

# Mid-Currituck Bridge Comparative Analysis

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## Supplemental Report

February 2026

*Prepared for NCDOT by Advisors*



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## Acronyms & Definitions

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**Albemarle Rural Planning Organization (ARPO):** Formed by the North Carolina General Assembly in order to involve rural county and municipal governments as well as the public in transportation issues in the regions.

**Design-Build-Finance-Operate-Maintain (DBFOM):** A project delivery method that allows a private sector consortium to design, construct, finance, perform regular maintenance, and rehabilitation of the infrastructure asset over the term of the contract to meet predefined performance specifications.

**Electronic Toll Collection (ETC):** A technology and toll payment option that allows customers to use a pre-authorized toll account for payments at one or more toll facilities.

**Equity:** An ownership interest in an asset - in this case, a private ownership interest in an asset such as a project corporation.

**Federal Highway Administration (FHWA):** An agency within the U.S. Department of Transportation that supports State and local governments in the design, construction, and maintenance of the Nation's highway system (Federal Aid Highway Program) and various federally and tribal owned lands (Federal Lands Highway Program).

**Final Environmental Impact Statement (FEIS):** A report mandated by NEPA for major federal actions that significantly affect the quality of the human environment.

**Internal Rate of Return (IRR):** A financial metric representing the annualized rate of return expected from an investment.

**North Carolina Department of Environmental Quality – Division of Water Resources (NCDEQ-DWR):** A division responsible for the environmental protection and quality of the state's surface water and groundwater, and to ensure safe drinking water for its residents.

**North Carolina Department of Environmental Quality – Division of Coastal Management (NCDEQ-DCM):** A division working to protect, conserve, and manage North Carolina's coastal resources through an integrated program of planning, permitting, education and research.

**North Carolina Department of Transportation (NCDOT):** A department of the North Carolina state government.

**North Carolina Turnpike Authority (NCTA):** A business unit of the North Carolina Department of Transportation created by the Authority Act in 2002.

**National Environmental Policy Act (NEPA):** Signed into law on January 1, 1970. NEPA requires federal agencies to assess the environmental effects of their proposed actions prior to making decisions.

**Operations and Maintenance (O&M):** Costs related to the day-to-day operations and maintenance of a roadway.

**Public Private Partnership (P3):** A P3 is a government service or private business venture funded and operated through a partnership of government and one or more private sector companies. A P3 involves a contract between a public sector authority and a private party, in which the private party provides a public service or project and assumes substantial financial, technical and operational risk in the project.

**Private Activity Bonds (PABs):** Tax-exempt debt issued for P3s.

**Record of Decision (ROD):** A document prepared as the conclusion of the NEPA process, after the FEIS, identifying the reasons for the project decision along with any mitigation measures that will be incorporated in the project.

**Renewal and Replacement (R&R):** Costs related to the major repair or reconstruction of roadway assets.

**Right of Way (ROW):** Land purchased for the construction, operations, and maintenance of a facility.

**Southern Environmental Law Center (SELC):** the largest nonprofit, nonpartisan environmental legal advocacy organization rooted in and focused on the South.

**Strategic Transportation Investments (STI) Law:** Passed in 2013, the STI Law established the Strategic Mobility Formula, which allocates available revenues based on data-driven scoring and local input. It is used to develop the State Transportation Improvement Program.

**State Transportation Improvement Program (STIP):** A 10-year state and federal-mandated plan that identifies the construction funding for and scheduling of transportation projects throughout the state.

#### **Traffic and Revenue (T&R) Studies:**

- **Level 1 T&R Study:** Also referred to as a “sketch” or “screening” level study. A Level 1 study utilizes existing data sources and models to screen a project and provide conceptual traffic and revenue forecasts.
- **Level 2 T&R Study:** Utilizes existing travel demand models, but incorporates new traffic counts along with speed and delay studies. A Level 2 study also incorporates a socioeconomic review and the value of time from census statistics. This study results in preliminary traffic and revenue forecasts.
- **Level 3 / Investment Grade T&R Study:** Utilizes a full travel demand model and forecasts. A Level 3 study incorporates new traffic counts, speed and delay studies, toll policy, origin and destination surveys, stated preference surveys and incorporates an independent economic review. A Level 3 study results in “Certified” or “Investment Grade” traffic and revenue forecasts that can be used to satisfy Lender, Investor or Rating Agency requirements.

**Transportation Infrastructure Finance and Innovation Act (TIFIA):** Act from 1998 which provides credit assistance from USDOT for qualified projects of regional and national significance.

**Toll Revenue Bonds (TRBs):** Bonds issued against future project or asset-specific revenues that are pledged to pay debt service.

**United States Army Corps of Engineers (USACE):** A branch of the United States Army with a regulatory program committed to protecting the Nation’s aquatic resources and navigation capacity.

**Value of Time (VOT):** The willingness-to-pay to reduce travel time and is derived by understanding the trade-off between time and money.

