Metro District Bicycle Plan

Guiding MnDOT's investments in bicycle facilities

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Photo credit: Liz Walton

MinnesotaGO
A Collaborative Vision for Transportation

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Technical Advisory Committee

Nathan Abney, Scott County

Karen Berglund, Our Streets Minneapolis

Connie Bernardy, Ramsey County

Jack Broz, City of Richfield

Reuben Collins, City of St. Paul

Matthew Dyrdahl, City of Minneapolis

Steve Elmer, Met Council

Jack Forslund, Anoka County

Joe Gustafson, Washington County

Jarrett Hubbard, Scott County

Emily Jorgensen, Washington County

Jordan Kocak, Hennepin County

Lil Leatham, Dakota County

Joe Lux, Ramsey County

Danny McCullough, Three Rivers Parks District

Theresa Nelson, Move Minnesota

Ethan Osten, St. Paul Bicycle Coalition

Sam Pertz, Carver County

Tom Thao, Move Minnesota

MnDOT Metro District Staff

Gina Mitteco

Mackenzie Turner Bargen

Kaare Festvog

Julie Dresel

MnDOT Central Office

Jake Rueter

Liz Walton

Eric DeVoe

Jasna Hadzic-Stanek

Consultant Team – Toole Design

Connor Cox

Ciara Schlichting, AICP

Chris Bower, P.E.

K.C. Atkins, P.E.

Galen Omerso

Jacob Nigro

Spencer Gardner, AICP

Greta Alquist, AICP

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CHAPTER 1 | Introduction

The Minnesota Department of Transportation (MnDOT) Statewide Bicycle System Plan (SBSP) was completed in 2016 and sets an ambitious vision and goals to improve safety, convenience, and comfort for local, regional, and statewide bicycle trips in Minnesota. To help achieve these goals, MnDOT developed district bicycle plans for each district in the state, including this plan for the Metro District. The Metro District Bicycle Plan (MBP) is intended to guide Metro District staff decisions regarding plans, projects, operations, and maintenance.

Planning and Policy Context Overview

MnDOT has existing policies in place to promote and encourage bicycling, including a Complete Streets Policy, which considers the needs of all transportation users through the phases of planning, project development, operation, and maintenance. The 20-year Minnesota State Highway Investment Plan (MnSHIP) established funding targets for bicycling infrastructure based on projected needs, available revenues, and public input. MnSHIP identified a statewide funding target of $140 million for bicycle infrastructure over a 20-year period through 2037. This funding level is significantly less than the estimated statewide need of $580 million. MnSHIP guides MnDOT to invest in bicycle facilities concurrently with bridge and pavement projects with limited opportunities for standalone bicycle projects. The district bicycle plans will help guide decisions about bicycle investments given the shortage of funding to address all bicycle needs on the MnDOT Highway system.

MnDOT's 2018 project selection policy requires that MnDOT clarify investment decisions and identify investment priorities. The project selection policy includes the MBP as a specific scoring criterion for identifying standalone bicycle investment priorities.

One of MnDOT's SBSP goals is to work with partners to develop a connected network of state bicycle routes. The SBSP identified search corridors for a state priority bicycle network that connects to the Regional Bicycle Transportation Network (RBTN)[1] in the Twin Cities metropolitan area. The RBTN was developed by the Met Council in partnership with MnDOT, counties, cities and bicycling-focused non-profits. The RBTN considered local and regional bicycle and trail planning efforts, and was adopted into the Met Council's 2040 Transportation Policy Plan (TPP) in 2015 and, most recently refined in its TPP 2018 Update[2]. The MBP builds on the SBSP and TPP and identifies MnDOT's bicycle investment priorities along and across MnDOT Highways.

The SBSP emphasized the importance of MnDOT supporting local bicycle networks. Local units of government in the Twin Cities metropolitan area are required to update their comprehensive plans every 10 years, which includes transportation and trail plans. Recent trends indicate that local partners

[1] Metropolitan Council (2014), *Twin Cities Regional Bicycle Systems Study*. Retrieved from: https://metrocouncil.org/Transportation/Publications-And-Resources/Regional-Bicycle-System-Study-Final-Report.aspx

[2] Metropolitan Council (2018), *Transportation Policy Plan (Chapter 7).* Retrieved from: https://metrocouncil.org/Transportation/Planning-2/Key-Transportation-Planning-Documents/Transportation-Policy-Plan/tpp-update/2018-Transportation-Policy-Plan-Update/Chapter-7-Bicycle-and-Pedestrian-Invetment-Directi.aspx

are preparing detailed bicycle master plans to supplement their comprehensive plans. Many local partners are planning and implementing local bicycle networks that may include facilities that are along or cross MnDOT Highways. The MBP identifies where local units of government have prioritized bicycling investments along or across MnDOT Highways.

Metro District Bicycle Plan Purpose

The purpose of the MBP is to support regional and local bicycle networks, prioritize MnDOT bicycle investments in the Metro District, and identify actions District staff can take to implement the SBSP strategies and achieve the SBSP goals and vision. Specifically, the MBP aims to:

- Understand what role MnDOT Highways play in local, regional, and state bicycle networks within the 8-County Metro District
- Develop prioritization criteria for MnDOT investments in bicycle facilities
- Prioritize areas with bicycling needs on MnDOT's system to guide investment and project development decisions, and
- Develop strategies and actions to guide Metro District's ongoing work to improve bicycling along and across MnDOT Highways in the region

Statewide Bicycle System Plan Vision, Goals, and Strategies

The 2016 SBSP provides a framework for how MnDOT will address bicycling needs and interests in Minnesota. Through the community engagement process in the SBSP, people from across Minnesota expressed a desire for bicycling facilities that feel safe and comfortable for all types of people, regardless of their age or ability. The MBP provides further guidance to Metro District's work and investment priorities to implement the vision and goals set forth in the SBSP.

Vision

Bicycling is safe, comfortable and convenient for all people.

Goals

Safety and Comfort: *Build and maintain safe and comfortable bicycling facilities for people of all ages and abilities.*

Local Bicycle Network Connections: *Support regional and local bicycling needs.*

State Bicycle Routes: *Develop a connected network of state bicycle routes in partnership with national, state, regional and local partners.*

Ridership: *Increase the number of bicycle trips made by people who already bike and those who currently do not.*

Strategies

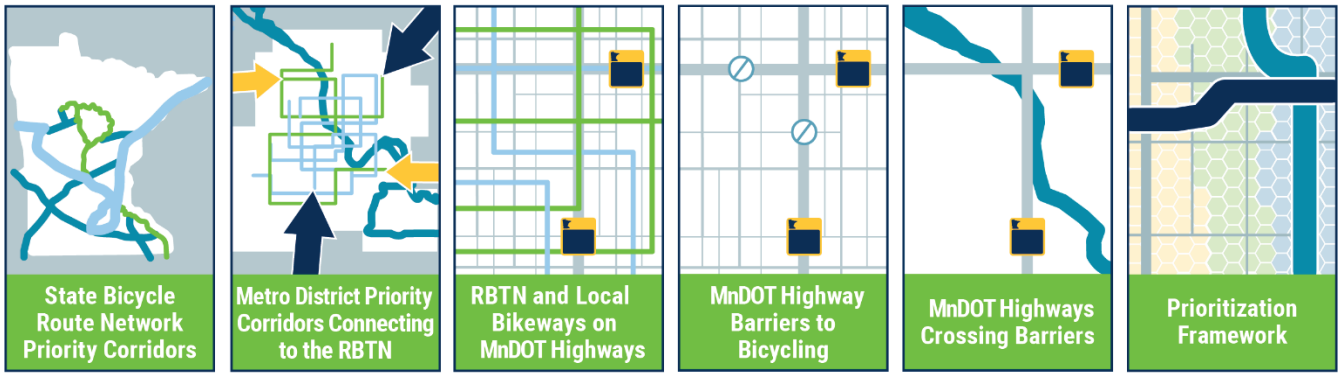
The SBSP includes 19 strategies that demonstrate MnDOT's commitment to addressing local bicycling needs, developing the state bikeway network, and increasing ridership through the 6Es – engineering, education, enforcement, evaluation, encouragement, and evolution. MnDOT introduced a sixth E, termed Evolution, to describe how MnDOT will respond to the changing bicycling landscape beyond the adoption of the SBSP.

Metro District Bicycle Planning Process

The Metro District bicycle planning process included six major components:

1. Identify state bicycle route network priority corridors (completed in the SBSP)
2. Identify district priority corridors (completed in the SBSP) that connect to the RBTN
3. Identify RBTN alignments and corridors as well as existing and planned local bikeways along MnDOT Highways
4. Identify MnDOT Highways that are barriers to regional and local bicycle travel
5. Identify MnDOT Highways that may provide opportunities to cross barriers such as freeways, expressways, railroads, rivers, and streams
6. Develop a framework to help MnDOT prioritize bicycle investments along and across MnDOT Highways

Figure 1: Metro District Bicycle Plan elements.



Technical Advisory Committee

A Technical Advisory Committee (TAC), composed of regional stakeholders from across the Metro District, helped guide the development of the MBP. TAC members included representatives from counties, cities, and non-profit organizations, including Scott County, Ramsey County, Anoka County, Washington County, Hennepin County, Dakota County, Carver County, City of Richfield, City of St. Paul, City of Minneapolis, Met Council, Our Streets Minneapolis, Three Rivers Park District, Move Minnesota, and the St. Paul Bicycle Coalition.

The TAC met four times, with the role of reviewing and discussing:

- MBP goals, projected outcomes, and project approach
- Bicycling suitability data analysis results and data needs for planned facilities along and across MnDOT Highways
- Bicycling investment prioritization framework methodology and criteria, and
- Weighting and prioritization results and how MnDOT should use the plan to guide policy, planning, programming and operations decisions. **Appendix C** includes some of the policy challenges discussed.

MnDOT staff also held individual meetings with counties, cities and the Met Council to discuss the MBP in greater detail, verify data, and gather information on planned bikeway networks.

Figure 2: TAC members discuss ideas for how the MBP can guide MnDOT decision making on future bicycle facility projects.

CHAPTER 2 | State Bicycle Travel

The MBP builds upon the extensive state bicycle transportation planning and implementation completed over the past several decades by MnDOT and external partners. MnDOT's Central Office led two state bikeway and U.S. Bicycle Route System implementation projects — the Mississippi River Trail/U.S. Bicycle Route 45 and the North Star Route/U.S. Bicycle Route 41 — that provide connections from Greater Minnesota to and through the Metro District. The SBSP also identifies potential corridors for future state bikeways and their relative priority. This chapter builds upon that work to identify how the state bikeway system can make connections between Greater Minnesota and regional and local networks within the Metro District.

State Bicycle Route Network

The State Bicycle Route Network (Figure 3), a series of prioritized corridors, is defined in the SBSP as a "network of envisioned connections that link destinations throughout the state by bicycle". The connections are presented in the SBSP as generalized 5- to 10-mile wide search corridors that provide connections between two points in Minnesota. The SBSP priority levels (i.e., high, medium or low on Figure 3) reflect public preferences expressed during SBSP plan outreach, the potential for connectivity to the U.S. Bicycle Routes, potential connectivity to other bicycle route corridors, potential for designation as a U. S. Bicycle Route, and continuity across the state. The following corridor definitions are from the SBSP.

High priority corridors

Statewide high priority corridors are the first corridors on the State Bikeway Network that MnDOT will consider for infrastructure improvements and future designation as state bikeways. Increasing the number of designated state bikeways is a performance target identified in the SBSP. MnDOT Central Office staff will lead formal designation of state bikeways and coordinate with MnDOT District staff and local road and trail jurisdictions to identify specific road and shared use path facilities that are most appropriate to serve as state bikeway routes. MnDOT District staff will prioritize bicycling infrastructure investments on the segments of state trunk highways that form these routes.

Medium priority corridors

Statewide medium priority corridors are those corridors that were prioritized by the public during plan outreach and met statewide connectivity criteria, but did not rise to the same level of priority as the high priority corridors. MnDOT will consider designating these routes as state bikeways after addressing the high priority corridors or when collaborative opportunities arise (e.g., a MnDNR state trail planning initiative).

Low priority corridors

Statewide lower priority corridors represent the remaining envisioned connections that link destinations throughout the state by bicycle. Although they did not rise to a high level of priority in the SBSP, these corridors illustrate the long-term potential for the State Bikeway Network. These corridors provide guidance for bicycling investments to roadway projects and will be implemented as opportunities arise and through coordination among MnDOT, the MnDNR, and local stakeholders.

Figure 3: State Bicycle Route Network Priority Corridors identified in the 2016 MnDOT SBSP.

To designate specific alignments for the prioritized corridors, further collaboration and planning between MnDOT Central Office, MnDOT District staff, and local partners is necessary to identify route alignments within the search corridors. MnDOT developed a Bicycle Route Planning Guide that serves as a blueprint to develop and designate long distance bicycle routes in Minnesota, including U.S. Bicycle Routes and the State Bicycle Route Network.

Metro District State Bikeways and High Priority Search Corridors

State Bicycle Route Network priority corridors that connect to the Metro District (Figure 4) show a generalized connection to the RBTN with the understanding that when a state bikeway route is established in the developed areas of the Metro District, there are likely many routing options given the density of the bikeway network. Two state bikeways and two high priority search corridors are in the Metro District (Figure 4):

- Mississippi River Trail/U.S. Bicycle Route 45 was designated in 2012 and provides a bikeway route along both sides of the Mississippi River through the Metro District that connects to District 3, District 6, and Wisconsin.
- North Star Route/U.S. Bicycle Route 41 was officially designated in 2017. MnDOT worked with partners to define an alignment for this corridor that extends from the Mississippi River Trail /U.S. Bicycle Route 45 in Saint Paul, through the east side of the Metro District, connects to District 3 and continues northward to the Canadian border.
- A corridor extends from Rice County (District 6) through Dakota County to the RBTN. The corridor generally follows MnDOT Highway 3.
- A corridor extends from Sibley County (District 7) at the southwest corner of the Metro District northeast along the Minnesota River in Scott and Carver County to the RBTN. The corridor follows the planned Minnesota Valley State Trail. Due to the anticipated long term implementation timeframe for the Minnesota Valley State Trail, a state bikeway that uses existing roads and trails will likely be defined and designated as an interim bicycle facility.

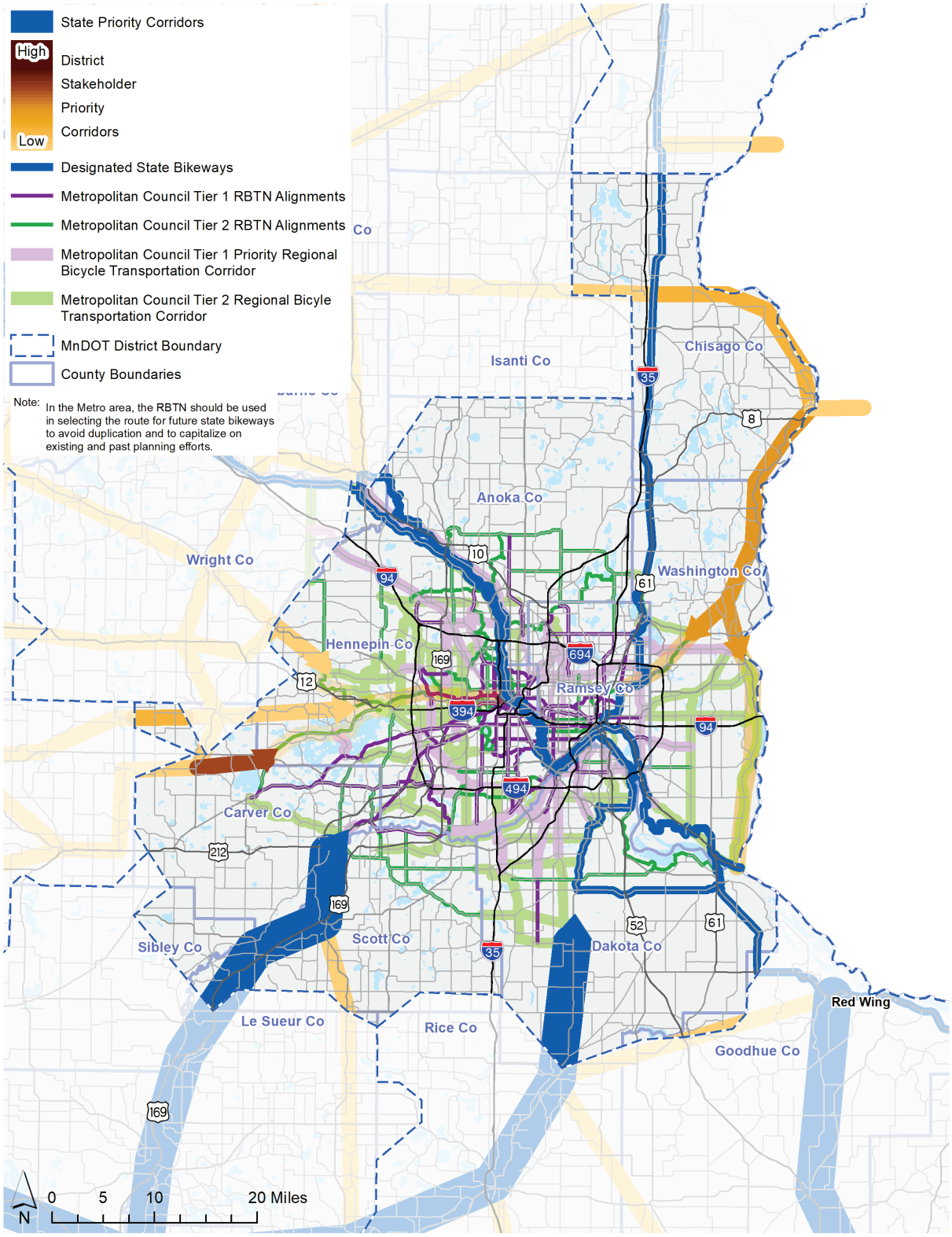
Metro District Stakeholder Priority Corridors

Through the planning and public outreach process for the SBSP, stakeholders in each district shared bicycle route preferences for the low priority corridors (i.e., yellow lines) on the State Bicycle Route Network (Figure 3). The results of the prioritization process in the Metro District are shown in as Metro District Stakeholder Priority Corridors. These corridors connect Greater Minnesota to the RBTN.

