



# Intersection Mobility and Safety Study

TAC Funding & Programming



September 21, 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

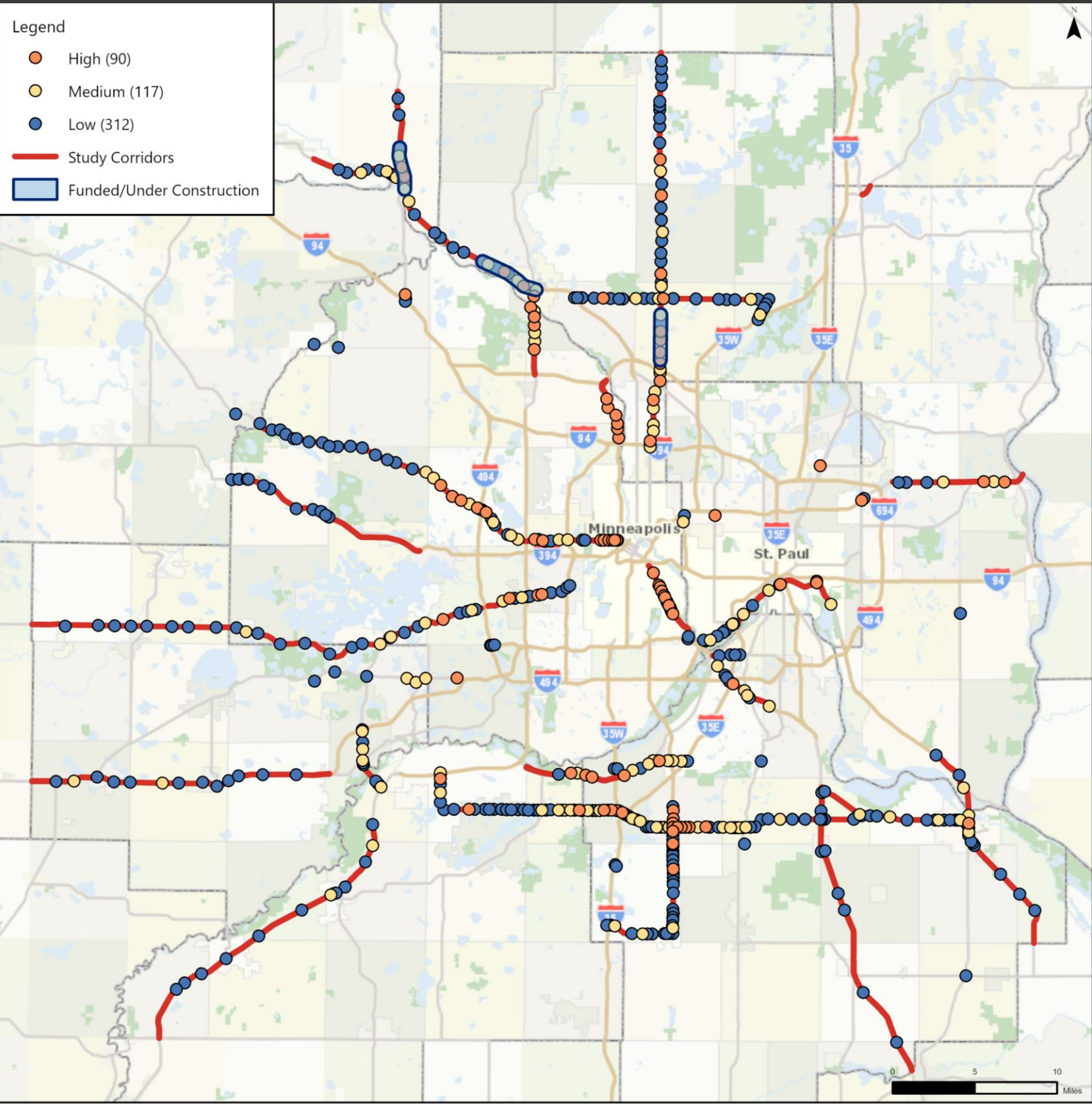
# Intersection Mobility and Safety Study



