



Case Study

Organization: Wyoming DOT

Location: Cheyenne WY

Wyoming DOT Keeps Travelers and Personnel Safe with MRM

Wyoming Department of Transportation (WYDOT) is responsible for keeping roads and highways clear of snow across more than 93,000 square miles of remote, and often treacherous, terrain. In 2009, WYDOT implemented the CompassCom Mobile Resource Management (MRM) solution (sometimes referred to as Automatic Vehicle Location or AVL) with a primary goal of enhancing the safety of travelers and state personnel during winter storms. The department complemented the MRM with mobile tablets that allow plow drivers and supervisors to respond quickly to weather-related incidents and report them directly to the public as needed.

Safeguarding Citizens and Crews

The Wyoming statewide MRM tracks nearly 500 vehicles, most of which are involved in snow response activities. GPS-enabled location messaging units installed in each vehicle monitor latitude/longitude and speed, as well as plow position and spreader engagement on the trucks. The units transmit the data over the WYOLink statewide Motorola network with 180-second refresh to the CompassLDE database at the Traffic Management Center (TMC) in Cheyenne.

Personnel at the 24-hour TMC monitor the vehicles on a dedicated map screen supported by CompassTrac 6. Supervisors elsewhere in the state can use the CompassTrac 6 application or they can tap into the web-based ArcGIS-based solution directly through the Internet.

Prior to the CompassCom solution, supervisors in the TMC had a general idea of where plows were located because drivers could radio in their status reports periodically. In a major snow event, that created a lot of overlapping chatter on the radio system. Now, supervisors can view precise plow locations on CompassTrac map display and dispatch them immediately to apply sanding materials where traffic accidents or changing road conditions have been reported.

“We use the AVL to find the closest unit to a traffic incident [caused by snow],” said Jason Fernandez, TMC Engineer. “That saves time and minimizes secondary accidents.”

“We can monitor plow operator safety without having to call them on the radio all the time,” said Vince Garcia WYDOT GIS/ITS Program Manager”

Not only are the roads cleared more quickly to keep travelers safe thanks to the MRM, but WYDOT plow drivers are now better protected as well. At least two potentially life-saving incidents have already occurred. In one, a plow driver rolled his vehicle on a rural two-lane route. Shaken up, he radioed for help but didn't know where he was. The TMC instantly dispatched emergency responders to his precise location.

Tablets in the Vehicles

To further improve responsiveness, WYDOT with funding support from the Federal Highway Administration (FHWA), provided a design specification to CompassCom for a mobile application that could run on a tablet in the snowplow trucks and supervisory vehicles. The app allows for two-way digital messaging over the statewide Motorola radio network or over Wi-Fi, where available. It has increased communication between drivers and supervisors while reducing voice radio traffic by a significant amount, while also dramatically improving the speed with which road condition updates get to the public.

The mobile app presents multiple screens for drivers and supervisors to view different information in their vehicles. One is a map showing the locations and status of vehicles within a certain radius of the user. Supervisors on the road view this and send text commands to plows closest to an icy road or accident. The map page of the app is the only page that requires Wi-Fi communication because of the large amounts of data that is transmitted.

The most frequently used screen, however, is a reporting interface. Using a simple interface with buttons representing different conditions, plow drivers are able to enter road conditions, such as 'Slick and Blowing Snow,' and current weather situations. These conditions and situations are listed on the menu so the driver need only point and click. The app ties this information to road segments and pushes the updates out instantly to a public WYDOT website, telephone system, text/email alerting system and free smartphone apps.

State personnel can also report automobile accidents and roadway hazards, which are geolocated to specific mile markers and reported publicly in similar fashion through the tablet app.

Vehicle Tracking in Court

At least a couple of times each year, a traveler in Wyoming attempts to sue the state for automobile accidents related to road conditions during snow events. Two of the most common complaints are road surfaces not cleared in a timely manner or spray from a snow plow temporarily blocking the vision of a passing motorist.



In both situations, WYDOT extracted historical winter maintenance data from the CompassCom solution and lawyers utilized this data as they prepared for the cases. The MRM data shows exactly when a road was cleared and where materials were applied. The data also pinpoints where a given plow was located at a specific time. Such reliable information can determine the outcome of the case.

CompassCom

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www.compasscom.com

12353 E. Easter Avenue
Suite 200
Centennial, Colorado, 80112

800.787.0651
303.680.3311
303.766.2488 Fax

Latitude 39 35' 18.75252" N
Longitude 104 50' 43.7526"W