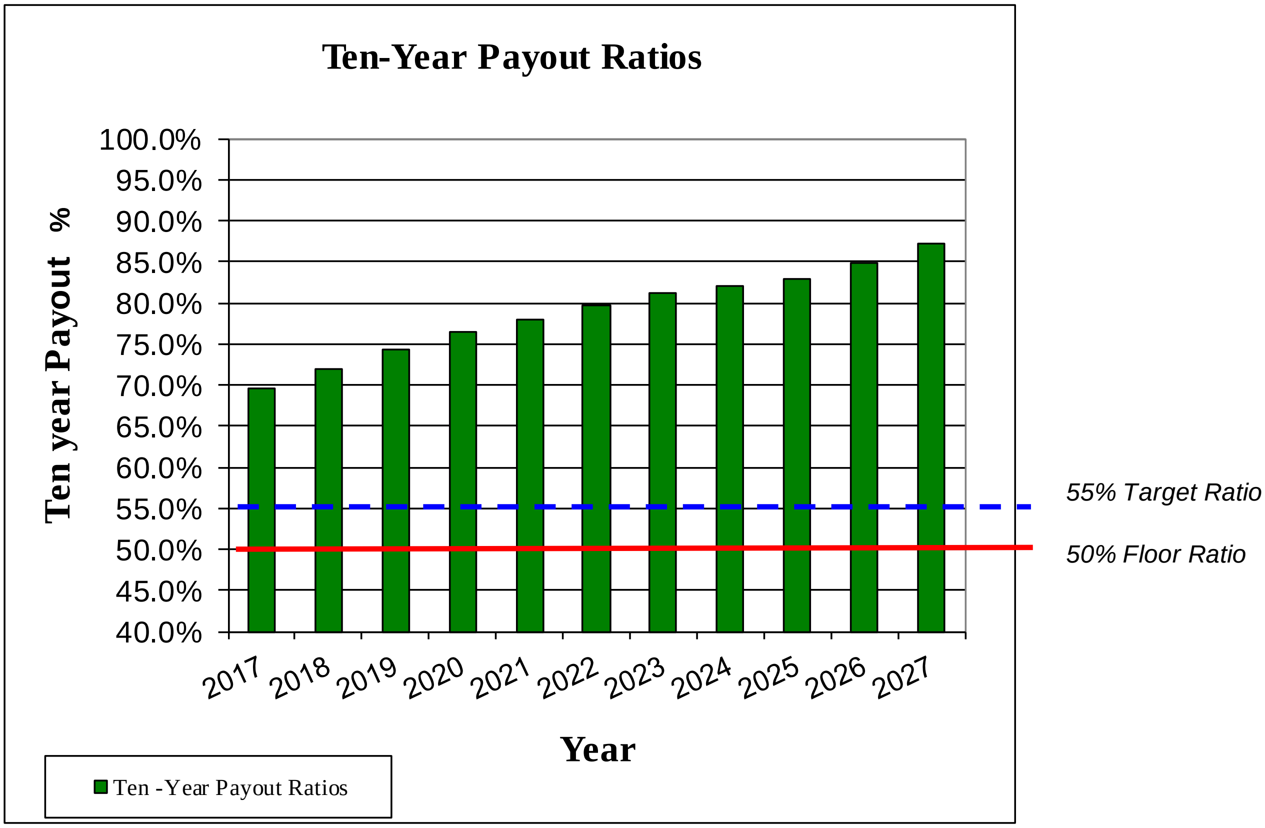


Source: Population and Personal Income statistics provided by "Moody's Economy.com", courtesy of the North Carolina General Assembly Fiscal Research Division.

Ten-Year Payout Ratio (55% Target, 50% Minimum)

The rating agencies consider the payout ratio (a measure of the period of time over which a State pays off its debt) as a credit factor. A fast payout ratio is a positive credit attribute. As illustrated in Chart 10 below, the State's payout ratio exceeds its targeted level and is projected to improve further. S&P notes that North Carolina has, "A low-to-moderate debt burden with rapid amortization…" The chart illustrates that over 85% of the State's debt will be retired over the next 10 years (even after issuance of the Connect NC Bonds).

Chart 10



Level of Reserves

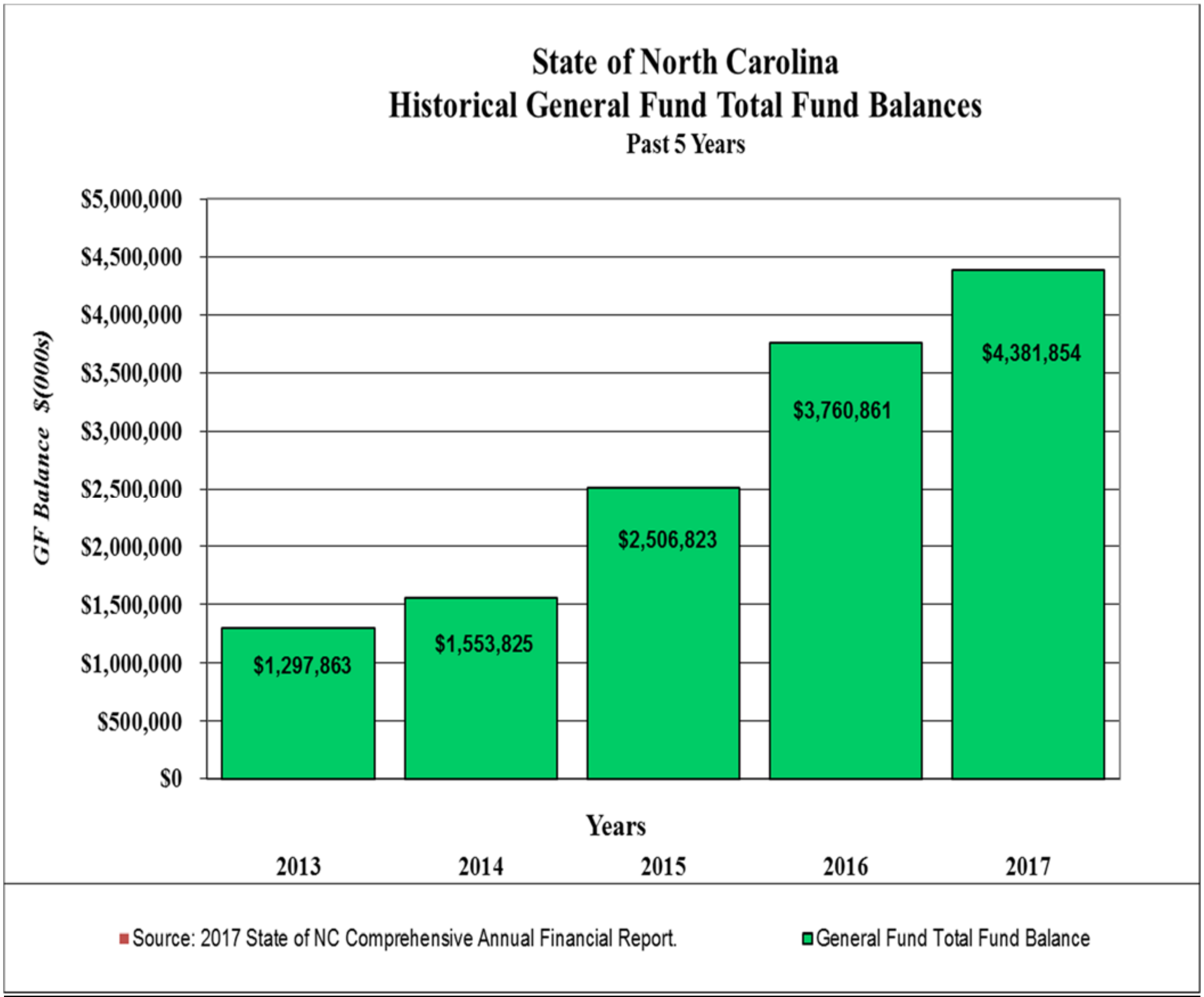
As discussed previously, the rating agencies place a great deal of emphasis on budgetary reserves. In a 2016 report, S&P stated that "States with well-funded reserves have greater flexibility to address shortfalls should and when they occur."

