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TECHNICAL COORDINATION COMMITTEE MEETING
November 12, 2025

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TECHNICAL COORDINATION COMMITTEE MEETING

November 12, 2025

Opening Remarks and Introductions

The North Carolina Transportation Innovation Council (NC-TIC) Technical Coordination Committee (TCC) convened for its quarterly meeting on November 12, 2025, in person at the NCDOT Transportation Building and on Microsoft Teams. The NC-TIC's mission is to cultivate a culture of collaboration within the North Carolina Department of Transportation (NCDOT), ensuring the swift adoption of significant innovations that contribute to the delivery of a contemporary, high-quality transportation system to the public.

Sarah Searcy, NC-TIC Coordinator, welcomed attendees and introduced the meeting's agenda. The meeting's agenda, attendance, and the presentation slides are provided at the end of these minutes.

Meeting Purpose

After opening remarks and introductions, **Sarah Searcy** shared that the meeting would include a recap of the state of innovation at NCDOT, starting with a presentation on the evolution of the NC-TIC and the various innovation initiatives that support it and followed by an update on accomplishments in 2025. Following the recap, guest speakers would present on recently completed State Transportation Innovation Councils (STIC) Incentive Program projects and on FHWA's Build a Better Mousetrap program. The meeting would conclude with a discussion about upcoming work to recharter the NC-TIC that will commence in the new calendar year.

FHWA Update

Yolonda Jordan, the Division Administrator of the North Carolina FHWA office, shared updates on behalf of **Edward Parker**, the Deputy Division Administrator of the North Carolina FHWA office and NC-TIC liaison.

STIC Incentive Program funding will be provided for the current fiscal year with allocation typically occurring in December. FHWA has plans for Every Day Counts (EDC)-8 but the timeline has not yet been determined. Potential EDC-8 innovations are not known at this time. Any new information on the STIC Incentive Program and EDC-8 will be shared with the NC-TIC as it is received.

Yolonda thanked the committee for their service and continued partnership.



Evolution of the NC-TIC

Alyson Tamer, NCDOT's State Value Management Engineer, presented on the evolution of the NC-TIC.

Alyson provided a comprehensive overview of the NC-TIC and its history, including its evolution since 2011, key milestones, changes in management, and lessons learned. She highlighted the Council's expanding scope and collaboration with various NCDOT units and external stakeholders.

Council Formation

The NC-TIC was established in 2011 following FHWA requirements, initially receiving \$100,000 in incentive funding through the STIC Incentive Program which increased to \$125,000 in recent years. The Council's first project was awarded in 2014, and the program expanded over time to support multiple projects annually with federal incentive funding matched by the state.

NCDOT's Value Management Office (VMO) was engaged through FHWA's Product Evaluation Program in 2015. By 2017, VMO was supporting the NC-TIC by facilitating and managing its Council. The Council was rechartered in 2019 under State Transportation Secretary Jim Trogon and Deputy Secretary David Howard. The Secretaries' goal at that time was to establish an Office of Innovation and a Chief Innovation Officer within the Chief Engineer's Office. In 2021, the NC-TIC won FHWA's STIC Excellence Award in recognition of the Council's significant impact on fostering a strong culture of innovation.

Management Transitions

Management of the Council transitioned through several offices at NCDOT, including the Chief Engineer's Office (2019-2022), Transportation Planning Division (2022-2023), and, most recently, the Office of Strategic Initiatives and Program Support (SIPS) (2023-present), with key roles played by Becca Gallas, Nastasha Earle-Young, and Sarah Searcy.

Stakeholder Engagement

The Council has seen shifts in stakeholder involvement. Initial strong external engagement (agency, industry, and academic) has waned over time due to unclear relevance of innovations. Current efforts focus on reengaging external stakeholders, expanding implementation champions beyond the core office, increasing support for funding opportunities outside of the STIC Incentive Program, and enhancing communications about NC-TIC's successes.

Programmatic Expansion

The Council's scope has broadened over time to include integrated mobility (bicycle and pedestrian, transit) in highway focused innovations and ongoing collaboration with



NCDOT's Communicate Lessons, Exchange Advice, Record (CLEAR) Program, Innovation Challenge, and Technical Advisory Groups (TAGs). The Council's support of the Minorities in Transportation Technology Initiative (MITTI) resulted in the launch of NCDOT's Historically Black Colleges and Universities (HBCU) Fellows Program. The Council has participated in information exchanges through state and national symposiums, conferences, committees, panels, centers of excellence, and communities of practice. The Council's recent integration into SIPS has further facilitated broader engagement with research, grants, data, technology, and artificial intelligence (AI) initiatives.

2025 Highlights

Sarah Searcy and **Jiana Brown**, a project manager with HDR representing NCDOT's Value Management Unit and CLEAR Program, shared updates on this year's innovation initiatives, including progress on STIC Incentive Program projects, EDC-7 initiatives, the 2024 and 2025 Innovation Challenges, reengagement of the Innovation Coordinators, and the upcoming Innovation Culture Index (ICI) survey.

STIC Incentive Program

NCDOT has five recent projects at various stages of completion through the STIC Incentive Program.

- **Pilot Debris Removal Systems** is ongoing.
 - The project team is testing and evaluating different debris removal systems installed on NCDOT's IMAP responder vehicles.
 - These systems allow the safe removal of debris out of the roadway without the driver leaving the truck or having to manually move the debris.
 - The project team is currently evaluating four debris removal systems.
 - Some challenges were experienced with the fabrication of two systems and installation of one system, causing schedule adjustments.
 - The final report for the project is expected to be completed in the spring of next year.
 - The project team will be invited back to share an update at the next NC-TIC TCC meeting.
- **Development of Data Governance for Rail Division's Crossing Data** was recently completed.
 - The project team reviewed and recommended enhancements to the Rail Division's current processes and procedures regarding data collection, management, reporting, and publication/distribution for rail crossing data.
- **Use of AI to Improve Vulnerable Road User Safety** was also recently completed.



- The project team developed an AI methodology as a proof-of-concept to extract data from turning movement counts and crash data involving vulnerable road users and analyze road safety.

The final reports for the two completed projects are available on the [NC-TIC webpage](#) along with the required reporting for all ongoing and completed projects.

Based on the outcomes of the previous NC-TIC TCC meeting in [June 2025](#), there are two new projects kicking off.

- **Project Delivery Enhancement through Integration of New Tools**
 - This project will integrate Technical Services' Plans, Specifications, & Estimates (PS&E) process and checklist within the ATLAS Workbench application and move the initiative out of the pilot phase to statewide implementation.
- **Deployment of Drone Illumination for Worksite Safety**
 - This project will test two drone lighting devices and establish uses cases and standard operating procedures around the use of drones for aerial lighting of NCDOT projects.

The project teams for the two new projects will be invited to a future NC-TIC TCC meeting to provide updates.

EDC-7

NCDOT supported five EDC-7 innovations across multiple teams in the department to take the innovations from the development stage towards institutionalization.

- **Nighttime Visibility for Safety**
- **Next Generation Traffic Incident Management**
- **Integrating Greenhouse Gas Assessment and Reduction Targets in Transportation Planning**
- **Rethinking Disadvantaged Business Enterprise for Design-Build**
- **Strategic Workforce Development**

EDC-7 has concluded and reporting for the innovations supported by NCDOT is available on the [NC-TIC webpage](#).

Ebony Pittman, NCDOT's Deputy Secretary for Business Administration, reported on successful workforce development programs under EDC-7, including the [Transportation Apprenticeship Program \(TAP+\)](#) and the [Highway Construction Trades Academy \(HCTA\)](#), both of which have increased youth and HBCU engagement and are moving toward institutionalization within the agency.



Innovation Challenge

The 2024 Innovation Challenge's theme was New Hire Training and the winners have been announced in a [video](#).

2024 Winners

- **Tolmy Butler**, Administrative Specialist II, who proposed the creation of a website that will answer FAQs about the assistance we can give and provide DMV customers assistance in times of need.
- **Mikel Kibel**, Division Safety Consultant, who provided and developed a comprehensive training system that addresses onboarding material for new hire employees and covers safety awareness within the construction and maintenance NCDOT operations.

NCDOT's Value Management Unit is supporting both winners to refine and implement their innovations. Both winners have been proactive by taking initiative on the implementation of their projects in collaboration with the Value Management team. Updates will be provided during future NC-TIC TCC meetings on the implementation of the projects.

The [2025 Innovation Challenge](#) was open from September 17-October 13, 2025. The theme was Breaking Barriers with Project Delivery. Respondents were asked to identify process improvements from concept through maintenance that support efficient project delivery, cost-effective solutions, and value-driven outcomes. Judges have selected one winning team submission and one winning individual submission.

2025 Winners

- The first-place winning team focused their innovation on a new cost estimate intake tool and approval workflow that would provide notification functionality to improve the process for Right of Way (ROW).
- The second-place winner highlighted precast concrete blocks as efficient and cost-effective solutions that benefitted bridge maintenance during the Hurricane Helene storm response, allowing for rapid stabilization and repair efforts.

The Value Management team is currently working with the winners to video the announcement video that will be released in December 2025.

Innovation Coordinators

NCDOT established the Innovation Coordinators in 2021. Innovation Coordinators are agency staff who act as liaisons for the CLEAR Program in their Units, Divisions, or local offices.



These champions help drive organizational change around future transportation technology and innovations by:

- Disseminating information and opportunities related to innovation from the NC-TIC, industry, and across NCDOT, and
- Engaging staff in brainstorming ideas, implemented successes, and best practices for submission to the CLEAR program.

The Innovation Coordinators were recently engaged to develop a quarterly newsletter to highlight innovation around the agency, including activities and successes outside of the annual Innovation Challenge. The first edition is anticipated to be shared with all NCDOT staff in December 2025. The goal is to provide a digest where staff can keep up to date on all the different innovation initiatives happening in the agency.

Innovation Culture Index

The Innovation Culture Index (ICI) was administered by NCDOT in 2021, 2023, and 2024. The first ICI was implemented as a part of the technology transfer that led to the creation of the CLEAR Program. The Value Management Unit used responses to the ICI to optimize how innovation is approached and supported throughout NCDOT.

The ICI informed Key Performance Indicators (KPIs) on the Knowledge Management and Innovation programs within NCDOT and can further be used as a tool to shape and refine initiatives to better foster a culture of innovation. Overarching themes across the three years of survey results include the need for ongoing and consistent communication on programs and initiatives, including highlighting the value, need, and areas of focus identified by executive leadership.

The Value Management team is planning to launch the next ICI in December 2025 to collect responses from all NCDOT staff through January 2026. The results will help establish the agency's baseline understanding of the different innovation programs at NCDOT and provide useful insights to guide work in the new year.

Research and Development Program Update

Curtis Bradley, NCDOT's Research and Development Manager, presented an overview of NCDOT's [Research and Development Program](#), detailing funding sources, program structure, collaboration opportunities, and the current status of the FY 2027 research cycle, with emphasis on strategic priorities and university partnerships.

The primary funding for research at NCDOT comes from federal State Planning and Research (SPR) Part B, supplemented by federal and state discretionary funds. The program includes annual research, technical assistance, and technology transfer, with a focus on applied research and implementation. NCDOT maintains master agreements with



13 universities, enabling collaborative research and matching funds for basic and applied research projects. Centers of excellence, university transportation centers, pooled funds, cooperative research programs, and internal research initiatives are also supported.

For the annual research program, research ideas and proposals are evaluated based on five strategic priorities (improve safety, increase access, increase customer satisfaction, increase reliability, and maintain state of good repair) and by six subcommittees comprised of NCDOT subject matter experts (Pavement, Materials, Operations, and Maintenance; Structures, Construction, and Geotech; Traffic, Roadway Design, and Safety; Planning, Programming, and Policy; Multimodal; and Environmental and Hydraulics).

Award notifications for FY 2027 annual research program projects will be released in February 2026.

AI Program Update

Amin Hezaveh, AI Program Manager in the Office of Strategic Initiatives and Program Support (SIPS), presented updates on NCDOT's Microsoft 365 Copilot pilot and the development of a data and AI hub, highlighting user adoption, productivity impacts, and ongoing efforts to collect and share AI use cases across the agency.

NCDOT's eight-week pilot of Microsoft 365 Copilot involved 175 NCDOT staff and 30 Department of Information Technology (DIT) staff, with most participants using Copilot for document summarization, meeting recaps, and email drafting. The pilot showed a 65% productivity improvement and average time savings of 21 minutes per day, with a calculated return on investment (ROI) of 12:1. 88% of pilot participants opted to retain their Copilot licenses. The program now requires a two-hour virtual training course for new users, and licenses are available via ServiceNow requests.

A new data and AI hub was launched on an internal SharePoint site, providing updates, team contacts, a learning center, and a use case library for AI and data projects. The hub aims to centralize resources and facilitate knowledge sharing across business units.

Amin emphasized the importance of coordinating with the AI Program team when planning future AI-related projects to ensure well-defined scopes and improved outcomes.

STIC Highlight – Use of AI to Improve Vulnerable Road User Safety

Daniel Carter, Traffic Safety Specialist in the Traffic Safety Unit, shared an update on a recently completed STIC Incentive Program project focused on using AI to improve road safety for vulnerable road users.

The project aimed to use AI to process text-based data from turning movement counts and crash report narratives.



The project had two main goals:

Goal 1: Extract pedestrian counts from turning movement count reports, which have been collected for years. These reports include data on vehicle movements and pedestrian counts at intersections.

Goal 2: Analyze crash report narratives written by officers to extract useful information about pedestrian-involved crashes.

For turning movement counts, the project team provided around 2,000 count reports from nine different vendors to a contractor. The contractor used an AI model to extract specific data elements, such as count number, location, date, and weather, from these reports and compiled them into an Excel spreadsheet. For crash reports, the project team provided 28,000 narratives from pedestrian-involved crashes to a contractor. The contractor developed an AI model to extract four distinct elements from these narratives: crash type, non-motorist type, pedestrian activity, and crosswalk presence.

While handling nine different formats of counts from nine different vendors was a significant challenge, the AI model for turning movement counts successfully extracted pedestrian counts and other data elements from the reports. Varying levels of detail in the crash narratives, which are open text fields, presented difficulties in extracting consistent data. The AI model for crash narratives was able to extract useful information, although the results were less consistent compared to the turning movement count data.

The extracted data from turning movement counts can be used in various research projects and integrated into intersection databases. The crash narrative extraction tool has potential for further exploration and improvement. Overall, the project demonstrated the potential of AI in processing and extracting data from text-based reports to enhance road safety analysis, more so from the structured format of the turning movement counts than the descriptive crash narratives.

STIC Highlight – Development of Data Governance for Rail Division’s Crossing Data

Todd Meyer, Data Analysis and Inventory Manager in the Rail Division, shared an update on a recently completed STIC Incentive Program project focused on data governance for rail crossing data within NCDOT’s Rail Division.

The project aimed to review and provide recommended enhancements to the Rail Division’s current processes and procedures regarding data collection, federalization, reporting, and publication/distribution surrounding railroad crossing data. The goal was to complete a data governance guidance document to outline and support continuous reporting of accurate railroad crossing data.



The project involved a diverse group of stakeholders, including business units across NCDOT, DIT, railroad company partners, federal partners, the NC Department of Public Instruction (DPI), the Institute for Transportation Research and Education (ITRE), and the UNC Charlotte Urban Institute.

The project utilized NCDOT's State Authoritative Railroad and Highway System (SARAH) database, which houses current rail crossing records, reports, and crossing safety project data. NCDOT maintains over 200 data attributes in the state crossing database, sourced mainly from FRA crossing records. These attributes include railroad operator, emergency contact number, latitude and longitude coordinates, purpose, type, position, train speed, trains per day, types of warning devices, signage, crossing surface type, number of traffic lanes, highway speed limits, and Annual Average Daily Traffic (AADT). NCDOT maintains an additional section of attributes for state use to support its Rail Crossing Investigative Index Model. These attributes include sight distance and school bus data.

