

WYDOT

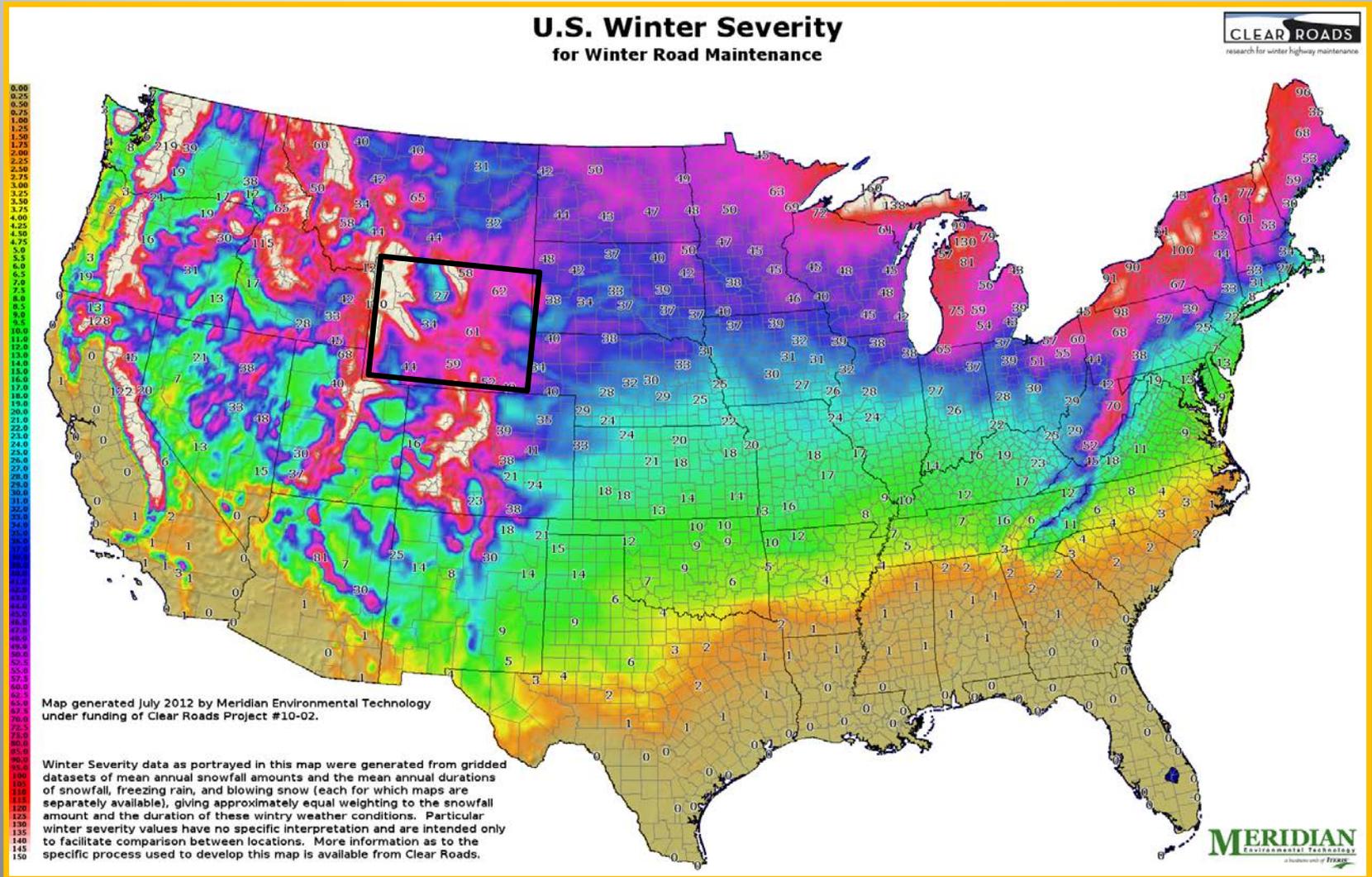
Using Mobile Data for Weather- Responsive Traffic Information and Management

