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A REVIEW OF ADVANCE CONSTRUCTION USE

PREPARED FOR THE NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

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A REVIEW OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION'S USE OF ADVANCE CONSTRUCTION

EXECUTIVE SUMMARY

The primary purpose of this review is to summarize the North Carolina State Department of Transportation's (NCDOT) use of Advance Construction (AC) and the benefits and risks associated with that use.

AC is a federal highway project authorization technique providing a state with greater flexibility in managing its federal-aid projects. AC is not federal funding. It simply allows a state to proceed with an approved federal-aid highway project without committing its federal funds to the project. This increases the number of federally eligible projects that can proceed at a given time, allowing the state to direct its federal funds to approved projects based on how quickly the projects are advancing.

AC is a popular technique used to some extent by all states to: allow federal-aid projects to move forward even if the state lacks sufficient federal funds to fully fund upfront the federal share of the projects; enhance cash management by allowing the state to commit federal funds to projects based on the level of project expenditures; generate a larger number of approved projects in the queue providing the state with an opportunity to quickly take advantage of additional federal funds that become available; and allow the issuance of federally reimbursable bonds while deferring the obligation of federal funds to the year in which bond payments are due.

The use of AC does create certain risks, particularly when the state is heavily dependent on federal funds. Under AC, projects are advanced without a commitment from the federal government to fund its share of project costs. Historically, federal highway funds have always been forthcoming in a predictable manner. Nevertheless, in recent years the United States Congress has struggled to pass highway legislation on time, often resulting in temporary extensions of expiring highway authorization acts. This creates political risk at the federal level that may delay, but is unlikely to eliminate, federal highway funds.

Beyond the inability of Congress to approve legislation in a timely manner, there is growing political risk with the inability of Congress to agree on reliable sources of revenue to keep the Federal Highway Trust Fund (HTF) solvent. To enable the HTF to continue meeting its obligations, Congress has resorted to providing the HTF with large infusions of General Fund monies over the past 10 years. This situation impairs the predictability of HTF revenues and presents an increasing risk of a reduction in federal highway funds available to the states. While a drastic long-term reduction in federal highway funding seems unlikely considering the bipartisan support for infrastructure spending, states need to carefully consider their contingency plans in case of a federal funding disruption.

NCDOT has developed a large and complex AC program, which it has used to take full advantage of additional federal funds and obligation authority made available to the states beyond the statutory formula apportionments. The state also uses AC to authorize its federally reimbursable GARVEE (Grant Anticipation Revenue Vehicle) bond projects. Furthermore, NCDOT recently has developed written policies to limit the amount of AC authorized for non-GARVEE projects. The current cash balances maintained by the state would

allow NCDOT to continue contactor payments in the event of a delay or slowdown in federal reimbursements. In the less likely event of a permanent reduction in federal funding, access to these unreserved state funds would allow time for the state to make necessary adjustments to its large program, minimizing the impact on projects underway.

There is no simple way to determine the optimal amount of AC a state should maintain. Each state has unique circumstances that influence AC policies and practices. Therefore, simply examining average metrics and typical procedures does not necessarily point to the best practices. All states have utilized AC authority and realized some of its program flexibility benefits. But there can be drawbacks with increasing reliance on uncertain federal funding and greater program complexity that introduces financial management challenges. Each state DOT must assess the right balance between flexibility benefits and complexity risks. While NCDOT senior staff are effectively managing a complex program, there is a lack of documentation and transparency regarding AC practices. Better written guidelines could help inform the financial reporting and would facilitate capacity building and succession planning within key offices.

Considering NCDOT's high usage of AC and the growing federal political risk, this report recommends that NCDOT reassess its risk factors and potentially strike a new balance between the flexibility AC provides and the administrative complexity and future governance of the program. One way to conduct this assessment is through a Process Mapping Workshop conducted by the Federal Highway Administration. These workshops have been conducted in several states to map out complex federal funds management and program processes helping the states to identify areas for improvement.

This type of mapping exercise applied to the state's AC program could be an effective vehicle for better documenting the current process and identifying potential inefficiencies, communication gaps, or other barriers as well as improvement opportunities for more effective funds management. Carefully mapping the state's AC processes might result in management improvements that do not require adjustments to the current AC policy. Or it might suggest a rebalancing of the flexibility-complexity tradeoff that would bring NCDOT in closer alignment with most other state DOTs regarding AC usage.

A REVIEW OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION'S USE OF ADVANCE CONSTRUCTION

PURPOSE OF REVIEW

The North Carolina State Department of Transportation (NCDOT) requested Mercator Advisors to review its use of the Advance Construction (AC) project authorization technique and suggest any policy revisions or program actions NCDOT may wish to consider. In addition to summarizing AC usage, this review focuses on evaluating the future federal funding uncertainty that could affect the timely reimbursement of state expenditures on approved federal-aid projects. The report discusses in depth the federal-aid process and the ongoing challenges facing the federal Highway Trust Fund.

INTRODUCTION TO ADVANCE CONSTRUCTION

AC is a project authorization technique authorized in federal highway law. The general rule under federal appropriations law requires a federal agency to obligate (commit) federal funds for the full federal share of any project at the time it approves the project. AC is an exception to this general rule allowing the Federal Highway Administration (FHWA) to approve a project without obligating federal funds. A state may subsequently request federal funds for a project as the project advances or after it is completed.

AC provides no federal funding but is an alternative method for approving a project allowing future federal participation. When the initial AC project agreement is executed between a state and the FHWA, the state acknowledges that no federal funds are being committed and that no future commitment of federal funds is being made to fund the federal share of the project. The state proceeds with the AC project using state or local funds (or even private contributions) with the anticipation of seeking federal reimbursements to cover the federal share at later dates.

What is Advance Construction or AC?

- ❖ AC is a federal project authorization technique.
- ❖ It is not a funding category.

Some key terms associated with AC are defined below in Figure 1.

Figure 1. AC-Related Terms and Definitions

Project Authorization	FHWA approval of a federal-aid highway project agreement committing the state to comply with federal requirements and obligating federal funds, or authorizing AC, as requested by the state.
Conversion	The process of obligating federal funds on an AC project advanced with state funds. The conversion may be incremental, referred to as partial conversion, where federal funds are obligated for only a portion of the federal share at any given time.
GARVEE Bonds	Grant Anticipation Revenue Vehicle (GARVEE) Bonds are a form of municipal bonds backed by future apportionments of federal highway funds. The bond

	proceeds are used to pay project costs and federal funds are used to pay the debt service (principal and interest) over a period of years.
Apportionments (or Program Authorizations)	Sometimes referred to as program authorizations or program funds. Federal funds are authorized in several categories with specific eligibilities. These funds are apportioned or distributed to the states by formula each year and are eligible for obligation over a four-year period.
Obligation Authority (or Obligation Limitation)	A limitation on the total amount of apportioned funds a state may obligate each federal fiscal year (FFY). Each state receives a proportional amount of obligation authority and may receive additional obligation authority at the end of the FFY, referred to as August redistribution.

LEGISLATIVE BACKGROUND OF ADVANCE CONSTRUCTION

AC has been a part of federal highway legislation since 1956, but its usage has changed over the years. Initially, AC applied only to the Interstate program and was used when the state lacked sufficient funds to authorize a federal-aid Interstate project at the end of a federal fiscal year. Federal funds had to be obligated for the project within 30 days after the beginning of the new fiscal year.

AC authority expanded to include additional federal programs, but when the AC project was converted to a regular federal-aid project, the state was still required to immediately obligate federal funds to cover the full federal share of the project. This full conversion requirement was problematic with the advent of GARVEE bonds in 1995.

The current statutory authority for AC is found in section 115 of Title 23 of the U.S. Code (Highways) and is paraphrased as follows:

The Secretary of Transportation may authorize a state to proceed with a project authorized under Title 23 without the use of federal funds; and in accordance with all procedures and requirements applicable to the project other than those procedures and requirements that limit the state to implementation of a project with the aid of federal funds previously apportioned or allocated to the state; or with obligation authority previously allocated to the state.

