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University of Nevada at Reno assistant geography professor and Nevada state climatologist Jeffrey Underwood takes a photo near the scene of the Nov. 3 pileup involving 86 vehicles on Highway 99.

Fog may be made more clear by traffic alert system

By Doug Hoagland / The Fresno Bee

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You're driving down Highway 99 and your car suddenly gets a wireless alert that a dangerous wall of fog lies dead ahead.

The message is based on data from weather sensors along the highway and a satellite thousands of miles above the Earth. It triggers a computerized voice that warns you to slow down.

This is all theoretical now, but it could become real by 2020.

Scientists, government officials and the auto industry are investigating whether a wireless system could reliably communicate messages about traffic congestion into cars. Tests coordinated by the California Department of Transportation will begin next year in the Bay Area.

If the system works, weather alerts -- including warnings about deadly fog -- could follow. There are predictions that American consumers could see in-car warning systems within the next decade.

One expert said real-time weather warnings might have helped avert last month's 86-car pileup on Highway 99 south of Fresno that killed two and injured 41.

"If a darn car navigation system can tell you that you need to take a left to get to a Chinese restaurant, I'm thinking some other gadget should be able to tell you that there's fog on the highway ahead," Jeffrey Underwood said. He is an assistant professor of geography at the University of Nevada at Reno, and he also advises Nevada officials on weather issues as the state climatologist.

Underwood, a former instructor at California State University, Fresno, still studies Valley fog, and he drove to Fresno four days after the Nov. 3 pileup to inspect the crash scene.

Earlier this year, he said, he asked Caltrans to use satellite images to help warn motorists about fog. But during his recent trip to Fresno, he acknowledged that he didn't know whether the technology exists to make in-car warnings possible.

Now, he's excited that Caltrans is getting ready to test such a system.

The idea is to transmit messages into specially equipped cars, said Greg Larson, chief of the agency's Office of Traffic Operations Research in Sacramento.

The test area will cover 20 miles of three major roadways -- Interstate 280, Highway 101 and State Route 82 -- in Palo Alto. The test begins early next year and initially will focus on traffic congestion alerts provided by 511, a free phone and Web service that consolidates Bay Area transportation information, Larson said.

Caltrans is working with Mercedes, Volkswagen, Toyota and BMW in Palo Alto. Similar tests will be done at the same time in the Detroit area with Ford, General Motors and Chrysler,

Larson said. The automakers are installing receivers in test cars.

The automakers are looking to test the reliability of the wireless system in different traffic conditions and terrains, said Chuhee Lee, principal engineer with Volkswagen's electronics research lab in Palo Alto.

"We're interested in taking the benefit of that technology, and we're doing research into how we can make our vehicles safer," Lee said.

Much research remains to be done, including on how older vehicles could be retrofitted with the systems, Lee said. Larson of Caltrans said the systems could cost \$300 per vehicle, but Lee said it's not possible to determine a price tag yet.

How could in-car alerts be generated if the wireless system proves effective? Larson gives one explanation.

Weather data might come from several sources, including:

Caltrans weather sensors now installed along some California highways. They measure wind speed, dew point, air moisture and pavement temperatures. There are 13 sensors in the Valley from Madera to Kern counties.

Satellites. Stationary satellites are used for communication, weather tracking and other purposes.

Wireless systems or telephone lines could transmit data from those sources to government transportation management centers. There, computers could analyze the information and send warnings to a wireless system installed along major roadways. That wireless system would consist of small boxes -- each with a radio and computer -- that could send messages to passing cars equipped with receivers.

Drivers might get a computerized voice message or a text message displayed on the dashboard.

Said Larson: "The beauty of [it] is that it enables us to convey information to drivers without depending on them to drive past the big sign on the side of the road that says, 'Fog Ahead.' "

Caltrans now uses ground readings and observations to initiate flashing message signs and highway advisory radio stations that alert motorists to fog and other road hazards.

Creating such an in-car warning system would be expensive.

It could cost about \$500 million to install wireless boxes at each of the state's 35,000 signalized intersections, and at one-mile intervals in urban areas and every 10 miles in rural areas on the state highway system, Larson said.

"The cost to install is insignificant compared to the benefit we would get, in my humble opinion," he said.

There would be little margin for inaccurate information, said Kevin Petty, scientific program manager for the National Center for Atmospheric Research in Colorado.

"The minute a motorist gets notified of fog five miles ahead and they get there and there's no fog -- and it happens multiple times -- they're going to start ignoring the warning," said Petty.



One Valley motorist said she'd welcome wireless alerts.

"That would be cool," said Belinda Lucas of Reedley, who commutes on Highway 99 to her bank job in Fresno. "It would remind drivers to slow down if there's an accident ahead or bad weather -- kind of giving us a warning basically, and we wouldn't just drive into it and hit cars."

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