8/14/14

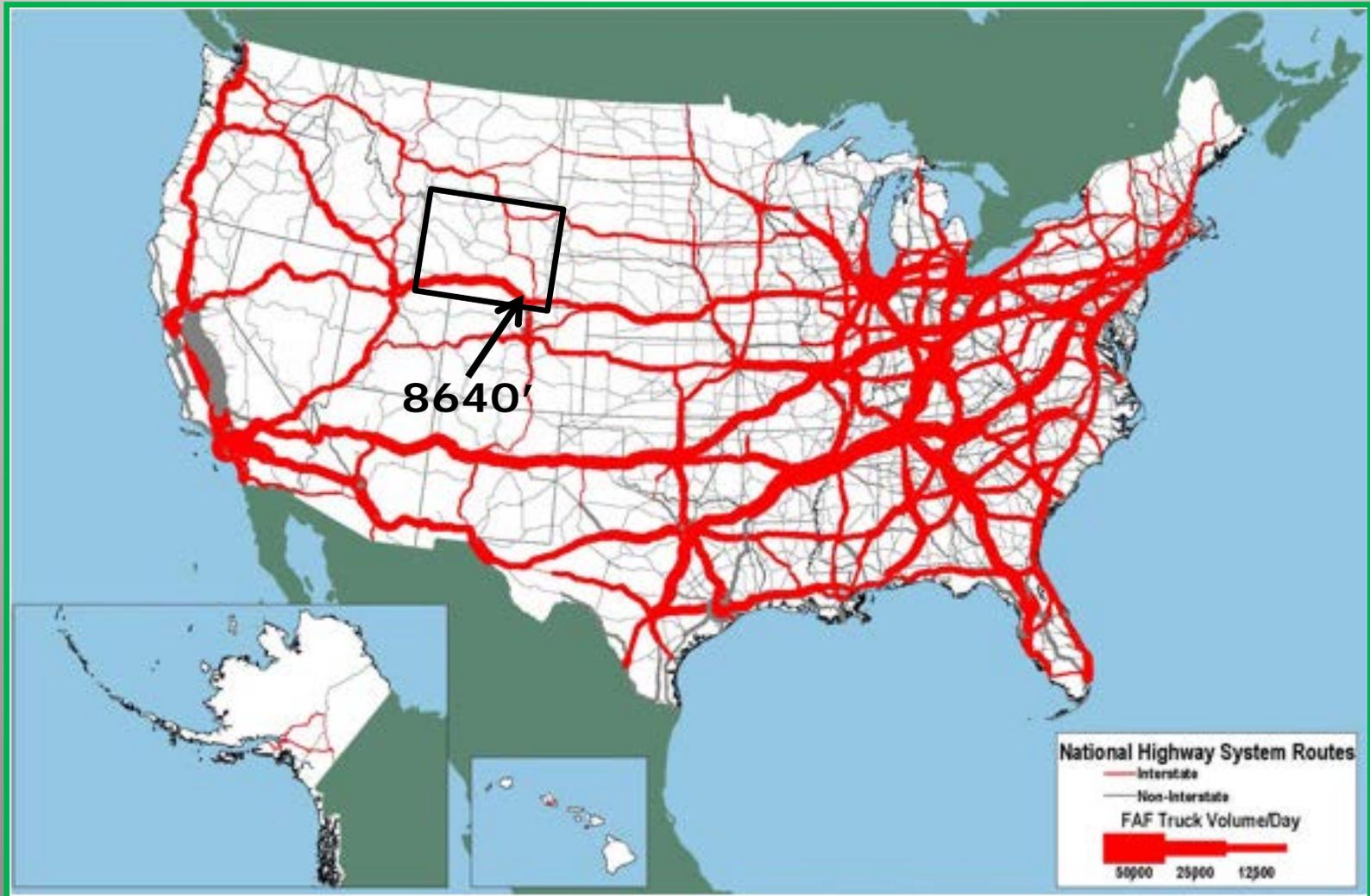
Vince Garcia, P.E.