# Project History

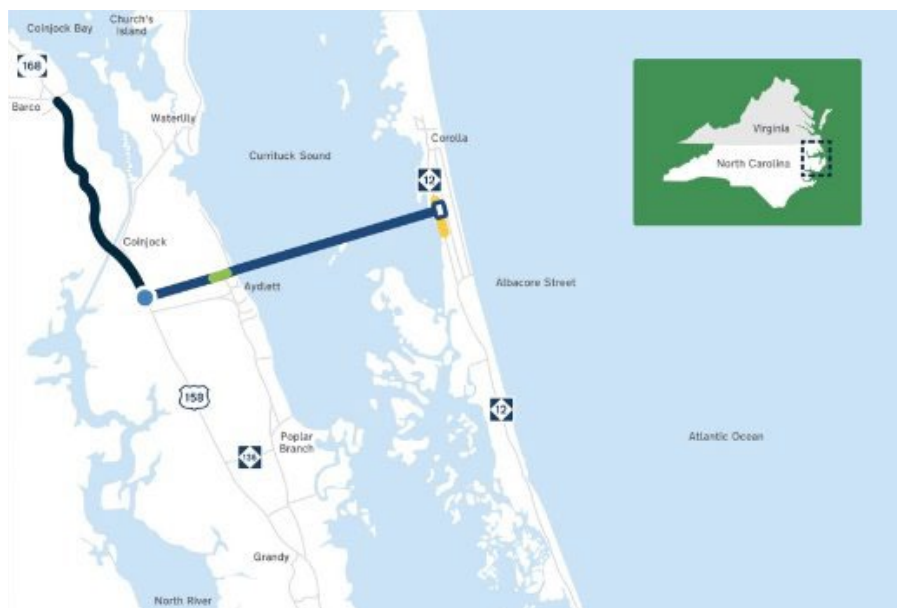
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The Mid-Currituck Bridge project (the “Project”) was first proposed in 1975 through a resolution adopted by the North Carolina Department of Transportation (NCDOT) Board of Transportation when the need for an east-west crossing of the Currituck Sound was first identified. The need was verified by traffic studies in the 1980s and an initial feasibility study for a bridge over the Currituck Sound was completed in the 1990s. NCDOT initiated the planning process in 1995 and transitioned the project development to the North Carolina Turnpike Authority (NCTA) in 2006. Since then, NCTA, in coordination with NCDOT and the Federal Highway Administration (FHWA), has evaluated proposed improvements in the Currituck Sound area. In accordance with the National Environmental Policy Act (NEPA), the Final Environmental Impact Statement (FEIS) was approved in 2012 and the Record of Decision (ROD) was issued in March 2019. In April 2019, a lawsuit was filed by the Southern Environmental Law Center (SELC), on behalf of the North Carolina Wildlife Federation and No MCB-Concerned Citizens and Visitors Opposed to the Mid-Currituck Bridge, to challenge FHWA and NCDOT’s environmental analysis and decision document for the Project. In December 2021, the U.S. District Court for the Eastern District of North Carolina decided in favor of FHWA and NCDOT ruling that FHWA and NCDOT complied with applicable federal laws and regulations. In February 2023, the U.S. Fourth Circuit Court of Appeals concurred with the U.S. District Court’s ruling in December 2021. Following the resolution of the lawsuit in 2023, the project team completed and submitted environmental permit applications to obtain permits from the following agencies in September 2024:

- N.C. Department of Environmental Quality – Division of Water Resources (NCDEQ-DWR)
- N.C. Department of Environmental Quality – Division of Coastal Management (NCDEQ-DCM)
- U.S. Army Corps of Engineers (USACE)

The NCDEQ-DWR and NCDEQ-DCM permits were issued in September 2025 and the USACE permit was issued in October 2025. In October 2025, SELC began the process of challenging the permit issued by NCDEQ-DCM.

The Project was included in the 2026-2035 State Transportation Improvement Program (STIP) with \$173 million in funding. A comparative analysis was conducted to evaluate a potential Public-Private Partnership (P3) Toll Delivery against a Traditional Toll Delivery managed by the NCTA.



# Project Overview

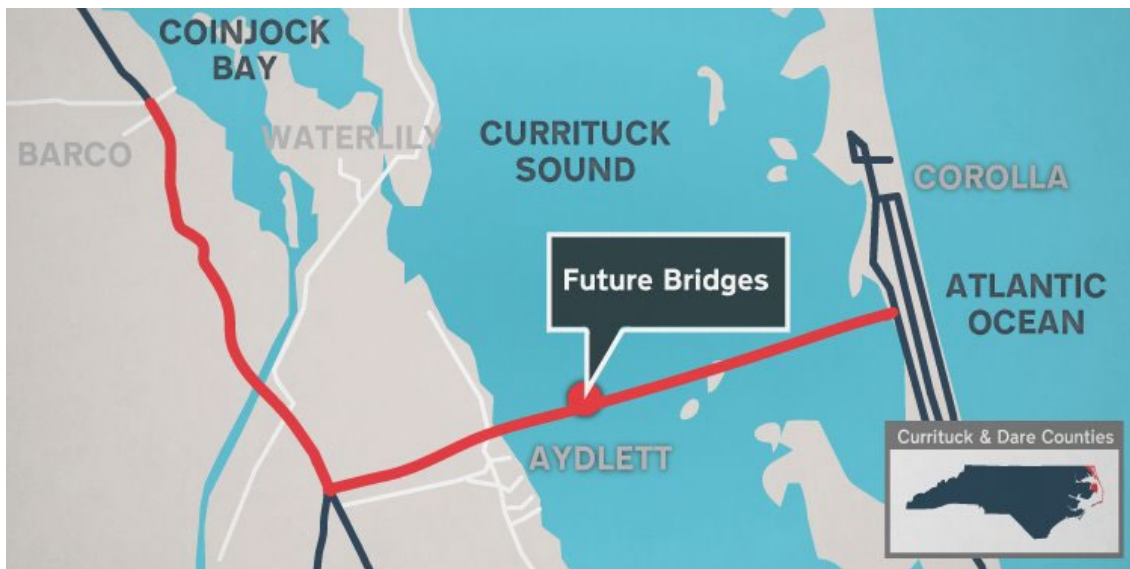
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## Background

The Mid-Currituck Bridge Project, STIP Project R-2576, is an approximately seven-mile long, two-lane toll project that would cross Currituck Sound and connect the mainland at U.S. 158 near Aydlett with N.C. 12 on the Outer Banks south of Corolla in Currituck County, North Carolina. The Project includes the construction of:

- Bridges over Maple Swamp (1.5 miles) and Currituck Sound (4.7 miles),
- An interchange and toll collection facilities at U.S. 158 on the Currituck County mainland,
- An intersection with N.C. 12 on the Currituck County Outer Banks,
- Improvements on N.C. 12 south of the bridge terminus to ensure efficient traffic flow, and
- Minor improvements near the Wright Memorial Bridge on the Outer Banks to aid in hurricane evacuation.