## 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

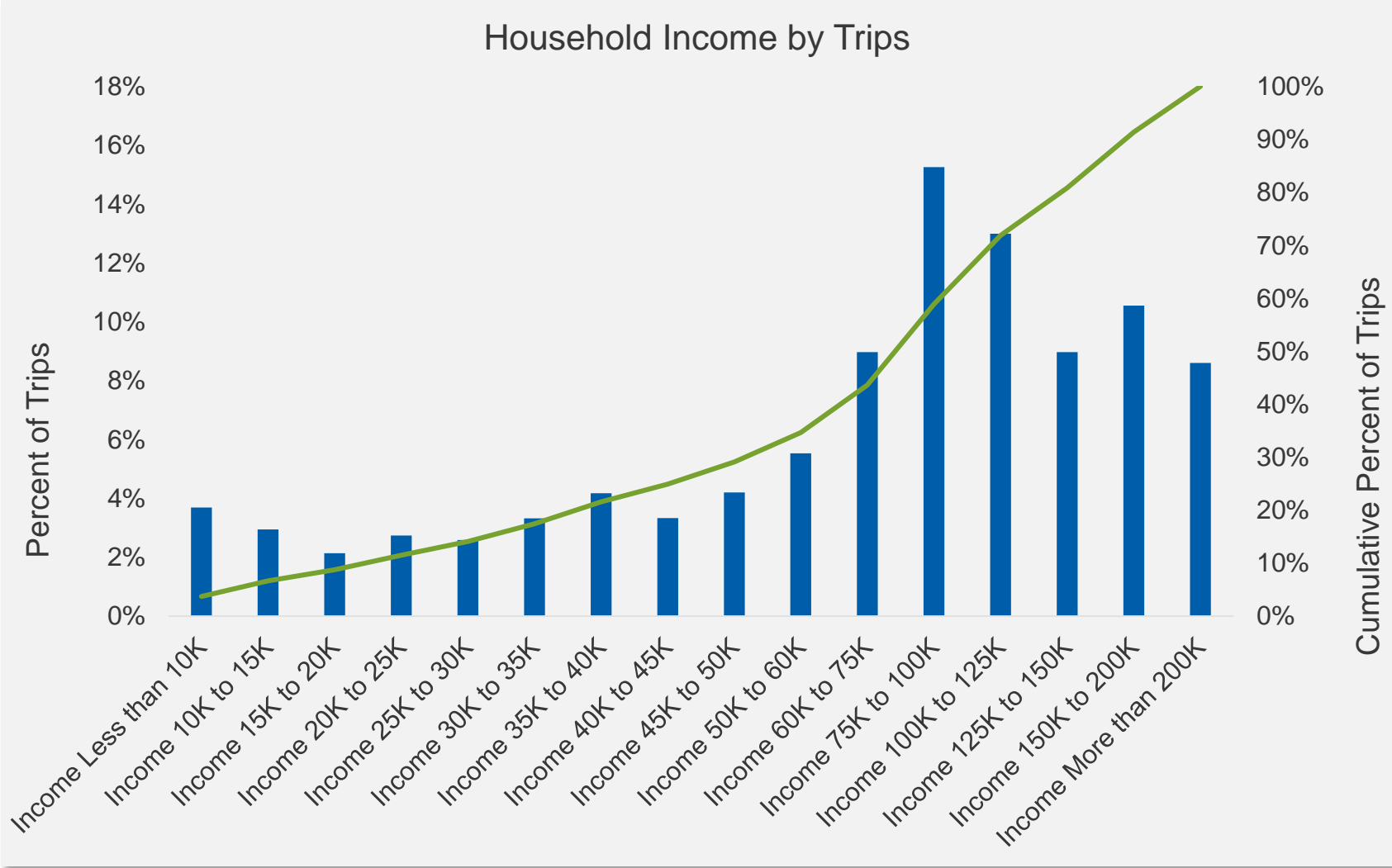
- Significant barrier effects (e.g., widen from four to six lanes, grade change, etc.)
- Significant cumulative/disproportionate impacts
- Increases displacement of residents, businesses or public amenities
- Reduces business revenue and employment (e.g., by relocating businesses)
- Greatly increases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

