



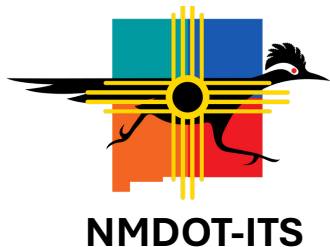
Intelligent Roadways

Intelligent Services

Transportation Infrastructure Revenue Subcommittee

**Charles Remkes, P.E., Chief
NMDOT ITS Operations**

November 3, 2025



Intelligent Roadways

Intelligent roadways are roads that integrate advanced technologies like sensors, communication systems, and data analytics to improve traffic management, safety, and efficiency.

These systems can monitor roadway and driving conditions, evaluate traffic flow, detect the presence of incidents and crashes, . Benefits include reduced congestion and accidents, optimized capacity, and improved emergency response times.

Key components and technologies

- **Sensors and Cameras:** Infrastructure placed along the roadside to collect data on traffic patterns, driving and road conditions.
- **Communication Systems:** Enable the collection and sharing of data between the key components, the infrastructure, vehicles, and users.
- **Data Analytics:** Software and AI that process collected data to provide real-time insights and predictions.
- **People and Relationships:** Being able to leverage actionable intelligence in response to the needs of all transportation stakeholders.

Intelligent Services

Roadway and Traffic Surveillance – obtaining information in real time on the roadway, traffic and driving conditions

Traffic Information Dissemination – distributing and sharing collected information to affected transportation stakeholders

Incident and Event Management – collecting and sharing of information and resources in an effort for quicker responses, safer clearances and lessening impacts

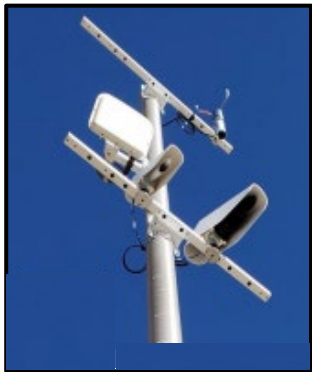
Work Zone Management – utilization of data and information to improve work zone safety and mitigate the impacts that transportation maintenance and construction activities have on the surface transportation infrastructure and the motoring public

Commercial Vehicle Operations - utilization of data and information to improve fleet management and operations

