Intersection Mobility and Safety Study

Transportation Advisory Board

METROPOLITAN COUNCIL

November 15, 2023

Agenda

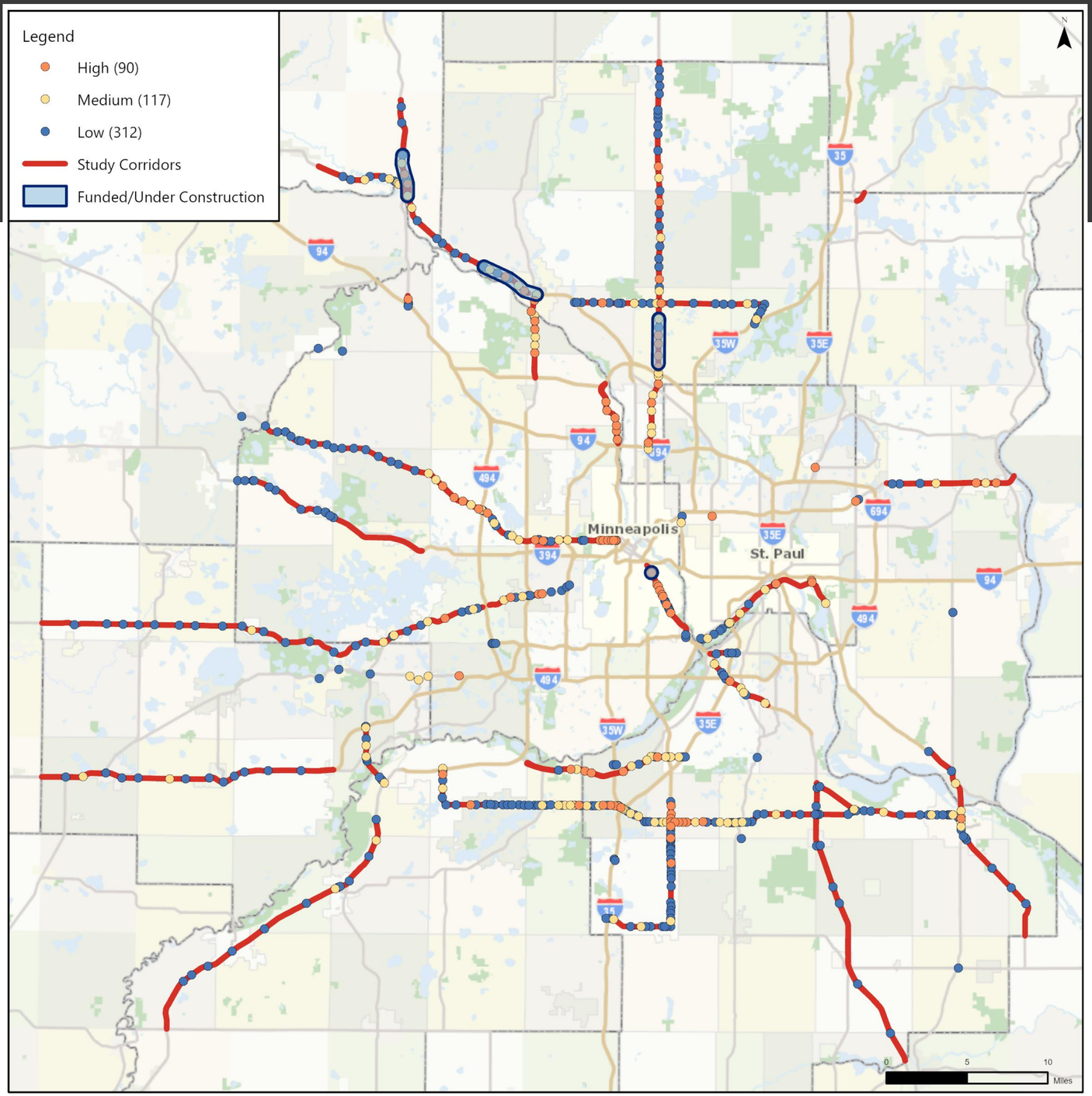
- Study Background
- Before-and-After Results
- Equity Evaluation
- Scoring and Tiering Results
- Implementation Next Steps
- Application of study in the 2050 Transportation Policy Plan (TPP)
- Application of study in the Regional Solicitation

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

Key takeaways:

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

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

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

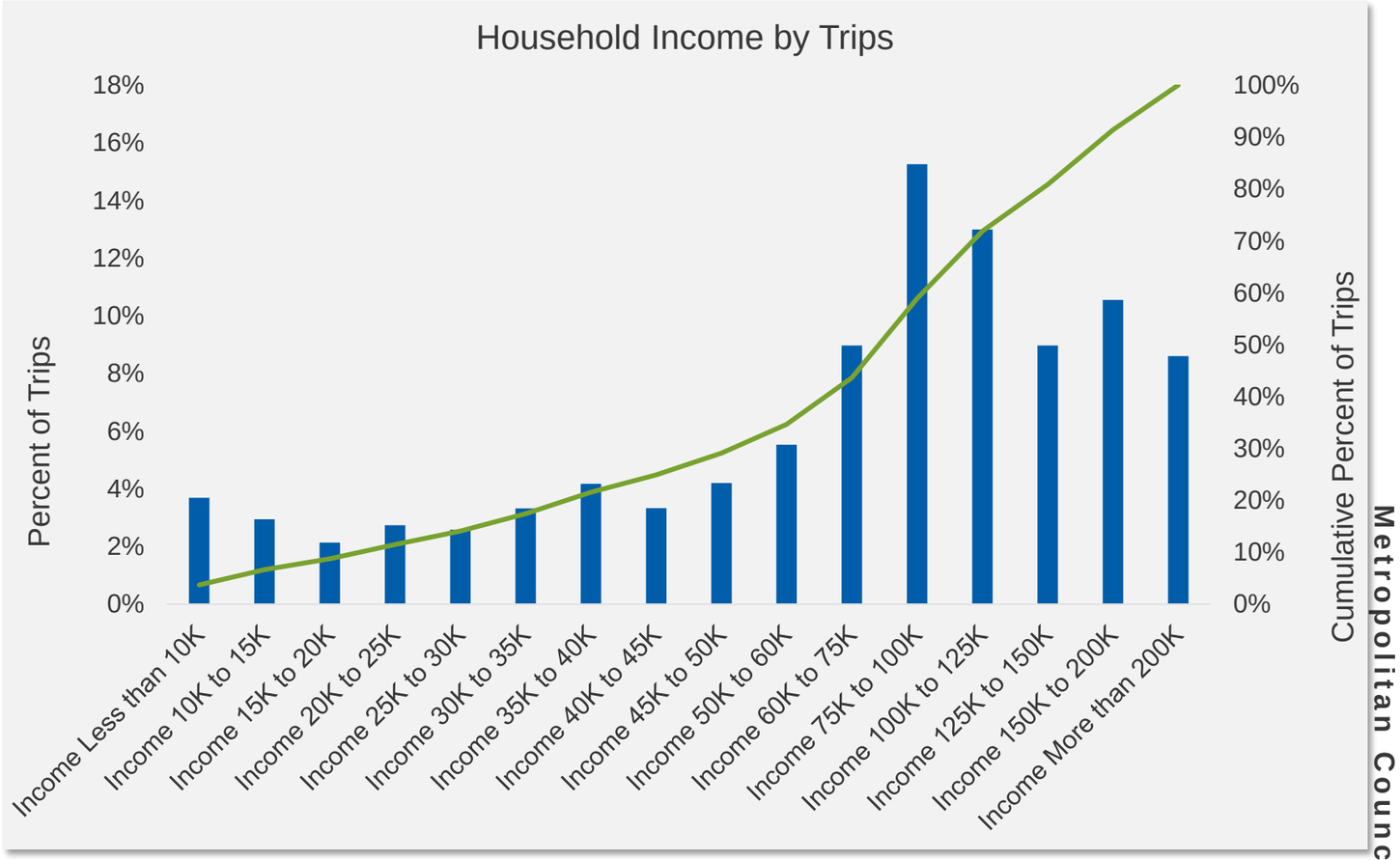
Burdens

- 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

