Saving Lives through Local Road Safety Planning

National Association of Counties
June 30, 2016
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Saving Lives through Local Road Safety Planning

National Association of Counties
April 6, 2016
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
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

Preliminary Status of LRSP

Source: FHWA Division
## 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

![Graph showing the comparison of Local, Non-Local, and National road safety plans from 2009 to 2013. The graph indicates a trend where Local and Non-Local safety plans have remained relatively stable, with slight increases, while the National plan has shown a slight decrease.]
Highway Safety Improvement Program (HSIP)
Percent of HSIP Funding Toward Local Projects
2014
National Average: 14.25%   Total Spending on Local Roads: $364M

Source: 2014 HSIP Report
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/

Local & Rural Roads Safety Peer Assistance Program

http://safety fhwa dot gov/local_rural/training/p2p/
Thank You!

rosemarie.anderson@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
* 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
* 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


MN Crash Mapping Tool (2008)

Rural Road Safety Solutions Workshops (2008)

Maintain a Safer Roadway Workshops (2010)


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

Traffic Sign Life Expectancy (2012)
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.
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
### Greater Minnesota Crash Data Overview

**5 Year Crashes**

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<tr>
<th>Category</th>
<th>All</th>
<th>Severe</th>
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<td><strong>State System</strong></td>
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<td><strong>CSAHI/CR</strong></td>
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<td><strong>Rural</strong></td>
<td>24,474</td>
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<td><strong>Urban</strong></td>
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<tr>
<td><strong>City, Twonsp, Other</strong></td>
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**Example**

- **All**
  - **Severe**
    - All Way Stop: 438 (6%), 7 (14%)
    - Run Off Road: 1,283 (24%), 74 (37%)
    - Head On: 61 (7%), 27 (14%)
    - Rear End: 1,315 (25%), 21 (11%)
    - Right Angle: 529 (10%), 18 (9%)

- **Inters-Related**
  - 5,448 – 51%
  - 160 – 42%

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

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

- **Animal**
  - 4,407 – 18%
  - 74 – 4%

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

**Source:** MnCMAT Crash Data, 2004-2008

Severe is fatal and serious injury crashes (K+A).
## MN HSIP Funding Splits – State vs Local

<table>
<thead>
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<th>District</th>
<th>TH</th>
<th>TH Percent of ATP Total</th>
<th>Local Percent of ATP Total</th>
<th>Total Number of F+ A injury</th>
<th>% F + A Injury Crashes by ATP (2009-2011)</th>
<th>HSIP/HRRR setaside per ATP</th>
<th>State HSIP setaside Dollars</th>
<th>Local HSIP setaside Dollars</th>
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Project Approach

1. **Crash Analysis**
   - Kick-off Video Conference
   - Project Programming
   - Project Development
   - Implementation
   - Evaluation
   - Refinement & Update SHSP

2. **Select Safety Emphasis Areas**

3. **Develop Comprehensive List of Safety Strategies**
   - Review Mtg w/ Counties

4. **Safety Workshop**

5. **Identify Safety Projects**

6. **Identify Short List of Critical Strategies**
   - Month 6

7. **Safety Plan**
   - Month 9

8. **Month 1**
   - Crash Analysis

9. **Month 4**
   - Select Safety Emphasis Areas

10. **Month 5**
    - Develop Comprehensive List of Safety Strategies
    - Safety Workshop

11. **Month 7**
    - Identify Safety Projects

12. **Month 9**
    - Safety Plan
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

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<th>Segment Ranking</th>
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<th>Miles</th>
<th>% of Miles</th>
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# Otter Tail County Segment Project Summary

