



North Carolina
Department of Transportation



Annual Program Report

Fiscal Year 2025
(October 1, 2024 - September 30, 2025)





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Introduction

The North Carolina Department of Transportation (NCDOT) Transportation Systems Management & Operations (TSMO) Program enhances mobility safety on freeway and arterial corridors across the state. The TSMO Program is comprised of core focus areas, shown below. These core focus areas work together under the leadership of NCDOT's State TSMO Engineer.

- Traffic Incident Management (TIM)
- Traffic Management Centers (TMC)
- Intelligent Transportation Systems (ITS) Operations
- ITS Design
- Traveler Information
- Mobility Performance Measures
- Emergency Weather Traffic Operations
- Active Work Zone Management
- TSMO Planning
- Traffic Signal Program
- Signal Design
- Signal System Timing and Operations (SSTO)

TSMO strategies seek to address the underlying causes of mobility and safety issues through innovation, process improvement, and partnership – solutions that typically cost less and are quicker to implement than traditional approaches, like adding lanes or building new roads to increase capacity.

The purpose of this report is to provide information regarding TSMO Program activities, with focus on program budget and management. For each core focus area, this report will highlight key accomplishments in Federal Fiscal Year (FY) 2025 and strategic goals for FY 2026.



Executive Summary

The TSMO Program accomplished many great things in FY 2025. Each core focus area expanded the program's level of service, range of capabilities, and responsiveness to emerging opportunities. These FY 2025 accomplishments include:

Program-wide

- 2025 NOCoE TSMO Awards: Best TSMO Project and Overall Winner for Hurricane Helene response.

Traffic Incident Management

- Expanded IMAP's patrol area to over 1,350 centerline miles and extended IMAP operations to weekends in the Triangle, Triad, and Metrolina regions.

Traffic Management Center

- Completed construction of the Eastern TMC and began onsite operations.
- Began construction of the Triad TMC and design of the new Mountain TMC.
- Maintained an operational quality score of 95% throughout 2025, which reflects accuracy, timeliness, and procedural compliance of TMC-implemented response measures.

ITS Operations

- Created a Statewide Plan for Day-to-Day and Emergency Communications across the Department.
- Awarded a new ITS Resilience contract and achieved device uptimes of over 98%.
- Twenty-two of 33 NC Broadband Project segments completed and turned over to OMC contractor.

ITS Design

- Inspected and accepted 11 commercial fiber partnership segments.
- Defined the scope for 3 design-build ITS projects.
- Designed/reviewed over 250 signal communications plans.

Traveler Information

- Conducted pilot to assess use of motorist dash cameras to validate incidents and work zones.
 - Implemented tool to verify connected arrow board activation in work zones across the state.



Emergency Weather Traffic Operations

- Managed the tracking and reporting of road closures due to Helene, including the re-opening of 98% of the 1,500 closures, including I-26 and I-40 near the Tennessee border.

Active Work Zone Management

- Deployed ICM solutions for I-6064 (I-95) work zone.
- Monitored over 40 major work zones across the state.

TSMO Planning

- Established and fully staffed the TSMO Planning Group.
- Completed ITS Strategic Plan for Wilmington.

Traffic Signal Program

- Completed nearly 500 in-house electrical and programming detail designs.
- Reviewed over 2,000 electrical and programming detail designs.
- Institutionalized use of the Signal Maintenance Dashboard.
- Began work on the traffic signal training program.
- Modernized over 2,000 traffic signals to date.

Signal Design

- Published TEPPL topic on NCDOT's Red-Red flashing policy.
- Completed over 450 in-house signal designs.
- Reviewed and approved over 700 developer projects.
- Created the "TSMO Metal Pole Inspection" GIS layer to track pole locations and inspection cycles and inspected over 1,050 metal signal poles.

Signal System Timing and Operations (SSTO)

- Optimized signal timing for 34 systems, impacting 290 signals.
- Reduced delay along corridors by 66% via signal timing – target is 25%.

TSMO Return on Investment in FY 2025

TSMO strategies often provide a high return on investment as technology is leveraged to increase safety and capacity within existing transportation infrastructure. To calculate the TSMO Program's return on investment (ROI) for FY 2025, NCDOT utilized industry research and analysis from leading TSMO agencies, FHWA, NOCoE, and AASHTO. NCDOT specifically evaluated the ROI associated with traveler information, incident management, signal system timing, and signal management TSMO strategies. These strategies alone resulted in the following benefits for the program:

- Over \$497 million in benefits due to estimated reduced crashes (3,760 crashes, 791 injuries, and 19 fatalities).
- Over \$1.3 billion in benefits due to reduced travel time (over 59 million hours of travel time savings).
- Over \$142 million in benefits due to reduced fuel consumption (over 38 million gallons) and reduced CO2 emissions (over 339 thousand metric tons).
- Over \$948 million in benefits due to reduced signal delay (over 32 million hours of reduced traffic signal delay, resulting in overall signal maintenance ROI of 25:1).

These benefits, when compared with an annual TSMO Program investment of \$97,252,532 resulted in a benefit/cost ratio of 30:1 for the program.

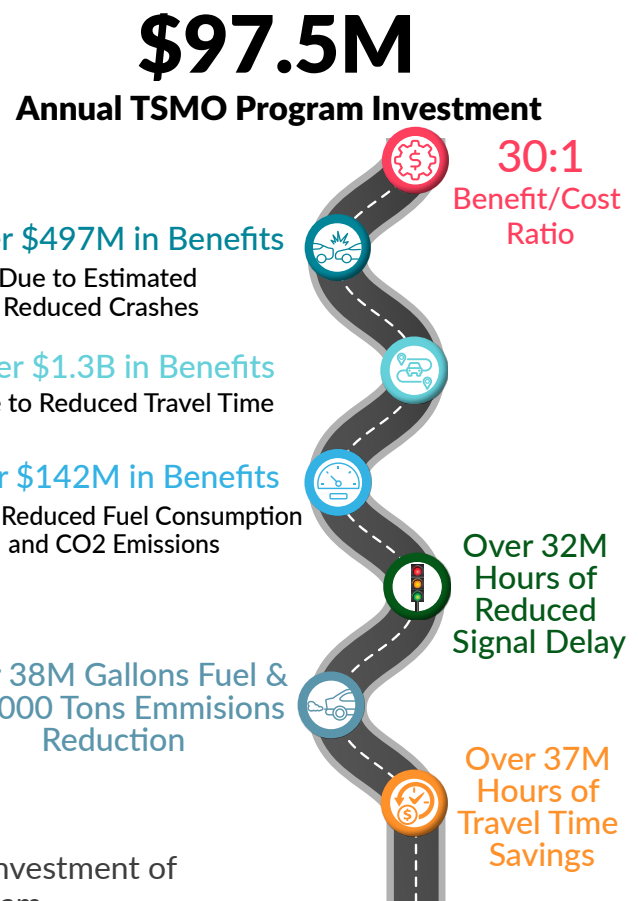
The TSMO program budget is organized across two primary funding areas: TSMO Operations and Traffic Signal Program. Both are structured to support a common set of operational outcomes (e.g., reduced travel times, etc.) and should be read together as a program investment in system performance. The TSMO program's return on investment is evaluated at the outcome level, not at the activity level. Activities like design and planning are not expected to produce program outcomes but remain essential to the program's overall success.

Program delivery is shared between the TSMO Unit and Divisions. TSMO Unit activities tend to focus on statewide policy, procurement, and oversight, while Division-level activities target deployment, field operations, and maintenance. All of these activities contribute to the same outcome targets, and the budget reflects that distributed delivery model.

Tow Contract Benefits

Since 2019, NCDOT has partnered with private towing and recovery companies to rapidly remove vehicles and reopen lanes to improve safety and traffic flow near major work zones. In that time, 5 incentive-based tow contracts have resulted in measurable improvements including an overall decrease in incident clearance times of 38%.

Project	BEFORE Tow Contract Avg. Clearance Time (min)	AFTER Tow Contract Avg. Clearance Time (min)	Clearance Time Improvement (min)	Clearance Time Improvement (%)
I-3306	62	30	32	52%
I-4700/I-4400	48	35	13	28%
I-5986	71	46	25	35%
I-5987	79	54	25	32%
I-6064	64	49	14	22%
OVERALL	65	40	25	38%



TSMO FY 2025 Updates

In FY 2025, the Department continued efforts to shift funding dependency away from general maintenance funding sources, implementing strategies from the TSMO Program Report, and advancing key initiatives across the state. Furthermore, the TSMO Program accomplished many of its highest priority goals while remaining responsive to real-time traffic demands, including on-going recovery from Hurricane Helene. The following table captures the report card that identifies the state of the program's FY 2025 goals.

Report Card

TSMO FY 2025 Updates

Core Focus Area	Goal	Action Plan	Status
Program Wide	National Recognition	2025 NOCoE TSMO Awards: Best TSMO Project and Overall Winner.	Completed
TIM	Operations	Advance the Training 2.0 initiative to include systematic trainer onboarding, rollout of refreshed training content, and implementation of innovative tech solutions.	In progress
	IMAP Expansion	Expand IMAP patrol routes statewide and implement weekend operations in the Triangle, Triad, and Metrolina regions.	Completed
	IMAP Resources	Leverage Prioritization Tool data in support of proactive and continuous data driven decisions for IMAP coverage.	In progress
	Operations	Develop incident management training to be integrated into the Basic Law Enforcement Training (BLET) curriculum or in service block.	In progress
TMC	Triad TMC Upgrade	Begin Triad TMC construction.	In progress
	Establish Eastern TMC	Complete Eastern TMC upfit and staffing, and begin operations.	Completed
	Mountain TMC Upgrade	Complete Mountain TMC design.	In progress
	Control Room Performance Quality	Maintain a quality score of 92% throughout 2025.	Completed
	STOC Operations	Adjust staff to facilitate increased IMAP dispatch support on weekends.	Completed
ITS Operations	Communications Working Group	Create Statewide Plan for Day-to-Day and Emergency Communications across the Department.	In progress
	ATMS Deployment	Deploy phase 1 of ATMS, including planned and unplanned event entry; DMS automation; integration of Inrix Queue detection and SHP CAD feed; and new DriveNC.gov website (public).	In progress
ITS Design	Outreach	Develop Educational Broadband Outreach Plan.	In progress
	Complete Construction of Metro Signal Systems	U-5968 Durham Signal System.	Completed
Traveler Information	511 & Customer Service	Serve 27,608 511 callers.	Completed
		Serve 55,655 DOT Customer Service callers.	Completed
	Alerts	Issue 198,227 slowdown alerts to trucks.	Completed
	Situational Awareness	Pilot incident validation tool using motorist dash cams.	Completed
		Deploy tool to view connected arrow boards.	Completed
Mobility Performance Measures	Mobility Performance Requirements	Poised to exceed targets on FHWA established mobility performance measures. (Have exceeded targets consistently in prior years; awaiting 2025 data).	Pending 2025 Data



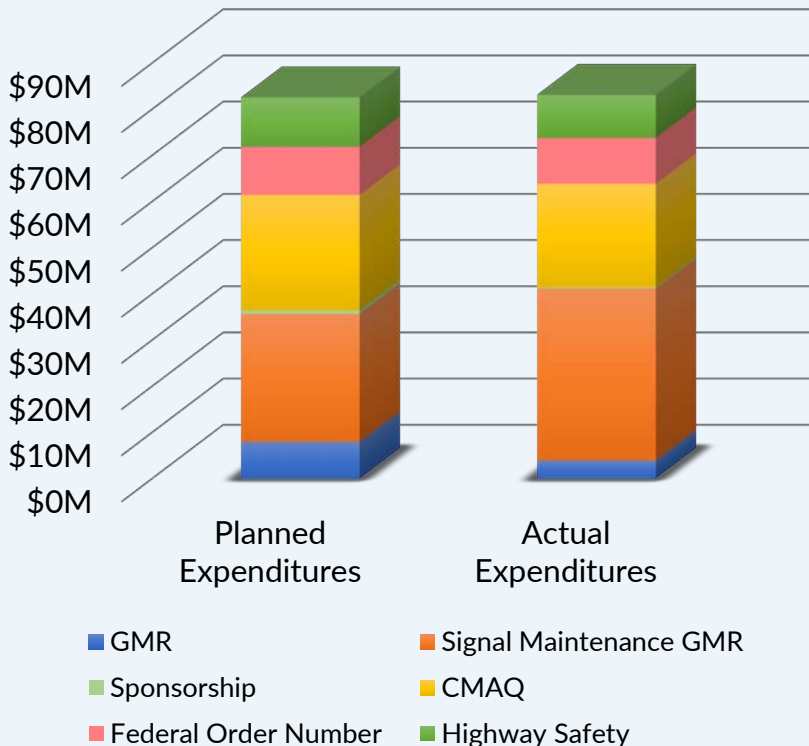
TSMO FY 2025 Updates (Cont'd.)

