MIC Safety Action Plan

Phase 1 Summary

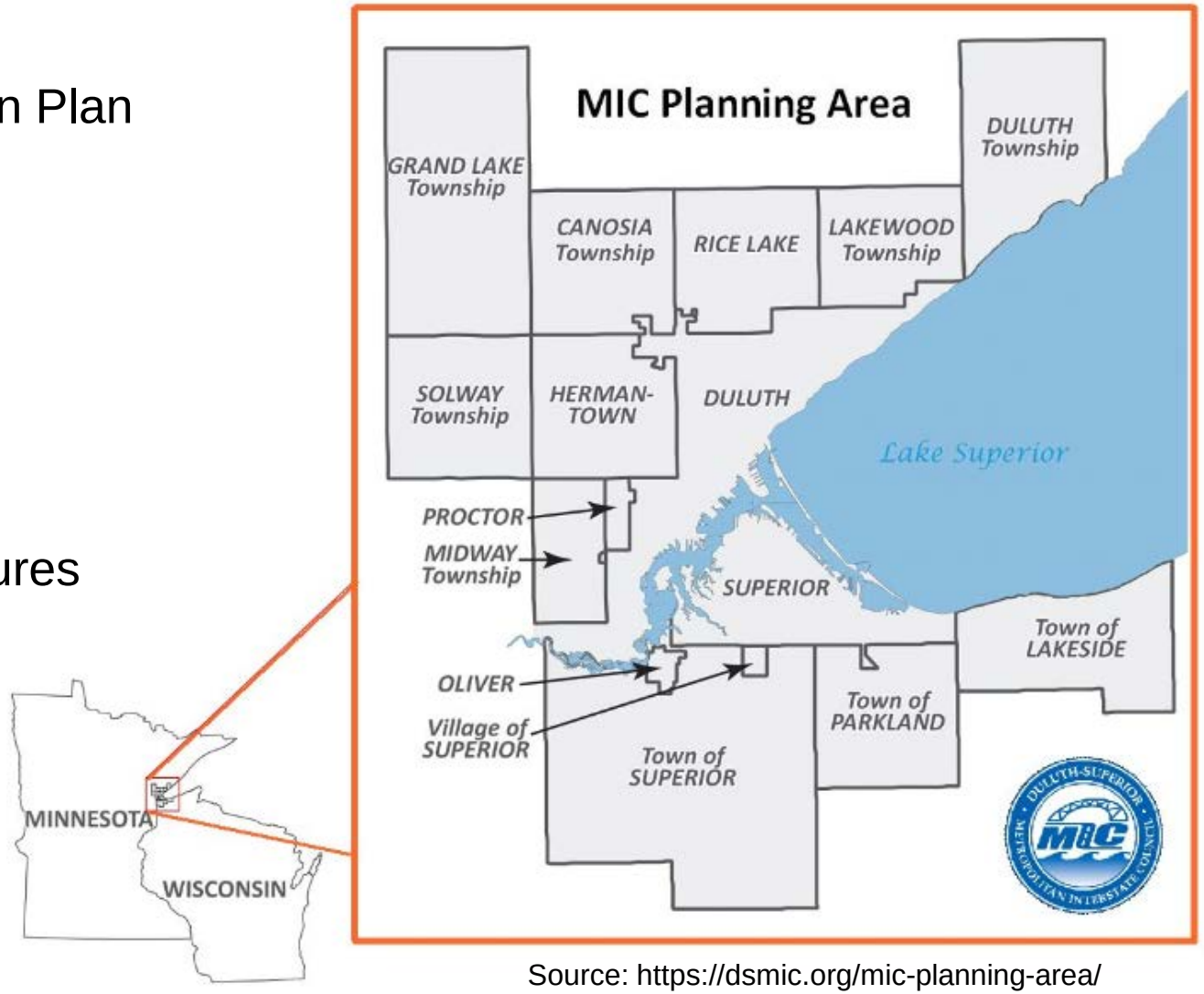
Policy Board Meeting

December 11, 2024

Derek Salomonsen, AECOM

Agenda

- Overview of a Comprehensive Safety Action Plan
- Overview of Systemic Safety Plan Process
- Crash Tree Overview
- Safety Emphasis Areas
- Risk Factors & Risk Assessments
- Safety Countermeasures
- Decision Trees for Selecting Countermeasures
- Safety Projects
- Questions/Discussion



Source: https://dsmic.org/mic-planning-area/

US DOT's Comprehensive Safety Action Plan

Comprehensive safety plans are aimed at reducing and eliminating *serious-injury* and *fatal crashes* affecting all roadway users.

The US DOT has identified eight components of a Safety Action Plan:

1. Leadership Commitment and Goal Setting
2. Planning Structure
3. **Safety Analysis**
4. Engagement and Collaboration
5. Equity
6. Policy and Process Changes
7. **Strategy and Project Selection**
8. Progress and Transparency

https://www.transportation.gov/grants/ss4a/comprehensive-safety-action-plans

S|S
4|A

Safe Streets and Roads for A

Action Plan Component

This document is not meant to replace the NOFO. Applicants should follow the instructions in the NOFO to correctly apply for a grant. See the SS4A website for more information: https://www.transportation.gov/SS4A

Leadership Commitment and Goal Setting

An official public commitment (e.g., resolution, policy, ordinance, etc.) by a high-ranking of and/or governing body (e.g., Mayor, City Council, Tribal Council, MPO Policy Board, etc.) to eventual goal of zero roadway fatalities and serious injuries. The commitment must includ goal and timeline for eliminating roadway fatalities and serious injuries achieved through or both, of the following:

(1) the target date for achieving zero roadway fatalities and serious injuries, OR

(2) an ambitious percentage reduction of roadway fatalities and serious injuries by a spec date with an eventual goal of eliminating roadway fatalities and serious injuries.

Planning Structure

A committee, task force, implementation group, or similar body charged with oversight of Action Plan development, implementation, and monitoring.

Safety Analysis

Analysis of existing conditions and historical trends that provides a baseline level of crash involving fatalities and serious injuries across a jurisdiction, locality, Tribe, or region. Includ an analysis of locations where there are crashes and the severity of the crashes, as well a contributing factors and crash types by relevant road users (motorists, people walking, tra users, etc.). Analysis of systemic and specific safety needs is also performed, as needed (e high-risk road features, specific safety needs of relevant road users, public health approa analysis of the built environment, demographic, and structural issues, etc.). To the extent practical, the analysis should include all roadways within the jurisdiction, without regard f ownership. Based on the analysis performed, a geospatial identification of higher-risk locations is developed (a High-Injury Network or equivalent).

Engagement and Collaboration

Robust engagement with the public and relevant stakeholders, including the private secto and community groups, that allows for both community representation and feedback. Information received from engagement and collaboration is analyzed and incorporated in the Action Plan. Overlapping jurisdictions are included in the process. Plans and processes coordinated and aligned with other governmental plans and planning processes to the ex practical.

