DRAFT - SEPTEMBER 2023

20-YEAR STATE HIGHWAY INVESTMENT PLAN

Identifying priorities for investing in state highways to maintain and improve the system over the next 20 years.

MINNESOTA GO

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CHAPTER 1

PLAN OVERVIEW

The Minnesota Department of Transportation is responsible for constructing, operating and maintaining an almost 12,000 mile state highway system. This system plays a key role in supporting the state's economy and quality of life. Businesses rely on the system to move their goods and raw materials throughout the state. In addition, state highways connect Minnesotans to other transportation networks and to state, national and global markets.

CHAPTER 1

MNSHIP PURPOSE

Through the 20-Year Minnesota State Highway Investment Plan (MnSHIP), the Minnesota Department of Transportation decides and communicates capital investment priorities for the state highway system for the next 20 years. MnSHIP is required by Minnesota statute. It must identify investment priorities given current and expected funding and be updated every five years. This MnSHIP update spans the 20-year planning period from 2023 to 2042 and replaces the 2018-2037 MnSHSIP.

MnDOT considers many factors in developing MnSHIP. The plan prioritizes future investments to address the widening gap between highway revenues and construction costs. MnSHIP also considers federal and state laws, MnDOT policy and current and expected future conditions on the state highway system. These factors are described in more detail in Chapter 2: Existing Conditions and Trends.

MnSHIP describes how MnDOT will use capital investments to repair, replace and improve the state highway system. The plan does not address how MnDOT funds the operation of the system or day-to-day maintenance. MnDOT's Transportation Asset Management Plan describes how the department maintains highway infrastructure and operates the highway system.

RELATIONSHIP TO MNDOT'S PLANS AND PROGRAMS

MnSHIP is part of a "family of plans" that connects statewide vision and policy direction for transportation in Minnesota to how MnDOT selects projects and makes improvements on the transportation system. The "family of plans" is shown in Figure 1-1. Together, the plans serve as a framework for implementing a multimodal transportation system throughout Minnesota.

Figure 1-1: Family of Plans

The Minnesota GO planning framework starts with the Minnesota GO Vision. Adopted in 2011, the Vision established eight guiding principles to move toward a multimodal transportation system that maximizes the health of people, the environment and the economy. These principles are to be used collectively and are intended to guide policy and investment direction.

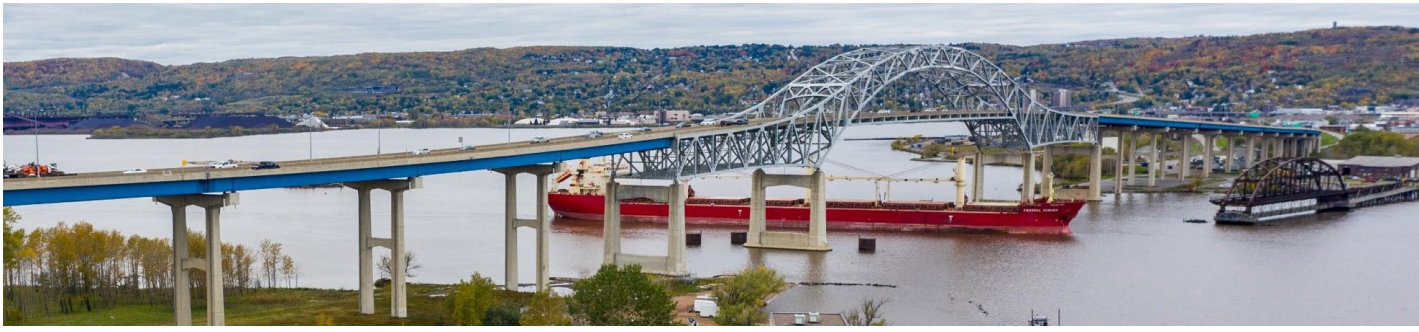
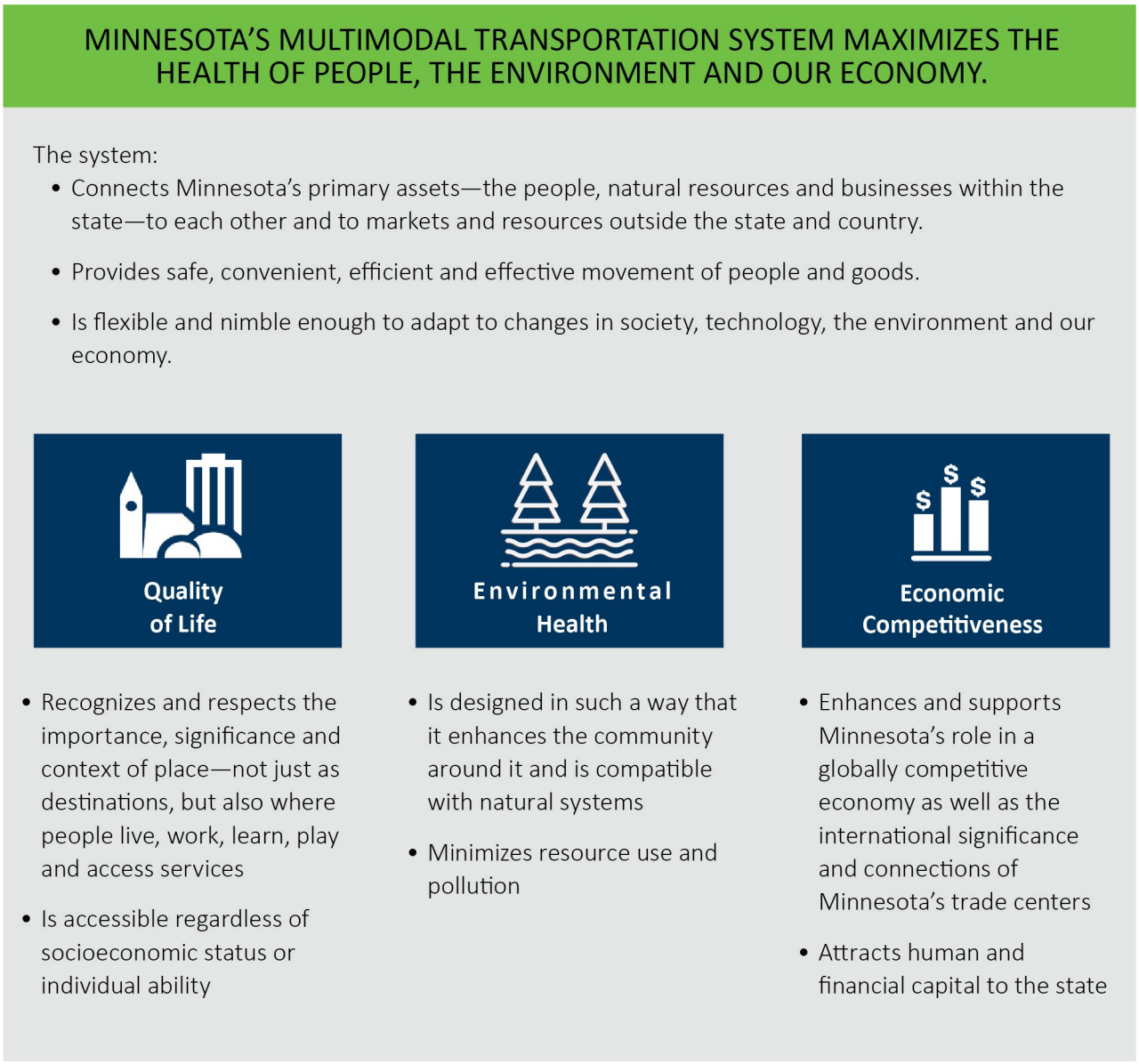


Figure 1-2: Minnesota GO Vision



The Statewide Multimodal Transportation Plan (SMTP) was adopted in 2022. It identified objectives, performance measures and strategies in six policy areas to make progress toward the Minnesota GO Vision and 16 legislative goals for transportation. The SMTP covers all the ways people and goods move around Minnesota and is for everyone with a role in implementing transportation. The objectives are listed in no particular order in Figure 1-3, and all are critical focus areas for the upcoming years.

Figure 1-3: Statewide Multimodal Transportation Plan Objectives

STATEWIDE MULTIMODAL TRANSPORTATION PLAN OBJECTIVES
Transportation Safety. Safeguard transportation users as well as the communities the systems travel through. Apply proven strategies to reduce fatalities and serious injuries for all modes. Foster a culture of transportation safety in Minnesota.
System Stewardship. Strategically build, manage, maintain, operate and adapt the transportation system based on data, performance and community needs. Ensure effective and efficient use of resources.
Climate Action. Advance a sustainable and resilient transportation system. Enhance transportation options and technology to reduce greenhouse gas emissions. Adapt Minnesota's transportation system to a changing climate.
Critical Connections. Maintain and improve multimodal transportation connections essential for Minnesotans' prosperity and quality of life. Strategically consider new connections that help meet performance targets and maximize social, economic and environmental benefits.
Healthy Equitable Communities. Foster healthy and vibrant places that reduce disparities and promote healthy outcomes for people, the environment and our economy.
Open Decision Making. Make equitable transportation decisions through inclusive and collaborative processes that are supported by data and analysis.