The Secretary, on the request of a state and execution of a project agreement, may obligate all or a portion of the Federal share of a project authorized to proceed under this section from any category of funds for which the project is eligible.

The Secretary may approve an application for a project under this section only if the project is included in the transportation improvement program of the state.

This legislation authorizes AC for any federal program category authorized in Title 23 and allows partial conversions. Using partial conversions, a state may obligate federal funds on a project over time. By converting projects over several years, a state can better manage its federal funds by obligating amounts that coincide with the construction costs incurred on a project or for debt service payments on GARVEE bonds issued to finance a project.

USE OF ADVANCE CONSTRUCTION AND FEDERAL FUNDS CONTROL

Understanding the implications of using AC – both the benefits as a management tool and the risks of reliance on future federal funding – requires examining the budgetary controls placed on federal highway funding. The extent to which states rely on these federal funds to advance their highway programs varies considerably, though the national average has remained consistent over the years. Federal highway funds, which generally must be used for capital investment, excluding operations and routine maintenance, have accounted for about 40 to 45 percent of total highway capital funding nationally. This historical federal share amounts to about 25 percent of total highway funding for all purposes. North Carolina’s reliance on federal funding is consistent with the national averages: 43 percent of the state’s highway capital program and 29 percent of the state’s total highway funding (including maintenance and operations) based on NCDOT’s current Spend Plan.

The federal-aid highway program is subject to two basic funding controls: program authorizations and obligation limitations sometimes referred to as obligation authority.

Program Authorizations. In recent decades the federal program generally has been authorized for periods of four to six years and the funds made available each year can be obligated by the states for a period of four years. This multi-year funding allows states to move forward with the planning and construction of highway projects that often require several years to complete.

Most of the funding amounts authorized for each federal program category are apportioned to the states by statutory formulas. Many projects are eligible for funding under multiple program categories. Federal legislation also allows for transfers between most funding categories (up to 50 percent) to meet the specific needs of the individual states.

The last federal highway authorization act (known as the FAST Act) was set to expire after September 30, 2020, until Congress extended it for an additional year.

Obligation Limitations. As another budget control feature, federal appropriation legislation establishes an annual limitation on the overall amount states can obligate for federal-aid highway projects each year. This national limitation on the authority to obligate funds is apportioned to the states based on their relative shares of authorized federal-aid funds providing each state with obligation

❖ Some states use AC as a tool for maximizing their obligation authority.

authority for the FFY. If a state or federal program office is not able to use its full amount of obligation authority by the end of the FFY (September 30), it must return the un-useable amount in August for redistribution to states that can use additional amounts. Managing the obligation of federal funds to maximize the amount of obligation authority received is a key objective for states and AC is a useful tool for that purpose. As such, this report generally will analyze AC usage in relation to obligation authority in lieu of federal program authorization amounts.

The benefits of multi-year federal program authorizations depend on having a dedicated revenue source, the federal Highway Trust Fund (HTF). However, receipts from motor fuel and other excise taxes dedicated to the HTF have lagged the cash outlays resulting from the funding authorizations in recent years requiring the appropriation of federal general fund monies to supplement the HTF revenues.

Since the turn of the century, Congress has struggled to reauthorize the highway program before the expiration of the existing authorization. The result has been short-term extensions of the federal program

pending approval of the multi-year program authorization being debated. Even with the struggle to reauthorize, Congress has not allowed the program to lapse. The latest example is the one-year extension of the current federal program authorization as noted above.

States are required by federal law to prepare multi-year transportation plans referred to as the State Transportation Improvement Program (STIP). These plans are required to be fiscally constrained, meaning there is a reasonable expectation that federal, state, local, or private funds will be available to carry out the projects in the approved STIP. These plans generally go beyond the period of the federal program authorization. For planning purposes, most states assume federal funding will continue through the period of the STIP at the same amount of the current authorization.

All states rely significantly on federal funding and therefore must consider the uncertainty of program reauthorization amounts and timing. All states also utilize AC, to some extent, recognizing various program benefits to be realized. But AC usage complicates the assessment of future federal funding risk since its chief benefit is to increase the number of projects in the STIP that rely on such funding.

COMPARING ADVANCE CONSTRUCTION TO THE STANDARD AUTHORIZATION PROCESS

This section provides a simple comparison of AC project authorization (partial conversion) with the standard project authorization process where the full federal share is obligated at the time the project is approved by FHWA. The comparison looks at how 16 projects would be advanced under the two processes with the following assumptions:

- The annual federal obligation authority is \$32.
- The cost of each project is \$10 and the federal share of each project is \$8 (80%).
- Each project will be completed in 4 years.
- The costs incurred on each project are spread evenly over the construction period (25% each year).

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Figure 2 illustrates the standard project authorization process, which requires federal funds to be obligated for the full federal share when the project is approved by FHWA.

Fully obligating the federal share of the projects when they are approved allows just four projects to be initiated in each year based on the annual obligation authority of \$32. The amount of federal cash reimbursement on each project is \$2 (25%) in the year of obligation and in each of the three subsequent years at which time the project is completed. The final four projects do not get completed until Year 7.

Figure 2. Federal Funds Obligated Using Standard Project Authorization

Amount of Federal Funds Obligated								
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Total
Project 1	\$8	-----	-----	-----				\$8
Project 2	\$8	-----	-----	-----				\$8
Project 3	\$8	-----	-----	-----				\$8
Project 4	\$8	-----	-----	-----				\$8
Project 5		\$8	-----	-----	-----			\$8
Project 6		\$8	-----	-----	-----			\$8
Project 7		\$8	-----	-----	-----			\$8
Project 8		\$8	-----	-----	-----			\$8
Project 9			\$8	-----	-----	-----		\$8
Project 10			\$8	-----	-----	-----		\$8
Project 11			\$8	-----	-----	-----		\$8
Project 12			\$8	-----	-----	-----		\$8
Project 13				\$8	-----	-----	-----	\$8
Project 14				\$8	-----	-----	-----	\$8
Project 15				\$8	-----	-----	-----	\$8
Project 16				\$8	-----	-----	-----	\$8
Total Obligated	\$32	\$32	\$32	\$32	\$0	\$0	\$0	\$128
Total Reimbursed	\$8	\$16	\$24	\$32	\$24	\$16	\$8	\$128

Figure 3 depicts the same 16 projects authorized as AC projects with partial conversion to federal funding during the construction period. The key differences are:

- All 16 projects are initiated in Year 1.
- Federal funds reimbursed to the state equal the obligation authority of \$32 each year.
- All 16 projects are completed in Year 4.

Figure 3. Federal Funds Obligated Using AC Partial Conversion

Amount of Federal Funds Obligated								
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Total
Project 1	\$2	\$2	\$2	\$2				\$8
Project 2	\$2	\$2	\$2	\$2				\$8
Project 3	\$2	\$2	\$2	\$2				\$8
Project 4	\$2	\$2	\$2	\$2				\$8
Project 5	\$2	\$2	\$2	\$2				\$8
Project 6	\$2	\$2	\$2	\$2				\$8
Project 7	\$2	\$2	\$2	\$2				\$8
Project 8	\$2	\$2	\$2	\$2				\$8
Project 9	\$2	\$2	\$2	\$2				\$8
Project 10	\$2	\$2	\$2	\$2				\$8
Project 11	\$2	\$2	\$2	\$2				\$8
Project 12	\$2	\$2	\$2	\$2				\$8
Project 13	\$2	\$2	\$2	\$2				\$8
Project 14	\$2	\$2	\$2	\$2				\$8
Project 15	\$2	\$2	\$2	\$2				\$8
Project 16	\$2	\$2	\$2	\$2				\$8
Total Obligated	\$32	\$32	\$32	\$32	\$0	\$0	\$0	\$128
Total Reimbursed	\$32	\$32	\$32	\$32	\$0	\$0	\$0	\$128

While this is a simple illustration, consider how it would impact hundreds of projects with varying completion dates and expenditure schedules.