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<th>Corridor #</th>
<th>Route #</th>
<th>Start</th>
<th>End</th>
<th>Length</th>
<th>Ranking</th>
<th>2' Shoulder Pave+RS +Safety Wedge</th>
<th>Rumble Strip</th>
<th>Rumble StripE</th>
<th>6&quot; Latex Marking</th>
<th>6&quot; Wet Reflective epoxy in Grooves</th>
<th>Project Cost</th>
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<td>NEW YORK MILLS CORP LMTS</td>
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</tr>
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<td>21</td>
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<td>CSAH 24</td>
<td>ERHARD CORP LMTS</td>
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<td>$16,800</td>
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<td>22</td>
<td>56.02</td>
<td>CSAH 56</td>
<td>CSAH 19</td>
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<td>6.6</td>
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<td>0</td>
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<tr>
<td>23</td>
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<td>CSAH 55</td>
<td>CSAH 16</td>
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<tr>
<td>24</td>
<td>29.01</td>
<td>CSAH 29</td>
<td>CSAH 82</td>
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<td>7.4</td>
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<td>4.6</td>
<td>0</td>
<td>0</td>
<td>2.8</td>
<td>$39,960</td>
</tr>
<tr>
<td>25</td>
<td>72.01</td>
<td>CSAH 72</td>
<td>MNTH 78</td>
<td>CSAH 83</td>
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<td>0.0</td>
<td>0</td>
<td>0</td>
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<tr>
<td>26</td>
<td>75.01</td>
<td>CSAH 75</td>
<td>CSAH 40</td>
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<td>4.5</td>
<td>★★★★★★</td>
<td>0.0</td>
<td>0</td>
<td>0</td>
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<td>0</td>
<td>$0</td>
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<tr>
<td>27</td>
<td>23.01</td>
<td>CSAH 23</td>
<td>CSAH 9</td>
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<td>5.2</td>
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<td>$3,380</td>
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<td>16.01</td>
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<td>MNTH 78</td>
<td>CSAH 5</td>
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<td>0</td>
<td>2</td>
<td>$32,490</td>
</tr>
<tr>
<td>29</td>
<td>41.01</td>
<td>CNTY 41</td>
<td>CSAH 35</td>
<td>MNTH 108</td>
<td>6.0</td>
<td>★★★★★★</td>
<td>0.0</td>
<td>3.7</td>
<td>0</td>
<td>0</td>
<td>2.3</td>
<td>$32,400</td>
</tr>
<tr>
<td>30</td>
<td>36.01</td>
<td>CSAH 36</td>
<td>CSAH 35</td>
<td>MNTH 228</td>
<td>6.6</td>
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<td>0.0</td>
<td>3.1</td>
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<td>CSAH 45</td>
<td>CSAH 1</td>
<td>CSAH 74</td>
<td>3.9</td>
<td>★★★★★★</td>
<td>0.0</td>
<td>2.8</td>
<td>0</td>
<td>0</td>
<td>1.1</td>
<td>$19,110</td>
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</tbody>
</table>
STATE AID FOR LOCAL TRANSPORTATION  
Environmental Documentation for Federal Projects with Minor Impacts  
SP(s)  MN Proj. No(s):  

Project Location: (see attached project location map)  

Project Purpose and Need:  

Project Type: check all that apply  
- Pavement Markings  
- Rumble Stripes  
- Signing Installation  
- Guardrail Installation  
- Shoulder paving (No widening)  
- Lighting  
- Engineering Studies  
- SRTS Education/Enforcement  

Project Manager  
Name:  
Title:  
Address:  
Address 2:  
Phone:  
Email:  

1 Any other type of work will require a project memo  
2 Project will be designed in accordance with the MMUTCD  

Estimated project costs  
Federal amount  
Federal amount other  
Other funds  
Total Project cost  

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  
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)
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
  - **ATF:** 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 MnCMAT Crash Data

<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
<th>Road Dept</th>
<th>K+A</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>15</td>
<td>11</td>
<td>1</td>
</tr>
<tr>
<td>2006</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2007</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Density (per mile per year):**
  - **Road Dept:** 0.44
  - **K+A:** 0.32
  - **0.03**

