

# Saving Lives through Local Road Safety Planning

National Association of Counties

June 30, 2016

**Stronger Counties. Stronger America.**



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# Saving Lives through Local Road Safety Planning

National Association of Counties

April 6, 2016

**Stronger Counties. Stronger America.**



# Today's Speakers



**Rosemarie Anderson**  
*Transportation  
Specialist, Local and  
Rural Roads Manager  
Federal Highway  
Administration, Office of  
Safety*



**Rick West**  
*Public Works  
Director/County  
Engineer  
Otter Tail County, Minn.*



**Matthew Enders**  
*Local Programs  
Technical Services  
Manager  
Washington State DOT*

# Local Road Safety Plan Overview

**NACo Saving Lives through Local Road Safety  
Planning Webinar**

**June 30, 2016**



U.S. Department of Transportation  
**Federal Highway Administration**

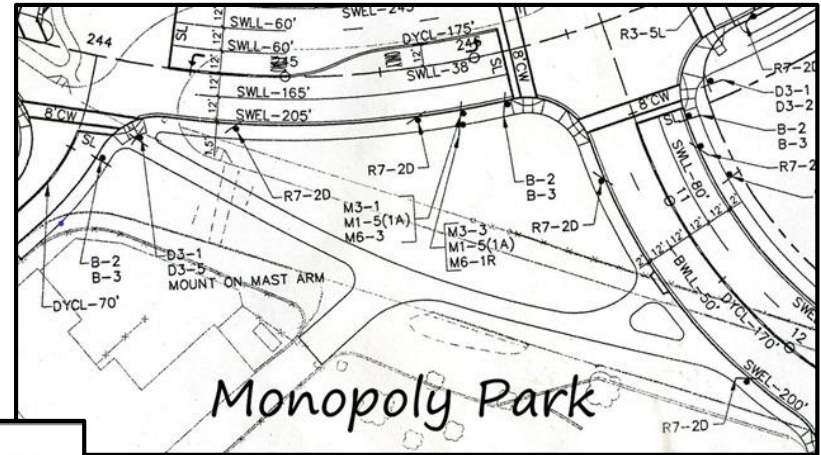


**Safe Roads for a Safer Future**  
*Investment in roadway safety saves lives*

<http://safety.fhwa.dot.gov>

# Local Road Safety Plans

- Plan
  - Strategy
  - Blueprint
  - Approach
  - Design
  - Proposal





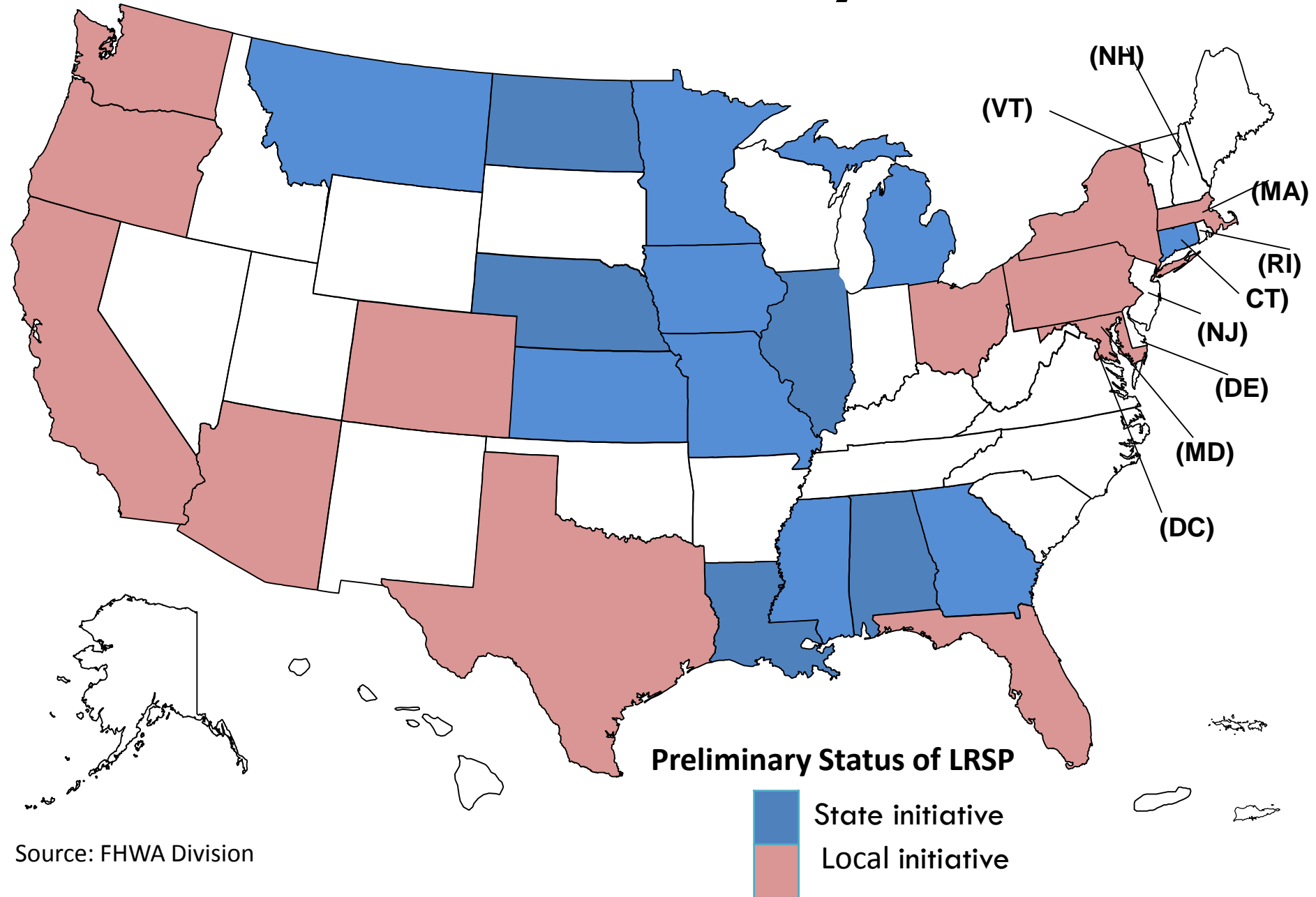
# Local Road Safety Plans

- An LRSP is a coordinated plan that provides a comprehensive framework for reducing highway fatalities and serious injuries on local roads within a specific jurisdiction.
- An LRSP is flexible and utilizes the 4 E's as appropriate to establish and gain support for an agency's local safety goals, objectives, and key emphasis areas.

# Local Road Safety Plans

- Local Road Safety Plans
- County Road Safety Plans
- County/Local Road Safety Action Plans
- Vision Zero Strategic Action Plans
- Systemic Safety Analysis Reports
- Regional Safety Action Plans

# Local Road Safety Plans



# Local Road Safety Plans

## State/Regional Initiated Plans

- Larger Documents
- Less Flexibility
- Contractor/MPO/RPO Developed
- Longer development period
- Cost Higher
- HSIP/PL Funds
- More Inclusive – Large Working group – 4 Es
- Funds set aside for implementation

## Local Initiated Plans

- Concise Documents
- More Flexible
- Continuous Update
- Local Agency Developed
- Assistance from LTAP or State
- Lower Cost
- Depends on local expertise and knowledge of the area
- State/Local Funds
- Tool to get funds for implementation

# Local Road Safety Plans

## Why develop a LRSP?

Benefits from developing an LRSP may include:

- Safety Awareness
- Establish partnerships
- Collaboration
- Leverage Safety Funds
- Informed Safety Priorities
- Complements the State SHSP



***A SHSP can assist local practitioners but a locally-focused plan(LRSP) is often needed to address the unique conditions on local and rural roads.***

# Local Road Safety Plans

“I feel I know my most hazardous locations and this generally confirms it. It also identified a stretch of roadway that is an issue that I was unaware of. Every day is a learning experience.”

# Local Road Safety Plans

- Why Coordinate LRSPs with State SHSP?

# Local Road Safety Plan

## From SHSP Guidance:

### Strategic Direction and Coordination

- The SHSP shall:
  - Provide strategic direction for:
    - other State plans, i.e., HSIP, HSP, CVSP
    - local and tribal plans
  - Consider the results of other State, regional or local highway safety planning processes



# Local Road Safety Plans

## Factors influencing the development and implementation of LRSP:

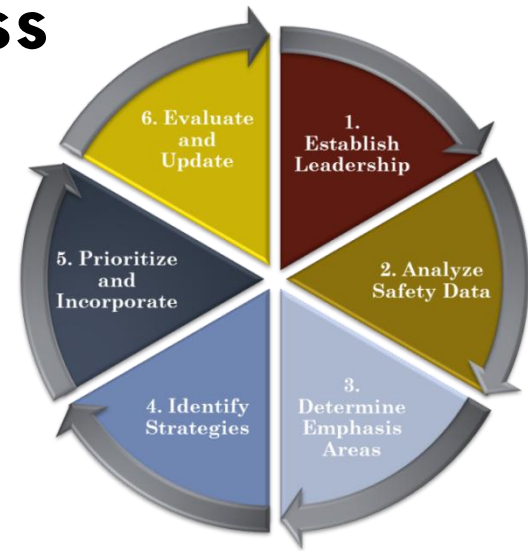
- Having a champion
- Developing a clear vision and mission
- Assembling collaborative partners
- Allocating appropriate resources
- Establishing open communication

*The  
Focus is  
Results!*

# Local Road Safety Plans

## Steps in the LRSP Development Process

- Step 1: Establish Leadership
- Step 2: Analyze the Safety Data
- Step 3: Determine Emphasis Areas
- Step 4: Identify Strategies
- Step 5: Prioritize and Incorporate Strategies
- Step 6: Evaluate and Update the LRSP



# Local Road Safety Plans

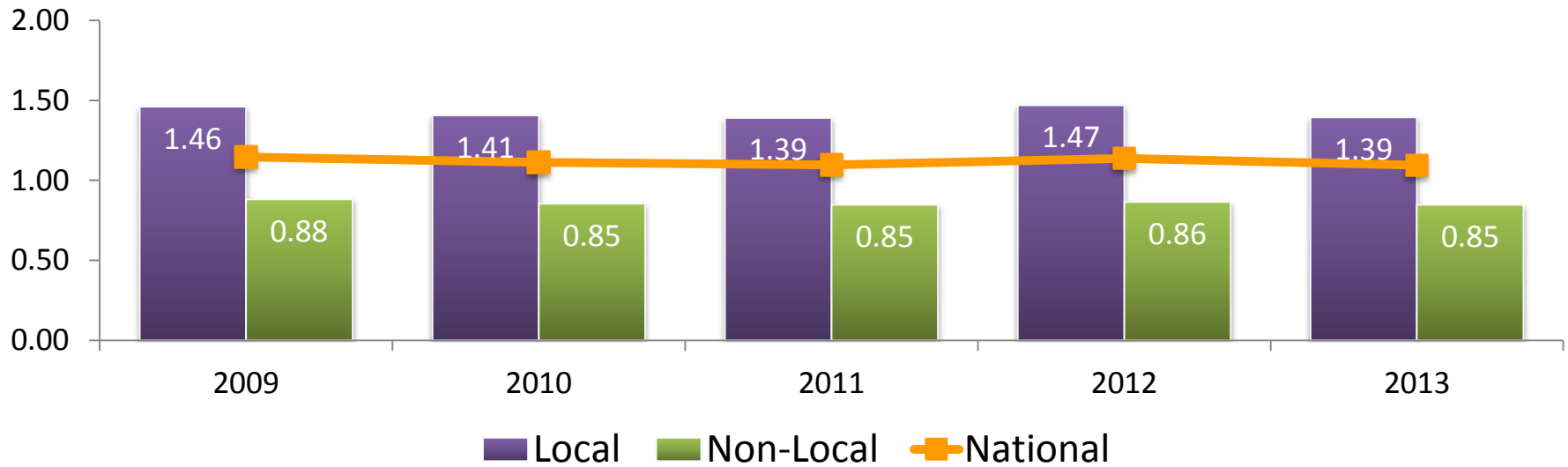
## Common Issues, Opportunities and Challenges