U.S. Department of Transportation

Still have questions? Visit the SS4A w

SS4A Action Plan Components | Page

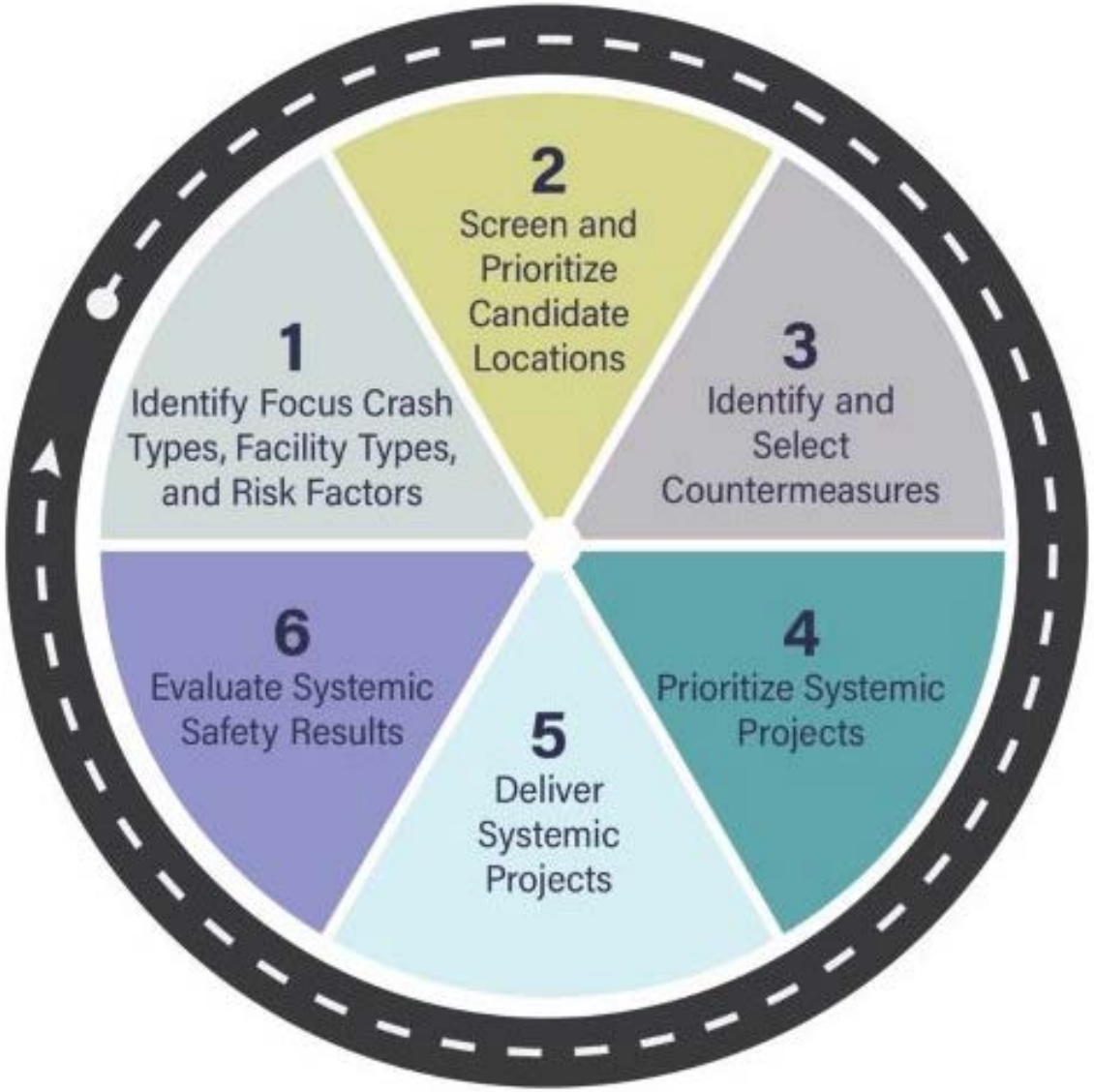
MIC Safety Action Plan – Phase 1 Advisory Committee

The MIC formed a technical advisory committee to assist in the completion of this phase of the Safety Action Plan.

- Members that represented all jurisdictions within the MIC study area, including municipal, state DOT, and county representatives.
- Monthly progress meetings
- Two 4-hour workshop meetings were held at critical points throughout the study to gather committee input.

