

Innovative tech boosts winter road safety in Alabama

Case Study



The client:

Alabama Department
of Transportation

Vaisala solution:

Wx Horizon

TempCast™ sensors

GroundCast™ sensors

THE CHALLENGE:

Maintaining road safety in unpredictable conditions

The Alabama Department of Transportation (ALDOT) West Central Region is responsible for managing state and federal roads, including traffic management, across 13 counties in the state of Alabama, U.S.A., where they face unique challenges in winter road maintenance. Tuscaloosa is a key city to maintain, and the I65 corridor is subject to significant elevation variations. Managing traffic during college football games—where attendance can swell to 100,000—including emptying the football stadium, adds even more complexity when snow or ice is on the roads.

In keeping with their mission to “provide a safe, efficient, and environmentally sound transportation system for all customers,” ALDOT operates 5 traffic management centers responsible for notifying the travel public of any roadway incidents that may impede the normal flow of traffic, including winter weather

or ever changing road conditions. Their Algo Traffic app and website provides real-time traffic information.

However, accurately predicting weather conditions, especially in locations that are hard to predict, has proven difficult. To improve their understanding of changing weather patterns and provide hyperlocal information to the public, ALDOT sought a cost-effective, long-term solution.

THE APPROACH:

Integrating modern sensors and visualization network-wide

Integrating Vaisala Wx Horizon, part of our Xweather family of subscription based products, with Vaisala GroundCast™ and Vaisala TempCast™ sensors takes the guesswork out of maintaining the roads in challenging weather conditions.

"Alabama gets a surprising amount of very diverse weather conditions, and some of it is impossible to predict. Wx Horizon pulls all the data we need from the TempCast and GroundCast sensors to give us the ground truth plus really accurate near-term forecasting in one place. We can be a lot more efficient and accurate in maintaining the road network, and it's cost-effective which is important."

*Ken Colvert
West Central Region TMC Manager,
Alabama Department of Transportation*

Wx Horizon provides pavement weather forecasts enhanced by integrated sensor measurements, radar, and alerts for a definitive state of the road network. ALDOT can see the state of roads in one interface and take proactive steps to maintain the right roads at the right time.

TempCast installs nearly anywhere on existing infrastructure, making it easy to measure air temperature, humidity, and surface temperature without touching the pavement.

GroundCast installs directly in the ground to measure real surface temperature, road temperatures from different depths, amount of treatment material on the road surface, and whether the pavement is wet or dry. ALDOT can also see when the road temperature is too hot to perform maintenance.

THE RESULTS:

Enhanced public safety and proactive maintenance

ALDOT is starting to take full advantage of everything Wx Horizon, GroundCast and TempCast have to offer. The organization

plans to integrate the solution into their traffic management center, which will enhance the accuracy of weather-related notifications and further improve overall efficiency.

The integration of Wx Horizon and sensor technology benefits both the public and ALDOT's traffic management personnel. By providing real-time, hyperlocal weather information through Algo Traffic, ALDOT aims to enhance public safety and improve traffic flow during adverse weather conditions. Additionally, the solution's ability to predict extreme temperatures will aid in proactive pavement maintenance.

The solution represents a great step forward in winter road maintenance for ALDOT. With an enhanced understanding of when and how the weather affects the road network, especially in hard-to-predict locations, the Department is improving overall traffic management and ensuring safer road conditions for all.

Why Vaisala?

Vaisala's weather and environmental technologies take every measure for unrivaled road network awareness – keeping roadways safe and efficient in any season.

Our instruments and intelligence are built on 85+ years of innovation and are known as the gold standard for precision and reliability. We understand how accurate data and insights do even more by driving sustainable road operations and climate action. Our holistic approach provides customers with end-to-end simplicity, valuable partnership, and a comprehensive portfolio that is constantly evolving.

As recognized experts in transportation, we continue to channel our curiosity into new ways of making roadways safer and more efficient than ever.