The project began with an initial meeting to review crossing data guidance and procedures and to identify roles and responsibilities. The contractor gathered source documents for review, documented findings, and prepared workflow diagrams representing an enhanced methodology to capture, validate, and populate the SARAH database. Monthly virtual meetings were held to review progress and solicit feedback. The project resulted in a final report that documents and describes the entire data collection to processing lifecycle, including workflow diagrams and recommended validation procedures to ensure data quality and consistency.

Action items moving forward include:

- Increase alignment with the agency's data governance vision through collaboration with the Office of Strategic Initiatives and Program Support (SIPS).
- Increase engagement with stakeholders necessary in data sharing activities and system enhancements.
- Further design, testing, and deployment of mobile inventory collection procedures.
- Automation scripts for better quality control.
- Continue dissemination of information to the public via ArcGIS Online.
- Continue process improvement.
- Integrate unstructured documentation.

Overall, the project demonstrated a comprehensive approach to improving data governance for rail crossing data, involving multiple stakeholders and utilizing advanced tools and methodologies.



Build a Better Mousetrap

Kate Davison, NC Local Technical Assistance Program (LTAP) Director, shared information about FHWA's [Build a Better Mousetrap national recognition program](#).

States compete in the Build a Better Mousetrap program by submitting innovative projects through their LTAP centers. Every state, Puerto Rico, and five regional tribal technical assistance programs have LTAP centers supported by FHWA. Each center operates independently and focuses on different areas such as training or technical assistance.

Centers solicit their own nominations within their state. Centers select nominations they would like to move forward. Multiple nominations in multiple categories may be submitted. Centers submit their nominations to FHWA under one of four categories:

- **Innovative Project:** Any solution that addresses any or all phase(s) of the “project” life cycle (Planning, Design/Engineering, Construction, Operations and Maintenance). This project shall introduce new ideas, is locally relevant, original, and creative in thinking.
- **Bold Steps:** Any locally relevant high-risk project or process showing a break-through solution with demonstrated high-reward.
- **Smart Transformation:** A locally relevant significant change in any transportation activity or process that is SMART “Specific, Measurable, Achievable, Realistic and Time-bound” in nature that results in improved efficiencies.
- **Pioneer:** A locally relevant product/tool that is among the first to solve a maintenance problem with a home-grown solution.

Examples of the [2024](#) winners include modified speed cushions in California, a street sweeper converted to a leaf vacuum in Indiana, and a mechanized sidewalk sander in Connecticut. North Carolina won in [2019](#) for a temporary roundabout implemented by Officer Lippert of the Wilmington Police Department to manage traffic more efficiently during Hurricane Florence. This project gained national recognition and has been adopted by other states like Florida.

Kate emphasizes the importance of celebrating and sharing these innovations to inspire others. She encouraged participation in the 2026 competition and mentioned that the 2025 submissions will be reviewed alongside the 2026 entries due to program delays. NC LTAP typically reviews submissions from May to June then submits its selections to the national competition at the end of June into July.

Kate concluded her presentation by sharing a [video](#) of another winning innovation from Arizona DOT called the “guardrail crab” that helps increase safety and reduce the labor and time to install and replace guardrail as an example of homegrown innovation and practical problem-solving that can potentially benefit many agencies across the country.



The committee discussed reviewing submissions from the NCDOT Innovation Challenge to submit to the Build a Better Mousetrap program. Opportunities for partnership in communication and outreach were brainstormed, and a follow-up discussion will be held at a future NC-TIC TCC meeting. Additionally, the committee recommended that Kate present at the upcoming [North Carolina Association of Metropolitan Planning Organizations \(NCAMPO\) conference](#) to share the program more widely.

Rechartering Discussion

Clare Fullerton, a project manager with Jacobs representing the Value Management Unit, shared information about the upcoming rechartering of the NC-TIC.

The rechartering was initiated to realign the Council's vision, mission, scope, membership, decision-making processes, external engagement, and metrics with current agency priorities and leadership changes, with plans to finalize the updated charter in 2026. The rechartering process was paused to allow the new State Transportation Secretary and executive leadership time to reevaluate the agency's work and establish their priorities. This will ensure the Council is aligned with their vision and direction.

The last official rechartering occurred in 2019. The Council's structure and activities have since evolved. The Council has become part of the Value Management Unit and then part of the Office of Strategic Initiatives and Program Support (SIPS), bringing in various innovation initiatives within NCDOT, such as research and development, data and technology, and grants management. The current charter has parts that are being implemented and parts that never launched or evolved. The rechartering process aims to consider the new organizational structure and priorities as well as reevaluating the voting membership body.

A read-ahead document will be provided to the committee ahead of the next NC-TIC TCC meeting anticipated for March 2026. This document will summarize key questions and recommendations for the committee to consider in advance of the meeting. Clare and Sarah will also collaborate with the Council's FHWA partners to gather input from peer states on their Councils, including different approaches to developing useful and consistent metrics for measuring the impact of the Council's work.

Summary and Next Steps

Sarah Searcy concluded the meeting by reminding the committee of the upcoming announcement of the 2025 Innovation Challenge winners and the release of the first edition of the Innovation Coordinators newsletter in December 2025. Sarah thanked the committee for their support and commitment and for helping celebrate the successes achieved over the past year.



Adjournment

Sarah Searcy adjourned the meeting.



Attendance and Voting Members

Name	Organization	Role	Voting Member
Yolonda Jordan	FHWA	Member	X
Curtis Bradley	NCDOT	Member	X
Amna Cameron	NCDOT	Member	X
Catherine Peele	NCDOT	Member	X
Ebony Pittman	NCDOT	Member	
Sarah Searcy	NCDOT	NC-TIC Lead	
Alyson Tamer	NCDOT	Member	X
Xin Wang	NCDOT	Member	X, as designee
Derrick Weaver	NCDOT	Member	X
Julie White	NCDOT	Member	X
Kate Davison	NC LTAP	Member	X
Daniel Carter	NCDOT	Presenter	
Amin Hezaveh	NCDOT	Presenter	
Todd Meyer	NCDOT	Presenter	
Nastasha Earle-Young	NCDOT	Guest	
Logan Gunthrop	NCDOT	Guest	
David Mathern	NCDOT	Guest	
Christopher Raichle	NCDOT	Guest	
Paul Worley	NCDOT	Guest	
Jiana Brown	HDR	Support	
Clare Fullerton	Jacobs	Support	
Christine Pinson	Jacobs	Support	
Voting Members Not in Attendance			
Victor Barbour	Carolinas AGC	Member	X
Kristin Barnes	NCDOT	Member	X
Robert Barrier	NCDOT	Member	X
Sam Boswell	Cape Fear RPO	Member	X
Matthew Carlisle	NCDOT	Member	X
Greg Dean	Carolinas CPA	Member	X
Jed Dixon	NCDOT	Member	X
Chris Lukasina	NC Association of MPOs	Member	X
Patrick Norman	NCDOT	Member	X
Amanda Olive	NCDOT	Member	X
Jason Orthner	NCDOT	Member	X
Edward Parker	FHWA	Member	X
Alpesh Patel	NCDOT	Member	X
Ellis Powell	Carolina APA	Member	X
Tara Robbins	ACEC NC	Member	X



Name	Organization	Role	Voting Member
Nick Short	NCDOT	Member	X
Tunya Smith	NCDOT	Member	X



Attachment A: Meeting Slides



NORTH CAROLINA
Department of Transportation

North Carolina Transportation Innovation Council (NC-TIC)

Technical Coordination Committee (TCC) Meeting

November 12, 2025

Connecting people, products and places safely and efficiently with customer focus, accountability and environmental sensitivity to enhance the economy and vitality of North Carolina

Meeting Agenda

10:00 am	Opening Remarks – Meeting Purpose	Sarah Searcy
10:05 am	Opening Remarks – FHWA Update	Edward Parker

<i>State of Innovation</i>		
10:10 am	Evolution of the NC-TIC	Alyson Tamer
10:20 am	2025 Highlights	Sarah Searcy Jiana Brown
10:40 am	Research & Development Program Update	Curtis Bradley
10:50 am	AI Program Update	Amin Hezaveh
<i>STIC Incentive Program – Project Updates</i>		
11:00 am	“Use of AI to Improve Vulnerable Road User Safety”	Daniel Carter
11:10 am	“Development of Data Governance for Rail Division’s Crossing Data”	Todd Meyer
<i>External Partners – Overview Presentations</i>		
11:20 am	Build a Better Mousetrap	Kate Davison

11:30 am	Rechartering Discussion	Clare Fullerton
11:40 am	Summary and Next Steps	Clare Fullerton
12:00 pm	Adjournment	

FHWA Update

Evolution of the NC-TIC

Timeline

- 2011: FHWA required each State DOT to establish a State Transportation Innovation Council (STIC) to engage stakeholders and facilitate the deployment of innovations.
 - \$100K in incentive funding to each state through the STIC Incentive Program.
- 2014: First project awarded by NC-TIC.
- 2015: VMO engaged through the Product Evaluation Program.
- 2017: VMO supported the NC-TIC by facilitating and managing its council.
 - First year multiple projects were awarded.
- 2019: Rechartering of the NC-TIC under Secretaries Trogon and Howard with a goal to create an Office of Innovation and Chief Innovation Officer. Managed in the Chief Engineer's Office.
- 2021: NCDOT won FHWA's STIC Excellence Award.
- 2022: Managed in the Transportation Planning Office.
- 2023 to present: Managed by VMO in the SIPS Office.

Fiscal Year	Innovations	Project
2023	TIM, Rail Crossing	1. Pilot debris removal systems (\$65,680) 2. Develop data governance workflow for Rail Division to improve rail crossing inventory. (\$34,320)
2022	Operations, emergency, crowdsourcing	Implement emergency alerting service, direct message to cell phones. (\$50,000)
2022	Strategic Workforce Development	Create a Ladders of Opportunity plan to Advance NCDOT's Diverse Engineering Workforce (\$50,000)
2021	Knowledge Management	Develop job tools to improve organizational knowledge transfer (\$40,000)
2021	Crowdsourcing, Traffic Incident Management	Automate full road closure information into the Waze crowdsourcing navigation app (\$60,000).
2020	Safe Transportation for Every Pedestrian (STEP)	Standardize the use of Leading Pedestrian Interval (\$50,000)
2020	Safety	Safety Service Patrol Technology Pilot and Assessment Project (\$50,000)
2019	CHANGE	Identify innovative hydraulic design practices to advance project delivery, through peer exchanges, guidance reviews, and training (\$30,000).
2019	STEP, LPA	Deploy a tool to aid communities in identifying appropriate countermeasures that address safety concerns at specific locations (\$20,000).
2019	TIM	Evaluate the capabilities, limitations, and technical challenges associated with Advanced Collaboration Technologies (\$50,000).
2018	Community Connections; STEP	Hold a peer exchange relative to bike and pedestrian safety project prioritization tools. (\$36,000)
2017	Safe Transportation for Every Pedestrian (STEP)	Develop and implement a collaborative Complete Streets and STEP training. (\$50,000)
2017	Automated Traffic Signal Performance Measures	Develop and implement a strategy for Automated Traffic Signal Performance Measures (ATSPMs) using high resolution data (\$50,000)
2016	Asset Management	Develop standards and specifications for preventive maintenance and repair of the NCDOT Ferry System in order to implement the principles of asset management (\$87,000)
2015	Bridge	Development of deep compaction grouting specifications and technology to stabilize settling bridge approach slabs (\$75,000)
2014	Local Public Agency	Development and implementation of a Local Government Agency Certification Program (\$100,000)

Wins and Lessons Learned from 13 Years



- The STIC Incentive Program has become more competitive, highlighting its greater visibility within and engagement across NCDOT.
- Ongoing engagement within NCDOT leadership.
- Inclusion of integrated mobility (bicycle and pedestrian, transit) in highway focused innovations.
- Progress with Every Day Counts.
- Consistent engagement of VMO for 10 years.



- Loss of engagement from external NCDOT stakeholders due to unclear relevance of innovations.
- Need for an implementation champion outside of VMO.
- Limited engagement with programs outside the STIC Incentive Program, such as AID and AMR.
- Limited communication about NC-TIC's wins externally.

2018-2020 Innovation Goal-Setting and Initiatives

- Internal Innovation
 - CLEAR Program
 - DOT Talks
 - Strategic Implementation Teams
 - STIC, AID, EDC, AMR
- Agency, Industry, and Academic Partnerships
 - Preparing for Future Technologies Workgroup
 - Technology Advisory Committee (TAC)
 - Technology Advisory Board (TAB)
 - Minorities in Transportation Technology Initiative (MITTI)
 - University Transportation Centers of Excellence
 - Information Exchanges



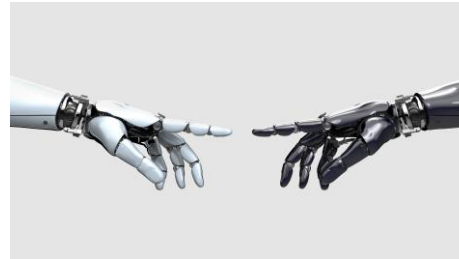
Evolution to Today

- Internal Innovation
 - CLEAR Program
 - CLEAR Lunch and Learns
 - Technical Advisory Groups (TAGs)
 - STIC, AID, EDC, AMR
- Agency, Industry, and Academic Partnerships
 - Information Exchanges
 - NC-TIC Technical Coordination Committee
 - TREC Committee
 - N.C. Transportation Summit
 - NCDOT Research and Innovation Symposium
 - AASHTO Committees and Communities of Practice
 - TRB Committees and NCHRP Panels
 - *MITTI – Published in 2020, outcome was HBCU Fellows Program*
 - University Transportation Centers of Excellence



Where Are We Now?

- NC-TIC sits in the Office of Strategic Initiatives and Program Support (SIPS).
- Managed by Sarah Searcy, Emerging Technologies and Innovation Manager.
- Current branches of SIPS are:
 - Research & Forecasting Branch
 - Programs & Projects Branch
 - Data & Information Branch
- Managing the NC-TIC in SIPS enables further implementation of innovations within the STIC.



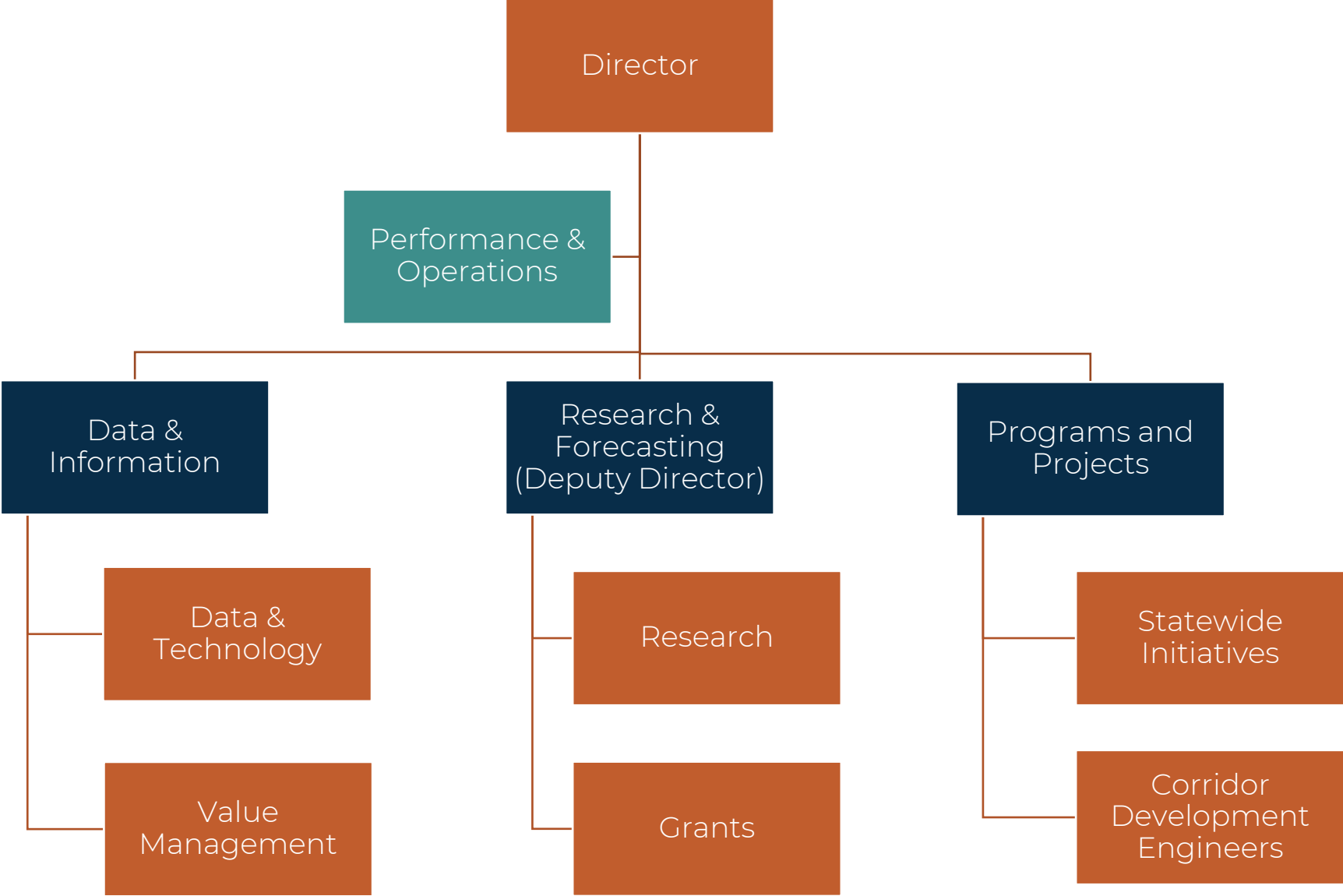
**How can SIPS
support the NC-TIC?**

Office of Strategic Initiatives & Program Support

- Core Purpose: Help NCDOT maximize success, act strategically, and prepare for the future.
- Key Functions:
 - Research, forecasting, scenario planning.
 - NCDOT strategic planning, goal setting, and performance management.
 - Statewide transportation planning.
 - Facilitate cross-departmental initiatives, programs and projects.
 - Innovative and creative problem solving.
 - Improve the value and quality of NCDOT products and outputs.