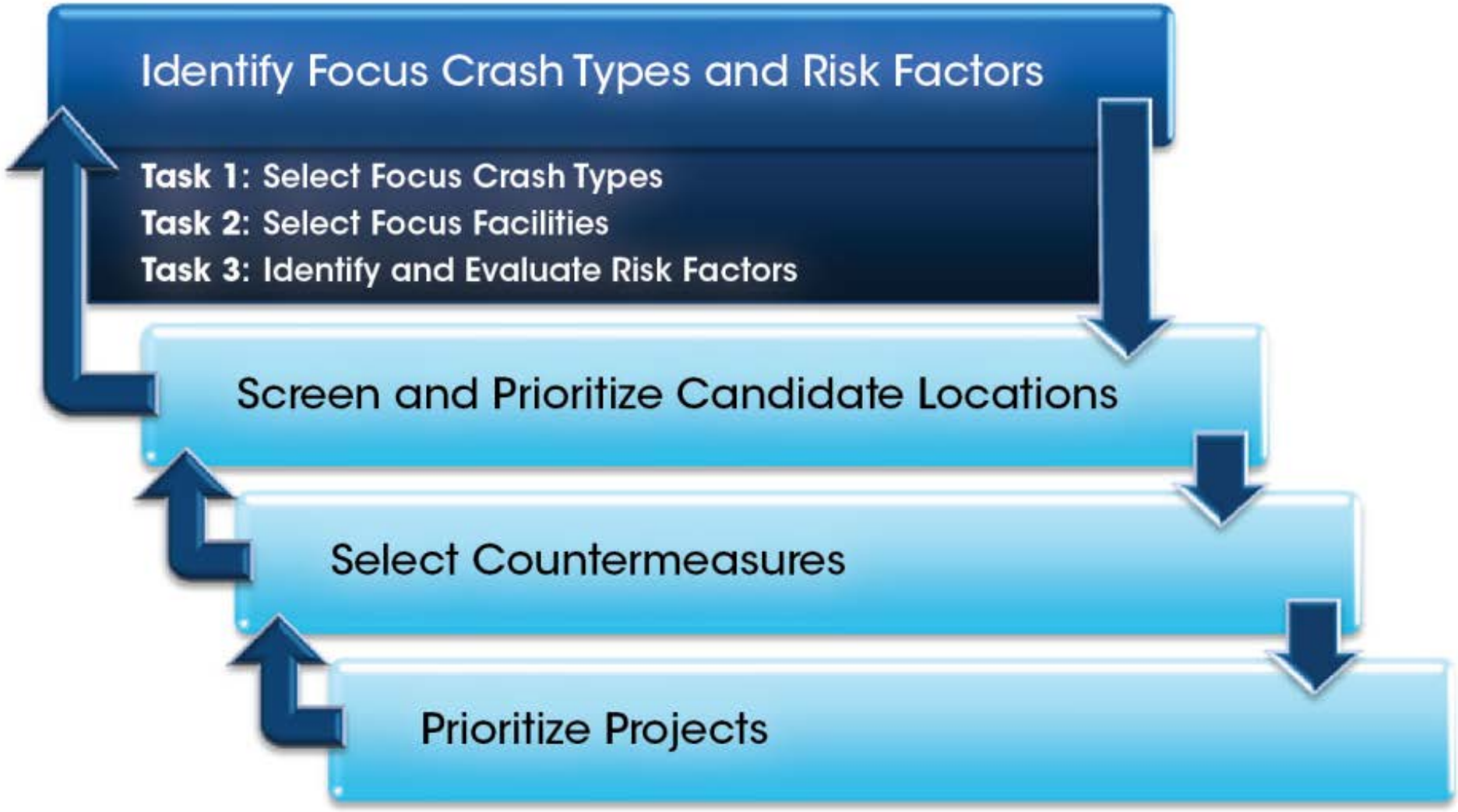
STEP 1: SAFETY ANALYSIS

FHWA’s Systemic Approach to Safety



Source: https://highways.dot.gov/safety/data-analysis-tools/systemic

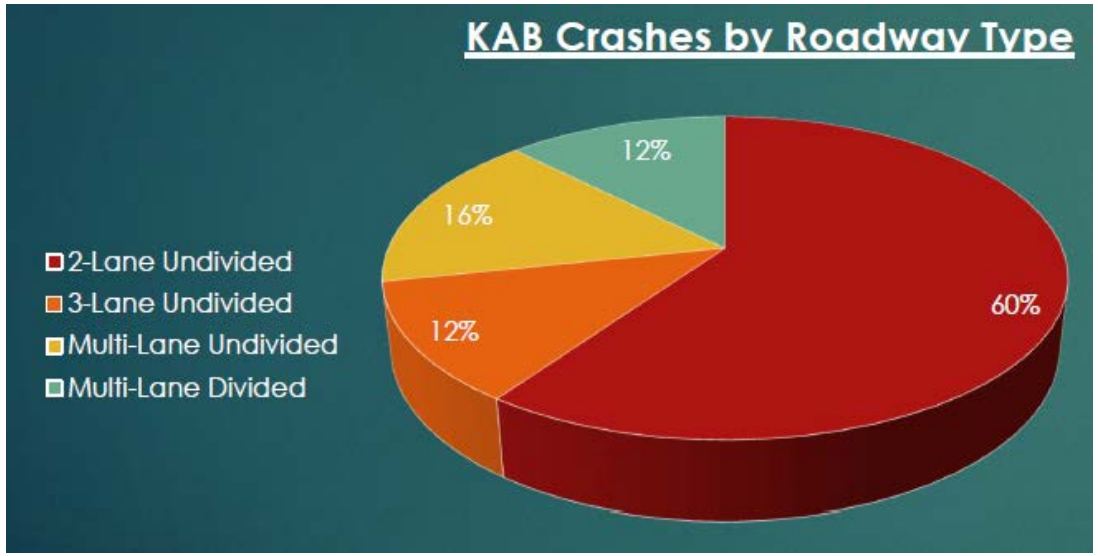
Systemic Safety Plan Process

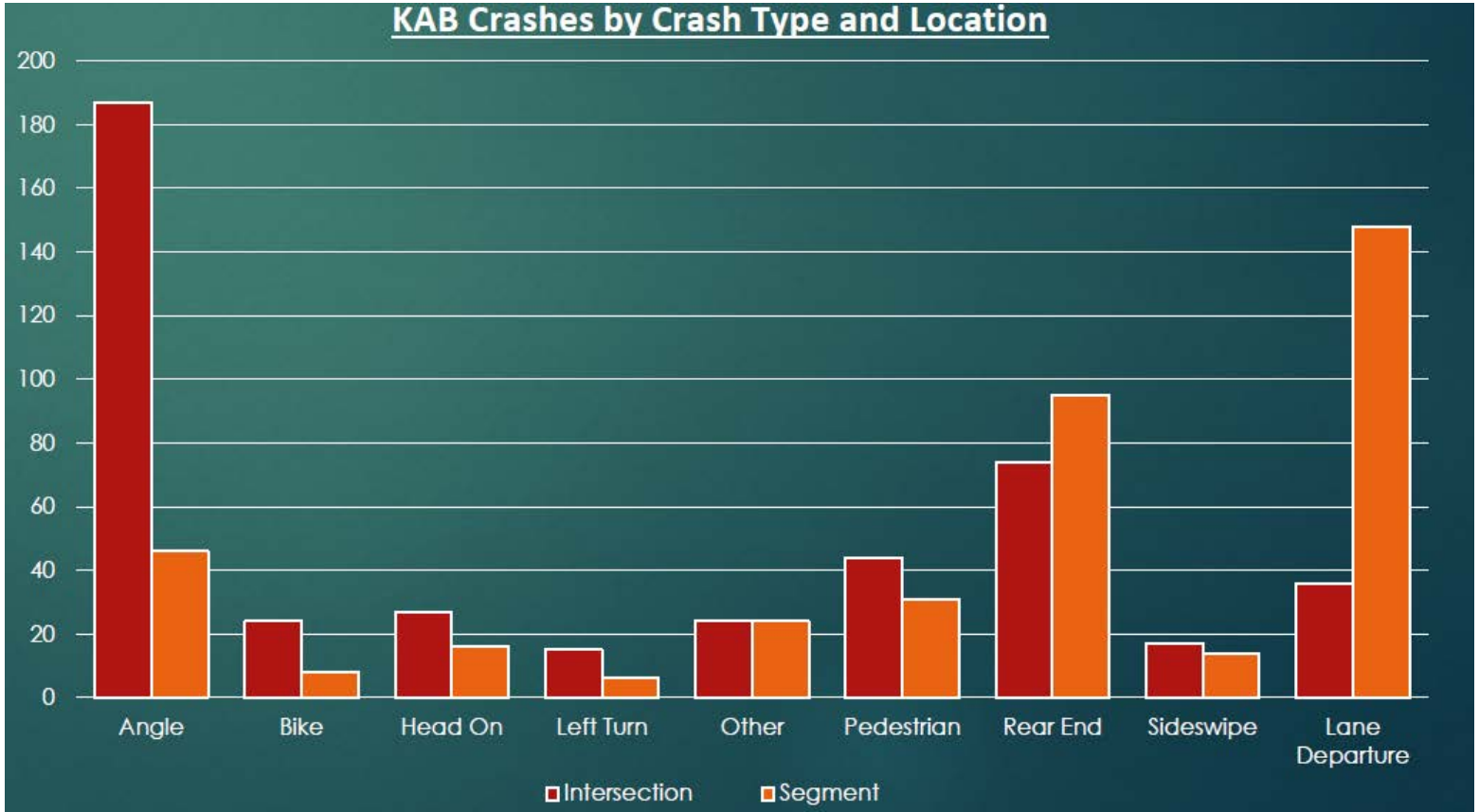


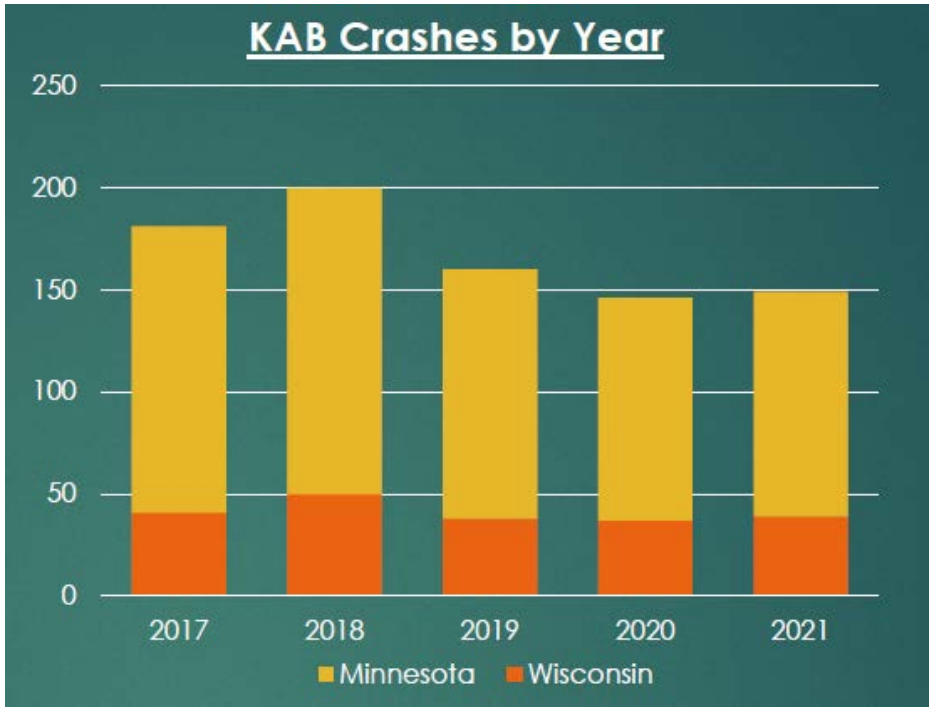
Overview – Collection/Research of Crash Data

