MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

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RESEARCH SUMMARY

TRAVELER INFORMATION FOR RURAL MARYLAND

WHAT WAS THE NEED?

Effective traveler information is essential for safe and efficient transportation operations, particularly in rural areas and during emergencies when timely guidance can directly affect traveler safety. In Maryland, Highway Advisory Radio (HAR) has historically supported traveler-information dissemination in rural areas, especially where other communication tools were limited. However, HAR infrastructure is aging, difficult to maintain, limited in geographic reach, and increasingly misaligned with how travelers now receive information. At the same time, rural Maryland continues to face communication challenges related to variable cellular coverage, sparse roadside infrastructure, and the need for reliable information during weather events, incidents, and evacuations.

WHAT WAS THE GOAL?

The goal of this project was to evaluate strategies for improving traveler-information dissemination in rural Maryland and provide evidence-based recommendations for modernizing communication in areas historically served by HAR.

WHAT DID THE RESEARCH TEAM DO?

The research team reviewed existing traveler-information technologies, national practices, HAR retirement trends, relevant policy requirements, and current Maryland traveler-information practices. The team also conducted field evaluations along selected SHA-maintained corridors to assess cellular signal conditions, evaluate traveler-information message delivery, and determine the feasibility of replacing HAR within existing service areas. The assessment considered cellular-based delivery, Dynamic Message Signs (DMS), and other complementary communication channels.

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WHAT WAS THE OUTCOME?

The project found that cellular-based delivery can play a major role in rural Maryland's traveler-information system, although performance varies by carrier, corridor, and geographic setting. Real-world testing using simulated SMS and app-based messages confirmed successful delivery under the tested roadway conditions. The feasibility assessment further showed that measured cellular conditions within existing HAR service areas were generally sufficient relative to the weakest successful delivery conditions observed in the field. These results indicate that cellular-based delivery can support the routine traveler-information function historically served by HAR in rural Maryland.

The findings also showed that cellular communication should not be treated as a standalone replacement for all traveler-information needs. DMS remain essential because they provide direct, location-specific information without requiring travelers to use a smartphone, data plan, or mobile application. The recommended strategy is therefore a layered communication framework in which cellular-based delivery serves as the primary replacement pathway for routine HAR functions, while DMS and other targeted tools provide redundancy.

Based on the corridors evaluated, the project recommends that SHA retire HAR as a routine traveler-information dissemination channel and transition to a cellular-centered, DMS-supported, multichannel traveler-information system.

HOW WILL MDOT SHA USE THE RESULTS?

SHA will use these findings to guide the phased retirement of HAR as a routine traveler-information channel and its replacement with a layered communication strategy. The first layer is a strategic mix of communication technologies: such as Cellular, DMS, satellite (LEO), connected vehicle/V2X, HAPS. The second layer is how that information reaches drivers: visual delivery, such as DMS and app alerts, and audible delivery, such as voice prompts or Wireless Emergency Alert (WEA), tones, when drivers need hands-free information. Next steps include developing a formal HAR decommissioning plan, repurposing existing HAR roadside signage to redirect travelers to MD 511, prioritizing continued DMS investment at key locations, and monitoring rural cellular coverage over time to confirm that service levels remain adequate as the transition proceeds.

LEARN MORE

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