

Request for Research Funding for FY 2025-2026

Project Number (Research Center Use Only): TEO-26-07

Requesting Office	State Traffic Engineering & Operations Office/FTE	Priority: High	7 of 12
Proposed Title	Determining the Best Uses of Wireless Emergency Alerts to Warn Drivers of Major Incidents and Emergency Situations on Florida Limited Access Roadways		
Justification	<p>Major traffic incidents and emergency situations can have significant impacts on traffic operations and safety. Full road closures due to jackknifed tractor trailers or hazardous spills can cause hours of congestion and lead to additional crashes due to unaware or impatient drivers. Quick and efficient notifications to nearby drivers can help reduce the operational and safety impacts of these situations. Wireless emergency alerts (WEAs) have great potential to reach almost all drivers in a timely manner, but care is needed to avoid overwhelming drivers with these alerts and ensure that only drivers who could potentially be affected by the major incident or emergency situation receive these alerts. This proposed research will help FTE and FDOT understand how WEAs and similar digital traffic alert systems could be used most effectively. WEAs are primarily used for national emergencies, AMBER alerts, or similar situations involving imminent threats to safety (such as severe weather), but they could also be used to warn nearby drivers of major traffic incidents. This project would help advance the FDOT Compass elements of Safety (by providing drivers with warnings of dangerous situations so they can respond safely), Community (by providing another notification method to alert drivers of major situations), and Technology (by identifying additional technological tools that FDOT could use to improve communication with drivers).</p>		
Impact	<p>It is expected that the results of this research will help FTE and FDOT identify how WEAs or similar alerts can be best utilized to warn drivers of major incidents and emergency situations. Recommended alert systems will be tested using hypothetical simulated examples during this proposed project so traffic management center (TMC) operators can learn how to best use these systems for different cases. This project will help FDOT improve their technological capabilities and better communicate with drivers during severe and emergency situations to reduce the operational and safety impacts of these situations.</p>		
Affected Offices/ Districts	<p>FTE, Emergency Management, Safety, State Traffic Engineering and Operations, Transportation Technology. Any recommended alert systems identified through this research could be implemented in any FDOT district, not just the FTE district.</p>		
Existing Work	<p>No ongoing or past research specifically focused on the use of WEAs for traffic-related incidents was found through the RIP or TRID databases. While a thorough literature review on the use of WEAs and similar alerts for major traffic incidents will be conducted as part of this proposed research, the study referenced below investigated the impacts of severe weather WEAs on traffic crashes and volumes in Virginia.</p> <p>Ferris, J. S. & Newburn, D. A. (2017). Wireless alerts for extreme weather and the impact on hazard mitigating behavior. <i>Journal of Environmental Economics and Management</i>, 82. 239–255. http://dx.doi.org/10.1016/j.jeem.2016.11.002</p> <p>A study focused on effective weather messaging for drivers is ongoing at the University of Connecticut (https://apps.trb.org/cmsfeed/TRBNetProjectDisplay.asp?ProjectID=5124), but this project only focuses on weather-related events (not large traffic incidents) and does not consider WEAs.</p> <p>As part of a prior research project with the Central Florida Expressway Authority (CFX) (referenced below), Professor Al-Deek and his UCF research team did a survey of 900 Central Florida drivers regarding wrong-way driving event notifications and found that 74% of respondents thought that WEAs should be used for wrong-way driving event notifications and that 63% of respondents would prefer to receive wrong-way driver event notifications through WEAs, making it the most preferred notification method. These findings suggest that WEAs could potentially be used for various types of traffic events.</p> <p>Al-Deek, H. (2019). <i>Wrong-Way Driving Phase-3 Study: Allocating and Evaluating Countermeasures on CFX Roadway Network</i>. Central Florida Expressway Authority.</p>		
Keywords Used In Existing Work Search	<p>Traffic Wireless Emergency Alert, Driver Emergency Warning Alert</p>		

Related Contracts (Give contract numbers)			
Funding Request	\$245,629	Anticipated Duration	21 months (18 months + 3 months reporting)
Project Manager	Eric Gordin	Contracting Method	Direct contract with University of Central Florida (Principal Investigator: Haitham Al-Deek, Ph.D., P.E.)
Equipment	N/A		
Urgency	1	Major traffic incidents or emergency situations can occur at any time, so it is important to have proper communication protocols in place when they occur. This research will help FTE and FDOT be more prepared for these situations so they can effectively notify affected drivers to increase awareness of these situations and reduce congestion and crashes.	
Implementability	1	Any WEA or similar systems recommended from this project can be immediately implemented by FDOT. In this project, hypothetical simulated examples will be developed and tested to understand the operational aspects (timeframes and procedures) involved with these systems. These examples will provide TMC operators with the necessary knowledge to quickly and effectively utilize these alerts for various situations, allowing for immediate use of these systems.	
<p>Project Benefits (Succinct, complete explanation) The expected benefits of this project would be identification of digital alert systems which could be used to send WEAs or similar alerts to drivers, prioritization of use cases for these alerts to ensure that these alerts do not overwhelm drivers, improved operations and safety due to increased driver awareness of major incidents and emergency situations, and an understanding of the operational aspects of these alert systems so TMC operators can effectively utilize them when needed.</p>			
Project Benefits (Select all that apply and explain)	Quantifiable Benefits (units, dollars, etc...if applicable)	Methodology or Data Sources Used to Determine Quantifiable Benefits. If not applicable, please give justification of project benefits	
<input type="checkbox"/> Materials Enhancement			
<input type="checkbox"/> Financial Impact			
<input type="checkbox"/> Time Savings	Reduced congestion, quicker notification of incidents to drivers	Sending WEAs or similar alerts to drivers will allow for quick and widespread notification of major incidents and emergency situations. It is expected that these alerts will reduce traffic volumes near the incident area, which will reduce congestion and save time for drivers in the incident area.	
<input type="checkbox"/> Lives Saved/Injuries Prevented	Reduction in crashes and associated injuries and fatalities	WEAs or similar alerts will make drivers more aware of potentially dangerous situations, which could result in them driving more carefully and reducing the frequency of crashes due to the situation. Fewer crashes means fewer injuries and fatalities, which can help FDOT get closer to Target Zero.	
<input type="checkbox"/> Other (Explain)	Identification of most effective alert systems, priority use cases for WEAs,	This project will help FDOT understand what digital alert systems would be most effective for different situations and prioritize use cases for WEAs so they are only used a few times a year and do not overwhelm drivers' mobile devices with alerts. The findings from this project can be used to implement digital alert systems throughout the state.	

*Comments should explain and support urgency, financial benefit, and implementability scores