
STATEWIDE PEDESTRIAN SYSTEM PLAN



A framework to create safe,
convenient and desirable walking for all.

March 2021

MINNESOTA **GO**

ACKNOWLEDGEMENTS

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Our state's quality of life depends on creating safe places for people to walk. Minnesotans walk to work, to visit the doctor, and to the grocery store. Others may walk for everyday exercise or to spend quality time with family and friends. Whatever your reason for walking, we know that safety is a priority – which is why I am pleased to share MnDOT's first *Statewide Pedestrian System Plan* to serve as a framework for how pedestrian needs and interests will be met on our state highways.

We couldn't have done this project without help from people like you. More than 2,700 people shared their interests and concerns about walking in Minnesota during various public engagement activities and virtual outreach. We are grateful for those thoughtful contributions – especially during the challenges presented by the COVID-19 pandemic. This new plan uses that feedback to guide MnDOT's vision to create places where walking is a safe, comfortable, and convenient transportation option for Minnesotans.

This plan also aligns with MnDOT's *Minnesota GO* 50-year vision for transportation, which aims to maximize the health of people, the environment and our economy.

To achieve the vision laid out in this plan, we will focus on the following goals:

- Promote walking as a universal need
- Create healthy and equitable communities
- Create safer places to walk
- Create enjoyable places to walk
- Build internal capacity to advance walking

This plan will help guide MnDOT's investments in walking while centering equity in our approach and responding to the challenges posed by climate change, especially for the most vulnerable Minnesotans.

And this is just one step in the process. MnDOT is committed to continuing engagement with Minnesotans and partners statewide in the implementation of this plan.

On behalf of all of us at MnDOT, thank you for your contributions and your partnership.

Sincerely,

A handwritten signature in black ink that reads 'Margaret Anderson Kelliher'.

Margaret Anderson Kelliher
Commissioner
Minnesota Department of Transportation

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EXECUTIVE SUMMARY

The *Statewide Pedestrian System Plan* is a detailed path for the Minnesota Department of Transportation (MnDOT) to maximize its role in making walking safe, convenient, and desirable for all. This plan uses the term ‘walking’ to include all the ways that people move themselves through the world, including with mobility devices such as walkers, strollers, and wheelchairs.

This plan draws on interviews with MnDOT staff and conversations with community members in each MnDOT District to establish project development and investment planning approaches that will create better places to walk in every part of the state. It builds on previous planning work at the state, regional, and local levels to holistically consider the needs of people walking, keeping the pressing issues of safety, equity, and climate change at the forefront of all analyses and action items.

This plan seeks to:

- Tell the story of why pedestrian networks are an essential part of the trunk highway system
- Match investment planning and project development to the public’s expectations for walking along and across state roadways
- Prioritize investments in a way that supports equity, safety, infrastructure, health, and land-use contexts
- Develop policy, implementation guides, and training opportunities for MnDOT staff to improve outcomes for people walking
- Expand the focus of pedestrian planning beyond meeting minimum Americans with Disabilities Act (ADA) compliance requirements



MnDOT'S GOALS FOR WALKING INVESTMENTS

Pedestrian planning at MnDOT currently focuses on planning improvements for ADA compliance. This work is essential for creating more accessible environments, but pedestrian planning at MnDOT strives to encompass safety, convenience, and desirability. MnDOT's goals for walking embrace this expansive vision of pedestrian planning. The goals include:

- Promote walking as a universal need
- Create healthy and equitable communities
- Create safer places to walk
- Create enjoyable places to walk
- Build internal capacity to advance walking

WHY MnDOT IS INVESTING IN WALKING



3 out of **4**

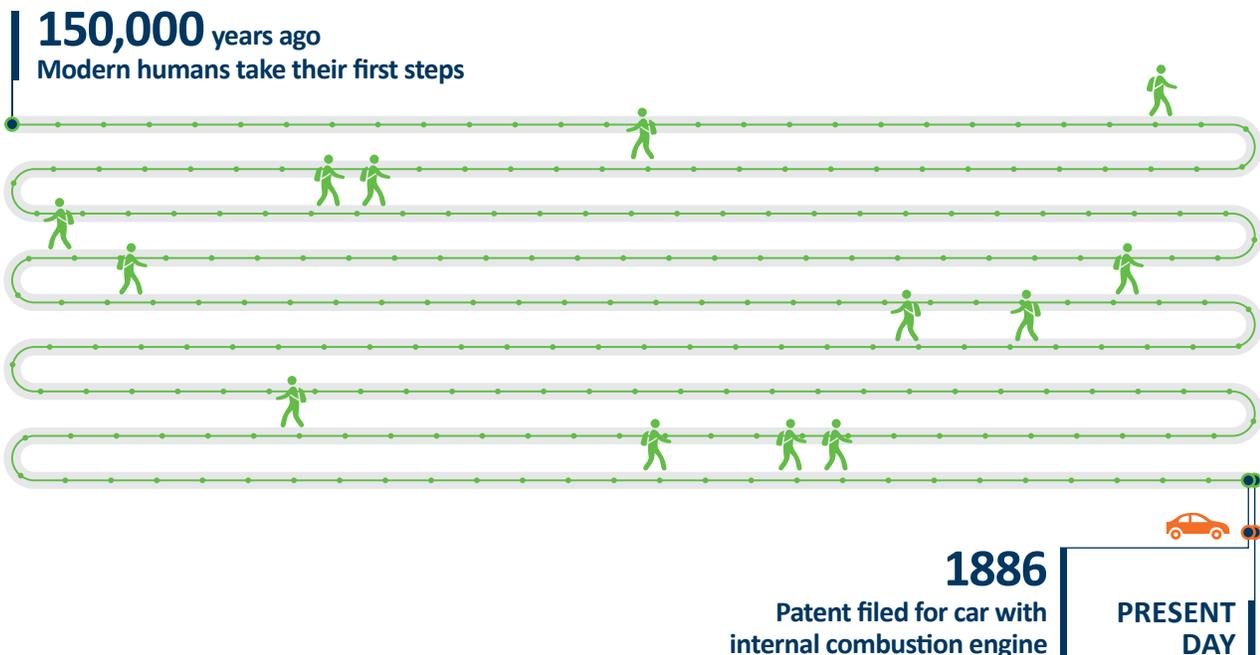
SURVEY RESPONDENTS

answered that they

COMPLETELY SUPPORT IMPROVEMENTS FOR WALKING

Pedestrian facilities along and across the trunk highway system are vital components of MnDOT's statutory commitment to transportation in Minnesota. Everyone walks at some point, including walking from transit or from a parked car. While cars currently dominate the transportation landscape of our state, walking is the oldest, most universal, and most fundamental mode of transportation, and Minnesotans across the state want to see more investment.

Investing in walking is essential to achieving MnDOT's vision: a multimodal transportation system that maximizes the health of people, the environment, and our economy. Investing in walking is an effective approach for achieving community goals like slowing speeds, enhancing quality of life, and improving health outcomes.



GUIDING PRINCIPLES

This plan highlights ways MnDOT can invest in walking with a focus on multimodal systems planning, safety, social and racial equity, and climate change.

PLANNING TRULY MULTIMODAL SYSTEMS



Successful pedestrian planning initiatives throughout the country help people walk across and along existing roadways safely not just

by adding walking-focused crossing treatments to a roadway, but by changing how space is allocated within the roadway. Roadways that are right-sized are assets rather than barriers for communities. They are places where people want to walk, rather than places where people can feasibly walk if they must.

PUTTING SAFETY OVER SPEED



Traffic crashes that kill and injure people are a serious public health concern that come with steep costs. Speeds on highways are sometimes inappropriately high for the surrounding land-use context, leading to death and injury for people walking. MnDOT can prevent traumatic, life-altering, costly crashes by focusing on creating low-speed environments in population centers and around other destinations where people are likely to walk.

RECTIFYING INEQUITY



While all communities offer a variety of ways to get around, not everyone has equal access to convenient, safe, and affordable means of transportation. In some cases, across Minnesota and throughout the United States, decisions to disinvest in pedestrian networks and locate freeways in marginalized communities were intentional and caused significant harm. Progress has been made toward inclusion of marginalized communities in planning processes to prevent these injustices from occurring again, but much more work remains. As part of making amends for past harms and rebuilding trust, it is important that MnDOT invests in reconnecting pedestrian networks where they have been disrupted by state highways, especially in environmental justice communities.

MITIGATING CLIMATE CHANGE IMPACTS



Transportation accounts for one-quarter of statewide greenhouse gas (GHG) emissions, with most surface transportation emissions coming from internal combustion engines in passenger cars and light-duty trucks. In the *Statewide Multimodal Transportation Plan*, MnDOT formally adopted the target of reducing GHG emissions by 30% from 2005 levels in accordance with the Minnesota Next Generation Energy Act. Investing in improvements that make walking comfortable and safe can reduce GHG emissions from transportation and lessen the impact of extreme heat and precipitation on the most vulnerable users of the transportation system.

HOW MnDOT IS PLANNING FOR WALKING INVESTMENTS

Building a multimodal system that puts safety first, rectifies inequity, and mitigates climate change requires increased investment in walking. This plan investigates current investment plans and practices, presents priority areas for walking to inform investment planning, and develops investment scenarios for increased funding.

INVESTMENT PLANS AND PRACTICES

The following highlights key findings and action items related to the current state of investment planning for walking, including District staff practices and MnDOT plans guiding investment priorities.

KEY FINDINGS

-  The Minnesota State Highway Investment Plan's (MnSHIP) Accessible Pedestrian Infrastructure category primarily focuses on meeting ADA standards and is the only dedicated funding for walking infrastructure on MnDOT projects.
-  Most investments that support walking are tied to projects that are already planned to meet the needs of people driving.

KEY ACTION ITEMS

-  In the next update of MnSHIP, expand the amount invested in "Accessible Pedestrian Infrastructure" to address walking improvements that go beyond ADA compliance projects.
-  Increase funding of stand-alone walking improvements.

PRIORITY AREAS FOR WALKING

Current MnDOT investments in walking are typically tied to projects that are primarily focused on car and truck traffic. Prioritizing the needs of people walking is critical. Every transportation investment decision that is made has impacts on people walking, and people walking are the most vulnerable users of the system. Centering walking advances MnDOT's mission of a safe, accessible, efficient, and reliable transportation system.

To better identify priority locations for people walking, this plan developed the Priority Areas for Walking Study (PAWS). The PAWS analysis integrates equity, safety, land use, health, and infrastructure considerations to identify the highest priority areas for walking on trunk highways across the state. For the analysis, the entire area of the state was divided into hexagons, each of a half-mile diameter. Each hexagon then received a score based on 19 factors that indicate demand for walking and need for improvement to the walking environment.



SAFETY



HEALTH



EXISTING
INFRASTRUCTURE



EQUITY



LAND USE

The PAWS analysis is meant as a starting point for considering walking in MnDOT decision-making. The analysis highlights areas that are important for walking but does not recommend specific treatments or standards.



INVESTMENT SCENARIOS

The investment scenarios build on the PAWS analysis to consider the capital costs associated with realizing key MnDOT goals in the highest priority areas for walking statewide and in each District. Goals advanced by these scenarios include creating safer places to walk, creating enjoyable places to walk, responding to climate change, and creating healthy and equitable communities.



The **context-sensitive scenario** estimates the cost associated with constructing improvements along and across roadways within the highest-priority areas for walking. While the highest-priority areas for walking contain only 6.5% of the trunk highway miles in the state, they account for nearly 48% of pedestrian crashes. The crossing treatments included in this scenario are likely to reduce the number of crashes occurring in these areas. The total cost of context-sensitive improvements along 526 miles of MnDOT roadways and 1,094 intersections in the highest-priority areas is likely to be between \$211 million and \$648 million.



The **climate change mitigation scenario** builds on the context-sensitive scenario to understand how MnDOT could use green infrastructure to simultaneously reduce emissions through mode shift and address the increased exposure to heat and flooding that put people walking at risk. Installing green infrastructure along MnDOT roadways in the highest-priority areas for walking is an efficient strategy for mitigating climate change impacts and meeting the public's expectations for spaces to walk that are shaded and buffered from car and truck traffic.

Costs associated with creating a complete tree canopy and managing stormwater runoff when constructing pedestrian improvements along 473 miles of MnDOT roadways in the highest-priority areas range from \$145 million to \$398 million.



EXHIBIT ES-1: Existing Conditions on a MnDOT Roadway



EXHIBIT ES-2: Context Sensitive Scenario



EXHIBIT ES-3: Climate Change Mitigation Scenario

The cost of pedestrian crashes on all roadways in the highest-priority areas over a 20-year period is nearly \$4 billion. The total cost of context-sensitive improvements that will likely prevent some of these crashes is \$211 to \$648 million.

PROCESS IMPROVEMENTS TO SUPPORT WALKING

Creating safe and comfortable walking conditions on MnDOT roadways will take more than increased funding; it will require improvements to MnDOT processes. This plan explores policies and practices around MnDOT's processes for cost participation, maintenance, and project scoping and needs identification. It identifies actions that will improve these processes to better support people walking.

COST PARTICIPATION

MnDOT's Cost Participation Policy (CPP) influences the design and implementation of walking infrastructure. The purpose of the CPP is to establish guidelines for how costs are shared between MnDOT and local governments.

KEY FINDINGS



The CPP is open to interpretation and Districts may apply the policy in different ways. This can cause challenges when nearby communities in a different MnDOT District see policy implemented differently from project to project.

KEY ACTION ITEMS



Evaluate changes to agency policy and practices to allow MnDOT to pay for design elements that are context appropriate, but may exceed current design standards.



Clarify CPP guidance about which agency pays for walking improvements in townships or unincorporated areas that connect two rural communities, and additional needs that are uncovered in urban projects.



Initiate a conversation among all MnDOT Districts about the consideration of community size in project decision-making and cost participation expectations.

MAINTENANCE

People walk year-round making snow and ice removal a critical safety and mobility concern. Maintenance is a key factor in ensuring facilities are ADA compliant.

KEY FINDINGS



The consensus among members of the general public is that sidewalks and paths aren't maintained as well as roads in the winter.



MnDOT does not have a clearly articulated, overarching policy about sidewalk maintenance.



MnDOT Districts are interested in identifying ways that projects can offer up-front support to locals (funding, education, and other resources), with the understanding that local government will carry out regular maintenance of pedestrian facilities.

KEY ACTION ITEMS



Design to support effective maintenance.



Explore how MnDOT can help local agencies take the lead on maintenance.



Clarify MnDOT's policies to reflect the expectation of year-round maintenance of pedestrian facilities.



Establish a winter prioritization network for clearing MnDOT-owned pedestrian facilities that ensures that the best access is provided to the greatest number of people possible following a heavy storm event.



Recommend alternative maintenance funding and responsibilities between MnDOT and local agencies.

PROJECT SCOPING AND NEEDS IDENTIFICATION

The project scoping process includes assigning a project manager, working through scoping worksheets, and incorporating feedback from functional groups and stakeholders. The scoping stage is a critical and efficient time to integrate pedestrian improvements into a project.



KEY FINDINGS



Walking improvements are often seen as ‘add on’ or a ‘wish’ and not a need. Therefore comprehensive walking improvements may not make it into the scope of a project.



Public engagement revealed support for sidewalks and/or sidepaths in every land use context. There was also support for paved shoulders in natural areas and connections between rural towns.



Minnesotans strongly support the following improvements:

- Improved pedestrian crossings
- More trees, benches, and other amenities
- Adequate space on sidewalks
- Separation from people bicycling
- Buffer space from car and truck traffic

KEY ACTION ITEMS



Incorporate climate change considerations into the appropriate Scoping Worksheets.



As a default, projects should fill network gaps where there is up to ¼ mile between sidewalk or sidepath facilities.



Consider the specific context of the project community when doing public engagement during scoping, and make sure stakeholders in the engagement process match that context.



Use the infrastructure expectations tables developed for this plan to investigate the types of linear and crossing infrastructure that would best facilitate walking within the project’s study area.



When right-of-way space is limited, select a linear facility that enables safe and comfortable walking within the confines of the existing right-of-way, or work to acquire additional right-of-way for increased separation between people walking and people driving.



ABOUT THE PLAN

Everyone walks at some point when getting around in Minnesota, including walking to transit or from a parked car. While cars currently dominate the transportation landscape of our state, walking is the most universal and fundamental mode of transportation. This *Statewide Pedestrian System Plan* is a detailed path for MnDOT to maximize its role in making walking safe, convenient, and desirable for all.

This chapter describes how the *Statewide Pedestrian System Plan* was developed. The Plan draws on interviews with MnDOT staff and conversations with community members in every MnDOT District to establish project development and investment planning approaches that will create better places to walk in every part of the state. It builds on previous planning work at the state, regional, and local levels to holistically consider the needs of people walking, keeping the pressing issues of safety, equity, and climate change at the forefront of all analyses and action items.

While this plan focuses specifically on pedestrian needs, it is important to remember that *every* plan is a pedestrian plan: plans for every mode of transportation impact the degree to which walking is a safe, convenient, desirable option.

Each and every MnDOT plan and project is an opportunity to strengthen walking as a viable transportation option in Minnesota.

PLAN PURPOSE

As established in *Minnesota GO*, MnDOT’s vision is “Minnesota’s multimodal transportation system maximizes the health of people, the environment and our economy.”

It is MnDOT’s responsibility to create safe systems that encourage walking. The Department was created by Section 174.01 of Minnesota Statutes to provide a transportation system “including facilities for walking and bicycling”, to “promote and increase” these modes, and to “reduce greenhouse gas emissions from the state’s transportation sector.” While MnDOT cannot control the behavior of all who use Minnesota’s roadways, the agency is responsible for creating safe transportation facilities that connect people walking to destinations and that support environmentally sustainable modes of transportation.

The *Statewide Pedestrian System Plan* is a detailed path for MnDOT to maximize its role in making walking safe, convenient, and desirable for all on the trunk highway system. Trunk highways are roadways under the jurisdiction of MnDOT, and often are designated as an Interstate, US, or MN highway. The plan seeks to:

- Tell the story of why pedestrian networks are an essential part of the trunk highway system
- Match investment planning and project development to the public’s expectations for walking along and across state roadways
- Prioritize investments in a way that supports equity, safety, infrastructure, health, and land-use contexts
- Develop policy, implementation guides, and training opportunities for MnDOT staff to improve outcomes for people walking throughout Minnesota
- Expand MnDOT’s work on pedestrian planning beyond meeting minimum Americans with Disabilities Act (ADA) compliance requirements. A more expansive definition of pedestrian planning encompasses safety, convenience, and desirability.

This plan uses the term ‘walking’ to include all the ways that people move themselves through the world, including with mobility devices such as walkers, strollers, and wheelchairs.

This plan uses the term ‘walking’ to include all the ways that people move themselves through the world, including with mobility devices such as walkers, strollers, and wheelchairs.



PLAN PROCESS

Under the [Minnesota GO](#) vision, MnDOT's Family of Plans includes system and investment plans that identify policy change and investment needed to improve transportation outcomes in Minnesota. *Minnesota Walks*¹ serves as a second guiding vision of why walking is important in Minnesota.

The project team's work began by reviewing [49 other plans created by MnDOT and other organizations in Minnesota](#). Each document was reviewed with specific themes and big ideas in mind. Findings were discussed with MnDOT staff and [goals](#) were developed to describe what the planning process should accomplish.

[Thousands of people participated in in-person and online conversations about walking in Minnesota](#). Residents shared ideas and questions for improving walking throughout the state. Ideas were then incorporated into the plan's [Priority Areas for Walking Study \(PAWS\)](#), which shows high-priority areas in Minnesota to improve conditions for walking.

The plan's later chapters describe processes to make these ideas a reality. Conversations with Minnesotans continued during this part of the process to make sure these recommendations met residents' expectations. Changes to MnDOT practices are supported by [investment priorities](#) to focus State dollars where they are most cost-effective. Investments on the trunk highway system are an important part of better connecting and facilitating walking on local pedestrian networks.



HOW TO USE THIS PLAN

The *Statewide Pedestrian System Plan* is a resource for MnDOT staff who plan, design, and engineer roadway projects. It translates the vision of *Minnesota GO* and *Minnesota Walks* into action. As such, it is also a key resource for MnDOT staff who set policy direction for the agency.

Major challenges echoed throughout the plan — creating a multimodal transportation system, advancing equity, and mitigating climate change — will be best met by actions taken from all levels of government. Staff from other levels of government, including municipalities, counties, metropolitan planning organizations (MPO), regional development organizations (RDO), and other public agencies may consider using this plan to adopt similar strategies that prioritize increased levels of walking throughout the state. Community members and organizations who focus on improving access to destinations where Minnesotans live, work, and play can use this plan to routinely check MnDOT’s progress toward plan goals. Ideas for how to use this plan are shown in EXHIBIT 1-1.

IMPLEMENTING PLAN ACTION ITEMS

Statewide Pedestrian System Plan action items should be incorporated into many aspects of planning processes, including project development and implementation, grant applications, policy and program development, community engagement, and other transportation plans. Action items require staff and funding resources. As such, ongoing engagement and coordination between MnDOT offices, divisions, and districts is critical. MnDOT staff from many offices and divisions contributed to this plan, including input regarding existing MnDOT practices, conversations throughout recommendation development stages, and review of the draft plan.

Action items included in the plan are ready for next steps to move toward implementation. The plan included robust discussion among MnDOT staff so that it can be implemented swiftly and comprehensively. Although action items will not be carried out automatically nor instantly, staff should begin the implementation process as soon as possible.



EXHIBIT 1-1: How to Use this Plan

I WORK FOR...	HOW CAN I USE THIS PLAN?
<p>MnDOT as a Project Manager, Planner, or Engineer/Designer</p>	<ul style="list-style-type: none"> • Implement project development action items within your day-to-day work, especially in a project’s early stages • Use investment planning scenarios and the Priority Areas for Walking Study (PAWS) to understand infrastructure needs and solutions for your projects • Follow Environmental Justice strategies for advancing equity within projects (as discussed in the yellow Environmental Justice Implications call-out boxes throughout the plan) • Implement cost participation, maintenance, and project scoping action items to improve inter-governmental collaboration
<p>MnDOT as a Tribal Affairs Staff Person</p>	<ul style="list-style-type: none"> • Use the Priority Areas for Walking Study (PAWS) results in Tribal Government Areas and investment scenarios to review infrastructure needs and solutions with Tribal Government leaders and residents • Follow Environmental Justice strategies for advancing equity within projects as discussed in the yellow Environmental Justice Implications call-out boxes throughout the plan)
<p>MnDOT as an Environmental Stewardship Staff Person</p>	<ul style="list-style-type: none"> • Use the investment scenarios for funding guidance and action items for integrating walking infrastructure into projects • Follow Environmental Justice strategies for advancing equity within projects as discussed in the yellow Environmental Justice Implications call-out boxes throughout the plan)
<p>Minnesota Department of Health or Another State Agency</p>	<ul style="list-style-type: none"> • Use plan goals, goals of pedestrian planning at MnDOT, and benefits of walking information as a compliment to existing and future agency planning initiatives. • Review project development action items and existing MnDOT practices as a primer for collaborating with MnDOT staff
<p>County, MPO, RDO/RDC, Municipal Government</p>	<ul style="list-style-type: none"> • Reference plan goals, goals of pedestrian planning at MnDOT, and benefits of walking information to frame your planning processes and infrastructure investment priorities • Review project development action items and existing MnDOT practices as a primer for collaborating with MnDOT staff • Identify priority areas for walking within your community
<p>Community or Advocacy Organization</p>	<ul style="list-style-type: none"> • Review MnDOT pedestrian planning goals and performance measures, and associated timelines, for items that relate to your organization’s goals; request updates over time • Use the Priority Areas for Walking Study (PAWS) results to review areas in your community in need of walking improvements



PLAN CONTEXT

This section shares the context in which the *Statewide Pedestrian System Plan* was developed. The plan is guided by the vision of *Minnesota GO* and *Minnesota Walks*, and builds on MnDOT’s [ADA Transition Plan](#). The planning process was altered by the COVID-19 pandemic, which began mid-way through the plan’s development. The planning process — and all of MnDOT’s activities — occurred on Native land.

MINNESOTA GO AND MINNESOTA WALKS

The *Minnesota GO* Family of Plans establishes a collaborative vision for transportation throughout the state. The 50-year vision for all forms of transportation seeks to “better align the transportation system with what Minnesotans expect for their quality of life, economy, and natural environment.”

Minnesota Walks lays the foundation for “addressing the importance of walking, why it should be easier, the difficulties that some people face when walking, and how Minnesota is on track to improve the pedestrian environment.” *Minnesota Walks* is the guiding vision of this

Minnesota GO presents the following guiding principles:

- Leverage public investments to achieve multiple purposes
- Ensure accessibility
- Build to a maintainable scale
- Ensure regional connections
- Integrate safety
- Emphasize reliable and predictable options
- Strategically fix the system
- Use partnerships

Minnesota GO is an ongoing planning effort and vision. All of MnDOT’s Family of Plans reflects the vision established in *Minnesota GO*.

Statewide Pedestrian System Plan. Minnesota Walks was adopted in December 2016 to create “a framework for action for creating safe, convenient, and desirable walking and rolling for all.” The plan includes guidance for planning, decision-making, and interagency collaboration. It also includes guidance on collaboration between MnDOT and other State-level public agencies, advocacy organizations, policy-makers, regional and municipal public agencies, and private entities. The plan is structured around

***Minnesota Walks* is the guiding vision of this *Statewide Pedestrian System Plan*.**



an overarching goal to “design for all.” Strategies and themes were defined based on extensive public and stakeholder engagement. Over 6,000 people provided input during the planning process. Engagement activities and findings are summarized in the *Minnesota Walks* planning document and the accompanying Community Engagement Report.

MnDOT’S ADA TRANSITION PLAN

The Americans with Disabilities Act (ADA) specifies that “...no qualified individual with a disability shall, by reason of such disability, be excluded from participation in or be denied the benefits of the services, programs, or activities of a public entity.” MnDOT is a public entity that is required to comply with the ADA. MnDOT developed its first ADA Transition Plan in 2010 with a revised plan in 2014, which sets out actions that will make its services, facilities, programs, and activities accessible to all individuals.

The Transition Plan works in conjunction with other MnDOT planning documents, such as *Minnesota GO*, the 20-year *Statewide Multimodal Transportation Plan*, and the 20-year *Minnesota State Highway Investment Plan* (MnSHIP). In addition, several Technical Memorandums have been released to provide further guidance on how MnDOT will make the department accessible to all individuals.

The Transition Plan is related to, but distinctly different from, the *Minnesota Statewide Pedestrian System Plan*. MnDOT’s work toward achieving ADA compliance throughout the MnDOT system is legally mandated. It focuses on outlining and achieving minimum expectations for the condition of sidewalks, curb ramps, and other infrastructure features. As discussed above, the ADA Transition Plan documents improvements. In contrast, this plan is based on MnDOT policy and seeks to meet expectations of where Minnesota residents want

to walk. This plan includes investment guidance and other action items to create pedestrian networks that are enjoyable places for people of all ages and abilities to walk.

COVID-19 PANDEMIC

Part of the plan development process occurred during the COVID-19 pandemic. The main impact to the plan occurred during the second phase of community engagement. The pandemic led to a change in strategy from in-person events to online engagement, which impacted the project team’s ability to reach [priority populations](#). It also influenced the thinking of those who responded to our online survey, as having space for social distancing took on importance in the pandemic era. Despite the change in societal context, the preferences of members of the public were largely consistent before and during the pandemic: people want to see investment in walking and want wide walking spaces separated from traffic.

PLANNING ON NATIVE LAND

MnDOT acknowledges that the facilities and assets of MnDOT are located on the traditional, ancestral, and contemporary lands of Anishinaabe (Ojibwe/Chippewa), Dakota, and Winnebago people, and many additional diverse Indigenous peoples from the time of human settlement to today and tomorrow. MnDOT also acknowledges that the lands that now make up Minnesota were ceded by Indigenous peoples in a series of treaties in the 1800s, and would like to respect the long-standing relationships of these groups to these lands. In offering this land acknowledgment, we affirm tribal sovereignty and will work to hold MnDOT accountable to Indigenous peoples. MnDOT staff are encouraged to work with the Office of Tribal Affairs to learn more about our agency’s commitment to working with the federally recognized sovereign Tribal Nations located within Minnesota.

BUILDING ON PREVIOUS PLANS

To develop the foundation for this plan, 49 plans, policies, and standards that impact walking-focused planning and design in Minnesota were reviewed. Plans were produced by state, regional, and local agencies. Findings from this review shaped [the plan's focus on multimodal planning, safety, equity and climate change](#).

Plan review included the long range transportation plans and bicycle and pedestrian plans for the eight metropolitan planning organizations (MPOs) in Minnesota.

Elements of comprehensive plans impacting people walking for the following counties and municipalities were also reviewed:

- Bloomington
- Brainerd
- Edina
- Ely
- Golden Valley
- Minneapolis
- Grand Marais
- Bemidji
- Hennepin County
- Kandiyohi County
- Otter Tail county
- Richfield
- Saint Paul
- Tracy
- Albert Lea
- Winona

State agency plans, policies, and standards reviewed include:

- MnDOT:
 - 2014 MnDOT ADA Transition Plan
 - Bridge Design Manual
 - Complete Streets Policy, Report, and Work Plan
 - Connected and Automated Vehicle Strategic Plan (Executive Report)
 - Cost Participation and Maintenance with Local Units of Government Manual
 - Highway Project Development Process Handbook and selected Subject Guidance documents
 - Greater Minnesota Transit Investment Plan
 - Minnesota Safe Routes to School Strategic Plan
 - *Minnesota GO* Vision
 - *Minnesota State Highway Investment Plan*
 - *Minnesota Walks* and Community Engagement Report
 - Performance Based Practical Design Policy
 - Road Design Manual
 - State Aid Manual
 - State Aid Standards
 - *Statewide Multimodal Transportation Plan*
 - Technical Memorandum: MnDOT Land-use contexts: Types, Identification, and Use
 - Traffic Engineering Manual (Chapter 13)
- Minnesota Pollution Control Agency:
 - Minnesota Climate Action Plan and Adapting to Climate Change in Minnesota Report
- Minnesota Department of Health
 - Minnesota Climate and Health Profile Report
 - Minnesota Health Planning: How to Guide
 - Older Adult Fitness: Access and Participation in Rural Minnesota

GUIDING DOCUMENTS

While many MnDOT policies and technical memoranda are important for pedestrian planning, two documents in particular were continuously revisited throughout the planning process: MnDOT's Complete Streets Policy² and MnDOT's Land-use context Technical Memorandum (18-07-TS-05)³. The guidance presented in Chapter 4 and Chapter 5 of this plan enhance MnDOT practices and investment strategies to more holistically address the central goals of the two documents summarized here.

COMPLETE STREETS POLICY

"Complete streets" is an approach to road planning and design that considers and balances the needs of all transportation users. The complete streets philosophy is incorporated into each MnDOT project by assessing the context in which the project will be implemented.

In addition to the overall community context, other factors such as topography, road function, vehicular traffic speed, freight volumes, and pedestrian and bicycle demand should be considered. Options to fulfill the goals of a complete street will vary depending on these factors. All construction projects within trunk highway right-of-way must have a documented complete streets project report identifying considerations for all users. Project Managers must complete the reports at the end of project scoping and revise them at 30% final design.

[MnDOT's Complete Streets Policy](#) (2016) addresses capital program priorities. Districts are instructed to evaluate opportunities to address the needs of all users when considering individual projects and when developing investment plans. Districts should give higher priority to opportunities to address identified user needs on projects that:

- Have affected populations that include a high proportion of individuals covered by Title VI of the Civil Rights Act and Executive Order 12898 on environmental justice, such as people of color and people with low incomes.

