Intersection Mobility and Safety Study

Technical Advisory Committee

METROPOLITAN COUNCIL

October 4, 2023

Agenda

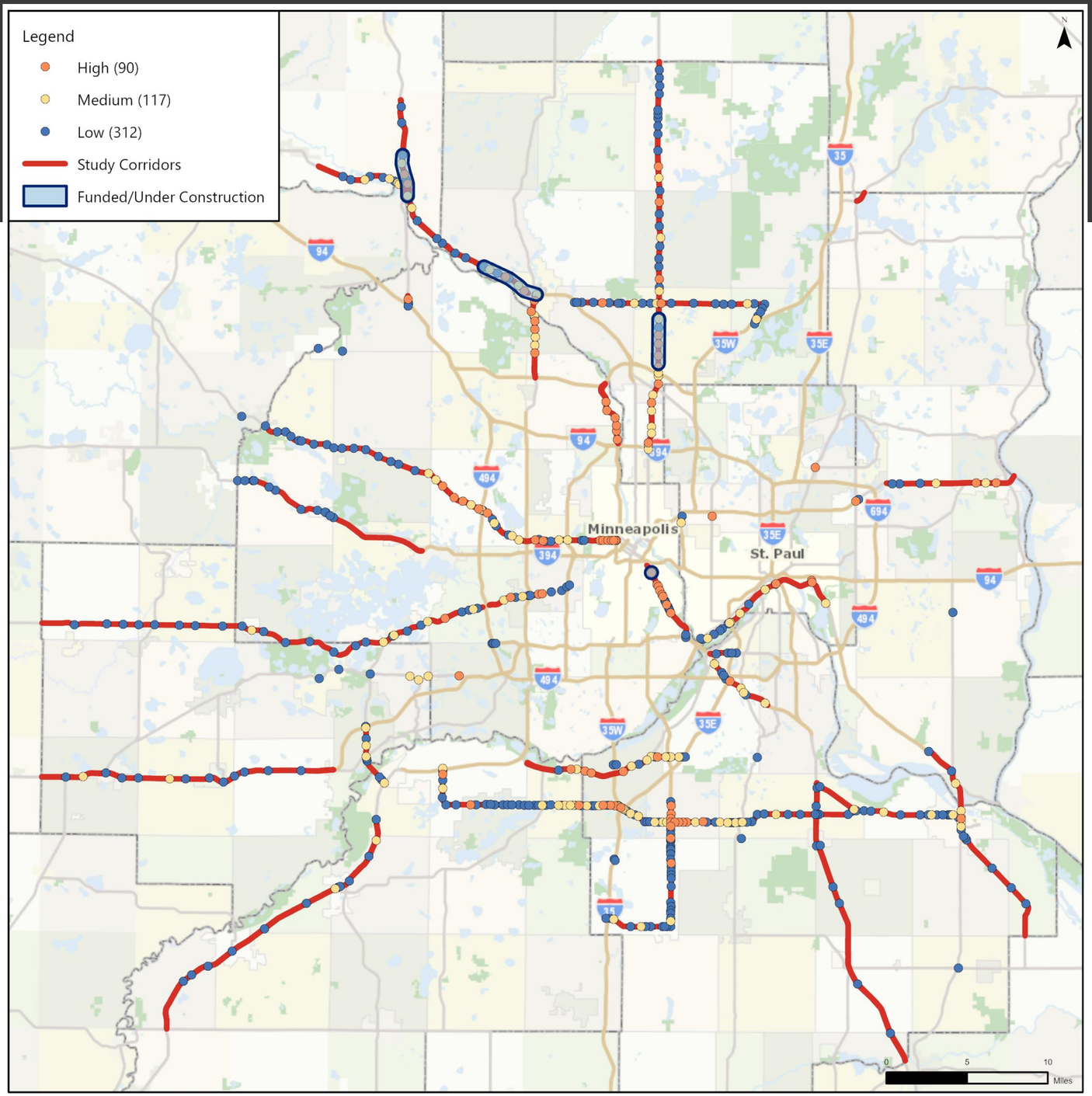
- Study Background
- Before-and-After Results
- Equity Evaluation
- Scoring and Tiering Results
- Implementation Next Steps
- Application of IMSS in 2050 Transportation Policy Plan (TPP)
- Application of IMSS in Regional Solicitation

Intersection Mobility and Safety Study

Study Background

- Review implementation from 2017 Principal Arterial Intersection Conversion Study
- Analyze before-and-after conditions of previous projects
- Prioritize intersections (high, medium, low – similar to last study effort)
- Use this information to influence project scoping in the short term, and long-range investment planning
  - Identify regional priorities for 2050 TPP and Regional Solicitation

Study Locations



Before-and-After Results

Before-and-After Analysis

Quantitative and Qualitative Assessment

- Includes mobility, emissions, safety, equity, engagement, land use impacts, and multimodal accessibility
- Locations:
  - Hwy 65 and Viking Blvd
  - Hwy 169 and Hwy 41

Qualitative Assessment

- Includes equity, engagement, land use impacts, and multimodal accessibility
- Locations:
  - Hwy 10 and Armstrong Blvd
  - Hwy 7 and Louisiana Ave

Before-and-After Equity Analysis

Criterion	Metric(s)	Evaluation type
Base evaluation		
Existing population	People of color, poverty, disability status, people under age 18 & over age 65	Quantitative
Local plans & policies	Comp plan mode share & other transportation goals, planned land use	Qualitative
Before and after		
Land use and zoning	How do existing land use and zoning change near the interchange following a project?	Qualitative
Built form	How does built form change - e.g., more pedestrian-oriented areas or greater emphasis on parking, etc.?	Qualitative
Mode shift	Percent people driving, walking, using transit, bicycling within one-half mile of project	Quantitative
Traffic & safety	AADT, crashes (severity, are bikes/peds involved), vehicle speed	Quantitative
Multimodal connectivity	Pedestrian/bicycle improvements & network connections, pedestrian crossing distance/delay, bike/ped LOS	Qualitative & quantitative

Key takeaways:

- All four projects provided enhanced multimodal connectivity by including local improvements (marked crosswalks, refuge islands, ped signals, bike paths, lighting, etc.) or connecting access to regional trails
- Projects support local comprehensive and transportation plan goals