Core Focus Area	Goal	Action Plan	Status
Emergency Weather Traffic Operations	Prepare for Weather Events	Conduct annual Hurricane and Winter Weather exercises	Completed
	Improve STOC routing room	Upfit routing room to be more connected and functional to support significant events.	Completed
Active Work Zone Management (AWZM)	ICM Implementation	Deploy ICM for I-6064 (I-95) work zone.	Completed
	Incident Management Signal Timing Plans	Develop and implement incident management timing plans in support of three ICM deployments.	In progress
TSMO Planning	Planning Group and Tools	Update Statewide ITS planning map.	In progress
	ITS Deployment Guide	Finalize guidelines for ramp metering.	In progress
	Regional ITS Strategic Deployment Plans	Complete ITS Strategic Plan for Wilmington.	Completed
Traffic Signal Program	Signal Upgrades	Implemented quarterly progress tracking of signal upgrades.	Completed
	Signal Maintenance Tracking	Developed method for tracking condition of traffic signal equipment.	Completed
	Traffic Electronics Center	Repaired 85% of equipment within 4 weeks of malfunction.	Completed
Signal Design	Safety & Accessibility Guidance	Develop TEPPL Topic for Red-Red Flashing Operation.	Completed
		Develop TEPPL Topic for Pedestrian Accommodations on projects.	In progress
		Establish policy to standardize use of backplates at traffic signals.	In progress
	Innovation	Deploy enhanced visibility arrow sections at 3 corridors across NC gather feedback.	In progress
Signal System Timing and Operations (SSTO)	Periodic signal system timing	Deliver 2 signal system timing/retiming cycles annually to maintain operational efficiency on signalized corridors throughout the state.	In progress
	Piloting of emerging signal timing tools and strategies	Pilot 4 probe data based emerging software platforms including ATSPM, Axillion, INRIX-IQ, and FlowLabs.	In progress

TSMO Programmatic Funding and Expenditures

FY 2025 Budget in Review

FY2025 Planned vs. Actual Expenditures



TSMO Program funding in FY 2025 continued to transition from primarily state funding to more federal funding. The breadth of the program widened to include the Traffic Signal Program while supporting substantial disaster response and remediation efforts following Hurricane Helene. Overall, TSMO funding source expenditures accounted for \$83.1M – within 1% of the planned \$82.6M. The program had additional unplanned and/or non-TSMO specific funding sources like NC Turnpike Authority funding, TIP projects, disaster response funding (i.e., Hurricane Helene), and additional General Maintenance Reserve (GMR) funding for evacuation route enhancements, the total of which accounted for an additional \$7.4M in expenditures. The overall TSMO Program expended nearly \$91M in FY 2025. This chart shows the breakdown of TSMO funding sources and their corresponding planned and actual expenditures.

Emerging Technology Work Session

In 2025, the TSMO leadership team built on the collaboratively engaging implementation of the Transportation Operations Manual (TOM) in 2024 with an equally creative training approach. This year's topic was Emerging Transportation Technology, with six teams being challenged to train the TSMO unit on specific emerging tech concepts. Throughout 2025, each team delivered engaging and creative learning experiences to help the TSMO unit understand how their topic is being applied in other states. To make things even more interesting, teams were asked to deliver their learning experience in the spirit of a randomly assigned sitcom. Each group embraced this challenge and helped the North Carolina TSMO team gain an appreciation of how new transportation technologies are helping other states reach their goals, all through the lens of the cast and characters of our favorite sitcoms.



Awards During FY 2025

NCDOT's standout performance and successful implementation of innovative strategies was repeatedly recognized in 2025 including the following awards:

- NOCoE TSMO Award – 2025 Best TSMO Project & Overall Winner for NCDOT's Hurricane Helene Response
- 2025 Governor's Awards for Excellence in Safety & Heroism: Garret McFalls, Chris Strader
- 2025 NCSHP Hurricane Helene Awards Ceremony: Garret McFalls, Chris Strader
- J.D Goins Award: Josh Collins, Bruce Peterson, James Merricks, Steve Schmidt, Nathan Webster, Adam Beaver, Jason Streich, Patrick Doran, Lavanya Chandala-Mohanbabu, Sruthi Boyapati, Kelly Wells
- Roscoe L. Norman Award: Chris Medlin
- NC DPS & USS Appreciation Award for Election Season: STOC



Grants

NCDOT is committed to securing grants to support the TSMO program. NCDOT was successful in securing the following grants:

- CMAQ Grant: TSMO Program Funding (FY 2025, \$32M)
- CMAQ Grant: ITS Device Operations (in progress, \$21.6M)
- CMAQ Grant: ATSPM Holly Springs Program Funding (in progress, \$1.8M)
- CMAQ Grant: Triad TMC (expended in FY 2025, \$1.8M)
- ATTAIN Grant: Smart Signals in our Communities (FY25, \$12M)
- Strengthening Mobility and Revolutionizing Transportation (SMART) Grants Program: Automating Actionable Road Anomalies (AARA) for Traveler Information (in progress, \$1M)
- Advanced Transportation and Congestion Management Technologies Deployment (ATC-MTD) Grant: Multimodal Connected Vehicle Pilot (MMCVP) (in progress, \$2.1M)
 - SPR Grant: Statewide ITS Deployment Guide (in progress, \$350K)
 - SPR Grant: Wilmington ITS Strategic Deployment Plan (FY 2025, \$200K)
 - STIC Grant: Debris Removal Tool (in progress, \$65,680)

Industry Speaking Engagements

Industry engagements for FY 2025 included:

- EDC SMART Lighting Peer Exchange (Fall 2024)
- Traffic Signal Technician Conference (Dec. 2024)
- Maryland DOT Resiliency Tasks Force – Hurricane Helene Response (Dec. 2024)
- Regional Transportation Alliance Annual Meeting (Jan. 2025)
- TRB Annual Meeting (Jan. 2025)
- ITS Carolinas Annual Meeting (Mar. 2025)
- AASHTO Hurricane Forum (Mar. 2025)
- NC IT Leadership Forum – Strengthening Readiness in the Face of Cyber (Mar. 2025)
- METTS Conference (Mar. 2025)
- NOCoE Emergency Ops and TSMO Peer Exchange (Apr. 2025)
- TETC Information Summit (Apr. 2025)
- TETC Fiber/Broadband Workshop (Apr. 2025)
- CTSO TIM Community of Practice (May 2025)
- FHWA SSP Pooled Fund Study Annual Meeting (May 2025)
- AASHTO Leadership Institute Meeting (Jun. 2025)
- NCDOT's LPI Policy to Charlotte MPO (Jun. 2025)
- ODOT Peer Exchange (Jun. 2025)
- NCDOT Board of Transportation (Jul. 2025)
- Regional Operations Leadership Forum (Jul. 2025)
- NCDOT Preparedness, Response and Recovery Exchange with Georgetown University and Egyptian Emergency Management Leadership (Jul. 2025)
- CTSO Annual Meeting (Jul. 2025)
- ITS World Congress (Aug. 2025)
- Talking TIM Webinars (Aug. 2025)
- Benefits of Modern Signals at BOT Highway Committee Meeting (Aug. 2025)
- MoDOT Peer Exchange (Aug. 2025)
- TETC Operations Academy (Aug. 2025)
- EDC-6 Crowdsourcing Summit (Sep. 2025)



Active Committees

NCDOT is an active participant in many local and national committees to support the development and research of national studies, guidelines, and manuals, as well as hosting meetings with peers in other states to solve familiar challenges.

- RTA I-40 Regional Partnership
- Regional ITS Working Groups
- CTSO TSMO Next Generation Workforce Development
- CTSO Operations Implementation Working Group
- CTSO TIM Community of Practice Working Group
- EDC-7 Next Generation TIM: Technology for Saving Lives
- FHWA Safety Service Patrol Pooled Fund Study
- Traffic Signal Change and Clearance Interval Pooled Fund Study
- TRB IT & Technology Committee
- NC FAV (fully automated vehicle) Committee
- USDOT Accelerating V2X Cohort
- V2X Interoperability Technical Working Group
- MUTCD Signal Features Task Force
- Wrong Way Driving Corridor Study Group
- Mobility Analysis and System Transportation Efficiency Research (MASTER) Pooled Fund Study
- Support for Urban Mobility Analyses (SUMA) Pooled Fund Study

Research and Pilots

NCDOT conducts numerous research studies and pilot evaluations every year to remain at the forefront of emerging best practices including the following in FY 2025:

- **Research**
 - Advancing the Consideration of Treatment Options for Approaches with Two Available Left Lanes
 - Benefits, Costs, and Return on Investment of Non-Intrusive Detection at Traffic Signals
 - Benefits, Costs, and Return on Investment for Metal Traffic Signal Supports over Wood
 - Managed Freeway Before and After Study
 - Highway Patrol Research on Blue Light Radar Trailers (BLRT)
- **Pilots**
 - Reported incident validation solution using motorist dash cams
 - IMAP Debris removal tool
 - Contract tow program in a non-work zone area
 - Probe data ATSPM systems including Flow Labs, Axilion, and INRIX.IQ
 - Blue Light Radar Trailer (BLRT) effectiveness for speed reduction in work zones
 - Beacon's "Dewey" AI solution for consuming and locating information in large documents like TEPPL
 - Enhanced visibility green arrow sections at reduced conflict intersection corridors
 - Connected arrow board map to identify work zones

TSMO FY 2026 Outlook

TSMO 2026 Goals

Core Focus Area	Goal	Action Plan
Program Wide	Update TSMO budget to align with 5-year plan	Reduce dependency on GMR as a funding source for TSMO budget.
		Better align funding to Division needs.
		Incorporate the Traffic Signal Program into the budget.
		Implement dashboard showing regional spending against their goals.
TIM	Contract and PEF Support	Review and assess contracted staff support, and implement any improvements with LSC transitions.
	Operations (focus on quality over quantity)	Implement sustainable IMAP Staffing and Training Framework (Training 2.0).
		Conduct IMAP audits within an established quality assurance program.
		Support strategic IMAP expansion based on regional needs.
	IMAP Vehicles	Modernize IMAP technology & ATMS module use cases.
	TIM Tools	Develop a comprehensive towing strategy (policy, training, pilots).
TMC	Regional Outreach	Establish and operate a Statewide TIM Coalition.
	Upgrade Triad and Mountain TMCs	Complete construction of the Triad TMC and begin operations; begin construction on the Mountain TMC.
	I-485 Express Lane Operations	Begin operations for I-485 Express Lanes in Charlotte.
	TMC Interoperability	Update processes due to expanded ATMS capabilities.
		Develop and practice strategies for dynamic coordination across TMCs due to ATMS and new phone system.
		Conduct STOC/TMC Shutdown Exercises to practice operational support from statewide and regional centers.
		Train all TMC/STOC staff and appropriate Division personnel on ATMS and ATIS.
ITS Operations	ATMS Deployment	Begin live ATMS operations across the STOC and all TMCs.
		Complete ATMS implementation including development of new ATMS features.
	FAMS	Integrate asset management (IAMS/IWOMS) in ATMS.
		Configure segments 20-27 of the NC Broadband Project in FAMS.
		Complete TSMO Enterprise GIS Layers.
		Complete configuration of Asheville Signal System.
	Statewide ITS Communications Plan	Complete population of urban regions: Triangle and Triad.
		Complete Statewide ITS Communications Plan.
		Complete replacement of remaining 25 end of life DMS.
		Complete DMS retrofit upgrades.
	Statewide ITS Resiliency	Transition the existing Statewide ITS Resiliency contract to the new contractor.
		Utilize InSIGHT AM for all preventive, responsive, as-needed maintenance and work order tracking.
		Use GMR funding (\$6M) to procure ITS dedicated to hurricane response including CMS, portable traffic signals, and stream gauges.
	Storm / Major Event ITS	Begin detour route signal system coordination for major weather events.
	ITS Broadband	Create a FAQ document for Broadband Projects and post on the TSMO website.
	Funding Opportunities for Fiber Infrastructure	Monitor STIP to include ITS components.
	Statewide ITS Deployment Guide	Pursue grants and investigate other methods including leasing/sharing fiber.
		Complete Statewide ITS Deployment Guide.
	AI TEPL	Complete a road map with recommendations for pursuing AI projects for TEPL and legislative NC statutes.
		Complete a chat style knowledge assistant that advises staff on AI projects.
	TSMO Prioritization	Develop a ROI for investment in TSMO projects to compare TSMO projects with standard NCDOT projects.

