

# Technology in Rural Transportation



A recent study documented more than eighty proven, cost-effective, “low-tech” solutions to rural transportation needs, most developed or implemented by local transportation professionals. One of these solutions is outlined below:

Learn all about the simple solutions on the Internet at <http://inform.enterprise.prog.org>

The simple solutions report is available from Hau To at (503) 892-2533, or email: [to@crc-corp.com](mailto:to@crc-corp.com)

## Speed Advisory During Fog

### Overall goal:

To provide speed advisories to traffic in fog conditions.

### Technical approach:

The ADVISE project is installing a series of technologies which will detect traffic and sense adverse weather conditions. Detection equipment include six sets of loop detectors which will provide data on speeds, headways, and vehicle classifications based on length, and a machine vision system which will provide traffic counts. The motivation for installing such a wide variety of detection equipment is to collect before and after data relating to driver behavior in normal and restricted visibility conditions, and to ascertain how the activation of the VMS affects driver behavior. It has already been observed that auto drivers and heavy truck drivers react differently in these conditions, hence the need for vehicle classification information.

Four fog sensors, which measure conditions based on refracted infrared light, have also been installed. Two high intensity incandescent VMS will provide speed advisories to drivers based on safe stopping distances calculated using input from the various detection components. Systems have been installed to monitor surface temperatures and snow / ice conditions on the roadway.

### Current status:

The system components are installed and data has been collected on the effectiveness of the system. The University of Utah has recommended that the project be expanded due to its effectiveness.

### Location / geographic scope:

The system is being tested where I-215 crosses the Jordan River in Utah where there is a history of severe accidents during fog conditions. The freeway often experiences congested stop-and-go traffic conditions in all lanes.



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**Agencies involved:** Utah DOT Maintenance Planning Region 2, FHWA, University of Utah.

**Cost information:** The approximate budget and deployment cost for this particular system is around \$500,000. This is a small investment compared to systems being deployed by California (\$2.5 million) and Georgia (\$3 million). Also, the initial cost of installing this system in a problem area with high traffic congestion and periodic dense fog is more than compensated by the avoided cost of high-speed traffic collisions.

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**Have goals been achieved?** A study showed that the standard deviation between speeds of vehicles on the highway was 2 to 3 times greater in foggy conditions compared to clear days. After applying this solution, a study showed a 22% decrease in the standard deviation of speeds between vehicles during foggy conditions C thereby reducing the potential for people to overtake other vehicles in fog. Even with a net increase in average vehicle speed due to decreased congestion, there is a net decrease in speed differential between vehicles.

**Solution timeline:** The system is fully implemented. UDOT will collect more data and conduct reliability testing. Plans are to implement this project statewide.

