

Company Name: North Carolina Department of Transportation

Project Title: Advanced Air Mobility Program and Response to Hurricane Helene

Project Description:

The North Carolina Department of Transportation (NCDOT) has demonstrated visionary leadership in leveraging Intelligent Transportation Systems (ITS) to support advanced mobility and disaster response. In the past year, NCDOT has expanded the state’s connected and automated vehicle and utilized cutting-edge technology.

Advanced Mobility Plan

In April 2024, NCDOT released North Carolina’s five-year Advanced Transportation Mobility Strategic Plan (Advanced Mobility NC), led by the Division of Aviation and Integrated Mobility Division. With a vision of leveraging innovation solutions and platforms to provide a safe, sustainable, efficient, and resilient transportation system that work for all North Carolinians, the strategic plan focused on three goals: improve quality of life, create economic opportunities, and be a transportation trailblazer.

UAS-Powered Emergency Response

Shortly have the release of Advanced Mobility NC, Hurricane Helene (September 26-27, 2024) hit North Carolina and gave NCDOT an opportunity to showcase the power of technology, particularly Uncrewed Aircraft Systems (UAS), to inform decisions, protect lives, and restore infrastructure. NCDOT’s drone teams, together with the Civil Air Patrol and NOAA, conducted over 300 aerial missions within two weeks of Helene, providing over 6,000 high-resolution imagery of flood damaged bridges, landslides, and impassable roads. Additionally, drone operators completed around 200 UAS missions to inspect damage and support engineering assessments. Within 24 hours of landfall, fixed-wing aerial surveillance captured real-time flood impacts, enabling early road closures and strategic routing of crews.

Integrated ITS and Data Fusion

Aerial data was seamlessly integrated with fixed traffic cameras, flood sensors, GIS dashboards, and crowd-sources input. This real-time synthesis empowered NCDOT to dynamically reroute evacuees, update travelers via DMS and mobile platforms, and guide emergency vehicles. They were able to reopen 600 roads - including key arteries like I-40, I-26 and US 221 – following data-informed recovery and identified and prioritized 6,900 damaged locations statewide.

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Building on this success, NCDOT secured a \$1.1 million US SMART grant to launch “done-in-a-box” pilot. The technology enables pre-storm deployment of autonomous drones – capable of streaming imagery post-event – position North Carolina for even more agile ITS-driven response.

Implementation of Advanced Mobility NC

While still addressing the aftermath of Hurricane Helene, NCDOT began implementing the Advanced Mobility NC plan in October 2024, advanced mobility initiatives across the state. Several key components of the plan that have been completed include:

- **Helicopter Landing Area Permit Process:** Identified changes needed to NCDOT existing helicopter landing area permits process to better incorporate UAS and AAM landings.
- **Development of Materials for Airports in Decarbonizing their Systems:** Created a toolkit for regional airports to be more fuel resilient.
- **Identified Infrastructure Needs to Support Advanced Mobility Technology Integration:** Determined the infrastructure readiness and the barriers and opportunities for improvement.
- **Technology Maturity Progress:** Held market sounding meetings with industry partners to better understand the future and maturity of ground and air advanced mobility.
- **Advanced Mobility Dashboard:** Developed a dynamic dashboard and mapping tool that can showcase all prior advanced mobility deployments based on deployment year.
- **Zoning Framework Requirements:** Developed conceptual zoning requirements for Advanced Air Mobility, establishing considerations for appropriate land uses for vertiports and supporting facilities
- **Lessons learned from NCDOT Pilot Programs and Future Standardization:** Created a summary of previous NCDOT air and ground advanced mobility pilots and lessons learned to standardize future pilot evaluations.

The North Carolina Department of Transportation has consistently demonstrated leadership and innovation in the field of Intelligent Transportation Systems (ITS). Their proactive approach to integrating advanced technologies has significantly enhanced their ability to respond to emergencies and improve overall mobility. The successful implementation of the Advanced Mobility Plan, along with numerous projects and programs, showcases NCDOT’s commitment to creating a safe, sustainable, and efficient transportation system. Their efforts have not only improved the quality of life for North Carolinians but have also positioned the state as a trailblazer in transportation innovation. For these reasons NCDOT is a deserving candidate for the Local Government Award.

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