MnDOT uses the SMTP objectives and strategies to inform modal and system investment plans. These plans include MnSHIP as well as the State Aviation System Plan, the Statewide Bicycle System Plan, the Statewide Freight Plan, the Statewide Ports & Waterways Plan, the State Rail Plan, the Greater Minnesota Transit Investment Plan, the Statewide Pedestrian Plan and a collection of supporting plans. These modal and system plans are updated every four to six years. Some help to set specific investment direction, others focus more on general policy guidance and some do both.

MnSHIP is a system investment plan that sets direction specifically for the state highway system. MnDOT has used performance-based planning to develop MnSHIP for more than 15 years. As a performance-based plan, MnSHIP uses measures and targets to assess system performance, identify needs and develop investment priorities. MnSHIP links policies and objectives in the Minnesota GO 50-Year Vision and the SMTP with capital investments on the state highway system.

ORGANIZATIONS OF CHAPTERS

The chapters in this plan are based on the steps in the plan's development process, presented together in Figure 1-4. The first step in the MnSHIP planning process involves gathering information from various sources. This chapter covers federal and state legislative requirements, MnDOT policy and describes the MnSHIP investment categories. Chapter 2: Existing Conditions and Trends covers current system conditions and trends.

The second step in the MnSHIP process involves projecting revenue for state highways. Chapter 3: Revenue Outlook describes the revenue scenarios developed for the plan. The third step in the plan process involves identifying needs. Chapter 4: Investment Needs describes the amount of money needed to meet performance targets and key objectives for each investment category.

The fourth step in the MnSHIP process involves developing investment scenarios and conducting public outreach on investment preferences. The details of this process are described in Chapter 5: Development of Investment Direction.

The fifth step in the MnSHIP planning process is setting the investment direction. Once the results from public outreach were analyzed, MnDOT gathered input from internal staff and developed an investment direction for MnSHIP. This direction describes how MnDOT is going to invest in the state highway system for the next 20 years. The details of this investment direction are presented in Chapter 6: Investment Direction. Needs not addressed by the MnSHIP Investment Direction are discussed in Chapter 7: Unmet Needs.

Chapter 8: Moving Forward identifies strategies to maximize the benefits of MnDOT's investment on the state highway system.

Once MnSHIP is complete, MnDOT districts select projects that follow the investment direction and strategies established in the plan. These planned and programmed projects are presented in the 10-Year Capital Highway Investment Plan (CHIP).

Figure 1-4: MnSHIP Chapters and Development Process

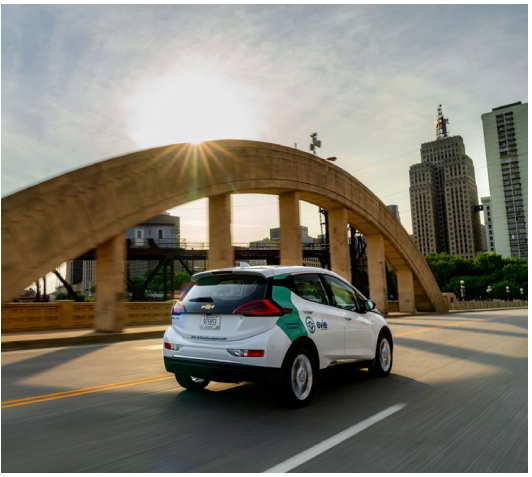
FEDERAL LAW

A new federal surface transportation bill, the Infrastructure Investment and Jobs Act (IIJA), was signed into law on November 15, 2021. It authorized approximately $550 billion in federal funding for fiscal years 2022 through 2026 for infrastructure projects, including $350 billion for highway projects, an increase from the previous federal bill. IIJA continues many of the requirements first established in Moving Ahead for Progress in the 21st Century (MAP-21), including the use of performance measures and emphasizing investment on the National Highway System. The new federal bill has an increased emphasis on climate resilience and equity.

The requirements in IIJA affect MnDOT, as well as MnDOT's transportation partners, in several ways. Appendix E: Planning Requirements details the role the SMTP and MnSHIP have in addressing the requirements in IIJA.

IMPACTS OF IIJA

- Requires states to make progress toward nine national goals for the National Highway System (NHS). The national goal areas are (1) safety, (2) infrastructure condition, (3) congestion reduction, (4) system reliability, (5) freight movement and economic vitality, (6) environmental sustainability, (7) reduced project delivery delays, (8) improved resiliency and reliability of the transportation system and reduction or mitigation of storm water impacts of surface transportation and (9) enhancement of travel and tourism.
- Continues performance requirements on the NHS. States are required to report on pavement condition, bridge condition, safety and reliability performance. USDOT has set minimum performance thresholds for Interstate pavement condition and NHS bridge condition. MnDOT sets targets for the other federal performance areas in coordination with the Metropolitan Planning Organizations.
- Creates multiple new discretionary grant programs and increases existing discretionary grant program funding. IIJA authorized over $35 billion in competitive roadway grants between 2022 and 2026.
- Increases funding for climate resilience and electric vehicle infrastructure. IIJA includes a new $5 billion electric vehicle charging infrastructure formula program to strategically deploy charging infrastructure and a $7 billion PROTECT program to make transportation infrastructure more resilient to future weather events.



CHAPTER 1

STATE REQUIREMENTS

State policy and legislative requirements had a strong influence on the development of MnSHIP. Minnesota statute 174.01 identifies 16 goals of the state transportation system. These goals guided the development of MnDOT's Family of Plans.

State legislative requirements for MnSHIP are contained in Minnesota statute 174.03. The law requires MnDOT to create a fiscally constrained, performance-based 20-year capital investment plan for the state highway system every five years. As part of the plan, MnDOT must analyze and track the effect of recent investments, identify needs, establish priorities for projected revenue and identify strategies to ensure the efficient use of resources. In 2021, the law was updated to include a requirement that MnDOT establish investment priorities that provide for cost-effective preservation, maintenance and repair of the state highway system. State legislative requirements specific to MnSHIP, and the MnSHIP chapter in which they are addressed, are presented in Figure 1-5.

MnDOT is also responsible for carrying out programs initiated by the Minnesota State Legislature for projects on the state highway system, such as Corridors of Commerce.

Figure 1-5: Chapters in MnSHIP Addressing Legislative REquirements for MnSHIP

MINNESOTA STATUTES FOR MNSHIP (SECTION 174.03, SUBD. 1C)	LOCATION IN MNSHIP
• Incorporates performance measures and targets for assessing progress and achievement of the state's transportation goals, objectives and policies identified [in this statute] for the state trunk highway system and those goals, objectives and policies established in the Statewide Multimodal Transportation Plan. Performance targets must be based on objectively verifiable measures, and address, at a minimum, preservation and maintenance of the structural condition of state highway bridges and pavements, safety and mobility	• Chapter 2 • Chapter 4
• Summarizes trends and impacts for each performance target over the past five years.	• Chapter 2
• Summarizes the amount and analyzes the impact of the department's capital investments and priorities over the past five years on each performance target, including a comparison of prior plan projected costs with actual costs.	• Chapter 2 • Appendix E
• Identifies the investments required to meet the established performance targets over the next 20-year period.	• Chapter 4
• Projects available state and federal funding over the 20-year period, including any unique, competitive, time-limited, or focused funding opportunities.	• Chapter 3 • Appendix C

MINNESOTA STATUTES FOR MNSHIP (SECTION 174.03, SUBD. 1C)	LOCATION IN MNSHIP
• Identifies strategies to ensure the most efficient use of existing transportation infrastructure, and to maximize the performance benefits of projected available funding.	• Chapter 6 • Chapter 8

• Establishes investment prioririte for projected funding which must:
  • provide for cost-effective preservation, maintenance and repair to address the goal under section 174.01, subd. 2 (state of good repair) in a manner that aligns with other goals in that section
  • As appropriate, provide a schedule of major projects or improvement programs for the 20-year period
  • Identify resulting projected costs and impact on performance measures
	• Chapter 6
	• CHIP

• Identifies those performance targets identified under clause (1) not expected to meet the target outcome over the 20-year period together with alternative strategies that could be implemented to meet targets.	• Chapter 7 • Chapter 8

MNDOT POLICY

MnDOT policies take many forms and those considerations that apply to MnSHIP have been applied throughout the plan development process. In addition to the Minnesota GO Vision and Family of Plans, the Transportation Equity Statement of Commitment and Complete Streets Policy are MnDOT policy requirements that apply to MnSHIP.

TRANSPORTATION EQUITY STATEMENT OF COMMITMENT

As part of the 2022 SMTP, MnDOT adopted a statement of commitment to advance its work on transportation equity.

ACKNOWLEDGEMENT OF PAST HARMS

MnDOT acknowledges the transportation system and agency decisions have underserved, excluded, harmed and overburdened some communities. We understand some of our past decisions denied Black and Indigenous communities as well as people with disabilities the full participation of transportation benefits. These and other underserved communities have historically carried disproportionate burdens of transportation decisions.

WHAT TRANSPORTATION EQUITY MEANS TO MNDOT

MnDOT is committed to creating an equitable transportation system.