- Personnel
- Funding
- Limited Data

# Local Road Safety Plans

- Ultimate Goal – Reducing Fatalities and Serious Injuries on the Local Road System
  - In 2014, 32,675 people died and 2.3 million people were injured in motor vehicle traffic crashes in the United States
  - Of those fatal crashes...
    - 55% occurred on local roads

# Local Road Safety Plans





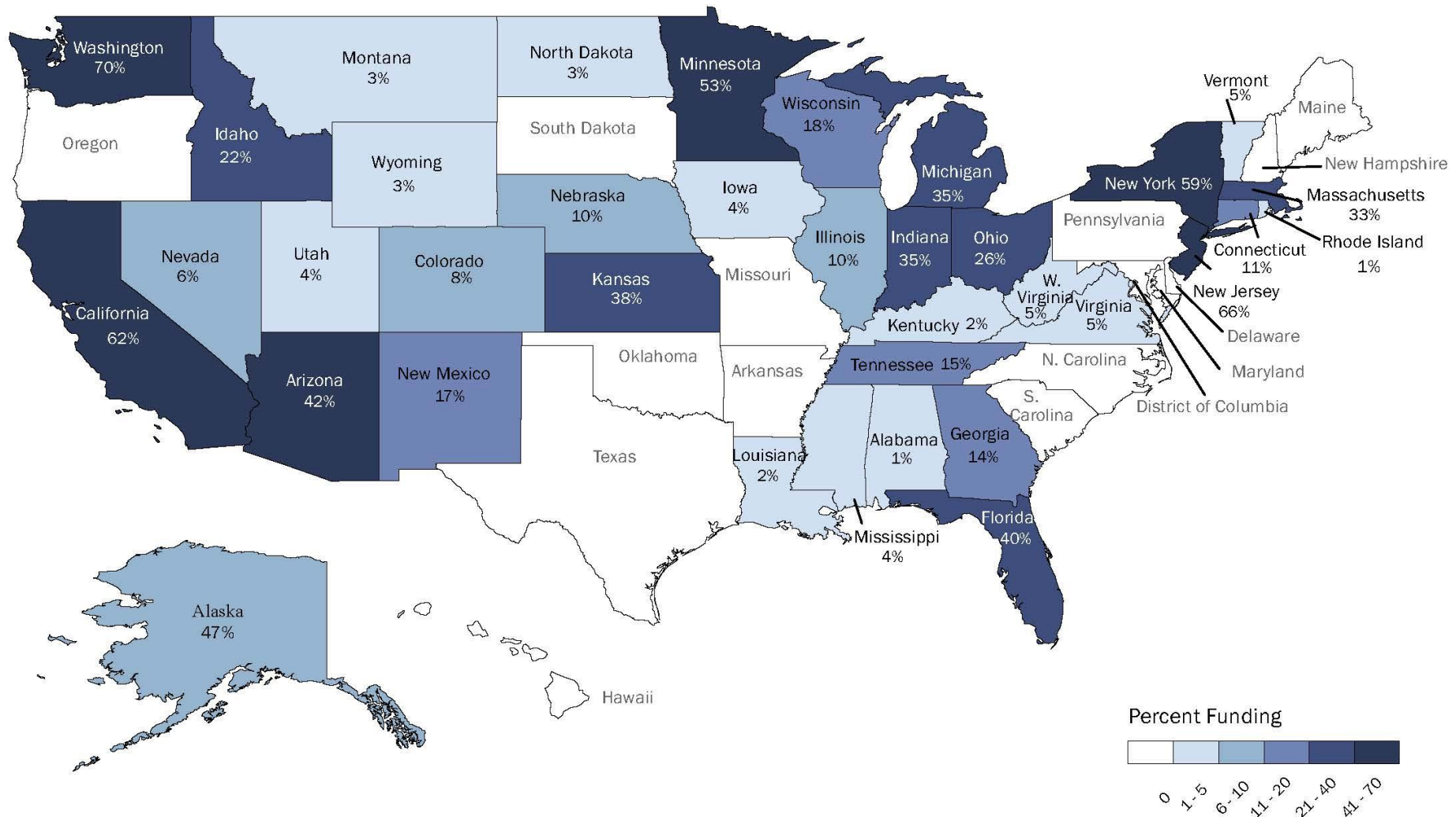
# Highway Safety Improvement Program (HSIP)

## Percent of HSIP Funding Toward Local Projects

2014

National Average: 14.25%

Total Spending on Local Roads: \$364M



# Local Road Safety Plans

## From HSIP Guidance:

- HSIP projects must be consistent with SHSP
- Projects must be data-based or supported
- HSIP funds used to
  - maximize projects with the greatest potential to reduce fatalities and serious injuries
  - Support safety performance targets
  - Implement proven effective strategies
- Cost effectiveness of projects to be considered during project selection and prioritization

# Local Road Safety Plans

- YES!! LRSP development can be funded with HSIP funds
  - However, it must be included in the State SHSP

- **From HSIP Guidance**

**Non-infrastructure projects** limit non-infrastructure activities to only those listed below:

- The conduct of model traffic enforcement activity at a railway-highway crossing
- **Transportation safety planning**
- Collection, analysis, and improvement of safety data
- Planning integrated interoperable emergency communications equipment, operational activities, or traffic enforcement activities (including police assistance) relating to work zone safety; and
- A road safety audit



# Local Road Safety Plans

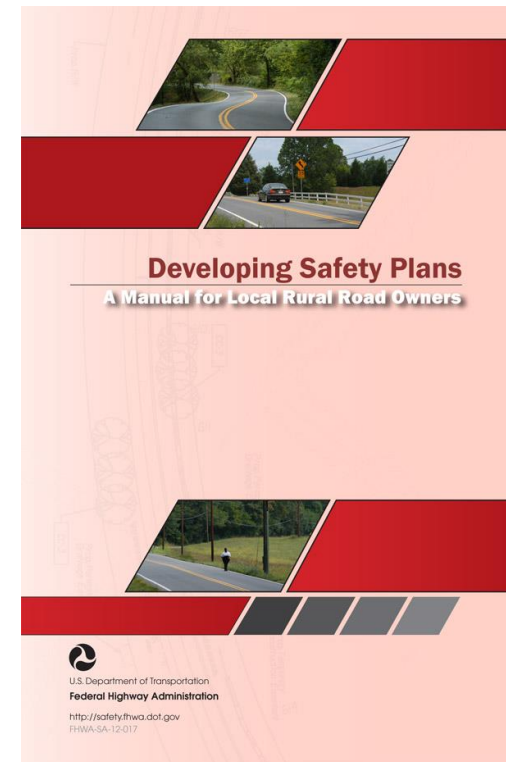
## Developing Safety Plans Manual Includes:

- Template for Kickoff Meeting Agenda
- Sample Emphasis Areas
- Emphasis Area Table
- Template for LRSP
- Resources for assistance

[http://safety.fhwa.dot.gov/local\\_rural/training/fhwasa12017/](http://safety.fhwa.dot.gov/local_rural/training/fhwasa12017/)

## Local & Rural Roads Safety Peer Assistance Program

[http://safety.fhwa.dot.gov/local\\_rural/training/p2p/](http://safety.fhwa.dot.gov/local_rural/training/p2p/)



# Thank You!

rosemarie.anderson@dot.gov



U.S. Department of Transportation  
**Federal Highway Administration**



**Safe Roads for a Safer Future**  
*Investment in roadway safety saves lives*

<http://safety.fhwa.dot.gov>

# Local Road Safety Plans Experiences with Development and Implementation

**“Saving Lives thru Local Road Safety Plans”**

NACo/FHWA Webinar

2:00 pm EDT, June 30, 2016

Richard (Rick) West, PE

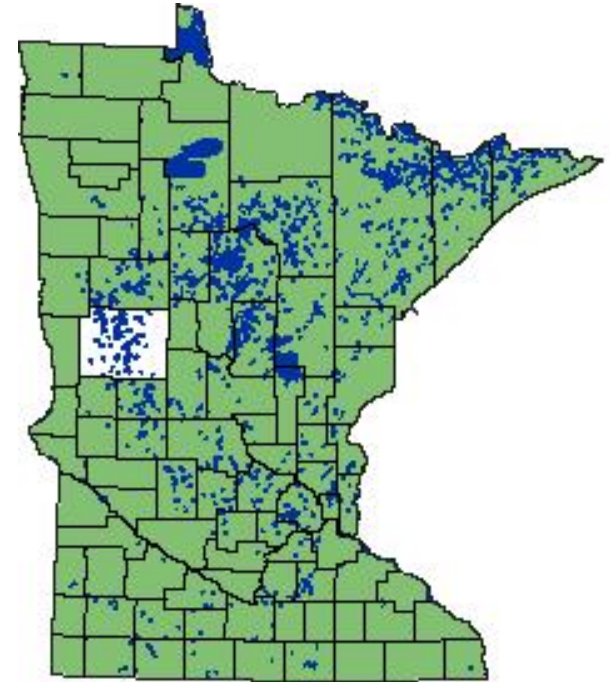
Public Works Director/County Engineer

Otter Tail County, MN



# Otter Tail County, MN

- \* Large rural county in West Central MN
- \* Land Area – 2232 square miles
- \* Population – 58,000
- \* 1048 Lakes
- \* Summer Population – 150,000
- \* 62 Townships
- \* 22 Cities



# Otter Tail County Highway System

- \* 1070 miles of County Highways (all paved)
- \* 2427 miles of Township Roads
- \* 142 Bridges
- \* One third of County system has 11 foot lanes and 2 foot gravel shoulders.
- \* 707 Horizontal Curves



# MN Counties Safety Background

## 2004 – 2015

- \* Traffic Safety Showcase – Mendocino Co, CA
- \* MN County Engineers Highway Safety Committee
- \* Local road safety research/implementation projects by MN Local Road Research Board
- \* Development of the MN Crash Mapping Analysis Tool
- \* Safe Roads Coalitions
- \* MN County Engineers strong relationships with Mn LTAP, Mn/DOT, Mn/DOT Office of State Aid, FHWA, NACE, and ATSSA
- \* Counties involved in Mn/DOT TZD efforts from beginning (2003 MN North Star Conference)

