

Liability, Reliability and Credibility – Challenges for ICWS



WEBINAR IS BEING RECORDED

E N T E R  P R I S E

ENTERPRISE Webinar Series – Webinar 3
June 25, 2015

Agenda

WEBINAR IS BEING RECORDED

- Introduction
- ENTERPRISE Program
- Featured Presentation
 - Perspective on Liability
 - Engineering Reliability
 - Importance of Credibility
 - Proof of Do-ability
- Questions
- Closing Remarks





ENTERPRISE Program

Cory Johnson


Minnesota Department of Transportation and
ENTERPRISE Project Champion



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ENTERPRISE Transportation Pooled Fund Study TPF-5 (231)


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Use and Impacts of Camera Images and Other Displays of Traveler Information

ENTERPRISE Transportation Pooled Fund Study TPF-5 (231)

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Next Generation Traffic Data and Incident Detection from Video

FINAL REPORT

Evaluating **N**ew **T**Echnologies for **R**oad
PRogram **I**nitiatives in **S**afety and **E**fficiency

ENTERPRISE Program

Members

- Arizona DOT
- Georgia DOT
- Idaho Transportation Department
- Illinois DOT
- Iowa DOT
- Kansas DOT
- Maricopa County, Arizona
- **Michigan DOT**
- Minnesota DOT
- Oklahoma DOT
- Pennsylvania DOT
- Texas DOT
- **Washington State DOT**
- Ministry of Transport Ontario
- Transport Canada
- Dutch Ministry of Transport
- FHWA

ENTERPRISE Program

- Recent projects
 - Next Generation Traffic Data and Incident Detection from Video (Video Analytics Evaluation)
 - Synthesis of Intelligent Work Zone Practices
 - Assessment of Telematics Service Provider Data Feeds
 - HAR Best Practices and Future Direction
 - Crashworthiness and Protection of ITS Field Devices
 - ***Developing Consistency in ITS Safety Solutions-ICWS***
 - ***ICWS Coordination and Systems Engineering***



ENTERPRISE Program

The screenshot shows the homepage of the ENTERPRISE Program website. The header features the logo and navigation links: Home, Projects, Members, About Us, and Contact Us. A main menu on the left lists various site sections. The central content area includes a 'Welcome' message, a 'Project Highlight' for ICWS support, and a list of projects completed in 2014. The right sidebar contains announcements for 2015 conferences and a program summary.

ENTERPRISE

Home Projects Members About Us Contact Us

Main Menu

- Home
- About Us
- Calendar
- Work Plans
- Management Plan
- Projects
- Members
- How to Join
- Benefits
- Progress Reports
- Contact Us
- Useful Links

Welcome

Welcome to the ENTERPRISE Pooled Fund Study website. The ENTERPRISE Program is a [Pooled Fund Study](#) with member agencies from North America and Europe. Its main purpose is to use the pooled resources of its members, private sector partners and the United States federal government to develop, evaluate and deploy [Intelligent Transportation Systems \(ITS\)](#).

As part of its mission, ENTERPRISE seeks to facilitate the sharing of technological and institutional experiences gained from its ITS projects, and the projects for its individual members.

Project Highlight: Intersection Conflict Warning Systems (ICWS) Support and Outreach

A series of webinars will be scheduled in 2015 to feature various topics related to ICWS. They are designed to facilitate peer exchange on both introductory and advanced topics. A brief explanation of each webinar will be posted along with relevant presentation information as they are confirmed. For more information about the webinars contact Ginny Cronson at gcronson@acrossroads.org.

Webinar 7 - FHWA Development of Crash Modification Factors (CMF) Safety Evaluation of ICWS
April 23, 2015, 2:00 - 3:00 p.m. (Central)

Scott Himes from VHB will present the results of a national safety evaluation of ICWS sponsored by the Evaluation of Low Cost Safety Improvements Pooled Fund Study.