TSMO FY 2026 Goals (Cont'd.)

Core Focus Area	Goal	Action Plan
Traveler Information	TIMS to ATMS	Incorporate training into Learning Management System for new users.
		Improve Work Zone "parent/child" relationship.
		Implement new TIMS and DriveNC.gov.
	AARA SMART Grant	Improve real-time, in-vehicle alerts and partner with TETC to share solution throughout and beyond North Carolina.
Emergency Weather Traffic Operations	Emergency Preparedness	Conduct Hurricane and Winter Weather Exercises.
		Develop Winter Weather Concept of Operations to document essential response strategies.
		Develop criteria for TMC/IMAP surge staffing and immediate tow.
	Multi-State Collaboration	Establish agreement with Tennessee DOT and South Carolina DOT outlining inter-state operations.
AWZM	ICM Implementation	Deploy ICM for I-2513 and I-5719 work zones.
	Feasibility Studies	Develop documentation and guidelines for feasibility studies.
TSMO Planning	Regional ITS Strategic Deployment Plans	Support the completion of the Wilmington MPO Regional ITS Strategic Deployment Plan.
	Planning Tools	Document planning milestones and maintain planning resources.
	ITS Deployment Guide	Develop guidelines for ramp metering and other operational strategies.
Traffic Signal Program	Transition to Kinetic Signals	Complete transition of all signals from Centrac to Kinetics.
	Present Business Case	Complete Traffic Signals Management Program business case and present to executive leadership.
	Traffic Signal Municipal Agreements	Hold workshops with municipalities. Update and finalize Reimbursable Agreement Frameworks.
Signal Systems Timing and Operations (SSTO)	Update Signal Timing Active Traffic Management Plan	Achieve a 25% reduction in delay through retiming for existing corridors.
		Develop consistent processes for Kinetic Signals that leverage the system's enhanced capabilities.
		Develop ATSPM guidelines for Division personnel.
		Pursue CMAQ grant for construction of Holly Springs project.
		Implement new system (Flow Labs) to evaluate and prioritize projects.
	SSTO Documentation and ATSPM	Complete updates of SSTO resources and planning documents; Outline what active traffic management looks like for NCDOT/SSTO.
Signal Design	Innovation	Develop out of service metal pole tracker for Division maintenance yards. This GIS tracker allows Division staff to catalog the metal poles that have been taken out of service and are in their maintenance yards. The inventory can be searched across the state to locate viable poles to be put back in service.

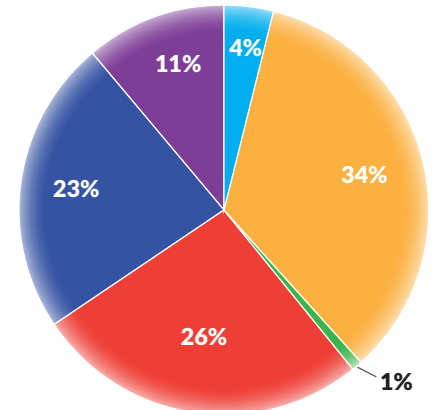
FY 2026 Budget Program

In FY 2026, the TSMO Program will be in Year 4 of its transition to be more focused on using federal funds and less reliant on state maintenance funding. This year will see an increase in the Federal Order Number cost allocations as the federal funding begins to move away from a heavy reliance on grants. NCTA funding will increase to support additional IMAP along the toll roads and GMR will fund the second year of evacuation route enhancements. The chart to the left and table below highlight the sufficient programming of anticipated funding.

FY 2026 External and Additional Programmed Funding

NCTA	\$1,000,000.00
Projects	\$2,500,000.00
GMR	\$6,000,000.00
Total	\$9,500,000.00

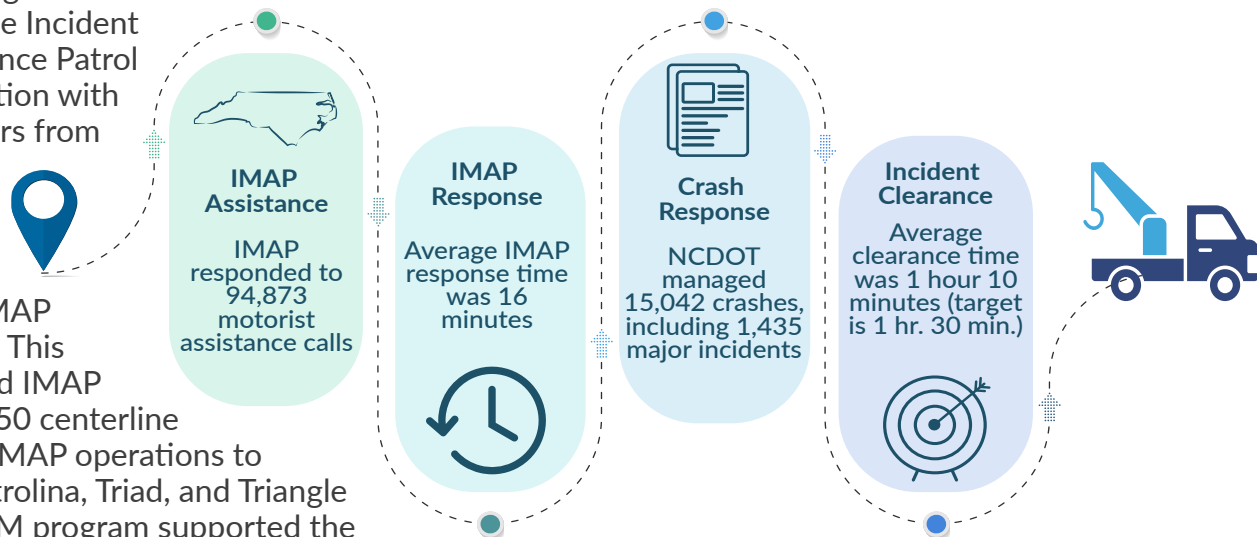
FY 2026 Program Funding Sources



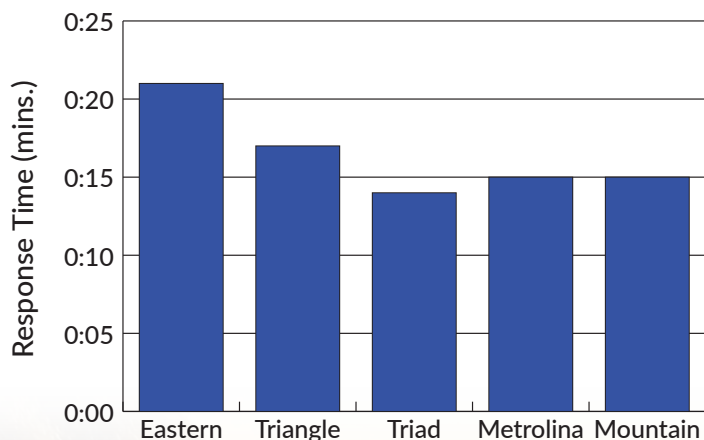
Traffic Incident Management

Key components of NCDOT's Traffic Incident Management (TIM) program include Incident Management Assistance Patrol (IMAP) and coordination with emergency responders from across the state. In 2025, NCDOT expanded the SSP contract that supplements state IMAP forces with a vendor. This support has increased IMAP coverage to over 1,350 centerline miles and extended IMAP operations to weekends in the Metrolina, Triad, and Triangle regions. NCDOT's TIM program supported the IMAP contract by training 43 new IMAP responders. The TIM Coordinator Team now includes 5 Regional TIM Coordinators, a Statewide TIM Coordinator, and TIM Program Manager.

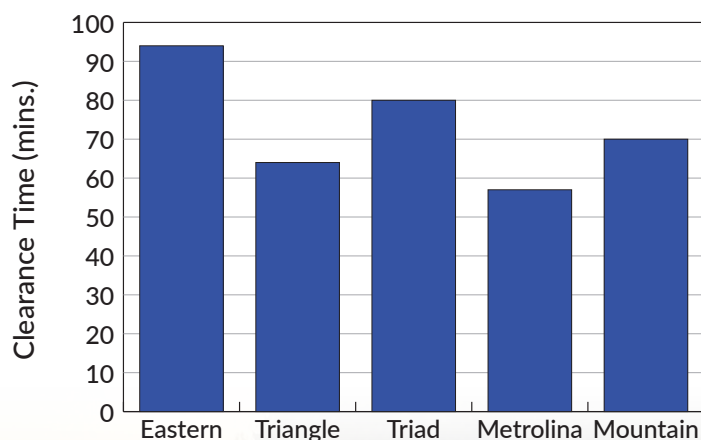
2025 IMAP and Incident Management



Average Response Time by Region



Average Clearance Time by Region



Citizen Praise for IMAP Assistance

Div 4 – Reggie Hocutt

The IMAP program put someone at the right place at the right time. It truly could have saved my life that day!

Div 4 – Willy Odom

He turned what may have been a disaster into a pleasant experience and exhibited a high level of professionalism that far exceeded expectations.

Div 5 – Sam Jaber

I can honestly say that I've never been in an accident like that in my 50 years. To learn how well NCDOT handles this type of incident was incredible.

Div 5 – Nick Garner

My husband fell and hit his head at a rest area. Your driver came along, cleaned my husband's wound, dressed it with antibiotic cream and wrapped his head.

Div 6 – Jonathan Oatman

You can imagine the panic that set in when my car suddenly became undriveable. At that moment, I looked in my rear view mirror and saw the large IMAP truck. They look for ways to rescue people. They don't just wait to be dispatched.

Div 7 – Jerry Brown

I have seen many times of IMAP helping and protecting those in bad situations. Because, let's face it, most people don't slow down or move over out of courtesy or safety.

Div 7/9 – Anthony Buie & Nick Allen

They put their lives on the line each day to help people they don't even know. They are truly a blessing!

Div 10 – James Portolese

This young man was so nice and approachable, came with a smile, eager to help, and was quick replacing my busted tire. He wouldn't even take the tip money I was trying to give him!

Div 14 – Johnathan Bishop

I owe our safety, and getting our vehicle and camper on the road again, to him. Having gone above and beyond, I'm not sure what we would have done without his help!