Equity Evaluation Framework

Evaluation Criteria

Benefits

- Active transportation: Project improves or expands bicycle or pedestrian facilities. Features may include
  - ✓ Separated shared-use trails
  - ✓ Grade-separated crossings
  - ✓ Improved lighting.
- Transit access and service: Project improves transit service and/or access, including first- and last-mile access. Investments may include
  - ✓ Transit stop improvements
  - ✓ Transit advantages
  - ✓ Added transit service.
- Americans with Disabilities Act (ADA): Project improves accessibility for persons with disabilities
  - ✓ Transit stops
  - ✓ ADA curb ramps
  - ✓ Audio-visual signals
  - ✓ Driveway grade

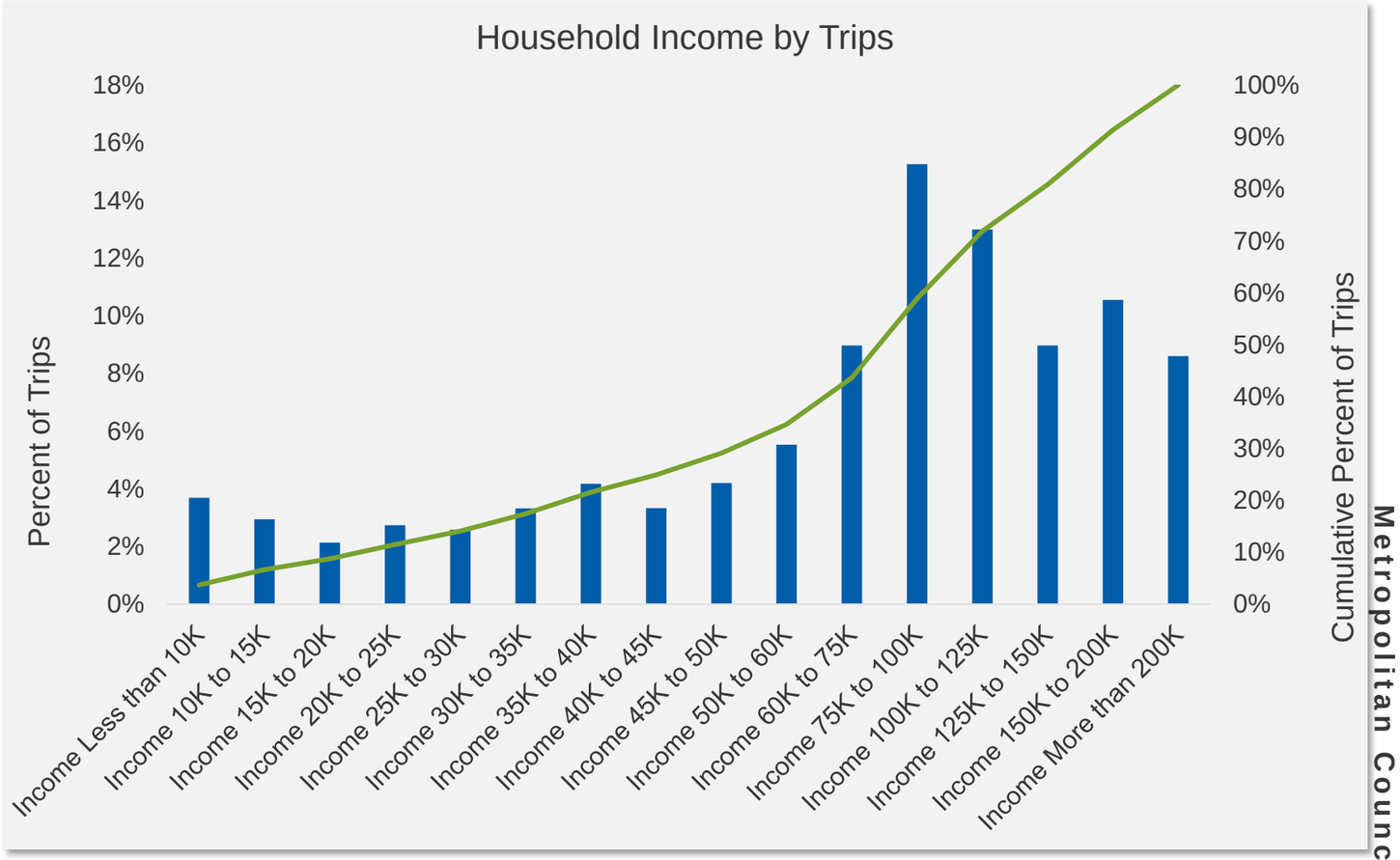
Burdens

- Significant barrier effects (e.g., widen from four to six lanes, grade change, etc.)
- Significant cumulative/disproportionate impacts
- Increases displacement of residents, businesses or public amenities
- Reduces business revenue and employment (e.g., by relocating businesses)
- Greatly increases noise or emissions
- Reduces safety and personal security

Before-and-After Analysis

Hwy 169 and Hwy 41

- Annual benefits
  - $1.8 million in annual travel time savings
  - $5.4 million in annual crash cost savings
- Travel time reliability – Planning Time Index
  - NB Hwy 169: 1.28→1.04
  - SB Hwy 169: 1.42→1.13



Scoring and Tiering Results

Performance Measures

MOBILITY

Total Intersection Delay		Daily person-hours for all approaches
Peak Period Delay		Person-hours for worst approach and worst peak
Cross-Street Delay		Daily person-hours for cross street approaches
Transit Passenger Delay		Daily person-hours on buses passing through intersection