The Project's purpose is to substantially improve traffic flow on N.C. 12 and U.S. 158, substantially reduce travel time for persons traveling between the Currituck County mainland and the Currituck County Outer Banks and substantially reduce hurricane evacuation clearance time for residents and visitors who use U.S. 158 and N.C. 168 during a coastal evacuation. Although not a purpose of the Project, it would also provide numerous economic benefits to the state, including the creation of construction jobs and the long-term savings to motorists of time and gasoline. The Project is a key component for the planned long-term growth and sustainability in this area of North Carolina.



# Delivery Options Overview

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At the request of the Albemarle Regional Planning Organization (ARPO), NCDOT conducted a comparative analysis to evaluate two delivery methods for the Mid-Currituck Bridge Project: A Traditional Toll Delivery and a Public-Private Partnership (P3) Toll Delivery. Details on the delivery methods can be found below.

## Traditional Toll Delivery

The Traditional Toll Delivery approach used by NCDOT and NCTA involves direct oversight of the design, construction, financing, operations, and maintenance of a project, typically under a design-build model. NCTA also manages tolling operations, including both roadside systems and back-office functions. This approach places full responsibility for the project—along with all associated financial risks and rewards—on the state.

While this method enables NCDOT to maintain complete control over each phase of the project, it also requires the state to assume the primary financial responsibilities and manage the associated risks. Under this approach, the project would likely be procured as a design-build to capture innovation in design and construction. However, compared to a fully integrated delivery model, it may provide fewer opportunities to align design, construction, operations, and maintenance in a way that optimizes lifecycle costs.

Financing for a Traditional Toll Delivery typically involves a combination of funding sources, including a Transportation Infrastructure Finance and Innovation Act (TIFIA) loan, toll revenue bonds, and state contributions. A TIFIA loan, which can cover up to 49% of eligible project costs, and toll revenue bonds are secured by anticipated toll revenues. The remaining capital requirements are met through state-provided public contributions. Consequently, NCDOT assumes responsibility for managing and mitigating any revenue risks associated with the project.

## Public-Private Partnership (P3) Toll Delivery

The P3 Toll Delivery model represents a long-term partnership where NCDOT selects a private developer to design, build, finance, operate, and maintain a project under a Design, Build, Finance, Operate, and Maintain (DBFOM) agreement. These agreements typically span 50 years, with the state retaining ownership of the project throughout the contract period. In this model, the private developer assumes financial risk and managerial responsibility, overseeing all aspects of the project, including lifecycle costs, revenue risk and upside, and funding.

The private developer finances the project using a combination of debt and equity, while NCDOT would contribute public funds to address any funding shortfall. The debt component often includes a mix of federal TIFIA loans, tax-exempt Private Activity Bonds (PABs), taxable bonds, and bank loans. The developer is granted the right to charge tolls on the bridge, as outlined in the project agreement, and takes on the risk related to the revenue collected. Additionally, NCTA is expected to provide back-office support and customer service, ensuring a seamless customer experience with other NCTA facilities, and enhancing the overall effectiveness and efficiency of the project.

# Comparative Analysis

## Overview

The comparative analysis evaluation process is shown in the graphic below. The evaluation process involved identifying project objectives, constraints, and risks, and prioritizing the objectives according to NCDOT's and stakeholders' goals. The Project was then assessed using both qualitative and quantitative analyses. To support this effort, NCDOT engaged several advisors: HNTB as the program manager, KPMG for financial structuring of the P3 Toll Delivery scenarios, PFM (NCTA's financial advisor) for financial structuring of the Traditional Toll Delivery scenarios, Lochner as the environmental and design advisor, and Stantec as the traffic and revenue advisor.



## Objectives & Priorities

Key objectives of the Project, identified and prioritized during the comparative analysis, include:

- Significantly reducing travel times between the mainland and the Outer Banks,
- Providing an alternative route for hurricane evacuation,
- Enhancing traffic flow on thoroughfares within the project area,
- Balancing toll costs and user benefits,
- Minimizing the financial burden on the local community, particularly frequent users,
- Expediting project delivery, and
- Optimizing project costs and financing structures to align with limited public funding.

## Constraints

Project constraints are driven by external factors that cannot be effectively mitigated or avoided. The primary constraint for the Mid-Currituck Bridge Project is linked to funding. In accordance with North Carolina's Strategic Transportation Investments (STI) law, NCDOT uses a data-driven process to prioritize projects for its capital improvement program, as documented in the STIP. The STI law directs that funding be allocated across three major categories: Statewide Mobility (40%), Regional Impact (30%), and Division Needs (30%). Per North Carolina General Statute §136-89.183, prior to the letting of a contract for a toll project, the project must be, "included in any applicable locally adopted comprehensive transportation plans" and "approved by all affected Metropolitan Planning Organizations and Rural Transportation Planning Organizations for tolling." The STIP covering 2026-2035 includes approximately \$173 million in funding from the Division Needs category for the Project.

## Risks

Key risks associated with the Project were identified and assessed across various dimensions, including permitting needs, construction costs and complexity, funding, financing, and litigation. These risks were categorized into three primary groups: Financial, Delivery, and Other. This categorization helped guide the qualitative analysis for the Project.

The quantitative analysis did not include specific financial risk adjustments beyond standard design-build contingencies. For the P3 Toll Delivery model, the risk allocation incorporated into the quantitative analysis reflects practices from recent successful U.S. projects. **Table 1** below outlines the identified Project risks.

