

Minnesota

A Collaborative Vision
for Transportation



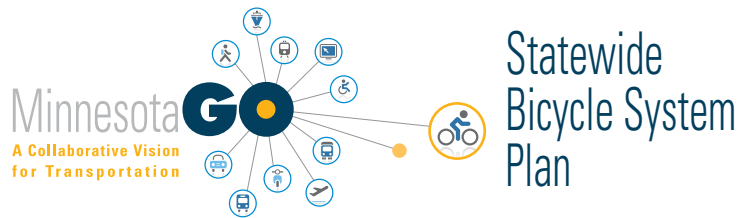
Statewide Bicycle System Plan

AUGUST 2016



Cover Photo

Congratulations to Kelly Chase for submitting the winning photo! Her photo was taken on the Rush Creek Regional Trail and was selected because it reflects the Plan's Vision of bicycling being an option for everyone.



Statewide Bicycle System Plan

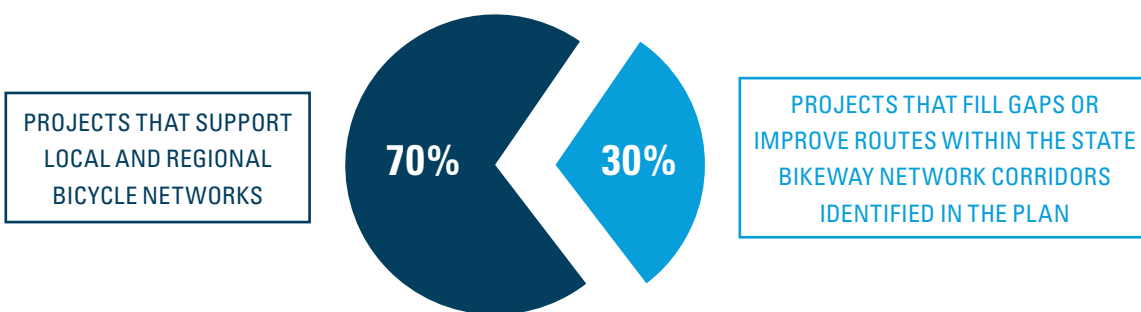
Executive Summary

Bicycling contributes to the quality of life for people in Minnesota by connecting them to daily activities and creating access to the state's amenities. The Statewide Bicycle System Plan provides a framework for how MnDOT will address bicycling needs and interests in Minnesota.

Vision

BICYCLING IS SAFE, COMFORTABLE AND CONVENIENT FOR ALL PEOPLE

WHERE FUNDING WILL GO



PLAN GOALS ARE TO INCREASE

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 with partners

Ridership

Increase ridership of people who already bicycle and people who don't

KEY FINDINGS

- ▶ The public values state bicycle routes, but people value opportunities for local and regional bicycle travel more
- ▶ State bicycle routes create opportunities for inter-community travel across the state and beyond
- ▶ People prefer riding on facilities separated from cars and trucks

WHAT DOES SUCCESS LOOK LIKE?

MnDOT will measure progress toward the plan's vision to make bicycling safe, comfortable and convenient for all people within three key areas:

- ▶ better understanding the number of people who are bicycling
- ▶ the rate of crashes and injuries
- ▶ are projects making needed improvements

THE PLAN INCLUDES 19 STRATEGIES DEVELOPED TO SUPPORT LOCAL BICYCLE NETWORKS, DEVELOP STATE BICYCLE ROUTES, INCREASE RIDERSHIP AND INVEST IN SAFETY AND COMFORT.

BIKE EVENT ECONOMICS

2015

According to the study, an estimated

\$121 spent per visitor*
in the event area.

Bicycle event visitors* spent

\$8.5 million
in Minnesota

*Visitors are people traveling more than 50 miles or staying overnight.

Bicycling event visitors in Minnesota supported an estimated

\$14.3 million
of economic activity

including

\$4.6 million labor income
150 jobs

An estimated

61,610 people
rode in bicycle events

HEALTH IMPACTS

According to the study, at least

244,000 people
in the Twin Cities area
occasionally commute
by bicycle

12-61
deaths are prevented
per year

Savings of
\$109 million
to
\$569 million
per year

Current 10-year value of
\$0.99 billion
to
\$5.19 billion

Bicycling is associated with reduced rates of chronic disease.



For three bicycle trips per weeks, there is a statistically significant reduction in metabolic syndrome, obesity and hypertension after adjusting for other risk factors.

Estimating the value of chronic disease prevention is difficult, but each prevented case of hypertension (including co-morbidities) is associated with

\$11,200
of greater medical spending per year

10% reduction in all-cause mortality from
100 minutes/week
of bicycling



Minnesota Department of Transportation

Transportation Building

395 John Ireland Boulevard
Saint Paul, Minnesota 55155-1899

Minnesotans want and need safe places to bicycle, whether to meet their everyday needs or enjoy the state's many natural resources, which contribute to their quality of life. This is why I am pleased to share the updated Minnesota's Statewide Bicycle System Plan that provides a framework for how bicycling needs and interests will be met in the state.

MnDOT thanks the more than 4,500 people who shared their interests and concerns about bicycling in Minnesota over the past several months during various public engagement activities. This plan is the result of their feedback and of MnDOT's vision for the state as a place where bicycling is a safe, comfortable and convenient transportation option for all people.

The plan presents the vision and goals that align with MnDOT's Minnesota GO 50-year vision for transportation, which maximizes the health of people, the environment and our economy.

To achieve this vision, we will focus on four goal areas: **safety and comfort, local bicycle connections, state bicycle network and bicycling ridership**. Specifically, this plan identifies strategies that will move our state to:

- Build and maintain safe and comfortable bicycling facilities for people of all ages and abilities.
- Support regional and local bicycling needs.
- Develop a connected network of state bicycle routes in partnership with national, state, regional and local partners.
- Increase the number of bicycle trips made by people who already bike and those who currently do not.

We hope the plan will start conversations and assist with making decisions about investments in bicycling to help our communities have a range of transportation options for people of all ages and abilities. MnDOT will continue to engage Minnesotans and partners in the implementation of this plan.

Sincerely,

A handwritten signature in blue ink, appearing to read "Charles A. Zelle".

Charles A. Zelle
Commissioner
Minnesota Department of Transportation

ACKNOWLEDGEMENTS

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TABLE OF CONTENTS

Executive Summary

Introduction

VISION AND GOALS 1

Chapter One

LEARNING FROM PUBLIC ENGAGEMENT 1

Chapter Two

SUPPORTING LOCAL BICYCLE NETWORKS 10

Chapter Three

DEVELOPING STATE BICYCLE ROUTES 17

Chapter Four

INVESTING IN SAFETY AND COMFORT 37

Chapter Five

INCREASING RIDERSHIP 42

Chapter Six

MEASURING SUCCESS 49

Chapter Seven

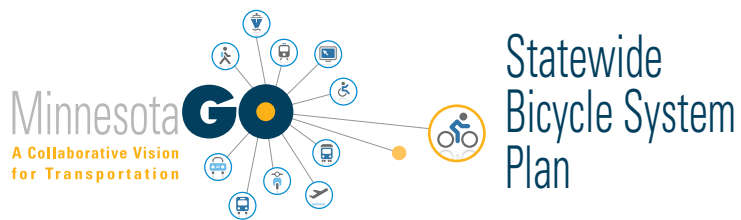
NEXT STEPS 58

Appendices

APPENDIX A: IDENTIFYING STATE BICYCLE ROUTES 67

APPENDIX B: PLANNING IN CONTEXT 75

APPENDIX C: ONLINE SURVEY SUMMARY REPORT 87



Introduction

Introduction

The Minnesota Department of Transportation is an agency dedicated to supporting a multimodal transportation system that maximizes the health of people, the environment and our economy. Whether connecting people to daily activities or creating access to the state's many natural amenities, bicycling contributes to Minnesotans' quality of life. The Statewide Bicycle System Plan was developed through extensive consultation with the public, agency staff, and partners at state, regional, and local planning agencies. MnDOT is committed to supporting bicycling on the state trunk highway network and in the communities it serves.

The Statewide Bicycle System Plan presents MnDOT's vision and goals for bicycle transportation, implementation strategies, and performance measures to evaluate progress toward achieving this vision.

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.



Learning from public engagement

MnDOT worked actively to engage the public during this planning process, and achieved one of the highest levels of public participation recorded in a statewide planning initiative. More than 4,500 people participated in public outreach activities to provide input to this plan. Engagement efforts included two series of public open houses in each MnDOT District, a series of workshops in each district among MnDOT staff and agency partners, and equivalent online engagement opportunities. MnDOT learned:

Key Finding 1: The public values state bicycle routes, but people value opportunities for local and regional bicycle travel more.

People consistently told MnDOT they value opportunities for local bicycle travel more than statewide. Local and regional bicycling networks support trips within and around communities. In places where state trunk highways overlap with a community's local bicycling network, MnDOT can improve the safety and comfort of conditions by investing in infrastructure on or across the state trunk highway even if it is not part of a designated state bicycle route.

Key Finding 2: State bicycle routes create opportunities for inter-community travel across the state and beyond.

State bicycle routes connect communities and destinations. In many cases, designated state bicycle routes will be eligible to become part of the U.S. Bicycle Route System and connect Minnesota to a national network of bicycling facilities. People value MnDOT's investment in state bicycle routes to support local bicycling trips and long-distance travel.

Key Finding 3: People prefer riding on facilities separated from motor vehicle traffic.

People strongly expressed preference for separated bicycle facilities. These can take the form of shared use paths, or an exclusive facility located within or adjacent to a roadway that is physically separated from cars and trucks. Separated bike lanes are sometimes called "cycle tracks" or "protected bike lanes."



Supporting local bicycle networks

This planning process has broadened MnDOT's perspective regarding investment in local and regional bicycle infrastructure. Plan participants rated investments to facilitate local travel two to three times higher than investments for statewide bicycle travel. Even though MnDOT roadways form a minority of local and regional bicycling networks, MnDOT has a role in facilitating local trips along or across state highways.

The availability of adopted local and regional bicycle plans enhances MnDOT's capacity to support local bicycle trips along or across the state highway network. Regardless of whether a local bicycling plan exists, communication and regular coordination between MnDOT and local/regional partners is crucial to successful collaboration on local and regional networks.

The strategies listed below demonstrate MnDOT's commitment to addressing local bicycling needs through both planning and implementation. MnDOT will:

STRATEGY 1. Establish a local bicycle planning technical assistance program to advance collaboration toward a bicycle system that conveniently connects people to important destinations by bicycle.

STRATEGY 2. Coordinate and consider regional and local partner participation in MnDOT plans and projects to efficiently respond to critical local and regional bicycle connections.

STRATEGY 3. Continue supporting efforts to allow local jurisdictions flexibility in choosing road designs that support bicycle travel.

STRATEGY 4. Build bicycle facilities that have the appropriate amount of separation from motor vehicle traffic based on the local context.

STRATEGY 5. Develop a process to annually track bicycle infrastructure investments by MnDOT district and statewide.

STRATEGY 6. Include bicycling infrastructure as an asset in the formal Transportation Asset Management Plan process.

STRATEGY 7. Continue bi-annual data collection to update bicycle-related information available for state, county and local roadways.

STRATEGY 8. Develop a bicycle safety plan using a data-driven, interdisciplinary approach that targets areas for improvement and employs proven countermeasures to enhance bicycling safety.



Developing State Bicycle Routes

MnDOT is committed to supporting a state bicycle network and participating in the U.S. Bicycle Route System. Partners in MnDOT's 2013 Statewide Bicycle Planning Study identified connections among destinations as their most significant concern regarding statewide bicycle travel. One of MnDOT's objectives in initiating this planning was to identify statewide destinations that should be linked via a state bicycle network. MnDOT received assistance from the public to prioritize these connections for future designation as a state bicycle route and/or U.S. Bicycle Route. This section presents the State Bicycle Network and MnDOT's strategies to implement this system.

The State Bicycle Network identified through this plan will function as a guide for prioritizing future infrastructure investments and formal designation of state bicycle routes along specific routes. Statewide high priority corridors are the first corridors on the State Bicycle Network that MnDOT will consider for infrastructure improvements and future designation as state bicycle routes.

The destinations on the statewide high priority corridors include:

- Twin Cities to Grand Portage, via Hinckley and Duluth
- Twin Cities to Mankato loop via the Minnesota River Valley and Northfield
- Moorhead to St. Cloud, via Detroit Lakes, Fergus Falls and Alexandria

MnDOT will develop the State Bicycle Network through the following strategies:

STRATEGY 9. Using the State Bicycle Network as guidance, work with local agencies and partners to designate routes as state bicycle routes and as United States Bicycle Routes (e.g. Mississippi River Trail Bicycle Route/USBR 45).

STRATEGY 10. Work with partners to develop and evaluate/update route and promote designated routes.

STRATEGY 11. Work with partners to improve and sign designated state bicycle routes to enhance the convenience and comfort of these facilities.

STRATEGY 12. Maintain up-to-date information about implementation of the State Bicycle Network through consistent and centralized data collection.



The State Bikeway Network

Increasing Ridership

MnDOT supports a holistic approach to achieving its vision of making bicycling a safe, comfortable and convenient option for all people through the “5 Es.” The 5Es include Engineering, Evaluation, Education, Enforcement and Encouragement. Each of these categories is a necessary and mutually supporting part of MnDOT’s overall strategy toward achieving a multimodal transportation system that is accessible to people of all ages and abilities.

While previous strategies focus on engineering improvements, the strategies below call out evaluation, education, enforcement, and encouragement activities that have a core role in staff work plans or activities that will receive greater support from the agency based on findings from this planning process. MnDOT introduces a sixth “E”, termed Evolution to describe how the agency will respond to the changing bicycling landscape beyond adoption of this plan.



EDUCATION

STRATEGY 13. Promote safe driving/bicycling behaviors by developing educational materials and supporting partners in sharing these messages with bicyclists and drivers (e.g. Share the Road).

ENFORCEMENT

STRATEGY 14. Work directly with state, regional and local efforts to enforce laws that make bicycling safer.

EVALUATION

STRATEGY 15. Create a statewide bicycle traffic monitoring program to count and estimate bicycle traffic volumes at selected locations throughout the state.

ENCOURAGEMENT

STRATEGY 16. Encourage bicycle system use by updating and publishing the Minnesota Bicycle Map every two years.

STRATEGY 17. Share information about bicycling opportunities in Minnesota to encourage ridership.

EVOLUTION

STRATEGY 18. Update the Statewide Bicycle System Plan every five years.

STRATEGY 19. Review the Minnesota Bicycle Facility Design Manual every two years to ensure standards reflect current conditions and are consistent with other MnDOT policies. Full manual updates will be periodic and respond to industry innovations.

INTRODUCTION

Investing in safety and comfort

MnDOT oversees planning, construction and maintenance projects on the state trunk highway system. MnDOT will support bicycling within its jurisdiction through investments on the state trunk highway system that facilitate safe and comfortable travel for people of all ages and abilities.

INVESTMENTS TO SUPPORT LOCAL AND REGIONAL BICYCLE NETWORKS

When making bicycling improvements on the state trunk highway system, MnDOT will target approximately 70 percent of funds toward projects that support local and regional bicycle networks. State trunk highways often create gaps in local bicycling networks. Destinations such as schools, churches, and recreational opportunities are often located next to state trunk highways. Large infrastructure such as bridges, overpasses, and interchanges can inhibit safe bicyclist crossings, and they frequently last 50 or more years before reconstruction. Targeting 70 percent of MnDOT's bicycling infrastructure investment toward local bicycle networks is intended to address these gaps.

Potential projects will be prioritized as follows:

1. Improvements and facilities along or across state trunk highways identified in a local or regional plan (e.g. Safe Routes to School plan, MPO, county, or city bicycle/trail plan, municipal comprehensive plan, etc.) or identified through local coordination described in Chapter 6.
2. Improvements along or across trunk highways to close gaps in existing or planned DNR-managed state trails
3. Investments within population centers greater than 5,000
4. Investments that create separation between bicyclists and motor vehicle traffic

INVESTMENTS TO DEVELOP THE STATE BICYCLE ROUTES

When making bicycling improvements on the state trunk highway system, MnDOT will target approximately 30 percent of funds toward projects that fill gaps or improve routes within State Bicycle Network corridors identified in this Plan. MnDOT districts will target state bicycle investments toward statewide high priority corridors and regional priority corridors on the State Bicycle Network.



PHOTO COURTESY OF ZAIDMAN



PHOTO COURTESY OF SACCO

Measuring our success

MnDOT will measure progress toward the plan vision of making bicycling a safe, comfortable and convenient transportation option for all people within three key areas: ridership, safety, and assets.

RIDERSHIP

The plan's vision is that bicycling is a "safe, comfortable and convenient option for all people." Although convenience and comfort are defined and perceived differently among individuals, ridership increases across the population are an indicator that more people find bicycling to be a comfortable and convenient choice. MnDOT will measure the following to assess increases in ridership:

- Bicycle Commuters in Minnesota
- Regular Bicycle Ridership
- Regular Bicycle Ridership among Women

SAFETY

Safety is a key area of performance for all MnDOT infrastructure and is the subject of the multi-agency Toward Zero Deaths initiative that focuses on reducing roadway-related deaths and injuries statewide. MnDOT will measure bicycling safety through the following indicators:

- Bicyclists at Index Monitoring Sites
- Annual Bicycle-Vehicle Crashes
- Growth in Cycling Compared to Growth in Crashes

ASSETS

As MnDOT seeks to increase safety and comfort for bicyclists, it is important that the agency track the development or existence of bicycling facilities in its jurisdiction, the state trunk highway network.

As coordination with partner agencies and data collection methods improve over time, MnDOT will seek to track bicycling infrastructure on local, county and Department of Natural Resources' properties. MnDOT will assess progress toward supporting bicycling on its assets through the following measures:

- MnDOT Projects That Address Bicycling Needs
- State Bicycle Designation and Mapping



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Statewide Bicycle System Plan

Chapter One

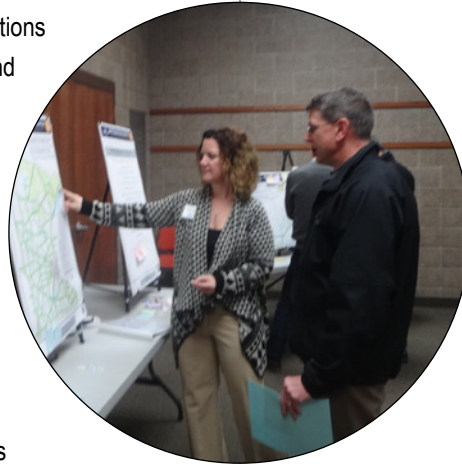
LEARNING FROM PUBLIC ENGAGEMENT

INTRODUCTION

MnDOT consulted extensively with partners to develop this plan. Consultation built on findings from the earlier Statewide Bicycle Planning Study. Engagement efforts included two series of public open houses in each MnDOT district, a series of workshops in each district among MnDOT staff and agency partners, and equivalent online engagement opportunities.

During the first series of open houses, conducted in spring 2014, more than 3,000 Minnesotans participated by providing ideas about destinations statewide that were important to connect by bicycle. At the second round of public engagement, MnDOT gathered additional comments to further refine recommendations ultimately presented in this plan. Nearly 1,500 people provided guidance during this second series of public open houses. Throughout both series of open houses, online engagement opportunities solicited additional input to facilitate equivalent participation among members of the public who did not attend an open house.

MnDOT received tens of thousands of comments and data points through these engagement efforts - among the highest level of public participation in any MnDOT statewide planning initiative. This input is already shaping MnDOT's policies and practices, from how bicycle projects are prioritized to the type of bicycle facilities considered for our roadway network. Insights from public engagement are also helping to improve coordination with local partners like Regional Development Organizations, Metropolitan Planning Organizations, counties, cities and advocacy groups.



Round 1 Public Engagement

Engagement efforts began with an initial round of workshops and activities in spring 2014. MnDOT initiated a two-pronged approach in order to reach as many people as possible. MnDOT hosted in-person workshops in each district statewide and maintained a robust online presence to provide an equivalent set of virtual participation opportunities. Activities included interactive mapping, visual preference surveys, and ranking and prioritization exercises.

Questions MnDOT sought to answer during the first round of public engagement included:

- Which types of bicycle facilities do Minnesotans prefer?
- How do Minnesotans rank local bicycling investments in comparison to investments in long-distance bicycle networks?
- What can MnDOT do to increase rates of bicycling in the state?
- What barriers inhibit bicycling today? Where are they located?

- What are the routes and connections that are important to bicyclists today?
- What kinds of destinations are important to bicyclists today?
- What are the desired regional bicycle connections?
- How do MnDOT roads interact with “Main Streets” in cities?

PARTICIPATION

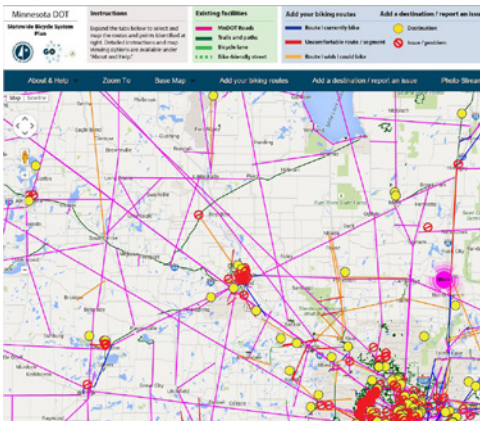
Aided by a successful promotion, more than 3,000 Minnesota residents participated in this first round of engagement.

In-person activities took place throughout the state, and included nine workshops attended by more than 350 participants. Participants shared thousands of votes for facility type preferences, and more than 1,800 comments related to destinations and links were received through map-based activities. MnDOT hosted in-person workshops in transit and bicycle-accessible locations to enable people of all income levels to attend. Each workshop included children-specific activities to ensure the events encouraged both children and parents to participate without need for child care.

Online activities achieved similarly high levels of participation. MnDOT deployed a wikimap (an online interactive mapping platform) and a survey that included visual preference questions and policy priorities and rankings during the same timeframe as the district open houses. The wikimaps featured links to these sites in the MnDOT Bicycle Plan webpage and MnDOT social media channels.

Nearly 1,100 participants registered to use the wikimap and placed more than 3,400 routes, destinations or barriers on the interactive map. MnDOT received responses to more than 1,400 surveys, each with guidance on facilities, priorities, and general comments. Text responses alone included thousands of comments and totaled about 230 pages.

MnDOT processed and analyzed all of the data contributed at the in-person workshops and through the online tools, and shared this information online.



Example Input on the Project Wikimap

WHAT WE LEARNED

During the first round of engagement, participants provided guidance to three key questions related to MnDOT's role in advancing bicycling in the state:

Which types of facilities do participants prefer?

- Participants expressed a clear preference for facilities that provide greater separation between bicyclists and motor-vehicle traffic, with separated facilities (including separated bicycle lanes and trails) receiving the highest rider comfort ratings.



- Facilities where bicyclists share roadway space with cars, unless in low-speed environments, received the most negative comfort ratings. Even facilities with designated, but not physically separated shoulder bicycle space, received high negative ratings.



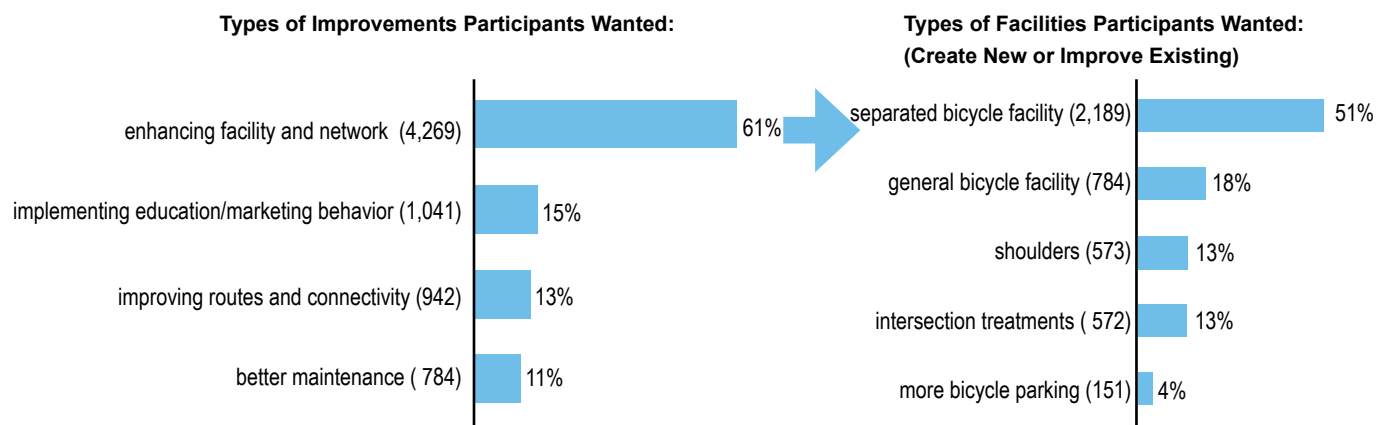
Where should MnDOT direct its bicycle investments?