SAFETY

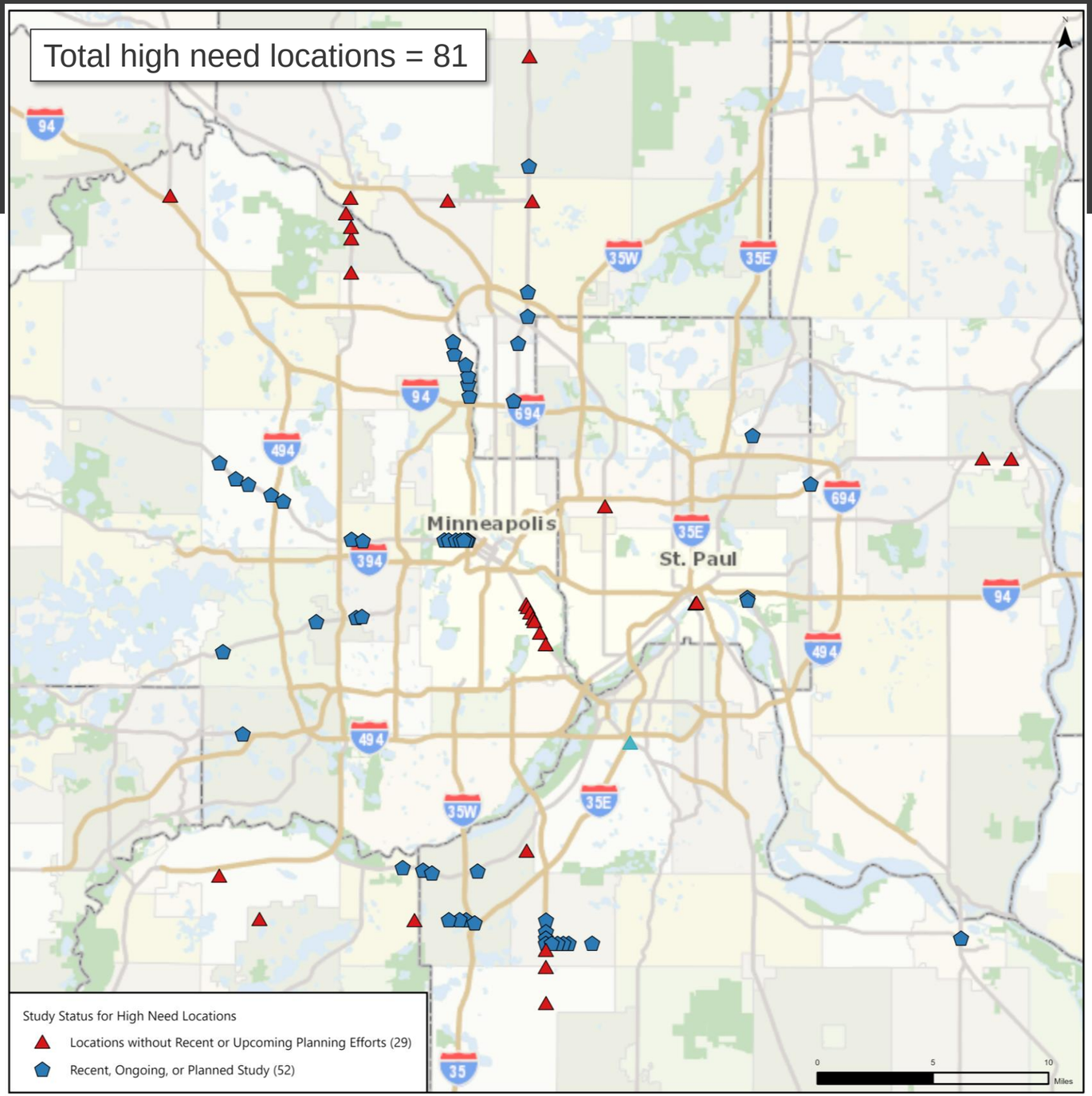
Severe Crash Rate		Rate of K+A crashes over 5 years per MEV
Total Crash Cost		Total dollar value over 5 years, K=2xA

