Minnesota GO
A Collaborative Vision for Transportation

Statewide Bicycle System Plan

Executive Summary

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ACKNOWLEDGEMENTS

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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 a safe, comfortable and convenient transportation option for all people.

GOALS

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

Local Bikeway Connections: Support regional and local bicycling needs.

State Bikeway Network: Develop a connected network of state bikeways in partnership with national, state, regional and local stakeholders.

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. 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, a series of workshops in each district among MnDOT staff and agency partners, and equivalent online engagement opportunities. The following are key findings learned through the outreach process:

Key Finding 1: State bikeways create opportunities for inter-community travel across the state and beyond.

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

Key Finding 2: The public values state bikeways, but people value opportunities for local and regional bicycle travel more.

During this planning process, stakeholders 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. In places where state trunk 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 bikeway route.

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

MnDOT's stakeholders have 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 motor vehicle traffic. Separated bike lanes are sometimes called "cycle tracks" or "protected bike lanes."

Developing the State Bikeway Network

MnDOT is committed to supporting a state bikeway network and participating in the U.S. Bicycle Route System. Stakeholders 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 bikeway network. MnDOT also desired assistance from the public in prioritizing these connections for future designation as a state bikeway and/or U.S. Bicycle Route. This section presents the State Bikeway Network and MnDOT's strategies to implement this system.

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

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 Bikeway Network through the following strategies:

STRATEGY 1. Using the State Bikeway Network as guidance, designate routes as state bikeways and, as appropriate, as United States Bicycle Routes (e.g. Mississippi River Trail Bikeway/USBR 45).

STRATEGY 2. Work with stakeholders to map and promote designated routes.

STRATEGY 3. Work with stakeholders to improve and sign designated state bikeway routes to enhance the convenience and comfort of these facilities.

STRATEGY 4. Maintain up-to-date information about implementation of the State Bikeway Network through consistent and centralized data collection.

The State Bikeway Network

Supporting local bikeway networks

This planning process has broadened MnDOT's perspective regarding investment in local and regional bikeways. 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 and regional partners is crucial to successful collaboration on local and regional bikeways.

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

STRATEGY 5. Establish a local bicycle planning technical assistance program to advance collaboration toward a bikeway system that conveniently connects people to important destinations by bicycle.

STRATEGY 6. Coordinate regional and local stakeholder participation in MnDOT plans and projects to efficiently respond to critical local and regional bicycle connections.

STRATEGY 7. Continue supporting efforts to allow local jurisdictions flexibility in choosing road designs that support bicycle travel.

STRATEGY 8. Build bicycle facilities that have the appropriate amount of separation from motor vehicle traffic based on the local context and anticipated user types.

STRATEGY 9. Review agency cost participation policies to support bicycle-related improvements on state highways within local communities.

STRATEGY 10. Develop a process to annually track bicycle infrastructure investments by district and statewide.

STRATEGY 11. Include bicycling infrastructure as an asset in the formal Transportation Asset Management Plan process.

STRATEGY 12. Continue bi-annual data collection to update bicycle-related information available for state, county and local roadways.

STRATEGY 13. Develop a bicycle safety plan using a data-driven, interdisciplinary approach that targets areas for improvement and employs proven countermeasures to enhance bicycling safety.

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 14. 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 15. Support state, regional and local efforts to enforce laws that make bicycling safer.

EVALUATION

STRATEGY 16. Create a statewide bicycle traffic monitoring program to count and estimate bicycle traffic volumes at selected locations throughout the state.

ENCOURAGEMENT

STRATEGY 17. Encourage bikeway system use by updating and publishing the Minnesota Bicycle Map every two years.

STRATEGY 18. Share information about bicycling opportunities in Minnesota to encourage ridership.

EVOLUTION

STRATEGY 19. Update the Statewide Bicycle System Plan every five years.

STRATEGY 20. Review the Minnesota Bikeway 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.

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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 BIKEWAY 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 bikeway 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 like bridges, overpasses, and interchanges can inhibit safe bicyclist crossings, and they frequently last fifty or more years before reconstruction. Targeting 70 percent of MnDOT's bicycling infrastructure investment toward local bikeway 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 process described in Chapter 6.
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

INVESTMENTS TO DEVELOP THE STATE BIKEWAY NETWORK

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 Bikeway Network corridors identified in this Plan. MnDOT Districts will target state bikeway investments toward statewide high priority corridors and regional priority corridors on the State Bikeway Network.

Measuring Performance

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 Bike 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 which 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 opportunities to track bicycling infrastructure on local, county, and DNR properties. MnDOT will assess progress toward supporting bicycling on its assets through the following measures:

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

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Minnesota GO
A Collaborative Vision for Transportation

Statewide Bicycle System Plan

Chapter One

PLAN VISION AND GOALS

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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. Bicycling is an integral part of this transportation system. Bicycling maximizes the health of people by creating opportunities for physical activity through daily travel and recreational pursuits. Bicycling maximizes the health of the environment by reducing the number of trips taken by carbon-emitting motor vehicles. Bicycling maximizes the health of our economy by facilitating tourism and offering a low-cost transportation alternative to motor vehicles.

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 a safe, comfortable and convenient transportation option for all people.

Goals

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

Safety is critical to Minnesota's multimodal transportation system. MnDOT will implement bicycle facilities that are safe for all users. MnDOT will invest in safety as well as comfort. Bicycle facilities that are comfortable for all users attract more riders, encourage physical activity and help to reduce reliance on motor vehicles among people of all ages and abilities.

Kelly, Phil and their son Steven enjoy the Rush Creek Regional Trail. Kelly and Phil got out of the habit of riding twenty years ago. Phil rediscovered biking when knee pain prevented him from running, and convinced Kelly, who suffers from asthma, to get back in the saddle too. Soon after they began riding together, Kelly and Phil found a trailer that would fit Steven, who has cerebral palsy. Now, the family takes outings together to explore new trails and run errands around their hometown of Brooklyn Park. Check out the full story by the Bicycle Alliance of Minnesota.

Local Bikeway Connections: Support regional and local bicycling needs.

Most bicycle transportation trips are local or regional. MnDOT roads often have a significant impact on local and regional bicycle connections – whether along an existing or future bikeway or across it. MnDOT will support local and regional bicycling needs by considering bicycle connections in plans and responding to community needs early in the project delivery process.

State Bikeway Network: Develop a connected network of state bikeways in partnership with national, state, regional and local stakeholders.

People value bikeways that connect communities and destinations at a regional, state, and national level. State bikeways, such as the Mississippi River Trail, create opportunities for long-distance bicycle travel and also support local bicycle trips within communities along the route. By enhancing accessibility to communities around the state, state bikeways support economic development and tourism in destinations along the route.

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

Increasing bicycle mode share in Minnesota is a goal in State Statute. MnDOT is committed to increasing the number of bicycle trips taken in the state. MnDOT recognizes this means creating conditions that encourage more bicycle travel among those who ride and those who currently do not. MnDOT participates in engineering, encouragement, enforcement, education, and evaluation activities that promote ridership equity among people of all ages and abilities.

PHOTO COURTESY OF RYAN

Minnesota GO
A Collaborative Vision for Transportation

Statewide Bicycle System Plan

Chapter Two

PLANNING IN CONTEXT

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INTRODUCTION

The Statewide Bicycle System Plan advances recent national, state, regional and local bicycle planning initiatives. This chapter 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

This plan also conforms to state and federal planning requirements listed in Appendix A.

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.

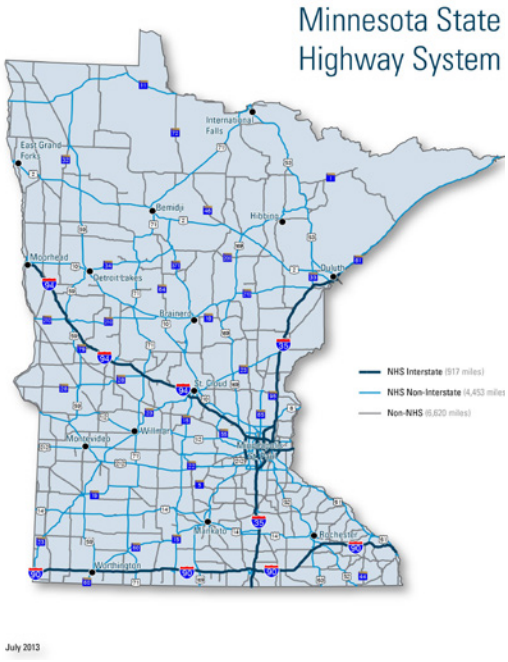
MnDOT's primary jurisdiction is the state trunk highway network. As a result, the Plan focuses on the state trunk highway network and its role in national, state, regional, and local bicycle networks.

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 Bikeway 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 development of the agency's policy direction and provide implementation tools for District staff in planning and investment decisions. The content of 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



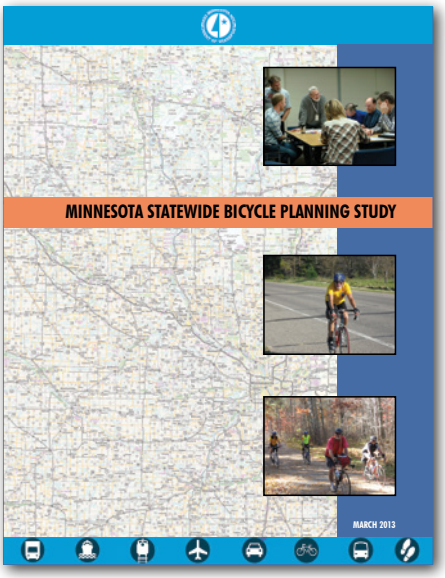
managers. The Plan also prioritizes the Central Office Bicycle and Pedestrian Section's work on bicycle-related initiatives.

MNDOT DISTRICTS

MnDOT District staff focus on planning, design, construction, and 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

The *Statewide Bicycle Planning Study*, completed by MnDOT 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 during development of the Statewide Bicycle System Plan, including:

- Provide a clear mandate and opportunities 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 bikeway 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 (SMTP)

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 is updated annual to identify priority projects and spending over the upcoming four years. 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.