Table 1: Project Risks

Financial	Delivery	Other
Project Funding Gap	Permit Issuance Delays	Potential Litigation
Demand Risk ( <i>Lower Toll Revenue</i> )	Complex Construction	Owner Oversight / Capacity
Increased Financing Cost	Unforeseen Field Conditions	Sea Level Rise / Storm Events
Unavailability of Cheap Financing (i.e., PABs or even TIFIA)	Sub-Aquatic Vegetation (SAVs)	Other Force Majeure Events
Cost Inflation	Contractor Market Capacity	
Construction Cost Overruns / Completion Delays		
Fiscal Exposure / State Creditworthiness		

## Qualitative Analysis

The comparative analysis evaluates the two-delivery models, Traditional Toll Delivery and P3 Toll Delivery approaches, through a qualitative analysis of financial and non-financial factors. Each model offers unique benefits and trade-offs, particularly in areas such as risk allocation, innovation, and public perception. This analysis highlights the strengths and challenges of each approach, underscoring the importance of selecting the model that aligns best with the Project’s goals and constraints. While the qualitative insights are valuable, they must be integrated with a comprehensive assessment of the Project’s financial viability to ensure informed decision-making.

### Non-Financial Factors

In terms of non-financial factors, both models present a balanced set of risks and benefits, as can be seen in **Table 2**. The P3 Toll approach encourages private-sector innovation and operational optimization, potentially resulting in improved traffic management and long-term maintenance efficiency. However, this model can face challenges in public sentiment, as private involvement may raise concerns about accountability and transparency. Conversely, the Traditional Toll delivery benefits from greater public familiarity and oversight, fostering stronger community trust, yet it may lack the same level of operational adaptability and innovation as the P3 approach. Ultimately, neither model clearly outperforms the other in non-financial aspects, as their strengths and weaknesses largely depend on stakeholder priorities.

Table 2: Qualitative Analysis: Non-Financial Factors

Program Impact	Traditional Toll	P3 Toll	Definitions
<b>Innovation</b>	✓	✓	Incentivizes and allows innovations to improve operations and maintenance, traffic flows, and revenue.
<b>Program Flexibility</b>	✓		Ability to address changing market needs (i.e., regulation, consumer behavior, etc.)
<b>Public Sentiment</b>	✓	✓	Degree of approval/willingness of the community to accept the Project.

✓ Indicates possible positive impact vis-a-vis the other approach.

## Financial Factors

**Table 3** below identifies the financial factors impacting risk management, project execution, and project funding/cost. The P3 Toll model effectively transfers construction and lifecycle risks to private partners, reducing the public sector's exposure to cost overruns and inefficiencies. This approach also diversifies funding by incorporating private capital alongside public financing. However, while revenue risk is shifted from NCDOT to a P3 Developer, any potential revenue upside is also relinquished. In contrast, the Traditional Toll model relies entirely on public funding, offering simpler financial structures and retaining full control over revenue. This simplicity comes with heightened exposure to construction and operational risks. Additionally, the Traditional Toll model enables NCTA to issue more debt due to its gross revenue pledge financing structure, as opposed to the net revenue pledge in the P3 model, though this approach increases financial risk for NCDOT.

Table 3: Qualitative Analysis: Financial Factors

Program Impact	Traditional Toll	P3 Toll	Definitions
<b>Construction Risk</b>	✓	✓	Transfer of risk associated with construction delays, interface, overruns, quality, and unforeseen events.
<b>Contractual Issues</b> <i>(Disputes, Compensation, etc.)</i>	✓		Lower probability of disputes (in the long term) and lower financial impact associated with them.
<b>O&amp;M and Lifecycle Risk</b>		✓	Transfers long-term risk and provides more incentive to optimize condition.
<b>Project Delivery</b>	✓	✓	Ability to achieve value through competition, accelerated project delivery, and design/construction risk transfer.
<b>Project Funding &amp; Public Financing Capacity</b>		✓	Ability to attract new funding and financing sources for the project and leverage existing public funding sources.
<b>Revenue Risk</b>		✓	Transfer of risk associated with traffic and revenue underperformance / outperformance.

✓ Indicates possible positive impact vis-a-vis the other approach.

This analysis of the Mid-Currituck Bridge project highlights that neither the Traditional Toll Delivery nor the P3 Toll Delivery has a definitive advantage with regards to qualitative benefits – non-financial and financial. Each delivery approach balances its benefits and risks, with trade-offs that must align with project objectives and stakeholder expectations. While the qualitative considerations discussed above are very important, the project's financial viability, which is still being assessed considering ongoing works including additional geotechnical investigations and traffic data collection, remains the most critical factor in determining the optimal delivery model.

## Quantitative Analysis

The quantitative analysis examines the funding and financing methods for the Project, including the potential need for public funds, under both the Traditional Toll Delivery and P3 Toll Delivery models.

Under a Traditional Toll Delivery, NCDOT funds the design and construction of the Project through a combination of toll revenue-supported debt, such as a federal TIFIA loan, toll revenue bonds, and public funding contributions. NCDOT, through NCTA, is also responsible for operating and maintaining the Project. Any surplus net toll revenues, after covering debt service, operations, maintenance, and renewal or replacement costs, would remain with NCDOT.

Conversely, under a P3 Toll Delivery, a private developer takes responsibility for financing the Project's design and construction, utilizing a combination of toll revenue-backed debt and equity, while NCDOT contributes public funds to address any funding shortfall. In this framework, the Developer retains toll revenues, with a mechanism in place for NCDOT to share in any excess revenues if they outperform projections.

## Forecast Inputs

To evaluate the financial feasibility of the two delivery methods, financial models were created for both the Traditional Toll and P3 Toll delivery models. These models incorporated project timelines, construction costs, operations and maintenance expenses, toll system costs, and renewal and replacement expenditures, along with anticipated traffic and toll revenue projections. The analysis also reviewed the capital structures of each approach, considering financing mechanisms such as debt capacity for both scenarios and equity for the P3 model, offering a thorough comparison of the financial outcomes associated with each delivery option.

## Schedule

Schedule assumptions used in the analysis are shown in **Table 4**. The analysis assumes a construction timeline of 69 months, with an opening date of January 2032 for both delivery approaches.