MULTIMODAL & EQUITY

SPACE Analysis		Aggregate score of 19 factors for ped/bike and equity

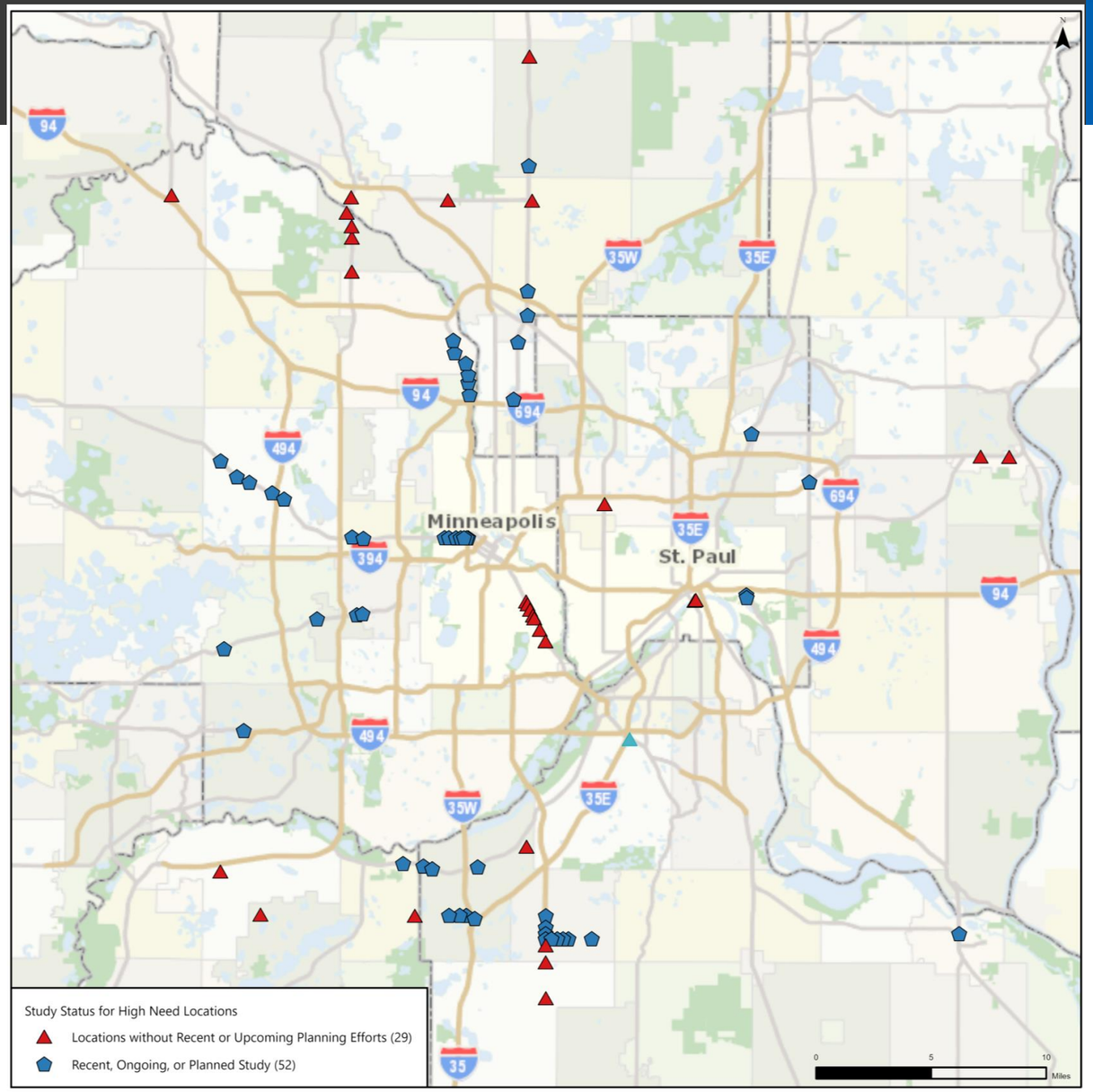
Top Scoring Locations

Rank	Location
1	6TH AVE N & HIGHWAY 55 & LYNDALE AVE N
2	HWY 51 & CR B
3	CSAH 23 (CEDAR AVE) & CSAH 42
4	HIGHWAY 55 & PENN AVE N
5	46TH ST E & HIAWATHA AVE
6	TH 252 & 85TH AVE
7	HIGHWAY 55 & LYNDALE AVE N
8	TH 65 NE & OSBORNE RD
9	TH 252 & 66TH AVE
10	CSAH 42 & CSAH 5
11	CSAH 23 (CEDAR AVE) & 140TH ST
12	38TH ST E & HIAWATHA AVE
13	35TH ST E & HIAWATHA AVE
14	TH 65 & 93RD LN
15	FERRY ST N & FERRY ST S & MAIN ST W
16	CEDAR AVE & 160TH ST
17	HIGHWAY 101 & DIAMOND LAKE RD S
18	TH 13 & NICOLLET AVE
19	HIGHWAY 169 & DAYTON RD
20	CSAH 42 & NICOLLET AVE



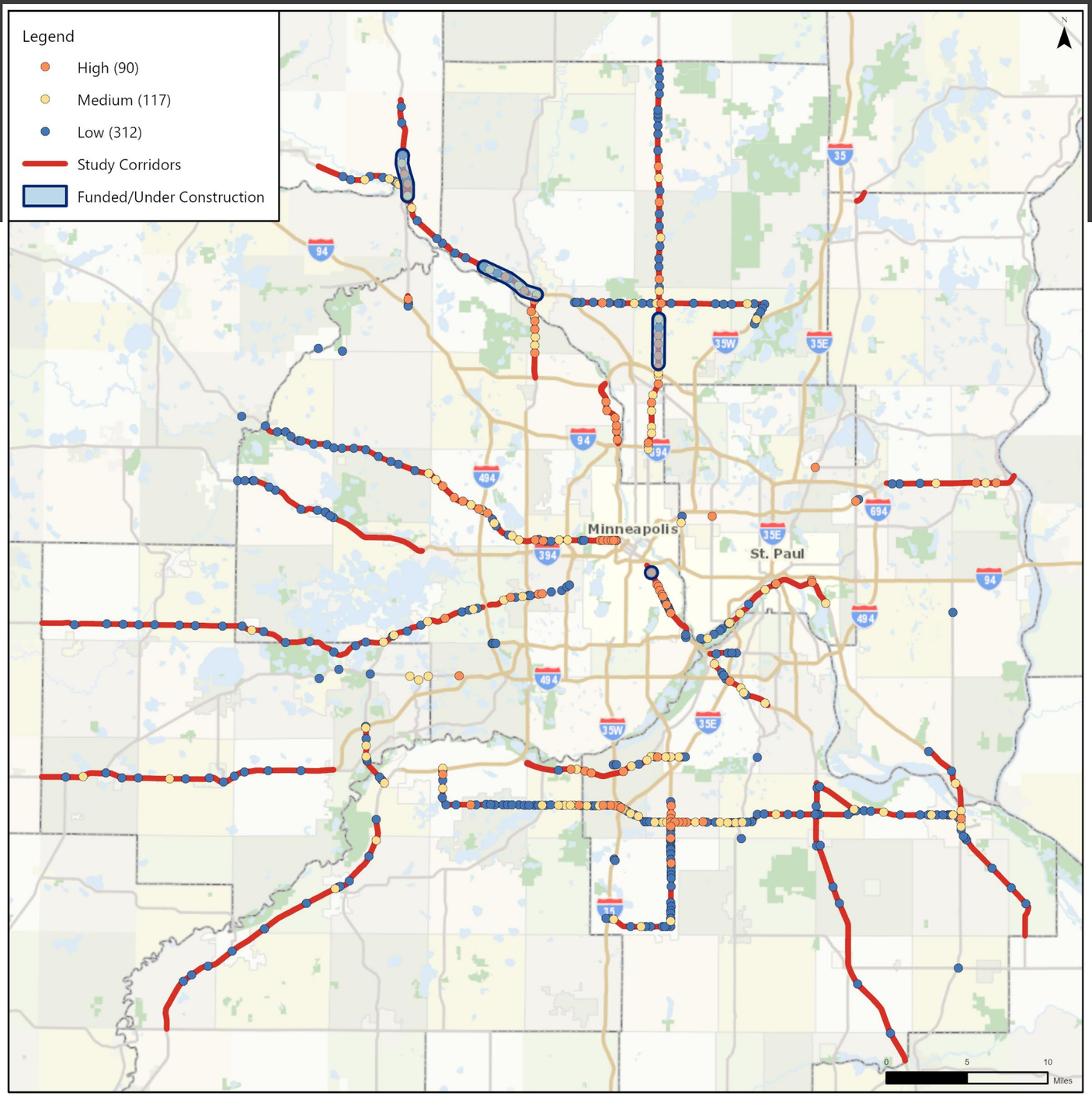
Corridor Sections

Corridors/Locations	Intersections
TH 13: Quentin Ave to Washburn Ave	4
TH 252: 66th Ave to Brookdale Dr	6
TH 65: I-694 to CR 10	2
TH 65: 131st to Bunker Lake Blvd	3
TH 55: CSAH 61 to CR 101 (Plymouth)	6
Cedar Ave: CSAH 42 to 138th St	3
CSAH 42: Cedar Ave to Flagstaff Ave	4
CSAH 42: CR 5 to I-35E (Burnsville)	4
TH 55: I-94 to Penn Ave (Olson Memorial)	7
TH 55: TH 100 to General Mills Blvd (Golden Valley)	2
TH 61: Burns Ave to Warner Rd	2
TH 7 : Blake Rd to Texas Ave	2
Shepard Rd (CH 36): Jackson St to Sibley St	2
TH 36 (Oak Park Heights): Washington Ave; Osgood Ave	2
TH 55: 46th St E to 26th St E (Hiawatha)	8
TH 169: 109th Ave to Dayton Rd (Champlin)	8