The State ended FY 2017 with a positive fund balance in the General Fund of approximately $4.382 billion as calculated under generally accepted accounting principles ("GAAP"). This represents a significant turnaround from the negative ending balances experienced during the recession which reached -$778 million at June 30, 2009. The Savings Reserve ("Rainy Day Fund") which is part of the fund balance of the General Fund is currently at $1.838 billion after transfers directed by S.L. 2017-57. S.L. 2017-7 also directed OSBM and the Fiscal Research Division (FRD) to establish a new goal for the Savings Reserve. Previously the target was 8% of the prior year's General Fund operating budget. Although the Committee notes that the State replenished the balances used during the recession, it continues to recommend that sustainable structural budgetary balance and continuing provision for an adequate level of reserves remain a priority. There is also legislation requiring the use of a portion of the unreserved fund balance (see Appendix D).

Chart 11 depicts the State's historic General Fund Balance on a GAAP basis over the last five years. The Rainy Day Fund is a budgetary reserve account and is not reported as an individual item in the

GAAP basis financial statements, but is included as part of the fund balance.

Chart 11



SECTION II

TRANSPORTATION DEBT AFFORDABILITY

Review of Transportation Funds, Debt and Other Commitments

Highway Fund

The Highway Fund accounts for most of the activities of the Department of Transportation ("DOT"), including the construction and maintenance of the State's primary and secondary road systems. In addition, it supports areas such as the North Carolina Ferry System and the Division of Motor Vehicles and provides revenue to municipalities for local street projects (termed "Powell Bill Transfers") and to other State agencies. The principal revenues are motor fuels taxes, motor vehicle registration fees, driver's license fees and federal aid.

Highway Trust Fund

The Highway Trust Fund was established by Chapter 692 of the 1989 Session Laws to provide a dedicated funding mechanism to meet the State's highway construction needs. The Highway Trust Fund also provides allocations for secondary road construction, to municipalities for local street projects and historically provided transfers to both the General Fund and the Highway Fund. The principal revenues are highway use taxes, motor fuels taxes and various fees.

The Highway Fund and the Highway Trust Fund are in many ways managed as a combined entity. Certain transportation revenues are deposited in each fund on a formulaic basis. For example, the Highway Fund receives three-fourths of the Motor Fuels Tax and the Highway Trust Fund receives the remaining one fourth. However, various combined expenditures are routinely paid from one fund or another. For example, salary expenses associated with the management of the Highway Trust Fund are actually paid out of the Highway Fund and debt service on the existing Highway GO Bonds is paid from the Highway Trust Fund. Powell Bill transfers are made from both Funds. Due to the interdependent nature of these funds, the Committee has determined that it is most useful to calculate the available debt capacities of these funds (collectively "Transportation Funds") on an aggregate, rather than individual, basis. The resulting debt capacity is termed the "Transportation" debt capacity and is reported separately from, but is then combined with, General Fund capacity. Pew found that providing a separate calculation "allows policymakers to both focus in on liabilities of particular interest and take a broader view of the state's long-term obligations."

On a combined basis, the Highway Fund and Highway Trust Fund are primarily involved with construction and maintenance of the State's highways. From total budgeted sources in FY 2017, the Transportation Funds in total allocated approximately 89 percent ($4.48 billion) to capital intensive infrastructure improvements (Transportation Improvement Plan ("TIP") Construction, Highway Maintenance and Other Construction).

Highway Debt

The State has a long history dating back to 1921 of authorizing debt to fund transportation projects. The most recent authorization of $950 million of GO Bonds (the “1996 Bonds”) was enacted in 1996 by Chapter 590 of the Session Laws of the 1995 General Assembly, as amended (“The State Highway Bond Act of 1996” or “the 1996 Act”). The 1996 Bonds authorized debt to finance the capital costs of urban loops ($500 million), Intrastate System projects ($300 million) and secondary highway system paving projects ($150 million). The outstanding amount of Bonds authorized by the 1996 Act as of June 30, 2017 was $101 million and they are scheduled to be retired in 2020.

The 1996 Act stated the General Assembly’s intention to pay the debt service on the Bonds from the Highway Trust Fund, but did not pledge the Highway Trust Fund revenues to make such payments. Although the Act contained amendments regarding the priorities of the payment of funds from the Highway Trust Fund to provide for the payment of debt service, *such funds are not pledged* to secure the Bonds. Instead, the bonds are secured by “the faith and credit and taxing power of the State.” As such, the bond rating agencies did not analyze the ability of the Highway Trust Fund on a stand-alone basis to service the debt when assigning their ratings.