- Investments to facilitate local bicycle travel were valued by participants two to three times higher than investments for long-distance bicycle travel.
- Routes to schools and parks were rated very highly by all participants, and, for Greater Minnesota participants, were a top investment priority.
- Routes to “Main Street” and neighborhood commercial districts, cities with bicycle plans, and local bicycle networks were identified as good candidates for further investments.

What could MnDOT do to increase bicycling in the state?

- Improving existing facilities and building a variety of new facilities was consistently identified by participants as the best approach for increasing bicycling (over education, encouragement or enforcement-related initiatives).
- Building facilities that offer physical separation from cars was consistently seen as one of the most effective ways of increasing the number of people riding bicycles.
- Improving network connectivity was also consistently identified as an effective tool for increasing bicycling.

Findings from Round 1 Engagement



KEY THEMES

Two key themes emerged through the first round of engagement effort:

- In general, participants place highest value on local bicycling trips (although opportunities for long-distance travel between communities are valued).
- In general, participants want facilities that offer greater separation between people on bicycles and motor vehicles (separated bicycle lanes, and shared use paths).

Round 2 Public Engagement

In winter 2015, MnDOT facilitated a second round of in-person open houses and online engagement. Approximately 1,500 people participated in this second round of engagement.

Key activities during the second round of engagement included:

- Reporting back what MnDOT learned from the first round of engagement.
- Seeking additional information to refine previous public guidance, including:
 - ▶ How MnDOT might best support bicycling in local communities (local bicycle networks were identified as an important priority during the first round of engagement).
 - ▶ Criteria for prioritizing statewide bicycle corridors.
 - ▶ Priorities for specific state bicycle corridor candidates, at a state and district scale for development as part of the USBRS (U.S. Bicycle Route System).
- Supporting development and refinement of performance (evaluation) measures to support implementation of the plan and its goals.
- Providing an opportunity for MnDOT district staff and local partners to highlight local bicycle-related projects and share them with members of the public.



PARTICIPATION

Approximately 300 people participated in in-person sessions for the second round of engagement. As with the first round of engagement, MnDOT hosted workshops in transit and bicycle-accessible locations and included children-specific activities to ensure the events enabled people of all ages, income levels and abilities to participate.

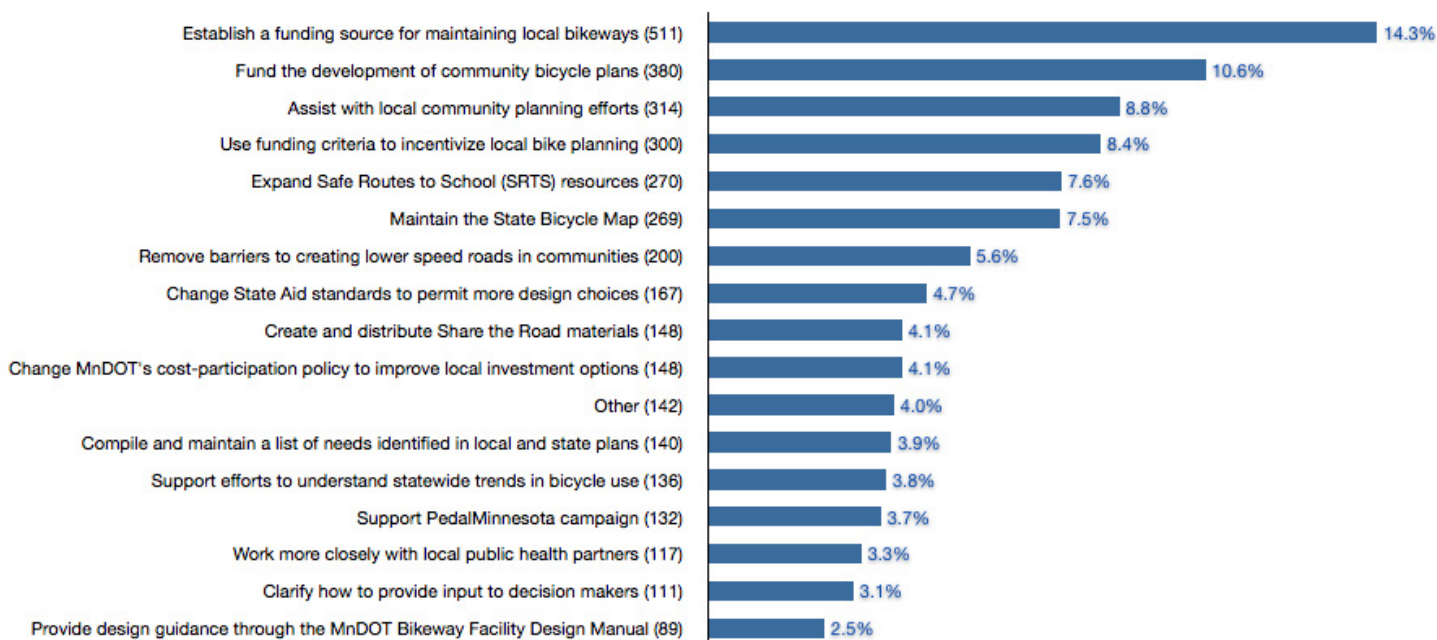
Online activities included an interactive map that allowed people to select their top choices for statewide corridors, and an online survey that matched the questions asked at in-person activities. More than 750 participants provided responses through the online survey, and more than 400 different users registered to provide guidance on statewide corridors through the project's wikimap.

WHAT WE LEARNED

- In priority order, how MnDOT could help support bicycling in local communities (identified as an important priority during the first round of public engagement):
 - ▶ Establish a funding source for maintaining local bicycle networks
 - ▶ Fund the development of community bicycle plans
 - ▶ Assist with local community planning efforts

FINDINGS FROM ROUND 2 ENGAGEMENT

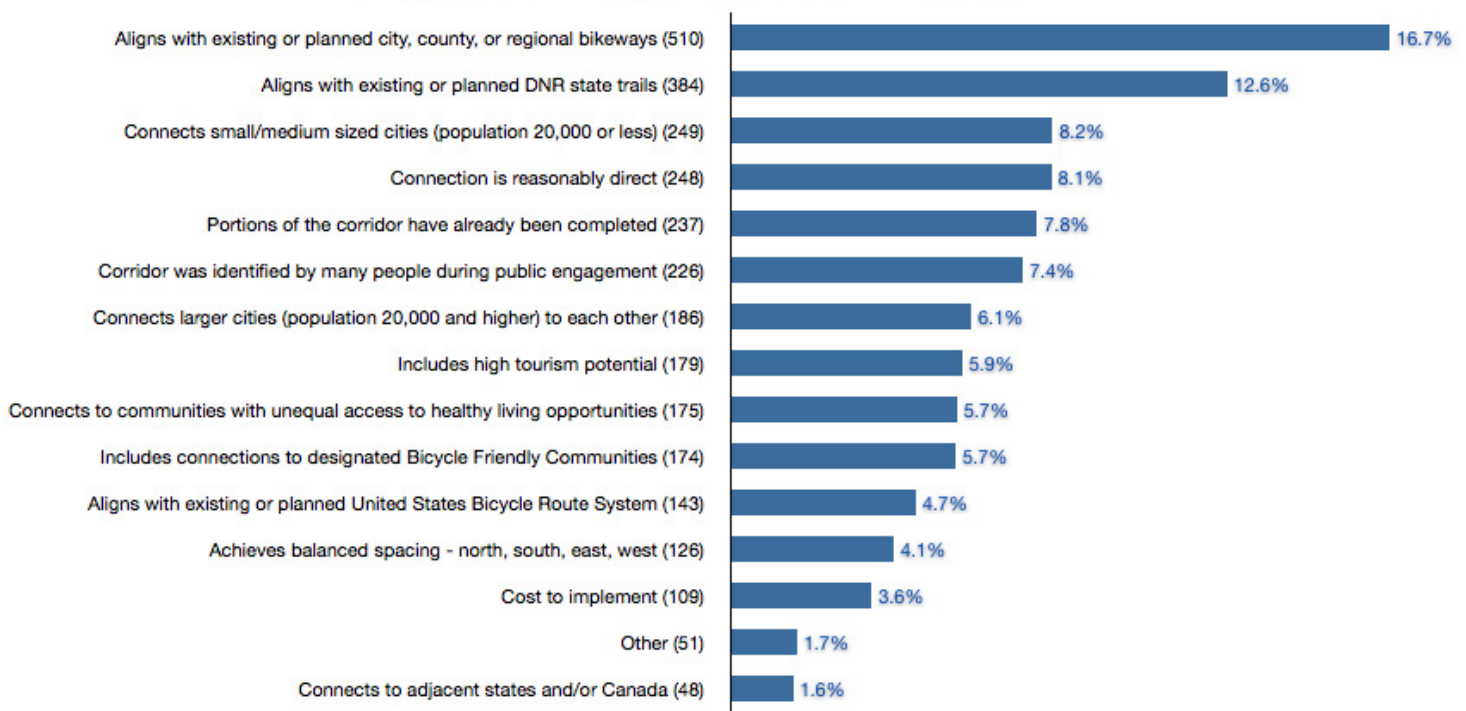
Prioritizing Local Initiative Improvements - All Responses



- Regarding which criteria MnDOT should use to select and prioritize investments across candidate statewide bicycle corridors, top choices were:
 - ▶ Aligns with existing or planned city, county, or regional bicycle routes
 - ▶ Aligns with existing or planned DNR state trails
 - ▶ Connection is reasonably direct

FINDINGS FROM ROUND 2 ENGAGEMENT

Prioritizing Criteria for Bikeways at the State Level - All Responses



Previous chapters address MnDOT's response to the plan's four goals: Develop the State Bicycle Routes, Support Local and Regional Bicycle Networks, Invest in Safety and Comfort, and Increase Ridership. Public engagement findings shaped these goals and were the cornerstone that informed the priority focus areas identified in these chapters.

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Statewide Bicycle System Plan

Chapter Two

SUPPORTING LOCAL BICYCLE NETWORKS

INTRODUCTION

One of the most significant findings of this plan is partner feedback regarding the importance of local bicycle trips. While participants consistently told MnDOT they value opportunities for long-distance bicycle travel between communities, they value opportunities for local travel more. In fact, plan participants rated investments to facilitate local travel two to three times higher than investments for statewide bicycle travel.

This planning process broadened MnDOT's perspective regarding investment in local and regional bicycle routes. Local and regional bicycle systems support trips within and around communities, where people are more likely to shift from driving a motor vehicle to bicycling. People of every age and ability are more likely to consider bicycling short distances for either utilitarian or recreational purposes than long-distance rides. Therefore, supporting local trips is an important part of MnDOT's vision to make bicycling a safe, comfortable, and convenient transportation option for all people.

MnDOT's focus on local and regional bicycle needs is a direct outcome of this planning process. When asked how MnDOT could help support local bicycling needs, participants in this planning process noted "assist with local community planning efforts" and "fund the development of community bicycle plans" among their top choices. Recent initiatives such as the Statewide Health Improvement Program and Safe Routes to School elevated bicycle planning in many communities. The state's eight Metropolitan Planning Organizations are responsible for fulfilling federal requirements to plan for and program bicycling investments in communities with more than 50,000 residents. While these efforts advanced the level of bicycling planning throughout the state, many communities do not have bicycle plans.

This chapter describes how MnDOT will support local bicycling needs and offers initial implementation steps the agency will undertake to support local and regional bicycle travel. Because this is a new area of emphasis for agency staff, MnDOT recognizes that its approach will evolve over time. The strategies listed in this chapter demonstrate MnDOT's commitment to addressing local bicycling needs through planning and implementation.



LOCAL BICYCLE NETWORKS

Addressing local bicycling needs requires ongoing collaboration, coordination, and communication with partners at Regional Development Organizations, Metropolitan Planning Organizations, cities, counties, townships, and the Department of Natural Resources.

The availability of adopted local and regional bicycle plans enhances MnDOT's capacity to support local bicycle trips along or across the state highway network. Local plans are one way to articulate local needs. Understanding needs in local plans helps MnDOT proactively assess the improvements that might be necessary early in the planning phase of upcoming highway projects. Even though MnDOT roadways form a minority of local and regional bicycling networks, MnDOT has a role in facilitating local trips along or across state highways. Improving crossing treatments or creating safe bicycling access to destinations along state highways are important ways MnDOT can support local bicycle trips.

IMPROVING STATE TRUNK HIGHWAYS FOR LOCAL BICYCLING NEEDS

Regardless of whether a local bicycling plan exists, communication and regular coordination among MnDOT and local and regional partners is crucial to successful collaboration on local and regional bicycle routes. Coordination early in MnDOT's project development will ensure that local bicycling needs are integrated into projects' scope and budget. The following process outlines how MnDOT staff will better-integrate consideration of local bicycling needs into project delivery.

Identify Project Needs

Ideally, bicycling needs are identified in a local plan. Local bicycle plans identify issues and recommend routes that have been vetted publicly and supported formally by the community. In addition to or in the absence of formal plans, enhanced engagement of local and regional partners by MnDOT staff early in the project development process can identify local bicycling needs. Staff at RDOs and MPOs are key partners that can assist MnDOT district staff and local agencies in maintaining regular communication about local bicycling needs.

STIP/Work Plan Development

The following engagement process describes how MnDOT district staff will integrate consideration of local bicycling needs into the 10-Year Capital Highway Investment Proposal.

- Identify road and bridge needs for inclusion in each district's 10-Year Capital Highway Investment Plan, which is performed annually.
- Assess proposed road and bridge projects for potential bicycle improvements identified in this plan and local plans at a high level consistent with the agency's planning scoping worksheet.
 - Determine community context. Identify:
 - ▶ urban versus rural setting
 - ▶ existing bicycling network
 - ▶ local bicycling network plans
 - ▶ statewide and regional prioritization on State Bicycle Routes
 - ▶ bicycling demand based on land use
 - Identify issues, impediments, and opportunities affecting bicycling relative to the project area.
- Contact RDO or MPO, as necessary, to verify and supplement project planning inputs (e.g. Safe Routes to School plan, local bicycle plan, Active Living policy) provide possible bicycle planning assistance to local units of government, and discuss alternatives.
- Initiate early notification with local agency and other partners (e.g., cities, counties, bicycling organizations), as appropriate, to discuss the highway project and other potential needs (i.e., utilities, sidewalks, drainage, bicycle lanes, etc.) and explore opportunities for combining multiple purposes and cost sharing.
- Finalize scoping of proposed project after consideration of purpose and need, add-ons, and project budget. (Note, scoping decisions become more final as a project is advanced in the work plan and is programmed in the STIP, with emphasis on urban, small town, and suburban areas due to complexity and statewide planning priorities.)
- Recommend including proposed project in the 10-Year Capital Highway Investment Plan.
- Develop project to include continuous community engagement and refining project scope, cost, local participation and cooperative agreements.



IMPLEMENTATION STRATEGIES

STRATEGY 1. Establish a local bicycle planning technical assistance program to advance collaboration toward a bicycle system that conveniently connects people to important destinations by bicycle.



MnDOT recognizes that most bicycle trips take place within local communities and that its partners highly value investments in local bicycle travel. Many local communities do not have the resources to develop plans that identify bicycling needs or guide how future investments in bicycling should be spent. A top priority identified by plan participants for how MnDOT could support bicycling in local communities was “fund the development of community bicycle plans.” A planning technical assistance program would help local entities identify bicycling needs within communities and publicly adopt local plans depicting desired local bicycling networks.

STRATEGY 2. Coordinate regional and local partner participation in MnDOT plans and projects to efficiently respond to critical local and regional bicycle connections.

Improvements to state highways are identified 5 to 10 years in advance of construction in each MnDOT district’s 10-Year Capital Highway Investment Plan. MnDOT relies on partners to help identify projects in the work plan that overlap with a local bicycling network need. Proactive and collaborative communication with partners and knowledge of local bicycling plans ensures MnDOT planners are aware of local bicycling priorities early in a project’s 10-year planning phase. This enables MnDOT and partners to consider ways to address bicycling needs in projects well before the project budget and scope are set.

STRATEGY 3. Continue supporting efforts to allow local jurisdictions flexibility in choosing road designs that support bicycle travel.

Through the State Aid for Local Transportation program, MnDOT administers funding and provides technical assistance for construction of roads and bridges operated by cities, counties and townships. Participating jurisdictions are required to meet specific design standards to receive funding. MnDOT will continue to work with cities and counties to modify standards to support bicycling facilities on local roads. MnDOT will also continue to encourage alignment between State Aid standards and design standards for MnDOT roads to promote consistent industry practices and riding experiences for the general public.

STRATEGY 4. Build bicycle facilities that have the appropriate amount of separation from motor vehicle traffic based on the local context.

Participants expressed a strong preference for separated bicycling facilities. When shown images of different types of bicycling facilities, Greater Minnesota and Metro area participants overwhelmingly identified separated facilities such as trails or separated bicycle lanes as being more comfortable than shoulders or shared space. MnDOT will prioritize investment in bicycling infrastructure that separates bicyclists from motor vehicle traffic.



STRATEGY 5. Develop a process to annually track bicycle infrastructure investments by district and statewide.

The 2013 Minnesota State Highway Investment Plan requires that 1.4 percent of MnDOT's roadway funding from 2014-2023 and 1.0 percent of funding from 2024-2033 be allocated to bicycle infrastructure improvements. MnSHIP provides MnDOT district planners guidance in how they categorize spending and what activities qualify as bicycle infrastructure investments. MnDOT will consistently track bicycle infrastructure spending across districts.



STRATEGY 6. Include bicycling infrastructure as an asset in the formal Transportation Asset Management Plan process.

MnDOT's Transportation Asset Management Plan evaluates risks, identifies mitigation strategies, analyzes life-cycle costs, establishes asset condition performance measures and targets, and recommends investment strategies for state infrastructure assets. MnDOT currently tracks pavement condition of highway travel lanes to gauge preventative maintenance needs, but does not record the same information for shoulders. Since most bicycling facilities along state highways are on shoulders, shoulder pavement quality is important to bicyclists' safety and comfort. Shoulder pavement condition should be prioritized to be included in MnDOT's next round of Transportation Asset Management planning, ensuring that the agency's preventative maintenance strategies incorporate facilities used for bicycling.

STRATEGY 7. Continue bi-annual data collection to update bicycle-related information available for state, county and local roadways.

MnDOT collects data on paved shoulders, designated bicycle routes, and trails every two years and presents this information in the Minnesota Bicycle Map. MnDOT relies on county engineers and local entities to provide current and updated information on roadway conditions. MnDOT will continue this partnership and serve as a clearinghouse of information regarding bicycling conditions statewide. MnDOT will continually update data and incorporate new data into this process when appropriate.

STRATEGY 8. Develop a bicycle safety plan using a data-driven, interdisciplinary approach that targets areas for improvement and employs proven countermeasures to enhance bicycling safety.

In partnership with city and county road authorities, MnDOT will create a Minnesota bicycle safety implementation plan to identify locations with the highest need for safety improvements. This effort would allow MnDOT and other agencies to systematically evaluate bicyclist safety needs and strategically make corresponding infrastructure improvements. This effort complements the state's Toward Zero Deaths program to reduce roadway fatalities among all users.



Statewide Bicycle System Plan

Chapter Three

DEVELOPING STATE BICYCLE ROUTES

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INTRODUCTION

The concept of a state bicycle network is rooted in earlier MnDOT planning efforts that identified a need to support bicycle travel along state highways. The concept first emerged in the state's 1977 initiative to assess the suitability for bicycling on all paved roads in the state. In 1987, the Minnesota State Bicycle Transportation System Plan identified 3,750 miles of priority shoulder paving improvements for bicycling purposes on the trunk highway network. The 2005 MnDOT Bicycle Modal Plan built on this idea by introducing conceptual routes for the Minnesota Scenic Bicycle Route System. The purpose of the Minnesota Scenic Bicycle Route System was to continue providing high levels of bicycle mobility through rural areas while connecting these routes with the state's scenic resources and building their potential to attract tourists. Consistent with today's thinking, the Scenic Bicycle Route System is intended to be designated on a combination of state highways and local roads and trails, depending on which facilities were suitable for bicycling and available to connect the route.

Since adopting the 2005 Bicycle Modal Plan, MnDOT has continued efforts to support statewide bicycle travel. Minnesota's first-ever state bicycle route, the Mississippi River Trail Bicycle Route, was designated in 2012 and fully signed in 2015. The bicycle route uses a combination of state highways, local roads, and trails to connect communities along the Mississippi River from Lake Itasca to the Iowa border. To help communities capture benefits of bicycle tourism and to promote use of the route, MnDOT provided planning and marketing technical assistance to six communities and produced the Mississippi River Trail Bicycle Route Marketing Toolbox. MnDOT and the communities along the MRT recognize that the presence of a state bicycle route creates economic development opportunities as a result of long-distance travel and short-distance trips made in and around the communities along the route.

The Mississippi River Trail Bicycle Route received additional designation by the American Association of State Highway and Transportation Officials as U.S. Bicycle Route 45. The U.S. Bicycle Route System is a national network intended to link urban, suburban, and rural areas using a variety of appropriate cycling facilities. State departments of transportation nominate U.S. Bicycle Routes for numbered designation through AASHTO's Special Committee on U.S. Route Numbering, the same committee that assigns numbers to U.S. highways and interstates. Designated U.S. Bicycle Routes are promoted to cyclists by the Adventure Cycling Association and have increased potential to support tourism due to these and other marketing efforts.





State Bicycle Route Network:

A network of envisioned connections that link destinations throughout the state by bicycle. These connections are presented as corridors between two points.



State Bicycle Route:

A route on the State Bicycle Route Network that is designated along a combination of state highways, trails and local roads. The Mississippi River Trail is currently the state's only designated state bicycle route.



U.S. Bicycle Route:

A bicycle route that has been designated by the American Association of State Highway and Transportation Officials as part of the U.S. Bicycle Route System. These routes connect bicyclists in Minnesota to U.S. Bicycle Routes in other states. The Mississippi River Trail is designated as U.S. Bicycle Route 45.



MnDOT is committed to supporting a state bicycle route network and participating in the U.S. Bicycle Route System. Partners in MnDOT's 2013 Statewide Bicycle Planning Study identified connectivity among destinations as their most significant concern regarding statewide bicycle travel. One of MnDOT's objectives in initiating this planning process was to identify statewide destinations that should be linked via a state bicycle route network. MnDOT also sought assistance from the public in prioritizing these connections for future designation as a state bicycle route and/or U.S. Bicycle Route. This chapter presents the State Bicycle Route Network and MnDOT's strategies to implement this system.

STATE BICYCLE ROUTE NETWORK: TERMS AND DEFINITIONS

The State Bicycle Route Network is a network of envisioned connections that link destinations throughout the state by bicycle. The State Bicycle Route Network does not define the actual facilities that will form these connections. Rather, this plan presents the network as a set of corridors throughout the state that link destinations. The State Bicycle Route Network depicted in Figure 1 is a starting point to guide future efforts to delineate actual bicycle routes within each corridor. Further collaboration and planning with MnDOT's local partners is necessary for designation and implementation to occur.

As part of this planning process, corridors in the State Bicycle Route Network are prioritized for future designation as state bicycle routes. Increasing the number of designated state bicycle routes from one to three routes is one of MnDOT's implementation strategies and a performance target defined in Chapter 8. Although MnDOT will lead planning to designate state bicycle routes, the routes that will eventually become state bicycle routes will not exclusively use state highways. For example, Minnesota's existing state bicycle route, the MRT, is designated on a combination of state highways, shared use paths, and local roads. Only 20 percent of the 800-mile route is on state highways. The location on a state bicycle route depends on which roadway or shared use path is most comfortable for bicyclists and able to provide a direct connection among destinations along the route.

Important Note: The planning analysis was modified for the Twin Cities Metropolitan area. The Metropolitan Council's 2013 Regional Bicycle System Study identifies regional priorities for planning and investment in bicycle infrastructure within developed and developing areas in its jurisdiction. This plan identifies connections to these routes from other parts of the metro and state, but does not identify any new corridors within the Metropolitan Council's defined network. Most of MnDOT's Metro District falls within the Metropolitan Council's planning area.