# MN Local Road Research Board (MN LRRB)

## Safety Projects

Advanced Dynamic LED Warning Signs for Rural Intersections Powered by Renewable Energy (2007 and 2011)

Analysis of Highway Design and Geometric Effects on Crashes (2010)

MN Crash Mapping Tool (2008)

Rural Road Safety Solutions Workshops (2008)

Maintain a Safer Roadway Workshops (2010)

Estimating the Crash Reduction and Vehicle Dynamic Effects of Flashing LED Stop Signs (2009)

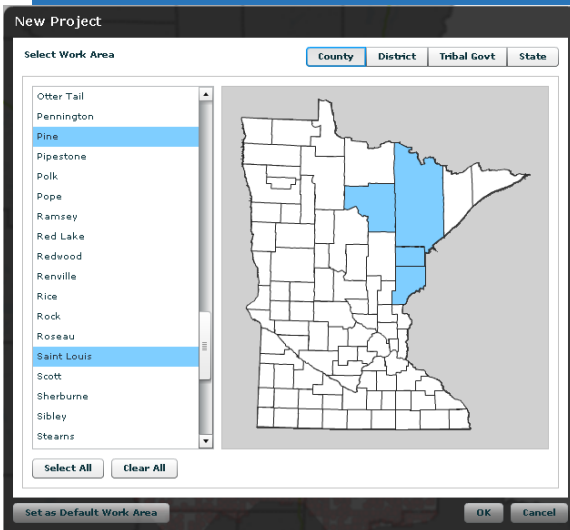
Best Practices and Policy Guidance County Roadway Safety(2011)

Best Practices for Sign Reduction on the Local System (2011)

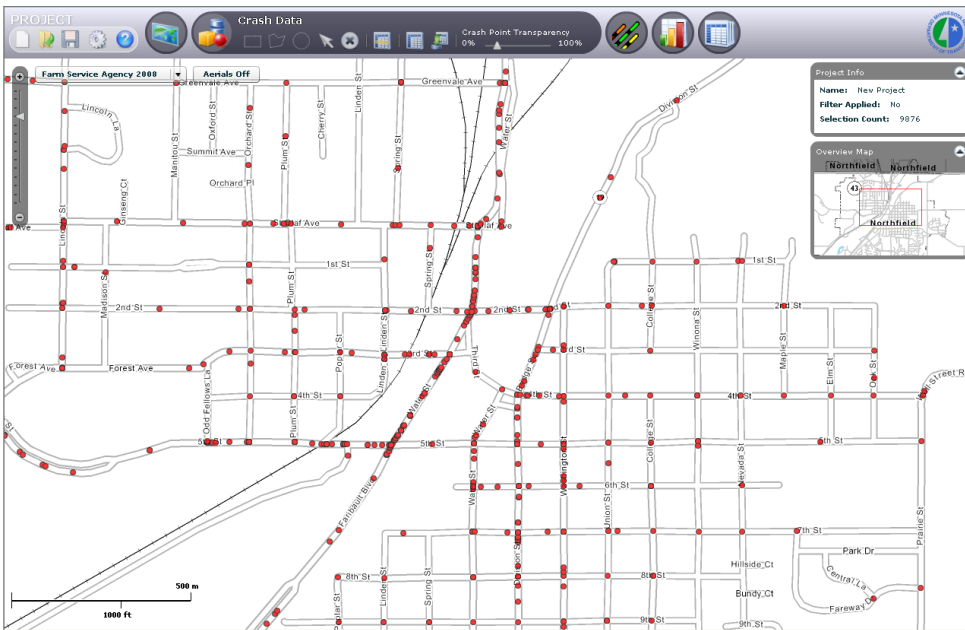
Lighting Levels for Isolated Intersections Leading to Safety Improvements (2012)

Traffic Sign Life Expectancy (2012)

# Minnesota Crash Mapping Analysis Tool (MnCMAT)

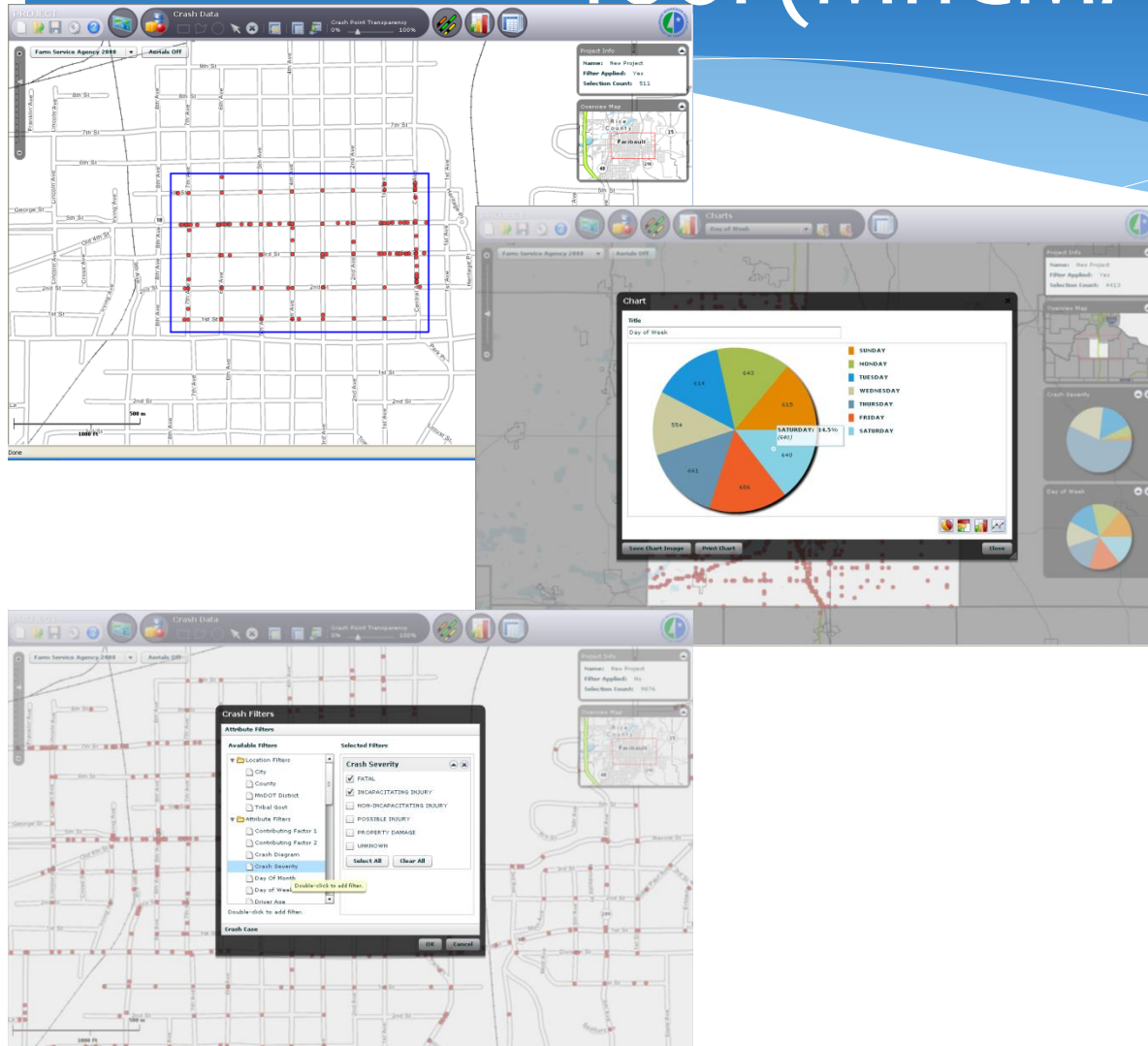


- \* In order to assist cities and counties in gaining a better understanding of crash characteristics on their systems, Minnesota Local Road Research Board and Minnesota County Engineers Association (MCEA) have made the MnCMAT tool available
- \* Map-based computer application that provides 10 years of crash data for every roadway in Minnesota
- \* Individual crashes are spatially located by reference point along all roadways
- \* Up to 67 pieces of information are provided for each crash, including route, location (reference point), date/day/time, severity, vehicle actions, crash causation, weather, road characteristics, and driver condition
- \* Analysts can select specific intersections or roadway segments for study. An overview of the entire county, city, MnDOT district or tribal government can also be generated.





# Minnesota Crash Mapping Analysis Tool (MnCMAT)



- \* The recommended analytical process for conducting a safety/crash study is to compare **Actual** conditions at a specific location (intersection or segment of highway) compared to **Expected** conditions (based on documenting the average characteristics for a large system of similar facilities).
- \* MnCMAT supports this analytical process by providing both the data for individual locations and for larger systems – individual or multiple counties.
- \* For more information about MnCMAT, consult the website: [http://www.dot.state.mn.us/stateaid/sa\\_crashmapping.html](http://www.dot.state.mn.us/stateaid/sa_crashmapping.html)

# Greater Minnesota Crash Data Overview

Source: MnCMAT Crash Data, 2004-2008  
Severe is fatal and serious injury crashes (K+A).

**Example**  
All – %  
Severe – %

**5 Year Crashes**  
165,739  
5,770

-ATP's 1, 2, 3, 4, 6, 7, and 8 – NO Metro

**State System**  
76,992 – 46%  
2,362 – 41%

**CSAH/CR**  
39,073 – 24%  
2,242 – 39%

**City, Twnshp, Other**  
49,674 – 30%  
1,166 – 20%

**Urban**  
14,599 – 37%  
382 – 17%

**Rural**  
24,474 – 63%  
1,860 – 83%

**Not Inters-Related**  
5,271 – 36%  
199 – 52%

**Unknown/Other**  
1,880 – 13%  
23 – 6%

**Inters-Related**  
7,448 – 51%  
160 – 42%

**Run Off Road** – 1,283 (24%), 74 (37%)  
**Head On** – 361 (7%), 27 (14%)  
**Rear End** – 1,315 (25%), 21 (11%)  
**Right Angle** – 529 (10%), 18 (9%)

**Signalized**  
2,189 – 29%  
36 – 22%

**All Way Stop**  
438 – 6%  
6 – 4%

**Thru-Stop**  
2,810 – 38%  
70 – 44%

**Other/Unknown**  
2,011 – 27%  
48 – 30%

**Right Angle** – 651 (30%), 20 (56%)  
**Rear End** – 753 (34%), 5 (14%)  
**Left Turn** – 361 (17%), 4 (11%)  
**Head On** – 70 (3%), 2 (6%)

**Right Angle** – 1,359 (48%), 41 (59%)  
**Head On** – 70 (3%), 7 (10%)  
**Left Turn** – 283 (10%), 4 (6%)  
**Rear End** – 368 (13%), 4 (6%)

**Animal**  
4,407 – 18%  
74 – 4%

**Not Animal**  
20,067 – 82%  
1,786 – 96%

**Inters-Related**  
5,938 – 30%  
535 – 30%

**Unknown/Other**  
1,502 – 7%  
66 – 4%

**Not Inters-Related**  
12,627 – 63%  
1,185 – 66%

**Other/Unknown**  
2,755 – 47%  
248 – 46%

**Signalized**  
249 – 4%  
5 – 1%

**All Way Stop**  
199 – 3%  
19 – 4%

**Thru-Stop**  
2,735 – 46%  
263 – 49%

**Run Off Road** – 1,047 (38%), 93 (38%)  
**Right Angle** – 297 (11%), 50 (20%)  
**Head On** – 119 (4%), 26 (11%)  
**Left Turn** – 186 (7%), 20 (8%)