Webinar link: <https://atheycreek.webex.com/atheycreek/onstage/g.php?MTID=57a2d86d9152257c42b21188f2c1b08>

Audio link: Call-in toll number (US/Canada) - 1-650-479-3208. Access code: 627 935 162

Projects completed in 2014 include:

- Next Generation Traffic Data and Incident Detection from Video (Video Analytics Evaluation)
- Deployment Strategy for Rural Connected Vehicle Systems
- Synthesis of Intelligent Work Zone Practices
- Assessment of Telematics Service Provider Data Feeds
- Highway Advisory Radio - Best Practices and Future Direction
- Crashworthiness and Protection of ITS Field Devices

Announcements and Resources

Mark Your Calendars - 2015 Conferences

- April 27-29, 2015 - [ITS Heartland Annual Meeting](#) - Omaha, Nebraska
- June 1-4, 2015 - [ITS American Annual Meeting and Expo](#) - Pittsburg, Pennsylvania
- August 9-12, 2015 - [National Rural ITS Conference](#) - Snowbird, Utah

Project Websites

[ENTERPRISE ITS Planning Guidance \(Webcasts\)](#) - ENTERPRISE has developed planning guidance for 10 ITS devices to help make the initial decision of whether or not to deploy an ITS solution.

Program Summary

ENTERPRISE has created a brief [program summary](#) that provides an overview of the program and provides selected project highlights.

www.enterprise.prog.org



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Featured Presentation

Jon Jackels

SRF Consulting Group



Consulting Group, Inc.

ENTERPRISE WEBINAR 3 INTERSECTION CONFLICT WARNING SYSTEMS (ICWS) SUPPORT AND OUTREACH

Liability, Reliability, Credibility, Do-Ability
Challenges for ICWS



Today's Challenges for ICWS

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- **Liability**
- **Reliability**
- **Credibility**
- **Do-Ability**



Intersection Conflict Warning Systems (ICWS)

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Minor Road Alert



Major Road Alert



FHWA Evaluation of Low-Cost Safety Improvements Pooled Fund Study

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ICWS can be highly cost-effective as a safety treatment

B/C Ratios

- 35:1 for two-lane
- 13:1 for four-lane

Crash Modification Factors (CMF)

- 0.73 for two-lane
- 0.83 for four-lane



LIABILITY

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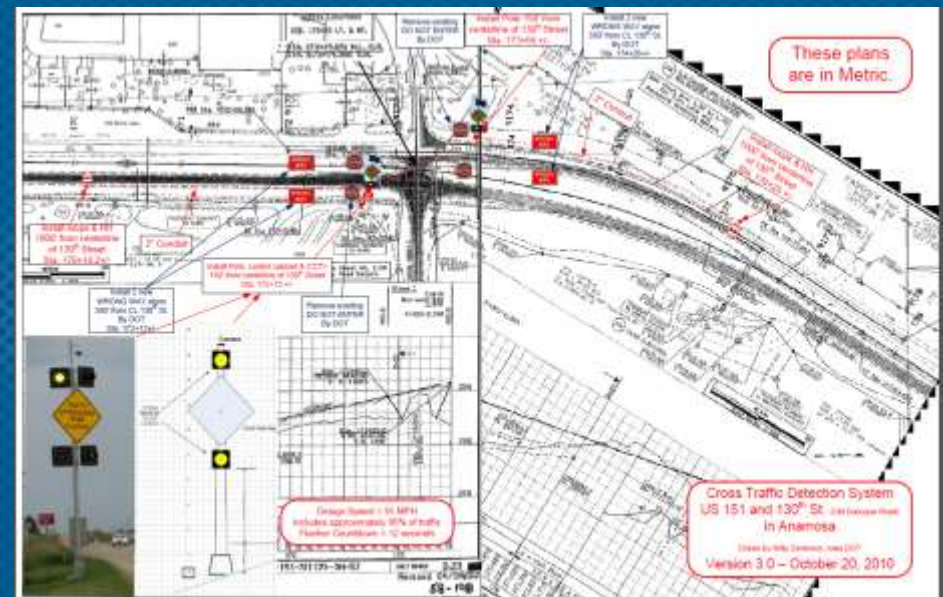
Attorneys and Engineers Working Together to Manage Risk and Liability