General Obligation Bonds versus Special Indebtedness-Transportation Rating Implications

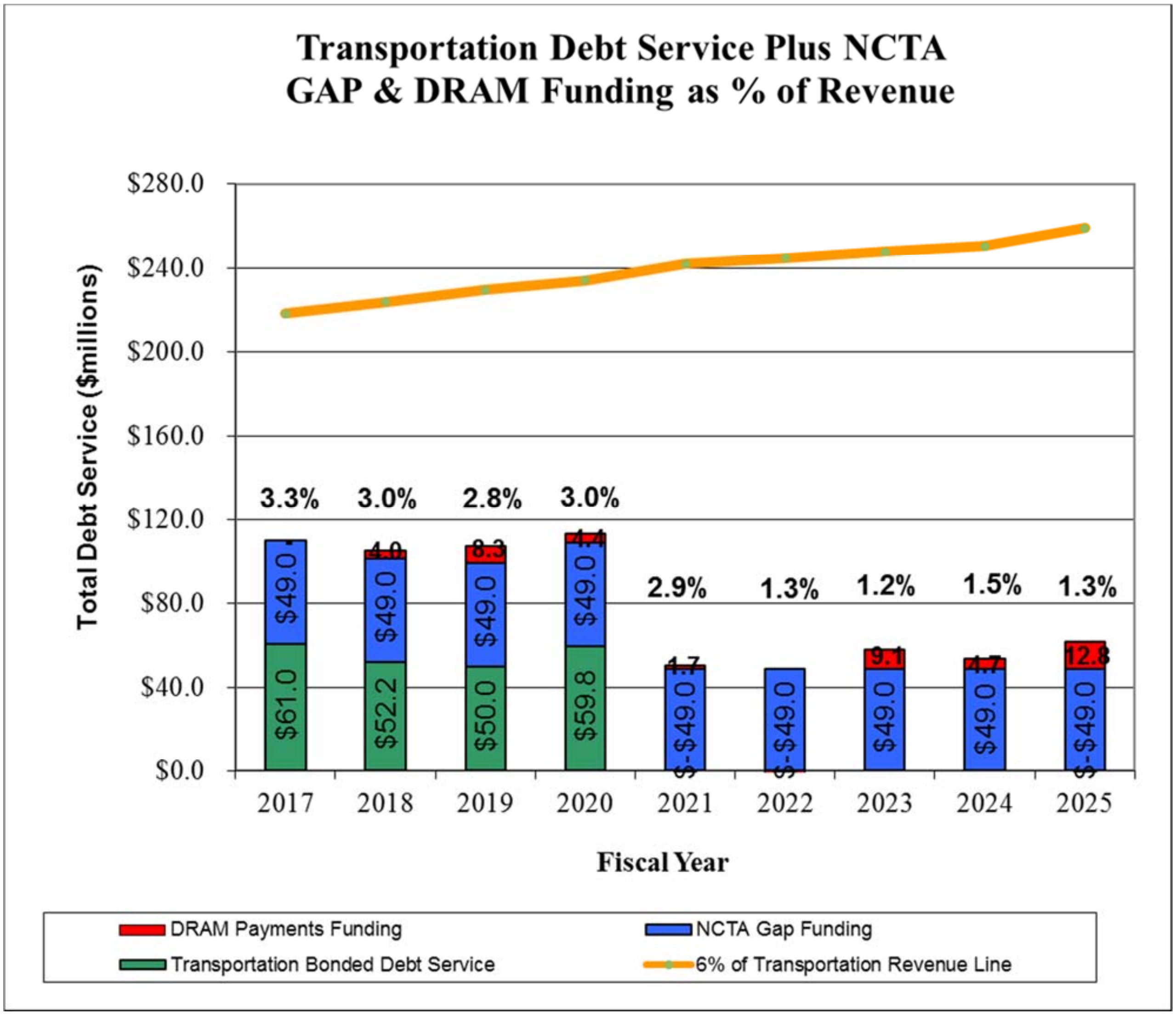
As discussed above, the State’s outstanding Highway Bonds were issued as GO Bonds and are not secured by any transportation revenues, but enjoy an implied General Fund back-up. As a result, the bonds were rated on a parity with the State’s other GO Bonds (“AAA”), permitting them to be issued at the lowest possible interest rates. If the Bonds had not been on a parity basis but been rated on a stand-alone basis based solely on transportation backing, they may not have been rated at the same level as the State’s GO Bonds. As described below, at least one rating agency explicitly rates bonds supported by transportation revenues at two notches below the State’s “AAA” rating.

Special Indebtedness (“Gap-Funded” bonds) issued for the Triangle Expressway project where transportation appropriations provide for the payment of debt service were only rated Aa2 by Moody’s, AA- by Fitch and AA by S&P. The Moody’s and S&P ratings are one step below the state’s other appropriation-supported bonds and the Fitch rating is two rating steps below. Of additional consideration is that bond counsel has determined that any bonding structure that involves a true pledge of transportation revenues, the source of which is state-wide taxes or user fees, would most likely require a voter referendum. Therefore, the Committee does not advocate the use of transportation-supported stand-alone Special Indebtedness and instead advocates the use of GO Bonds for Transportation debt.

Debt Service

Debt Service on Highway Bonds peaked in FY 2006 at $93.6 million. The amount of actual debt service will remain relatively level at current levels until the Bonds are fully retired in FY 2020. Debt service, both on an absolute basis and as a percentage of Transportation revenues, is illustrated below. As discussed in more detail in Appendix B, appropriation of funds to support debt obligations issued by the North Carolina Turnpike Authority and any “availability payments” or other long term contractual arrangements that support P3 projects or similar arrangements are treated the same as any other debt service obligation. This is consistent with rating agency treatment. See Appendix B for further details.

Chart 12



Grant Anticipation Revenue Vehicle Bonds ("GARVEEs")

A review of Transportation-related debt would be incomplete without a discussion of the State's GARVEE program. Although not supported by State Transportation or General Fund revenues and therefore not technically a part of the Transportation debt affordability model, GARVEEs do represent a financing vehicle that provides significant funds to the State to accelerate transportation projects.

North Carolina General Statute §136-18 (12b) as codified by Session Law 2005-403 ("the GARVEE Act") authorized the State to issue GARVEEs to accelerate the funding of transportation improvement projects across the State. GARVEEs are a revenue bond-type debt instrument where the debt service is to be paid solely from future federal transportation revenues and has no other State support. The State has issued multiple series of GARVEEs and the outstanding amount is currently $588.8

million. The ratings assigned by Fitch, S&P and Moody's for NC's GARVEEs are, respectively: A+/AA/A2. The low amount of GARVEE debt service relative to the federal reimbursements (approximately $99 million for FY 2017 versus actual collections of approximately $1.06 billion) means that federal sequestration should not impair bondholder payments. In 2017, the State refunded approximately $244 million of GARVEE bonds.

North Carolina Turnpike Authority

The North Carolina Turnpike Authority ("NCTA") as a part of the Department of Transportation is authorized to construct and operate toll roads within the State and to issue revenue bonds to finance the costs. The General Assembly has authorized funding to "pay debt service or related financing costs" for various series of revenue bonds issued by the NCTA (called "gap funding"). The NCTA currently has $707.7 million of such bonds outstanding that provided funding for two projects: the Triangle Expressway project and the Monroe Connector project. The NCTA also has approximately $884 million in toll-supported debt outstanding for these projects.

