SMART GRANTS PROGRAM

Leading in Sustainable Safety with V2X technology in Oakland County, MI

Road Commission for Oakland County (RCOC)

PROJECT PARTNERS

AECOM
Brandmotion
Bridgeport
Integral Blue
Mannik Smith Group
Operis
Poco Labs
P3Mobility
University of Michigan
Oakland County
Michigan Department of Transportation
Southeastern Michigan Council of Governments (SEMCOG)
City of Oak Park, Michigan
City of Southfield, Michigan
Lawrence Tech University
Cohda Wireless
Cubic

PROJECT CHALLENGE

The project aims to address deployment challenges by creating private investment blueprints and public-private models to reduce reliance on government funding. It will evaluate using unlicensed Wi-Fi spectrum for low-latency safety alerts, ensuring secure performance. Specifications from OEMs and standards committees will establish diverse use cases from Day 1, fostering trust in the ecosystem. Additionally, the project will demonstrate security functions like encryption, authentication, and accounting.

IMPACT

The project is planning for a county-wide deployment of C-V2X infrastructure in Oakland County. Intersection selection is underway and considers crash and traffic data, existing equipment, affordability, and equity. Additionally, a C-V2X prototype demonstration will be deployed at 5 intersections during Stage 1. The 10 vehicles and drivers initially benefiting from the prototype will be RCOC maintenance trucks. The key use cases being evaluated are vulnerable road user notifications, signal priority, and V2X fleet intelligence.

CURRENT STATE OF THE ISSUE

The project's motivation and use case testing is driven by safety. Oakland County Michigan 5-year statistics (2017-2021) provides a baseline of: 319 traffic fatalities, 942 pedestrian crash events, and 4908 red light crashes.

POLICY QUESTIONS

1. Ownership of the intersections in a large county is a patchwork of local, county, and state DOT. How can "rules of engagement" for ITS digital infrastructure be streamlined along a corridor with multiple jurisdictions?
2. How can the IT policy of a major IOO's Traffic Operations Center Network be modified to allow connectivity for the enhanced technologies being deployed (e.g., edge computers, C-V2X RSUs, and cloud services)?
3. What infrastructure delivery model(s) (e.g., public vs. private ownership) best meets and abides by procurement policies?

STAGE 1 OUTCOMES

Successful outcomes for the RCOC project would include:

1. Improved financial sustainability of the C-V2X system by introducing a model that focuses on generating funds and attracting private investment to support the deployment, operations, and maintenance of the C-V2X.
2. Reduced number of VRU crashes and near-misses with C-V2X VRU alerts.
3. Demonstrating that delivering safety critical messages in the unlicensed Wi-Fi band is as reliable and secure as in the dedicated spectrum.

STAGE 2 VISION

Stage 2 aims to align Oakland County, Michigan with the USDOT's goal of 50% V2X deployment at signalized intersections by 2029. The project will create a sustainable blueprint for other cities, enhance interoperable infrastructure for OEM and fleet testing, and include community engagement to highlight the safety benefits of C-V2X. Additionally, it will focus on workforce development to ensure readiness in operating and maintaining the infrastructure and in-vehicle elements.