What are the components of the RICAS?

1. Sensing - Sensors are used on the mainline to determine the position, speed, and lane of travel for vehicles approaching the intersection crossroads. Automotive radar is the sensor of choice for this application; automotive radar is accurate, durable, reliable, available, relatively inexpensive, and works in all weather conditions.

2. Computation - The computation system takes responsibility for collecting sensor data, computing vehicle trajectories, and assessing threats. The threat assessment produces three states for the system: inactive (no traffic threat), alert (conditions require careful consideration), and warning (where dangerous maneuvers are to be avoided).

3. Electronic message signs - The electronic message signs relay alerts and warnings to the side-road driver as determined by the computational system. A prototype of the sign is shown below.

4. Monitoring – Provides WisDOT and researchers the ability to monitor, troubleshoot and collect data remotely.

4 Electronic Message Signs

Monitoring Sensors on US 53 and STH 77

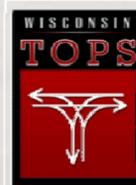2 Monitoring Cameras

Additional information:

Project Website:
http://www.topslab.wisc.edu/workgroups/rsip.html

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U.S. Department of Transportation
Federal Highway Administration

Rural Intersection Collision Avoidance System (RICAS)

US Highway 53 and State Highway 77 Minong, Wisconsin

Part of the USDOT Federal Highway Administration Rural Safety Innovation Program (RSIP)

What is the Rural Safety Innovation Program (RSIP)?

Established as a competitive program in 2008 by the USDOT Federal Highway Administration, the goal of the Rural Safety Innovation Program is to improve rural road safety by assisting rural communities in addressing highway safety problems.

The objectives of the Rural Safety Innovation Program are to:

1. Improve safety on local and rural roads with innovative approaches in which rural communities develop and design local solutions to their roadway safety problems.

2. Provide best practices and lessons learned on innovative safety technologies to assist rural road owners and operators in the development and implementation of infrastructure-based rural safety countermeasures that complement behavioral safety efforts.

3. Promote national awareness and interest in addressing rural safety issues.

4. Promote the use of Intelligent Transportation Systems (ITS) technologies to improve safety on rural roads.

Wisconsin was one of 19 transportation agencies to successfully be awarded a grant. The proposal includes installation and evaluation of an experimental Rural Intersection Collision Avoidance System (RICAS).

The primary project goal in Wisconsin is to demonstrate technology that improves the safety of rural thru-stop intersections by providing drivers information that promote safer gap selection (i.e., intersection crossing). Gap selection is the primary factor in rural thru-stop intersection crashes.

Where is the RICAS being installed?

The RICAS is being installed at the intersection of US 53 and STH 77 in the Village of Minong in northwestern Wisconsin.

First installation of RICAS went live in Cannon Falls, MN in January 2010. The Wisconsin installation will be the second location in the U.S.
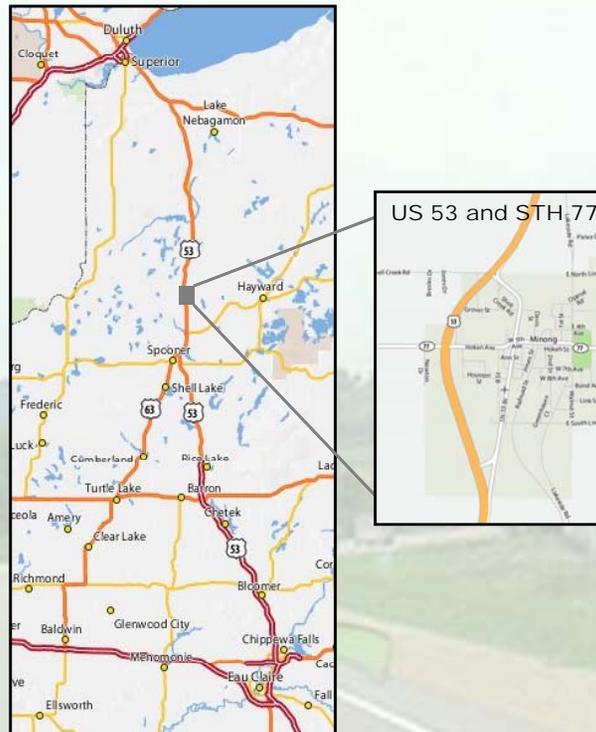
US 53 and STH 77

What are the expected benefits of installing the RICAS?

*   Reduce the frequency of crashes at the intersection of US 53 and STH 77 in Minong.
*   Better understanding of driver behavior, both by frequent and infrequent users of the intersection.
*   Documentation of the safety benefits to support a benefit- cost analysis.
*   Pending proper evaluation, provide motivation for further deployments throughout the U.S.

Why was the intersection in Minong selected?

More than 30% of all vehicle crashes in the US occur at intersections; these crashes result in nearly 9,000 annual fatalities, or approximately 25% of all traffic fatalities. Moreover, these crashes lead to approximately 1.5 million injuries/year, accounting for approximately 50% of all traffic injuries. In Wisconsin, the US 53 corridor between Rice Lake and Superior has a number of intersections with higher than expected crash rates; US 53 and STH 77 in Minong still suffers from high crash rates despite a variety of special treatments (pavement markings, median stop bars, median stop signs with flashing beacons, etc.). The intersection was also on the State of Wisconsin's 5% list, which includes an inventory of the most severe safety problems on state routes.

When will the RICAS system be installed?

The RICAS was installed over the fall/winter of 2009 with an anticipated startup of spring 2010.

How long will the system operate?

The RICAS will initially operate for approximately one year. Depending on results by an independent evaluator, the RICAS may continue operations after the initial demonstration period.