TIM FY 2025 Updates

Focus Area	Goal	Status
Staffing	Complete assessment of existing and needed VIP Goals.	In progress
	Hire a training program manager and additional trainer.	In progress
	Hire 2 Regional TIM coordinators.	Completed
	Update job description for all TIM team members.	In progress
	Create roles and responsibilities matrix for TIM Coordinators, IME, and RITS.	In progress
	Create guidelines for onboarding new TIM team members.	Completed
IMAP Training	Construct an upgraded training building at the TIM Training and Development Track.	Not started
	Develop IM training to be integrated into BLET curriculum or in-service block.	Completed
	Conduct at least one multi-discipline training exercise in every region.	Completed
	Complete Volume 1 of the Operations Manual to include guidance on IMAP after-hours response using Quick Clearance MOUs, etc.	In progress
	Complete Volume 2 of the IM Manual to include guidance on Detours, Active Traffic Management, Incident Command.	In progress
	Establish incident management training for towing.	In progress
	Implement revised NC TIM Responder training.	Completed
	Develop and distribute training for new IMAP equipment and strategies.	Completed
IMAP Vehicles	Evaluate F-350 and develop F-450 vehicle strategy and implementation plan.	Completed
	Pilot SMART lighting technology.	In progress
	Pilot One-Cone strategy.	In progress
	Conclude debris removal tool pilot and complete assessment.	In progress
	Continue management of IMAP fleet and replacement of end-of-life vehicles.	Completed
	Implement vehicle tracking technology for the full fleet (Geo Tab).	In progress
	Implement AVL feed into ATMS.	In progress
IMAP Expansion	Develop a broad strategy regarding towing (tow rotation, training, non-WZ tow contracts, tow contracts).	In progress
	Refine expansion plan and timeline based on analysis of traffic and incident data and B/C analysis.	Completed
	Develop and implement additional IMAP expansion plans in the Triad and Metrolina, weekend patrols, and identify options for coverage in other regions.	Completed
	Advertise new sponsorship request for proposals (RFP).	Completed
Regional Outreach	Identify priority agencies for Quick Clearance MOUs and execute 40% of priority MOUs.	Completed
	Conduct 95% of TIM Team and Open Roads meetings in person.	Completed
	Support regional and statewide resources required around special events.	Completed
Performance Measures	Define process and metrics for capturing the impacts of QC MOU.	In progress
	Assess all incidents over 90 minutes and conduct AARs when necessary.	Completed
	Evaluate return on investment of current tow contract language and work orders, and refine and improve future contracts (I-5729 and I-2513).	Completed
Tools	Pilot a non-work zone tow strategy on at least one corridor.	In progress
	Establish VIPER radio management plan.	In progress
	Establish resource management plan in response to emergencies.	In progress
Communications	Implement Move Over video on Gas TV and in driver's license offices.	Completed
	Issue quarterly IMAP Newsletter.	Completed

TIM FY 2026 Goals

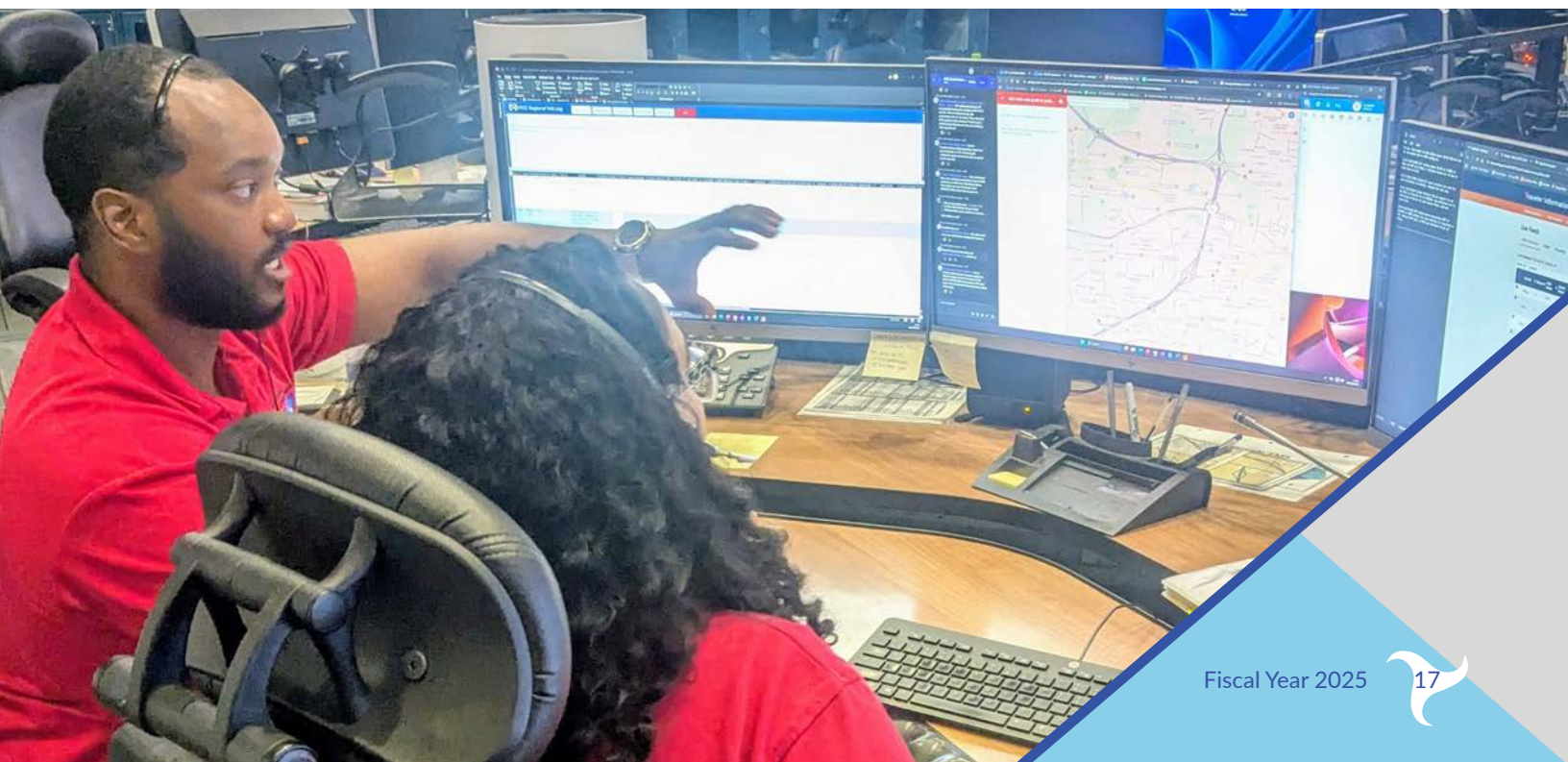
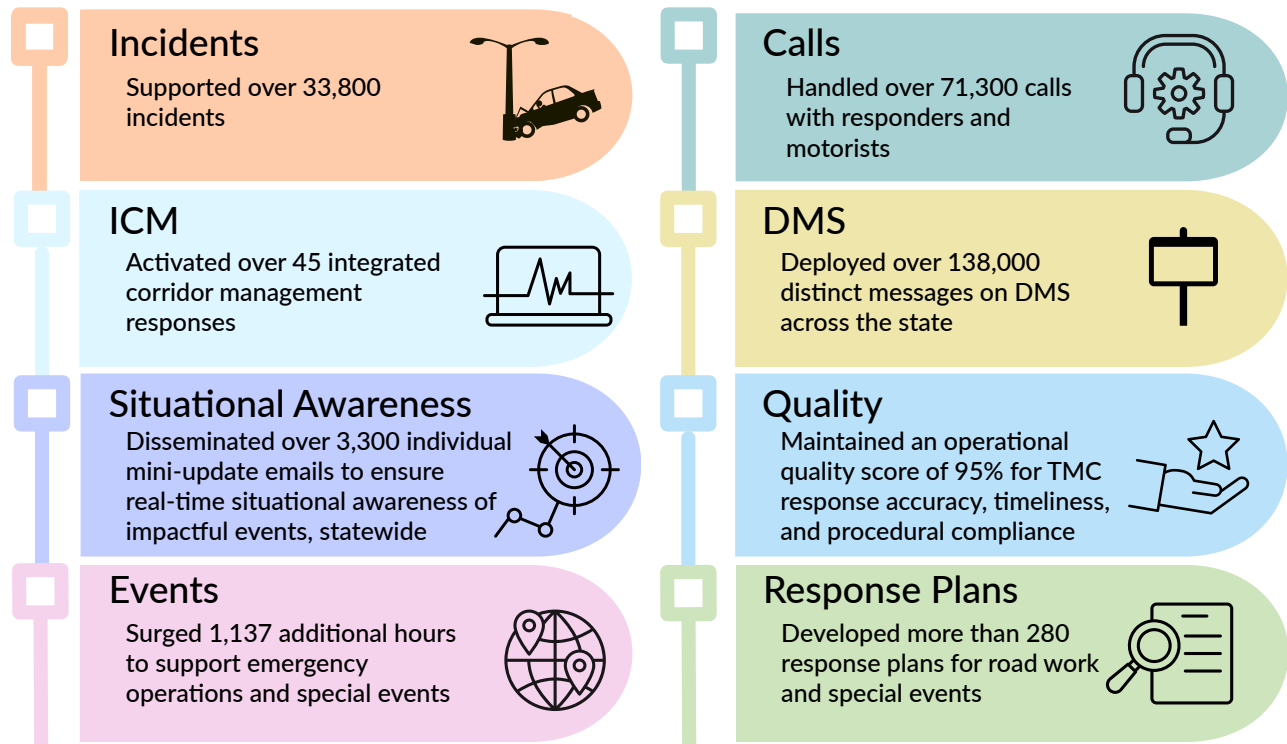
Goal	Action Plan
Regional Outreach	Strengthen Quick Clearance and Interagency Partnerships.
	Establish and operate a Statewide TIM Coalition.
	Formalize engagement with key TIM stakeholders.
	Statewide TIM training and outreach strategy.
Operations	Sustainable IMAP staffing and training framework.
	Advance multi-discipline regional TIM exercises.
	Complete and maintain TIM Operations / IM Manuals.
	IMAP Audit and Quality Assurance Program.
	TIM Initiatives Strategy, Tracking and Accountability.
	Effective ETC Applications Strategy (Beyond IMAP).
	Support Strategic IMAP Expansion based on regional need.
IMAP Vehicles	Upgraded TIM Training Building / Track.
	Modernize IMAP technology and ATMS module use cases.
	Next-Gen IMAP vehicle / pilot portfolio and procurement strategy.
TIM Tools	IMAP fleet lifecycle and regional distribution.
	Comprehensive towing strategy (policy, training, pilots).
	Emergency resource management and surge planning.
Performance Measures	VIPER radio template and regional radio management plan.
	Measure and refine TIM application effectiveness.
	Optimize IMAP coverage using data-driven decision tools.
	Regional TSMO CMM Assessments and Short-Term Action Plans.
Communications	Connect VIP process to regional CMM assessment goals (regional maturity)
	Integrated TIM resource and performance dashboards.
	Integrate incident management training across LE and in-service.



Traffic Management Centers

Traffic Management Centers (TMC) are the communication hubs of NCDOT's TSMO Program. These centers play an essential role in the Department's situational awareness, decision-making, and real-time response by proactively detecting incidents, collecting and relaying critical intel, dispatching IMAP units, and implementing measures that protect responders and keep traffic flowing. NCDOT operates 4 regional TMCs: Mountain TMC in Asheville, Metrolina TMC in Charlotte, Triad TMC in Greensboro, and Eastern TMC in Selma. NCDOT's Statewide Transportation Operations Center (STOC) in Raleigh houses the Triangle TMC and operates 24/7/365, maintaining traffic management when regional TMCs are closed.

