TECH**BRIEF**

Technology in Rural Transportation:

"Simple Solutions"

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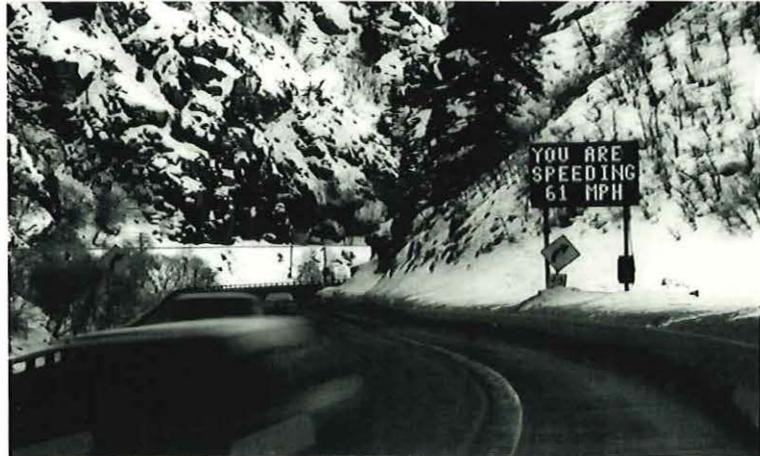
The Rural ITS "Simple Solutions" Project, which was performed within the ENTERPRISE pooled-fund study program, aimed to identify and describe proven, cost-effective, "low-tech" solutions for rural transportation-related problems or needs. These projects, referred to as "Simple Solutions," focus on practical applications of technologies that could serve as precursors to future applications of more advanced systems or intelligent transportation systems (ITS).

More than 50 solutions were initially identified and documented, and then categorized according to the 7 Critical Program Areas (CPA's) defined within the U.S. Department of Transportation's Advanced Rural Transportation Systems (ARTS) Strategic Plan. Of all the projects, 14 solutions were selected to be documented and analyzed in detail (see table 1). Project selection was based on representing all of the CPA's, as well as the ability of a project to transfer to other locations.

A report was written as part of this 6-month study that contains detailed descriptions of the 14 solutions, which include benefits of the technology; the expected implementation process; the potential issues associated with each technology; and each technology's role in a larger scale, fully integrated rural intelligent transportation system. The report also describes 42 other feasible solutions, examines broader rural ITS developments, and discusses other findings, such as transportation practitioners' perceptions of ITS. The 14 solutions are also published as stand-alone technical briefs.

One interesting finding of the Rural Outreach Project is that many of the local-level transportation professionals that were contacted assumed that ITS included only highly advanced technologies. It is hoped that this study will introduce local-level transportation professionals to ITS and its potential benefits, as well as show that ITS includes many levels of technology, even "Simple Solutions."

TABLE 1.

Selected "Simple Solutions."

CPA 1—TRAVELER SAFETY AND SECURITY

Colorado DOT Weather by Fax

Up-to-the-minute road and weather information is provided to public agencies and businesses throughout Colorado in an efficient, cost-effective manner via facsimile.

NOAA Weather Radio

The National Oceanic and Atmospheric Administration (NOAA) provides current, regional weather forecasts throughout the United States from 400 FM transmitters. Broadcasts are tailored to local user needs in the transmitter area.

Pager Activation of School Crossing Beacons (Oregon)

Paging technology activates flashing beacons on school zone warning signs. This allows programming for multiple sites to be performed from a central location rather than at the actual sign location, which is especially helpful for special events programming.

Washington State Ice on Bridge Warning System

Some bridges tend to ice over before the roadway: ice sensors installed on bridges detect icy conditions and activate flashing beacons on signs that read ICE ON BRIDGE WHEN FLASHING.

CPA 2—EMERGENCY SERVICES

Minnesota's Rural Coordinate Addressing System

A coordinate-based addressing system using global positioning system (GPS) technology was developed for areas that do not have a traditional addressing system. This improves emergency services and other's ability to locate rural locations.

Signal-Activated Signal Preemption

A digital siren detector, which can be installed at an intersection, detects an oncoming emergency vehicle and pre-empts the traffic signal, if necessary, giving a green light to the emergency vehicle.

CPA 3—TOURISM AND TRAVEL INFORMATION SERVICES

City of Galena, Illinois, and City of Decorah, Iowa, Web Sites

Internet web sites have been created to provide potential visitors and new residents with information about local area attractions, food and lodging, weather, and city offices. This information dissemination strategy is relatively inexpensive for both the provider and the user, and has resulted in cost savings for the local government.

CPA 4—PUBLIC TRAVELER SERVICES/PUBLIC MOBILITY SERVICES

Sweetwater County, Wyoming, Multi-Service Provider Dynamic Dispatching System

Various social service agencies combined their individual vehicle fleets and operations to form a single transit organization with a central dispatching center. This streamlining provides a more efficient and effective service.

CPA 5—INFRASTRUCTURE OPERATIONS AND MAINTENANCE

Infrared Pavement Sensor Monitoring

Infrared sensors, which monitor pavement temperatures, can be installed on maintenance patrol trucks to improve the efficiency and cost-effectiveness of the application of anti- and de-icing materials.

Kalamazoo County Road Commission Internet Site (Michigan)

The Kalamazoo County Road Commission created an Internet site to provide information to residents and others. The site includes local maps, road and bridge closings with detour information, and vehicle weight restrictions.

Smartsonic Sensor for Traffic Applications

A sensor measures acoustic energy radiated by passing vehicles to determine lane occupancy, vehicle count, vehicle types and speeds, and link travel times.

Lane Drop Smoothing System (Indiana)

A series of portable DO NOT PASS signs equipped with flashing beacons are placed at the approach to a construction site. Electronic occupancy sensors placed in the roadway activate the beacons based on the volume of traffic at the approach to the construction zone. This system improves work-zone safety and traffic operations.

CPA 6—FLEET OPERATIONS AND MAINTENANCE

Snow Route Design Optimization Software (Indiana)

Snow route design optimization software was developed to enable streamlining of snowplow routes, which provides greater time- and cost-efficiency.

CPA 7—COMMERCIAL VEHICLE OPERATIONS

Truck Speed Warning System (Colorado)

A truck speed warning system uses radar detection and variable message signs to warn truck drivers if they are approaching a dangerous curve at an unsafe speed. The system has significantly reduced the truck speeds at this site.