New Roles as of 2024

- Value engineering, constructability reviews, and post-construction assessments.
- Innovation programs, including CLEAR and NC-TIC.
- Clean Transportation Plan implementation.
- Management of CMAQ, Carbon Reduction, and NEVI programs.
- Strategic transportation corridors.
- Grant strategy and pursuits.
- Rural and small planning organization technical assistance.
- Data, Technology and AI strategy, integration, and governance.



Research & Forecasting Branch

Revenue
Forecasting

Funding
Education

Federal
Grants

Research

Public
Engagement

Federal
Policy

Data, Technology, and AI Program Vision

Vision:

NCDOT leverages data, technology, and advanced analytics at all levels of the organization to enable data-driven decisions and improve business outcomes



CLEAR Program Support

TAGs

- Working Groups
- Facilitation
- Implementation Engagement

Innovation Challenge

- Encourages Submissions
- Celebrates Innovation at All Levels
- Communication Framework

CLEAR Portal

- Captures Innovations
- Disseminates Further SME Reviews
- Encourages Growing Off Current Ideas

2025 Innovation Highlights

NC-TIC Incentive Programs

State Transportation Innovation Councils (STIC)



- Provides technical assistance and up to \$125,000 in total funds per state to offset the costs of standardizing innovative practices.
- Funds activities such as conducting internal assessments, initiating capacity building, developing guidance, drafting standards and specifications, organizing peer exchanges, implementing system process changes, etc.
- At the local level, the **NC-TIC determines which projects/activities to fund.**

<u>Project Name</u>	<u>Funding Year</u>	<u>Point of Contact</u>	<u>Status</u>
Pilot Debris Removal Systems	2023	Jennifer Portanova	Ongoing
Develop Data Governance for Rail Division	2023	Todd Meyer	Completed
Use of AI to Improve Vulnerable Road User Safety	2024	Daniel Carter	Completed
Project Delivery Enhancement through Integration of New Tools	2025	Derrick Weaver	Not Started
Deployment of Drone Illumination for Worksite Safety	2025	Christopher Arnette	Not Started

NC-TIC Incentive Programs

EDC-7 Innovations



<u>Innovations</u>	<u>Where we are now?</u>	<u>Where do we want to be in two years?</u>	<u>Point of Contact</u>
Nighttime Visibility for Safety	Development Stage	Assessment Stage	Greg Hall; Shawn Troy
Next Generation TIM: Technology for Saving Lives	Development Stage	Assessment Stage	Dom Ciaramitaro; Jennifer Portanova
Integrating Green House Gas Assessment and Reduction Targets in Transportation Planning	Demonstration Stage	Assessment Stage	Heather Hildebrandt
Rethinking DBE for Design-Build	Development Stage	Development Stage	Lisa Wilson; Tonya Marriott
Strategic Workforce Development	Development Stage	Institutionalized Stage	Mark Council; Rhonda Royster; Ebony Pittman

Innovation Challenge

November 12, 2025



CLEAR

Communicate Lessons, Exchange Advice, Record

Jiana Brown, HDR
Strategic Communications



CLEAR

Communicate Lessons, Exchange Advice, Record



Innovation Challenge Recap

2024 Innovation Challenge

Theme: New hire training

Winners tied for first place:



Mikel Kibel
Safety Consultant
Division 13
Safety Training Program



Tolmy Butler
Administrative Specialist
NCDMV Elizabethtown
Disaster Response Website

[Announcement Video](#)

All Previous Themes:

2020: The Lightbulb Moment

2021: Implemented Innovation

2022: Observation is the key

2023: Idea Sharing

2024: Improving training



NCDOT 2025 Innovation Challenge

Breaking Barriers with Project Delivery

Developed by Kristin Barnes

Identify and implement process improvements from concept through maintenance that support efficient project delivery, cost-effective solutions, and value-driven outcomes.

Submissions: September 17th – October 13th



Innovation Challenge

NCDOT launches the **annual Innovation Challenge** to encourage all NCDOT employees to submit their ideas and/or best practices that help NCDOT operate more efficiently.

- 💡 A new **theme** is created and/or chosen by the CLEAR team every year.
- 💡 The period for **submissions** is open for a month.
- 💡 A panel of **judges** review all responses based on scoring criteria.
- 💡 The top two **winners** are notified and receive a certificate with NCDOT merch.
- 💡 A yearly **video** features the winners and allows them to explain their innovative idea.

2025 Timeline

- Current Stage: Filming Winners
 - Right of Way (Team)
 - Division 14 Bridge Maintenance
- December
 - Winner's Video + Announcement
 - Winners to receive a certificate & NCDOT swag

Suggestions for 2026 Theme?

Innovation Coordinators

- Act as liaisons for the CLEAR Program in their Units, Divisions, or local offices.
- Help drive organizational change around future transportation technology and innovations.
- Disseminate information and opportunities related to innovation from the NC-TIC, industry, and across NCDOT.
- Engage staff in brainstorming ideas, implemented successes, and best practices for submission to the CLEAR Program.

Quarterly Newsletter – Innovation Around NCDOT

Identifying innovation outside of the annual Innovation Challenge...

First Edition – Coming Soon!



Innovation Culture Index (ICI)

2021, 2023, 2024

- Captures the Culture of Innovation.
- Key Performance Indicators (KPIs) on the Knowledge Management and Innovation Programs within NCDOT.
- Provides valuable feedback on how Innovation and Knowledge sharing initiatives need to be shaped.

Planning is underway for 2025 survey
to collect responses from all NCDOT staff.



Overarching themes across survey results:

Ongoing and consistent communication on the program and initiatives, including highlighting the value, need, and areas of focus identified by Executive Leadership.

Research and Development Program Update



NORTH CAROLINA
Department of Transportation

NCDOT Research & Development Program Update

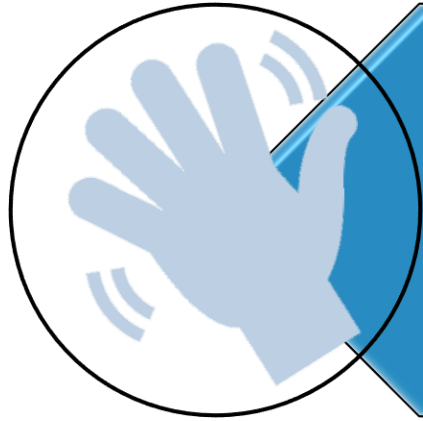
Curtis T. Bradley, Ph.D

Manager, Research & Development Unit

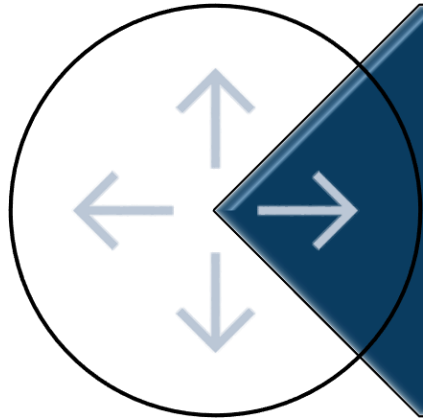
November 12, 2025

Connecting people, products and places safely and efficiently with customer focus, accountability and environmental sensitivity to enhance the economy and vitality of North Carolina

Table of Contents



Research Program
Summary

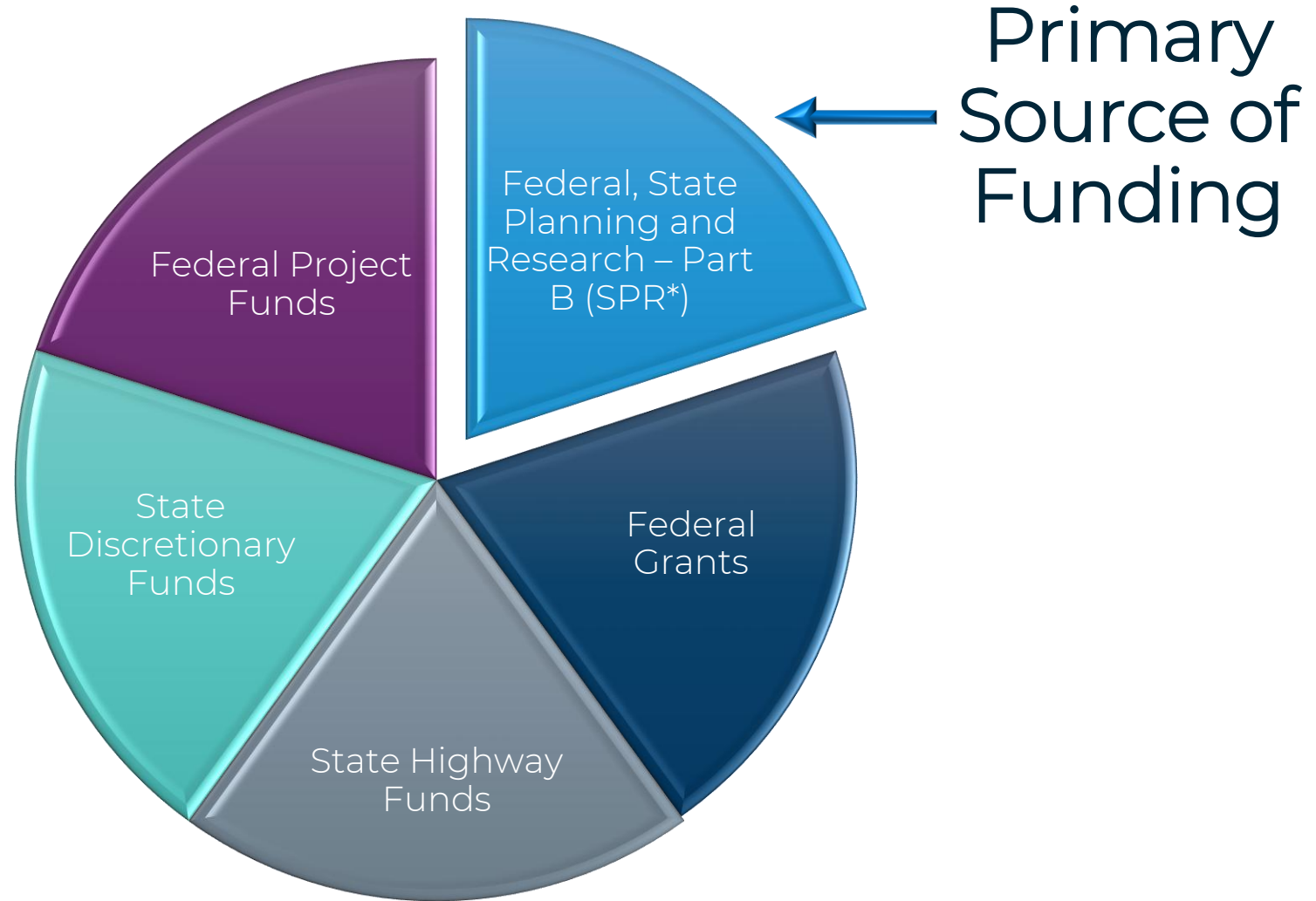


FY2027 Research
Program - Update



Research Program Summary

How is NCDOT Research Funded?



Research Programs

	Annual Research Program <ul style="list-style-type: none">• Applied Research Long Term Research
	Technical Assistance Program (120 hours / 15 days) <ul style="list-style-type: none">• White Paper, Short Term Research
	Technology Transfer / Implementation <ul style="list-style-type: none">• Workshops / Training, Conferences, Development, Pilots
	Pooled Fund / Cooperative Research Program <ul style="list-style-type: none">• TRB, Cooperative Research Program, National Pooled Fund Research, AASHTO Technical Programs
	Library Services <ul style="list-style-type: none">• Subscriptions to Journals, Licenses for Manuals, Access to Library Database
	University Collaboration Program <ul style="list-style-type: none">• University Transportation Center, SP&R Part B Eligible Match (Research Grants)
	Centers of Excellence

Who Conducts Most of The Research?