**Head On, SS Opp**  
821 – 7%  
129 – 11%

**On Curve**  
284 – 35%  
47 – 36%

**Run Off Road**  
8,367 – 66%  
790 – 67%

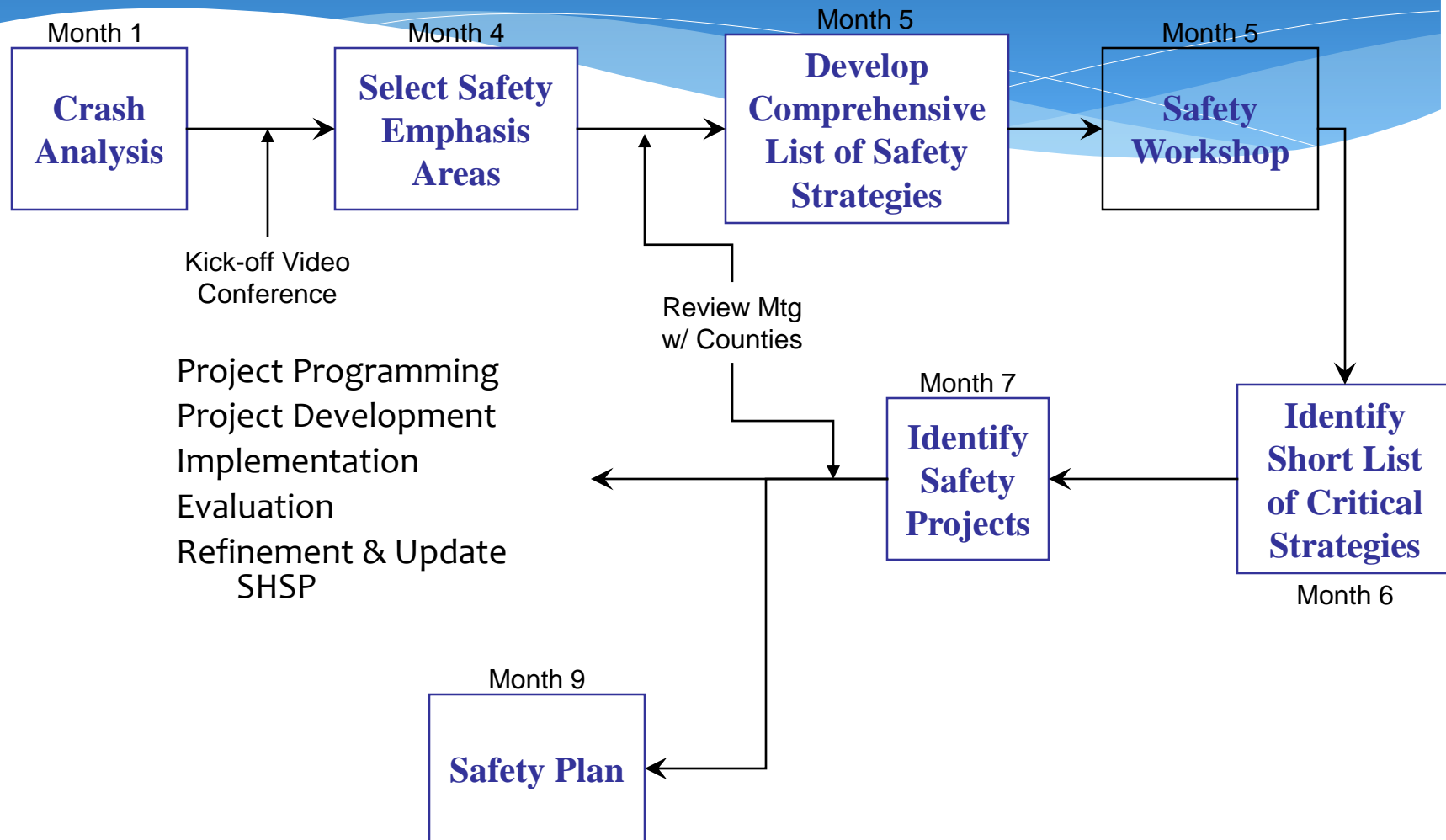
**On Curve**  
3,550 – 42%  
399 – 51%

**Right Angle** – 968 (35%), 145 (55%)  
**Run Off Road** – 360 (13%), 23 (9%)  
**Left Turn** – 183 (7%), 11 (4%)  
**Rear End** – 287 (11%), 8 (3%)

# MN HSIP Funding Splits – State vs Local

Fatal + Serious Injury Crashes (2009-2011)						HSIP and HRRR Distribution			
District	TH	TH Percent of ATP Total	Local	Local Percent of ATP Total	Total Number of F+ A injury	% F + A Injury Crashes by ATP (2009-2011)	HSIP/HRRR setaside per ATP	State HSIP setaside Dollars	Local HSIP setaside Dollars
1	178	48.1%	192	51.9%	370	8.3%	1,618,500	\$ 778,630	\$ 839,870
2	71	43.6%	92	56.4%	163	4.9%	955,500	\$ 416,199	\$ 539,301
3	241	41.3%	342	58.7%	583	14.6%	2,847,000	\$ 1,176,890	\$ 1,670,110
4	116	44.6%	144	55.4%	260	6.7%	1,306,500	\$ 582,900	\$ 723,600
6	179	39.1%	279	60.9%	458	11.7%	2,281,500	\$ 891,678	\$ 1,389,822
7	133	42.4%	181	57.6%	314	7.9%	1,540,500	\$ 652,505	\$ 887,995
8	120	46.3%	139	53.7%	259	6.9%	1,345,500	\$ 623,398	\$ 722,102
M	478	30.9%	1069	69.1%	1547	39.0%	7,605,000	\$ 2,349,832	\$ 5,255,168
<b>TOTAL</b>	<b>1516</b>	<b>38.3%</b>	<b>2438</b>	<b>61.7%</b>	<b>3954</b>	<b>100.0%</b>	<b>19,500,000</b>	<b>\$ 7,472,032</b>	<b>\$ 12,027,968</b>

# Project Approach



# Otter Tail County

## COUNTY ROADWAY



Moving Toward **ZERO** Deaths

August 2011



Prepared by:  
CH2M HILL  
SRF Consulting Group, Inc.

## Plan Contents

- \* Description of Safety Emphasis Areas.
- \* Identification of high priority, low cost Safety Strategies.
- \* Documentation of at-risk locations on roadway segments, horizontal curves, and intersections based on crash data.
- \* Development of \$7,200,000. of suggested safety projects.
- \* Cost of plan development - \$40,000.



“Local Road Safety Plans provide practitioners with a detailed, data based, prioritized, county-wide safety plan to guide and support future safety investments.”

Rick West, Otter Tail County Public Works Director/County Engineer

# Risk Factors

## Intersections (244)

- \* Geometry – Inter. Skew
- \* Geometry – Roadway (on or near curve)
- \* Commercial Development in Quadrants
- \* Distance to Previous STOP
- \* ADT Ratio
- \* R/R Crossing on Min. Appr.
- \* Crash History

## Curves (707)

- \* Curve Radius
- \* Traffic Volumes
- \* Intersection in Curve
- \* Visual Trap
- \* Crash Experience

# Risk Factors



## Segments

- \* ADT Range
- \* Access Density
- \* Road Departure Density
- \* Critical Radius Curve Density
- \* Edge Risk (Shoulder width/inslope/clear zone)



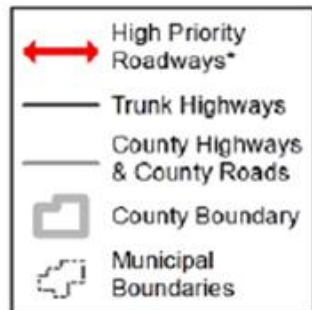
# Summary of Results from Prioritized Segments

**TABLE 3-3**

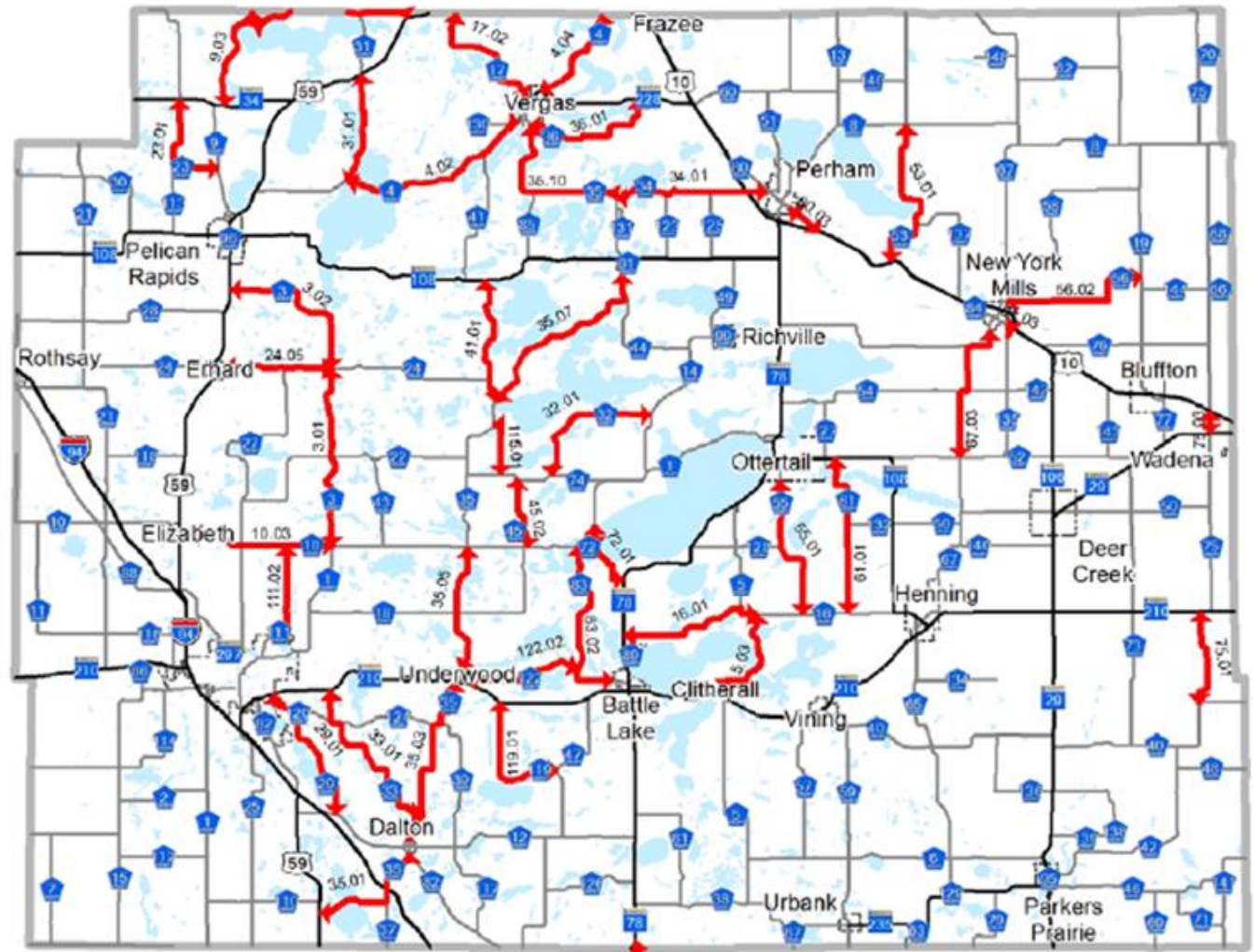
Summary of Otter Tail County Prioritized Segments