<u>NCTA Build America Bonds ("BABs") and Federal Sequestration</u>
As part of the plan of finance for both the Triangle Expressway project and the Monroe Connector project, the NCTA issued BABs of which approximately $576 million is outstanding. These bonds depend upon a federal subsidy to make a portion of the interest payments due to bondholders. The federal subsidy was reduced by approximately $841,071 for FY 2017 due to Federal Sequestration. Reductions of a similar or slightly lesser size are anticipated for a number of the years into the future. DOT reports that there were sufficient funds in the general reserve accounts associated with these financings to make up for the shortfall so that bondholders were not affected. In addition, the debt service reserve funds for these issues totaled approximately $19.9 million at June 30, 2017 and the total (net) annual subsidy for the current federal fiscal year totals nearly $11.3 million.

Other Transportation Expenditures

Consistent with its treatment for General Fund debt affordability, the Committee does not advocate including non-debt related Transportation obligations or commitments in the definition of liabilities when measuring debt capacity. It is useful, however, to review the level of ongoing administrative and other recurring expenses/transfers when analyzing the level of flexibility in the Transportation Funds. From FY 2013, the levels of these commitments are shown below both with and without debt service as a percentage of total Transportation Revenues, including federal revenues. Over the last five years, between 11 percent and 18 percent of total Transportation revenues are allocated to administrative costs, transfers and debt service.

Chart 13

Transportation Expenses by Year

($ Dollars in Millions)

	2013	2014	2015	2016	2017
Total Transportation Revenues [1]	$4,414.4	$4,726.9	$4,617.0	$4,819.0	$5,054.3
Administration [2]	$231.9	$264.0	$278.2	$293.0	$278.2
Powell Bill Transfers	142.8	145.6	147.1	147.7	147.2
Transfers to Other State Agencies	257.7	255.4	272.8	72.9	38.0
General Fund Transfers	27.6	-	-	-	-
Expenditures excluding Debt Service	$660.0	$665.0	$698.1	$513.5	$463.4
%Total Transportation Revenues	15%	14%	15%	11%	9%
Debt Service					
Bonds	$81.5	$73.1	$59.8	$48.6	$60.9
GAP Funding	49.0	49.0	49.0	49.0	49.0
Total Debt Service [3]	$ 130.5	$ 122.1	$108.8	$97.6	$109.9
Total Expenditures	790.5	787.1	806.9	611.2	573.3
%Expenditures/Revenues	18%	17%	17%	13%	11%

(1) Includes Federal Revenues.
(2) Prior year administrative expenses have been restated to be net of receipts.
(3) State tax-supported debt service.

Comparative Transportation Ratios

Using 2016 information where available, the State's transportation-related debt service as a percentage of State transportation revenues appears modest when compared with a peer group composed primarily of states in the Southeast region but also certain other states selected after consultation with DOT. Within the peer group, both Missouri and South Carolina utilize an approach that limits transportation debt separately from other state-level debt. In contrast, Georgia measures available debt capacity on a combined basis, but has dedicated a great deal of that capacity toward transportation priorities as shown in Chart 14 below. Finally, Tennessee has not issued state-level debt for transportation purposes.

Chart 14

Transportation Historical Peer Group Comparisons [1]

State	Ratings [2]	Maturity / Yrs	Transportation DS % of Transportation Revenues [3]
Tennessee	AAA/AAA/Aaa	N/A	0.0%
North Carolina	**AAA/AAA/Aaa**	**25**	**3.8%**
South Carolina	AAA/AA+/Aaa	15-20	5.5%
Florida [4]	AAA/AAA/Aa1	30	6.1%
Virginia [8]	AAA/AAA/Aaa	25	7.6%
Kentucky [6]	AA-/A+/Aa3	20	8.0%
Missouri [7]	AAA/AAA/Aaa	20	9.6%
Texas	AAA/AAA/Aaa	30	11.4%
Georgia [5]	AAA/AAA/Aaa	20	21.0%
	Median		***7.6%***
	Average		***8.1%***

(1) 2016 data unless otherwise noted.
(2) Fitch / Standard & Poors / Moodys (updated in 2017).
(3) Excludes Garvee debt service (if any) and Federal Revenues.
(4) Projected for 2017.
(5) Allocated Debt Service.
(6) 2015
(7) Missouri uses overall capacity to support transportation debt; overall debt service as % of revenue = 1.9%.
(8) Projected for 2017.

Transportation Debt Guidelines, Affordability Model and Results

The rating agencies view all debt supported by state-wide, generally applied taxes and/or user fees to be “Tax-Supported Debt”. This combined treatment extends to all General Fund-supported, and to Highway Fund and Highway Trust Fund-supported (“Transportation Fund”) debt. Some analysts apply the same treatment to debt supported by non-State revenues such as GARVEE bonds. The Committee recognizes that the rating agencies compare the State to its peers utilizing a broad measure of Transportation and General Fund debt, and has reviewed the State’s relative status on this basis (see Chart 7).

However, the State of North Carolina has a long history of viewing the debt supported by the General Fund as tax-supported debt and its Highway Bonds as being non-tax supported (in this case, Highway Trust Fund-supported) debt. The State’s existing debt affordability model excludes both transportation revenues and transportation debt service as components of the General Fund calculation. Continuing this practice, the Committee has determined that it should adopt a measure of Highway Fund and Highway Trust Fund debt capacity that is separate and distinct from that calculated for the General Fund. Although not common, this practice has been discussed with the rating agencies who understand North Carolina's incremental and separate approach to debt affordability measurement.

The Committee also recognizes the inherent differences between the General Fund and the Transportation Funds, not only in terms of the revenue streams, but also in terms of the commitments on those revenues. In addition, the State's transportation "enterprise" is, by its nature, a long-lived, capital intensive, rapidly growing program. As such, a customized individual debt capacity model is appropriate to measure the debt capacities of the Transportation Funds and the Committee believes that an individual Transportation debt capacity calculation is consistent with the legislative intent of S.L. 2007-551. As stated earlier, Pew found that providing a separate calculation for transportation "allows policymakers to both focus in on liabilities of particular interest and take a broader view of the state's long-term obligations."

Due to the interdependent nature of the Highway and Highway Trust Funds as discussed earlier, the Committee has determined that it is more useful to calculate the available debt capacities of these Funds on an aggregate, rather than individual, basis. The resulting debt capacity is termed the "Transportation" debt capacity.

The Committee has adopted the ratio of annual transportation-related debt service as a percentage of State transportation revenues as the measure to evaluate the level of Transportation debt capacity. By measuring what portion of the State's transportation resources is committed to debt-related fixed costs, this ratio reflects the flexibility (or lack thereof) to allocate transportation resources to other priorities.