Furthermore, a state with sufficient state funds available can authorize additional AC projects beyond the anticipated federal obligation authority amount providing a larger queue of active projects eligible for conversion to federal-aid projects. As the projects progress, the state can select projects best suited for conversion and fund the remaining projects with state funds. The larger queue also provides more projects that can be readily obligated in the event additional federal funding or obligation authority is made available to the state.

BENEFITS OF USING ADVANCE CONSTRUCTION

Every state uses AC as a management tool. Some of the stated benefits of using AC include:

Better project management. Project lettings are not delayed pending the availability of obligation authority or approval of federal highway funding legislation. As illustrated in the prior section, projects can be completed sooner thereby (1) avoiding inflationary cost increases and (2) opening sooner and accelerating public benefits.

Better cash management. States can better manage both federal funds and state funds by selecting the projects and the amount of federal funds to be obligated in a way that optimizes cash flow.

May increase federal obligation authority. Every state has a limitation on the amount of federal funds it can obligate each FFY. If a state or federal program office cannot use some of its obligation authority, those amounts are allocated to other states each August, provided the funds can be obligated before the end of the FFY (September 30). AC projects can be quickly converted to federal funds allowing a state to take full advantage of the “August redistribution” of federal obligation authority.

Allows for federally approved bond issue projects. States can finance federally approved highway or bridge projects with bond issues that may be repaid with their federal highway funds. Such state debt issuances are referred to as GARVEE bonds. Use of AC allows the federal funds to be obligated each year in amounts required to pay for annual debt service instead of having to use the current-year obligation authority to pay for costs that typically occur over 10 to 20 years.

Key Benefits of Using AC

- ❖ Better project management
- ❖ Better cash management
- ❖ May increase federal obligation authority
- ❖ Allows for GARVEE bonds

RISK OF USING ADVANCE CONSTRUCTION

As noted previously, the primary risk associated with the use of AC is that the United States Congress could fail to authorize sufficient highway program funds to allow for the timely conversion of numerous AC projects to cover the federal share of project expenses.

The federal-aid highway program operates mostly under multi-year program authorizations permitting fund obligations to be made in advance of annual appropriations. This mechanism of contract authority backed by dedicated HTF tax revenues is intended to give states assurance that authorized funds will be available at the beginning of each FFY. Even when a federal authorization act expires, unobligated funds are still available to the states beyond the period of the authorization act. This gives states some flexibility to manage projects if Congress fails to promptly extend the federal-aid program.

Managing the Risk of Using AC

- ❖ State DOTs must evaluate future federal funding risk.
- ❖ Cash reserves are an important management tool.

The future federal funding risk associated with having a large number of AC projects in the STIP is mitigated for the following reasons:

- The federal-aid highway program has a long history of funding reliability. Congress has recognized the nature of long-range planning and project development, and the necessity for states to have a reliable funding source.
- Any major disruption to federal funding would have a significant impact on all states. This impact would be greater for states relying more heavily on federal funds. This widespread potential impact mitigates the political risk.
- A state can delay advancing certain projects to the next phase or activity.
- A state can use its reserve of state funds to pay project costs until additional federal funding (obligation authority) is made available – effectively increasing its AC balance by delaying planned conversions.

The federal funding risk associated with the continuance of the federal-aid highway program was heightened with the authorization of GARVEE bonds. GARVEE bonds were authorized in 1995 allowing the states to use bond proceeds to pay federal-aid project costs and then use federal funds to pay for debt service and other costs associated with the issuance of the bonds. GARVEE-financed projects always use AC because it would be inefficient to use current obligation authority on projects where the debt costs often will cover periods of 10 to 20 years, or even longer. Many of these projects will require future funding from two or more federal authorization acts to fully pay the debt service. The rating agencies have opined on this funding risk. [The following section on [Advance Construction Use and Federal Funding Risk](#) contains a more detailed description of the risk associated with using AC for GARVEE projects.]

The states are currently facing a potential disruption to federal reimbursements. FHWA issued a letter to the states on August 26, 2021, advising that the federal Highway Trust Fund Highway Account might soon lack a sufficient balance to fully reimburse state claims. If federal reimbursements are delayed, NCDOT currently has a sufficient balance of state funds to avoid any serious consequences in the short term.

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ADVANCE CONSTRUCTION USE AND FEDERAL FUNDING RISK

State DOTs and other stakeholders (including GARVEE bond investors) have been able to rely upon a relatively predictable federal-aid program despite occasional “hiccups” in the legislative reauthorization process every few years. The multi-year federal funding provided through a dedicated federal “trust fund” has been a reassuring source of program stability. While these basic features are still in place, certain trends are making the assessment of future federal funding risk more problematic.

This risk relates either to a reduction in federal obligation authority, temporary or permanent, or to a delay in federal reimbursements due to a cash shortfall in the federal Highway Trust Fund (HTF). Figure 4 and Figure 5 illustrate how a reduction of federal obligation authority would impact projects authorized under the standard process versus projects authorized as AC projects with partial conversion. Using the same examples that were presented in Figure 2 and Figure 3, the following figures depict the impact of a 25% reduction in federal obligation authority in Year 4.

Figure 4 shows the impact of a reduction of federal obligation authority on projects authorized under the standard process. Obligation authority is reduced in year 4 by 25% to \$24. As a result, the state cannot authorize Project 16. On a larger scale, the state would have to reduce the number of projects it planned to advance in its STIP. The state might also have to remove projects from upcoming lettings.

Figure 4. Federal Funds Obligated Using Standard Project Authorization – Obligation Authority Risk

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Total
Project 1	\$8	-----	-----	-----				\$8
Project 2	\$8	-----	-----	-----				\$8
Project 3	\$8	-----	-----	-----				\$8
Project 4	\$8	-----	-----	-----				\$8
Project 5		\$8	-----	-----	-----			\$8
Project 6		\$8	-----	-----	-----			\$8
Project 7		\$8	-----	-----	-----			\$8
Project 8		\$8	-----	-----	-----			\$8
Project 9			\$8	-----	-----	-----		\$8
Project 10			\$8	-----	-----	-----		\$8
Project 11			\$8	-----	-----	-----		\$8
Project 12			\$8	-----	-----	-----		\$8
Project 13				\$8	-----	-----	-----	\$8
Project 14				\$8	-----	-----	-----	\$8
Project 15				\$8	-----	-----	-----	\$8
Project 16				\$0				\$0
Total Obligated	\$32	\$32	\$32	\$24	\$0	\$0	\$0	\$120
Total Reimbursed	\$8	\$16	\$24	\$30	\$22	\$14	\$6	\$120

Figure 5 shows the impact on projects authorized as AC with partial conversions in the event of a 25% reduction in federal obligation authority in Year 4 to \$24. In this case, the state would not be able to obligate federal funds in the final year for Projects 13, 14, 15, and 16. This in turn reduces federal reimbursements requiring the state to pay contractors with state funds to avoid contract penalties.