GIS/ITS Program

Winter Weather – Winter Severity



I-80 Major Commerce Corridor

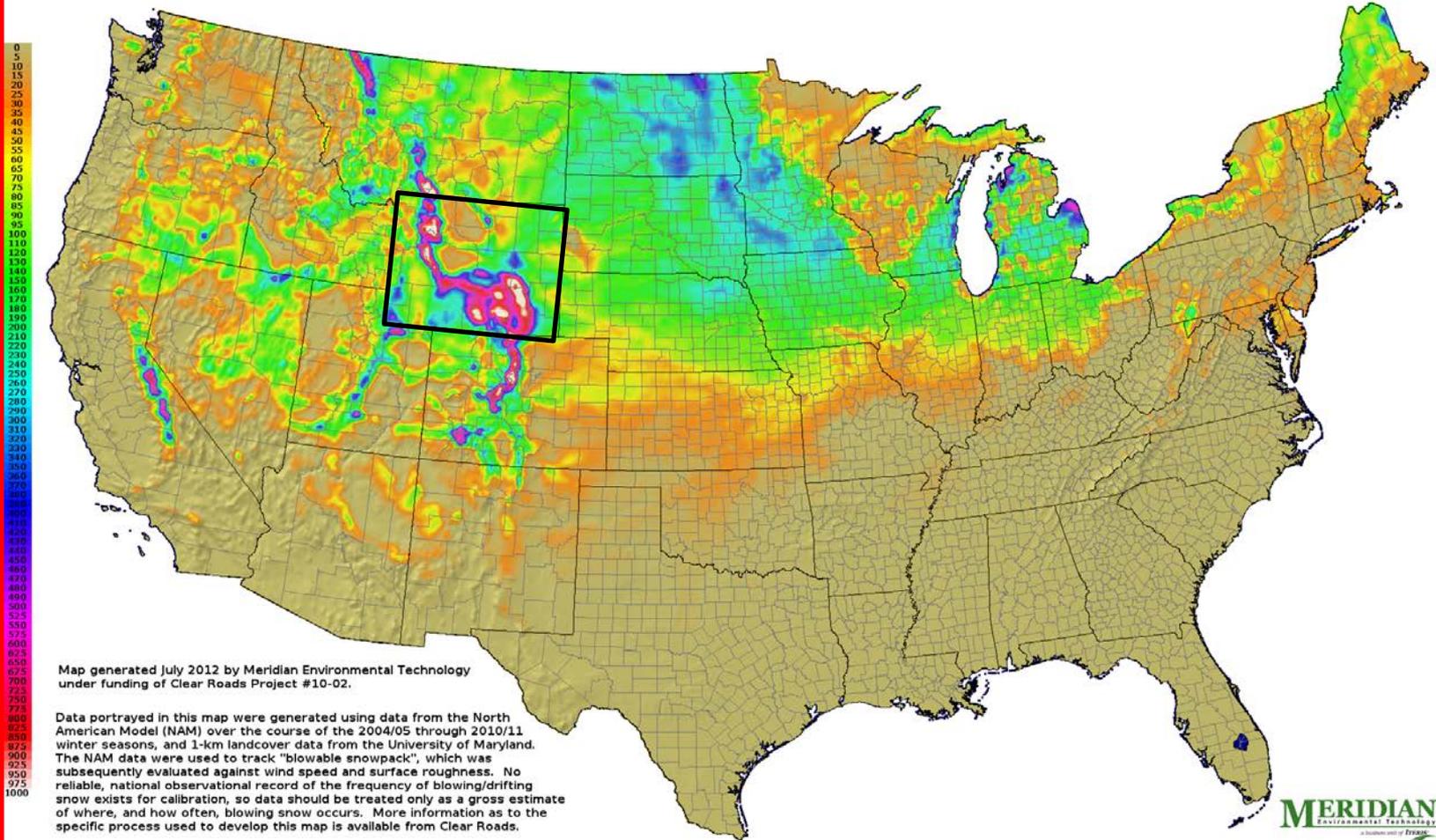


Winter Weather – Blowing Snow

U.S. Annual Hours of Blowing Snow

Estimated from Modeled Data

CLEAR ROADS
research for winter highway maintenance



Winter Weather Crashes



Winter Weather Crashes



Summer Crashes

- 10:30 a.m., August 19, 2004
- Interstate 80
- Cheyenne - Laramie
- Fog Event – minimal visibility
- 66 people involved
- 36 vehicles
- 4 fatalities

Population - Reality Check

Census Data*	Wyoming	United States
2013 Population (Est.)	582,658	316,128,839
Households (2008-2012)	221,479	115,226,802
Persons per Household	2.48	2.61

* Source: U.S. Census Bureau
(<http://quickfacts.census.gov/qfd/states/56000.html>)

Safety Concerns

- Low population density
 - Towns spacing
 - Alternate routes add significant distances
 - Low traffic volumes
-
- Citizens rely on timely and accurate information to make important safety decisions

511 Phone System

- 511 Phone system
 - July 2013–June 18, 2014: 870,280 calls
 - Peak year: 1.9 million calls

511 Notify

- July 1, 2013 – June 18, 2014
- 511 Notify (text/email)
 - Text – 16.4 million
 - Email – 19.5 million
 - Total – 35.9 million

Website (Cont.)