FIGURE 1:
STATE BICYCLE ROUTE NETWORK PRIORITY CORRIDORS



STATEWIDE PRIORITY CORRIDORS

The State Bicycle Route Network is presented in Figure 1. The statewide prioritization of corridors within the network reflects public preferences expressed during plan outreach, potential for connectivity to the Mississippi River Trail state bicycle route, potential connectivity to other bicycle route corridors, potential for designation as U.S. Bicycle Routes, and continuity across the state. The selection process is described in further detail in Appendix B. Again, these corridors do not represent specific routes. MnDOT will work with partners to select specific facilities and designate routes as part of plan implementation.

The State Bicycle Route Network identified through this plan will function as a guide for prioritizing future infrastructure investments and formal designation of state bicycle routes along specific routes. Statewide high priority corridors are the first corridors on the State Bicycle Route Network that MnDOT will consider for infrastructure improvements and future designation as state bicycle routes. Increasing the number of designated state bicycle routes is a performance target identified in this plan (see Chapter 8). 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 bicycle routes. MnDOT district staff will prioritize bicycling infrastructure investments on the segments of state trunk highways that form these routes.

The destinations on the statewide high priority corridors include:

- Twin Cities to Grand Portage, via Hinckley and Duluth
- Twin Cities to Mankato loop via the Minnesota River Valley and Northfield
- Moorhead to St. Cloud, via Detroit Lakes, Fergus Falls and Alexandria

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 bicycle routes after addressing the high priority corridors or when collaborative opportunities arise (e.g., a DNR state trail planning initiative). Statewide medium priority corridors include:

- A corridor roughly following the Minnesota River from the state border at Browns Valley southeast to Mankato, and then continuing on to Owatonna, Rochester, and Winona
- A corridor running northeast through Pipestone, Marshall, Granite Falls, St. Cloud and Hinckley

- A corridor starting in Red Wing traveling south through Rochester to the Iowa border
- A corridor from Detroit Lakes to Walker and to Itasca State Park
- A corridor from Aitkin to Duluth

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 during this plan, these corridors illustrate the long-term potential for the State Bicycle Route Network. These corridors provide guidance for bicycling investments to roadway projects and will be implemented as opportunities arise and through coordination among MnDOT, the DNR, and local partners.

MnDOT Central Office staff will lead designation of statewide high priority corridors as state bicycle routes. In locations where state trunk highways are designated as part of a state bicycle route, MnDOT district staff will prioritize bicycling investments on these routes.

REGIONAL PRIORITY CORRIDORS

While the State Bicycle Route Network depicts priorities for future state bicycle routes, participants in outreach activities also shared preferences among bicycling routes within their own regions. Figures 2 through 8 illustrate how participants in this plan prioritized bicycling facilities within each MnDOT district. Some of the low priority corridors on the State Bicycle Route Network (presented in Figure 1), were identified as high priorities by members of the public in a given MnDOT district. This indicates that some routes on the State Bicycle Route Network may have regional significance, even though they did not rise to a high level of statewide significance.

FIGURE 2:
DISTRICT 1 REGIONAL PRIORITY CORRIDORS

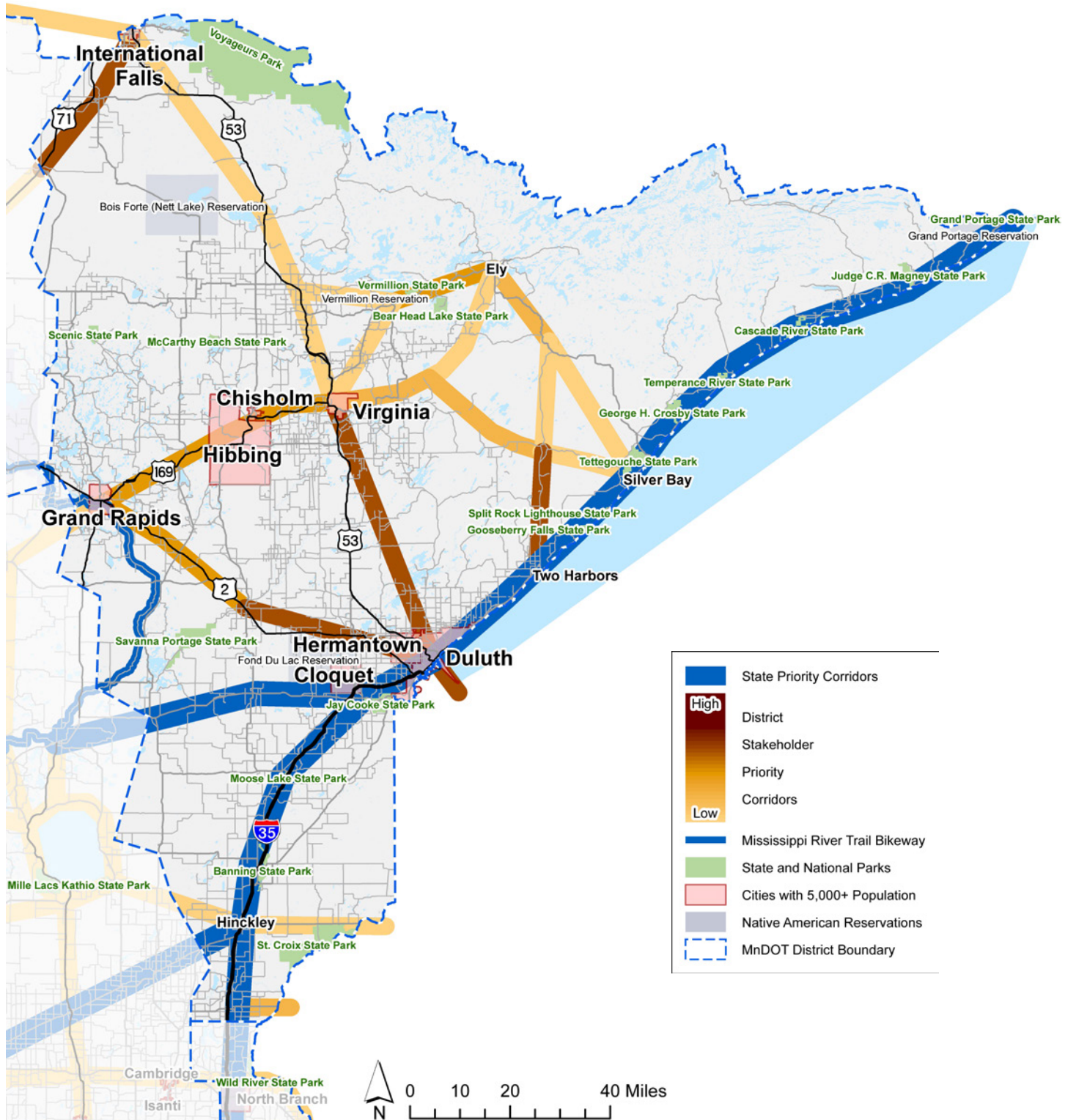


FIGURE 3:
DISTRICT 2 REGIONAL PRIORITY CORRIDORS

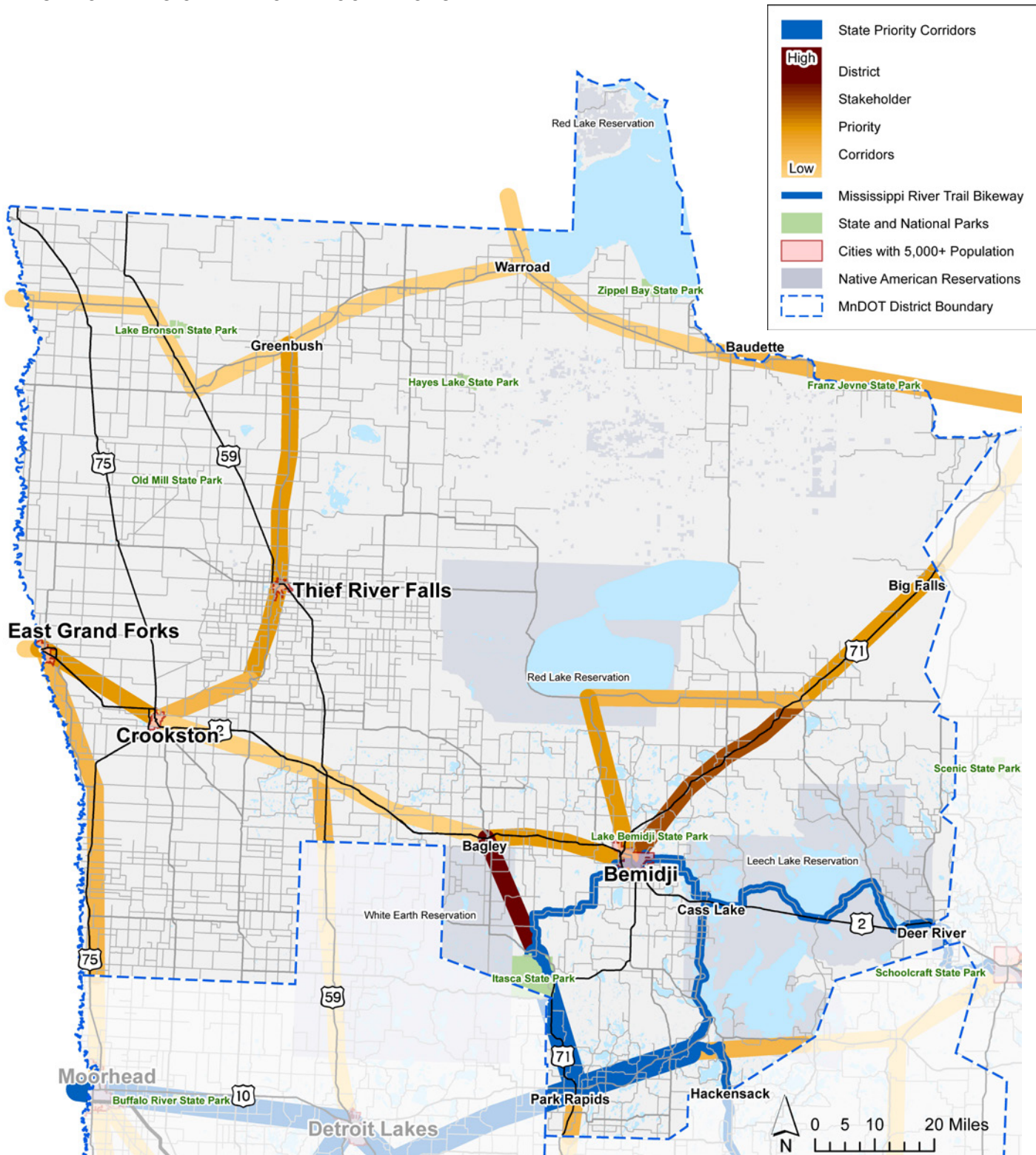


FIGURE 4:
DISTRICT 3 REGIONAL PRIORITY CORRIDORS

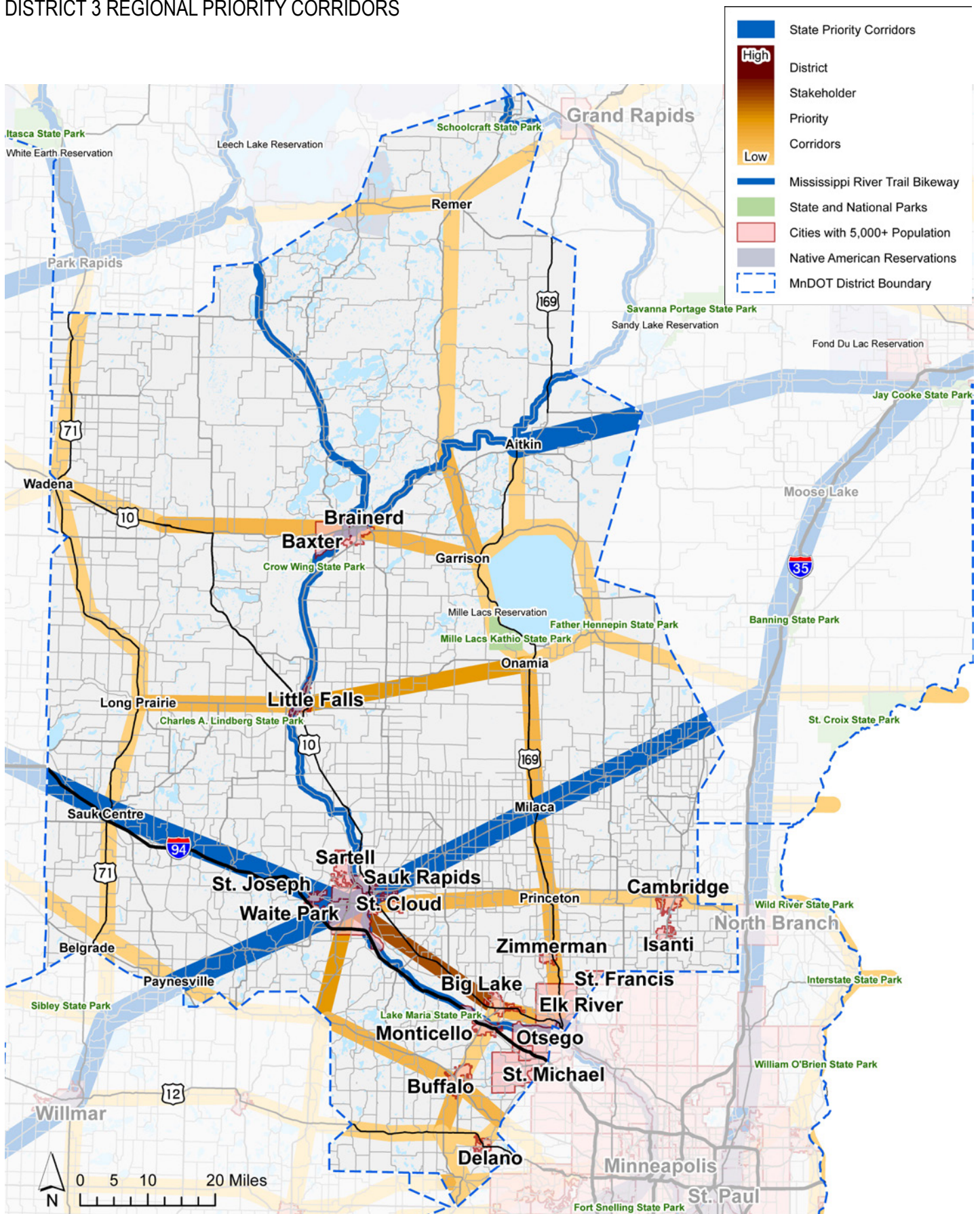


FIGURE 5:
DISTRICT 4 REGIONAL PRIORITY CORRIDORS

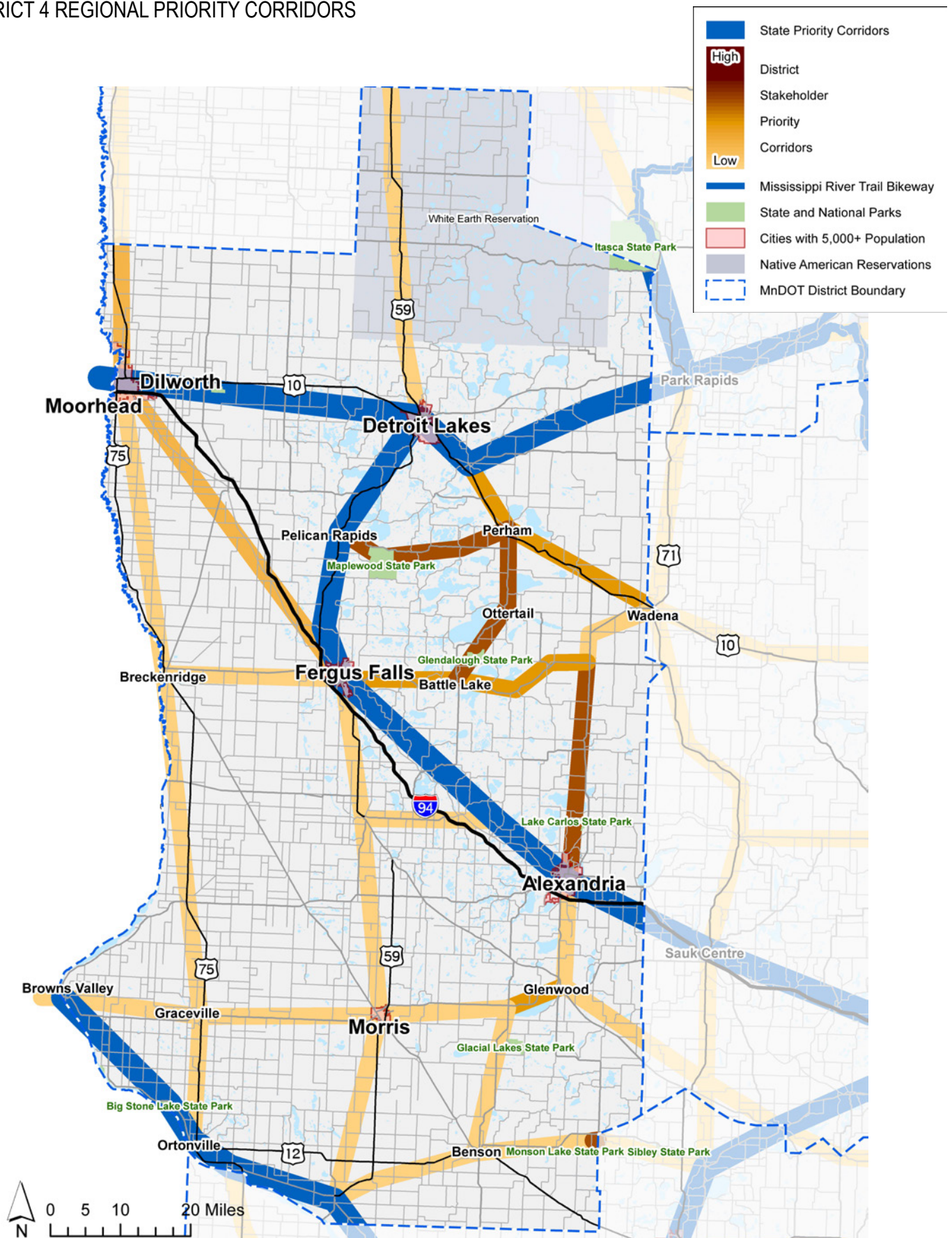


FIGURE 6:
DISTRICT 6 REGIONAL PRIORITY CORRIDORS



FIGURE 7:
DISTRICT 7 REGIONAL PRIORITY CORRIDORS

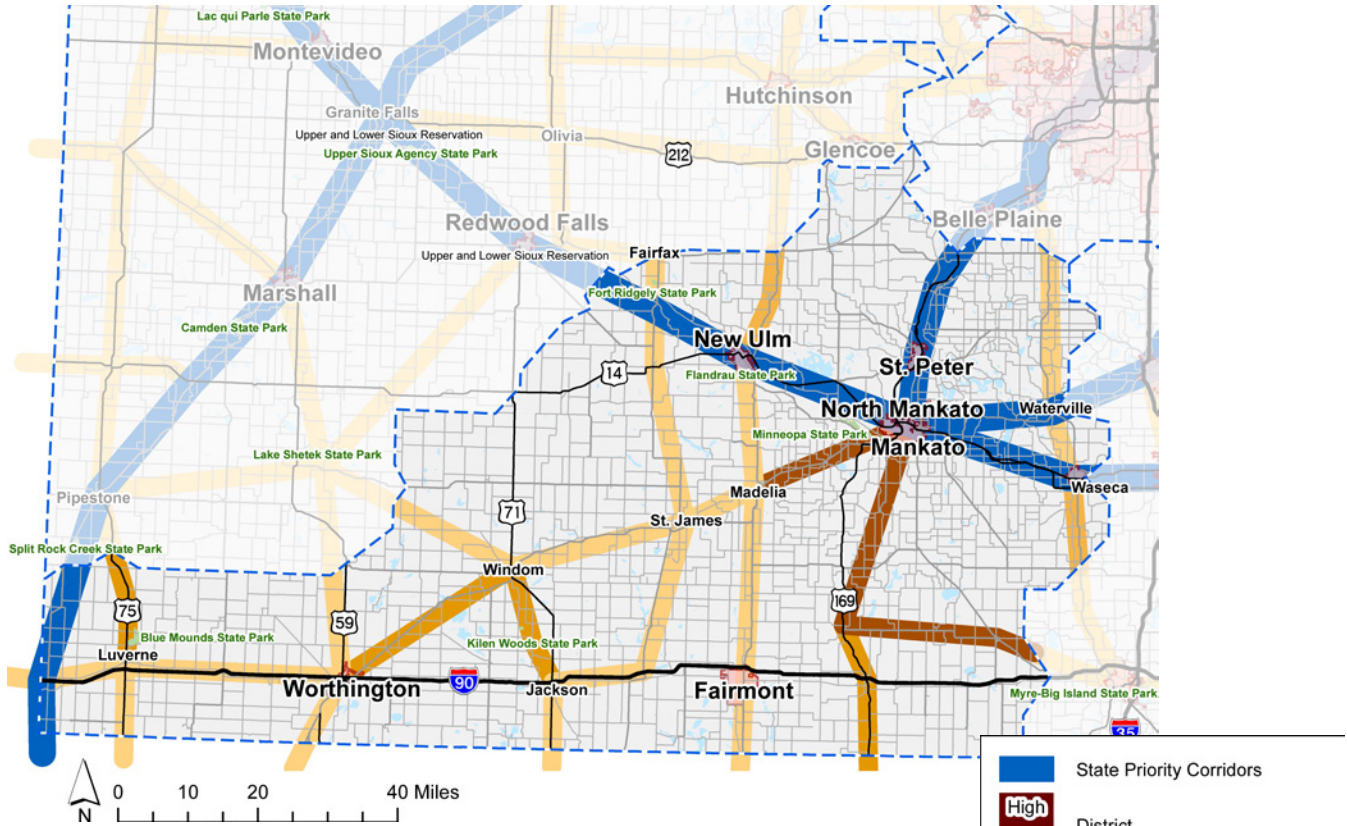
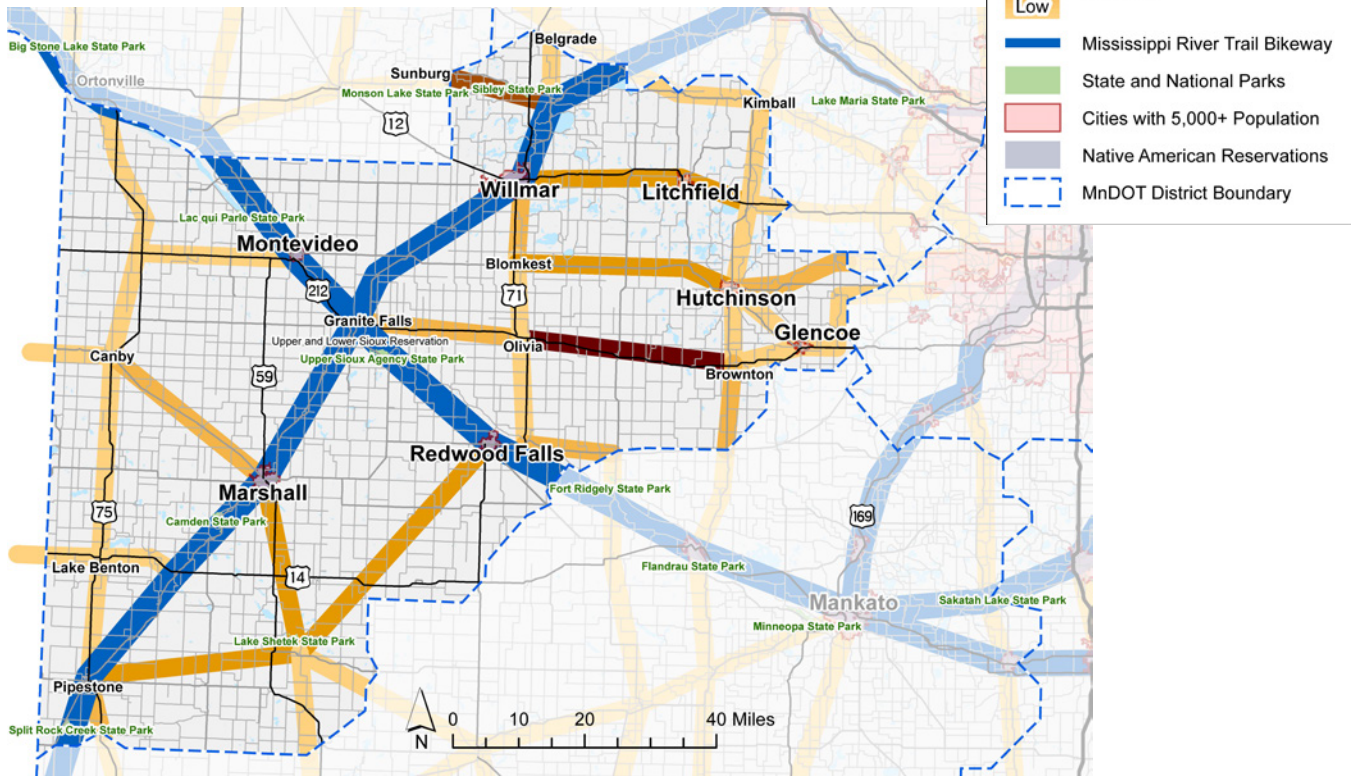