Transportation equity means the benefits and burdens of transportation systems, services and spending are fair and just, which historically has not been the case. Transportation equity requires ensuring underserved communities, especially Black, Indigenous and People of Color, share in the power of decision making.

The journey of transforming our transportation systems, services and decision-making processes will require ongoing listening, learning, changing, implementing and adapting.

Everyone in our agency regardless of position or work assignment has a role to advance transportation equity. We will partner with community members, community-based organizations, transportation service providers, Tribal Nations and government institutions to evolve our work and to change outcomes for our communities.

COMPLETE STREETS POLICY

MnDOT policy requires a complete streets approach in all phases of project delivery. On all projects, MnDOT evaluates and balances the needs of all users (pedestrians, bicyclists, freight, transit, motor vehicles, etc.) during planning, scoping, design, construction, operations and maintenance of the state highway network. Project development analysis includes the access and mobility needs of user groups moving both along state highways and crossing state highways. The objective is not all modes on all roads, but rather, interconnected and integrated networks for all users. Districts must evaluate opportunities to address the needs of all users both at the individual project level and when developing Area Transportation Improvement Programs and 10-Year CHIPs.

MINNESOTA'S STATE HIGHWAY SYSTEM

The state highway system is a multimodal network serving many different transportation users. These users include motorists, freight carriers, transit passengers, bicyclists and pedestrians. It also connects these users to other transportation systems, such as transit networks, rail, aviation and waterways, as well as county and city roads.

The importance of the state highway system is demonstrated by its use. At almost 12,000 miles, the system comprises only 8% of Minnesota's total road miles yet carries almost 60% of the vehicle miles traveled and moves the majority of freight. State highways are central to many communities in Minnesota and their conditions directly affect residents' quality of life.

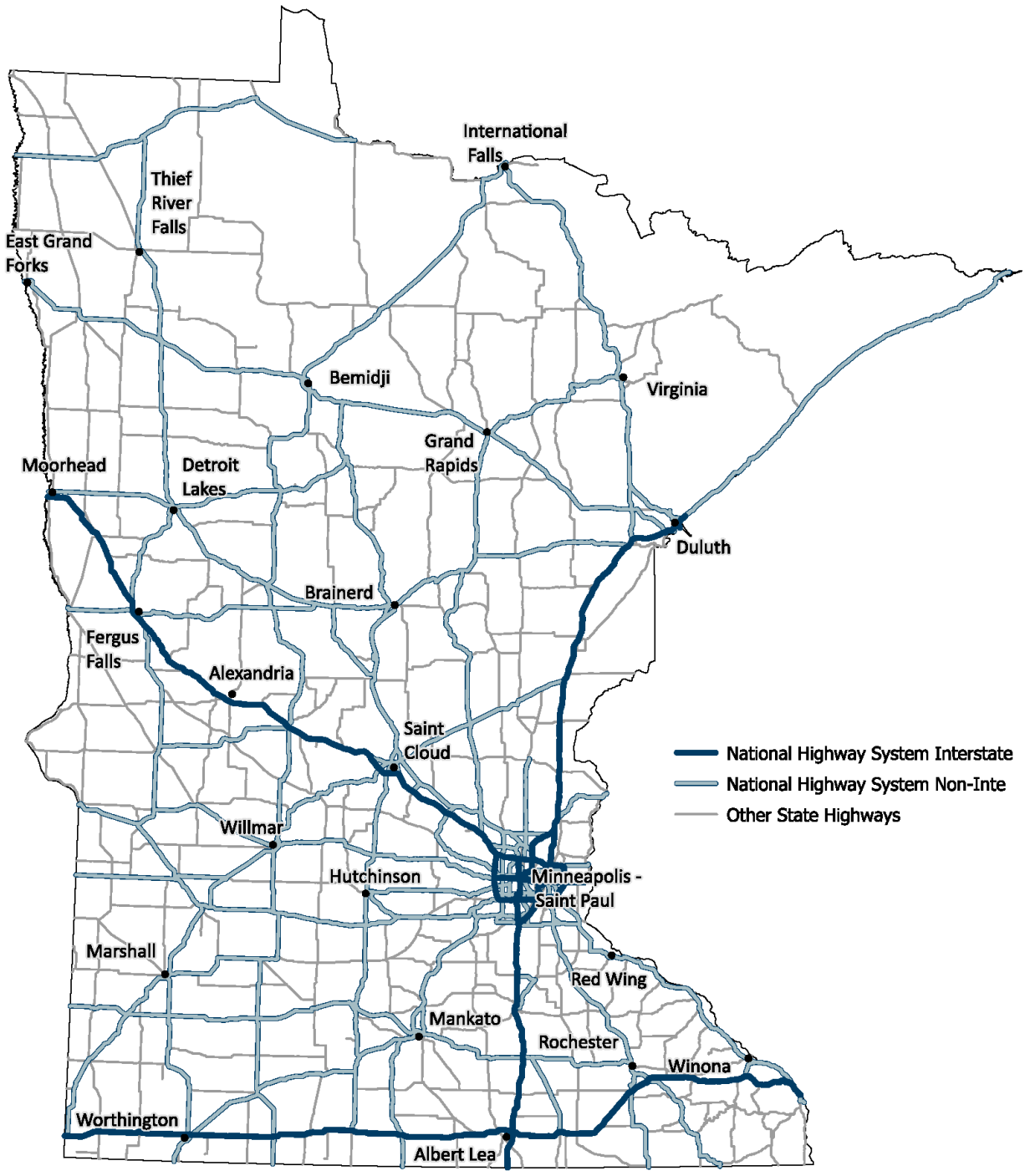
A strong economy depends upon a well-maintained and well-connected transportation network. Minnesota businesses rely on the state highway system's size, connections and pavement and bridge conditions to carry freight throughout the state. To keep Minnesota economically strong into the future, MnDOT needs to maintain and improve the state highway system. The size and the age of Minnesota's transportation system demonstrate the scope of the state highway system's investment need:

- 50% of state highway pavements are more than 50 years old
- 47% of MnDOT owned highway bridges are more than 40 years old

WHICH ROADS MAKE UP THE STATE HIGHWAY SYSTEM?

The state highway system includes all Interstate highways, U.S. highways and Minnesota state highways. These roads fall into two categories: National Highway System roadways and non-NHS roadways. NHS roadways serve statewide and interstate travel and are the primary connections between large urban areas throughout the state and beyond. Non-NHS state highways provide important connections for regional and local travel and generally carry lower traffic volumes. Figure 1-6 shows the extent of the state highway system.

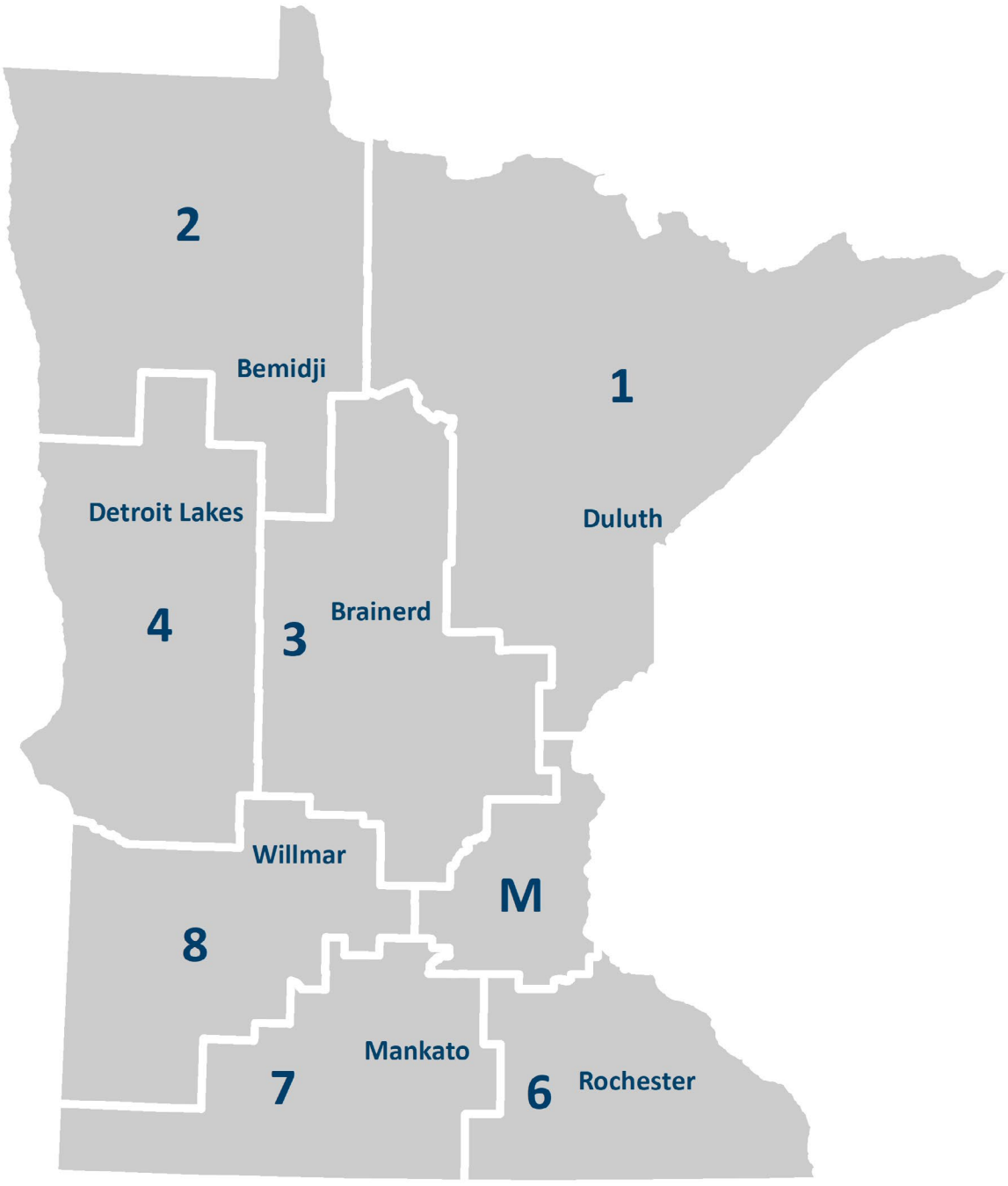
Figure 1-6: Minnesota's State Highway Network