Roadway and Traffic Surveillance



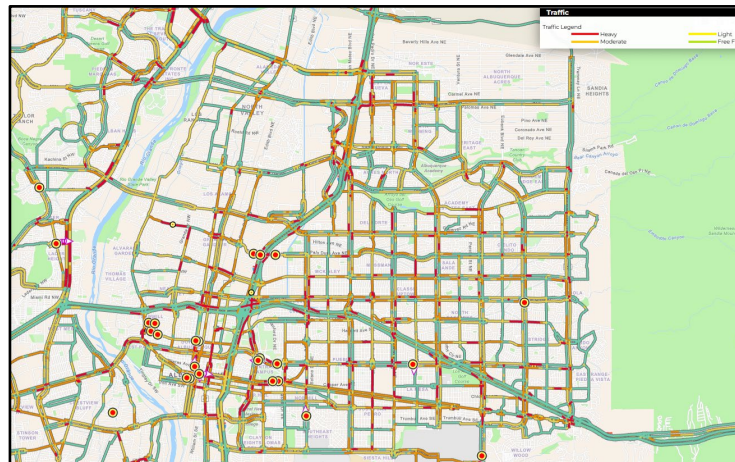
Road Weather Information Systems



Closed Circuit Television Systems



Traffic Sensor Systems



Wrong Way Detection Systems

Third Party Probe Data

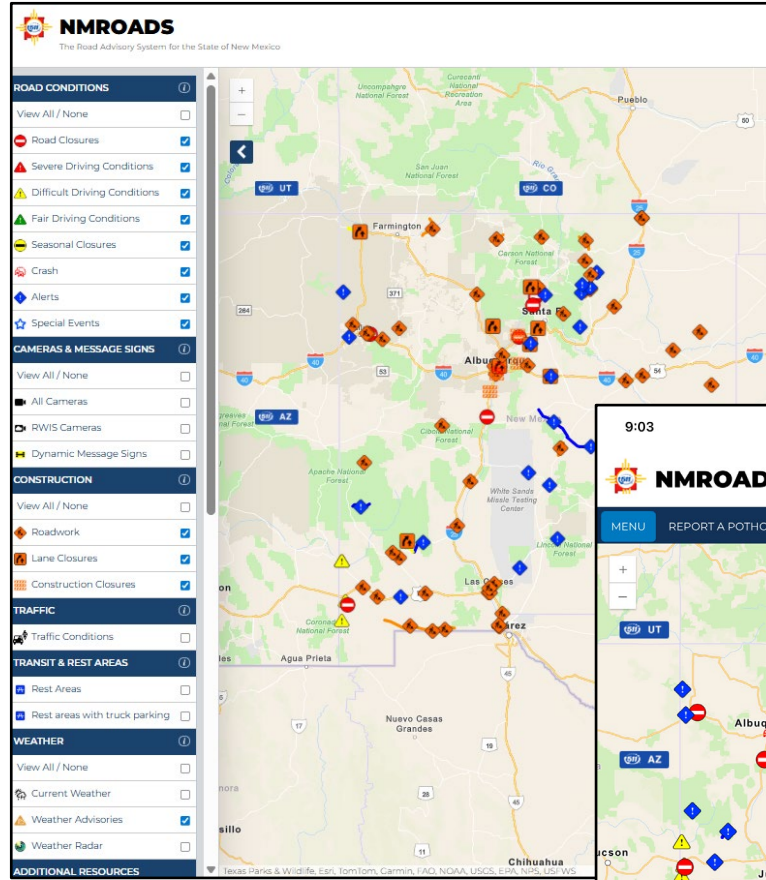


Game Detection Systems

Information Dissemination



Transportation Management Centers



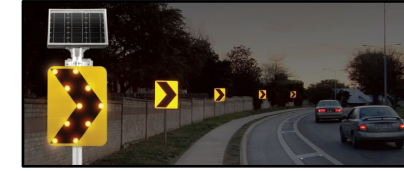
Web-based Traveler Advisory Systems



Dynamic Message Signs



Truck Parking Availability Signs

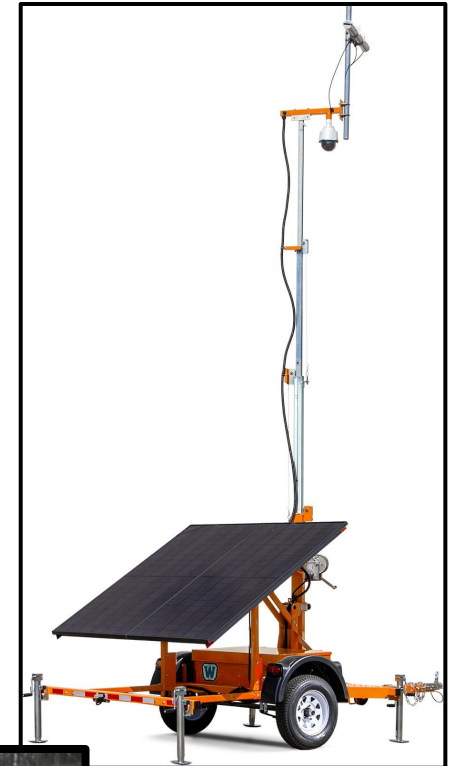
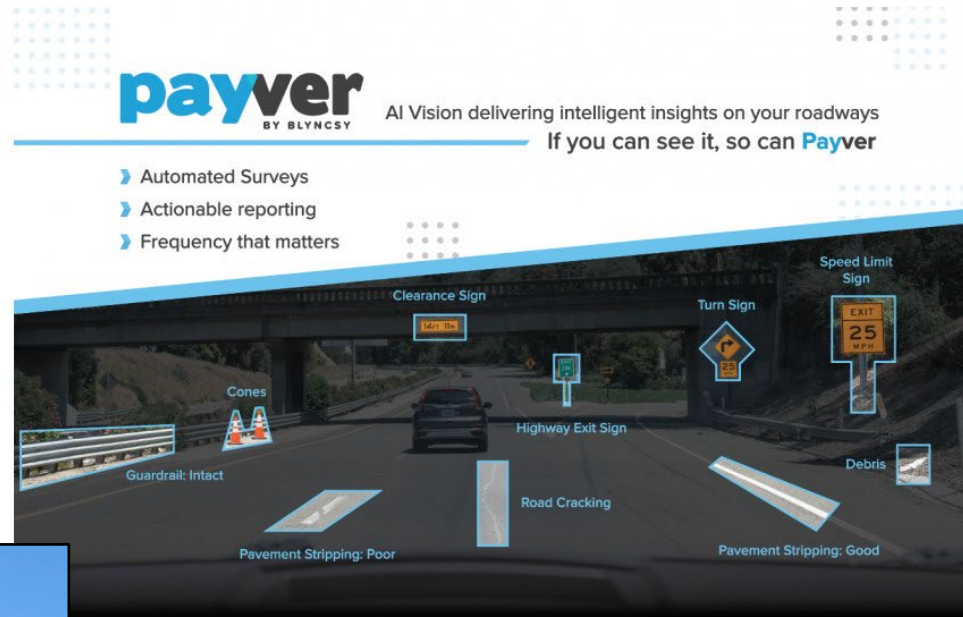


Driver Alert Signage Systems

Incident and Event Management



Work Zone Management



Commercial Vehicle Operations



TSPS Charles Remkes - Team: NMDOT

Yucca Rest Area
NM00019IS0000530EYUCCARA0

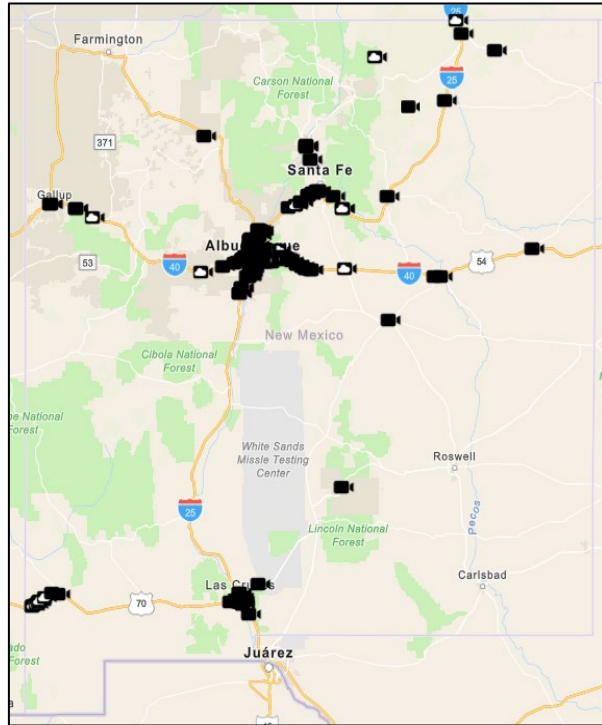
6 vehicles counted
46% (7 spots available)
13 vehicle maximum

Last Updated: 2025-09-15 23:17:37
Flow: 0 steady
Published: 2025-09-15 23:17:37
Received: 2025-09-15 23:17:37
Signs Status: 3 green
Sensor Type: Radar
Driver: Omnisight
Negative Count: 2567
Last Went Negative: 2025-09-15 00:14:10 (UTC)

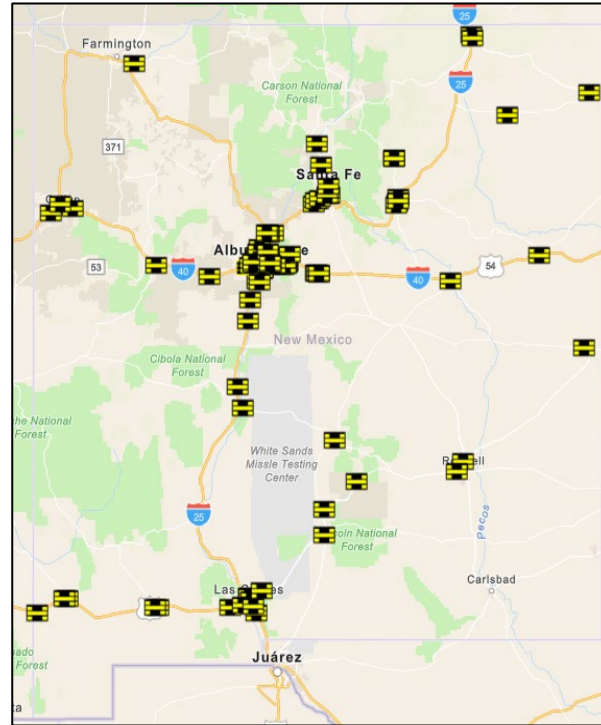
Camera: Camera
Camera Presets: Home, Entry, Center, Exit
Location is enabled
Open camera controls
I-10, Yucca, New Mexico