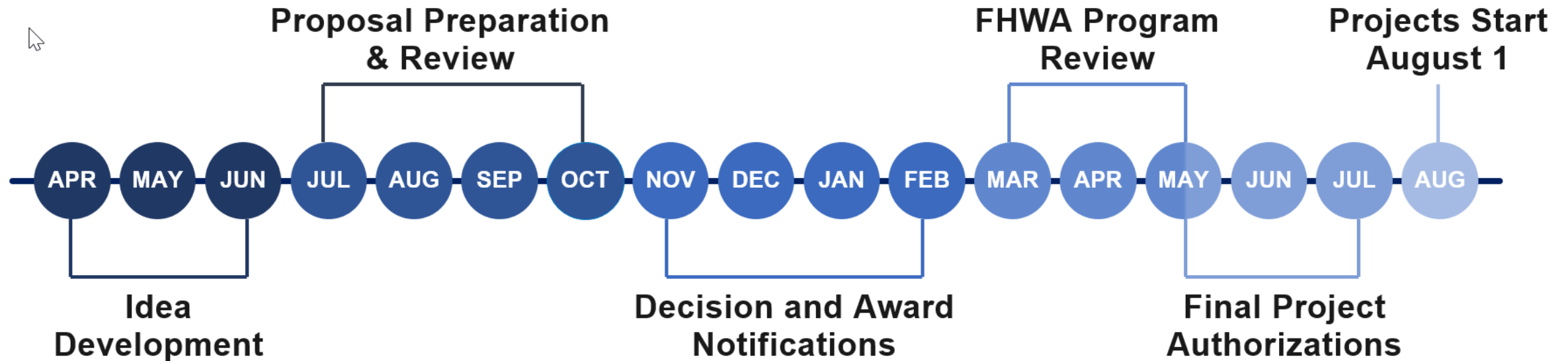


Not For Profit

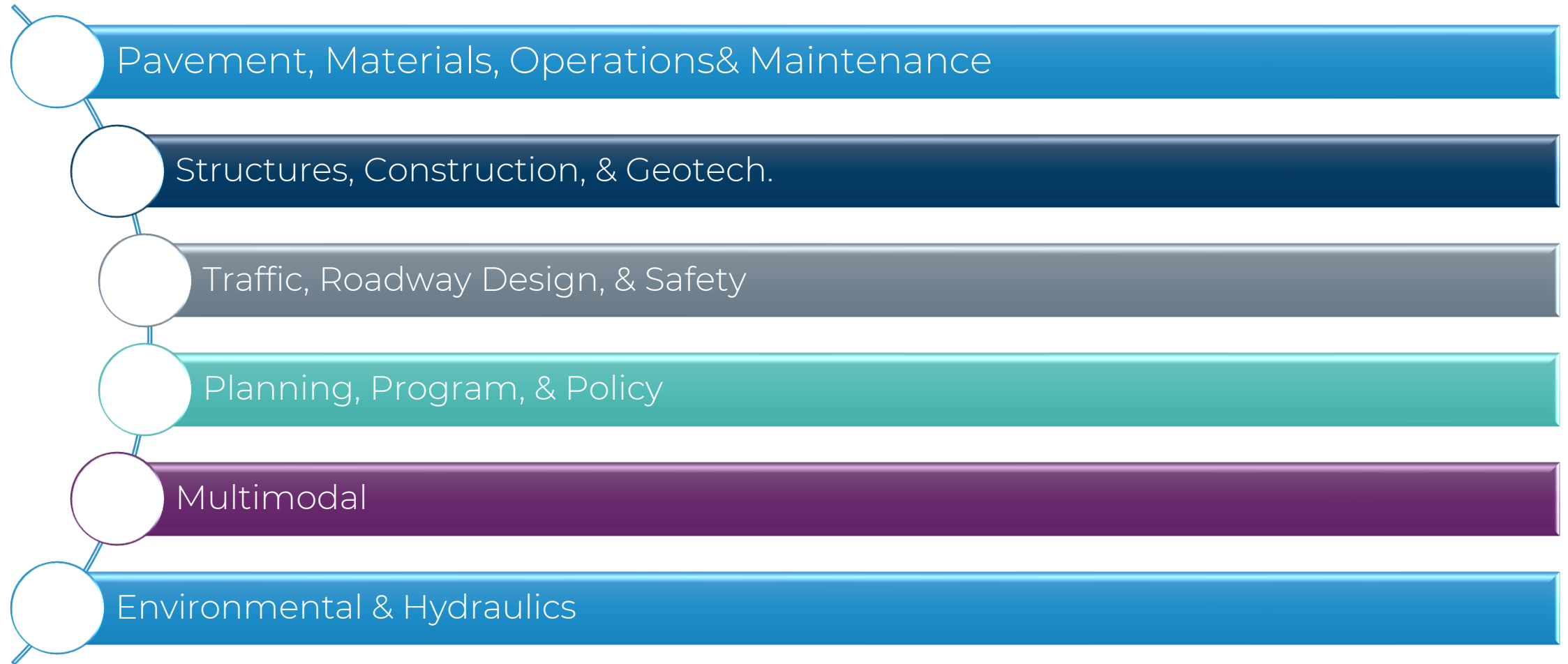


FY2027 Research Program Update

Annual Research Timeline



Research Subcommittees



Strategic Priorities included in Research Idea Solicitation



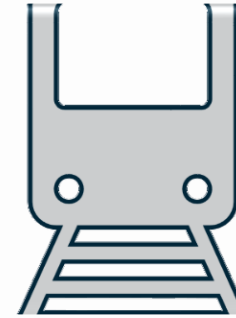
Improve
Safety



Increase
Access



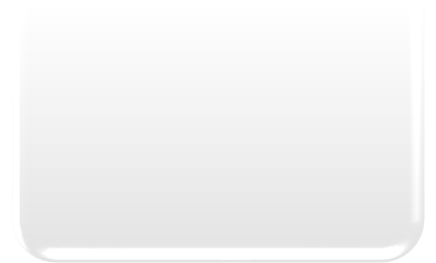
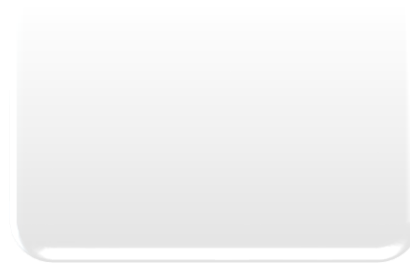
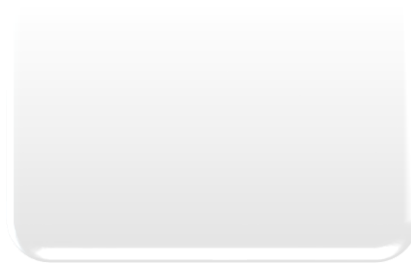
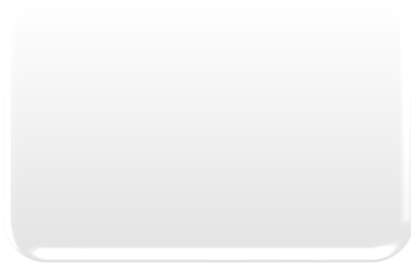
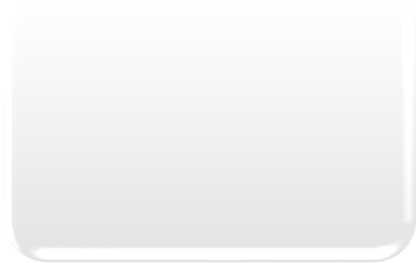
Increase
Customer
Satisfaction



Increase
Reliability



Maintain
State of Good
Repair



AI Program Update



NORTH CAROLINA
Department of Transportation

MS 365 Copilot's Pilot & Data and AI Hub

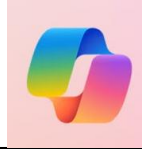
Amin Hezaveh

AI Program Manager, Data and Information Branch

November 12, 2025

Connecting people, products and places safely and efficiently with customer focus, accountability and environmental sensitivity to enhance the economy and vitality of North Carolina

Free Copilot Chat vs Paid MS365 Copilot



Category	Copilot Chat (Free, in Windows or Edge)	Microsoft 365 Copilot (Licensed)
Availability	Built into Windows 11, Edge, and web for free	Add-on license (\$30 USD/user/month) for Microsoft 365 E3/E5, Business Standard/Premium
Integration Level	Stand-alone chat experience; limited in-app functions	Fully integrated into Word, Excel, PowerPoint, Outlook, and Teams
Data Access	Web data + manual uploads only	Secure access to organizational data in SharePoint, OneDrive, Outlook, and Teams
Context Awareness	General knowledge and user-provided context	Understands your work context , recent files, meetings, and emails
Features in Word/Excel/PowerPoint	Basic summarization and Q&A via chat; not embedded in the ribbon	Deep in-app commands: “Draft in Word,” “Analyze data in Excel,” “Design slides in PowerPoint”
Teams Integration	Limited to Copilot Chat window	Full meeting recap , action items, and context from chat and transcripts
Value Proposition	Free entry-level AI assistant for everyday use	Productivity multiplier across Microsoft 365 ecosystem

MS 365 Copilot Pilot



Summarizing Documents, Meetings, and Emails

Efficiently condense lengthy documents

Capture key points from meetings

Summarize email content for quick reference



Drafting Communications

Create memos and reports

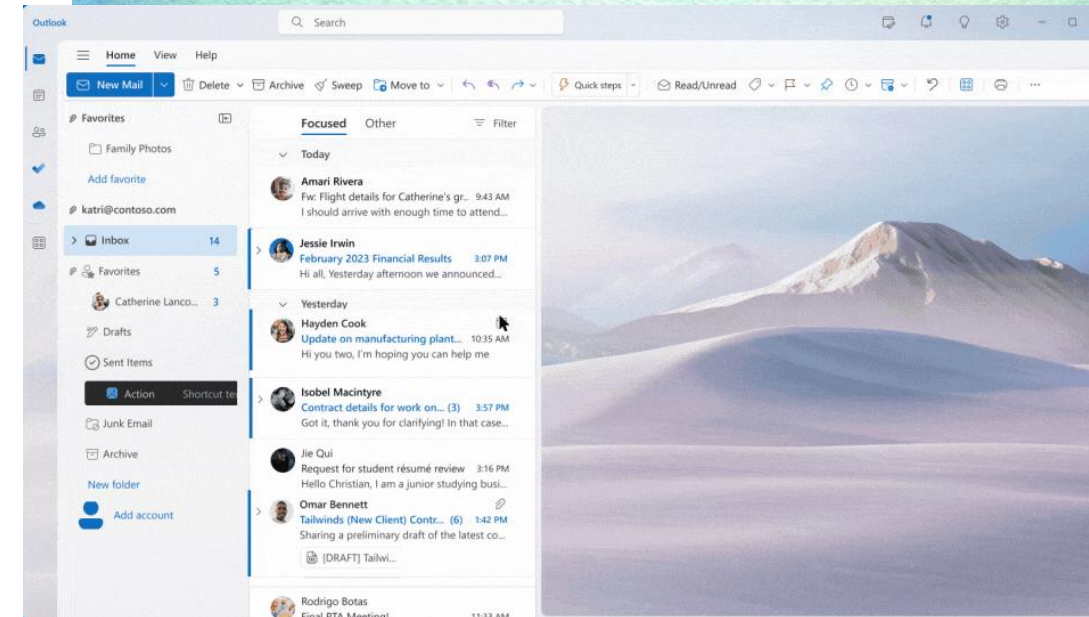
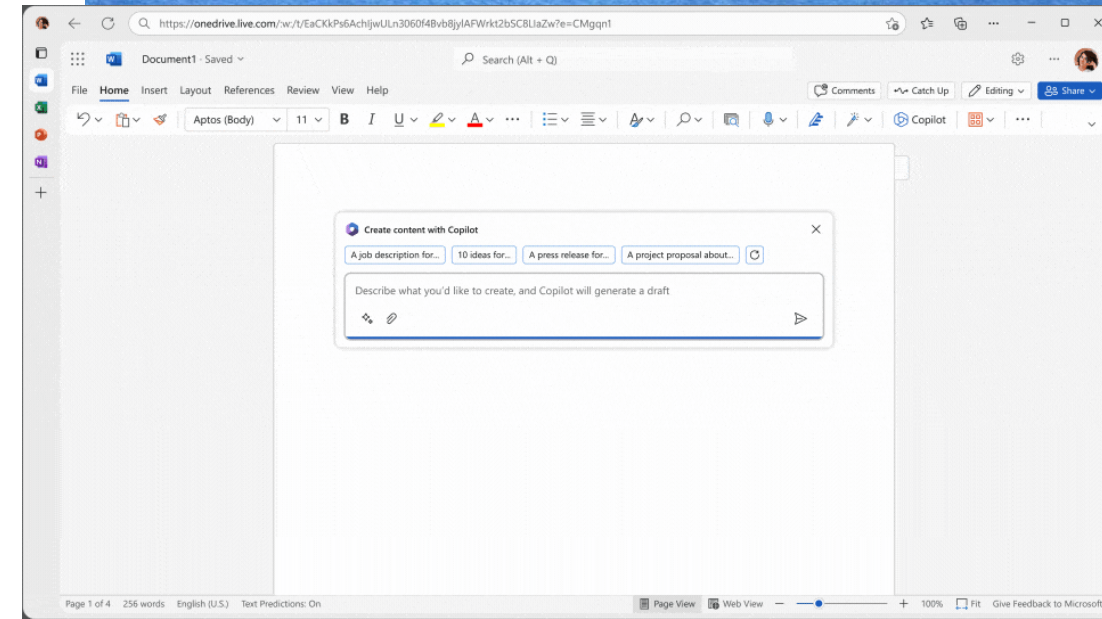
Compose professional emails



Recapping Teams Meetings

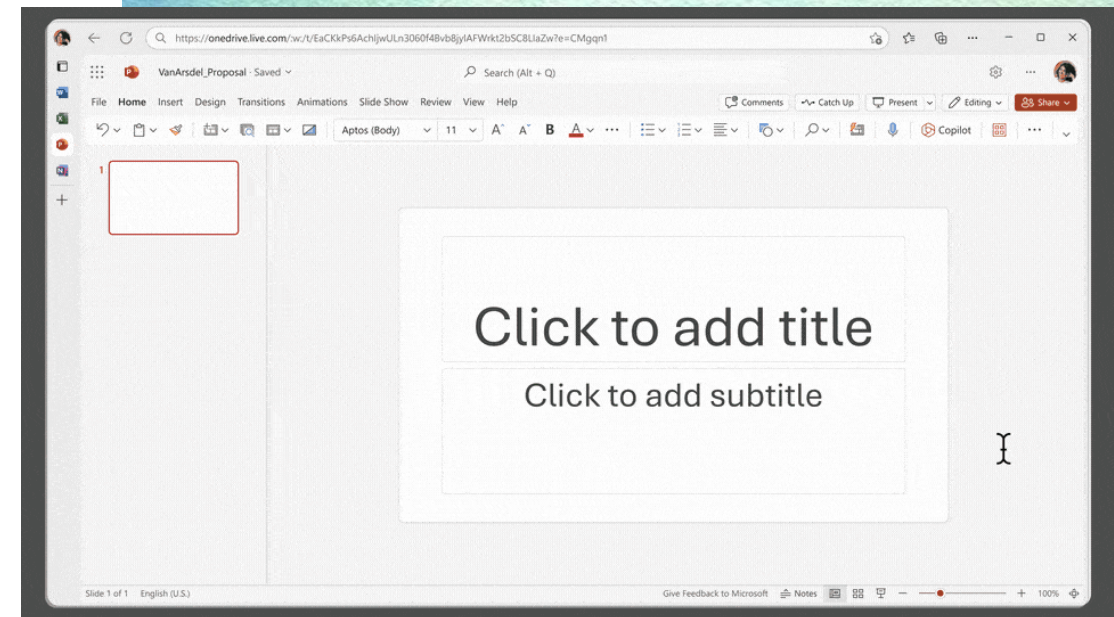
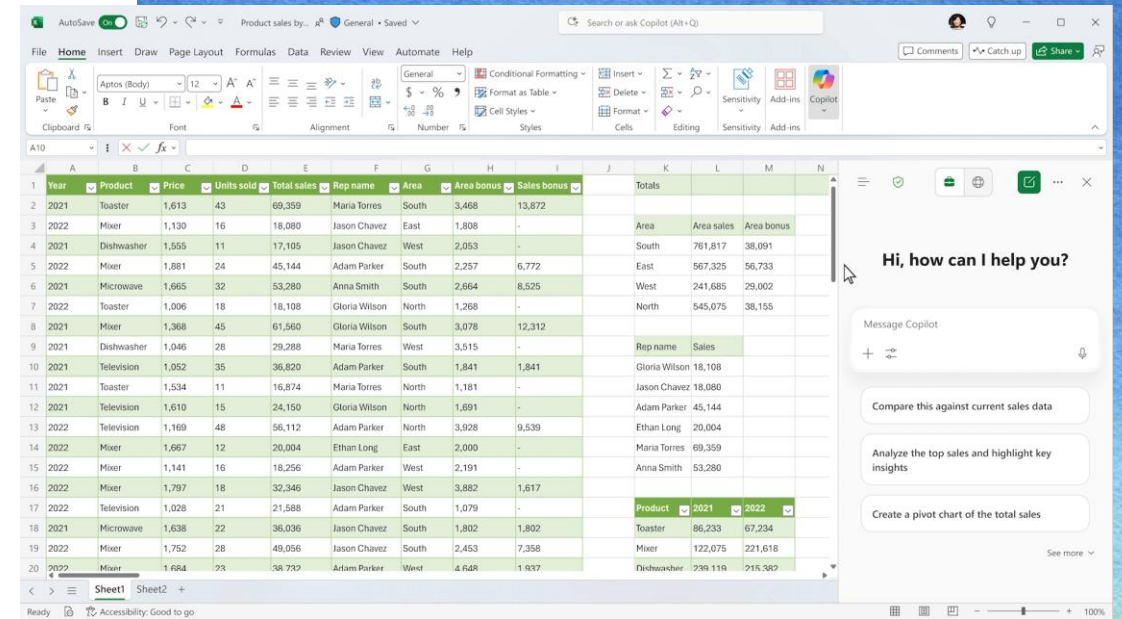
Extract action items

Provide concise meeting summaries



MS 365 Copilot Pilot

- **High Retention Rate**
 - 88% of participants want to keep their Copilot license
- **Minimal Disinterest**
 - Only 1% do not wish to continue
- **Productivity Impact**
 - 65% say they would be less productive without Copilot
- **Interest in Customization**
 - 21% expressed interest in a customized AI tool for their specific work needs
- **Meeting Needs**
 - 49% believe Copilot sufficiently meets their needs





Need a License?