- Have a higher probability of increasing the number of people biking, walking, or taking transit
- Address a significant safety issue for vulnerable users
- Addresses a gap or barrier created by prior transportation investments
- Are identified in a local or regional plan

LAND-USE CONTEXT TECHNICAL MEMORANDUM

In June 2018, MnDOT released [Technical Memorandum 18-07-TS-05](#) to update the Department's approach to land-use context in relation to transportation project planning. The memo is based on the principles of Context Sensitive Solutions, which is an approach to planning transportation projects that takes into consideration the characteristics of the surrounding communities.

The purpose of the memo is to provide direction on land-use context for all projects and guidance documents. It is to be used by staff from the project planning stage to the design stage.

Significance for the SPSP

MnDOT's previous approach to land use was more broadly defined, featuring urban, rural, and occasionally suburban and small-town land-use context types. The current memo has a more refined approach, and describes nine distinct land-use context types. This has implications for how people walking are considered in the planning and design of transportation projects, as the surrounding area must be considered when planning and designing transportation projects.

The memo notes that the relative volume of people walking varies based on the surrounding land-use context. For example, a location in an urban core with a mix of uses at high density or where there is a single major facility like a university campus or sports arena will have higher volumes of people walking in the area than a suburban commercial area

that is oriented more toward vehicular access. The suburban commercial area will, in turn, generally have higher volumes of people walking than a rural or natural area. In addition to volumes of people walking, there may also be existing or planned sidewalks or pathways that are part of the land-use context.

When planning for transportation enhancements in a given area, existing pedestrian volumes are one input used to make planning decisions. However, presence of destinations and the potential for new or enhanced walking connections are often more valuable pieces of information than counting the number of people who currently walk at a given location. For example, a planner may count few people walking near a convenience store in a rural context. However, with comfortable and safe walking infrastructure installed, many more people could walk to the location, and people who are already walking would be able to travel more safely.

The memo recognizes that there is variation along a transportation corridor depending on the land-use context, and therefore different approaches to planning for people walking are needed for each context. A state highway through a rural area with low volumes of people walking and infrequent cross streets will be treated differently than one that passes through an urban commercial area where people walking are present in higher volumes. The land-use context may mean that a different approach is used in the planning and design of transportation projects. This could include a mid-block crossing for people walking where there are major destinations on either side of the roadway, the provision of new sidewalks or pathways, or modification to speed limits in areas with high concentrations of people walking.

Land Use Characteristics

Identification of the land use characteristics will help determine which land-use context type is applicable to a given section of transportation infrastructure. When determining the applicable land-use context in a community, MnDOT and local agencies should consider multiple characteristics. These include:

Existing land uses: The activities that occur in an area, which may include residential (housing, apartments, retirement homes), commercial (retail stores, offices), and institutional (hospitals, universities). Urban areas tend to have a mix of different uses in the same area, while suburban and rural areas tend to have each use separated.

Planned land uses: These are land uses that do not exist today but are planned for in local planning documents, including the zoning ordinance or code.

Density: The floor area of a building relative to the size of the parcel of land the building occupies. High-rise buildings will have higher densities and be located in an urban context, while single-story buildings will have lower densities and be located in suburban or rural contexts.

Building setbacks: The distance a building is located from the roadway. An urban context will have smaller setbacks than a suburban context, while a rural context will have very large setbacks.

Road frontage: The width of a lot along the road. Lots are typically very narrow in an urban context, wider in a suburban context, and very wide in a rural context.

Access, facilities, and parking: Accesses are the driveways, sidewalks, and sidepaths that provide entry to a lot. There tend to be more facilities (such as transit shelters) in urban areas, plentiful parking and driveways and some facilities in suburban areas, and few accesses, facilities, and parking in rural areas.

Users and uniquely affected groups: This may include environmental justice populations or communities with demographics that differ from statewide averages. For example, some communities may have higher numbers of seniors or children.

Presence of special uses: This may include universities, parks, historic places, emergency management facilities, sports arenas, and hospitals.

Land-Use Context Types

Each of the nine land use types described in the memo are summarized below, with accompanying example photos from the memo.

Natural: These are areas that are undeveloped natural features such as forests, wetlands, and meadows. Uses include parks, forestry, and tourism-focused uses, with very low densities. Traffic is low-medium volume, with some walking and bicycling on scenic routes and pathway crossings. See EXHIBIT 1-2.

Rural: These are areas characterized by farms and sporadic tree cover that have very low density. Automobile traffic is usually low to medium volume. Rural areas typically have low volumes of transit, walking and bicycling traffic. See EXHIBIT 1-3.

Rural crossroads: These are areas of small concentrations of low density at the intersection of rural roads. Automobile and transit traffic is usually low to medium volume, with the potential for medium volumes of walking and bicycling traffic. See EXHIBIT 1-4)

Industrial – Warehouse – Port: These are areas characterized by industrial, warehousing, shipping, and port uses, usually of low-medium densities, and with high automobile and truck traffic and low walking traffic in the surrounding area. See EXHIBIT 1-5.



EXHIBIT 1-2: Natural Land Use



EXHIBIT 1-3: Rural Land Use



EXHIBIT 1-4: Rural Crossroads Land Use



EXHIBIT 1-5: Industrial Land Use

Suburban Residential: These areas have low- to medium-density housing, neighborhood parks, and small-scale commercial uses. Traffic is generally low to medium volume for all modes. See EXHIBIT 1-6.

Suburban Commercial: These are areas characterized by retail, office, and other commercial uses, with low to medium density. There are medium to high volumes of automobile and truck traffic. See EXHIBIT 1-7.

Urban Residential: These are highly developed areas consisting of a mix of residential types and associated commercial, park, and institutional uses. They are of medium to high density and have medium to high volumes of walking, bicyclist, transit, and automobile traffic. See EXHIBIT 1-8.

Note that the term “urban” does not exclusively apply to major cities: small rural towns often have downtown areas that are comprised of a mix of urban residential and urban commercial land uses.

Urban Commercial: These areas include high concentrations of office, retail, and other commercial uses, with other institutional and civic uses as well. They are medium to high density. There are medium to high volumes of people walking and bicycling and transit traffic, and medium volumes of automobile use. See EXHIBIT 1-9.

Urban Core: These are the centers of the major cities, such as Minneapolis, St. Paul, Rochester, and Duluth, and are characterized by a high density of mixed uses, including commercial, residential, institutional, and civic uses. All traffic types are of medium to high volume. See EXHIBIT 1-10.



EXHIBIT 1-6: Suburban Residential Land Use



EXHIBIT 1-7: Suburban Commercial Land Use



EXHIBIT 1-8: Urban Residential Land Use

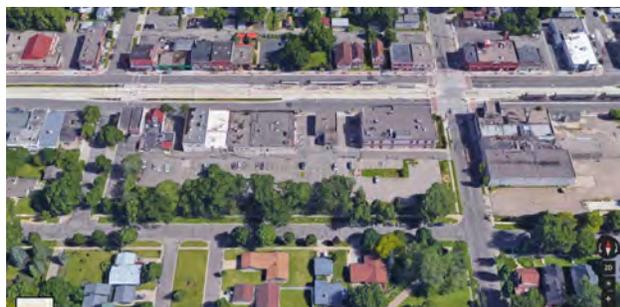


EXHIBIT 1-9: Urban Commercial Land Use

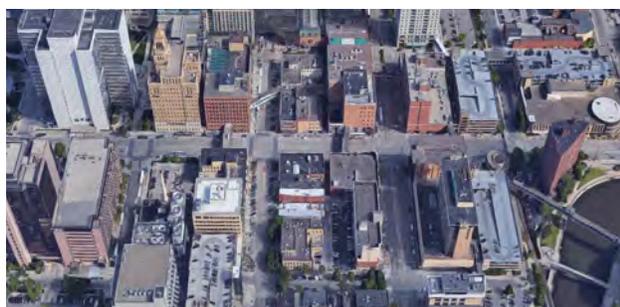


EXHIBIT 1-10: Urban Core Land Use

HOW MnDOT STAKEHOLDERS SHAPED THE PLAN

Frequent consultation with internal MnDOT stakeholders was critical to developing this plan. MnDOT staff provided feedback during several stages of the planning process.

PROJECT ADVISORY COMMITTEE

MnDOT staff from several work units, multiple MnDOT Offices, and multiple MnDOT Districts served on the Project Advisory Committee (PAC). This group met regularly throughout the project process. Feedback from the PAC was instrumental to develop an actionable plan; members discussed project goals, task progress, and key findings. Between formal meetings, the PAC convened by email and phone conversations to review draft plan components. This created a robust review process. Plan contents were reviewed and refined through an iterative process and were then incorporated

MEETING PRESENTATIONS

MnDOT staff routinely discussed plan findings and other updates at MnDOT staff meetings and workshops. These updates were important to gain feedback from other staff who were not PAC members. Planning staff sought new ideas by sharing updates to a broad array of staff with varying roles and responsibilities.

ALL PLANNERS GROUP ANNUAL WORKSHOP

About halfway through the planning process, the project team began transitioning from studying what it is like to walk in Minnesota today, to

developing action items to improve walking throughout the state roadway system. Ideas and questions from MnDOT staff helped make this transition. The project team presented ideas at the All Planners Group Annual Workshop to hear from a broad cross-section of MnDOT staff. Presenters asked staff about existing practices for developing walking-related improvements. The four topics discussed were the same topics covered during small group interviews held later in the project:

- Cost Participation Policy
- Investment Planning
- Maintenance
- Scoping and Needs Identification

Workshop participants worked in groups and individually to answer questions about current practices and ideas for improvement. This feedback helped develop interview questions for selected MnDOT stakeholders as described below.

INTERVIEWS

Phone interviews were conducted with staff members in each MnDOT District in Greater Minnesota. The interviews discussed existing MnDOT policies and procedures related to investment planning, project scoping and needs identification, maintenance planning and cost participation as they relate to pedestrian projects. Notes from these interviews informed plan action items. Interview participants were selected based on their daily work responsibilities. Participants had extensive experience with program development and delivery, maintenance agreements, project management, design, and construction. Interview participants recommended ideas for improving MnDOT practices and discussed how improvements could enhance walking throughout the state roadway system. Participants referred the project team to other resources to learn more about existing and potential MnDOT policies. They also shared tools they have developed to enhance project delivery.

HOW MINNESOTANS SHAPED THE PLAN

The project team used a variety of tools, including both in-person and online engagement, to gather input for the plan. Project engagement was designed to hear specifically from the people identified in *Minnesota Walks* as facing greater barriers to safe and desirable walking. Priority populations include: people of color, people in small rural communities, children and youth, Native Americans, people with low incomes, older adults, and people with disabilities.

Project engagement was divided into two phases. Phase 1 occurred in the summer and fall of 2019 and involved both in-person and online engagement, including multiple events in each MnDOT District. Phase 2 occurred in the summer of 2020. Due to the COVID-19 pandemic, in-person engagement was not possible. As a result, Phase 2 utilized multiple strategies to reach people across the state through online engagement.



Project engagement was designed to hear specifically from the people identified in *Minnesota Walks* as facing greater barriers to safe and desirable walking.

ENGAGEMENT PHASE 1

IN-PERSON ENGAGEMENT

As part of the first round of engagement, 42 in-person engagement events were held across the state between May 2019 and October 2019. Input was gathered at these events through written comments, conversations, surveys, and an interactive poster. Outreach was also conducted in coordination with the MnDOT Tribal Liaison Office to hear from tribal communities. Outreach efforts in the eight MnDOT districts included:

- 9 pop up events, where project staff set up tables at libraries, senior centers, and other organizations
- 22 tabling events, where project staff attended public events such as community festivals and fairs
- 8 listening sessions, where project staff held meetings with organizations and their members
- 3 on-street engagement sessions, where project staff spoke with and surveyed people walking near community destinations, such as transit stations

Data collected from Phase 1 in-person engagement included 884 surveys, several verbal or written comments, and 20 interactive posters.

2,700+ SURVEYS FROM ACROSS THE STATE

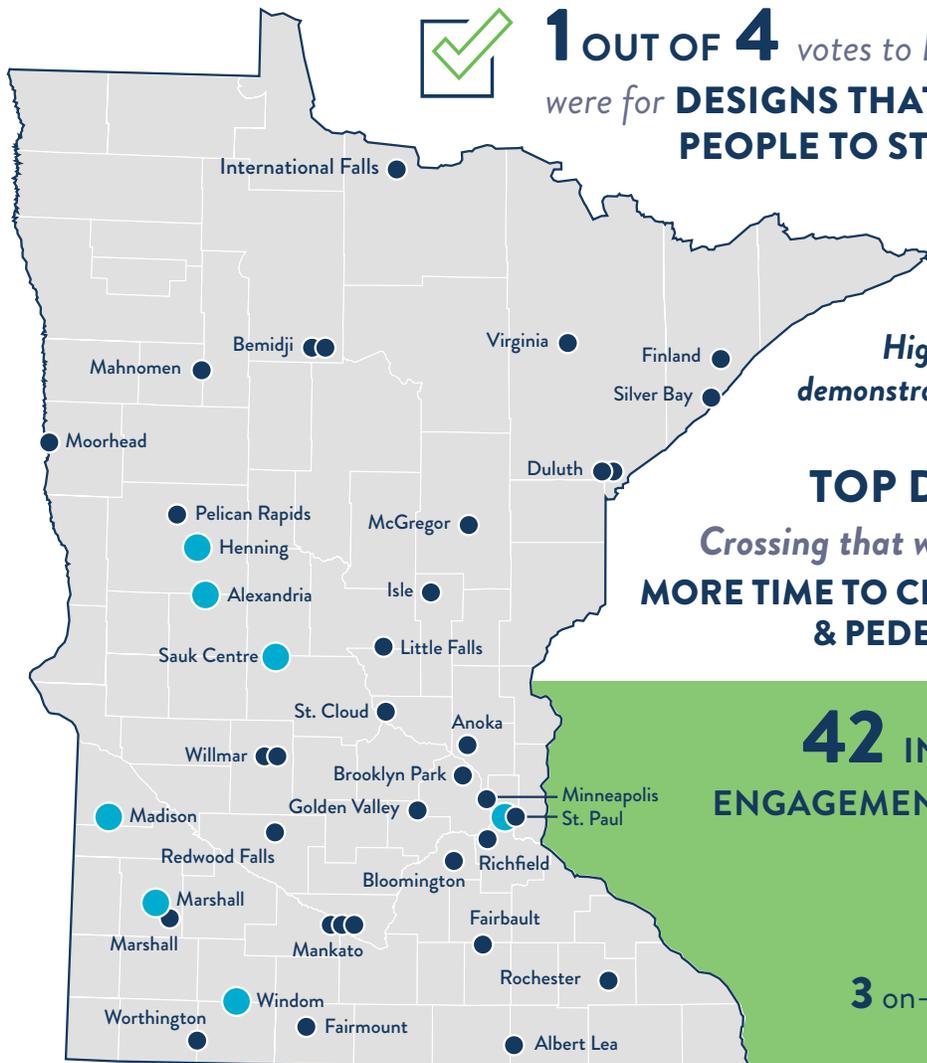
NEARLY 3 OUT OF 4 RESPONDENTS

“Completely support improvements for walking”

IMPROVING WINTER MAINTENANCE

#1 choice for *Policies that Improve Walking*

62% IMPROVING ACCESSIBILITY ON, ADDING, OR WIDENING PATHS AND SIDEWALKS
of votes included *for Improvements for walking along state roadways*



1 OUT OF 4 votes to *Improve Pedestrian Crossing* were for **DESIGNS THAT WOULD ENCOURAGE PEOPLE TO STOP FOR PEDESTRIANS**

OVER 85% OF RESPONDENTS

Highly support the installation of a demonstration project in their community

TOP DESIGN CHOICES for *Crossing that would make people feel safer:*
MORE TIME TO CROSS, CURB EXTENSIONS, & PEDESTRIAN REFUGE ISLANDS

42 IN-PERSON — 
ENGAGEMENT EVENTS

- 9 pop-ups
- 22 tabling events
- 8 listening sessions
- 3 on-street engagement sessions
- 2 rounds of surveying
- 7 demonstration projects

EXHIBIT 1-11: Summary of Engagement for Phase 1 and Phase 2





ONLINE ENGAGEMENT

Online engagement was used during the first phase of engagement to reach a broader audience than would be possible through in-person engagement. The project team created a website with project information, an engagement toolkit, and an online version of the survey, which was available in multiple languages. The survey was advertised through social media, project emails, and community-based organizations. This outreach complemented in-person activities and yielded a high level of input, particularly from the online survey.

Project Website

The project website was launched in June 2019 and provided a central location for all public-facing project materials, including the project survey. The website was accessible for people with disabilities and had an option for content to be translated from English to twelve other languages. The project resources page contained information about past projects, fact sheets, and an engagement tool kit. The online survey was available in Hmong, Spanish, Somali, and English, and included all the same questions and content available through the in-person engagement activities.

Social Media

Social media posts and advertisements were utilized to expand the project's reach. MnDOT's existing social media channels were used to share upcoming in-person engagement opportunities and promote the online survey. Additionally, social media advertisements focused on reaching priority populations to make sure their voices were heard.

Project Emails

Emails were sent to MnDOT's contact list to engage existing stakeholders and people interested in MnDOT's transportation planning.

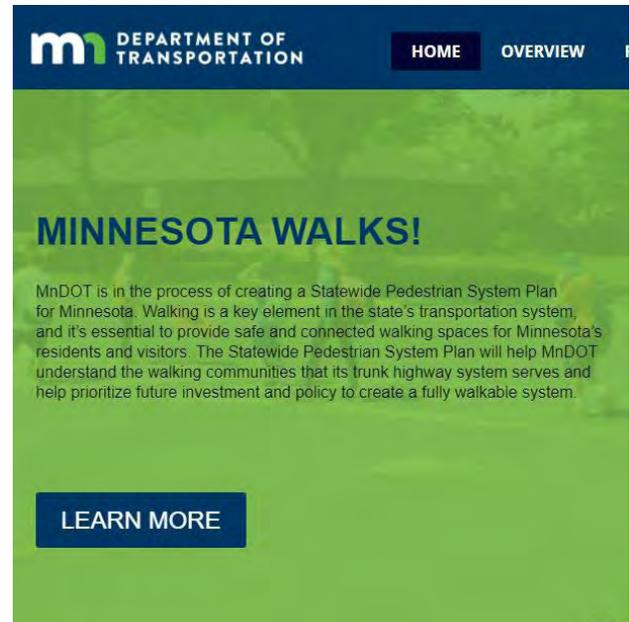


EXHIBIT 1-12: Project Website



EXHIBIT 1-13: Social Media Advertisement

PHASE 1 ENGAGEMENT RESULTS

The first phase of engagement garnered 2,103 surveys, including 884 surveys that were collected in-person and 1,219 that were collected online. The focus on priority populations helped reach a representational portion of those groups of people. While online engagement was effective at reaching people from across the state, in-person engagement was critical for connecting with priority populations.

EXHIBIT 1-14: Phase 1 Respondent Demographics

PRIORITY POPULATION	% OF SURVEYS	% OF MINNESOTANS
People of Color	21%	20%
Children and Youth	7%	33%
Native Americans	4%	1%
People with Low Incomes	12%	17%
Older Adults	17%	15%
People with Disabilities	17%	11%

The percent of priority populations represented in the Phase 1 surveys are shown in EXHIBIT 1-14 (for more demographic information please see the [Appendix](#)). All demographic information was self-reported by people who completed the survey.

Not many children and youth are represented in survey data. However, their participation and thoughts are represented in data from the community events in other ways, including conversations with project staff and a walking route activity for children.

Many of the in-person engagement events took place in small rural communities to hear directly from residents living in rural areas and small towns throughout the state. People from across the state provided feedback, as illustrated by EXHIBIT 1-15 which shows surveys received by zip code. Higher numbers of completed surveys are represented by darker colors.

While online engagement was effective at reaching people from across the state, in-person engagement was critical for connecting with priority populations.



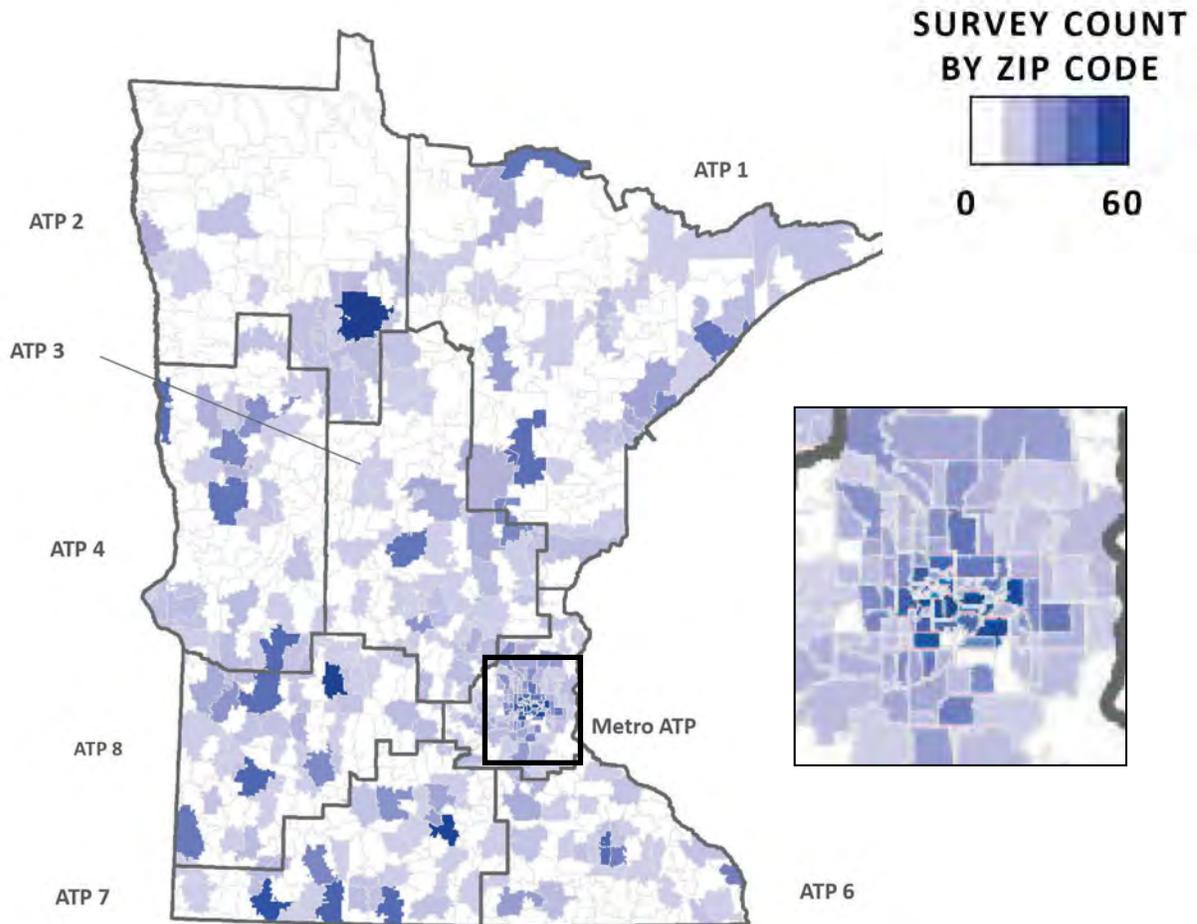


EXHIBIT 1-15: Phase 1 Survey Count By Zip Code with MnDOT Funding District Boundaries

Themes

The survey utilized in the first phase of engagement asked questions regarding walking in Minnesota, support for walking and policies, and general ideas for improvements. The results of public engagement are highlighted throughout the plan. Across the state, a few major takeaways include:

- Nearly 3 out of every 4 survey respondents answered that they “completely support improvements for walking”
- “Sidewalks, or other walkways, where none currently exist” was the most frequently chosen answer for which changes could most improve walking along state roadways

- “Street designs that encourage drivers to stop for people walking” was most frequently chosen for which improvements could most improve walking across state roadways
- The most favored policy idea was “Improved winter maintenance”

The results of public engagement are highlighted throughout the plan.

ENGAGEMENT PHASE 2

The second phase of engagement for the *Statewide Pedestrian System Plan* took place during the summer of 2020. Initial plans for the second phase of engagement were to connect with people across the state in a similar manner as Phase 1, with the project team traveling to meet people across the state and hear their experiences firsthand. Due to the COVID-19 pandemic, the project team moved all engagement online.

Throughout the second phase of engagement, MnDOT staff designed and installed demonstration projects across the state that showed how infrastructure changes could improve the walking experience. These short-term, low-cost projects demonstrated pedestrian infrastructure improvements that could later be implemented as more durable infrastructure tools. In order for people across the state to experience demonstration projects, each project was documented online to provide a virtual first-person experience, including before and after photos, short videos of people crossing in the demonstration project area, and descriptions of the projects.



An online survey during the second phase of engagement gathered feedback regarding street designs that could improve the walking environment, potential crossing improvements, pedestrian safety, and support for demonstration projects. The online survey was available in Hmong, Spanish, Somali, and English.

Similar to the first phase of engagement, emails were sent to MnDOT’s contact list, and social media posts and advertisements were utilized to expand the project’s reach, especially to priority populations. While in-person engagement was not an option due to COVID-19, yard signs and sidewalk decals were placed throughout the state to encourage people to provide feedback. Signs and decals focused on locations with higher concentrations of priority populations to promote the survey and encourage people to provide feedback.

PHASE 2 ENGAGEMENT RESULTS

The second phase of engagement garnered 649 surveys. The shorter duration of engagement as well as the online format resulted in a decreased reach during this phase of engagement. Despite the project team’s best efforts to connect with priority populations, the results of this engagement push fell short of matching Minnesota’s demographics as shown in EXHIBIT 1-16 (for more demographic information please see the Appendix). All demographic information was self-reported by people who completed the survey.

EXHIBIT 1-16: Phase 2 Respondent Demographics

PRIORITY POPULATION	% OF SURVEYS	% OF MINNESOTANS
People of Color	10%	20%
Children and Youth	5%	33%
Native Americans	<1%	1%
People with Low Incomes	12%	17%
Older Adults	13%	15%
People with Disabilities	12%	11%



The results of the second phase of engagement highlight the importance of intentional in-person engagement with priority populations. Several of the community-based organizations that the project team connected with during this time shared that their resources were stretched thin due to the pandemic; feedback regarding planning efforts could not be prioritized compared to struggling to meet their constituents' other basic needs. It is important to note that many of the priority populations for this plan were disproportionately impacted by COVID-19 and the associated financial impacts of the pandemic. In May 2020, George Floyd was killed by Minneapolis Police Officers, so many people were more focused on issues beyond this project during this time. While fewer surveys were collected during the second phase of engagement, surveys were received from across the state and from every priority population, although not necessarily at a proportional level. Despite the change in societal context, the preferences of members of the public were largely consistent before and during the pandemic.

Themes

- Phase 2 survey respondents generally expressed a desire for:
 - Improved pedestrian crossings
 - More trees, benches, and other amenities
 - Adequate space on sidewalks
 - Separation from people bicycling
 - Buffer space from car and truck traffic
- To improve the experience of walking across state roadways, respondents favor:
 - More time to cross
 - Curb extensions
 - Pedestrian refuge islands
- Eighty-five percent of respondents are supportive or very supportive of demonstration projects in their community
- When asked what pedestrian safety means to them, respondents most commonly said:
 - Safe crossings/intersections
 - Prioritize pedestrians over vehicles or provide equal access
 - Well-maintained sidewalks/trails for all users
 - Not having to worry about driver behavior

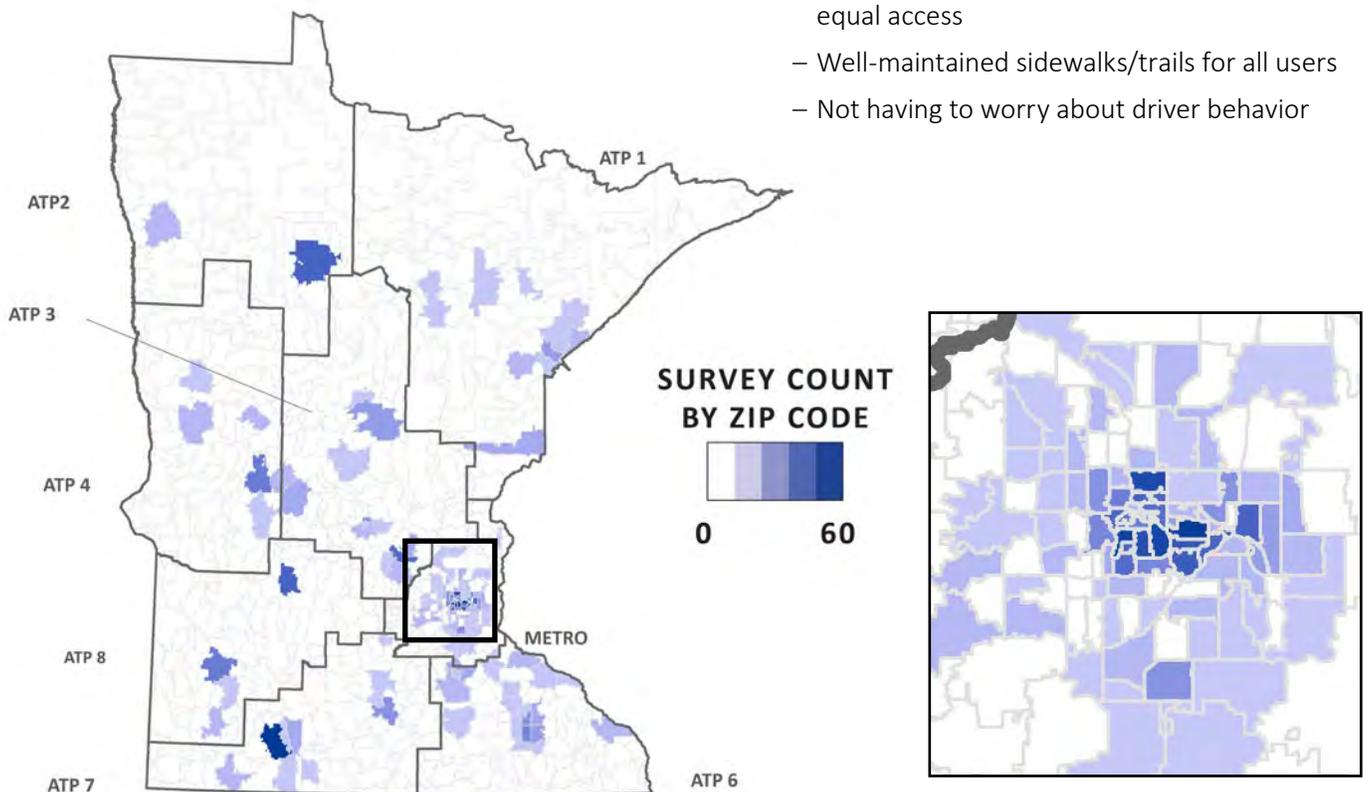


EXHIBIT 1-17: Phase 2 Survey Count By Zip Code with MnDOT Funding District Boundaries



ENVIRONMENTAL JUSTICE ANALYSIS

According to the USDOT, the definition of environmental justice includes “fair treatment and meaningful involvement of all people, regardless of race, ethnicity, income, national origin or educational level” with respect to laws, regulations and policies.⁴

As created by USDOT and re-emphasized in the MnDOT *Statewide Multimodal Transportation Plan* (SMTP) the fundamental principles of environmental justice include:

- To avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on people of color and people with low incomes.
- To ensure the full and fair participation by all potentially affected communities in the transportation decision-making process.
- To prevent the denial of, reduction in, or significant delay in the receipt of benefits by people of color and people with low incomes.

MnDOT should pursue work on the transportation system that advances equity and justice. This includes both preventing harm and righting the wrongs of the past.