Collected High Severity (K/A/B) Crashes

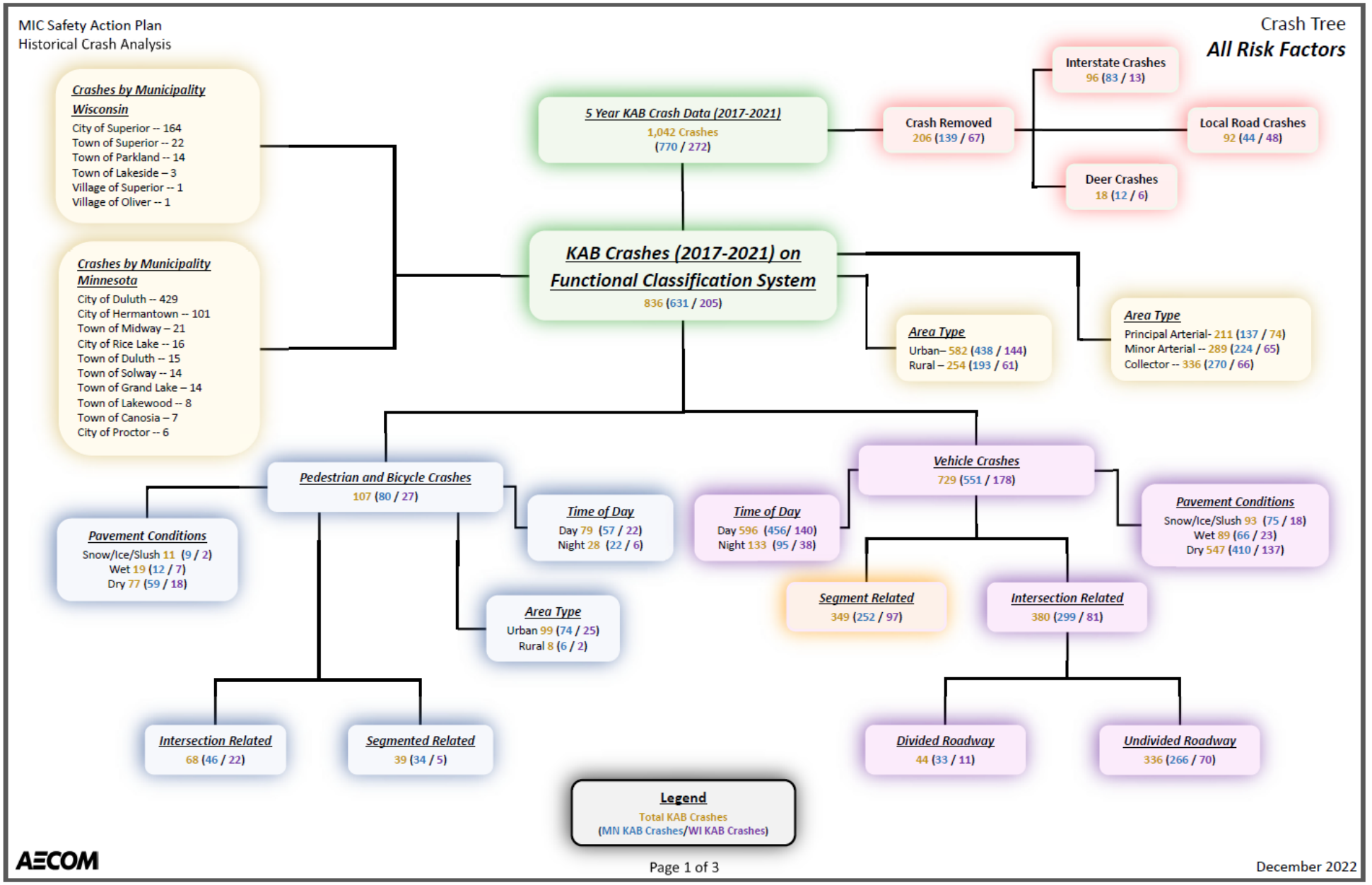
- 5 Years (2017-2021)
- Only Roads on Functional System (Collectors & Arterials)
- Crashes were disaggregated by crash type, location, functional classification, roadway geometrics, traffic volume, and other roadway characteristics.







Overview – Crash Tree: Overall



Safety Emphasis Areas

Safety Emphasis Area 1:

Rural Two-Lane Undivided Roads

With Less Than 5,000 AADT

- 360 miles or 270 Segments
- 250 curves

Safety Emphasis Area 2:

Urban Intersections Side Road Stop Control

Angle Crashes

- 160 Intersections

Safety Emphasis Area 3:

Signalized Intersections Along Multi-Lane Arterials

- 93 Intersections

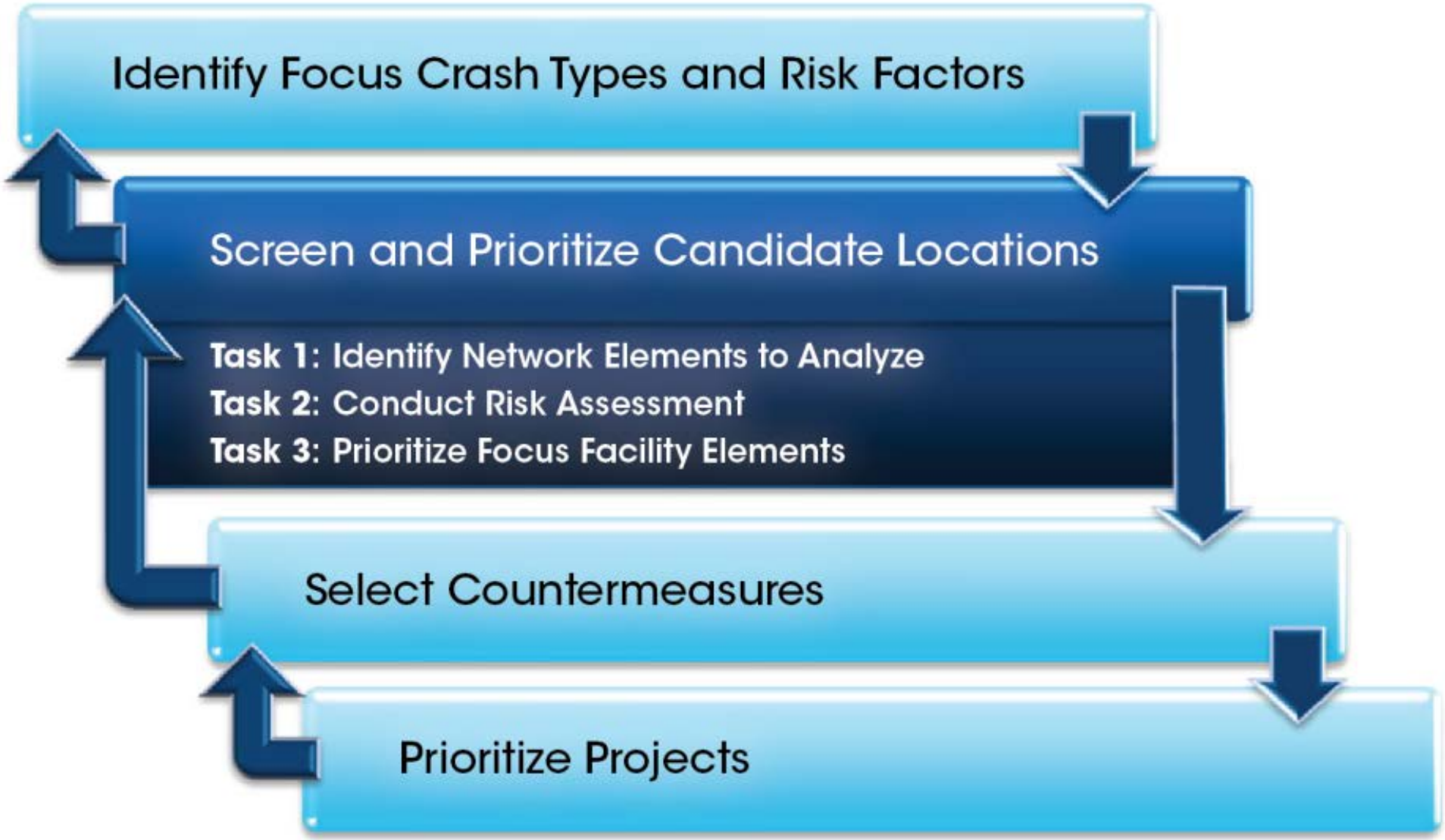
Safety Emphasis Area 4:

Urban Intersections

Pedestrian & Bicycle Crashes

- 722 Intersections

Systemic Safety Plan Process



Risk Factors – Safety Emphasis Area 1 *(Identified for all Safety Emphasis Areas)*

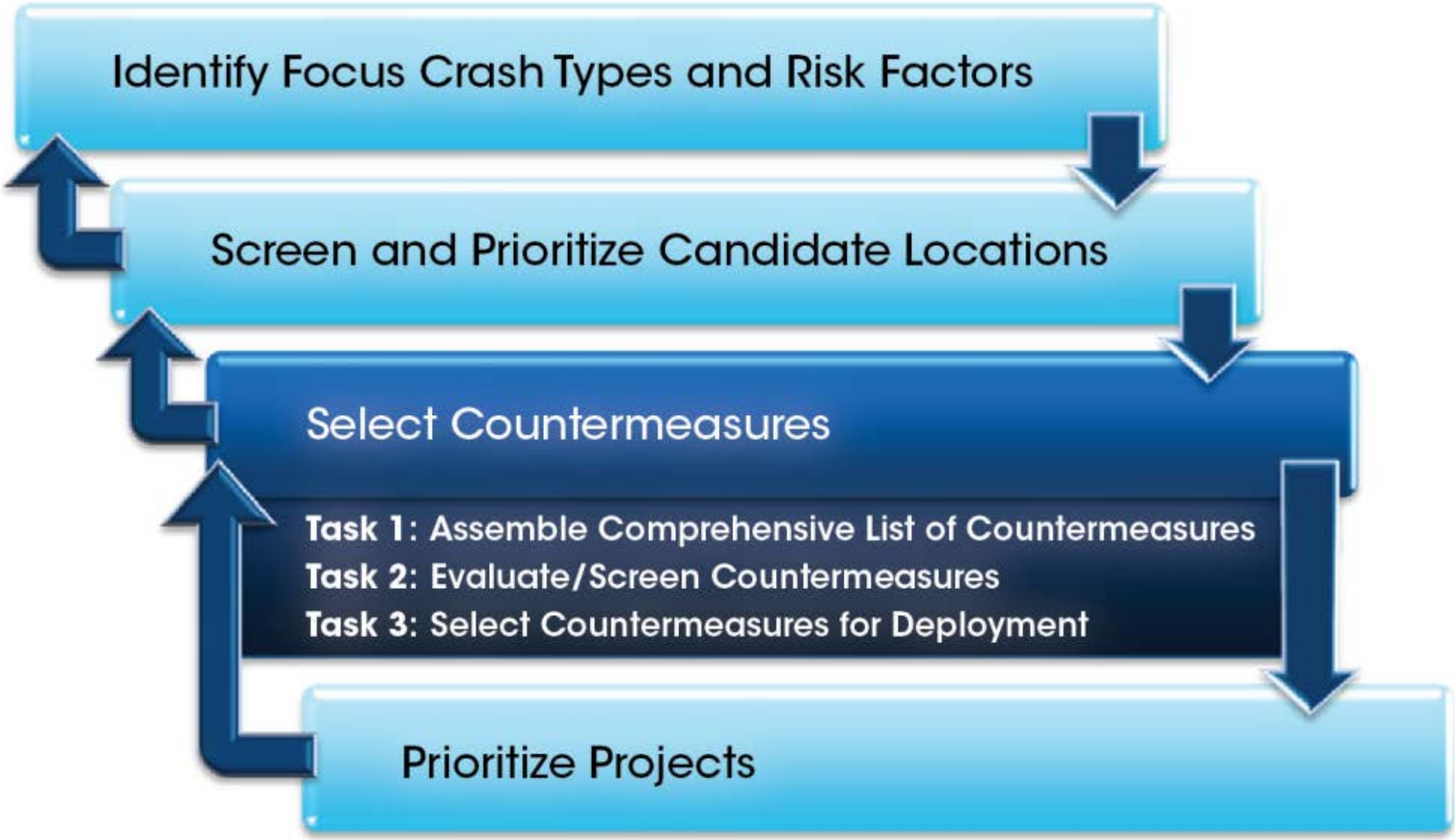
Risk Factor -Segments	At-Risk Criteria	Data Source	Include in Study?
Density of Lane Departure KAB Crashes	↳ >0.10 crashes per mile per 5 year period ★ >=0.50 crashes per mile per 5 year period	AECOM	Yes
Curve Density	↳ >=1 curve/s per mile ★ >=3 curves per mile	Stakeholders & AECOM	Yes
Access Density (driveways, field entrances, unsignalized public streets)	↳ >=7 & <15 ★ >=15	AECOM	Yes
Edge Risk Assessment & Shoulder/Surface Type (steep slopes, fixed objects in clear zone)	↳ No Paved Shoulder & No Deficiencies ↳ Paved Shoulder & 1 or 2 Deficiencies ★ No Paved Shoulder & 1 or 2 Deficiencies	AECOM	Yes
Speed Limit	↳ >=40 mph & <55 mph ★ >=55 mph	AECOM	Yes
Roadway Width (of thru travel lanes)	★ <24-feet	AECOM	Yes
Presence of Edgeline and/or Centerline Rumble Strips	-	-	No Use as mitigation strategy
Presence of Edgeline and/or Centerline Pavement Markings	-	-	No Use as mitigation strategy
Risk Factor - Curves	**Criteria**	**Data Source**	**Include in Study?**
Occurrence of KAB Crashes on Curves	↳ 1 crash per curve per 5 year period ★ >=2 crashes per curve per 5 per period	Stakeholders & AECOM	Yes
Presence of Intersection on Curve or Visual Trap	↳ Intersection on curve ★ Visual Trap & Int. on Curve	AECOM	Yes
Curve Radii	↳ >=500-feet to 1,000-feet ★ < 500-feet	AECOM	Yes
Horizontal Curve Speed Differential	↳ 5-10 mph (curve advisory speed sign present) ★ >10 mph (curve advisory speed sign present) ★ Curve Radius <=750', Speed Limit >=45 mph (no curve advisory speed sign present)	Stakeholders & AECOM	Yes
Shoulder/Surface Type	↳ Gravel Shoulder Only ★ No Paved shoulder	AECOM	Yes

Risk Assessment Safety Emphasis Area 1

(Conducted for all Safety Emphasis Areas)