If you need one, contact your manager and submit a ServiceNow ticket.

- Highly recommended if you are frequent user of Word, outlook and/or Teams.
- It requires 2 hours Training



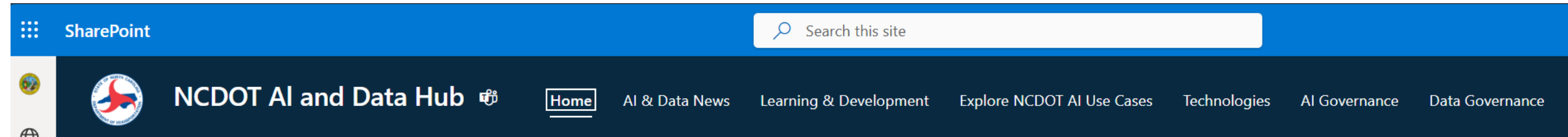
NORTH CAROLINA
Department of Transportation

Data & AI Hub Site Features

Connecting people, products and places safely and efficiently with customer focus, accountability and environmental sensitivity to enhance the economy and vitality of North Carolina

AI and Data Hub

The NCDOT AI and Data Hub provides **central, secure AI & Data related resources**.



Features

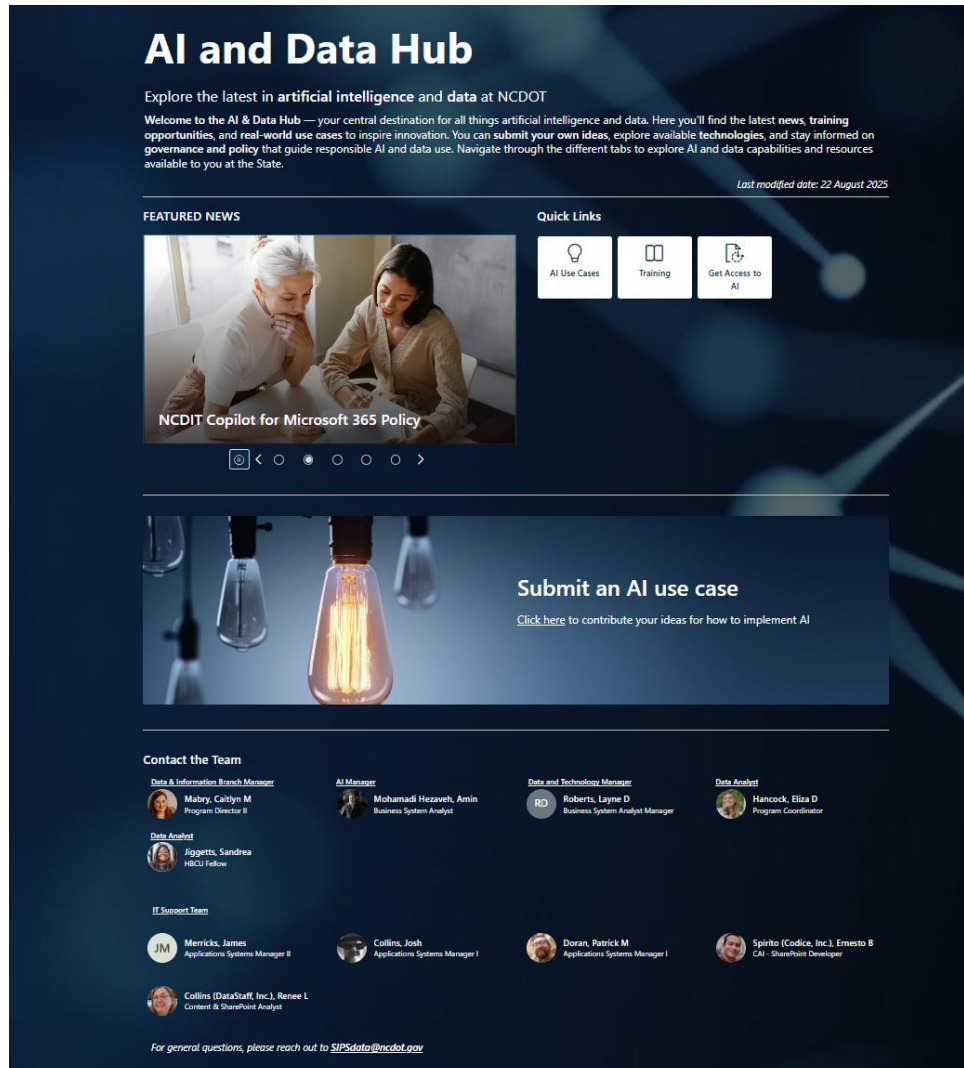
- **Navigation ribbon shortcuts to*:**
 - AI & Data News
 - Learning & Development
 - Explore NCDOT AI Use Cases (Use Case Repository)
 - Available Technologies
 - AI Governance
 - Data Governance

**Additional details on site pages on slides following*



AI and Data Hub Homepage

The homepage provides an **overview of the site's purpose and key features**, including the latest news, quick links to AI use cases, training resources, and more. It also includes team **contact information** to request further assistance.



Features

- **Featured News section:** rotating carousel of 5 latest news articles
- **Quick Links section:**
 - **AI Use Cases button:** shortcut to *the Explore NCDOT AI Use Cases page*
 - **Training button:** shortcut to the *Learning & Development page*
 - **Get Access to AI button:** shortcut to the *Technologies page*
- **Submit an AI use case section:** shortcut to the form where you can submit an idea in the *Explore NCDOT AI Use Cases page*
- **Contact the Team section:** key contacts and their role

AI & Data News


This page highlights NC AI and Data news, Upcoming events, Industry updates, and Featured Projects.

AI & Data in North Carolina

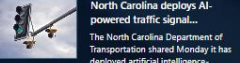
Last modified date: 22 August 2025

NC AI & DATA NEWS


See all



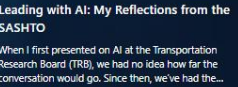
North Carolina Department of State Treasurer and Open AI...
North Carolina State Treasurer Brad Briner and OpenAI today announced a pilot program to use artificial...



North Carolina deploys AI-powered traffic signal...
The North Carolina Department of Transportation shared Monday it has deployed artificial intelligence...



Governor Stein Announces Amazon Plans to Invest \$10...
Governor Josh Stein announced that Amazon is planning to invest \$10 billion to launch a new high-tech...



Leading with AI: My Reflections from the SASHTO
When I first presented on AI at the Transportation Research Board (TRB), we had no idea how far the conversation would go. Since then, we've had the...

UPCOMING EVENTS

See all

+ Add event


SEP 3-4	2025 N.C. TRANSPORTATION SUMMIT Wed, Sep 3, 7:00 AM
OCT 10-31	Databricks - Virtual Learning Festival Fri, Oct 10, All day
NOV 17-20	2025 AASHTO Annual Meeting & Expo Mon, Nov 17, 7:00 AM

Want Your Event To Show Here?


Submit an Event

INDUSTRY NEWS

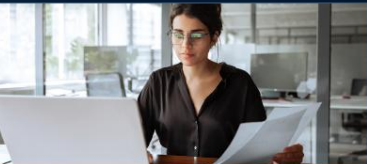
See all




Case Study: Scale the Adoption and Value of Generative AI (Ohio DOT)
When working with the CIO to implement an AI strategy, heads of I&O must make adoption an early measure of success. This study examines the Ohio DOT's approach to...



'State of Logistics' Report Highlights AI's Freight Impact
The 2025 edition of the "State of Logistics" report published by the Council of Supply Chain Management Professionals (CSCMP) and sponsored by Penske Logistics outlines how...




Generative AI at Work: Stay Creative, Stay Compliant
Generative artificial intelligence (AI) has emerged as a transformative force across industries. This article provides insights into effectively leveraging generative AI while ensuring compliance with legal and ethical standards.



Knowledge Session: Examining Role of AI in Transportation
A variety of insights into the current and future role of artificial intelligence or "AI" in the transportation sector were shared during a knowledge session held during the...

FEATURED PROJECTS



IMD Virtual Agent
Explore IMD's smarter support tool.
[Learn more](#)

Features

- **NC AI & Data News section:** general AI & Data news in North Carolina
- **Upcoming Events section:** showcases events for AI & Data
- **Submit an Event button:** shortcut to email SIPSdata@ncdot.gov to request to showcase your event
- **Industry News section:** transportation-related news
- **Featured Projects tile:** showcases select projects to highlight

Learning & Development

This page features **general and technology-specific training resources**. It also provides quick links to the **Ethical AI** training and the **AI Glossary**.

Grow your AI Skills Last modified date: 22 August 2025

Responsible AI
Responsible AI means using technology ethically, fairly, and transparently. In North Carolina, it's especially critical to ensure public trust, protect sensitive data, and support inclusive innovation—particularly as AI tools are adopted across state agencies and public services.
[Learn more](#)

Quick Links
[Ethical AI Training](#) [AI Glossary](#)

Trainings Library
Filter by Technology
[General AI & Data](#) [Microsoft 365 Copilot](#) [Copilot Chat](#)

Training Details

Boost Productivity with M365 Copilot - Engineers
Accelerate engineering workflows by using AI to summarize technical documents, automate data analysis, generate reports, manage project plans, and enhance collaboration.
Advanced
45 mins | Microsoft 365 Copilot | Consulting Partner Published | Slides & Video

Boost Productivity with M365 Copilot - Executives
Enhance effectiveness with AI-powered support for data analysis, strategic communication, and informed decision-making.
Advanced
45 mins | Microsoft 365 Copilot | Consulting Partner Published | Slides & Video

NCDIT Training Events [See all](#)
+ Add event

Date	Event	Time
AUG 28	Cayosoft Training	Thu, Aug 28, 11:00 AM
SEP 4	AvePoint and Cayosoft Office Hours	Thu, Sep 4, 11:00 AM
OCT 22	AvePoint and Cayosoft Office Hours	Wed, Oct 22, 11:00 AM

Features

- **Responsible AI tile:** shortcut to *NCDIT's Principles for Responsible Use of AI*
- **Quick Links section:**
 - **Ethical AI Training button:** shortcut to the *Using Generative AI Ethically at Work* LinkedIn training
 - **AI Glossary button:** provides a comprehensive artificial intelligence glossary covering essential AI vocabulary, definitions, and terminology
- **Trainings Library section:** library of training resources filterable by technology
- **NCDIT Training Events section:** training events from Enterprise Collaboration Services

Note: Clicking on a training in the Trainings Library will redirect you to the respective training page.



Explore NCDOT AI Use Cases (1 of 2)

This page has a **listing of AI use cases** in development, proofs of concept, and deployed to Production at NCDOT. It also includes a form to **submit ideas for new AI use cases**.

Explore NCDOT AI Use Cases

Below is a listing of AI use cases in development, proofs of concept, and deployed to Production at NCDOT

Have an idea for a use case? [Submit an Idea](#)

Last modified date: 22 August 2025

Filter by Production Deployment Status

[Production](#) [Proof of Concept](#) [In Progress](#) [Retired](#)

AI Use Cases

Click on use case tile to expand information

Use Case Name	Use Case Name	Use Case Name	Use Case Name
Automatic Flagging of Variances	BMS Bridge Replacement Estimate	IMD Claims Processing	IMD Virtual Agent
Description Robotic Process Automation (RPA) - An end-user will submit a Microsoft Form...	Description Robotic Process Automation (RPA) - An end-user will input a structure they wi...	Description Robotic Process Automation (RPA) - An OCR automation built to review the...	Description A public facing Virtual Agent hosted on the NCDOT connect page. Which is...
Process Owner Weatherbee, Jon	Process Owner Carroll, Trey H	Process Owner Fuqua, Brennon	Process Owner Fuqua, Brennon
Business Unit Contract Standards	Business Unit Structures Management Unit	Business Unit IMD	Business Unit IMD
Functional Area Technical Services	Functional Area Technical Services	Functional Area Claims Processing	Functional Area Claims Processing
Status Production	Status Production	Status Production	Status Production

Submit an Idea

Use the form below to submit your idea for a new AI use case. Please refer to [this diagram](#) to understand what to expect after submitting a new idea.

Submit an Idea

Have an idea for using AI in your team's work? We're always open to new submissions at DOT and actively explore opportunities for implementation. Once submitted, your idea will be reviewed based on business need and potential impact. If it moves forward—or if we need more details—our team will reach out. For questions, contact the SIPS team anytime.

Hi, Jason (ET), Jerry, when you submit this form, the owner will see your name and email address ext-jalson@ncdot.gov

Idea Title

Enter value here

Features

- **AI Use Cases section:** list of use cases filterable by production deployment status; tiles are expandable for more use case details (details on next slide)
- **Submit an Idea button:** shortcut to *Submit an Idea* section
- **Submit an Idea section:** form to submit an idea for a new AI use case
 - Link to flowchart with details for what to expect after idea submission also provided

Explore NCDOT AI Use Cases (2 of 2)

Clicking a use case from the *Explore NCDOT AI Use Cases* page expands a popup listing the **properties associated with the use case**.

Edit all

Copy link

Automatic Flagging of Variances

Use Case Name

Automatic Flagging of Variances

Description

Robotic Process Automation (RPA) - An end-user will submit a Microsoft Form, which will prompt the automation to begin. The automation will read the details and attachment within the Microsoft Form, then sum up the totals for each bucket. It will then compare the per mile cost estimates for these buckets to historical per mile cost averages for projects within the same Classification.

See more

Process Owner

Weathersbee, Jon

Business Unit

Contract Standards

Functional Area

Technical Services

Status

Production

Go Live Date ⓘ

1/16/2025

Technology Used


RPA

Attachments

State of NC_Process Design Document (PDD)_JA.DOT.0003_Automate Flagging of Variances...

Comments ▾

@mention or comment



Be the first one to add a comment

Properties

- **Use Case Name:** Title of the AI use case
- **Description:** Brief overview of the use case
- **Process Owner:** Person responsible for the process
- **Business Unit:** Department or team owning the use case
- **Functional Area:** Area of business operations impacted
- **Status:** Current stage (e.g., Production, Proof of Concept, In Progress, Retired)
- **Go Live Date:** Launch date of the use case
- **Technology Used:** Tools or platforms applied
- **Attachments:** Supporting documents or files (ex: process diagrams, design documents, operating handbooks, etc.)

STIC Incentive Program Project Updates



NORTH CAROLINA
Department of Transportation

Use of AI to Improve Vulnerable Road User Safety

Daniel Carter, NCDOT Traffic Safety Unit

NC-TIC Meeting, November 12, 2025

Connecting people, products and places safely and efficiently with customer focus, accountability and environmental sensitivity to enhance the economy and vitality of North Carolina

Idea Conception

- Part of a larger theme – using technology to process the enormous amount of NCDOT data
- Can we use AI to transform our text-based data into analysis-ready databases?
- Exploratory project conducted on two categories of data – turning movement counts and crash report narratives

Project Goals

- Overall goal of project was to conduct a proof-of-concept study to use AI to process text-based data
- Goal 1 – process turning movement count reports to extract pedestrian counts
- Goal 2 – process crash report narratives to extract data elements about the crash scene


Goal 1 – Pedestrian Counts

- NCDOT collects turning movement counts (TMCs) at over a thousand locations per year around the state (typically intersections).
- Many include the count of pedestrians and bicyclists crossing the road.
- Data is contained in static PDF documents, not available for region- or state-wide analysis.
- Goal was to extract the counts of pedestrians from the PDF reports and compile into a database, along with descriptive data elements about the count event.