FIGURE 8:
DISTRICT 8 REGIONAL PRIORITY CORRIDORS



METRO DISTRICT AND METROPOLITAN COUNCIL PLANNING PROCESS

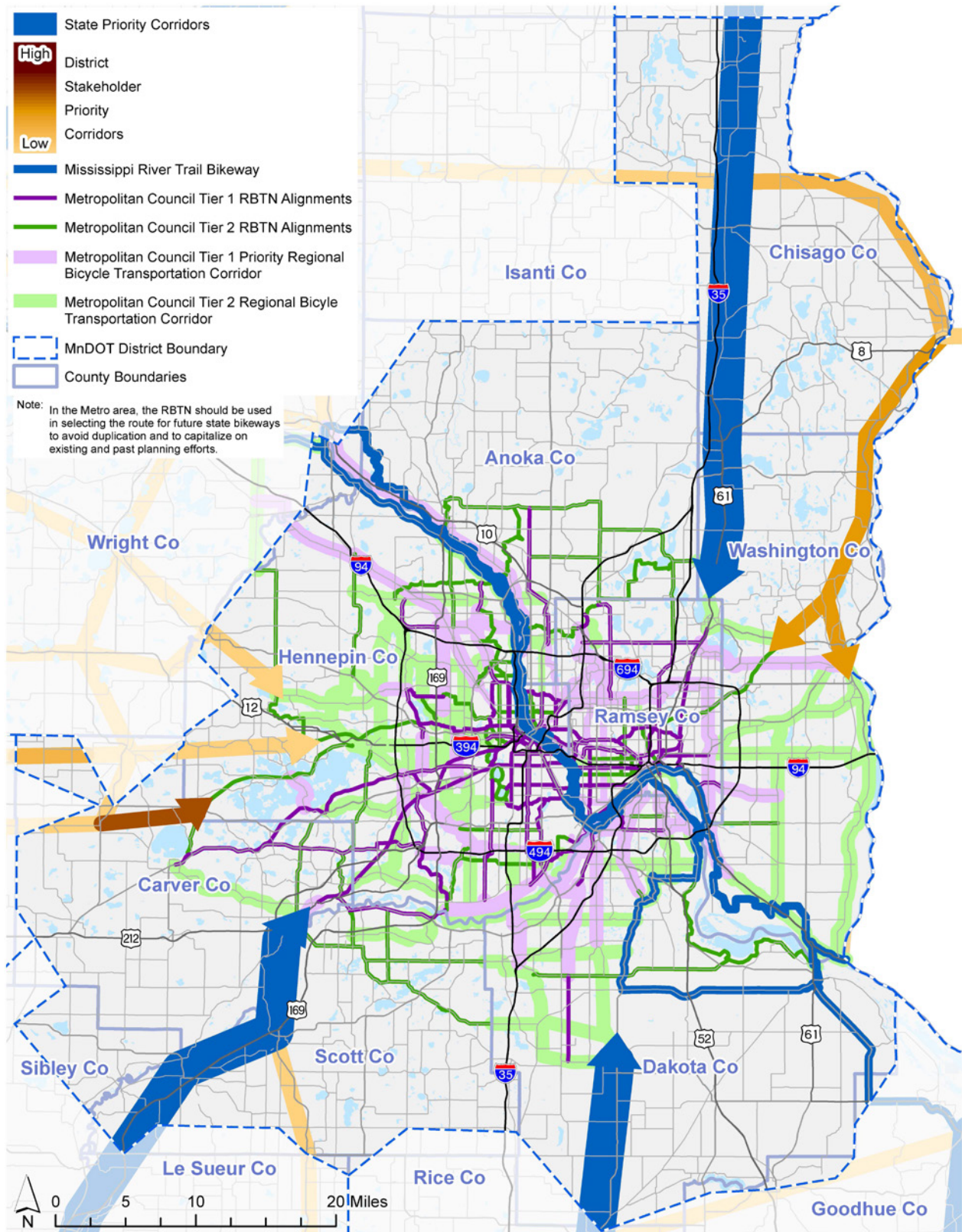
In 2013-2014, the Metropolitan Council led the Twin Cities Regional Bicycle System Study in partnership with MnDOT Metro District. MnDOT district staff and MnDOT's Central Office Bicycle Pedestrian Section were closely involved. The study proposed a seamless system of multijurisdictional on- and off-street bicycle routes to serve as the backbone of a bicycle transportation network in the metro region. This system, called the Regional Bicycle Transportation Network was included in the Met Council's 2040 Transportation Policy Plan adopted in 2015. While the RBTN does include some trail elements, its focus is geared toward facilitating day-to-day bicycling for transportation in the Twin Cities area than trips of highly recreational purpose. The RBTN establishes regional priorities for bicycle route planning, implementation, and investment in the seven-county Metropolitan Area.

The RBTN was developed through an extensive process of public engagement, local agency involvement, and geographic data analysis. The public and local agency staff helped identify the criteria for selecting regional corridors and provided feedback on the network as it was developed and refined. Individual network corridors were evaluated based on several data sets including proximity to job and activity centers, access to transit, future population density, proximity to concentrated areas of poverty with high minority populations, and other priority destinations identified through the public process.

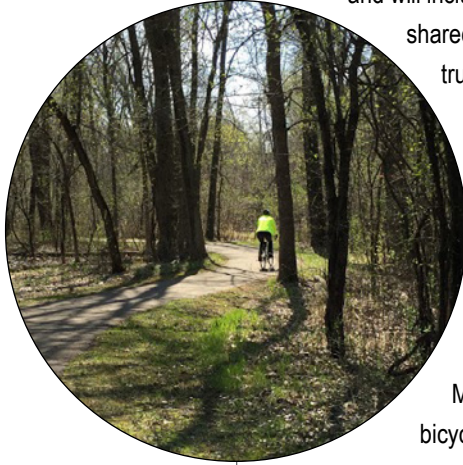
The RBTN and Priority State Bicycle Route Corridors are shown in Figure 9. The RBTN will serve as the foundation for MnDOT Metro District to identify and prioritize locations on the state trunk highway system that provides opportunities for local bicycle travel within the region. This process will also identify planning corridors for connections between the RBTN and bicycle routes in adjoining MnDOT Districts.

As state bicycle routes are developed and refined that travel the Metro Area, the RBTN will be used for route identification where feasible to avoid duplication and to recognize established regional priorities.

FIGURE 9:
METRO DISTRICT REGIONAL PRIORITY CORRIDORS



DEFINING FACILITIES ON STATEWIDE AND REGIONAL PRIORITY CORRIDORS



As with state bicycle routes, the specific facilities that will connect regional priority corridors will be determined by MnDOT in collaboration with partners and will include a combination of state trunk highways, local roads and shared use paths. MnDOT will work proactively to identify the role state trunk highways play in creating each of these routes. Working with local partners (e.g. DNR regional staff, RDOs, MPOs), MnDOT District staff will determine the road and shared use path facilities that will accomplish the priority corridor connections identified in Figures 1 through 9. The candidate facilities will be based on mapping activities undertaken during this planning process by MnDOT district staff, regional and local partners, in-person workshop participants and online mapping tool users. MnDOT and its regional and local partners will develop regional bicycle system plans in every Greater Minnesota MnDOT district.

MnDOT's process for refining candidate facilities within corridors is outlined here:

1. MnDOT district staff will host a workshop with regional and local partners to review and further refine the best facilities to connect statewide and regional priority corridors. An additional comprehensive planning process with partners and local agencies will occur. This process will involve local planning, engineering staff and local policy makers.
2. MnDOT district staff will consult this plan (and addendum) to determine if any upcoming state trunk highway projects overlap with a statewide or regional priority corridor. If the roadway is not a regional priority corridor or statewide priority corridor, staff will consult regional and local partners and existing local plans to determine bicycling needs (see Local Coordination section).
3. Staff consult the MnDOT Bicycle Facility Design Manual (update forthcoming in 2016) to select the most suitable bicycle facility treatment to be included in the project. MnDOT district staff will share data on the constructed facility with appropriate MnDOT Central Office staff, who will centralize information about progress toward implementing the State Bicycle Route Network. (In the Twin Cities Metro Area, MnDOT Metro District will cooperate with Metropolitan Council and local partners to refine the Regional Bicycle Transportation Network).

IMPLEMENTING STATEWIDE AND REGIONAL PRIORITY CORRIDORS

The statewide priority corridors and the regional priority corridors on the State Bicycle Route Network will serve as a reference during district-led project planning for prioritizing opportunistic investment in bicycling improvements during planned state trunk highway improvements. The network also informs MnDOT district staff of important connections to highlight during coordination with other jurisdictions that construct bicycle facilities. Because the State Bicycle Route Network will ultimately be designated on a combination of state highways and local roads and trails, MnDOT anticipates that the prioritization of corridors will also provide guidance to local partners planning and implementing bicycling facilities. Metropolitan Planning Organizations, Regional Development Organizations, cities and counties are encouraged to use this guidance to understand statewide priorities for bicycling as they prepare plans and implement projects at the regional and local scale.

Chapter 6, “Investing in Safety and Comfort,” provides additional information about how MnDOT will implement the State Bicycle Route Network through planning and programming decisions.

IMPLEMENTATION STRATEGIES

STRATEGY 9. Using the State Bicycle Route Network as guidance, work with local agencies and partners to designate routes as state bicycle routes and as United States Bicycle Routes (e.g. Mississippi River Trail Bicycle Route/USBR 45).



Currently, the Mississippi River Trail Bicycle Route is the only state bicycle route designated by state statute. Routes with this designation are eligible for funding from various state and federal sources. Collaboration among state, regional and local road and trail authorities to gain additional designation of state bikeways as a U.S. Bicycle Route by AASHTO elevates the status of a state bicycle route and connects it to the largest official cycling route network in the world. This encourages local improvements within host communities to support bicycling and greater ability to bring visitors to Minnesota communities and enhance the lives of local residents.

STRATEGY 10. Work with partners to map and promote designated routes.

People can't choose to ride a route if they don't know it exists! Including state bicycle routes on published maps and promoting these routes to local businesses, tourist bureaus and cycling organizations are the primary ways agencies communicate the presence of these facilities to the public. MnDOT's 2011 publication of the Mississippi River Trail Bicycle Route Marketing Toolbox is an example of how the agency can assist local partners in promoting a state bicycle route.

STRATEGY 11. Work with partners to improve and sign designated state bicycle routes to enhance the convenience and comfort of these facilities.

Improvements can be made to enhance the comfort and convenience of state bicycle routes after routes are designated. For example, local entities can connect local bicycle routes to state bicycle routes. MnDOT has already made improvements to the Mississippi River Trail Bicycle Route by taking advantage of a planned resurfacing project on MN 26 in Houston County. MnDOT District 6 staff chose to widen paved shoulders along portions of the road that overlap with the MRT route. MnDOT and local entities can enhance the quality of the State Bicycle Route Network even after its initial implementation, attracting additional users as the facilities offer more comfortable and convenient bicycling experiences.

Signing routes is an additional improvement to state bicycle routes that makes it easier for bicyclists to travel between destinations without stopping to consult a map. Signs also communicate to expect bicyclists traveling along the roadway. Wayfinding along state bicycle routes and between state bicycle routes and other destinations such as local bicycling facilities, recreational opportunities, and community attractions encourages both long-distance riding and local riding by a variety of users.

STRATEGY 12. Maintain up-to-date information about implementation of the State Bicycle Route Network through consistent and centralized data collection.

MnDOT staff and local and regional partners will designate suitable bicycling routes on the State Bicycle Route Network and identify or improve facilities to serve these routes over time. As MnDOT and partner jurisdictions designate bicycle routes and make improvements to facilities, a centralized source of information about the current status of corridors, routes and facilities will facilitate successful implementation of the State Bicycle Route Network.

MnDOT Central Office staff will maintain a centralized database associated with the State Bicycle Route Network and coordinate with MnDOT district staff to regularly update this information as changes occur through district planning processes.

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Statewide Bicycle System Plan

Chapter Four

INVESTING IN SAFETY AND COMFORT

INTRODUCTION

This chapter is intended to guide MnDOT staff as they build and maintain safe and comfortable bicycling facilities for people of all ages and abilities. MnDOT oversees planning, construction and maintenance projects on the state trunk highway system. This chapter addresses how findings from this planning process inform how MnDOT will support bicycling within its jurisdiction through investments on the state trunk highway system.

KEY FINDING 1: State bicycle routes create opportunities for inter-community travel across the state and beyond.

State bicycle routes connect communities and tourist destinations within corridors around the state. In most cases, designated state bicycle routes will be eligible to become part of the U.S. Bicycle Route System and connect Minnesota to a national network of bicycling facilities. Partners value MnDOT's investment in state bicycle routes to support both local bicycling trips and long-distance trips.

KEY FINDING 2: The public values state bicycle routes, but people value opportunities for local and regional bicycle travel more.

During this planning process, people consistently told MnDOT they value opportunities for local bicycle travel more than statewide bicycle travel. Local and regional bicycling networks support trips within and around communities and have the greatest potential to increase bicycle ridership. In places where state highways overlap with a community's local bicycling network, MnDOT can improve the safety and comfort of bicycling conditions by investing in bicycling infrastructure on or across the state trunk highway even if it is not part of a designated state bicycle route. For example, using funds to facilitate safer state highway crossings or create more comfortable access to community destinations along a state trunk highway fulfills a local bicycling need that is more important to the general public than adding shoulders to a state trunk highway to fill a gap in the State Bicycle Route Network.

KEY FINDING 3: People prefer riding on facilities that are separated from motor vehicle traffic.

People strongly expressed preference for separated bicycle facilities. These can take the form of shared use paths, or bicycle routes on the road that are separated from motor vehicle traffic by a physical barrier such as curbs, flexible posts, parked cars, or planters. As MnDOT seeks to enhance new and existing state bicycle routes or local bicycling networks, investing in facilities that create separation from motor vehicle traffic is a priority over shared lanes, shoulders or bicycle lanes that provide minimal separation.



INVESTMENT GUIDANCE

MNSHIP GUIDANCE: BICYCLING INFRASTRUCTURE ALLOCATIONS

The Minnesota State Highway Investment Plan 2014-2033 uses and prioritizes investments on the state highway network and creates consistency in how MnDOT categorizes and reports spending. MnDOT district planners are accountable for programming each district's dollars in ways that meet the spending allocations required by MnSHIP.

MnSHIP directs that 1.4 percent of MnDOT's roadway funding from 2014 to 2023 and 1.0 percent of funding from 2024 to 2033 be allocated to bicycle infrastructure investments. MnSHIP provides guidance identifying what types of investments can be considered "bicycling infrastructure" to help MnDOT staff determine whether a roadway improvement should be categorized as a bicycling infrastructure investment. This enables MnDOT greater accuracy in tracking its investments and measuring how well the state trunk highway system supports bicycling.

Current MnSHIP guidance defining bicycle infrastructure is listed below.

Bicycle Infrastructure Projects and/or project components included as a response to local or statewide priorities for the preservation and/or improvement of bicycle travel accommodations along or across trunk highways. Components not specifically identified for improving bicycle accommodation or as a priority bicycle route should not be included in this category.	On road	Striping or improvements for any of the following: marked shared lanes (sharrows); paved shoulders; bicycle lanes; bicycle boulevard; buffered bicycle lanes; cycle tracks; rumble strip removal or repositioning.
	Off road	Striping or construction of any of the following: shared use path; side paths (shared use paths adjacent to roadways).
	Other Improvements	Route signage, other projects or project components that improve the accommodation of bicycle travel along or across state highways.

Table Source: 10-Year Capital Investment Work Plan Guidance, 2016 - 2025

APPLYING MNSHIP GUIDANCE TO THE STATEWIDE BICYCLE SYSTEM PLAN

One of the purposes of this plan is to refine policy guidance to assist MnDOT staff in determining the best use of funds that are allocated toward bicycling infrastructure. The goals articulated in this plan demonstrate MnDOT's commitment to facilities that are safe and comfortable for people who bicycle on state, regional and local networks. MnDOT's investments in bicycling infrastructure on the state trunk highway network will primarily be made as opportunities arise in conjunction with other roadway projects.

As MnDOT invests in its system through individual roadway projects, opportunities for investments that support local bicycling networks will be prioritized over opportunities to improve routes on the State Bicycle Route Network. As a proxy for measuring improvements in state and local bicycle route networks to address bicycling needs, MnDOT will target spending approximately 70 percent of bicycle infrastructure funds on projects that support local and regional networks and 30 percent of bicycle infrastructure funds on projects to improve the State Bicycle Route Network. Determining the extent to which MnDOT's project portfolio supports local bicycling trips versus state bicycle routes is nuanced. MnDOT district planners will work actively with local and regional partners to understand the existing and planned bicycling system to assess where and when MnDOT investments can best support bicycling needs.

INVESTMENTS TO SUPPORT LOCAL AND REGIONAL BICYCLE ROUTE NETWORKS

When making bicycling improvements on the state trunk highway system, MnDOT will target approximately 70 percent of funds for bicycle infrastructure improvements toward projects that support local and regional bicycle route networks. State trunk highways often cause gaps in local bicycling networks. Destinations such as schools, places of worship and recreational opportunities are often located next to state trunk highways. Large infrastructure such as bridges, overpasses and interchanges can inhibit safe bicyclist crossings, and they frequently last 50 or more years before reconstruction. Targeting 70 percent of MnDOT's bicycling infrastructure investment toward local bicycle route networks is intended to address these gaps.

Potential projects will be prioritized as follows:

1. Fund improvements and facilities along or across state trunk highways identified in a local or regional plan (e.g. Safe Routes to School plan, MPO, county, or city bicycle/trail plan, municipal comprehensive plan, etc.) or identified through the local coordination described in Chapter 5.
2. Fund improvements along or across trunk highways that address gaps in existing or planned DNR-managed state trails.
3. Prioritize investments within population centers greater than 5,000.
4. Prioritize investments that create separation between bicyclists and motor vehicle traffic.



Consistent with MnDOT's Complete Street's policy, all MnDOT projects within communities on non-controlled access state trunk highways should include improvements for bicycling along or across the roadway, unless a parallel facility exists. Preference should be given to treatments that facilitate safe crossings and treatments that separate bicycle routes from motor vehicle traffic. MnDOT is guided by its Complete Streets policy and by this plan to include facilities for bicycling in projects along all non-controlled access trunk highways within communities of populations greater than 5,000.

MnDOT will allocate funds targeted toward local bicycling needs within each district's portfolio of projects. Identification of local bicycling needs early in the project delivery process is critical. MnDOT will follow the local coordination process outlined in Chapter 5 to ensure timely inclusion of projects in each district's annual 10-Year Capital Highway Investment Plan and the State Transportation Improvement Program.

INVESTMENTS TO DEVELOP THE STATE BICYCLE ROUTE NETWORK

When making bicycling improvements on the state trunk highway system, MnDOT will target approximately 30 percent of funds for bicycle infrastructure improvements toward projects that fill gaps or improve routes within State Bicycle Route Network corridors identified in this plan. MnDOT districts will target state bicycle route investments toward statewide high priority corridors and regional priority corridors on the State Bicycle Route Network. Listed in order of preference, statewide high priority corridors are:

- Twin Cities to Grand Portage, via Hinckley and Duluth
- Twin Cities to Mankato loop via the Minnesota River Valley and Northfield
- Moorhead to St. Cloud, via Detroit Lakes, Fergus Falls and Alexandria

Regional priority corridors are depicted in Figures 2 through 9 in Chapter 4. These will receive second priority over statewide high priority corridors.



Statewide Bicycle System Plan

Chapter Five

INCREASING RIDERSHIP

INTRODUCTION

MnDOT supports a holistic approach to achieving its vision of making bicycling a safe, comfortable, and convenient option for all people through the “5 Es.” The 5Es describe a nationally-recognized framework for points of intervention that advance bicycling. They include Engineering, Evaluation, Education, Enforcement and Encouragement. Each of these categories is a necessary and mutually supporting part of MnDOT’s overall strategy toward achieving a multimodal transportation system that is accessible to people of all ages and abilities.

When participants in this planning process were asked “What can we do to make it easier and more convenient for people to choose to ride a bicycle?” responses overwhelming indicated public desire that MnDOT increase investment in infrastructure such as separated bicycle routes, smoother road surfaces and intersection safety treatments. Construction and maintenance of transportation infrastructure is a MnDOT core function, so it is natural that the public expects MnDOT to advance safer and more convenient facilities for bicycling. The strategies described in previous chapters and the performance measures in Chapter 8 focus on improvements to MnDOT’s delivery of bicycling infrastructure to all people through engineering.

Participants in the planning process also expressed a desire for other improvements that cannot be addressed through infrastructure, such as “improve driver behavior,” “improve bicyclist behavior,” “more bicycle safety education” and “update and distribute the Statewide Bicycle Map.” This chapter describes MnDOT’s role in supporting the Es of Evaluation, Education, Enforcement and Encouragement. MnDOT’s approach to each of these Es supports equitable access to bicycling among people of all ages and abilities. Strategies listed call out activities that have a core role in staff work plans or activities that will receive greater support from the agency based on findings from this planning process. The chapter closes with the introduction of a sixth “E”, termed Evolution, which describes how MnDOT will respond to the changing bicycling landscape beyond this Plan.



EDUCATION

MnDOT participates in efforts to educate motorists, bicyclists, engineers, planners, and law enforcement professionals about safe bicycling and driving practices. MnDOT leads the Share the Road campaign and provides materials for local partners to teach safe behaviors to road users. Through partnership in the statewide [Toward Zero Deaths](#) program, MnDOT seeks to eliminate bicyclist fatalities on roadways through design, enforcement, emergency services, and education initiatives. MnDOT also collaborates to advance

bicycle safety education through initiatives such as Safe Routes to School, Walk! Bike! Fun! curriculum, Bicycle Friendly Community workshops, the PedalMN campaign, and the Minnesota Department of Health's State Health Improvement Program and Active Living program.

STRATEGY 13: Promote safe driving/bicycling behaviors by developing educational materials and supporting partners in sharing these messages with bicyclists and drivers (e.g. Share the Road).



MnDOT's Bicycle and Pedestrian Section leads the state's Share the Road campaign to educate both motorists and bicyclists about safe driving and riding behaviors on roadways. MnDOT leads the campaign and provides local partners with materials to spread these messages among their networks. This partnership ensures the public receives consistent and recognizable information about safe driving and riding behaviors.

ENFORCEMENT

Although MnDOT does not play an active role in enforcement, MnDOT partners with law enforcement officials to share information about safe driving and bicycling practices and to understand the frequency and cause of bicycle-related crashes. MnDOT promotes awareness of bicycle-related laws through the Share the Road campaign and the statewide Towards Zero Deaths program. Data collected by law enforcement agencies helps MnDOT understand emerging and systemic safety issues that can be addressed through MnDOT's education campaigns, design guidance, or policies.

STRATEGY 14: Work directly with state, regional and local efforts to enforce laws that make bicycling safer.

The Department of Public Safety oversees statewide law enforcement efforts and influences activities among local law enforcement. Wherever possible, MnDOT seeks to partner with these entities to promote law enforcement related to bicycling. Public education and law enforcement is an important element in promoting change that makes bicycling safer and more comfortable for all types of riders.

EVALUATION

MnDOT collects and maintains data to measure and track performance of its systems. MnDOT evaluates the statewide bicycle system through performance measures and indicators identified in Chapter 8 regarding bicycle safety, ridership and assets. In addition to gathering data related to this plan's performance metrics, MnDOT supports initiatives and studies that lead toward creating more robust data about the statewide bicycle system.

STRATEGY 15: Create a statewide bicycle traffic monitoring program to count and estimate bicycle traffic volumes at selected locations throughout the state.