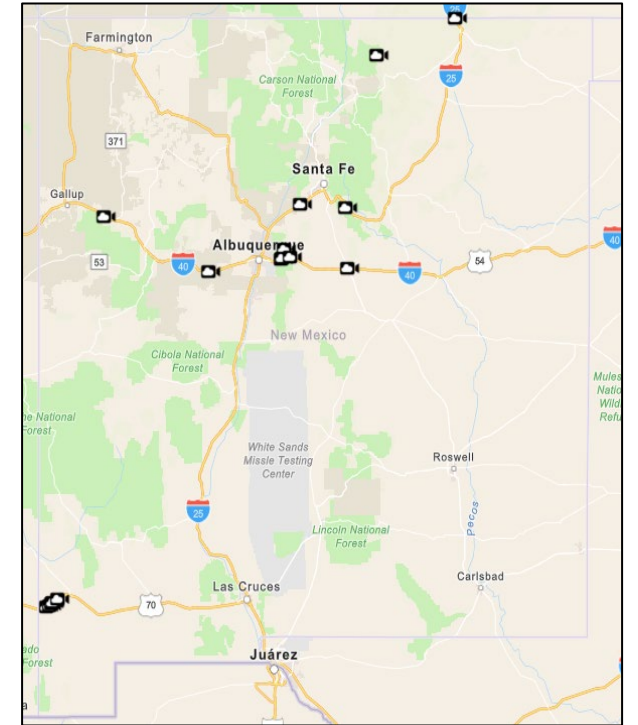
Inventory Count



CCTV Installations - 182

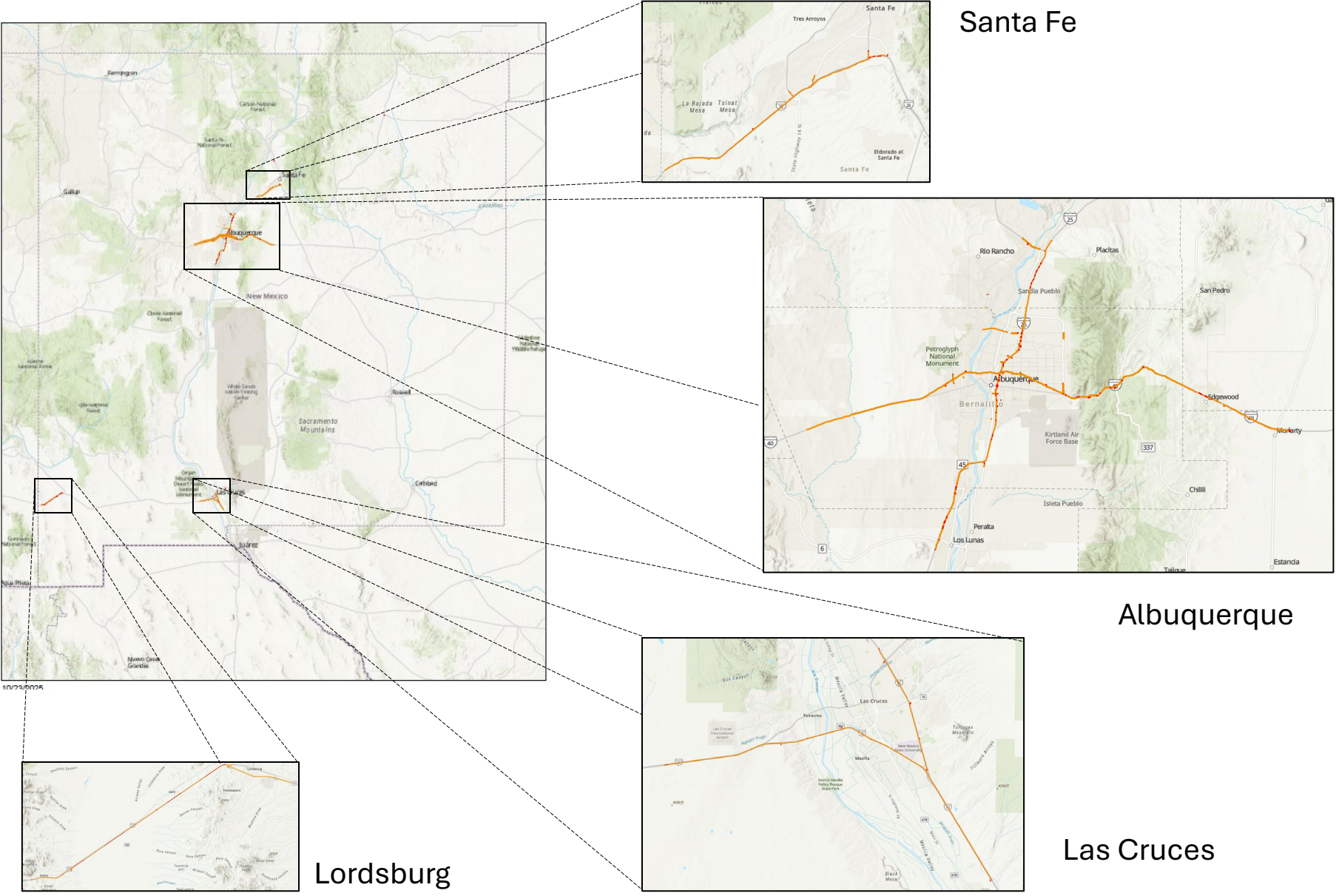


**Dynamic Message Signs (DMS)
Installations - 132**



**Road Weather Installation Systems (RWIS)
Installations - 25**

Communications Coverage



Santa Fe

Albuquerque

Las Cruces

Lordsburg

FOCUSED SERVICES


Integrating technologies and leveraging core capabilities for enhanced and expanded services

Dust Storm Detection Systems

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Dust storm kills 6 in 25-vehicle pileup at New Mexico-Arizona line

Associated Press
Published: 11:17 a.m. ET June 20, 2017



Florida Times-Union

LORDSBURG, N.M. — Authorities in New Mexico say six people are dead after a 25-vehicle pileup on I-10 caused by sudden blowing dust in New Mexico near the Arizona state line.

Those killed Monday include a 9-month-old girl and her parents from Phoenix, two people from El Paso, Texas, and a California woman.

The stretch of interstate in Lordsburg, New Mexico, was closed for several hours following crash. The closure extended through Willcox, Arizona, where local authorities helped manage traffic that was diverted through a small road. The closure ended Tuesday.

State police say sudden high winds caused limited visibility from blowing dust, causing 18 commercial trucks and seven passenger cars to crash on the westbound lanes of I-10.

Truck Parking Availability Systems



To New Mexico via I-10	Hours*
From Los Angeles	~ 10 - 12
From Long Beach	~ 10 - 12
From Houston	~ 10 - 12

OPERATIONAL ENGAGEMENT

Sharing of resources, data, infrastructure, access and systems management, operations and maintenance with various stakeholders including other transportation agencies, disciplines, and institutions to best leverage time, money, equipment and staff to accommodate making the best operational decisions on actionable intelligence.

City of Albuquerque
City of Las Cruces
City of Rio Rancho
Bernalillo County

New Mexico State Police
Santa Fe Indian Schools
Los Alamos National Labs
Third parties – WAZE, NWS, App Developers

POSITIONED to SUPPORT CHANGE

Autonomous Vehicles (AVs)

- Automated driving system (ADS) has the decision-making capacity embedded within its on-board processor to emulate the dynamic driving tasks of a human driver (steering, braking and acceleration).
- ADS doesn't need access to external data sources to perform those same functions.
- Both humans and ADSs rely on an awareness of the driving conditions in its immediate environment and circumstances at any given moment (via sensory input) to make the appropriate decisions and choices.
- Specific to the transportation infrastructure, what is good for the human driver also benefits the ADS (i.e., legibility of signs, visibility of pavement markings).

Connected Vehicles (CVs)

- CVs utilize on-board processors to obtain and share information about the current driving conditions and environment to accommodate specific functions associated with the dynamic driving task as well as making associated strategic decisions.
- CVs can communicate with other CVs (V2V) or to other external data sources (V2X) such as roadside infrastructure (i.e., signal systems, roadway weather systems) or cloud-based data sources for roadway and driving conditions (i.e., NMRoads).

Highly Autonomous Vehicles (HAVs) -- AVs with on-board processing and connected capabilities to accommodate the dynamic driving task at hand as well as strategic elements such as route determinations to avoid congestion or conditions that might be out of their operational design domain.