Figure 5. Federal Funds Obligated Using AC Partial Conversion – Obligation Authority Risk

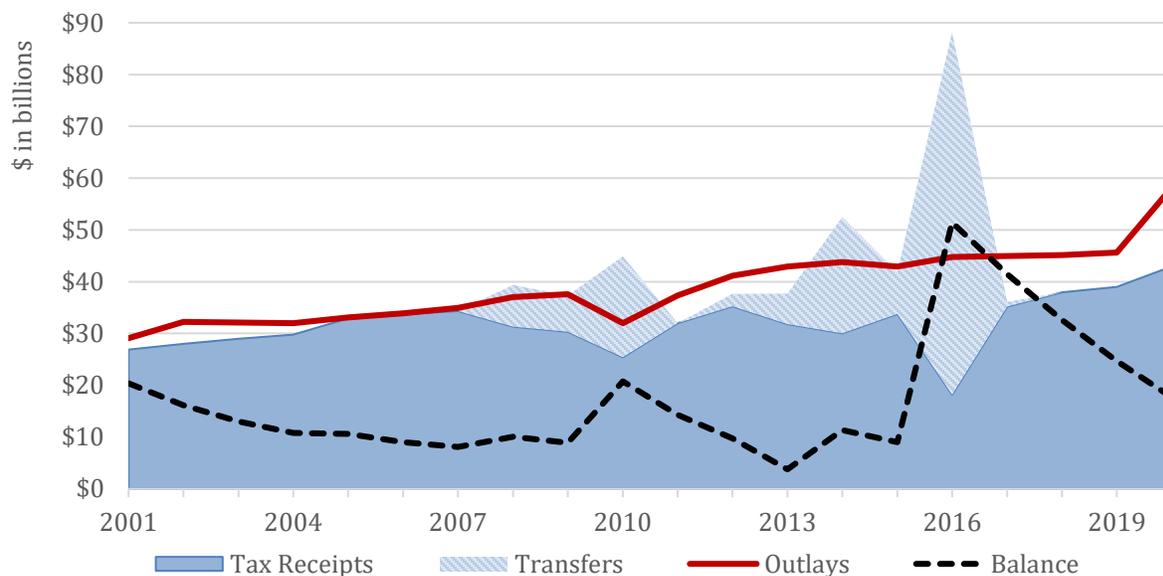
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Total
Project 1	\$2	\$2	\$2	\$2				\$8
Project 2	\$2	\$2	\$2	\$2				\$8
Project 3	\$2	\$2	\$2	\$2				\$8
Project 4	\$2	\$2	\$2	\$2				\$8
Project 5	\$2	\$2	\$2	\$2				\$8
Project 6	\$2	\$2	\$2	\$2				\$8
Project 7	\$2	\$2	\$2	\$2				\$8
Project 8	\$2	\$2	\$2	\$2				\$8
Project 9	\$2	\$2	\$2	\$2				\$8
Project 10	\$2	\$2	\$2	\$2				\$8
Project 11	\$2	\$2	\$2	\$2				\$8
Project 12	\$2	\$2	\$2	\$2				\$8
Project 13	\$2	\$2	\$2	\$0				\$6
Project 14	\$2	\$2	\$2	\$0				\$6
Project 15	\$2	\$2	\$2	\$0				\$6
Project 16	\$2	\$2	\$2	\$0				\$6
Total Obligated	\$32	\$32	\$32	\$24	\$0	\$0	\$0	\$120
Total Reimbursed	\$32	\$32	\$32	\$24	\$0	\$0	\$0	\$120

This emphasizes the importance of having state funds available to mitigate the risk of a reduction in federal obligation authority when using AC.

FEDERAL CONTRACT AUTHORITY AND HTF SOLVENCY

Most federal revenues used for surface transportation, including federal motor fuel excise taxes, are credited to the Highway Trust Fund. The HTF is the primary source of reimbursements to the states under the federal aid program. For the last two decades, HTF outlays have exceeded revenues as authorized obligations increased and excise tax rates did not. Congress has maintained the solvency of the HTF through periodic transfers from the general fund, totaling over \$150 billion through the current FAST Act authorization period.

Figure 6. Federal Highway Trust Fund Status (FFY 2001-2020)

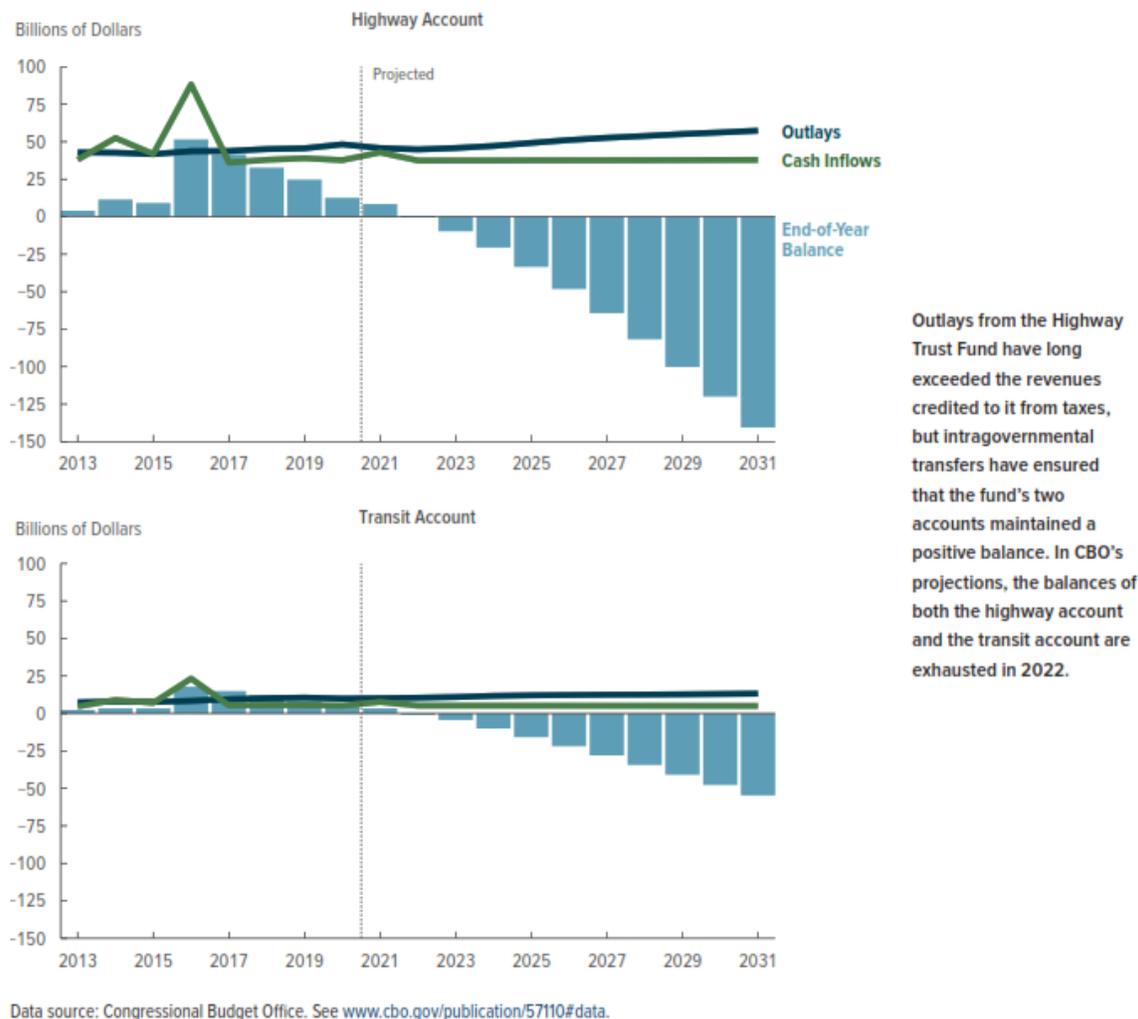


Source: Highway Statistics Table FE210 and Treasury Bulletins

In April 2021 testimony before the Senate Committee on Environment and Public Works, the Director of Microeconomic Analysis for the Congressional Budget Office (CBO) addressed the future, long-term solvency of the HTF.¹ He highlighted the decade long imbalance between revenues and outlays and stated that, “starting in the first half of 2022, balances in the highway account of the trust fund will fall below the amount needed to reimburse states in a timely fashion for the bills presented to the fund. The possibility of delays in payments from the federal government increases uncertainty among states when they plan transportation projects.”

¹ Testimony on Addressing the Long-Term Solvency of the Highway Trust Fund, April 14, 2021, <https://www.cbo.gov/publication/57110>

Figure 7. Federal Highway Trust Fund – CBO’s February 2021 Baseline Projections



In assigning credit ratings for GARVEE bonds backed by reimbursements from the HTF, rating agencies have noted the fund’s structural imbalance and the inability of federal policy makers to agree on a long-term solution. Nevertheless, they consistently deem the risk of major disruption to the federal program to be low and assign ‘A’ category ratings. In August of 2021, Fitch Ratings assigned an ‘A+’ rating on North Carolina’s Series 2021 GARVEE bonds, stating the following.