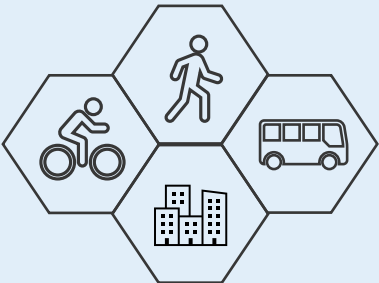
Total Crash Cost



Total dollar value over 5 years,  $K=2xA$

## MULTIMODAL & EQUITY

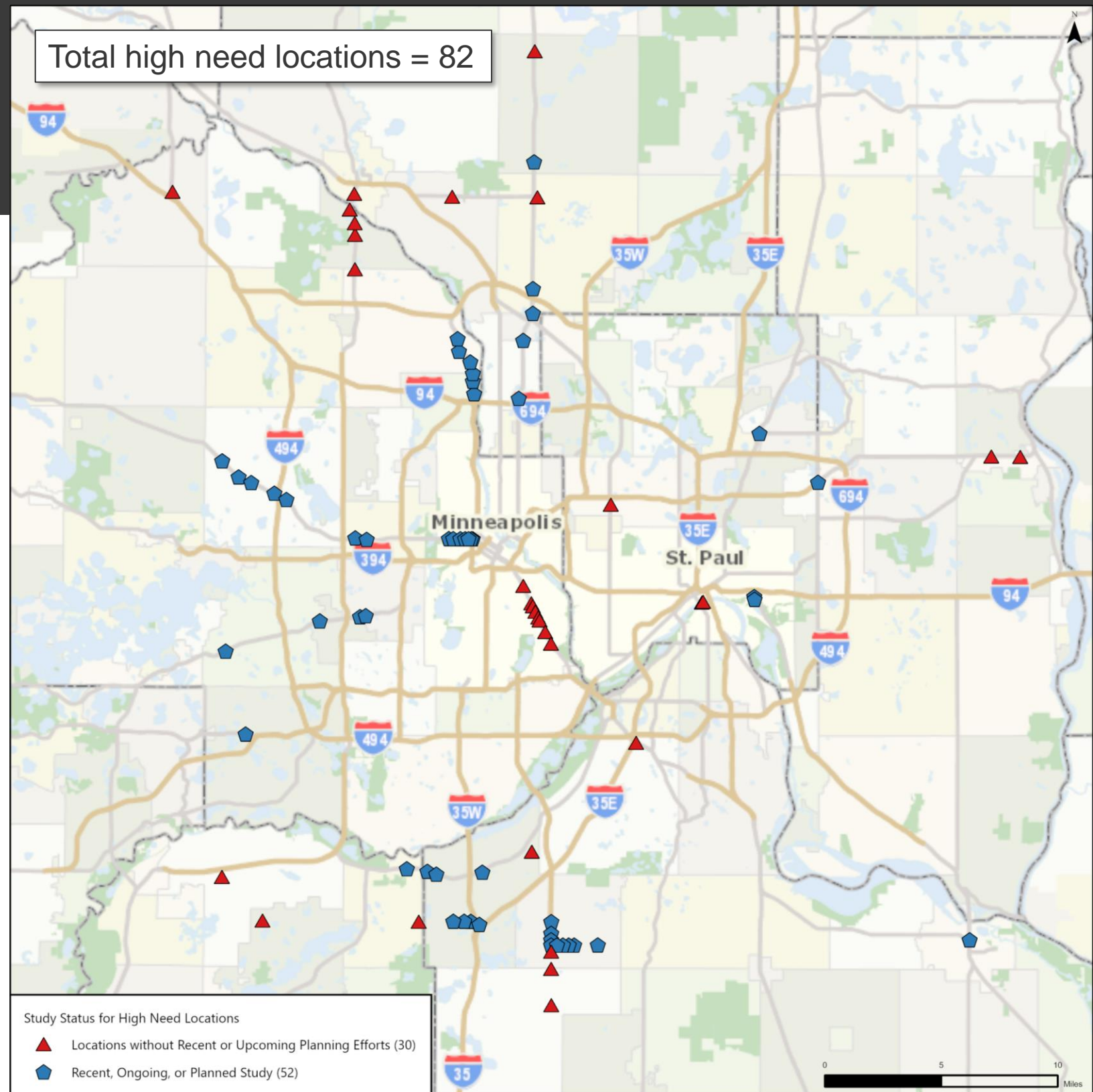
SPACE Analysis



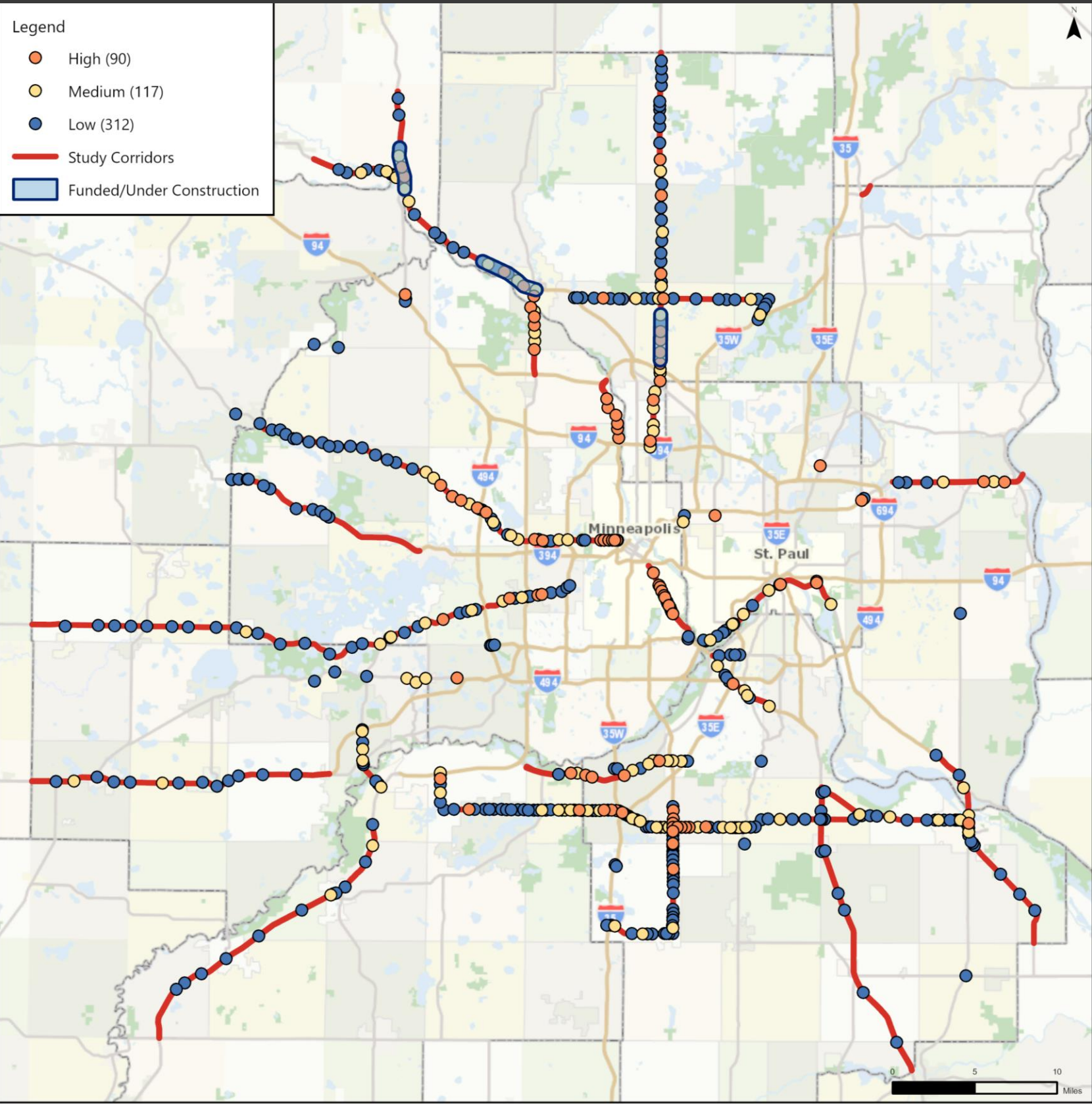
Aggregate score of 19 factors for ped/bike and equity