MnDOT will establish a bicycle traffic monitoring program based on principles of traffic monitoring outlined in the Federal Highway Administration's Traffic Monitoring Guide. MnDOT will install automated, continuous bicycle traffic monitoring devices in each of MnDOT's districts. In collaboration with local partners, MnDOT will also collect short duration bicycle traffic counts in each MnDOT district. These will support the efforts of the Minnesota Bicycle and Pedestrian Counting Initiative to encourage and foster bicycle traffic monitoring throughout the state.

MnDOT will institutionalize the Bicycle Traffic Monitoring Program beyond 2016 and increase the total number of sites where automated counts are collected. Traffic monitoring results will inform the development of performance measures (see Chapter 8). Increasing the number of monitoring locations will deepen the understanding of bicycling statewide.

Maintaining the bicycle traffic monitoring program on an on-going basis is critical to MnDOT's ability to reliably measure changes in bicycling rates at different locations over time. Robust, longitudinal measures of bicycle traffic volumes potentially could enable analyses of bicyclist crash rates, bicycle miles travelled, levels of winter cycling activity, or estimates of demand for specific bicycling corridors.



ENCOURAGEMENT

Encouragement supports the other Es by increasing people with bicycles. MnDOT's main encouragement initiative is producing and updating a statewide bicycle map. MnDOT also collaborates with state and local agencies and organizations to encourage ridership through infrastructure improvements, publishing maps and wayfinding tools, participating in marketing and tourism campaigns such as PedalMN, and disseminating information about the benefits of bicycling to the general public. MnDOT will continue to work with its partners to advance bicycling in Minnesota, recognizing that safety for bicyclists overall increases when more people ride¹.

STRATEGY 16: Encourage bicycle route system use by updating and publishing the Minnesota Bicycle Map every two years.

The Minnesota Bicycle Map is MnDOT's primary tool for communicating shoulder and road conditions and designated state bicycle routes to the cycling public. By continually enhancing the map's information and by updating the map's data, MnDOT provides accurate information to the public and enables them to plan rides on routes that suit their comfort level.

STRATEGY 17: Share information about bicycling opportunities in Minnesota to encourage ridership.

MnDOT's Bicycle and Pedestrian Section provides staff support and sponsorship for initiatives to encourage and support bicycling. For example, the agency released the Mississippi River Trail Bicycle Route Marketing Toolbox to assist local entities to promote the Mississippi River Trail. Currently, MnDOT supports the PedalMN initiative by helping coordinate the statewide PedalMN Bicycle Conference. Although these efforts may not be branded as MnDOT's, MnDOT is committed to encouraging bicycling and will continue to support these types of activities through partnerships.



¹ **Bonham, Cathcart, Petkov and Lumb, 2006**

Bonham J, Cathcart S, Petkov J, Lumb P, Safety in numbers: a strategy for cycling?. University of South Australia .

EVOLUTION

While not one of the nationally-recognized “5 Es”, this plan supports the “Evolution” of MnDOT’s bicycle planning efforts and design guidance. Bicycle planning and design standards are evolving at the national, state, and local level and MnDOT must adapt to changing bicycling practices and needs.

MnDOT will continue to review its practices in the context of the strategies recommended in this plan. As strategies are implemented, MnDOT will respond to these outcomes. For example, increased participation in bicycle planning among local entities will result in identification of more bicycling needs. Initiatives such as the Statewide Health Improvement Program and Safe Routes to School indicate increasing interest among partners outside the transportation community in promoting bicycle planning. MnDOT may experience greater fiscal pressure on project budgets to address local needs.

Another area of evolution is maintenance. During plan outreach, participants rated “establish a funding source for maintaining local bicycle routes” among their top choices when asked how MnDOT could help support bicycling in local communities. Preventative maintenance will become a topic of increasing relevance as the bicycling system expands and as the roadway system as a whole ages. At the same time, increases in ridership could result in increased public demand for seasonal maintenance such as snow and gravel removal along bicycling routes. MnDOT Metro District already includes bicycling facilities in its priority snow clearance corridors; other districts should continue to evaluate snow and debris removal policies as the bicycling network expands and gains users.

Meanwhile, design innovations and increased public demand for new facility types such as separated bicycle routes could alter how agencies program bicycling infrastructure. Participants in this planning process overwhelming indicated a preference for riding on separated bicycling facilities, regardless of whether they live in the Twin Cities or in Greater Minnesota. Separated bicycling facilities such as shared use paths or separated bicycle lanes generally have greater right of way requirements and project costs than traditional bicycle lanes or shoulders. MnDOT is prepared to evaluate programming requirements and design guidelines to support investments in separated facilities.

As MnDOT’s strategies to support bicycling evolve, the agency will continue to measure and evaluate investments in bicycling. For example, the MnDOT Omnibus Survey, which is used to gauge public attitudes about various MnDOT services, could be used to collect more specific information related to bicycling, such as seasonal riding habits. Meanwhile, the Minnesota Bicycle and Pedestrian Counting Initiative is collecting its first set of statewide counts at the time of this plan’s publication. This data forms a baseline from which more robust analysis can be conducted in future years.

STRATEGY 18: Update the Statewide Bicycle System Plan every five years.

The previous statewide bicycle plan, the 2005 MnDOT Bicycle Modal Plan, was published 10 years prior to this plan. To be responsive to changing demand and design innovations, MnDOT will regularly reevaluate policies and performance measures in the Statewide Bicycle System Plan with input from the policy advisory committee who guided this planning process and from the State Nonmotorized Transportation Committee. MnDOT will review the need for a formal plan update every five years.

STRATEGY 19: Review the Minnesota Bicycle Facility Design Manual every two years to ensure standards reflect current best practices and are consistent with MnDOT policies. Full manual updates will be periodic and respond to industry innovations.

MnDOT produces the Minnesota Bicycle Facility Design Manual and updates it periodically to reflect current best practices and standards design. Nationwide bicycle design standards are evolving as once-experimental treatments, such as bicycle boxes and separated facilities, become integrated into standard practice. Regularly updating the manual helps ensure that projects undertaken by state, county and city jurisdictions respond to current design guidance and best practices for bicycle facilities.



PHOTO COURTESY OF ST. PAUL SMART TRIPS & BRUCE SILCOX



Statewide Bicycle System Plan

Chapter Six

MEASURING SUCCESS

INTRODUCTION

This chapter outlines eight performance measures developed to track progress toward meeting this plan's goals.

MnDOT uses performance measures to evaluate achievement toward agency goals. The 2012 Statewide Bicycle Planning Study recommended that the Statewide Bicycle System Plan identify measures that demonstrate the level of success achieved by implementing plans, programs and investments that support bicycling. The study identified three key performance areas to measure ridership, safety and assets. By establishing performance measures, MnDOT demonstrates its commitment to partner agencies and the general public to support bicycling as an integral part of the state's multimodal transportation system.

RIDERSHIP

The 2012 Minnesota Statewide Bicycle Planning Study recommended ridership (usage) as a category for measuring the performance of MnDOT's bicycling system. The plan's vision is that bicycling is a "safe, comfortable and convenient option for all people." Although convenience and comfort are defined and perceived differently among individuals, ridership increases across the population are an indicator that more people find bicycling to be a comfortable and convenient choice.

Data sources do not exist that consistently measure bicycle travel in Minnesota. However, several sources provide indicators that demonstrate changes in overall levels of bicycling statewide.



Bicycle Commuters in Minnesota

Measure: The percent of bicycle commuters in Minnesota

Relevance: The plan's vision is that bicycling is a safe, comfortable and convenient transportation option. One way to test that vision is to measure how many people routinely bicycle for a transportation purpose. The American Community Survey is the only data source that regularly tracks information about bicycle travel over time by asking participants about their commute mode to work. Although bicycle commuting represents only a portion of total trips made by bicycle, the ready availability and longevity of this data make this a relevant indicator of peoples' use of bicycling to serve a daily transportation need.

Trends: While this number of people in Minnesota commuting by bicycle generally increased over the previous five reporting years, the share of people commuting by bicycle hovered around 0.7 percent during that timeframe. The share of bicycle commuters rose slightly in 2008, consistent with the sharp increase in gas prices during that year.

MnDOT's goal to increase the percentage of bicycle commuters demonstrates that more transportation trips are being made by bicycle in lieu of motorized vehicles. Because these numbers are taken at a large scale and represent only a portion of bicycling activity, MnDOT does not anticipate this measure will show dramatic short-term increases. However, this data can demonstrate long-term trends and will be monitored for changes that occur over five years or more.

Source: American Community Survey: this survey takes a continuous sample of households each year and uses the question "How did this person usually get to work last week?"

Regular Bicycle Ridership

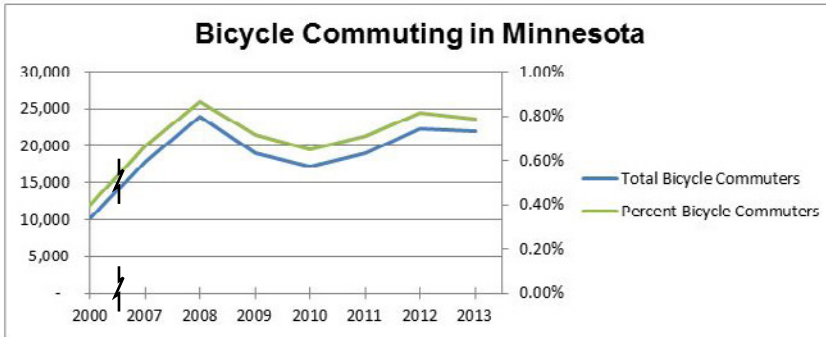
Measure: The percent of Minnesotans who regularly rode a bicycle at least once a week from April to October

Relevance: MnDOT conducts an annual Omnibus Survey that asks people how frequently they ride a bicycle between April and October. Unlike the American Community Survey, this tracks bicycle ridership for any purpose. Trends among those who ride at least once a week are indicative of regular bicycling travel, which likely incorporates some riding along roadways or for transportation purposes. This is the only data source besides the American Community Survey that consistently collects information at a statewide level about bicycle travel.

Trends: In 2015, 18 percent of survey respondents indicated they ride a bicycle once a week or more, representing a modest decrease over the previous five years. While MnDOT does not anticipate this measure will

show dramatic changes, this data can demonstrate long-term trends and will be monitored for changes that occur over five years or more.

Source: MnDOT's Omnibus Survey: this annual survey includes a representative sample of residents statewide and asks participants about the frequency of their bicycle use (for any purpose). Sample data is used to estimate statewide statistics.



Bicycle Commuting in Minnesota
(sources: 2000 U.S. Census, American Community Survey 2007-2013, 1-year estimates)

Regular Bicycle Ridership among Women

Measure: Percent of women who ride weekly or more from April to October

Relevance: While MnDOT supports mode shift among all users, women are found to more strongly prefer separated bicycling facilities than men, a finding linked to gender differences in risk aversion. Increases among the percentage of women choosing to bicycle are linked to higher perceptions of safety and levels of comfort on existing infrastructure and are therefore an important indicator in whether a broad spectrum of bicyclists perceives these facilities as comfortable and safe.

Trends: In 2013, 20 percent of women statewide reported cycling once a week or more, compared to 29 percent of men. MnDOT does not anticipate this measure will show dramatic changes. This data can demonstrate long-term trends and will be monitored for changes that occur over five years or more.

Source: MnDOT's Omnibus Survey: this annual survey includes a representative sample of residents statewide and asks participants about the frequency of their bicycle use (for any purpose). Sample data is used to estimate statewide statistics.

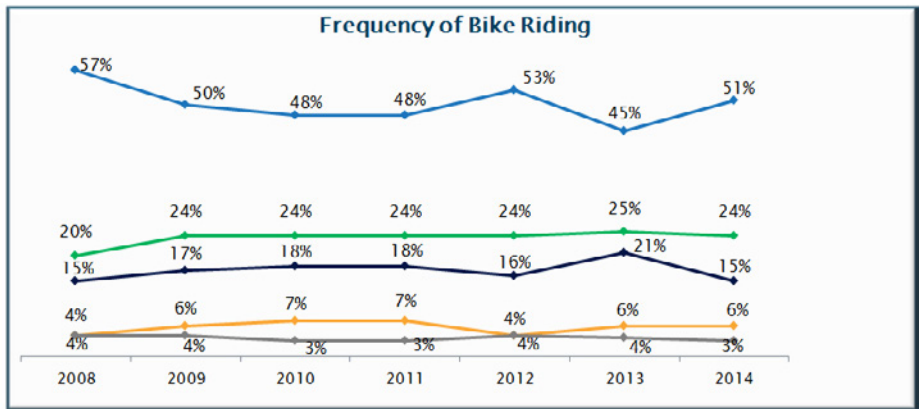


Frequency of Bicycling Use in Minnesota
(source: MnDOT Omnibus Survey)

Bicyclists at Index Monitoring Sites

Measure: Average daily traffic volumes at permanent index monitoring sites statewide.

Relevance: MnDOT is establishing a network of permanent automated bicycle traffic monitoring sites in each MnDOT district. Although data from these sites will not be representative of bicycle traffic on all roads in the state, these data can be used to create an index of bicycle traffic that illustrates trends in levels of bicycling in Minnesota much like how indexes are used in the fields of finance and business. Taken together, the results from both permanent and short-duration monitoring sites will illustrate the



range of bicycle traffic likely to be encountered on roads and trails across Minnesota. Unlike measures based on the American Community Survey and the Omnibus Survey that estimate the percentages of people who report that they bicycle for commuting or other purposes, this measure will illustrate demand on infrastructure at specific locations.

Trends: The Minnesota Bicycle and Pedestrian Counting Initiative began manual counting and to document results of automated monitoring by local agencies in 2011. In 2014, MnDOT installed its first permanent automated counters on roads and trails in Duluth, Eagan, and Minneapolis. In 2015, MnDOT requested funding for additional permanent counters to implement the index site concept plan.

Source: Minnesota Bicycle and Pedestrian Counting Initiative (sponsored by MnDOT and the University of Minnesota)



PHOTO COURTESY OF FREUND

SAFETY

The 2013 Statewide Bicycle Planning Study recommended safety as a category for measuring the performance of MnDOT's bicycling system. Safety is a key area of performance for all MnDOT infrastructure and is the subject of the multi-agency Toward Zero Deaths initiative that focuses on reducing roadway-related deaths and injuries statewide.

Annual Bicycle-Vehicle Crashes

Measure: Number of bicycle-motor vehicle crashes per year.

Relevance: This plan articulates the goal to “build and maintain safe

	2013		2014		2014			
	Male (A)	Female (B)	Male (C)	Female (D)	Metro		Greater MN	
					Male (E)	Female (F)	Male (G)	Female (H)
Every day	6% B	2%	4%	3%	6%	4%	2%	1%
At least once a week	23%	18%	17%	14%	18%	15%	15%	12%
Once a month/A few times from April–October	25%	25%	23%	26%	24%	29% H	22%	21%
One time	6%	6%	6%	7%	6%	5%	6%	9%
Never	40%	49% A	50%	52%	47%	48%	54%	57% F

Rates of Female Cycling (source: MnDOT Omnibus Survey)

and comfortable bicycling facilities for people of all ages and abilities.” Reductions in crashes are indicative of safer conditions for bicycling. However, MnDOT recognizes growth in crashes does not necessarily indicate increasing levels of danger for bicycling; they could simply mean that more trips are being made by bicycle.

MnDOT will track recorded bicycle-motor vehicle crashes of all severities, recognizing that any crash with a motor vehicle while bicycling likely results in injury or damage that is disruptive to the bicyclist’s daily activities. Within this group, MnDOT will monitor crashes identified as fatal and serious, in tandem with the state’s Toward Zero Deaths initiative aiming to reduce deaths among roadway users. MnDOT will also monitor crash data to understand trends specific to state highways and State-Aid routes.

Trends: Between 2004 and 2013, Minnesota recorded an average of 924 bicycle-motor vehicle crashes per year, 7 percent of which were categorized as “fatal” or “incapacitating injury.” MnDOT’s goal is a decrease in the rate of bicycle-motor vehicle crashes (which cannot be measured with available data) and a decrease in the absolute number of bicycle-motor vehicle crashes (recognizing that every roadway injury is undesirable, regardless of whether trends indicate unsafe conditions for bicycling).

In 2013, 67 percent of bicycle-motor vehicle collisions occurred on State-Aid routes and 11 percent occurred on state or US trunk highways.

Source: Minnesota Department of Public Safety: annual crash data

includes location, contributing factors and severity of crashes. This data is gathered from police reports; crashes that do not involve motor vehicles or for which no police report was filed are not included. This data represents a smaller number of crashes than actually occurred.

Growth in Cycling Compared to Growth in Crashes

Measure: Rate of change in bicycle average daily traffic volumes at permanent index monitoring sites compared to rate of change in bicycle crashes.

Relevance: Without understanding trends in overall growth in cycling, growth in crashes does not necessarily indicate increasing levels of danger for cyclists; they could simply be the result of more trips being taken by bicycle. An increase in bicycling statewide with a corresponding decrease in crashes would indicate that cycling is becoming a safer activity. To gauge whether bicycling is increasing statewide, MnDOT can compare bicycle traffic volumes at permanent index sites to generate a rate of increase in bicycling over time.

Trends: The Minnesota Bicycle and Pedestrian Counting Initiative began manual counting in 2011. In 2014, MnDOT installed its first permanent automated counters on roads and trails in Duluth, Eagan and Minneapolis. In 2015, MnDOT requested funding for additional permanent counters to implement the index site concept plan. This data will provide baseline information from which future data can be compared. Trends in bicycle-motor vehicle crashes were described in the previous section.

Source: Minnesota Bicycle and Pedestrian Counting Initiative, Department of Public Safety



ASSETS

The 2012 Statewide Bicycle Planning Study recommended assets as a category for measuring the performance of MnDOT's bicycling system. As MnDOT seeks to increase safety and comfort for bicyclists, it is important that the agency track the development or existence of bicycling facilities within its jurisdiction, which is the state trunk highway network. As coordination with partner agencies and data collection methods improve over time, MnDOT will seek opportunities to track bicycling infrastructure on local, county and DNR properties.

MnDOT Projects That Address Bicycling Needs

Measure: The percentage of MnDOT projects where identified existing conditions do not adequately meet bicycling needs and improvements for bicyclists are included in the final project scope.

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	10 YR TOTAL	PERCENT
FATAL	10	7	8	4	12	10	9	5	7	7	79	0.9%
INCAPACITATING INJURY	90	72	60	75	55	42	39	58	48	47	586	6.3%
NON-INCAPACITATING INJURY	403	407	355	371	322	318	254	276	261	244	3211	34.8%
POSSIBLE INJURY	424	443	452	505	528	577	518	580	556	472	5055	54.7%
PROPERTY DAMAGE	41	21	39	38	38	1	20	27	46	33	304	3.3%
TOTAL	968	950	914	993	955	948	840	946	918	803	9235	100.0%

Relevance: This measure helps MnDOT evaluate progress toward addressing known bicycling infrastructure gaps and issues on its roadway system. As required by the agency's Complete Streets policy, MnDOT planners and engineers assess bicyclist needs along and across the state highway during the planning phase of every construction project to identify whether or not there is a need for bicycling improvements in the project. Although all needs are documented, not all projects address these needs due to costs or other constraints. MnDOT will measure the percentage of its projects where identified existing conditions do not adequately meet bicycling needs and improvements for bicycling, such as a paved shoulder or bicycle lane, are included in the final project scope.

Target: 90 percent of MnDOT projects with an identified need include bicycling improvements.

Performance: MnDOT started requiring the documentation of bicycling needs for projects constructed in 2015. In state fiscal years 2015 and 2016, MnDOT identified bicycle needs on 38 projects. Of those projects, 29 (76 percent) included improvements for bicycling in the scope of work.

Source(s): MnDOT's Complete Streets Project Reports

Source: [Minnesota Department of Public Safety Annual Crash Data](#)

State Bicycle Route Designation & Mapping

Measure: Number of State Bicycle Routes designated in state statute and mapped.

Relevance: This measure is intended to guide MnDOT's Bicycle and Pedestrian Section work plan toward leading these efforts.

State Bicycle Routes form the spine of the state's bicycling network. The presence of a State Bicycle Route can lead local decision-makers to improve conditions for bicycling in communities along the route. Many communities along State Bicycle Routes see the benefit in attracting people to their communities and make additional infrastructure improvements near the routes. For example, establishing the Mississippi River Trail Bicycle Route prompted several communities to apply to MnDOT for a one-time technical assistance program to prepare bicycle friendly community assessments and local Mississippi River Trail marketing action plans, a key first step to understanding how to make their community more bicycle-friendly and attractive to visitors.

Developing State Bicycle Routes requires designation in state statute and recognition by road and trail authorities. MnDOT and local entities undertake signing and infrastructure improvements to enhance the specified route. Once a State Bicycle Route is established, MnDOT includes this route on the State Bicycle Route Map. Publicizing the route makes the general public aware of its existence. MnDOT will measure progress toward State Bicycle Routes based on the number of routes mapped.

Target: Increase the State Bicycle Route System from one to designated routes by 2020.

Performance: In 2012, MnDOT completed the Mississippi River Trail, the state's first designated state bicycle route and United States Bicycle Route. The route follows a combination of roads and trails owned by multiple jurisdictions, including state highways, county roads, city streets, and local and state trails. The route was designated by each of these authorities and mapped by MnDOT.

Source: State statute, MnDOT



Statewide Bicycle System Plan

Chapter Seven

NEXT STEPS

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NEXT STEPS & LESSONS LEARNED

Bicycling is an essential mode of transportation providing low cost and energy efficient travel options all while serving critical connections and offering opportunity and choice in Minnesota's multimodal transportation system. Minnesota has demonstrated that bicycling is a viable and desirable mode of transportation and has been ranked as the #2 state for bicycling 3 years in a row. More Minnesotans in the past year have chosen bicycling as their primary mode of transportation. For those who do not bicycle as a primary means of travel still rely on bicycling to make critical connections in a trip, such as bicycling to the nearest bust stop or recreational enjoyment.

Since the last [Mn/DOT Bicycle Modal Plan](#) (2005) the composition of Minnesota has changed in many ways including societal and demographic trends, population size, and so on, and extensive work was undertaken in 2012 – 2013 to create the [Statewide bicycle planning study](#) which outlines the changes and needs of current population. Through the extensive work of creating the study (2013) and bicycle plan (2016) and extensive engagement process (2014 – 2015), MnDOT has set the framework for identifying opportunities and priorities for bicycling across and along Minnesota roadway network.

Even more so, during the development of the bicycle system plan (2016), for the first time in MnDOT's plan history, this plan helped push some boundaries that have extended to other plans and have made the process more accessible. There were many lessons learned including:

- Public engagement approach
- Focus on local connections
- Strategy implications on environmental justice populations

Starting with public engagement

MnDOT worked actively to engage the public during this planning process, and achieved one of the highest levels of public participation recorded in a statewide planning initiative. Over 4,500 people participated in public outreach activities to provide input to this Plan. Engagement efforts included two series of public open houses in each MnDOT District tailored to provide easier access to working families and others who may otherwise not have the opportunity to attend in person, a series of workshops in each district among MnDOT staff and agency partners, and equivalent online engagement opportunities which included an aggressive undertaking in terms of online and social media efforts.



Focus on local connections

This planning process has broadened MnDOT's perspective towards supporting local and regional bicycle networks. Plan participants rated investments to facilitate utilitarian and local travel two to three times higher than investments for statewide bicycle travel indicating the 70/30 split between local and regional investments. Even though MnDOT roadways form a minority of local and regional bicycling networks, MnDOT has a role in facilitating local trips along or across state highways. MnDOT and its partners will continue to explore and vet potential projects for local improvements through the bicycle district plans which are set to kick off in 2017.

Strategy implications on Environmental Justice Populations

In the past decade, our understanding of disadvantaged populations has evolved and so has the way we conduct planning around environmental justice populations. In addition to the goal of facilitating better bicycle transportation to provide enhanced opportunities for disadvantaged populations, this plan not only ensured that our public engagement open houses were centered around areas of minority and impoverished population concentrations, but it also took a concerted effort to align the top strategies for implementation with the needs of those who rely on the multimodal transportation system. MnDOT recognizes the importance of bicycling as a form of transportation and is reflected in the agency's overall goal of increasing the number of people who walk and bicycle.