While there is a projected shortfall in the current revenue generating ability of the program when compared to expected outlays, there has traditionally been a short- to medium-term legislative solution to meet funding needs. The program has proven to be an essential investment for the federal government with funding disseminated in a formulaic nature across the states.... While the most recent infrastructure bill allocates more than \$100 billion to support the Highway Trust Fund (HTF), the new legislation does not change the rate of the motor fuel tax which provides revenues for the program. In Fitch’s view, while the new funding does show legislative support for the HTF, the allocation of funds is only a temporary solution to address the shortfalls of the HTF and no longer-term needs of the program have been

addressed. It is still Fitch's view that significant changes are needed either on the expenditure side or on the revenue side... to put the program on a sustainable trajectory.²

While commenting on the growing uncertainty of future federal policy and funding levels, Fitch also notes that North Carolina has robust state revenues and strong cash balances to support its GARVEE bond rating.

Fitch Rating Drivers

- ❖ In Fitch's view, what was once a formula-driven program funded on a multiyear basis has now morphed into a program where future policy is less certain, and funding levels are less predictable.
- ❖ Favorably, only 26% of NCDOT's [revenues] were derived from federal aid in federal fiscal year (FFY) 2020. Moreover, the DOT has a policy of maintaining working capital balances well in excess of GARVEE debt service payments, utilizing prior federal fund receipts alongside appropriation funding from the General Assembly and federal government to bolster strong cash balances.

FEDERAL FUNDING RELIABILITY AND FINANCIAL MANAGEMENT IMPLICATIONS

Despite rating agency and investor sentiment that a major collapse of the federal program is unlikely, the potential for short-term disruption of reimbursements remains. As of the date of this report the U.S. Senate has passed, and the U.S. House is considering, a large infrastructure bill called the Infrastructure Investment and Jobs Act (IIJA) that incorporates a five-year reauthorization of the federal surface transportation programs. Nearly half of the roughly \$1 trillion proposal is allocated to federal highway, bridge, and transit programs. If enacted and fully funded, the legislation would dramatically increase those federal funding levels over the coming five years (FFY 2022-2026): FHWA funding would increase 49 percent over the current baseline to about \$351 billion and Federal Transit Administration (FTA) funding would increase 65 percent over the current baseline to about \$107 billion. Other federal transportation programs such as for rail would receive even larger funding increases percentagewise.

While transportation investment advocates applaud this development, there are financial management implications for state DOTs and other transportation agencies. One set of issues involves the significant ramping up of the federal programs over a few years, with potential concerns about larger state and local required matching of the federal funds. There also might be concerns about nationwide demands on construction labor and materials within the infrastructure sectors (including beyond transportation) receiving an estimated \$550 billion of additional federal spending over the current baseline amounts.

² Fitch Assigns North Carolina's GARVEE Bonds at 'A+'; Outlook Stable; August 16, 2021.
<https://www.fitchratings.com/research/us-public-finance/fitch-assigns-north-carolina-garvee-bonds-at-a-outlook-stable-16-08-2021>

Another set of issues involves the status and outlook of federal surface transportation funding at the end of the next five years. To fund the dramatically increased federal programs during FFY 2022-2026, the proposal would:

- Transfer another \$118 billion from the General Fund to the HTF to keep the HTF solvent for another five years (increasing the total “GF bailouts” of the HTF to almost \$272 billion since 2008).
- Authorize one-time “guaranteed funding” in the form of advance appropriations from the General Fund to supplement the HTF. These advance appropriations would be in addition to the regular authorizations of General Fund appropriations for certain programs like FTA’s Capital Investment Grants. About \$84 billion of the authorized funding for FHWA and FTA would be sourced directly from the General Fund.

Counting the infusion of general funds to keep the HTF solvent through FFY 2026, the total amount of FHWA and FTA funding that would be sourced from the General Fund is about \$202 billion, or 44 percent of the funding for those two federal agencies traditionally supported by the HTF. One takeaway from this funding plan is that the HTF structural imbalance has not been addressed and would only get much larger five years out. Its “users-pay / users-benefit principle” foundation continues to erode with the growing General Fund component, and the political will to continue to prop up a federal budgetary “trust fund” supposedly financed with user taxes is questionable.

2021 IJA Highlights Problematic Trends in Federal Funding

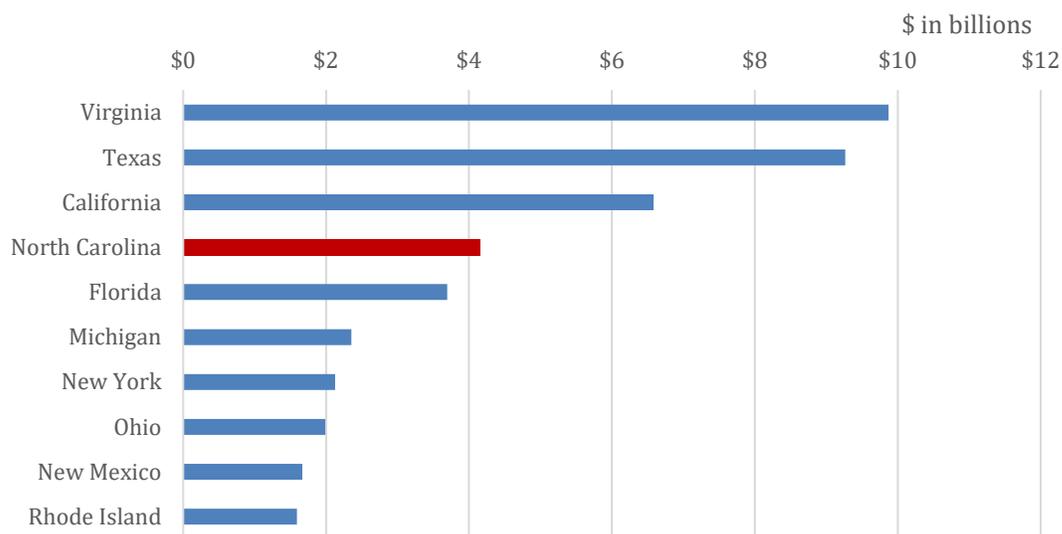
- ❖ Uncertain future for the federal HTF due to growing structural imbalance and lack of long-term policy solution
- ❖ Growing reliance on general funds
- ❖ Increasing use of discretionary grants instead of formula funds

A notable aspect of the proposal is the growing discretionary nature of the federal transportation funding. In past decades the vast majority of federal transportation aid to state and local governments has been provided through formula funds. Under the IJA, over \$100 billion or nearly 18 percent of the \$567 billion for the USDOT would be distributed through expanded or new discretionary programs.

ADVANCE CONSTRUCTION USE IN NORTH CAROLINA

NCDOT authorizes most of its federal-aid projects as AC projects, excluding some smaller dollar or shorter duration projects. As a result, North Carolina is one of the top users of AC among the states. At the end of FFY 2020 (September 30, 2020), North Carolina's outstanding AC balance was about \$4.2 billion, which ranked fourth among the states as shown in Figure 8.³ That balance represented the federal share of authorized AC projects that potentially could be reimbursed with federal-aid funds. The state has used AC for several decades and has shown the ability to effectively manage the authorization and conversion of large numbers of AC projects.

Figure 8. FFY 2020 AC Balances (Top Ten States)



Source: BATIC Institute Advance Construction Research Brief

The state also ranked fourth when comparing the use of AC to the size of its federal-aid highway program based on annual formula obligation authority. Some of the high-use states authorize all or most of their projects through AC, giving them the option to select which projects will be converted to federal aid based on future criteria while recognizing that some projects will never be reimbursed with federal funding.

³ NCDOT's total AC balance at the end of federal fiscal year 2021 was just over \$4.1 billion.