MnDOT Title VI policy supports environmental justice through every stage of planning, construction, and maintenance processes. Environmental Justice populations are defined in the Title VI of the Civil rights Act of 1964 and the subsequent federal Executive Order in 1994 to include people of color (Black, Hispanic or Latino, Asian American, American Indian/Alaskan Native or Native Hawaiian/ Other Pacific Islander groups) and people with low incomes (people whose median household income is at or below the Department of Health and Human Services poverty guidelines) who live near or will be impacted by a project.

In the SMTP, people age 65 and older, people age 17 and younger, people with limited English proficiency, and households without a motor vehicle are included in the environmental justice analysis in addition to the federally defined environmental justice classes.

ENGAGEMENT IN THE PLANNING PROCESS

Engagement for the *Statewide Pedestrian System Plan* was designed to focus on several priority populations who may be more dependent on walking, including those identified formally under environmental justice policy. Priority populations were identified in *Minnesota Walks*, and the *Statewide Pedestrian System Plan* added people of color. Priority populations include:

- People of color
- Children and youth
- Native American populations
- People with low incomes
- Small rural communities
- Older adults
- People with disabilities

Both phases of the plan’s public engagement processes focused on hearing from people who identify as one or more priority groups. Parts of the state with high concentrations of priority populations were chosen as locations for events, also accounting for an even distribution of locations among all MnDOT districts. The first round of engagement used a variety of event types and tools to be accessible to all audiences. This included activities for a variety of ages, translation of tools into multiple languages, gathering of input through multiple platforms, and providing set meeting spaces as well as “pop up” locations in areas where populations might already be gathered. Two online surveys were conducted. The first was replicated in paper format to provide accessibility to those without computer access. The second could not be replicated in paper format because it was distributed online due to COVID-19 restrictions.

All efforts were made to collect feedback from people who could not access written formats, by receiving oral feedback and transposing ideas to comment sheets. Through these methods valuable input was gathered that shapes this plan. The planning process also facilitated continued improvement in communication with these priority populations. Every effort should be made to continue to build relationships between MnDOT and environmental justice communities through stakeholder outreach, direct engagement, and the Tribal Liaison Office as action items of this plan are implemented.

PLAN ACTION ITEMS RELATED TO PRIORITY POPULATIONS

Plan action items were reviewed for intended and unintended impacts they may have on environmental justice communities. Findings are presented within each relevant section of Chapters 4 and 5.



MnDOT'S GOALS FOR WALKING INVESTMENTS

Opportunities abound for MnDOT to be a leader on advancing pedestrian networks throughout the state. Pedestrian planning at MnDOT currently focuses on planning improvements for ADA compliance. This work is essential for creating more accessible environments, and pedestrian planning at MnDOT strives to encompass comfort, safety, and convenience.

MnDOT's goals for walking embrace this expansive vision of pedestrian planning. This chapter shares the goals and objectives developed for the *Statewide Pedestrian System Plan*, as well as evaluation measures that track progress towards meeting these goals.



GOALS AND OBJECTIVES

The *Statewide Pedestrian System Plan's* goals and objectives were created to enhance MnDOT's pedestrian planning practices. The callout box on this page lists pedestrian planning goals. Goals and objectives were created based on MnDOT staff input and were revised during the plan's development based on lessons learned from public input and from a review of existing MnDOT plans, policies, and practices. These goals advance MnDOT's *Statewide Multimodal Transportation Plan* objectives of Open Decision Making, Transportation Safety, Critical Connections, System Stewardship, and Healthy Communities.

MnDOT staff should frequently reference goals, objectives, and barriers when implementing the plan and when evaluating progress toward these objectives. The following section discusses challenges and barriers; addressing these topics is critical to meeting plan goals and objectives.

Action items are identified by topic area in the tables beginning on page 42 (IP=Investment Planning; CP=Cost Participation; M=Maintenance; PS=Project Scoping). The performance measures identify ways to monitor progress towards achieving the objectives.

Statewide Pedestrian System Plan Goals

1. Promote walking as a universal need
2. Create healthy and equitable communities
3. Create safer places to walk
4. Create enjoyable places to walk
5. Build internal capacity to advance walking

IDENTIFIED CHALLENGES AND BARRIERS

Each of the following challenges and barriers points to a range of issues that exist within the transportation system. Challenges and barriers present opportunities for improvement. Action items show steps to address challenges and barriers.

EXISTING AND HISTORIC MnDOT PRACTICES

Identifying existing and historic MnDOT practices as a barrier is an important step towards acknowledging that MnDOT, while a multimodal agency, does not have the same level of expertise and history delivering projects for people walking as for people driving. Existing agency practices take time and intentional effort to change. Acknowledging that this effort is needed, starts MnDOT down the path of revising and improving its practices to enhance walking along and across our system.

EXISTING INFRASTRUCTURE

Existing infrastructure barriers are often a legacy of past MnDOT practices. From neighborhoods where freeway construction severed local network connections, to highways in tribal areas that lack safe crossings and places to walk along the roadway; transportation infrastructure lasts for a long time, and the barriers created by historic decisions often last for generations. Chapter 3 discusses opportunities for MnDOT to be a leader in addressing challenges posed by existing systems.

FUNDING

Investment needs in the network for people walking are vast and significant, as are potential benefits from prioritized investment. Years of investment towards completing the vehicular roadway network have left much work to be done towards creating

complete pedestrian networks. MnDOT's State Highway Investment Plan (MnSHIP) is a key driver in how Minnesota invests in transportation and has a vital role to play in pedestrian improvements that are needed for safe, enjoyable walking around the state. More about funding and investment planning can be found in Chapter 4.

STAFF CAPACITY

MnDOT employees throughout the agency face significant demands on their time and resources. Strenuous demands on maintenance staff to meet existing commitments is one example. Conducting intentional, equitable public engagement on multiple projects is a second example. Action items proposed in Chapter 5 will help to share the responsibility for improving walking throughout multiple parts of the agency.

TECHNICAL RESOURCES

MnDOT's guidance documents and training opportunities need further development to help employees develop skills in advancing pedestrian networks. As a starting place, the *Statewide Pedestrian System Plan* is delivering a training module offered three times in May 2021. The plan's team will continue to coordinate with key MnDOT stakeholders to ensure that the direction and guidance provided in this plan is consistent with other agency directives.

OVERCOMING CHALLENGES AND BARRIERS

The *Statewide Pedestrian System Plan* includes an extensive list of action items that, when taken, will work to address the challenges and barriers identified in the plan. This work will take time, though MnDOT has already taken key steps to start implementing critical action items.

MnDOT is committed to including these action items as part of decisions about projects and initiatives to pursue. Examples include:

- Researching designs that facilitate better maintenance of walking safety infrastructure
- Delivering *Statewide Pedestrian System Plan* trainings for MnDOT staff
- Offering technical assistance for active transportation planning
- Supporting MnDOT’s Complete Streets Policy
- Supporting and guiding other MnDOT plans and projects that impact outcomes for walking

GOAL 1: PROMOTE WALKING AS A UNIVERSAL NEED

OBJECTIVES	ACTION ITEMS	PERFORMANCE MEASURES
1.1. Increase the number of people who walk for all purposes, including the percentage of children who walk to school	<ul style="list-style-type: none"> • All 	<ul style="list-style-type: none"> • PM-2: Total number of people counted walking • PM-10: Percentage of people who walk to work as their primary mode (by district) • PM-5: Mode split of students walking to school
1.2. Implement the <i>Minnesota Walks</i> vision; normalize walking as a part of everyday life	<ul style="list-style-type: none"> • All 	<ul style="list-style-type: none"> • PM-11: Percentage of people who walk at least a few times per week • PM-6: Number and percent of schools, school districts, or communities with Safe Routes to School plans

GOAL 2: CREATE HEALTHY AND EQUITABLE COMMUNITIES

OBJECTIVES	ACTION ITEMS*	PERFORMANCE MEASURES
2.1. Center equitable outcomes as part of the project development process, including an emphasis on prioritizing the system’s most vulnerable users	<ul style="list-style-type: none"> • IP-4 • PS-1 • PS-3 • PS-13 	<ul style="list-style-type: none"> • PM-15: Percent of programmed projects that benefit the high priority areas for walking
2.2. Eliminate existing disparities related to the ease of accessing safe and enjoyable walking environments	<ul style="list-style-type: none"> • IP-2 • PS-9 	<ul style="list-style-type: none"> • PM-3: Miles and percent of sidewalks that are fully ADA compliant
2.3. Connect people to everyday destinations, including transit stops and priority destinations in <i>Minnesota Walks</i>	<ul style="list-style-type: none"> • PS-6 • PS-10 	<ul style="list-style-type: none"> • PM-9: Total walking trips between 1/8 mile and 1 mile
2.4. Complete sidewalk gaps	<ul style="list-style-type: none"> • PS-10 	<ul style="list-style-type: none"> • PM-8: Percent of sidewalk gaps filled on MnDOT roadways

*IP=Investment Planning; CP=Cost Participation; M=Maintenance; PS=Project Scoping



GOAL 3: CREATE SAFER PLACES TO WALK

OBJECTIVES	ACTION ITEMS*	PERFORMANCE MEASURES
3.1. Respond to existing inequities that place marginalized communities at greater risk of harm	<ul style="list-style-type: none"> • IP-5 • IP-9 • IP-10 • IP-11 • IP-15 • IP-16 	<ul style="list-style-type: none"> • PM-15: Percent of programmed projects that benefit the high priority areas for walking
3.2. Eliminate all fatal and serious injury crashes involving a person walking	<ul style="list-style-type: none"> • IP-3 	<ul style="list-style-type: none"> • PM-1: Number of fatal and serious injury causing walking-related crashes • PM-13: Average operating speed within downtown areas / town centers
3.3. Develop resilience within pedestrian networks to protect people walking from the impacts of climate change	<ul style="list-style-type: none"> • PS-2 • PS-16 	<ul style="list-style-type: none"> • <i>Measure not currently identified</i>
3.4. Increase year-round usability of the pedestrian network	<ul style="list-style-type: none"> • M-1 • M-3 • M-4 • M-5 • M-8 • M-9 • M-10 	<ul style="list-style-type: none"> • <i>Measure not currently identified</i>
3.5. Install demonstration projects that improve pedestrian safety	<ul style="list-style-type: none"> • IP-8 	<ul style="list-style-type: none"> • PM-7: Number of walking-related active transportation demonstration projects on trunk highways

*IP=Investment Planning; CP=Cost Participation; M=Maintenance; PS=Project Scoping



GOAL 4: CREATE ENJOYABLE PLACES TO WALK

OBJECTIVES	ACTION ITEMS*	PERFORMANCE MEASURES
4.1. Design delightful places to walk that enhance comfort and provide a sense of personal safety	<ul style="list-style-type: none"> • IP-1 • IP-6 • CP-2 • PS-15 • PS-16 	<ul style="list-style-type: none"> • PM-14: Number of FHWA STEP safety countermeasures included in MnDOT projects
4.2. Collaborate with stakeholders to reflect community through projects	<ul style="list-style-type: none"> • PS-4 • PS-8 	<ul style="list-style-type: none"> • PM-7: Number of walking-related active transportation demonstration projects on trunk highways
4.3. Build high quality walking infrastructure appropriate for community land use contexts	<ul style="list-style-type: none"> • CP-3 • CP-5 • PS-16 • IP-14 	<ul style="list-style-type: none"> • PM-12: Percentage of constructed projects meeting SPSP guidance related to preferred facility type by land-use context and project type
4.4. Improve air quality for people walking along MnDOT roadways	<ul style="list-style-type: none"> • IP-12 • IP-13 	<ul style="list-style-type: none"> • PM-4: Transportation-related GHG emissions reductions

GOAL 5: BUILD INTERNAL CAPACITY TO ADVANCE WALKING

OBJECTIVES	ACTION ITEMS*	PERFORMANCE MEASURES
5.1. Establish training and development opportunities to advance pedestrian planning within MnDOT	<ul style="list-style-type: none"> • IP-7 • CP-1 • CP-4 • CP-6 • CP-7 • M-2 • M-6 • M-7 • PS-5 • PS-7 • PS-14 	<ul style="list-style-type: none"> • <i>Measure not currently identified</i>
5.2. Increase the number of MnDOT staff actively engaged in walking-related work	<ul style="list-style-type: none"> • CP-8 • PS-11 • PS-12 	<ul style="list-style-type: none"> • <i>Measure not currently identified</i>

*IP=Investment Planning; CP=Cost Participation; M=Maintenance; PS=Project Scoping





EVALUATING PROGRESS

The performance measures in this section will help MnDOT measure progress. The performance measures also track basic data points that can assist planning, design, and engineering staff throughout their daily work. Performance measures discussed in this section are sorted based on whether they are existing or new measures.

Many variables affect the outcomes associated with each performance measure. While some variables are outside of direct MnDOT control, tracking these performance measures enhances our understanding of the plan's impact and the general state of walking throughout Minnesota. If progress is not being made on the performance measures, the lack of progress indicates that a new approach from MnDOT or agency partners is necessary.

Performance measures are organized into tables that align with MnDOT's existing performance measure framework that links measures to their corresponding SMTP objective.

EXHIBIT 2-1: Existing MnDOT Performance Measures Related to Walking

PERFORMANCE MEASURE	ADDITIONAL DESCRIPTION	DESIRED IMPACT
<p>PM-1: Number of fatal and serious injury causing walking-related crashes</p> <p><i>SMTP Objective: Transportation Safety</i></p>	<ul style="list-style-type: none"> • District level and statewide • This measure currently tracks crashes between motor vehicle drivers and people walking • DPS currently reports all crashes to NHTSA • This measure should be updated to show the total number of pedestrian involved crashes and walking-related crashes as a percentage of total crashes 	<p>Halve number of walking-related crashes on trunk highway system within five years of plan adoption.</p> <p>Reduce the severity of walking-related crashes</p>
<p>PM-2: Total number of people counted walking</p> <p><i>SMTP Objective: Critical Connections</i></p>	<ul style="list-style-type: none"> • MnDOT currently uses a non-motorized counting program to track the change in walking levels over time • The measure could be updated to focus on counts along the MnDOT trunk highway system • Consider opportunities to update existing data with MnDOT-created data from the counting program, data available from District staff, data tracked as part of <i>Safe Routes to School Strategic Plan</i> 	<p>Increase in number of people counted walking</p>
<p>PM-3: Miles and percent of sidewalks that are fully ADA compliant</p> <p><i>SMTP Objective: System Stewardship</i></p>	<p>District level and statewide</p>	<p>100% substantial compliance</p>
<p>PM-4: Transportation-related GHG emissions reductions</p> <p><i>SMTP Objective: Healthy Communities</i></p>	<ul style="list-style-type: none"> • Statewide • Explore district level analysis 	<p>Decrease in emissions</p>
<p>PM-5: Mode split of students walking to school</p> <p><i>SMTP Objective: Critical Connections</i></p>	<p>Data tracked as part of <i>Safe Routes to School Strategic Plan</i></p>	<p>Increase in percent of students walking to school</p>
<p>PM-6: Number and percent of schools, school districts, or communities with Safe Routes to School plans</p> <p><i>SMTP Objective: Open Decision Making / Critical Connections</i></p>	<p>Data tracked as part of <i>Safe Routes to School Strategic Plan</i></p>	<p>Increase in number and percent of schools, school districts, or communities with Safe Routes to School Plans</p>



EXHIBIT 2-2: New MnDOT Walking-Related Performance Measures

PERFORMANCE MEASURE	ADDITIONAL DESCRIPTION	DESIRED IMPACT
<p>PM-7: Number of walking-related active transportation demonstration projects on trunk highways</p> <p><i>SMTP Objective: Critical Connections / Healthy Communities</i></p>	<ul style="list-style-type: none"> Track based on number, type of improvement, and number of intersections / roadway mileage involved Track the number of days each project is installed as a subset of this measure 	<p>Increase in number of projects; Minimum of one project per district per year; Projects convert to permanent geometric features along roadway and intersections</p>
<p>PM-8: Percent of sidewalk gaps filled on MnDOT roadways</p> <p><i>SMTP Objective: Critical Connections</i></p>	<ul style="list-style-type: none"> Sidewalk gaps are identified based on MnDOT’s ADA Inventory. 	<p>Elimination of gaps</p>
<p>PM-9: Total walking trips between 1/8 mile and 1 mile</p> <p><i>SMTP Objective: Critical Connections</i></p>	<ul style="list-style-type: none"> Motor vehicle trips of one mile or less have high potential for converting to walking trips based on presence of supportive infrastructure and other factors Data source: Streetlight data 	<p>Increase in walking trips that are one mile or shorter</p>
<p>PM-10: Percentage of people who walk to work as their primary mode (by district)</p> <p><i>SMTP Objective: Critical Connections</i></p>	<p>An increase in walking mode share may indicate that conditions are improving for walking.</p> <p>Current walking mode share: D1: 4%; D2: 3.5%; D3: 2.3%; D4: 3.3%; D6: 3.5%; D7: 3.3%; D8: 3.1%; Metro District: 2.3%</p>	<p>Double walking mode share within ten years</p>
<p>PM-11: Percentage of people who walk at least a few times per week</p> <p><i>SMTP Objective: Critical Connections / Healthy Communities</i></p>	<p>In MnDOT’s most recent omnibus survey, 31% of people responded that they walk at least a few times a week.</p>	<p>Increase percentage of people walking at least a few times per week to 60%</p>
<p>PM-12: Percentage of constructed projects meeting SPSP guidance related to preferred facility type by land-use context and project type</p> <p><i>SMTP Objective: Critical Connections</i></p>	<p>Refer to the infrastructure expectations tables for recommended facility types per land-use context and project type. When finalized, the Facility Design Guide (FDG) will also include guidance regarding non-motorized facilities.</p>	<p>90% of projects meet plan guidance</p>



EXHIBIT 2-3: Walking-Related Performance Measures to Evaluate

PERFORMANCE MEASURE	ADDITIONAL DESCRIPTION	DESIRED IMPACT
<p>PM-13: Average operating speed within downtown areas / town centers</p> <p><i>SMTP Objective: Transportation Safety</i></p>	<ul style="list-style-type: none"> • Additional work is needed to refine and implement an approach for this measure. • As measured on select highways. The measure should exclude roadways where walking is prohibited. • Average operating speed along roadway segments in the high-priority areas for walking identified in PAWS should be collected as a subset of this measure. • Compare measured speed to the posted speed limit 	<p>Decrease in operating speeds above the roadway segment’s posted speed limit</p>
<p>PM-14: Number of FHWA STEP safety countermeasures included in MnDOT projects</p> <p><i>SMTP Objective: Transportation Safety</i></p>	<ul style="list-style-type: none"> • This measure could be tracked via Complete Streets Project Reports or other reporting mechanisms. • Track countermeasures installed on freight routes as a subset of this measure. 	<p>100% of projects on non-limited access roadway projects include safety countermeasures</p>
<p>PM-15: Percent of programmed projects that benefit the high priority areas for walking</p> <p><i>SMTP Objective: Open Decision Making</i></p>	<p>Track walking-related investments that focus on high need areas through MnDOT’s Complete Streets project reports.</p>	<p>Increase in percent of programs that benefit high-priority areas</p>







WHY MnDOT IS INVESTING IN WALKING

Investing in walking is essential to achieving MnDOT’s vision: a multimodal transportation system that maximizes the health of people, the environment, and our economy.

This chapter presents the many reasons MnDOT has a responsibility to invest more in walking:

- Minnesotans across the state want to see more investment
- Research points to the effectiveness of walking for achieving community goals like slowing speeds, enhancing quality of life, and improving health outcomes
- MnDOT’s plans and policy documents support investing in walking with a focus on multimodal planning, safety, equity, and climate change

MnDOT can leverage its resources and role as statewide leader to support agencies at the regional and local levels in their efforts to advance walking



MINNESOTANS SUPPORT WALKING INVESTMENTS

As part of [public engagement for this plan](#), over 2,000 Minnesotans responded to a survey about walking. Survey respondents shared overwhelming support for improving walking. 74% of respondents selected the highest rating for expressing their support, and only three percent said they do not support any improvements for walking.

Nearly



3 out of **4**

**SURVEY
RESPONDENTS**

answered that they

**COMPLETELY
SUPPORT
IMPROVEMENTS
FOR WALKING**



WALKING BENEFITS COMMUNITIES

Walking is a healthy, non-polluting, low-cost, quiet, and fun form of transportation that is ideal for many trips, including commuting and shopping. Better conditions for walking will benefit all people who live, work, play, study, and do business in Minnesota. Efficient, convenient, and affordable transportation options like walking can make life easier, better, and more enjoyable for both residents and visitors.

Over a ten-year period, walking trips in the Twin Cities increased by 44%, from 4.5% of all trips in 2000 to 6.6% of all trips in 2010. On an average day in the Twin Cities metro area, people make 735,000 walking trips.⁵ But walking is not just a way to get around in Minnesota's biggest cities. Communities across the state have worked to advance walking, whether by connecting people to food, schools, transit or parks. Continuing to increase the number and percentage of trips made by walking will help improve public health and quality of life as well as providing positive safety and economic impacts and helping accomplish state and local carbon emissions goals.

This following summarizes the need, purpose, and benefits of improving conditions for walking as it relates to transportation choice and equity, the economy, livability, traffic safety, and personal and environmental health.

HEALTH & SAFETY BENEFITS

REPLACING TIME SITTING WITH WALKING BOOSTS HEALTH OUTCOMES



Time spent sitting in a motor vehicle is associated with chronic diseases like cardiovascular disease, hypertension, and type 2 diabetes as well as increased stress.¹³

LESS DRIVING MEANS CLEANER AIR



Gas-powered cars emit CO₂, nitrous oxide, sulfur oxide, and other gases

associated with asthma attacks and cardiovascular disease. Driving electric and gas-powered cars causes non-exhaust particle emissions generated by the wearing down of brakes, clutches, tires, and road surfaces and the suspension of road dust.¹⁴ Pregnant people, newborns, children, and people with chronic illnesses are especially vulnerable to air pollution.¹⁵

LESS TRAFFIC = SAFER STREETS

A 30% reduction in traffic volume at a signalized intersection may reduce the total number of injured pedestrians by 35% and the average risk of pedestrian collision by 50%.¹⁶



SLOWER SPEEDS SAVE LIVES¹⁷

A person walking hit by a vehicle at:



30MPH has a **96%** chance of survival.



40MPH has a **62%** chance of survival.

COMMUNITY BENEFITS

WALKING IS KEY TO SECURING A LOW-CARBON FUTURE



Transportation is the sector with the largest net source of greenhouse gas emissions in Minnesota. To avoid the worst effects of climate change, and to achieve the MN Next Generation Energy Act targets, Minnesota must reduce transportation energy use by 80% by 2050.⁶ Encouraging more Minnesotans to walk, bike, and take public transit is key to meeting Minnesota's emissions goals and fighting climate change.



PEOPLE PREFER WALKING

While people prefer walking to driving, most say they drive because they have no other options.⁷



WALKABILITY ENHANCES QUALITY OF LIFE

88% of those who agree that there are places to walk to nearby also report that they are more satisfied with their quality of life.⁸



WALKABLE COMMUNITIES ARE MORE EQUITABLE

Many Minnesotans rely on walking and cannot drive due to age, disability, immigration status, poverty, and other factors.

ECONOMIC BENEFITS

REDUCING CAR DEPENDENCY BENEFITS FAMILY BUDGETS...

Living in a walkable community can allow families to go car-lite or car-free. The average cost to own and operate one car is \$8,500/year.⁹

Rural households are especially cost-burdened: they frequently earn less than urban families, but own more cars, and spend 19% more on gasoline and motor oil.¹⁰



AND COMMUNITY BUDGETS

Walkable communities developed according to smart growth principles are more efficient, and cheaper to administer.¹¹

Walkable neighborhoods generate far greater tax revenue per square foot than all other types of development.¹²





MnDOT HAS AN OPPORTUNITY TO LEAD

MnDOT can advance transportation planning in Minnesota by investing in walking. [A review of 49 walking-focused plans, policies, and standards](#) produced by MnDOT and other state and local agencies points to areas where MnDOT's leadership is needed. These areas include multimodal systems planning, walking safety, social and racial equity, and climate change. MnDOT will monitor performance in these areas through the [performance measures](#) adopted in this plan. The following summaries identify findings from the plan review related to these topics.

PLANNING TRULY MULTIMODAL SYSTEMS

Plans at the state and local level recognize the necessity of planning for walking as a mode of transportation, but largely focus on maintaining the existing car-centered transportation system found across Minnesota as well as throughout the United States. Further uncertainty exists in the face of potential pivots to more connected and automated vehicles both on and alongside roadways. Within this context, facilities to support people walking are often considered optional elements that may be added to the roadway, rather than the basis for the transportation system around which other parts of the system are designed and constructed. This approach can lead to disjointed pedestrian networks that feel unsafe or unattractive for walking. The approach also creates tension between a plan's goals that seek to increase walking mode share and the same plan's recommended projects and policies that do not center on the needs of people walking.

Successful pedestrian planning initiatives throughout the country help people walk across and along existing roadways safely not just by adding walking-focused crossing treatments to a roadway, but by changing how space is allocated within the roadway.



Successful pedestrian planning initiatives throughout the country help people walk across and along existing roadways safely not just by adding walking-focused crossing treatments to a roadway, but by changing how space is allocated within the roadway. Narrowing and/or removing travel lanes reduces the amount of time people walking are exposed to vehicular traffic as they cross the street and slows vehicle speeds. Narrowing and/or removing travel lanes can also allow space for a larger buffer along the roadway between people walking and vehicular traffic. Roadways that are right-sized are assets rather than barriers for communities. They are places where people want to walk, rather than places where people can walk if they must.

The [Minnesota GO vision](#) emphasizes the creation and stewardship of a multimodal transportation system. Multimodal transportation networks should provide safe, comfortable, and convenient options for people of all ages and abilities. They should connect people walking with local destinations. By investing in walking and right-sizing roadways to better prioritize safety for people walking, MnDOT can demonstrate how to create truly multimodal transportation systems.

Research is an important part of advancing multimodal systems planning. The Office of Transit and Active Transportation will continue to identify opportunities to partner with other MnDOT offices (including Connected and Automated Vehicle Office) on research projects looking to advance safety for people walking.

Demonstration projects are also an important strategy for advancing multimodal systems planning. MnDOT has been a leader nationally in using demonstration projects to test reallocations of roadway space and pedestrian safety improvements. These projects present opportunities to test potential pedestrian improvements for an upcoming project, respond to pressing safety concerns, and improve the environment for people walking on a seasonal basis.

PUTTING SAFETY OVER SPEED

In the plans reviewed, public agencies across Minnesota express concern about the safety of people walking. Public attention is increasingly focused on pedestrian fatalities: the number of people killed while walking in Minnesota increased from 45 in 2018 to 50 in 2019, an 11% increase.¹⁸ Increasing pedestrian fatalities in Minnesota are part of a national trend: In the US, the number of people who died while walking in 2019 (6,590 people) was the highest in more than 30 years.¹⁹

Traffic crashes that kill and injure people are a serious public health concern that come with steep costs. Between 2016 and 2018 (the most recent years for which data was available for this plan), 2,805 pedestrian crashes were reported across the state, 93 of them fatal. In addition to the incalculable devastation of the lives that were lost and forever altered by these crashes, using MnDOT's comprehensive crash unit costs²⁰, the cost of these crashes is nearly \$2 billion.

The impact of motor vehicle travel speed on crashes that involve walking is well documented. Speeds on highways are sometimes inappropriately high for the surrounding land-use context, leading to death and injury for people walking. MnDOT can prevent traumatic, life-altering, costly crashes by focusing on creating low-speed environments in population centers and around other destinations where people are likely to walk. Creating low speed environments is especially important because SUVs and light trucks, which pose a greater danger to pedestrians than smaller vehicles, have become more prevalent in recent years.²¹

Promoting investment in walking safety and comfort is important to achieving the *Minnesota Walks* vision. Positioning safety over vehicular speed will save lives and prevent life-altering injuries on MnDOT roadways across the state.

MnDOT can prevent traumatic, life-altering, costly crashes by focusing on creating low-speed environments in population centers and around other destinations where people are likely to walk.



RECTIFYING INEQUITY

While all communities offer a variety of ways to get around, not everyone has equal access to convenient, safe, and affordable means of transportation. Some communities have connected networks of trails and sidewalks, and few barriers, while others have incomplete networks and major barriers, including wide roadways, that make walking uncomfortable and difficult.

[Environmental justice populations](#) have unique transportation needs. According to national Census data, people with low incomes have the highest rates of walking. Children of color, particularly those who identify as Hispanic/Latino or African American, are more likely to walk to school than white students; low-income children are twice as likely to depend on walking to school than children from higher-income families.²² Asian Americans have the highest rates of walking to work compared to that of any other race. Many people with disabilities depend on walking to meet daily needs; walking is critical for their independence. [Walking is also an important means of transportation in Indian Country](#). Since environmental justice communities are more likely to rely on walking, investment in

pedestrian systems directed to areas where they live and work will support better transportation options for people who need it most, while also advancing equity more broadly.

In some cases, across Minnesota and throughout the United States, decisions to disinvest in pedestrian networks and locate freeways in marginalized communities were intentional and caused significant harm. From the construction of the interstate system in the 1960s that divided the prominent Black communities in both North Minneapolis and the Rondo neighborhood in St. Paul, to a legacy of auto-centric policies in rural Minnesota, MnDOT (and former Minnesota Highway Administration) actions have negatively impacted [environmental justice communities](#). Past attempts to manage congestion on arterial roadways have prioritized minimizing travel time for drivers passing through, at the expense of walkability and quality of life of local residents. This uneven distribution of transportation infrastructure can provide health, safety, mobility, and economic benefits for some sub-segments of a population, while increasing hardships for others. Public agencies have a duty to rectify this inequity.

MnDOT acknowledges this harmful history and strives to improve its processes through programs like the Advancing Transportation Equity Initiative and the community healing process that is part of Rethinking I-94. Through these and other initiatives, progress has been made toward inclusion of marginalized communities in planning processes to prevent these injustices from occurring again. MnDOT and other public agencies throughout Minnesota are seeking inclusive community engagement practices to create plans. This involves removing barriers to participation in decision making, especially for marginalized people. Compensation should be provided to people who contribute their time towards planning processes.

In addition to including people in current planning efforts, MnDOT and other public agencies have an opportunity to correct historic wrongs. This would involve changing investment priorities, but much

Progress has been made toward inclusion of marginalized communities in planning processes to prevent injustices from occurring again, but much more work remains.



more work remains.²³ As part of making amends for past harms and rebuilding trust, it is important that MnDOT invests in reconnecting pedestrian networks where they have been disrupted by state highways, especially in marginalized communities. Some public agencies are beginning to develop project identification and prioritization processes that include an equity and need assessment. Statewide planning efforts should set a standard for integrating equity within planning processes.

MITIGATING CLIMATE CHANGE IMPACTS

Transportation accounts for one-quarter of statewide greenhouse gas (GHG) emissions, with most surface transportation emissions coming from internal combustion engines in passenger cars and light-duty trucks.²⁴ Both the operation and construction of our vehicle-focused transportation system result in emissions that contribute to climate change and negative health impacts such as asthma. Climate change threatens transportation assets and the health and safety of Minnesotans statewide, as the state experiences more frequent and more destructive floods as well as higher numbers of extreme heat events.

Several plans at the state and local level acknowledge that the transportation system both contributes to and is vulnerable to the impacts of climate change. Some documents set goals for reducing greenhouse gas emissions and otherwise curtailing the transportation system's negative effects. Plans that include recommendations for combating climate change and its impacts sometimes also include conflicting recommendations. For example, tension exists between objectives to reduce vehicle miles traveled while also striving to maintain high vehicular level of service and ample parking.

Investing in improvements that make walking comfortable and safe can reduce greenhouse gas emissions from transportation and reduce the impact of extreme heat and precipitation on the most vulnerable users of the transportation system.



