

## Intelligent Transportation Systems Improve Travel Safety and Transit Service in Rural Areas

Intelligent transportation systems (ITS) were originally conceived as a means of improving travel safety and efficiency in densely populated urban areas. But transportation agencies, local governments, and travelers in rural and small urban areas also stand to gain big benefits from ITS, especially in the area of safety.

Travel in rural areas is typically characterized by low traffic volumes, infrequent congestion, high travel speeds, and rugged terrain. Many motorists in rural areas are just passing through and are thus unfamiliar with the roads, environment, and terrain. Towns are few and far between. Travelers can easily get lost. When a crash occurs, there might not be anyone around to report it.

- Eighty percent of the Nation's roads are in rural and small urban areas (areas with populations under 50,000).
- Although rural roads account for less than 40 percent of total annual vehicle miles traveled, about 60 percent of all traffic fatalities occur on rural roads.
- Low population densities and relatively long travel distances can make rural transit systems too inefficient and expensive to operate.



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- Rapidly moving storms in mountainous areas can quickly cause slick road conditions and impede visibility.
- Work zone fatalities on non-Interstate local roads are three times higher than those on Interstates.
- On average, it takes twice as long in rural areas as in urban areas for word of a crash to reach emergency medical services (EMS), and it takes twice as long to get the crash victims to the hospital. In rural Colorado, for example, the average time between a crash and EMS notification is 12 minutes; an average 57 minutes elapse between the time of the crash and arrival at the hospital. Contrast that with the response times in urban Colorado: 6 minutes for EMS notification and 28 minutes for transport to the hospital.

The technologies included in the Federal advanced rural transportation systems (ARTS) program can help local governments, transit agencies, and public works agencies make travel on rural roads and highways safer and easier. For example, using ARTS technologies, local governments can take some of the isolation out of rural living. Because many elderly and physically challenged residents in rural areas lack access to a car, they are frequently stranded from the doctor or the grocery store. Automated scheduling systems, real-time vehicle location systems, and other technologies are making rural transit more affordable and accessible for rural residents. A computerized bus dispatch system in Sweetwater County, Wyoming, has already doubled ridership and cut operating costs in half. And Delaware County, Pennsylvania, is working with the Federal Transit Administration and a private-sector partner to test a system that automates procedures for transit reservations, billings, and dispatch, resulting in lower overhead costs and more efficient routes.

Automated collision notification (ACN) systems can dramatically cut emergency response



times. If a vehicle is involved in a crash, on-vehicle sensors automatically trigger a call that alerts rescue services and makes use of global positioning systems and other technologies to pinpoint the exact location of the crash.

Rural vacation meccas can also benefit from advanced technologies that enhance transit services for residents and tourists. For example, the Cape Cod (Massachusetts) Regional Transit Authority uses state-of-the-art equipment to track and coordinate an extensive dial-a-ride service, regional fixed-route service, community bus services, and seasonal trolleys.

New mapping systems are helping emergency dispatchers in Blue Earth County, Minnesota, locate remote addresses. When an emergency call comes in, the computer system identifies the caller's number and then uses a geographical information system to automatically highlight the caller's location on a digitized map at the dispatch center, enabling dispatchers to more quickly and easily deploy emergency teams.

ARTS technologies can also help improve traffic safety and maintenance operations. For example, sensors that monitor weather and pavement conditions along remote highways can be coupled with variable message signs to effectively warn motorists of treacherous travel conditions—giving motorists ample time to slow down or choose an alternate route. Such a system is already in use in Snoqualmie Pass, Washington.

Similar sensors coupled with a computer-aided dispatch system have helped Indiana authorities redesign snowplow routes, cutting the total number of routes by 10 percent and saving \$14 million in operating and equipment costs to date. And the Colorado Department of Transportation's Weather by Fax program provides timely, accurate, localized information to more than 200 organizations, including ski areas, visitors' centers, television stations, freight companies, and weigh stations. Bulletins are routinely sent as often as five times a day during the winter, and special bulletins are issued to warn of avalanches and mountain-pass closures.

Although the ARTS program focuses on rural travel needs and conditions, it was designed to be interoperable with ITS in urban areas and to provide a seamless transportation system for motorists. The program comprises seven critical areas:

1. Traveler safety and security
2. Emergency services
3. Tourism and travel information services
4. Public traveler services/public mobility services
5. Infrastructure operating and maintenance
6. Fleet operating and maintenance
7. Commercial vehicle operations.

More information on the ARTS program is available on the Web at [www.its.fhwa.dot.gov/rural](http://www.its.fhwa.dot.gov/rural).

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### For more information...

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