Road Name	State	County	Municipality	Speed Limi	Number of KAB Crashe	Length (mil	AADT	Total Stars
Lester River Rd	Minnesota	Saint Louis	Township of Lakewood	45	1	3.6	2000	★★★★★
Ryan Rd	Minnesota	Saint Louis	Township of Duluth	50	1	0.3	364	★★★★★
Becks Rd	Minnesota	Saint Louis	Township of Midway	55	1	1.1	670	★★★★½
CTH A	Wisconsin	Douglas	Township of Superior	40	1	1.3	730	★★★★½
CTH K	Wisconsin	Douglas	Township of Parkland	55	0	1.8	1200	★★★★½
CTH A	Wisconsin	Douglas	Township of Superior	55	2	0.7	970	★★★★½
S Chicago Ave	Wisconsin	Douglas	Village of Oliver	45	1	1.3	2300	★★★★½
W Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	55	0	1.7	1580	★★★★
Saginaw Rd	Minnesota	Saint Louis	Township of Solway	55	0	0.4	225	★★★★
CTH 8	Minnesota	Saint Louis	Township of Grand Lake	30	0	0.8	120	★★★★
Hermantown Rd	Minnesota	Saint Louis	City of Hermantown	55	1	1.0	2800	★★★★
Seven Bridges Rd	Minnesota	Saint Louis	City of Duluth	45	1	1.4	348	★★★★
Occidental Blvd	Minnesota	Saint Louis	City of Duluth	30	0	0.4	348	★★★★
Ryan Rd	Minnesota	Saint Louis	Township of Duluth	55	0	0.2	364	★★★★
Swan Lake Rd	Minnesota	Saint Louis	City of Duluth	30	0	1.2	3000	★★★★
Observation Rd	Minnesota	Saint Louis	City of Duluth	40	0	1.1	1100	★★★★
E Skyline Pkwy	Minnesota	Saint Louis	City of Duluth	40	0	0.7	1450	★★★★
CTH U	Wisconsin	Douglas	Township of Lakeside	30	0	0.9	90	★★★★
CTH C	Wisconsin	Douglas	Township of Parkland	30	4	4.0	1000	★★★★
CTH E	Wisconsin	Douglas	Township of Parkland	55	0	1.1	1200	★★★★
W Skyline Pkwy	Minnesota	Saint Louis	City of Proctor	30	1	1.8	680	★★★½
W Skyline	Minnesota	Saint Louis	Township of Midway	30	1	0.5	680	★★★½
Oldenberg Pkwy	Minnesota	Saint Louis	City of Duluth	55	1	2.0	2000	★★★½
Lavaque Rd	Minnesota	Saint Louis	City of Hermantown	45	0	0.7	3500	★★★½
Caribou Lake Rd	Minnesota	Saint Louis	Township of Grand Lake	40	2	0.6	499	★★★½
Schultz Rd	Minnesota	Saint Louis	City of Rice Lake	55	0	2.0	170	★★★½
Schultz Rd	Minnesota	Saint Louis	City of Rice Lake	55	2	1.0	115	★★★½
Culbertson Rd	Minnesota	Saint Louis	Township of Duluth	55	0	1.0	380	★★★½
McQuade Rd	Minnesota	Saint Louis	Township of Lakewood	40	2	0.4	345	★★★½
Swan Lake Rd	Minnesota	Saint Louis	City of Hermantown	55	0	0.7	1400	★★★½
W Calvary Rd	Minnesota	Saint Louis	City of Rice Lake	55	0	2.0	1650	★★★½
CTH D	Wisconsin	Douglas	Township of Lakeside	55	1	2.5	1400	★★★½
CTH K	Wisconsin	Douglas	Township of Parkland	55	0	2.5	850	★★★½
CTH C	Wisconsin	Douglas	Township of Parkland	55	0	2.7	750	★★★½
CTH E	Wisconsin	Douglas	Township of Parkland	45	1	2.8	670	★★★½
CTH E	Wisconsin	Douglas	Township of Parkland	55	0	1.0	2000	★★★½
CTH C	Wisconsin	Douglas	Township of Superior	30	0	3.7	430	★★★½
CTH W	Wisconsin	Douglas	Township of Superior	30	0	3.7	270	★★★½

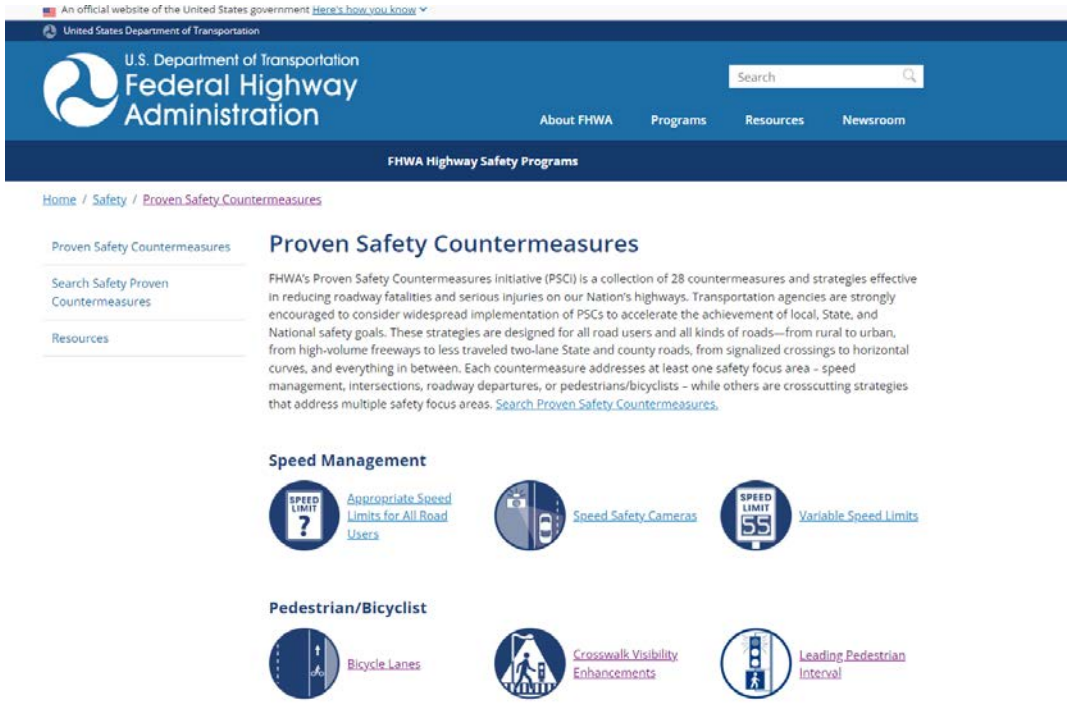
Systemic Safety Plan Process



Safety Countermeasures

Sources of Safety Information

- FHWA Proven Safety Countermeasures
- WisDOT Approved Crash Modification Factors
- MnDOT District Safety Plan Updates
  “The Big Book of Ideas”
- Crash Modification Clearinghouse



Safety Countermeasures – Safety Emphasis Area 1

(Identified for all Safety Emphasis Areas)