# Top Scoring Locations

Rank	Location
1	6TH AVE N & HIGHWAY 55 & LYNDAL 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	26TH ST E & HIAWATHA AVE
8	HIGHWAY 55 & LYNDAL AVE N
9	TH 65 NE & OSBORNE RD
10	TH 252 & 66TH AVE
11	CSAH 42 & CSAH 5
12	CSAH 23 (CEDAR AVE) & 140TH ST
13	38TH ST E & HIAWATHA AVE
14	35TH ST E & HIAWATHA AVE
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

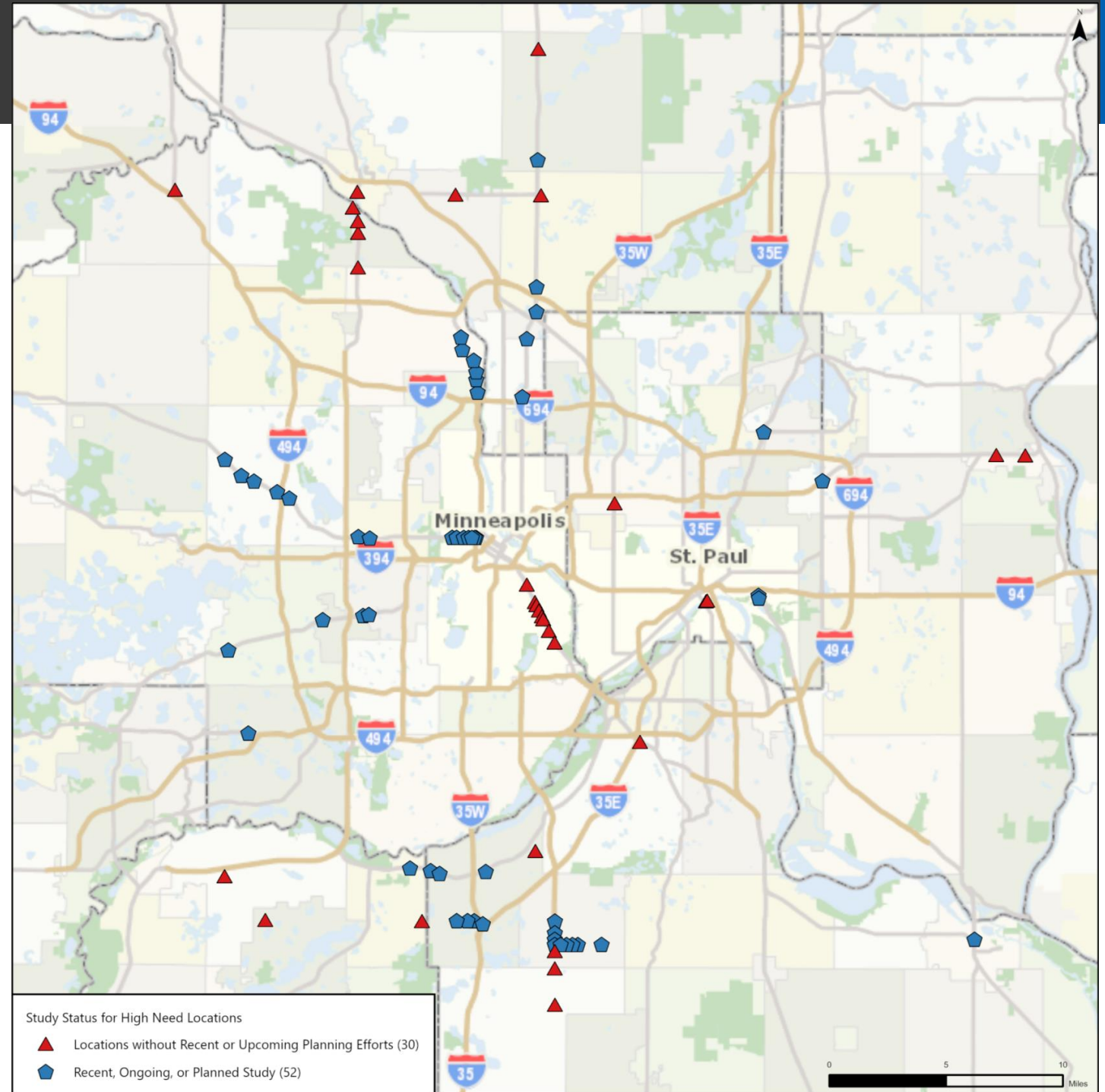


# Map of Tiering Results



# 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

# 