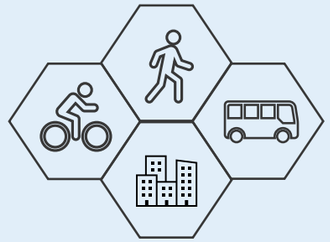
MOBILITY

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

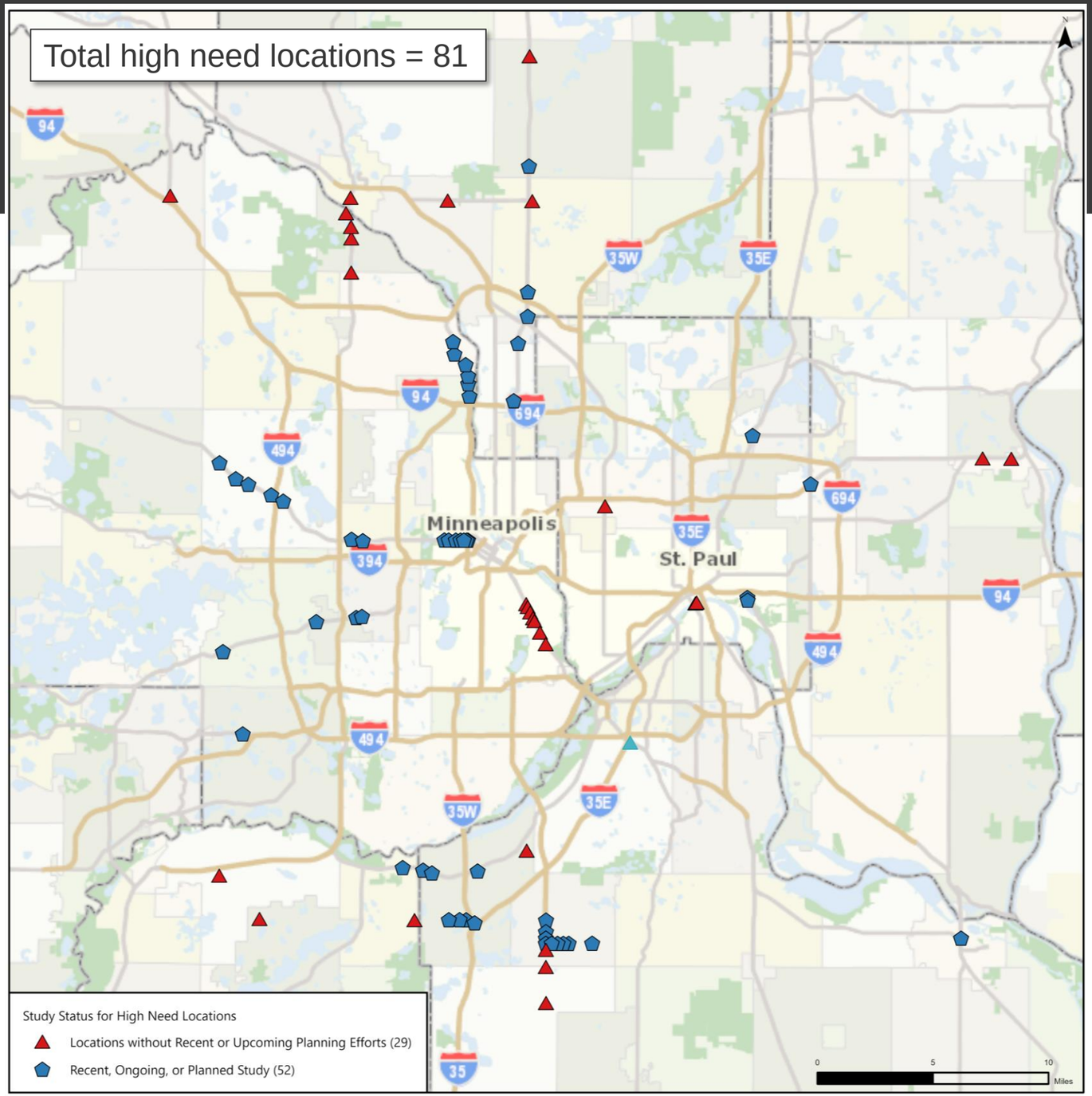
Severe Crash Rate		Rate of K+A crashes over 5 years per MEV
Total Crash Cost		Total dollar value over 5 years, K=2xA