NMRoads – More than a Website

NMROADS
The Road Advisory System for the State of New Mexico

Save My View Fastest Route Report a Pothole or Litter Account Login

ROAD CONDITIONS

- View All / None
- Road Closures
- Severe Driving Conditions
- Difficult Driving Conditions
- Fair Driving Conditions
- Seasonal Closures
- Crash
- Alerts
- Special Events

CAMERAS & MESSAGE SIGNS

- View All / None
- All Cameras
- RWIS Cameras
- Dynamic Message Signs

CONSTRUCTION

- View All / None
- Roadwork
- Lane Closures
- Construction Closures

TRAFFIC

- Traffic Conditions

TRANSIT & REST AREAS

- Rest Areas
- Rest areas with truck parking

WEATHER

- View All / None
- Current Weather
- Weather Advisories
- Weather Radar

ADDITIONAL RESOURCES

- New Mexico Rail Runner
- NMDOT Park & Ride
- Airports
- Bicycle Routes
- Trucking Restrictions

Additional Links:

- Save My View
- Hands Free Mode
- Find the Fastest Route
- Contact Us
- Disclaimer
- Download the Mobile App
- RSS Feed
- GeoJSON Feed
- Follow NMRoads on X
- General Help

DASHBOARD

- ROAD CONDITIONS
- VIEW CAMERAS
- DYNAMIC MESSAGE SIGNS
- CONSTRUCTION
- CURRENT WEATHER
- REST AREAS
- CALL 511 TRAVEL INFO
- SURROUNDING STATES
- NMROADS MAP VIEW
- HANDS FREE MODE
- MEMBER LOGIN / SIGNUP

GENERAL HELP VIDEOS

- Application Overview
- Mobile Overview
- Route Subscription Instructions

GENERAL INFORMATION

Artificial Intelligence (AI)

According to AI, artificial intelligence, is the capability of computer systems to perform tasks that typically require human intelligence, such as learning, problem-solving, and decision-making. It involves creating machines that can perceive their environment, understand language, recognize patterns, and make predictions or autonomous decisions based on data. Examples range from virtual assistants and search engines to self-driving cars and recommendation systems

Reactive Awareness System Response

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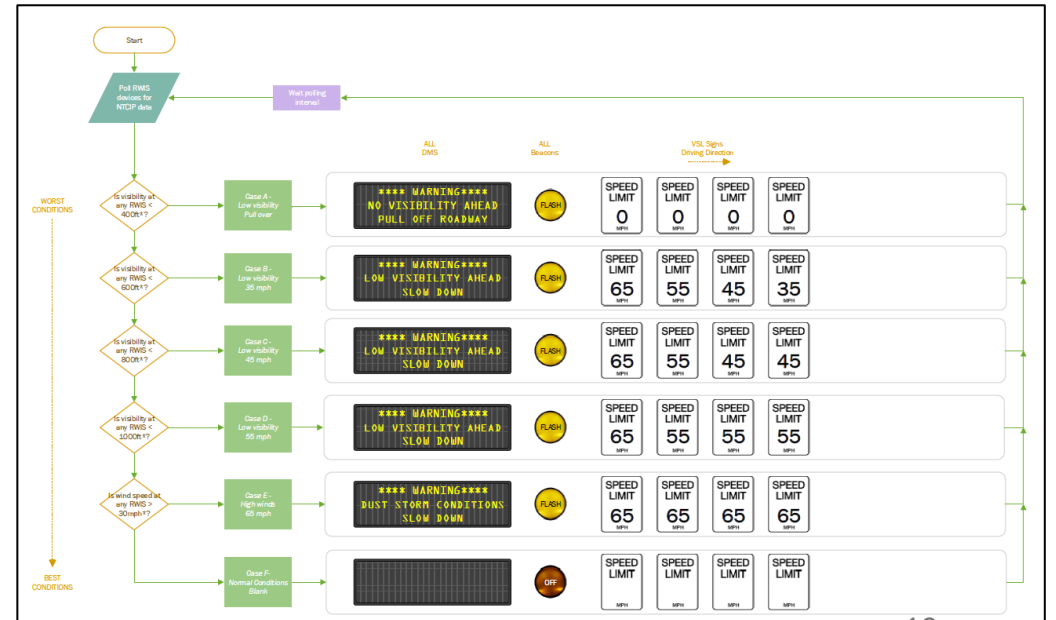
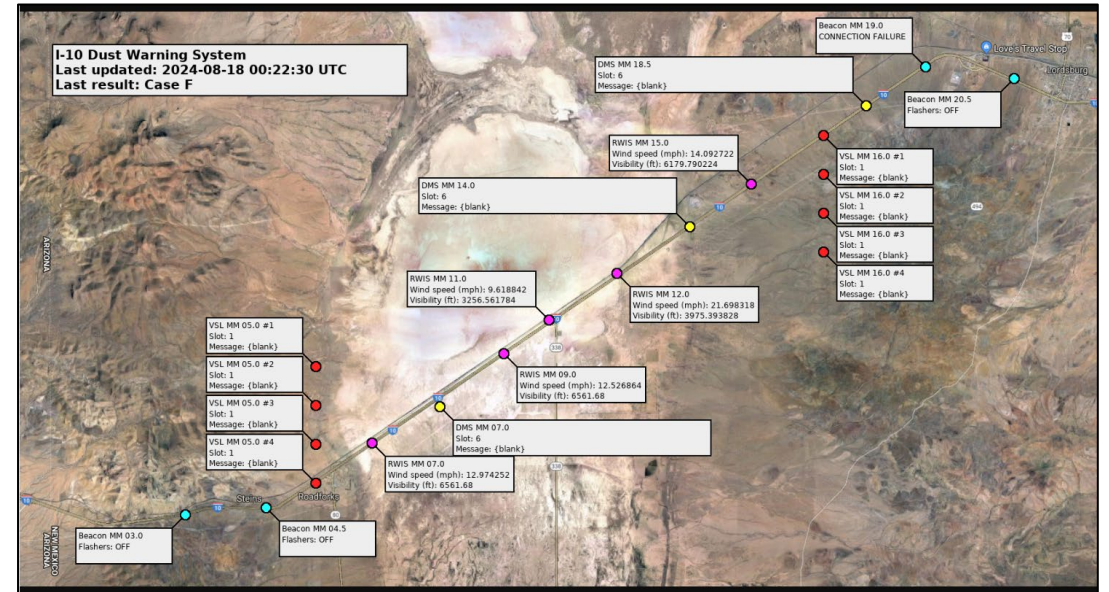
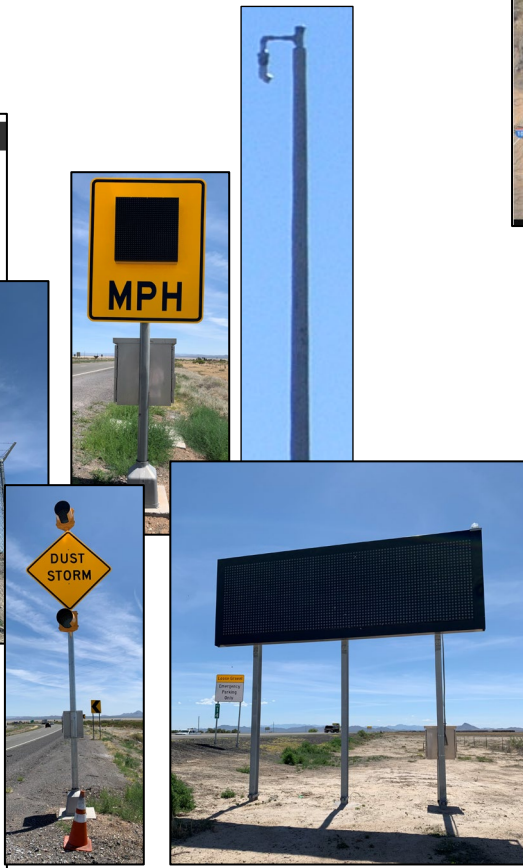
Dust storm kills 6 in 25-vehicle pileup at New Mexico-Arizona line