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



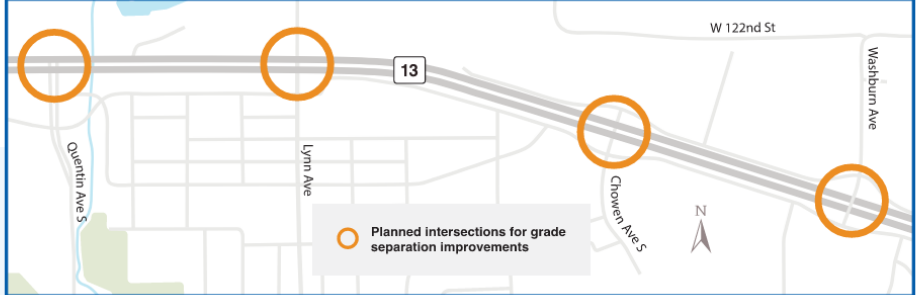
# Implementation Plans




## 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

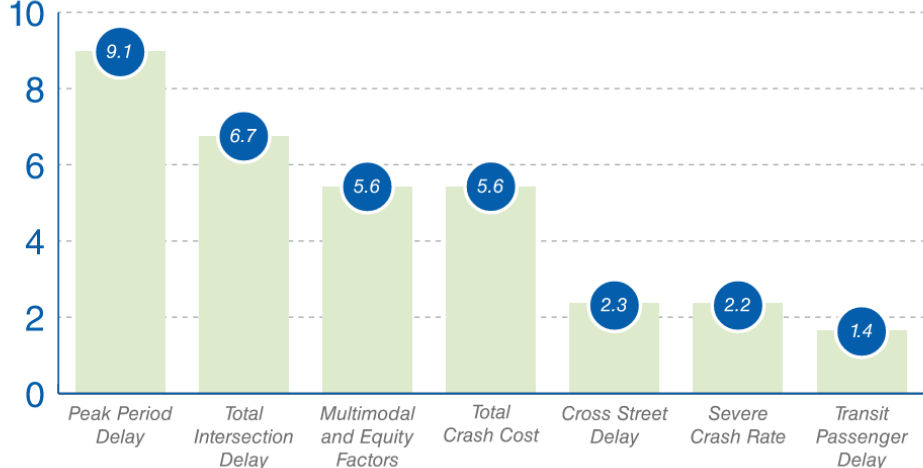
#### Environmental doc

 Underway

#### Funding status

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

## Evaluation scores



Metric	Score
Peak Period Delay	9.1
Total Intersection Delay	6.7
Multimodal and Equity Factors	5.6
Total Crash Cost	5.6
Cross Street Delay	2.3
Severe Crash Rate	2.2
Transit Passenger Delay	1.4