NCDOT used about 70 percent of its federal obligation authority in FFY 2021 to convert (receive reimbursements for state funds expended on) non-GARVEE AC projects and about 12 percent to convert (make debt service payments on) GARVEE AC projects. About \$1.8 billion of the state's AC balance at the end of FFY 2021 relates to GARVEE projects with debt service payments scheduled through 2036. The remaining \$2.3 billion AC balance involves non-GARVEE projects anticipated to receive federal fund obligations over the next few years.

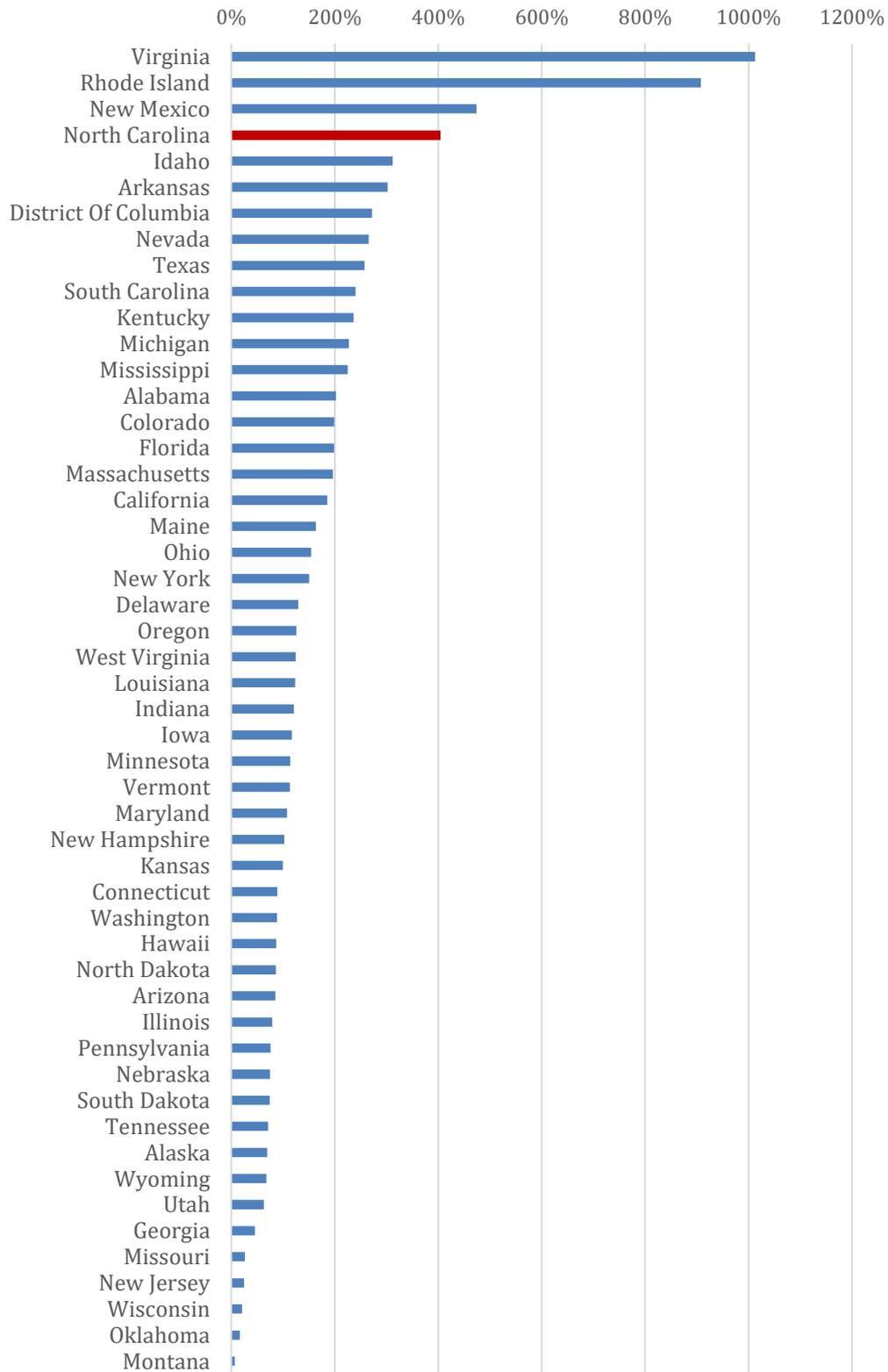
Figure 9 below shows that, at the end of FFY 2020, North Carolina's outstanding AC balance was about four times the size of its FFY 2020 obligation authority. The median state had an AC balance of 121 percent of its obligation authority. Nineteen states had an AC balance of less than 100 percent of obligation authority. Some of these states target their use of AC to specific types of projects, such as GARVEE bond projects or other major projects. Some states avoid authorizing AC projects that may not be converted to federally funded status because they view the federal approval process and federal requirements as burdensome and expensive.

NCDOT AC Usage

- ❖ AC is used with a relatively large number of projects.
- ❖ AC usage has increased substantially over the last two decades.
- ❖ NC is one of the top AC users among the states.

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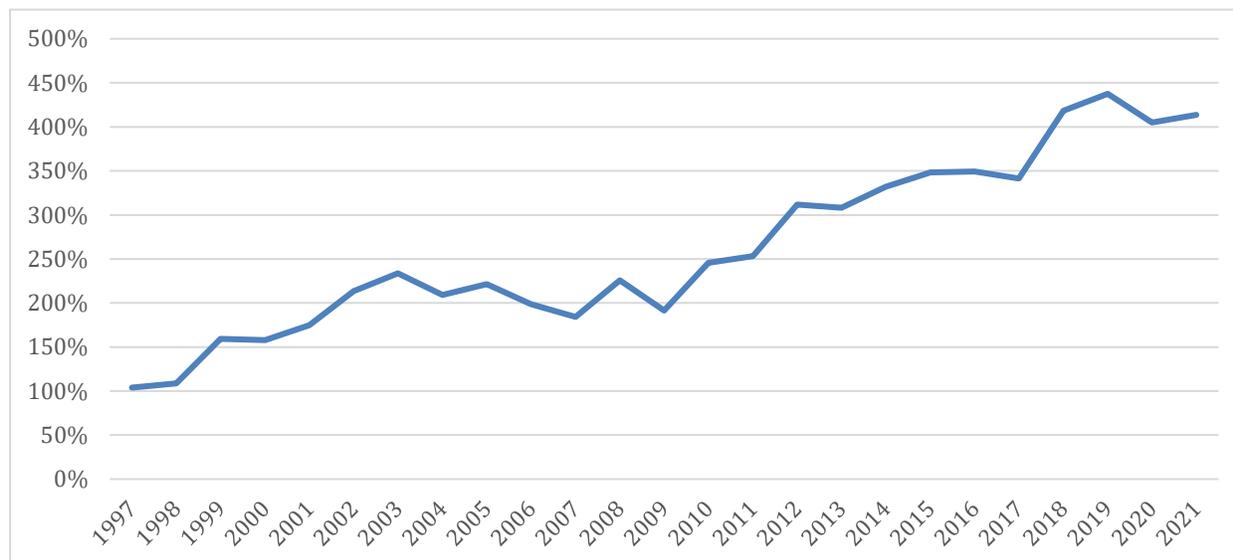
Figure 9. FFY 2020 AC Balances as Percentage of Obligation Authority (All States)



Source: BATIC Institute Advance Construction Research Brief

NCDOT's use of AC has grown steadily since 1997 from about 100 percent of formula obligation authority to over 400 percent as seen in Figure 10. This substantial increase in the use of AC over the past 24 years reflects the national trend. The aggregate AC nationwide balance was \$10 billion in 1997 and increased to \$68 billion in 2020.

Figure 10. NCDOT AC Balance as Percentage of Formula Obligation Authority



Source: BATIC Institute Advance Construction Research Brief and NCDOT

LIMITATIONS ON USE OF ADVANCE CONSTRUCTION

Going forward, NCDOT has established the following parameters on the use of AC to provide more assurance that the program is properly managed. For non-GARVEE projects:

- The amount of unreimbursed state funds (by funding source) should not exceed one year of anticipated federal apportionments.
- The AC balance (by funding source) should not exceed four years of anticipated federal apportionments.