Potential alignments for some of the Metro District Stakeholder Priority Corridors were identified during the MBP planning process; however, they will remain search corridors until further discussions between Metro District staff and local partners result in defining specific alignments. The search corridors are summarized below:

- Chisago and Washington Counties – the corridor follows the existing Gateway State Trail and then the alignment generally follows MnDOT Highway 95
- Hennepin County – the corridors follow the existing Luce Line State Trail and the planned Lake Sarah Regional Trail
- Carver County – the corridor follows the existing Dakota Rail Regional Trail
- Scott County – the corridor is located along MnDOT Highway 21 between Jordan and New Prague

Figure 4: State Bicycle Route Network connections to the Metro District.



CHAPTER 3 | Regional and Local Bicycle Travel

The Metro District is home to six nationally designated Bicycle Friendly Communities[3] and many other cities, counties, and park districts that have been planning and implementing shared use paths and bikeways for decades. Regional and local partners across the district built hundreds of miles of shared use paths and bikeways that form an extensive network across the region. Many local units of government in the Metro District have adopted trail and/or bicycle master plans and include bikeways and shared use paths in their comprehensive plans. These plans reflect local priorities and tend to be the outcome of extensive community engagement efforts and technical analyses. The Met Council developed the RBTN in 2014 and local units of government addressed this network in their 2018 comprehensive plan updates. The RBTN and adopted plans assist Metro District staff in understanding where local partners have prioritized bicycle travel and how they can potentially help support local bicycle travel along and across MnDOT's system. The MBP builds upon this extensive regional and local bicycle transportation planning and implementation.

Regional Bicycle Transportation Network

The Twin Cities Regional Bicycle System Study was completed in 2014 and identified the RBTN. The RBTN was adopted into the Met Council's 2040 Transportation Policy Plan (TPP) in 2015, and most recently refined in its TPP 2018 Update.

The RBTN represents the region's prioritized vision for the planning of and investment in bicycle transportation infrastructure.

The TPP notes that the three goals of the RBTN are to:

- Establish an integrated and seamless network of on-street bikeways and off-road trails;
- Provide the vision for a "backbone" arterial network to accommodate daily bicycle trips by connecting regional destinations and local bicycle networks;
- Encourage cities, counties, parks agencies, and the state to plan and implement future bikeways in support of the network vision.

In support of the TPP and these goals, the MBP process identified MnDOT Highways that are designated as RBTN alignments and those that fall within RBTN corridors. MnDOT Highway segments that coincide with RBTN alignments, or that run along and significantly overlap with RBTN corridors, are identified in Figure 5 and listed in Tables D-1 and D-2 of **Appendix D**. RBTN corridors show where specific bikeway alignments have not yet been identified. Further coordination between MnDOT, the Met Council, and local corridor agencies will be needed to determine if there are opportunities for MnDOT Highways and associated rights-of-way to play a role in solving a gap in the RBTN. Such opportunities may range from short, but critical bikeway segments to full, RBTN-corridor-length, alignment designations. In some of these RBTN corridors, there may be no role for the MnDOT Highway due to physical constraints and/or

[3] The following are designated Bicycle Friendly Communities: Minneapolis, Saint Paul, St. Louis Park, Edina, Richfield, and Hennepin County.

Figure 5: MnDOT Highways in the Metro District designated as, or adjacent to, RBTN alignments or within RBTN corridors.

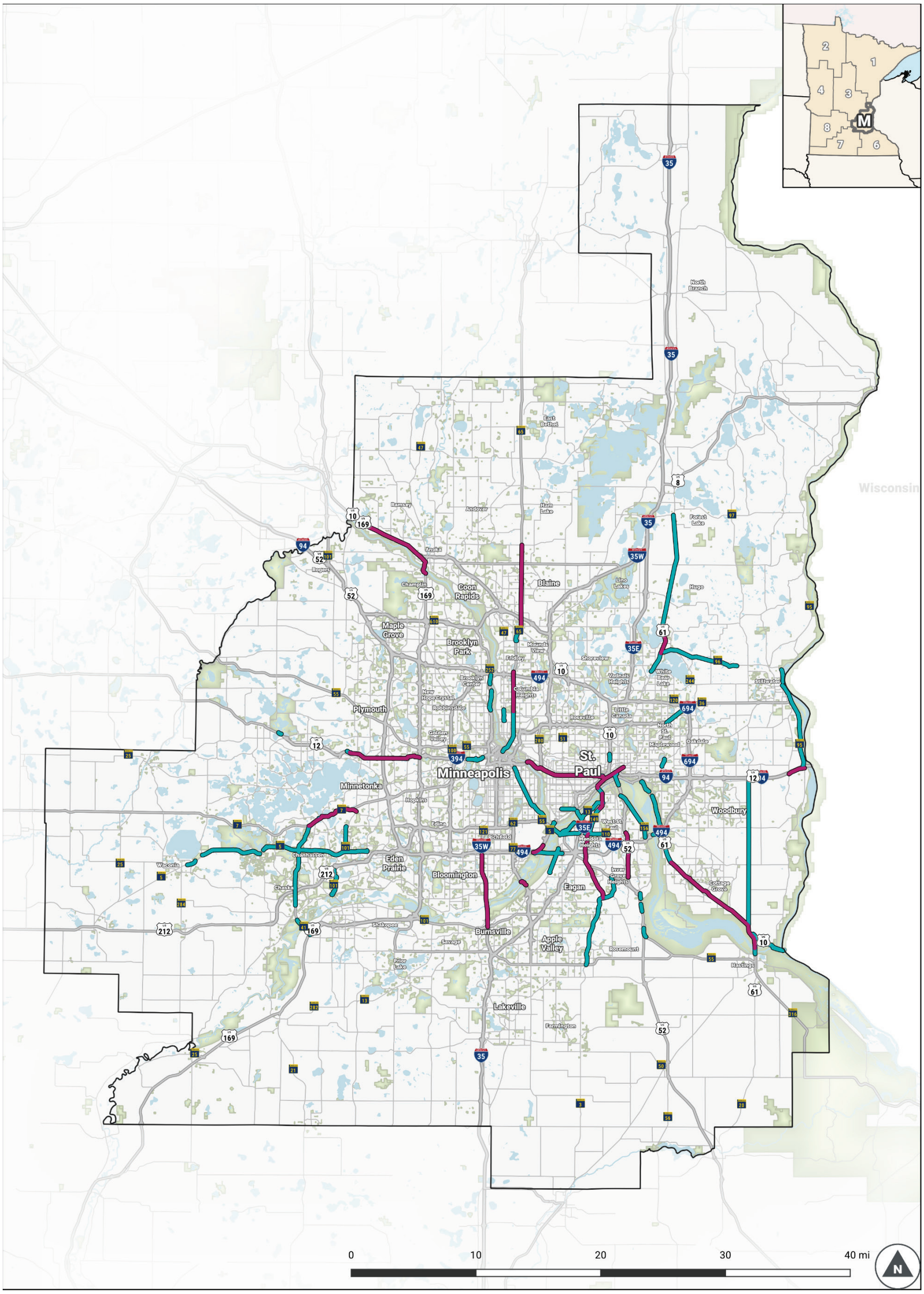
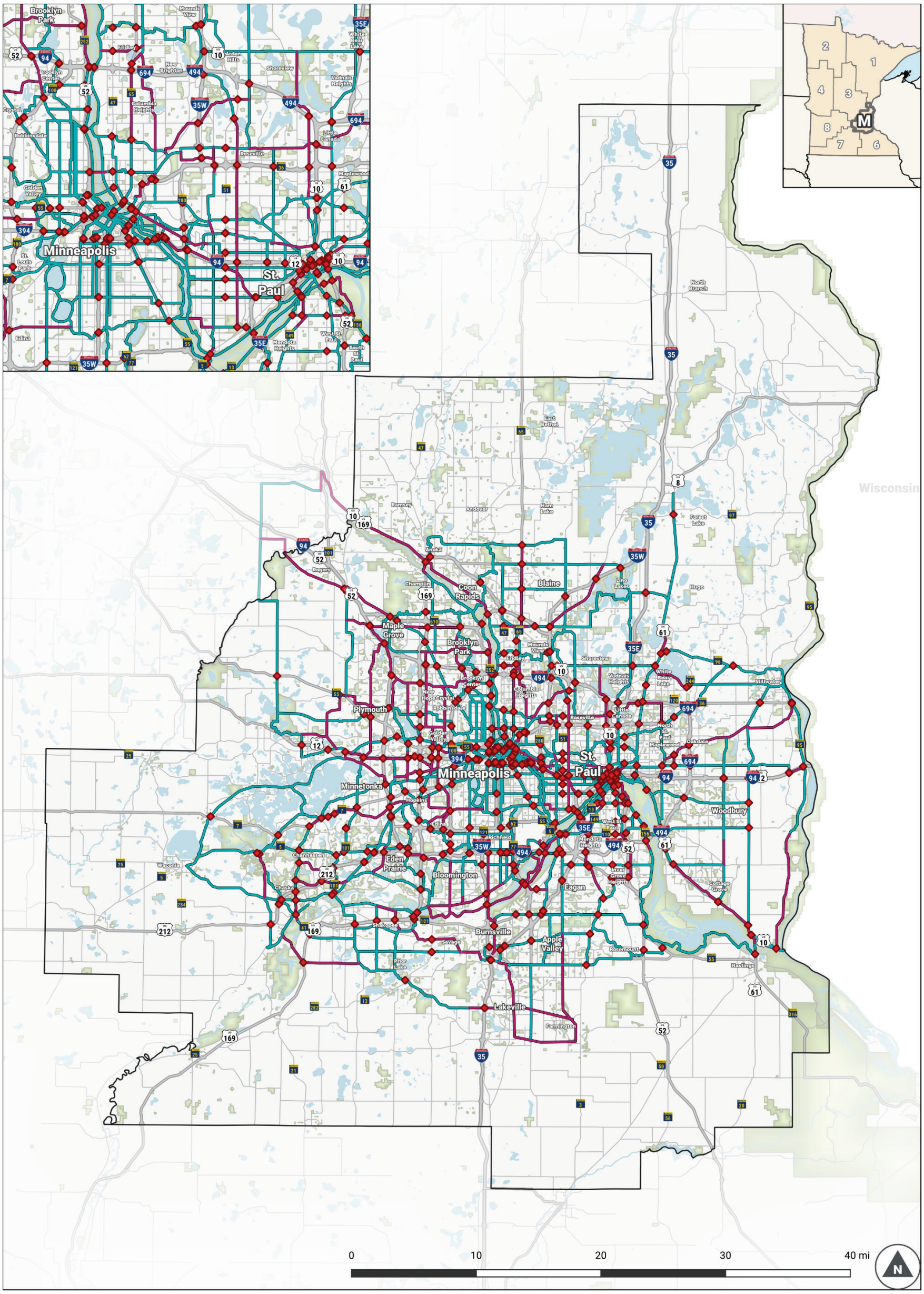


Figure 6: RBTN alignments and corridors that cross MnDOT Highways.



the presence of suitable local roadways and trails to accommodate a safe and continuous bikeway. Many RBTN alignments on local roadways and trails cross MnDOT Highways (Figure 6). Safe and comfortable crossings of highways are critical to providing a robust regional bicycling network.

Regional Bicycle Barriers Study

The Regional Bicycle Barriers Study (RBBS) identified major physical barriers to bicycle transportation posed by freeways, expressways, railroads, and streams. The RBBS study area included the RBTN coverage area, which does not include the entire seven-county metropolitan area or Chisago County. The RBBS process analyzed and prioritized areas along these barriers where there is the greatest potential need for new crossings (i.e., bridges and underpasses) or improved at-grade intersection crossings on planned bikeways. Many of the freeway and expressway barriers are MnDOT Highways. Figure 7 shows the location of regional freeway and expressway barriers, as adopted in the Met Council's TPP 2018 Update, and where there are existing or planned bikeways that cross MnDOT Highways. In the future, Metro District staff could identify barriers to bicycling across the district in Chisago County and rural areas that were not included in the RBBS.

MnDOT Highways also represent potential opportunities for bicyclists getting across regional barriers since in many areas, the highway may be the only way to get across a barrier. Figure 8 shows locations where MnDOT Highways cross regional barriers created by freeways, expressways, railroads, and streams.

Major River Bicycle Barrier Crossings

The RBBS did not include bicycle barriers posed by the Mississippi, Minnesota, and St. Croix Rivers. For the 2018 update to the Met Council's TPP, Met Council staff conducted a high-level assessment of the existing roadway bridges and existing or planned stand-alone bikeway bridges crossing the region's primary rivers. The existing and planned crossings on MnDOT Highways are shown in Table 1. Projects that incorporate bicycle facilities that cross these major barriers, including bridges like the I-35W bridge over the Minnesota River and Robert Street bridge over the Mississippi River, are considered a regional priority for the bikeway system planning and investment by the Met Council. In addition to the major river crossings included in the TPP, major river crossings in Chisago County are included in Table 1.

Table 1: The existing and planned crossings of major rivers on MnDOT Highways.

Bridge Name	Highway Name	Community	Bicycle Facility Status
I-35E Mississippi River Bridge	I 35E	Saint Paul/Lilydale	Existing
I-35W Mississippi River Bridge	I 35W	Minneapolis	None
I-35W Minnesota River Bridge	I 35W	Bloomington/Burnsville	Under Construction
I-494 Minnesota River Bridge	I 494	Bloomington/Eagan	Existing

Bridge Name	Highway Name	Community	Bicycle Facility Status
I-494 Mississippi River Bridge	I 494	South St. Paul/Newport	Existing
I-694 Mississippi River Bridge	I 694	Fridley/Brooklyn Center	Existing
I-94 St. Croix River Bridge	I 94	Lakeland	Existing
I-94 Mississippi River Bridge	I 94	Minneapolis	None
Smith Ave Mississippi River Bridge	MN 149	Saint Paul	Existing
MN 25 Minnesota River Bridge	MN 25	Belle Plaine	Existing
MN 41 Minnesota River Bridge	MN 41	Chaska	Existing
MN 5 (Fort Rd) Mississippi River Bridge	MN 5	Saint Paul/Unorganized Territory of Ft. Snelling	Sidewalk*
MN 55 Minnesota River Bridge	MN 55	Mendota/Unorganized Territory of Ft. Snelling	Existing
MN 610 Mississippi River Bridge	MN 610	Brooklyn Park/Coon Rapids	Existing
Third Avenue Mississippi River Bridge	MN 65	Minneapolis	Existing
MN 77 Minnesota River Bridge	MN 77	Bloomington/Burnsville	Existing
Robert St Mississippi River Bridge	MN 952A	Saint Paul	Planned
US 8 St. Croix River Bridge	US 8	Taylors Falls	Existing
US 36 St. Croix River Bridge	US 36	Oak Park Heights	Existing
US 10 St. Croix River Bridge	US 10	Denmark Township	Existing
US 169 Minnesota River Bridge	US 169	Shakopee/Bloomington/Eden Prairie	None
US 169 Mississippi River Bridge	US 169	Anoka/Champlin	Existing
US 52 Mississippi River Bridge	US 52	Saint Paul	Existing
US 61 Mississippi River Bridge	US 61	Hastings	Existing
Stone Arch Mississippi River Bridge	NA	Minneapolis	Existing
Stillwater Lift Bridge St. Croix River	Old US 36	Stillwater	Existing

* The existing sidewalk on the MN 5 bridge over the Mississippi River has stairs on both ends, but it is frequently used by bicyclists.

Figure 7: Regional freeway and expressway barriers near existing or planned bikeways.