MnDOT has formally adopted the target of reducing GHG emissions by 30% from 2005 levels in accordance with the Minnesota Next Generation Energy Act.²⁵ MnDOT must lead by anticipating and mitigating climate change impacts along the trunk highway system and developing strategies to work toward reducing emissions from the transportation sector. Investing in improvements that make walking comfortable and safe can reduce GHG emissions from transportation and lessen the impact of extreme heat and precipitation on the most vulnerable users of the transportation system. As MnDOT works to shift trips from driving to walking, it should track and seek to reduce vehicle miles traveled.



HOW MnDOT IS PLANNING FOR WALKING INVESTMENTS

Building a multimodal system that puts safety first, rectifies inequity, and mitigates climate change requires increased investment in walking.

The chapter begins with a summary of the current state of investment planning for walking, including District staff practices and MnDOT plans guiding investment priorities. It identifies recommended actions related to practices and plans.

Besides stand-alone ADA compliance projects, walking improvements typically occur only as part of already planned projects that primarily serve car and truck traffic.

To better identify priority locations for people walking, this plan presents the Priority Areas for Walking (PAWS) analysis. The PAWS analysis integrates equity, safety, land use, health, and infrastructure considerations to identify the highest priority areas for walking on trunk highways across the state.

Building on the PAWS analysis, the scenarios for investment planning develop cost estimates for context-sensitive and climate change mitigation improvements in the high-priority areas for walking.

INVESTMENT PLANS AND PRACTICES

Currently, most investments that support walking are tied to projects that are already planned to meet the needs of people driving. This makes implementing improvements for walking less expensive, but may not always address high-priority locations where improvements are needed. This section identifies the plans and practices that impact investment planning for walking, and presents action items to improve investment planning.



PLANS IMPACTING INVESTMENT PRIORITIES

The MnDOT Family of Plans addresses all travel modes and guides investment priorities. The plans related to walking investments are listed below, with a summary of the applicable existing pedestrian-related investments or strategies as well as action items to improve investment planning.

Greater Minnesota Transit Investment Plan (GMTIP), *Statewide Bicycle System Plan*, and *Statewide Connected and Autonomous Vehicle Strategic Plan* are not specifically discussed in the following pages, but also influence walkability in Minnesota.

STATEWIDE MULTIMODAL TRANSPORTATION PLAN

Walking-related strategies described in the [Statewide Multimodal Transportation Plan](#) include:

- Plan, design, build, operate and maintain transportation infrastructure to improve the safety of all users and communities.
- Support and develop multimodal connections that provide equitable access to goods, services, opportunities and destinations.
- Develop and improve multimodal transportation options within and between cities and regions.
- Give asset management priority to infrastructure on identified priority networks.
- Use a complete streets approach to assess trade-offs to better serve both users and those affected by the transportation system.

MINNESOTA STATE HIGHWAY INVESTMENT PLAN

The [Minnesota State Highway Investment Plan](#) (MnSHIP) is a long-range planning document that plans spending on the State’s highway system until 2037, with emphasis on maintaining the existing system. The plan estimates that spending on the highway system will be \$21 billion over the 20-year life of the plan. MnDOT does not identify specific projects for the 20-year period.

MnDOT is committed to achieving substantial ADA compliance of the State pedestrian network by 2037. Of the \$21 billion in planned spending, \$530 million, or 2.5%, will be directed to accessible pedestrian infrastructure, which represent many of the upgrades that are needed to satisfy ADA requirements as well as some projects that are focused on providing additional pedestrian access beyond the minimum of ADA compliance. This is a significant increase in MnDOT’s investment commitment to improving infrastructure for people walking compared to historic investment direction. Investments will prioritize curb ramps, sidewalks and accessible pedestrian signals at intersections, implemented concurrently with pavement and bridge projects. MnDOT will be able to complete some stand-alone ADA improvements, focusing on complete streets and filling gaps in the sidewalk network.

MnSHIP’s Accessible Pedestrian Infrastructure category primarily focuses on meeting ADA standards and is the only dedicated funding for walking infrastructure on MnDOT projects. It includes very limited funding for walking infrastructure improvements that go beyond meeting ADA requirements, including mid-block crossings or new sidewalk connections.

This *Statewide Pedestrian System Plan* includes [investment scenarios](#) to budget for walking improvements throughout Minnesota that would go beyond meeting minimum ADA requirements.

CAPITAL HIGHWAY INVESTMENT PLAN

The [Capital Highway Investment Plan](#) (CHIP) identifies potential projects over the next 10 years of MnDOT highway investment in accordance with MnSHIP investment levels and performance outcomes. The CHIP explains any changes in MnDOT’s programmed and planned highway investment as laid out in MnSHIP. MnDOT posts the draft ten year CHIP Project List per District on the MnDOT website.²⁶

Projects in Years 1-4 of the CHIP are part of the State Transportation Improvement Program (STIP). These projects are programmed and scheduled and intended to be delivered within the next four years.

Projects in Years 5-10 are not yet committed. They are likely to be constructed in this timeframe, but project timing, scope and cost may change.

In the CHIP, Districts select their 10-year investment needs for accessible pedestrian infrastructure based on planned bridge and pavement projects, ADA needs identified in MnDOT’s ADA Transition Plan and inventory, and highest-risk pedestrian areas.

MnSHIP’s Accessible Pedestrian Infrastructure category primarily focuses on meeting ADA standards and is the only dedicated funding for walking infrastructure on MnDOT projects.



ADA TRANSITION PLAN

As noted above in the discussion of MnSHIP, investment related to walking is focused on meeting ADA requirements. The ADA mandates that MnDOT carry out a review of current policies and practices, as well as physical assets, such as roads and bridges. From this review, an inventory was created of facilities that do not meet ADA standards. Using the findings of this inventory, MnDOT has identified several areas where large scale upgrades are required. Those that directly affect people walking include:

- Sidewalks: Some sidewalks are too narrow, in poor condition, or have other barriers that make them inaccessible.
- Curb ramps: These are depressions in the curb that are present at crosswalks and other locations that make it easier for people using wheelchairs, strollers, and other mobility devices to get onto the curb. Many curb ramps are too steep, or have other qualities that make them inaccessible to some people.
- Pedestrian bridge ramps: These are the approaches to a pedestrian bridge, which are often too steep, too narrow, or have curves that are too tight for use by people using wheelchairs and other mobility devices. Some pedestrian bridges are not approached by ramps, just steps.
- Transit stop access: Some bus stops do not have enough space for the bus ramp to be extended from the bus to the curb, or have no paved waiting area, which make them inaccessible.
- Accessible Pedestrian Signals: These are signals at crosswalks that make a special sound to alert people with low vision that they are able to cross, and are usually activated by a push button. They are not present at all intersections.
- Rest areas: These are rest areas on state and Interstate highways, which may include facilities such as washrooms and picnic areas. Some rest areas may have barriers, such as stairs, that make them inaccessible.

In general, upgrades to facilities so that they meet the ADA occurs during projects when a facility reaches the end of its normal lifecycle. Upgrades also occur when a transportation project meets a certain condition, such as when a road is reconstructed. Other facilities that need upgrades to meet ADA standards are prioritized based on volumes of people walking, and the proximity to destinations such as hospitals, nursing homes, public transit, or other public services.

While upgrades to facilities to make them ADA-compliant represents a major benefit for all people walking, there are other changes that are not included in this transition program that would affect walking in the vicinity of state roadways.

TRANSPORTATION ASSET MANAGEMENT PLAN (TAMP)

The 2014 [Transportation Asset Management Plan](#) (TAMP) focused on pavement, bridge, and roadside infrastructure investments and the management of those assets. The current TAMP (2019) expands these asset classes to include pedestrian infrastructure. The TAMP uses the inventory of assets from the ADA Transition Plan as an input. MnDOT currently owns over 560 miles of sidewalks and over 21,000 curb ramps. The most recent asset valuation estimates that the replacement value of the pedestrian infrastructure in the system is \$279 million statewide.

In addition to the period following construction, pedestrian assets are evaluated every 10 years and assigned a condition rating. The infrastructure is rated for ADA compliance and this data is reported in the *ADA Transition Plan*.

As of 2017, 61% of curb ramps and 44% of sidewalk were considered non- ADA compliant. In order to meet compliance targets a total of \$354 million would need to be invested in the system in the next ten years.

STRATEGIC HIGHWAY SAFETY PLAN

The [Minnesota Strategic Highway Safety Plan](#) (SHSP) is a tool that identifies key areas to focus traffic safety resources and provides data-driven, actionable strategies to reduce deaths and serious injuries on Minnesota roadways. The 2020-2024 Minnesota SHSP was developed by blending crash data analysis with input from stakeholders working toward zero deaths on Minnesota roads. MnDOT led the development of this plan but it is intended to be used by the entire State of Minnesota, including all State agencies and local units of government.

Compared to previous versions of SHSP, pedestrian safety ranked higher as a strategic focus area based on recent trends with pedestrian crashes. It includes three key action-oriented strategies for pedestrian safety:

- Promote policy changes that advance pedestrian safety
- Improve design and maintenance for pedestrian safety
- Increase education and awareness for drivers and pedestrians

ACTION ITEMS

IP-1: In the next update of MnSHIP, expand the amount invested in “Accessible Pedestrian Infrastructure” to address walking improvements that go beyond ADA compliance projects

Focus funding on capital maintenance (repair and replacement) of existing facilities and construction of new facilities that support completion of walking networks as the current walking system becomes more ADA-compliant. A larger funding stream will be required to accomplish these goals and it may be necessary to separate ADA and non-ADA investments within the category.

IP-2: Monitor progress toward achieving TAMP targets for pedestrian infrastructure assets based on ADA compliance

Utilize this plan’s [performance measures](#) to review previous year construction projects as part of existing annual MnDOT self-evaluation (TAMP, page 30).

Collaborate with asset management staff at MnDOT to include additional walking-related infrastructure assets within future TAMP processes. This should include “right-sizing” roads to reduce crossing distances and calm traffic in situations where the existing facility is wider than land-use contexts or traffic patterns suggest is necessary. Quantify the change in pavement and maintenance costs of the system, based on reallocating roadway space to other modes.

IP-3: Monitor the SHSP and implement SHSP action plans

Routinely review tactics included in the plan related to the needs of people walking, especially tactics with implementation timeframes in years one and two of the SHSP.

IP-4: Continue to work with MnDOT’s Office of Traffic Engineering staff to review the outcomes of field walks

Follow the prioritization results and facility selection action items included in this plan and Pedestrian Strategy Two: Improve Design and Maintenance for Pedestrian Safety from the SHSP.

IP-5: Consider the use of Highway Safety Improvement Program (HSIP), Local Partnership Program (LPP), and Local Road Improvement Program (LRIP) funding to address pedestrian safety-related issues

Discuss the program and application process with local agency staff to build awareness; encourage them to apply for funding to address locations with known risk factors for potential crashes involving people walking and sustained crash locations involving people walking.

INVESTMENT PRACTICES

Most walking improvements on the trunk highway system are constructed as part of larger projects that predominantly serve the needs of people driving motor vehicles. A MnDOT District may select potential standalone projects if they have additional funds available after funding bicycle and walking improvements on projects included in the Capital Highway Investment Plan (CHIP) and State Transportation Improvement Program (STIP). Districts first consider opportunities presented by city, county, tribal or DNR projects that intersect the state highway network. After considering those opportunities, districts then evaluate the high-priority locations identified through a safety risk analysis.

Other projects to improve walking and bicycling along the state highway system or within state highway rights-of-way are initiated and funded locally and/or through competitive programs. Such programs may include Transportation Alternatives, Safe Routes to School funding, or Minnesota's State Health Improvement Program.

[MnDOT staff from across all districts shared their experiences](#) related to investment planning for pedestrian improvements. Key findings include:

- Planning for walking infrastructure projects in areas with smaller populations (less than 5,000 people) can be difficult due to lack of MnDOT and local funding sources and a focus on planning for driving instead of other modes.
- Construction limits and right-of-way impacts can be hard to estimate
- Right-of-way acquisition can be difficult to keep within a defined timeline.
- Funding is a constraint.
- Reconstruction projects are the easiest type of project for incorporating walking improvements.
- Some communities don't see a need for pedestrian improvements.
- Communities benefit from having published local plans, such as Safe Routes to School plans, that support walking improvements.
- Early public engagement is critical to gaining community buy-in.
- Sidewalk gaps are defined differently across MnDOT work groups.



Most walking improvements on the trunk highway system are constructed as part of larger projects that predominantly serve the needs of people driving motor vehicles.



ACTION ITEMS

IP-6: Support opportunities to fund stand-alone walking improvements

Develop a new grant program to fund local walking and biking investments. MN Statute 174.38 defines an Active Transportation grant program that would fund local network improvements but has not yet been allocated funding.

Use the [expectations for walking infrastructure tables](#) and [scenarios for investment planning](#) to guide stand alone investments in [priority areas for walking](#). Additionally, track investment in projects where walking is identified as a primary need of the project.

Continue to support and facilitate funding programs like Safe Routes to School and Minnesota Statewide Health Improvement Program to assist local communities.

Investigate other similar sources of funding that can be used to create plans.

IP-7: Increase partnerships with regional and local municipalities and planning organizations to develop plans for walking improvements and investment priorities

Plans should use guidance from the [MnDOT Land-use contexts memorandum](#) and foster connectivity with recommended investments in high-priority areas along the trunk highway system. Special consideration should be paid to situations where a MnDOT roadway represents a barrier to reliable crossing movements for people walking.

IP-8: Coordinate with MnDOT partners who may be interested in using demonstration projects as a way to explore potential improvements for people walking, meet seasonal walking needs, and quickly respond to safety needs

Interested partners within MnDOT may include the Connected and Automated Vehicle Office, Maintenance, and Materials.

Environmental Justice Implications of Investment Planning Action Items

As illustrated in this chapter, action items for investment planning include actions to expand pedestrian investment beyond the current ADA compliance program, and to increase partnership within and outside of MnDOT to increase funding options and expand existing programs. It also includes a recommendation to prioritize the use of less carbon-intensive construction and materials to reduce emissions.

Greater investment in pedestrian improvements would benefit environmental justice populations. Environmental justice communities often include people that depend on walking and transit as their main forms of transportation. Investment in pedestrian systems can improve the safety of roads for people walking and improve their overall health and well-being.



PRIORITY AREAS FOR WALKING

Current MnDOT investments in walking are typically tied to projects that are primarily focused on car and truck traffic. Prioritizing the needs of people walking is critical. Every transportation investment decision that is made has impacts on people walking, and people walking are the most vulnerable users of the system. Centering walking advances MnDOT’s mission of a safe, accessible, efficient, and reliable transportation system.

The Priority Areas for Walking Study (PAWS) is meant as a starting point for considering walking in MnDOT decision-making. The analysis highlights areas that are important for walking but does not recommend specific treatments or standards.

MnDOT District planners and designers may find the District-level scoring helpful in identifying areas to invest in walking. The priority areas for walking district map should be consulted in the initial phases of project planning for any transportation project. While all projects should consider the needs of people walking, projects in higher ranked areas especially should prioritize comfort and safety for

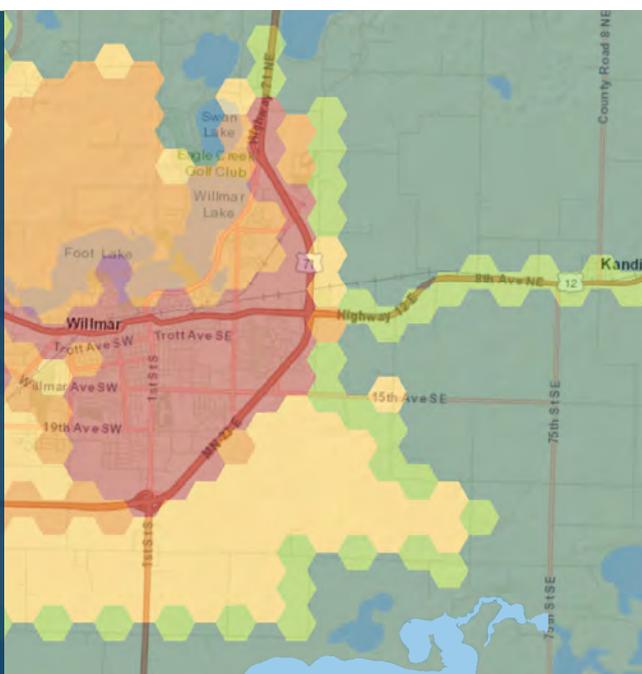
people walking over convenience for people using other modes of transportation.

The priority areas for walking may also be useful for evaluating District- and State-level progress on improving conditions for walking. For example, MnDOT can monitor the number of pedestrian crashes occurring or the project dollars invested in Tier 1 areas.

The MnDOT priority areas for walking analysis uses the same unit of analysis as the bicycle prioritization analysis developed for the MnDOT District Bike Plans and Bicycle/Pedestrian Scoping Field Walks (known as the SPACE Tool). In both analyses, the entire area of the state was divided into half-mile wide hexagons.

Each hexagon received a score based on 19 factors that indicate demand for walking and need for improvement to the walking environment (listed in EXHIBIT 4-2). One point was available per factor, for a maximum possible score of 19.

The Priority Areas for Walking Study (PAWS) is meant as a starting point for considering walking in MnDOT decision making. The analysis highlights areas that are important for walking but does not recommend specific treatments or standards.



HOW TO INTERPRET SCORE RESULTS

Once scored, hexagons were divided into five tiers, with the highest scoring hexagons receiving a Tier 1 ranking. Hexagons received both a statewide tier ranking to allow for comparison of areas in different parts of the state, as well as a MnDOT district-specific tier ranking to allow for comparison of areas within a district. The top 0.2% of all hexagons received a statewide Tier 1 ranking. At the District level, the top 0.1% to 1.6% of hexagons in each District received a District Tier 1 ranking.

Cut-off scores for the tiers were determined by natural breaks statistical analysis for hexagons that include a trunk highway. For the statewide tier ranking, hexagons with a score of 12 or more received a Tier 1 ranking. For Districts 2, 4, 7, and 8, hexagons with a score of 10 or more received a Tier 1 District ranking. For Districts 1, 3, and 6, hexagons with a score of 11 or more received a Tier 1 District ranking. For the Metro District, hexagons with a score of 13 or more received a Tier 1 District ranking. Refer to the statewide and District-level maps on the following pages for analysis results. An [online, interactive version of the map](#) is also available.

EXHIBIT 4-1: Statewide Scoring Results

TIER	RANGE OF SCORES	PERCENT OF HEXAGONS RECEIVING SCORE
1	12-16	0.2% (991 hexagons)
2	9-11	4% (22,578 hexagons)
3	6-8	20% (103,855 hexagons)
4	4-5	32% (164,705 hexagons)
5	0-3	44% (230,134 hexagons)
Total	0-16	100% (522,263 hexagons)

ACTION ITEMS

IP-9: Identify opportunities to use PAWS scores in MnDOT project selection processes

IP-10: Update PAWS scores on a bi-annual basis

IP-11: Utilize the PAWS scores in development review to advocate for improvements in high-need areas

MnDOT's role in development reviews allows for the opportunity to comment on how proposed developments may impact the transportation system. The safety and network needs of people walking should be taken into consideration during reviews, especially when the proposed development will be a generator of pedestrian traffic.

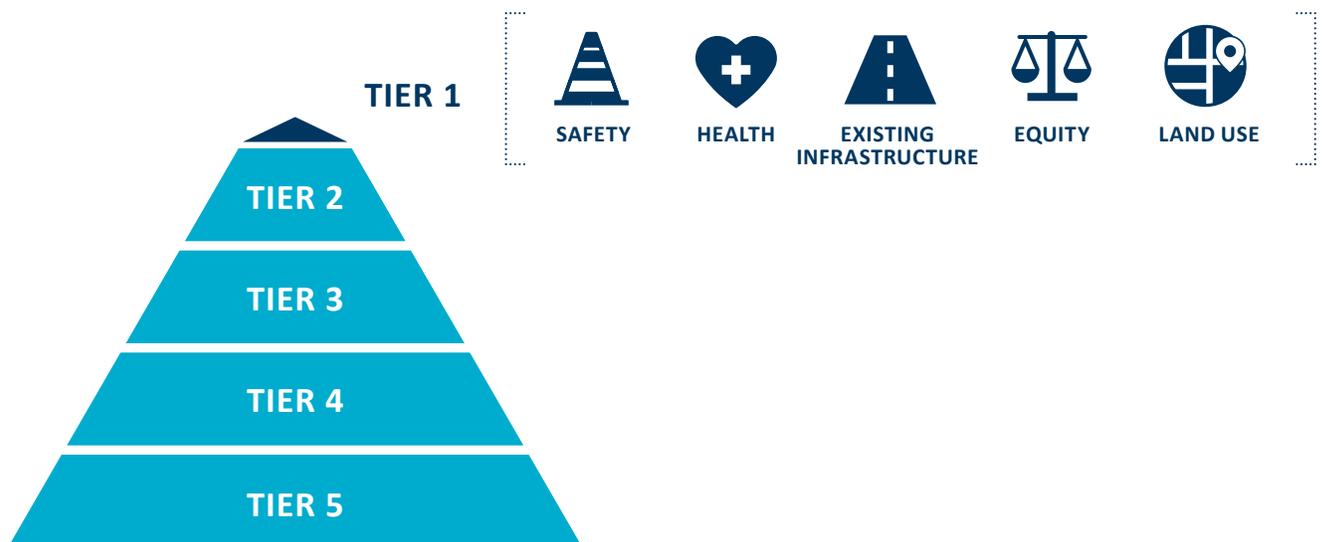
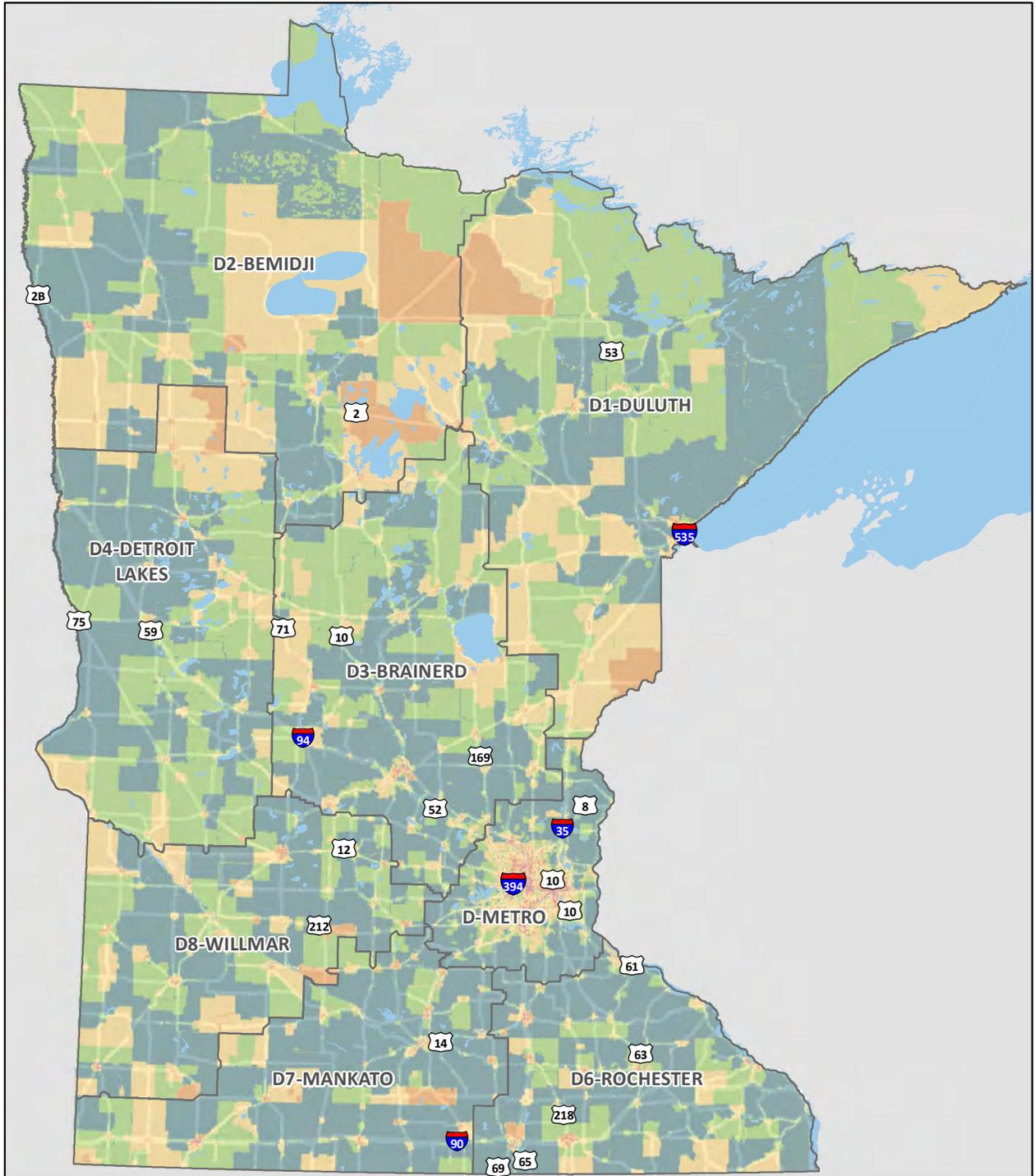


EXHIBIT 4-2: Prioritized Areas for Walking (PAWS) Scoring Factors

CATEGORY	FACTOR	SCORING APPROACH
Infrastructure supply	Within a five-minute walk of a transit stop (400m or ¼ mi)	Hexagons overlapping with ¼ mi buffer around transit stops receive a point
Infrastructure supply	Calculated ADT, trunk highways	Hexagons containing a TH segment over 2,000 ADT receive a point
Infrastructure supply	ADA sidewalk inventory	Hexagons with ratio of total sidewalk mileage to TH road mileage less than 1, and located in urban areas, receive a point
Infrastructure supply	Permeability exercise scoring	Hexagons with a permeability score greater than 2 receive a point. A score of two or more indicates long distances between intersections or other crossings.
Health	Life expectancy	Hexagons with life expectancy lower than MN average receive a point
Land-use context	Pedestrian generating jobs	Hexagons receive a point based on two criteria that represent destinations that could show demand for walking. This is used instead of pedestrian modeling or count data: 1) One or more of the following sectors are represented in the hexagon: Retail Trade, Educational Services, Health Care, Arts, Entertainment, Recreation, Accommodation and Food Service, Other Services (NAICS codes 44, 45, 61, 62, 71, 72 and 81); and 2) The hexagon has 108 or more jobs in the sectors shown above (greater than the average for these combined sectors)
Land-use context	Within 1 mile of a K-12 school	Hexagons overlapping with 1 mi buffer around school locations receive a point
Safety	Buffered cluster analysis of crashes	Hexagons with a cluster of 2 or more pedestrian crashes receive a point
Safety	Maximum (TH) intersection safety risk score for non-motorists	Hexagons containing an intersection with score greater than or equal to 3 receive a point
Equity	Percent population age 5-17	Hexagons greater than or equal to MN average receive a point
Equity	Percent population age 65+	Hexagons greater than or equal to MN average receive a point
Equity	Percent population with disability	Hexagons greater than or equal to MN average receive a point
Equity	Percent population people of color	Hexagons greater than or equal to MN average receive a point
Equity	Percent of population below 200% poverty level	Hexagons greater than or equal to MN average receive a point
Equity	Percent of people without access to a vehicle	Hexagons greater than or equal to MN average receive a point
Equity	Percent of population that does not speak English well or at all	Hexagons greater than or equal to MN average receive a point
Equity	Percent of population with no high school diploma	Hexagons greater than or equal to MN average receive a point
Equity	Percent of population non-citizen, foreign born	Hexagons greater than or equal to MN average receive a point
Equity	Tribal government areas	Hexagons overlapping with tribal government areas receive a point



EXHIBIT 4-3: Pedestrian Improvement Prioritization - Statewide



PRIORITY AREAS FOR WALKING

Statewide

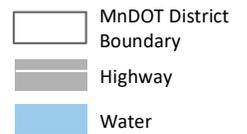
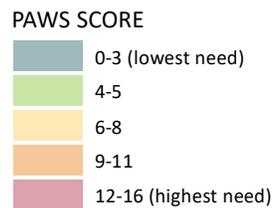
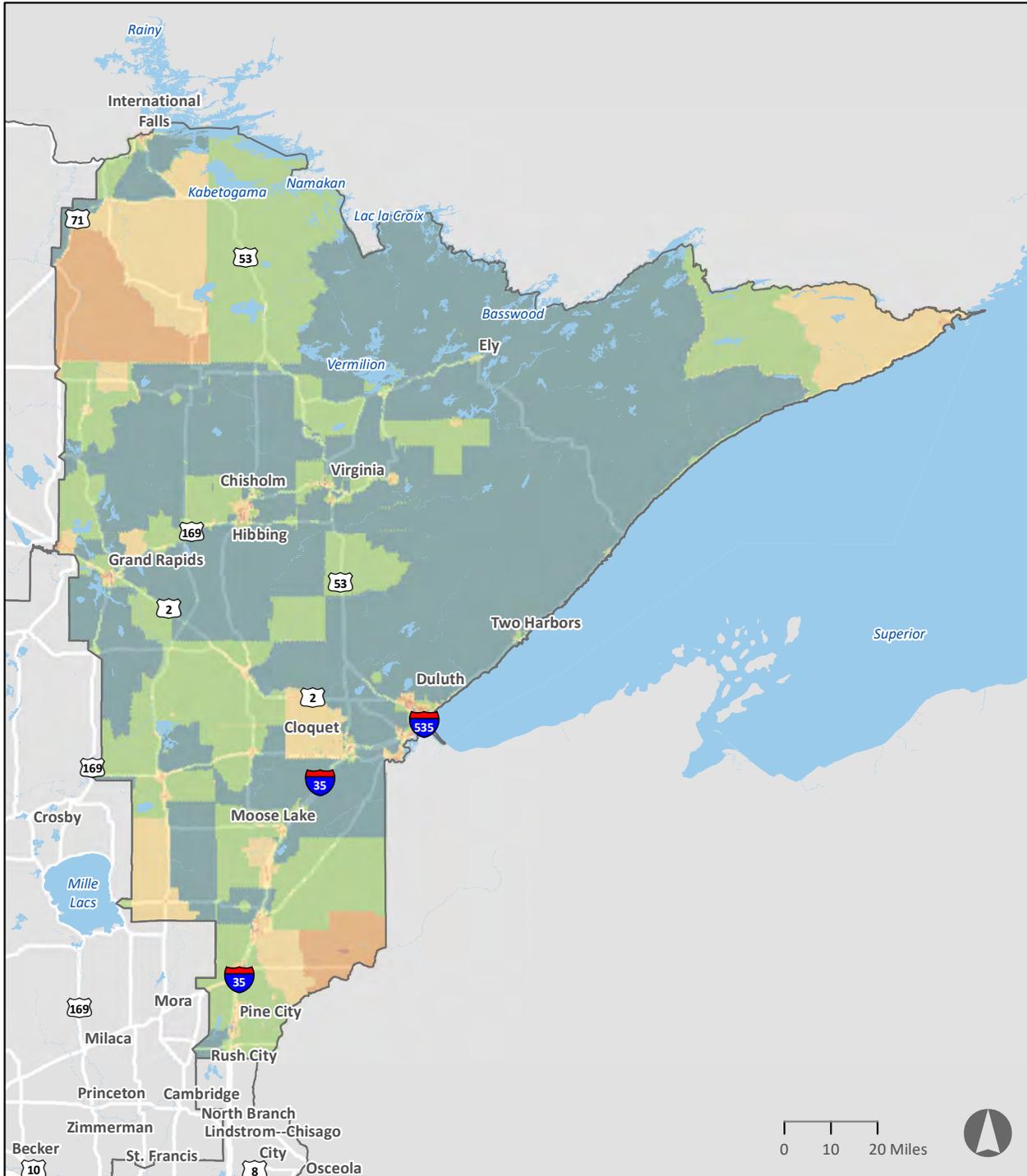