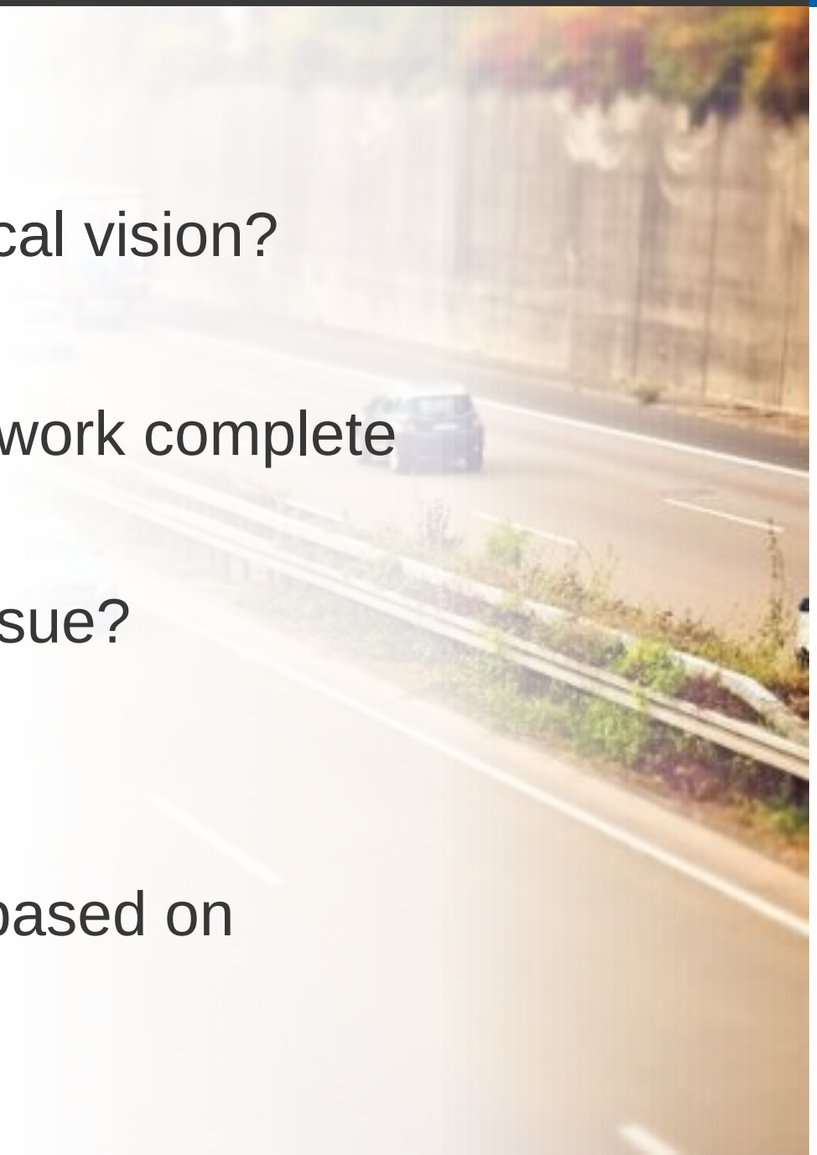
Regional Priorities Overview

Map of Tiering Results



Identifying Regional Priorities

- Review agency priorities with tiering results
  - Do problem magnitudes and types align with local vision?
- Identify optimal interchange projects
  - High regional priority + local priority + planning work complete
  - Consider surrounding context
    - Is there a corridor need or location-specific issue?
- Identify optimal projects for other local priorities
  - Review performance across scoring criteria
  - Determine appropriate project scope and type based on observed problems

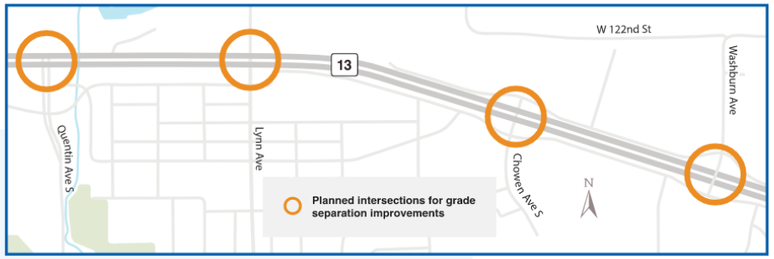


Implementation Plans

Intersection Mobility and Safety Study

Highway 13: Savage to Burnsville

Quentin Avenue to Washburn Avenue



Highlight of location needs

- This corridor has some of the highest levels of vehicle delay during peak periods
- This corridor has a high number of crashes regionally and overall

Corridor vision

- Grade separation throughout the corridor and at two key intersections
- Create a freeway facility from Highway 13 to Interstate 35W

Existing funding opportunities

- Meets criteria for various programs
- Key funding opportunities include:
  - MPDG
  - RAISE