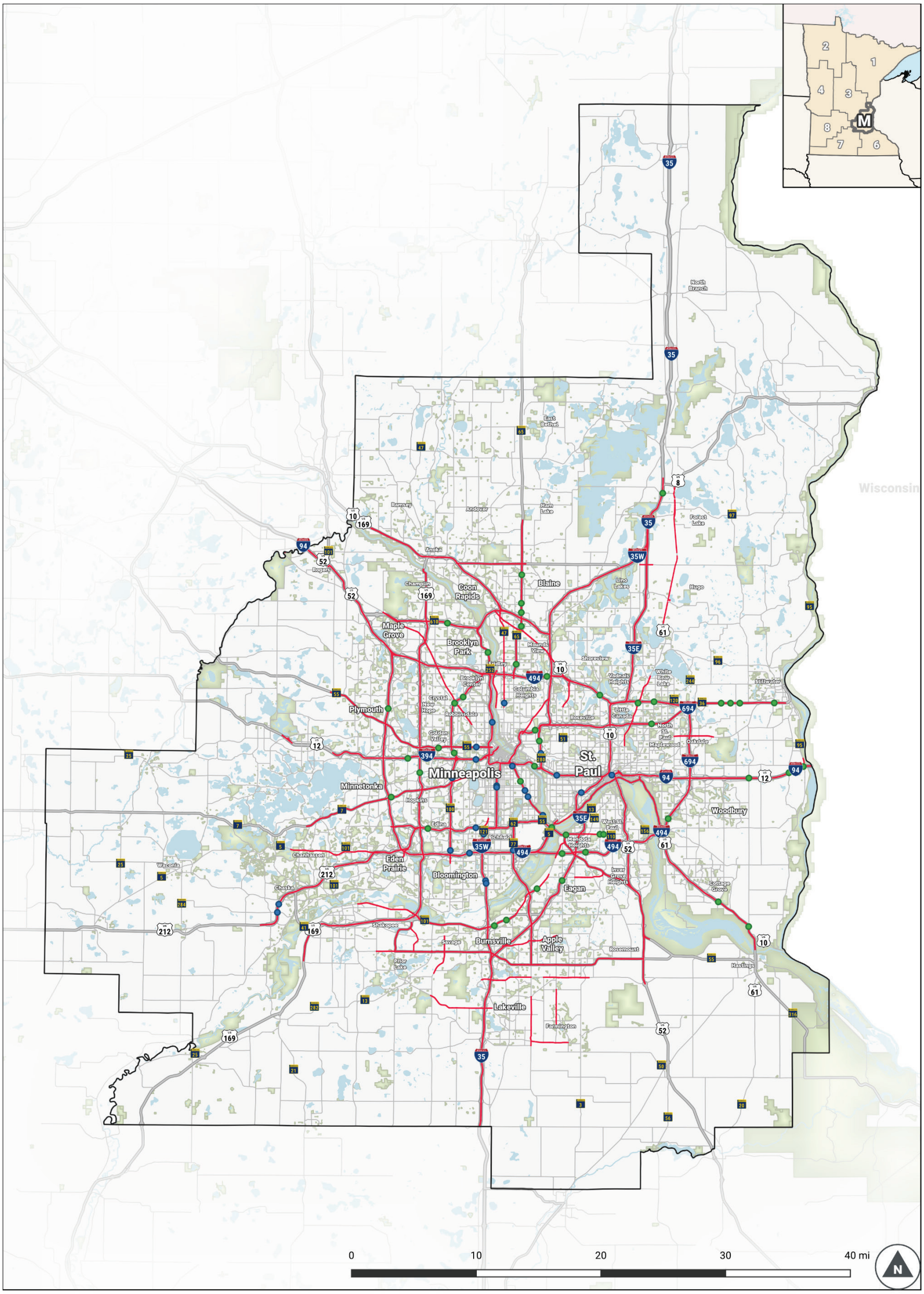
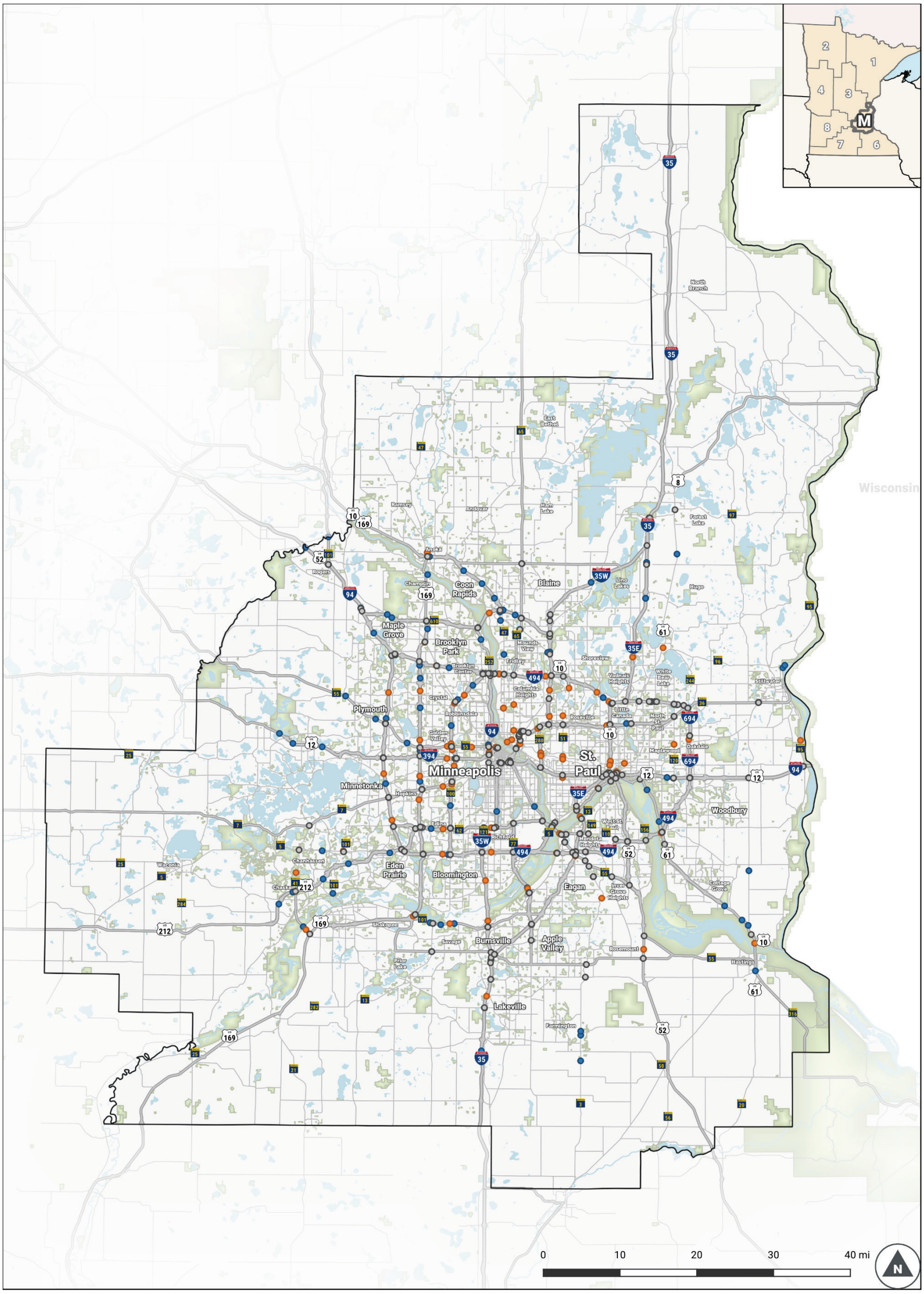


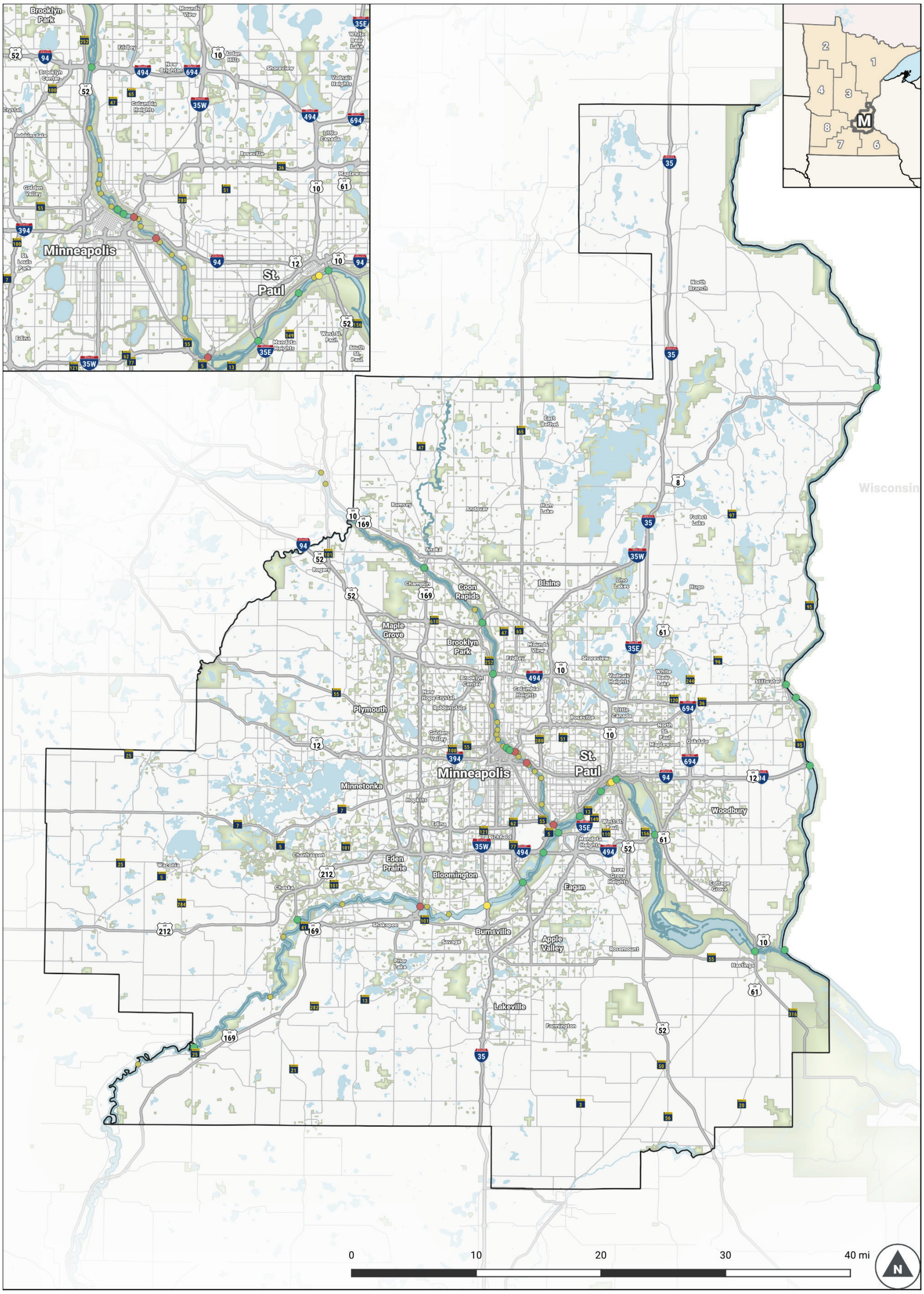
Figure 8: Locations where MnDOT Highways cross regional barriers created by freeways, expressways, railroads, and streams.



MnDOT Highways that Cross Regional Barriers in the TPP

- Freeway and Expressway Barriers
- Railroad Barriers
- Stream Barriers
- District Boundary
- Water
- Parks

Figure 9: Major river bicycle barrier crossings on MnDOT facilities.



Regional Bicycle System Inventory

The Regional Bicycle System Inventory (RBSI) dataset is a compilation of locally designated bikeways in the seven-county metropolitan area, which does not include Chisago County. The seven metropolitan counties identified bicycle system facilities using county and local resources. The Met Council aggregated the county data and frequently asked questions and answers about the data are available. Figure 10 shows the most recent version of the RBSI dataset in the Metro District (October 2016). The data were provided by each county and definitions for existing and planned bicycle facilities were based on local bicycle plan designations and/or roadway facility databases. As a result, designations for on-street bikeways sometimes varied depending on the jurisdiction. For example, the data indicates there is an existing bicycle facility on some MnDOT Highways due to the presence of a wide shoulder. The data does not consider the character of the highway or level of traffic stress (i.e. motor vehicle speeds, motor vehicle volumes, shoulder width). As a result, some MnDOT Highways with wide shoulders are identified in the data as locations with existing bikeways. While bicyclists are legally allowed to ride on a shoulder, it is not likely a comfortable facility for most people who bicycle and therefore would not be considered a completed part of the bicycle network for people of all ages or abilities.

Figure 10 also shows designated U.S. Bicycle Routes and the location of existing and planned regional trails in the 8-county Metro District based on Met Council and Chisago County data.

Local Bikeways Planned Along and Across MnDOT Highways

Local priorities for bicycle travel documented in the RBSI, Met Council regional trail data, and Chisago County data occur both along and across MnDOT Highways. Figure 11 shows MnDOT Highways that are within 200 feet of an existing or planned bikeway. These MnDOT Highways are important for local bicycle travel and represent areas of local need. Figure 12 shows existing or planned bikeway crossings of MnDOT Highways.

Figure 10: Existing and planned bikeways in the Metro District.

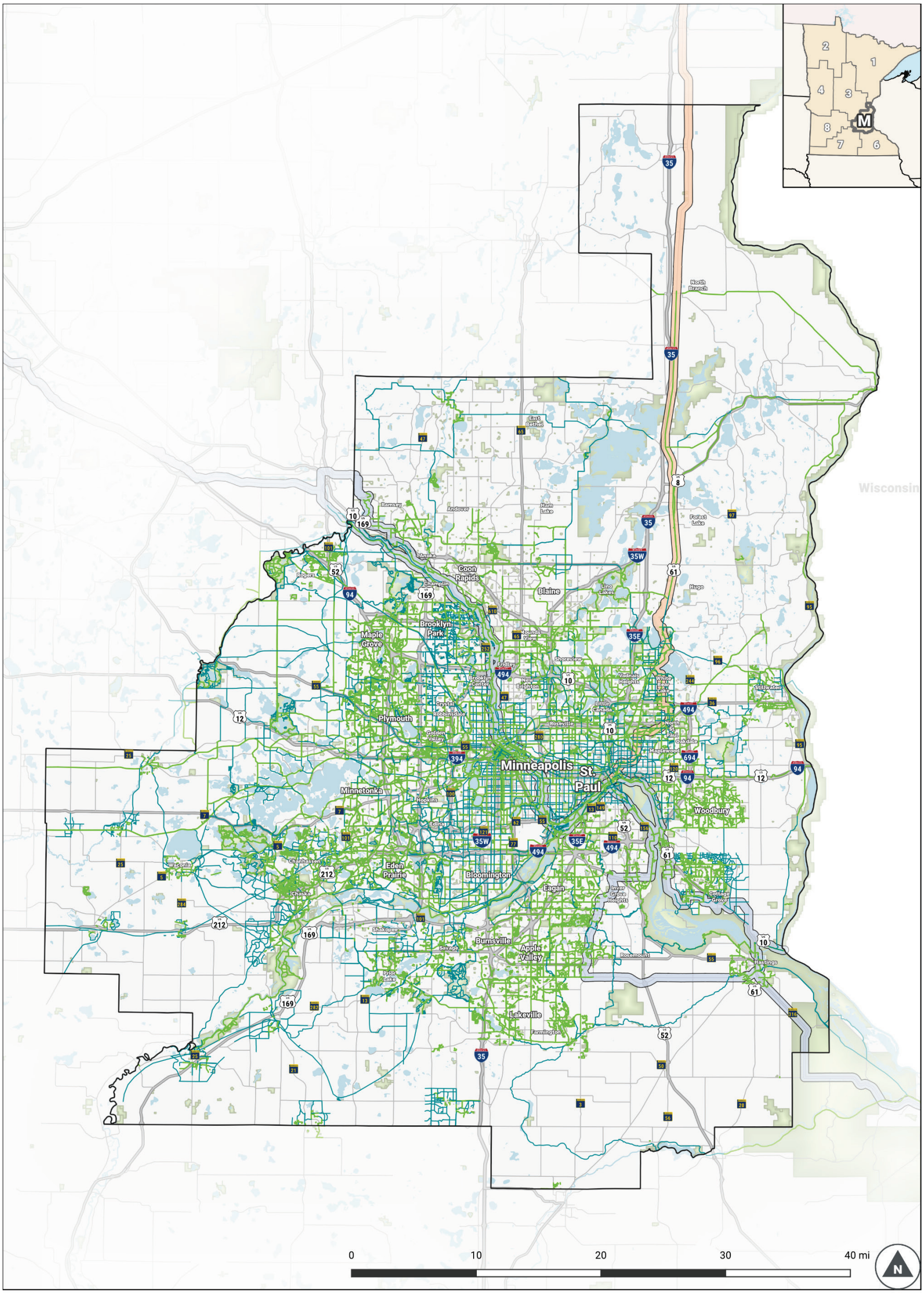
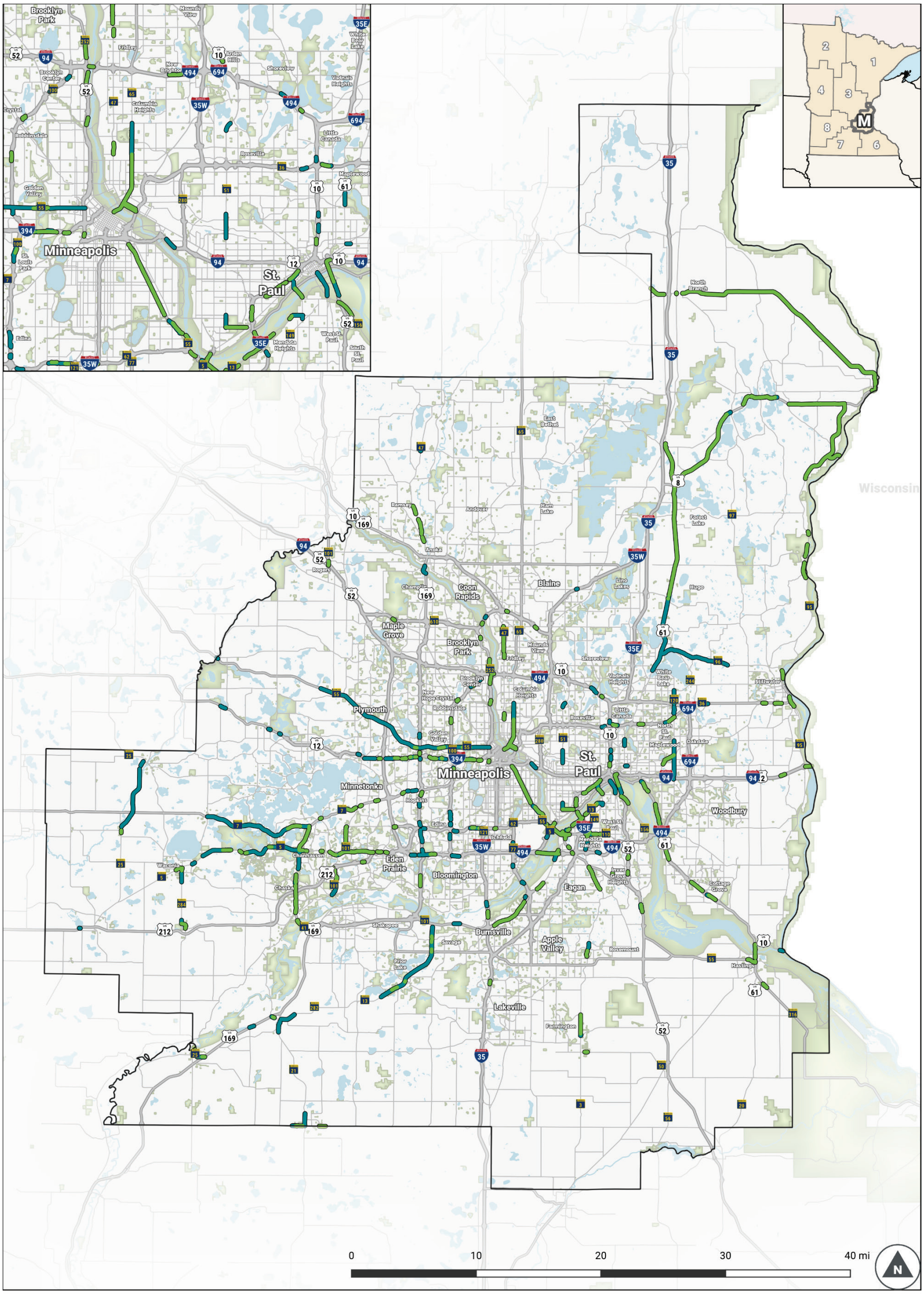


Figure 11: Existing and planned local bikeways located along MnDOT Highways.