EXHIBIT 4-4: Pedestrian Improvement Prioritization - District 1



PRIORITY AREAS FOR WALKING

District 1

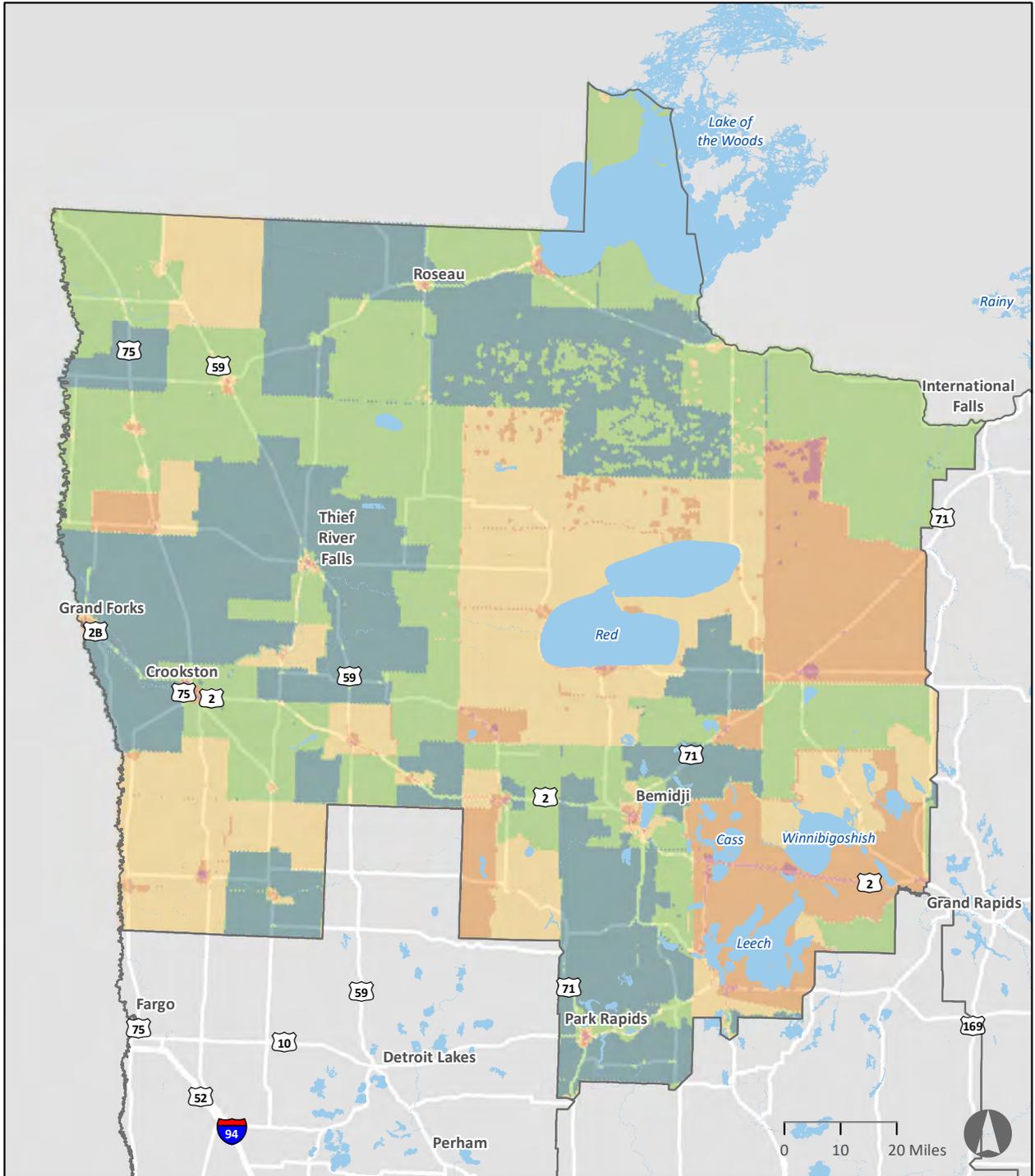
PAWS SCORE

- 0-4 (lowest need)
- 5-6
- 7-8
- 9-10
- 11-15 (highest need)

- MnDOT District Boundary
- Highway
- Water



EXHIBIT 4-5: Pedestrian Improvement Prioritization - District 2



PRIORITY AREAS FOR WALKING

District 2

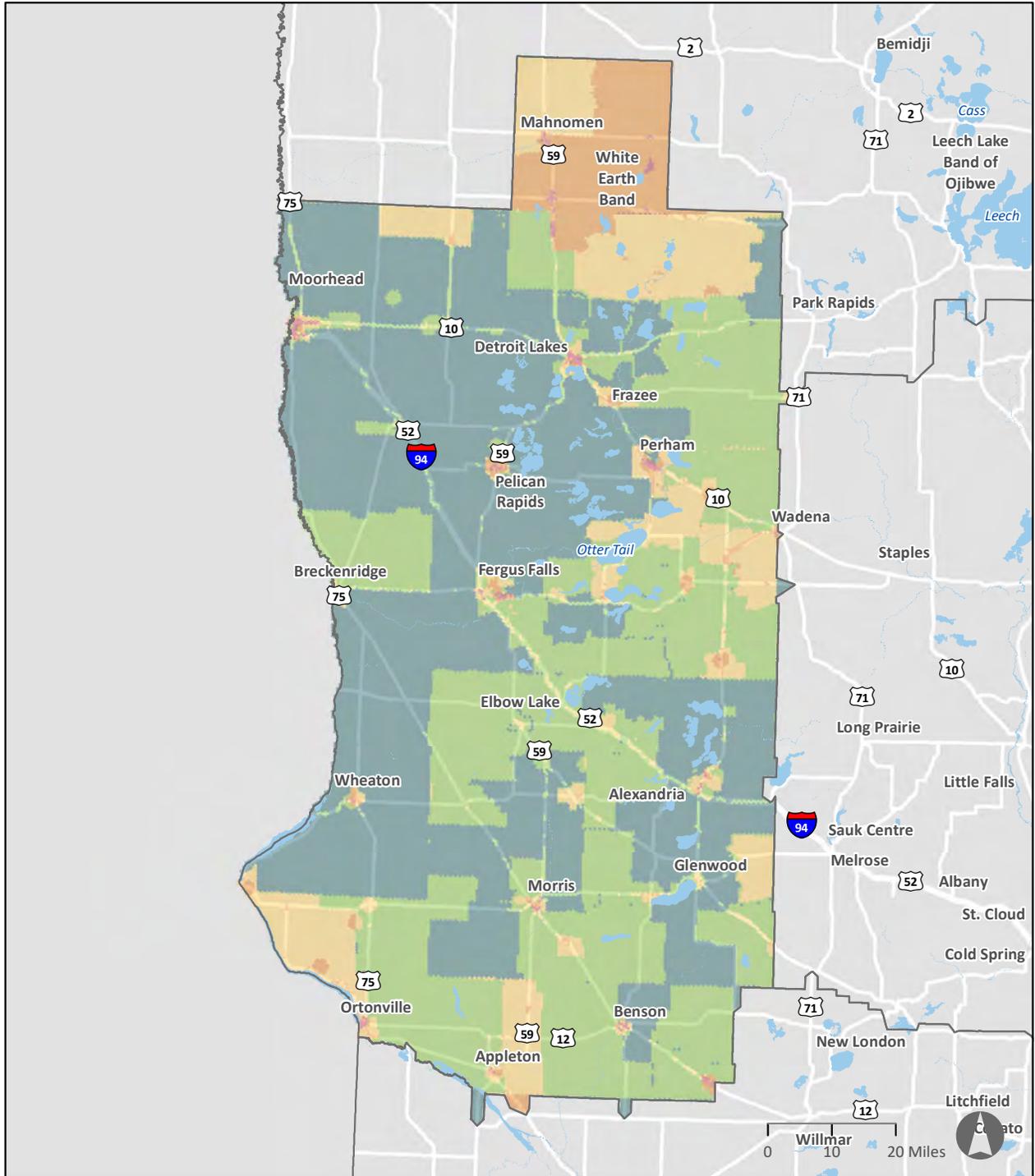
PAWS SCORE

- 0-3 (lowest need)
- 4-5
- 6-7
- 8-9
- 10-13 (highest need)

- MnDOT District Boundary
- Highway
- Water



EXHIBIT 4-7: Pedestrian Improvement Prioritization - District 4



PRIORITY AREAS FOR WALKING

District 4

PAWS SCORE

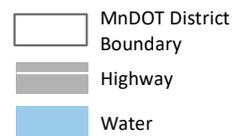
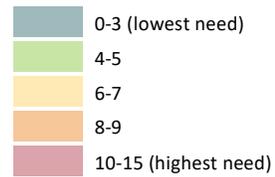
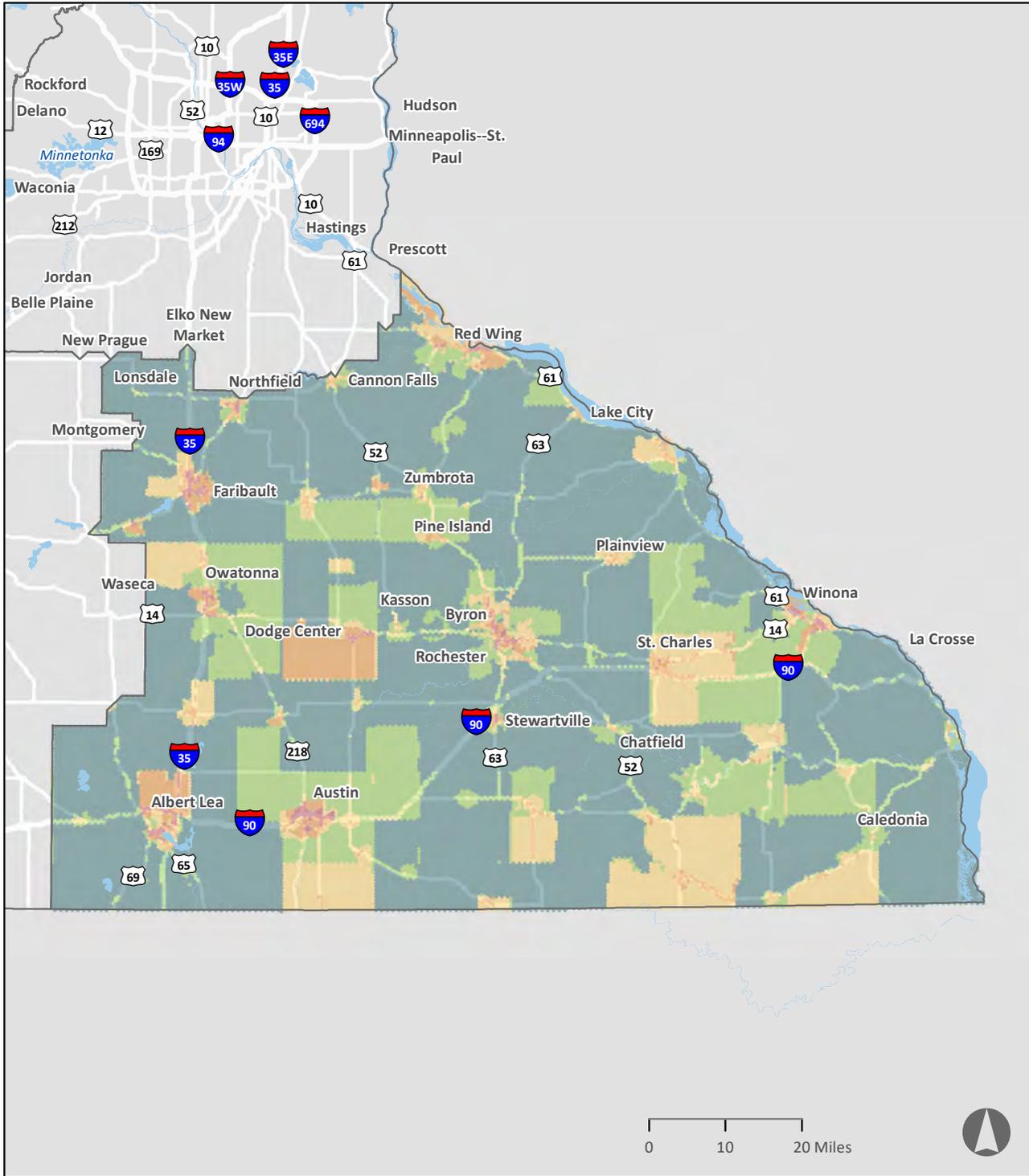


EXHIBIT 4-8: Pedestrian Improvement Prioritization - District 6



PRIORITY AREAS FOR WALKING

District 6

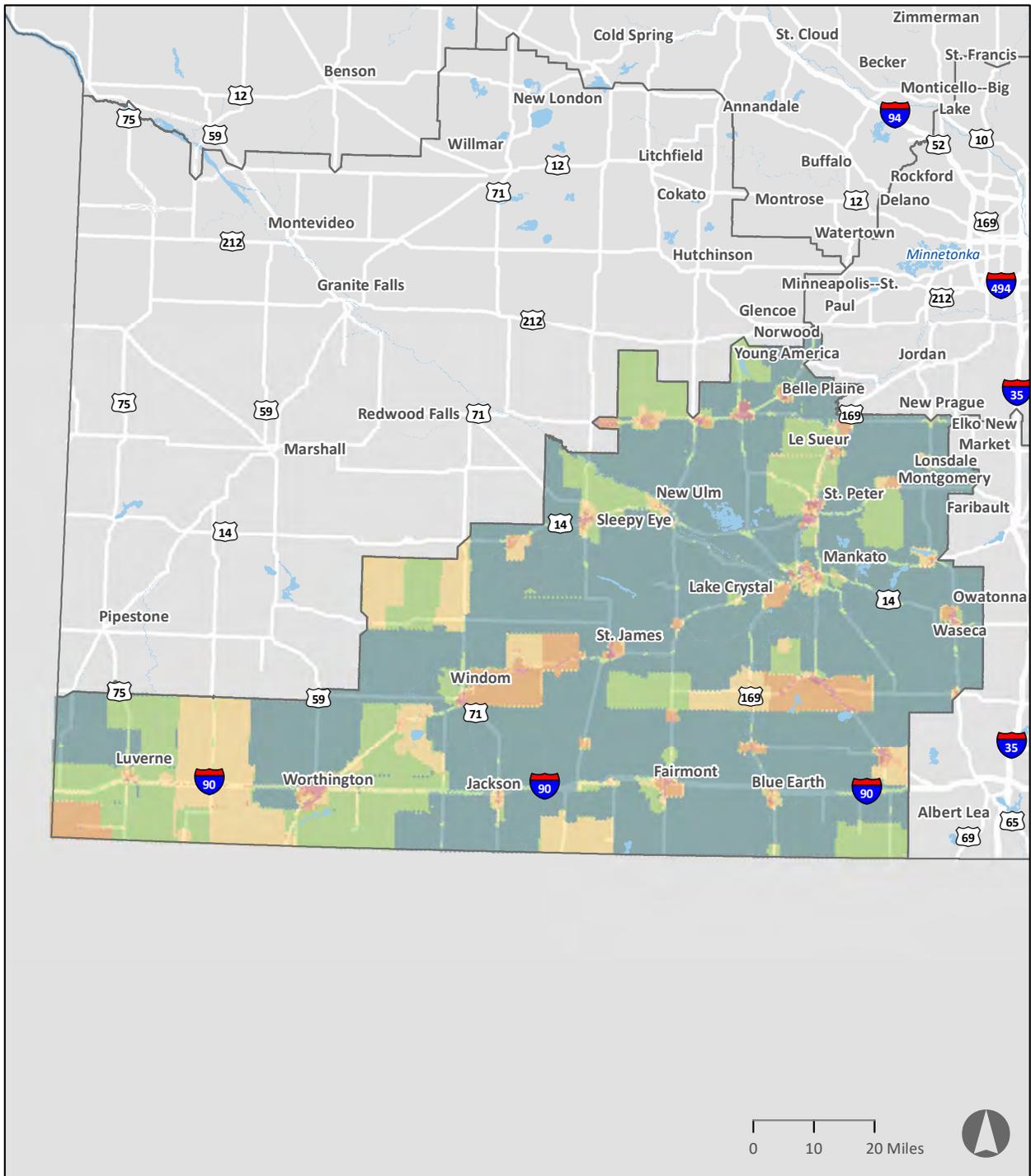
PAWS SCORE

- 0-3 (lowest need)
- 4-5
- 6-7
- 8-10
- 11-16 (highest need)

- MnDOT District Boundary
- Highway
- Water



EXHIBIT 4-9: Pedestrian Improvement Prioritization - District 7



PRIORITY AREAS FOR WALKING

District 7

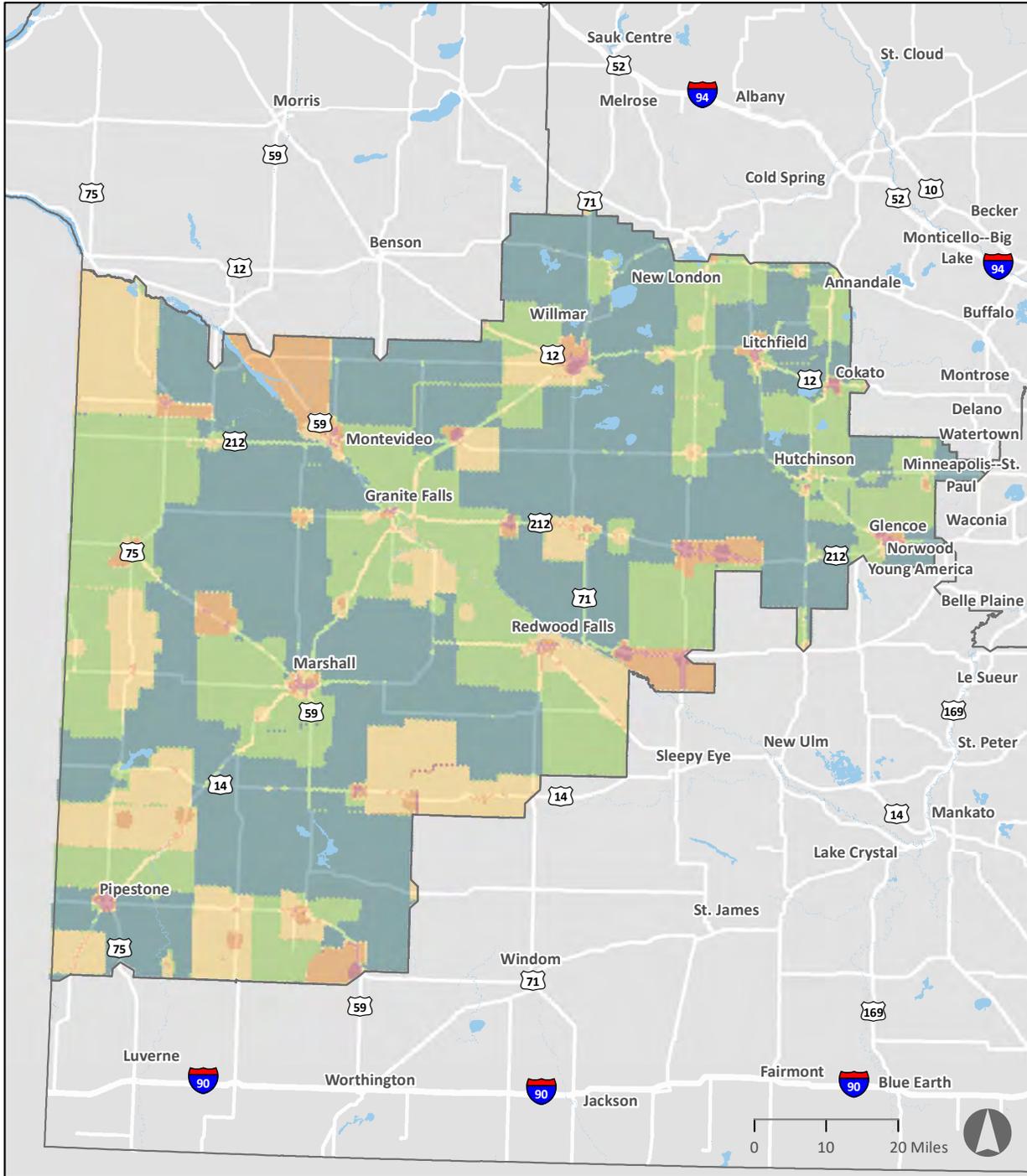
PAWS SCORE

- 0-3 (lowest need)
- 4-5
- 6-7
- 8-9
- 10-14 (highest need)

- MndOT District Boundary
- Highway
- Water



EXHIBIT 4-10: Pedestrian Improvement Prioritization - District 8



PRIORITY AREAS FOR WALKING

District 8

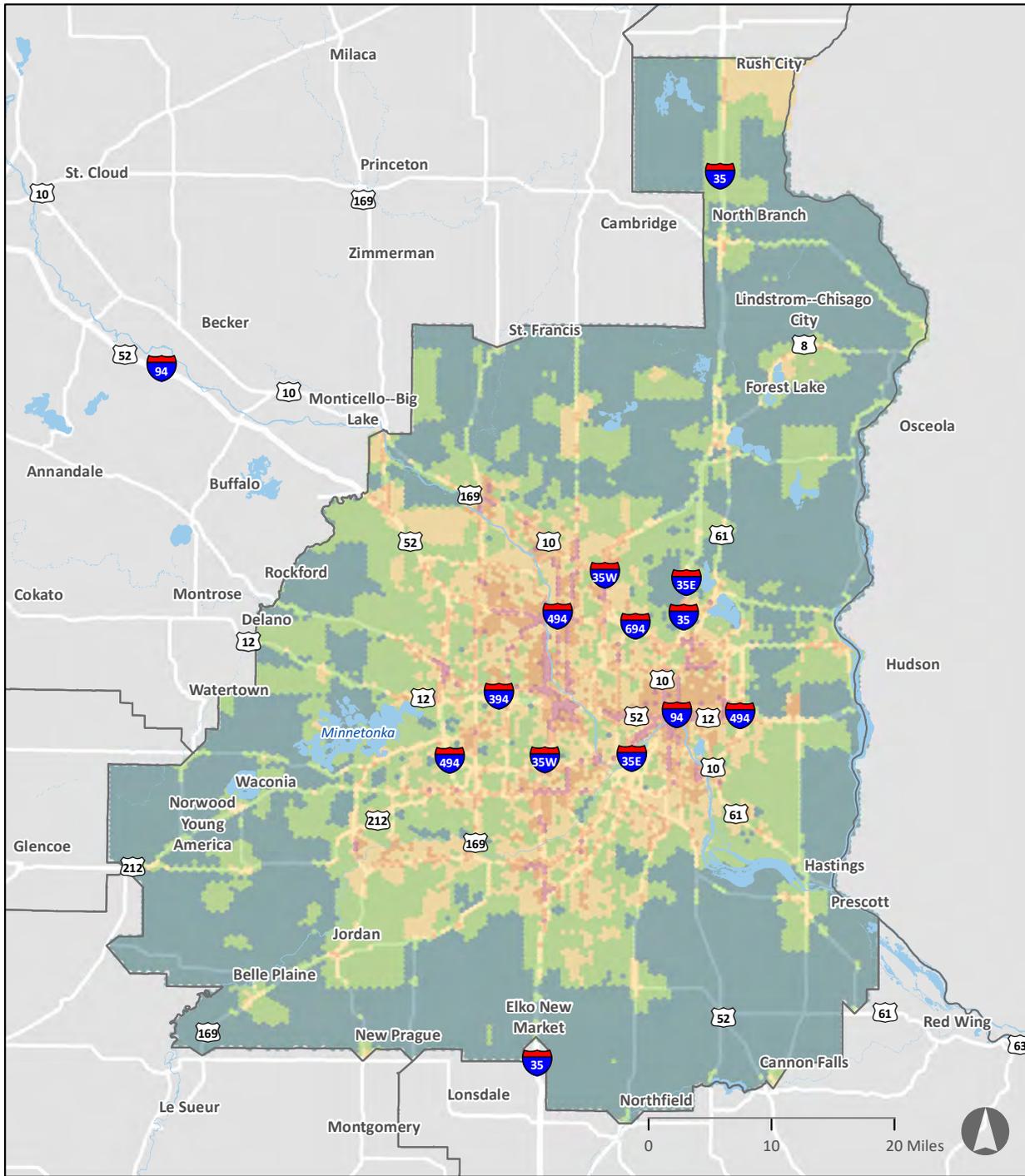
PAWS SCORE

- 0-3 (lowest need)
- 4-5
- 6-7
- 8-9
- 10-15 (highest need)

- MnDOT District Boundary
- Highway
- Water



EXHIBIT 4-11: Pedestrian Improvement Prioritization - Metro District



PRIORITY AREAS FOR WALKING

Metro District

PAWS SCORE

- 0-3 (lowest need)
- 4-6
- 7-9
- 10-12
- 13-16 (highest need)

- MnDOT District Boundary
- Highway
- Water



Based on MnDOT’s currently available data, the Priority Areas for Walking Study identifies reservation land and off-reservation tribal trust lands as higher priority places for pedestrian improvements.



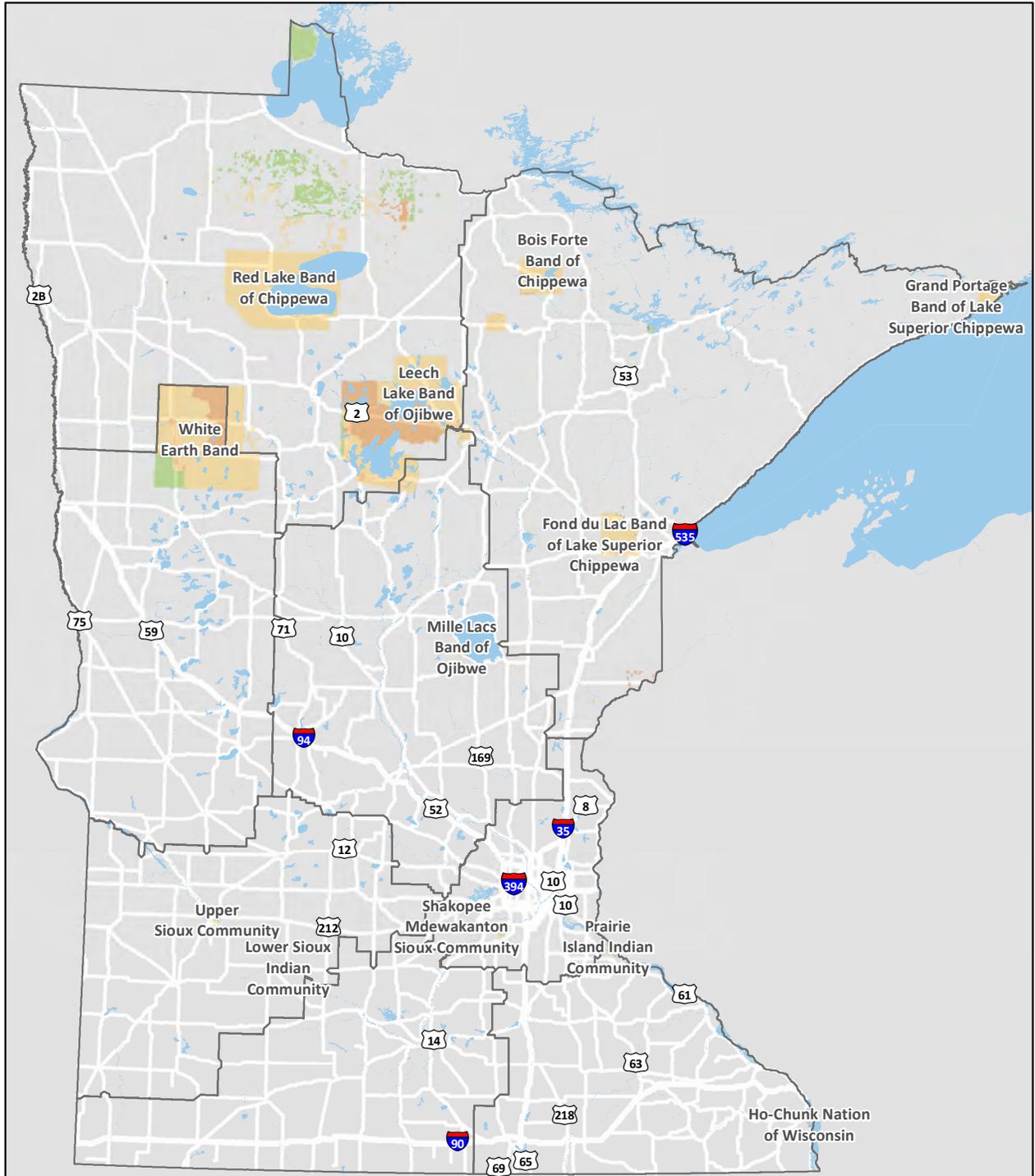
WALKING IN INDIAN COUNTRY

Based on MnDOT’s currently available data²⁷, the Priority Areas for Walking Study (PAWS) identifies reservation land and off-reservation tribal trust lands as higher priority places for pedestrian improvements. PAWS scores for tribal lands are highlighted in EXHIBIT 4-12. [MnDOT’s interactive PAWS map](#) can be used to view in closer detail.

MnDOT’s Office of Tribal Affairs has been working with each of the federally-recognized sovereign Tribal Nations to better understand their transportation needs, including those related to walking. Because of the long distances between land uses, pedestrian needs in rural areas are different than those in urban areas. Tribal citizens living on or near the reservation have limited access to motor vehicles and public transit and walk along highways to reach community destinations. There is an elevated risk of serious injury and death along these roadways because people walking must share space with people driving at high speeds. Walking behavior in Indian Country may not be immediately apparent to MnDOT staff, and tribal officials are best positioned to explain the needs of their community.

MnDOT employees are responsible for integrating the [Tribal Nations Policy](#)²⁸ into their programs, projects and planning as it relates to their work. The purpose of the policy is to develop, improve, and maintain collaborative relationships between MnDOT and Tribal Nations. When selecting and scoping projects in Indian Country, build on already established and ongoing relationships between the Department and tribal officials to identify walking-related opportunities and challenges in the project area.

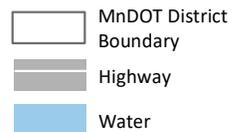
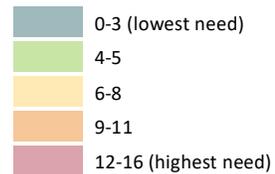
EXHIBIT 4-12: Pedestrian Improvement Prioritization - Tribal Lands



PRIORITY AREAS FOR WALKING

Tribal Government Areas

PAWS SCORE



INVESTMENT PLANNING SCENARIOS

The following investment scenarios consider the capital costs associated with realizing key [MnDOT goals](#) in the State and District Tier 1 [highest priority areas for walking](#) across the state. Goals advanced by these scenarios include creating safer places to walk, creating enjoyable places to walk, responding to climate change, and creating healthy and equitable communities. The investment needs identified by the scenarios are important to the success of MnDOT’s Complete Streets Program’s evaluation and tracking efforts.

Walkable communities enhance the state’s economy, health, and safety. The improvements included in these scenarios will accelerate [the increase in walking trips already occurring throughout many communities](#) and make it safer for those who were already walking. Because everyone walks at some point when getting around in Minnesota, everyone stands to benefit from these improvements. The improvements also have many co-benefits for people when they drive, bicycle, and take transit.