Topics for Discussion

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- Functions as Intended
- Reasonable Care
- Reliability
- Credibility
- Widespread Deployment



Available Resources

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ENTERPRISE Pooled Fund

- Design and Evaluation
- Concepts of Operations
- System Requirements

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ENTERPRISE Transportation Pooled Fund Study TPF-5 (231)

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WATCH FOR ENTERING TRAFFIC

WATCH FOR ENTERING TRAFFIC

WATCH FOR ENTERING TRAFFIC

WATCH FOR ENTERING TRAFFIC

System Requirements for Intersection Conflict Warning Systems (ICWS)

FINAL REPORT

Prepared by:
Athey Creek

Design and Evaluation Guidance for Intersection Conflict Warning Systems (ICWS)

FINAL REPORT

Prepared by:
Athey Creek

Prepared with support from:
USDOT FHWA Office of Safety
www.fhwa.dot.gov

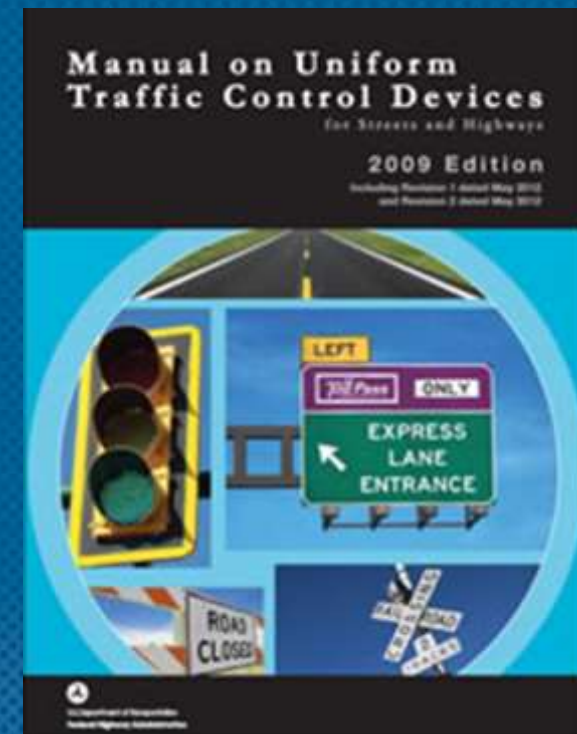
Prepared by:
Athey Creek

Version 1.0 January 2011

ENTERPRISE Efforts

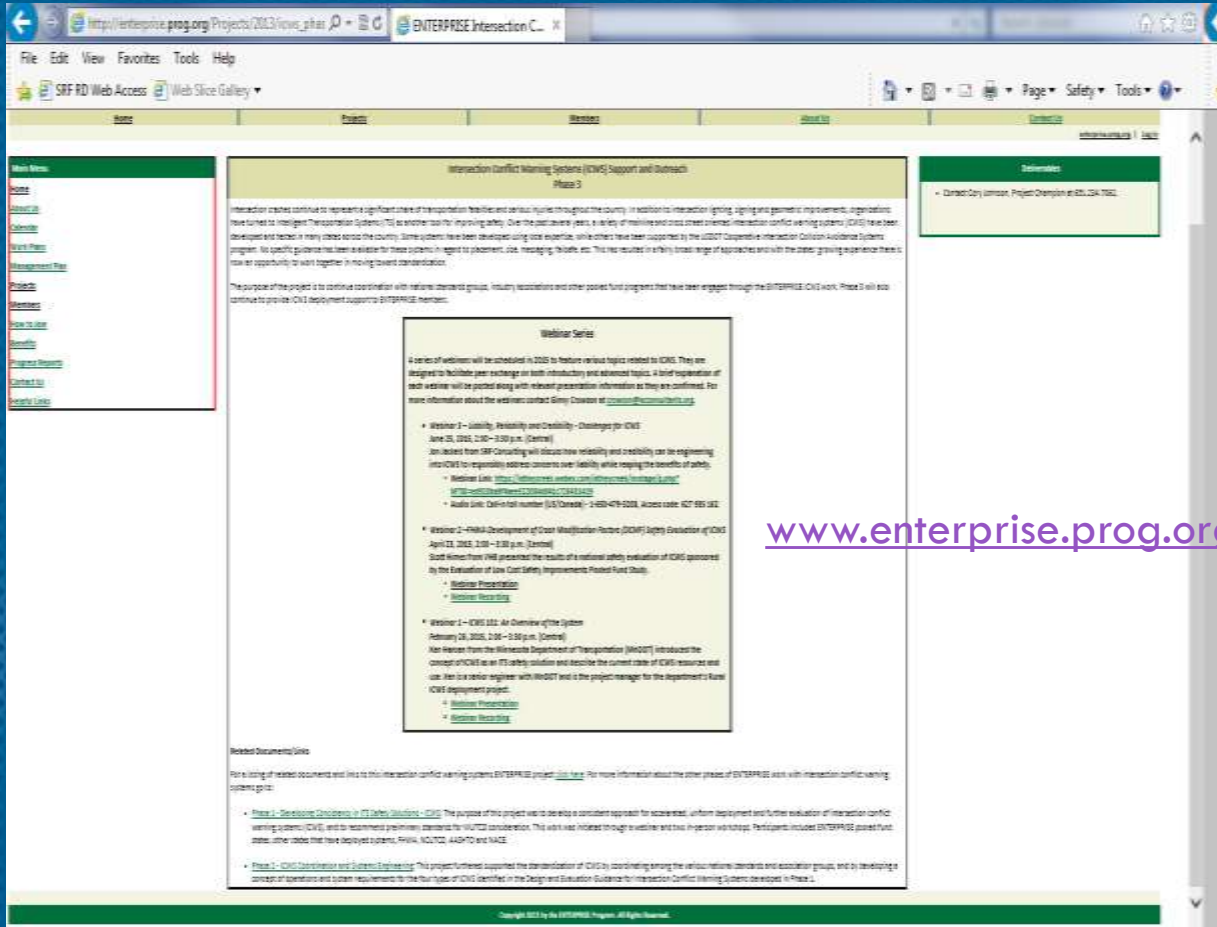
16

- Collaboration with AASHTO SCOTE
 - Accepted design and systems engineering efforts
 - Reviewed guidelines for application
- Work with NCUTCD
 - Proposed Language for MUTCD



ENTERPRISE WEBSITE

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Includes:

- Plan Sets
- Specifications
- Evaluations

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Reliability and Credibility

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Timely accurate information to
enhance driver decision making

