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

U.S. Winter Severity
for Winter Road Maintenance

Map generated July 2012 by Meridian Environmental Technology
Under funding of Clear Roads Project #10-02.

Winter Severity data as portrayed in this map were generated from gridded datasets of mean annual snowfall amounts and the mean annual durations of snowfall, freezing rain, and blowing snow (each for which maps are separately available), giving approximately equal weighting to the snowfall amount and the duration of these wintry weather conditions. Particular winter severity values have no specific interpretation and are intended only to facilitate comparison between locations. More information as to the specific process used to develop this map is available from Clear Roads.
I-80 Major Commerce Corridor
Winter Weather – Blowing Snow

U.S. Annual Hours of Blowing Snow
Estimated from Modeled Data

Map generated July 2012 by Meridian Environmental Technology under funding of Clear Roads Project #10-02.

Data portrayed in this map were generated using data from the North American Model (NAM) over the course of the 2004/05 through 2010/11 winter seasons, and 3-km landcover data from the University of Maryland. The NAM data were used to track "blowable snowpack", which was subsequently evaluated against wind speed and surface roughness. No reliable, national observational record of the frequency of blowing/drifting snow exists for calibration, so data should be treated only as a gross estimate of where, and how often, blowing snow occurs. More information as to the specific process used to develop this map is available from Clear Roads.
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

<table>
<thead>
<tr>
<th>Census Data*</th>
<th>Wyoming</th>
<th>United States</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013 Population (Est.)</td>
<td>582,658</td>
<td>316,128,839</td>
</tr>
<tr>
<td>Households (2008-2012)</td>
<td>221,479</td>
<td>115,226,802</td>
</tr>
<tr>
<td>Persons per Household</td>
<td>2.48</td>
<td>2.61</td>
</tr>
</tbody>
</table>

*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.wyoroad.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
Information

- Weather information
- Information posted on DMS and VSLs
- Location
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
  
  Ali Ragan, Project Manager
  307-777-2985
  Ali.ragan@wyo.gov

  Vince Garcia, GIS/ITS Program Manager
  307-777-4231
  Vince.garcia@wyo.gov