- **Rate (per MVH):**
  - **Road Dept:** 1.05
  - **K+A:** 0.77
  - **0.07**

### Ranking Criteria

<table>
<thead>
<tr>
<th>Value</th>
<th>Critical</th>
<th>Risk Ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADT Range</td>
<td>1148</td>
<td>!</td>
</tr>
<tr>
<td>RD Density</td>
<td>0.32</td>
<td>!</td>
</tr>
<tr>
<td>Access Density</td>
<td>11.32</td>
<td>!</td>
</tr>
<tr>
<td>Curve Critical Radius Density</td>
<td>0.59</td>
<td>!</td>
</tr>
<tr>
<td>Edge Risk</td>
<td>3</td>
<td>!</td>
</tr>
<tr>
<td></td>
<td></td>
<td>!</td>
</tr>
<tr>
<td></td>
<td></td>
<td>!</td>
</tr>
</tbody>
</table>

### Short List of Strategies Considered

<table>
<thead>
<tr>
<th>Description</th>
<th>Type</th>
<th>Cost per mi</th>
<th>Mileage</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>2' Shoulder Pave+RS+Safety Wedge</td>
<td>Proactive</td>
<td>$40,000</td>
<td>4.8</td>
<td>$192,120</td>
</tr>
<tr>
<td>Rumble Strip</td>
<td>Proactive</td>
<td>$3,000</td>
<td>0.0</td>
<td>$0</td>
</tr>
<tr>
<td>Rumble StripE</td>
<td>Proactive</td>
<td>$3,500</td>
<td>0.0</td>
<td>$0</td>
</tr>
<tr>
<td>6' edgelines</td>
<td>Proactive</td>
<td>$650</td>
<td>0.0</td>
<td>$0</td>
</tr>
<tr>
<td>Ground In Wet-Reflective Markings</td>
<td>Proactive</td>
<td>$8,500</td>
<td>2.0</td>
<td>$16,762</td>
</tr>
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</table>

### Implementation Cost

<table>
<thead>
<tr>
<th></th>
<th>Federal Funds</th>
<th>$186,894</th>
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<tbody>
<tr>
<td>Local Match (10% of Total project cost)</td>
<td>$20,988</td>
<td></td>
</tr>
<tr>
<td><strong>Total Project Cost</strong></td>
<td><strong>$209,882</strong></td>
<td></td>
</tr>
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</table>

**Notes:**
- HSIP Project selection adjusted for Little McDonald Lake, Paul Lake and Rusch Lake shoreline properties.
## Examples of HSIP Projects 2009 - 2011

<table>
<thead>
<tr>
<th>Safety Strategy</th>
<th>Location/Quantity</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lane Marking and Curve Enhancements</td>
<td>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)</td>
<td>$1,600,000</td>
</tr>
<tr>
<td>Intersection Lighting</td>
<td>Joint contract with six counties to install overhead street lighting at 30 intersections</td>
<td>$360,000</td>
</tr>
<tr>
<td>Intersection Signs and Marking Upgrade</td>
<td>Install/upgrade TH junction signs, stop ahead markings and stop bars at 91 Intersections (Otter Tail County Only)</td>
<td>$158,000</td>
</tr>
<tr>
<td>CSAH Shoulder Paving/Rumble StripEs</td>
<td>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)</td>
<td>$293,000</td>
</tr>
<tr>
<td><strong>Total Funding</strong></td>
<td></td>
<td><strong>$2,411,000</strong></td>
</tr>
<tr>
<td>Priority</td>
<td>Focus Area</td>
<td>Locations</td>
</tr>
<tr>
<td>---------</td>
<td>-----------------------</td>
<td>-----------</td>
</tr>
<tr>
<td>1</td>
<td>Lane Departure</td>
<td>13</td>
</tr>
<tr>
<td>2</td>
<td>Lane Departure</td>
<td>19</td>
</tr>
<tr>
<td>3</td>
<td>Intersection Improvements</td>
<td>44</td>
</tr>
<tr>
<td>4</td>
<td>Lane Departure</td>
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<tr>
<td>5</td>
<td>Lane Departure</td>
<td>42</td>
</tr>
<tr>
<td>6</td>
<td>Lane Departure</td>
<td>59</td>
</tr>
<tr>
<td>7</td>
<td>Intersection Improvements</td>
<td>21</td>
</tr>
<tr>
<td>8</td>
<td>Lane Departure</td>
<td>78</td>
</tr>
<tr>
<td>9</td>
<td>Lane Departure</td>
<td>48</td>
</tr>
<tr>
<td>10</td>
<td>Lane Departure</td>
<td>42</td>
</tr>
<tr>
<td>11</td>
<td>Lane Departure</td>
<td>50</td>
</tr>
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</table>

|              |                      |           | $2,949,921.00| $2,654,928.90 | $294,992.10 | Otter Tail County Projects - Summary                                      |
Positive Outcome of MN Local Road Safety Plans