### Contacts

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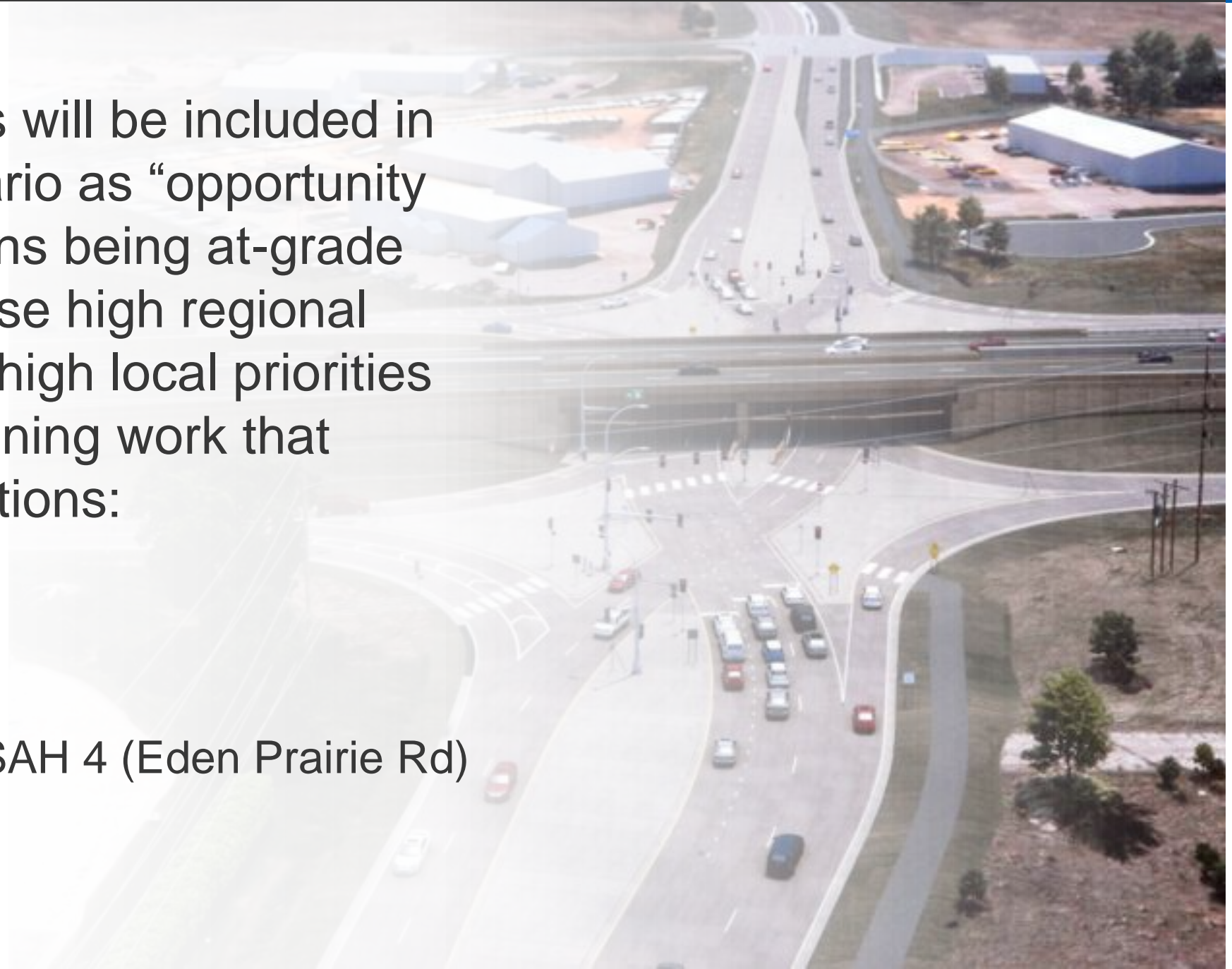
# Implementation Next Steps