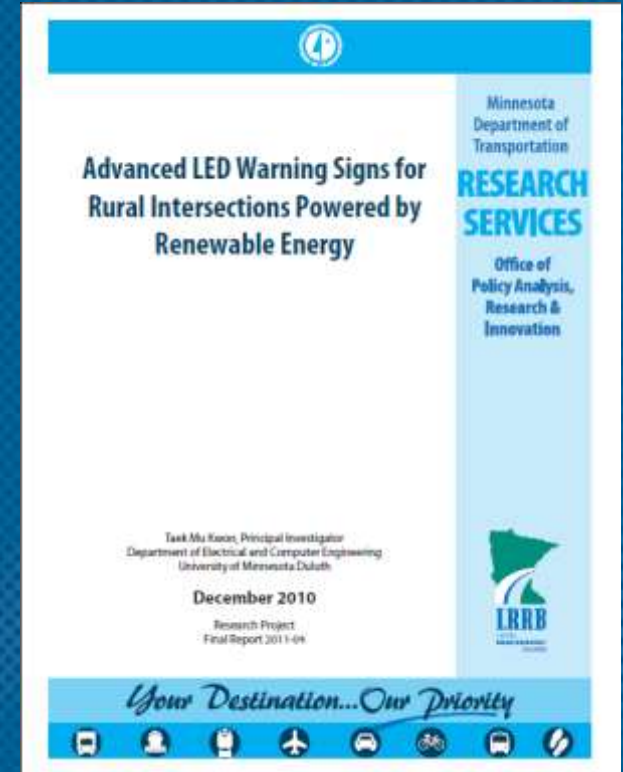


Driver Behavior

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ICWS changes driver behavior

- Before 13% roll through
- After
 - 0% roll through when active
 - 24% roll through when inactive



Reliability

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- Traditional Traffic Control Devices
 - Visible and function as designed
 - Maintained
- Dynamic Warning Systems
 - Visible and function as designed
 - Maintained



Reliability

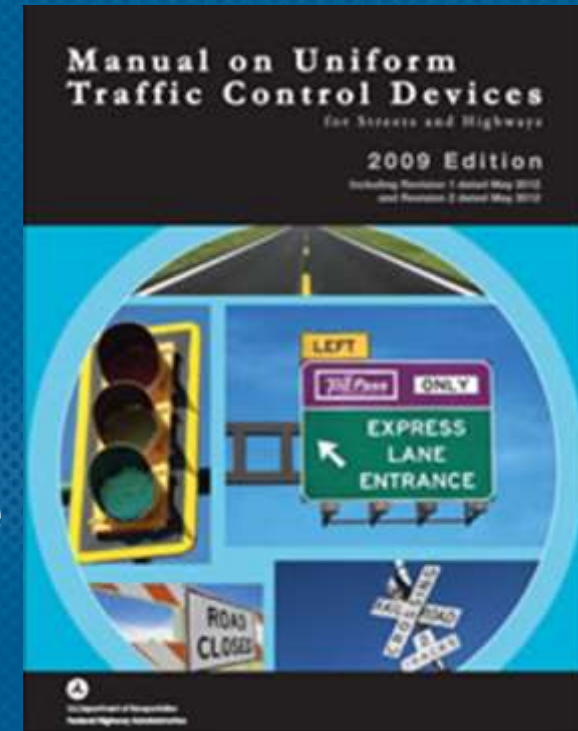
21

- Provide reliable power
- Accuracy of response
- Repair and maintenance of the system

Effectiveness

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- Fulfill a need
- Command attention
- Convey a clear, simple message
- Command respect from road users
- Give adequate time for proper response



Credibility

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**Driver must view
traffic control
devices as credible**

Photos courtesy of FF Brian Duddy and PFF David Robertson



Reliable Power

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- Grid Power
 - Performance history
 - Consider battery back-up
- Solar / Wind Power
 - Geographic area
 - Meet power needs



Accuracy of Response

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What accuracy is required?

For 3000 entering vehicles:

- 99.95% allows 1.5 missed activations per day
- 95% allows 150 missed activations per day



Malfunction Display

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ACTIVE



INACTIVE



MALFUNCTION



24 HOUR FLASH

System Repair and Maintenance

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Establish a maintenance plan with appropriate response times.