The context-sensitive scenario applies [the expectations for walking infrastructure guidance](#) for improving conditions for people walking along

and across MnDOT roadways. This project scoping guidance identifies whether a sidewalk, sidepath, or shoulder is most appropriate to meet pedestrian needs in a given land use (such as a small town main street or a suburban commercial area). Project scoping guidance also identifies which crossing improvement tools (such as curb extensions and pedestrian-scale lighting) are appropriate in each land-use context. Using the project scoping guidance, the context-sensitive scenario estimates the cost associated with constructing these improvements along and across roadways within the highest-priority areas for walking, as identified in the [Priority Areas for Walking Study \(PAWS\)](#).



The climate change mitigation scenario builds on the context-sensitive scenario to understand how MnDOT could simultaneously

reduce emissions through mode shift and address the increased exposure to heat and flooding that put people walking at risk. It identifies the mix of green infrastructure tools (such as tree trenches and flow-through planters) that make sense for each land-use context. The climate change mitigation scenario develops a cost estimate for creating a complete tree canopy and managing stormwater runoff when constructing pedestrian improvements along MnDOT roadways in the highest-priority areas.

The investment scenarios consider the capital costs associated with realizing key MnDOT goals in the State and District Tier 1 highest priority areas for walking across the state.





EXHIBIT 4-13: Base image

Each scenario description includes an illustration of the associated improvements, building on a base image of existing conditions along a trunk highway in a small town as shown in EXHIBIT 4-13. This location was selected based on its applicability to many communities throughout Minnesota.



EXHIBIT 4-14: Context Sensitive Scenario

CONTEXT-SENSITIVE SCENARIO



The public’s expectations for pedestrian infrastructure along and across roadways are related to the surrounding land use and the presence of destinations like stores, schools, and recreational facilities as well as roadway conditions. Sidewalks on both sides of the street are often appropriate in urban residential and commercial areas, while a paved shoulder may meet needs in a rural area with few nearby destinations. Someone walking across a multi-lane intersection near a suburban shopping mall may need a pedestrian refuge island to make the crossing safely, while someone crossing a main street in a small town may benefit from curb extensions that shorten their exposure to car and truck traffic and make them more visible when crossing the street.

The context-sensitive scenario responds to these expectations as well as [the problem of increasing numbers of people killed and injured while walking](#). It estimates the capital cost associated with making land use and roadway context-sensitive improvements along and across roadways in the highest priority areas for walking in each district and across the state.

CONTEXT-SENSITIVE IMPROVEMENTS AND WALKING

Improving walking conditions along and across state roadways in the highest-priority areas will encourage more people to walk and increase their safety and comfort while doing so.

Reducing Crashes

Crossing treatments included in the context-sensitive scenario are known to decrease crashes involving people walking. The Federal Highway Administration’s [Safe Transportation for Every Pedestrian \(STEP\) Studio](#) offers the following statistics on crossing treatment impacts²⁹:

- Lighting at intersections: 23% reduction in total injury crashes
- Raised crosswalks: 45% reduction in pedestrian crashes and 30% reduction in vehicle crashes
- Pedestrian refuge islands: 32% reduction in pedestrian crashes
- Rectangular Rapid Flashing Beacon flashing patterns: 47% reduction in pedestrian crashes and increased driver yielding rate
- Pedestrian hybrid beacon: 55% reduction in pedestrian crashes
- Road diet (lane reduction): 19% reduction in total crashes in urban areas, and 47% reduction in suburban areas

Many of these treatments are also recommended strategies in the Strategic Highway Safety Plan.

While the State and District Tier 1 highest-priority areas for walking contain only 6.5% of the trunk highway miles in the state, they account for nearly 48% of pedestrian crashes. Of the 2,805 pedestrian crashes reported in Minnesota between 2016 and 2018, 1,344 occurred within these areas. Some of these 1,344 crashes were on MnDOT roadways, while others were on county or local roads. 22 were

While the State and District Tier 1 highest-priority areas for walking contain only 6.5% of the trunk highway miles in the state, they account for nearly 48% of pedestrian crashes. The crossing treatments included in this scenario are likely to reduce the number of crashes occurring in these areas.

fatal crashes, 130 were serious injury crashes, 642 were minor injury crashes, 530 were possible injury crashes, and 20 were property damage-only crashes. Using MnDOT’s comprehensive crash unit costs³⁰, the cost of these 1,344 crashes is \$580,300,000. Assuming similar crash rates, the cost of pedestrian crashes on all roadways in the highest-priority areas over a 20-year period is estimated at nearly \$4 billion.

The crossing treatments included in this scenario are likely to reduce the number of crashes occurring in the highest-priority areas. If the improvements in this scenario were to result in a 30% reduction in pedestrian crashes over a 20-year period, the savings would amount to over \$1.1 billion. The actual savings would likely be significantly higher because improvements would also reduce non-pedestrian crashes.

EXHIBIT 4-15: Cost of Pedestrian Crashes in the Highest-Priority Areas, 2016-2018

CRASH SEVERITY	# OF CRASHES, 2016-2018	MNDOT COMPREHENSIVE CRASH UNIT COST	TOTAL COST OF CRASHES, 2016-2018
FATAL	22	\$12,800,000	\$281,600,000
SERIOUS INJURY	130	\$720,000	\$93,600,000
MINOR INJURY	642	\$220,000	\$141,240,000
POSSIBLE INJURY	530	\$120,000	\$63,600,000
PROPERTY DAMAGE-ONLY	20	\$13,000	\$260,000
TOTAL	1,344		\$580,300,000

Increasing Walking and Decreasing Driving

Improving conditions along and across MnDOT roadways will allow people to make short trips by walking rather than driving, resulting in a host of benefits, as discussed earlier in the plan.

Walking helps Minnesotans meet physical activity recommendations and improves health. About half of Minnesotans meet physical activity recommendations, most of whom do so by including walking as part of their regular physical activity.³¹ Replacing sedentary time spent sitting in a car with walking leads to health benefits. Motor vehicle time is associated with increased weight and chronic diseases such as cardiovascular disease, hypertension, and Type 2 diabetes³² as well as increased stress.³³ Less driving also benefits the health of people who live close to busy roadways which generate high levels of noise, negatively impacting psychological well-being and physical health by increasing blood pressure.³⁴

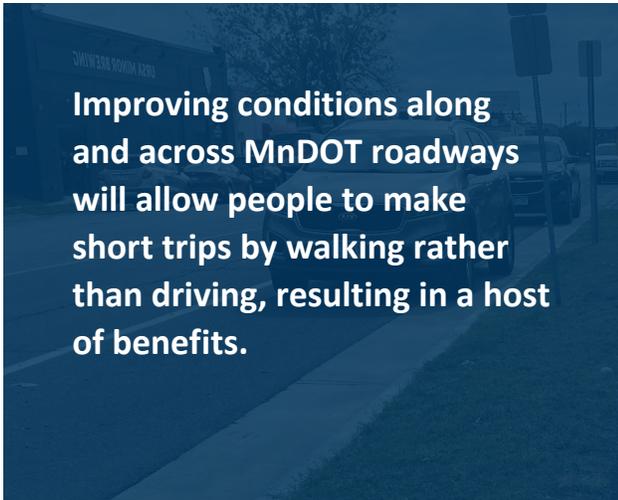
Walking is key to lowering vehicle miles traveled and securing a low-carbon future. To avoid the worst effects of climate change, and to achieve the MN Next Generation Energy Act targets, Minnesota must reduce transportation GHG emissions by 80% by 2050. Transportation is the sector with the largest net source of greenhouse gas emissions in Minnesota, and walking trips can replace some of the driving trips that produce GHG emissions.³⁵ Reducing emissions will improve health

for everyone, especially those who are especially vulnerable including pregnant people, newborns, children, and people with chronic illnesses. Fossil fuel-powered cars emit carbon dioxide, nitrous oxide, sulfur oxides, and other gases associated with asthma attacks and cardiovascular disease.³⁶

Walking is essential for equitable access to employment. Considering both commuters who primarily walk and commuters who take transit, over 200,000 Minnesotans rely on walking to get to work.³⁷ Seven percent of Minnesota households do not own a car.³⁸ Many Minnesotans rely on walking and cannot drive due to age, disability, immigration status, poverty, or other factors.

Pedestrian facilities connect people to schools, jobs, recreation, goods and services, enhancing quality of life. People who have places to walk to nearby say they are more satisfied with their quality of life.³⁹ People who live in walkable neighborhoods tend to be familiar with their surroundings, engaged in their community, and walk more for day-to-day activities such as trips to the local store and to complete errands.⁴⁰ Living in a walkable community can allow people and families to go car-lite or car-free.

Walkable communities developed according to smart growth principles are more efficient, and cheaper to administer.⁴¹ Walkable neighborhoods generate far greater tax revenue per square foot than all other types of development.⁴²



Improving conditions along and across MnDOT roadways will allow people to make short trips by walking rather than driving, resulting in a host of benefits.



METHODOLOGY

Because there is no existing statewide dataset of land use along MnDOT roadways, the context-sensitive scenario used a combination of broad community context information (rural/natural, metro area, or rural town) and sampling of land use conditions at randomly selected intersections and roadways to estimate conditions across the state. This high-level analysis was not intended to identify improvements for specific roadways and intersections, but to develop an understanding of the scale of investment needed to make improvements in all of the highest-priority areas in each District and statewide.

The following list outlines the process of developing the cost estimate for the context-sensitive scenario:

1. Developed unit cost estimates for crossing improvements and linear pedestrian facilities (such as sidewalks).
2. Determined broad community context (rural/natural, metro area, or rural town) of trunk highways in the highest-priority areas in each District and statewide.
3. Identified intersections in the highest-priority areas falling into three categories: trunk highway/trunk highway, county state aid/trunk highway, and trunk highway ramp/non-highway roadway. There are approximately 1,094 such intersections within the highest-priority areas.
4. Sampled intersections to determine the range of intersection types (such as multi-lane signalized and two-lane stop controlled) as well as the typical improvements recommended for each type of intersection. For example, typical improvements for a two-lane signalized intersection include pedestrian-scaled light posts, curb ramps, high visibility crosswalks, stop bars, and curb extensions. A multi-lane signalized intersection would have a slightly different set of improvements, with pedestrian crossing islands but no curb extensions.
5. Created intersection pedestrian improvement packages by grouping together intersections with similar total costs into packages: multi-lane, two-lane, and ramps and roundabouts. Created a separate enhanced crossing add-on package consisting of a pedestrian warning beacon, raised crosswalk, and pedestrian warning signs.
6. Randomly sampled 50 of the 1,094 intersections identified in step three, noting rural/natural, metro area, or rural town context and intersection package type. Determined percentage of sampled intersections falling into each package type by context. Estimated costs for intersections in the highest-priority areas by applying these percentages.
7. Identified trunk highways where walking is allowed in priority areas. This amounts to approximately 526 miles. Determined whether existing shoulders have sufficient width to accommodate people walking.
8. Identified recommended pedestrian facility type (sidewalk, sidepath, or shoulder) based on land-use context for the highest-priority roadways in ten randomly chosen rural towns and parts of three randomly chosen metro areas. Determined percentage of sampled segments falling into each facility type for rural towns and for metro areas. Estimated costs for linear pedestrian facilities in priority areas by applying these percentages.

COST ESTIMATE

The cost estimate considers only pedestrian improvements on trunk highways within the highest-priority areas statewide and in each District, as determined by the [Priority Areas for Walking \(PAWS\) analysis](#) developed for this plan. The cost estimate does not include maintenance costs. The assumptions that drive the analysis are included in the [Appendix](#).

The total cost of context-sensitive improvements in the highest-priority areas is likely to be between \$211 million and \$648 million (see EXHIBIT 4-16). Costs are broken down by District to support District-level project planning efforts. The context-sensitive scenario cost estimate combines two elements: an estimate for linear pedestrian facilities and an estimate for crossing improvements at intersections.

Linear Pedestrian Facilities

The estimate for linear pedestrian facilities describes the cost associated with constructing or reconstructing sidewalks and sidepaths or filling in missing shoulders on MnDOT roadways where pedestrian access is allowed. Facility type is based on land-use context.

The linear pedestrian facilities cost is between \$125 million and \$252 million (see EXHIBIT 4-17). The cost includes constructing or reconstructing 78 miles of shoulders (on both sides of the roadway), 108 miles of sidepath (on one side of the roadway), 124 miles of sidewalk (on both sides of the roadway), and 72 miles of sidewalk and sidepath (sidewalk on one side of the roadway and sidepath on the other).

EXHIBIT 4-16: Total Context-Sensitive Scenario Cost Estimate

DISTRICT	LOW COST ESTIMATE	HIGH COST ESTIMATE
1	\$12,083,000	\$38,984,000
2	\$24,245,000	\$71,566,000
3	\$21,841,000	\$63,766,000
4	\$18,669,000	\$54,492,000
6	\$19,751,000	\$63,477,000
7	\$27,542,000	\$77,774,000
8	\$29,601,000	\$84,694,000
Metro	\$57,750,000	\$193,160,000
Total	\$211,481,000	\$647,912,000

EXHIBIT 4-17: Linear Pedestrian Facilities Cost Estimate

DISTRICT	MILES	LOW	HIGH
1	24	\$6,234,000	\$12,360,000
2	77	\$15,990,000	\$33,280,000
3	57	\$13,967,000	\$27,665,000
4	54	\$12,041,000	\$24,122,000
6	47	\$10,423,000	\$20,609,000
7	91	\$19,044,000	\$38,642,000
8	98	\$20,230,000	\$41,284,000
Metro	77	\$27,132,000	\$53,762,000
Total	526	\$125,060,000	\$251,723,000

EXHIBIT 4-18: Pedestrian Treatments at Intersections Cost Estimate

DISTRICT	INTESECTIONS	LOW	HIGH
1	71	\$5,849,000	\$26,624,000
2	119	\$8,255,000	\$38,286,000
3	102	\$7,874,000	\$36,101,000
4	86	\$6,628,000	\$30,370,000
6	123	\$9,328,000	\$42,868,000
7	115	\$8,498,000	\$39,132,000
8	134	\$9,371,000	\$43,410,000
Metro	344	\$30,618,000	\$139,399,000
Total	1094	\$86,421,000	\$396,188,000

Pedestrian Treatments at Intersections

The estimate for pedestrian treatments at intersections describes the cost associated with constructing or reconstructing context-sensitive pedestrian treatments (such as curb ramps, pedestrian refuge islands, or high-visibility crosswalks) at trunk highway to trunk highway, trunk highway to county state aid highway, and trunk highway ramp to roadway intersections where pedestrian use is likely.

The pedestrian treatments at intersections cost is between \$86 million and \$396 million (see EXHIBIT 4-18). The pedestrian treatments at intersections cost includes basic pedestrian improvements at 274 two-lane intersections, 521 multi-lane intersections, and 206 trunk highway on/off ramps and roundabouts, as well as 160 enhanced crossing add-on treatments.

Environmental Justice Implications of the Context-Sensitive Scenario

The Context-Sensitive Scenario would have significant positive impacts for environmental justice populations across the state. Implementation of this scenario would result in critical improvements to areas with high concentrations of environmental justice populations.

1,344 pedestrian crashes, of which at least 794 resulted in death or injury, occurred in the highest-priority areas targeted in this scenario. The improvements in this scenario are likely to make the difference between life and death for people walking in these areas. During the engagement process, people with disabilities shared countless stories of injuries suffered from pedestrian crashes with vehicles; one person named two separate instances that impacted their long-term wellbeing. Prioritizing options to serve the most needed areas with minimum improvements could alleviate risks for people who depend on walking for their primary mode of transportation.

The cost of pedestrian crashes on all roadways in the highest-priority areas over a 20-year period is estimated at nearly \$4 billion. The total cost of context-sensitive improvements that will likely prevent some of these crashes is between \$211 million and \$648 million.

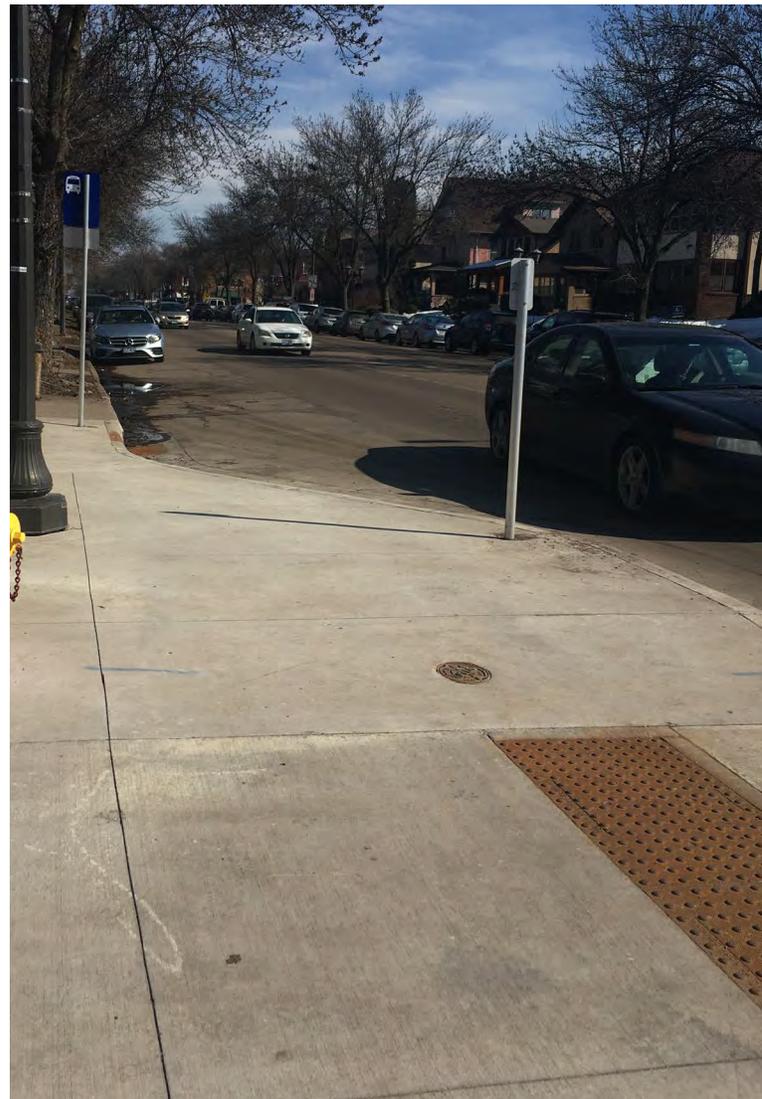




EXHIBIT 4-19: Climate Change Mitigation Scenario

CLIMATE CHANGE MITIGATION SCENARIO



Climate change is increasing the frequency of extreme precipitation and heat events in Minnesota, threatening the health, safety, and comfort of people walking as well as damaging transportation infrastructure. [Previous MnDOT plans, including the Minnesota GO Vision and the Minnesota State Highway Investment Plan, discuss climate change as a high-priority threat.](#)

Emissions from transportation are a major contributor to climate change. In the Statewide Multimodal Transportation Plan, MnDOT formally adopted the target of reducing GHG emissions from the transportation sector by 30% from 2005 levels in accordance with the Minnesota Next Generation Energy Act.

The climate change mitigation scenario considers how MnDOT can use green infrastructure to reduce the transportation system’s contributions to climate change and reduce the negative impact of extreme weather on people walking within the

The climate change mitigation scenario considers how MnDOT can use green infrastructure to reduce the transportation system’s contributions to climate change and reduce the negative impact of extreme weather on people walking within high-priority areas.

highest-priority areas in Minnesota cities. Green infrastructure treatments will benefit people traveling by all modes and are often considered as part of total project costs rather than as a pedestrian cost. Because green infrastructure significantly impacts the experience of people walking and shares the same space on the outer edges of the right-of-way, this plan explores the installation of green infrastructure alongside the construction of pedestrian infrastructure.

GREEN INFRASTRUCTURE AND WALKING

Green infrastructure that can be installed along sidewalks/sidepaths includes shade trees, tree trenches, bioswales/raingardens, and permeable pavement. Rain gardens and flow-through planters can be installed as part of curb extensions. Installing green infrastructure along MnDOT roadways in the highest-priority areas for walking is an efficient strategy for mitigating climate change impacts and meeting [the public's expectations for spaces to walk that are shaded and buffered from car and truck traffic](#).



Need for attractive spaces to support mode shift

Mode shift from driving to walking is an important strategy for reducing emissions from transportation. According to the 2017 US National Household Travel Survey, 21.4% of non-commercial vehicle trips are one mile or shorter.⁴³ Converting some of those short vehicle trips to walking trips will reduce emissions.

Walking must be both safe and attractive to achieve mode shift. During [public engagement](#) for this plan, Minnesotans indicated a strong preference for space to walk that is buffered from car and truck traffic. When asked what walking safety means to them, respondents commonly shared that a physical buffer from vehicles and adequate shade are important parts of feeling safe.



Impacts of extreme weather

Heavy rainfall events are already becoming larger and more common. Warmer year-round temperatures mean

shorter but wetter and snowier winters, more rapid snow melt, and hotter summers.⁴⁴ During heavy rains, roadways carry high volumes of water that moves rapidly and can erode sidewalks and roadways, creating potholes and degraded paving conditions and increasing the cost of maintenance over time. Storm drains are often overwhelmed during heavy rain events. This places the most

Installing green infrastructure along MnDOT roadways in high-priority areas for walking is an efficient strategy for mitigating climate change impacts and meeting the public's expectations for spaces to walk that are shaded and buffered from car and truck traffic.



vulnerable roadway users—people walking, bicycling, and using transit—at increased risk and inconvenience, especially at the end of curb ramps where water can collect and pool.

Sidewalks and sidepaths have not always been constructed with water and snow in mind. Sidewalks that directly abut roadways without a buffer space quickly become a place for snow storage as plows clear the roadway. Water pools on sidewalks, forming deep puddles and ice that can render them unusable.

Rising temperatures are increasing the frequency and severity of extreme heat events (prolonged periods of hot weather) across the state and are projected to increase further – from approximately eight days per year with a heat index over 90 degrees Fahrenheit to a projected 27-34 days per year by mid-century.⁴⁵ Extreme heat can cause heat stroke and exhaustion, worsening existing conditions like asthma and heart disease. Extreme heat can also be fatal, particularly for individuals under 18 and over 65 years of age, and especially in areas where shade coverage is lacking. Extreme heat, lack of shade on sidewalks, bus stops, and roadways, and lack of places to sit and rest can be a major deterrent to walking, biking, and waiting for transit. High levels of impervious surface contribute to the urban heat island effect, making cities even hotter.

Green infrastructure as a solution

Green infrastructure can be incorporated into safety enhancements for people walking and waiting for transit. Curb extensions shorten crossing distances, and can also provide space for flow-through planters that treat stormwater and beautify the street. Right-sizing roadways and parking can create opportunities for increasing pervious surfaces and capturing stormwater while also improving safety and comfort for people using the street.

Adding a buffer space for trees, benches and green stormwater infrastructure provides many benefits:

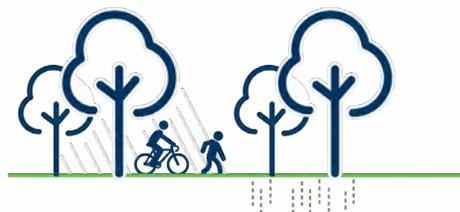
- Space for snow storage and snow melt in winter
- Tree canopy to provide shade, intercept rain and snow, filter the air, and capture carbon
- Separation from car and truck traffic noise and pollution
- On-site holding and filtering of storm run-off
- A more beautiful, peaceful walking experience

The benefits of streets trees significantly outweigh the costs. Street trees provide a host of economic benefits, including intercepting stormwater runoff, raising property values and reducing energy use. Trees are an appreciating asset, providing more benefits as they grow.⁴⁶

Green infrastructure integrated into streets reduces water pollution and the strain on traditional gray stormwater management systems.



Trees and plants provide valuable ecosystems services like cleaning the air and water and providing cooling.



METHODOLOGY

Based on research into the impact of climate change in Minnesota and available treatments for managing increased stormwater and heat in MnDOT rights-of-way, MnDOT developed a scenario for statewide infrastructure investments that would simultaneously improve the pedestrian experience and mitigate climate impacts.

Minnesota currently lacks statewide climate impact data at the scale needed to assess which roadways are most at risk from extreme precipitation and heat. Given the limited data available, this analysis assumes that most urbanized areas would benefit from green infrastructure. Urbanized areas feature concentrations of impervious surfaces, which exacerbate the impacts of climate change. Communities with a high percentage of impermeable land are more likely to face challenges related to urban heat islands, stormwater management, and maintenance of paved areas.

The following outlines the process of developing the cost estimate for the climate mitigation scenario:

1. Determined menu of stormwater-focused and heat-mitigation treatments for installation along with walking infrastructure like sidewalks, sidepaths, and curb extensions. Recommended treatments come from the MN Stormwater Manual and other sources, and include shade trees, tree vault systems, bioswales/filter strips/stormwater planters, flow through planters/rain gardens, planted center medians, permeable paving, and benches. These treatments prioritize people walking and manage the risk of extreme precipitation and heat.
2. Developed assumptions for appropriate treatments for each land use. For example, along roadways in urban/suburban industrial areas where right-of-way space is less constrained, there will be less need to use tree vault systems to provide enough soil and water for shade trees to grow and thrive. Along roadways in urban commercial areas where space is more constrained, there will be more need for tree vault systems.
3. For each land-use context, calculated per-mile cost of green infrastructure. This calculation took into account typical block length, existing tree cover, and presence of a curb and gutter. The calculation also included stormwater costs associated with installing tree vaults and bioswales, such as irrigation equipment, grate inlets, catch basin remodeling, and storm drain and manhole relocation. The calculation assumed pedestrian infrastructure, such as sidewalks, sidepaths, and curb extensions, would be installed simultaneously, reducing construction costs. Costs for pedestrian infrastructure are included in the context-sensitive scenario.
4. For each land use, estimated miles of roadway State and District Tier 1 priority areas where sidewalks or sidepaths are the recommended facility type (where shoulders are the recommended facility type, the surrounding area is typically highly pervious). The estimate was derived from a random sample of ten rural towns and three metro areas.
5. Multiplied miles of roadway by per-mile costs to develop overall cost estimate for mitigating heat and flooding along roadways in priority areas for walking.

COST ESTIMATE

The climate mitigation scenario cost estimate includes green infrastructure installed along with the sidewalks, sidepaths, and intersection improvements from the context-sensitive scenario. It does not include maintenance costs. The assumptions that drive the analysis are included in the [Appendix](#).

Costs associated with creating a complete tree canopy and managing stormwater runoff when constructing pedestrian improvements along 473 miles of MnDOT roadways in the highest-priority areas statewide and in each District range from \$145 million to \$398 million (See EXHIBIT 4-20). Costs are broken down by District to support District-level project planning efforts.

The green infrastructure treatments included within the cost are stormwater infrastructure, flow through planters/rain gardens, shade trees, bioswale/filter strip/stormwater planter, planted center medians, and permeable paving. Types of green infrastructure appropriate for each land use condition are shown in EXHIBIT 4-21.

This scenario represents only one piece of the much larger investment MnDOT must make to reduce emissions and protect people and infrastructure from the effects of climate change.

Environmental Justice Implications of the Climate Change Mitigation Scenario

The Climate Change Mitigation Scenario would serve climate-vulnerable areas and support mitigation of impacts of climate change impacts. Environmental justice communities are impacted disproportionately by climate change for many reasons. According to the Environmental Protection Agency, environmental justice populations are “coping with higher levels of existing health risks when compared to other groups, living in low-income communities with limited access to healthcare services, having high rates of uninsured individuals who have difficulty accessing quality healthcare, having limited availability of information and resources in a person’s native language, less ability to relocate or rebuild after a disaster.” Since environmental justice communities tend to be the most vulnerable in terms of climate change, climate adaptation activities could alleviate the pressures on these communities. In this respect, investment in climate change mitigation could have the effect of furthering equity, especially if the money saved through climate adaptation could be used to further improve the pedestrian infrastructure.

EXHIBIT 4-20: Climate Mitigation Scenario Cost Estimate

DISTRICT	MILES	LOW	HIGH
1	21	\$8,287,000	\$22,555,000
2	69	\$13,399,000	\$37,295,000
3	51	\$17,957,000	\$49,097,000
4	49	\$13,695,000	\$37,750,000
6	42	\$12,659,000	\$34,897,000
7	82	\$19,105,000	\$53,041,000
8	89	\$19,258,000	\$53,602,000
Metro	70	\$40,932,000	\$109,876,000
Total	473	\$145,292,000	\$398,114,000



EXHIBIT 4-21: Green Infrastructure Costs by Land-use context

LAND USE CONTEXT	SHADE TREES AND BENCHES	TREE VAULT SYSTEMS	BIOSWALE/FILTER STRIP/STORMWATER PLANTER	STORMWATER INFRA-STRUCTURE	PLANTED CENTER MEDIANS	PERMEABLE PAVING	FLOW-THROUGH PLANTERS OR RAIN GARDENS IN CURB EXTENSION	TOTAL COST PER MILE, BOTH SIDES OF STREET (LOW)	TOTAL COST PER MILE, BOTH SIDES OF STREET (HIGH)
Rural Industrial Areas, Natural Areas, Connections between Small Towns								N/A*	N/A*
Rural Crossroads	X	X	X	X		X	X	\$428,000	\$1,290,000
Suburban Residential	X	X	X	X	X	X	X	\$681,000	\$1,815,000
Suburban Commercial (Swale drainage)	X				X		X	\$182,000	\$729,000
Suburban Commercial (curb and gutter drainage)	X		X	X	X			\$306,000	\$1,087,000
Urban Residential	X	X	X	X	X	X	X	\$1,237,000	\$3,068,000
Urban Commercial, Urban Core, and Main Street	X	X	X	X	X	X	X	\$739,000	\$1,902,000
Urban/ Suburban Industrial Areas	X	X	X	X	X		X	\$651,000	\$1,786,000

*No green infrastructure treatments recommended. Existing conditions assumed to include existing trees, groundcover, and swale.

CONCLUSION

The two scenarios included in this section outline investment opportunities to prioritize walking improvements in the highest-priority areas statewide and in each District. The land-use context and climate mitigation scenarios build on each other to estimate costs to inform MnSHIP investment targets. The infrastructure tools identified here elevate walking comfort, connectivity, and climate change mitigation. They utilize proven countermeasures from FHWA to enhance walking safety along and across State-owned roadways.

Focused investment in priority areas will benefit Minnesota residents, communities, businesses, and public agencies. The scenarios target areas of the state where these investments can make the biggest difference in the lives of residents. Investments made now are critical to increasing the percent of everyday trips made by walking. The greater this increase, the more resilient, attractive, and safe Minnesota communities will become.

The following chapter recommends organizational changes to augment these investment strategies. Feedback from MnDOT staff identified existing processes that if strengthened, would better serve the agency's goals for pedestrian planning and the goals of this plan.

ACTION ITEMS

IP-12: Seek opportunities to provide wide vegetated buffers between people walking and vehicle traffic

Wide buffers allow space for snow storage, increase comfort for people walking, and can protect people walking from roadway pollution. Wide buffers allow space for tree roots and green infrastructure treatments that capture stormwater run off.

IP-13: Prioritize street trees as critical pedestrian infrastructure for adapting to climate change

Street trees play a role in carbon sequestration, provide wildlife habitat, absorb storm water, buffer people from the roadway, and provide shade for people walking or gathering on the sidewalk.

IP-14: Reference the [infrastructure expectations tables](#) in investment planning processes

IP-15: Update cost estimates after PAWS score updates

Updating the cost estimates should include reviewing unit costs for materials.

IP-16: Investigate level of investment needed to construct context-sensitive and climate mitigation improvements in PAWS Tier 2 areas



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PROCESS IMPROVEMENTS TO SUPPORT WALKING

Creating safe and comfortable walking conditions on MnDOT roadways will take more than increased funding; it will require improvements to MnDOT processes. MnDOT commits to improving processes related to project planning, design, and construction in order to support people walking on MnDOT roadways.