MnDOT Plans and Programs

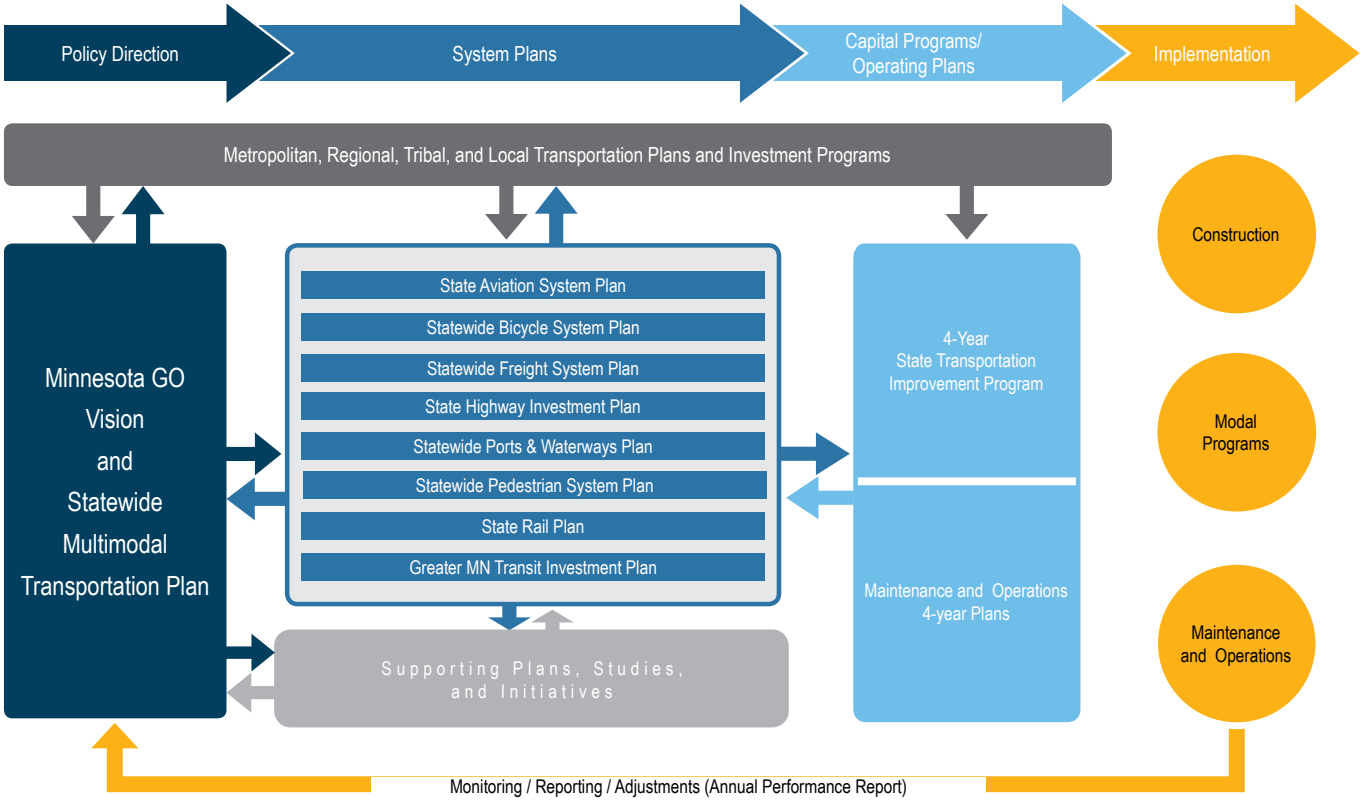


IMAGE SOURCE: MINNESOTA STATEWIDE MULTIMODAL TRANSPORTATION PLAN

STATE HIGHWAY INVESTMENT PLAN (MNSHIP)

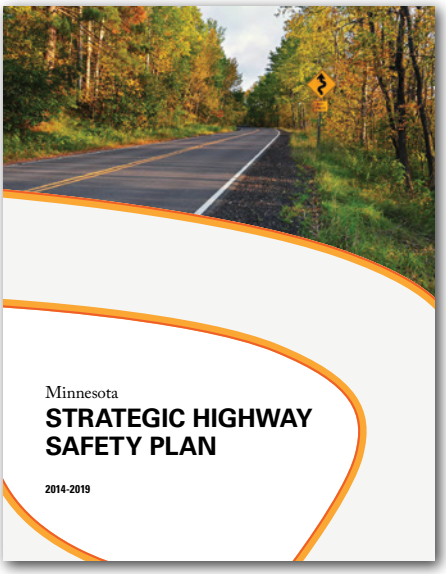
The *Minnesota State Highway Investment Plan 2014-2033* supports the guiding principles from the Minnesota GO vision and links the policies and strategies in the Statewide Multimodal Transportation Plan to improvements on the state trunk highway system.

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 bike 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 stakeholders

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 addresses bicycle safety by analyzing 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 crasehes with motor vehicles. The Plan compiles bicycling safety strategies from other adopted plans, including:

- 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 bike

MNDOT BICYCLE MODAL PLAN (2005)

The 2005 MnDOT Bicycle Modal Plan is MnDOT's most recent bicycle system plan. It superceded 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 the measurement of bicycle infrastructure targets.

Some key findings from the Bicycle Modal Plan have been 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 Bikeways 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.

In order 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 kids 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* (SHIP), 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 has been 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 stakeholder engagement process 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 managementor master plan for each state park, state recreation area and state trail. DNR Divsion of Parks and Trails staff typically prepare master plans for state trails, which are developed through an open, public process.

The DNR Division of Parks and Trails has developed 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 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 is not feasible to establish an off-rad corridor. This relationship is further described in Chapters 5 and 6.

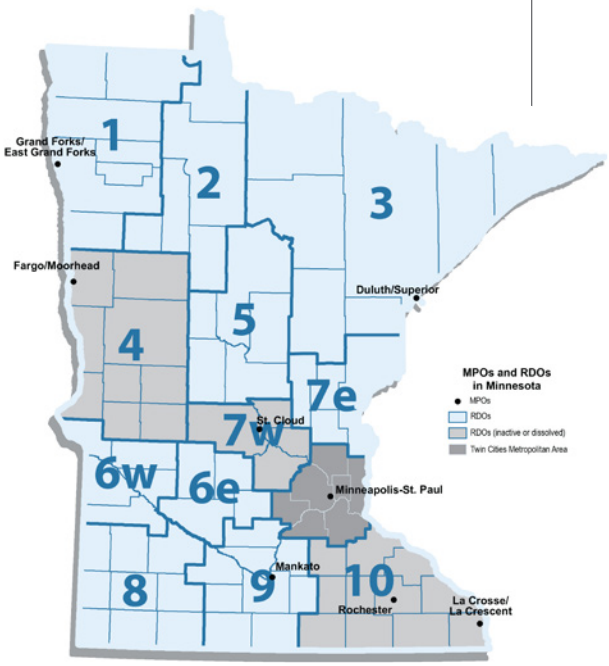
REGIONAL PLANNING INITIATIVES

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

Regional Development Organizations

Regional Development Organizations are regional planning agencies throughout Minnesota that assist communities with planning activities where local jurisdictions may not have capacity or where regional plans are needed. RDOs also contract with MnDOT to conduct transportation planning work and often convene conversations between MnDOT and local jurisdictions. RDOs also play an active role in Safe Routes to School initiatives and MDH's SHIP program.

RDO staff expertise and region-wide focus provide an invaluable asset to MnDOT and its transportation programs. For example, many local jurisdictions



are involved in developing active transportation plans as a result of SHIP, but they may not have been formally adopted or widely known. RDO planners increase awareness of these plans during the MnDOT project development process, filling in missing information during project scoping to identify local needs. RDOs are also heavily involved with Minnesota's Area Transportation Partnerships and the Transportation Alternative Program funding.

Metropolitan Planning Organizations

Metropolitan Planning Organizations are regional agencies within urbanized areas of 50,000 or more that are required to address multimodal transportation planning including bicycling.

Part of the MPOs' function is to provide technical assistance and expertise to study and identify solutions to metropolitan transportation problems. Each MPO is required to develop a unified planning work program in cooperation with the state and regional transit operators. MPOs are also required to prepare a 20-year transportation plan that includes a financial plan assessing capital investment and other measures to preserve the existing transportation system.

Similarly, MPOs are also required to develop a Transportation Improvement Program (TIP) in cooperation with the state and local transit operators. The TIP includes a prioritized list of projects and a financial plan consistent with anticipated funding. The TIP is updated annually and covers a four-year period.

Some of Minnesota's seven MPOs have adopted regional bicycle plans. Recent examples are the Metropolitan Council's Regional Bicycle System Study (2014) 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 required within MPO jurisdictions. In locations where local or regional agencies initiate bicycle planning, MnDOT staff participate actively 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.

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 (USBRS) 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 of routes to the American Association of State Highway and Transportation Officials (AASHTO) Special Committee on U.S. Route Numbering.

To date, 11,053 miles of U.S. Bike Routes have been established in 15 states: Alaska, Kentucky, Illinois, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, New Hampshire, North Carolina, Ohio, Tennessee, Virginia, Washington and the District of Columbia. 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.

Image Source: Adventure Cycling Association

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.

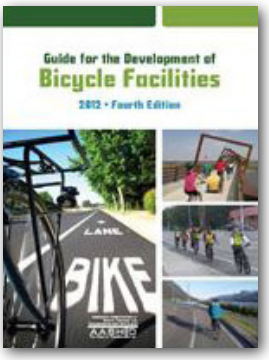


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PHOTO COURTESY OF GUTKNECHT

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Statewide Bicycle System Plan

Chapter Three

LEARNING FROM PUBLIC ENGAGEMENT

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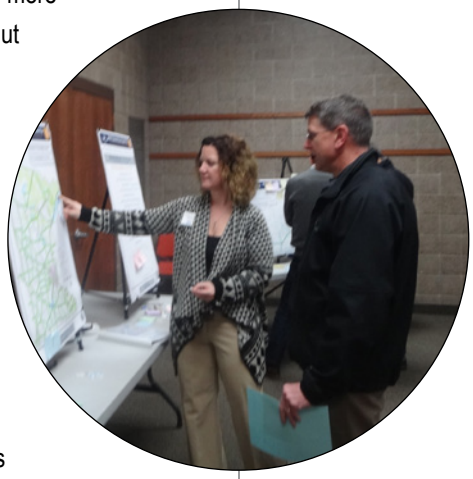
INTRODUCTION

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

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



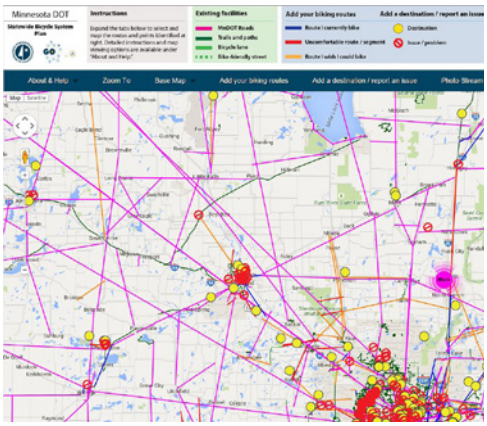
MnDOT received tens of thousands of comments and data points through these engagement efforts - among the highest level of public participation in any MnDOT statewide planning initiative. This input is already shaping MnDOT's policies and practices, from how bicycle projects are prioritized to the type 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 engagement 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?