Goal 1 – Pedestrian Counts

Extract event description data, such as:

- Count number
- Location
- Date
- Weather

Count Number: 8232		Count Type: Turn Movements	
County: Haywood		Duration: 13 hours	
City: Waynesville		Count Volume: NA	
Division: 14			
Location: US 276/ Russ Avenue at Delicious Ridge/Shining Rock Academy			
Start Count Date: Wednesday, February 2, 2022		Count Time: 06:00 a.m.	
End Count Date: Wednesday, February 2, 2022		Count Time: 19:00 p.m.	
NOAA WEATHER CONDITIONS			
Wednesday, February 2, 2022	<u>Sky Cover</u>	<u>Rain (in.)</u>	<u>Hi</u>
Mostly Cloudy	0.9	0.00	56
			<u>Low</u>
			22
COMMENTS			
Data Collector: Mike Prindiville			
Data Processor: Mike Prindiville			
Project Coordinator: Mike Prindiville			
School in Session: Yes			
Speed Limit: 45 MPH			
FRA Land Use Category: NA			
Method Used: CountCAM2			
Manufacturer/Type Used: Spack			
Equipment was working properly			
Vicinity Map			
			

Goal 1 – Pedestrian Counts

Extract
pedestrian
count totals
by approach
leg

Site 4 of 6
NW Maynard Rd
NC-54 NW Maynard Rd
NC-54 Chapel Hill Rd
Chapel Hill Rd

Date
Tuesday, March 1, 2022
Fair
53°F
Lat/Long
35.7987347, -79.7960337

0600 - 1900 (Weekday 13h Session) (03-01-2022)
Pedestrians

TIME	Northbound NW Maynard Rd			Southbound NC-54 NW Maynard Rd			Eastbound NC-54 Chapel Hill Rd			Westbound Chapel Hill Rd		
	App 4e	WB 4d	Total	App 4c	NB 4d	Total	App 4e	NB 4f	Total	App 4g	SB 4h	Total
0600-0615	0	0	0	0	0	0	0	0	0	0	0	0
0615-0630	0	0	0	0	0	0	0	0	0	0	0	0
0630-0645	0	0	0	0	0	0	0	0	0	0	0	0
0645-0700	0	0	0	0	0	0	0	0	0	0	0	0
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0
0700-0715	0	0	0	0	0	0	0	0	0	0	0	0
0715-0730	0	0	0	0	0	0	0	0	0	0	0	0
0730-0745	0	0	0	0	0	0	0	0	0	0	0	0
0745-0800	0	0	0	0	0	0	0	0	0	0	0	0
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0
0800-0815	0	0	0	0	0	0	0	0	0	0	0	0
0815-0830	0	0	0	0	0	0	0	0	0	0	0	0
0830-0845	0	0	0	0	0	0	0	0	0	0	0	0
0845-0900	0	0	0	0	0	0	0	0	0	0	0	0
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0
0900-0915	0	0	0	0	0	0	0	0	0	0	0	0
0915-0930	0	0	0	0	0	0	0	0	0	0	0	0
0930-0945	0	0	0	0	0	0	0	0	0	0	0	0
0945-1000	0	0	0	0	0	0	0	0	0	0	0	0
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0
1000-1015	0	0	0	0	0	0	0	0	0	0	0	0
1015-1030	0	0	0	0	0	0	0	0	0	0	0	0
1030-1045	0	0	0	0	0	0	0	0	0	0	0	0
1045-1100	0	0	0	0	0	0	0	0	0	0	0	0
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0
1100-1115	0	0	0	0	0	0	0	0	0	0	0	0
1115-1130	0	0	0	0	0	0	0	0	0	0	0	0
1130-1145	0	0	0	0	0	0	0	0	0	0	0	0
1145-1200	0	0	0	0	0	0	0	0	0	0	0	0
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0
1200-1215	0	0	0	0	0	0	0	0	0	0	0	0
1215-1230	0	0	0	0	0	0	0	0	0	0	0	0
1230-1245	0	0	0	0	0	0	0	0	0	0	0	0
1245-1300	0	0	0	0	0	0	0	0	0	0	0	0
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0
1300-1315	0	0	0	0	0	0	0	0	0	0	0	0
1315-1330	0	0	0	0	0	0	0	0	0	0	0	0
1330-1345	0	0	0	0	0	0	0	0	0	0	0	0
1345-1400	0	0	0	0	0	0	0	0	0	0	0	0
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0
1400-1415	0	0	0	0	0	0	0	0	0	0	0	0
1415-1430	0	0	0	0	0	0	0	0	0	0	0	0
1430-1445	0	0	0	0	0	0	0	0	0	0	0	0
1445-1500	0	0	0	0	0	0	0	0	0	0	0	0
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0
1500-1515	0	0	0	0	0	0	0	0	0	0	0	0
1515-1530	0	0	0	0	0	0	0	0	0	0	0	0
1530-1545	0	0	0	0	0	0	0	0	0	0	0	0
1545-1600	0	0	0	0	0	0	0	0	0	0	0	0
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0
1600-1615	0	0	0	0	0	0	0	0	0	0	0	0
1615-1630	0	0	0	0	0	0	0	0	0	0	0	0
1630-1645	0	0	0	0	0	0	0	0	0	0	0	0
1645-1700	0	0	0	0	0	0	0	0	0	0	0	0
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0
1700-1715	0	0	0	0	0	0	0	0	0	0	0	0
1715-1730	0	0	0	0	0	0	0	0	0	0	0	0
1730-1745	0	0	0	0	0	0	0	0	0	0	0	0
1745-1800	0	0	0	0	0	0	0	0	0	0	0	0
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0
1800-1815	0	0	0	0	0	0	0	0	0	0	0	0
1815-1830	0	0	0	0	0	0	0	0	0	0	0	0
1830-1845	0	0	0	0	0	0	0	0	0	0	0	0
1845-1900	0	0	0	0	0	0	0	0	0	0	0	0
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00	
Intersection %	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00	

0	5	5	10	14
0	0	1	1	3
0	0	0	0	0
0	0	1	1	1
0	2	0	2	2
0	2	2	4	6
0	38	26	64	79
-	59.38	48.63		
0.00	48.10	32.91	81.01	

Goal 1 – Pedestrian Counts

Project Activities:

- NCDOT provided 2,000 TMC reports to the project team
 - Reports originated from 9 different count data vendors
- Project team worked with NCDOT to identify target data for extraction
- Team developed a model to extract a total of 18 data elements
- NCDOT engaged in model testing and QAQC

Deliverables:

- Summary output dataset with extracted data from 1,400 TMC reports
- Web-based tool to allow NCDOT to upload additional turn count reports and have the data extracted

Goal 2 – Pedestrian Crash Data Elements

- NCDOT receives crash reports from approximately 2,200 pedestrian involved crashes per year
- Many data elements are coded in the form (e.g., location, time, date, parties involved, etc.)
- Additional data elements can be gleaned from the written descriptive narrative

Goal 2 – Pedestrian Crash Data Elements

84 DIAGRAM

Indicate North

NOT TO SCALE

Unit#1 was: ☒ Traveling ☐ Parked Facing ☐ N ☐ S ☐ E ☐ W on N SHARON AMITY RD

Unit#2 was: ☒ Traveling ☐ Parked Facing ☐ N ☐ S ☐ E ☐ W on N SHARON AMITY RD

85 NARRATIVE

(Include pertinent and unusual aspects, which are not listed elsewhere on the form)

UNIT #1 WAS MAKING A RIGHT TURN FROM SUDBURY RD TO N SHARON AMITY RD. PEDESTRIAN #2 WAS HEADING NORTH BOUND ON SIDEWALK ALONG N SHARON AMITY RD IN A MOTORIZED WHEEL CHAIR. UNIT #1 WAS MAKING A RIGHT TURN AT THE TIME WHEN PEDESTRIAN WAS CROSSING SUDBURY RD COLLIDING WITH HIS WHEEL CHAIR. UNIT #1 AND THE PEDESTRIAN REMAINED IN THE AREA UNTIL THE INVESTIGATING OFFICER ARRIVED. DRIVER OF UNIT #1 STATED THAT SHE WAS DRIVING EAST BOUND ON SUDBURY RD AND CAME TO A FULL STOP AT THE N SHARON AMITY RD INTERSECTION. SHE PROCEEDED TO MAKE A RIGHT TURN ON N SHARON AMITY RD AND HEARD COLLISION WITH PEDESTRIAN #2. SHE PULLED OVER AND CALLED 911. PEDESTRIAN #2 STATED THAT HE WAS TRAVELING ON THE SIDEWALK AND ATTEMPTING TO CROSS SUDBURY RD WHEN UNIT #1 STRUCK HIM. HE HAD BLOOD ON HIS LIPS AND BEHIND RIGHT ANKLE. HIS WHEEL CHAIR HAD SUPERFICIAL DAMAGE ALONG RIGHT SIDE. HE WAS CHECKED BY MEDIC #20 AND TRANSPORTED TO ATRIUM-MAIN FOR FURTHER EVALUATION.

State

Goal 2 – Pedestrian Crash Data Elements

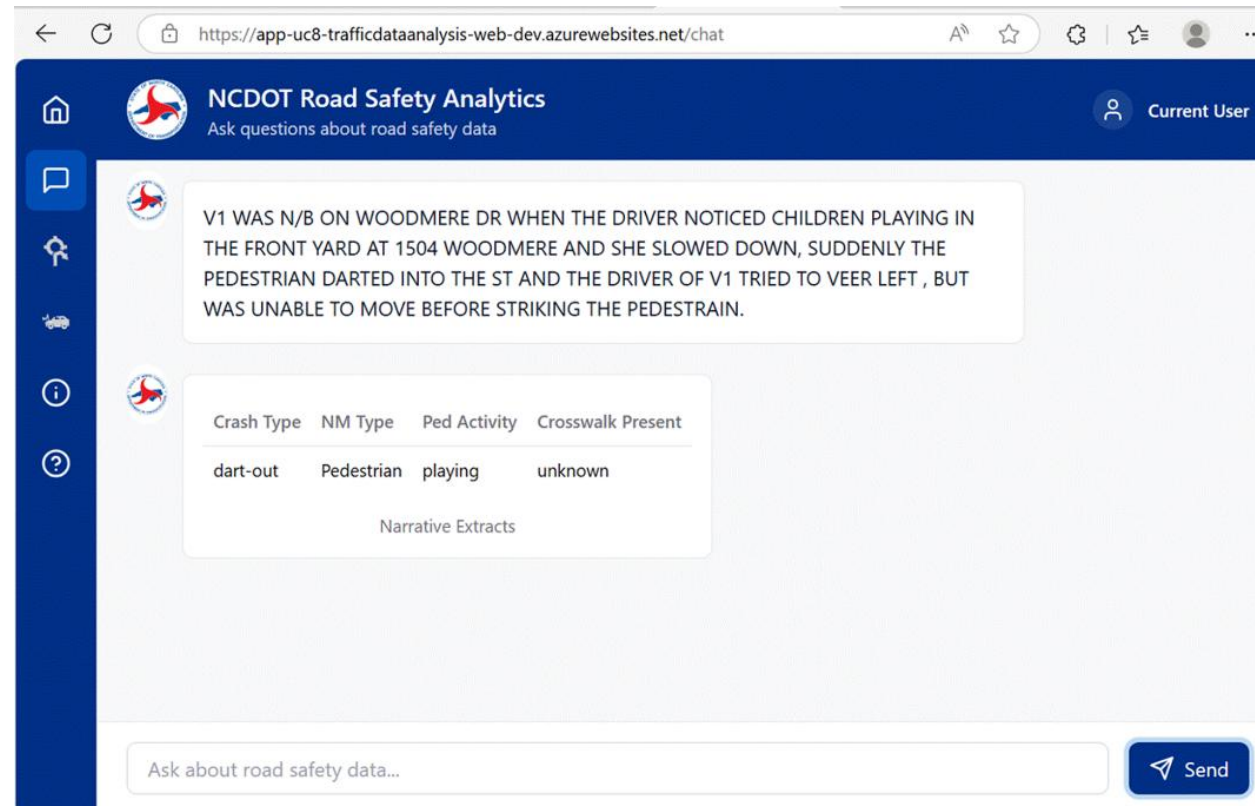
Project Activities:

- NCDOT provided 28,000 crash records to the project team
- NCDOT also provided crash type coding performed previously through a separate project
- Contractor worked with NCDOT to determine which data elements to extract and how to format and categorize them
- Contractor developed model to extract four elements:
 - Crash type (e.g., dart-out, vehicle failed to yield, walking along roadway)
 - Non motorist type (pedestrian, scooter, or skateboard)
 - Pedestrian activity (e.g., “ran out into the street”, “pushing vehicle”, or “standing in the middle of the road”)
 - Crosswalk presence (yes/no/unknown)

Goal 2 – Pedestrian Crash Data Elements

Deliverables:

- Web-based tool to allow NCDOT to feed in crash report narratives and have the model extract the 4 target data elements (limit 100 per batch)



Challenges

Pedestrian counts data extraction

- Data from 9 vendors meant 9 different formats

Crash narrative data extraction

- Narrative is an open text field – amount of detail varies by officer

Lessons Learned

- Scope of work needed to be more detailed even though the project was “proof-of-concept.” The open-ended scope meant that products ended up scaling back repeatedly through the project, particularly in the crash narrative extraction.
- AI extraction of data from text shows promise – more in the structured format of the turning movement counts than the descriptive nature of the crash narratives.

Contact Us

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919-814-4949




 @NCDOT

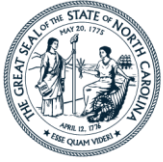
 NCDOT

 NCDOTcommunications

 @NCDOT

 ncdotcom

 ncdot_comm



NORTH CAROLINA
Department of Transportation



Development of Data Governance for Rail Divisions Crossing Data

Todd Meyer, Data Analysis & Inventory Manager
NCDOT Rail Division, Engineering Coordination & Safety Branch

November 12, 2025

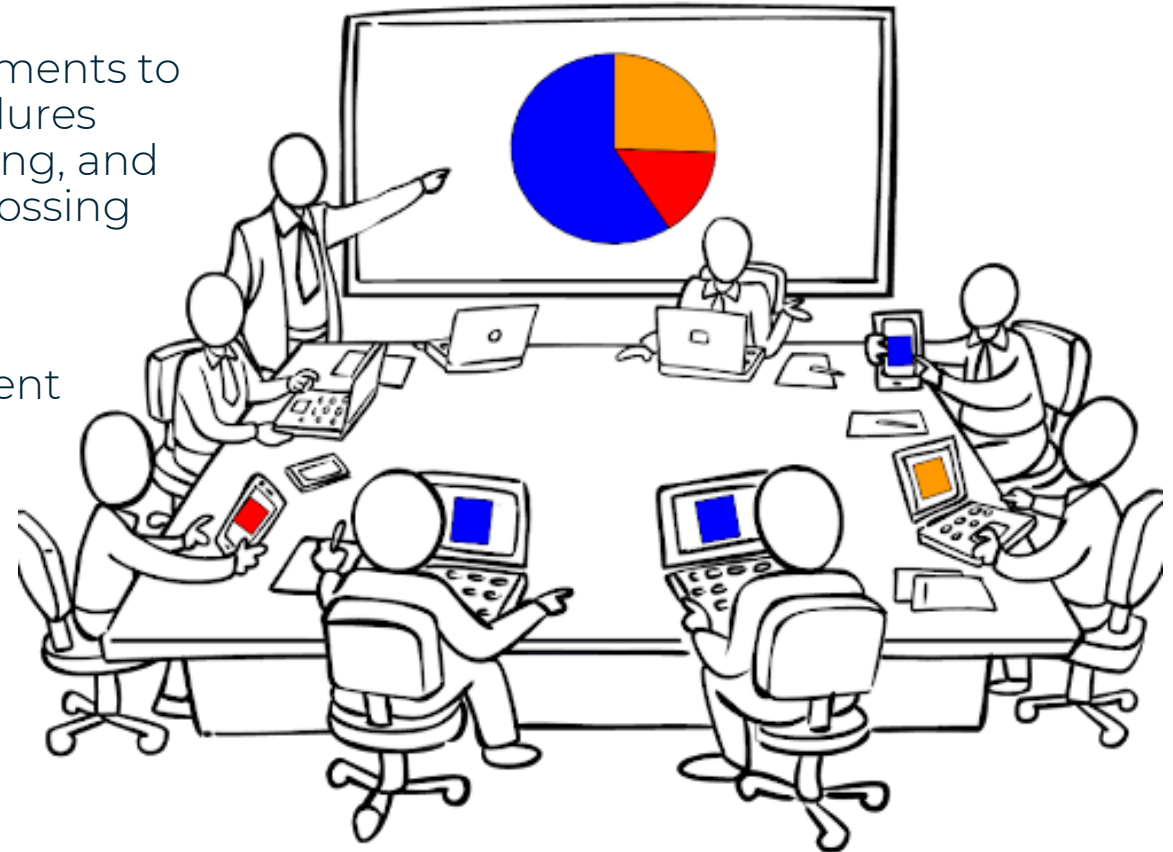
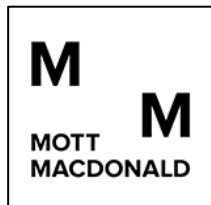
Connecting people, products and places safely and efficiently with customer focus, accountability and environmental sensitivity to enhance the economy and vitality of North Carolina