An organization's policies and practices matter; MnDOT's everyday practices are no exception. They drive decisions throughout the project development process. Current policies and practices have stumbling blocks that prevent optimal project outcomes. The outcomes of these decisions—the design and maintenance of state roadways—impact peoples' lives, for better and for worse.

This chapter outlines strategies for overcoming challenges to help MnDOT staff and local governments more effectively meet the goals of this plan. The policies and processes related to cost participation, project scoping, and maintenance addressed in this chapter all heavily influence the ability of MnDOT and local jurisdictions to improve conditions for people walking on state facilities.

These strategies describe improvements to processes under the current funding level and funding structure for pedestrian planning at MnDOT. If increased funding becomes available, further process improvements would be possible.



COST PARTICIPATION

MnDOT's [Cost Participation Policy](#) (CPP) influences the design and implementation of walking infrastructure. This section discusses how the CPP helps and hinders walking-focused improvements and provides action items that focus on identifying ways the CPP could potentially be modified to support the design and construction of safe and comfortable pedestrian facilities. To support the action items, a summary of stakeholder feedback and a summary of current CPP practices are also included.

COST PARTICIPATION POLICIES

The purpose of the CPP is to establish guidelines for how costs are shared between MnDOT and local governments. Where a mutual benefit and a demonstrated transportation need exist, MnDOT endorses cooperative construction projects with local units of government. EXHIBIT 5-2 summarizes cost-sharing for common infrastructure elements.

The majority of MnDOT's construction funding is constitutionally limited to trunk highway purposes and scope elements that are necessary to address trunk highway needs. Minnesota State Statute 174.01, which created the Minnesota Department of Transportation, includes promoting and increasing

The purpose of the CPP is to establish guidelines for how costs are shared between MnDOT and local governments.



walking and providing multimodal transportation facilities and services to increase access for all persons in the goals of the state transportation system. Pedestrian facilities along and across the trunk highway system serve a trunk highway purpose and are vital components of MnDOT's statutory commitment to transportation in Minnesota. Pedestrian facilities are needed on both sides of roadways to create safe places for people walking. The upcoming Facility Design Guide will include expected widths for sidewalks.

In general, cost-sharing can be initiated by MnDOT or a local entity. Typically, the MnDOT share of costs is proportionate to trunk highway system benefits created by the project, and local governments are responsible for elements that do not have a trunk highway purpose. Maintenance responsibilities are also included in cost participation agreements.

ACTION ITEMS

CP-1: Distribute the CPP factsheet (EXHIBIT 5-2) as a reference for local and District staff

This factsheet breaks down the CPP into user-friendly reference tables based on type of project/type of improvement.

CP-2: Evaluate revising the existing cost participation policy to cover 100% of pedestrian-scale lighting

This change would provide a safety feature to help protect people walking, who are legal users of the trunk highway system. Pedestrian-scale lighting is also a proven safety countermeasure under FHWA's Safe Transportation for Every Pedestrian (STEP) initiative. Pedestrian-scale lighting is especially important for illuminating people with darker pigmented skin.

CP-3: Consider options for incorporating other construction elements within projects that already involve changes to the curb line

For example, this may afford opportunities to consider adding curb extensions within a project, rather than replacing the curb in the original configuration. This plan's [action items related to scoping and needs identification](#) consider opportunities to install curb extensions and other elements within various project types and land use types.

CP-4: Reexamine the treatment of urban and rural pavements in the CPP

Urban roadways and rural roadways serve different purposes and are subject to differing patterns of wear and maintenance needs. Urban roadways are often built above utility systems that may need upgrading. The CPP should be examined to determine if disparities result from the way the policy is applied to urban and rural projects.

CP-5: Evaluate changes to the CPP and supporting policies to allow MnDOT to pay for design elements that are context appropriate, but may exceed current design standards

For example, enable MnDOT to pay for sidewalks

that are constructed with thicker slabs of concrete to better withstand frequent plowing by maintenance vehicles. This approach would keep local agency maintenance costs manageable and could lead to more compromise between MnDOT and local agencies.

CP-6: Clarify CPP guidance about which agency pays for walking improvements in townships or unincorporated areas that connect two rural communities, and additional needs that are uncovered in urban projects

COST PARTICIPATION PRACTICES

[Staff interviews](#) point to confusion regarding which infrastructure tools are included in the CPP and which agencies contribute funding:

- Level of comfort with the CPP varies across Districts. Some feel they have a good handle on what MnDOT is responsible for, and others struggle with gray areas of the policy.
- MnDOT pays for most curb ramps and other ADA improvements on state roadways. The policy is clear regarding items such as pedestrian ramps; it is less clear on other items such as sidewalks and lighting. Sidewalks were mentioned a few times as a gray area in terms of which agencies pay for construction. MnDOT typically pays for up to 50% of construction costs for new MnDOT approved continuous lighting on trunk highways. For trunk highway intersections where MnDOT has safety concerns, MnDOT typically pays up to 100% of lighting construction costs.
- There is tension between the CPP and the [Complete Streets Policy](#). When designing a project with a Complete Streets lens, improvements such as benches, wayfinding, lighting, colored concrete, waste receptacles, and bike racks support walking and bicycling and are essential parts of a design. However, if MnDOT staff recommend these items, there may be conflict when they later note that the CPP says these items should be paid for by the local agency.

- The CPP is open to interpretation and Districts may apply the policy in different ways. This can cause challenges when nearby communities in a different MnDOT District see policy implemented differently from project to project.

In general, the uncertainty and difficulty that some MnDOT staff have with CPP guidance is a result of the flexibility within the CPP. While phrases like “as deemed necessary” or “MnDOT may” or “at the discretion of the District” offer beneficial flexibility, they also invite divergent interpretations. This leads to inconsistency between different Districts and projects. It can also cause conflict between MnDOT staff and local staff who may interpret the guidance or “necessities” differently.

Currently, cities are largely expected to contribute the same percentage of project costs regardless of their size. MnDOT District 7 staff have created a matrix (EXHIBIT 5-1) which proposes an interpretation of the CPP based on population. Within this matrix, cities with populations over 5,000 contribute more towards project costs than cities with populations less than 5,000. This process more equitably distributes cost obligations and places less burden on communities with smaller populations that may also have fewer financial resources. The

matrix is one tool to help provide an equity lens in rural areas. However, additional analysis of community and MnDOT resources is needed on a case by case basis.

ACTION ITEMS

CP-7: Hold an annual cost participation policy review workshop and/or webinar

This would be held for local municipalities and hosted by each MnDOT District. This would give new municipal staff a chance to be briefed on the policy and provide a refresher for more seasoned staff. Consider including a discussion that reviews recent projects and use of the CPP in the District.

CP-8: Initiate a conversation among all MnDOT Districts about the consideration of community size in project decision-making and cost participation expectations

Review the cost sharing guidance shown in EXHIBIT 5-1. This exhibit was based on guidance created and used by District 7. Engage smaller communities in the conversation to verify that lower expectations for cost participation might increase their willingness to add walking improvements to projects.

EXHIBIT 5-1: Cost-sharing table for walking improvements by community size. MnDOT District 7 staff developed the table as a tool to summarize cost-sharing policy that considers community size and whether a project includes changes to existing infrastructure or new construction.

	EXISTING		NEW		NOTES
	Cities less than 5000	Cities 5000 or more	Cities less than 5000	Cities 5000 or more	
Driveways	 100% / 0%	 100% / 0%	 90% / 10%	 60% / 40%	Consider incentivizing local planning
Longitudinal Walk	 90% / 10%	 60% / 40%	 90% / 10%	 60% / 40%	Concrete walk, aggregate below walk
Removals	 100% / 0%	 100% / 0%	 90% / 10%	 60% / 40%	Removal of existing features
Aesthetics	*	*	*	*	MnDOT determines if the project is eligible. Costs will be shared between cities and MnDOT

● MnDOT ● Local



EXHIBIT 5-2: Cost Participation Policy Factsheet

RESPONSIBILITY FOR CONSTRUCTION COSTS

MnDOT and local government staff use the Cost Participation and Maintenance Responsibilities with Local Units of Government Manual to guide cost participation procedures. Responsibility for construction costs are articulated in the manual by type of improvement. The manual includes the following provisions for pedestrian-related improvements within a MnDOT-initiated project.



ROADWAYS		
All roadway costs to a standard that meets applicable MnDOT design criteria, including roadway shoulders that may be used by pedestrians	●	-
Additional shoulder width beyond design standards	-	●
Local roadway construction costs that are required as a result of trunk highway construction, including frontage roads and right-of-way costs	●*	●
LIGHTING		
Lighting necessary for the trunk highway system, including along the roadway, at intersections, and on bridges that carry trunk highway traffic. These may offer some benefit to pedestrians but are tall light systems that aren't at a pedestrian level	●	-
Non-Standard, decorative or aesthetic lighting may fall under MnDOT provisions for aesthetic elements (see below)	-	●
SIDEWALKS, BIKEWAYS, AND SHARED USE PATHS		
Sidewalks, bikeways and shared use paths that are affected by a trunk highway project, or to promote the safe and efficient operation of these facilities as part of the trunk highway system	●	●
NEW SIDEWALKS / SHARED USE PATHS		
New standard-width sidewalks, shared use paths, and ramps where MnDOT deems them necessary	●	-
Additional sidewalk or shared use path width, or sidewalks or shared use paths where MnDOT does not deem them necessary	-	●
Sidewalks or shared use path on bridge replacement/new bridge projects if MnDOT deems the sidewalk or shared use path necessary	●	●
New sidewalks or shared use path along frontage roads and local roads	-	●
Shared use bridge as a replacement for at-grade crossings lost as a result of a trunk highway project	●	●
Pedestrian or shared use bridge or in lieu of an at-grade crossing at the request of the local agency	●**	●
SIDEWALK RECONSTRUCTION / SHARED USE PATHS		
Sidewalk reconstruction where sidewalks are disturbed, at same ratio as the project work that disturbed it	●	●
Improvements needed to meet ADA Transition Plan requirements in the construction area of a project	●	-
AESTHETIC ELEMENTS		
Aesthetic elements that have a substantial relationship to the trunk highway system based on proximity and function and/or impact	●	●
Pedestrian non-standard lighting, pavement coloration, or other amenities that generally make the pedestrian environment more inviting and have a substantial relationship as stated above	●	●
<p>● 100% ● Up to 100% ● Shared ● As low as 0%</p>		

* MnDOT participation is of the same ratio as the trunk highway improvement that requires the local improvement, but there are many exceptions and provisions listed in the manual.

** MnDOT participation would be capped at the cost for the at-grade improvement.





Environmental Justice Implications of the Cost Participation Action Items

Local cost participation can be a barrier to implementing pedestrian improvements. Action items clarify MnDOT's cost participation policy and provide changes to cost-sharing agreements. This benefits environmental justice populations by removing some of the barriers that prevent local communities from funding pedestrian projects. For example, allowing MnDOT to pay for pedestrian-scale lighting would respond to lighting requests from environmental justice communities and communities throughout the state without those communities being required to supply resources they may not have.

The plan also recommends that MnDOT consider community size when weighing cost participation expectations. Rural communities with low populations often don't have the same resources as larger communities, and therefore have to make their limited dollars stretch further and may not be able to justify pedestrian improvements over road improvements. By contrast, some smaller communities have more resources than others throughout the state. Implementing a scaled cost participation policy, alongside consideration of equity factors quantified in the prioritization analysis, would benefit environmental justice communities by making it more affordable for small communities to make investments in pedestrian infrastructure.



MAINTENANCE

People walk year-round, so snow and ice removal is a critical safety and mobility concern. However, the need for year-round maintenance of walking infrastructure can be a barrier at multiple project stages. At the project planning and design phases, pedestrian facilities are sometimes left out of a project because MnDOT and the local government agency are unable to come to agreement. The project design stage is critical for considering how a sidewalk or sidepath will be maintained after it is constructed. For example, sidewalk width impacts whether maintenance equipment will effectively clear a sidewalk after a winter snowstorm. If maintenance decisions are left until after construction, a local agency may find design flaws that limit their ability to effectively maintain a safe and comfortable path in the winter.

This section provides action items to improve MnDOT's current maintenance processes and policies related to walking infrastructure. The action items are supported by a summary of stakeholder feedback and a summary of current MnDOT maintenance policies and procedures.

Maintenance was a popular topic with members of the general public who participated in [outreach events and surveys](#). People would like to see general maintenance increase, such as repairing cracks and trimming vegetation along walking areas. Winter maintenance was often mentioned as a barrier to walking in the winter. The consensus among members of the general public is that sidewalks and paths aren't maintained as well as roads in the winter. This is specifically a problem at pedestrian ramps and waiting areas near walk signal push buttons at crosswalks.

MAINTENANCE PRACTICES

Key findings from [staff interviews](#) included:

- Past projects did not always have well-defined maintenance agreements.
- There are no specific consequences if locals do not maintain facilities as specified in maintenance agreements.
- Snow storage is always a concern. Snow often gets passed back and forth between the sidewalk and the roadway shoulder as maintenance workers representing different agencies work to remove snow from sidewalks and roadways.

- Local maintenance of sidewalks has become generally accepted by local communities.
- There is an opportunity for more local agency education and clarification about maintenance agreements. This could lead to greater community buy-in for maintenance agreements.
- There is an opportunity for more education of MnDOT staff on the importance of having discussions early and often with local agencies regarding the details of maintenance agreements as well as the importance of properly documenting the agreed upon terms in a cooperative construction or maintenance agreement. Agreements should be finalized prior to project construction.
- MnDOT Districts are interested in identifying ways that projects can offer up-front support to locals (funding, education, and other resources), with the understanding that local government will carry out regular maintenance of pedestrian facilities.
- Sometimes walking improvement designs are modified based on maintenance concerns, but staff did not report any times that walking facilities were removed from a project based on maintenance concerns.
- District maintenance engineers frequently hear that residents want maintenance work, especially snow removal, performed quickly and cost-effectively. Engineers often explain to residents that local agencies may be best equipped to quickly remove snow. Although this varies, District engineers feel that because local crews and equipment are already working on the locally-owned pedestrian facilities within a community, they may complete walkway maintenance faster than sending MnDOT staff with specialized equipment for sidewalks and trails.

ACTION ITEMS

M-1: Design to support effective maintenance

Separated facilities like sidewalks, protected bike

lanes, and trails require separate equipment to maintain. However, with the right equipment, they are easier to maintain to a high standard compared to sidewalks, trails, or bike lanes without a buffer between that facility and the roadway. Providing adequate buffer space for these facilities and adequate facility width is key to providing space for snow storage. Sidewalks or sidepaths without a buffer space are difficult to maintain and can become narrow or impassable in winter.

Choose surfaces for pedestrian facilities that are both accessible and easy to maintain. An example would be thicker sidewalk pavements that allow for the use of heavier, motorized equipment to more efficiently remove snow. Where costs prohibit more durable materials, consider prioritizing construction in higher pedestrian use areas.

In cases where local municipalities are expected to maintain pedestrian facilities, involve them in the design process. For example, if locals plan to use plows that require a thicker pavement, that should be considered in design, as noted above.

M-2: Explore options for how MnDOT can help local agencies take the lead on maintenance work

Some possible ways MnDOT can help include purchasing maintenance equipment for local agencies, leasing or renting MnDOT equipment at low or no cost, or contributing funding toward local agencies' equipment with training included. This would allow for a more standardized approach to maintenance and could also clarify some facility design decisions. This approach would be advantageous to MnDOT when:

- A pedestrian facility is proposed as part of an upcoming roadway project, which requires maintenance equipment the city doesn't currently have.
- A municipality already has pedestrian facilities that require unique maintenance equipment and similar facilities are planned for future roadway projects.

MAINTENANCE POLICIES

MnDOT does not have a clearly articulated, overarching policy about sidewalk maintenance. This is a barrier to safe walking because maintenance is a key factor in ensuring facilities are ADA compliant. MnDOT released an ADA Transition Plan in 2014 and an update is currently in progress.

MnDOT's Americans With Disabilities Act (ADA) Policy states:

In accordance with the requirements of Title II of the Americans With Disabilities Act of 1990 (updated in 2010) (ADA), the Minnesota Department of Transportation will not discriminate against qualified individuals with disabilities on the basis of disability in its services, programs or activities. MnDOT must also ensure that all of its programs, services and activities are accessible to and useable by individuals with disabilities.

[MnDOT's Complete Streets Policy](#) also references maintenance, and requires that alternative and accessible routes and detours be provided during construction "to perpetuate previously existing modes of travel, including pedestrians and bicyclists" and to "work with local jurisdictions and transit providers to identify responsibility for maintenance and snow removal on facilities such as sidewalks, shared use paths, crossings, bridges, underpasses, and transit stops and hubs."

ACTION ITEMS

M-3: Clarify MnDOT's policies to reflect the expectation of year-round maintenance of pedestrian facilities

Include thresholds and timelines for addressing facility repairs, as well as vegetation trimming.



Sidewalks or sidepaths without proper space for snow storage are difficult to maintain and can become narrow or impassable in winter.

MAINTENANCE GUIDANCE

Maintenance practices are supported by the MnDOT Technical Memorandums, Maintenance Bulletins, and the MnDOT Maintenance Manual. The [MnDOT Maintenance Manual](#) covers many aspects of highway maintenance and provides best practices and established guidelines. It does not include all policies, safety directives or technical guidance. In general, the MnDOT Maintenance Manual rarely mentions pedestrian facilities aside from roadway shoulders. Portions of the manual that may relate to pedestrian facilities are summarized below.

Chapter 2 (Clear Roads) addresses snow and ice removal, including the priority sequence for snow removal. Clearing of full width shoulders is second on a list of four priorities. Pedestrian facilities are not specifically mentioned.

Chapter 3 (Smooth Roads) has a dedicated section addressing maintenance of shoulders and road approaches (Section 3-8.0) and specifically acknowledges that shoulders are important for people walking and bicycling. It mentions keeping shoulders free from obstructions or other unsafe conditions, including early spring sweeping of sand and debris. It gives specific direction for maintenance depending on approach type or shoulder type.

Specific reference to maintenance of pedestrian facilities includes: *If the traveled lane of the approach [to an intersection], bicycle or pedestrian access is outside of a shoulder or located within an approach main vehicle travel lane, the maintenance is the responsibility of the agency or private party with jurisdiction over the approach, bicycle or pedestrian facility (p. 3-31)*

Chapter 5 (Debris and Roadsides) suggests that trees should be removed or pruned when they cause hazards to people walking.

Chapter 8 (Maintenance of Safety and Traffic Control Devices) addresses signs, traffic signals, lighting, guardrails and barriers, attenuation devices, rumble strips, delineators and markers, and striping/pavement markings. Maintenance of most of these items is the responsibility of MnDOT, with exception of lighting and traffic signals which may be covered under a maintenance agreement and responsibilities may vary. While this serves as a guide, it is important to note that maintenance responsibilities can vary based on the specific project and the terms agreed upon by the parties.

ACTION ITEMS

M-4: Establish a winter prioritization network for clearing pedestrian facilities that ensures that the best access is provided to the greatest number of people possible following a heavy storm event

For MnDOT crews, this could include clearing shoulders in high pedestrian use areas as part of Priority A clean-up operations for snow removal, instead of Priority B. For local governments, prioritization of pedestrian facilities (trails and sidewalks) along state highways could become part of a maintenance agreement, with focus on making snow-clearing of pedestrian facilities a high-priority. Access to transit stops and critical connections, such as major river crossings, should be included in the winter prioritization network.

M-5: Consider the application of automated vehicle technology to operate snowplows or other snow-clearing equipment

Coordinate with MnDOT's Connected and Automated Vehicle Office to partner on automated or other technological solutions in areas that don't have the staff or financial capacity to clear pedestrian facilities, and/or those areas that have a high level of pedestrian traffic.

MAINTENANCE AGREEMENTS

Per the MnDOT Maintenance Manual Chapter 6 (Contracts and Agreements), the types of maintenance agreements between MnDOT and local agencies include:

- For new construction projects with a cooperative construction agreement, maintenance responsibilities should be addressed in that agreement. MnDOT Central Office Cooperative Agreements Unit writes these agreements upon initiation by the MnDOT District.
- For new construction projects without a cooperative construction agreement, maintenance agreements may be required and are written by the District with assistance from the Cooperative Agreements Unit. These types of projects are the most susceptible to being constructed without maintenance responsibilities being defined.
- In some cases, local agencies may be granted authorization to do construction in MnDOT right-of-way through an access or construction permit. A maintenance contract is required which states the applicant will be responsible for all maintenance of the items permitted on MnDOT right-of-way.
- Construction can also be authorized by a Limited Use Permit (LUP). The permitted use must be for a “highway purpose” that is necessary in the public interest. The example given in the MnDOT Contracts Manual is a pedestrian recreational trail that crosses the highway right-of-way. The LUP should specify that all maintenance associated with the permitted use is the responsibility of the permittee.
- Routine maintenance contracts involve payment for local agencies to maintain a local section of trunk highway, or for MnDOT to maintain a local street. Maintenance contracts can be limited to snow and ice control or may be for year-round maintenance.

- Equipment rental and service contracts between MnDOT and local agencies cover the sharing of equipment or services.
- Informal or “handshake” agreements are also acknowledged in the manual, with caution that these types of agreements can come with legal and financial risks and should be reconciled via a formal written contract.

Most MnDOT Districts noted that maintenance is covered most often through a cooperative construction agreement for new construction, routine maintenance contracts, or LUPs.

Pedestrian improvements are not explicitly mentioned in the manual when discussing contract types, with the exception of LUPs.



ACTION ITEMS

M-6: Make it standard MnDOT practice to review maintenance expectations and specific agreements with local elected officials in a formal setting, such as a presentation at a city council or county board meeting

Conversations should be documented and documentation distributed to relevant stakeholders. MnDOT and local agencies should make documentation publicly available.

M-7: Make it standard MnDOT practice to review maintenance expectations and specific agreements with local maintenance staff who will be executing the maintenance

Involve maintenance staff in the formulation and review of such agreements. Review existing maintenance agreements between MnDOT and local staff every five years.

M-8: Recommend alternative maintenance funding and responsibilities between MnDOT and local agencies

Especially for longer-term maintenance commitments, negotiate agreement terms which have MnDOT covering more of the up-front construction costs in exchange for the local agency conducting long-term maintenance (e.g. snow clearance, vegetation management, crack repairing). Ideally work up to MnDOT paying for all construction costs of pedestrian facilities, to demonstrate to local partners that MnDOT is committed to pedestrian improvements and will pay its fair share, while the local commitment can be reflected in the long-term maintenance.

M-9: Allocate staff time to enforce maintenance agreements to ensure pedestrian facilities are addressed properly

Explore the possibility of establishing an incentive program or structure of fines or other consequences if maintenance provisions are not kept. This should seek to support the most under-resourced communities and not to create an additional burden.

M-10: Work with maintenance stakeholders to define expectations for year-round maintenance on the pedestrian system

The language currently used in MnDOT's Cooperative Agreements is vague regarding expectations and timelines for completing maintenance on pedestrian facilities. MnDOT will work with internal and external partners to clarify these expectations for use in future agreements.

Environmental Justice Implications of Maintenance Action Items

The cost of long-term maintenance can dissuade some communities from investing in pedestrian improvements because they don't have the funds or the equipment to maintain them. The plan includes policy action items that aim to make maintenance activities easier for communities; maintenance agreement action items that strive to clarify expectations, lessen the burden on local communities, and to review and enforce long-term agreements; and design action items that provide longer-lasting improvements that require less maintenance. This allows all parties to assure the completion and proper maintenance of all projects which support walking improvements.

Maintenance of walking facilities, particularly in winter, was a common concern from participants in the planning process. Providing a better framework for conducting maintenance activities more efficiently and effectively benefits those who rely on walking infrastructure for primary transportation by ensuring their path is safe and reliable.



PROJECT SCOPING AND NEEDS IDENTIFICATION

As the project team engaged Minnesotans in the preparation of this plan, members of the public expressed support for improvements for people walking along and across trunk highways. For example:

- The most popular improvements for walking along state roadways were “sidewalks, or other walkways, where none currently exist,” “wider sidewalks or multi-use paths,” and “easier access for people with differing physical abilities (e.g., level sidewalks).”
- Top choices for improvements for walking across state roadways were “street designs that encourage drivers to stop for people walking,” “a longer ‘Walk’ signal to provide more time to cross the street”, and “easier access for people with differing physical abilities (e.g., corner curb ramps).”

The scoping stage is a critical and efficient time to integrate pedestrian improvements like these into a project. This section provides action items to improve the current project scoping process, and how pedestrian needs and infrastructure are identified within that process. It includes a summary of stakeholder feedback and a summary of current scoping policies and procedures.

SCOPING POLICIES

MnDOT developed detailed scoping process resources for staff in 2008 and revised the materials in 2017. The overall project development and scoping process for MnDOT projects is summarized in EXHIBIT 5-3.

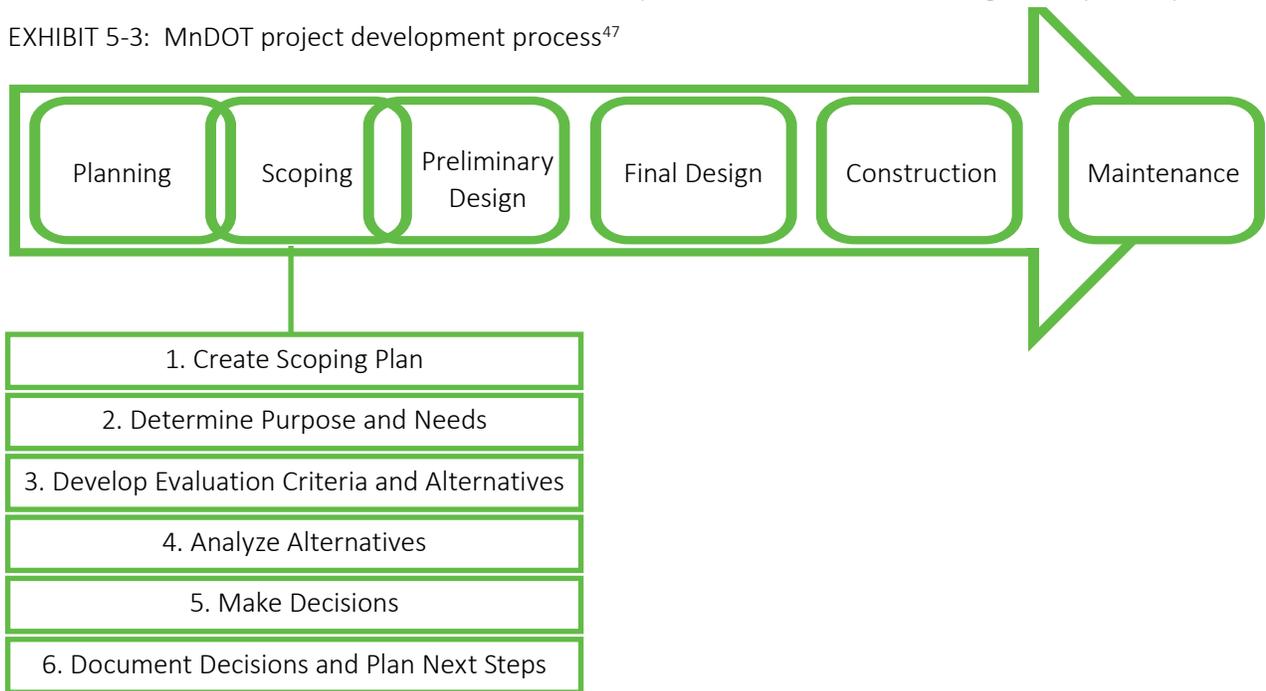
PROJECT PLANNING PHASE

During project planning, MnDOT staff discuss a long list of potential projects amongst themselves and develop a short list. The project planning phase identifies and prioritizes transportation system needs based on performance measures set in various statewide and District plan documents. Through considerations of project purpose and cost, and application of fiscal constraints, an initial long list of projects is refined to a short list of projects that advance to the scoping phase. A project charter is completed for each project selected, which documents the work and decisions of the planning phase. An approved project charter is necessary for a project to move forward to the project scoping phase.

PROJECT SCOPING PHASE

Project scoping is done before a project appears in the Statewide Transportation Improvement Program (STIP), often five or more years before a project is actually funded and implemented. The scoping process for most project types starts five to six years before project letting, depending on project type. Scoping for major projects could start up to 10 years before MnDOT signs a contract to begin construction on the project. While the longer timeframes facilitate more comprehensive planning and earlier engagement, it can also be challenging in the context of new trends, evolving physical conditions, and unexpected changes to the economy and/or cost of materials. It can also be challenging to engage meaningfully with stakeholders and the public when a project is years away from construction. The longer timeframe makes engagement especially challenging for Safe Routes to School projects, as impacted students, parents and school staff change from year to year.

EXHIBIT 5-3: MnDOT project development process⁴⁷



IDENTIFYING PEDESTRIAN NEEDS

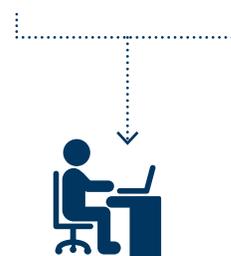
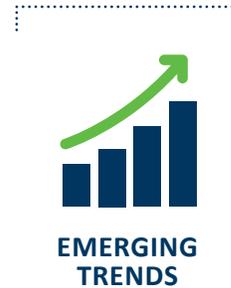
In addition to the input from the MnDOT groups described in the previous section, identification of pedestrian needs is based on the following considerations:

- Land use context
- Roadway conditions – speed, traffic/truck volumes, cross-section, crash rates
- Pedestrian conditions – crash history, speed, visibility, comfort, crossing distance
- Users of the corridor
- ADA requirements
- Existing facility types and crossing locations/ treatments
- Type of project – rehabilitation/resurfacing vs. reconstruction
- Local and regional plans

ACTION ITEMS

PS-1: Add a category to the scoping worksheet that gives consideration to emerging trends

Emerging trends are identified in the “What is Changing?” section of the *Statewide Multimodal Transportation Plan (SMTP)*. Projects must identify how they are accommodating or reflecting these emerging trends in the scope of the project. Trends identified in the current SMTP which may influence pedestrian needs include aging population; growing urban population; racial disparities and inequities; aging infrastructure; climate change; and increases in transit use, bicycling and walking.⁴⁸ Additionally, best practices in pedestrian and bicycle planning are evolving so rapidly that over the course of a project from development to construction, MnDOT policies and practices may have changed significantly.



PS-2: Incorporate climate change considerations into the appropriate Scoping Worksheets, especially as impacts relate to people walking

Assess project geographies and asset types and their degree of vulnerability to effects of climate change. Assess the degree to which the project is providing for people walking and the project’s role in shifting roadway users towards transit, walking, and bicycling for daily trips.

Select building materials and/or quantities of building materials that are responsive to the specific climate vulnerabilities resulting from the assessment. This may include thicker pavements or different mixes of surface materials. Plan for such materials in early phases of scoping and incorporate necessary costs. Examine tradeoffs of spending more money and greenhouse gas emissions on these types of materials vs. spending more on maintenance or repairs due to the current and future effects of climate change.

Investigate climate positive construction materials such as carbon-negative cement and recycled asphalt.

PS-3: Keep MnDOT’s data on environmental justice communities updated

[MnDOT augmented the federal definition of environmental justice communities](#) to include populations that might have unique transportation needs. Every effort should be made to use the most accurate data to define the boundaries of these communities. This strategy will help serve the goals of environmental justice while being mindful of the dynamic nature of people and transportation.

PS-4: Create structures for public engagement in every step of project formation and execution

Public feedback from marginalized communities should be solicited and considered throughout the project development process. Engagement should begin with early investment conceptualization and carry through discussions about construction and maintenance.