MULTIMODAL & EQUITY

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

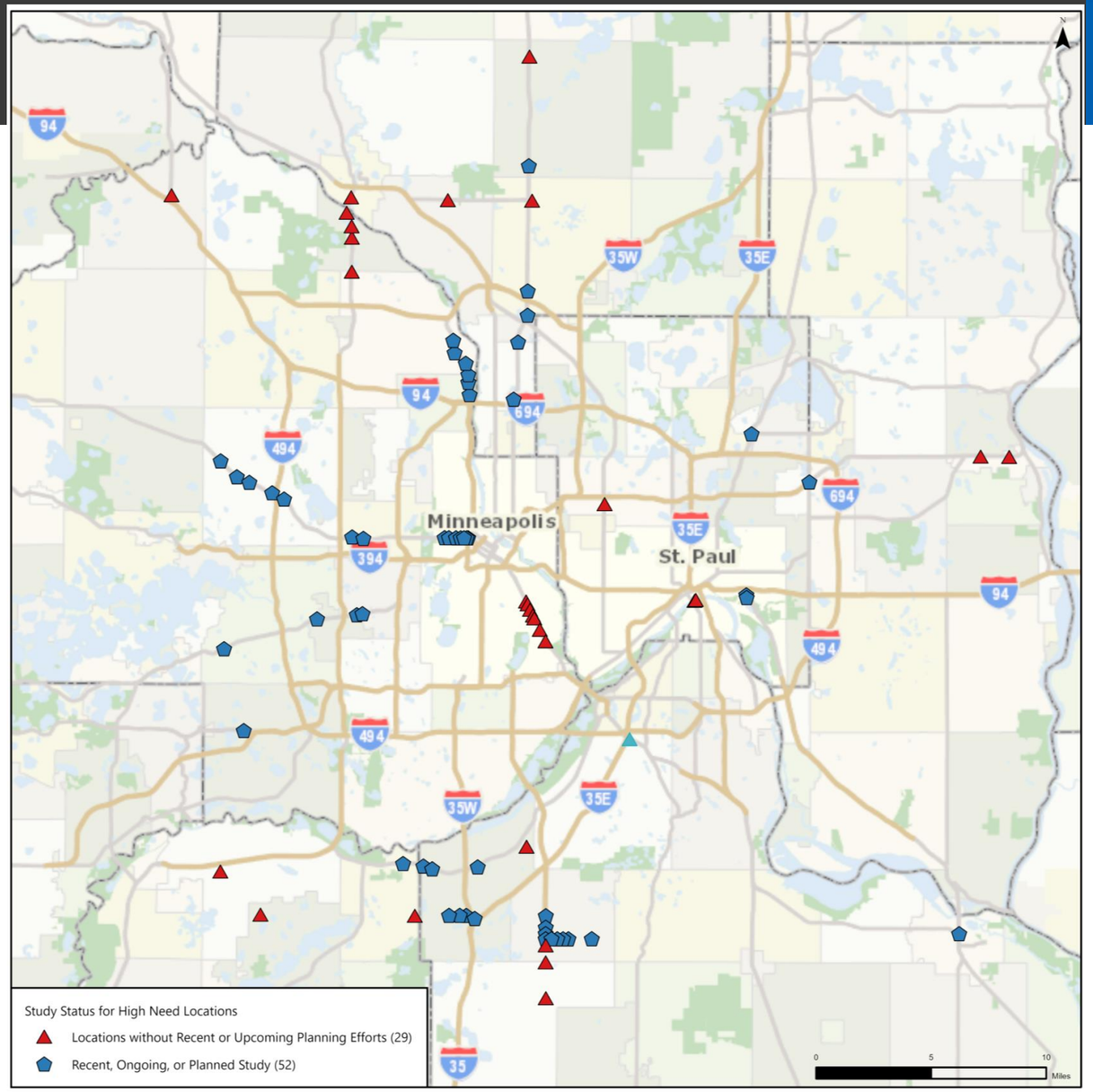
Top Scoring Locations

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



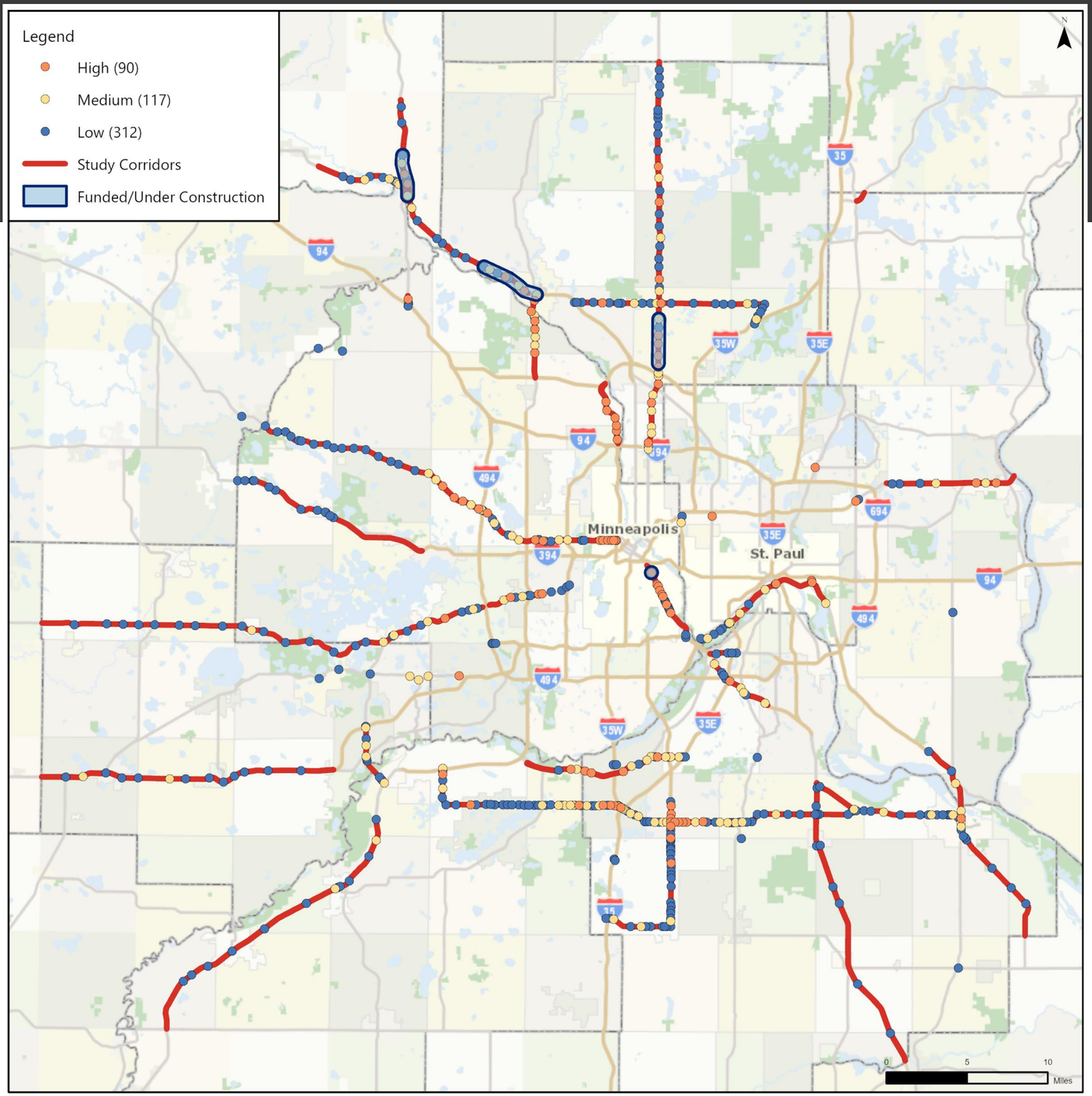
Corridor Sections