Example Input on the Project Wikimap

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

PARTICIPATION

Aided by an active promotion campaign, the workshops and engagement efforts were highly successful. 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 that were attended by more than 350 participants. Participants shared thousands of votes for facility type preferences, and over 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 working parents to participate.

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, and prominently featured links to these sites in the MnDOT Bicycle Plan webpage and MnDOT social media channels.

Almost 1,100 participants registered to use the wikimap and placed over 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 for access by engagement participants, project partners and members of the general public.

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 barrier-separated facilities (including separated bicycle lanes / cycletracks 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?

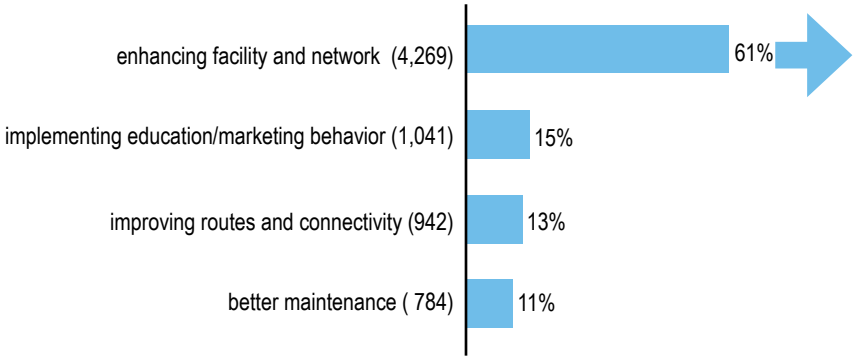
- Investments to facilitate local bicycle travel were valued by participants around two to three times higher than investments for long-distance bicycle travel.
- Routes to schools and parks were rated very highly by all participants, and, for Greater Minnesota participants, were a top investment priority.
- 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?

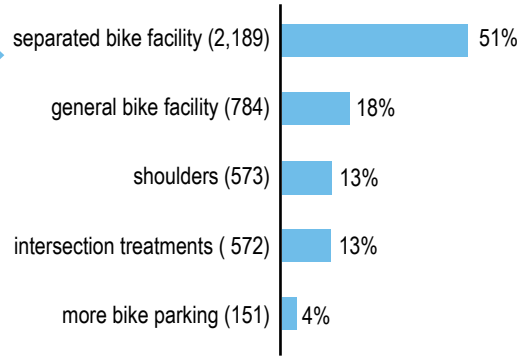
- Improving existing facilities and building a variety of new facilities was consistently identified by participants as the best approach for increasing bicycling (over education, encouragement or enforcement-related initiatives).
- Building facilities that offer physical separation from cars was consistently 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

Types of Improvements Participants Wanted:



Types of Facilities Participants Wanted: (Create New or Improve Existing)



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 who bike and motor vehicles (separated bike 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 to Minnesota communities on 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.
  - Public priorities for specific state bikeway corridor candidates, both at a state and district scale for development as part of the USBRS (US 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

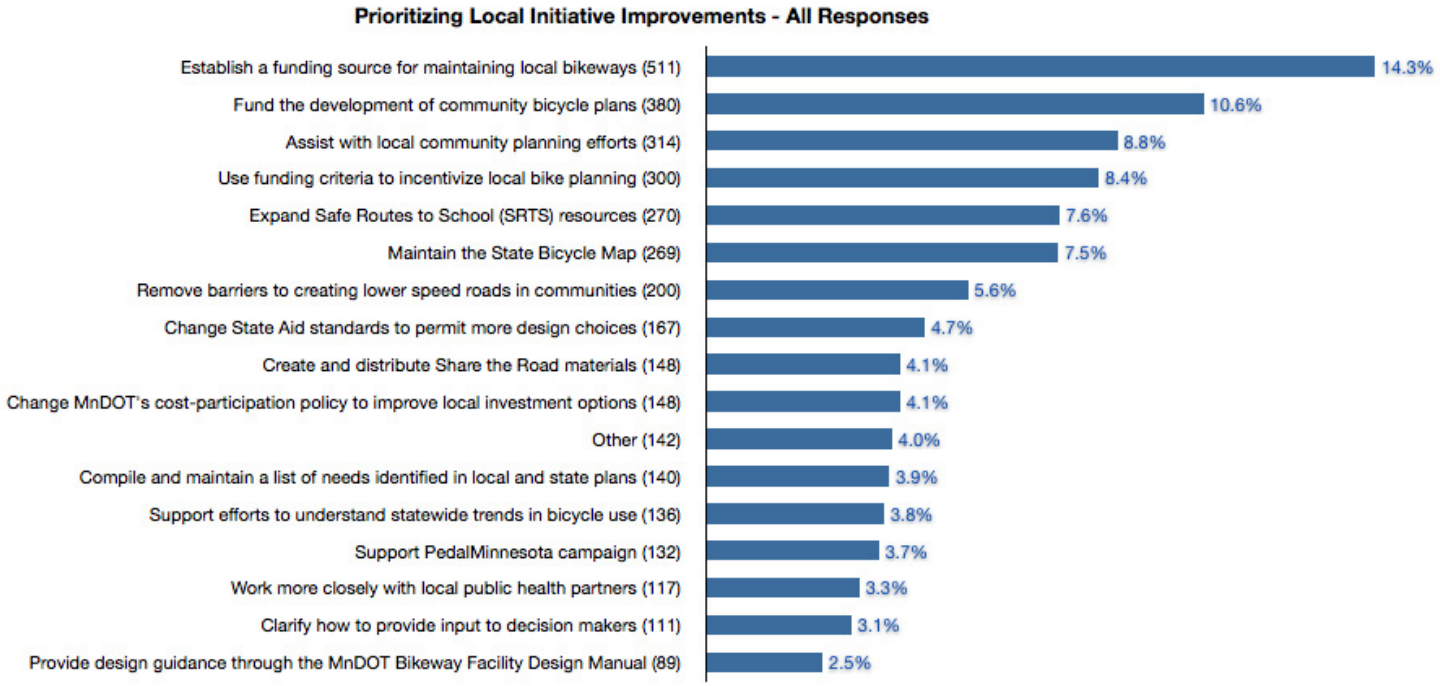
Approximately 300 people participated in in-person sessions for the second round of engagement. As with the first round of engagement, MnDOT hosted workshops in transit and bicycle-accessible locations and included children-specific activities to ensure the events enabled people of all ages, income levels,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

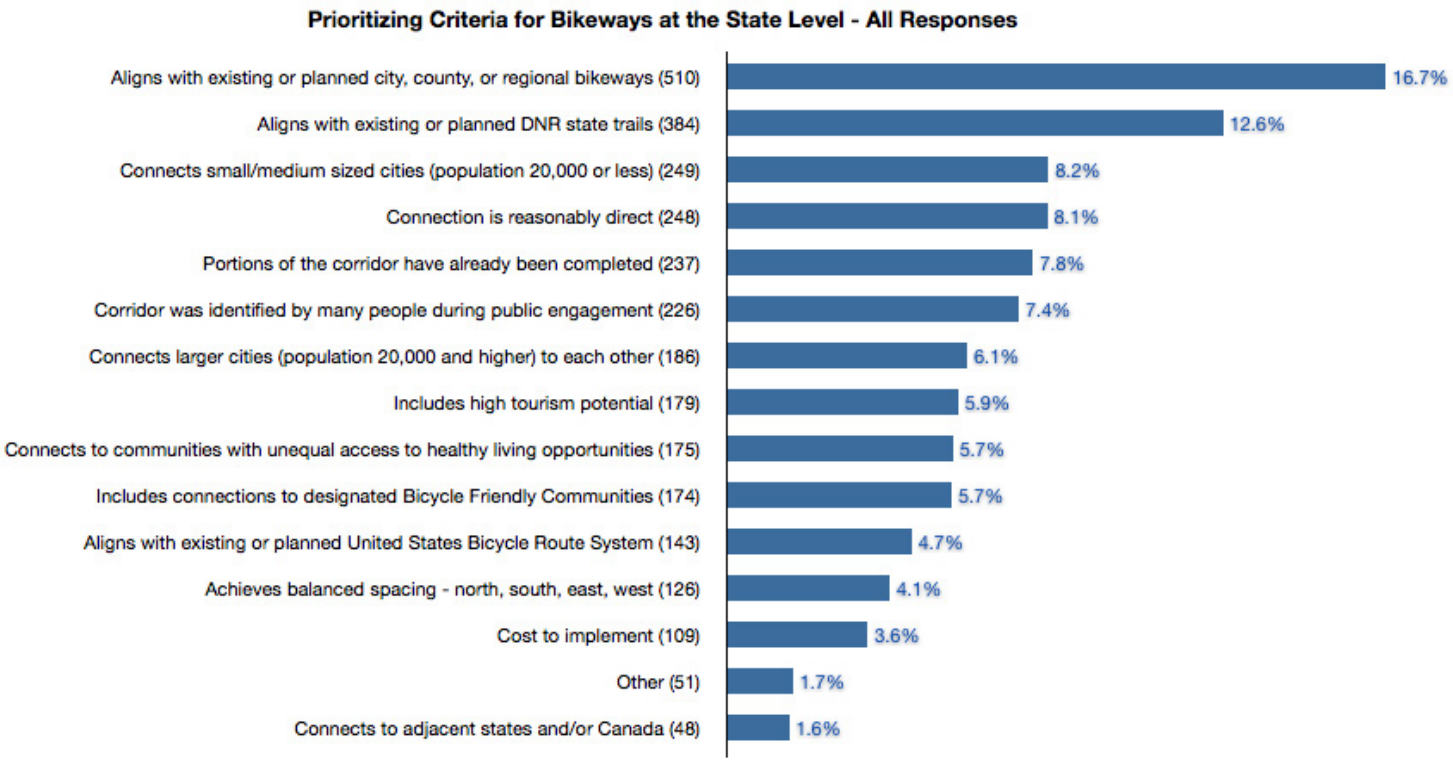
- Regarding how MnDOT could help support bicycling in local communities (identified as an important priority during the first round of public engagement), participants' top choices were:
  - Establish a funding source for maintaining local bikeways
  - Fund the development of community bicycle plans
  - Assist with local community planning efforts

FINDINGS FROM ROUND 2 ENGAGEMENT



- 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 bikeways
    - Aligns with existing or planned DNR state trails
    - Connection is reasonably direct

FINDINGS FROM ROUND 2 ENGAGEMENT



The following chapters address MnDOT's response to the Plan's four goals: Develop the State Bikeway Network, Support Local and Regional Bikeway Networks, Invest in Safety and Comfort, and Increase Ridership. Public engagment 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 Four

DEVELOPING THE STATE BIKEWAY NETWORK

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INTRODUCTION

The concept of a state bikeway 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 Bikeway System. The purpose of the Minnesota Scenic Bikeway 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 Bikeway System was 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 bikeway, the Mississippi River Trail Bikeway (MRT), was designated in 2012 and fully signed in 2015. The bikeway 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 Bikeway Marketing Toolbox. MnDOT and the communities along the MRT recognize that the presence of a state bikeway creates economic development opportunities as a result of both long-distance travel and short-distance trips made in and around the communities along the route.