Project Overview

- Project Purpose
 - To review and provide recommended enhancements to the Rail Division's current processes and procedures regarding data collection, federalization, reporting, and publication/distribution surrounding railroad crossing data.
- Goal
 - Complete a data governance guidance document to outline and support continuous reporting of accurate railroad crossing data

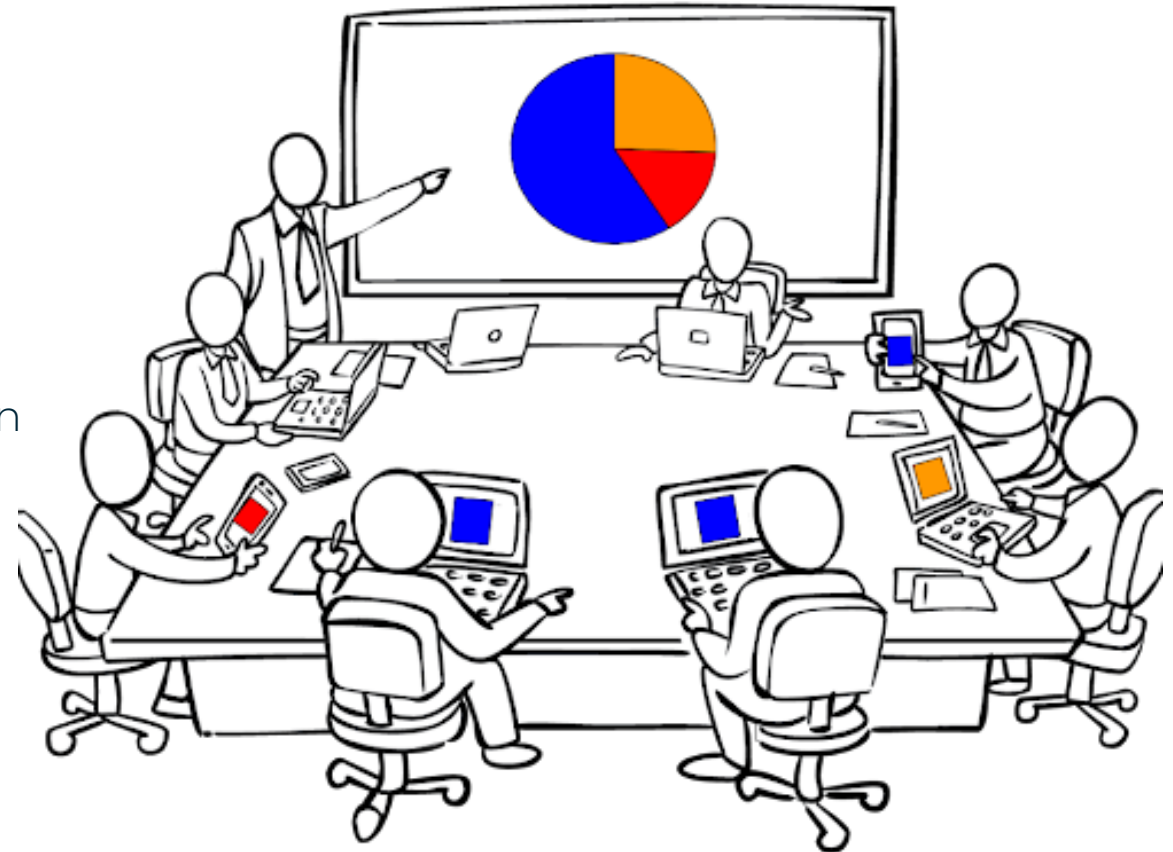
Partnered with Mott Macdonald and Arora Engineers, LLC to manage the project.





Project Overview

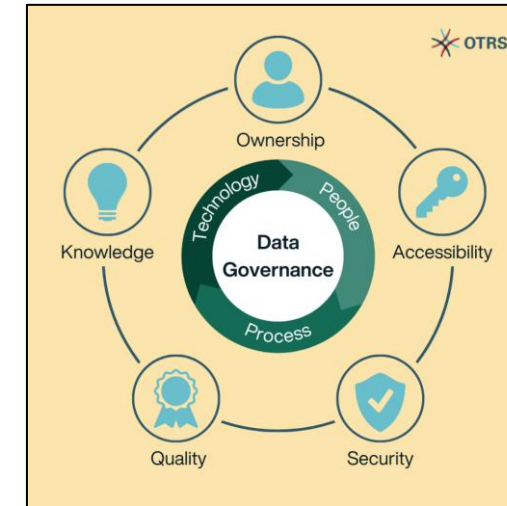
- Stakeholders Involved
 - NCDIT-T GIS Unit
 - NCDOT Road Inventory
 - NCDOT Traffic Signals
 - NCDOT Bridge Structures
 - School Bus Sponsors
 - North Carolina Department of Public Instruction (NCDPI)
 - Institute for Transportation Research and Education (ITRE)
 - UNC Charlotte Urban Institute
 - Class I and Short line Railroads
 - Federal Railroad Administration (FRA)
 - Federal Highway Administration (FHWA)





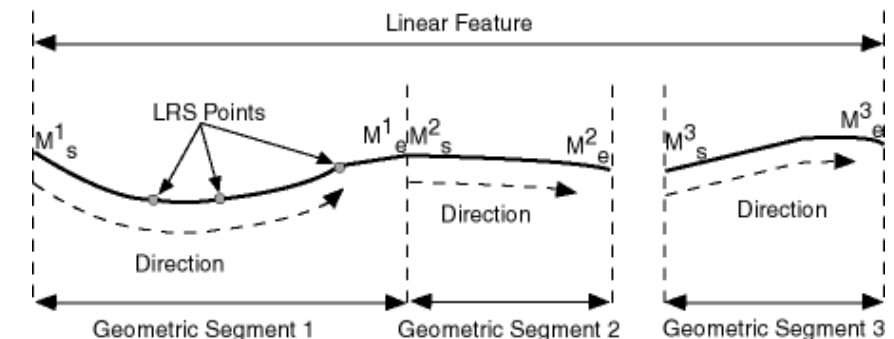
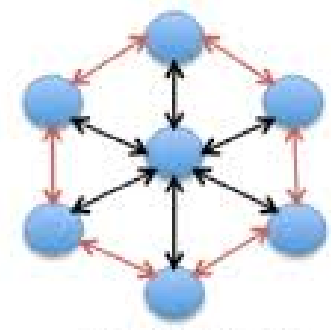
What's all this terminology about?

- **Data Governance** - Is the set of rules and processes that ensure an organization's data is accurate, secure, and properly managed, so the right people can use it effectively.
- **Data Federalization** - Data remains in its original location but is accessed and combined virtually through a centralized system or framework.
- **State Authoritative Railroad And Highway System (SARAH)** – NCDOT Rail Division's application and database that allows for the tracking and reporting of asset and project related data.
- **Linear Reference System (LRS)** - Method used to locate specific points or segments along a roadway by referencing their relative positions to known landmarks or measured distances, rather than using geographic coordinates.



Data Governance Framework

Federated Data Model





What is Rail Crossing Data & Inventory?

A highway-rail crossing is a location where a public highway, road, street, or private roadway, including associated sidewalks and pathways, crosses one or more railroad tracks. All such crossings are reported by railroads and state Department of Transportations to the FRA.

- Federal Rail Administration (FRA) National Crossing Database
 - [CFR 49 Part 234.3 Application and Responsibility for Compliance](#)
 - [FRA F 6180.71 U.S. DOT Crossing Inventory Form](#)
- NCDOT State Authoritative Railroad and Highway System (SARAH)
 - Includes FRA crossing characteristics data
 - Additional data to support Investigative index
 - Tracks safety projects & maintenance payments to railroads
 - Field assessment inventory of public, at-grade crossings





Crossing Inventory Record Attributes

Six sections, with over 200 Data Attributes

Some Key Attributes:

- Railroad operator
- Emergency contact #
- Lat/Long
- Purpose, Type, Position
- Train Speed/Trains per day
- Types of warning devices
- Signage
- Crossing surface type, # Traffic Lanes
- Highway speed limits, AADT

Rail Divisions Attribute Additions:

- Sight distance, school bus data, inventory metrics

Data supports NCDOT rail crossing Investigative Index model



Location &
Classification
information



Railroad
Information



Traffic Control
Devices



Physical
Crossing
Characteristics



Highway
Information

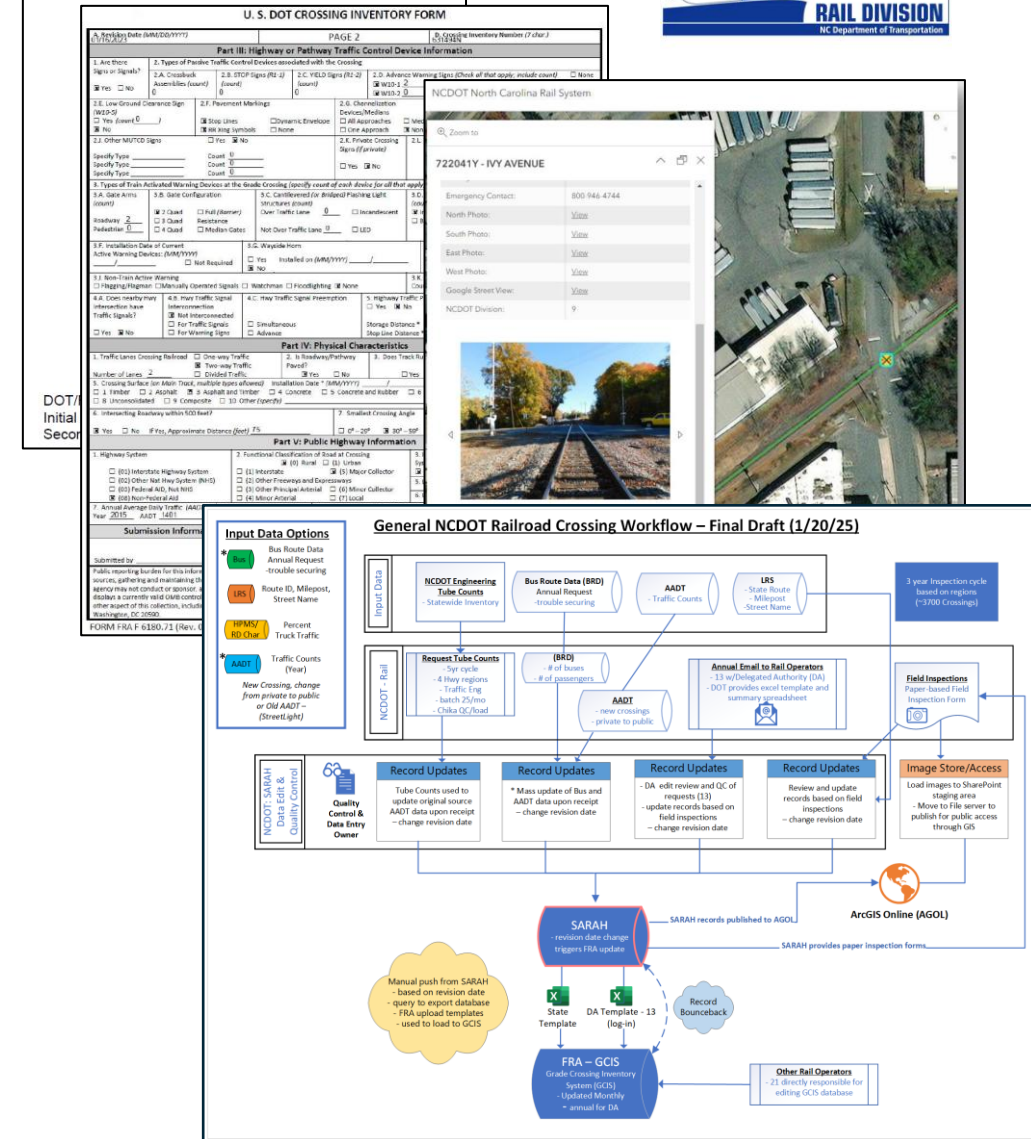


Rail Division
Additional Data Attributes

Project Progression

- Meetings held to review crossing data guidance/procedures and identify roles and responsibilities to establish a sustainable and transparent railroad crossing inventory solution.
- Gather source documents for review
- Document findings and develop workflow diagrams representing enhanced methodology to capture, validate, and populate the SARAH database
- Coordinate monthly virtual calls to review progress and solicit feedback
- Recommend data validation procedures to ensure data quality and consistency
- Deliver a technical memorandum which documents and describes the entire data collection to processing lifecycle including workflow diagram and recommended validation procedures.

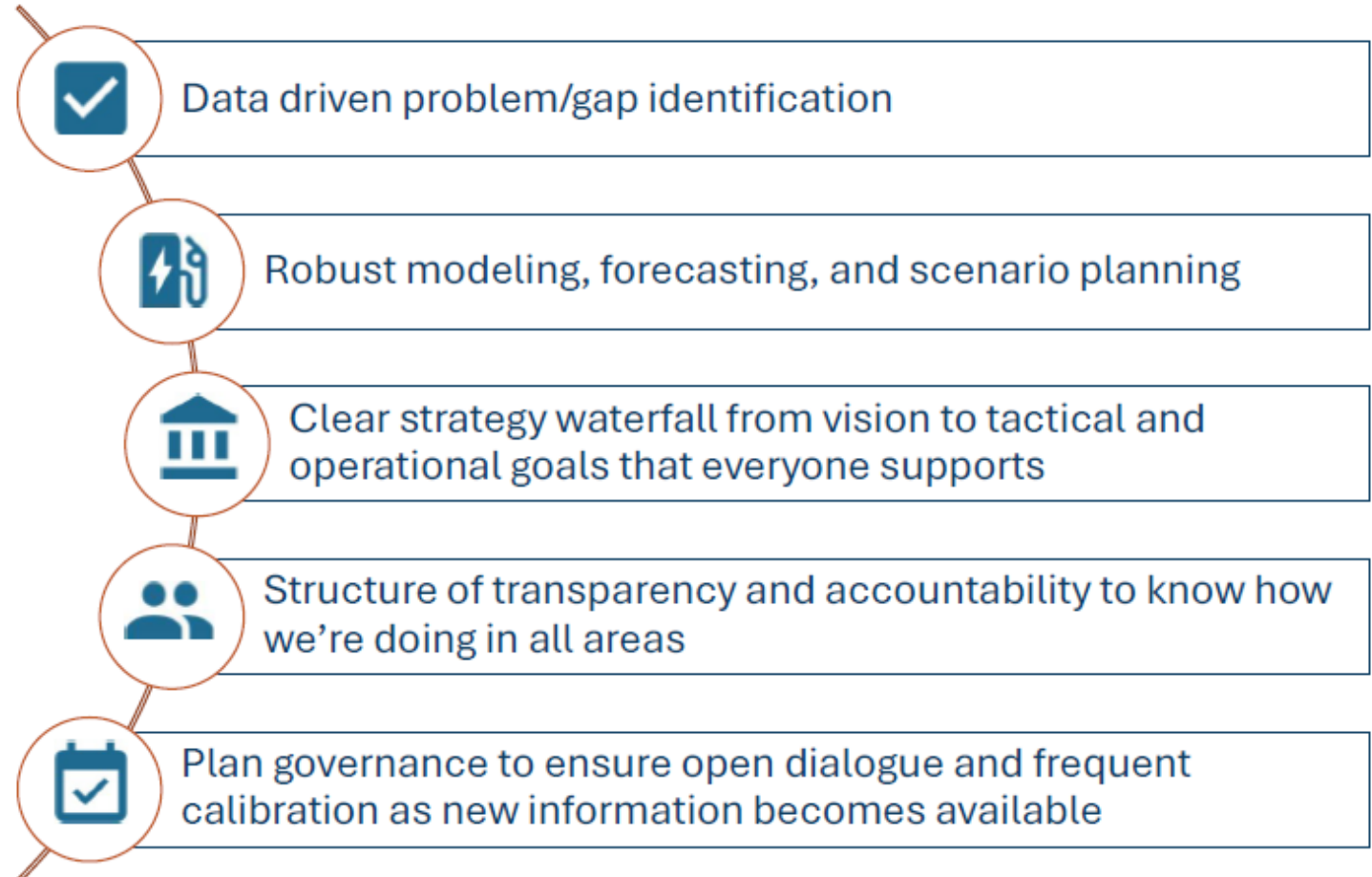
FEDERAL RAILROAD ADMINISTRATION GUIDE FOR PREPARING U.S. DOT CROSSING INVENTORY FORMS





