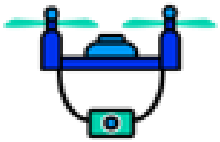
SMART GRANTS PROGRAM



Automating Actionable Road Anomalies (AARA)

North Carolina Department of Transportation (NCDOT)

PROJECT PARTNERS

North Carolina State University

NCDOT ICF KPMG

The Eastern Transportation Coalition (TETC)

PROJECT CHALLENGE

North Carolina's freeways experience sudden unexpected slowdowns and work zones that require drivers to change lanes. These situations, encountered at high speeds, can negatively impact traveler safety and mobility. Providing in-vehicle hands-free, eyes free alerts for these conditions will give drivers specific, timely and actionable information. To achieve this, the AARA system will leverage and integrate public agency and private sector datasets, advanced algorithms, and open data feeds to enable motorists to receive detailed actionable alerts on their existing smartphone applications and navigation systems.

IMPACT

For State 1, NCDOT will deploy AARA on two interstate segments – Interstate 40 (I-40) and Interstate 95 (I-95). For the I-40 corridor, the project deployment area will encompass the Tennessee state line to Mile Marker (MM) 31, known as Pigeon River George. This is a rural area and is a critical Commercial Motor Vehicle (CMV) route with minimal alternative routes, especially for CMVs. For the I-95 Corridor, the project deployment area boundaries include the South Carolina state line to MM 81, which is outside of Fayetteville, NC. This corridor is a major north/south route with many active and planned work zones over the next five years. Travelers in North Carolina will benefit from automated, higher quality, timelier, and actionable traveler information and alerts.

CURRENT STATE OF THE ISSUE

North Carolina's freeways experience sudden unexpected slowdowns and work zones that require drivers to change lanes. These situations, encountered at high speeds, can negatively impact traveler safety and mobility. The North Carolina Governor's Highway Safety Program Annual Report for FY 2021 reported that NC had 1,538 vehicle fatalities in 2020, a 6% increase from 2019. The Federal Motor Carrier Safety Administration reports that 33% of work zone fatal crashes involved at least one large truck.

POLICY QUESTIONS

1. The AARA system will disseminate automated alerts based on data ingested. Is the data ingested of high enough quality and controlled such that the system will remain automated? 2. NCDOT currently requires Connected Lane Closure Systems (CLCS) as a construction specification but does not have an existing policy or procedure to verify use. Will the AARA system provide a method to verify and gain value from the CLCS?

STAGE 1 OUTCOMES

1. Increased number of unique in-vehicle alerts are received within the AARA deployment area. 2. The percentage of AARA system detected anomalies that are reported in mapping apps within 5 minutes increases by 5%. 3. Instances of hard braking within AARA system deployment area and work zones are reduced by 2% compared to outside of the AARA system deployment areas.

STAGE 2 VISION

Stage 2 will expand the AARA system statewide and enhance its functionality by integrating connected vehicle and agency fleet data. In addition, NCDOT will share the outcomes with partner agencies in The Eastern Transportation Coalition (TETC), offering the potential opportunity for others to leverage the experience and service to expand AARA's footprint and increase roadway safety throughout the southeast.