This plan will ensure that the strategies proposed reflect what was heard and will benefit those who rely on bicycling to meet their basic needs. Starting with the strategy to address the overwhelming support for local bicycling trip connections and facilities that offer greater separation between people on bicycles and motor vehicles. State trunk highways often create gaps in local bicycling networks and MnDOT is answering this vital call with strategy 1 – to establish local bicycle planning assistance program to connect people to important destinations by bicycle. Other strategies include building bicycle facilities that have the appropriate amount of separation from motor vehicle traffic (strategy 4) and developing bicycle safety plans (strategy 8).

The trailblazing work that was undertaken through the bicycle study (2013) and this plan outline a thoroughly examined 5-year framework and work plan that MnDOT and its partners will undertake to make bicycling a safe, comfortable and convenient for all people. In addition, MnDOT is committed to taking the lessons learned and carrying this plan further along and is already taking the next steps towards developing MnDOT district bicycle plans in 2017. Together with our partners, we commit to continuing the work of making bicycling a viable transportation for many who rely on this mode and to make Minnesota the #1 state for bicycling.

ADVANCING OUR VISION

The Minnesota Statewide Bicycle System Plan presents nineteen strategies that articulate how MnDOT will achieve the plan's vision of making bicycling safe, convenient, and comfortable for all people. Some of these strategies describe activities MnDOT is already undertaking and will continue. Other strategies will be implemented by initiating new activities or by revising existing processes. Together, the strategies documented in the statewide bicycle system plan define MnDOT's intended activities toward realizing the plan's vision.

Next steps to achieve the plan vision of making bicycling a safe, comfortable and convenient transportation option for all have been identified with the Project Advisory Committee and through extensive public engagement. These initiatives are anticipated to be of significant effort in the short-, medium- and long-term and require coordination among entities such as MnDOT, other state, regional and county agencies, and local partners. MnDOT is responsible for implementing plan strategies and have created a work plan with outline activities and timelines for all of the strategies.

The work plan outlines how MnDOT will advance all of the plan's nineteen strategies, with actionable steps to support each strategy. Each strategy is presented in the work plan with discrete actions that will be initiated within the next five years. Many strategies describe long-term or on-going efforts that cannot be "concluded" in a five-year timeframe; the implementation activities are intended to describe measurable and achievable actions that can be taken within this time period to forward long-term outcomes. This work plan is intended to be a living document that will be revised periodically before being updated in a future planning process.

More information and details about the work plan can be found at <http://www.dot.state.mn.us/bike/system-plan/index.html>.



PHOTO COURTESY OF KRENZ



Statewide Bicycle System Plan

Appendices

APPENDIX A: IDENTIFYING STATE BICYCLE ROUTES

MnDOT approached developing the State Bicycle Routes in three phases.

1. Identify important destinations and connections
2. Select preliminary connection corridors
3. Refine State Bicycle Route corridors

Each phase incorporated technical analysis and public input, including:

Phase 1: Identify important destinations and connections

The purpose of Phase 1 was to identify origins and destinations likely to be important statewide bicycle connections.

PUBLIC INPUT

In spring 2014, MnDOT hosted on-line surveys and public workshops asking participants to identify origins and destinations likely to be important to bicyclists. At the public workshops, participants worked in small groups to identify their top five origin-destination pairs (See Chapter 3 for further description). These preferences guided to develop the connection corridors presented in Phase 2.

Phase 2: Select preliminary connection corridors

The purpose of Phase 2 was to identify potential corridors that linked sets of origin-destination pairs. During Phase 2, MnDOT combined the origin-destination pairs identified in Phase 1 with additional criteria to depict potential connection corridors around the state.

TECHNICAL ANALYSIS: CONNECTING DESIRABLE DESTINATIONS AND ROUTES

The U.S. Bicycle Route System Framework establishes criteria for desirable long-distance routes, which informed the selection of connection corridors in Minnesota. These criteria include:

- High tourism potential
- Scenic, historic, cultural resources values
- Connectivity to major metro areas
- Reasonably direct

- Potential to connect states via the U.S. Bicycle Route System
- Even geographic spacing north, south, east and west
- Correspondence to current USBR and state bicycle route system

MnDOT refined this framework to develop a Minnesota-specific approach toward selecting potential connections to form corridors on the State Bicycle Route Network. MnDOT analyzed the following criteria in GIS software to select corridors.

Connection Corridor Selection Criteria

1. COMMUNITIES OF MORE THAN 5,000 PEOPLE AND RESERVATIONS

Recognizing that demand for bicycling (or any mode of travel) is largest in population centers, this analysis identifies all Minnesota communities with a population of 5,000 or greater and American Indian reservations.

2. SIGNIFICANT NATURAL FEATURES

Public input during Phase 1 clearly demonstrated that Minnesotans want to bicycle to and along the state's many natural features such as rivers, lakes, major parks and forests. Therefore, the analysis identifies state parks and national forests and other major public recreation destinations.

3. HIGH PRIORITY DESTINATIONS AND CONNECTIONS

The analysis includes high priority origin-destination pairs identified during Phase 1 public outreach and in consultation with MnDOT district staff.

4. CONNECTIONS TO U.S. BICYCLE ROUTE SYSTEM

The Adventure Cycling Association's National Corridor Plan identifies five prioritized corridors (including the MRT/USBR 45) in the state for the U.S. Bicycle Route System. The analysis includes corridors with potential to connect to the existing MRT and proposed the USBR corridors.

5. DIRECTNESS BETWEEN DESTINATIONS

Direct links between destinations enhance the desirability of bicycling for transportation purposes. The analysis identifies corridors with potential to most directly link destinations.

6. LINKS TO OTHER STATES AND CANADA

The State Bicycle Routes are intended to support recreation and transportation. These activities do not stop at borders, so possible connections to existing trail corridors and large population centers in neighboring states and provinces are included in the analysis.

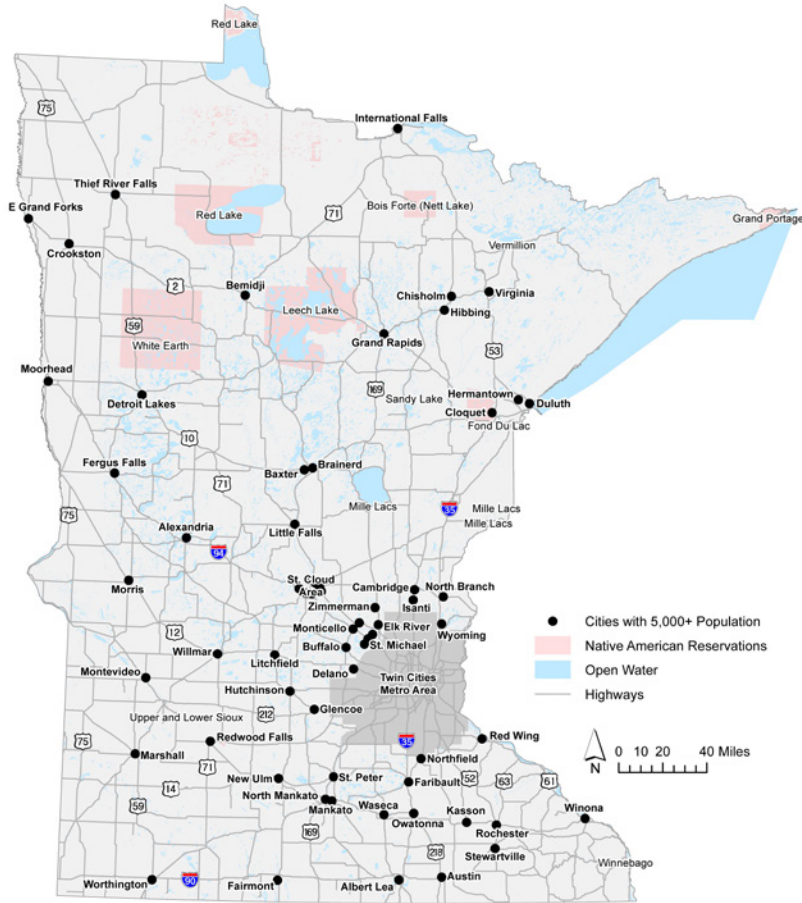


Figure A: Communities of over 5,000 People and Reservations

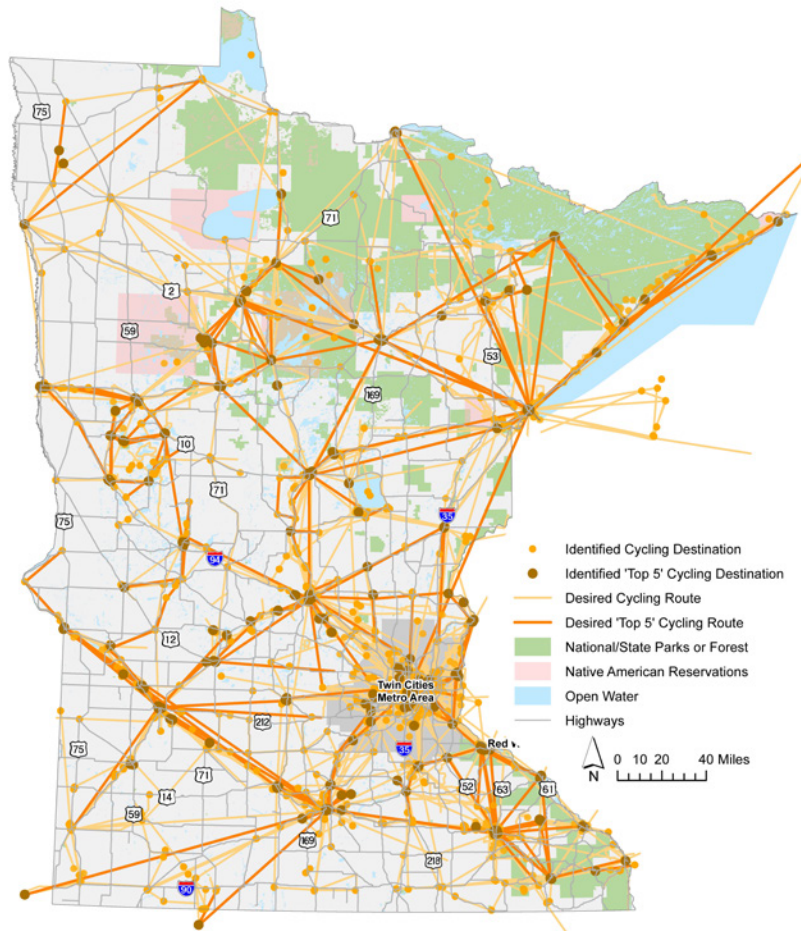


Figure B: High Priority Destinations and Connections

Each of the criteria described above is compiled in the map of preliminary connection corridors at right. Combined, these create a much larger potential network than MnDOT can realistically implement in the foreseeable future. MnDOT initiated Phase 3 to prioritize among connection corridors and refine this map in consultation with partners and stakeholders.

Phase 3: Refine the State Bicycle Route corridors

The purpose of Phase 3 was to review connection corridors on the preliminary State Bicycle Routes identified in Phase 2 and prioritize corridors in the State Bicycle Route Network.

TECHNICAL ANALYSIS: AGENCY REVIEW

MnDOT district staff and local planning partners reviewed each of the connection corridors identified in Phase 2 for potential inclusion in the State Bicycle Route Network. Staff and local partners worked in small groups to modify the corridors based on local knowledge of roadway conditions, desirable origins and destinations, and existing bicycling routes.

PUBLIC INPUT: REVIEW AND PRIORITIZE POTENTIAL CORRIDORS

MnDOT shared the draft State Bicycle Routes at public open houses in each district and via an on-line mapping tool. MnDOT asked participants to prioritize which corridors were most important. MnDOT asked participants to identify corridors that served important connections from a statewide perspective and those corridors that were important for bicycling within each district but less likely to have statewide significance. Figure D illustrates how the public prioritized these connections.

ENVIRONMENTAL JUSTICE ANALYSIS

MnDOT is committed to facilitating better bicycle transportation that provides enhanced opportunities to all. A set of 19 strategies and corresponding actions (Chapter 7) have been developed to help guide the State and achieve the goals of this plan.

MnDOT conducted a number of engagement activities throughout the development of this plan in which individuals and partner agencies and organizations were invited to provide input and give feedback. In each of these activities, participants were given the opportunity to provide information on a number of topics, including the type of facilities participants prefer and where should MnDOT direct its bicycle investments. Public engagement undertaken as part of the 2016 Minnesota Bicycle System Plan is described in further



Figure C: Preliminary Corridors

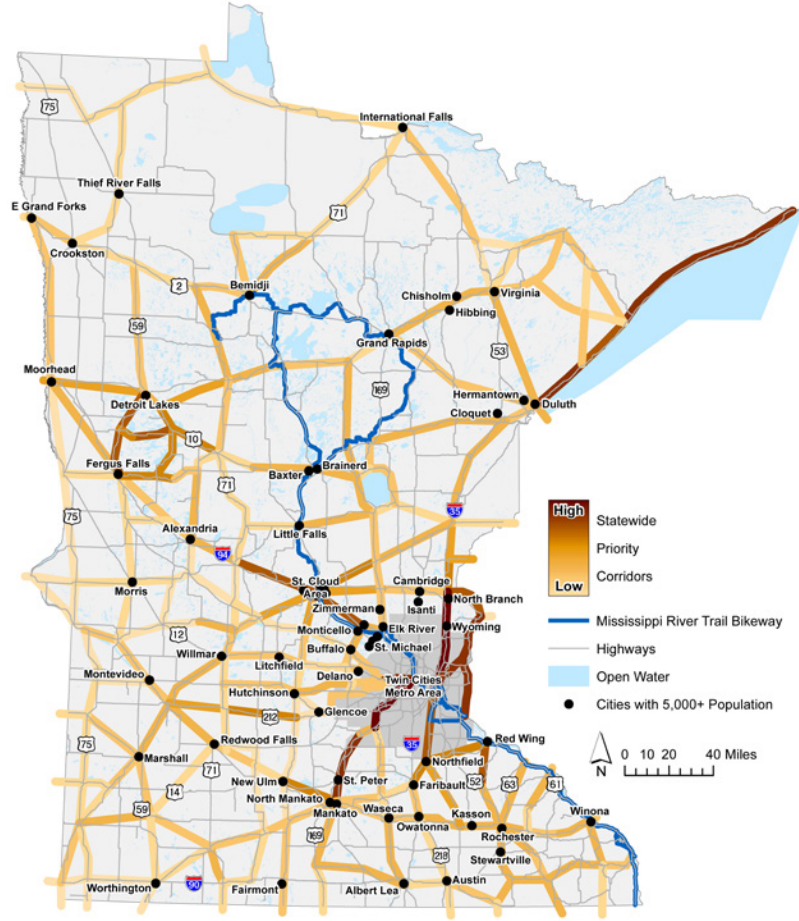


Figure D: Prioritized Corridors

details in Chapter 1. In addition, engagement was tailored in a way to make it easier for specific environmental justice populations to provide input, starting with the:

- Location – public engagement workshops were located in population centers with high concentration of minority and impoverished populations, such as: Duluth, Bemidji, Rochester, and Redwood Falls.
- Format – the open houses were formatted as workshops, so it was easier for people to drop in and out without having to stay for the duration of the entire workshop.
- Time – the workshops were scheduled during shoulder time hours of 5 – 7PM so people who are transitioning between shifts can still attend.
- Flexible – in addition to being centrally located, the workshops also offered kid friendly activities and hearty snacks so parents are able to still attend with their children in tow.

So why is environmental justice crucial to planning at MnDOT?

Presidential Executive Order 12898, issued in 1994, directs each federal agency to “make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies and activities on minority and low-income populations.” The order builds on Title VI of the Civil Rights Act of 1964, which prohibits discrimination on the basis of race, color or national origin. The order also provides protection to low-income groups. Minority and low-income populations are defined to include:

- Black – a person having origins in any of the black racial groups of Africa.
- American Indian and Alaskan Native – a person having origins in any original people of North America and who maintains cultural identification through tribal affiliation or community recognition.
- Asian – a person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent.
- Native Hawaiian or Other Pacific Islander – a person having origins in any of the original people of Hawaii, Guam, Samoa, and other Pacific Islands.
- Hispanic – a person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race.
- Low-income – a person whose household income (or in the case of a community or group, whose median household income) is at or below the U.S. Department of Health and Human Services poverty guidelines.

While not specifically identified by Title VI or the Executive Order, MnDOT chose to expand its environmental justice analyses to include persons age 65 and older, persons age 17 and younger, persons with limited English proficiency, and households with zero vehicles because these additional population groups have unique transportation needs.

For a detailed discussion of the state's environmental justice populations, refer to the 2012 Statewide Multimodal Transportation Plan.

How did MnDOT approach the analysis of environmental justice and the implications of the plan's strategies?

After identifying the draft State Bicycle Route Corridors, MnDOT conducted additional analysis to identify how proposed corridors may impact environmental justice among the state's disadvantaged populations. MnDOT analyzed census tracts to identify locations of minority populations documented in the 2010 Census and impoverished populations documented in the 2006-2010 5-Year American Community Survey.

The smallest unit for which population data is provided by the U.S. Census Bureau is census tract. In many of Greater Minnesota's sparsely populated areas, census tracts are fairly large in size. Therefore, they can misrepresent actual concentrations of disadvantaged populations because it is difficult to know where within the census tract a population lives. Since there is no smaller geographic division for which this population data is available, it is not possible to determine locations of disadvantaged populations at a more refined scale than the census tract. However, MnDOT used two sources of data to better-estimate locations of disadvantaged populations within census tracts. One is the 2011 National Land Cover Database, which identifies forested areas; the other is Census block groups, which indicates no residences. MnDOT assumed that both of these geographic divisions cover land areas without population concentrations. MnDOT also assumed the disadvantaged population for each Census tract was likely to be located somewhere in the remainder of the tract after these two areas were subtracted.

Figure E depicts concentrations of minority and impoverished populations in Minnesota. Overall, the state's minority population is approximately 14.5 percent, and the percentage of the statewide population living in poverty is approximately 10.6 percent. The map depicts census tracts where minority levels or levels of poverty exceed concentrations of these groups statewide.

Figure F shows the prioritized corridors in the State Bicycle Route Network overlaid on the concentrations of disadvantaged populations presented in Figure E. The proposed bicycle routes provide connections, which has been established to be 2 miles of what most people are willing to bicycle and consider a short bicycle commute trip, to the majority of areas with concentrations of disadvantaged populations.

The prioritization established for the State Bicycle Route Network will serve as a reference during district led projects and planning and is meant to provide guidance for local partners. Additional environmental Justice analysis will be completed as projects move forward. MnDOT will work to avoid, minimize and mitigate any negative impacts. For further information on implications of strategies 1 – 4 since this emphasizes the importance of the local connections, please refer to chapter 7, Strategy implications on Environmental Justice Populations.

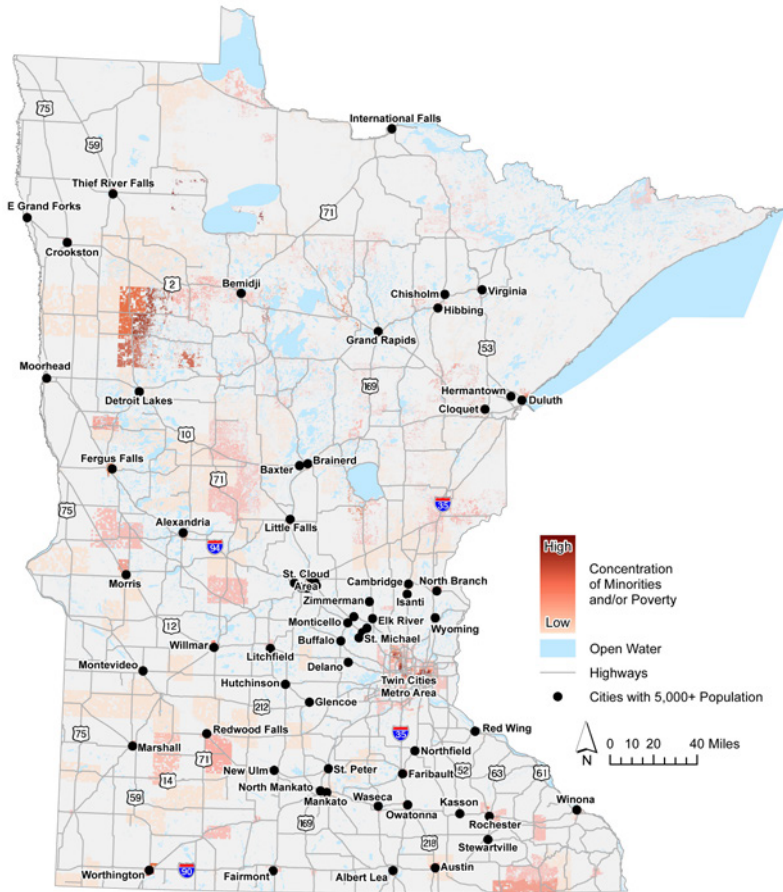


Figure E: Locations of Disadvantaged Populations



Figure F: Locations of Disadvantaged Populations and Prioritized Corridors

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APPENDIX B: PLANNING IN CONTEXT

The Statewide Bicycle System Plan advances recent national, state, regional and local bicycle planning initiatives. This provides an overview of the context in which this plan was developed, highlighting its relationship to:

- Intended audiences
- The Statewide Bicycle Planning Study
- MnDOT's family of plans
- MnDOT's relationships with national, state, regional, and local planning efforts and policies
- Past MnDOT bicycle plans
- Federal planning requirements: 23 USC 135(d)(1); 23 CFR 450.206(a)
- State Planning Goals: [Minnesota State Statute 174.01](#)

Statewide Bicycle System Plan Audience

The Statewide Bicycle System Plan is intended to address a broad audience while responding to agency-specific needs to ensure its successful implementation by MnDOT staff. This section describes the plan's intended audience in more detail.

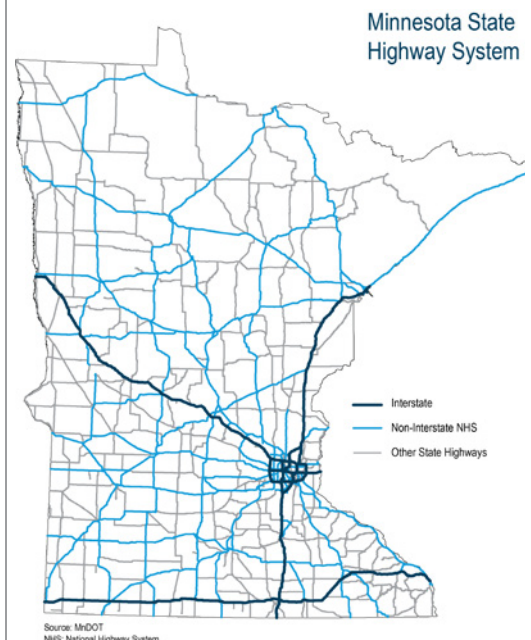
MnDOT's primary jurisdiction is the state trunk highway network. As a result, the plan focuses on the state trunk highway network and its role in national, state, regional, and local bicycle networks.

Although state trunk highways are the primary roadways over which MnDOT has jurisdictional control, the agency's influence extends beyond the trunk highway network through guidance it provides in documents like the [MnDOT Bicycle Route Design Manual](#) and partnerships with other agencies in planning and project development. While most specific recommendations and implementation strategies identified in this Plan focus on a MnDOT audience, areas where MnDOT has influence are also addressed.

MnDOT's organizational structure supports a Central Office and eight District Offices. This plan recognizes the different roles staff perform within this structure and makes recommendations specific to each.

MNDOT CENTRAL OFFICE

MnDOT Central Office staff guide the agency's policy and provide implementation tools for district staff in planning and investment decisions. The plan is intended to inform related plans such as the Strategic Highway Safety Plan, the Statewide Multimodal Transportation Plan and the Minnesota State Highway Investment Plan. Together, these plans inform and influence



decision-making among planners, engineers and project managers. The plan also prioritizes the Central Office Bicycle and Pedestrian Section's work on bicycle-related initiatives.

MNDOT DISTRICTS

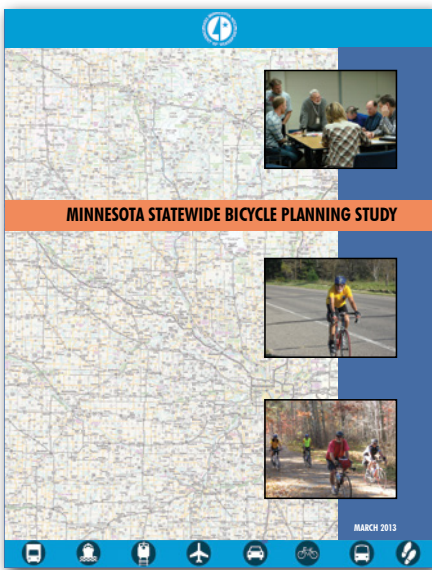
MnDOT district staff focus on planning, design, construction, maintenance and operation of the state trunk highway network. Because these project decisions are tailored to each district, the plan offers guidance to district staff while recognizing that implementation strategies will vary. These recommendations will inform district planners and engineers who oversee programs and regional investments as well as project managers who develop the scope, cost and design for individual projects.