TMC Activity in 2025



TMC FY 2025 Updates

Focus Area	Goals	Status
Triad TMC Upgrade	Begin Triad TMC construction.	In progress
Mountain TMC Upgrade	Complete Mountain TMC design.	In progress
Establish Eastern TMC	Lease, upfit, and furnish Eastern TMC.	Completed
	Hire Eastern TMC control room staff including operators, supervisors, and Assistant Traffic Specialists (ATS).	Completed
	Begin onsite control room operations.	Completed
	Evaluate responsibilities for STOC as Eastern TMC is operational.	Completed
Control Room Quality Control	Establish a role dedicated to TMC operational quality measurement and reporting.	In progress
	Maintained an operational quality score of 95% throughout 2025, which reflects accuracy, timeliness, and procedural compliance of TMC-implemented response measures.	Completed
STOC/TMC Training	Onboard and train 40 new Operators and Supervisors.	Completed
	Introduce a new Supervisor Training program to reinforce best practices and empower new supervisors to manage their teams.	Completed
	Introduce a new operator development program to assist operators in advancing their traffic management and supervisory skills.	In progress
	Implement routine and tailored 3rd Shift training to ensure connectivity between operations during normal work hours and night hours.	Completed
	Implement a TIMS field training course for regional TIMS field users.	In progress
Project Facilitation	Onboard and train 2 new Assistant Traffic Specialists (ATS).	Completed
	Refine response plan development and tracking process.	In progress
	Develop dashboard to measure call volumes at all TMCs and 511/DOT customer service center.	Completed
	Develop dashboard to quantify IMAP dispatch activity levels and report traffic speeds and volumes in major urban areas.	In progress
	Update Tow Contract Dashboard to assess possible program benefits including incident duration improvements and delay-cost savings.	Completed
	Implement a professional development plan to cross-level knowledge and build redundancy within the team.	Completed
TMC Interoperability	Conduct STOC Shutdown Exercise to practice statewide operational support from regional TMCs.	Completed
	Develop plan for relocation of 3rd Shift STOC operations when required.	In progress
Portable Devices	Maintained regular testing and location confirmation for 395 CMS and 75 portable CCTV.	Completed
STOC Operations	Adjust staff to facilitate increased IMAP dispatch support on weekends.	Completed
	Add staff to 3rd Shift to increase traffic monitoring capabilities on weekend nights.	Completed

TMC FY 2026 Goals

Goal	Action Plan
I-485 Express Lane Operations	Begin operations for I-485 Express Lanes in Charlotte.
Upgrade STOC and Regional TMCs	Complete Triad TMC construction.
	Begin Mountain TMC construction.
	Begin retrofit designs for Metrolina TMC.
	Upgrade STOC video wall.
STOC/TMC Training	Identify and document process changes and new strategies resulting from ATMS deployment.
	Align training to build on and reinforce updated operator KPIs.
	Expand LMS for refresher and on-demand training.
	Integrate simulation and scenarios-based training into LMS.
	Assess training needs and develop and implement effective ATMS training to all TMC staff and appropriate Division personnel.
	Update Control Room SOP based on new processes implemented with the ATMS.
Project Facilitation	Leverage artificial intelligence (AI), machine learning (ML), and large language models (LLM) to process large and unstructured data sets including operator and dispatch logs.
	Complete dashboards for Tow Contracts, IMAP Dispatch, and Traffic Speed/Volumes.
	Leverage suite of new dashboards and ATMS reporting features to implement KPIs for control room operations and enhance reporting for IMAP, incident management, and statewide mobility.
	Implement new response plan and leadership briefing agenda for Winter Weather and Hurricane events.
TMC Interoperability	Mature and update processes relative to expanded ATMS capabilities.
	Document and practice strategies for improved coordination and dynamic workload shifting across TMCs due to ATMS and new phone system.
	Complete quarterly shutdown exercises.
	Develop plan for relocation of 3rd Shift STOC operations when required.
Control Room Quality Control	Formalize quality control processes and cadence of quality reports.
	Leverage quality reporting to influence training and other operational performance improvement activities.



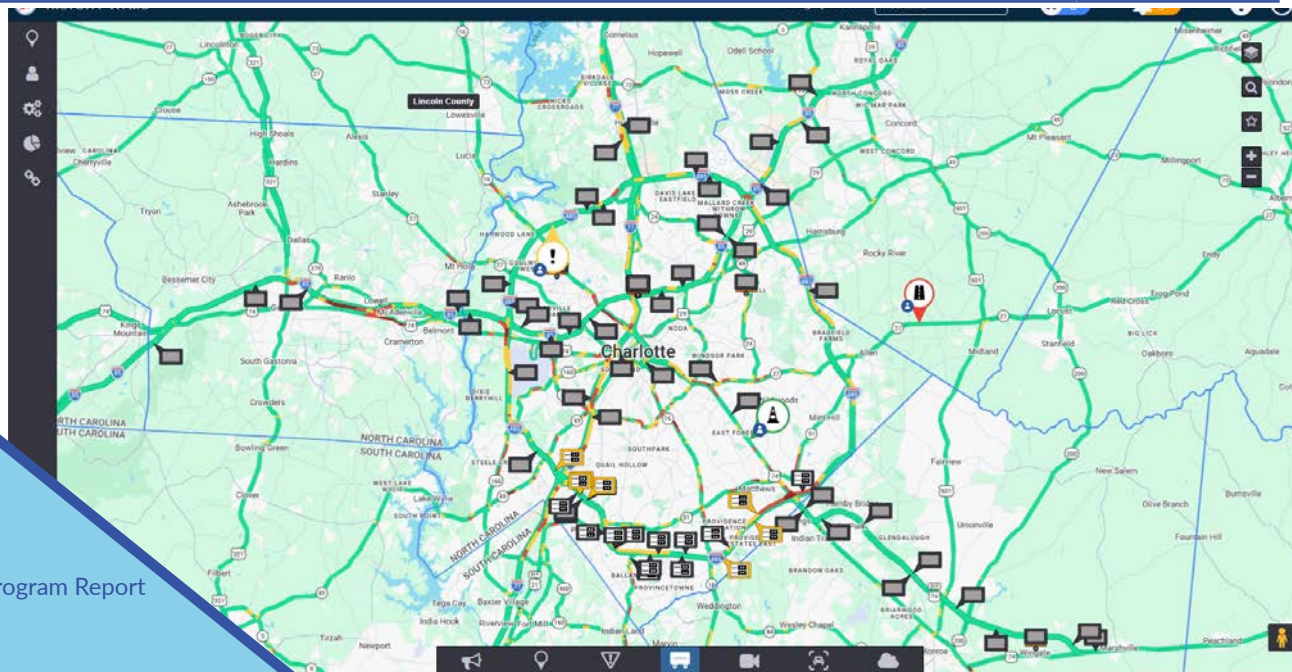
Construction of new Triad TMC

Intelligent Transportation Systems Operations

NCDOT strives to modernize and maintain our ITS network and elevate asset management practices across the state. In 2025, the Department's performance-based ITS maintenance contracts delivered uptimes exceeding 98% for all covered assets while continuing to expand connectivity statewide. ATMS systems integration and response configuration were also a focus in 2025, with initial deployment anticipated for early 2026.

ITS FY 2025 Updates

Focus Area	Goals	Status
End of Life DMS Replacement	Complete design of 56 DMS.	Completed
	Replace 7 of 31 DMS.	In progress
	Complete retrofit of 38 DMS controllers.	Completed
Fiber Asset Management System (FAMS)	Integrate existing infrastructure in the Triangle.	In progress
NC Broadband	Constructed 46 new cameras and hubs to support situational awareness and redundant network connectivity in the eastern region.	Completed
	Enabled 170 cellular ITS devices to be transitioned to a more reliable fiber optic connection and established connectivity to some previously unconnected devices such as closed-loop signal systems.	Completed
	Improved NC 811 response time along these routes, reducing NCDOT's risk for fiber optic cable cuts during construction.	Completed
	Achieved an average device uptime of 99+% for ITS devices maintained under the performance-based maintenance contract.	Completed
Resiliency Contract	Replaced 15 obsolete cameras and replaced/installed 7 DMS.	Completed
	Replaced 10 cabinets, 10 junction boxes, and completed 8 fiber repairs, 8 meter repairs/replacements, and 5 tree-trimming work orders.	Completed
	Designed ALPR cameras at 12 weigh stations.	Completed
	Configured the InSIGHT AM ITS Asset Management System and integrated statewide ITS Resilience devices.	Completed
	Achieved an average device uptime of 98.5% for all ITS devices.	Completed
Statewide ITS Communications Plan	Expand communication plan to include additional facilities and evaluate existing and future camera and DMS deployments.	In progress
Asset Management	Integrate asset management system with ATMS platform.	In progress
ATMS Deployment	Deploy phase 1 of ATMS, including planned and unplanned event entry; DMS automation; integration of Inrix Queue detection and SHP CAD feed; and new DriveNC.gov website (public).	In progress
	Deploy new Video Management System (iVDS).	In progress
Communications Working Group	Create Statewide Plan for Day-to-Day and Emergency Communications across the Department.	In progress
Portable Devices for Emergency Operations	Purchase 194 portable CMS and 54 Portable CCTVs for emergency operations and evacuation routes.	Completed



ITS FY 2026 Goals

Goal	Action Plan
Permanent Devices for Emergency Operations	Install DMS and CCTV identified for emergency operations.
ATMS	Deploy Phase 2 and Phase 3 of ATMS which will refine previously deployed elements from Phase 1 and introduce new capabilities including robust performance reporting, full ICM response, and activity logging for IMAP and Contract Towing.
Resiliency Contract	Execute new Statewide ITS Resiliency Contract. Complete DMS retrofit upgrades. Transition the existing Statewide ITS Resiliency contract to the new contractor. Utilize InSIGHT AM for all preventive, responsive, as-needed maintenance and work order tracking.
FAMS	Configure segments 20-27 of the NC Broadband Project in FAMS. Complete TSMO Enterprise GIS Layers. Complete configuration of Asheville Signal System. Complete population of urban regions: Triangle and Triad.
End of Life DMS Replacement	Complete installation for 31 replacement DMS.
Video Sharing	Migrate municipal camera sharing to new video distribution system. Migrate media camera sharing to new video distribution system.



ITS Design

The Intelligent Transportation Systems (ITS) design group is responsible for the design, implementation, and integration of ITS infrastructure across North Carolina. The group develops and reviews plans for ITS devices such as cameras, dynamic message signs, weigh stations and fiber optic communication systems that support real-time traffic management, incident response, traveler information, and traffic signal system communications. This infrastructure helps improve safety, reliability, and mobility on the state’s roadways.

ITS design engineers work closely with regional offices, local agencies, and consultants to deliver projects that integrate technology, data, and innovation to ensure North Carolina’s transportation system remains efficient, adaptive, and ready for the future.

The NCDOT ITS design group plays a vital role in advancing the state’s smart transportation network and supporting the Department’s mission to connect people and communities safely and efficiently.

ITS Design FY 2025 Updates

Focus Area	Goals	Status
Resources	Update TSMO Chapter 3 of the Design Manual.	In progress
Outreach	Develop Educational Broadband Outreach Plan.	In progress
TSMO Design Manual	Contribute ITS design portion of manual.	Completed
Complete Construction of Metro Signal Systems	U-5968 Durham Signal System.	Completed
	C-5703 Gastonia Signal System.	In progress
Complete Construction of Townwide Signal System	U-6022 Fuquay-Varina Signal System.	In progress
	U-6023 Wake Forest Signal System.	In progress
	U-6026 Knightdale Signal System.	In progress

ITS Design FY 2026 Goals

Goal	Action Plan
I-5719 AC and AF	FUTURES Grant Fiber, connected technology, travel info.