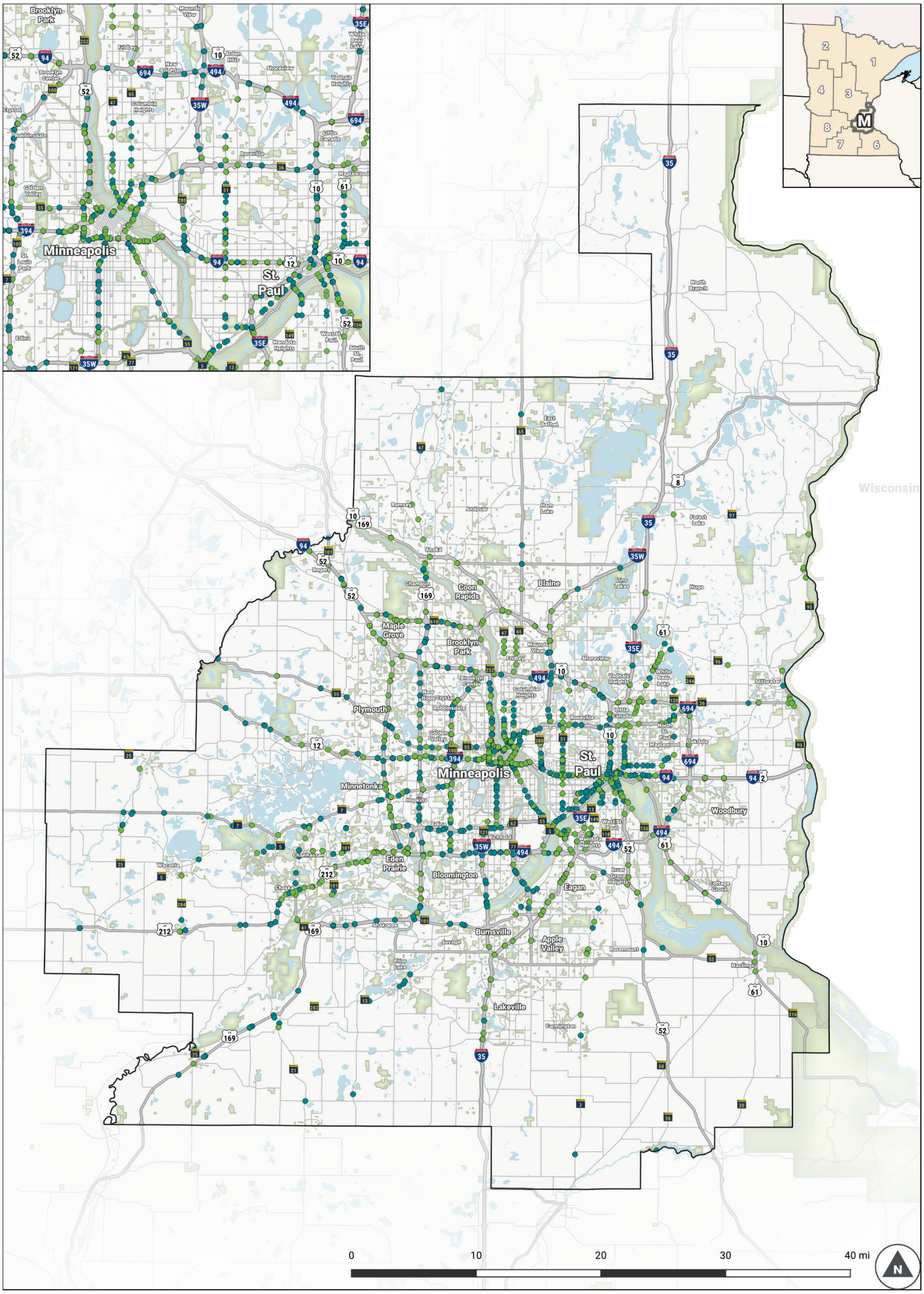


Local Bikeways Within 200 ft of a MnDOT Highway

- Existing Bikeways
- Planned Bikeways
- District Boundary
- Water
- Parks

DEPARTMENT OF TRANSPORTATION TOOLE DESIGN

Figure 12: Existing and planned local bikeways that cross MnDOT Highways.



Local Bikeway Crossings of MnDOT Highway

- Existing Bikeways
- Planned Bikeways
- District Boundary
- Water
- Parks

CHAPTER 4 | Bicycle Investment Prioritization

Every year MnDOT develops and delivers highway paving and bridge projects, which present opportunities to make improvements to bicycling infrastructure. Establishing priorities helps MnDOT identify areas where bicycle facility investment should be made that offer the greatest public benefit as part of the statewide, regional, and local networks. In addition to prioritizing investment, prioritization can potentially be used as an information source to guide other MnDOT activities including planning studies, the environmental review process, and maintenance priorities. Identifying bicycle needs and the data used to develop priorities improves transparency to the public and local partners on where MnDOT develops bicycle facilities.

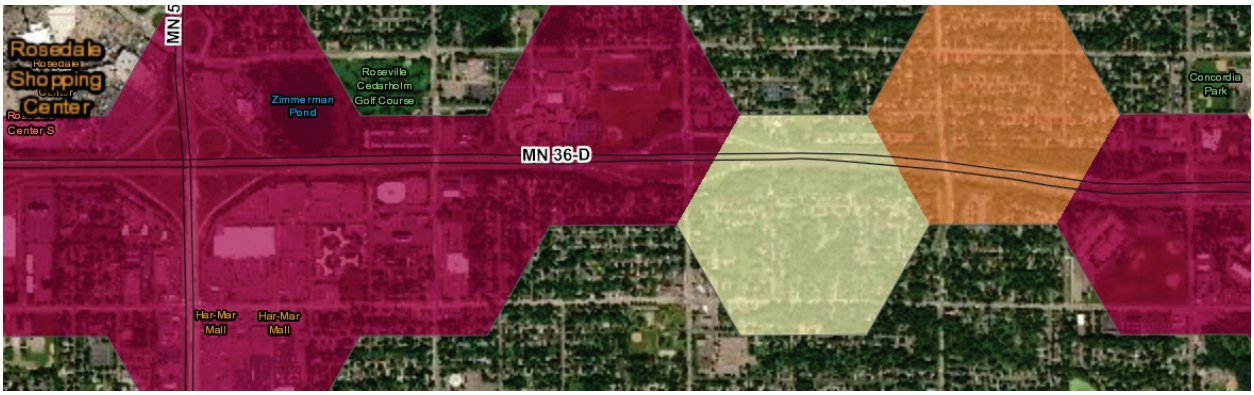
In 2018, MnDOT staff and the Metro District TAC developed a prioritization framework for the MBP. The framework was developed to help identify and prioritize MnDOT Highways that have the greatest need for bicycle facility investment. This high-level analysis aggregates data of key characteristics across the Metro District. The goals of the bicycle investment prioritization framework are to be:

- Comprehensive
- Transparent
- Defensible
- Easily updated in the future

Prioritization Criteria

The bicycle investment prioritization framework evaluates each MnDOT Highway in the Metro District based on several scoring criteria. Draft criteria were initially developed by staff in MnDOT's Office of Transit and Active Transportation, and then reviewed and modified based on input from Metro District TAC members and Metro District staff. All the criteria in the framework are data-based and use Metro-wide data sources or US Census data. One-half mile wide hexagons along every MnDOT Highway (Figure 13) in the entire Metro District were scored for each criterion relative to a defined scoring threshold. Hexagons are the simplest, circle-like polygon that can form a grid. Hexagons are used to avoid issues with updates to MnDOT's linear referencing system and to ensure continuity across geographies.

Figure 13: The project prioritization process scored individual one-half mile wide hexagons along all MnDOT Highways in the Metro District based on a set of prioritization criteria.



The bicycle investment prioritization framework is divided into six categories. Each category includes one or more criteria with scoring thresholds to determine how many points are awarded to each one-half mile wide MnDOT Highway segment. See **Appendix A** for a full table of subcategories and scoring criteria.

- **Population & Equity** – segments in areas with underserved populations receive points in this category. Underserved groups are defined in Minnesota Walks (p. 14) as "priority populations" and include: children, Native Americans, older adults, people with disabilities, immigrants, low-income populations, and zero-vehicle households. Segments in areas with high residential population density, people of color, and concentrated poverty also receive points in this category.
- **Activity Generators** – segments in areas that attract a significant number of people bicycling. Activity generators include regionally recognized activity nodes or corridors where people work, shop, recreate, or are entertained. Destinations were identified by stakeholders during the RBSS.
- **Network** – segments that increase bikeway network connectivity. Examples include projects that connect to existing local bikeways, existing shared use paths, designated state bikeways, close existing gaps, and address known barriers to bicycling, such as bridges and highways.
- **Plan Consistency** – segments that are identified for bicycle improvements in a local bicycle plan, regional trail master plan, and/or the RBTN
- **Safety** – contains an intersection identified as high risk for bicyclists. It is noted that the entire district was not analyzed due to a lack of data.

The Metro District TAC had the opportunity to participate in a survey and rate the importance of each prioritization subcategory. TAC members were asked to weight each subcategory by distributing 100 points amongst the 17 subcategories. Fifteen TAC members participated in the survey, and the average scores (or weights) for each prioritization subcategory are shown in Table 2.

The prioritization criteria and scores can be updated in the future as new data becomes available or if the weighted averages for each subcategory change. For example, TAC members desired more criteria and emphasis on the safety and comfort of existing bikeways, but comprehensive bikeway facility and context data does not exist to adequately assess safety and comfort across the Metro District.

Table 2: Results of a survey to TAC members that asked them to rank the 17 subcategories in the prioritization framework.

Rank	Prioritization Subcategory	Average Score (weights)
1	Area is identified for future bicycling improvements	11.8
2	Area is near schools or parks	10.7
3	Area includes high-risk intersection for people biking	10.4
4	Within 1 mile of a transitway station/park-and-ride or 1/8 mile from a local bus stop	9.9
5	Adding facilities would address route spacing concerns	9.9
6	Area has an above average percentage of people without vehicle access	9.7
7	*Area includes freeway/expressway barriers[4]	6.4
8	Area includes a Regionally Concentrated Area of Poverty	5.7
9	Area population is more than 50% people of color	5.3
10	Population density is greater than the regional average	4.4
11	Number of RBTN destinations present	4.0
12	Presence of existing on/off street bikeways	3.3
13	Area is above the 25th percentile for population between 0-17	2.3
14	Employment density above the 25th percentile	2.2
15	Area has a greater than average Native American population or is part of a Tribal reservation	1.6
16	Area is above the 25th percentile for foreign born individuals	1.3
17	Area is above the 25th percentile for population 65+	1.1

[4] *Note – this criterion was not used in the final bicycle investment prioritization framework.

Data-Based Prioritization Criteria Scoring

To determine prioritization scores, the entire state of Minnesota was divided into 522,263 hexagons that are ½ mile wide and approximately 104 acres in size. Each hexagon was scored following these three major steps:

1. Each hexagon was scored based on the 16 data-based criteria (up to two points per criteria) in the route prioritization framework (**Appendix A**)
2. Each criterion score (up to two points for each of the 16 criteria) was multiplied by the average score (weight) from the TAC criteria ranking exercise (see Table 2)
3. Each hexagon's cumulative weighted score for all 16 criteria was normalized to 100.

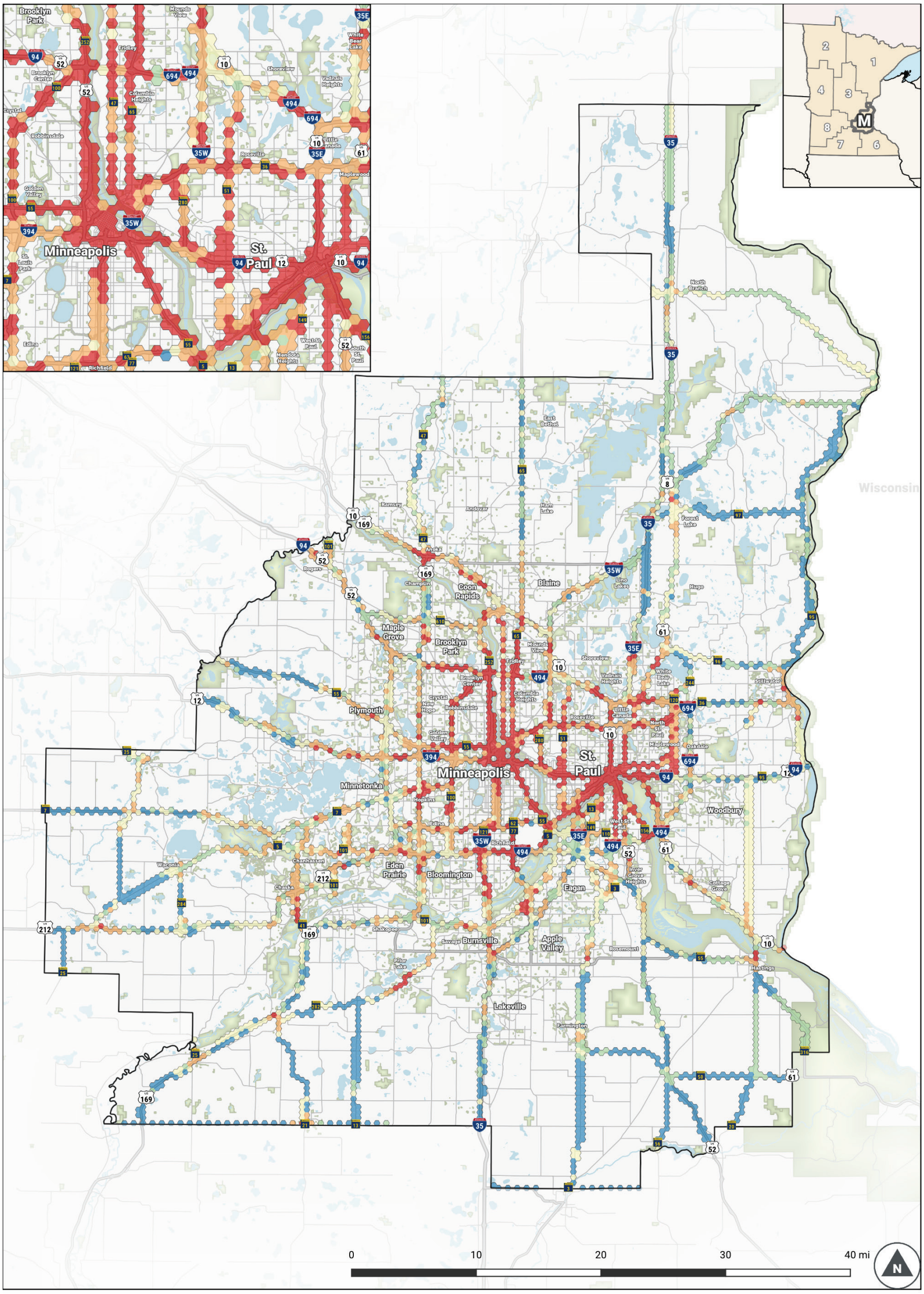
Data for all criteria was derived from various sources, but most of them were specific sources for the Twin Cities metropolitan area. Datasets included both internal MnDOT sources and external datasets from other organizations. Crash risk data is an example of MnDOT data. External data included school and park locations (received from each County), demographic data (US Census), and other sources. A key limitation of the analysis is the lack of consistent and comprehensive data associated with existing and planned bikeways; therefore, the analysis is heavily focused on demographic characteristics. Once more comprehensive data is available, the prioritization criteria can be expanded to include more network related criteria. Figure 14 displays the Metro District bicycle investment prioritization scores for all hexagons that intersect with the MnDOT Highway system. The prioritization scores for each hexagon are sorted into five tiers using the Jenks natural breaks classification method; the red hues represent hexagons with the highest prioritization scoring results, and the blue and green hues represent hexagons with the lowest prioritization scoring results. The bicycle investment prioritization scores can also be viewed on the online, interactive map. To view the bicycle investment prioritization scores, click on the tab on the top of the map titled 'Prioritization scores along MnDOT Highways'.

Prioritization scores are one tool for making bicycle investment decisions. The Metro District Bicycle Scoping Guide (see **Appendix B**) is another tool that considers additional factors such as local destinations, adopted plans, bicycle demand, etc. to assist Metro District staff in making bicycle facility and investment decisions.

Metro District Bicycle Investment Prioritization Summary

This section provides a summary of the bicycle investment priorities identified in the MBP. Figure 14 displays the Metro District prioritization scoring results on MnDOT Highways. Tables 3-7 display prioritization scoring results for a variety of different potential bicycle investments along or across MnDOT Highways, such as enhancing existing local bikeways and building planned local bikeways along MnDOT Highways, enhancing existing and building planned regional bikeway alignments in the RBTN, investing in bicycle facilities along designated state bikeways and U.S. Bicycle Routes, and enhancing existing and planned bikeway crossings of MnDOT Highways.

Figure 14: Metro District prioritization scoring results on MnDOT Highways in the Metro District.



Prioritization Scores

- Tier 1
- Tier 2
- Tier 3
- Tier 4
- Tier 5
- District Boundary
- Water
- Parks

Table 3: Prioritization scoring results for MnDOT Highway segments adjacent to existing or planned local bikeways.

Prioritization Tier	Existing (mi.)	Planned (mi.)	Total (mi.)
Tier 1	25.9	23.8	49.7
Tier 2	36.3	45.9	82.2
Tier 3	45.9	39.2	85.0
Tier 4	48.8	5.5	54.3
Tier 5	16.8	0.5	17.3
Total	173.7	114.8	288.5

Table 4: Prioritization scoring results for RBTN Tier 1 and Tier 2 Alignments and Corridors along MnDOT Highways.

Prioritization Tier	RBTN Tier 1 Alignment (mi.)	RBTN Tier 1 Corridor (mi.)	RBTN Tier 2 Alignment (mi.)	RBTN Tier 2 Corridor (mi.)
Tier 1	15.2	8.7	4.4	8.3
Tier 2	15.9	8.8	13.3	22.1
Tier 3	9.6	6.2	13.9	28.5
Tier 4	2.1	0.1	5.0	4.8
Tier 5	--	--	--	0.4
Total	42.7	23.9	36.6	64.2

Table 5: Prioritization scoring results for existing and planned local bikeway intersection crossings of MnDOT Highways.

Prioritization Tier	Number of RBSI Crossings at Intersections*	% of RBSI Crossings of MnDOT Highways
Tier 1	1461	49.6%
Tier 2	926	31.4%
Tier 3	460	15.6%
Tier 4	82	2.8%
Tier 5	18	0.6%
Total	2947	100%

* One roadway intersection may have one to four bikeway crossings (e.g., eastbound, westbound, northbound and southbound bicycle travel and/or multistage crossings of divided highways)

Table 6: Prioritization scoring results for MnDOT Highways crossing RBTN alignments and corridors.