Associated Press
Published 12:17 p.m. ET June 20, 2017

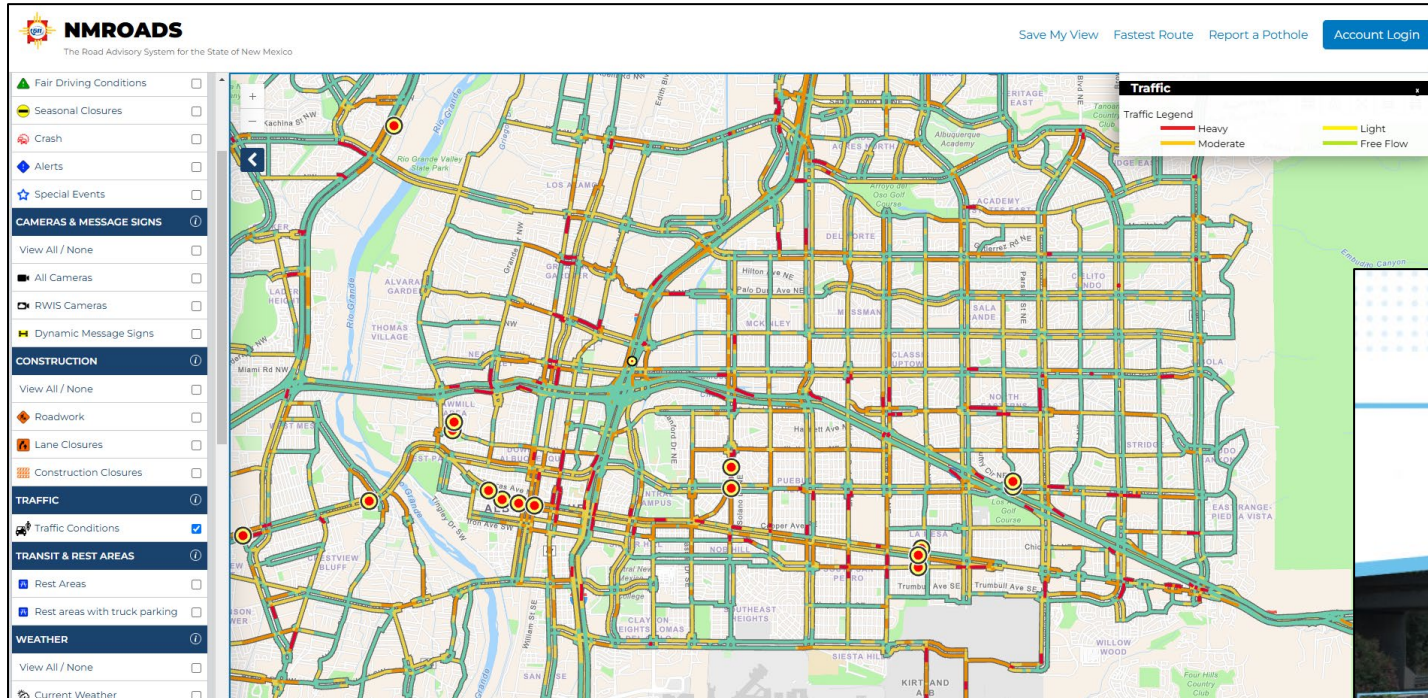


Florida Times-Union

LORDSBURG, N.M. — Authorities in New Mexico say six people are dead after a 25-vehicle pileup on I-10 caused by sudden blowing dust in New Mexico near the Arizona state line.



Crowd Sourced Data Aggregation



payver
BY BLYNCYS

AI Vision delivering intelligent insights on your roadways
If you can see it, so can Payver

- Automated Surveys
- Actionable reporting
- Frequency that matters

Labels in road view:
Guardrail: Intact
Pavement Stripping: Poor
Road Cracking
Pavement Stripping: Good
Cones
Highway Exit Sign
Debris
Clearance Sign
Turn Sign
Speed Limit Sign

Video Analytics

Charles.Remkes@dot.nm...		From	Received	Size	Subject																														
<table border="1"> <tr> <td colspan="2">Inbox 22060</td> <td colspan="4">Today</td> </tr> <tr> <td>Drafts</td> <td>[389]</td> <td>noreply@nmdot.trafficvision.com</td> <td>Sun 2/2/2025 3:26 PM</td> <td>70 KB</td> <td>[EXTERNAL] Incident alert: Slow traffic @ NS-2 [I-25 @ Tramway South]</td> </tr> <tr> <td>Sent Items</td> <td></td> <td>noreply@nmdot.trafficvision.com</td> <td>Sun 2/2/2025 2:26 PM</td> <td>70 KB</td> <td>[EXTERNAL] Incident alert: Stopped vehicle/object [I-40 @ Rio Puerco]</td> </tr> <tr> <td>Deleted Items</td> <td>1367</td> <td>World Geospatial Industry Council</td> <td>Sun 2/2/2025 2:24 PM</td> <td>237 KB</td> <td>[EXTERNAL] Don't miss WGIC at Geo Week – claim your discounted pass today</td> </tr> <tr> <td>Archive</td> <td>3</td> <td>noreply@nmdot.trafficvision.com</td> <td>Sun 2/2/2025 2:09 PM</td> <td>70 KB</td> <td>[EXTERNAL] Incident alert: Slow traffic @ NS-2 [I-40 @ San Pedro EB]</td> </tr> </table>						Inbox 22060		Today				Drafts	[389]	noreply@nmdot.trafficvision.com	Sun 2/2/2025 3:26 PM	70 KB	[EXTERNAL] Incident alert: Slow traffic @ NS-2 [I-25 @ Tramway South]	Sent Items		noreply@nmdot.trafficvision.com	Sun 2/2/2025 2:26 PM	70 KB	[EXTERNAL] Incident alert: Stopped vehicle/object [I-40 @ Rio Puerco]	Deleted Items	1367	World Geospatial Industry Council	Sun 2/2/2025 2:24 PM	237 KB	[EXTERNAL] Don't miss WGIC at Geo Week – claim your discounted pass today	Archive	3	noreply@nmdot.trafficvision.com	Sun 2/2/2025 2:09 PM	70 KB	[EXTERNAL] Incident alert: Slow traffic @ NS-2 [I-40 @ San Pedro EB]
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noreply@nmdot.trafficvision.com

To: Cok, Jeremy, DOT; Jaramillo, Andrew, DOT; 5054903308@mms.att.net; Remkes, Charles, DOT; Ortiz, Shyaela, DOT; Lopez, Lisa, DOT; 5052809343@vzwpix.com; 5054902488@vzwpix.com; Tuttle, Skyler, DOT; Montano, Andrew, DOT; 5057950173@vzwpix.com; Young, Garrett, DOT; Turner, Michael, DOT

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Click here to download pictures. To help protect your privacy, Outlook prevented automatic download of some pictures in this message.