Traveler Information

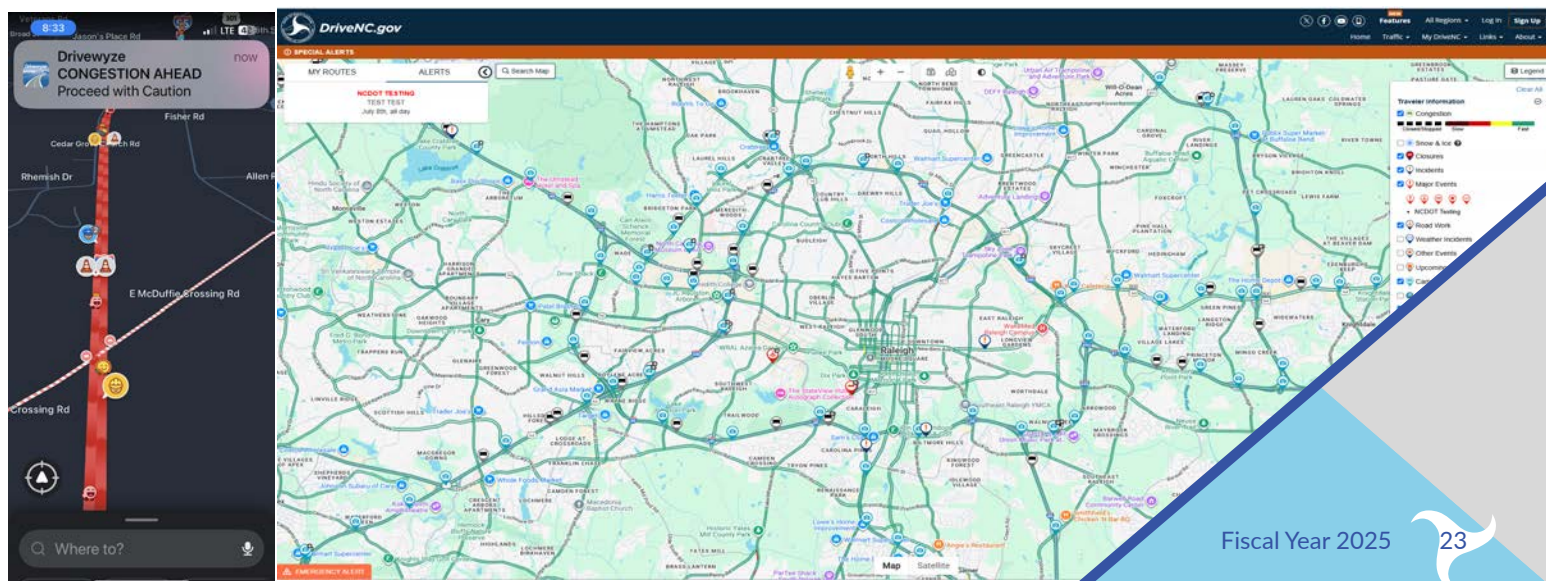
North Carolina's Traveler Information Program gives motorists information to make decisions to improve safety and mobility. Our DriveNC.gov website, 511 phone system, Dynamic Message Signs, Drivewyze Alerts, and Wireless Emergency Alerts (WEA) continue to provide reliable insight on current and upcoming travel conditions. Dashcam images and connected arrow board data feeds are new tools added this year to improve situational awareness and incident detection.

Traveler Information FY 2025 Updates

Focus Area	Goal	Status
DriveNC.gov	Transition from TIMS to new ATMS.	In progress
	Deploy new DriveNC.gov.	In progress
	TIMS improvements including bug fixes, platform resiliency, map functionality, information for ferries and truck closures, and expanded data management options.	Completed
511 & Customer Service	Serve 27,608 511 callers.	Completed
	Serve 55,655 DOT Customer Service callers.	Completed
	Introduce Citizen Navigation Change Guide.	Completed
Alerts	Use IMAP to validate slowdown alerts to trucks.	Completed
	Issue 234,235 Drivewyze slowdown alerts to trucks.	Completed
	Issue 28 Wireless Emergency Alerts.	Completed
AARA SMART Grant	Deploy and evaluate system for lane closure and slowdown driver alerts.	Completed
	Expand alerts statewide and beyond.	Decided against
Situational Awareness	Pilot reported incident validation solution using motorist dash cams.	Completed
	Deploy tool to view connected arrow boards.	Completed

Traveler Information FY 2026 Goals

Goal	Action Plan
DriveNC.gov	Deploy new DriveNC.gov with streaming video and live DMS messages.
	Deploy new TIMS and require user training.
AARA SMART Grant	Implement improvements noted in AARA Lessons Learned.
	Define Traveler Info and Work Zone Management Roadmaps.
	Explore Messaging to Connected Vehicles.
	Improve WZDx and navigation provider pipelines (Waze, Google, HERE) to accurately convey work zone info to motorists and CAVs.
Video Sharing	Update NCDOT's Video Sharing Policy.
	Update All Media Agreements to include PSAs.



Mobility Performance Measures

NCDOT provides the following mobility reports to the North Carolina General Assembly and Federal Highway Administration (FHWA)::

- Maintenance Operations and Performance Analysis Report (MOPAR) as required by G.S. 136-44.3. Metrics include:
 - Travel Time Index – the variability of travel time during rush hour
 - Average Number of Congested Hours – the number of hours that speeds are slow
 - Travel Time Reliability – the variability of travel time on a “bad day”
- Moving Ahead for Progress in the 21st Century (MAP-21) required by FHWA. Reliability results and targets can be found in the following table:

NCDOT shares probe speed data with public agencies and private engineering firms (PEF). The TSMO program onboards and provides technical support to users.

Performance Measurements based on Probe Data

Performance Measure	2024 Actual*	Proposed 2025 Target	Proposed 2026 Target
Percent of person-miles traveled on the Interstate that are reliable	91%	75%	75%
Percent of person-miles traveled on the non-Interstate NHS that are reliable	95%	70%	70%
Truck Time Reliability Index	1.4	1.7	1.7
Peak Hours of Excessive Delay – Charlotte Urbanized Area (NHS only)	14	34	34
Peak Hours of Excessive Delay – Concord Urbanized Area (NHS only)	3	10	10

*Green values surpassed 2024 performance targets.

The results above were calculated using INRIX probe speed data. NCDOT shares INRIX data with public agencies and private engineering firms (PEF). Currently, there are 34 public agencies and PEFs using INRIX data. NCDOT also uses Streetlight data for origin/destination (O/D) and volume data. Currently, there are 15 PEFs using Streetlight data. NCDOT assists these users with onboarding and technical assistance.

Mobility Performance Measures FY 2025 Updates

Focus Area	Goal	Status
Dashboard Plan	Roll out Dashboard for TSMO Strategic Plan Performance Measures.	In progress
Mobility Data	Evaluate O/D Vendors.	In progress
Performance Measures Service Layer	Improve Mobility Performance Measure.	In progress

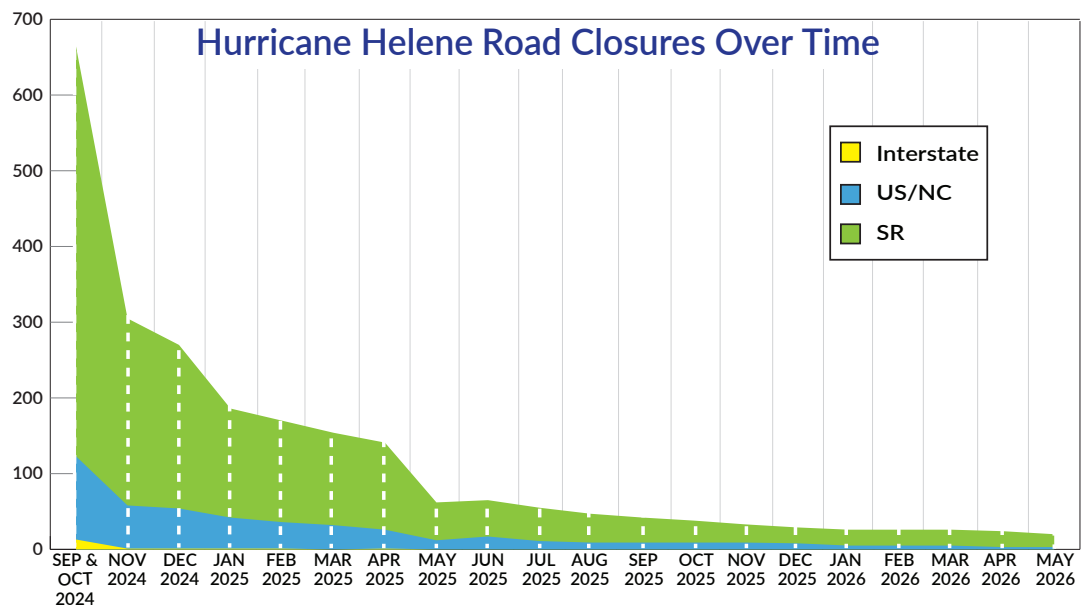
Mobility Performance Measures FY 2025 Goals

Goal	Action Plan
Expand Performance Measures	Develop methodology for calculating and tracking new performance measures identified in the NCDOT Statewide Strategic Plan and the TSMO Service Layer Strategic Road Maps.

Emergency Weather Traffic Operations

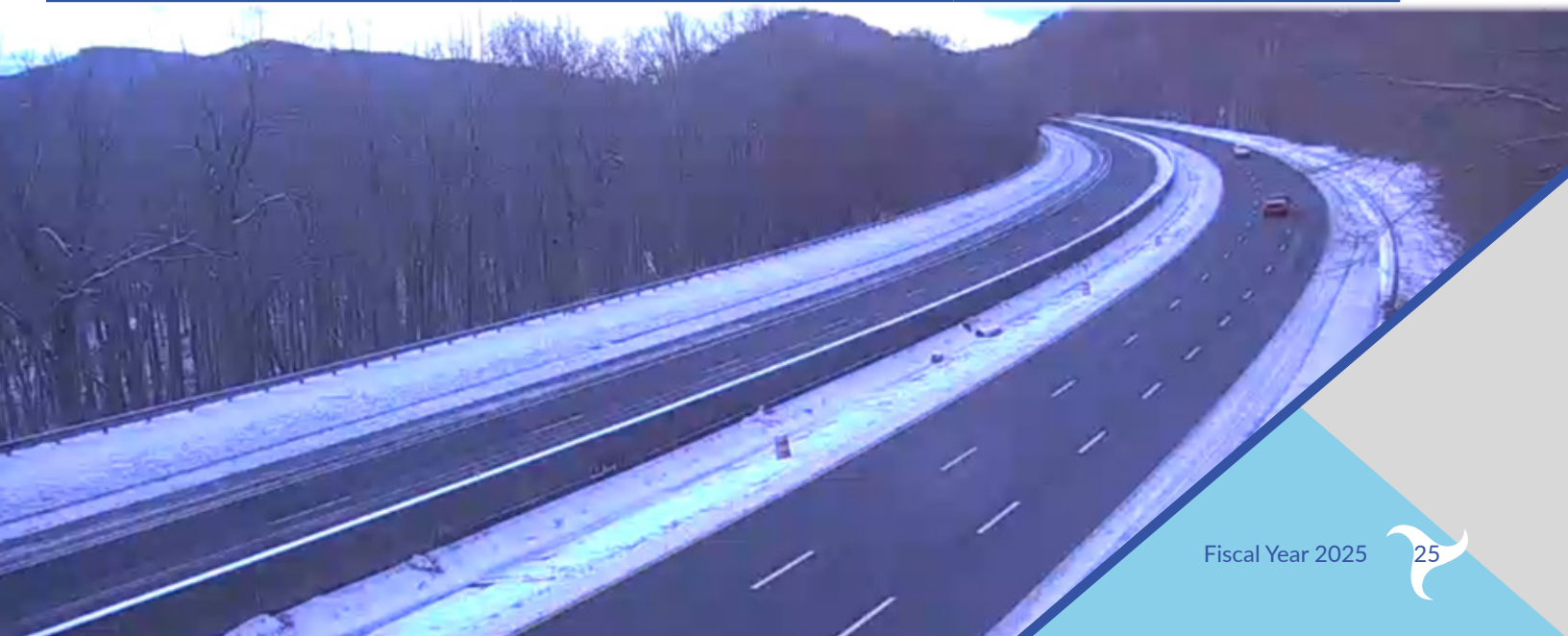
Emergency weather operations and management is a critical function of NCDOT’s TSMO program. Our team works to provide accurate information, support first responders, and navigate traffic around impacted areas during hurricanes, major rain events, and winter weather.