The policy states that federal funding needed for future GARVEE bond payments will be subtracted prior to performing these calculations. Also, AC authorizations for emergency relief projects approved in response to a disaster event are not included in these limitations since special federal funds will be made available for these projects. However, it should be noted that state funds will be needed to cover expenses on emergency relief projects until federal funds are made available.

NCDOT evaluates the status of these AC parameters at the end of each FFY and at other times as appropriate. In addition to performing a “spot check” at a point in time, NCDOT projects forward two years utilizing data in the most recent STIP. Figure 11 summarizes some of the most recent calculations made (as of October 2021) to test the size of the AC balance for each of the three major federal funding sources for NCDOT's non-GARVEE projects.

Figure 11. AC Balance Limitations for Non-GARVEE Projects

\$ in millions	Funding Source		
	NHPP	STBGP	HSIP
Assess End of FFY 2021			
Apportionment FFY 21	\$617	\$293	\$58
Less: GARVEE DS Payments	\$129	\$3	\$0
Balance: Net Apportionment	\$488	\$290	\$58
Times 4: Policy Limit FFY 21	\$1,954	\$1,160	\$230
AC Balance End of FFY 21	\$1,609	\$489	\$163
FFY 2021 AC Balance Test	Pass	Pass	Pass
Project Forward: FFY 2022			
Apportionment FFY 22	\$617	\$293	\$58
Less: GARVEE DS Payments	\$176	\$1	\$0
Balance: Net Apportionment	\$441	\$292	\$58
Times 4: Policy Limit FFY 22	\$1,766	\$1,167	\$230
AC Balance End of FFY 21	\$1,609	\$489	\$163
Projected AC Conversions	\$438	\$270	\$40
Projected New AC	\$322	\$360	\$36
AC Balance End of FFY 22	\$1,493	\$579	\$159
FFY 2022 AC Balance Test	Pass	Pass	Pass

Source: NCDOT

There are no specific AC limitations for GARVEE bond projects, but the issuance of GARVEE debt is limited by state law as shown in Figure 12. The law requires that (a) the outstanding principal amount of GARVEE bonds does not exceed the previous federal fiscal year's total amount of federal program authorizations (program authority apportioned to the state) or (b) the maximum annual principal and interest of such debt does not exceed 20 percent of the expected average annual federal revenue shown in the most recently adopted STIP.

Figure 12. Statutory Limitations on Issuance of GARVEE Bonds (as of 09/30/21)

\$ in millions	Current Amount	Current Limitation
a) Outstanding Principal Not to Exceed Prior Year Federal Authorizations, OR	\$1,128	\$1,163
b) Maximum Annual Debt Service Not to Exceed 20% of Average Annual Federal Revenue	\$154	\$241

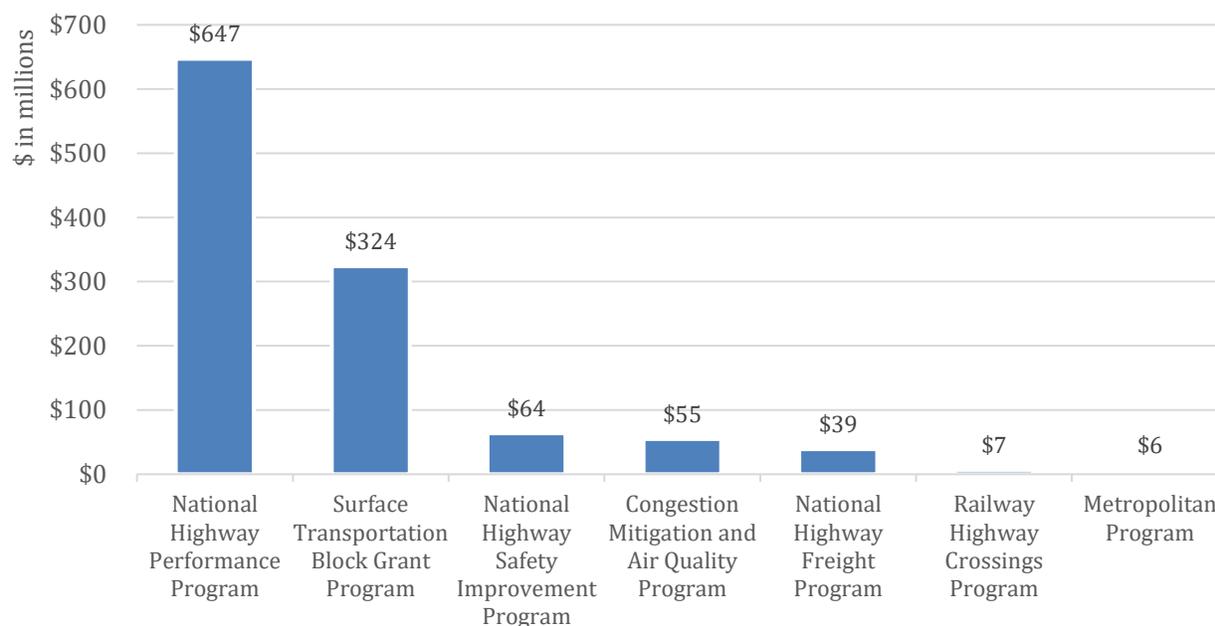
Source: NCDOT

Furthermore, the GARVEE bond indenture requires that no additional parity bonds for the funding of projects may be issued unless the amount of federal revenues received in the immediately preceding FFY or received (or to be received) in the FFY in which the proposed additional bonds are to be issued shall have been sufficient to pay an amount representing at least 300% of the maximum combined annual payments on any outstanding GARVEE bonds and on the proposed additional bonds to be issued.

NORTH CAROLINA FUND APPORTIONMENTS AND OBLIGATION AUTHORITY

North Carolina received a total of \$1.142 billion of federally apportioned highway funds in several federal program categories for FFY 2021, as shown in Figure 13.

Figure 13. NCDOT Apportionments by Federal Program (FFY 2021)



Source: FHWA Funding Notices

Apportioned program funds are available for obligation over a four-year period. Up to 50 percent of each program apportionment may be transferred to another program to meet the specific needs of the state. Many of the state's federally assisted projects may be funded under two or more federal-aid programs.

Other funds may be allocated or apportioned to a state. For example, NCDOT received \$259 million pursuant to the Coronavirus Response and Relief Supplemental Appropriations Act of 2021. NCDOT was able to immediately apply most of these funds to AC projects and receive federal reimbursement early in 2021.

In addition to program apportionments, NCDOT is subject to an annual obligation limitation. As previously described, Congress establishes a specific amount that can be obligated each fiscal year for budget control purposes. This amount is distributed to the states (by formula) and to certain programs administered by FHWA program offices. NCDOT can obligate funds from any of its program categories provided the total amount of its federal-aid obligations does not exceed its annual obligation limitation.

Congress authorizes a redistribution of annual obligation limitation in August. If a state or federal program office cannot fully use its obligation authority by the end of the FFY (September 30), it is required to return the excess amount in August. The amount returned to FHWA is then redistributed to states that can demonstrate their ability to obligate additional funds before the end of the fiscal year.

Figure 14 summarizes NCDOT’s total obligation authority over each of the past five years. These amounts represent NCDOT’s share of the annual obligation limitation established by Congress and excludes amounts not subject to the limitation.

