



Moving the SCP Forward

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2026 ITE Workshop

April 16, 2026

What to Expect

- High level overview of foundational information
- Safety Certification Process (SCP) Updates
 - Policy
 - Tools
 - Timeline



High Level Overview



High Level Overview

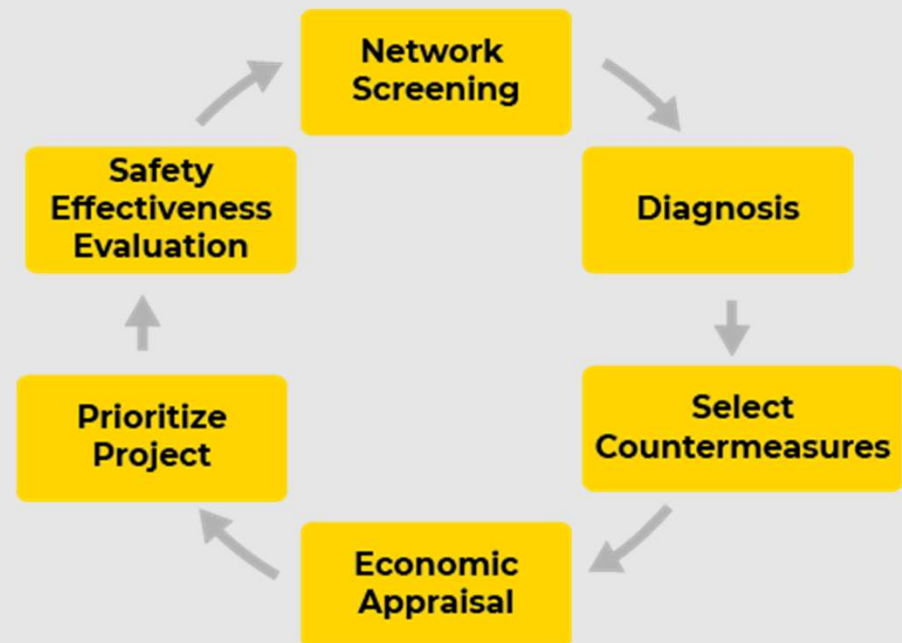
- Safety Certification Process (SCP)
 - WisDOT's adoption of Highway Safety Manual (HSM)
 - Released in 2018
 - Quantifies safety benefits for roadway improvements to help implement performance-based practical design
 - Used on almost every improvement project
 - Analyses performed by DTSD Regions and reviewed by BTO



High Level Overview

- SCP aligns with the Highway Safety Manual's (HSM) Roadway Safety Management Process

1. Network Screening for Safety Sites of Promise
2. Diagnosis of Safety Sites of Promise
3. Countermeasure Identification
4. Safety Evaluation & Economic Appraisal of Alternatives
5. Documentation



High Level Overview

- Process requires numerous tools to perform and maintain
 - Spreadsheet tools have limitations
 - Primary alternative analysis software is phased out
 - Safety engineering analysis continues to evolve and tools may remain static
- **HSM2 on the horizon (2027)**



High Level Overview

Safety Certification Process

Network Screening

- Meta-Manager (Segments)
- Intersection Network Screening Spreadsheet
- Safety Certification Mapping Tool
- BTO GeoPortal Map

Alternative Analysis

- Interactive Highway Safety Design Model (IHSDM)
- Crash Modification Factor Table
- Highway Safety Benefit-Cost Analysis Tool