Hurricane Helene, which devastated western North Carolina at the end of FY 2024, remained a high priority for NCDOT throughout FY 2025 as the Department worked to reopen 98% of the 1,500 roads closed by Helene, including I-26 and I-40 near the Tennessee border. While restoring mobility throughout Western NC, NCDOT enhanced emergency operations capabilities by employing new technologies and lessons learned following Hurricane Helene, including new portable devices and mobile communications equipment. NCDOT continued to progress our operational readiness during an active year for impactful storm events, resulting in over 1,970 road closures.



Road Closures from Storm Events

Storm Event	Date	Number of Road Closures
Hurricane Helene	Sep 2024 to Present	1,518
Tropical Storm Chantal	July 2025	185
Hurricane Erin	August 2025	20
Unnamed Storms	FY 2025	245



Emergency Weather Traffic Ops FY 2025 Updates

Focus Area	Goal	Status
Prepare for Hurricane Season	Conduct NCDOT Hurricane Exercise.	Completed
	Participate in EM Hurricane Exercise.	Completed
	Update STOC Roles & Responsibilities in NC Emergency Operations Plan (NCEOP).	Completed
	Develop IMAP hurricane response binder templates and process.	Completed
	Map hurricane evacuation routes (from regions) as a KMZ layer on the IMAP map.	In progress
	Identify high flood areas associated with IMAP routes (KMZ map).	In progress
Hurricane Evacuation Plans	Update NC/VA Evacuation Coordination Guide.	Completed
	Procure Hurricane Evacuation Devices.	In progress
	Hurricane Evacuation Route Enhancements and Mapping.	In progress
Prepare for Winter Weather Season	Conduct NCDOT Winter Weather Exercise.	Completed
	Pre-season Coordination Meeting with EM, National Guard on hot spot packages.	Completed
Multi-state Adverse Weather Collaboration	Helene coordination (for long distance detour + re-opening of I-26 and I-40 w/ TN).	In progress
Prepare for Weather Events	Implement new response plan template for Winter Weather and Hurricane events to dynamically incorporate decisions from daily TSMO briefings and focus on near-term, event-specific activities.	In progress
	Established hotel agreements and statewide inventory of lodging options for major events.	Completed
	Develop TMC, IMAP, and Immediate Tow Surge Considerations.	In progress

Emergency Weather Traffic Ops FY 2026 Goals

Goal	Action Plan
Prepare for Hurricane Season	Conduct NCDOT Hurricane Exercise.
	Use GMR funding (\$6M) to procure ITS dedicated to hurricane response including CMS, portable traffic signals, and stream gauges; and to optimize signal system timing for evacuation and detour routes.
Prepare for Winter Weather Season	Conduct NCDOT Winter Weather Exercise.
	Annual National Guard Hot Spot meeting.
	Develop Winter Weather Concept of Operations to document essential response strategies.
	Identify steep grade areas and implement corresponding operational rental agreements.
Multi-state Adverse Weather Collaboration	Establish agreements with Tennessee DOT and South Carolina DOT outlining inter-state operations.
Hurricane Evacuation Plans	Expand evacuation strategies based on current assets/procedures and identify future resources to optimize evacuation efforts.
	Implement additional detour plans for flood-prone evacuation routes throughout Eastern NC.
Weather Management	Develop criteria for TMC/IMAP surge staffing and immediate tow.
	Attend Quarterly Emergency Management exercises.
	Implement new response plan and leadership briefing agenda for Winter Weather and Hurricane events.
Emergency Operations	Participate in nuclear evacuation exercises.

Active Work Zone Management

The TSMO Program's Active Work Zone Management (AWZM) efforts seek to promote proactive, data-driven management of work zones statewide by strengthening partnerships with responders and construction personnel and by implementing strategies like Integrated Corridor Management (ICM) to enhance safety, mobility, and operational efficiency within active construction zones.

AWZM FY 2025 Updates

Focus Area	Goal	Status
ICM Implementation	Deploy I-6064 ICM Solutions (I-95).	Completed
	Develop Tow Contract Dashboard to manage and reflect the positive return on investment (ROI) provided by tow contracts.	Completed
HAWKS Funding	Coordinate with the North Carolina State Highway Patrol (NCSHP) to manage the \$2.2 Million HAWKS program.	Completed
	Secure additional funding for HAWKS in I-40 Pigeon River Gorge project.	Completed
Blue Light Radar Trailers (BLRT)	Coordinate deployment of Blue Light Radar Trailers (BLRTs) in WZs.	Completed
	Complete pilot to analyze effectiveness of BLRT and capture regional stakeholder feedback.	Completed
	White paper study by highway patrol to test BLRT capabilities in reducing crash precursors, such as speeding.	In progress
Active WZ Coordination	Maintain Active Work Zone Coordination Meetings.	Completed

AWZM FY 2026 Goals

Goal	Action Plan
ICM Planning & Implementation	Deploy ICM Solutions for I-2513 and I-5719.
	Deploy tow contract solutions for I-2513 and I-5719.
HAWKS Funding	Coordinate with the North Carolina State Highway Patrol (NCSHP) to manage the HAWKS program.
Blue Light Radar Trailers (BLRT)	Deploy BLRT in priority work zones.
Active WZ Coordination	Maintain Active Work Zone Coordination Meetings.



TSMO Planning

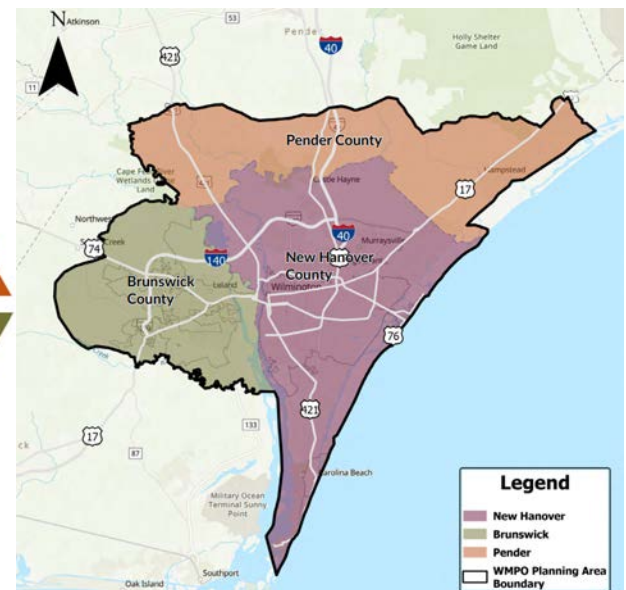
The TSMO Planning Group is dedicated to creating new TSMO planning tools and processes, developing guidance for deploying TSMO strategies, and mapping statewide traffic management assets including ITS devices and network infrastructure.

TSMO Planning FY 2025 Updates

Focus Area	Goal	Status
TSMO-Traffic Operations Planning Manual	Draft outline for this manual.	In progress
Feasibility Studies	Provide cost estimates for express design studies.	In progress
Planning Group and Tools	Establish and Staff TSMO Planning Group.	Completed
	Document TSMO planning milestones.	In progress
	Update Statewide ITS planning map.	In progress
	Organize system engineering documentation.	In progress
ITS Deployment Guide	Finalize guidelines for ramp metering.	In progress
Regional ITS Strategic Deployment Plans	Complete ITS Strategic Plan for Wilmington.	Completed

TSMO Planning FY 2026 Goals

Goal	Action Plan
TSMO-Traffic Operations Planning Manual	Begin development of this manual.
Feasibility Study Guidelines	Finalize documentation and guidelines for feasibility studies.
Regional ITS Strategic Deployment Plans	Begin ITS Strategic Plan for Asheville.
ITS Deployment Guide	Develop guidelines for managed freeways.
	Develop Guidelines for Variable Speed Limits.
	Finalize ITS deployment guides.
Planning Group and Tools	Develop Statewide TSMO Prioritization Tool.
	TSMO GIS Resource Dashboard.
	Project Tracking and Coordination with ITS Design.
TSMO Strategic Plan	Begin TSMO strategic plan update initiative.
	Begin development of TSMO Unit Roadmap progress tracker and Measures Dashboard.
ICM Planning	Determine projects with potential ICM routes.
	Finalize and implement I-5719 ICM.
Statewide ITS Communications Plan	Complete Statewide ITS Communications Plan.
Statewide ITS Deployment Guide	Complete Statewide ITS Deployment Guide.
AI TEPL	Complete a road map with recommendations for pursuing AI projects for TEPL and legislative NC statutes.
	Complete a chat style knowledge assistant that advises staff on AI projects.
TSMO Prioritization	Develop a ROI for investment in TSMO projects to compare TSMO projects with standard NCDOT projects.



Traffic Signal Program

NCDOT's Traffic Signal Program manages the largest state-owned signal system in the nation with more than 10,500 traffic signals dispersed throughout the state. Effective management of these assets is essential for mitigating traffic congestion, enhancing safety, supporting economic development and vitality, and extending the life of the signal system.

The Traffic Signal Program supports 10,500 signals – the largest state-owned signal system in the nation.

Besides 'keeping the lights on,' the Traffic Signal Program seeks to formalize and document best practices for traffic signal maintenance and operations; set targets, performance measures, and achievable goals for the program; identify gaps in funding, training, and staffing; and plot the course to a well-managed, properly funded, and optimally maintained statewide signal system.

The number of signals grows by about 3% each year, while funding and staffing remain largely the same.

Overall funding levels remained steady in FY 2025, but with continued growth in the number of signals and diminished purchasing power of the provided funding, the Department's expenditures/signal has dropped steadily since 2015 from \$4,768/signal to \$3,423/signal. That number also varies significantly across the Divisions, with some spending as little as \$2,000/signal and others as much as \$15,000/signal, indicating a large gap in signal maintenance needs and priorities. The number of signal technicians has remained fairly steady as well, resulting in an average of 65 signals/technician, approximately 50% more than the recommendation from FHWA. These gaps and variances, when paired with increasing demands on existing staff in the form of Legislatively mandated underground utility locations beginning in 2016, have resulted in the continued decline in the Department's ability to perform proactive preventative maintenance on traffic signal infrastructure, with only 64% of traffic signals receiving the targeted two annual Operational Performance Reviews – a 9% drop from FY 2024 and the lowest reported since the tracking began in 2008.

Traffic Signal Program FY 2025 Updates

NCDOT's signal modernization efforts seek to address antiquated legacy signal controller hardware and software by modernizing all state-maintained traffic signals and many city-maintained traffic signals. The newer hardware and software being deployed by these efforts are able to utilize the latest technological advances in traffic signal safety, operations, and maintenance, like Connected Vehicle capabilities, remote communications, and ATSPM. Thus far, over 2,000 traffic signals have been modernized since these efforts began while remaining ahead of schedule and under budget.



Efforts to create a comprehensive training program for traffic signal technicians, improve signal maintenance and asset tracking, update traffic signal municipal agreements, and present a business case to leadership for the Traffic Signal Program have all had significant progress made during 2025.