Statewide Bicycle Planning Study

MnDOT's [Statewide Bicycle Planning Study](#), completed in 2013, identified key issues and opportunities to support bicycling in Minnesota and set the framework for this plan. The study reviewed MnDOT's planning policies and project development practices and recommended more proactive and uniform processes for considering and implementing bicycle investments on MnDOT projects.

The study identified focus areas to be addressed in the Statewide Bicycle System Plan, including:

- Provide a clear mandate to integrate bicycle planning into early stages of project development
- Revise policy language to provide clearer direction to address bicycling regularly in the agency
- Develop a statewide bicycle plan and district bicycle plans to establish a priority network for implementation
- Provide information about local and regional level bicycle route planning to MnDOT districts
- Develop clear and consistent resources and tools to better evaluate need, demand and costs for bicycle projects
- Develop protocol and processes to support district staff on projects, including support for regional and local outreach



MnDOT Family of Plans

MINNESOTA GO VISION

Adopted in November 2011, the [Minnesota GO Vision](#) was developed to better align Minnesota's transportation system with residents' expectations for quality of life, economy and natural environment.

The vision and guiding principles address all forms of transportation, including bicycling. This vision is wide-ranging and implementation is a shared responsibility that includes the entire transportation system beyond MnDOT's jurisdiction.



MINNESOTA GO VISION FOR TRANSPORTATION

Minnesota's multimodal transportation system maximizes the health of people, the environment and our economy.

The system:

- Connects Minnesota's primary assets—the people, natural resources and businesses within the state—to each other and to markets and resources outside the state and country
- Provides safe, convenient, efficient and effective movement of people and goods
- Is flexible and nimble enough to adapt to changes in society, technology, the environment and the economy

QUALITY OF LIFE

The system:

- Recognizes and respects the importance, significance and context of place—not just as destinations, but also where people live, work, learn, play and access services
- Is accessible regardless of socioeconomic status or individual ability

ENVIRONMENTAL HEALTH

The system:

- Is designed in such a way that it enhances the community around it and is compatible with natural systems
- Minimizes resource use and pollution

ECONOMIC COMPETITIVENESS

The system:

- Enhances and supports Minnesota's role in a globally competitive economy as well as the international significance and connections of Minnesota's trade centers
- Attracts human and financial capital to the state

GUIDING PRINCIPLES

The following principles will guide future policy and investment decisions for all forms of transportation throughout the state. These are listed in no particular order. The principles are intended to be used collectively.

Leverage public investments to achieve multiple purposes:

The transportation system should support other public purposes, such as environmental stewardship, economic competitiveness, public health and energy independence.

Ensure accessibility: The transportation system must be accessible and safe for users of all abilities and incomes. The system must provide access to key resources and amenities throughout communities.

Build to a maintainable scale: Consider and minimize long-term obligations—don't overbuild. The scale of the system should reflect and respect the surrounding physical and social context of the facility. The transportation system should affordably contribute to the overall quality of life and prosperity of the state.

Ensure regional connections: Key regional centers need to be connected to each other through multiple modes of transportation.

Integrate safety: Systematically and holistically improve safety for all forms of transportation. Be proactive, innovative and strategic in creating safe options.

Emphasize reliable and predictable options: The reliability of the system and predictability of travel time are frequently as important or more important than speed. Prioritize multiple multimodal options over reliance on a single option.

Strategically fix the system: Some parts of the system may need to be reduced while other parts are enhanced or expanded to meet changing demand. Strategically maintain and upgrade critical existing infrastructure.

Use partnerships: Coordinate across sectors and jurisdictions to make transportation projects and services more efficient.

STATEWIDE MULTIMODAL TRANSPORTATION PLAN

Based on the Minnesota GO Vision, the [Statewide Multimodal Transportation Plan](#) provides a transportation policy framework to guide Minnesota partners and transportation modes for 20 years. The SMTP focuses on multimodal solutions that ensure a resilient transportation system and projects that achieve high return on investment while considering geographic context and integration between land use and transportation systems.

The Statewide Multimodal Transportation Plan establishes guidance and priorities for state transportation decisions. System modal plans, including the Statewide Bicycle System Plan, provide more detailed direction for each mode in the context of SMTP guidance. The graphic below depicts this relationship.

Ultimately, transportation decisions are represented in the [Statewide Transportation Improvement Program](#). The STIP lists priority projects and spending over the upcoming four years. It is updated annually. To keep pace with changing priorities, opportunities, and challenges, the SMTP and the different system plans are updated every four to six years. This plan will inform planning work for the upcoming SMTP update in January 2017.

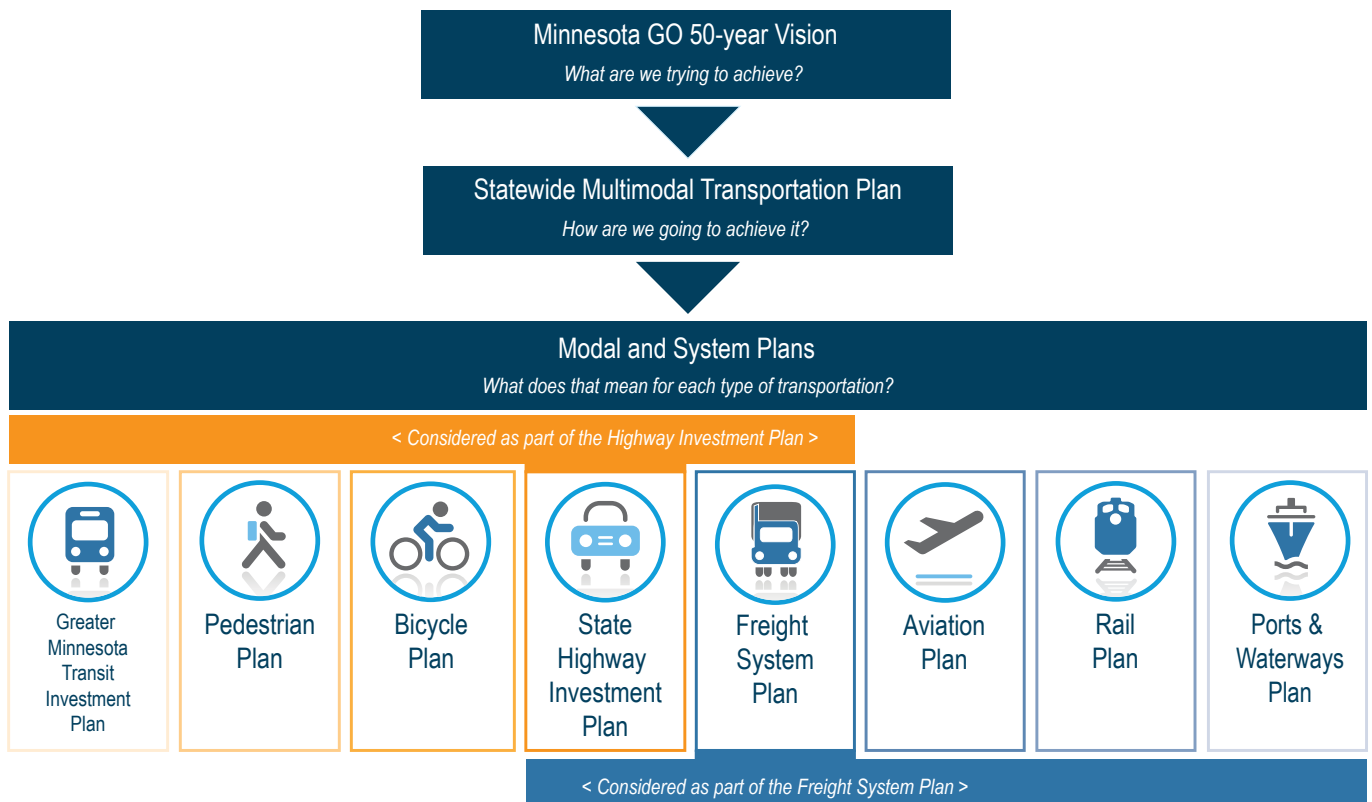
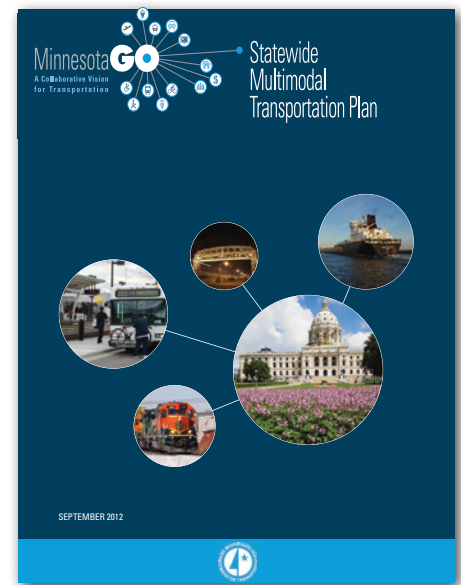
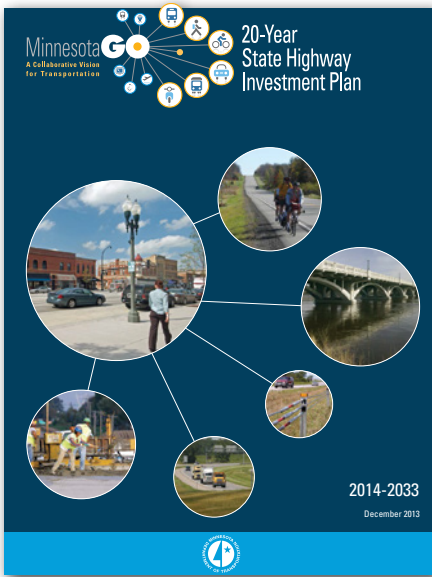


IMAGE SOURCE: MINNESOTA STATEWIDE MULTIMODAL TRANSPORTATION PLAN



STATE HIGHWAY INVESTMENT PLAN (MNSHIP)

The [Minnesota State Highway Investment Plan 2014-2033](#) supports the guiding principles from the Minnesota GO vision and links the policies and strategies in the Statewide Multimodal Transportation Plan to improvements on the state trunk highway system.

MnSHIP identifies investment targets for the next 20 years, including targets for bicycle infrastructure investment. Specifically, MnSHIP identifies a \$10 million annual investment target for years 2014-2033 for bicycle infrastructure.

Strategies identified in MnSHIP to support bicycling on state highways include:

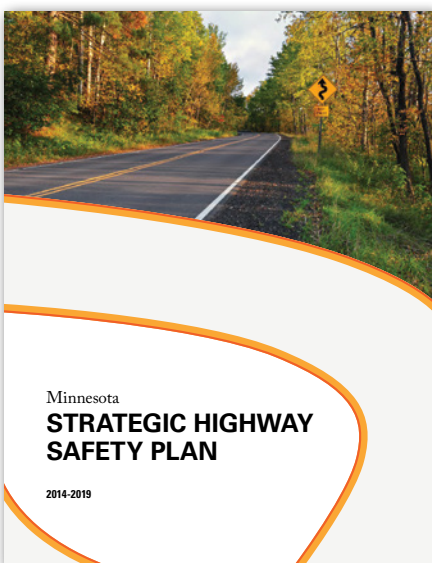
- Construct bicycle infrastructure concurrently with pavement and bridge projects to cost-effectively maintain and improve the bicycle network
- Make stand-alone investments on state highways within identified priority bicycle networks
- Support regional and local efforts to increase the share of non-motorized commuting trips through the development and maintenance of efficient, safe, and appealing non-motorized transportation systems
- Coordinate education and bicycle planning efforts with transportation partners

The Statewide Bicycle System Plan guides how MnDOT spends bicycle infrastructure funds on the state trunk highway system to meet targets identified in MnSHIP. This is described in more detail in Chapter 8 of this plan. Findings from this plan will also inform guidance created through the upcoming MnSHIP update, which will be complete in early 2017.

STRATEGIC HIGHWAY SAFETY PLAN

MnDOT updated the state's [Strategic Highway Safety Plan](#) in 2014 in collaboration with its partners in the state's Toward Zero Deaths program. The Plan provides insight and direction on how to reduce traffic-related crashes that involve motor vehicles on all Minnesota roads. The SHSP sets an overall direction for future safety strategies to maximize the reduction of fatal and serious injury crashes and sets performance measures to track progress toward that goal. The plan identifies the nature of bicycle crashes in the state. The plan includes detailed statistics on the location, roadway type, time of day, and demographics of bicyclist crashes with motor vehicles. The plan compiles bicycling safety strategies from other adopted plans. Strategies are:

- Educational and promotional programs to increase awareness of and respect for the rights of bicyclists and to educate bicyclists on the proper and safe use of public roadways



- Promote local pedestrian and bicycle safety education, e.g. Share the Road
- Improve operation of bicycle facilities at signalized intersections
- Promote traffic calming measures
- Promote roadway designs that improve crossings for people who bicycle

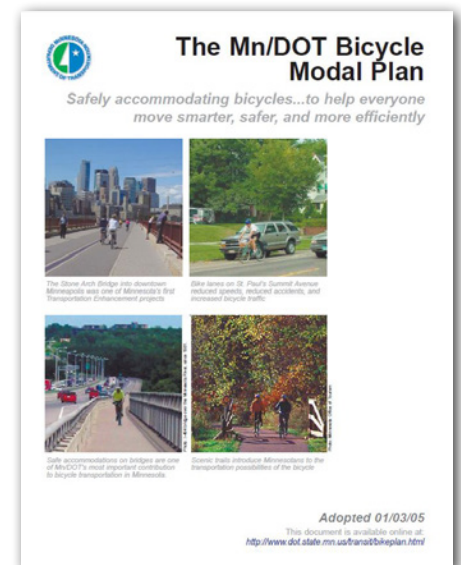
MNDOT BICYCLE MODAL PLAN (2005)

The 2005 MnDOT Bicycle Modal Plan is MnDOT's most recent bicycle system plan. It preceded the Bicycle Trunk Highway System Plan (1987) and the Comprehensive Bicycle Plan, Plan B (1992).

The 2005 Bicycle Modal Plan identified strategies for elevating bicycling in the state. The plan was developed prior to a change in MnDOT's structure and lacked an institutional framework to support it. For example, the plan recommended that MnDOT districts regularly invest in bicycle-related infrastructure projects, but no formal requirement or funding source was identified. This was addressed in 2013 by MnSHIP. MnSHIP's investment recommendations for bicycling now have financial implications through measuring bicycle infrastructure targets.

Some key findings from the Bicycle Modal Plan were incorporated into MnDOT's current practices. These include:

- Coordination and partnerships: these recommendations evolved to scoping process improvements with partner agencies described in the next section
- Funding: these recommendations evolved into MnSHIP categories for regular bicycle reporting and spending targets and tracking
- Scenic Bicycle Route system: this evolved into more robust public involvement initiatives and a new framework for considering national, state, regional, and local bicycle trips



State, Regional, Local, and National Bicycle Planning Initiatives and Partners

STATE INITIATIVES

Complete Streets

In November 2013, MnDOT adopted a [Complete Streets policy](#) to consider the needs of people who walk; ride bicycles; use transit; or drive passenger vehicles, large trucks and emergency vehicles on every roadway project undertaken by the department. MnDOT policy now requires a Complete Streets Project Report for all MnDOT construction projects. These reports document MnDOT's consideration of each transportation user group on every project. Information gathered in these reports enables MnDOT to track and monitor the department's policy implementation. In addition, reporting helps identify needs for additional resources such as education or guidance to strengthen the scoping process to improve implementation of the broader policy. This has resulted in the agency moving towards better addressing all modes in scoping.

Safe Routes to School

[Safe Routes Minnesota](#) is administered by MnDOT and provides funding to community and school groups to make improvements to the routes children use to walk and bicycle to school.

To increase opportunities for children to walk and bicycle to school safely, the 2005 federal transportation bill, SAFETEA-LU, provided funding for Safe Routes to School in all 50 states. Congress created SRTS to help reverse the nationwide increase in childhood obesity and inactivity. The program has numerous additional benefits to local communities including helping students exercise, reducing traffic congestion, improving air quality and helping children arrive to school focused and ready to learn.

In 2013, the Minnesota State Legislature allocated \$250,000 per year for Safe Routes to School non-infrastructure programs. In 2014, the legislature allocated \$1 million per year to the Safe Routes to School infrastructure grant program and increased the non-infrastructure funds to \$500,000 per year.

Minnesota Department of Health

The Minnesota Department of Health organizes interdisciplinary groups around the state through Local Public Health and the [Statewide Health Improvement Program](#), which supports community access to active living (including active transportation) through policy, system and environmental changes. Many SHIP-funded communities have developed active living plans that identify local bicycling needs. Much of the work through Local Public Health with SHIP funds was coordinated by



Regional Development Organizations (described in the following section) and partnerships with local active living groups. These coalitions had a strong presence in the partner engagement for this Plan.

In addition to SHIP, MnDOT collaborates with MDH on a number of initiatives including Safe Routes to School, Bikeable and Walkable Community workshops, and the Bicycle Traffic Monitoring Program.

Minnesota Department of Natural Resources

[Minnesota Statute Section 86A.09](#) requires the Minnesota Department of Natural Resources to prepare a management or master plan for each state park, state recreation area and state trail. DNR Division of Parks and Trails staff typically prepare master plans for state trails, which are developed through an open and public process.

The DNR Division of Parks and Trails has a statewide system plan to prioritize investments in state trails around the state by using strategic criteria. It was complete in 2015.

MnDOT district staff work with the DNR in project scoping for both MnDOT and DNR projects to ensure cooperation and coordination in addressing transportation and trail needs on state right of way.

The DNR is also undertaking new strategies for state trail development, including an emphasis on connecting towns and communities to state trails. This is an opportunity for collaboration with MnDOT in cases where a trunk highway can serve as a short-term accommodation where a trail currently does not exist or as a long-term connection for a segment of a trail where it is not feasible to establish an off-road corridor. This relationship is further described in Chapters 5 and 6.

REGIONAL PLANNING INITIATIVES

Regional planning plays an important role in Minnesota's bicycle system. Regional planning facilitates coordination between state and local efforts.

MnDOT Districts

The Minnesota Department of Transportation is made up of regional administrations that plan and construct transportation improvements along the Trunk Highway System. District offices oversee regional transportation projects and assist with creating better pedestrian environments. For example, in District 7, MnDOT staff helped implement a wider shoulder along State Highway 109 from Wells to Winnebago, which provides a safer facility for people walking and bicycling along this stretch. District offices are key to implementing safer pedestrian facilities along state roads. In drafting this plan, several conversations and meetings were held with district staff to understand the needs and opportunities for better bicycle planning throughout Minnesota.



Regional Development Organizations

Minnesota's nine Regional Development Organizations are key partners in statewide transportation planning and programming. Each RDO works on a variety of planning and programming activities with their local MnDOT District and Area Transportation Partnership. These activities consist of providing technical assistance to local communities for transportation planning and program development, ATP coordination, implementation of the Transportation Alternatives Program solicitation and providing a regional voice in statewide planning activities. Individual RDOs also contract with MnDOT for specific services such as Safe Routes to School and Scenic Byway planning. MnDOT contracts with RDOs for trunk highway planning and coordination planning.

Metropolitan Planning Organizations

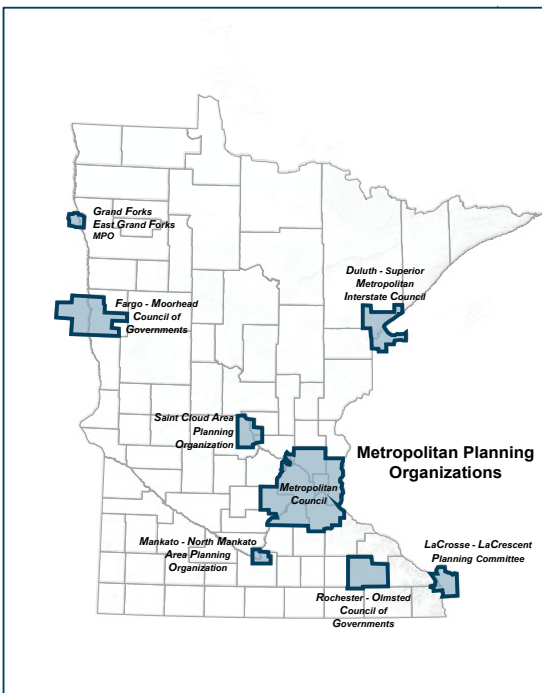
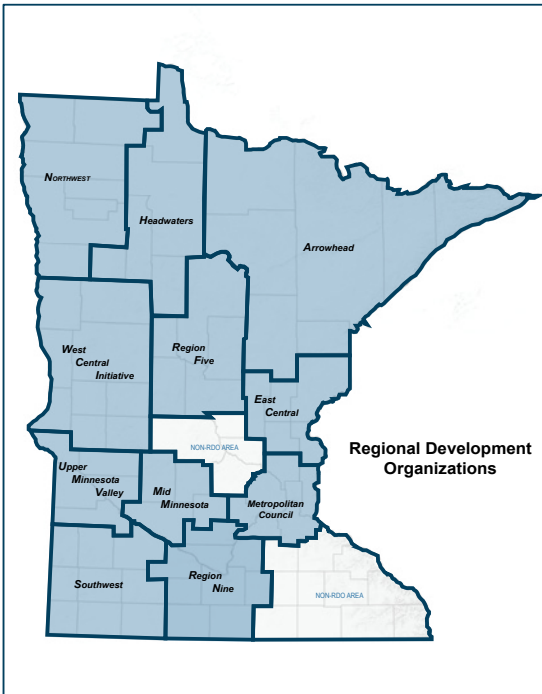
Minnesota's eight Metropolitan Planning Organizations are designated by federal law and have the lead responsibility for the development of metropolitan areas. They also provide a forum for regional transportation issues. MPOs develop and maintain a long-range multimodal metropolitan transportation plan and a short-range transportation improvement program. Some MPOs have also established separate committees that specifically address bicycle and pedestrian issues. MPO staff serves as technical experts and participate in a variety of transportation-related activities such as corridor studies; Safe Routes to School planning; bicycle and pedestrian counting programs; and other regional and statewide planning and programming initiatives.

Some of Minnesota's seven MPOs have adopted regional bicycle plans. Recent examples are the Metropolitan Council's Regional Bicycle Transportation Network as adopted in the 2040 Transportation Policy Plan (2015) and Rochester-Olmsted's Bicycle Master Plan (2012).

LOCAL PLANNING INITIATIVES

Bicycle planning at the local level ranges widely throughout the state. When considering local bicycle connection needs, transportation agencies are much better positioned to respond when these are identified in a formally-adopted plan. Local bicycle plans are not required, except as part of multimodal planning within MPO jurisdictions. Where local or regional agencies initiate bicycle planning, MnDOT staff are available to provide technical assistance (e.g. participate as a member of an advisory committee) and/or to review these plans to provide substantive input on the role that state trunk highways play in existing and proposed local bicycling networks.

NATIONAL PLANNING INITIATIVES



United States Bicycle Route System

The [U.S. Bicycle Route System](#) is a proposed nationwide network of bicycle routes. The network will link urban, suburban, and rural areas using a variety of appropriate bicycling facilities.

The U.S. Bicycle Route System is developing through a combination of local, state, and regional partnerships between transportation agencies, bicycle and trail organizations, and volunteers. State departments of transportation are responsible for submitting applications for official numbered designation to the American Association of State Highway and Transportation Officials' Special Committee on U.S. Route Numbering.

To date, 11,053 miles of U.S. Bicycle Routes have been established in 23 states. Presently, more than 40 states are working to create U.S. bicycle routes.

In 2013, the Mississippi River Trail in Minnesota was formally designated as a part of USBR 45. This Plan will identify other corridors in the state to align with the USBRS plan.

AASHTO Guide for the Development of Bicycle Facilities

The AASHTO Guide for the Development of Bicycle Facilities includes a chapter dedicated to bicycle planning. The AASHTO Guide stresses the importance of integrating planning for existing and potential bicycle use with overall transportation planning. MnDOT consulted the AASHTO Guide throughout the planning process for guidance related to planning bicycle transportation networks and technical analysis tools.