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



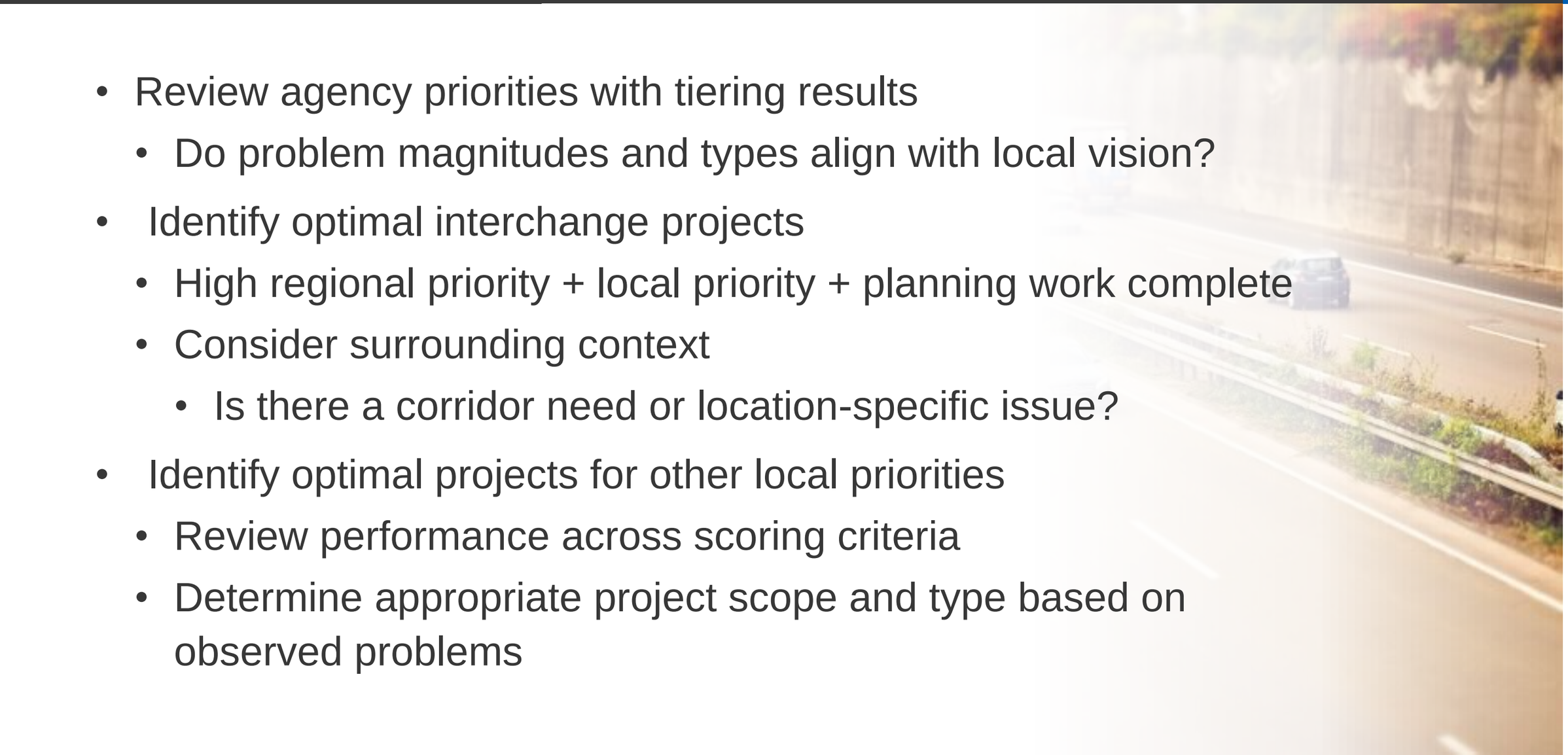
Regional Priorities Overview

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

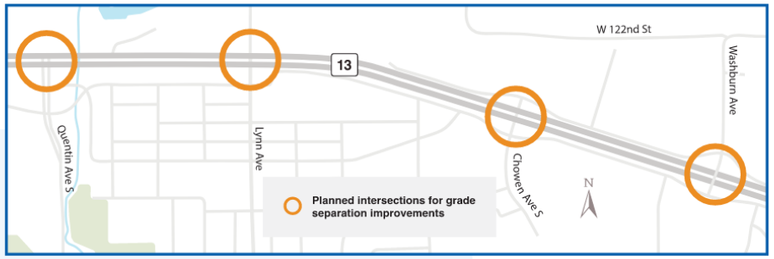


Implementation Plans

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