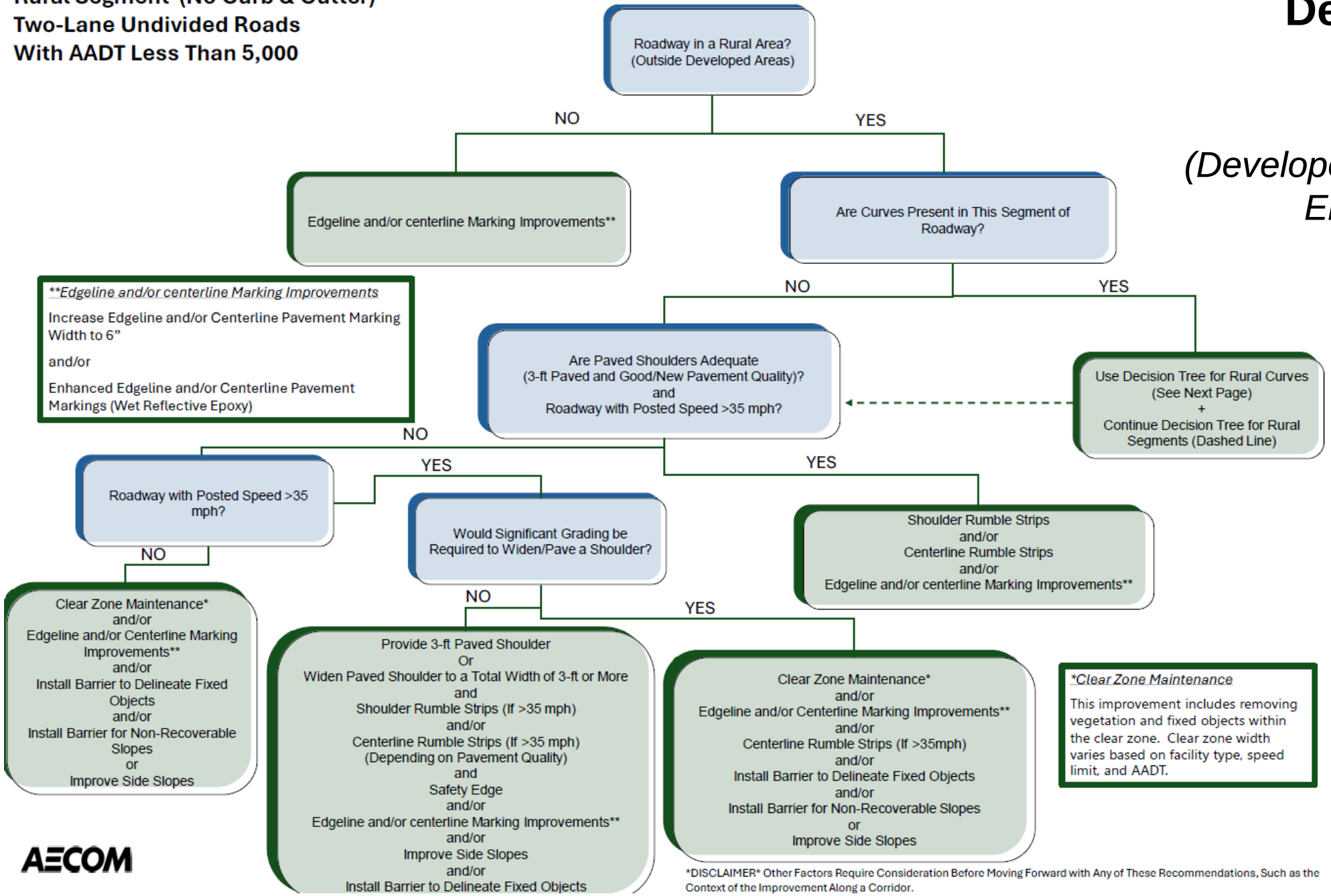
Safety Countermeasure	In Response to Which Risk Factor?	MN* Safety Benefit (% Crash Reduction)	WI Safety Benefit (% Crash Reduction)	Source of WI Safety Data	Include in Study?
Install Shoulder Rumble Strips	N/A	35%: KA Lane Departure Crashes	8%: Injury Crashes 16%: Lane Departure Crashes	WisDOT Approved CMF CMF ID 3430 & 3442	Yes
Install Centerline Rumble Strips	N/A	36%	No WI Data CMF Clearinghouse: 4% to 11%		Yes
Provide Paved Shoulder	Edge Risk Assessment, Lane Width	17% to 31%	No WI Data CMF Clearinghouse: 12% (Run off Road)		Yes
Widen Paved Shoulder	Edge Risk Assessment, Lane Width	N/A	14%	WisDOT Approved CMF CMF ID 4078	Yes
Install Safety Edge (45 mph or Greater)	Edge Risk Assessment	24%	13%	WisDOT Approved CMF CMF ID 8658	Yes
Side Slope Improvements	Edge Risk Assessment	14% : KAB Rollover Crashes	N/A	N/A	Yes
Increase Edgeline from 4" to 6"	N/A	18%	No WI Data CMF Clearinghouse: 18% (All), 27% (Single Vehicle)		Yes
Install Barrier for Non-Recoverable Slopes	Edge Risk Assessment	35%: Injury Crashes	No WI Data CMF Clearinghouse: 9%		Yes
Clear Zone Maintenance (Clearing of Vegetation and Appropriate R/W Width)	Edge Risk Assessment	22% to 44%	N/A	N/A	Yes
Remove or Relocate Fixed Object	Edge Risk Assessment	No State Data CMF Clearinghouse: 38%		CMF ID 1024	Yes
Install Wet Reflective Pavement Markings	Edge Risk Assessment	N/A	40%: All Crashes 25%: Wet Crashes 30%: Nighttime Crashes (CMFs for multilane divided highways)	WisDOT Approved CMF CMF ID 8110, 8113, 8115	Yes
Increase Lane Width from 11-ft to 12-ft	Lane Width	No State Data CMF Clearinghouse: 5%		CMF ID 3	No

Systemic Safety Plan Process

Decision Tree Roadway Segments

(Developed for all Safety Emphasis Areas)

Rural Segment (No Curb & Gutter)
Two-Lane Undivided Roads
With AADT Less Than 5,000



DISCLAIMER Other Factors Require Consideration Before Moving Forward with Any of These Recommendations, Such as the Context of the Improvement Along a Corridor.

AECOM

Cost Estimates – Safety Emphasis Area 1 - Segments

(Identified for all Safety Emphasis Areas)

Safety Countermeasure	Unit	Unit Price
Add Paved Shoulders + Safety Edge	MI	$ 330,000
Clear Zone Maintenance	MI	$ 47,000
Increase Edgeline + Centerline from 4” to 6” (Paint)	MI	$ 19,800
Increase Edgeline + Centerline from 4” to 6” (Epoxy)	MI	$ 34,000
Increase Edgeline + Centerline from 4” to 8” (Paint)	MI	$ 34,000
Increase Edgeline + Centerline from 4” to 8” (Epoxy)	MI	$ 46,000
Install Barrier at Non-Recoverable Slopes	LF	$ 50
Install Centerline Rumble Strips	MI	$ 12,000
Repave Existing Shoulder and Install Safety Edge	MI	$ 140,000
Install Shoulder Rumble Strips	MI	$ 8,000
Remove or Relocate Fixed Object	MI	$ 41,000
Side Slope Improvements	MI	$ 190,000
Install Wet Reflective Pavement Markings	MI	$ 41,000
Widen Paved Shoulder + Safety Edge	MI	$ 240,000