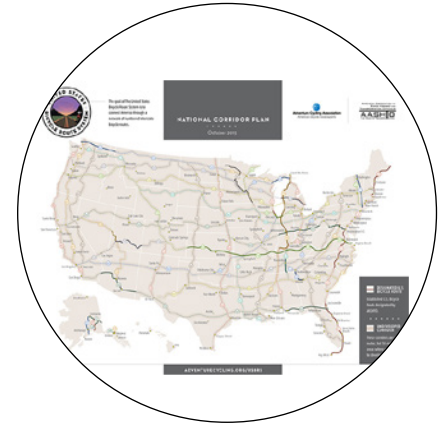
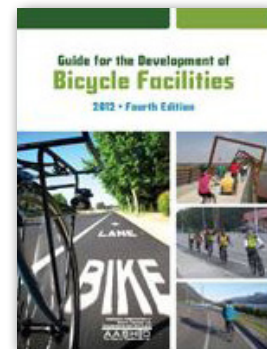


Image Source: Adventure Cycling Association, October 2015



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APPENDIX C: ONLINE SURVEY SUMMARY REPORT

Survey Results

Minnesota residents were invited to complete an online survey during the period of April and May 2014.

The survey was widely shared by MnDOT using a variety of methods, and made available on the project's website (www.dot.state.mn.us/bike/). The goal of the survey was to learn about Minnesota residents' bicycling habits, their priorities for future MnDOT projects, and their preferences for a wide variety of bicycle facility types/scenarios. The survey also asked participants to share demographic, socio-economic and location information.

In total, there were 1,645 respondents who completed at least some portion of the survey. There were 1,224 respondents who completed the entire survey. The number of responses received for each of the questions is included in the summary below.

Organization of Survey

The survey is organized into five sections:

- The first section gathers participants' bicycling habits including destinations, frequency, preferred facilities and seasonal variation. This section is analogous to the "Icebreaker Questionnaire" that was given to participants at the MnDOT district workshops.
- The second section is used to gather participants' anticipated level of comfort if riding a specific facility in a given scenario. This section is analogous to the "Comfort Continuum" dot exercise held at the MnDOT district workshops. The average score per facility was calculated by the same method.
- The third section is used to provide feedback for MnDOT policy priorities. This section is analogous to the "Priority Improvements" dot exercise held at the MnDOT district workshops.
- The fourth section is used to gather demographic and socio-economic information from participants. This section also includes location information, such as city/township, county, and zipcode, and is used to determine the distribution of participants across the state.

Section 1: bicycling habit questions

The first section of the survey was used to gather participants' bicycling habits including destinations, frequency, preferred facilities and seasonal variation.

Q1-1: FREQUENCY AND TYPE OF DESTINATION

"From May to October, how often do you ride a bike to go to the following destinations?"

- 1,360 responses were received for this question.
- Almost 37% (521 out of 1,416) of all respondents indicated they bicycle for recreation, health or exercise 2-3 days a week from May to October.
- 71% (1,005 out of 1,416) of all respondents bicycle for recreation, health or exercise at least 2-3 days a week from May to October.
- Almost 26% (351 out of 1,374) of all respondents indicated they bicycle for school or work 4 or more days a week from May to October.
- 5% (619 out of 1,374) of all respondents bicycle for school or work at least 2-3 days a week from May to October.

Q1-1: School or Work

- 45% (619 out of 1,374) of all respondents bicycle for school or work at least 2-3 days a week from May to October.
- Over 55% (747 out of 1,374) of all respondents bicycle for school or work at least once a week from May to October.

Q1-1: Shopping or Errands

- 33% (452 out of 1,367) of all respondents bicycle for shopping or errands at least 2-3 days a week from May to October.
- Almost 57% (778 out of 1,367) of all respondents bicycle for shopping or errands at least once a week from May to October.

Q1-1: Recreation, Health, or Exercise

- Almost 71% (1,005 out of 1,416) of all respondents bicycle for recreation, health or exercise at least 2-3 days a week from May to October.
- Over 89% (1,262 out of 1,416) of all respondents bicycle for recreation, health or exercise at least once a week from May to October.

Q1-1: Dining or Entertainment Destinations

- Almost 21% (281 out of 1,363) of all respondents bicycle to dining or entertainment destinations at least 2-3 days a week from May to October.
- Over 41% (570 out of 1,363) of all respondents bicycle to dining or entertainment destinations at least once a week from May to October.

Q1-1: Visit Friends or Relatives

- More than 22% (305 out of 1,365) of all respondents bicycle to visit friends or relatives at least 2-3 days a week from May to October.
- More than 44% (609 out of 1,365) of all respondents bicycle to visit friends or relatives at least once a week from May to October.

Q1-1: Community Events / Religious Institutions

- 13% (178 out of 1,360) of all respondents bicycle to community events / religious institutions at least 2-3 days a week from May to October.
- 31% (422 out of 1,360) of all respondents bicycle to community events / religious institutions at least once a week from May to October.

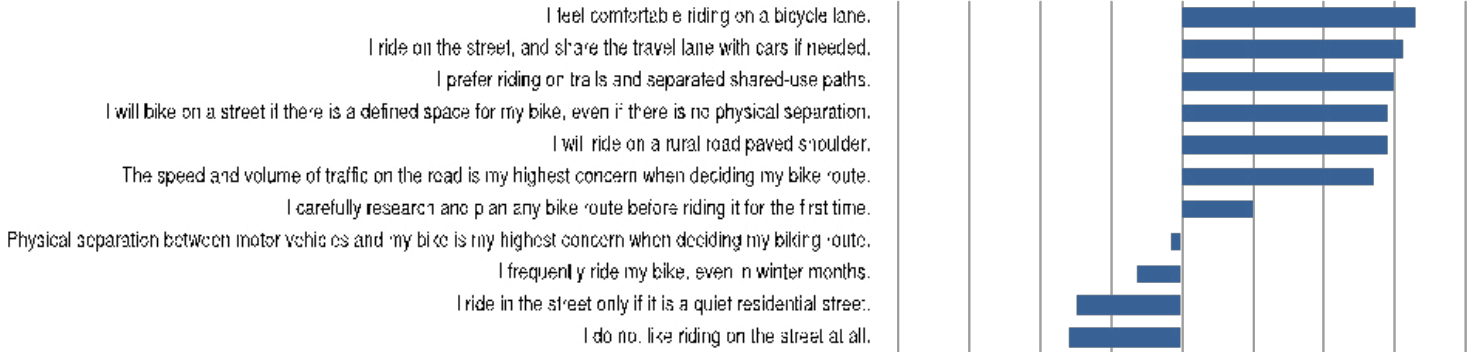
Q1-2: FREQUENCY OF RIDING IN WINTER

“Compared to the period between May and October, how often do you ride your bike during the winter?”

- 1,436 responses were received for this question.
- Nearly 53% (781 out of 1,436) of all respondents indicated they don't ride in the winter months.
- Almost 7% (93 out of 1,436) of all respondents indicated they ride about the same as in the warmer months.

Q1-3: DIFFERENT RIDING HABITS

Respondents were asked how strongly they agreed or disagreed with a series of statements. The following chart identifies, on average, how strongly respondents agreed or disagreed.



The number of responses to each of the questions grouped here ranged from 1,332 to 1,347, depending on the question.

There was a high level of agreement with the following statements. Answers of “agreed” or “strongly agreed” were used to indicate agreement.

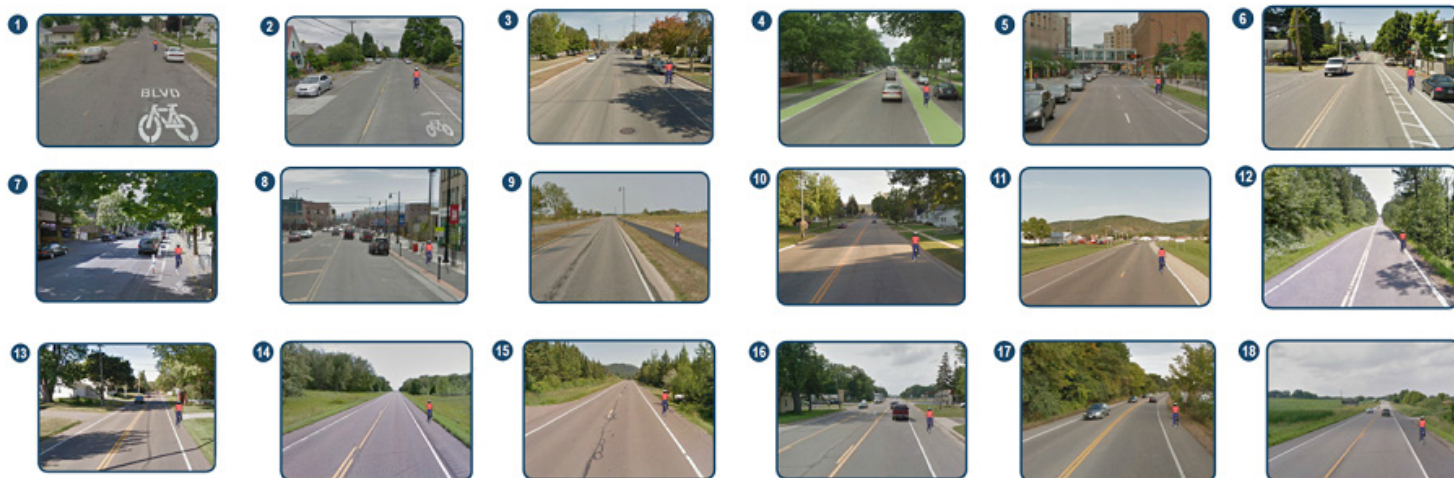
- “I feel comfortable riding on a bicycle lane.” 88% (1,187 out of 1,347) of all respondents were in agreement.
- “I ride on the street, and share the travel lane with cars if needed.” Nearly 87% (1,168 out of 1,347) of all respondents were in agreement.

There was a high level of disagreement with the following statements. Answers of “disagreed” or “strongly disagreed” were used to indicate disagreement.

- “I do not like riding on the street at all.” Almost 72% (958 out of 1,339) of all respondents were in disagreement.
- “I ride in the street only if it is a quiet residential street.” 71% (958 out of 1,345) of all respondents were in disagreement.

Section 2: Comfort Continuum

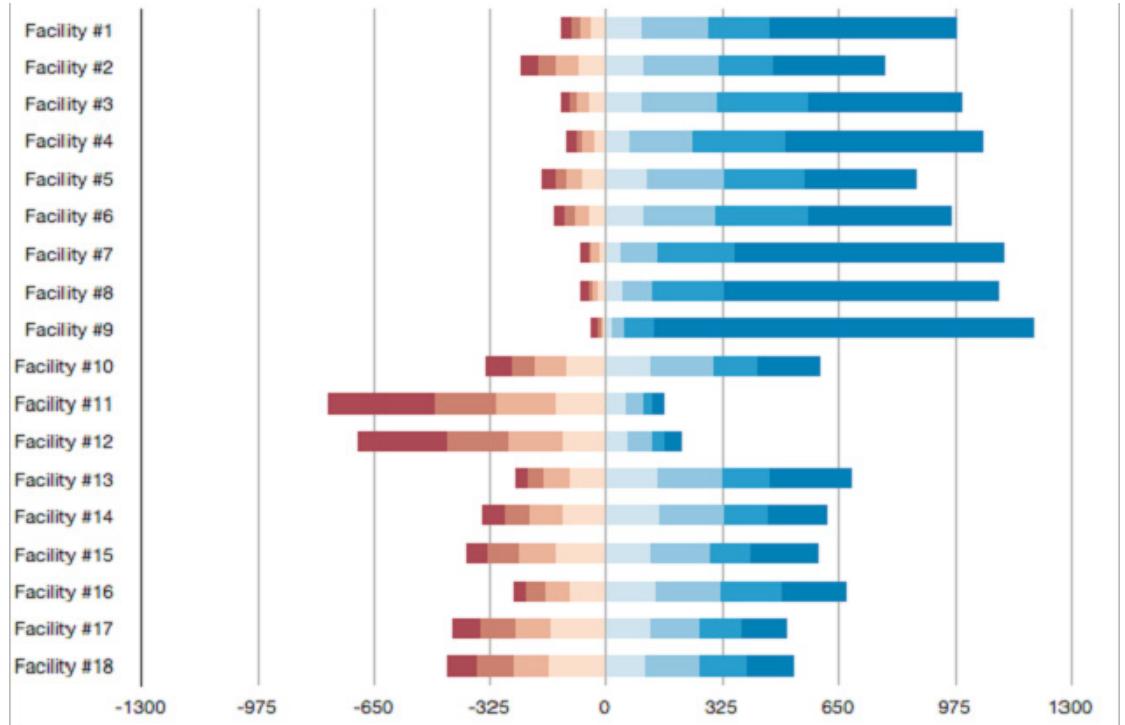
The second section of the survey was used to gather participants' anticipated level of comfort if riding a specific facility in a given scenario. The scenario was depicted with an image and some additional information about the traffic volumes, traffic speed, width of shoulder or lane and parking conditions. The 18 images used are shown below. In each image the same graphic of a bicyclist is used, indicating where the respondent might ride their bicycle.



Participants chose their level of anticipated comfort on a scale ranging from “I would feel very comfortable riding here” to “I would feel very uncomfortable riding here.” Participants could also indicate if they would not consider riding on that facility at all. A response of “I would not ride here at all” was given a score of zero. To calculate an average overall score for each facility, number values were assigned to each response option along the continuum, from “I would feel very uncomfortable riding here” (-8 score) to “I would feel very comfortable riding here” (+8 score). The count of responses were multiplied by their score, added, and then divided by the total count of all responses to calculate the average overall score.

The chart on the following page summarizes respondents' level of comfort with the 18 scenarios depicted in the images shown above. However, unlike the example bar chart, each comfort level and each count of responses were not labeled, to improve readability. The same scale of colors is used and the convention of placing the most comfortable responses (dark blue) on the right and the least comfortable responses (dark red) on the left.

SUMMARY OF COMFORT CONTINUUM RESPONSES - ONLINE SURVEY RESPONSES



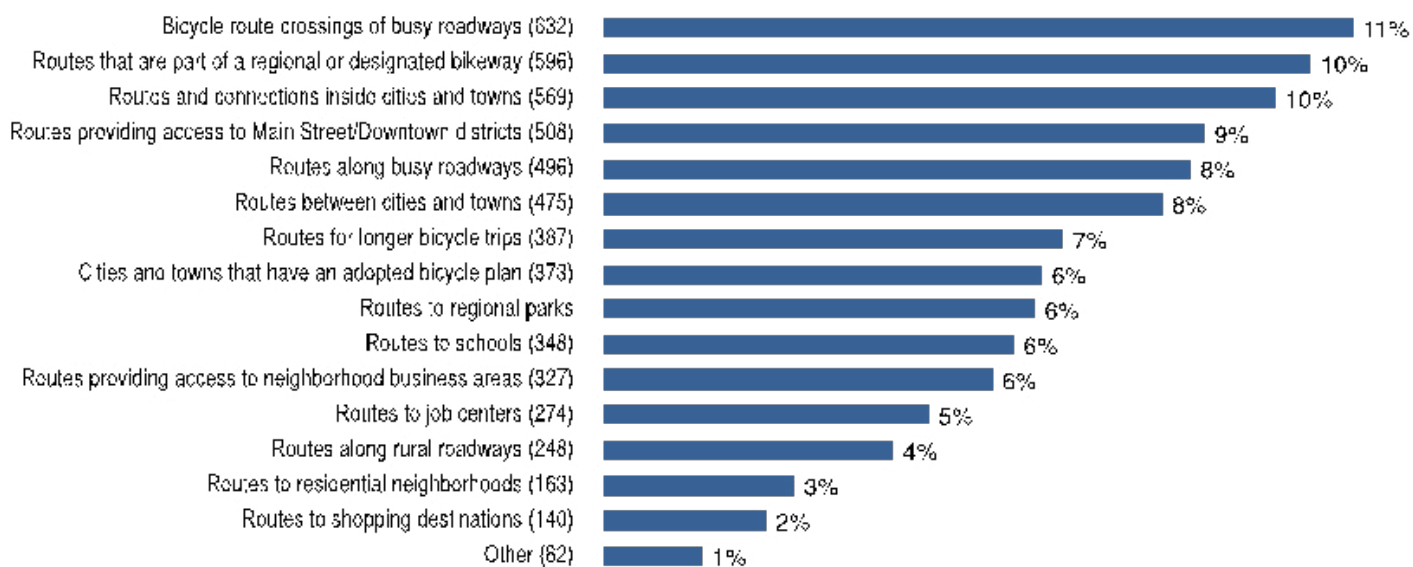
- The number of responses received for each facilities grouped here ranged from 1,234 to 1,324, depending on the facility.
- Respondents overwhelmingly felt very uncomfortable (negative) riding on facilities #11 and #12.
- Respondents overwhelmingly felt very comfortable (positive) riding on facilities #7, #8, and #9, especially facility #9.
- In general respondents felt more comfortable (positive) about facilities #1 - #9 than facilities #10 - #18.
- More “comfortable” responses than “uncomfortable” responses were received for all of the facilities except #11 and #12.

Section 3: Policy Priorities

The third section of the survey was used to provide feedback for MnDOT policy priorities. Participants were asked where MnDOT should direct its bicycle infrastructure investments and what would make it easier for more people to choose to ride a bicycle.

Q3-1: BICYCLE INFRASTRUCTURE INVESTMENT PRIORITIES

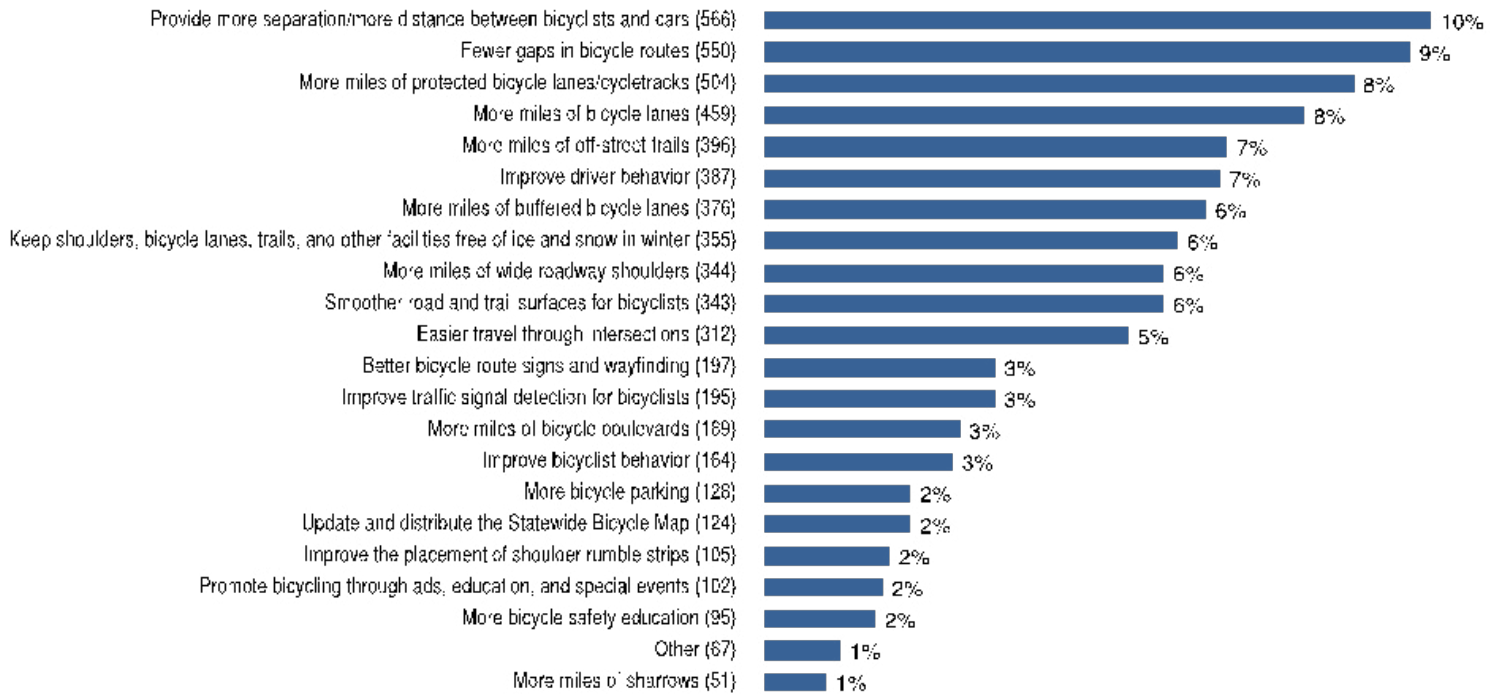
“Please select the five (5) best ideas from the list below about where MnDOT should direct its bike infrastructure investments. Note that you are selecting your top 5 in no particular ranked order.”



- 1,213 responses were received for this question, including 82 open-ended responses (please see the Appendix).
- 30% of all votes (1,797 total) were for these top 3 ideas: bicycle route crossings of busy roadways (10%), routes that are part of a regional or designated bikeway (10%), and routes and connections inside cities and towns (10%).
- Other ideas that scored high: routes providing access to Main Street/Downtown districts (9%) and routes along busy roadways (8%).
- Ideas that scored low: routes to residential neighborhoods (3%) and shopping destinations (2%). These makes sense given the locations where MnDOT can build infrastructure. (Local shopping and residential areas are more likely to fall under local control.)

Q3-2: HOW TO MAKE BICYCLING EASIER AND MORE CONVENIENT

“Please select the five (5) best ideas from the list below about where MnDOT should direct its bike infrastructure investments. Note that you are selecting your top 5 in no particular ranked order.”



- 1,214 responses were received for this question, including 67 open-ended responses (see the Appendix).
- 27% of all votes (1,620 total) were for these top 3 ideas: provide more separation/more distance between bicyclists and cars (10%), fewer gaps in bicycle routes (9%), and more miles of protected bicycle lanes/cycletracks (8%).
- Other ideas that scored high: more miles of bicycle lanes (8%) and more miles of off-street trails (7%).
- Ideas that scored the lowest: more bicycle safety education (2%) and more miles of sharrows or a shared-lane marking (1%).

Section 4: Demographic, Socio-Economic, and Location Information

The fourth section of the survey was used to gather demographic and socio-economic information from participants. This section also included location information, such as the determination of district and zip code.

Q4-1: AGE

“What is your age? Please select one of the ranges below.”

- 1,210 responses were received for this question.
- Almost 25% (296 out of 1,210) of all respondents are ages 25 to 34.
- Almost 45% (538 out of 1,210) of all respondents are ages 25 to 44.

Q4-2: GENDER

“What is your gender?”

- 1,201 responses were received for this question.
- Almost 60% (705 out of 1,201) of all respondents are male.

Q4-3: ETHNICITY

“How would you describe your ethnic / cultural heritage? Please select one category.”

- 1,203 responses were received for this question, including 24 open-ended responses (please see the Appendix).
- Almost 90% (1,074 out of 1,203) of all respondents described their ethnicity/cultural heritage as Caucasian or European American.
- Just over 6% (73 out of 1,203) of all respondents preferred not to answer this question.
- Of the 24 respondents who chose “other,” 22 described their ethnicity/cultural heritage.
- While less than 1% of the total, 8 out of the 22 “other” respondents described their ethnicity/cultural heritage as mixed or multiracial in the open-ended responses.

Q4-4: INCOME

“For the year 2013: Approximately what was your household’s total yearly income from all sources? Please select one category.”

- 1,197 responses were received for this question.
- Almost 4% (47 out of 1,197) of all respondents stated their household total yearly income was \$20,000 or less.
- More than 46% (556 out of 1,197) of all respondents stated their household total yearly income was \$75,000 or greater.
- More than 70% (844 out of 1,197) of all respondents stated their household total yearly income was \$45,000 or greater.
- About 11% (134 out of 1,197) of all respondents preferred not to answer this question.

DATA TO DETERMINE THE LOCATION (RESIDENCE) OF THE RESPONDENT

There were three data points to determine the location of the respondent: two survey questions and the respondents’ IP address.

DISTRICT OF THE RESPONDENT

Based on the above three data points, a district location was determined for 96% (1,579 out of 1,645) of all respondents.

Keeping the eight MnDOT district areas in mind, it is helpful to summarize the respondents by MnDOT district where they live.

- More than 61% (1,016 out of 1,645) of all respondents live in the Metro District.
- Almost 9% (144 out of 1,645) of all respondents live in District 3.
- Almost 8% (127 out of 1,645) of all respondents live in District 1.
- 7% (115 out of 1,645) of all respondents live in District 6.