The Mississippi River Trail Bikeway has received additional designation by the American Association of State Highway and Transportation Officials (AASHTO) as U.S. Bicycle Route 45. The U.S. Bicycle Route System is a national network of bicycle routes 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. Routes designated as 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.

MnDOT is committed to supporting a state bikeway network and participating in the U.S. Bicycle Route System. Stakeholders 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 bikeway network. MnDOT also desired assistance from the public in prioritizing these connections for future designation as a state bikeway and/or U.S. Bicycle Route. This chapter presents the State Bikeway Network and MnDOT's strategies to implement this system.

STATE BIKEWAY NETWORK: TERMS AND DEFINITIONS

The State Bikeway Network is a network of envisioned connections that link destinations throughout the state by bicycle. The State Bikeway Network does not define the actual facilities that will form these connections. Rather, this Plan presents the network as set of corridors throughout the state that link destinations. The State Bikeway Network presented here will guide future efforts to delineate actual bikeway routes within each corridor.

As part of this planning process, corridors in the State Bikeway Network were prioritized for future designation as state bikeways. Increasing the number of designated state bikeways 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 and designation of state bikeways, the routes that will eventually become state bikeways will not exclusively use state highways. For example, Minnesota's existing state bikeway, the MRT, is designated on a combination of state highways, shared use paths, and local roads. Only twenty percent of the 800-mile route is on state highways. The location of a state bikeway 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.

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

State Bikeway:
A route on the State Bikeway Network that has been designated along a combination of state highways, trails and local roads. The Mississippi River Trail is currently the state's only designated state bikeway.

U.S. Bicycle Route:
A bike 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 has been designated as U.S. Bicycle Route 45.

FIGURE 1:
STATE BIKEWAY NETWORK PRIORITY CORRIDORS

STATEWIDE PRIORITY CORRIDORS

The State Bikeway 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 bikeway, potential connectivity to other bikeway 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 staff will work with partners to select specific facilities and designate routes as part of Plan implementation.

The State Bikeway Network identified through this Plan will function as a guide for prioritizing future infrastructure investments and formal designation of state bikeways along specific routes. Statewide high priority corridors are the first corridors on the State Bikeway Network that MnDOT will consider for infrastructure improvements and future designation as state bikeways. Increasing the number of designated state bikeways is a performance target identified in 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 bikeway 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 bikeways 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 Bikeway Network. These corridors provide guidance for bicycling investments to roadway projects and will be implemented as opportunities arise and through coordination among MnDOT, the DNR, and local stakeholders.

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

REGIONAL PRIORITY CORRIDORS

While the State Bikeway Network depicts priorities for future state bikeways, 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 Bikeway 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 Bikeway 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