Priority criteria

!!! High need/ high readiness

Study status

Complete

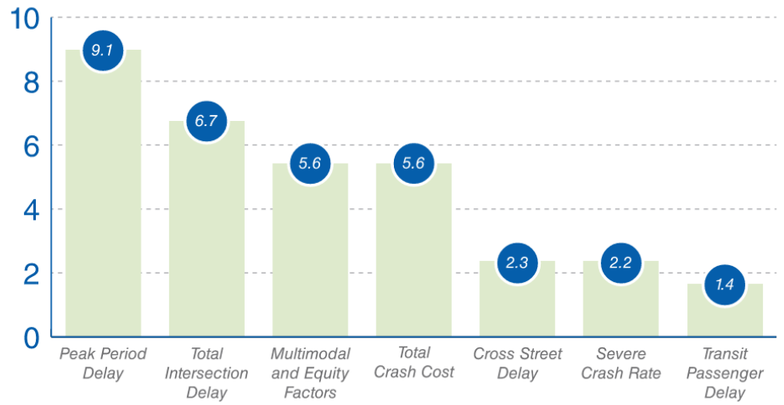
Environmental doc

Underway

Funding status

$$$ Partial funding: **yes**
Full funding: **no**

Evaluation scores



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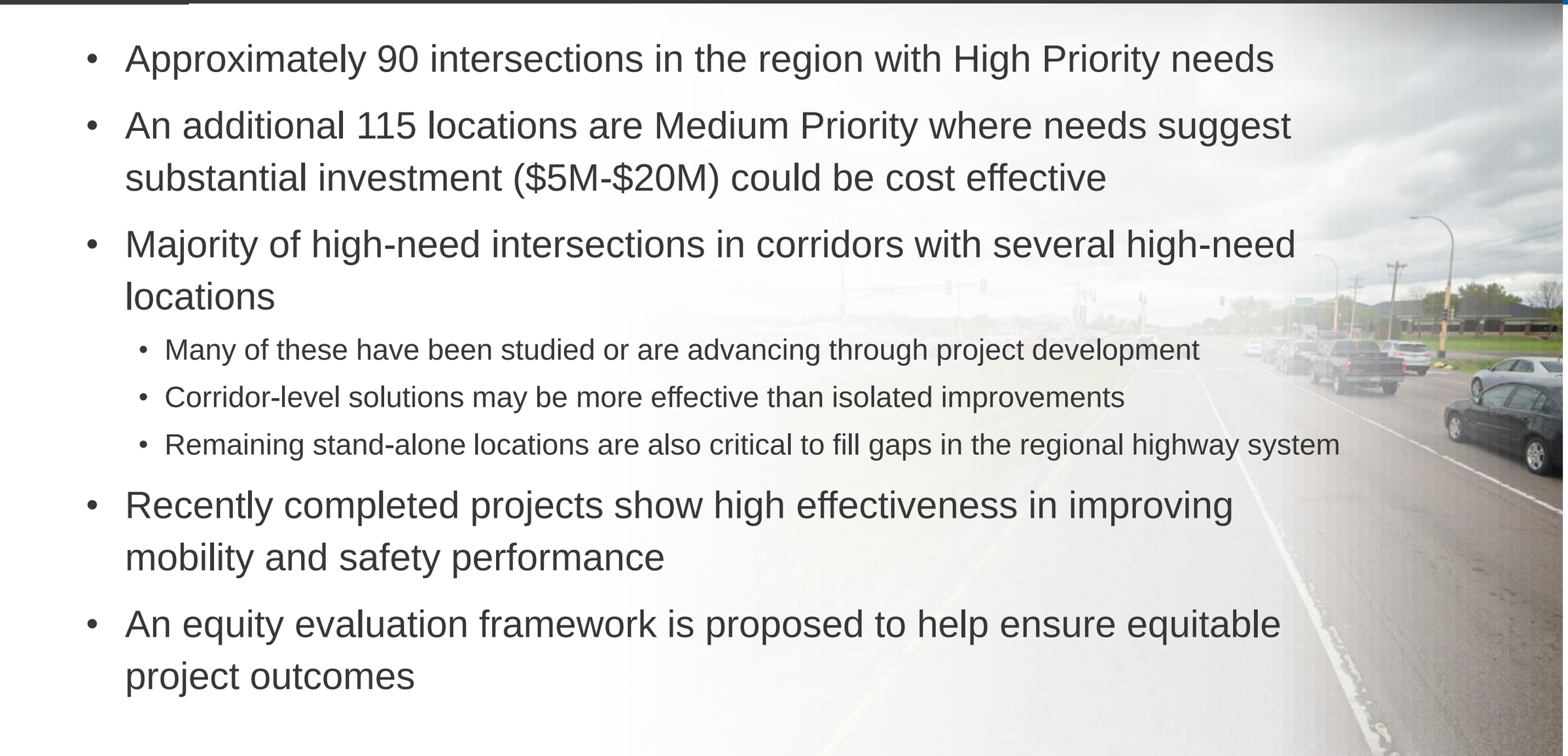
Implementation Next Steps

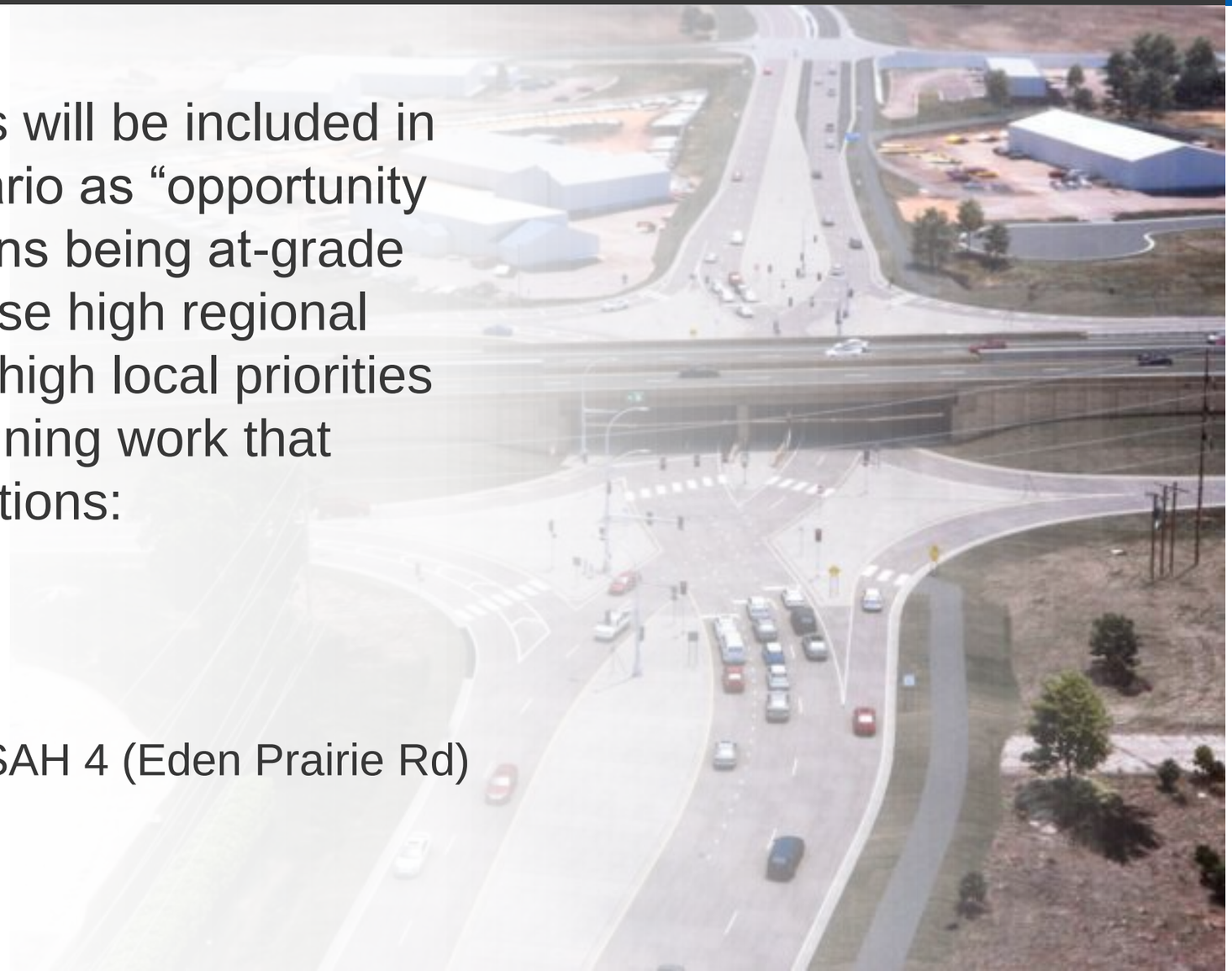
Findings and Conclusions

- Approximately 90 intersections in the region with High Priority needs
- An additional 115 locations are Medium Priority where needs suggest substantial investment ($5M-$20M) could be cost effective
- Majority of high-need intersections in corridors with several high-need locations
  - Many of these have been studied or are advancing through project development
  - Corridor-level solutions may be more effective than isolated improvements
  - Remaining stand-alone locations are also critical to fill gaps in the regional highway system
- Recently completed projects show high effectiveness in improving mobility and safety performance
- An equity evaluation framework is proposed to help ensure equitable project outcomes