Prioritization Tier	Number of RBTN Crossings at Intersections*	% of RBTN Crossings of MnDOT Highways
Tier 1	582	52.0%
Tier 2	360	32.2%
Tier 3	162	14.5%
Tier 4	15	1.3%
Tier 5	--	--
Total	1119	100%

* One roadway intersection may have two to four bikeway crossings (e.g., eastbound, westbound, northbound and southbound bicycle travel and/or multistage crossings of divided highways)

Table 7: Prioritization scoring results for designated state bikeways and U.S. Bicycle Routes along MnDOT Highways.

Prioritization Tier	North Star Route (U.S. Bicycle Route 41) within Metro District (mi.)	Mississippi River Trail (U.S. Bicycle Route 45) within Metro District (mi.)
Tier 1	9.1	59.8
Tier 2	14.7	56.6
Tier 3	15.2	33.7
Tier 4	22.3	22.6
Tier 5	0.9	11.7
Total	62.2	184.5

CHAPTER 5 | Implementation

The MBP builds upon previous local, regional, and state plans to identify and prioritize bicycle needs along and across MnDOT Highways. Planning and programming bicycle investments will happen over the course of many years and in partnership with local and regional agencies. Bicycle improvements will be made with routine highway and bridge maintenance and construction projects, which can range from low-cost striping and intersection improvements to higher cost investments such as shared use path development, depending on context and project scope. Also, year-round bikeway maintenance plays a critical role in providing safe and comfortable facilities for bicycle users of all ages and abilities.

This section provides strategies and actions to plan, program and maintain MnDOT's existing and planned bikeway network in a state of good repair. Short term strategies will help guide initial plan implementation in the next five years. This phased approach sets realistic expectations to help MnDOT implement changes in the short term. Following the short-term strategies are a list of recommendations that represent aspirational, long term strategies and best practices that MnDOT may consider when sufficient resources are available to pursue them. Each strategy is supported by a set of actions. A list of the strategies and actions are located in **Appendix E**.

Short Term (0-5 years) Planning and Programming Strategies and Actions

Strategy 1: Identify planned projects on MnDOT Highways and bridges that provide opportunities to address bicycle system needs

Action 1.1: Conduct an annual review of the Metro District 10-year Capital Highway Investment Plan (CHIP) to identify local, regional and state bikeways that overlap with projects

Improving highways and bridges for bicycling with routine preservation and construction projects is cost effective and meets MnDOT's Complete Streets Policy and MnSHIP guidance. Early identification of future highway and bridge projects that provide opportunities to improve bicycling allows adequate time for planning and local coordination before project scopes are determined. Metro District staff can communicate with local partners to identify local bicycling needs in the project area, learn about local plan amendments or updates, and better understand the preferred bicycle facility type so that project scopes can adequately address needs. In addition to consulting with local partners, the prioritization scores, adopted local and regional plans, and Metro District Bicycle Scoping Guide (**Appendix B**) are tools to assist in making investment decisions for projects in the CHIP.

Action 1.2: Utilize the Metro District Bicycle Scoping Guide to determine appropriate locations for bicycle facilities

The Metro District Bicycle Scoping Guide (**Appendix B**) can help District staff identify bicycling needs and refine project scopes to address bicycling needs. During the project scoping process, it can serve as a communication tool between District staff and local partners to better understand the local context,

projected demand for bicycling, adopted plans, potential maintenance responsibilities, and budget considerations.

Strategy 2: Plan for bicycle facility projects not currently identified in the STIP or CHIP

Action 2.1: Identify high priority bikeway gaps or needs not currently identified in the STIP or CHIP for early planning and coordination

Priority bicycle investment areas may not align with planned highway preservation or construction projects in the STIP or CHIP. In these circumstances, the MBP should be used to identify potential candidates for stand-alone bikeway planning studies and/or projects. Priority locations will be identified based on adopted local, regional, and state plans as well as the MBP prioritization framework.

Strategy 3: Document existing bicycle facilities on MnDOT right-of-way

Action 3.1: Build upon the RBSI to develop an inventory and assessment of existing bicycle facilities on MnDOT right-of-way in the 8-county Metro District, including shared use paths, bicycle lanes, signed bicycle routes, designated bicycle routes, and non-motorized bridges or tunnels. The inventory should also include information on maintenance agreements and limited use permits for each facility.

The RBSI dataset is a compilation of locally planned bikeways aggregated by the Met Council in the seven-county metropolitan area, which does not include Chisago County. The data were provided by each county and definitions for existing and planned facilities were based on local bicycle plan designations and/or roadway facility databases. As a result, designations for on-street bikeways sometimes varied depending on the jurisdiction. This resulted in shoulders along MnDOT Highways being defined as existing bicycle facilities without considering the character of the highway or level of traffic stress (speeds, volumes, width of shoulder, etc.). Additional roadway and bicycle facility characteristics are needed to determine the level of traffic stress and the adequacy of the facility for users of all ages and abilities.

In addition to the RBSI, MnDOT collects data on paved shoulder width, designated bicycle routes, and shared use paths for all districts every two years and presents this information in the Minnesota State Bicycle Map. For this process, MnDOT relies on county and city staff to provide updated information on roadway characteristics, including bicycle facilities.

An accurate and regularly updated bicycle facility inventory will help MnDOT make more informed decisions about bicycle infrastructure investments. An implementation strategy from the SBSP is to develop a comprehensive inventory. Once developed, this dataset could be put to various analytical uses, such as:

- Calculating the level of traffic stress for existing facilities that considers facility type (i.e., bike lane, buffered bike lane, shoulder bikeway, separated bike lane, etc.) and characteristics (posted speed, number of travel lanes, ADT, width of bicycle facility, and presence of an adjacent parking lane). This will help determine if an existing facility is adequate for potential user types.

- Identifying bikeways that MnDOT currently performs routine maintenance on, including snow removal, vegetation management/mowing, and surface repairs
- Identifying bikeways under MnDOT's responsibility for major maintenance (resurfacing or repair)
- Cataloging existing maintenance agreements and determining the need for new agreements (see Action 7.1)
- Notifying local partners about maintenance issues (see Action 8.3)
- Establishing maintenance schedules and cost analyses
- Developing future projects based on maintenance needs
- Understanding the distribution of facility types across the statewide bikeway network

To develop the inventory, Central Office can develop a standardized process for recording existing and planned bicycle facilities and coordinate with the MnDOT districts on data collection. MnDOT and the Met Council should collaborate to identify an efficient and coordinated approach to the collection, aggregation, and publication of bikeway facility data for the Twin Cities metropolitan area and the Metro District. Ideally the Central Office and Met Council would collect the same bicycle facility data to ensure seamless data integration across the Metro District. A mechanism for updating the inventory at regular intervals (e.g. every other year or in conjunction with statewide bicycle plan updates) could also be created. The inventory could be publicly available so local jurisdictions, partner agencies, and advocates could use it as a resource. It could be housed under MnDOT's interactive GIS platform, the Common Spatial Data online tool, or housed in a new platform that MnDOT could develop in the future.

Strategy 4: Convene stakeholders on a regular basis

Action 4.1: Continue to Convene the MBP TAC on an annual basis

Metro District staff can continue to convene the MBP TAC on an annual basis to discuss updates to MnDOT policies, plans and programs, local plans and projects, resource sharing, and MBP implementation opportunities and challenges. Metro District staff, in consultation with the MBP TAC members and other key partners, should determine the TAC's mission, role, membership, and other key considerations. MnDOT District staff should encourage TAC members and other local partners to build upon the partnerships that started through the district bicycle planning process.

Action 4.2 Establish and convene an internal MnDOT Pedestrian and Bicycle Task Force

Key MnDOT staff from the Central Office and Metro District can convene on a regular basis to discuss updates to MnDOT policies, plans and programs, issues and opportunities related to local plans and projects, resource sharing, and MBP implementation opportunities and challenges. This can help MnDOT staff prepare the agenda for the annual MBP TAC meeting. Periodically, District staff implementing bicycle plans in Greater Minnesota could participate in a Task Force meeting to share statewide bicycle planning and implementation experiences.

Action 4.3 Continue to work with Met Council and local partners to identify opportunities to enhance local and regional bicycle networks along MnDOT Highway corridors

Figure 5 shows the location of MnDOT Highways that are existing RBTN alignments or are within RBTN corridors and Figure 11 shows existing and planned local bikeways along MnDOT Highways. Further coordination with the Met Council and local partners is needed to determine if there are opportunities where MnDOT Highway segments could help to fill gaps in the RBTN or local bikeway networks, or could fulfill longer, more continuous segments to advance the completion of bikeway networks. With respect to the RBTN, **Appendix D** provides a summary of MnDOT Highways as potential RBTN "gap fillers" and RBTN alignments.

Action 4.4 Explore forming a Community Advisory Committee

From 2009 to 2018, the State Non-Motorized Transportation Advisory Committee served as the central advisory body on items related to non-motorized transportation. The committee expired on June 30, 2018. MnDOT Central Office and Metro District staff, in consultation with local and regional partners, can explore forming a new advisory committee that includes public members. Items to explore include the committee's mission, role, membership, and other key considerations to minimize overlap or redundancy with existing advisory groups.

Strategy 5: Measure performance

MnDOT uses performance measures to evaluate achievement toward agency goals. The SBSP identified eight performance measures to track progress toward meeting the SBSP's goals. The performance measures address the topics of ridership, safety, and assets. More detailed information on these measures are in Chapter Six of the SBSP. MnDOT will continue to use emerging counting technologies and analytical tools such as big data to better understand bicycle demand and travel behavior. Performance measures will be tracked statewide by MnDOT's Office of Transit and Active Transportation; however, District staff can support this effort.

Action 5.1: Continue providing data on addressing bicycling needs to MnDOT's Office of Transit and Active Transportation

The SBSP defines "MnDOT projects that address bicycling needs" as a performance measure. This measure helps MnDOT evaluate progress toward addressing known bicycling infrastructure gaps and issues on its roadway system. This is measured by the percentage of MnDOT projects where existing conditions do not adequately meet bicycling needs and improvements for bicyclists are included in the final project scope. Data from District staff is needed to track this performance measure.

Action 5.2: Encourage local and regional partners in the district to participate in MnDOT's Bicycle and Pedestrian Counting Program

MnDOT's Office of Transit and Active Transportation started a Statewide Pedestrian and Bicycle Counting Program in 2013, which uses automated technologies to monitor bicycle and pedestrian traffic volumes and patterns throughout Minnesota. The program generates walking and bicycling information that can be used to inform state, regional, and local planning and engineering initiatives and to assess

important transportation policies and programs such as Complete Streets and Toward Zero Deaths. Expanding the count program and increasing the amount of bicycle count locations across the state will make the program more valuable to future MnDOT planning and engineering projects.

MnDOT's Office of Transit and Active Transportation facilitates the counting program and offers the resources to conduct bicycle counts, but they rely on counties, local governments, and other partners across the state to conduct the counts. District staff should work with local partners and encourage participation in the program. MnDOT offers portable counters that partners can borrow to collect local and regional bicycling and walking data. More information on MnDOT's bicycle and pedestrian traffic count data program can be found here.

Strategy 6: Document bicycle facility investment needs and spending in the Metro District

Action 6.1: Develop a high-level assessment of potential bicycle investment needs in the Metro District

A high-level cost estimate for the bicycle investments identified in the MBP can help inform future investment planning initiatives such as MnSHIP and regular legislative requests for information on investment needs.

Action 6.2: Track bicycle facility investments on Metro District projects

Documenting cost estimates for bicycle investments on highway and bridge projects provides transparency and helps monitor progress toward MnSHIP targets.

Short Term (0-5 years) Bikeway Maintenance Strategies and Actions

The strategies in this section are focused on maintaining bicycle facilities located on the MnDOT Highway network.

Strategy 7: Clarify maintenance responsibilities and identify sustainable funding sources for bicycle facilities within MnDOT right-of-way

Action 7.1: Establish maintenance agreements with local jurisdictions and partner agencies to identify responsibilities for maintenance activities, including snow clearing

Many bicycle facilities on MnDOT's system are implemented, owned and operated by partner agencies. The jurisdiction that owns the facility is generally responsible for maintenance and operations. These responsibilities are typically documented in a maintenance agreement and/or a limited use permit.[5] Without formal agreements, confusion over maintenance responsibilities can occur. Effective maintenance programs include coordination between the government agencies that own and maintain the infrastructure.

[5] Minnesota Department of Transportation (2007), *MnDOT Bikeway Facility Design Manual*. Retrieved from: https://www.dot.state.mn.us/bike/pdfs/manual/manual.pdf

Maintenance agreements can transfer responsibility from MnDOT to local agencies and can provide for payments to local agencies for performing maintenance responsibilities that MnDOT operations would normally perform. For example, a local agency may agree to conduct plowing, mowing, and other maintenance activities on shared use paths constructed and owned by MnDOT. Clarifying responsibilities for maintenance costs and operations ensures that maintenance problems can be directed to the responsible party and resolved in a timely manner to maintain safe facilities for users. Ideally, one agency would be responsible for the length of an individual facility.[6] Facilities managed by a single entity are more likely to have a consistent level of maintenance that users come to expect.

The bicycle facility inventory (Action 3.1) should include maintenance agreements and limited use permits. MnDOT can establish maintenance agreements where they do not exist or are lacking, especially with jurisdictions located along the investment priority routes identified in this plan.

MnDOT's Bikeway Facility Design Manual encourages the use of maintenance agreements to clarify the roles and responsibilities of each agency.[7] The Cost Participation and Maintenance Responsibilities with Local Units of Government Manual provides further guidance on maintenance agreements.[8]

Strategy 8: Develop a proactive pavement preservation program

Action 8.1: Work with Metro District Maintenance, Office of Materials and Road Research, and the ADA (Americans with Disabilities Act) Unit to develop a process and schedule to inventory shared use paths on MnDOT right-of-way for surface quality and pavement condition

A consistent pavement inspection and maintenance schedule is one of the most effective ways to ensure user safety on shared use paths. Regular and preventive maintenance can also extend the service life of a facility and reduce long term expenses by delaying or eliminating the need for costly rehabilitation projects.

Developing a comprehensive pavement management program for MnDOT's off-road facilities would guide routine maintenance activities. The program could evaluate four shared use path characteristics: roughness (ride), surface distress (condition), surface skid characteristics, and structure (pavement strength and deflection). A rating system could be used to score each characteristic. Based on the resulting score, recommended actions may range from "no maintenance required" to "routine maintenance" or even "reconstruction." [9] Data from the pavement management program can inform maintenance decisions, in conjunction with other considerations, such as shared use path user volumes.

Staff from the ADA Unit can be included in this process to determine if existing maintenance issues are causing accessibility problems. If a facility is deemed noncompliant due to lack of maintenance, it could

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[6] University of Delaware (2007), Sidewalks and Shared-Use Paths: Safety, Security, and Maintenance, Part 3: Key Maintenance Issues, p.61. Retrieved from: https://www.americantrails.org/files/pdf/SharedUsePathSafetyDE.pdf
[7] Minnesota Department of Transportation (2007), *MnDOT Bikeway Facility Design Manual*. Retrieved from: https://www.dot.state.mn.us/bike/pdfs/manual/manual.pdf
[8] Minnesota Department of Transportation (2017), *Cost Participation and Maintenance Responsibilities with Local Units of Government Manual*. Retrieved from: http://www.dot.state.mn.us/policy/financial/fm011.html
[9] Indiana Local Technical Assistance Program (2014). *Best Practices in Trail Maintenance*. Retrieved from: https://docs.lib.purdue.edu/cgi/viewcontent.cgi?article=1007&context=inltappubs

be prioritized for improvement. Materials and Road Research can also be consulted for its expertise in pavement engineering.

Action 8.2: Conduct pavement preservation repairs on an as-needed basis, including crack sealing, patching, fog sealing, microsurfacing, and asphalt resurfacing

Many short- and mid-term maintenance techniques are used for pavement preservation. These include crack sealing, patching, fog sealing, microsurfacing, asphalt resurfacing, grinding and cutting, and tree root barriers. MnDOT can perform minor repairs and maintenance activities for bikeway pavement preservation as needed. The need for repairs could be identified through various channels, such as updating MnDOT's bicycle facility inventory, requests from local agencies, or public demand (see Action 11.1).

Action 8.3: Develop a process for notifying the responsible agency about maintenance issues

Once the bicycle facility inventory in Action 3.1 is developed, it can be used to inform local agencies about maintenance issues and request that they be resolved. Where an existing maintenance agreement identifies a local agency as the responsible entity (see Action 7.1), MnDOT can inform that agency and could offer support as it addresses the problem, if possible. Where no maintenance agreement is in place and the facility in need of maintenance is within a local jurisdiction's boundary, MnDOT could inform the appropriate agency of the problem and coordinate with them to address the problem.

Action 8.4: Develop a pavement preservation program for shared use paths on MnDOT right-of-way

Based on the shared use path inventory (Action 8.1), Metro District staff can program projects to repair, resurface or reconstruct shared use paths as funding is available or in conjunction with adjacent MnDOT Highway projects.

Strategy 9: Develop procedures for routine maintenance and snow clearing on shared use paths and curb level separated bikeways

Action 9.1: Identify a snow removal priority network for shared use paths and curb level separated bikeways where MnDOT is responsible for winter maintenance

Shared use paths and separated bikeways at curb level (i.e., Grand Rounds in Minneapolis or the Capital City Bikeway in Saint Paul) are the major thoroughfares of the active transportation network: they are limited access, allowing only non-motorized modes of travel; they enable fast and convenient travel over long distances; and they are often the preferred route for many users. After winter weather events, clearing these facilities could be a priority, just as the Interstate Highway System is for motorized travel. Additional snow removal responsibilities will require additional funding, staffing, and equipment. Other winter users of these trail corridors should be engaged when making decisions about snow clearance, including skiers, snowshoers, and snowmobilers.

Facilities that carry the highest number of bicyclists can be prioritized. These routes can also be prioritized for anti-icing prior to winter weather events (see Long Term Strategies for more information). To make the public aware of priority routes, designated facilities could be signed as such and identified in MnDOT-produced bicycling literature and on the MnDOT bicycle map and web site. Multimodal planning staff can lead these efforts in partnership with Metro Maintenance.