Segment Ranking	# of Segments	% of Segments	Miles	% of Miles
★★★★★	4	2%	26.0	3%
★★★★	12	6%	67.9	7%
★★★	26	13%	138.2	14%
★★	61	32%	303.7	30%
★	62	32%	325.4	32%
-	28	15%	142.9	14%
	193	100%	1004.1	100%

# Otter Tail County High Priority Segment Map



\* Map reflects segments with three or more stars



# Otter Tail County Segment Project Summary

Rank	Corridor #	Route #	Start	End	Length	Ranking	2' Shoulder Pave+RS +Safety Wedge	Rumble Strip	Rumble StripE	6" Latex Marking	6" Wet Reflective Epoxy in Grooves	Project Cost
1	34.01	CSAH 34	CSAH 35	PERHAM CORP LMTS	6.8	★★★★★	4.8	0.0	0.0	0.0	2.0	\$209,882
2	4.04	CSAH 4	VERGAS CORP LMTS	BECKER COUNTY LINE	4.7	★★★★★	0.0	0.0	3.9	0.0	0.8	\$20,445
3	35.07	CSAH 35	CSAH 41	DENT CORP LMTS	9.3	★★★★★	0.0	0.0	6.0	0.0	3.3	\$48,825
4	9.03	CSAH 9	MNTH 34	BECKER COUNTY LINE	5.2	★★★★★	3.0	0.0	0.0	0.0	2.2	\$139,204
5	31.02	CSAH 31	USTH 59	CSAH 20	2.9	★★★★	0.0	0.0	0.0	0.0	2.9	\$24,650
6	64.01	CSAH 64	MNTH 78	DOUGLAS COUNTY LINE	0.6	★★★★	0.6	0.0	0.0	0.0	0.0	\$24,000
7	35.05	CSAH 35	UNDERWOOD CORP LMTS	CSAH 1	6.0	★★★★	6.0	0.0	0.0	0.0	0.0	\$240,000
8	5.03	CSAH 5	CLITHERALL CORP LMTS	CSAH 16	4.7	★★★★	0.0	0.0	0.0	0.0	4.7	\$39,950
9	35.01	CSAH 35	USTH 59	DALTON CORP LMTS	5.8	★★★★	3.6	0.0	0.0	0.0	2.2	\$162,574
10	3.01	CSAH 3	CSAH 10	CSAH 24	8.4	★★★★	0.0	4.6	3.8	0.0	0.0	\$27,090
11	33.01	CSAH 33	CSAH 35	MNTH 210	8.5	★★★★	0.0	0.0	8.5	0.0	0.0	\$29,750
12	83.02	CSAH 83	BATTLE LAKE CORP LMTS	CSAH 1	8.5	★★★★	0.0	0.0	5.8	0.0	2.7	\$43,350
13	122.02	CNTY 122	UNDERWOOD CORP LMTS	CSAH 83	5.4	★★★★	0.0	0.0	2.7	0.0	2.7	\$32,400
14	3.02	CSAH 3	CSAH 24	USTH 59	7.5	★★★★	0.0	6.6	0.0	0.0	0.9	\$27,450
15	20.01	CSAH 20	CSAH 9	USTH 59	5.1	★★★★	0.0	0.0	3.8	0.0	1.3	\$24,225
16	111.02	CNTY 111	FERGUS FALLS CORP LMTS	CSAH 10	4.5	★★★★	0.0	0.0	4.5	0.0	0.0	\$15,750
17	4.02	CSAH 4	CSAH 31	VERGAS CORP LMTS	8.9	★★★	0.0	0.0	3.0	0.0	5.9	\$60,520
18	31.01	CSAH 31	CSAH 4	USTH 59	5.1	★★★	0.0	0.0	1.6	0.0	3.5	\$35,445
19	67.03	CSAH 67	CSAH 52	NEW YORK MILLS CORP LMTS	6.9	★★★	0.0	0.0	6.9	0.0	0.0	\$24,150
20	35.03	CSAH 35	DALTON CORP LMTS	UNDERWOOD CORP LMTS MNTH 210	8.3	★★★	0.0	0.0	0.0	0.0	8.3	\$70,550
21	24.05	CSAH 24	ERHARD CORP LMTS	CSAH 3	4.8	★★★	0.0	0.0	4.8	0.0	0.0	\$16,800
22	56.02	CSAH 56	NEW YORK MILLS CORP LMTS	CSAH 19	6.6	★★★	0.0	0.0	6.6	0.0	0.0	\$23,100
23	55.01	CSAH 55	CSAH 16	OTTERTAIL CORP LMTS	6.8	★★★	0.0	0.0	6.8	0.0	0.0	\$23,800
24	29.01	CSAH 29	CSAH 82	MNTH 210	7.4	★★★	0.0	0.0	4.6	0.0	2.8	\$39,960
25	72.01	CSAH 72	MNTH 78	CSAH 83	3.0	★★★	0.0	0.0	0.0	0.0	3.0	\$25,500
26	75.01	CSAH 75	CSAH 40	MNTH 210	4.5	★★★	0.0	0.0	0.0	0.0	0.0	\$0
27	23.01	CSAH 23	CSAH 9	MNTH 34	5.2	★★★	0.0	0.0	0.0	5.2	0.0	\$3,380
28	16.01	CSAH 16	MNTH 78	CSAH 5	5.7	★★★	0.0	0.0	3.2	0.0	2.5	\$32,490
29	41.01	CNTY 41	CSAH 35	MNTH 108	6.0	★★★	0.0	0.0	3.7	0.0	2.3	\$32,400
30	36.01	CSAH 36	CSAH 35	MNTH 228	6.6	★★★	0.0	0.0	3.1	0.0	3.5	\$40,590
31	45.02	CSAH 45	CSAH 1	CSAH 74	3.9	★★★	0.0	0.0	2.8	0.0	1.1	\$19,110



## STATE AID FOR LOCAL TRANSPORTATION

### Environmental Documentation for Federal Projects with Minor Impacts

Sept 2010

Page 1 of 2

**SP(s)** \_\_\_\_\_ **MN Proj. No(s):** \_\_\_\_\_

**Project Location:** (see attached project location map) \_\_\_\_\_

**Project Purpose and Need:** \_\_\_\_\_

**Project Type:** check all that apply<sup>1</sup>

- ☐ Pavement Markings<sup>2</sup>
- ☐ Rumble Stripes
- ☐ Rumble Strips
- ☐ Signing Installation<sup>2</sup>
- ☐ Guardrail Installation
- ☐ Shoulder paving (No widening)
- ☐ Lighting
- ☐ Engineering Studies
- ☐ SRTS Education/Enforcement

**Project Manager**

Name: \_\_\_\_\_  
Title: \_\_\_\_\_  
Address: \_\_\_\_\_  
Address2: \_\_\_\_\_  
Phone: \_\_\_\_\_  
Email: \_\_\_\_\_

<sup>1</sup> Any other type of work will require a project memo

<sup>2</sup> Project will be designed in accordance with the MMUTCD

#### **Estimated project costs**

Federal amount \$ \_\_\_\_\_  
Federal amount other \$ \_\_\_\_\_ (Enter Funding Type Here)  
Other funds \$ \_\_\_\_\_ (Enter Funding Type Here)  
Total Project cost \$ \_\_\_\_\_

Project is listed in the Select STIP Year State Transportation Improvement Program in year Year as Sequence number \_\_\_\_\_.

Desired date to begin work: Month/Year.

#### **Method of Execution of work.**

- ☐ County/City will let work for competitive bids.
- ☐ County/City will purchase materials under a competitive process and install with their own forces (**NO** federal reimbursement for installation costs).
- ☐ County/City will hire a consultant to perform an engineering study.

**Environmental Impacts:** Check appropriate boxes

#### **Section 106 (Cultural Resources)**

- ☐ No Historic Properties are affected (see attached letter) (*No Adverse Effect or Adverse Effect will require a project memo*)
- ☐ Engineering Studies (No letter Required)

#### **Endangered Species**

- ☐ Project is in a county which has no federal threatened and endangered species
- ☐ Project will have no impact on federal threatened or endangered species (see attached letter)



☐ Engineering Studies (No letter Required)

***Federal Action Determination Statement***

Based on the environmental study in accordance with 23 CFR 771.117, it is determined that the proposed improvement is a Class II Action (categorical exclusion) anticipated to have no foreseeable change on the quality of the human environment.

***Recommended:***

\_\_\_\_\_  
County Engineer

\_\_\_\_\_  
Date

***Reviewed and Recommended***

\_\_\_\_\_  
District State Aid Engineer

\_\_\_\_\_  
Date

***Approved***

\_\_\_\_\_  
Director, State Aid for Local Transportation

\_\_\_\_\_  
Date

# Sample Segment Project Form

## CSAH 34 from CSAH 35 to PERHAM CORP LMTS Project Agency: Otter Tail County

### Roadway Data

Type: CSAH  
Number: 34  
Verbal  
Start: CSAH 35  
End: PERHAM CORP LMTS  
City/Rural: Rural  
County: Otter Tail  
ATP: 4  
ADT: 1148  
Facility Type: 2-Lane  
Lane Width: 11'  
Shoulder Width: 2'  
Shoulder Type: gravel  
Length (miles): 6.8  
Rumble Installed: No



### Crash Data

2005-2009 Mn/CMAT Crash Data

5 years

	Total	Road Dept	K+A
Crashes	15	11	1
Density (per mile per year)	0.44	0.32	0.03
Rate (per MVM)	1.05	0.77	0.07

### Ranking Criteria

	Value	Critical	Risk Ranking
ADT Range	1148	600 to 1199	*
RD Density	0.32	0.08	*
Access Density	11.32	10.80	*
Curve Critical Radius Density	0.59	0.35	*
Edge Risk	3	2 or 3	*
*****			

### Short List of Strategies Considered

Description	Type	Cost per mi	Mileage	Cost	Notes - 6" edgeline 2010
2' Shoulder Pave+RS+Safety Wedge	Proactive	\$40,000	4.8	\$193,120	HSIP. Project selection
Rumble Strip	Proactive	\$3,000	0.0	\$0	adjusted for Little McDonald
Rumble StripE	Proactive	\$3,500	0.0	\$0	Lake, Paul Lake and Rusch
6" edgelines	Proactive	\$650	0.0	\$0	Lake shoreline properties.
Ground In Wet-Reflective Markings	Proactive	\$8,500	2.0	\$16,762	

### Implementation Cost

Federal Funds	\$188,894
Local Match (10% of Total project cost)	\$20,988
<b>Total Project Cost</b>	<b>\$209,882</b>