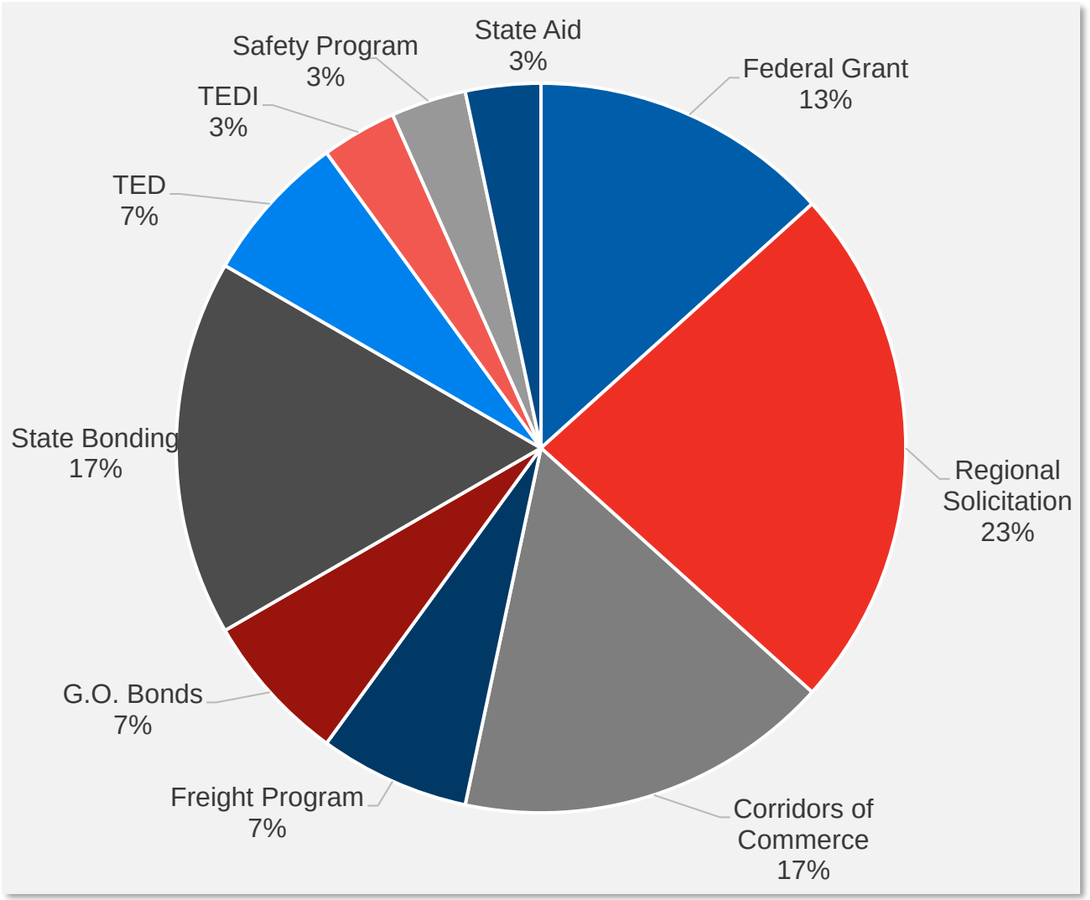
Application of IMSS in TPP

- All high priority locations will be included in Current Revenue Scenario as “opportunity areas” with most locations being at-grade solutions, except for those high regional priorities that were also high local priorities and had completed planning work that pointed to grade separations:
  - TH 13
  - TH 65 (north of CR 10)
  - TH 36 and TH 120
  - TH 5 and Hennepin CSAH 4 (Eden Prairie Rd)