MNDOT'S ORGANIZATION AND MANAGEMENT OF THE STATE HIGHWAY SYSTEM

State highway construction and maintenance responsibilities are divided into eight MnDOT districts. Figure 1-7 maps the district boundaries. MnDOT's Central Office headquarters are located in St. Paul, near the state Capitol building.

Figure 1-7: MnDOT district boundaries and their headquarters

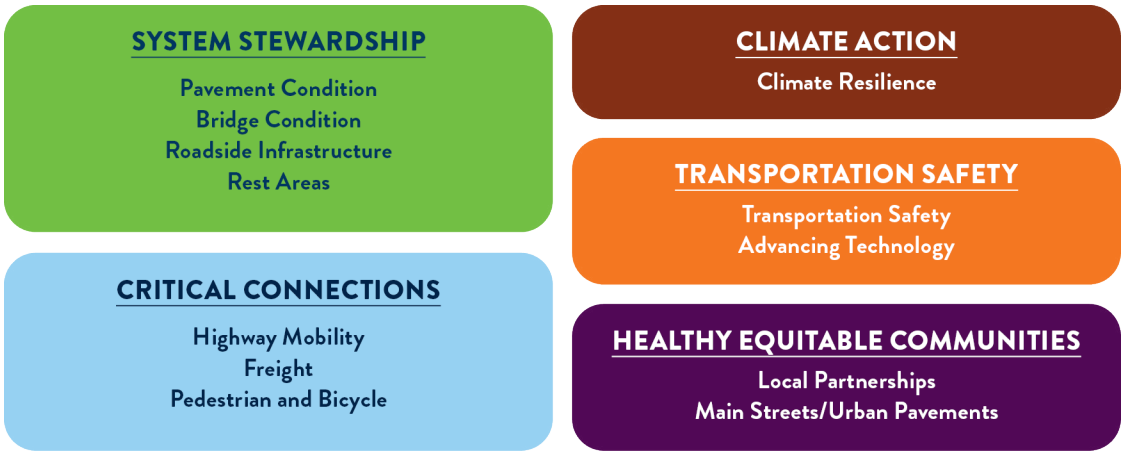


INVESTMENT CATEGORY DESCRIPTIONS

MnDOT invests in the state highway system through various types of capital improvement projects. Some projects enhance the condition of existing infrastructure, whereas others add new infrastructure to the system. Investment categories are components of projects. A single MnDOT project can include investment from multiple different investment categories. There are many competing priorities for investment along the state highway system. MnDOT is responsible for selecting investments that best balance these priorities. This is especially challenging given the gap between MnDOT's projected transportation revenues and investment needs.

MnDOT tracks capital investment in highways by investment categories. The 2017 version of MnSHIP identified 14 investment categories. This MnSHIP update substantially revised the investment categories to address new focus areas and simplify reporting. New investment categories include Climate Resilience, Advancing Technology and Main Streets/Urban Pavements. The individual categories are separated into five major investment objective areas as illustrated in Figure 1-8.

Figure 1-8: MnSHIP Investment Categories



SYSTEM STEWARDSHIP: CATEGORY DESCRIPTIONS

System Stewardship includes five investment categories: Pavement Condition, Bridge Condition, Roadside Infrastructure and Rest Areas.

PAVEMENT CONDITION

MnDOT preserves the structural integrity and smoothness of its pavements through investment in the Pavement Condition category. MnDOT seeks to maintain pavements in good condition and minimize the share in poor condition. This category includes the repair or replacement of existing pavement on the state highway system. Typical improvements to pavements include:

- Overlays – Putting new pavement on top of old pavement to smooth the road surface
- Mill and overlays – Removing a few inches of the existing pavement and then putting new pavement on top
- Reconstruction projects – Completely rebuilding the road and the road base
- Preventive maintenance – Activities to help slow pavements from deteriorating from good to fair condition.

Pavements are a critical part of MnDOT's transportation network, providing mobility and access to a wide range of users. MnDOT maintains over 11,703 miles of state highways that serve vehicles, freight, transit, bicycle users and pedestrians. On an average day, there are more than 90 million vehicle miles traveled on Minnesota state highways.

The majority of Minnesota's highways were originally constructed between 60 and 70 years ago. Pavements generally need to be fully reconstructed every 50 years. MnDOT also needs to make repairs at regular intervals to prolong pavement life and reduce total life-cycle costs. MnDOT is better able to fulfill its responsibilities as stewards of the highway system by making the proper fix at the proper time.

BRIDGE CONDITION

The Bridge Condition category includes the repair or replacement of existing bridges on the state highway system. Construction of new bridges on the state system is also included in this category. Typical bridge improvements include replacement, repair and preservation activities such as painting. The Bridge Condition category does not include surrounding or supporting elements for bridges, such as signs, pavement markings or lighting.

More than 2,800 of Minnesota's 7,500 bridges are on the state highway system and are maintained by MnDOT. Most bridges last 60 to 80 years before needing replacement with adequate maintenance and repair projects. Delaying repairs can lead to more extensive maintenance needs and shorter service life. MnDOT uses asset management principles to plan optimal preventive maintenance, preservation, rehabilitation and replacement projects. By planning bridge investments in a timely and cost-effective manner, MnDOT is able to maintain these vital connections.

ROADSIDE INFRASTRUCTURE

Roadside Infrastructure includes an array of supporting infrastructure found on the state highway system. This infrastructure enhances the safe, reliable and efficient movement of people and goods throughout the state. Investments in this category include the repair or replacement of existing roadside infrastructure elements including:

- Culverts, deep stormwater tunnels, storm sewer systems, stormwater management and other drainage structures that carry water away from or under the road
- Traffic signals, lighting and Intelligent Transportation Systems that enhance safety and provide information
- Highways signs and sign structures including traffic and directional signs
- Guardrails and concrete barriers, including cable-median barriers that protect people and infrastructure
- Noise walls
- Pavement markings

Roadside infrastructure improvements are often completed with a pavement or bridge project. MnDOT also conducts stand-alone projects, such as culvert replacement projects along segments of road with poor drainage or culverts.

REST AREAS

The Rest Areas investment category is a new category in this MnSHIP update. It includes the repair and maintenance of existing state highway rest area buildings, sites and parking lots including investments to make them compliant with the Americans with Disabilities Act.

Rest areas serve as a countermeasure to drowsy driving, reduce unsafe highway shoulder stops, support freight movements and promote state and regional tourism as well as provide convenient services for travelers. By providing adequate and properly spaced rest areas along the state highway network, MnDOT can meet the demand and expectations of the traveling public.

CLIMATE ACTION: CATEGORY DESCRIPTION

Climate Action is a new objective area established in the SMTP. Investments in this area aim to advance a sustainable and resilient transportation system that adapts to a changing climate.

CLIMATE RESILIENCE

The Climate Resilience investment category improves state highway infrastructure to withstand increasingly extreme weather events. Types of investments include flood mitigation to address locations with recurring flooding issues, living and structural snow fences to reduce snowdrifts and proactive resilience enhancements to limit weather impacts on the state highway system before they occur.

Investment in this category also adapts the state's transportation system to put less stress on the environment by reestablishing native habitats and mitigating impacts from the transportation system. The investment category includes planting more native and climate-appropriate vegetation along roadsides. This helps with stormwater management by increasing infiltration and slope stabilization, provides more shade and also increases the appeal and comfort of people walking and bicycling.

