



# INTERSECTION WARNING SYSTEMS IN MINNESOTA

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*Your Destination...Our Priority*





# Minnesota ITS Safety Plan

## ITS Critical Strategy 5:

### Use Intersection Collision Warning Systems

[http://www.dot.state.mn.us/guidestar/2006\\_2010/its\\_safety\\_plan.html](http://www.dot.state.mn.us/guidestar/2006_2010/its_safety_plan.html)



## Minnesota ITS Safety Plan

Prepared for:



Prepared by:

**URS**

SEH Inc.

International Idea Institute, Inc.

October 31, 2006





# Deployment Strategies for Minnesota

- Dynamic Intersection Warning is included in Minnesota's ITS Safety Plan and SHSP.
- Eligible for federal HSIP funding.
- It is anticipated Minnesota Safety plans will identify 160 to 180 intersections where dynamic intersection warning systems may be installed.





# Intersection Warning Systems

## Major Roadway Warning Systems

Vehicle Crossing / Entering Mainline

Speed Warning (none in Minnesota)

## Minor Roadway Warning Systems

Mainline Vehicle Approaching Cross Street

Cross-street Stop Sign Warning Systems

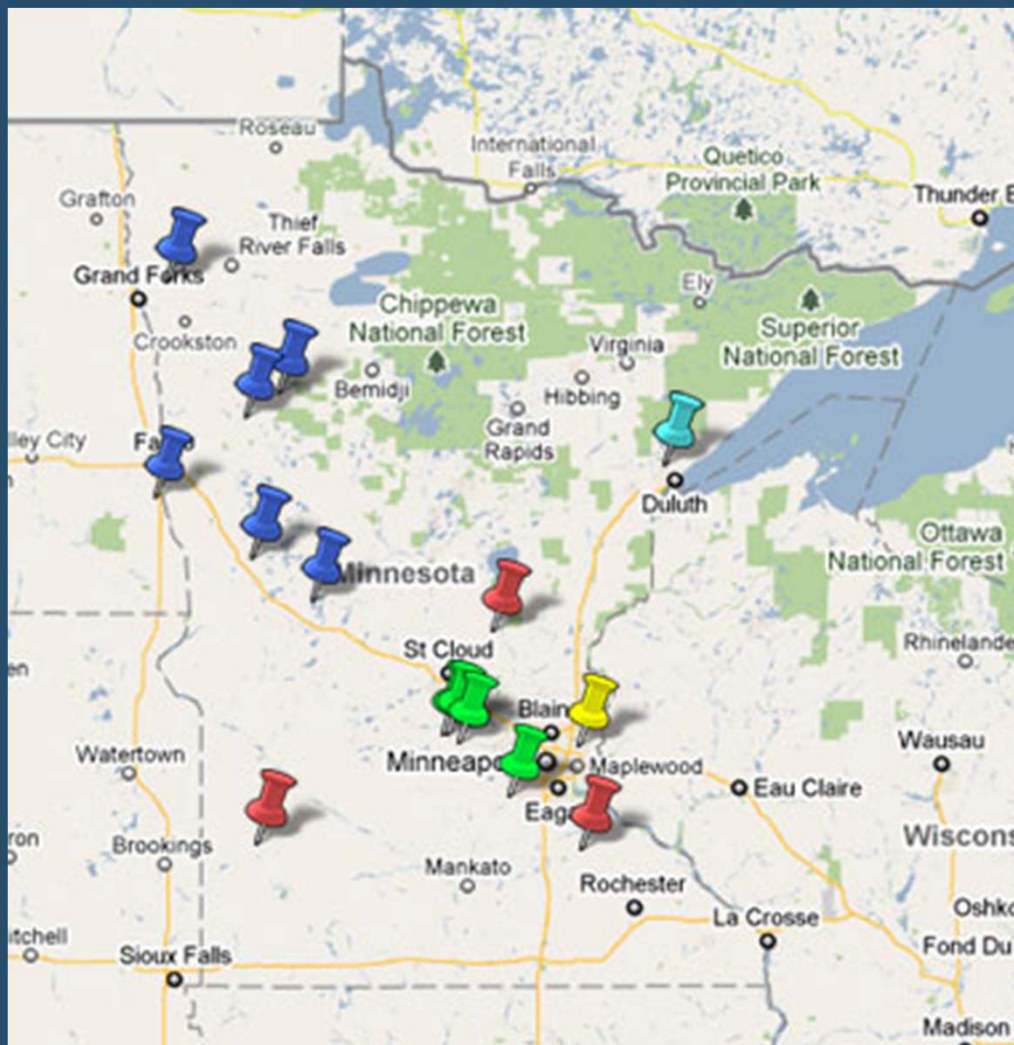
Cross-street Gap Assistance Systems







# Intersection Warning Systems in Minnesota





# Major Roadway Warning Vehicle Entering or Crossing



TH 169 @  
Mille Lacs CSAH 11

(This system has been removed  
and a CICAS system installed)