Action 9.2: Establish guidelines for clearing snow on shared use paths

Some jurisdictions have performance measures and goals in place for snow clearance on their bikeway networks. Policies include time-sensitive targets, such as clearing priority shared use paths within 24 hours of snowfall. A realistic time-sensitive target could be established with district maintenance staff to ensure facilities are cleared and functional as quickly as possible after winter weather. Guidelines for timing could consider the location of the facility, user volumes, connectivity, and whether it is part of the priority network (see Action 9.1). Multimodal planning staff can lead these efforts in partnership with Metro Maintenance.

Action 9.3: Use MnDOT's small business procurement process for routine maintenance of shared use paths

MnDOT's maintenance staff has an extensive workload and may not have resources to maintain all MnDOT-owned shared use paths. As an alternative, MnDOT could use its small business procurement process to contract maintenance work with vendors. MnDOT is currently piloting a program to provide capacity-building and training for small businesses, Disadvantaged Business Enterprises (DBEs), veteran-owned small businesses (VETs), and Targeted Group Businesses (TGBs). These programs provide increased access to state contracting opportunities for qualifying businesses. MnDOT would need to explore estimated program costs to ensure that it would be more cost-effective than relying on in-house maintenance staff.

Action 9.4: Implement a routine vegetation management schedule to ensure user safety

When conducting vegetation management, agencies should be mindful of the important role that vegetation plays in facility character as well as user experience. Routine trimming, mowing, and pruning can contribute to shared use path aesthetics and user safety, but an overly-aggressive approach can degrade the natural features that attract users in the first place.

Mowing, trimming, and pruning could be performed on a regular basis to keep sight lines clear and shared use paths free from obstructions. Noxious weeds and invasive species can also be monitored and managed during routine vegetation maintenance. MnDOT can be prepared to respond to specific complaints of low-hanging branches or downed trees as needed. Users could report these issues through a maintenance request system (see Action 11.1).

Strategy 10: Assess current maintenance practices for on-street bicycle facilities

Action 10.1: Work with Metro District Maintenance to understand and assess current practices for year-round routine maintenance for MnDOT Highways with on-street bicycle facilities, including bicycle lanes and shoulder facilities

Both Maintenance and Planning staff play important roles in the maintenance of bicycle facilities. Improving communication between the two offices would result in more informed strategies for bicycle facility maintenance. Maintenance and Planning staff can work together to assess current practices, such as snow clearing, sweeping, pavement quality assessment, inspections, replacing signs, and pavement markings. Staff can engage local partners that maintain on-street bicycle facilities to better understand local best practices. While user safety is the goal for both offices, they may approach maintenance strategies with different perspectives. This action would establish a common understanding of current maintenance practices for on-street bicycle facilities. Solutions include scheduling regular joint office meetings or forming a committee to work on shared bikeway maintenance issues.

Action 10.2: Identify opportunities to maintain on-street bicycle facilities

Once a common understanding and strong working relationship have been established through Action 10.1, maintenance stakeholders can further refine and develop strategies for effective, coordinated, and timely on-street bicycle facility maintenance.

Strategy 11: Engage the public in maintaining the bikeway network

Action 11.1: Develop a public-facing platform for reporting bikeway maintenance issues

Direct communication with the public allows government agencies to control their messaging and promote maintenance efforts. MnDOT already provides reliable, timely, and regular updates via social media on many issues, from roadway maintenance to special events. It also operates a sophisticated 511 traveler information system, with an interactive website, mobile application, and conventional phoneline. With some modification, the public could use any of these platforms to report bikeway maintenance issues, such as poor pavement conditions, overgrown vegetation, snow or ice accumulation, or bikeway signs in poor condition.

Alternatively, a standalone web-based maintenance reporting system could be developed. For example, the California Department of Transportation (Caltrans) has a webpage[10] where users can submit service requests for maintenance issues. Bicyclists in Minneapolis can use the SeeClickFix[11] platform to report maintenance and other issues. Providing a similar statewide platform for public feedback would generate awareness of MnDOT's current maintenance activities and support for future goals.

[10] https://csr.dot.ca.gov/
[11] https://en.seeclickfix.com/minneapolis

Action 11.2: Raise awareness of MnDOT's sponsorship agreement program and other initiatives to assist with volunteer maintenance activities

In 2017, Minnesota Statutes § 160.801 authorized the establishment of a statewide highway sponsorship program to encourage businesses, civic groups, or individuals to support the enhancement and maintenance of MnDOT Highways and right-of-way. This program could be extended to bicycle facilities to build local support for and investment in the bikeway network. In some areas nonprofits and other groups already maintain off-road facilities with trash removal, beautification, and similar initiatives. Launching a statewide initiative with these groups could harness untapped partnerships for local bikeway maintenance. MnDOT already has a strong working relationship with the Bicycle Alliance of Minnesota. This advocacy group could identify local bicycling organizations who could participate in volunteer maintenance activities.

Strategy 12: Design bikeways to accommodate existing maintenance vehicles

Action 12.1 Design bikeways to accommodate existing maintenance vehicles

Many agencies use pickup truck-mounted plows to clear smaller roadways and parking lots. Jurisdictions can save on capital expenses for new vehicles by designing bicycle facilities to accommodate existing maintenance vehicles widths. Pickup trucks or small tractors can be outfitted with brooms, perforated plows, and salting and wetting devices to clear shared use paths and other bicycle facilities.

Strategy 13: Maintain pavement markings

Action 13.1 Routinely inspect pavement markings and replace as needed

Bicycle facilities that are subject to significant wear and tear from motor vehicles require a strong and durable material; materials such as thermoplastic should be used. Thermoplastic has a raised profile and can be damaged by snowplows. Some agencies recess thermoplastic to decrease the likelihood of snowplow damage, but this practice is expensive. Generally, thermoplastic is used for on-street facilities due to its longevity, while less durable, paint-based materials (latex or epoxy) are used for off-street bikeways. On-street bikeways are subject to more wear and tear than shared use paths. Agencies should frequently inspect pavement markings and replace degraded markings as needed. Shared use paths and other off-street facilities can be inspected less frequently.

Long Term (5+ years) Planning and Programming Strategies and Actions

Strategy 14: Develop a better understanding of existing bikeways and local bicycle planning efforts

Action 14.1: Collect and disseminate information about existing and planned bikeways and other local bicycle planning efforts

The Met Council completed the RBSI in October 2016. This action can build upon the RBSI data by collecting additional characteristics of all existing bikeways (e.g., bikeway type, width, adjacent roadway speed and ADT, etc.). In addition, Metro District staff can collaborate with the Met Council to document all local plans related to bicycling, active transportation, or Safe Routes to School within the Metro District. These plans may be prepared at various scales, including county, city, neighborhood, school or corridor. Also, Metro District and the Met Council staff can collaborate to create an online mapping database of all planned and existing bikeways in the district to share amongst agency staff and local partners that plan, program, construct, and maintain bikeway projects.

Strategy 15: Update the Metro District Bicycle Plan on a regular basis

Action 15.1: Work with local partners to update the MBP every five years

The MBP is intended to be updated at least every five years, alternating with the SBSP update and following the decennial Comprehensive Plan updates in the Seven-County Metropolitan Area. Plans should reflect any updates that have been achieved since the development of this plan, as well as reexamining the prioritization framework, updating bicycle investment priorities, and refining the strategies and actions to better achieve the goals of the SBSP and unique district needs.

Long Term (5+ years) Bikeway Maintenance Strategies

Due to limited resources, the best practices outlined in this section should be considered as long term bikeway maintenance strategies. They are widely recognized as cost-effective policies and programs that improve maintenance practices overall. These strategies are aspirational, long term goals that MnDOT may consider pursuing when sufficient resources are available.

Strategy 16: Implement a proactive anti-icing program for priority bikeways prior to major weather events

Pretreating bicycle facilities with anti-icing agents is a best practice for bikeway networks in cold climates[12]. This method requires less material and plowing than reactive deicing, which is applied after snow events. DOTs report using one third the amount of anti-icing material for proactive programs as

[12] City of Minneapolis (2018), *Pedestrian and Bicycle Winter Maintenance Study Final Report.* Retrieved from: http://www.minneapolismn.gov/www/groups/public/@publicworks/documents/webcontent/wcmsp-210946.pdf

compared to reactive ones. Planning and Maintenance staff can work together to identify high priority bikeways that would benefit from this treatment based on factors such as the MBP prioritization scores, demand, and community input. The mileage of bikeways identified for this treatment would rely significantly on available maintenance resources.

Strategy 17: Provide shared use path etiquette guidance and trash receptacles to reduce the need for sweeping

Posting etiquette rules on littering and encouraging users to pick up trash can help maintain a clean and attractive facility. Providing trash receptacles at trailheads and rest stops and emptying them regularly can also reduce the need for sweeping. These additions would require a sustainable funding source and dedicated staff to maintain. The MnDOT Adopt a Highway Program also helps to reduce the need for sweeping by encouraging members of the program to volunteer and pick up litter along MnDOT Highways at least two times a year for at least two years.

Strategy 18: Ensure that all signed or marked shoulder facilities are cleared for bicycle use after snowfall

In rural areas, on-shoulder bicycle routes comprise most of the bikeway network. It is important to keep these facilities clear and functional in the winter. Often, shoulder maintenance is the responsibility of the jurisdiction that owns the road. Removing snow from shoulders is a recommended maintenance task in MnDOT's Bikeway Facility Design Manual.[13]

Strategy 19: Explore establishing creative maintenance agreements

Local partners may not have the labor resources or equipment to maintain bicycle facilities. Metro District staff and partners can work together to establish maintenance agreements that allow for sharing necessary resources to maintain bikeways across jurisdictional boundaries.

[13] Minnesota Department of Transportation (2007), *MnDOT Bikeway Facility Design Manual*. Retrieved from: https://www.dot.state.mn.us/bike/pdfs/manual/manual.pdf

Planning-Level Cost Assumptions

The costs for implementing bicycle facilities varies widely depending on unique-project specific circumstances, details of the facility design, and economic factors at the time of project construction. To aid in planning and programming future bicycle implementation projects, basic planning-level cost estimates for various bicycle facility types are provided. More detailed breakdowns of the planning-level cost estimates for each bicycle facility type can be found in **Appendix F**.

The cost estimates are based on MnDOT 2017 statewide average bid prices. Actual bid prices may vary and estimates for construction in future years should be adjusted to account for anticipated construction cost inflation. The cost estimates do not include an allowance for engineering, utility, or right-of-way costs, but the higher estimate includes a 40% contingency that may account for some of those costs.

The cost estimates account for adding the bicycle facility on **both** sides of the roadway (to allow for directional travel), except for shared use paths. Shared use paths would allow for two-way travel and are estimated on only one side of the roadway. Note that whether a shared use path is constructed on one or two sides is a context-sensitive design decision.

Planning-Level Cost Estimate Assumptions

Paved Shoulder

$250,000 to $510,000 per mile

- Includes costs to add a paved shoulder to both sides of an existing roadway, regardless of existing shoulder widths.
- The lower range cost ($250,000/mile) includes adding 6’ of pavement to both sides of an existing roadway shoulder with no contingency for additional unexpected costs.
- The higher range cost ($510,000/mile) includes adding 10’ of pavement to both sides of an existing roadway shoulder with a 40% contingency for additional unexpected costs.
- Includes embankment, aggregate base and asphalt pavement.
- Includes an allowance for landscaping/turf establishment, pavement markings, and drainage work.
- Estimate does not account for unusual site-specific grading challenges, such as adding guardrail or retaining walls.

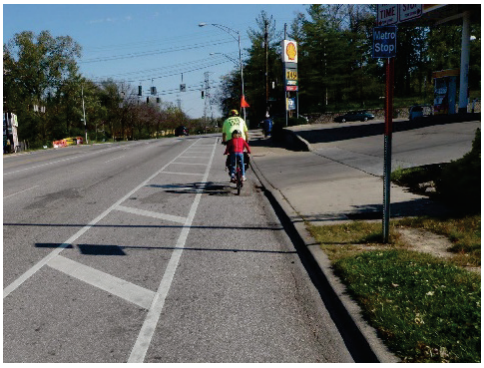
Bicycle Lane

$14,000 to $20,000 per mile

- Includes costs to add painted bike lane pavement marking symbols (one symbol every 250 feet) and bicycle lane and wayfinding signs (one sign every 1,000 feet and two wayfinding signs every 2,640 feet) to an existing roadway.
- Estimate includes costs to add bike lane only and does not include removal or replacement of existing markings.
- Estimate assumes that existing roadway width can accommodate bicycle lanes.

Buffered Bicycle Lane

$17,000 to $25,000 per mile



- Includes costs to add painted bike lane pavement marking symbols (one symbol every 250 feet) and bicycle lane and wayfinding signs (one sign every 1,000 feet and two wayfinding signs every 2,640 feet) with a 4’ striped buffer every 40’ to an existing roadway.
- Estimate includes costs to add buffered bike lane only and does not include removal/replacement of existing markings.
- Estimate assumes that existing roadway width can accommodate buffered bicycle lanes.

Delineator-Separated Bicycle Lane

$25,000 to $36,000 per mile

- Includes costs to add painted bike lane pavement marking symbols (one symbol every 250 feet) and bicycle lane and wayfinding signs (one sign every 1,000 feet and two wayfinding signs every 2,640 feet) with a 4’ striped buffer and tube delineators every 40’ to an existing roadway.
- Estimate includes costs to add delineator-separated bike lane only and does not include removal/replacement of existing markings.

Curb-Separated Bicycle Lane

$1,900,000-$2,700,000 per mile

- Includes costs to relocate existing 5-foot sidewalks with adjacent sidewalk-level, one-way, 7’ wide concrete bicycle paths (5’ bicycle lane plus 2’ shy distance).
- Includes an allowance for landscaping/turf establishment, painted bike lane pavement marking symbols (one symbol every 250 feet), bicycle lane and wayfinding signs (one sign every 1,000 feet and two wayfinding signs every 2640 feet), and drainage work. This work may be done at a lower cost when performed in conjunction with a planned roadway reconstruction.
- Cost estimate assumes bicycle lanes do not require right-of-way acquisition and facility can be constructed within MnDOT right-of-way by narrowing lane widths, removing motor vehicle travel lanes, removing parking or reconfiguring parking lanes.

Shared Use Path (Trail)

$250,000-$360,000 per mile

- Includes costs to construct a 10' shared use asphalt path along one side of a roadway.
- Whether a shared use path is constructed on one or both sides of a roadway is a context-sensitive design decision.
- Includes an allowance for landscaping/turf establishment, signing/markings, and drainage work.
- This estimate does not include potential right-of-way acquisition, retaining walls, bridges, or other non-typical cost elements.

Bikeway Funding Sources

Designing, building, and maintaining bikeways along MnDOT Highways supports MnDOT's Complete Streets Policy. In addition, one of the goals in Minnesota Statutes §174.01 is to "promote and increase bicycling and walking as a percentage of all trips as energy-efficient, nonpolluting, and healthy forms of transportation".

A forthcoming update to the MnDOT Bicycle Facility Design Guide will include a list of funding sources for various levels of government. The guide includes the funding type (planning, design) as well as information on the eligible uses for each funding source. The US DOT also publishes an exhaustive list of bicycle-related improvements that are eligible for various sources of federal funding.[14] Table 8 lists federal funding sources for bicycle and pedestrian infrastructure projects based on project type and eligibility. In the Twin Cities metropolitan area, TA, STBG and SRTS are available via the biennial Regional Solicitation. MnDOT should continue to make investments that benefit people bicycling through the MnSHIP categories of Pavement Condition, Bridge Condition, Jurisdictional Transfer, Traveler Safety, and Regional and Community Improvement Priorities.

[14] https://www.fhwa.dot.gov/environment/bicycle_pedestrian/funding/funding_opportunities.cfm

Table 8: Pedestrian and Bicycle Funding Opportunities.