Alignment with Department Data Governance Vision

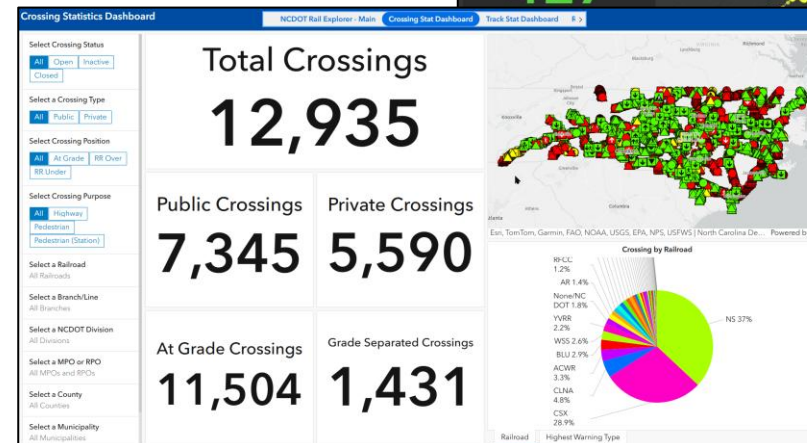
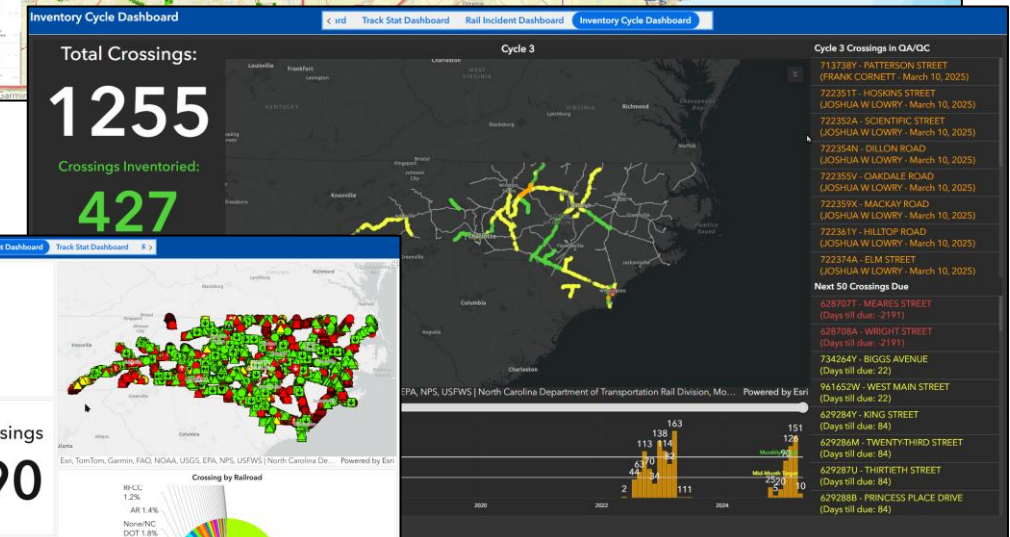
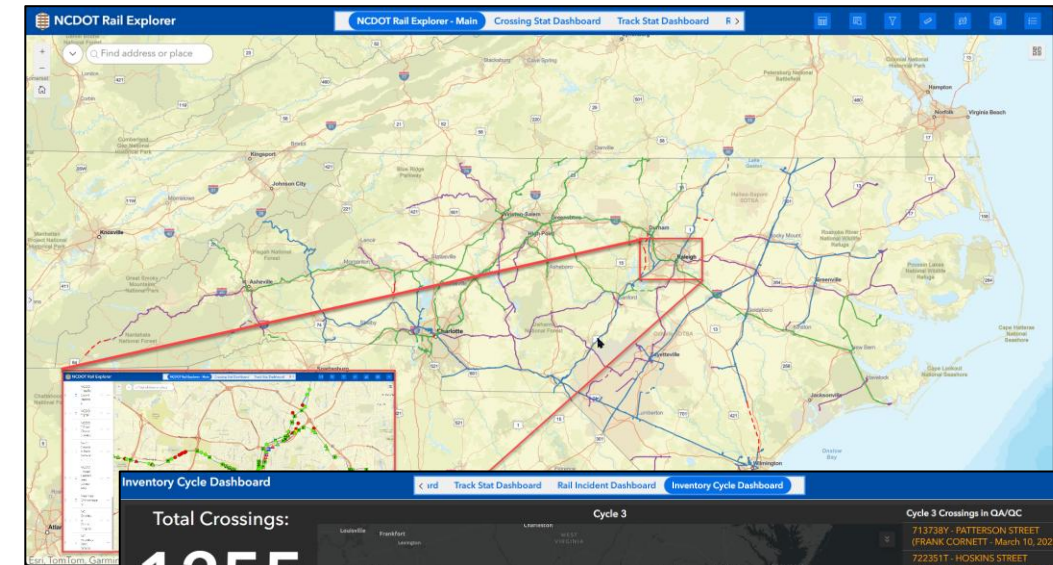
Office of Strategic Initiatives & Program Support – Has a core purpose to help NCDOT maximize success, act strategically, and prepare for the future





Action items moving forward

- Increased engagement with stakeholders necessary in data sharing activities & system enhancements
- Further design, test, and deployment of mobile inventory collection procedures
- Automation scripts for better Quality Control
- Continue dissemination of information to public via ArcGIS Online
- Continued Process Improvement
- Integrate unstructured documentation



Future Enhancements

- Implement API to facilitate data migration
- Fully implement a mobile Field Maps inventory process
 - Linking to navigation applications
 - Ability to work off-line
 - Eliminate paper-based forms
 - Data loaded to ArcGIS Online
 - Office data synchronization
- Additional automated quality control procedures (FME)
- Visual data validation procedures within GIS
- Enhance Integration with the Highway Linear Referencing System (LRS)



7:58

Cancel Collect Submit

SARAH Field Maps Crossings
35.867008°N 80.250360°W

Is there an Adjacent Crossing with a Separate Number?

YES

Adjacent Crossing Number:

Quiet Zone (FRA provided):
NO

HSR Corridor ID:
--

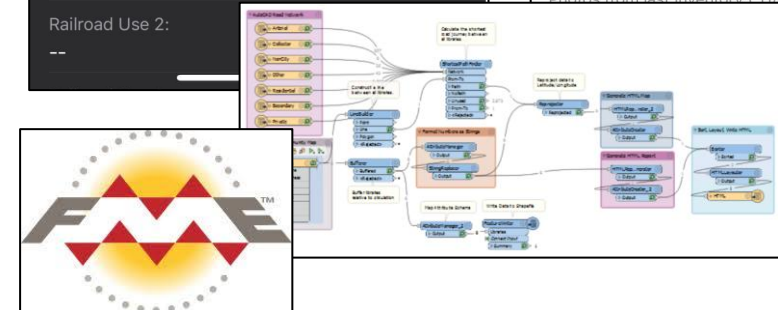
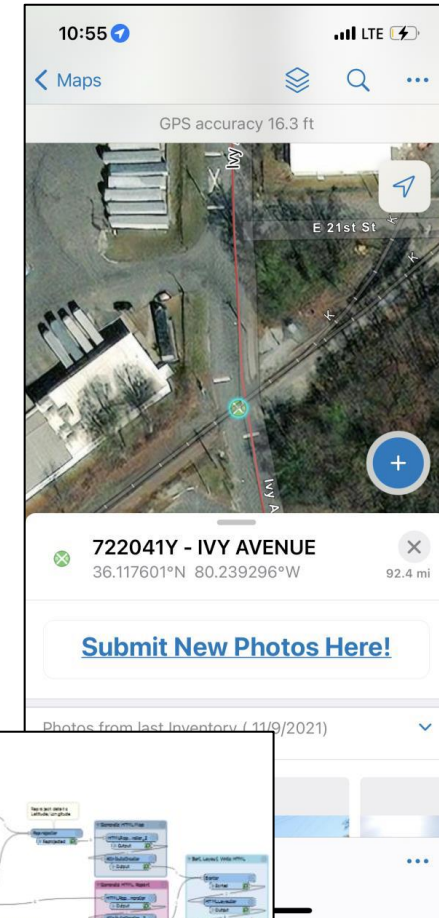
Latitude:
35.867008

Longitude:
-80.25036

Lat/Long Source:
ACTUAL

Railroad Use 1:
--

Railroad Use 2:
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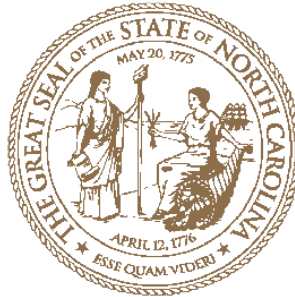
Comments & Q&A

North Carolina Department of Transportation
Rail Division

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Data Analysis & Inventory Manager

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Raleigh, NC 27603

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tmeyer@ncdot.gov



External Partners Overview Presentations

Build A Better Mousetrap

Annual Innovation Challenge

**Kate Davison, NC Local Technical Assistance Program
(LTAP) Director**

ITRE at NC State University

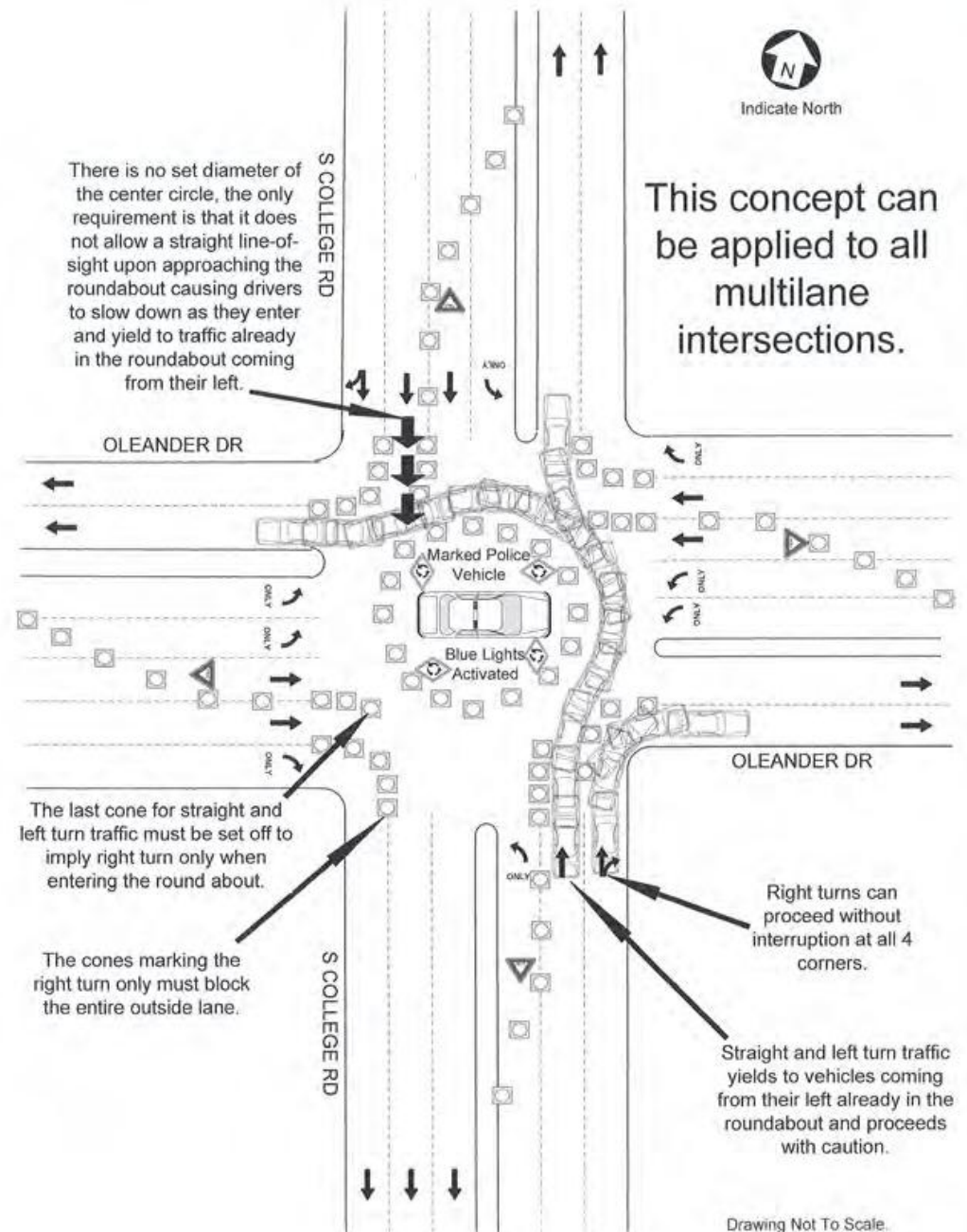


***Now it's time to
let your innovation
make waves***

Categories

- **Innovative Project**– Any solution that addresses any or all phase(s) of the ‘project’ life cycle – Planning, Design/Engineering, Construction, Operations and Maintenance. This project shall introduce new ideas, is locally relevant, original, and creative in thinking.
- **Bold Steps**– Any locally relevant high-risk project or process showing a breakthrough solution with demonstrated high-reward.
- **Smart Transformation**– A locally relevant significant change in any transportation activity or process that is SMART “Specific, Measurable, Achievable, Realistic and Time-bound” in nature that results in improved efficiencies.
- **Pioneer**– A locally relevant product/tool that is among the first to solve a maintenance problem with a home-grown solution.







Build a Better Mousetrap 2025/2026

- Delayed 2025, will be reviewed with 2026 submissions
- NC 2026 competition will open in January 2026 and run through May 2026.
 - <https://itre.ncsu.edu/focus/ltap/build-a-better-mousetrap/>

BEFORE:

AFTER:

**CONTINUOUS IMPROVEMENT:
The Guardrail Crab**



NC-TIC Rechartering Initiative

Recharting Pending

- Last signed NC-TIC Charter from 2019
- Opportunity to restructure the NC-TIC

The goal of the recharting is to align the Council's vision and mission with the Council's scope. This includes what the Council has authority to vote on, what the membership of the Council looks like, what stakeholders the Council needs to coordinate and communicate with, and how the Council wants to provide management.

Questions to Consider

- What is the mission of the Council?
- What is the scope of the committee?
- What is not in the scope?
- What kinds of fundings are awarded by this committee?
- What updates are needed for this committee?
- Who can recommend moving ideas to another entity (such as the grants team)?
- What positions should have voting power?
- What should be shared externally out of NCDOT?

Outreach Needed from Peer States?

- The efforts of the NC-TIC should be measurable.
 - Is there a peer state who has developed useful and consistent metrics?
 - What metrics that have been captured and developed period over period?
 - How have they used the analysis?

Summary and Next Steps

Adjournment