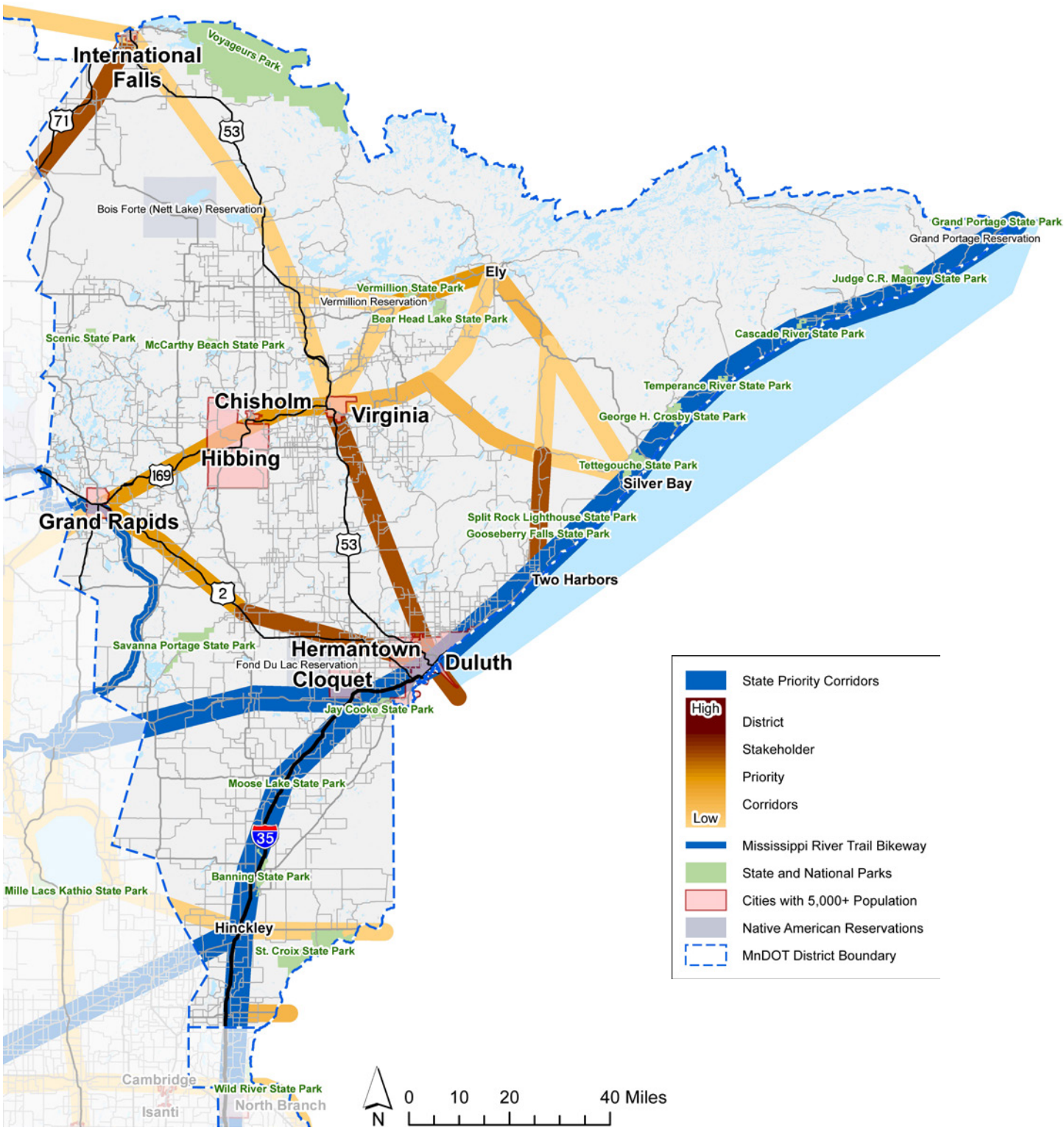


FIGURE 3:
DISTRICT 2 REGIONAL PRIORITY CORRIDORS

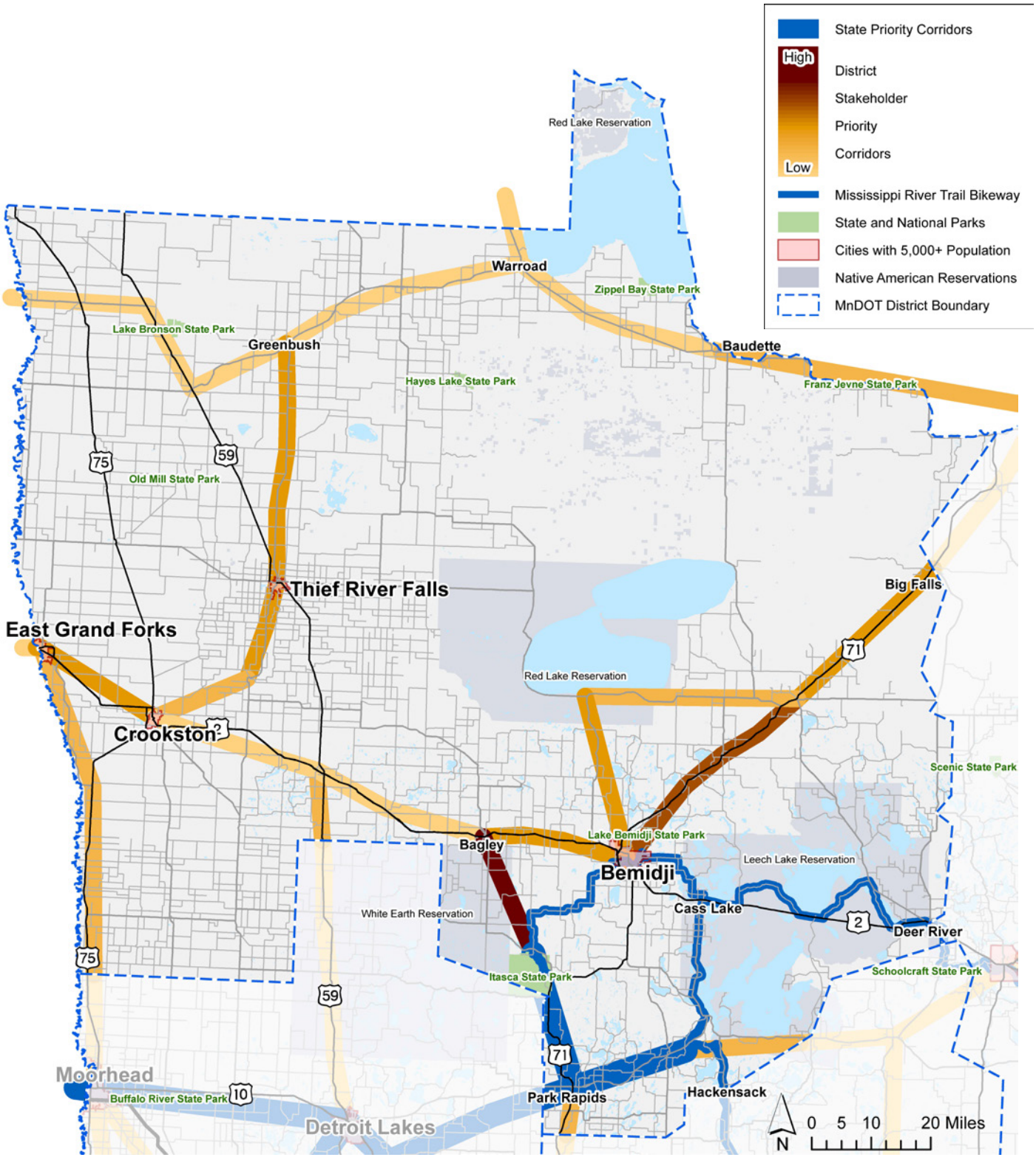


FIGURE 4:
DISTRICT 3 REGIONAL PRIORITY CORRIDORS

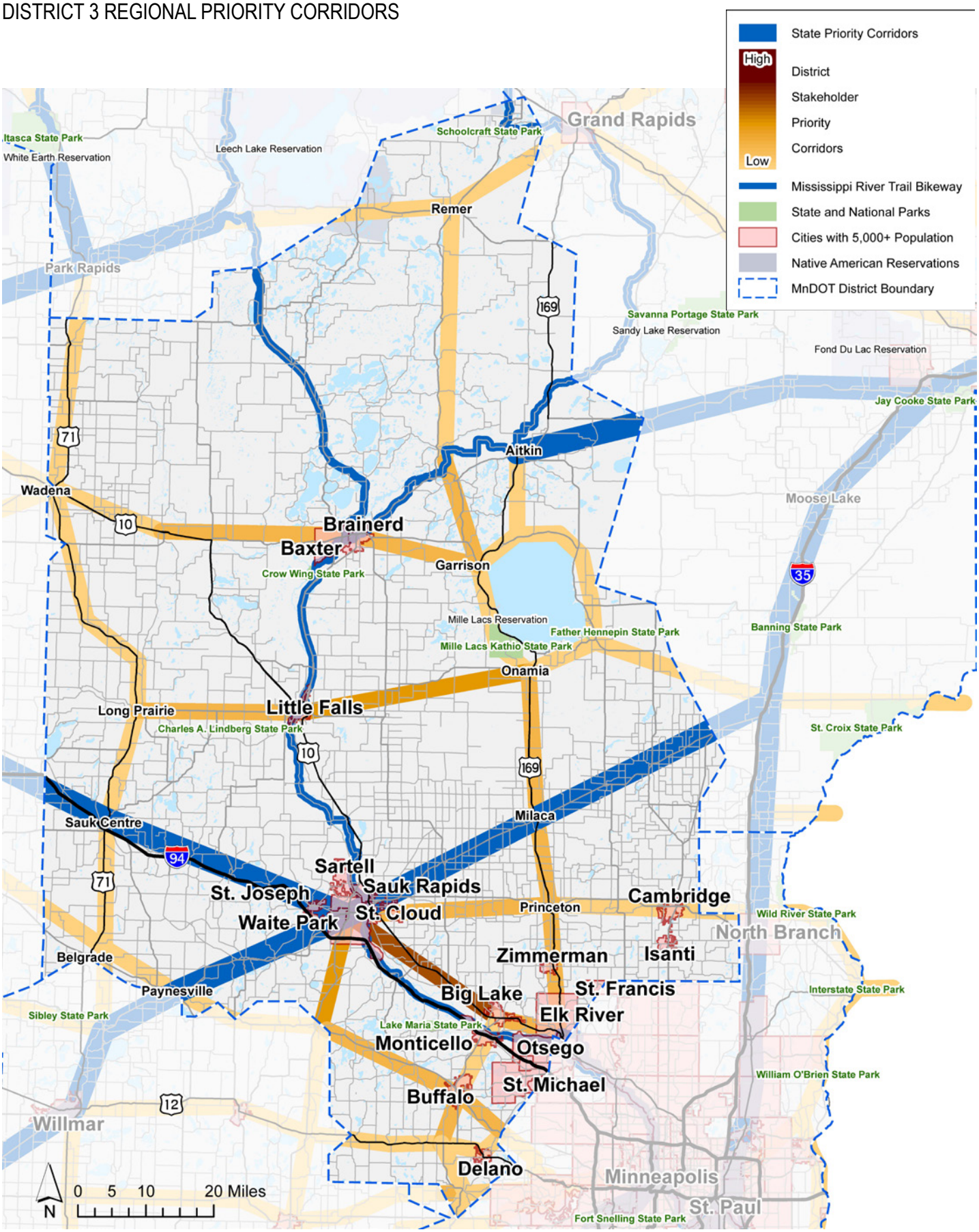


FIGURE 5:
DISTRICT 4 REGIONAL PRIORITY CORRIDORS

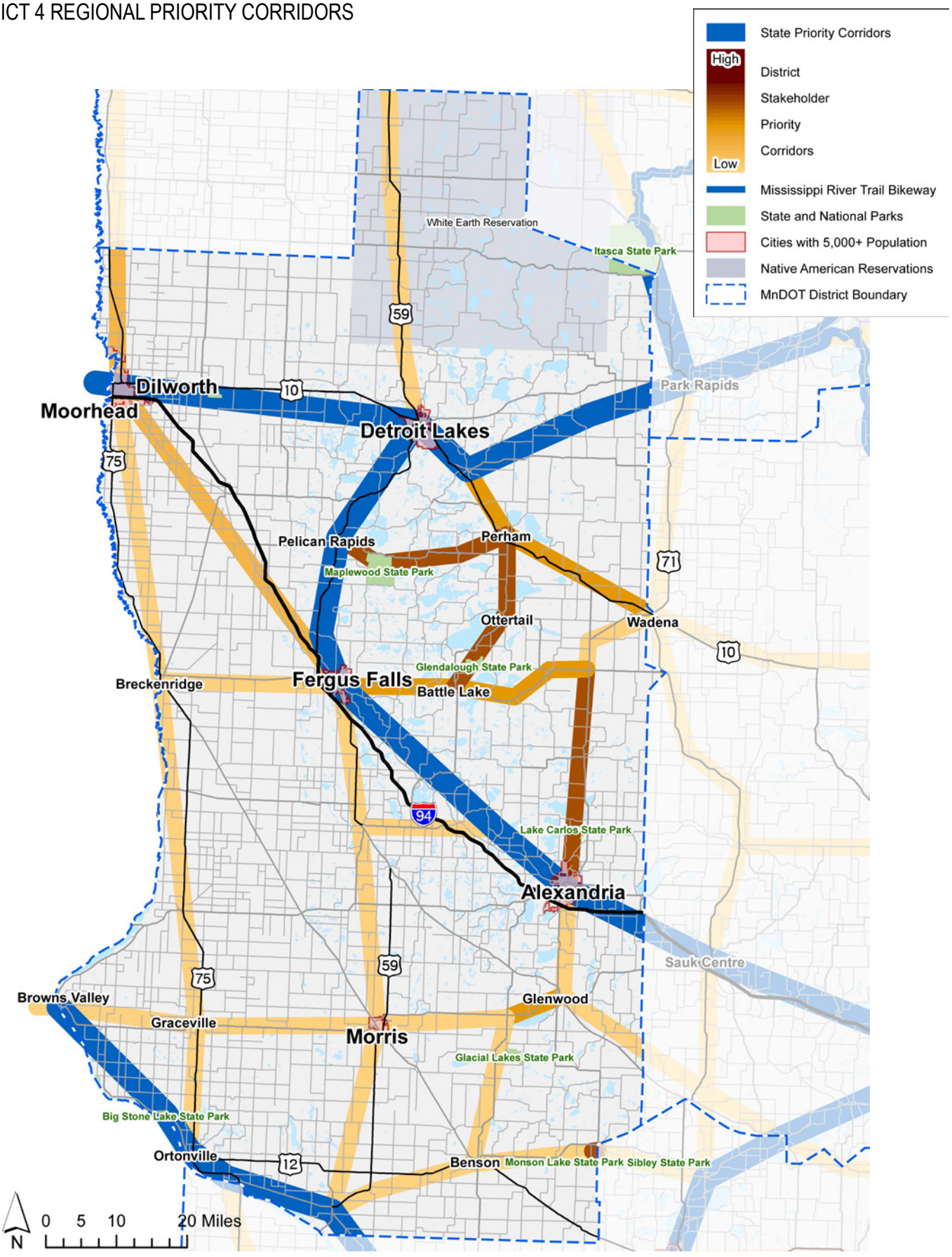
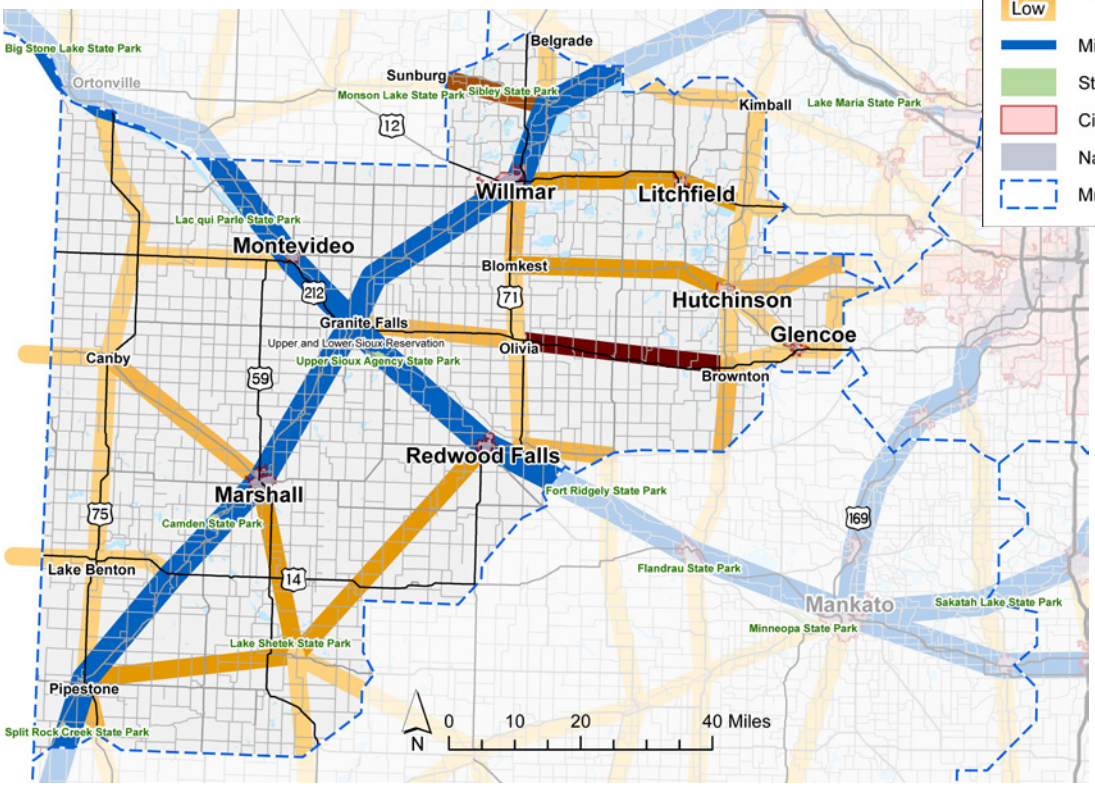