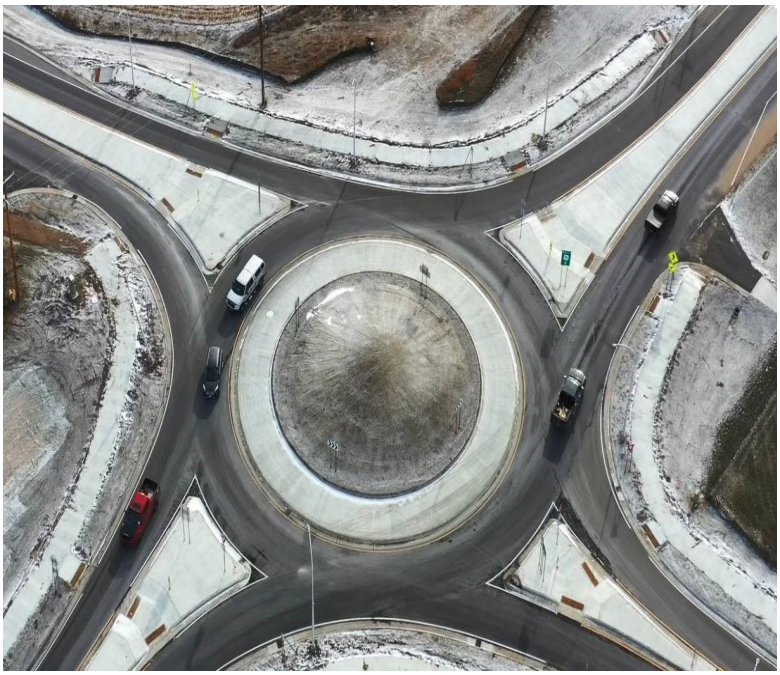
TRANSPORTATION SAFETY: CATEGORY DESCRIPTION

There are two investment categories under the transportation safety objective area: Transportation Safety and Advancing Technology. Safety elements are included in all MnDOT projects. Safety benefits are the primary focus for investment in these categories.

TRANSPORTATION SAFETY

The Transportation Safety category includes investments in new highway safety improvements. Typical improvements include lower-cost, high-benefit engineering solutions, such as rumble stripes, lighting, signage and new cable median barriers. MnDOT also invests in higher-cost treatments, such as signals and reduced conflict intersections (e.g., roundabouts, median refuges and J-turns). These higher-cost improvements are used to address locations with a sustained history of crashes.

Vehicle crashes are the leading cause of death for people under the age of 35 and the second leading cause of accidental death in the nation. Crash-related deaths and serious injuries create significant costs for individuals, families and society. On average, more than one person died every day in 2022 on Minnesota roads (444 total) and more than four were seriously injured. MnDOT and its partners have made reducing fatalities and serious injuries a top priority through:



- The Toward Zero Deaths initiative. MnDOT and its partners use a data-driven, multi-disciplinary "four Es" approach – education, engineering, enforcement and emergency services – to target and reduce fatalities and serious injuries. By implementing the TZD approach, the state of Minnesota has seen a dramatic decline in traffic fatalities during the past decade.
- Incorporate safety improvements into regular construction projects through planning, design and engineering. MnDOT includes safety elements as part of its highway construction projects.
- Proactive lower-cost, high-benefit safety features. Lower-cost safety improvements may be newly installed as part of a pavement project, including edge treatments (rumble stripes and rumble strips), guardrail and pavement markings, or as stand-alone projects. MnDOT has also developed District Safety Plans for each of its eight districts. The plans prioritize strategies at high-risk locations and identify appropriate treatments that are proven to reduce fatal and serious injury crashes.
- Improvements at sustained crash locations. These are locations with a consistently high-crash rate over a five-year period compared to similar locations across the state. Improvements at these locations tend to be higher-cost intersection improvements and can be targeted for motorized and non-motorized modes. Projects in this category include improvements such as roundabouts and passing lanes.

ADVANCING TECHNOLOGY

Advancing technology investments are focused on improving MnDOT's intelligent transportation system (ITS) infrastructure and Transportation System Management Operations (TSMO). These investments will help the safe and efficient movement of people and goods and prepare the state highway system for the widespread use of connected and autonomous vehicles. Investments in this category include expanding fiber infrastructure, adding ITS assets and piloting infrastructure for connected and autonomous vehicles.

The Advancing Technology investment category was created to react directly to emerging trends occurring in the transportation and employment sectors which have the potential to change commuting and working patterns substantially. These trends include the adoption of connected and autonomous vehicles and new transportation technologies. These trends require enhanced fiber networks, especially in rural areas. Without investment in this category, Minnesota runs the risk of falling behind other parts of the country and becoming less economically competitive.

CRITICAL CONNECTIONS: CATEGORY DESCRIPTION

There are three categories in which MnDOT invests to improve transportation connections: Highway Mobility, Pedestrian and Bicycle and Freight. These investment categories comprise the Critical Connections investment area.

HIGHWAY MOBILITY

The Highway Mobility investment category focuses on improving the vehicular movement of people and freight on the National Highway System, the priority network for MnSHIP. Minnesota is projected to add over 600,000 residents statewide between 2020 and 2050 according to the State Demographer, with much of this growth taking place in the Twin Cities region. Maintaining reliable and safe connections between and within the state's regions and urban centers while accommodating this growth remains an important objective of highway mobility. Through investments in Highway Mobility, MnDOT aims to increase mobility throughout the state, increase job accessibility, improve trip reliability and enhance travel options.

In the Twin Cities metro area, mobility projects include managing delay by providing cleaner, convenient and reliable alternatives in congested corridors. Population growth pressures in the region are accompanied by competing demands for continued reductions in emissions to ensure acceptable levels of air quality, while also maintaining the benefits of high levels of access to opportunities that make it attractive to residents and businesses. Highway mobility investments can promote these objectives through network improvements that smooth traffic flow and also enhance transit service access. The investment strategies for Highway Mobility in the Twin Cities region align with the investment direction established in the Metropolitan Council's 2040 Transportation Policy Plan. These investments follow a tiered approach and include:

- Active Traffic Management and transit-supportive investments. Operational improvements to help manage traffic flow, which include variable message signs, freeway ramp metering, dynamic signing and re-routing, dynamic shoulder lanes, reversible lanes and lane-specific signaling.
- Spot mobility improvements. Lower-cost, high-benefit projects that improve traffic flow and provide bottleneck relief at spot locations. These projects include intersection or interchange modifications and auxiliary lanes.
- E-ZPass lanes. Priced managed lane projects that provide a predictable, congestion-free travel option for transit users, those who ride in carpools or those who are willing to pay. E-ZPass

lanes currently operate on I-394, I-35W and I-35E. During peak drive times, E-ZPass lanes are free for buses, vehicles with two or more occupants and motorcycles; single-occupant vehicles are charged a fee through an electronic device attached to the windshield.

- Strategic capacity investments. Projects aimed at enhancing mobility, safety, multimodal or freight movements such as improved or new interchanges. General-purpose lanes can be considered in the following instances: to correct lane continuity or where E-ZPass has been evaluated and found not feasible.

The strategies listed above also benefit transit in many ways, such as bus-only shoulders, high occupancy vehicle bypass ramps and E-ZPass express lanes.

In Greater Minnesota, typical investments include spot mobility improvements such as upgraded signals, turn lanes, intersection improvements or passing lanes. Locations for improvements were identified through the Greater Minnesota Mobility Study.

REDUCING VEHICLE MILES TRAVELED

MnDOT has adopted a target to reduce per capita vehicle miles traveled (VMT) 14% by 2040. Meeting that goal would reduce the capital investments needed to meet performance targets for Highway Mobility. More investment in this category may jeopardize reaching the VMT target.

FREIGHT

The Freight category includes projects that are eligible for funding as part of the National Highway Freight Program. These include addressing freight bottlenecks, freight safety and mobility improvements, first-last mile connections and intermodal freight improvements. Investments in freight also include preservation and upgrades for truck weigh stations, at-grade rail crossings on the state highway system and truck parking at the state's rest areas.

Minnesota's broad range of industries include manufacturing, food production, computer and electronics, fabricated metal, machinery and medical devices. Many of these industries require a safe, reliable and efficient highway system to connect to customers, import raw materials and deliver goods and services. Projections show that the volume of freight is expected to grow 25-45% by 2040, according to the U.S. Department of Transportation.

Weight enforcement conducted at weigh stations ensure that freight being shipped to and through Minnesota is not over weight limits. Enforcement of Minnesota's truck size and weight laws increases safety and reduces damage to roadways and bridges.

PEDESTRIAN AND BICYCLE

Pedestrian and bicycle investments provide infrastructure for people to walk, roll and bicycle safely along and across state highways. Examples of MnDOT investments include sidewalks, accessible curb ramps, accessible pedestrian signals at signalized intersections, shared use paths, bicycle lanes and grade-separated facilities.

Bicycle investments aim to improve network connections, quality of life and the environment by providing a safe, comfortable and convenient bicycling network. In addition, the bicycle objectives aim to routinely consider bicycle trips on highways early in the planning process; maintain quality non-motorized infrastructure; facilitate bicycle travel on priority networks and eliminate fatalities and serious injuries statewide.

The Statewide Bicycle System Plan provides guidance for investing in local and regional bicycle connections, a state bikeway network and separated bicycle facilities. The plan recommends that 70% of bicycle investments fund projects to support local and regional networks with the remaining investment in an enhanced State Bikeway Network.

