



👁️ CASE STUDY

How Indiana's Roadway Network Navigates Winter Storms

Scaling weather intelligence across dramatically different winter weather regions to improve operational planning and storm response decision-making.

ABOUT THE INDOT

The Indiana Department of Transportation (INDOT), one of the nation's largest state DOT operations, oversees roadway maintenance and winter operations across the state's interstate and highway network, helping support safe travel conditions for motorists throughout Indiana. Headquartered in Indianapolis, INDOT manages a statewide fleet of more than 1,000 snowplow trucks and maintains 24/7 winter roadway response operations during severe winter weather events.

INDOT's statewide maintenance director, Nick Evans, helps oversee maintenance strategy, operational preparedness, and winter storm response coordination across the state's diverse weather regions.

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THE CHALLENGE

How do you keep a statewide roadway network safe across different weather zones?

INDOT oversees 920 snow routes spanning dramatically different weather regions across northern, central, and southern Indiana — from lake-effect snow in the north to milder winter conditions in the south.

During the 2025 winter season, INDOT documented five winter storm events within the Maintenance Decision Support System (MDSS) for operational review and planning while coordinating statewide winter maintenance operations, fleet readiness, and material usage throughout active storm events. To compound that complexity during a high-demand winter season across the northern United States, nationwide salt supply disruptions created delays in replenishment orders and increased pressure on material inventory levels throughout the state.

“When you see that your salt inventory is starting to dwindle, and you’ve got more snow in the forecast, it changes the way you think about how you’re going to manage the storm.”

Operational pressure extended beyond material availability alone. INDOT needed to proactively coordinate equipment readiness, fleet logistics, and replenishment planning ahead of storm events while continuing to meet roadway safety and service expectations statewide.

To support winter preparedness, INDOT targets 60% inventory capacity across salt facilities entering the winter season and tracks material usage and replenishment orders in real time throughout storm events.

“We measure success by service delivery and preparedness, not cost savings alone.”

“Servicing our communities and getting them back on the road safely is a top priority. Confidence in our operational decisioning tools and the data quality is of the utmost importance in achieving our maintenance operations goals.” Evans said.

THE DTN SOLUTION

Balancing Safety, Materials, and Storm Response

INDOT used DTN MDSS to support proactive winter operations planning and weather-informed storm response decisions throughout the 2025 winter season.

“Our success is defined by proactive preparedness in crew deployment, equipment, and materials. Tools like DTN MDSS give us the data-backed confidence to make those calls before the storm hits.”

During a late-season winter storm event, MDSS provided pavement temperature forecasting and operational guidance that helped INDOT evaluate whether a plow-only response strategy would be effective during forecasted pavement temperatures below 15° F.

The operational strategy helped INDOT avoid unnecessary salt application during conditions where materials would have limited effectiveness while continuing to support roadway safety and service expectations statewide.

MDSS also helped INDOT align route-level operational planning with real-time weather conditions and material management priorities throughout storm events.

Following the event, INDOT refined MDSS route configurations to better align with operational practices and future storm response planning.



OPERATIONAL OUTCOMES

Preserving Service While Managing Winter Risk

Using DTN MDSS to support weather-informed operational planning helped INDOT preserve material inventory during a period of delayed replenishment orders while avoiding critical shortage levels later in the winter season.

The operational strategy also supported continued delivery of INDOT's 24/7 roadway service commitment across Indiana while improving confidence in operational decision-making during severe winter weather events.

FUTURE STATE

Refining Storm Response for Future Winter Events

As INDOT continues refining its statewide winter operations strategy and evaluating how maintenance success is measured, DTN MDSS supports more proactive and weather-informed storm response planning across Indiana's roadway network.

“We were able to look at DTN MDSS and all the forecasting tools at our disposal and say with confidence: Given the forecasted pavement temperatures, we really shouldn't be applying materials,” Evans said. “That gave our team the confidence in the data to make the right decision.”

By improving alignment between pavement forecasting, route-level planning, and operational decision-making, DTN MDSS helps INDOT optimize material usage, preserve operational efficiency during high-impact winter events, and maintain its 24/7 service commitment during periods of severe weather and material supply constraints.