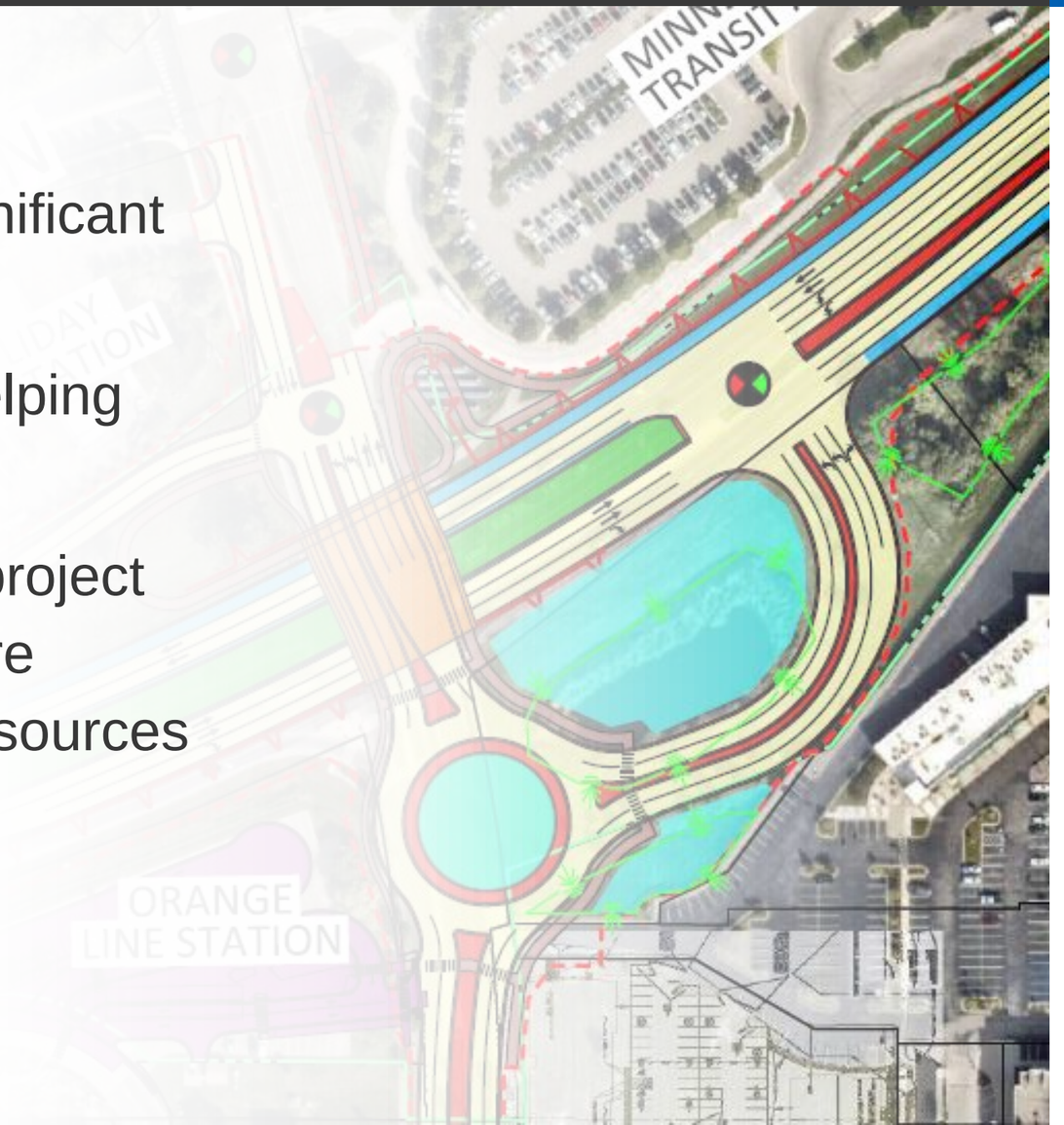
Funding Considerations

- Important role of Regional Solicitation in partially funding projects
  - Regional Solicitation funds are often “first dollars in”
  - Once partial funding is committed (i.e., Regional Solicitation), project becomes more competitive in grant opportunities
- Agencies can leverage study findings identifying their locations as regional priorities when applying for funding (e.g., MnDOT’s Reconnecting Communities grant application on Highway 55 west of downtown Minneapolis)



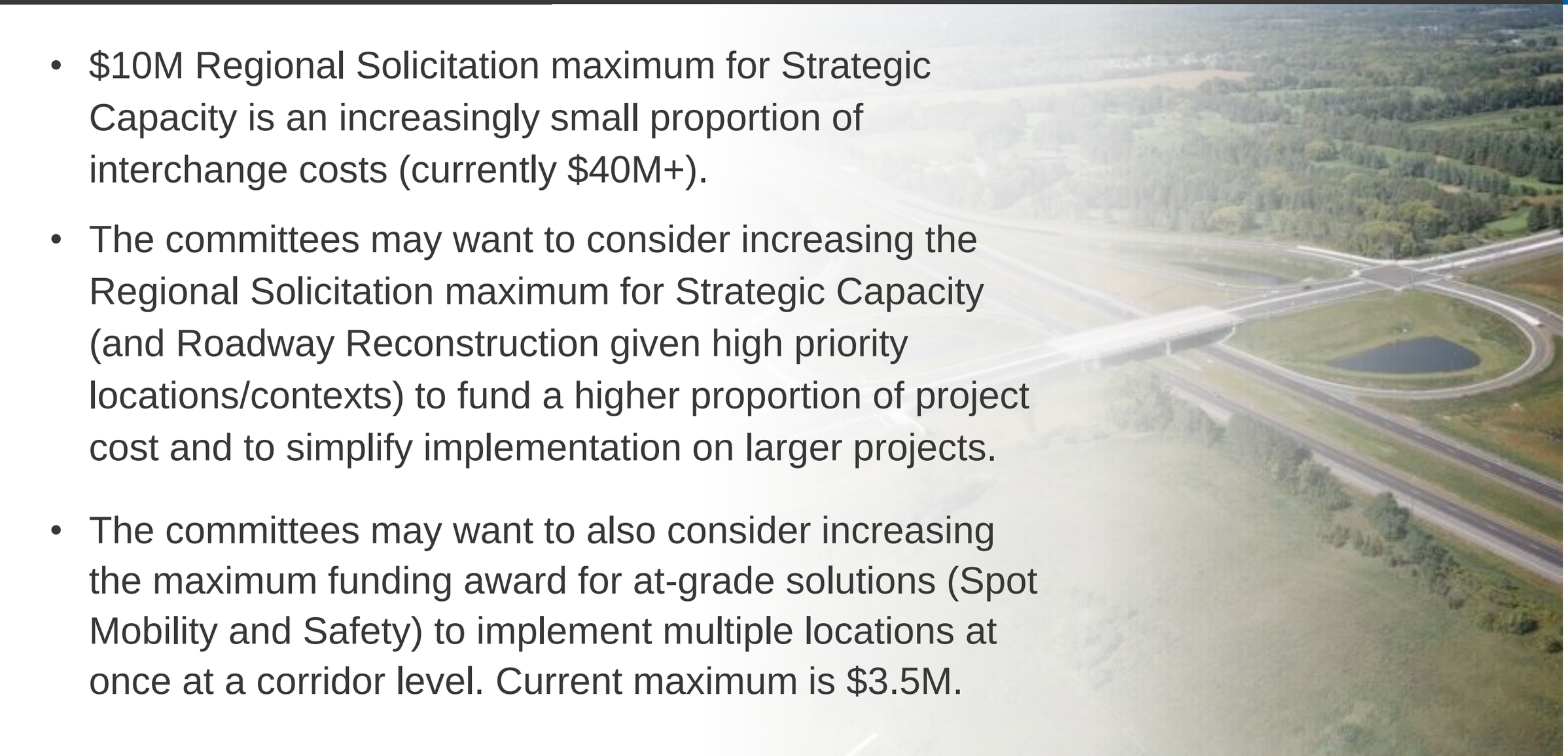
Funding Considerations

- Findings from Before-and-After studies demonstrate that these projects yield significant benefits
- Regional Solicitation is instrumental in helping implement these projects
- However, that remains a minor share of project cost and must be supplemented with more funding, typically from several additional sources



Application of IMSS in Regional Solicitation

- $10M Regional Solicitation maximum for Strategic Capacity is an increasingly small proportion of interchange costs (currently $40M+).
- The committees may want to consider increasing the Regional Solicitation maximum for Strategic Capacity (and Roadway Reconstruction given high priority locations/contexts) to fund a higher proportion of project cost and to simplify implementation on larger projects.
- The committees may want to also consider increasing the maximum funding award for at-grade solutions (Spot Mobility and Safety) to implement multiple locations at once at a corridor level. Current maximum is $3.5M.



Questions?

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