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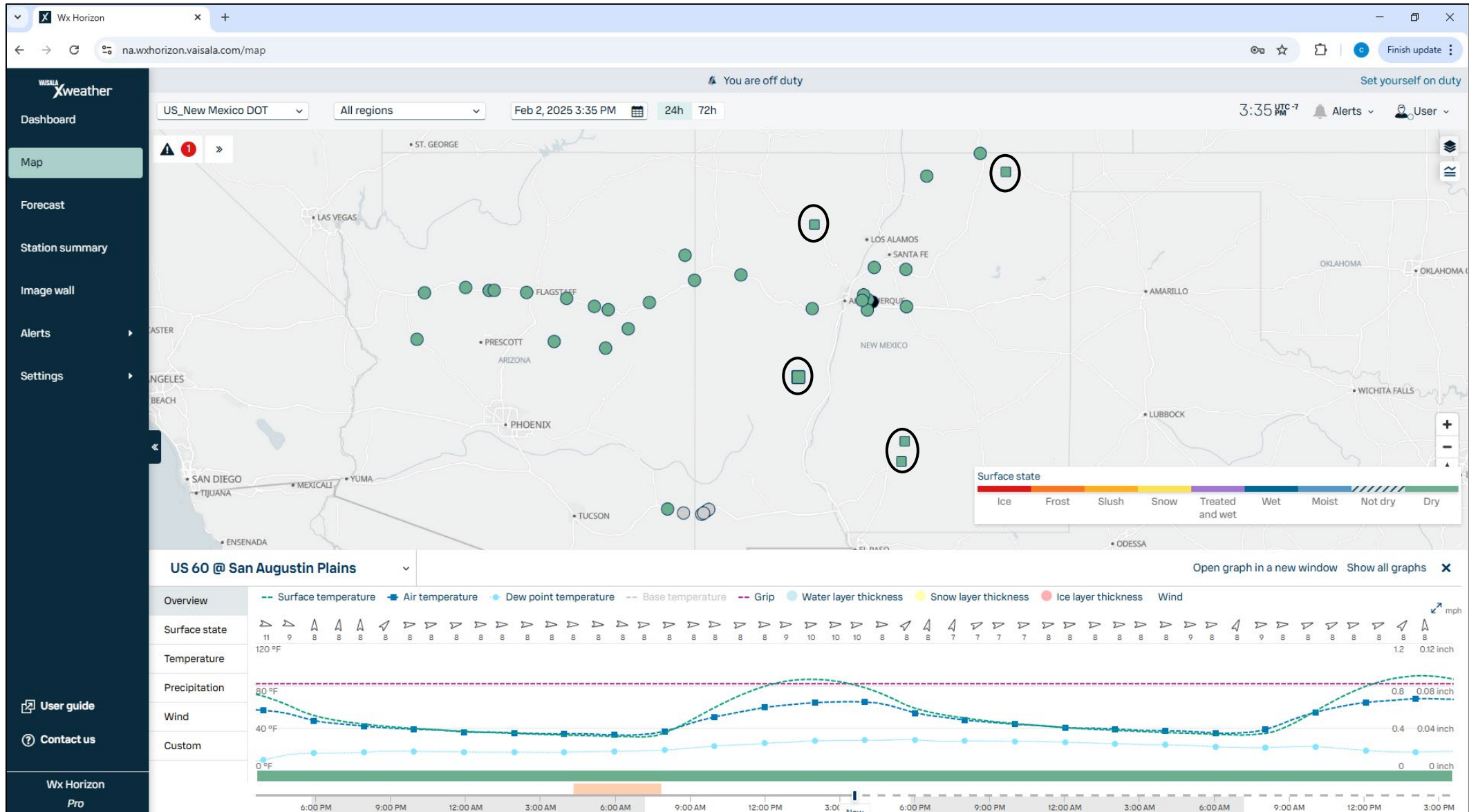


Snapshot: <https://nmdot.trafficvision.com/pub-links/9da38e78-85fa-4749-be75-411f4e4fcc9>

Video: <https://nmdot.trafficvision.com/playclip?src=/publinks/0174d510-1e86-477c-b78a-8b0b905b58be>



Virtual RWIS Stations



TPAS Ground Truthing Analytics

TPAS Charles Remkes

Groups Team: NMDOT

Yucca Rest Area
NM00010IS0000530EYUCCARA0

change locations back to group overview

31%
9 spots available

4 vehicles counted
13 vehicle maximum

Edit Vehicle Count

Last Updated: 2025-02-02 22:58:15 by System

Flow: 3 filling

Published: 2025-02-02 22:58:15

Received: 2025-02-02 22:52:50


Signs Status: ● ● ●

Sensor Type: Radar

Driver: Omnisight

Negative Count: 770

Last Went Negative: 2025-02-02 22:49:16 (UTC)



Camera: < Prev Camera Next >

Camera Presets: Home Entry Center Exit

Location is enabled

Open camera controls

I-10, Yucca, New Mexico

TPAS Charles Remkes

Groups Team: NMDOT

Yucca Rest Area
NM00010IS0000530EYUCCARA0

change locations back to group overview

4 vehicles counted
13 vehicle maximum

Edit Vehicle Count

5-02-02 22:55:18 by System

3 filling


5-02-02 22:55:18

5-02-02 22:52:50

Radar

Omnisight

2025-02-02 22:49:16 (UTC)