(Prepared by Howard Preston, CM2H Hill)

Minnesota Fatality Rates By System

<table>
<thead>
<tr>
<th>Year</th>
<th>County</th>
<th>Trunk Highway</th>
<th>State Total</th>
<th>Interstate</th>
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<tbody>
<tr>
<td>2003</td>
<td>1.80</td>
<td>1.30</td>
<td>1.20</td>
<td>0.50</td>
</tr>
<tr>
<td>2004</td>
<td>1.55</td>
<td>1.20</td>
<td>1.10</td>
<td>0.50</td>
</tr>
<tr>
<td>2005</td>
<td>1.30</td>
<td>1.10</td>
<td>1.00</td>
<td>0.50</td>
</tr>
<tr>
<td>2006</td>
<td>1.33</td>
<td>0.95</td>
<td>0.87</td>
<td>0.34</td>
</tr>
<tr>
<td>2007</td>
<td>1.31</td>
<td>1.00</td>
<td>0.89</td>
<td>0.45</td>
</tr>
<tr>
<td>2008</td>
<td>1.10</td>
<td>0.87</td>
<td>0.79</td>
<td>0.46</td>
</tr>
<tr>
<td>2009</td>
<td>1.20</td>
<td>0.79</td>
<td>0.74</td>
<td>0.23</td>
</tr>
<tr>
<td>2010</td>
<td>1.19</td>
<td>0.76</td>
<td>0.72</td>
<td>0.20</td>
</tr>
<tr>
<td>2011</td>
<td>1.19</td>
<td>0.76</td>
<td>0.72</td>
<td>0.20</td>
</tr>
<tr>
<td>2012</td>
<td>1.17</td>
<td>0.72</td>
<td>0.69</td>
<td>0.17</td>
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<tr>
<td>2013</td>
<td>1.09</td>
<td>0.72</td>
<td>0.68</td>
<td>0.20</td>
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<tr>
<td>2014</td>
<td>0.89</td>
<td>0.68</td>
<td>0.63</td>
<td>0.24</td>
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</table>

*Projection via linear interpolation

Begin Preparation of County Roadway Safety Plans
Begin Widespread Deployment of Safety Strategies Along County 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.
* 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
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
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
Projects must address fatal/serious crashes in a risk-based, low-cost & widespread approach

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
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

<table>
<thead>
<tr>
<th></th>
<th>All Public Roads</th>
<th>All Counties</th>
<th>Cowlitz County</th>
<th>All Public Roads</th>
<th>All Counties</th>
<th>Cowlitz County</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Overall Numbers</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total # of Collisions</td>
<td>12,447</td>
<td>3,246</td>
<td>7,997</td>
<td>12,447</td>
<td>3,246</td>
<td>7,997</td>
</tr>
<tr>
<td># of Fatal Collisions</td>
<td>2,190</td>
<td>17.6%</td>
<td>682</td>
<td>2,190</td>
<td>17.6%</td>
<td>682</td>
</tr>
<tr>
<td># of Serious Injury Collisions</td>
<td>10,257</td>
<td>82.4%</td>
<td>2,564</td>
<td>10,257</td>
<td>82.4%</td>
<td>2,564</td>
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<tr>
<td># of Alcohol-Related Collisions</td>
<td>3,268</td>
<td>26.3%</td>
<td>1,078</td>
<td>3,268</td>
<td>26.3%</td>
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<tr>
<td>Total # of Fatalities</td>
<td>2,375</td>
<td></td>
<td>732</td>
<td>2,375</td>
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<tr>
<td>Total # of Injuries</td>
<td>17,770</td>
<td></td>
<td>4,503</td>
<td>17,770</td>
<td></td>
<td>4,503</td>
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</tbody>
</table>