Documentation

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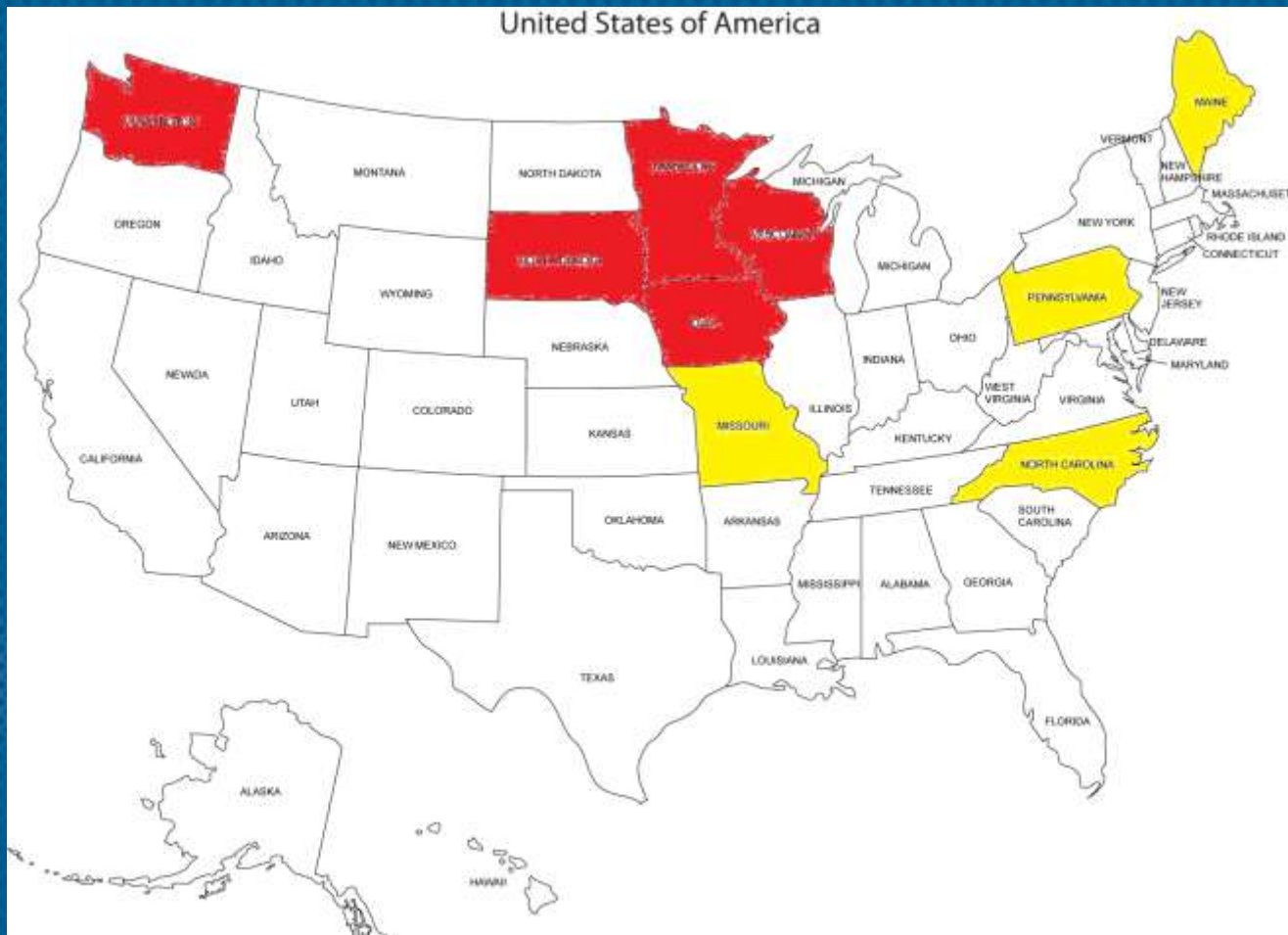
- Systems Engineering
- Design Decisions
- Testing and Validation Results
- Maintenance Logs

BEMV Maintenance Log		BEMV Maintenance Log	
No.	Description	Work Order #	Work Order #
1
2
3
4
5
6
7
8
9
10
11
12
13
14
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20



Do-Ability

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States that have deployed Intersection Conflict Warning Systems