PS-5: Create Project Advisory Committees that include members of priority populations

This advisory group should have a structural role in decision-making within the planning, construction and maintenance processes. In order to assure the group is able to serve community members without adding an extra burden to their experience, explore providing compensation to the members of these bodies. In addition to reviewing existing work, this body could be responsible for conducting workshops for their community members to provide feedback and providing further input in the creation of new initiatives and augmentation of existing programs.

PS-6: Identify walking connectivity needs between MnDOT right-of-way and adjacent pedestrian destinations outside the right-of-way

MnDOT Right-of-Way unit staff should work with District staff to identify available MnDOT right-of-way to build walking infrastructure that connects to destinations. Walking connections should ideally be considered while these teams identify motor vehicle access points and connections to these destinations on adjacent parcels. The following section describes facility selection based on land use. This guidance is to be considered alongside roadway characteristics (e.g., posted speed limit and volume) and available right-of-way. Coordinate with land owners during this process and discuss benefits of enabling pedestrian access.



SCOPING PRACTICES

Key findings from [staff interviews](#) included:

- The scoping process has been working better in recent years. The early involvement of planning staff in the scoping process has been well received and staff believe this makes for better projects. This practice should continue.
- Both ADA field walks and bike/pedestrian field walks have been effective in helping to identify needs and scope projects. Some District staff expressed an interest in holding the two field walks concurrently to save time and to consider conflicting issues in real time. Subsequent input from the MnDOT Office of Traffic Engineering and the MnDOT Accessibility Unit indicated that the two types of field walks serve different purposes, require different durations of time to complete, and consider different scales and methods for auditing existing conditions. Thus, the two field walks will continue to be held separately.
- Early engagement from MnDOT planning staff helps in scoping projects. Earlier engagement yields better results.
- It can be hard to commit to pedestrian improvements early in the process, if the whole scope of a project is not defined.
- Walking improvements are often seen as ‘add on’ or a ‘wish’ and not a need. Therefore comprehensive walking improvements may not make it into the scope of a project.

ADA FIELD WALKS

An ADA field walk focuses on identifying what facilities and upgrades are required to achieve ADA compliance, including consideration of curb ramps, sidewalk and driveway improvements, accessible pedestrian signal (APS) upgrades, roadway modifications, and maintenance access routes. These walks also identify utilities and obstructions for relocation, and any necessary coordination that will be required with local jurisdictions including right-of-way needs.



The MnDOT ADA unit recommends sidewalk infill of gaps less than 400 feet. Funding for these gaps may also be available from ADA-focused funds. Sidewalk gaps greater than 400 feet are classified as network gaps and often impact connectivity to local destinations.

NON-MOTORIZED FIELD WALKS

A non-motorized field walk reviews traffic conditions; proposed intersection crossing locations, intersection improvements and turn lanes; and opportunities to reduce conflicts between vehicles and non-motorized users. These walks also address safety of people walking and biking both along and across trunk highways; and considers facility improvements that help create a complete network beyond just the project area.

ACTION ITEMS

PS-7: Conduct virtual or in-person trainings with local jurisdictions to share the benefits of walking facilities and to set expectations for cost participation and long-term maintenance as part of the scoping process

This may help remove some of the hesitation or resistance to including walking facilities in the scope of projects.

PS-8: Consider the specific context of the project community when doing public engagement during scoping, and make sure stakeholders in the engagement process match that context

For instance, in communities where tourism/seasonal uses are a focus, include local tourism agencies and business groups in the stakeholder outreach to help identify pedestrian needs. Projects near schools should engage with students, parents, and school staff and reference existing Safe Routes to School planning documents. Projects in corridors with transit service should consult the transit operator to identify any needs or opportunities to improve accessibility to transit service.

PS-9: Support needs identification by reviewing local plans and conducting community sidewalk inventories

The inventory should identify the location and condition of pedestrian facilities which could be improved through RDCs work programs or other partnerships.

PS-10: As a default, projects should fill network gaps where there is up to ¼ mile between sidewalk or sidepath facilities. Network gaps of up to ½ mile should be filled when a Minnesota Walks priority destination is located on an end or within the network gap.

PS-11: Work with human resources and District staff to integrate multimodal approaches into position descriptions and responsibilities for planners, project managers, designers and engineers

PS-12: Develop and distribute best practices and lessons learned through convening district staff on an annual basis

PS-13: Incorporate recommendations from MnDOT's Advancing Transportation Equity Initiative and reports in daily MnDOT functions

This includes recommendations to expand transportation options, support equitable land use, deepen public engagement, and partner to build relationships.

PS-14: Coordinate closely with the Minnesota Department of Health and Statewide Health Improvement Program grantees



INCORPORATING LAND-USE CONTEXT IN SCOPING

One of this plan’s objectives is to build high quality walking infrastructure appropriate for community land use contexts. This objective builds upon [MnDOT technical memorandum #18-07-TS-05](#) titled, “MnDOT Land-use contexts: Types, Identification, and Use.” The memo defines land-use contexts adjacent to roadways in Minnesota and “serves as a robust framework for planning, scoping, and preliminary and final design at MnDOT.”

To understand Minnesotans’ expectations for walking infrastructure in different contexts, an interactive poster was used throughout the [first phase of engagement](#) for this plan. This poster used photos of community contexts throughout the state to ask residents about the type of walking infrastructure that would encourage them to walk more often in their communities. Community contexts shown on the poster were natural areas, connections between small towns, suburban areas, industrial areas, and town centers or urban areas.

Participants could pick whichever types of walkways they felt were most comfortable and safe for their community. Types of walking infrastructure that residents could select included shared roadway, paved shoulder, sidewalk, and sidepath.

As shown in EXHIBIT 5-4, responses to the matrix showed a strong preference for more separation for people walking, indicated by the support for sidewalks and/or sidepaths in every community context. There was also support for paved shoulders in natural areas and connections between rural towns.

[Engagement in phase two](#) confirmed the expectations for walking in each land-use context. Generally, those engaged in phase two desire:

- Improved pedestrian crossings
- More trees, benches, and other amenities
- Adequate space on sidewalks
- Separation from people bicycling
- Buffer space from car and truck traffic

EXHIBIT 5-4: Votes in response to the question “What types of infrastructure would help you walk in your community more often?”

	NATURAL AREA	CONNECTION BETWEEN RURAL TOWNS	SUBURBAN RESIDENTIAL AREA	SUBURBAN COMMERCIAL AREA	INDUSTRIAL AREA	URBAN RESIDENTIAL	TOWN CENTER/DOWNTOWN AREA
SHARED ROADWAY	136	105	114	65	162	85	47
PAVED SHOULDER	266	540	50	46	179	31	67
SIDEWALK	105	80	654	797	489	938	975
SIDEPATH	724	419	485	363	307	300	218



PROJECT TYPES

Different project types present different opportunities for incorporating pedestrian improvements. This section discusses preservation, preservation plus, reconstruction, ADA accessibility enhancement, and sidewalk repair projects. New construction projects are extremely rare due to MnDOT's focus on maintaining the existing transportation system, and thus are not discussed here.

Preservation

Preservation projects are intended to maintain existing infrastructure and are usually driven by pavement quality or bridge condition. Efforts vary depending on setting (i.e., rural or urban), life span of the improvement, and other needs. Examples include travel lane repair and design changes that reflect current vehicle safety standards while maintaining existing shoulders, sidewalks and paths. These improvements accompany roadway resurfacing and redesign and are included with roadway improvements such as bituminous mill & overlay, concrete pavement rehabilitation, chip seal and/or fog seal, bridge deck overlays, or bridge re-decks.

If these projects meet the alteration threshold set by the Department of Justice/Federal Highway Administration (DOJ/FHWA) Technical Assistance designers, MnDOT is required by the ADA to provide curb ramps where needed and replace deficient curb ramps.

Preservation Plus

Preservation plus projects maintain existing infrastructure as described in "preservation" while making design changes that enhance safety and accessibility for all users. Preservation projects may move from "Preservation" to "Preservation Plus" based on additional elements identified from either a pedestrian need or an ADA accommodation. Preservation Plus projects can involve doing work outside the curblines while the roadway portion of

the project is focused on more typical preservation activities. Examples include adding safety features like pedestrian islands and curb extensions. These projects almost always meet the alteration threshold set by the DOJ/FHWA Technical Assistance designers, MnDOT is required by the ADA to provide curb ramps where needed and replace deficient curb ramps.⁴⁹

Reconstruction

Reconstruction projects typically involve removing the existing pavement and subbase and replacing it on the same alignment. Reconstruction projects may result in additional vehicle capacity through the addition of turn lanes or through bridge widening. These infrastructure improvements should include the addition or expansion of pedestrian infrastructure that improve walking safety and comfort. Examples of pedestrian facilities that add safety include improvements to crossings such as underpasses, pedestrian bridges, and Pedestrian Hybrid Beacons. Walking infrastructure could be added within reconstruction projects or the project could improve existing infrastructure. Improvements to existing trails, sidepaths, or sidewalks may include adding buffers, trail separation, or grade separation from vehicle traffic.

MnDOT requires that all reconstruction projects include curb ramps, reconstruction and correction of non-ADA compliant sidewalks and driveways, improvements to address sidewalk gaps within the existing network, and provide Accessible Pedestrian Signals (APS) and APS readiness, where needed. All reconstructions should be scoped to identify and address pedestrian needs, including but not limited to ADA, per MnDOT's policy and design requirements.

ADA Accessibility Enhancements

ADA accessibility projects include replacement of existing curb ramps and addition of curb ramps on existing trail and sidewalk intersections where none currently exist.⁵⁰ To ensure a usable and maintainable pedestrian system, these

improvements may require additional right-of way (dependent on ramp type and context) at non-signalized or signalized intersections.

Sidewalk Replacement

This includes complete replacement of existing sidewalk and construction of new sections where gaps exist. Completed sidewalk would exist on both sides of the road and have safety updates such as curb extensions, added passing space, and additional signs where appropriate. Sidewalk replacement projects should consider three elements of sidewalk design: buffer, pedestrian access route (PAR), and frontage. Minimum sidewalk buffer, PAR, and frontage width should be determined by facility type and context (i.e., residential versus downtown districts). PAR widths above the absolute minimum for ADA compliance should be used wherever feasible. A preferred minimum of six feet allows for people to pass each other, walk side by side, and use strollers or wheelchairs more easily. Six feet of width is also the preferred minimum for Maintenance Access Route provision. The PAR should be clear of obstructions such as utility poles, signs, and street furnishings. The MnDOT Facility Design Guide (FDG) and Road Design Manual (RDM) define PAR characteristics. FDG guidance is in progress as of this writing. When published, it will update the RDM definition provided in 11-3.05.03 of “an accessible, continuous, and unobstructed portion of a walkway”.

Sidewalk buffer and frontage areas vary in width and are located outside of the PAR. Buffer and frontage areas should be included in sidewalk designs. Including these elements contributes to walking comfort by increasing the separation between people walking from drivers. Whenever possible, acquire wider sidewalk footprints and temporary easements in areas that can be tapered flush with the adjacent sidewalk by either grading or sloping paved areas. This minimizes the use of V curb, reduces trip hazards and improves maintainability.



ACTION ITEMS

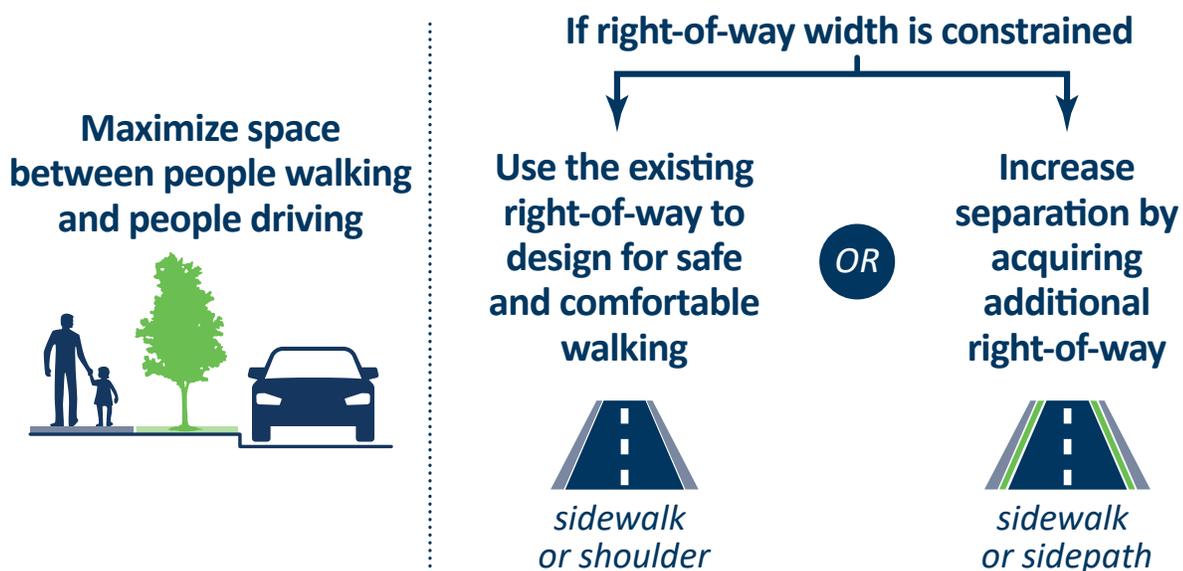
PS-15: When right-of-way space is limited, select a linear facility that enables safe and comfortable walking within the confines of the existing right-of-way, or work to acquire additional right-of-way for increased separation between people walking, people bicycling, and people driving

Reducing the number and/or the width of travel and parking lanes is a strategy to create space within the existing right-of-way for people walking and for snow storage.

As discussed in the [‘Identifying Pedestrian Needs’](#) section, roadway characteristics should be considered alongside land-use context. As speed and volume increase, more separation is needed between people walking, people bicycling, and people driving.

PS-16: Use the infrastructure expectations tables during project scoping

MnDOT staff should use the following tables during project scoping to investigate the types of linear and crossing infrastructure that would best facilitate walking within the project’s study area. These tables were created during the Statewide Pedestrian System Plan as new tools to set walking infrastructure expectations based on community context. Projects can incorporate walking infrastructure beyond what is described in the tables, and should pay particular attention to local pedestrian and/or active transportation plans for guidance. MnDOT staff should use these tables early in the project scoping process to select appropriate walking facilities. Engineering judgement is required to select the most appropriate infrastructure choices for each project.



Infrastructure Expectations: Preservation Projects

MnDOT staff noted that preservation projects, such as mill and overlay projects, sometimes face challenges when scoping pedestrian improvements. Use EXHIBIT 5-5 and EXHIBIT 5-6 to maximize potential for pedestrian improvements associated with preservation projects. When a clear pedestrian need is demonstrated through on-the-ground conditions or in [PAWS](#), consult EXHIBIT 5-7 and EXHIBIT 5-8 for guidance on Preservation Plus projects. The presence of an “X” denotes that the improvement should be considered.

EXHIBIT 5-5: Preservation Projects: Guidance for Linear Facilities

LAND USE CLASSIFICATION	MAINTAIN EXISTING INFRASTRUCTURE*	SHOULDER IMPROVEMENTS**
NATURAL AREAS/ CONNECTIONS BETWEEN SMALL TOWNS	X	X
RURAL CROSSROAD	X	X
SUBURBAN RESIDENTIAL	X	
SUBURBAN COMMERCIAL	X	
URBAN RESIDENTIAL	X	
URBAN COMMERCIAL	X	
MAIN STREET	X	
URBAN CORE	X	
INDUSTRIAL AREAS	X	X

*Maintenance activities within this context refer to those which a group of workers can complete within one trip, while on-site for a preservation project. They include general upkeep tasks and do not involve replacing or rerouting infrastructure (e.g., brush maintenance/trimming, minor crack repair, and trip hazard grinding along sidewalks). The type of pedestrian infrastructure will vary according to community context and may include paved shoulders, sidewalks, or sidepath.

**Shoulder improvements may include restriping to widen, adding width, and adjusting rumble strip location.

EXHIBIT 5-6: Preservation Projects: Guidance for Crossings*

LAND USE CLASSIFICATION	CROSSWALK PAVEMENT MARKINGS	PED CROSSING WARNING SIGNS
NATURAL AREAS/ CONNECTIONS BETWEEN SMALL TOWNS**		
RURAL CROSSROAD	X	X
SUBURBAN RESIDENTIAL	X	X
SUBURBAN COMMERCIAL	X	X
URBAN RESIDENTIAL	X	X
URBAN COMMERCIAL	X	X
MAIN STREET	X	X
URBAN CORE	X	X
INDUSTRIAL AREAS	X	X

* Additional crossing infrastructure may be necessary based on roadway posted speed limit, traffic volumes, crash history, and/or systemic safety analysis/crash risk. At signalized crossings, adjust signal timing with a Leading Pedestrian Interval (LPI), per FHWA Safe Transportation for Every Pedestrian (STEP) guidance.

** Crossing infrastructure may be appropriate based on the presence of destinations and transit stop access needs.

Infrastructure Expectations: Preservation-Plus Projects

Use EXHIBIT 5-7 and EXHIBIT 5-8 to select walking-focused infrastructure for preservation plus projects. These projects’ scopes often enable additional walking-focused elements beyond preservation projects. As such, preservation-plus project tables include walking-focused infrastructure beyond those shown in preservation project tables.

EXHIBIT 5-7: Preservation Plus Projects: Guidance for Linear Facilities

LAND USE CLASSIFICATION	SHOULDER IMPROVEMENTS*	MAINTAIN EXISTING**	CLOSE SIDEWALK GAP	ROAD DIET OR TRAVEL/ PARKING LANE NARROWING	CURB EXTENSIONS OR TIGHTER TURNING RADII	BENCHES	SHADE TREES
NATURAL AREAS	X	X					
CONNECTIONS BETWEEN SMALL TOWNS	X	X					
RURAL CROSSROAD	X	X	X	X	X	X	X
SUBURBAN RESIDENTIAL		X	X	X	X	X	X
SUBURBAN COMMERCIAL		X	X	X	X	X	X
URBAN RESIDENTIAL		X	X	X	X	X	X
URBAN COMMERCIAL		X	X	X	X	X	X
MAIN STREET		X	X	X	X	X	X
URBAN CORE		X	X	X	X	X	X
INDUSTRIAL AREAS		X	X	X			

Note: Pedestrian wayfinding is not included in the table because signs are planned and implemented by local agencies. More information regarding green stormwater management features is included in [the plan section related to investment planning](#).

Certain improvements require the presence of a curb / absence of a drainage ditch.

* Shoulder improvements may include restriping to widen, adding width, adjusting rumble strip.

** Maintenance activities completed during preservation plus projects have a broader scope than preservation projects. They may include activities such as replacing damaged sidewalk panels, filling short gaps between two existing sidewalks, or fixing sidewalk cross slopes in excess of 3%.



EXHIBIT 5-8: Preservation Plus Projects: Guidance for Crossings*

LAND USE CLASSIFICATION	CROSSWALK PAVEMENT MARKINGS	PED CROSSING WARNING SIGNS	PED CROSSING BEACON (E.G., RRFB, PHB)	PED REFUGE ISLANDS	CURB EXTENSIONS OR TIGHTER TURNING RADII	PED-SCALE LIGHTING
NATURAL AREAS	X	X				
CONNECTIONS BETWEEN SMALL TOWNS	X	X				
RURAL CROSSROAD	X	X	X	X	X	X
SUBURBAN RESIDENTIAL	X	X	X	X	X	X
SUBURBAN COMMERCIAL	X	X	X	X	X	X
URBAN RESIDENTIAL	X	X	X	X	X	X
URBAN COMMERCIAL	X	X	X	X	X	X
MAIN STREET	X	X	X	X	X	X
URBAN CORE	X	X	X	X	X	X
INDUSTRIAL AREAS	X	X				

* Additional crossing infrastructure may be necessary based on roadway posted speed limit, traffic volumes, crash history, and/or systemic safety analysis/crash risk. At signalized crossings, adjust signal timing with a Leading Pedestrian Interval (LPI), per FHWA Safe Transportation for Every Pedestrian (STEP) guidance.

Certain improvements require the presence of a curb / absence of a drainage ditch.



Infrastructure Expectations: Reconstruction Projects

Use EXHIBIT 5-9 and EXHIBIT 5-10 to select walking-focused infrastructure for reconstruction projects. Scoping for this type of project provides opportunities for a number of infrastructure tools for walking along and across trunk highways.

EXHIBIT 5-9: Reconstruction Projects: Guidance for Linear Facilities

LAND USE CLASSIFICATION	NEW OR ENHANCED PAVED SHOULDER (BOTH SIDES OF STREET)	NEW OR ENHANCED SIDEWALK OR SIDEPATH (BOTH SIDES OF STREET)	ROAD DIET OR TRAVEL LANE/ PARKING LANE NARROWING	CURB EXTENSIONS OR TIGHTER TURNING RADII	BENCHES	PED-SCALE LIGHTING	SHADE TREES	AMENITY SPACE*
NATURAL AREAS	X							
CONNECTIONS BETWEEN SMALL TOWNS	X							
RURAL CROSSROAD		X	X	X	X		X	
SUBURBAN RESIDENTIAL		X	X	X	X		X	
SUBURBAN COMMERCIAL		X	X	X	X		X	
URBAN RESIDENTIAL		X	X	X	X		X	
URBAN COMMERCIAL		X	X	X	X	X	X	X
MAIN STREET		X	X	X	X	X	X	X
URBAN CORE		X	X	X	X	X	X	X
INDUSTRIAL AREAS	X	X	X					

Note: Pedestrian wayfinding is not included in the table because signs are planned and implemented by local agencies. More information regarding green stormwater management features is included in [the plan section related to investment planning](#).

*Amenities may include cafe seating and tables, bus shelters, vendor carts, trash receptacles, art installations, bicycle racks, kiosks, and planters



EXHIBIT 5-10: Reconstruction Projects: Guidance for Crossings*

LAND USE CLASSIFICATION	CROSSWALK PAVEMENT MARKINGS	PED CROSSING WARNING SIGNS	PED CROSSING BEACON (E.G., RRFB, PHB)	PED REFUGE ISLANDS	CURB EXTENSIONS OR TIGHTER TURNING RADII	RAISED CROSS-WALK	PED-SCALE LIGHTING
NATURAL AREAS	X	X					
CONNECTIONS BETWEEN SMALL TOWNS	X	X					
RURAL CROSSROAD	X	X	X	X	X	X	X
SUBURBAN RESIDENTIAL	X	X	X	X	X	X	X
SUBURBAN COMMERCIAL	X	X	X	X	X	X	X
URBAN RESIDENTIAL	X	X	X	X	X	X	X
URBAN COMMERCIAL	X	X	X	X	X	X	X
MAIN STREET	X	X	X	X	X	X	X
URBAN CORE	X	X	X	X	X	X	X
INDUSTRIAL AREAS	X	X					

* Additional crossing infrastructure may be necessary based on roadway posted speed limit, traffic volumes, crash history, and/or systemic safety analysis/crash risk. At signalized crossings, adjust signal timing with a Leading Pedestrian Interval (LPI), per FHWA Safe Transportation for Every Pedestrian (STEP) guidance.



Infrastructure Expectations: Bridge Projects

Use EXHIBIT 5-11 to select walking-focused infrastructure for preservation projects involving bridges. Use EXHIBIT 5-12 to select walking-focused infrastructure for improvement projects involving bridges. These tables use the bridge investment categories and associated activities as defined within the MnDOT Bridge Preservation and Improvement Guidelines.⁵¹ The tables focus on project type as opposed to land use types, which are highlighted in the preceding tables.

EXHIBIT 5-11: Bridge Projects: Guidance for Preservation Investments

ACTIVITY	SWEEPING OF PED WAY	MINOR PAVEMENT CRACK REPAIR	TRAVEL LANE NARROWING FOR PED SPACE	IMPROVED SHOULDERS
BRIDGE MAINTENANCE	X	X		
MAJOR PRESERVATION	X	X	X	X

EXHIBIT 5-12: Bridge Projects: Guidance for Improvement Investments

ACTIVITY	TRAVEL LANE NARROWING FOR PED SPACE	IMPROVED SHOULDERS	ADD RAISED AND/OR BARRIER- SEPARATED SIDEWALK/ SIDEPATH	BENCHES	PED-SCALE LIGHTING
BRIDGE REHABILITATION	X	X	X	X	X
BRIDGE REPLACEMENT			X	X	X

Environmental Justice Implications of Scoping and Needs Identification Action Items

Scoping action items include measures to improve existing processes, and to guide selection of appropriate pedestrian facilities. Process action items include bringing in local participants earlier in the scoping process, giving greater weight to local context, and setting early expectations about costs and long-term maintenance. This benefits environmental justice populations by encouraging pedestrian facilities in places where they are most needed, and where they provide the most benefit. Action items also include adding a category to the scoping worksheet that considers emerging trends, including racial disparities and equity.



ENDNOTES

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APPENDIX

Action Items (pg 132)

[Safety Education Program Review](#)

[Scenario Cost Estimates Spreadsheet](#)

[Priority Areas for Walking \(PAWS\) Criteria Methodology](#)

Benefits of Walkable Communities Handout:

- [Graphic Version](#)
- [Accessible Text Version](#)

[Benefits of Walkable Communities Talking Points](#)

[Public Participation Plan](#)

[Phase Two Engagement Scenarios](#)

Surveys:

- [Phase One](#)
- [Phase Two](#)

[Statewide Public Engagement Summary](#)

District-level Phase One Public Engagement Summaries:

- [District 1](#)
- [District 2](#)
- [District 3](#)
- [District 4](#)
- [Metro District](#)
- [District 6](#)
- [District 7](#)
- [District 8](#)

[Survey Demographics Analysis](#)



ACTION ITEMS

INVESTMENT PLANNING

IP-1: In the next update of MnSHIP, expand the amount invested in “Accessible Pedestrian Infrastructure” to address walking improvements that go beyond ADA compliance projects. (p. 65)

IP-2: Monitor progress toward achieving TAMP targets for pedestrian infrastructure assets based on ADA compliance. (p. 65)

IP-3: Monitor the SHSP and implement SHSP action plans. (p. 65)

IP-4: Continue to work with MnDOT’s Office of Traffic Engineering staff to review the outcomes of field walks. (p. 65)

IP-5: Consider the use of Highway Safety Improvement Program (HSIP), Local Partnership Program (LPP), and Local Road Improvement Program (LRIP) funding to address pedestrian safety-related issues. (p. 65)

IP-6: Support opportunities to fund stand-alone walking improvements. (p. 67)

IP-7: Increase partnerships with regional and local municipalities and planning organizations to develop plans for walking improvements and investment priorities. (p. 67)

IP-8: Coordinate with MnDOT partners who may be interested in using demonstration projects as a way to explore potential improvements for people walking, meet seasonal walking needs, and quickly respond to safety needs. (p. 67)

IP-9: Identify opportunities to use PAWS scores in MnDOT project selection processes. (p. 69)

IP-10: Update PAWS scores on a bi-annual basis. (p. 69)

IP-11: Utilize the PAWS scores in development review to advocate for improvements in high-need areas. (p. 69)

IP-12: Seek opportunities to provide wide vegetated buffers between people walking and vehicle traffic. (p. 96)

IP-13: Prioritize street trees as critical pedestrian infrastructure for adapting to climate change. (p. 96)

IP-14: Reference the infrastructure expectations tables in investment planning processes. (p. 96)

IP-15: Update cost estimates after PAWS score updates. (p. 96)

IP-16: Investigate level of investment needed to construct context-sensitive and climate mitigation improvements in PAWS Tier 2 areas. (p. 96)

COST PARTICIPATION

CP-1: Distribute the CPP factsheet (EXHIBIT 5-2) as a reference for local and District staff. (p. 101)

CP-2: Evaluate revising the existing cost participation policy to cover 100% of pedestrian-scale lighting. (p. 101)

CP-3: Consider options for incorporating other construction elements within projects that already involve changes to the curb line. (p. 101)

CP-4: Reexamine the treatment of urban and rural pavements in the CPP. (p. 101)

CP-5: Evaluate changes to the CPP and supporting policies to allow MnDOT to pay for design elements that are context appropriate, but may exceed current design standards. (p. 101)

CP-6: Clarify CPP guidance about which agency pays for walking improvements in townships or unincorporated areas that connect two rural communities, and additional needs that are uncovered in urban projects. (p. 101)



CP-7: Hold an annual cost participation policy review workshop and/or webinar. (p. 102)

CP-8: Initiate a conversation among all MnDOT Districts about the consideration of community size in project decision-making and cost participation expectations. (p. 102)

MAINTENANCE

M-1: Design to support effective maintenance. (p. 106)

M-2: Explore options for how MnDOT can help local agencies take the lead on maintenance work. (p. 106)

M-3: Clarify MnDOT's policies to reflect the expectation of year-round maintenance of pedestrian facilities. (p. 107)

M-4: Establish a winter prioritization network for clearing pedestrian facilities that ensures that the best access is provided to the greatest number of people possible following a heavy storm event. (p. 108)

M-5: Consider the application of automated vehicle technology to operate snowplows or other snow-clearing equipment. (p. 108)

M-6: Make it standard MnDOT practice to review maintenance expectations and specific agreements with local elected officials in a formal setting, such as a presentation at a city council or county board meeting. (p. 110)

M-7: Make it standard MnDOT practice to review maintenance expectations and specific agreements with local maintenance staff who will be executing the maintenance. (p. 110)

M-8: Recommend alternative maintenance funding and responsibilities between MnDOT and local agencies. (p. 110)

M-9: Allocate staff time to enforce maintenance agreements to ensure pedestrian facilities are addressed properly. (p. 110)

M-10: Work with maintenance stakeholders to define expectations for year-round maintenance on the pedestrian system. (p. 110)

PROJECT SCOPING AND NEEDS IDENTIFICATION

PS-1: Add a category to the scoping worksheet that gives consideration to emerging trends. (p. 113)

PS-2: Incorporate climate change considerations into the appropriate Scoping Worksheets, especially as impacts relate to people walking. (p. 114)

PS-3: Keep MnDOT's data on environmental justice communities updated. (p. 114)

PS-4: Create structures for public engagement in every step of project formation and execution. (p. 114)

PS-5: Create Project Advisory Committees that include members of priority populations. (p. 114)

PS-6: Identify walking connectivity needs between MnDOT right-of-way and adjacent pedestrian destinations outside the right-of-way. (p. 114)

PS-7: Conduct virtual or in-person trainings with local jurisdictions to share the benefits of walking facilities and to set expectations for cost participation and long-term maintenance as part of the scoping process. (p. 116)

PS-8: Consider the specific context of the project community when doing public engagement during scoping, and make sure stakeholders in the engagement process match that context. (p. 116)

PS-9: Support needs identification by reviewing local plans and conducting community sidewalk inventories. (p. 116)

PS-10: As a default, projects should fill network gaps where there is up to ¼ mile between sidewalk or sidepath facilities. Network gaps of up to ½ mile should be filled when a Minnesota Walks priority destination is located on an end or within the network gap.. (p. 116)

PS-11: Work with human resources and District staff to integrate multimodal approaches into position descriptions and responsibilities for planners, project managers, designers and engineers. (p. 116)

PS-12: Develop and distribute best practices and lessons learned through convening district staff on an annual basis. (p. 116)

PS-13: Incorporate recommendations from MnDOT's Advancing Transportation Equity Initiative and reports in daily MnDOT functions. (p. 116)

PS-14: Coordinate closely with the Minnesota Department of Health and Statewide Health Improvement Program grantees. (p. 116)

PS-15: When right-of-way space is limited, select a linear facility that enables safe and comfortable walking within the confines of the existing right-of-way, or work to acquire additional right-of-way for increased separation between people walking, people bicycling, and people driving. (p. 120)

PS-16: Use the infrastructure expectations tables during project scoping. (p. 120)







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