Traffic Signal Program FY 2025 Updates

Focus Area		Goal	Status
Signal Modernization	Transition to Kinetic Signals	Upgrade 1,000 signals to new software.	Completed
		Develop signal plans to support 1,000 signal upgrades.	Completed
		Procure controllers to support 1,000 signal upgrades.	Completed
	Complete transition of all signals from Centracos to Kinetic Signals	Configure intersections in Kinetic Signals.	In progress
		Establish communication between controllers and Kinetic Signals.	In progress
		Migrate signal coordination parameters and schedules.	In progress
Signal Management	Implement quarterly progress tracking	Implement quarterly progress tracking of signal upgrades.	Completed
	Traffic Signal Program	Present Signals Management Program State of the State to Executive Leadership.	Completed
	Traffic Signals Training Plan	Acquire funding for training.	Completed
		Develop training materials.	In progress
		Deliver training.	In progress
	Traffic Signal Municipal Agreements	Hold workshops with municipalities.	In progress
		Update Reimbursable Agreement Frameworks.	In progress
	Improve Signal Maintenance Tracking	Institutionalize use of Signal Maintenance Dashboard.	Completed
		Develop method for tracking condition of traffic signal equipment.	Completed
		Institute traffic signals asset management into Signal Maintenance Dashboard.	In progress
	Traffic Electronics Center	Maintain spending within +/- 10% of budget throughout 2025.	Completed
		Repair 85% of equipment within 4 weeks in 2025.	Completed
		At least 90% of traffic signal equipment items on contract in stock at central warehouse during 2025.	Completed
	Signals Structure Inspection	Inspect 1,050 metal poles per year to maintain 10-year service inspection schedule (unable to meet target of 1,092 inspections due to funding limitations).	In progress

Traffic Signal Program FY 2026 Outlook

A continuous pursuit of additional funding to maintain and operate the state's traffic signal system is necessary not only to stay at pace with recurring malfunctions and critical replacements, but to position the Department to enhance traffic signal performance. With additional funding, NCDOT can increase inspections to align with FHWA recommendations, decrease time to repair critical assets, and train signal technicians throughout NC to deploy signal solutions consistently and effectively. With an asset value of \$1.69 billion, proper maintenance is critical to extend the life of the signal system and protect the investments made to the infrastructure.

Efforts to modernize the traffic signal system through new controller hardware and signal software will continue throughout 2026. Continued work on the traffic signal training program, updates to traffic signal municipal agreements, and improving signal maintenance and asset tracking will be focus areas for 2026.

Traffic Signal Program FY 2026 Outlook

Goal		Action Plan
Signal Modernization	Continue Signal Upgrades	Upgrade 1,000 signals to new software.
		Develop signal plans to support 1,000 signal upgrades.
		Procure controllers to support 1,000 signal upgrades.
	Complete transition of all signals from Centracos to Kinetic Signals	Configure intersections in Kinetic Signals.
		Establish communication between controllers and Kinetic Signals.
		Migrate signal coordination parameters and schedules.
	Continue quarterly progress tracking	Continue quarterly progress tracking of signal upgrades.
Signal Management	Statewide Traffic Signal Program Plan	Finalize the Traffic Signal Management Program Plan.
	Traffic Signal Program Business Case	Present to Executive Leadership.
	Traffic Signals Training Plan	Developing training materials.
		Deliver training.
	Traffic Signal Municipal Agreements	Hold workshops with municipalities.
		Update Reimbursable Agreement Frameworks.
		Finalize updated framework.
	Improve Signal Maintenance Tracking	Acquire traffic signals asset management tool/solution.
	Traffic Electronics Center	Maintain spending within +/- 10% of budget throughout 2026.
		Repair 85% of equipment within 4 weeks in 2026.
		At least 90% of traffic signal equipment items on contract in stock at central warehouse during 2026.



Signal Design

The Signal Design Section is responsible for the design of over 10,000 state-owned traffic signals, representing the largest state-owned signal system in the country. This section ensures our traffic signals adhere to the latest state and federal standards and provide safe and efficient facilities for all modes of transportation.

The Section does in-house design for various types of projects and handles the review and approval of work prepared by private engineering firms. We are involved throughout the life cycle of projects from planning to design and provide technical support during construction. Additionally, our Structure Review Group handles the design and inspection of over 10,000 metal traffic signal supports across the state.

Together with support from our 14 Highway Divisions, the Signal Design Section ensures North Carolina has modern and safe traffic signals that meet the growing demands of our transportation network.

Signal Design FY 2025 Updates

Focus Area	Goal	Status
Signal Structure Inspection	Inspected 1,075 metal poles across the state.	Completed
Research	Receive funding to proceed with research project: Benefits, Cost, and Return-on-Investment for Metal Traffic Signal Supports over Wood Traffic Signal Supports.	In progress
Innovation	Designed, tested, and implemented a larger vertical green arrow section for signal heads to address visibility concerns.	Completed
	Developed Metal Pole GIS layer to geolocate existing metal pole assets across the state and track inspection cycles.	Completed
Artificial Intelligence (AI)	Hired Exult to deliver a pilot version of Beacon's "Dewey" product, consuming information from NCDOT's TEPL system, State Statutes, and the MUTCD to make the documents more consumable and useful to NCDOT users. Refine specific use cases, gather user feedback, define potential areas of improvement, and evaluate the success of the pilot in terms of benefit to the department.	In progress
MUTCD Compliance	Updated standard interconnect for traffic signal preemption near railroad crossings.	In progress

Signal Design FY 2026 Goals

Focus Area	Goal
Innovation	Develop out of service metal pole tracker for Division maintenance yards. This GIS tracker allows Division staff to catalog the metal poles that have been taken out of service and are in their maintenance yards. The inventory can be searched across the state to locate viable poles to be put back in service.
Signal Structure Inspection	Inspect 1,700 metal poles per year to maintain 6-year service inspection schedule as recommended by AASHTO.
	Inspect additional 600 poles per year for 5 year to clear out backlog of 4,500 currently eligible poles.
Signal Safety Improvements	Develop a standardized backplate practice.
	Implement enhanced visibility arrow section at three test corridors.
	Develop a TEPL topic to provide guidance for including pedestrian phasing at signals.

Signal System Timing and Operations

The NCDOT Signal System Timing and Operations (SSTO) group oversees the coordination and operation of signal systems across all 14 Divisions in North Carolina. Each year, SSTO conducts signal retiming projects to enhance travel on state-maintained arterials by reducing delays and stops. While NCDOT has achieved significant improvements cost-effectively, it continues to explore ways to leverage data for even greater efficiency. In recent years, SSTO has evaluated emerging technologies and data sources to better assess corridor performance for engineers and stakeholders. In FY 2025, NCDOT significantly expanded the number of signals connected to the new statewide central signal system. This continued effort supports future efforts to maximize the value of collected data—whether from probe-based or hardware-based ATSPMs—and informs proactive decision-making for both corridor operations and individual intersection maintenance.

Signal Timing/Operations FY 2025 Updates

Focus Area	Goal	Status
FY 2025 Signal Timing Projects	Update signal timing for 34 systems, impacting 290 signals.	Completed
	Reduce delay along corridors by 66% via signal timing – target is 25%.	Completed
Probe Data ATSPM Pilot	Utilize INRIX.IQ for project prioritization and selection.	Completed
	Pilot Flow Labs for project prioritization and selection, and investigate correlation between Travel Time Runs (project/industry standard) and probe data in before-and-after.	In progress
	Expand pilot analysis to evaluate Axilion, INRIX.IQ, Flow Labs.	In progress
CMAQ ATSPM	Install out-of-pavement detection zones in enhanced layout at 28 intersections.	Completed
	Evaluate benefits, ROI, target locations for use of Hi-Res Hardware ATSPMs.	In progress
Kinetic Signals	Develop training materials to assist field staff with database conversions and intersection configuration.	Completed
	Complete at least one training per year for all staff to be trained or refreshed in Kinetic Signals.	Completed
	Develop consistent SOPs for Kinetic Signals use cases to leverage enhanced data capabilities.	In progress
Active Traffic Management Plan	Develop a plan for moving towards active traffic management.	In progress

Signal Timing/Operations FY 2026 Goals

Goal	Action Plan
FY 2026 Signal Timing Projects	Let FY 2026 signal timing projects.
	Achieve a 25% reduction in delay for signal timing projects.
CMAQ ATSPM	Evaluate and compare benefits of hardware-based ATSPMs and probe-data-based ATSPMs.
	Provide documentation for field personnel to utilize ATSPMs in daily operations and maintenance.
Kinetic Signals	Migrate system from Kinetic Signals to Kinetic Mobility.
	Provide at least one training for all field and design staff in Kinetic Mobility.
	Update Kinetic resources to document SOPs for Kinetic Mobility.
Active Traffic Management Plan	Complete updates of SSTO resources and planning documents; Outline what active traffic management looks like for NCDOT/SSTO.
Probe Data ATSPM Pilot	Document pilot experience with Flow Labs. Evaluate correlation between probe-data and traditional travel time runs for before-and-after analysis of implemented timing projects.
	Use Flow Labs as an optimization pilot.
	Update Signal Timing Philosophy Manual.

List of Acronyms

Acronym	Meaning
AAR	After Action Review
AARA	Automating Actionable Road Anomalies
AASHTO	American Association of State Highway and Transportation Officials
AI	Artificial Intelligence
ALPR	Automated License Plate Reader
ATCMTD	Advanced Transportation and Congestion Management Technologies Deployment
ATIS	Advanced Traveler Information System
ATMS	Advanced Transportation Management System
ATS	Assistant Traffic Specialists
ATSPM	Automated Traffic Signal Performance Measures
AVL	Automatic Vehicle Location
AWZM	Active Work Zone Management
B/C	Benefit/Cost
BLET	Basic Law Enforcement Training
BLRT	Blue Light Radar Trailers
BOT	Board of Transportation
CAD	Computer Aided Dispatch
CAV	Connected and Autonomous Vehicles
CCTV	Closed Circuit Television
CMAQ	Congestion Mitigation and Air Quality
CMM	Capability Maturity Model
CMS	Changeable Message Sign
CTSO	Committee on Transportation System Operations
DMS	Dynamic Message Sign
DOT	Department of Transportation
DPS	Department of Public Safety
EDC	Every Day Counts
EM	Emergency Management
ETC	Emergency Traffic Control
FAQ	Frequently Asked Questions
FAV	Fully Autonomous Vehicle
FHWA	Federal Highway Administration
FY	Fiscal Year
GHSP	Governor's Highway Safety Program
GIS	Geographic Information Management System
GMR	General Maintenance Reserve
HAWKS	Helping All Work Zones Keep Safe
IAMS/ IWOMS/ FAMS	ITS-related Asset Management Systems
ICM	Integrated Corridor Management
IM	Incident Management
IMAP	Incident Management Assistance Patrol

Acronym	Meaning
IME	Incident Management Engineer
IT	Information Technology
ITS	Intelligent Transportation Systems
iVDS	Video Management System
JFHQ	Video Management System
KPI	Key Performance Indicator
LLM	Large Language Model
LMS	Learning Management System
LPI	Leading Pedestrian Interval
MAP-21	Moving Ahead for Progress in the 21st Century
ML	Machine Learning
MMCVP	Multimodal Connected Vehicle Pilot
MOPAR	Maintenance Operations and Performance Analysis Report
MOU	Memoranda of Understanding
MPO	Metropolitan Planning Organization
MUTCD	Manual on Uniform Traffic Control Devices
NC	North Carolina
NCDOT	North Carolina Department of Transportation
NCEOP	North Carolina Emergency Operations Plan
NCSHP	North Carolina State Highway Patrol
NCTA	North Carolina Turnpike Authority
NHS	National Highway System
NOCoe	National Operation Center of Excellence
O/D	Origin/Destination
ODOT	Ohio Department of Transportation
PEF	Private Engineering Firm
PSA	Public Service Announcement
QC	Quick Clearance or Quality Control
RFP	Request for Proposal
RITS	Regional ITS (Engineer)
ROI	Return on Investment
SMART	Strengthening Mobility and Revolutionizing Transportation
SOP	Standard Operating Procedure
SPR	State Planning and Research
SSTO	Signal Systems Timing and Operations
STIP	State Transportation Improvement Program
STOC	Statewide Transportation Operations Center
SUMA	Support for Urban Mobility Analyses
TEPPL	Traffic Engineering Policies, Practices and Legal Authority
TETC	The Eastern Transportation Coalition
TIM	Traffic Incident Management
TIMS	Traveler Information Management System
TMC	Traffic Management Center
TOM	Transportation Operations Manual
TRB	Transportation Research Board
TSMO	Transportation Systems Management and Operations
USDOT	United States Department of Transportation
V2X	Vehicle-to-Everything
VIP	Valuing Individual Performance
VIPER	Voice Interoperability Plan for Emergency Responders
WEA	Wireless Emergency Alert
WZ	Work Zone
WZDx	Work Zone Data Exchange