Costs

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\$40,000 to \$140,000

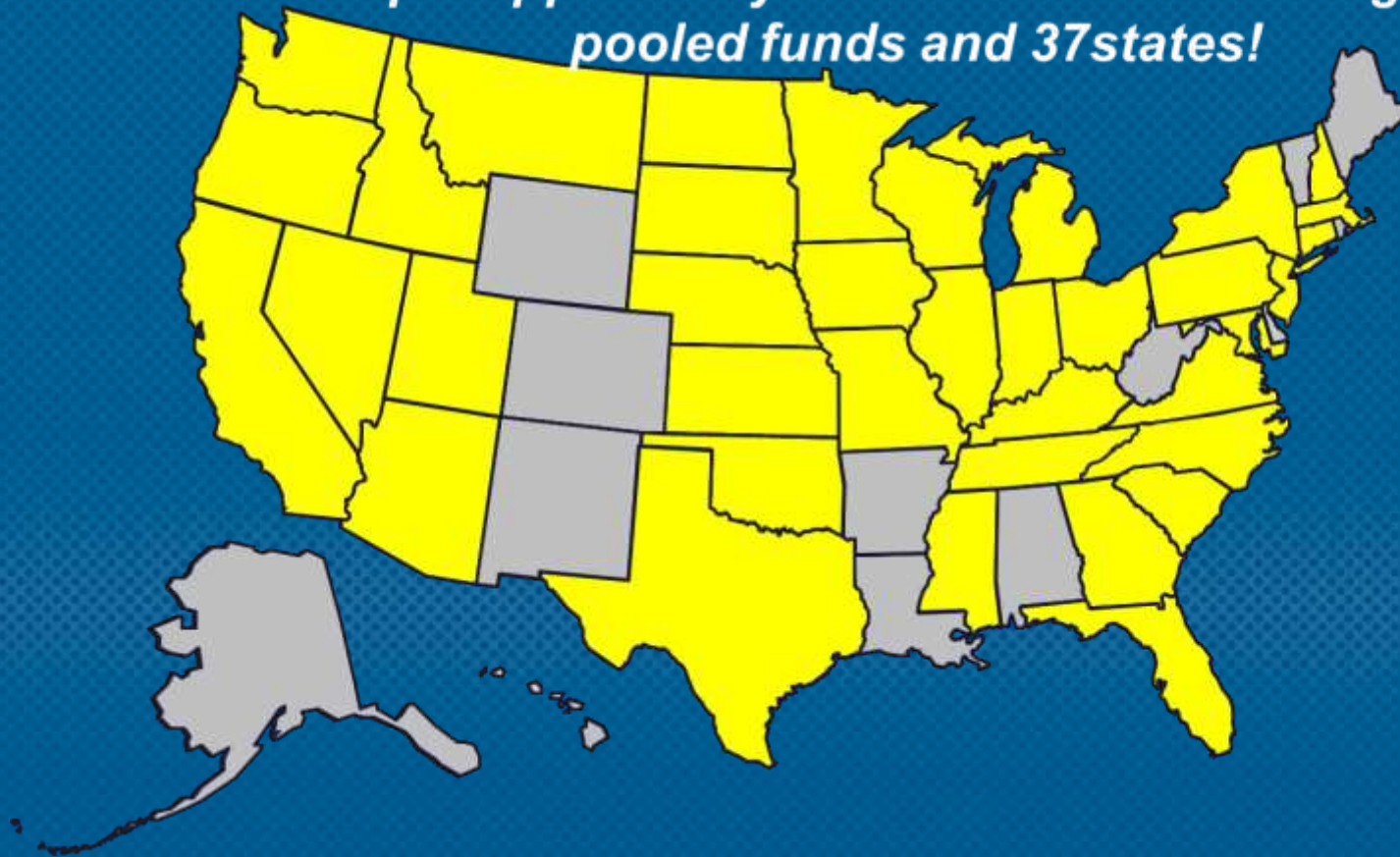
- Design Costs?
- Installation Costs?
- Annual Maintenance?



Continued Collaboration

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Unique opportunity for collaboration among three pooled funds and 37 states!



Contact Information

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Senior Associate

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Questions?

Access the WebEx Q&A box on the right side of your screen. Type your question and send to all participants.

Moderator will read questions aloud and presenter will respond verbally.



Closing Remarks

- For more information...
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