Rank: 1  
Segment ID: 34.01  
Date: 4/27/2011



## Examples of HSIP Projects 2009 - 2011

Safety Strategy	Location/Quantity	Cost
Lane Marking and Curve Enhancements	Joint contract with 12 counties to install 1,670 miles of 6-inch edge lines, 46 miles of Rumble StripEs and 2,267 chevron signs (distributed among 325 horizontal curves)	\$1,600,000
Intersection Lighting	Joint contract with six counties to install overhead street lighting at 30 intersections	\$360,000
Intersection Signs and Marking Upgrade	Install/upgrade TH junction signs, stop ahead markings and stop bars at 91 Intersections (Otter Tail County Only)	\$158,000
CSAH Shoulder Paving/Rumble StripEs	Install 5.3 miles of four-foot paved shoulder with a one-foot rumble and a six-inch stripe imbedded within the rumble (Otter Tail County Only)	\$293,000
	Total Funding	\$2,411,000

# 2014 HSIP Projects

## Otter Tail County Projects - Summary

HSIP 2014 - 2016

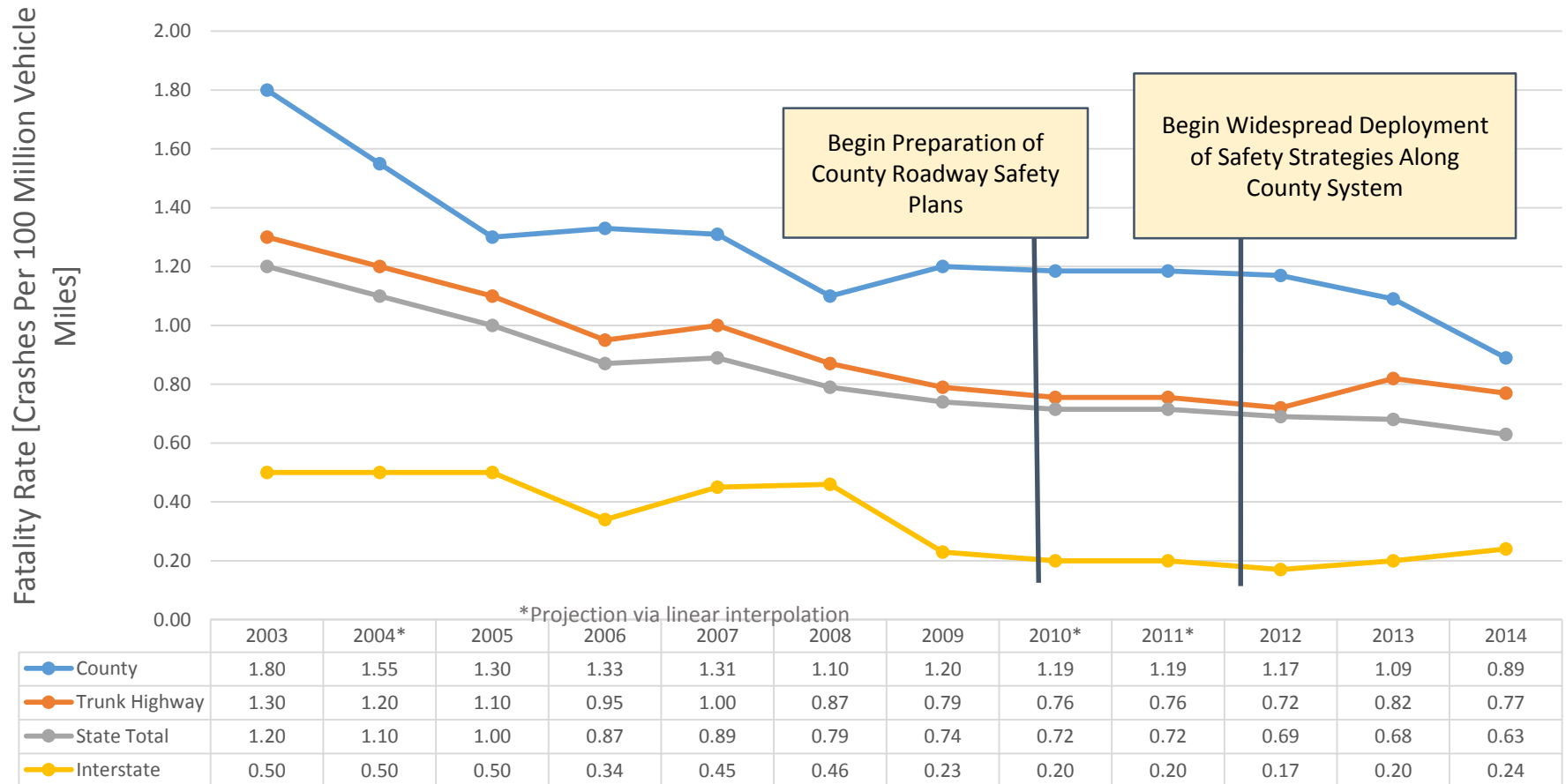
Priority	Focus Area	Locations	Cost	Federal	Local	Work Type
1	Lane Departure	13	\$348,580.00	\$313,722.00	\$34,858.00	Enhanced Edge Line Markings - Phase I
2	Lane Departure	19	\$349,835.00	\$314,851.50	\$34,983.50	Enhanced Edge Line Markings - Phase II
3	Intersection Improvements	44	\$104,750.00	\$94,275.00	\$10,475.00	Enhanced Signage and Marking
4	Lane Departure	25	\$82,500.00	\$74,250.00	\$8,250.00	Chevron Installation on Curves
5	Lane Departure	42	\$283,052.00	\$254,746.80	\$28,305.20	Shoulder Paving and Rumble Strips on Curves - Phase IA
6	Lane Departure	59	\$344,064.00	\$309,657.60	\$34,406.40	Shoulder Paving and Rumble Strips on Curves - Phase IB
7	Intersection Improvements	21	\$203,000.00	\$182,700.00	\$20,300.00	Lighting
8	Lane Departure	78	\$332,450.00	\$299,205.00	\$33,245.00	Shoulder Paving and Rumble Strips on Curves - Phase IIA
9	Lane Departure	48	\$322,065.00	\$289,858.50	\$32,206.50	Shoulder Paving and Rumble Strips on Curves - Phase IIB
10	Lane Departure	42	\$264,964.00	\$238,467.60	\$26,496.40	Shoulder Paving and Rumble Strips on Curves - Phase IIC
11	Lane Departure	50	\$314,661.00	\$283,194.90	\$31,466.10	Shoulder Paving and Rumble Strips on Curves - Phase IID
		441	\$2,949,921.00	\$2,654,928.90	\$294,992.10	



# Positive Outcome of MN Local Road Safety Plans

(Prepared by Howard Preston, CM2H Hill)

## Minnesota Fatality Rates By System



# Highway Safety Culture Change in Otter Tail County

- \* 6 inch edge line installed on entire system.
- \* Increased resources for annual sign replacements and annual pavement marking contract.
- \* Safety Edge on all paving projects.
- \* Paving of shoulders (inside and outside) with rumble stripes/strips on all curves on surfacing projects.
- \* Increased resources for brushing/clearing sight lines.
- \* Increased resources for gravel shoulder maintenance.

# Summary

- \* Provides information to educate the County Board and the public.
- \* Provides data sheets for HSIP funding applications.
- \* Provides practitioners with a detailed, prioritized county-wide, safety plan to guide and support future safety investments.
- \* The benefits far out weigh the challenges.
- \* Caused a highway safety culture change in Otter Tail County.

# Summary

- \* County Board is very supportive of safety program.
- \* Federal, State and local Highway Safety Champions are very important to the successful development and implementation of the plan.
- \* The need for public outreach and education cannot be overstated.
- \* MN Local Road Safety Plans – Phase 2 is in the development stage.

“There is no silver bullet in reference to highway safety. It is about doing many small things to the best of our abilities and doing them consistently.”

Quote from the MN County Engineers who attended the  
2004 FHWA Safety Showcase in Mendocino Co., CA



# Thank you

Richard West

Otter Tail County Public Works  
Director/County Engineer

Phone: 218-998-8473

Email: [rwest@co.ottertail.mn.us](mailto:rwest@co.ottertail.mn.us)

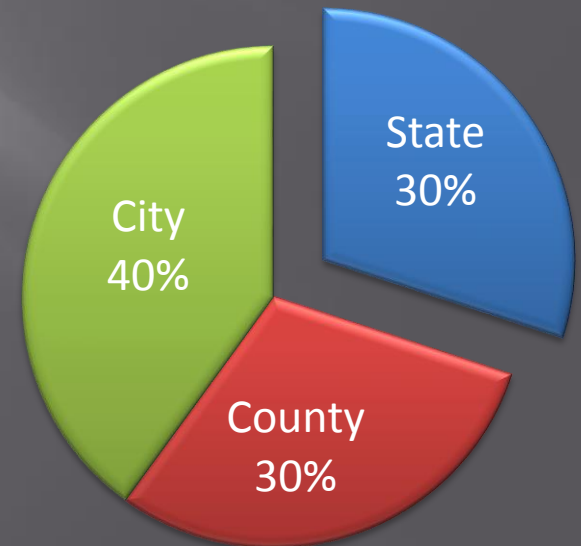
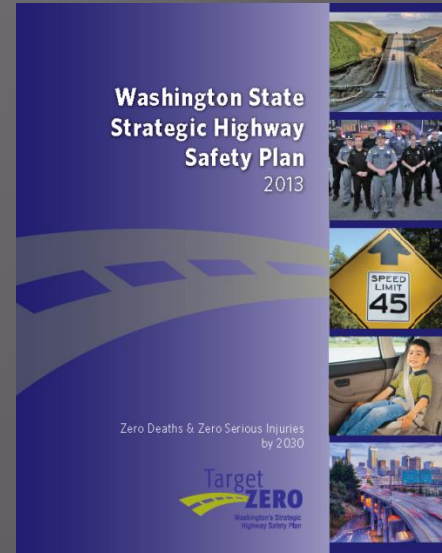
Address: 505 S. Court St., Suite 1  
Fergus Falls, MN 56537

# THE WHY, HOW, AND WHAT OF LOCAL ROAD SAFETY PLANS

Matthew Enders, P.E.  
Washington State DOT  
Local Programs Division  
June 30, 2016

# Program Basics

- ▣ Funding split with state DOT
  - Data driven, using fatalities & serious injuries
  - Based on priority 1 infrastructure emphasis areas in the SHSP (run-off-the-road, intersections)
  - 70% local, 30% state
- ▣ Funding split of 70% for local agencies
  - Based on same data-driven process as state/local