While a Design-Build project generally features a shorter procurement timeline compared to a DBFOM project, the DBFOM delivery model offers integrated oversight of design and construction by a private developer. This integration facilitates more streamlined and coordinated processes. Consequently, a P3 Toll Delivery approach could potentially achieve a shorter construction timeline compared to a Traditional Toll Delivery. It is therefore reasonable to assume similar construction timelines for both delivery models, leading to an identical opening date in January 2032. Additionally, a private developer has strong financial incentives to complete and open the Project early, as earlier toll revenue generation accelerates their financial returns.

Table 4: Project Schedule Assumptions

Schedule / Term Assumptions	Traditional Toll & P3 Toll
Design & Construction Period	April 2026 - Dec 2031
Design & Construction Term	69 months
Operations Period	Jan 2032 - Dec 2081
Operations Term	50 years

To maintain consistency in the comparative analysis, the same operating term was assumed for both delivery approaches, 50-years from when the Project opens to traffic. In a Traditional Toll Delivery, debt obligations are generally paid off in a term ranging from 35 to 40 years, whereas a P3 Toll Delivery typically requires a longer term (around 50 years) to allow for the return of equity.

### Construction Cost

When assessing the construction cost of the Mid-Currituck Bridge, it is important to note that NCDOT will not directly undertake the design or construction in either delivery approach. Instead, private partners will handle the design and construction work under NCDOT’s oversight. The critical distinction between the two delivery approaches lies in the delivery model and the allocation of construction risk.

Under a Traditional Toll Delivery, NCDOT would enter into a direct contract with the construction contractor, retaining certain elements of construction risk. To account for potential unforeseen circumstances, such as cost increases or change orders, NCDOT would set aside additional funds as part of its proactive budgeting strategy. This practice, standard for design-build projects in North Carolina, ensures that unexpected costs do not disrupt funding for other transportation projects in the region or statewide.

In contrast, a P3 Toll Delivery model involves contracting with a private developer who assumes responsibility for managing the contractor and delivering the project. In this model, NCDOT transfers a larger portion of construction risk to the developer, including risks associated with schedule delays or unanticipated cost increases. If unforeseen challenges arise, resulting in a change order, the private developer or contractor, rather than NCDOT, bears the additional costs.

For a high-cost, high-complexity project like the Mid-Currituck Bridge, the delivery model can impact financial and operational outcomes. The Traditional Toll Delivery model allows NCDOT to retain greater control over the project but requires the state to bear a higher financial risk. In contrast, the P3 Toll Delivery model transfers much of this risk to the private sector, potentially reducing NCDOT’s financial and schedule related exposure.

This shift in risk allocation resulted in an estimated final project cost of \$1,090 million under a P3 Toll Delivery, compared to \$1,200 million under a Traditional Toll Delivery — a difference of approximately \$110 million, as shown in **Table 5**. The cost disparity arises from variations in administrative and agency expenses and change order allowances.

The \$110 million difference is primarily attributed to additional NCDOT agency costs and charges to NCTA and differences in contingencies, reserves and allowances. The P3 model, benefiting from risk transfer to the private developer, requires a Change Order Allowance roughly 50% smaller. By transferring risk, the P3 Toll Delivery achieves greater cost certainty, reflecting reduced administrative overhead and contingency requirements.

Table 5: Construction Cost

Construction Cost (YOE \$ millions)	Traditional Toll	P3 Toll
Base Design and Construction Costs <i>(includes design and construction components such as roadways, bridges, drainage, etc.)</i>	\$955	\$940
Right of Way, Landscaping, & Utility Relocation	\$58	\$58
Toll Integration	\$6	\$6
<b>Total Design and Construction Related Cost</b>	<b>\$1,019</b>	<b>\$1,004</b>
Administrative Allowance, & Agency Costs	\$181	\$86
<b>Total Project Costs</b>	<b>\$1,200</b>	<b>\$1,090</b>

*Totals may not add due to rounding.*

### Operating Costs

The operating costs for the Project fall into three categories: toll operations, routine maintenance, and renewal and replacement. Costs related to toll operations and routine maintenance are incurred annually, whereas renewal and replacement costs are assumed at various intervals over the life of the Project. The operating costs assumed in the comparative analysis are presented in **Table 6**.

Table 6: Operating Costs

Average Annual Costs (2032 to 2060, YOY \$ millions)	Traditional Toll	P3 Toll
Toll Operations	\$3.2	\$3.1
Routine Maintenance	\$1.2	\$1.2
Renewal & Replacement	\$2.7	\$2.7
<b>Average Annual Costs</b>	<b>\$7.1</b>	<b>\$7.0</b>

Annual toll operations costs encompass various activities associated with toll collection and customer service and are calculated based on the number of toll transactions projected in each year. The cost per transaction is based on historic costs seen on operational toll facilities in North Carolina. The toll operations costs

for the Project are related to activities including, but are not limited to, operating and maintaining toll collection systems, distributing transponders, and costs related to the call center facilities and staffing.

The annual toll operations costs differ between the Traditional Toll Delivery and P3 Toll Delivery due to the utilization of separate traffic forecasts and assumed transaction volumes, as discussed in more detail in the subsequent Traffic and Revenue section below.

The routine maintenance costs are related to maintaining the bridges and corridor in sound condition. The same routine maintenance activities and costs for the corridor were assumed for both the Traditional Toll Delivery and P3 Toll Delivery approaches. The routine maintenance costs assumed activities such as maintaining pavement surfaces and markings, signage, snow and ice removal, drainage, lighting, and litter removal. The unit costs for these activities are based on maintenance costs seen on other NCDOT and NCTA projects.

The renewal and replacement costs are related to unusual or extraordinary maintenance, repairs or replacements, not recurring annually. A new facility should require relatively minor renewal and replacement costs during the initial years of operations. As many elements are subjected to aging and wear, increasing amounts of maintenance and rehabilitation are required. The same renewal and replacement activities and associated costs were assumed for both the Traditional Toll Delivery and P3 Toll Delivery approaches as a part of the comparative analysis. These costs include major pavement maintenance, joint maintenance, sign replacement and toll collection system replacement.