Pedestrian investments include reconstructed and new infrastructure to ensure safe, accessible and convenient pedestrian travel across and along the state highway system. Typical improvements include keeping existing pedestrian infrastructure in compliance with the Americans with Disabilities Act (ADA), building new curb ramps and sidewalks where needed, improving intersections with accessible pedestrian signals and building new pedestrian bridges. MnDOT frequently coordinates pedestrian improvements with other bridge and pavement projects to maximize the impact of MnDOT investments.

Pedestrian infrastructure is important because everyone is a pedestrian – whether your main form of transport is a motor vehicle, bus, train, van, or bicycle and whether you travel using your feet or an assistive device. MnDOT's pedestrian network consists of more than 600 miles of sidewalk, more than 20,500 curb ramps and more than 100 pedestrian bridges.

The Statewide Pedestrian System Plan guides MnDOT's pedestrian investments. It helps prioritize and create spaces that are safe and convenient for people to walk along and cross state highways.

CHAPTER 1

HEALTHY EQUITABLE COMMUNITIES: CATEGORY DESCRIPTION

Investments in this area aim to foster healthy and vibrant places that reduce disparities and promote healthy outcomes.

LOCAL PARTNERSHIPS

The Local Partnerships category incorporates investment strategies and programs that involve local collaboration and planning. Investments support local priorities on the state highway system where MnDOT partners with local communities to deliver improvements to the state highway system. These include landscaping/beautification projects, improvements supporting economic development, safety and improvements that help to integrate the highway into the local community and improve livability. The category also includes highway ownership realignment agreements where ownership of the roadway is transferred from one roadway authority to another.

Jurisdictional Transfer is a type of investment within the Local Partnerships category. It includes the costs associated with transferring ownership of a road to or from MnDOT. Aligning roads with the correct level of service helps road owners better meet customer expectations for maintenance, ride quality and safety. It's also easier as stewards of the transportation system if costs associated with constructing, operating, maintaining and replacing roads are better aligned with what is expected for level of service.

The Transportation Economic Development (TED) program is also included in the Local Partnerships category. The TED program gives grants to roadway projects that improve regional economic competitiveness and support new jobs.

MAIN STREETS/URBAN PAVEMENTS

Main Streets-Urban Pavements is a new category in this update to MnSHIP. Investment in Main Streets-Urban Pavements provides additional funding for projects in cities and towns to deliver more improvements along state highways. This includes segments of the state highway that are non-freeways and function both as a state highway and as a city street in an urban context.

The strategy for investment is to create funding for MnDOT districts to upgrade existing urban pavement projects to longer-term fixes such as reconstructions in order to address other needs. Additional improvements addressed could be local utilities under the road, drainage infrastructure, a longer-term ADA fix, or redesigning the roadway to meet the community's quality of life and transportation equity needs. These investments allow MnDOT to better partner with local communities on urban pavement projects.

OTHER: CATEGORY DESCRIPTION

PROJECT DELIVERY

The Project Delivery category includes investments necessary to ensure the timely and efficient delivery of projects constructed on the state highway system. Resources are needed in a number of areas to effectively work with partners on improvements, deliver quality capital projects and optimize MnSHIP investment. These areas include:

- Right of way - to purchase property adjacent to projects for construction and construction staging
- Consultant services - to hire private consultants to supplement MnDOT staff and provide special expertise in preliminary engineering and detailed design work
- Construction incentives - to promote or increase the likelihood of a desired outcome, such as early completion or meeting certain performance outcomes
- Supplemental agreements - to address unanticipated issues that develop during construction, such as unknown contaminated soil

SMALL PROGRAMS

The Small Programs category includes investments that are not specifically identified or prioritized within MnSHIP but make up a part of MnDOT's overall capital investment. Small Programs typically respond to short-term, unforeseen issues or are used to fund one-time specialized programs that do not fit into a MnSHIP investment category. If funding is required beyond the short-term, an effort is made to incorporate the program into a MnSHIP investment category during the next MnSHIP update. Small Programs in MnSHIP includes funds for historic properties, flood and slide repair and cleaning up contaminated materials.


SCHOOL BUS
St. Joseph's Hospital
50

CHAPTER 2

EXISTING CONDITIONS AND TRENDS

MnDOT considered or accounted for current conditions, recent and future trends in establishing investment priorities for the state highway system. Some of these trends pose large challenges to both managing the existing infrastructure and making improvements to the system. These challenges include rising construction costs due to inflation, federal and state legislative and performance requirements and a large and aging highway system in need of repair and reconstruction. MnDOT analyzed these and other trends to guide the development of MnSHIP.

CHAPTER 2

WHAT TRENDS ARE INFLUENCING TRANSPORTATION?

The Minnesota GO 50-Year Statewide Vision and the Statewide Multimodal Transportation Plan (SMTP) identify challenges and opportunities facing Minnesota's transportation. Because transportation infrastructure can last 50 years or longer, it is important for MnDOT to monitor trends that influence the use and condition of the state's transportation system. This allows MnDOT to adapt roadway designs and operations as needed. Included in these considerations are:

- Demographic shifts. Minnesota will continue to grow both older and more diverse, with most population growth occurring in metropolitan areas and along the I-94 corridor.
- Logistical evolution. Freight volume will continue to grow with increasing focus on local hubs to ensure timely delivery.
- Aging infrastructure. Minnesota will increasingly need to reconstruct aging infrastructure as pavement, bridges, rails and ports reach the end of their useful life.
- Climate change. The transportation system will face challenges of increased wear from torrential rain and rising temperatures as well the transition away from fossil fuels.
- Safety concerns. After years of decline, deaths of motorists, pedestrians and bicyclists have increased, especially during the pandemic, a reversal that has a particular impact on the state's Black, Indigenous, and People of Color communities.
- Behavioral changes. Recent years have seen growth in telecommuting, especially during the pandemic. However, the long-term travel behavior of workers remains unknown, and other types of trips may still increase as commutes remain below pre-pandemic levels.

CURRENT SYSTEM CONDITIONS AND LONG-TERM TRENDS

The state highway system is a large and aging network. It requires a mix of maintenance and capital investments to keep the system in a state of good repair. MnDOT actively seeks to minimize costs over the life of its assets through maintenance and capital investments. In particular, state highway pavements face a growing need for reconstruction over the life of the plan.

Since the early 1990s, MnDOT has used performance measurement to evaluate its services and to guide its plans, projects and investments. MnDOT tracks the condition of the state highway system and publishes this information in its Annual Minnesota Transportation Performance Report.

Historically, MnDOT has set targets designed to achieve optimal or desired performance levels in particular investment categories. These targets have typically been based on lowest life-cycle costs, customer expectations or a policy priority. Others have been trend-based – set by looking at trends and outcomes associated with historical spending levels. More recently, MnDOT has established targets that it determines to be an acceptable risk, such as those targets identified for roadside infrastructure assets.

The following sections describe the current conditions and long-term trends for each MnSHIP investment category.

SYSTEM STEWARDSHIP: CONDITIONS AND TRENDS

PAVEMENT CONDITION

Pavement deterioration is a serious risk facing Minnesota's state highway system – more than half of its pavements were constructed 50 or more years ago. MnDOT measures pavement conditions by tracking the percentage of Interstate, other National Highway System (NHS) and non-NHS pavements in good, fair and poor condition. Targets for NHS and non-NHS pavement condition are used to calculate needs (see Chapter 4: Investment Needs). Federal legislation requires MnDOT to assess NHS pavement conditions and the U.S. Department of Transportation has set a minimum performance threshold for Interstates. Interstate condition in Minnesota is currently meeting the minimum threshold and is not projected to exceed that threshold based on programmed investments.

As shown in Figure 2-1, the percentage of pavements in poor condition have remained low on the Interstate and Other NHS and declined significantly on the non-NHS. Pavement conditions are currently meeting targets on all state highway systems. The current percentage of pavements in poor and good condition varies between the three different types of state highway roads:

- Interstate pavements: 0.5% poor, 92.2% good
- Other NHS pavements: 0.5% poor, 83.1% good
- Non-NHS pavements: 1.0% poor, 77.5% good

Overall, the average remaining service life of all state highway pavements has increased slightly over the past six years as shown in Figure 2-2.