Revenues Used in the Transportation Model Calculation

The model uses a definition of State transportation revenues that includes an aggregate of all State-level revenues deposited into the Highway Fund and the Highway Trust Fund including the motor fuels tax, highway use tax, motor vehicle license tax and certain non-tax revenue such as investment income. Consistent with the model mechanics for the General Fund, there is no deduction for projected transfers to the General Fund, Powell Bill transfers or other non-debt commitments. Federal transportation revenues are specifically excluded from the definition of revenues used to calculate Transportation debt capacity as federal revenues have been pledged to the State's GARVEE program and are not available to back other transportation-related debt.

Debt Used in the Transportation Model Calculation

The model uses a definition of State transportation debt service that includes outstanding Highway GO Bonds, gap funding, availability payments and long term contractual payments to support P3 or other structures (see Appendix B for further discussion of DRAM payments) but excludes the GARVEEs supported by federal revenues. There are currently no tax-supported capital lease obligations that need to be included. Highway Trust Fund support for debt issued by the North Carolina Turnpike Authority is included as a liability for model purposes.

Debt Structuring Assumptions

This year's Transportation debt affordability model assumes that model debt is fixed-rate 25-year maturity debt with an average interest cost of 6.15% and a level debt service profile after the first year.

Transportation Debt Capacity Guidelines

The Committee has adopted a guideline of 6% for transportation-related debt service as a percentage of state transportation revenues. In doing so, the Committee determined that the Transportation Funds enjoy a greater degree of budgetary flexibility than does the General Fund, and the Committee determined that the State's Transportation funds could support a higher ongoing level of debt service as a percentage of revenues than was deemed appropriate for the General Fund. However, the Committee also determined not to adopt the same 15% guideline for Transportation debt capacity as was contained in the GARVEE legislation because GARVEEs have higher annual debt service requirements due to their shorter maturity.

Table 7

Transportation

Net Tax-Supported Debt Capacity using 6.0% debt service/revenues target ratio

(In millions of dollars)

Fiscal Year	2018	2019	2020	2021	2022
Total Additional Debt Capacity per Year *	$1,521.2	$0.0	$868.8	$0.0	$0.0
Debt Capacity Available Each and Every Year	$284.6	$284.6	$284.6	$284.6	$284.6

* In addition to that already authorized but unissued. Assumes additional debt capacity is authorized and issued in stated fiscal year. GAP Funding for North Carolina Turnpike Authority projects assumed to total $49 million annually.

Model Assumptions regarding Revenue Growth and Sensitivity Analysis

The model uses NCDOT estimates for the revenues over the model horizon (see Appendix B).

A one percent charge, either up or down, in transportation revenues in each and every year of the model horizon will change the amount of first year debt capacity by about $30 million. A variation in revenues of $100 million per year will impact the amount of capacity in the first year by about $76 million. If the interest rate assumption for all incremental debt is lowered by 100 basis points (1%), an additional $155 million of first year capacity is created.

SECTION III

Transportation and General Fund Ratios Combined

The Committee adopted the 6% Transportation guideline after analyzing the State's position relative to its peer group on an aggregate basis (General Fund and Transportation Funds combined), consistent with rating agency practice. Illustrated below is how the State appears on a combined basis utilizing debt service as a percentage of revenue percentages for both the General Fund and the Transportation Funds. The Committee notes that the combined ratio (3.26% in FY 2020) is below the 4% target and is substantially below the 4.75% ceiling. Depending upon the reactions by the rating agencies and financial markets, the Committee may choose to revisit the 6% guideline for Transportation Debt.

Table 8

General Fund and Transportation Funds
Combined Debt Service / Revenue Percentages

Fiscal Year	2018	2019	2020	2021	2022
General Fund	3.11%	3.29%	3.32%	3.20%	2.94%
Transportation *	2.82%	2.81%	2.90%	1.26%	1.12%
Combined	3.07%	3.22%	3.26%	2.92%	2.68%

Note: Percentages are based on forecasted revenues and debt service.

* GAP Funding for North Carolina Turnpike Authority projects assumed to total $49 million annually.

Appendix A
Other Recommendations

1. Policy Recommendation on Pension and OPEB Liability and on increasing the 4% target to 4 ½%

The DAAC is repeating its recommendation to begin funding the unfunded Pension and Other Post-Employment Benefits (OPEB) obligations that represent retired employee's health benefit costs and to raise the debt limit ratio from 4% to 4 ½% to create capital capacity for the General Fund. The State currently has Net Pension and OPEB Liabilities totaling approximately $40.7 billion and the bond rating agencies are scrutinizing these liabilities more carefully. The Committee recommends that the General Assembly adopt policies to address these liabilities. Specifically, the Committee believes a policy should be adopted to begin funding the liability for Pensions and OPEB by taking DAAC revenues available within the previous 4% limit and devoting them to the Pension and OPEB liabilities by placing them in trust for this purpose. Furthermore, in order to have capacity to meet general fund capital needs the Committee believes the debt service/revenues target ratio should be increased to from 4% to 4 ½% which would allow the State to support a General Obligation bond of approximately $1.5 billion dollars by current estimates.

The Committee believes this bold policy action is needed due to the increasing size of these unfunded liabilities and the significant focus on these issues by all those interested in the fiscal status of public entities. Rating agencies have created new tests to make comparisons of units of government with these unfunded liabilities and investors and citizens have taken increased interest in how governments are responding to challenges caused by the increasing levels of these liabilities. While the State Treasurer is leading the charge to reduce fees on investments and reduce the assumed rate of return on retirement funds so that it reflects current reality, and while he intends to reduce the overall costs of the State Health Plan, that alone is not enough.

By taking this step, the State will begin meeting these liabilities with significant funding on an annual basis while still addressing capital infrastructure needs with a very measured increase in overall risk in terms of a modest increase to the debt service/revenues target ratio. This target will still be below the current ceiling of 4.75%.

Why is this step needed? The unfunded liability in Pensions and OPEB is growing faster and has reached a level where it should not be ignored. North Carolina has long been known as a government, maybe the premier government, in the recognition and practice of good fiscal stewardship. Taking actions now to begin addressing this issue is consistent with that reputation and the conservative nature of the State. It puts the issue front and center before all those who live, work, and invest in our State - in other words, all those who depend on the State to continue to perform.

We believe the rating agencies and other stakeholders do approve of this action to recognize the liability and to devote money on a consistent basis to begin addressing it. Moody's in particular, noted that the State's 2017 DAAC Report "included pension and OPEB liabilities...and directed dollars ...towards the payment of unfunded pension and OPEB liabilities." Furthermore, we would also not abandon our responsibility to keep up critical infrastructure and we would make a well measured and relatively small increase in risk to address both of these critical issues. We therefore believe this move will be seen as a positive step to preserve the fiscal standing of the State and as such should strengthen our AAA standing with rating agencies while keeping North Carolina in the forefront of states when it comes to fiscal responsibility.