Camera: < Prev Camera Next >

Camera Presets: Home Entry Center Exit

Location is enabled

Open camera controls

I-10, Yucca, New Mexico

Charles Remkes

Team: NMDOT

change locations back to group overview

counted


maximum

Count

2:56:15 by System

2:56:15

2:52:50



Camera: < Prev Camera Next >

Camera Presets: Home Entry Center Exit

Location is enabled

Open camera controls

I-10, Yucca, New Mexico

Signs Status: ● ● ●

Sensor Type: Radar

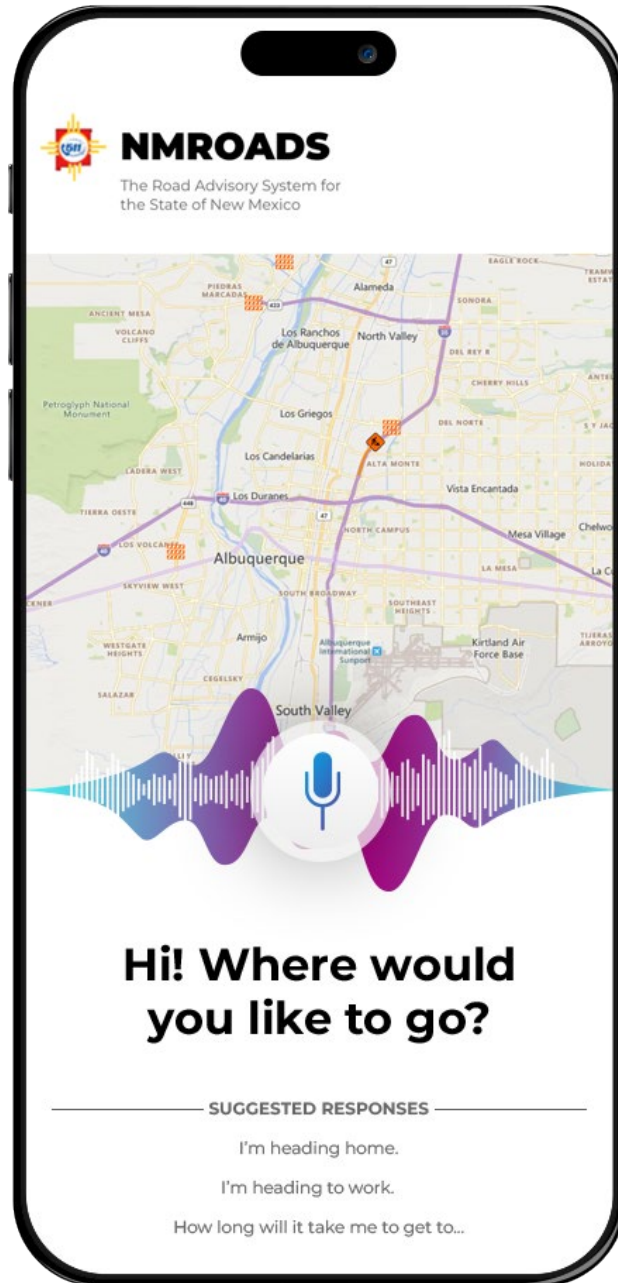
Driver: Omnisight

Negative Count: 770

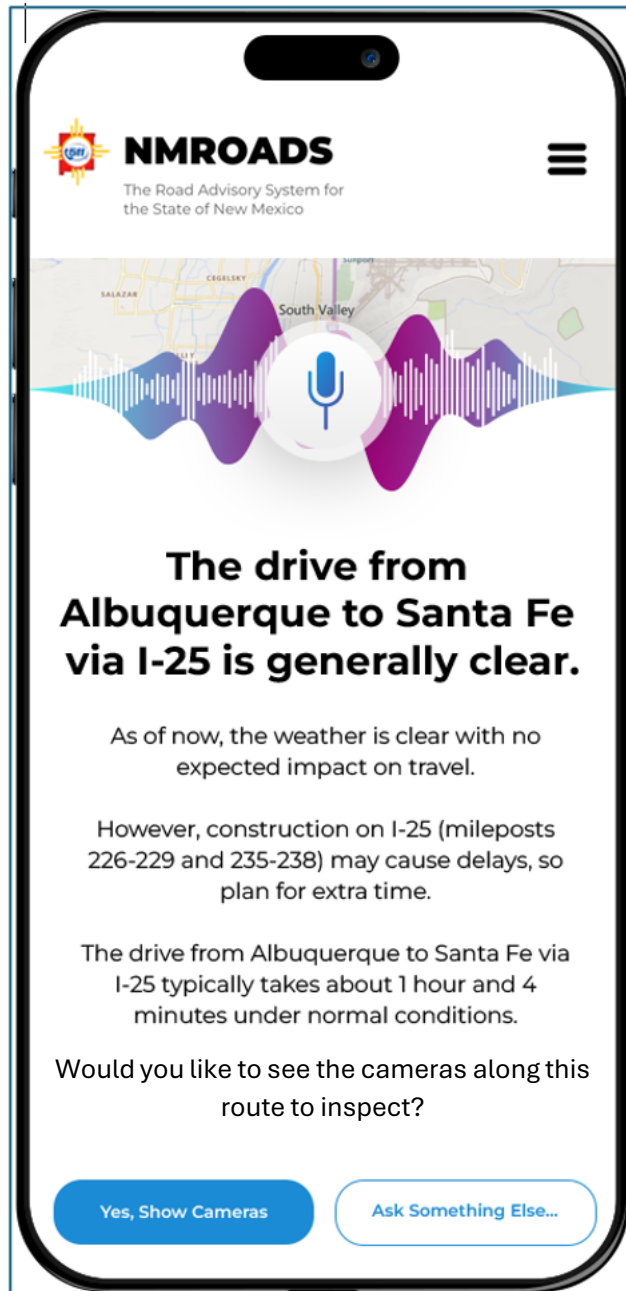
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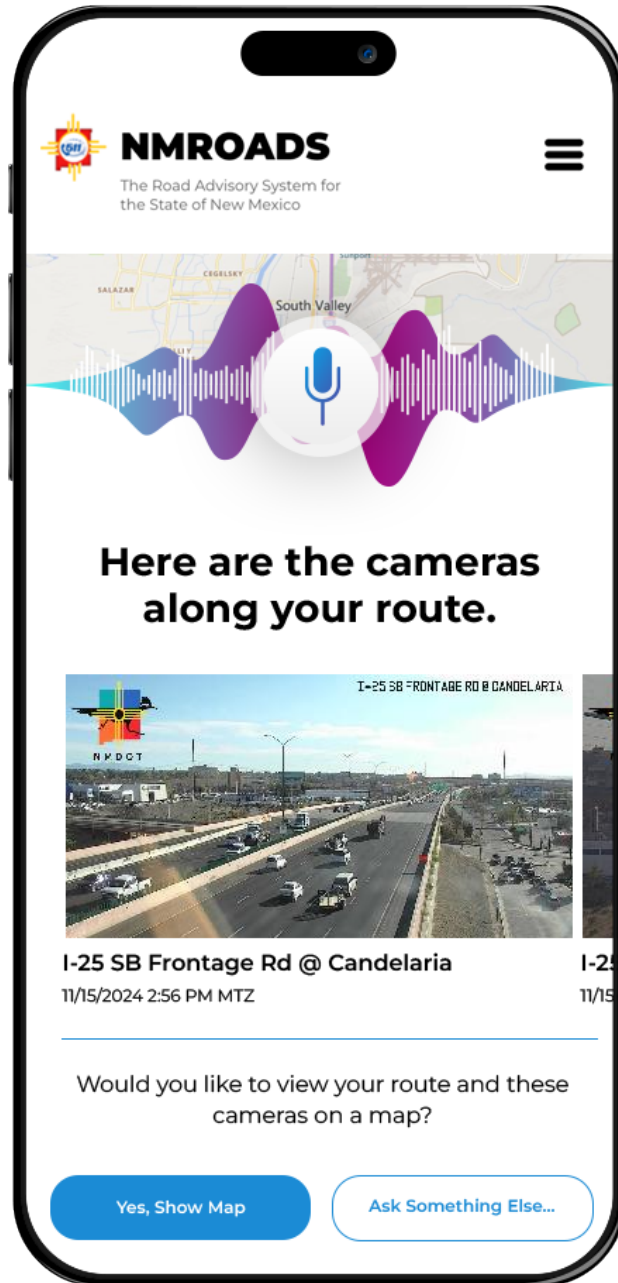
Traveler Information that Anticipates User Requests