STEP 2: STRATEGY & PROJECT SELECTION

Applying Cost Estimates to Safety Projects

Road Name	TOTAL STARS	Remove Vegetation or Obstructions to Improve Stop Sign Visibility	Restrict Parking Near the Intersection	Install Retroreflective Strips on Stop Sign Posts	Install Flashing Beacons with Warning 'Stop Ahead' Signs	Install Left Turn Lanes	Consider Installing Right Turn Lanes	Remove Obstructions to Increase Intersection Sight Distance	Install Pedestrian Curb Extensions	Extend Median Through Crosswalk	Install High-Visibility Crosswalk	Left Turn Calming	Reduce Lane Widths and Install Median	Install Raised Crosswalk	Install Raised Intersection	Install Stop Bar Pavement Markings on Side Road Approaches	Project Cost Estimate
Grand Ave, S 63rd Ave W	★★★★★½		X	X			X				X	X or	X or	X or	X or	X	$1,149,000
Highway 53, E St	★★★★★½					X	X									X	$1,931,000
E 2nd St - Hwy 53/2, E 2nd St - Hwy 53/2, E 3rd St	★★★★★½				X		X	X			X		X	X or	X or	X	$3,725,000
Midway Rd, Old Miller Trunk Hwy	★★★★★			X				X				X				X	$160,000
Tower Ave, Tower Ave, N 16th St	★★★★★			X					X		X		X	X or	X or		$727,000
Mesaba Ave, Mesaba Ave	★★★★★	X	X	X		X	X	X								X	$1,215,000
Railroad St, Railroad St, Harbor Dr	★★★★½			X	X		X							X			$472,000
Rice Lake Rd, Rice Lake Rd, E Skyline Pkwy	★★★★½			X										X		X	$484,000
Tower Ave, N 56th St, Tower Ave	★★★★½			X			X	X	X		X	X or	X or	X or	X		$858,000
Tower Ave, Henry Cohen Dr	★★★★½			X			X	X	X		X		X				$3,680,000
Hammond Ave, N 5th St, Hammond Ave, N 5th St	★★★★			X						X	X			X or	X or	X	$288,000
E 2nd St - Hwy 53/2, E 2nd St - Hwy 53/2, 23rd Ave E	★★★★							X		X	X		X	X or	X or		$322,000
Hammond Ave, Broadway St, Hammond Ave	★★★★		X	X					X		X	X or	X or	X or	X or		$453,000
Tower Ave, Tower Ave, N 34th St, N 34th St	★★★★			X			X		X		X			X or	X or		$648,000
E 2nd St - Hwy 53/2, Marina Dr, E 2nd St - Hwy 53/2	★★★★	X		X	X		X	X		X	X			X or	X		$693,000
E 4th St, N 4th Ave E	★★★★	X or		X	X or				X		X	X		X or	X or	X	$711,000
E 2nd St - Hwy 53/2, 31st Ave E, E 2nd St - Hwy 53/2	★★★★						X				X		X			X	$1,014,000
Belknap St, E 5th St, E 5th St, Belknap St	★★★★			X	X		X						X				$1,025,000
E Superior St, N 14th Ave E, S 14th Ave E, E Superior St	★★★★		X	X			X	X	X		X	X		X or	X or		$1,081,000
Tower Ave, N 40th St	★★★★						X		X	X	X			X or	X or		$1,185,000
Skyline Pkwy, Mesaba Ave, E 9th St, Mesaba Ave	★★★★	X		X		X	X									X	$1,213,000
E Superior St, 47th Ave E, 47th Ave E	★★★★		X	X			X					X		X or	X or		$3,482,000
Highway 53, Catlin Ave	★★★½		X	X												X	$308,000
Tower Ave, N 58th St, Tower Ave	★★★½		X	X							X	X or	X or	X or	X or		$353,000
Highway 53, Grand Ave, Grand Ave	★★★½		X	X									X			X	$413,000

Safety Projects

Corridor Rank	Corridor	State	Limits	Length (Mi)	# of Intersections in Tier 1 or Tier 2 Locations	Total Cost	Weighted Risk Factor	Total Prioritization ($/Weight)
1	Superior St	Minnesota	6th Ave W to 4th Ave E	0.9	9	$ 927,000	71.11	$ 14,000
2	2nd St	Minnesota	4th Ave W to 3rd Ave E	0.6	8	$ 2,034,000	64.44	$ 32,000
3	Lake Ave	Minnesota	Superior St to 3rd St	0.2	3	$ 993,000	25.00	$ 40,000
4	Grand Ave	Minnesota	59th Ave to Central Ave	0.4	3	$ 939,000	23.33	$ 41,000
5	4th St	Minnesota	3rd Ave E to 5th Ave E	0.2	3	$ 1,258,000	21.62	$ 59,000
6	46th Ave	Minnesota	Mike Colalilo Dr/1st St to Grand Ave	0.2	2	$ 917,000	13.89	$ 67,000
7	Superior St - 3	Minnesota	12th Ave E to 14th Ave E	0.2	3	$ 1,540,000	21.72	$ 71,000
8	6th Ave/Central Entrance Dr	Minnesota	3rd St to 10th St	0.5	4	$ 3,648,000	49.44	$ 74,000
9	Woodland Ave	Minnesota	Kent Rd/8th St to Oxford St	1.5	6	$ 6,115,000	68.89	$ 89,000
10	US 2/Belknap St	Wisconsin	STH 35/Tower Ave to Catlin Ave	1	6	$ 4,345,000	47.78	$ 91,000
11	Tower Ave/Hwy 35	Wisconsin	58th St to 31st St	2.3	7	$ 9,240,000	84.49	$ 110,000
12	CSAH 4/Mesaba Ave	Minnesota	3rd St to Skyline Parkway	1	6	$ 5,855,000	52.32	$ 112,000
13	Hammond Ave	Wisconsin	Broadway St to 5th St	0.4	5	$ 5,394,000	44.55	$ 122,000
14	Tower Ave/Hwy 35 - 2	Wisconsin	28th St to Broadway St	1.5	9	$ 12,476,000	100.45	$ 125,000
15	MNTH 23 (Grand Ave)	Wisconsin	88th Ave to 63rd Ave	3.2	5	$ 5,784,000	44.44	$ 131,000
16	USTH 53/Miller Trunk Hwy - 2	Minnesota	Midway Rd to Stebner Rd	4.6	5	$ 4,175,000	31.67	$ 132,000
17	USH 53/2nd St - 2	Wisconsin	USH 2/Belknap St to Grand Ave	1.5	5	$ 7,046,000	50.96	$ 139,000
18	USTH 53/Trinity Rd	Minnesota	Piedmont Ave to Mall Dr	2.5	4	$ 4,168,000	27.78	$ 151,000
19	USH 53/2nd St	Wisconsin	3rd St/50th Ave to Marina Dr/9th Ave	3.8	7	$ 9,757,000	59.04	$ 166,000
20	TH 194/Central Entrance	Minnesota	USH 53/Trinity Rd to Pecan Ave	1.8	7	$ 15,808,000	87.22	$ 182,000
21	USTH 53/Miller Trunk Hwy	Minnesota	CSAH 32 (Arrowhead Rd) to Loberg Ave/Cottonwood A	1.9	6	$ 8,389,000	43.33	$ 194,000
22	Arrowhead Rd	Minnesota	CSAH 90/Arlington Ave to Rice Lake Rd	0.4	2	$ 3,179,000	13.89	$ 229,000
23	27th Ave	Minnesota	Helm St/I-35 WB Ramps to 1st St	0.2	2	$ 3,696,000	13.33	$ 278,000
24	Superior St - 2	Minnesota	43rd Ave to 47th Ave	0.4	2	$ 4,744,000	12.73	$ 373,000

Next Steps

Complete the final Comprehensive MIC-Area Safety Action Plan
(SS4A grant (2025-2026)

1. **Leadership Commitment and Goal Setting**
2. **Planning Structure**
3. Safety Analysis
4. **Engagement and Collaboration**
5. **Equity**
6. **Policy and Process Changes**
7. Strategy and Project Selection
8. **Progress and Transparency**

- It will incorporate the two technical components completed by AECOM
- The 2025-2026 planning process will address at least four of the remaining six components (Scope of Work is currently being developed; RFP release early 2025)

Thank you.

Questions?