Facility Type	BUILD	TIFIA	FTA	ATI	HSIP	NHPP	STBG	TA	RTP	SRTS
Bicycle and pedestrian overpasses	A	A	A	A	A	A	A	A	A	A
Bicycle parking	C	C	A	A	D	A	A	A	A	A
Bicycle and pedestrian scale lighting	A	A	A	A	A	A	A	A	A	A
Curb ramps	A	A	A	A	A	A	A	A	A	A
Bike lanes	A	A	A	A	A	A	A	A	D	A
Paved shoulders	A	A	D	D	A	A	A	A	D	A
Separated bike lanes	A	A	A	A	A	A	A	A	D	A
Shared use paths	A	A	A	A	A	A	A	A	A	A
Signed routes	A	A	A	A	A	D	A	A	A	D
Signs and signals	A	A	A	A	A	A	A	A	A	D
Streetscaping	C	C	C	A	D	D	A	A	A	D
Traffic calming	A	A	A	A	D	A	A	A	A	D
Shared use path bridges	A	A	A	D	B	A	A	A	A	A
Shared use path crossings	A	A	A	D	B	A	A	A	A	A
Shared use path facilities (e.g. restrooms)	C	C	C	D	D	D	D	B	B	B
Tunnels/ underpasses	A	A	A	A	B	A	A	A	A	A

Source: Adapted from the U.S. Department of Transportation (2018), https://www.fhwa.dot.gov/environment/bicycle_pedestrian/funding/funding_opportunities.cfm

Table Key

A	Funds may be used for this activity
B	See program-specific notes for restrictions (https://www.fhwa.dot.gov/environment/bicycle_pedestrian/funding/funding_opportunities.cfm)
C	Eligible, but not competitive unless part of a larger project
D	Not eligible

Program Abbreviations

BUILD: Better Utilizing Investments to Leverage Development

TIFIA: Transportation Infrastructure Finance and Innovation Act (loans)

FTA: Federal Transit Administration Capital Funds

ATI: Associated Transit Improvement (1% set-aside of FTA)

HSIP: Highway Safety Improvement Program

NHPP: National Highway Performance Program

STBG: Surface Transportation Block Grant Program

TA: Transportation Alternatives Set-Aside (formerly Transportation Alternatives Program)

RTP: Recreational Trails Program

SRTS: Safe Routes to School Program/Activities

Appendix A: Bicycling Investment Prioritization Framework

Category	Subcategory	Objectives	Scoring Criteria	Scoring
Population & Equity	Serves children and youth	Near youth destinations such as schools or parks	How many schools or parks are located within ½ mile?	2= Two or more schools or parks are within ½ mile wide hexagon 1= One school or park is within ½ mile wide hexagon 0= No schools or parks are within ½ mile wide hexagon
		Serves area with children and youth	Does the area have a population between 5-17 years of age that is equal to or greater than the Metro average?	2= Population between 5-17 years of age is equal to or greater than 150% of the Metro average 1=Population between 5-17 years of age is between 100%-150% of the Metro average 0= Population between 5-17 years of age is less than the Metro average
	Serves Native American populations and/or Tribal Reservations	Serves Native American communities	Is the project within ½ mile of a Native American Tribal Reservation or is the percentage of the population that identifies as Native American higher than the Metro average?	2= Area is within ½ mile of a Native American Tribal Reservation AND the Native American population is higher than the Metro average 1= Area is within ½ mile of a Native American Tribal Reservation OR the Native American population is higher than the Metro average 0= Does not meet scoring criteria
	Serves older adults	Serves population over the age of 65	Is the percentage of the population aged 65+ greater than or equal to the Metro average?	2= Meets scoring criteria 0= Does not meet scoring criteria
	Serves immigrant populations	Serves people born in a foreign country	Is the percentage of the population that is foreign born greater than or equal to 4% (statewide average)?	2= Meets scoring criteria 0= Does not meet scoring criteria
	Serves populations without motor vehicle access	Serves areas where the population without motor vehicle access is greater than the statewide average	Does the route serve an area where the population without motor vehicle access is greater than the Metro average?	2= Meets scoring criteria 0= Does not meet scoring criteria
	Serves areas of concentrated poverty	Serves populations of concentrated poverty	Does the area serve an area of concentrated poverty?	2= Meets scoring criteria 0= Does not meet scoring criteria
	Serves areas with people of color	Serves people of color	Does the area serve an area with the population more than 50% people of color?	2= Meets scoring criteria 0= Does not meet scoring criteria
	Serves area with high residential population density	Serves areas with high residential density	What is the population density of the project area relative to the Twin Cities metropolitan area regional average?	2=Serves areas with population density higher than regional average 0=Serves areas with population density lower than regional average
Activity Generators	Connects to high-priority destinations	Presence of high-priority destinations near project corridor, which may include regional parks, museums, community centers, shopping centers, etc.	How many RBTN Destinations are located within ½ mile of the project?	2= Two or more identified destinations are within the ½ mile wide hexagon 1= One identified destination is within the ½ mile wide hexagon 0= No identified destinations are within the ½ mile wide hexagon
	Serves areas with significant employment densities	Provides access to areas with high employment density	What is the employment density of the area relative to the regional average?	2= Employment density is higher than the regional average 0= Employment density is lower than the regional average

Category	Subcategory	Objectives	Scoring Criteria	Scoring
	Connects to public transportation/multi-modal transportation hubs	Increase access to public transportation and/or multi-modal transportation hubs including rail stations and intercity bus stops	Is the area located within 1 mile of transitway station or Park and Ride or within 1/8 mile of local bus stop	2= One or more transitway stations or Park and Ride stations are within 0.5 mi of hexagon **and** hexagon contains at least one bus stop 1= One or more transitway station or Park and Ride stations are within 0.5 mi of hexagon **or** hexagon contains at least one bus stop 0= No transit
Network	Connects to existing bikeways	Contributes to the local bikeway network by connecting to existing on-street or off-street routes	How many existing on-street or off-street bikeways (paved shoulder, bike lane, buffered bike lane, separated bike lane, off-street path or trail, U.S. Bicycle Route) does the area connect to?	2= Hexagon intersects one or more existing bikeways 0= Hexagon does not intersect with any existing bikeways
	Contributes to balanced route spacing in E/W or N/S directions	Contributes to appropriate route spacing within communities	How evenly spaced is this project in relation to other existing and planned bikeways in the RBSI data?	2 = Hexagon is not within 1 mi buffer from existing or planned bikeway 1 = Hexagon is within 0.5 - 1 mi buffer of existing or planned bikeway 0 = Hexagon is less than 0.5 mi buffer of existing or planned bikeway
Plan Consistency	Aligns with planned local and regional bikeways	Identified for planned bicycle improvements in a local or regional plan.	Is the area identified for bicycle improvements in a local plan or regional plan?	2= The hexagon intersects with a planned local bikeway, a planned regional trail, or the RBTN 0= The hexagon does not intersect with a planned local bikeway, a planned regional trail, or the RBTN
Safety	Improves intersection safety	Contains an intersection identified as high risk for bicyclists	Does the area contain an intersection that is identified as a high risk intersection for bicyclists?	2= Project includes one or more high risk intersections for bicyclists 0= Project does not include any high risk intersections for bicyclists

Appendix B: Metro District Bicycle Scoping Guide

Purpose

The purpose of the Metro District Bicycle Scoping Guide is to supplement the scoping and subject guidance for bikeway development in MnDOT's existing Highway Project Development Process. This guide is designed to help District staff determine if bicycle facilities should be included on any given roadway and if crossing improvements are needed, generally during the scoping phase of project development. To determine what type of bicycle facility to implement on any given roadway, refer to the forthcoming MnDOT Bicycle Facility Design Guide. Current design guidance and resources are posted on MnDOT's bicycling design and engineering website.

Scoping Checklist

Existing Conditions	
1. Are bicyclists legally prohibited from using the roadway (is there signage prohibiting bicycles)? **(If yes, skip to Projected Demand section)**	☐ Yes ☐ No
2. Is there currently a dedicated facility for bicyclists? This may include: shared use path, bicycle lane (separated or not), and/or a wide paved shoulder	☐ Yes ☐ No
3. If there is an existing bicycle facility, what is the level of traffic stress (LTS) of the roadway.	☐ LTS 1 ☐ LTS 2 ☐ LTS 3 ☐ LTS 4
4. Is there a history of crashes or do the existing conditions pose a crash risk	☐ Yes ☐ No
Projected Demand	
5. Is the project located directly on or travel across an existing or planned bikeway? (i.e. Transportation Plan, Bicycle Plan, RBTN, MnDNR, City or County Plan)	☐ Yes ☐ No
6. Is the project within a half mile of a school, and if so, is there a Safe Routes to School Plan that identifies a need for improvements?	☐ Yes ☐ No

7. If there is an existing dedicated bicycle facility, is the existing LTS appropriate for potential users? LTS 1 and 2 is comfortable for all ages and abilities. LTS 3 and 4 are appropriate for more confident bicyclists.	☐ Yes ☐ No
Improvement Opportunities Across the Roadway	
8. Is the crossing identified in a regional or local plan? This may include: RBSI, RBTN, RBBS, TPP, Safe Route to School Plan, MnDNR Trail Master Plan, City or County Comprehensive Plan, or any similar document that suggests there may be a future demand for an improved crossing.	☐ Yes – RBTN crossing ☐ Yes – local bikeway crossing ☐ Yes – RBBS crossing opportunity area ☐ Yes – Major River Bicycle Barrier Crossing ☐ Yes – Other (SRTS, Trail Master Plan, etc.) ☐ No
9. How does the project area score on the Metro District Bicycle Plan prioritization analysis? (Estimate the average priority level of the hexagons that are adjacent to the crossing.)	☐ Tier 1 ☐ Tier 2 ☐ Tier 3 ☐ Tier 4 ☐ Tier 5
10. Who would maintain the crossings?	☐ MnDOT ☐ Local partner has agreed to maintain ☐ Local partner would be responsible, but maintenance agreement has not been discussed
Improvement Opportunities Along the Roadway	
11. Is the project identified in a regional or local plan?	☐ Yes - RBTN ☐ Yes – local plan ☐ No
12. How does the project area score on the Metro District Bicycle Plan prioritization analysis? (Estimate the average priority level of the hexagons that the project traverses.)	☐ Tier 1 ☐ Tier 2 ☐ Tier 3 ☐ Tier 4 ☐ Tier 5
13. Who would maintain the facility?	☐ MnDOT ☐ Local partner has agreed to maintain ☐ Local partner would be responsible, but maintenance agreement has not been discussed

Project Budget Considerations	
14. Are improvements consistent with MnDOT's Complete Streets policy, MnSHIP and other applicable funding guidance? If yes, summarize below:	☐ Yes ☐ No
15. Should other funding be pursued for the project? (TAP, HSIP, others?)	☐ Yes ☐ No
16. Does a local partner have a cost participation requirement?	☐ No ☐ Yes, and local partner has agreed to participate in costs ☐ Yes, but cost participation has not been discussed

Appendix C: Statewide Policy and Planning Challenges

During the district planning process, District staff and the TACs identified different policy and planning challenges that are potential barriers to plan implementation. These challenges are not specific to one district and should be addressed by the MnDOT Central Office with collaboration from district planning staff. Therefore, this Appendix is included in all eight district bicycle plans and these policy and planning challenges are not included as a specific strategies or actions for one district to address.

- **Cost Participation Policy** – Recent updates to MnDOT's "Cost Participation and Maintenance Responsibilities with Local Units of Government" manual have increased MnDOT's ability to fund bicycle infrastructure. However, there are still opportunities for further improvements such as:
    - Reduce **ambiguity** under what circumstances bicycle improvements may be funded by MnDOT to align with other elements such as parking that lack qualifiers. From the current cost participation policy: "MnDOT will be responsible for up to 100% of costs of facilities **which MnDOT determines are necessary** to accommodate bicycle and other non-motorized transportation modes".
    - Allow MnDOT participation in bicycle infrastructure when reconstructing a roadway bridge, even if those bicycle infrastructure improvements are **not** included in a published plan, given that the expected life of future bridges (50 years or greater) exceeds the duration of most planning documents and future development may necessitate bicycle infrastructure improvements where they may not be warranted at present.
    - Allow greater MnDOT participation in construction of shared use bridge construction, where MnDOT's Pedestrian Crossing Facilitation Technical Memorandum recommends grade separation, including up to 100% of costs where MnDOT-initiated construction would alter an existing at-grade crossing to meet warrants for a grade-separated crossing (such as adding additional lanes or increasing vehicle speeds).
    - Allow MnDOT participation on locally-initiated bikeway projects outside of MnDOT Highway right-of-way, where the locally-initiated bikeway project serves a MnDOT Highway purpose. An example of this could include a situation where a local partner constructs a bikeway on a route parallel to a MnDOT Highway in lieu of MnDOT providing a bikeway along the MnDOT Highway. This may be beyond the purview of the Cost Participation Policy and require a determination of what is considered "trunk highway purpose" per current state statutes.
    - Include a similar policy to what many counties have where MnDOT would agree to provide appropriate bicycle facilities for the roadway context with a standard rate of participation from the local entity. The example from most counties in the metro is that the County will install shared use paths on both sides of a county highway in incorporated cities with a standard participation rate (typically 50%). In rural areas, shoulders are provided as standard upgrades.
- **State Aid Policy for Bicycle Design** – Bicycle design best practices are evolving and new treatments such as separated bicycle lanes or advisory bicycle lanes are not well-covered under existing State Aid policy and guidance, or MnDOT's Bicycle Facility Design Manual. To the extent practicable, State Aid policy and guidance should be updated to allow designers maximum flexibility when designing bicycle facilities.

- **MnDOT LRFD Bridge Design Guidance** - Revise section 2.1.2 – Bridge Deck Requirements – “Shared-use paths are provided on bridges where both pedestrian and bicycle traffic are expected. Bridge walkways are provided where only pedestrian traffic is expected.”, to require provision of bicycle and pedestrian facilities on all bridges where bicycles and pedestrians are not legally prohibited, rather than only where they are expected. The type of bicycle and pedestrian facility improvements should vary based on the context of the roadway, anticipated volumes, and speeds; and may include shoulders only in rural contexts. Include similar revisions to the Bridge Geometrics guidance in Section 9-2.03.01.01 in the Road Design Manual.

Appendix D: MnDOT Highways and the Regional Bicycle Transportation Network (RBTN)

The following tables provide a list of MnDOT Highway segments that are RBTN alignments or are potential RBTN Corridor gap fillers. Alignments represent existing or proposed bicycle paths and corridors represent areas where bicycle path alignments are yet to be determined. Corridors and alignments are classified as Tier 1 or Tier 2 priorities, with Tier 1 representing the region's highest priorities for bikeway planning and investment. Tier 1 corridors and alignments are planned in locations where they can attract the most riders and where they can most effectively enhance mode choice in favor of biking, walking, and transit over driving alone.

Table D-1: MnDOT Highway segments on RBTN Alignments.

MnDOT Highway Segments as RBTN Alignments	Key Local Jurisdictions	RBTN Status
MnDOT Highway 3 between (bet.) MnDOT Highway 55/80th St E and MnDOT Highway 149 (Jefferson Trail)	Inver Grove Heights, Dakota County	Tier 2 Alignment
MnDOT Highway 3 between MnDOT Highway 149 (Jefferson Trail) and CSAH 42	Inver Grove Heights, Eagan, Rosemount, Dakota Co.	Tier 2 Alignment
MnDOT Highway 5 from Lake Minnetonka Reg. Trail (Victoria) to Waconia	Victoria, Laketown Twp., Waconia, Carver Co.	Tier 1 Alignment
MnDOT Highway 5 bet. Eden Prairie Rd and Lake Minnetonka Reg. Trail	Eden Prairie, Chanhassen, Victoria, Carver Co. Parks	Tier 1 Alignment/planned regional trail in Carver County to Rolling Acres Rd.
MnDOT Highway 5 bet. McKnight Rd and Stillwater Rd	Maplewood	Tier 1 Alignment
MnDOT Highway 5 bridge over Mississippi River (Shepard Rd to Fort Snelling)	Saint Paul, Fort Snelling, Hennepin County	Tier 1 Alignment
US 10 from US 61 to St. Croix River bridge to Prescott, WI	Washington County	Tier 2 Alignment

MnDOT Highway Segments as RBTN Alignments	Key Local Jurisdictions	RBTN Status
MnDOT Highway 55 over Minnesota River (Mendota Bridge) from MnDOT Highway 13 to MnDOT Highway 5	Mendota Heights, Fort Snelling, Hennepin County	Tier 1 Alignment
I-35E bridge over Mississippi River from MnDOT Highway 13 to Shephard Road	Saint Paul, Mendota Heights, Ramsey County	Tier 1 Alignment
MnDOT Highway 13 along Annapolis St from Sibley Mem. Hwy to MnDOT Highway 149 (Smith Ave)	St Paul, West St Paul, Mendota Heights	Tier 2 Alignment
MnDOT Highway 13 between I-35 E and Annapolis Street	Mendota, Mendota Heights, Lilydale	Tier 1 Alignment
MnDOT Highway 13 bet. Victoria Curve and Big Rivers Reg. Trail	Mendota Heights	Tier 1 Alignment
MnDOT Highway 13 from Letendre Street to Mendota Heights Rd (Big River Reg. Trail)	Eagan, Mendota Heights, Dakota County	Tier 1 Alignment
MnDOT Highway 41 from US 169 to MnDOT Highway 7 (except bet. MN River Bridge & Crosstown Blvd)	Chaska, Chanhassen	Tier 2 Alignment
MnDOT Highway 47 (Univ. Ave) bet. NE 26th Ave & St. Anthony Pkwy	Minneapolis	Tier 2 Alignment
MnDOT Highway 51 (Montreal Ave) bet. Snelling Ave & MnDOT Highway 5 (W. 7th)	Saint Paul	Tier 1 Alignment
US 61 from 120th St (Co. Line) to MnDOT Highway 97	Hugo, Forest Lake, Washington Co.	Tier 2 Alignment
US 61 from MnDOT Highway 96 to Hoffman Rd	White Bear Lake, Washington Co.	Tier 1 Alignment

MnDOT Highway Segments as RBTN Alignments	Key Local Jurisdictions	RBTN Status
US 61 trail from Battle Creek Reg. Park to 0.33 mi s/of Warner Rd	Saint Paul	Tier 1 Alignment
US 61 trail from Highwood Ave to Carver Ave	Saint Paul	Tier 1 Alignment
MnDOT Highway 65 (Central Ave) bet. Washington Ave & St. Anthony Pkwy	Minneapolis	Tier 1 Alignment
MnDOT Highway 65 (Central Ave) bet. Osborn Rd NE & Pierce St NE	Spring Lake Park	Tier 1 Alignment
MnDOT Highway 77 bridge over MN River (bet. N & south trail connections)	Bloomington, Burnsville	Tier 1 Alignment
MnDOT Highway 95 from I-94 to Brown Creek State Trail (Stillwater)	Lakeland, W. Lakeland Twp., Baytown Twp., Bayport, Oak Park Hts., Stillwater, Wash. County	Tier 2 Alignment
MnDOT Highway 95 from US 10 to I-94	Cottage Grove, Woodbury, Afton Denmark Township, Wash. County	Tier 2 Alignment
MnDOT Highway 96 from US 61 to Gateway State Trail	White Bear Lake, Dellwood, Grant, Washington Co.	Tier 2 Alignment and regional trail
MnDOT Highway 36 bet. Helen St N and Hadley Ave N	North St Paul, Oakdale	Tier 2 Alignment and state trail
MnDOT Highway 101 from CSAH 61 (Flying Cloud) to CSAH 14 (Pioneer Trail)	Chaska, Hennepin County	Tier 2 Alignment

MnDOT Highway Segments as RBTN Alignments	Key Local Jurisdictions	RBTN Status
MnDOT Highway 101 from MnDOT Highway 5 to Hennepin CSAH 101/W 62nd St.	Chanhassen, Eden Prairie, Hennepin County	Tier 2 Alignment
MnDOT Highway 62 bet. MnDOT Highway 13 & Marywood Lane	Mendota Heights, West St. Paul	Tier 1 Alignment
MnDOT Highway 149 bridge over Mississippi River (High Bridge, Cherokee Ave to Cliff Ave)	Saint Paul	Tier 1 Alignment
MnDOT Highway 149 from MnDOT Highway 62 to Delaware Avenue	Mendota Heights	Tier 1 Alignment
MnDOT Highway 149 (Jefferson Trail) between Wescott Rd and MnDOT Highway 3	Inver Grove Heights	Tier 2 Alignment
MnDOT Highway 156 bet. US 52 interchange and Villaume Avenue	Saint Paul, South St Paul	Tier 1 Alignment
I-494 Wakota Bridge Trail bet. Maxwell Ave & Verderosa Ave	Newport, South St Paul	Tier 1 Alignment
I-494 Trail (Mn River bridge) from American Blvd to Pilot Knob Rd	Bloomington, Eagan	Tier 1 Alignment
MnDOT Highway 77 bridge over Minnesota River (bet. north & south trail connections)	Bloomington, Burnsville	Tier 1 Alignment

Table D-2: MnDOT Highway Segments as Potential RBTN Corridor Gap Fillers.