# 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

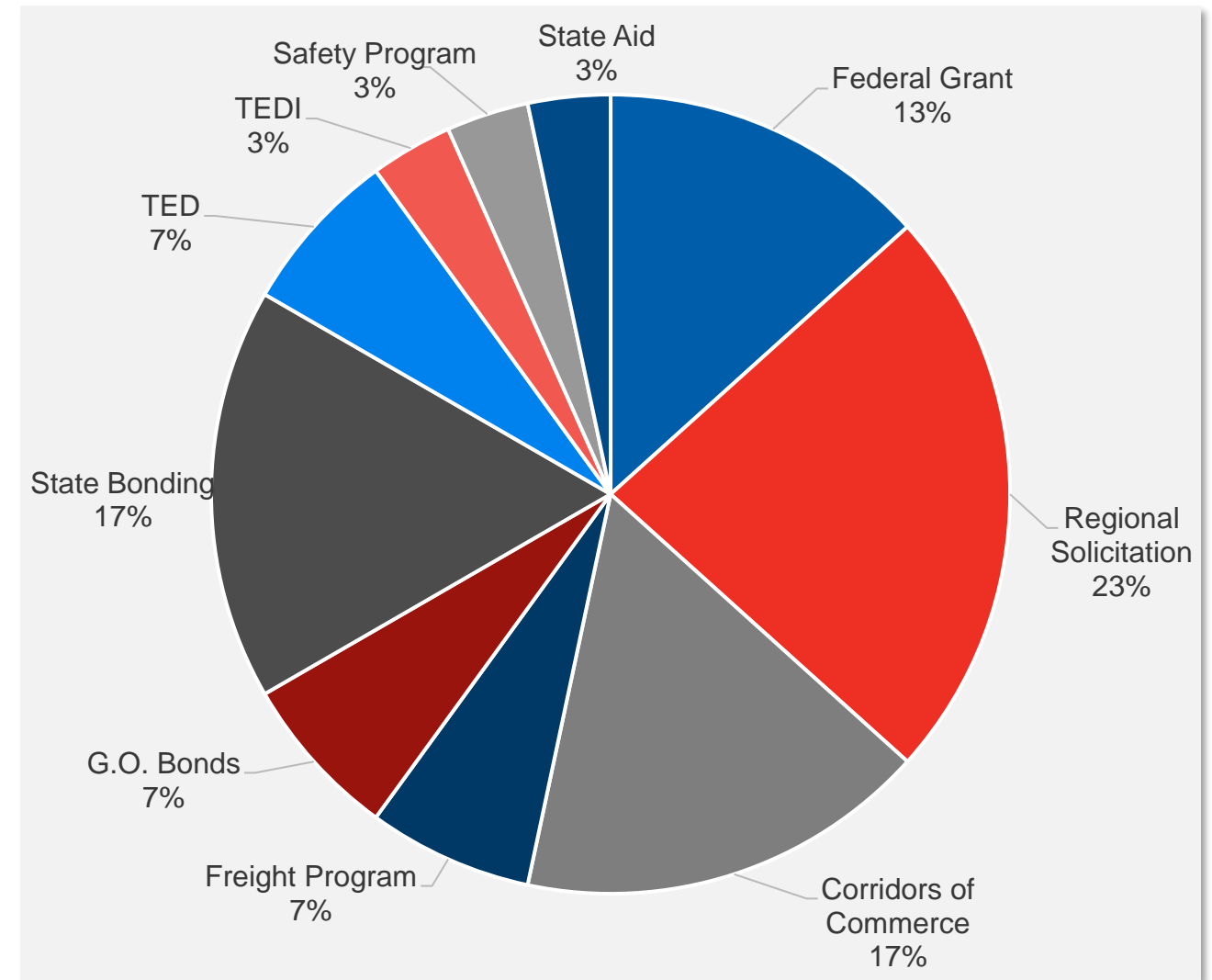
# Application of IMSS in TPP

- 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
  - 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 both Strategic Capacity and Roadway Reconstruction 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?

Steve Peterson, Senior Manager of Highway  
Planning

