TRB 2016 International Conference & Workshop on Winter Maintenance and Surface Transportation Weather

Connected Vehicle Winter Weather Maintenance Advanced Technologies/Management for Motorist Advisories and Warnings

The Michigan Department of Transportation (MDOT) has partnered with the United States Department of Transportation (USDOT)/Federal Highway Administration (FHWA) Road Weather Management Program (RWMP), and the Nevada and Minnesota Department of Transportation to develop and deploy sensor technology on fleet vehicles that collect near-real time vehicle data. The vehicle data collection system supports connected vehicle winter weather maintenance advanced technologies and management for motorist advisories and warnings. MDOT received a FHWA grant to collect and use Integrated Mobile Observations (IMO) data to post motorist advisories and warnings (MAW) to MDOT dynamic messages signs and the State of Michigan MI Drive website. This system collects near real-time environmental/weather and traffic related data from both fixed environmental and mobile sensors, processes this information into advisories/warnings, alerts, or traveler information and disseminates the traveler information in near real-time for pre-trip applications via the Weather Response Traveler Information System (WxTINFO). This presentation will discuss the data collection system(s), application development, and functional deployment of motorist advisories and warnings from weather events using fixed and mobile data for weather maintenance advanced technologies and management.

Findings and Conclusions

This project provides motorist advisories, warnings and alerts to travelers pre-trip and en-route. The following are project findings and conclusions achieved:

- Traveling Public Benefits: The project demonstrated how providing motorists with more timely/valuable information allows them to make safer decisions both pre-trip and en-route in relation to traveling the road network in inclement weather conditions.
- Operations Users Benefits: DOT operations are critical in providing motorists with valuable information during winter weather events. Transportation Operations Centers (TOCs) can become overwhelmed with incidents that occur during winter weather events. Having the ability to utilize an alert system to advise TOCs of necessary weather related advisory or specific alert locations increases near real-time knowledge of roadway conditions, thereby increasing the motorist decision and safety.
- Maintenance Users Benefits: DOT maintenance activities are critical in providing motorists with safe driving conditions during winter weather events. DOT maintenance staff manages multiple maintenance activities (plowing, salting, etc.) during winter weather events. Having the ability to utilize an alert system to potentially advise maintenance staff of necessary winter maintenance locations including near real-time unsafe pavement/roadway conditions, enhances response times and improves the use of maintenance resources.

State agencies continue to look for innovations that leverage connected vehicle technologies that can be developed and deployed with current systems. MDOT supports several USDOT/FHWA connected vehicle projects and has initiated connected vehicle research projects that look at how data from vehicles can enhance and support current Department data needs while trying to understand how this information can potentially change the way a DOT does business. Our vision is to continue pursing excellence by leveraging technology to ensure our customers truly see a transportation system that operates better, faster, cheaper, safer and smarter while providing the highest quality of life for all.