### Traffic and Revenue

The traffic and revenue (T&R) forecasts prepared by Stantec build upon prior analyses dating back to 2006. The updated study incorporated traffic counts conducted during the peak season in 2022 and the shoulder season in 2023. Both the Traditional Toll Delivery and P3 Toll Delivery approaches relied on similar data collection methods and vehicle classifications, with traffic analyzed across key periods: peak season (June 16–August 15), off-peak seasons (October 1–April 30), and the shoulder periods (May 1–June 15 and August 16–September 30).

The forecasts assumed toll collection via cash or electronic toll collection (ETC), covering both passenger cars and commercial vehicles, with commercial vehicles paying higher toll rates. Revenue projections from the Level 2 T&R Study are summarized below in **Table 7**.

Table 7: Revenue Forecasts

Average Annual Revenue (2032 to 2060, \$ millions)	Traditional Toll (Base Revenue Case)	P3 Toll (Developer Revenue Case)
Passenger Vehicles Revenues	\$24.2	\$32.9
Commercial Vehicles Revenues	\$0.4	\$0.3
<b>Annual Toll Revenues</b>	<b>\$24.6</b>	<b>\$33.2</b>

A Traditional Toll Delivery approach relies on the advisor’s Base Revenue Case, which incorporates traffic and revenue forecasts based on county-level population growth rates aligned with Region 17 and the State Data Center projections, as well as employment forecasts consistent with Woods and

Pooler data. The analysis assumes a motorist value of time (VOT) derived from surveys of comparable

public toll facilities, with no real growth in VOT over the forecast period. It also includes a tolling policy aimed at capturing 85 to 90 percent of the maximum revenue potential.

This approach adheres to lenders' expectations for forecasts that emphasize conservative assumptions regarding factors such as population growth, regional development, and motorists' value of time. Consequently, the Base Revenue Case yields low to moderate revenue estimates, reflecting more moderate regional growth projections, conservative toll policies, and a lower willingness to pay tolls compared to more optimistic scenarios.

A P3 Toll Delivery, in contrast, is based on the advisor's Developer Revenue Case, which assumes higher socioeconomic growth, increased value of time, and a toll strategy aimed at maximizing revenue. In the Developer Revenue Case, population growth is projected to be five to eight percent higher in Currituck County and one to two percent higher in Dare County compared to the Base Case growth assumptions. Employment growth is also significantly higher, with Currituck County projected at nine to 17 percent higher and Dare County at eight to 13 percent higher than the Base Case.

Additionally, the Developer Revenue Case assumes values of time increase by 0.5 percent annually, whereas the Base Case assumes no growth. The tolling strategy in the Developer Revenue Case adopts a "Maximize Revenue" policy, in contrast to the Base Case's "Optimal Toll" policy, which generates 85 to 90 percent of maximum revenue. These factors result in the Developer Revenue Case having slightly lower traffic levels but higher toll rates compared to the Base Case

This difference is justified by the inclusion of developer equity, which allows the developer to assume more risk and support more aggressive assumptions in traffic and revenue forecasts. These include higher socioeconomic growth projections, leading to higher anticipated revenues. This pattern is consistent with comparable projects, where developer traffic and revenue cases frequently exceed the forecasts of state traffic and revenue advisors.

Finally, it should be noted that discount policies are not applied in either case.

### *Financing Assumptions*

When evaluating financing options for the Project, a Traditional Toll Delivery and a P3 Toll Delivery present distinct methodologies with varying risk profiles. Two primary distinctions are the equity contribution in the P3 Toll Delivery model, which is absent in the Traditional Toll Delivery model, and the gross revenue pledge in a Traditional Toll Delivery versus a net revenue pledge in a P3 Toll Delivery which impacts the financial leverage of the Project. The financing assumptions used in analysis are shown in **Table 8**.

Table 8: Financing Assumptions

<b>Financing Assumptions</b> <i>(in Base Case)</i>	<b>Traditional Toll</b>	<b>P3 Toll</b>
Debt - TIFIA Interest Rate	4.4%	4.4%
Debt - TIFIA Tenor	35-years	35-years
Debt - TRB (Traditional Toll) / PABs (P3 Toll) Interest Rate	N/A	N/A
Debt - TRB (Traditional Toll) / PABs (P3 Toll) Tenor	40-years	40-years
Equity Pre-Tax IRR	N/A	13.5%

Under a Traditional Toll Delivery, the state finances the Project through a mix of toll revenue-supported debt, including a federal TIFIA loan and, where feasible, Toll Revenue Bonds (TRBs) as well as public funds from state and potentially federal sources. As with other projects delivered by NCTA, this approach assumes toll revenue-supported debt is backed by a gross revenue pledge, where all toll revenues are committed to debt repayment before covering operating expenses. This structure exposes the state to greater financial risk, as it is responsible for operations and maintenance costs if toll revenues are

insufficient to cover both debt service and operations; however, the model does allow the Project to support a greater amount of debt.

A P3 Toll Delivery, on the other hand, assumes a private developer will finance the design and construction of the Project using non-recourse project debt. This is typically comprised of a federal TIFIA loan and, where feasible, tax-exempt Private Activity Bonds (PABs), combined with developer equity. Any remaining funding gap would require public contributions, similar to a Traditional Toll Delivery. The P3 financing model employs a net revenue pledge, prioritizing toll revenues for operating expenses before applying the remaining net revenue to debt repayment. This structure transfers significantly more financial risk to the private developer, thereby reducing the state’s financial exposure. However, the reliance on a net revenue pledge means the P3 Toll Delivery model can support less debt than the Traditional Toll Delivery model.

## Results and Findings

### Base Case Results

The base financial case results are derived from inputs and forecasts provided by NCDOT’s advisors and are presented in **Table 9**. These inputs and forecasts are designed to align with more cautious expectations, ensuring that the forecasts are acceptable to lenders and other stakeholders.

The base financial case in the comparative analysis shows that a P3 Toll Delivery could offer cost savings as well as additional funding from the introduction of equity. The analysis shows that a P3 Toll Delivery model has a total project cost of \$1,090 million which is lower than the \$1,200 million projected for the Traditional Toll Delivery.