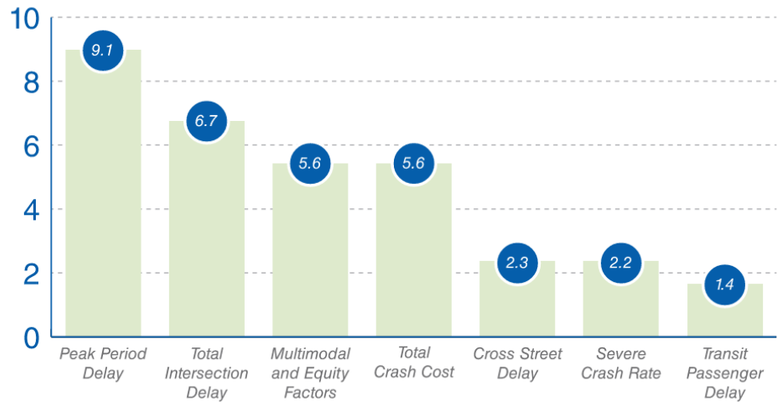
Environmental doc

Underway

Funding status

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

Evaluation scores



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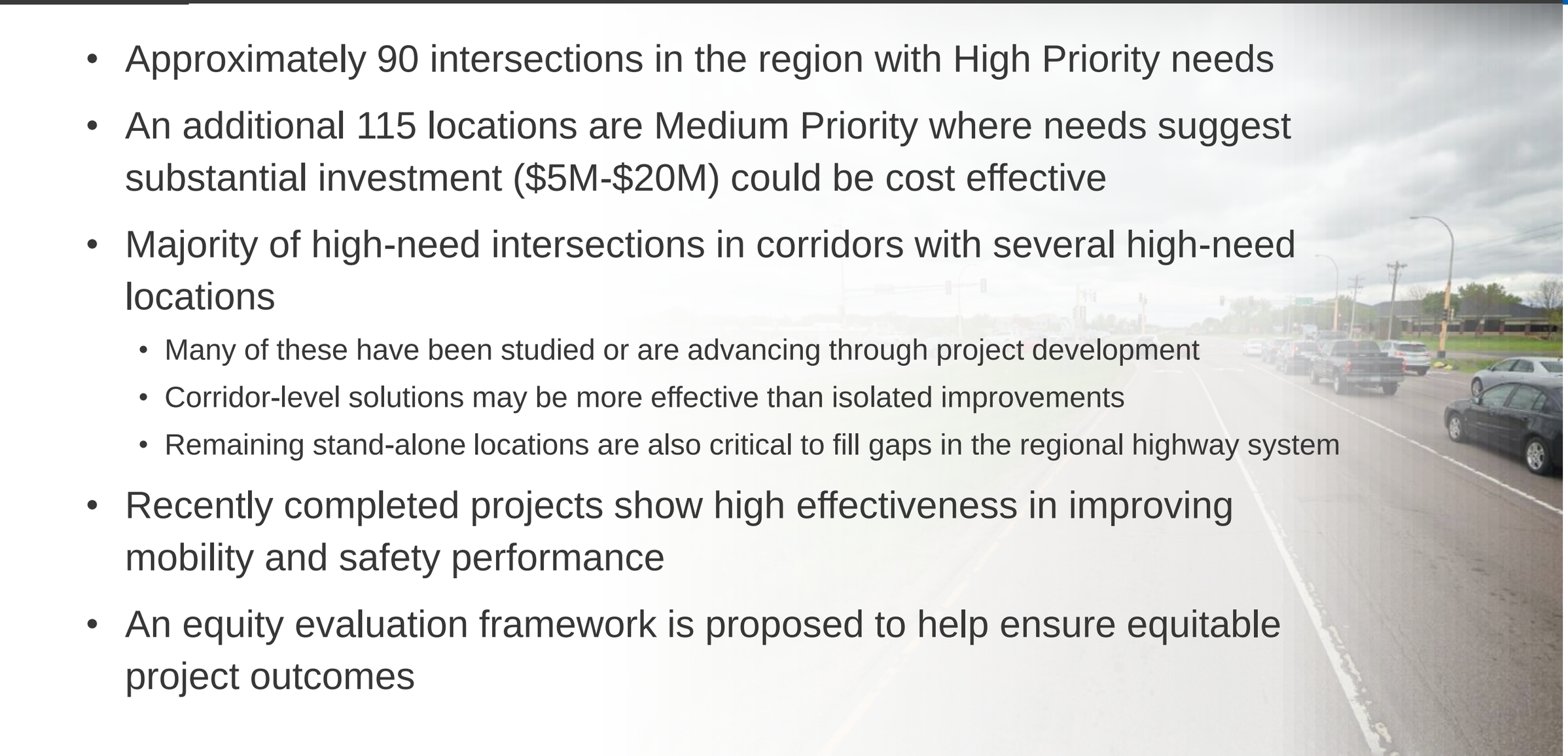
Implementation Next Steps