Figure 2-1: Current and Forecast Percent of State Highway Pavement in Poor Condition

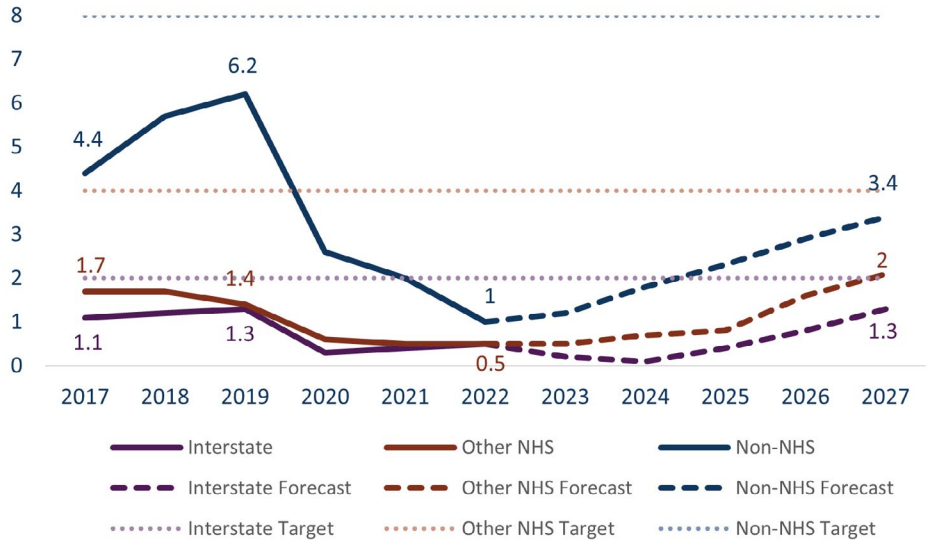
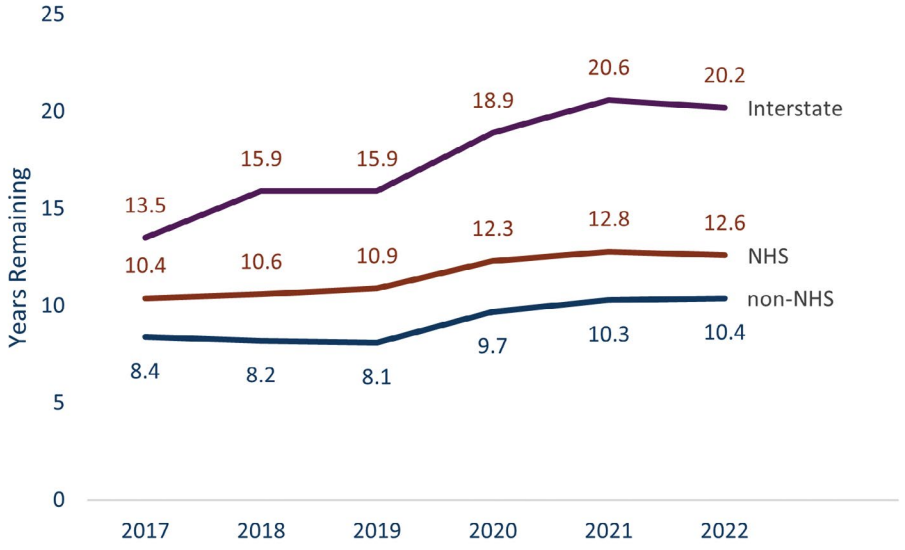


Figure 2-2: Statewide Average Remaining Service Life



BRIDGE CONDITION

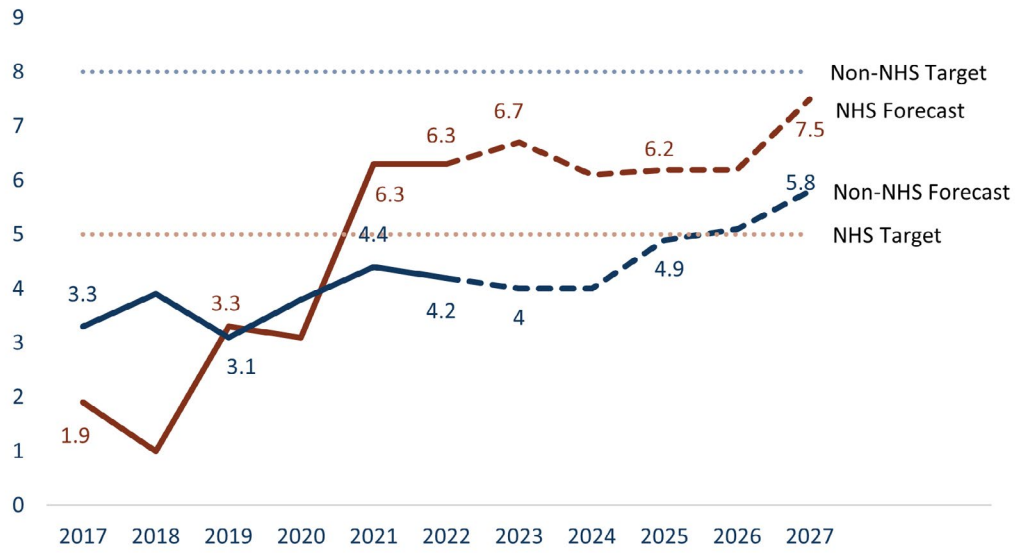
MnDOT is committed to a regular schedule of condition assessment and preventive maintenance to keep state highway bridges in good condition. Approximately 43% of MnDOT owned highway bridges are more than 50 years old. Like state highway pavements, aging bridges require more costly repairs to be maintained in serviceable condition.

MnDOT measures its performance in Bridge Condition by reporting on the percent of deck area in poor condition through regular inspections. The condition measure includes ratings of the deck, the substructure and the superstructure for bridges on the state highway system. MnDOT set a goal that the share of NHS bridges in good structural condition should be 55% and those in poor structural condition should be 5% or less, measured by deck area. Bridges rated in poor condition are safe to drive on but are approaching the end of their service life. Structurally unsafe bridges are either closed or strengthened immediately.

MnDOT also must report on federal performance measures for NHS bridge condition. MnDOT is required to keep the percent of NHS bridges in poor condition below 10%. MnDOT's own target is more stringent than the federal target. Keeping state highway bridges out of poor condition saves money and maintains a safe and accessible system.

MnDOT is not currently meeting its target for NHS bridges in poor condition but is meeting targets for non-NHS bridges, as shown in Figure 2-3. As of 2022, the percent of NHS bridges in poor condition (6.3%) exceeded the target of 5% poor and has increased steadily since 2018.

Figure 2-3: Current and Forecast State Highway Bridges in Poor Condition



CHAPTER 2

ROADSIDE INFRASTRUCTURE

In 2022, MnDOT completed its federally required Transportation Asset Management Plan (TAMP). The TAMP included condition information, investment strategies and projections for 12 state highway asset types. MnDOT has developed performance measures and targets for all the assets included in the TAMP. A selected list of these assets is shown in Figure 2-4. The work from the TAMP planning process has enhanced the planning for roadside assets and provides a better understanding of their needs and current conditions for MnSHIP.

Figure 2-4: Roadside Infrastructure Asset Condition

ROADSIDE ASSET	CONDITION YEAR	ASSET CONDITION
Culverts	2020	17% poor
LIghting	2021	12% beyond useful life
Noise walls	2021	6% poor
Overhead sign structures	2021	14% poor
Traffic signals	2021	9% beyond useful life

Currently, MnDOT is able to address some of its roadside infrastructure needs as part of other construction projects. However, MnDOT has not been able to fix most assets at optimal points in their life cycles under the current investment program. Roadside infrastructure conditions will likely deteriorate unless additional investments are made. Repairing and replacing these assets requires staff time and resources. Expanding the state highway system also increases the number of roadside assets to maintain.

REST AREA CONDITION

Rest areas is a new investment category in this plan. It includes all 52 MnDOT-owned rest areas. MnDOT measures rest area building condition through periodic assessments. In 2021, 6% of rest area buildings were in poor condition. Rest area buildings are aging and more facilities will fall into poor condition without additional investment.

MnDOT also began assessing parking lot pavement condition in terms of percent of parking lots in poor condition. There is no set condition target for parking lot pavement currently. An inventory is scheduled to be completed within the next four years to assess ADA compliance issues with rest area buildings, sites and parking lots to better understand where there are ADA compliance issues. Currently, ADA needs are identified as a part of individual rest area projects and any nearby pavement project scoping processes.

CLIMATE ACTION: CONDITIONS AND TRENDS

CLIMATE RESILIENCE

MnDOT does not currently have performance measures related to Climate Resilience beyond asset condition measures. The 2022 SMTP identified a need to develop and refine measures of system and asset resilience. These are work plan items in the plan. System resilience is being further refined through the Resilience Improvement Plan that MnDOT is developing.

The department also produces an annual sustainability report which tracks greenhouse gas emissions from the transportation sector, electric vehicle adoption and native seeding and planting by MnDOT among other measures. Since 2016, transportation has been the largest contributor to greenhouse gas emissions in the state. Climate change impacts from high temperatures, large storms and more are impacting transportation. These impacts are anticipated to continue and intensify as Minnesota's climate continues to warm.