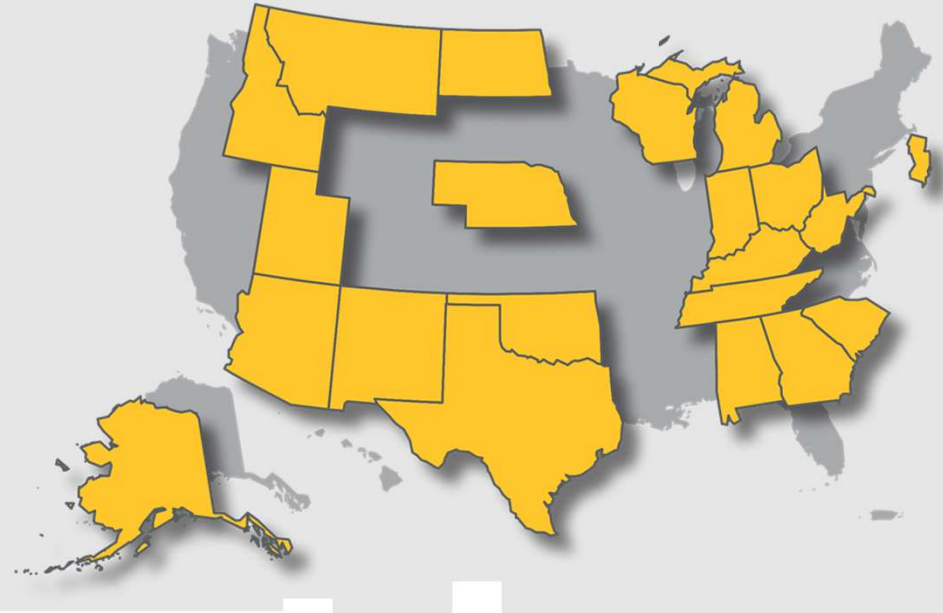
Economic Analysis

- IHSDM
- Highway Safety Benefit-Cost Analysis Tool

AASHTOWare Safety has (or will) replace most of our existing safety analysis tools, but results will be similar



AASHTOWare State Partners



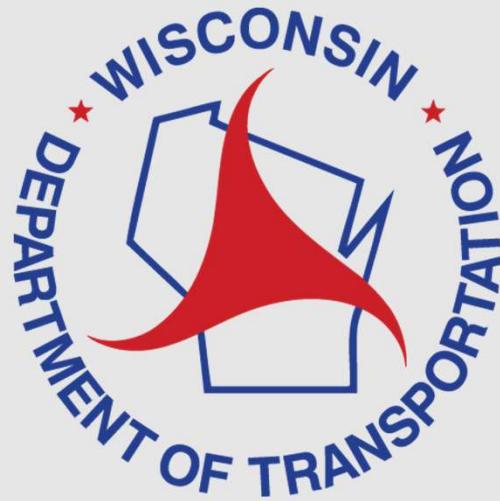
High Level Overview

- AASHTOWare Safety's vision is to support the Highway Safety Manual and be adaptative to future editions or other efforts (Green Book)
- Integrates roadway, attribute, and traffic volume data to support safety analyses
- Supports
 - Crash queries
 - Safety network screening
 - Alternatives analyses with economic evaluation (B/C)



Safety Certification Process Updates





Policy Updates

Policy Updates

Yearly Updates

- Goal is to update information on a yearly basis in May/June
- Next update will include:
 - Crashes
 - Crash cost values
 - Intersection calibration factors
- Long-Term
 - Step-by-Step guidance moving to TEOpS
 - Crash costs, crashes, line work/intersections, SPF and calibration factors



Policy Updates

Methodology Changes

- Network Screening

- Intersection and Segment crashes are now separated
- Using network screening level SPFs and the level of service of safety (LOSS) to identify locations
- Crashes are tied to linework through spatial results (not RP coded)
- Crashes omitted from the screening results:
 - Work Zone Involved crashes (Work Zone Involved = Y)
 - Animal Involved crashes (Animal Involved = Y)
 - Parking Lot crashes (Location Type = Parking Lot)



Policy Updates

Methodology Changes

- Alternative Design

- Preparing for HSM 2 → Mixed methodology
- Use Empirical Bayes (EB) (WisDOT Method 3) for the future no-build alternative.
- Use either Predictive (WisDOT Method 2) or EB for other alternatives

- Not mixing with CMF x Observed Crash History (WisDOT Method 1)





Tool Updates

Tool Updates

Legacy Tools

- Highway Safety Benefit-Cost Analysis Tool (Method 1 Tool)
 - Crash Costs
 - Severity Distributions
- IHSDM (Methods 2 & 3 Tool)
 - Crash Costs
 - Severity Distributions
 - Intersection calibration factors



Tool Updates

AASHTOWare Safety Network Screening - Intersections

Related WisDOT tools

- Wisconsin Network Screening Spreadsheet (WINSS)
- BTO GeoPortal Map



Tool Updates

AASHTOWare Safety Network Screening - Segments

Related WisDOT tools

- Meta-Manager is replaced
- Wisconsin Network Screening Spreadsheet (WINSS)
- BTO GeoPortal Map



Tool Updates

AASHTOWare Safety Alternative Design

Related WisDOT tools

- Interactive Highway Safety Design Model (IHSDM)
- Highway Benefit-Cost Spreadsheet

Cost Values	Current 1 January 2019 - 31 December 2023	No-Build 10 Year Total	Shoulder Rumble S... 10 Year Total	Lighting CTH U 10 Year Total
Benefit	-	\$0	\$5,907,753	\$156,390
Project Cost	-	\$1,750,000	\$2,835,000	\$150,000
Net Benefit	-	-\$1,750,000	\$3,072,753	\$6,390
Benefit Cost Ratio	-	-	2.08	1.04