- Winter months only (10/1/13 – 5/31/14)
- www.wyoroadd.info
 - Total Hits – 552.1 million
 - Total Visitors – 13.8 million

Usage Statistics – May 11/12

- Mother's Day storm
- Impacted I-80
- Approximately 30 hours
- Total Hits – 19 million

WYDOT's TMC

- Statewide Operation
- Maintenance dispatching and ITS Ops
- Co-located with statewide Patrol dispatch



WYDOT's TMC

- Receive reports (Maintenance and Citizens)
- Log each report
- Update roadside systems
 - DMS, VSLs, HAR
- Update travel information system
 - Web, Phone, Text/Email

WYDOT's TMC

- Updating information competes with other tasks of the TMC
- Is there a better way?

Road Condition Reporting App

- Federal Grant – WRTM – Roemer Alfelor
- Android-based tablet/App
- The app will allow WYDOT employees to use a tablet to do the same functions they do now using a radio or cell phone

App

- Directly update WYDOT's public information systems
- Easier access to information from the field
- Reduced strain on the radio system
- Allow TMC to focus on critical tasks

Project Goals

- Improve efficiency
 - Faster reports from the field, quicker updates to information sharing systems
- Improve traffic management during weather events – Better VSL feedback from vehicles
- More timely updates
- Improve situational awareness of maintenance and highway patrol employees

Information Reporting

- Road and weather condition reporting
- Crash, traffic incident reporting
- VSL changes

The screenshot shows a software interface for reporting road and weather conditions. At the top, it displays 'I-80 233 00:00' with a warning icon, a search bar, and status indicators: '6 MPH NW Wyo Hill', 'Weather Alert', and 'VSL Active 45 mph'. The main area is a grid of 14 yellow buttons for reporting conditions: 8-1 Dry Road, 8-2 Wet Road, 8-3 Slick, 8-4 Strick Spots, 8-5 Drifted Snow, Black Ice, Freezing Temps, 9-1 Favorable, 9-2 Snowing, 9-3 Raining, 9-4 Strong Winds, 9-5 Fog, 9-6 Blowing Snow, and 9-7 Reduced Visibility. Below the grid are 'Clear' and 'Send Now' buttons, and a list of sections: I-25 Section 3, I-25 Section 33, I-25 Section 512, I-80 Section 1, and I-80 Section 2. On the right, a vertical menu includes 'Reporting', 'Route Info', 'Messages', 'Map', and 'Event Log'. The bottom status bar shows '10', '8 / 9', and 'VSL'.

Information

- Weather information
- Information posted on DMS and VSLs
- Location

The screenshot displays a traffic management software interface. At the top, a status bar shows a red warning icon, the text "I-80 233 00:00", a search bar, and indicators for "6 MPH NW Wyo Hill", "Weather Alert", and "VSL Active 45 mph". Below this, a left sidebar contains a "MAP" tab, a "WEATHER" tab, and a "No Alert" status. The sidebar also features a vertical stack of control panels for "Base Map", "Wind", "Severe", "Warnings", "Watches", and "Advisories", each with a corresponding icon and a slider. The main area is a map of the western United States, showing states like Montana, Wyoming, Colorado, and Utah, with various cities and road networks. A large green shaded area is visible on the map. On the right side, a vertical navigation menu includes buttons for "Reporting", "Route Info", "Messages", "Map", and "Event Log". At the bottom left, there is a watermark that reads "Licensed for Developer Use Only".

Communication

- Cell coverage is very poor in Wyoming
- Want to avoid monthly costs
- The app will use two forms of communication
 - Wi-Fi (preferred)
 - WyoLink, a digital trunked VHF P-25 compliant public safety communication system

Wi-Fi

- Ubiquiti Unifi with high gain sector antenna
- Tested to 1 mile at 65 mph with video stream
- Centralized control/configuration
- About \$300 per site for radio and antenna



Questions/Feedback?

- Contact Information

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