FIGURE 6:
DISTRICT 6 REGIONAL PRIORITY CORRIDORS

FIGURE 7:
DISTRICT 7 REGIONAL PRIORITY CORRIDORS

FIGURE 8:
DISTRICT 8 REGIONAL PRIORITY CORRIDORS



METRO DISTRICT AND METROPOLITAN COUNCIL PLANNING PROCESS

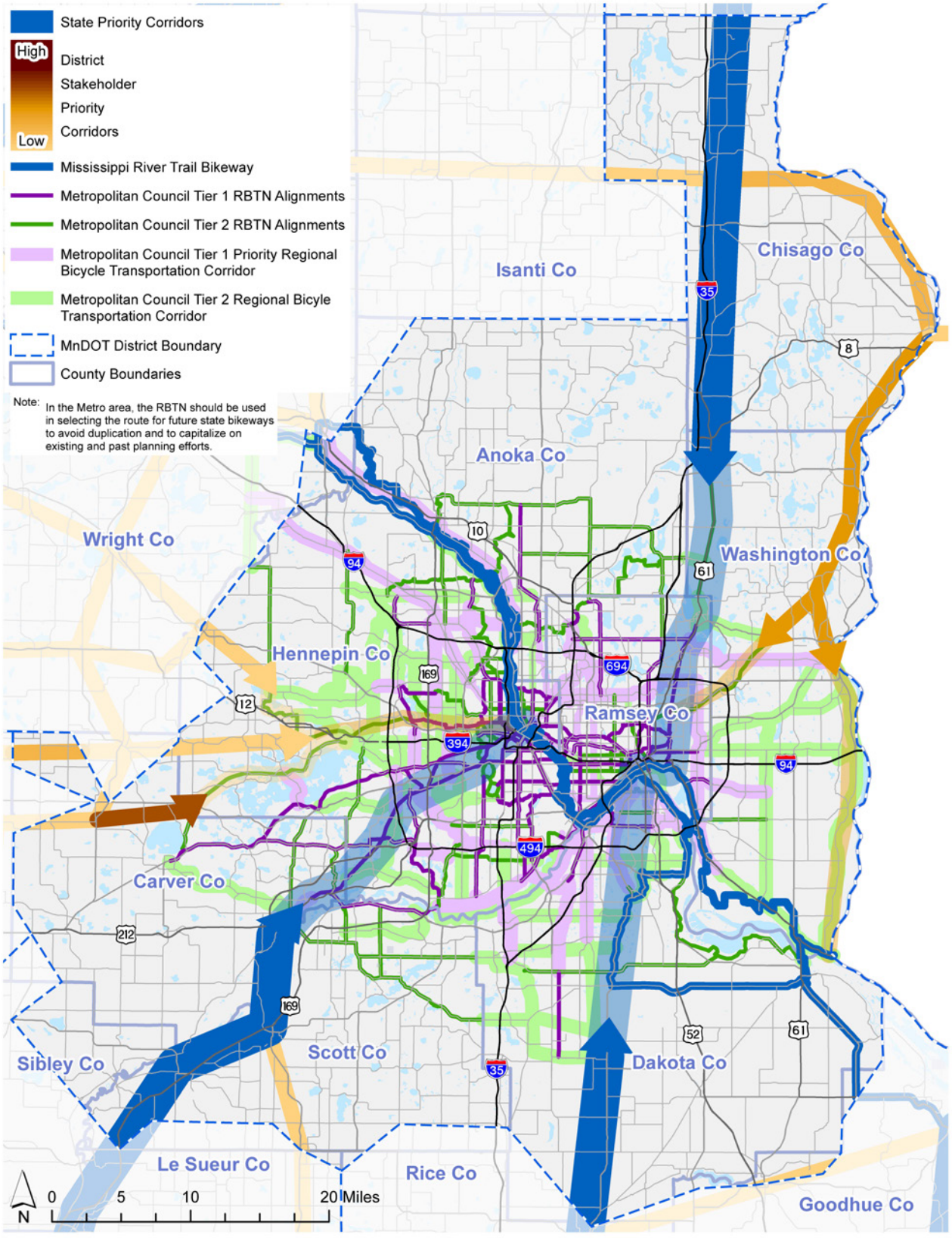
In 2013-2014, the Metropolitan Council led the Twin Cities Regional Bicycle System Study in partnership with MnDOT Metro District. MnDOT District staff and MnDOT's Central Office Bicycle Pedestrian Section were closely involved. The study proposed a seamless system of multijurisdictional on- and off-street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

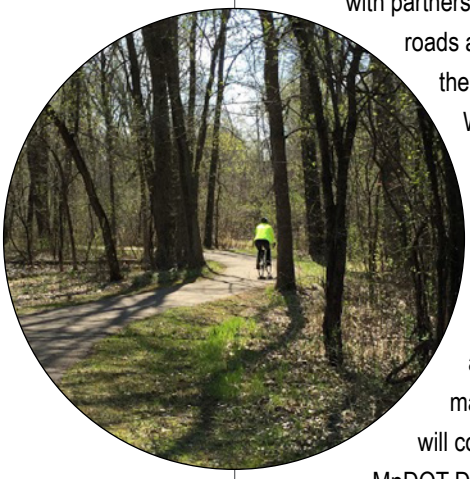
The RBTN and Metro District regional priority corridors are shown in Figure 9. The RBTN will serve as the foundation for MnDOT Metro District work to establish state bikeway corridors by identifying locations on the state trunk highway system that provide opportunities and barriers for local bicycle travel within the region. This process will also identify planning corridors for connections between the RTBN and bikeways in adjoining MnDOT Districts.

As state bikeways are developed and refined that traverse 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 bikeway routes, the specific facilities that will connect regional priority corridors will be determined by MnDOT District staff 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 continue to refine candidate facilities in every Greater Minnesota MnDOT District during workshops planned in Winter 2015.

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 confirm the best facilities to connect statewide and regional priority corridors (anticipated Winter 2015). The selected facilities will become an addendum to this Plan.

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 Bikeway 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

Both the statewide priority corridors and the regional priority corridors on the State Bikeway 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 Bikeway 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 Bikeway Network through planning and programming decisions.

IMPLEMENTATION STRATEGIES

STRATEGY 1. Using the State Bikeway Network as guidance, designate routes as state bikeways and, as appropriate, as United States Bicycle Routes (e.g. Mississippi River Trail Bikeway/USBR 45).

Currently, the Mississippi River Trail Bikeway (MRT) is the only state bikeway 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 bikeway 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 2. Work with stakeholders to map and promote designated routes.

People can't choose to ride a route if they don't know it exists! Including state bikeways 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 Bikeway Marketing Toolbox is an example of how the agency can assist local stakeholders in promoting a state bikeway.

STRATEGY 3. Work with stakeholders to improve and sign designated state bikeway routes to enhance the convenience and comfort of these facilities.

Improvements can be made to enhance the comfort and convenience of state bikeways after routes are designated. For example, local entities can connect local bicycle routes to state bikeways. MnDOT has already made improvements to the Mississippi River Trail Bikeway 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 Bikeway 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 bikeways that makes it easier for bicyclists to travel between destinations without stopping to consult a map. Signs also communicate to drivers that they can expect bicyclists to be traveling along the roadway. Wayfinding along state bikeways and between state bikeways 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 4. Maintain up-to-date information about implementation of the State Bikeway Network through consistent and centralized data collection.

MnDOT staff and local and regional partners will designate suitable bicycling routes on the State Bikeway Network and identify or improve facilities to serve these routes over time. As MnDOT and partner jurisdictions designate bikeways 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 Bikeway Network. MnDOT Central Office staff will maintain a centralized database associated with the State Bikeway Network and coordinate with MnDOT District staff to regularly update this information as changes occur through district planning processes.

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PHOTO COURTESY OF FRENCH

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Statewide Bicycle System Plan

Chapter Five

SUPPORTING LOCAL BIKEWAY SYSTEMS

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INTRODUCTION

One of the most significant findings of this Plan is stakeholder feedback regarding the importance of local bicycle trips. While participants in this planning process 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 has broadened MnDOT's perspective regarding investment in local and regional bikeways. Local and regional bikeway 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 like the Statewide Health Improvement Program and Safe Routes to School have 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 over 50,000 residents. While these efforts have 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 both planning and implementation.

LOCAL BIKEWAY NETWORKS

Addressing local bicycling needs requires ongoing collaboration, coordination, and communication with partners at RDOs, MPOS, cities, counties, and the DNR.

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 bikeways. Coordination early in MnDOT's project development process helps to 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.

Project Needs Identification

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 Ten-Year project Capital Highway Investment Plan.

- Identify road and bridge needs for inclusion in each district's Ten-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, understanding:
        - urban versus rural setting
        - existing bicycling network
        - local bicycling network plans
        - statewide and regional prioritization on the State Bikeway Network
        - 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 bike 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, bike 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 inclusion of proposed project in the Ten-Year Capital Highway Investment Plan.
- Initiate project development that includes continuous community engagement and refinement of project scope, cost, local participation, and cooperative agreements.

IMPLEMENTATION STRATEGIES

STRATEGY 4. Establish a local bicycle planning technical assistance program to advance collaboration toward a bikeway system that conveniently connects people to important destinations by bicycle.

PHOTO COURTESY OF DESNICK

MnDOT recognizes that most bicycle trips take place within local communities and that its stakeholders 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 5. Coordinate regional and local stakeholder participation in MnDOT plans and projects to efficiently respond to critical local and regional bicycle connections.

Improvements to state highways are identified five to ten 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, collaborative communication with partners and knowledge of local bicycling plans ensures MnDOT planners are aware of local bicycling priorities early in a project's ten-year planning phase. This enables MnDOT and stakeholders to consider ways to address bicycling needs in projects well before the project budget and scope are set.

STRATEGY 6. 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 in order 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 in order to promote consistent industry practices and riding experiences for the general public.

STRATEGY 7. Build bicycle facilities that have the appropriate amount of separation from motor vehicle traffic based on the local context and anticipated user types.

Participants in this planning process expressed a strong preference for separated bicycling facilities. When shown images of different types of bicycling facilities, both Greater Minnesota and Metro area participants overwhelming identified separated facilities such as trails or separated bike 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 8. Review agency cost participation policies to support bicycle-related improvements on state highways within local communities.