2. Control of Debt Authorization Authority

As an alternative to traditional debt structures, historically various agencies have proposed "off balance sheet" types of arrangements and/or specialized financing structures to provide funding for capital projects, including various lease structures and other agreements arranging for payments made over time subject to the availability of funds. Not only do such structures typically result in more expensive financing and issuing costs, they also circumvent the State's historically conservative debt management practices. The Committee continues to strongly recommend that the State of North Carolina maintain its historically conservative debt management practices with regard to (1) centralized debt authorization, (2) centralized debt management and issuance and (3) classification of debt and debt-like obligations when determining the debt burden. These practices are among those considered by the rating agencies when assigning their "triple A" ratings to the State and ultimately allow the State to maintain a healthy financial position.

Centralized debt authorization, issuance and management are considered one of North Carolina's credit strengths. As stated by Fitch the "Issuance and management of all North Carolina debt is centralized" and "Centralized management of debt in North Carolina is a credit strength" further noting that the "treasurer approves execution of each financing". The Committee believes that centralized debt management is a key best financial management practice and should be embraced by the State as a matter of policy.

3. State Aid Intercept

In a number of recent legislative sessions, there has been legislation discussed and/or proposed that would provide for the timely payment of special obligation bonds issued for the constituent institutions of the University of North Carolina by requiring the State to "intercept" General Fund appropriations to those entities in order to make debt service payments on "self-liquidating" indebtedness issued pursuant to G.S. 116D. Similar proposals have been discussed and put forth by other State entities. In essence, this back-stop of debt service obligations by the State's General Fund provides a form of bond insurance resulting in higher credit ratings and provides the issuer with debt service savings. Staff has been informed that the UNC Board of Governors will again consider a State Aid Intercept proposal for this legislative session.

The Committee strongly opposes on policy grounds providing credit support for debt issues whose source of repayment was and is represented to be project revenues. The use of State appropriations is not currently permitted to be used to pay debt service on such debt issues. In addition, the proposals have not provided for appropriate levels of State oversight and control for debt issues that may potentially utilize the State's debt capacity and increase its debt burden.

4. Consider General Obligation Bonds as the preferred financing method

The Committee notes that the State has recently relied extensively, although not exclusively, on the authorization of Special Indebtedness to finance capital projects. Due to the potential debt service savings and increased transparency, the Committee believes that General Obligation bonds should be considered the preferred, but not the exclusive, method to debt finance the State's capital needs.

5. Structural Budget Balance and Reserve Replenishment

The Committee confirms its view that North Carolina's priorities of achieving structural budgetary balance and rebuilding the State's reserve funds are strong evidence of financial stability and flexibility. The Committee recognizes that long term budgetary stability and reserve fund replenishment are key factors in maintaining our "triple A" bond rating. In its 2016 report, Moody's states that a "Return of structural imbalance, evidenced by…recurring general fund spending outpacing recurring general fund revenues…" could result in a reduction in North Carolina's bond rating. Under the provisions of SL 2017-57 it is possible that Rainy Day Fund balances will be further bolstered (see Appendix D for further discussion).

Appendix B

General Fund Revenues and Liabilities and Debt Affordability Model 10-Year Solutions

DAAC Revenues

The model uses general tax revenues adjusted for one-time or non-recurring items plus certain other revenue items deemed available to service debt from the most recently available *Comprehensive Annual Financial Report.* The following items are included:

General Fund Tax Revenues

- Individual Income Tax
- Corporate Income Tax
- Sales & Use Tax
- Franchise Tax
- Insurance Tax
- Beverage Tax
- Tobacco Products Tax
- Other Taxes

Other General Fund Revenue Items

- Investment Income
- Miscellaneous Revenues

Revenue Growth and Other Assumptions

Changes to revenue estimates have a significant impact on the calculation of available debt capacity because of the multiplier effect of compounding growth over the ten-year period. Such projections are especially important when they reflect changing or differing economic outlooks.

In consultation with OSBM, DAAC revenue projections are assumed to be as follows:

Table 9

General Fund Revenue ($ millions) [1]
Used in the Debt Affordability Model *

Fiscal Year	Revenues ($ millions)	Growth Rate	Fiscal Year	Revenues ($ millions)	Growth Rate
2017	$21,975.8	2.2%	**2023**	$26,093.8	3.9%
2018	22,526.9	2.5%	**2024**	27,102.2	3.9%
2019	22,935.9	1.8%	**2025**	28,149.8	3.9%
2020	23,358.9	1.8%	**2026**	29,238.3	3.9%
2021	24,189.4	3.6%	**2027**	30,369.2	3.9%
2022	25,123.4	3.9%	**2028**	31,544.2	3.9%

* General Fund recurring tax revenues, miscellaneous revenues and Treasurer's investments per OSBM.

[1] Fiscal Years 2018 - 2028 revenue forecast as of December 2017. Fiscal Year 2017 is budgetary actual.

Liabilities

To calculate net tax-supported debt, credit analysts take into account all debt supported by general tax revenues. This debt position shows the amount of indebtedness serviced from an issuer's General Fund; that is, it reflects the debt service payments made directly from tax revenues and is known as net tax-supported debt. Although a consensus appears to exist among credit analysts as to the appropriateness of using net tax-supported debt as the standard for determining an issuer's debt position, there is less unanimity about the precise calculation. The Committee has determined to exclude self-supporting debt from its calculations.

The model uses a definition of net tax-supported debt that includes GO Bonds, Special Indebtedness, Capital Lease Obligations, and any other obligations that are owed to a third party over a predetermined schedule and paid from General Fund Revenues. Should mandatory payments be due to contractors or others under P3s, "Design/Build/Finance" or other such arrangements, those payments would be counted as a liability for the model. Obligations of Component Units, Highway Fund debt that is paid from Highway Fund revenues and other self-supporting debt, including performing Energy Performance Contracts where the debt service is actually being paid from energy savings, are also excluded.

The model includes the actual debt service from all outstanding net tax-supported debt and for all authorized, but currently unissued, tax-supported debt if such issuance does not require further action on the part of the General Assembly.

The following is a list of those liabilities that are included in the General Fund model (outstanding amounts as of June 30, 2017):

- GO Bonds supported by General Fund Tax Revenue - $2.7 billion
- General Fund appropriation-supported debt
  - Limited Obligation Bonds - $1,888.4 million
  - Certificates of Participation- $102.4 million
  - Capital Leases, Installment Purchase Contracts and Equipment lease obligations determined pursuant to G.S. 147-33.72H - $33.3 million

Liabilities not included in the General Fund model (outstanding amounts as of June 30, 2017):

- Highway Construction General Obligation Debt supported by Highway Trust Fund - $ 146.6 million

- Short Term Tax Anticipation Notes (not supported by General Tax Revenue) - $0

- Obligations of the University of North Carolina System or other Component Units – $6.7 billion

- Energy Performance Contract obligations where such obligations are guaranteed and approved pursuant to G.S. 142-64 and not supported by separate appropriations - $236.5 million issued

- OPEB

- Pension liabilities

- Employment Security advances from the US Treasury not anticipated to be paid from General Fund revenues.