#### By Collision Type

<table>
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<th>All Public Roads</th>
<th>All Counties</th>
<th>Cowlitz County</th>
<th>All Public Roads</th>
<th>All Counties</th>
<th>Cowlitz County</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hit Fixed Object</td>
<td>3,439</td>
<td>27.6%</td>
<td>1,340</td>
<td>27.6%</td>
<td>1,340</td>
<td>27.6%</td>
</tr>
<tr>
<td>Overturn</td>
<td>1,281</td>
<td>10.3%</td>
<td>424</td>
<td>10.3%</td>
<td>424</td>
<td>10.3%</td>
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<tr>
<td>Hit Pedestrian</td>
<td>1,667</td>
<td>13.4%</td>
<td>208</td>
<td>13.4%</td>
<td>208</td>
<td>13.4%</td>
</tr>
<tr>
<td>Head On</td>
<td>642</td>
<td>5.2%</td>
<td>182</td>
<td>5.2%</td>
<td>182</td>
<td>5.2%</td>
</tr>
</tbody>
</table>

#### By Light Condition

<table>
<thead>
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<th></th>
<th>All Public Roads</th>
<th>All Counties</th>
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<td></td>
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<td></td>
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<td></td>
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<tr>
<td>Daylight</td>
<td>7,169</td>
<td>57.6%</td>
<td>1,753</td>
<td>57.6%</td>
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#### By Highway Surface

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<th>All Counties</th>
<th>Cowlitz County</th>
<th>All Public Roads</th>
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<td></td>
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<tr>
<td>Dark - No Street Lights</td>
<td>2,014</td>
<td>16.2%</td>
<td>941</td>
<td>16.2%</td>
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#### By roadway curvature

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<th>All Public Roads</th>
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<td></td>
<td></td>
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</tr>
<tr>
<td>Horizontal Curve</td>
<td>3,353</td>
<td>26.9%</td>
<td>1,282</td>
<td>26.9%</td>
<td>1,282</td>
<td>26.9%</td>
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<tr>
<td>Vertical Curve</td>
<td>352</td>
<td>2.8%</td>
<td>112</td>
<td>2.8%</td>
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#### By Contributing Circumstance

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<td></td>
<td></td>
<td></td>
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<tr>
<td>Tree Stump (Stationary)</td>
<td>642</td>
<td>18.7%</td>
<td>334</td>
<td>18.7%</td>
<td>334</td>
<td>18.7%</td>
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<tr>
<td>Ran Over Embankment</td>
<td>290</td>
<td>8.7%</td>
<td>116</td>
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<td>8.7%</td>
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<tr>
<td>Earth Bank</td>
<td>249</td>
<td>2.2%</td>
<td>100</td>
<td>2.2%</td>
<td>100</td>
<td>2.2%</td>
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<tr>
<td>Fence</td>
<td>214</td>
<td>6.2%</td>
<td>65</td>
<td>6.2%</td>
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#### By Vehicle Type

<table>
<thead>
<tr>
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<th>All Public Roads</th>
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<tbody>
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<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Passenger Car</td>
<td>8,235</td>
<td>43.0%</td>
<td>1,797</td>
<td>43.0%</td>
<td>1,797</td>
<td>43.0%</td>
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<tr>
<td>Light Truck / SUV</td>
<td>3,126</td>
<td>17.2%</td>
<td>1,735</td>
<td>17.2%</td>
<td>1,735</td>
<td>17.2%</td>
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<tr>
<td>Motorcycle</td>
<td>2,459</td>
<td>12.8%</td>
<td>763</td>
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#### By Speed Limit