MnDOT will review its cost participation policy to better support local jurisdictions in making bicycling-related improvements on trunk highways. MnDOT will conduct a comprehensive review in light of bicycling needs identified through this planning process.

STRATEGY 9. Develop a process to annually track bicycle infrastructure investments by district and statewide.

The 2013 Minnesota State Highway Investment Plan (MnSHIP) 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 10. 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 11. Continue bi-annual data collection to update bicycle-related information available for state, county and local roadways.

MnDOT collects data on paved shoulders, designated bikeways, 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 12. 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 compliments the state's Toward Zero Deaths program to reduce roadway fatalities among all users.

PHOTO COURTESY OF DEMAIO

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Statewide Bicycle System Plan

Chapter Six

INVESTING IN SAFETY AND COMFORT

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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 bikeways create opportunities for inter-community travel across the state and beyond.

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

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

During this planning process, stakeholders 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. 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 bikeway route. For example, using funds to facilitate safer crossings of state highways or to 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 Bikeway Network.

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

MnDOT's stakeholders have strongly expressed preference for separated bicycle facilities. These can take the form of shared use paths, or bikeways 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 bikeway routes or local bicycling networks, investing in facilities that create separation from motor vehicle traffic is a priority over shared lanes, shoulders or bike lanes that provide minimal separation.

PHOTO COURTESY OF CITY OF MINNEAPOLIS

INVESTMENT GUIDANCE

MNSHIP GUIDANCE: BICYCLING INFRASTRUCTURE ALLOCATIONS

The Minnesota State Highway Investment Plan 2014-2033 uses and prioritizes 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 provide refined 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 bike on state, regional, and local networks. MnDOT's investments in bicycling infrastructure on the state trunk highway network will primarily be made as opportunitites 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 Bikeway Network. As a proxy for measuring improvements in state and local bikeway 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 Bikeway Network. Determining the extent to which MnDOT's project portfolio supports local bicycling trips versus state bikeway routes is nuanced. MnDOT district planners will work actively with local and regional partners to understand the existing and planned bicycling system in order to assess where and when MnDOT investments can best support bicycling needs.

INVESTMENTS TO SUPPORT LOCAL AND REGIONAL BIKEWAY 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 bikeway networks. State trunk highways often cause gaps in local bicycling networks. Destinations such as schools, churches, and recreational opportunities are often located next to state trunk highways. Large infrastructure like bridges, overpasses, and interchanges can inhibit safe bicyclist crosisngs, and they frequently last fifty or more years before reconstruction. Targeting 70 percent of MnDOT's bicycling infrastructure investment toward local bikeway 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 process 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 bikeways 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.

As MnDOT staff determine how to 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 BIKEWAY 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 Bikeway Network corridors identified in this Plan. MnDOT Districts will target state bikeway investments toward statewide high priority corridors and regional priority corridors on the State Bikeway 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.

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Chapter Seven

INCREASING RIDERSHIP

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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 it 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 like separated bikeways, smoother road surfaces and intersection safety treatments. Construction and maintenance of transportation infrastructure is a MnDOT core function. Therefore, 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 adoption of this Plan.

EDUCATION

MnDOT participates in several 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 (TZD), 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 14: 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 development of the campaign and provides local stakeholders 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 15: Support 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 enforcement of laws related to bicycling. Public education and enforcement of laws 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 creation of more robust data about the statewide bicycle system.

STRATEGY 16: 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. The results of traffic monitoring 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 rates of bicycling 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 getting more people to bicycle. 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 ride[1].

STRATEGY 17: Encourage bikeway 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 bikeway 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 18: 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 Bikeway Marketing Toolbox to assist local entities with promotion of the Mississippi River Trail. Currently, MnDOT staff support the PedalMN initiative by helping coordinate the statewide PedalMN Bike 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 like 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 in order to address local needs that were not articulated through this planning process.

Another area of evolution is maintenance. During Plan outreach, participants rated “establish a funding source for maintaining local bikeways” 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 incorporates bicycling facilities in its priority snow clearance corridors; other districts should continue to evaluate snow and gravel removal policies as the bicycling network expands and gains users.

Meanwhile, design innovations and increased public demand for new facility types such as separated bikeways 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 lived in the Twin Cities or in Greater Minnesota. Separated bicycling facilities such as shared use paths or separated bike lanes generally have greater right-of-way requirements and project costs than traditional bike 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 is a tool that 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 19: Update the Statewide Bicycle System Plan every five years.

The previous statewide bike plan, the 2005 MnDOT Bicycle Modal Plan, was published ten years prior to this Plan. In order to be responsive to changing stakeholder 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 20: Review the Minnesota Bikeway 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.

MnDOT produces the Minnesota Bikeway Facility Design Manual and updates it periodically to reflect current best practices and standards regarding design of bicycling infrastructure. Nationwide bicycle design standards are evolving as once-experimental treatments, such as bike 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.

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Statewide Bicycle System Plan

Chapter Eight

MEASURING PERFORMANCE

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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 (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 areas of performance that should be measured: ridership, safety, and assets. By establishing performance measures, MnDOT demonstrates its commitment to stakeholders, 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 (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 has regularly tracked 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.

The goal is an increase in the percent of bicycle commuters over time. That demonstrates a greater share of Minnesota commuters travel by bicycle, indicating 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

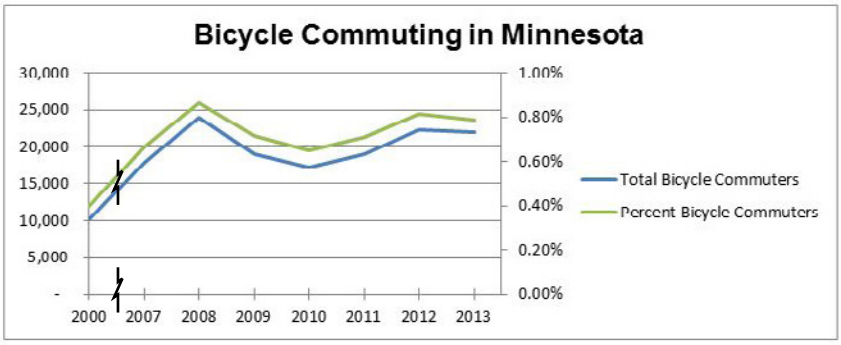
Measure: The percent of Minnesotans who regularly rode a bicycle at least once a week from April to October

Relevance: MnDOT conducts an annual Omnibus Survey which 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 bike 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 extrapolated to estimate statewide statistics.



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

Regular Bike 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 have been 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.

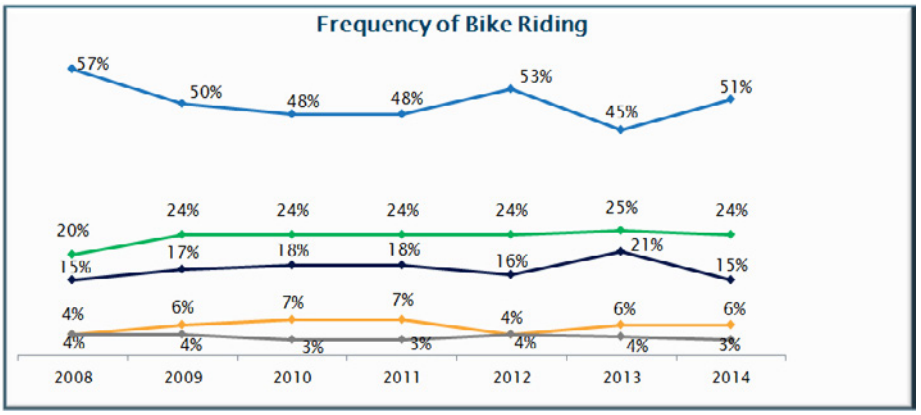
Trends: In 2013, 20 percent ofj women statewide reported cycling once a week or more, compared to 29 percent of men. While MnDOT does not anticipate this measure will show dramatic changes. This data can demonstrate long-term trends and will be monitored for changes that occur over five years or more.

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 extrapolated to estimate statewide statistics.

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 are estimates of the percentages of people who report that they bicycle for commuting or other purposes, this measure will illustrate demand on infrastructure at specific locations.



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

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 (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 which 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 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.

Frequency of Bike Riding
(By Gender)

	2013		2014		2014 Metro		2014 Greater MN	
	Male (A)	Female (B)	Male (C)	Female (D)	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)

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, seven 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 eleven 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 of 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%**

Source: Minnesota Department of Public Safety Annual Crash Data

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 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 bike lane, are included in the final project scope.

Target: Ninety 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

State Bikeway Designation and Mapping

Measure: Number of State Bikeways 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. Meeting this Plan's target demonstrates an increase in the number of State Bikeways.

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

The development of State Bikeways requires designation in state statute and recognition by road and trail authorities. In some cases MnDOT and local entities undertake signing and infrastructure improvements to enhance the specified route. Once a State Bikeway has been established, MnDOT includes this route on the State Bikeway Map. Publicizing the route makes the general public aware of its existence. MnDOT will measure progress toward State Bikeways based on the number of routes that have been mapped.

Target: Increase the State Bikeway System from 1 to 3 designated routes by 2020.

Performance: In 2012, MnDOT completed the Mississippi River Trail, the state's first designated state bikeway 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 has been designated by each of these authorities and mapped by MnDOT.

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Appendices

APPENDIX A: STATE AND FEDERAL PLANNING REQUIREMENTS

Federal

Federal transportation law and regulations identify eight planning factors. States and MPOs must use a continuing, cooperative and comprehensive planning process that provides for the consideration and implementation of projects, strategies and services that address these factors. The eight factors are:

- Support the economic vitality of the United States, the States, metropolitan areas, and nonmetropolitan areas, especially by enabling global competitiveness, productivity, and efficiency
- Increase the safety of the transportation system for motorized and non-motorized users
- Increase the security of the transportation system for motorized and non-motorized users
- Increase accessibility and mobility of people and freight
- Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns
- Enhance the integration and connectivity of the transportation system, across and between modes throughout the State, for people and freight
- Promote efficient system management and operation
- Emphasize the preservation of the existing transportation system

State

Statewide transportation plans should help achieve the sixteen transportation goals for the state transportation system established in *Minnesota State Statute 174.01*. The sixteens goals are to:

- minimize the fatalities and injuries for transportation users throughout the state
- provide multimodal and intermodal transportation facilities and services to increase access for all persons and businesses and to ensure economic well-being and quality of life without undue burden placed on any community
- provide a reasonable travel time for commuters

- enhance economic development and provide for the economical, efficient, and safe movement of goods to and from markets by rail, highway, and waterway
- encourage tourism by providing appropriate transportation to Minnesota facilities designed to attract tourists and to enhance the appeal, through transportation investments, of tourist destinations across the state
- provide transit services to all counties in the state to meet the needs of transit users
- promote accountability through systematic management of system performance and productivity through the utilization of technological advancements
- maximize the long-term benefits received for each state transportation investment
- provide for and prioritize funding of transportation investments that ensures that the state's transportation infrastructure is maintained in a state of good repair
- ensure that the planning and implementation of all modes of transportation are consistent with the environmental and energy goals of the state
- promote and increase the use of high-occupancy vehicles and low-emission vehicles
- provide an air transportation system sufficient to encourage economic growth and allow all regions of the state the ability to participate in the global economy
- increase use of transit as a percentage of all trips statewide by giving highest priority to the transportation modes with the greatest people-moving capacity and lowest long-term economic and environmental cost
- promote and increase bicycling and walking as a percentage of all trips as energy-efficient, nonpolluting, and healthy forms of transportation
- reduce greenhouse gas emissions from the state's transportation sector
- accomplish these goals with minimal impact on the environment

APPENDIX B: STATE BIKEWAY NETWORK IDENTIFICATION

MnDOT approached development of the State Bikeway Network in three phases.