Note: Although these liabilities may not constitute tax-supported debt, some are obligations of the State or various component units and the State's General Fund, although not legally obligated to, could be called upon to service these obligations if necessary.

Debt Structuring Assumptions

The following assumptions were used in this year's debt affordability model calculations:

- The State does not have any outstanding Variable Rate Debt and is not expected to issue any over the model horizon.
- The State will issue the Connect NC Bonds at fixed rates over the next five years with a 20-year level principal payment profile and a budgeted interest cost at 5.75%.
- The State does not currently have any authorized but unissued non-GO debt.
- Incremental model debt will be structured with a fixed rate 20-year maturity, a 6% interest rate, and an overall level debt service profile after the initial year.

Note on Issuance of the Connect NC Bonds

The Connect NC Bonds ($2 billion authorized/$1.8 billion unissued) approved by the voters, are incorporated into the model since to omit them would distort the amount of debt capacity remaining to the State. The schedule used for the issuance is provided below and is based on the currently anticipated cash flow needs as provided to OSBM by the agencies managing the projects being financed. Note that these cash flow needs will be re-evaluated prior to the issuance of any bonds.

Spring 2018	$600 million	Summer 2020	$430 million
Summer 2019	$690 million	Summer 2021	$80 million

Note on Interest Rate Assumptions

The DAAC model assumes consistency between the issuing assumptions used in the study and those used for budgetary planning. The issuance of the remaining Connect NC Bonds could be at lower rates than those stated above, especially in the early years. Such savings are not expected to significantly impact the results of the Study.

General Fund

10-Year Model Solutions

4.5% Debt Service/Revenue Target

Table 10

General Fund - 2017 Policy

Alternate Debt Capacity using 4.5% debt service/revenues target ratio

(In millions of dollars)

Fiscal Year	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
$ to Unfunded Liabilities	$200.0	$162.2	$158.7	$194.3	$267.4	$332.1	$417.0	$592.8	$722.6	$806.2
Total Additional Debt Capacity per Year *	$1,315.4	$24.3	$47.6	$53.6	$55.7	$57.8	$60.1	$62.4	$64.9	$67.4
Debt Capacity Available each and every Year	$194.0	$194.0	$194.0	$194.0	$194.0	$194.0	$194.0	$194.0	$194.0	$194.0

* In addition to that already authorized but unissued. Assumes additional debt capacity is authorized and issued in stated fiscal year.

4.75% Debt Service/Revenue Target

Table 11

General Fund - 2017 Policy

Net Tax-Supported Debt Capacity using 4.75% debt service/revenues target ratio

(In millions of dollars)

Fiscal Year	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
$ to Unfunded Liabilities	$ 200.0	$ 162.2	$ 158.7	$ 194.3	$ 267.4	$ 332.1	$ 417.0	$ 592.8	$ 722.6	$ 806.2
Total Additional Debt Capacity per Year *	$1,973.1	$36.4	$71.4	$80.3	$83.5	$86.8	$90.1	$93.6	$97.3	$101.1
Debt Capacity Available each and every Year	$290.4	$290.4	$290.4	$290.4	$290.4	$290.4	$290.4	$290.4	$290.4	$290.4

* In addition to that already authorized but unissued. Assumes additional debt capacity is authorized and issued in stated fiscal year.

See Appendix A

Appendix C

Transportation Revenues and Liabilities and Debt Affordability Model 10-Year Solutions

The Transportation debt affordability model uses all state transportation revenues plus other revenue items deemed available to service debt for the most recent Fiscal Year. The following items are included:

State Transportation Revenues

- Motor Fuels Tax
- Highway Use Tax
- Motor Vehicle Revenues
  - o Vehicle registration and title fees
  - o Driver's license fees
  - o International registration plan fees
  - o Penalties
  - o Equipment inspection fees
  - o Other
- Investment Income
- Other misc.
- *Federal Transportation Revenues are excluded*

Revenue Growth

Changes to revenue estimates have a significant impact on the calculation of available debt capacity. In consultation with NCDOT, Transportation revenue projections are assumed to be as follows:

Table 12

Transportation Revenues ($ millions)

Fiscal Year	Revenues ($ millions)	Growth Rate	Fiscal Year	Revenues ($ millions)	Growth Rate
2017	$3,634.5	4.7%	**2023**	$4,129.0	1.2%
2018	3,726.7	2.5%	**2024**	4,173.5	1.1%
2019	3,824.1	2.6%	**2025**	4,317.9	3.5%
2020	3,897.6	1.9%	**2026**	4,358.7	0.9%
2021	4,029.4	3.4%	**2027**	4,395.0	0.8%
2022	4,079.0	1.2%	**2028**	4,439.0	1.0%

* Revenue amounts per NC Department of Transportation (excluding federal revenues).
Fiscal Year 2017 is actual.

Transportation Liabilities

The model uses the debt service from all outstanding Highway Bonds and includes transportation-related capital lease obligations and installment purchase contracts if appropriate. There is no currently authorized but unissued transportation-related debt to include, but the model would count such debt and the resulting debt service as part of Transportation Liabilities if there were. Debt Service arising from the State's GARVEE program is not included as a State Transportation Liability because the GARVEEs are supported solely by federal transportation revenues.

The General Assembly has authorized funding to "pay debt service or related financing costs" for various series of revenue bonds issued by the North Carolina Turnpike Authority. The funds so appropriated are legally pledged to support the bonds and bondholders will depend upon the appropriations continuing. Therefore, the model treats the gap funding as the equivalent of debt service since it represents ongoing Highway Trust Fund support of debt. $49 million of GAP funding is treated as debt service for each year over the 10-year model horizon. NCDOT has also pledged certain operating and maintenance funds to secure debt, if necessary to provide adequate coverage levels. At the present, it appears that such funding will not be required. However, these funds would be treated as additional gap funding for model purposes if NCDOT were to be required to make such payments.

<u>Availability Payments</u>
The model counts "availability payments" as debt-like obligations. These payments are contractually owed to the contractor or other service provider on a delayed schedule that stretches beyond the standard construction period. Sometimes entered into as part of Public Private Design/Build/Finance and/or other arrangements, the delayed payments represent debt service for contractor-provided financing. The debt-like characteristics of availability payments (even if "subject to appropriation") mean that the payments are treated as a liability for the purposes of the model. The availability payment arrangements that NCDOT entered into in connection with the I-485 project have been satisfied.