The introduction of equity that a developer can bring to the Project allows for more optimistic traffic and revenue projections under the P3 Toll Delivery. This approach generates a net cash flow of \$215 million as compared to the \$195 million under the Traditional Toll Delivery. The difference in revenue is attributed to the more aggressive growth assumptions made in the P3 model, which aligns with the advisor’s Developer Revenue Case.

The comparative analysis shows a funding gap for the P3 Toll Delivery of \$702 million after STIP funding, compared to \$832 million for the Traditional Toll Delivery.

Table 9: Base Case Results

<b>Base Case Results Summary Sources and Uses (\$ millions)</b>	<b>Traditional Toll</b>	<b>P3 Toll</b>
<b>Total Project Cost</b>	<b>\$1,200</b>	<b>\$1,090</b>
Debt <i>(transaction costs netted)</i>	\$195	\$150
Equity	\$0	\$65
<b>Total Funding Gap (without STIP funding)</b>	<b>\$1,005</b>	<b>\$875</b>
STIP Funding	\$173	\$173
<b>Total Funding Gap</b>	<b>\$832</b>	<b>\$702</b>

*\*Debt plus equity is equivalent to net cash flow from bridge operations*

# Comparative Analysis Findings and Potential Next Steps

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## Comparative Analysis Findings

The base case financial results from the comparative analysis reveal that neither the Traditional Toll Delivery nor the P3 Toll Delivery are currently financially feasible. The analysis highlights funding gaps of \$1,005 million for the Traditional Toll Delivery and \$875 million for the P3 Toll Delivery, both of which exceed the \$173 million of committed STIP funding.

## Potential Next Steps

NCDOT remains committed to identifying and pursuing additional funding opportunities to support construction of the Project. The project team has identified the following potential options for additional funding:

- Given the Project's current legal and funding challenges, ARPO could request NCDOT to adjust the STIP schedule and allow the Project to re compete in Prioritization 8.0 for Statewide Mobility and/or Regional Impact funding.
  - The Project would no longer be scheduled for delivery (committed) and the \$173 million that is currently committed would be available for other Division Needs projects.
- Continue applying for Federal Discretionary Grant(s).
- Additional options identified that would require action by the N.C. General Assembly and other governing bodies include:
  - Tolling of existing capacity in the region.
    - Frequent user passes could be explored to minimize the impact to drivers.
  - Annual State Appropriation
  - Local Option Sales Tax
  - Local Room Occupancy Tax

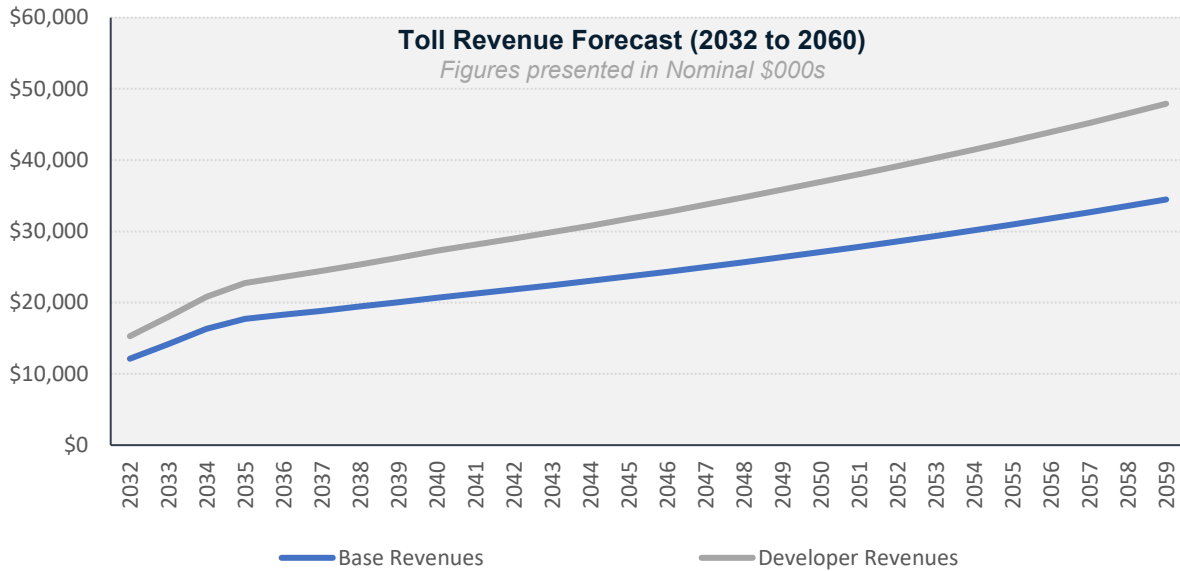
NCDOT and NCTA are not advocating for a particular path forward and will continue to provide support as ARPO continues to consider all possible funding options for the Project.