1. Identify important destinations and connections
2. Select preliminary connection corridors
3. Refine State Bikeway Network corridors

Each phase incorporated technical analysis and public input, described in more detail below.

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 informed the development of 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 Routes 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
- Correspondance to current USBR and state bikeway system

MnDOT refined this framework to develop a Minnesota-specific approach toward selecting potential connections that would form corridors on the State Bikeway Network. MnDOT analyzed the following criteria in GIS software to select corridors for inclusion in this Plan.

Connection Corridor Selection Criteria

1. COMMUNITIES OF OVER 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.

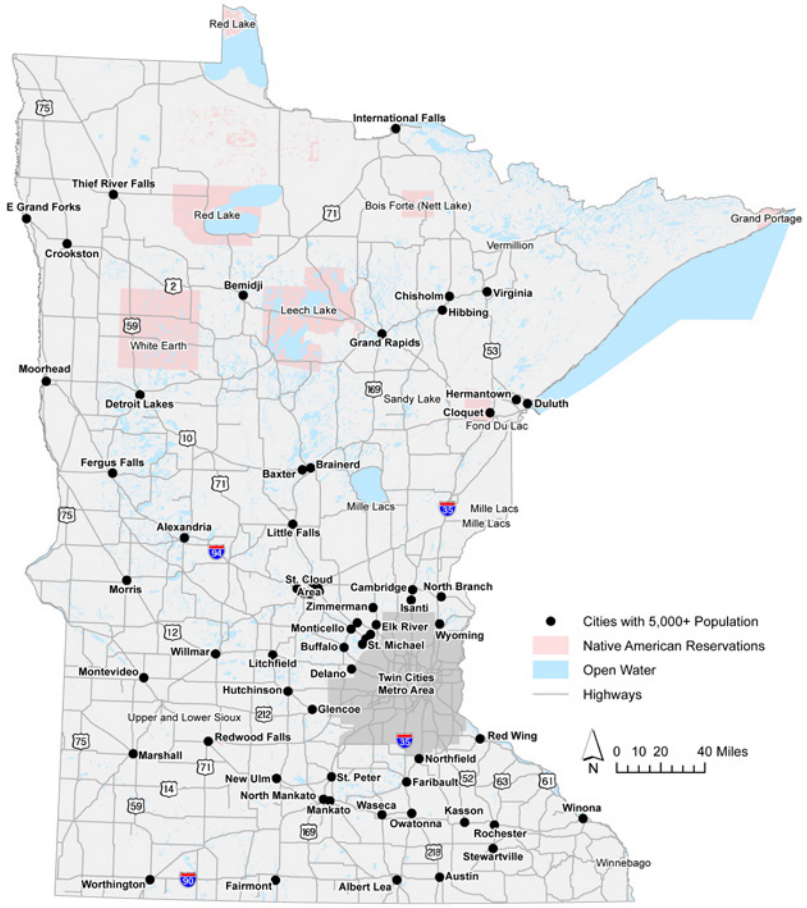

Figure A: Communities of over 5,000 People and Reservations

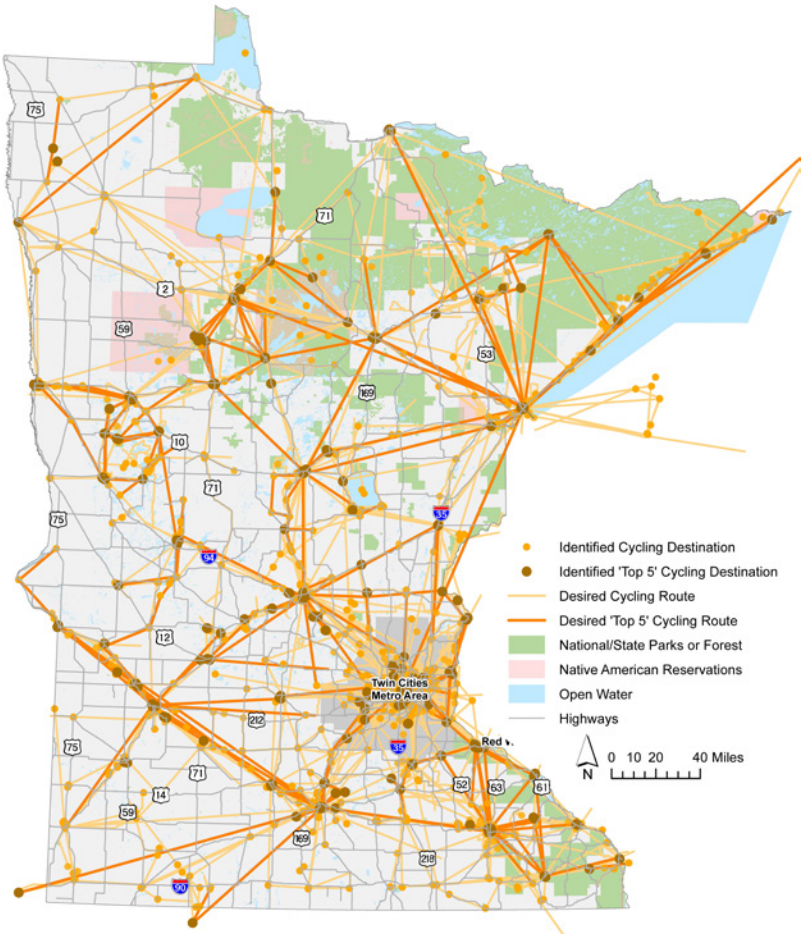

Figure B: High Priority Destinations and Connections

6. LINKS TO OTHER STATES AND CANADA

The State Bikeway Network is intended to support both 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.

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. Therefore, MnDOT initiated Phase 3 to prioritize among connection corridors and refine this map in consultation with partners and stakeholders.

Phase 3: Refine the State Bikeway Network corridors

The purpose of Phase 3 was to review connection corridors on the preliminary State Bikeway Network identified in Phase 2 and prioritize corridors for inclusion in the State Bikeway Network presented in this Plan.

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 Bikeway 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 PRIORITIZATION OF POTENTIAL CORRIDORS

MnDOT shared the draft State Bikeway Network at public open houses in each district and via an on-line mapping tool. MnDOT asked participants to prioritize which of these corridors were most important. MnDOT asked participants to identify corridors that served important connections both from a statewide perspective, as well as those corridors that were important for bicycling within each district but less likely to have statewide significance. The map at right illustrates how the public prioritized these connections.

ENVIRONMENTAL JUSTICE ANALYSIS

Presidential Executive Order 12898, issued in 1994, directed 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

Figure C: Preliminary Corridors

Figure D: Prioritized Corridors

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.

After identifying the draft State Bikeway Network Corridors, MnDOT conducted additional analysis to identiy how proposed corridors 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 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 identification of forested areas; the other is Census block groups that had no persons. MnDOT assumed that both of these geographic divisions cover land areas without concentrations of population. Therefore, 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 poplulations 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 State Bikeway Network overlaid on the concentrations of disadvantaged populations presented in Figure E. It is clear that the proposed bikeway network provides connections to the majority of areas with concentrations of disadvantaged population.

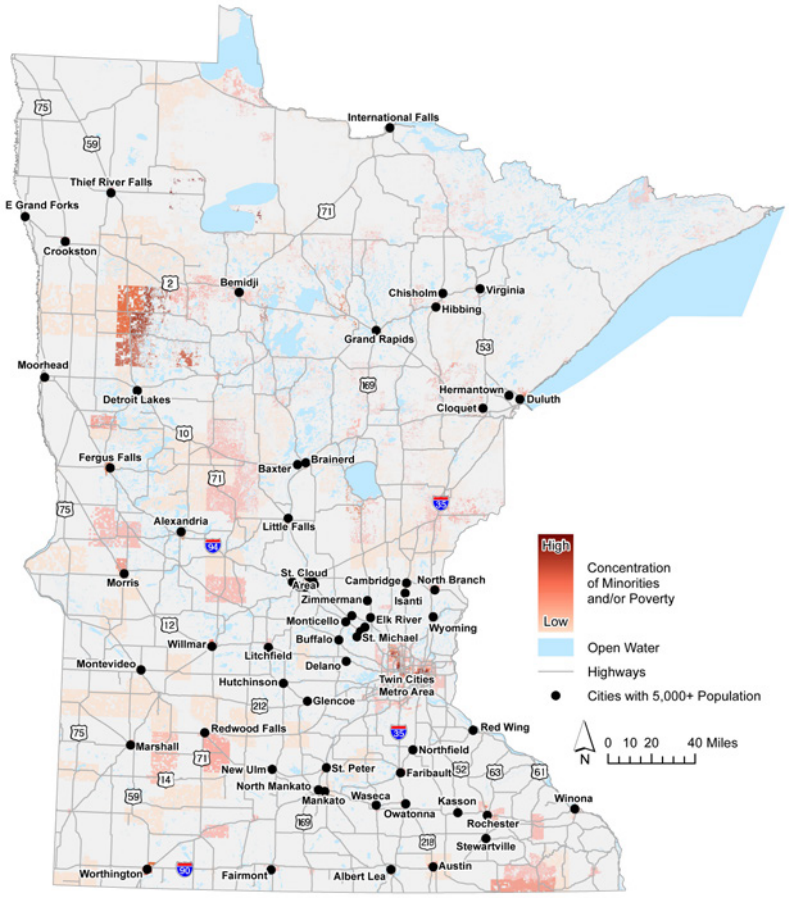

Figure E: Locations of Disadvantaged Populations

Figure F: Locations of Disadvantaged Populations and Prioritized Corridors