# Minor Roadway Warning Vehicle Approaching Intersection

Hennepin County Road 47  
@ Lawndale Lane

[http://www.dot.state.mn.us/guidestar/2006\\_2010/intersection\\_warning\\_system/Final%20Documentation.pdf](http://www.dot.state.mn.us/guidestar/2006_2010/intersection_warning_system/Final%20Documentation.pdf)





# Minor Roadway Warning Cross Street STOP Sign Warning



Washington County  
CSAH 15 (Manning Ave) @  
CR 47 (McKusick Road)









# Minor Roadway Warning Gap Assistance System

US 52 @ CSAH 9 – Goodhue County – January 2010

US 169 @ CSAH 11 – Milaca, MN - Spring 2011

MN 23 @ CSAH 7 – Lyon County – Spring 2011

<http://www.dot.state.mn.us/guidestar/2006/2010/cicas.html>









# Major Roadway and Minor Roadway Warning

## St. Louis County

- Co Rd 2 (West Tischer Road) @ Co Rd 246 (West Eagle Lake Road) [De-energized]

## Wright County

- CSAH 5 @ CSAH 35
- CSAH 6 @ CSAH 35
- CSAH 9 @ CR 107

## Scott County

- CSAH 42 @ CSAH 17









# Safe Intersection Project - COTS

## District 4

- TH 200 @ Mahnomen CSAH 4
- TH 29 @ Douglas CSAH 5
- TH 75 @ Clay CSAH 2
- TH 210 @ Ottertail CSAH 35

## District 2

- TH 75 @ Polk CSAH 21





# Challenges

- Establish the safety impact
- Continue development of intersection warning systems
- Establish warrants for proper applications
- Implement MUTCD standards and guidelines
- Educate and inform drivers
- Focus enforcement efforts





# Developing Consistency in ITS Safety Solutions – Intersection Warning Systems

Bring together the agencies and individuals who have deployed ITS intersection warning systems to reach consensus on an approach for an accelerated uniform deployment of intersection warning systems, and a recommendation for inclusion in the MUTCD.







# Contact Information

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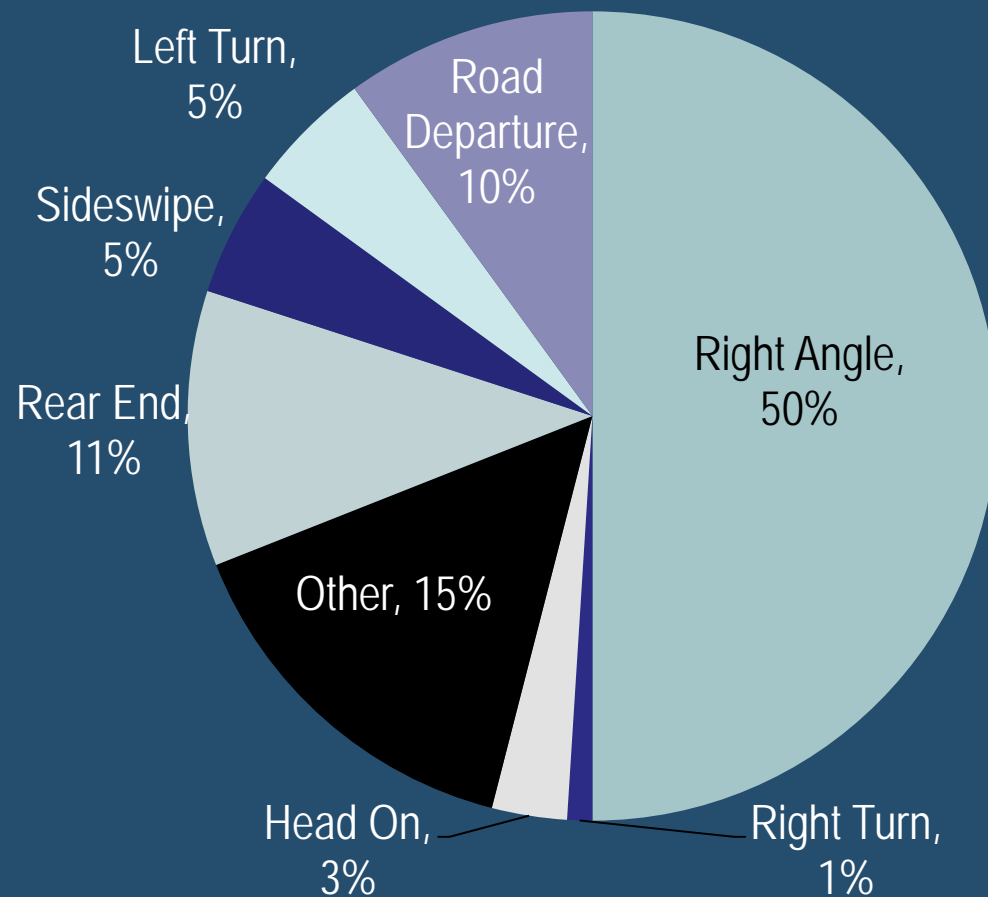
651-234-7377