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<tr>
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<th>All Public Roads</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>25 MPH</td>
<td>2,137</td>
<td>12.3%</td>
<td>369</td>
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<td>369</td>
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<tr>
<td>30 MPH</td>
<td>2,192</td>
<td>12.6%</td>
<td>136</td>
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<tr>
<td>35 MPH</td>
<td>4,350</td>
<td>25.1%</td>
<td>1,519</td>
<td>25.1%</td>
<td>1,519</td>
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<tr>
<td>40 MPH</td>
<td>1,312</td>
<td>7.6%</td>
<td>474</td>
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<tr>
<td>50 MPH</td>
<td>1,063</td>
<td>5.1%</td>
<td>444</td>
<td>5.1%</td>
<td>444</td>
<td>5.1%</td>
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</tbody>
</table>
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
### 31 of 39 counties completed a LRSP

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

<table>
<thead>
<tr>
<th>Priority</th>
<th>Safety Plan</th>
<th>Data Collection</th>
<th>Guardrail</th>
<th>Truck ramp</th>
<th>Signing</th>
<th>Slopes, shoulders</th>
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<tbody>
<tr>
<td>Priority 1</td>
<td>Shoulders, slopes, clear zone, guardrail</td>
<td>Shoulders, slopes, guardrail</td>
<td>Guardrail</td>
<td>Truck ramp, signing</td>
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<td>Slopes, shoulders</td>
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<tr>
<td>Funding</td>
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<td>$200,000</td>
<td>$533,723</td>
<td>$120,000</td>
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<td>$900,400</td>
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<td>Yes</td>
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<td>Priority 2</td>
<td>Data collection</td>
<td>Curve improvements</td>
<td>Guardrail</td>
<td>Guardrail, shoulder, fixed objects</td>
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<td>Guardrail, signing</td>
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<td>$575,000</td>
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<td>Priority 3</td>
<td>CLRS</td>
<td>Guardrail</td>
<td>Guardrail</td>
<td>Guardrail, signing, sight distance</td>
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<tr>
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<td>Guardrail</td>
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<td>Delineation</td>
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<td>Yes</td>
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<tr>
<td>Priority 6</td>
<td>Shoulders, slopes, alignment</td>
<td>Bridge rail</td>
<td>Signing</td>
<td>Guardrail</td>
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<tr>
<td>Funding</td>
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<td>Guardrail</td>
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<td>Bridge rail</td>
<td>Intersection reconstruct</td>
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<td>Priority 9</td>
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<td>100%</td>
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**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

**Funding**

- $315,000
- $200,000
- $270,000
- $553,723
- $102,500
- $570,000
- $544,200
- $37,927
- $300,850
- $883,640
- $2,895,000
- $1,032,200
- $2,904,588
- $1,394,000

**Percent**

- 100%
- Yes
- No
- Yes
- Yes
- Yes
- Yes
- Yes
# Common Risk Factors

<table>
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<th>Factor</th>
<th>Avg.</th>
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<td>Crashes/Severity/Rate</td>
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<td>ADT</td>
<td>19</td>
</tr>
<tr>
<td>Horizontal Curves</td>
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</tr>
<tr>
<td>Speed Limit</td>
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</tr>
<tr>
<td>Shoulder Width</td>
<td>14</td>
</tr>
<tr>
<td>Functional Class</td>
<td>14</td>
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<tr>
<td>Pavement/Lane Width</td>
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<tr>
<td>Fixed Objects/Clear Zone</td>
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<td>Embankment Slope</td>
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<tr>
<td>Surface Type</td>
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</tr>
<tr>
<td>Vertical Curves</td>
<td>4</td>
</tr>
</tbody>
</table>

Avg. = 6

Risk Factors
Planned Countermeasures

- Guardrail: 22
- Signing: 19
- Data Collection: 12
- Clear Zone/Fixed Object Improvements: 10
- Safety Plan Development: 6
- Slope Flattening: 5
- Shoulder Improvements: 5
- Intersection Grade/Alignment/Geometry: 4
- High Friction Surface Treatments: 4
- Bridge Rail: 4
- Delineation: 3
- Shoulder Rumble Strips: 3
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
(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
THANK YOU!

Additional questions or feedback?
Contact Kathy Rowings at krowings@naco.org