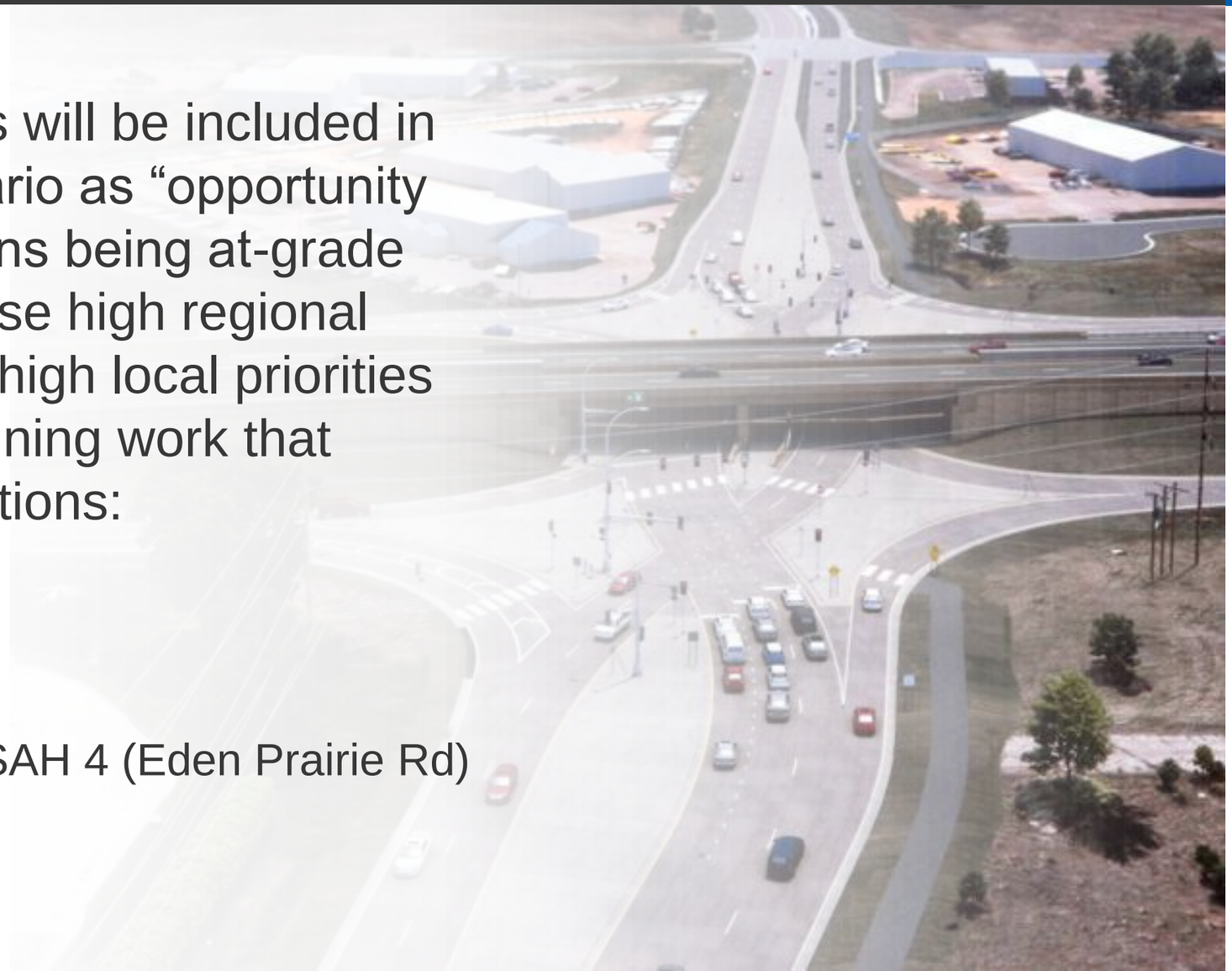
Findings and Conclusions

- 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



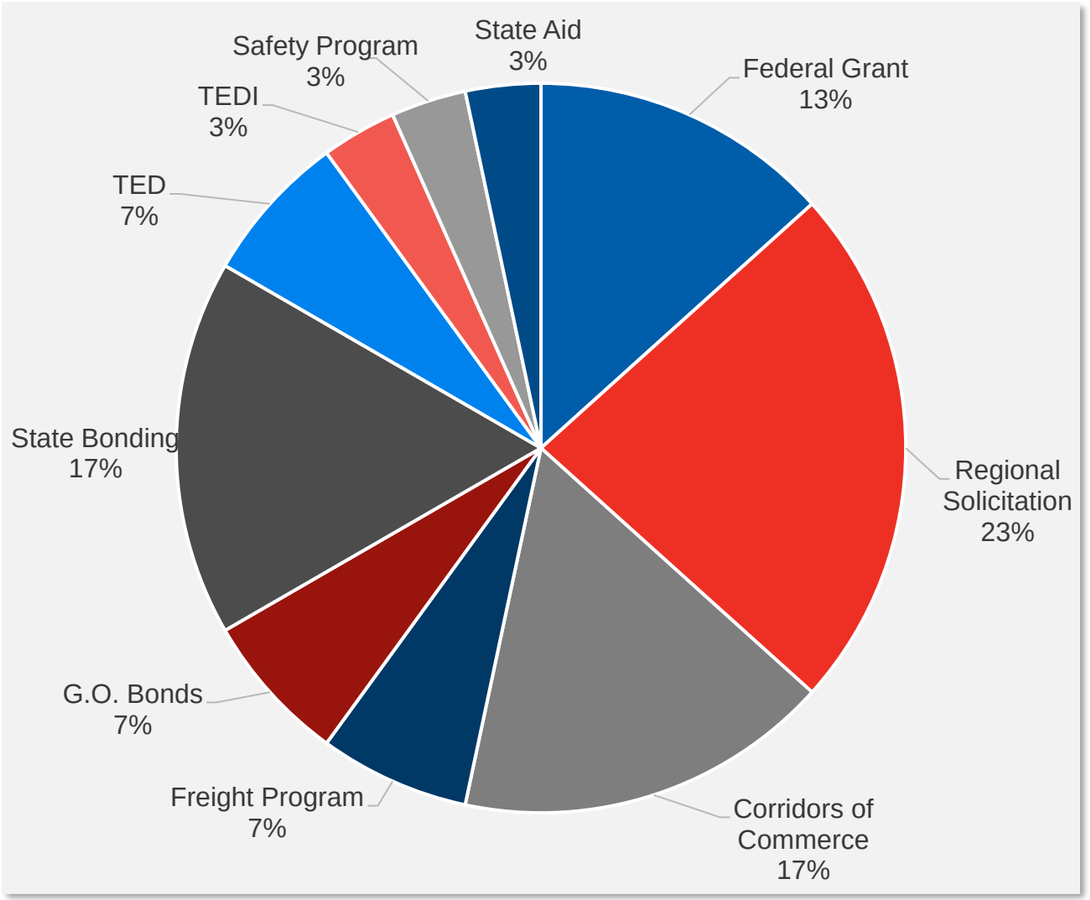
Application of Study in the 2050 TPP

- 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)



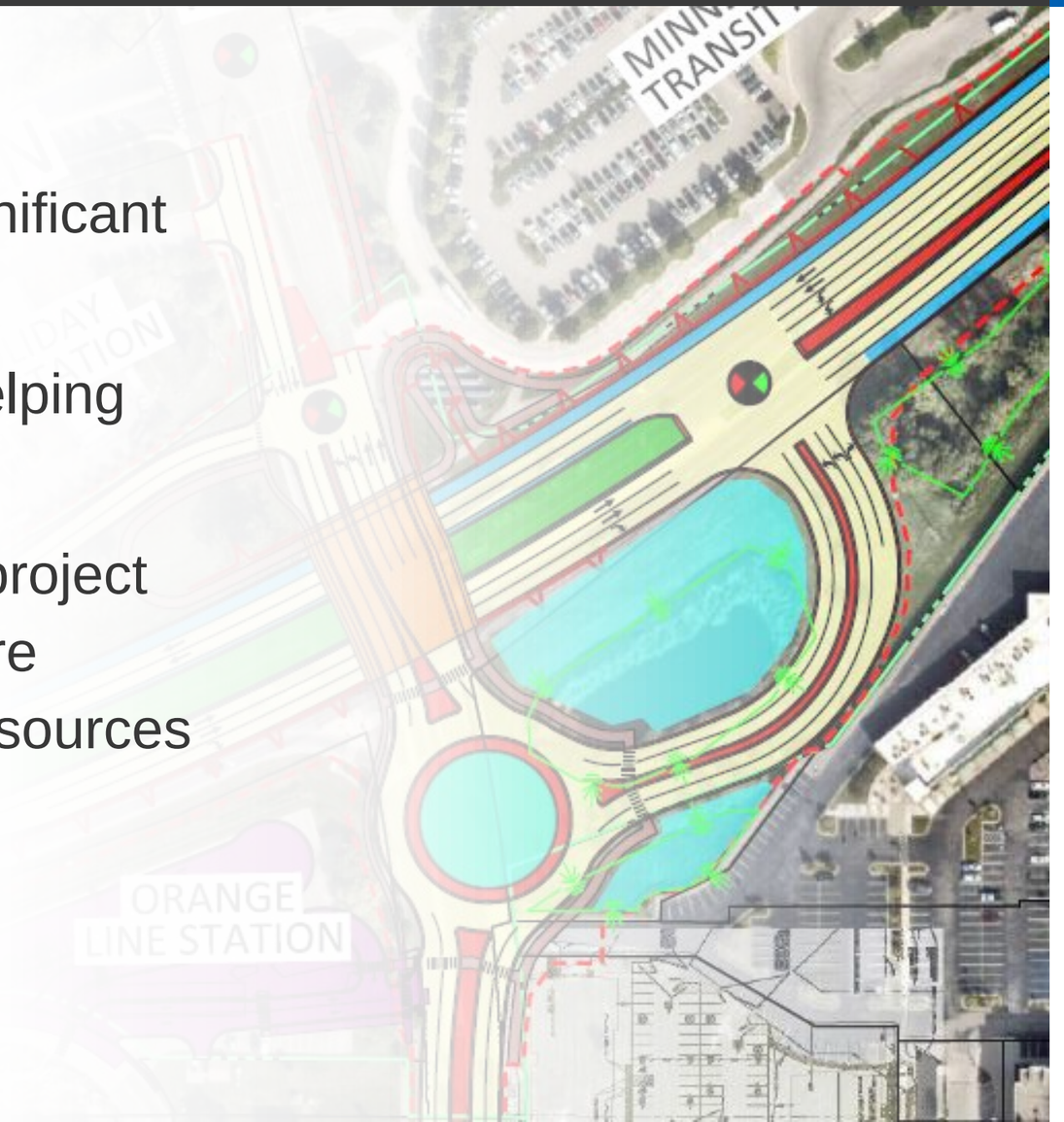
Funding Considerations

- 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)



Application of Study in Regional Solicitation

- 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



Questions?

Website:
https://metrocouncil.org/Transportation/System/Highways/Studies/Intersection-Mobility-and-Safety-Study.aspx

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