Crash Values	Current 1 January 2019 - 31 December 2023	No-Build 10 Year Total	Shoulder Rumble S... 10 Year Total	Lighting CTH U 10 Year Total
Total Crashes (+/-)	106	235.26	218.13 (▼-7.28%)	234.66 (▼-0.25%)
Fatal (K) (+/-)	2	3.82	3.54 (▼-7.36%)	3.82 (▼-0.08%)
Suspected Serious Injury (A) (+/-)	2	8.68	7.83 (▼-9.83%)	8.62 (▼-0.73%)
Suspected Minor Injury (B) (+/-)	6	23.15	21.31 (▼-7.98%)	23.00 (▼-0.68%)
Possible Injury (C) (+/-)	3	24.83	23.17 (▼-6.71%)	24.75 (▼-0.35%)
Property Damage Only (D) (+/-)	93	174.77	162.29 (▼-7.14%)	174.48 (▼-0.16%)
Bicycle Related (+/-)	0	0.00	0.00	0.00
Pedestrian Related (+/-)	0	0.00	0.00	0.00

Shoulder Rumble Strips + Add left turn lane CTH U

Total Benefit *
\$5,907,753

Total Project Cost
\$2,835,000

Total Benefit Cost Ratio *
2.08

Location	Changes	Current Value	Proposed Value	Current AF	Proposed AF	Construction Cost	Maintenance Cost
Segment 1	Lane Width	Lane Width: 11	Lane Width: 12	1.03	1.00 (▼-0.03)	\$250,000	\$0
Segment 1	Shoulder Width And Type *	Right Shoulder Type: Composite Left Shoulder Type: Composite	Right Shoulder Type: Paved Left Shoulder Type: Paved	1.07	1.05 (▼-0.02)	\$2,250,000 *	\$0 *
Segment 1	Centerline Rumblestrips *	Centerline Rumblestrips: Not Present	Centerline Rumblestrips: Present	1.00	0.94 (▼-0.06)	\$35,000 *	\$0 *
CTH U	Left Turn Approaches	Left Turn Approaches: 0	Left Turn Approaches: 1	1.00	0.56 (▼-0.44)	\$300,000	\$0



Calibrating HSM 2 Intersection SPFs



The Goal:

- Calibrate all intersection models in the HSM 2
 - Using the balloting version as source of information
- Complete by the end of April 2026
- Long Term Goal = continue to update yearly
 - Last update was from 2018 (using 2016 linework and data)



The Data:

- Built off our old intersection inventory, but added more data elements
- Used a 250' buffer around intersections to collect crashes
- Used formula and assumptions to take crash report crash types and reassign as HSM crash types



The Models:

- Only looking at multivehicle and single vehicle crashes
- Only looking at PDO, KABC, and TOTAL crashes
 - But data is available to look at more specific crash types



The Models:

• Rural

- R2U3ST
- ~~R2U3STT~~
- R2U4ST
- R2U4AST
- R2U3SG
- R2U4SG
- ~~R2U3R1~~
- ~~R2U4R1~~
- WI_RR1

• Rural

- RML3ST
- RML4ST
- RML3SG
- RML4SG
- ~~RML3R2~~
- ~~RML4R2~~
- WI_RR2

• Urban

- U3ST
- U3ST-HS
- WI_3ST-AS
- U3ST6
- WI_U3ST6_Full
- WI_U3ST6_RIRO
- ~~U3AST~~
- U3SG
- U3SG-HS
- U3SG6
- U5SG (& 6-leg)

• Urban

- U4ST
- U4ST-HS
- WI_U4ST-AS
- ~~U4AST~~
- WI_UAST
- U4SG
- U4SG-HS
- U4SG6
- U3R1
- U3R2
- U4R1
- U4R2
- WI_UR1
- WI_UR2



The Calibration:

- Calibrating 3 Ways
 - Factor
 - Function
 - SPF Coefficients
- Will look at CURE (cumulative residual) plots
 - How does the shape of the calibration compare to the shape of the SPF?
- Plan is to use the calibration factor now...
... see when/where we can use the others in the future





Timeline

Path to Implementation

- AWS Network Screening → Implemented
- AWS Alternative Design → (2026-2027)
 - BTO currently working with Numetric to explore use at WisDOT
 - **Will likely roll out in stages**
 - E.g. start with intersections
- Yearly Updates (May/June)
 - Crash Costs → implemented
 - Crash Data → implemented
 - Volume Updates → working on it



- NS SPFs → implemented
- Calibration Factors → probably 3-5 years away from yearly updates



Questions?

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