# Modern County Safety Efforts

## 2009 HRRRP

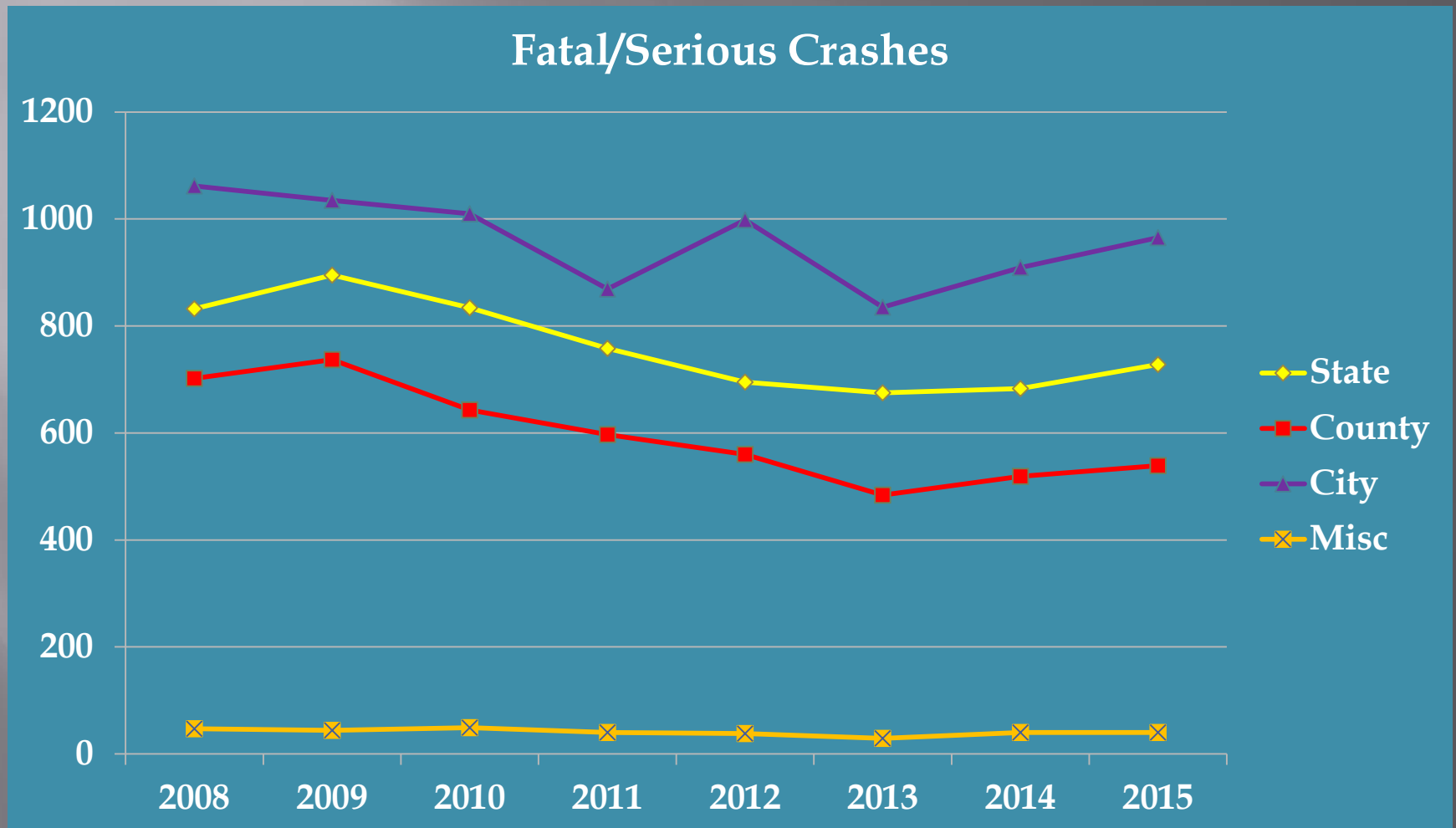
- \$4.8 million, run-off-road focus
- Top 10 counties for fatal/serious per mile & per MVM traveled
- Varied funding levels based on fatal/serious crashes per mile

## 2010 County Safety

- \$45.7 million, run-off-road & intersection focus
- All 39 counties
- Varied funding levels based on fatal/serious crashes per mile

- ▣ Projects must address fatal/serious crashes in a risk-based, low-cost & widespread approach

# Trends



# 2014 County Safety Program

- ▣ \$26.5 million
- ▣ All 39 counties eligible
- ▣ Varied funding levels based on fatal/serious crash frequency
- ▣ Risk-based, low-cost & widespread approach

Must develop a local road safety plan

# Why?

- ▣ To assist counties in determining safety priorities
  - Crash types, locations, countermeasures
- ▣ To create a more sustainable safety program
- ▣ To better advocate for county projects

46% of counties said they previously  
had a data driven safety plan

# How?

- ▣ Share LRSP Requirements
  - Data driven, ID key factors, prioritize network, ID countermeasures, prioritize projects
  - No new data collection
- ▣ Share Resources
  - Summary/comparison data, workshops, Systemic Safety Project Selection Tool (FHWA) & training, technical assistance
- ▣ Connect to HSIP Funds

92% of counties said workshops were helpful for developing a LRSP

# Summary/Comparison Data

2008-2012 County Data	Fatal/Serious Injury Crashes Only												Total Crashes											
	All Public Roads		All Counties		Cowliutz County								All Public Roads		All Counties		Cowliutz County							
	2008-2012	%	2008-2012	%	2008-2012	%	2012	2011	2010	2009	2008	2008-2012	%	2008-2012	%	2008-2012	%	2012	2011	2010	2009	2008		
Overall Numbers																								
Total # of Collisions	12,447		3,246		39		9	2	12	7	9	513,944		70,278		932		173	173	181	208	197		
# of Fatal Collisions	2,190	17.6%	682	21.0%	9	23.1%	1	1	3	3	1	2,190	0.4%	682	1.0%	9	1.0%	1	1	3	3	1		
# of Serious Injury Collisions	10,257	82.4%	2,564	79.0%	30	76.9%	8	1	9	4	8	10,257	2.0%	2,564	3.6%	30	3.2%	8	1	9	4	8		
# of Alcohol-Related Collisions	3,268	26.3%	1,078	33.2%	17	43.6%	6	0	5	4	2	38,860	7.6%	8,700	12.4%	165	17.7%	32	32	35	40	26		
Total # of Fatalities	2,375		732		9		1	1	3	3	1	2,375		732		9		1	1	3	3	1		
Total # of Injuries	17,770		4,503		54		12	1	13	11	17	235,108		35,239		478		83	90	109	106	90		
By Collision Type																								
Hit Fixed Object	3,439	27.6%	1,340	41.3%	24	61.5%	6	1	7	3	7	99,255	19.3%	28,374	40.4%	588	63.1%	114	120	113	129	112		
Overturn	1,281	10.3%	424	13.1%	3	7.7%	0	0	1	2	0	14,764	2.9%	4,893	7.0%	63	6.8%	10	9	12	18	14		
Angle (T)	1,369	11.0%	324	10.0%	3	7.7%	1	0	1	0	1	79,814	15.5%	9,440	13.4%	60	6.4%	12	11	13	13	13		
Hit Pedestrian	1,667	13.4%	208	6.4%	3	7.7%	1	1	1	0	0	8,927	1.7%	740	1.1%	8								
Head On	642	5.2%	182	5.6%	2	5.1%	0	0	0	1	1	2,895	0.6%	420	0.6%	2								
By Roadway Surface																								
Dry	9,085	73.0%	2,372	73.1%	29																			
Wet	2,644	21.2%	655	20.2%	9																			
By Light Condition																								
Daylight	7,169	57.6%	1,753	54.0%	24																			
Dark - No Street Lights	2,014	16.2%	941	29.0%	11																			
By Junction Relationship																								
Non-Intersection (Not Related)	6,705	53.9%	2,117	65.2%	31																			
Intersection-Related	4,107	33.0%	711	21.9%	3																			
By Roadway Curvature																								
Horizontal Curve	3,353	26.9%	1,282	39.5%	24	61.5%																		
Straight & Level	6,588	52.9%	1,397	43.0%	8	20.0%																		
Straight & Grade	2,165	17.4%	441	13.6%	6	15.0%																		
Vertical Curve	352	2.8%	132	4.1%	3	7.5%																		
Hit Fixed Object Crashes Only - By Fixed Object Hit																								
Tree / Stump (Stationary)	642	18.7%	334	24.9%	6	25.0%																		
Ran Over Embankment	299	8.7%	136	10.1%	3	12.5%																		
Earth Bank	249	7.2%	103	7.7%	3	12.5%																		
Fence	214	6.2%	105	7.8%	3	12.5%																		
By Contributing Circumstance																								
Exceeding Safe / Stated Speed	3,682	20.6%	1,236	25.5%	22	33.8%																		
Under Influence of Alcohol / Drugs	3,178	17.7%	1,016	20.9%	13	20.0%																		
Over Centerline	1,606	9.0%	619	12.8%	6	9.2%																		
Operating Defective Equipment	382	2.1%	101	2.1%	5	7.7%																		
Inattention / Distraction	1,587	8.9%	402	8.3%	4	6.2%																		
Improper Passing	272	1.5%	93	1.9%	4	6.2%																		
By Vehicle Type																								
Passenger Car	8,235	43.0%	1,797	40.1%	18	38.3%	4	0	6	5	3	499,063	52.7%	53,374	49.4%	551	46.0%	101	108	106	120	116		
Light Truck / SUV	7,126	37.2%	1,735	38.7%	13	27.7%	5	2	2	2	2	372,041	39.3%	46,614	43.2%	537	44.8%	96	101	98	122	120		
Motorcycle	2,459	12.8%	703	15.7%	12	25.5%	2	0	5	1	4	11,819	1.2%	2,320	2.1%	40	3.3%	8	2	2	4	3		
By Speed Limit																								
25 MPH	2,137	12.3%	369	8.8%	6	13.6%	1	1	1	2	1	135,462	16.8%	11,933	12.2%	156	14.5%	25	36	40	29	26		
30 MPH	2,192	12.6%	136	3.2%	4	9.1%	1	0	0	0	3	142,121	17.6%	4,875	5.0%	37	3.4%	6	5	4	12	10		
35 MPH	4,350	25.1%	1,519	36.3%	21	47.7%	6	1	9	2	3	224,655	27.8%	42,732	43.7%	679	63.2%	133	132	128	145	141		
40 MPH	1,312	7.6%	474	11.3%	8	18.2%	2	0	1	3	2	49,421	6.1%	10,122	10.4%	141	13.1%	23	12	22	38	46		
45 MPH	1,063	6.1%	444	10.6%	1	2.3%	1	0	0	0	0	34,008	4.2%	8,328	8.5%	17	1.6%	9	5	0	3	0		
50 MPH	1,944	11.2%	1,057	25.2%	4	9.1%	0	0	1	1	2	40,596	5.0%	16,905	17.3%	38	3.5%	4	6	11	7	10		

# Resources

## Shared Resources

- Summary Data
- Systemic Safety Project Selection Tool
- State SHSP
- FHWA Systemic Safety website/resources
- CMF Clearinghouse

## Most Commonly Used Resources (Survey)

- Summary Data
- Road Log Data
- Systemic Safety Project Selection Tool
- Crash Rates
- State SHSP