# Rural Intersection Crashes

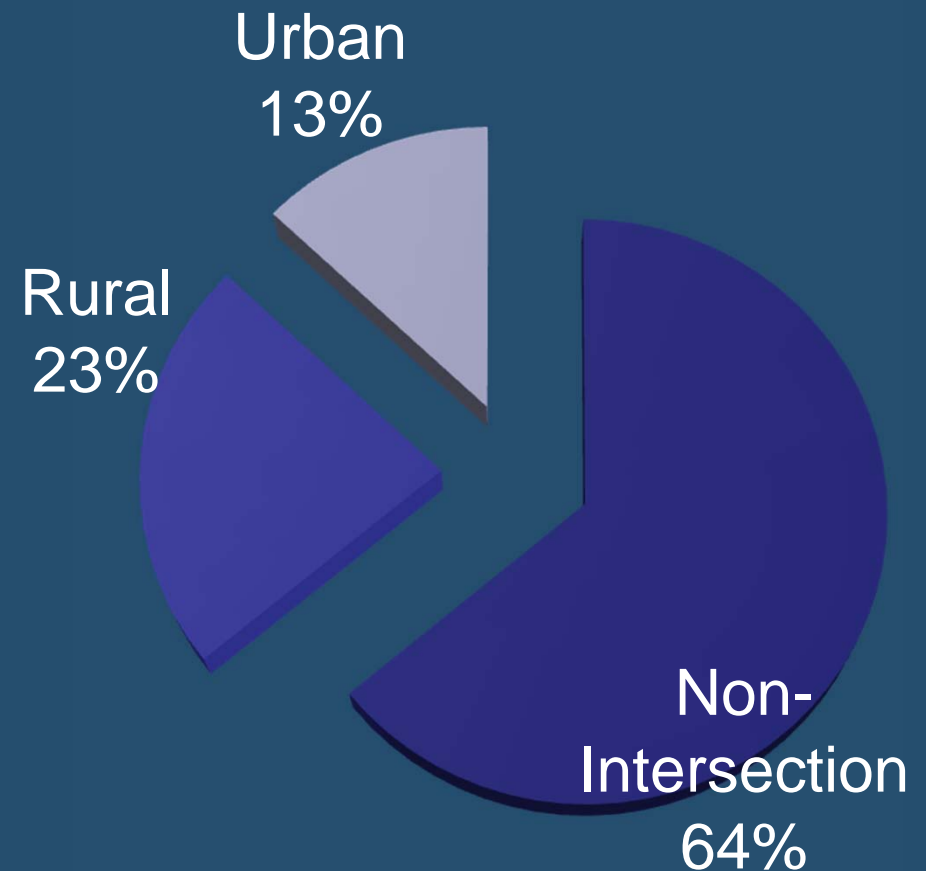
Right angle crashes overrepresented at rural STOP controlled intersections.





# Fatal Crashes

Most of the fatal crashes at STOP controlled intersections are stop and proceed.





# Intersection Crashes – Driver Error

Primary cause where drivers stopped before entering:

- Driver looked but did not see other vehicle (62.1%);
- Driver misjudged the gap (lag) (19.6%);
- Driver had obstructed view (14.0%), or
- Roads were ice-covered (4.4%)

The first 3 are problems with lag detection or selection.









# ENTERPRISE

- FHWA Pooled Fund Study since 1991
- 16 members (including Ontario and Dutch Ministry of Transport)
- Forum for collaborative ITS research, development, and deployment ventures
- Facilitates the sharing of technological and institutional experiences gained from individual ITS projects from its members





# Developing Consistency in ITS Safety Solutions Intersection Warning Systems

Bring together the agencies and individuals who have deployed ITS intersection warning systems to reach consensus on an approach for an accelerated uniform deployment of intersection warning systems, and a recommendation for inclusion in the MUTCD.

ENTERPRISE





# Project Stakeholders

- ENTERPRISE Pooled Fund Members
- States with ICW Systems
- NCUTCD – Committee on Warning and Guide Signs
- AASHTO – Sub-Committee on Traffic Engineering
- NACE
- FHWA

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# Anticipated Results

- Comprehensive List of Deployed Intersection Systems
- Workshops to learn from others and develop consensus on revisions to the MUTCD
- Recommended Application Guidelines for Intersection Warning Systems

E N T E R  P R I S E







# ENTER PRIZE