MnDOT Highway Segments as Potential *RBTN Corridor Gap Fillers*	Key Local Jurisdictions	RBTN Status
I-94 between CR 21 and St Croix River Bridge	Wash Co., W. Lakeland Township, Lakeland	Tier 2 Corridor
US 61 between 70th Street S and Hastings Bridge over Mississippi River	Cottage Grove, Denmark Township, Hastings	Tier 1 & Tier 2 Corridors
MnDOT Highway 7 from MnDOT Highway 41 to Mill Street (Lake Minnetonka Reg. Trail)	Chanhassen, Shorewood, Excelsior, Three Rivers Park District	Tier 2 Corridor
MnDOT Highway 7 between Mill Street and Hennepin CSAH 101	Excelsior, Shorewood, Greenwood, Minnetonka, Three Rivers Park District	Tier 2 Corridor
MnDOT Highway 51 (Snelling) bet. Old Snelling (CR 76) & Hamline Ave (CR 50)	Arden Hills, Roseville, Ramsey County	Regional Bicycle Barrier crossing improvement location
MnDOT Highway 5 bet. Post Road & I-494 Bike Trail	Fort Snelling (unorg.)	Tier 1 Corridor
I-94 bet. Downtown St. Paul and MnDOT Highway 51 (Snelling Ave)	Saint Paul, Ramsey County	Possible E-W parallel bikeway identified in Rethink the I-94 Corridor Study
I-94 bet. MnDOT Highway 51 (Snelling Ave) and Hudson Blvd interchange	Saint Paul, Minneapolis, Hennepin & Ramsey Counties	Tier 2 Corridor, & identified in Rethink the I-94 Corridor Study
MnDOT Highway 5 (7th Street) from Margaret Street to MnDOT Highway 149 (Smith Avenue)	Saint Paul	Tier 1 Corridor

MnDOT Highway Segments as Potential *RBTN Corridor Gap Fillers*	Key Local Jurisdictions	RBTN Status
MnDOT Highway 149 bet. Cliff Street and MnDOT Highway 5 (W 7th Street)	Saint Paul	Tier 1 Corridor
MnDOT Highway 149 bet. Cherokee Ave & CR 63 (Delaware Ave)	Saint Paul, West St Paul	Tier 1 Corridor
MnDOT Highway 149 from MnDOT Highway 62 to Wescott Road	Mendota Heights, Eagan	Tier 1 Corridor
US 52 bet. CR 14 (Southview Blvd) and CR 28 (80th St E)	South St Paul, Inver Grove Heights, Dakota Co.	Tier 2 Corridor
I-35W bet. American Blvd and MnDOT Highway 13 interchange	Bloomington, Burnsville	Tier 1 and Tier 2 Corridors
I-394/US 12 bet. US 169 and Luce Line State Trail (Wayzata)	Wayzata, Minnetonka, St. Louis Park	Tier 2 Corridor
US 169 at Mississippi River bridge (W. River Rd to W. Main Street)	Champlin, Anoka	Tier 2 Corridor
US 10 bet. W Ferry St (Anoka) & Alpine Dr NW (Ramsey)	Anoka, Ramsey, Anoka Co.	Tier 1 Corridor
MnDOT Highway 65 bet. St Anthony Pkwy and Medtronic Parkway	Minneapolis, Columbia Heights, Fridley	Tier 2 Corridor
MnDOT Highway 65 bet. 85th Ave NE and Anoka CR 116 (Bunker Lake Blvd)	Blaine, Ham Lake, Anoka County	Tier 2 Corridor
US 61 bet. MnDOT Highway 96 and 120th St (Co. line)	White Bear Lake, Ramsey County	Tier 2 Corridor

Appendix E: List of Metro District Bicycle Plan Strategies and Actions

Metro District Bicycle Plan Strategies and Actions	
Short Term (0-5 years) Planning and Programming Strategies and Actions	
Strategy 1	**Identify planned projects on MnDOT Highways and bridges that provide opportunities to address bicycle system needs**
Action 1.1	*Conduct an annual review of the CHIP to identify local, regional and state bikeways that overlap with projects*
Action 1.2	*Utilize the Metro District Bicycle Scoping Guide to determine appropriate locations for bicycle facilities*
Strategy 2	**Plan for bicycle facility projects not currently identified in the STIP or CHIP**
Action 2.1	*Identify high priority bikeway gaps or needs not currently identified in the STIP or CHIP for early planning and coordination*
Strategy 3	**Document existing bicycle facilities on MnDOT right-of-way**
Action 3.1	*Build upon the RBSI to develop an inventory and assessment of existing bicycle facilities on MnDOT right-of-way in the 8-county Metro District, including shared use paths, bicycle lanes, signed bicycle routes, designated bicycle routes and non-motorized bridges or tunnels. The inventory should also include information on maintenance agreements and limited use permits for each facility.*
Strategy 4	**Convene stakeholders on a regular basis**
Action 4.1	*Continue to Convene the MBP TAC on an annual basis*
Action 4.2	*Establish and convene an internal MnDOT Pedestrian and Bicycle Task Force*
Action 4.3	*Continue to work with Met Council and local partners to identify opportunities to enhance local and regional bicycle networks along MnDOT Highway corridors*
Action 4.4	*Explore forming a Community Advisory Committee*
Strategy 5	**Measure performance**
Action 5.1	*Continue providing data on addressing bicycling needs to MnDOT's Office of Transit and Active Transportation*
Action 5.2	*Encourage local and regional partners from municipalities and counties in the district to participate in MnDOT's Bicycle and Pedestrian Counting Program*
Strategy 6	**Document bicycle facility investment needs and spending in the Metro District**
Action 6.1	*Develop a high-level assessment of potential bicycle investment needs in the Metro District*

Metro District Bicycle Plan Strategies and Actions	
Action 6.2	*Track bicycle facility investments on Metro District projects*
Short Term (0-5 years) Bikeway Maintenance Strategies and Actions	
Strategy 7	**Clarify maintenance responsibilities and identify sustainable funding sources for bicycle facilities within MnDOT right-of-way**
Action 7.1	*Establish maintenance agreements with local jurisdictions and partner agencies to identify responsibilities for maintenance activities, including snow clearing*
Strategy 8	**Develop a proactive pavement preservation program**
Action 8.1	*Work with District Maintenance, Office of Materials and Road Research, and the ADA Unit to develop a process and schedule to inventory shared use paths on MnDOT right-of-way for surface quality and pavement condition*
Action 8.2	*Conduct pavement preservation repairs on an as-needed basis, including crack sealing, patching, fog sealing, microsurfacing, and asphalt resurfacing*
Action 8.3	*Develop a process for notifying the responsible agency about maintenance issues*
Action 8.4	*Develop a pavement preservation program for shared use paths on MnDOT right-of-way*
Strategy 9	**Develop procedures for routine maintenance and snow clearing on shared use paths and curb level separated bikeways**
Action 9.1	*Identify a snow removal priority network for shared use paths and curb level separated bikeways where MnDOT is responsible for winter maintenance*
Action 9.2	*Establish guidelines for clearing snow on shared use paths*
Action 9.3	*Use MnDOT's small business procurement process for routine maintenance of shared use paths*
Action 9.4	*Implement a routine vegetation management schedule to ensure user safety*
Strategy 10	**Assess current maintenance practices for on-street bicycle facilities**
Action 10.1	*Work with District Maintenance to understand and assess current practices for year-round routine maintenance for MnDOT Highways with on-street bicycle facilities, including bicycle lanes and shoulder facilities*
Action 10.2	*Identify opportunities to maintain on-street bicycle facilities*
Strategy 11	**Engage the public in maintaining the bikeway network**
Action 11.1	*Develop a public-facing platform for reporting bikeway maintenance issues*
Action 11.2	*Raise awareness of MnDOT's sponsorship agreement program and other initiatives to assist with volunteer maintenance activities*

Metro District Bicycle Plan Strategies and Actions	
Strategy 12	**Design bikeways to accommodate existing maintenance vehicles**
Action 12.1	*Design bikeways to accommodate existing maintenance vehicle*
Strategy 13	**Maintain pavement markings**
Action 13.1	*Routinely inspect pavement markings and replace as needed*
Long Term (5+ years) Planning and Programming Strategies and Actions	
Strategy 14	**Develop a better understanding of existing bikeways and local bicycle planning efforts**
Action 14.1	*Collect and disseminate information about existing and planned bikeways and other local bicycle planning efforts*
Strategy 15	**Update the MBP on a regular basis**
Action 15.1	*Work with local partners to update the MBP every five years*
Long Term (5+ years) Bikeway Maintenance Strategies	
Strategy 16	**Implement a proactive anti-icing program for priority bikeways prior to major weather events**
Strategy 17	**Provide shared use path etiquette guidance and trash receptacles to reduce the need for sweeping**
Strategy 18	**Ensure that all signed or marked shoulder facilities are cleared for bicycle use after snowfall**
Strategy 19	**Explore establishing creative maintenance agreements**

Appendix F: Cost Estimate Methodology

The following pages contain breakdowns of the planning-level cost estimates found in Chapter 5. The cost estimates are based on MnDOT 2017 statewide average bid prices. The cost estimates do not include an allowance for engineering, utility, or right-of-way costs, but the higher estimate includes a 40% contingency that may account for some of those costs. In order to develop planning-level cost estimates, it was necessary to make some assumptions about the various types of bicycle facilities. The cost estimates include typical construction materials such as grading, base, pavement, pavement markings, and signage. Where appropriate, these estimates also include lump sum allowances for construction cost incidentals such as landscaping, drainage, and traffic control, as well as a 40% contingency allowance for unusual project-specific cost items. Individual project costs may vary; these estimates are only intended to be used at a planning level and should be refined throughout project development.

Adding Paved Shoulder

Includes adding a 10' or 6' paved shoulder (as noted below) to both sides of an existing roadway

Assumes no right of way acquisition is required
Unit Prices per MnDOT plan
All costs in 2017 dollars

Bid Item	Unit	Quantity	Unit Cost	Total Cost	Assumptions
Common Embankment	CY	16427	$2.18	$35,810	Assume 14' wide, 3' deep on each side
Aggregate Base Class 5	CY	4693	$25.85	$121,323	Assume 12' wide, 1' deep on each side
Type SP 9.5 Wearing Course Mixture (3,C)	TON	2652	$54.06	$143,353	N/A
10' Shoulder Construction Cost Subtotal	-	-	-	**$300,486**	-

Bid Item	Unit	Quantity	Unit Cost	Total Cost	Assumptions
Common Embankment	CY	11733	$2.18	$25,579	Assume 10' wide, 3' deep on each side
Aggregate Base Class 5	CY	3129	$25.85	$80,882	Assume 8' wide, 1' deep on each side
Type SP 9.5 Wearing Course Mixture (3,C)	TON	1591	$54.06	$86,012	N/A
6' Shoulder Construction Cost Subtotal	-	-	-	**$192,472**	-

Bid Item	Total Cost
Landscaping/Turf Establishment (5%)*	$250,000.00
Signing/Markings (5%)*	$15,024.28
Drainage (10%)*	$30,048.55
Contingency (40%)	$144,233.04

Estimate	Total Cost
Low Construction Cost/Mile (no contingency, 6' shoulders)	**$250,000.00**
High Construction Cost/Mile	**$510,000.00**

Actual costs may vary based on project scope and current market conditions.
Future project costs should be inflated relative to a base year of 2017.
* All lump sum items based off of a 10' shoulder width

Standard Bicycle Lanes

Includes street-level, one-way bicycle lanes (both sides of road). Requires striping and signing.

Unit Prices per MnDOT 2017 Statewide Average Bid Prices
All costs in 2017 dollars

Item	Unit	Quantity	Unit Cost	Total Cost	Assumptions
4" Solid Line Epoxy (Bike Lane Markings)	LF	10560	$0.29	$3,062	Long Lines - 2 solid lines entire length, each side
Pavement Message Preform Thermoplastic Ground In (Bike Symbols)	SF	367	$25.58	$9,390	Bike Symbol - 1 Symbol every 250 feet, each side of road
Sign Panels Type C	SF	44	$38.63	$1,687	Bike Lane Signs every 1000 feet, each side of road, 2 wayfinding signs every 2640 feet
Construction Cost Subtotal	**-**	**-**	**-**	**$14,139**	-

Item	Total Cost
Contingency (40%)	$5,655.72

Estimate	Total Cost
Low Construction Cost/Mile (no contingency)	**$14,000.00**
High Construction Cost/Mile	**$20,000.00**

Actual costs may vary based on project scope and current market conditions.
Future project costs should be inflated relative to a base year of 2017.

Buffered Bicycle Lanes

Includes street-level, one-way buffered bicycle lanes (both sides of road). Requires striping and signing.

Unit Prices per MnDOT 2017 Statewide Average Bid Prices
All costs in 2017 dollars

Item	Unit	Quantity	Unit Cost	Total Cost	Assumptions
4" Solid Line Epoxy (Bike Lane Markings)	LF	21120	$0.29	$6,125	Long Lines - 4 solid lines entire length, each side
8" Solid Line Epoxy (Buffer Hatching)	LF	1056	$0.61	$644	Buffer Lines - 1 solid line, 4 feet long, every 40 feet, both sides
Pavement Message Preform Thermoplastic Ground In (Bike Symbols)	SF	367	$25.58	$9,390	Bike Symbol - 1 Symbol every 250 feet, each side of road
Sign Panels Type C	SF	44	$38.63	$1,687	Bike Lane Signs every 1000 feet, each side of road, 2 wayfinding signs every 2640 feet
Construction Cost Subtotal	**-**	**-**	**-**	**$17,846**	-

Item	Total Cost
Contingency (40%)	$7,138.00

Estimate	Total Cost
Low Construction Cost/Mile (no contingency)	**$17,000.00**
High Construction Cost/Mile	**$25,000.00**

Actual costs may vary based on project scope and current market conditions.
Future project costs should be inflated relative to a base year of 2017.

Delineator Separated Bicycle Lanes (Temporary Installation)

Includes street-level, one-way bicycle lanes (in both directions). Requires striping, signing, and flexible delineators.

Unit Prices per MnDOT 2017 Statewide Average Bid Prices
All costs in 2017 dollars

Item	Unit	Quantity	Unit Cost	Total Cost	Assumptions
4" Solid Line Epoxy (Bike Lane Markings)	LF	21120	$0.29	$6,125	Long Lines - 4 solid lines entire length, each side
8" Solid Line Epoxy (Buffer Hatching)	LF	1056	$0.61	$644	Buffer Lines - 1 solid line, 4 feet long, every 40 feet, both sides
Pavement Message Preform Thermoplastic Ground In (Bike Symbols)	SF	367	$25.58	$9,390	Bike Symbol - 1 Symbol every 250 feet, each side of road
Sign Panels Type C	SF	44	$38.63	$1,687	Bike Lane Signs every 1000 feet, each side of road, 2 wayfinding signs every 2640 feet
Tube Delineator	EA	264	$27.83	$7,347	Every 40 feet, both sides
Construction Cost Subtotal	-	-	-	**$25,193**	-

Item	Total Cost
Contingency (40%)	$10,077.19

Estimate	Total Cost
Low Construction Cost/Mile (no contingency)	**$25,000.00**
High Construction Cost/Mile	**$36,000.00**

Actual costs may vary based on project scope and current market conditions.
Future project costs should be inflated relative to a base year of 2017.

Curb-Separated Bicycle Lanes (Permanent Installation)

Assumes relocation of existing 5-foot concrete sidewalks with adjacent sidewalk-level, one-way, 7' concrete bicycle paths

Requires grading, utility adjustment, and traffic control measures. Includes construction on both sides of road

Assumes bicycle lanes do not require right of way acquisition

Unit Prices per MnDOT 2017 Statewide Average Bid Prices

All costs in 2017 dollars

Item	Unit	Quantity	Unit Cost	Total Cost	Assumptions
Excavation – Common	CY	4563	$5.60	$25,553	
Remove Concrete Sidewalk	SF	52800	$0.72	$38,016	
Aggregate Base Class 5	CY	1825	$25.85	$47,181	
6” Concrete Walk Special	SF	73920	$13.83	$1,022,314	Colored concrete for bikeway
4” Concrete Walk	SF	52800	$4.46	$235,488	To replace sidewalks
ADA Ramps	EA	32	$7,000.00	$224,000	Assume 4 intersections per mile
Construction Cost Subtotal	**-**	**-**	**-**	**$1,592,551**	-

Item	Total Cost
Landscaping/Turf Establishment (5%)	$79,627.56
Signing/Markings (5%)	$79,627.56
Drainage/Utilities (10%)	$159,255.12
Traffic Control (5%)	$79,627.56
Contingency (40%)	$764,424.59

Estimate	Total Cost
Low Construction Cost/Mile (no contingency)	**$1,900,000.00**
High Construction Cost/Mile	**$2,700,000.00**

Actual costs may vary based on project scope and current market conditions.

Future project costs should be inflated relative to a base year of 2017.

Shared Use Paths

Assumes a single 10' wide asphalt path with signage and intersection crossing/curb ramp improvements
Includes an allowance for drainage and landscaping
Assumes shared use paths do not require any removals or right of way

Unit Prices per MnDOT 2017 Statewide Average Bid Prices
All costs in 2017 dollars

Item	Unit	Quantity	Unit Cost	Total Cost	Assumptions
Excavation – Common	CY	1956	$5.60	$10,951	
Aggregate Base Class 5	CY	782	$25.85	$20,220	
Type SP 9.5 Wearing Course Mixture (3,C)	TON	1326	$54.06	$71,676	
ADA Ramps	EA	16	$7,000.00	$112,000	Assume 4 intersections per mile
Construction Cost Subtotal	**-**	**-**	**-**	**$214,848**	-

Item	Total Cost
Landscaping/Turf Establishment (5%)	$10,742.40
Signing/Markings (5%)	$10,742.40
Drainage (10%)	$21,484.79
Contingency (40%)	$103,127.00

Estimate	Total Cost
Low Construction Cost/Mile (no contingency)	**$250,000.00**
High Construction Cost/Mile	**$360,000.00**

Actual costs may vary based on project scope and current market conditions.
Future project costs should be inflated relative to a base year of 2017.