## Appendix A: Quantitative Analysis – T&R Assumptions

Attribute	Base Revenue Case	Developer Revenue Case
<b>Eligible Vehicles</b>	All Vehicles	Same
<b>Toll Discounts</b>	No Discounts	Same
<b>Toll Collection Methodology</b>	Transponder or Cash Collection	Same
<b>Non-transponder Toll Rates Factor/Multiplier</b>	Transponder rates are discounted by 35% from cash rates	Same
<b>ETC Penetration</b>	The transponder share is 88%	The transponder share is 89%
<b>Future Model Years</b>	2035 and 2050	Same
<b>Population Assumptions</b>	Based on NCDOT Region 17 Model and then revised considering other forecasts at County, subarea & TAZ level	Currituck County population adjusted 5-8% over Base Case and Dare County adjusted 1-2% over Base Case
<b>Employment Assumptions</b>	Based on NCDOT Region 17 Model and then revised considering other forecasts at County, subarea & TAZ level	Currituck County population adjusted 9-17% over Base Case and Dare County adjusted 8-13% over Base Case
<b>Real VOT Changes</b>	No growth	Assumes VOT grows by 0.5% per year
<b>Tolling Policy</b>	85 – 90% of Revenue Maximizing Toll Rates	Revenue Maximizing Toll Rates
<b>Annual Toll Rate Increases</b>	CPI + adjustments based upon increased demand / congestion	Same
<b>Ramp-Up (% of potential years 1-4)</b>	75/85/95/100 for transactions and revenue	Same
<b>Commercial Vehicle Multiplier</b>	2x FHWA Class 5 & 6 and 4x FHWA Classes 7 to 13	Same
<b>Annualization (Off-Peak)</b>	Off-peak Friday daily transactions assumed to be 110% of Weekday daily transactions	Same
<b>Annualization (Peak/Shoulder)</b>	Peak/Shoulder Friday daily transactions assumed to be 120% of Weekday daily transactions	Same
<b>Hours of Operation</b>	24 hours a day, 7 days a week, all year	Same

# Appendix B: Quantitative Analysis – T&R Results

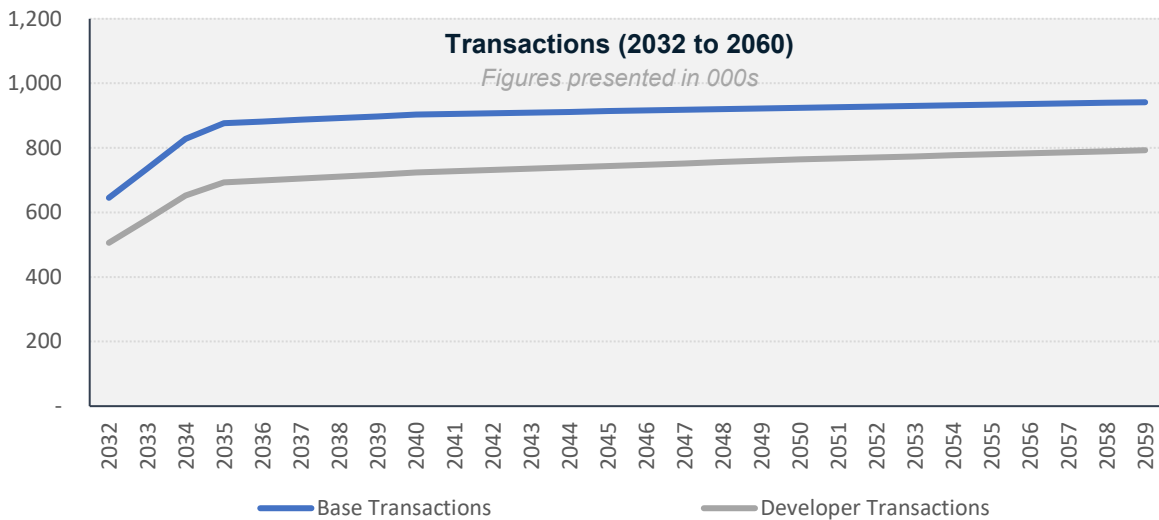
## Toll Revenue Forecasts



- Through 2060 the Developer Revenue Case forecast is 33% higher than the Base Revenue Case forecast on average.

## Back-up Forecasts

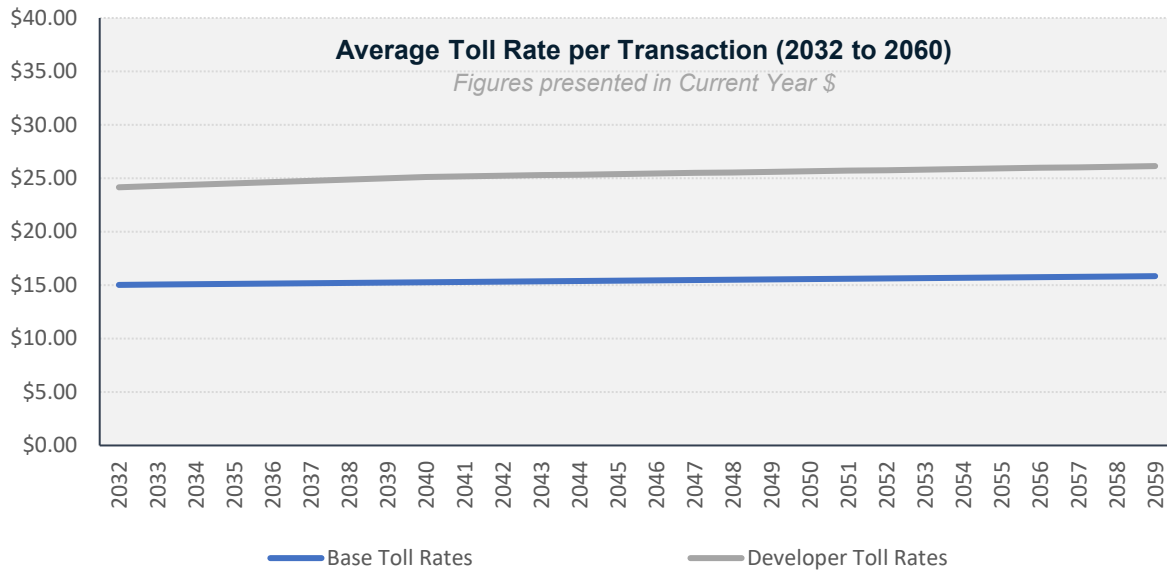
### Transactions



- Over the same time period, the Base Revenue Case traffic (number of transactions) forecast is on average 23% higher than the Developer Revenue Case traffic forecast.

*Note: Out-of-state traffic is anticipated to make up an average of approximately 65% of transactions on the Mid-Currituck Bridge over the course of a year. The proportion of out-of-state traffic differs significantly between weekdays and weekends.*

## Toll Rates



- The average toll rate in the Developer Revenue Case is initially 61% higher than the Base Revenue Case toll rate and increases to 65% by 2060.