# What?

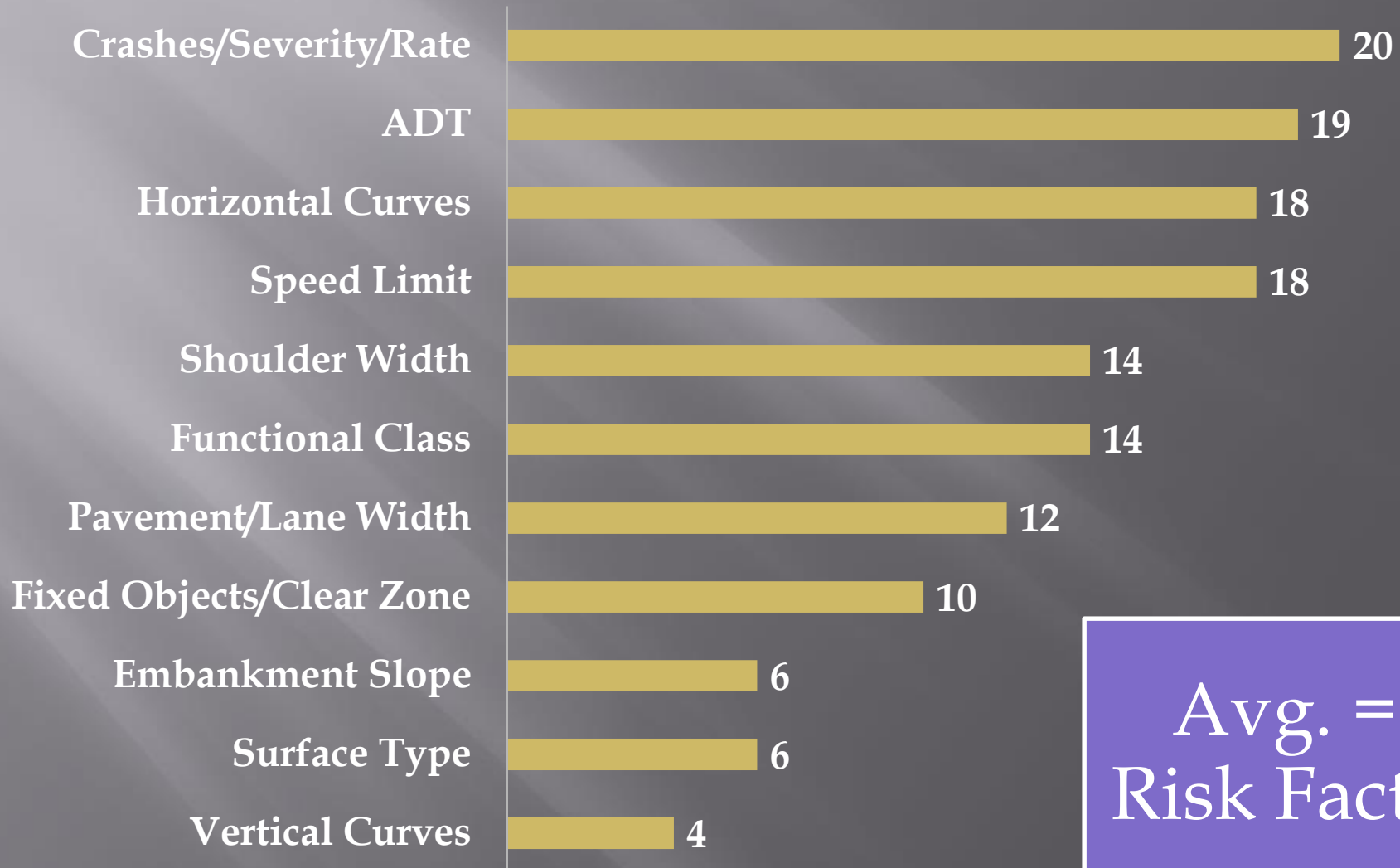
- 31 of 39 counties completed a LRSP

Total	\$515,000	\$775,000	\$1,222,990	\$1,904,165	\$883,640	\$2,895,000	\$1,032,200	\$2,904,588	\$1,394,000
Priority 1	Shoulders, slopes, clear zone, guardrail	Safety Plan	Shoulders, slopes	Guardrail, slopes	Data collection	Guardrail	Truck ramp, signing	Signing	Slopes, shoulders
Funding	\$315,000	\$200,000	\$270,000	\$553,723	\$102,500	\$570,000	\$544,200	\$37,927	\$300,850
100%	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Priority 2	Data collection	Curve Improvements	Guardrail	Guardrail, shoulders, fixed objects	Data collection	Guardrail	Guardrail, signing	Signing	Slopes, shoulders
Funding	\$200,000	\$575,000	\$188,990	\$1,350,442	\$30,000	\$120,000	\$292,700	\$30,705	\$104,500
100%	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Priority 3			CLRS		Guardrail	Guardrail	Guardrail, signing, sight distance	Signing	Slopes, shoulders
Funding			\$35,000		\$139,490	\$590,000	\$52,700	\$69,897	\$60,000
100%			Yes		Yes	Yes	Yes	Yes	Yes
Priority 4			Radar Speed Signs		Bridge rail	Guardrail	Guardrail, signing	Signing	Slopes, shoulders
Funding			\$50,000		\$170,250	\$530,000	\$142,600	\$73,318	\$337,700
100%			Yes		Yes	Yes	Yes	Yes	Yes
Priority 5			Guardrail		Bridge rail	Delineation		HFST	Data collection
Funding			\$359,000		\$107,750	\$260,000		\$74,326	\$15,000
100%			Yes		Yes	Yes		Yes	Yes
Priority 6			Shoulders, slopes, alignment		Bridge rail	Signing		Signing	Guardrail
Funding			\$320,000		\$124,250	\$110,000		\$51,201	\$475,200
100%			Yes		Yes	Yes		Yes	Yes
Priority 7					Bridge rail	Guardrail		HFST	Guardrail
Funding					\$84,000	\$275,000		\$60,876	\$90,750
100%					Yes	Yes		Yes	Yes
Priority 8					Bridge rail	Intersection reconstruct		Guardrail	Data collection
Funding					\$79,000	\$355,000		\$1,051,337	\$10,000
100%					Yes	Yes		Yes	Yes
Priority 9					Bridge rail	Intersection grade/alignment		HFST	
Funding					\$46,400	\$85,000		\$233,074	
100%					Yes	Yes		Yes	
Priority 10								Guardrail	
Funding								\$726,818	
100%								Yes	
Priority 11								HFST	
Funding								\$460,109	
100%								Yes	
Priority 12								Data collection	
Funding								\$35,000	
100%								Yes	

100% of counties said this effort was useful for identifying safety priorities (38% very useful, 62% somewhat useful)

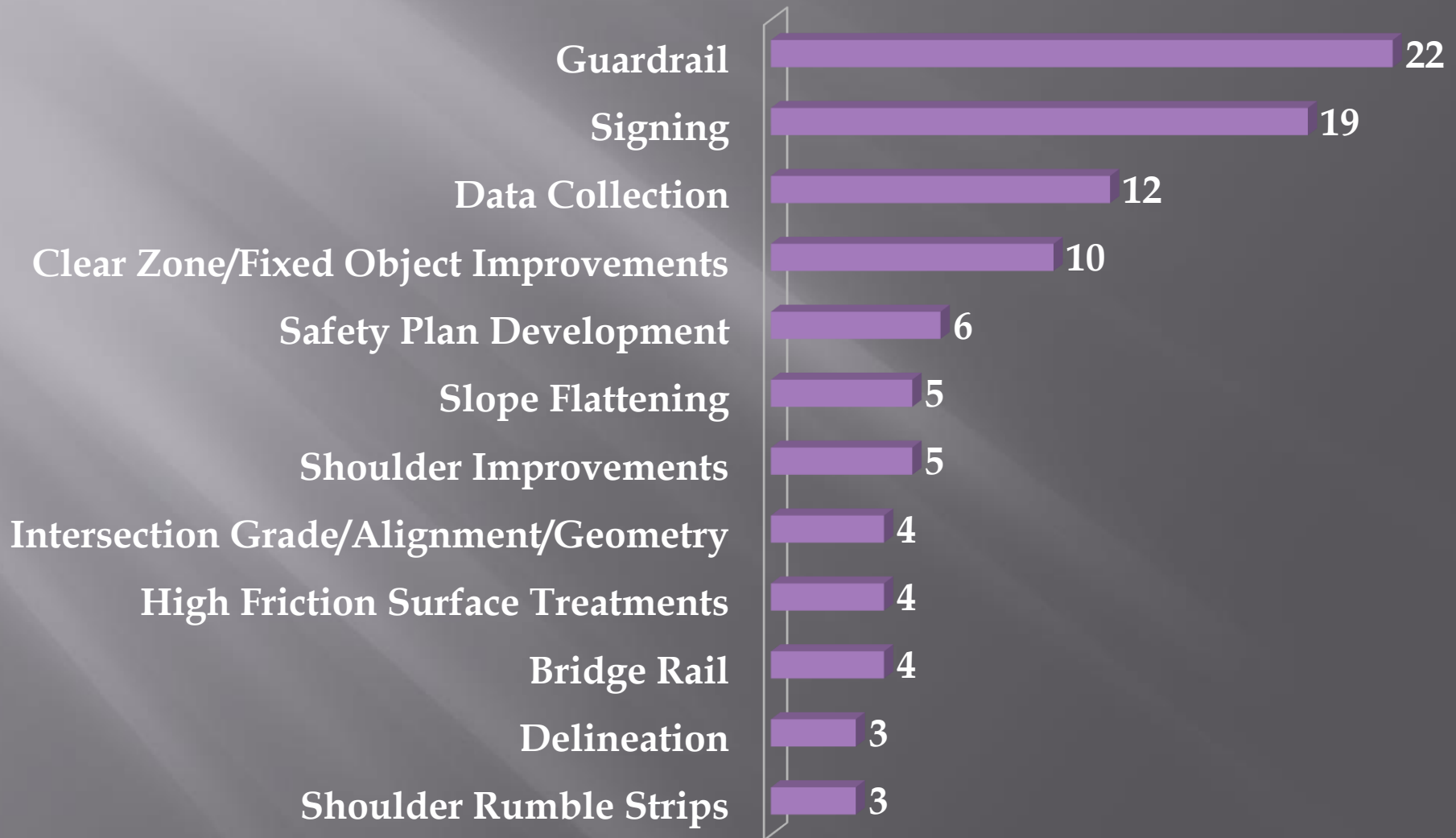


# Common Risk Factors



Avg. = 6  
Risk Factors

# Planned Countermeasures



# Outcomes/Next Steps

- ▣ Easy to use prioritized list of projects
  - Allowed for selection of both county priorities and HSIP priorities (maximize benefits)
- ▣ Will repeat process with counties
  - Counties may use/build on existing plans
  - Will provide an example LRSP
  - Will update/expand summary/comparison data

100% of counties would submit again if a LRSP was required

# Questions?

Matthew Enders, P.E.

Washington State DOT

[matthew.enders@wsdot.wa.gov](mailto:matthew.enders@wsdot.wa.gov)

(360) 705-6907

# Question & Answer session

- Type your question into the “Questions” box and the moderator will read the question on your behalf.

# Transportation Safety Webinars

April 6, 2016: **Enhancing Road Safety through the Improvement of Unsignalized Intersections**

June 30, 2016: **Saving Lives through Local Road Safety Planning**

Learn more and register at:  
[www.naco.org/webinars](http://www.naco.org/webinars)

# THANK YOU!

Additional questions or feedback?  
Contact Kathy Rowings at [krowings@naco.org](mailto:krowings@naco.org)