U.S. Department of Transportation

ITS and Extreme Weather Events *SNOW & ICE*

Over 70% of the nation's roads are located in regions that receive more than five inches of average annual snowfall. Snow and ice can lead to slower speeds, reduced visibility and roadway capacity, and increased delay and crash risk. Annually, 24% of weather-related vehicle crashes occur on snowy, slushy, or icy pavement.[1] Intelligent Transportation Systems (ITS) can help enhance safety and efficiency during extreme snow and ice events by providing real-time road monitoring and alert systems to inform weather response teams of areas in need of treatment.

The featured benefits, costs, and lessons learned are based on ITS project evaluations contained in the ITS Databases at: www.itskrs.its.dot.gov. **Click on each example to learn more.**

BENEFITS

Variable Speed Limits (VSL) in Ohio
After deploying VSL, crashes during snow events declined 42% despite an increase in snow days. Using VSL led to decreases in incident clearance times by an average of 31 minutes, secondary crashes by 25%, and travel delays by 83%.

Vehicle-to-Everything (V2X) Snowplow Technology in Utah
Snowplow routes equipped with V2X had a greater reduction in the crash rate per million vehicle miles traveled (-3.87) than non-equipped routes (-1.82).

Integrating Mobile Observations (IMO) in Iowa
Real-time road weather conditions and fleet vehicle locations were used to reduce chloride applications by 30%, saving about $150,000 annually.

Data Crowdsourcing in Utah
Utah DOT's *Citizen Reporter* app, which utilizes crowdsourced road condition data, produced annual savings of $250,000 in weather surveillance costs.

COSTS

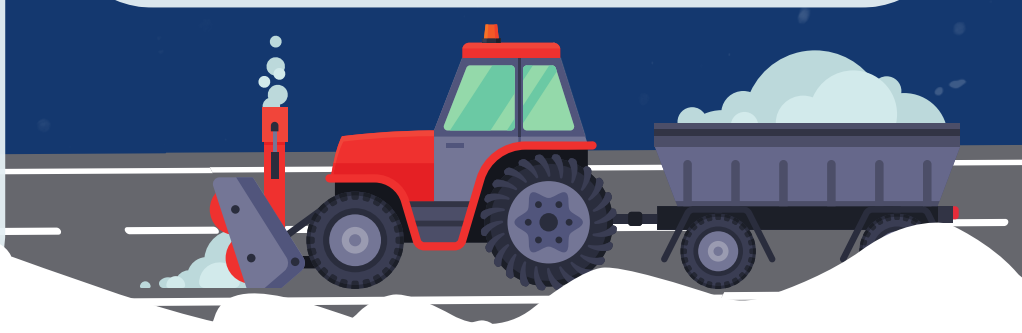
Winter IMO Costs in Iowa
- Communications & data: $30 per month, per plow truck
- Ongoing service: $8,700 per year

Variable Message Signs in Michigan
- Installation: $72,000
- Annual Operations and Maintenance (O&M): $2,300

Data Crowdsourcing Costs in Utah
- App development: $120,000
- Annual O&M: $5,000-$6,000

LESSONS LEARNED

Winter Maintenance Performance Measures in Minnesota
Develop measures specific to road types to quantify the effectiveness of winter maintenance. MnDOT uses road classes to determine allowable clearance times (e.g., super commuter roadways need to be cleared within 3 hours).



1. FHWA, Road Weather Management Program Snow & Ice

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