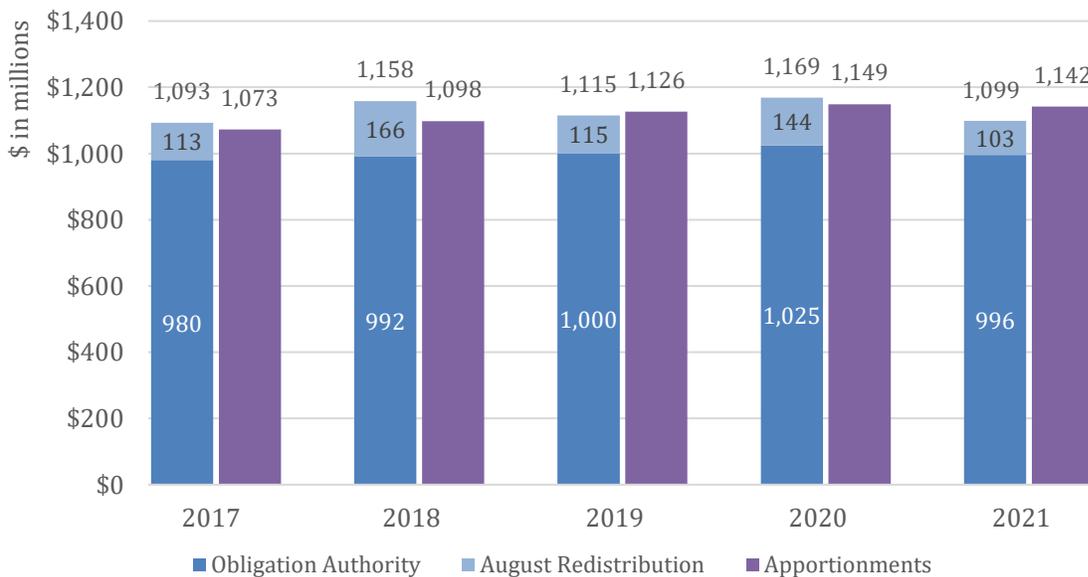
Figure 14. NCDOT Obligation Authority by Federal Fiscal Year

(\$ millions) FFY	Formula Obligation Authority	August Redistribution	Total Obligation Authority
2021	\$996	\$103	\$1,099
2020	\$1,025	\$144	\$1,169
2019	\$1,000	\$115	\$1,115
2018	\$992	\$166	\$1,158
2017	\$980	\$113	\$1,093

Source: FHWA Funding Notices

Figure 15 compares the total amount of program funds apportioned to NCDOT in recent years with the total amount of obligation authority. The additional obligation authority obtained by NCDOT through the August Redistribution process has resulted in the state being able to obligate more than its new program funding authorizations thereby drawing down its unobligated balances from prior years.

Figure 15. NCDOT Total Obligation Authority and Apportionments by Federal Fiscal Year



Source: FHWA Funding Notices

ADVANCE CONSTRUCTION AND CASH BALANCES

NCDOT is subject to cash balance thresholds – a minimum, a target range, and a ceiling. The minimum cash balance is 7.5 percent of total current fiscal year appropriations, not including GARVEE reserves. For FY 2021, the required minimum balance was about \$267 million based on total appropriations of \$3.564 billion from the state’s Highway Fund and Highway Trust Fund. The target cash balance is 15 to 20 percent of total appropriations; for FY 2021 that equated to a range of \$535 million to \$713 million. If the combined average daily cash balance for a month falls outside the target range, NCDOT must report to the legislature why the cash balance is outside the range and what actions will be taken to bring it back inside the range. The cash balance ceiling is \$1 billion. One of the conditions for issuing Build NC Bonds is that NCDOT’s average month-end cash balance for the months of January, February and March prior to issuance must be not greater than this statutory ceiling. In recent years the annual variability in both expenditures and revenues – particularly federal revenues – has made it difficult for NCDOT to stay within the cash balance thresholds. While budget accountability and financial management measures have helped stabilize the cash balance, the uncertainty regarding future federal funding continues to present management challenges to all states.

AC is a useful tool for managing cash balances by allowing a state to monitor its expenditures on projects to determine the appropriate time to obligate federal funds on AC-designated projects. The federal share of these expenditures can be reimbursed by FHWA thereby increasing the cash balance in the state’s Highway Fund. NCDOT follows a structured federal reimbursement process, billing FHWA at about \$20 million per week for apportioned funds to achieve a consistent flow of federal funds. This process requires NCDOT to modify FHWA project agreements for several AC projects each week to obligate federal funds and generate a reimbursement of incurred costs. AC projects are selected based on the amount of accrued unbilled costs and other project management requirements. Weekly federal billings may be increased if additional federal funds are provided outside of the apportionment categories (e.g., Covid relief funds).

As noted previously, AC authorizations result in more projects underway at a given time. Having a large highway program with a large AC balance provides greater flexibility in determining the partial conversions of federal funds based on how projects are being advanced and how costs are being incurred. For example, AC provides some margin wherein NCDOT could increase federal-aid conversions and billings (up to the state’s obligation authority) on projects with accrued unbilled costs to help address a short-term cash imbalance.

A large state cash balance mitigates the risk of a decrease in federal funding by allowing AC projects to continue with state funds being used to pay project costs. The state also has the option to designate projects programmed as AC projects as state-funded projects if necessary.

AC Use and State Cash

- ❖ Maintaining a target cash balance is difficult.
- ❖ AC conversion practice is a cash management tool.

NCDOT PROGRAM ASSESSMENT

All states have utilized AC authority and realized some of its program flexibility benefits. But there can be drawbacks with increasing reliance on uncertain future federal funding and greater program complexity that introduces financial management challenges. Each state DOT must assess the right balance between flexibility benefits and complexity risks. NCDOT has steadily increased its usage of AC over the past 25 years and now has an outstanding balance close to four times its annual federal obligation authority – the fourth most among the states. The median AC balance among all states is 1.2 times the annual federal obligation authority and only six states (including North Carolina) have an AC balance over 3.0 times. While senior staff are effectively managing a relatively large and complex program, there is a lack of documentation and transparency regarding AC practices. Written guidelines could help inform the financial reporting and would facilitate capacity building and succession planning within key offices.

PROCESS MAPPING EXERCISE

In addition to the current detailed financial reporting and adoption of a formal AC policy, NCDOT has an opportunity to reassess certain risk factors and potentially strike a new balance between the flexibility AC provides and the administrative complexity and future governance of the program. In recent years the FHWA has been offering Process Mapping Workshops to help state DOTs map out certain funds management processes and develop action plans for improvement. These facilitated two- or three-day workshops result in comprehensive maps (flow charts / “swim lanes”) that document the current process and identify potential inefficiencies, communication gaps, or other barriers as well as improvement opportunities for more effective funds management. Several states have successfully used the process mapping exercise to improve their project closeout processes.

This type of mapping exercise applied to the state’s AC program could be an effective vehicle for documenting internal procedures, reassessing the risk factors, and identifying program simplification steps or other improvements. Each state has unique circumstances that undoubtedly influence AC policies and practices. Therefore, simply examining average metrics and typical procedures does not necessarily point to the best practices. Carefully mapping the state’s AC processes might result in management improvements that do not require adjustments to the current AC policy. Or it might suggest a rebalancing of the flexibility-complexity tradeoff that would bring NCDOT in closer alignment with most other state DOTs regarding AC usage.

AC Process Mapping Goals

- ❖ Reassess the risk factors
- ❖ Develop written guidelines
- ❖ Revise the AC policy, if necessary

The recommended AC Process Mapping Workshop would be facilitated by FHWA’s Program Management Improvement Team (PMIT) and Resource Center. The NCDOT and the FHWA Division Office would partner to scope out and conduct a multi-day process mapping workshop that would include interviews and discussions with the relevant units (e.g., audit, finance/accounting, engineering, planning, programming) to generate the comprehensive maps and develop an action plan. Key goals would be to reassess the risk factors, develop written guidelines, and revise the AC policy, as appropriate, to optimize AC usage in the future.

APPENDIX

ADDITIONAL RESOURCES ON ADVANCE CONSTRUCTION

The following resources are available from the American Association of State Highway and Transportation Officials:

- [BATIC Institute Advance Construction Research Brief](#)

Issued in 2019, the report updates the 2011 report listed below and provides a specific focus on the states' current use of AC in the context of the 2020 scheduled rescission of federal funds and the expiration of the FAST Act.

- [Use of Advance Construction in Financing Transportation Projects](#)

Issued in 2011, the report presents historical trends in AC usage, identifies current practices, benefits, and challenges, and provides observations regarding future use and administration of the AC technique.