<u>Developer Ratio Adjustment Mechanism (DRAM) payments</u>
In connection with the I-77 P3 project, DOT has agreed to make certain payments over time to support the project. The maximum amount of such payments may not exceed $12 million annually or $75 million in the aggregate. The actual amounts will be subject to the actual performance of the project. However, the amounts projected to be needed provided by DOT using relatively conservative assumptions are included in the model. This is consistent with rating agency treatment. In 2014 Moody's stated that "States…have entered into P3 projects that incorporate a long-term contractual obligation of the state to make availability payments or other types of contractual payments to the private partner that supports the debt service of the project." "[W]e view this contractual obligation as another form of general state debt…"

Debt Issuance Assumptions

The following assumptions were used in this year's debt affordability model calculations:

- There is no remaining authorized but unissued GO or non-GO debt.
- Incremental model debt will be structured with a fixed rate 25-year maturity, a 6.15% interest rate and an overall level debt service profile after the first year.

It is the Committee's determination that a 25-year structure, with a correspondingly higher interest rate, can be justified for analyzing debt that will be used to finance long-lived transportation infrastructure projects.

Transportation

10-Year Model Solution

Table 13

Transportation

Net Tax-Supported Debt Capacity using 6.0% debt service/revenues target ratio

(In millions of dollars)

Fiscal Year	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Total Additional Debt Capacity per Year *	$1,521.2	$0.0	$868.8	$0.0	$0.0	$89.0	$7.0	$46.6	$28.7	$62.7
Debt Capacity Available each and every Year	$284.6	$284.6	$284.6	$284.6	$284.6	$284.6	$284.6	$284.6	$284.6	$284.6

* In addition to that already authorized but unissued. Assumes additional debt capacity is authorized and issued in stated fiscal year.

Appendix D

Public Private Partnerships
Review of Recent Debt-Related Legislation

Public Private Partnerships-Debt

As the State enacts laws that permit the procurement and financing of assets through the use of Public Private Partnerships ("P3's"), care should be taken to ensure that sound debt management and authorization practices are in place in the review and approval process. The term P3 can describe a wide variety of arrangements in which a private sector entity plays a key role in the acquisition of an asset and/or the provision of a service. While P3s may appear to provide a new source of funds in a time of diminished revenues and debt capacity, such agreements often contain financing arrangements with the private entity that results in that entity incurring debt or obligations secured, directly or indirectly by governmental payments or charges to the citizens of that government. *Governing Magazine* notes in an article from the November 2013 issue concerning P3s that "capital often comes at a cost that can exceed the expense of a typical municipal borrowing". More states are coming to this realization. In the summer of 2014, the state of Nevada dropped plans for a highway widening project using a P3 after "discovering it would cost less for the state to manage the project itself and issue municipal bonds," according to an August 25, 2014 article in the *Bond Buyer*. More recently, Kansas is reported to have delayed approving a P3 for a prison after the state auditor found that "Traditional state bond finance could provide the state a better deal."

In times of diminished resources, governments should compare the costs of financing under a P3 arrangement with the issuance of more typical municipal debt when determining the preferable means of financing the acquisition of an asset. S&P noted in 2015 that "the debt of P3s faces an inherent disadvantage compared with debt service on tax-exempt bonds, which states traditionally issue."

P3s do not create additional debt capacity although it may appear so if you do not view the agreements as debt or debt-like obligations. However, these are often a commitment of funds in order to acquire an asset and that must be treated like debt when determining debt capacity. Failure to make the contractual payments could result in loss of the asset and create a default of a contractual liability to another party, and would typically impact the credit rating of the government. The rating agency treatment is clear: when a state's payments are used to support or secure debt issued by a private party, other public entity, and conduit issuer or through a lease arrangement, such debt will be counted toward the state's debt burden. Sponsoring agencies whose mission is to provide a particular service or asset are not in the best position to make decisions that prioritize the use of a state's debt capacity or require a state to enter into debt-like arrangements. That decision should be made by the state's legislative body which represents all the citizens of the state and is equally responsible for providing all services to all citizens.

Review of Recent Debt-Related Legislation

<u>Session Law 2017-5</u>

<u>Rainy Day Fund</u>

S.L. 2017-5 made significant changes to the rules regarding deposits to and withdrawals from the General Fund's Savings Reserve ("Rainy Day Fund"). Prior law dictated that the Office of the State Controller transfer one-quarter of any unreserved fund balance at the end of the fiscal year to the

Savings Reserve. Under S.L. 2017-5, the Controller shall transfer 15 percent of projected growth in General Fund tax revenues to the Savings Reserve, making a year-end adjustment for the difference between actual growth and projected growth. Prior law also set forth a goal to accrue a Savings Reserve balance equal to 8 percent of the prior year's General Fund operating budget. S.L. 2017-5 converted the 8-pecent goal to a savings target based on a consensus estimate from OSBM and the General Assembly's Fiscal Research Division of the balance amount sufficient to cover a two-year shortfall in state revenues in nine out of ten revenue downturns. OSBM shall report the target amount for FY 2017-18 no later than February 1, 2018. In addition, S.L. 2017-5 provides that refunding savings be transferred to the Savings Reserve Account.

Session Law 2017-57

Pay-As-You-Go Capital and Infrastructure Fund ("Fund")

S.L. 2017-57 establishes a new fund to be used to address ongoing capital and infrastructure needs effective July 1, 2019. 4% of the State's General Fund net tax revenues are to be deposited into the fund to be used to pay debt service (first priority) and then new State and UNC capital projects and repair and renovation projects. In addition to also directing a portion of the unreserved General Fund balance be deposited into the Fund, The Committee notes that the use of such funds for capital projects circumvents the Committee's recommendation that such funds be used to address unfunded Pension and OPEB liabilities.

Federal Tax Reform

The Tax Cuts and Jobs Act ("the Act") that was signed into law in late 2017 will have an effect on the municipal debt markets, although analysts are mixed as to the magnitude of the impact. The Act repeals the ability for municipal bond issuers to advance refund tax-exempt bonds (on a tax-exempt basis) and will reduce issuers' flexibility to refund bonds to create debt service savings when previously issuers would have been able to take advantage of refunding opportunities utilizing this mechanism. Some analysts predict the result will be a shrinkage in the size of the municipal market, perhaps by as much as 20-30%. Offsetting the decline in supply is likely a decline in demand as well. The reduction in the corporate tax rate means that tax-exempt interest is less valuable to corporate investors, especially banks and insurance companies. Individual investors will have to weigh the elimination of most itemized deductions in their calculations but tax-exempt interest is still believed to be valuable to individuals, especially in high tax states. The changes, by themselves, are unlikely to have a significant impact on the demand for State's future debt issues.