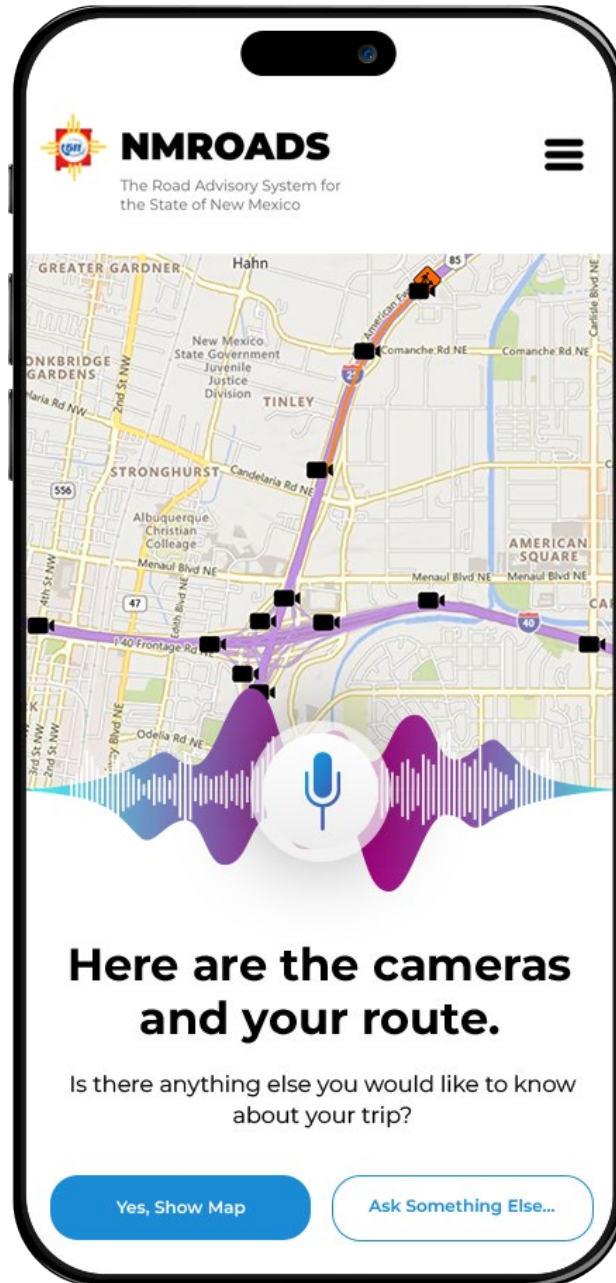
*“I’m heading to Santa Fe.
How are the roads?”*



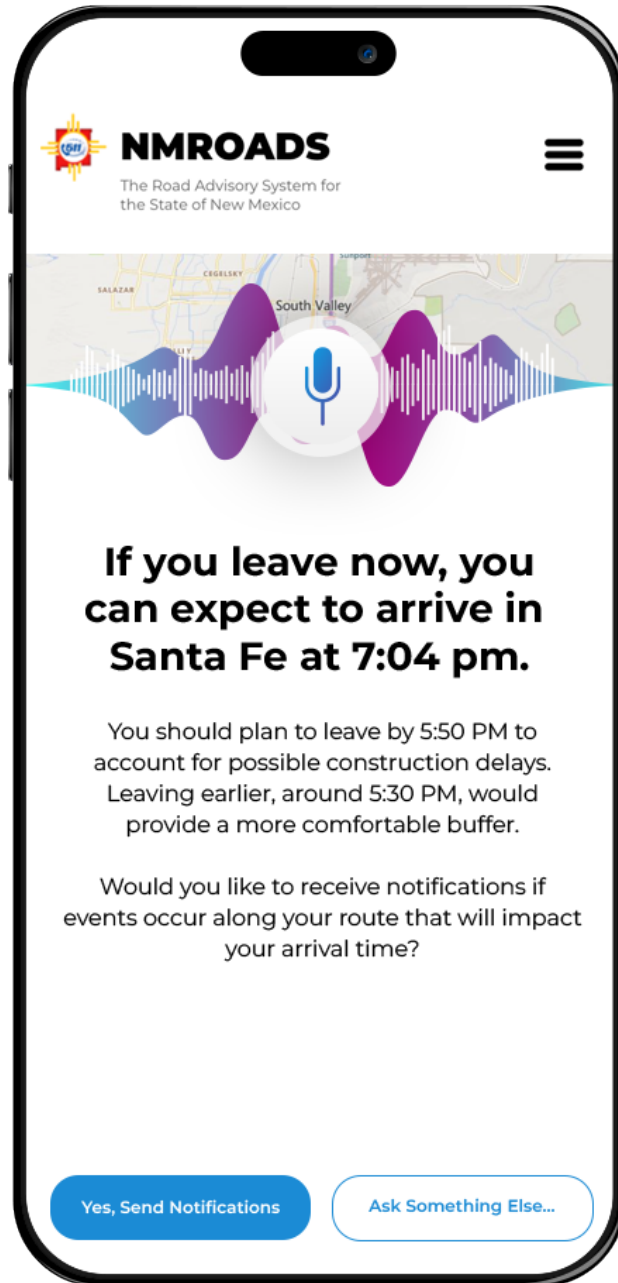
“Yes, show me the cameras.”



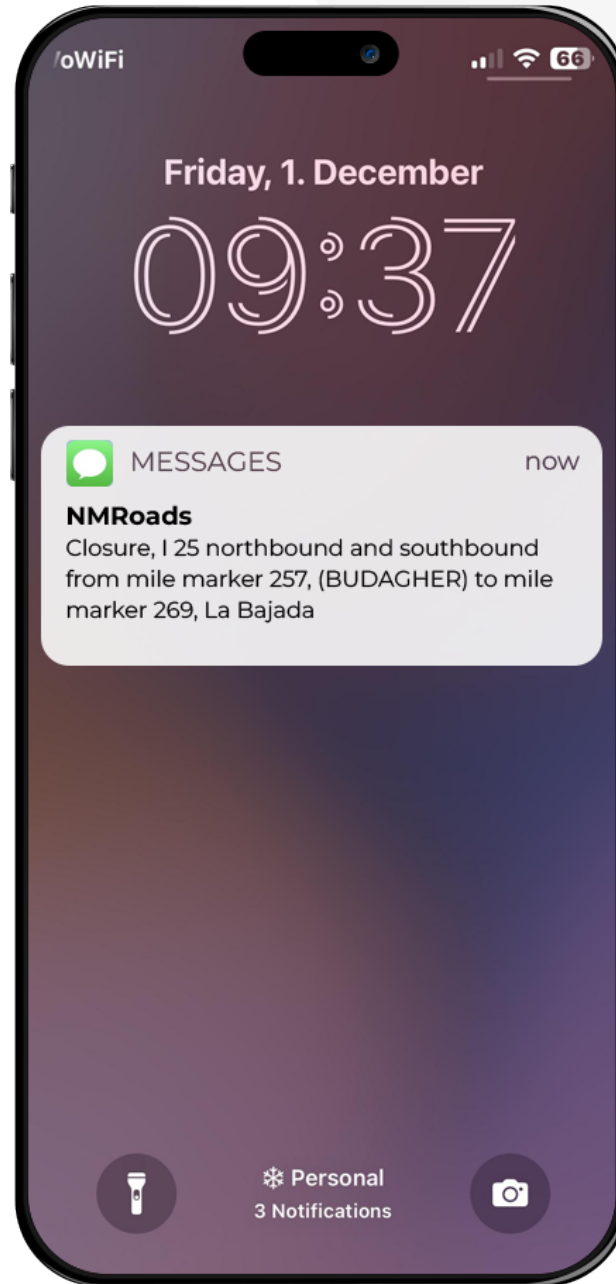
“Yes, show me the map of cameras on my route.”



*“How long is the trip
going to take?”*



*“Yes, send me the
notifications.”*





CHARLES REMKES

Charles.remkes@dot.nm.gov