CHAPTER 2

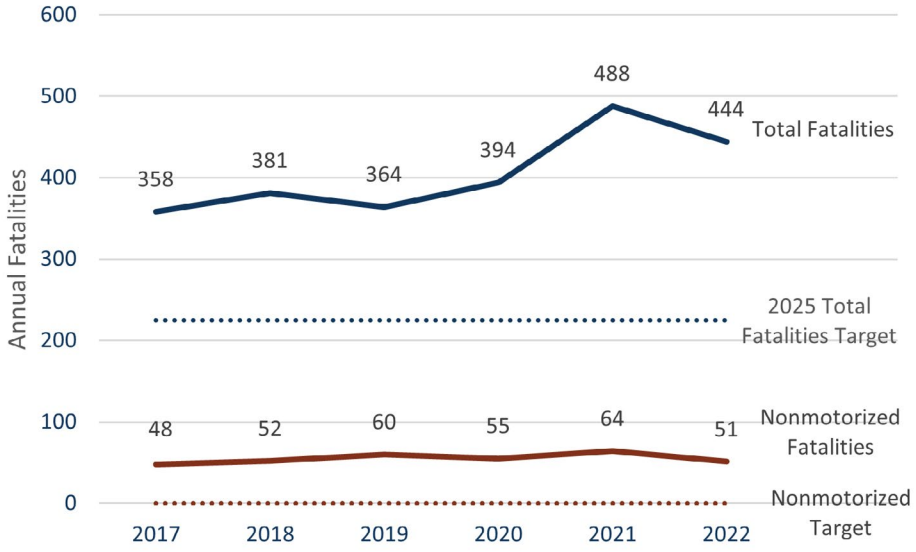
TRANSPORTATION SAFETY: CONDITIONS AND TRENDS

TRANSPORTATION SAFETY

MnDOT measures transportation safety improvements in the number of projects implemented, and in the reduction of fatal and serious injury crashes across the entire roadway system. The Strategic Highway Safety Plan set targets to measure the state's progress in Transportation Safety. MnDOT aims to help the state reach 225 or fewer fatalities and 980 or fewer serious injuries by 2025. The long-term goal in coordination with the Toward Zero Deaths (TZD) program is to eliminate fatalities and serious injuries on Minnesota roadways.

On an average day in 2022, at least one person died on Minnesota roadways (444 deaths total [see Figure 2-5]). This vehicle crash-related fatality total is above the statewide TZD goal of fewer than 225 deaths per year by 2025. With 1,913 serious injuries in 2022, Minnesota was well above the TZD target of 1,200 or fewer serious injuries. After a decade of minimal change in roadway fatalities and serious injuries, crashes spiked sharply in 2021 and 2022.

Figure 2-5: Traffic Fatalities on Minnesota Roads, 2017-2022



ADVANCING TECHNOLOGY

Transportation technology is rapidly changing how the state highway system is used, planned, designed, built and maintained. Technology like traffic condition monitoring, maps, on-board vehicle monitors and real-time transit information have improved the ability for people and goods to move around Minnesota. Increasingly, communications and technology need to be integrated into the system to ensure transportation can meet its goals.

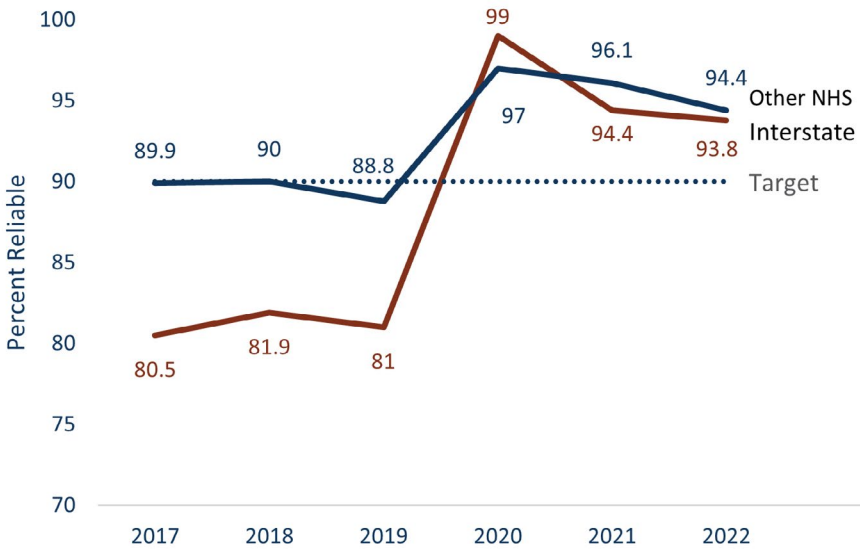
MnDOT currently measures technology performance through the Statewide Intelligent Transportation System (ITS) Plan. The ITS Plan contains 12 performance measures spread over 6 categories - safety, mobility, fiscal responsibility and sustainability, operations and maintenance, asset management and consistency. ITS infrastructure condition is tracked in the Roadside Infrastructure category. Additionally, the Connected and Automated Vehicles office (CAV-X) is currently developing performance measures centered upon connected and automated vehicle technology implementation.

CRITICAL CONNECTIONS: CONDITION AND TRENDS

HIGHWAY MOBILITY

MnDOT tracks reliability on the NHS. Travel time reliability is important for the public and freight operators. For individual travelers, reliability may dictate what mode or travel route to use, or it may impact departure times. It is also a required federal measure. Figure 2-6 shows reliability on the Interstate and Other NHS since 2017. Due to the COVID-19 pandemic, reliability considerably improved in 2020 and has remained well above the target of 90% reliable.

Figure 2-6: Statewide Travel Time Reliability, 2017-2022

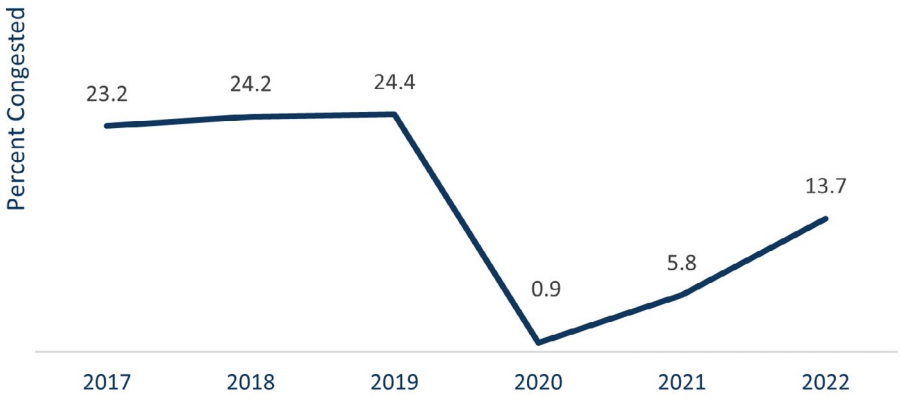


MnDOT recently adopted a measure of average delay per person in the Twin Cities Metro area. In 2018, there was 9.7 minutes of delay, slightly above the target of 9 minutes of delay. MnDOT is developing a methodology to track this measure moving forward.

MnDOT also tracks congestion on Twin Cities NHS urban freeways by measuring the percentage of miles where vehicles are traveling below 45 miles per hour during morning or evening peak periods.

The metro area freeway system had a marginal increase in the percentage of miles of freeway congested, from 24.2% in 2018 to 24.4% in 2019. The COVID-19 pandemic stay-at-home order decreased congestion by 30-50% initially and it remains at a 15-20% decrease. In 2020, only 1.4% of freeway miles were operating below 45 miles per hour during peak periods. Since 2020, congestion has increased to 13.7% of freeway miles operating below 45 miles per hour in peak periods.

Figure 2-7: Urban Freeway Miles Congested in the Twin Cities, 2017-2022

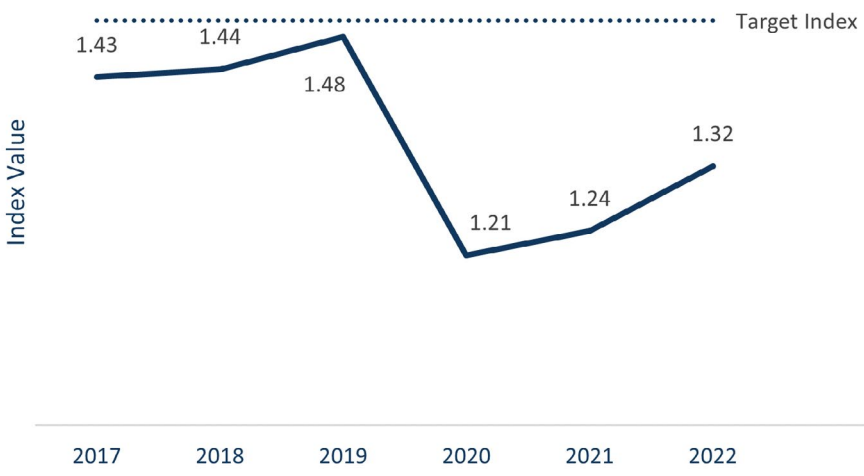


FREIGHT

Freight includes the movement of all goods that travel in Minnesota across all modes. This includes trucks and other heavy commercial vehicles, rails, water ports, pipelines and air transport. Truck-only trips remain the primary means of shipping goods by value, but the share moved by other modes is increasing.

Truck Travel Time Reliability Index (TTTRI) is a performance measure that MnDOT monitors and is a required federal performance measure. TTTRI measures the variation in commercial truck travel times on the Interstate system. An index value of 1 is the lowest possible score and indicates the highest level of travel reliability. MnDOT's target is 1.5. In 2022, the most recent data available, Minnesota's TTTRI was 1.32. The COVID-19 pandemic caused fewer people to be on the road and resulted in lower TTTRI for 2020 and 2021 before picking up in 2022. However, the 2022 TTRI is still below pre-pandemic levels.

Figure 2-8: Statewide Truck Travel Time Reliability, 2017-2022

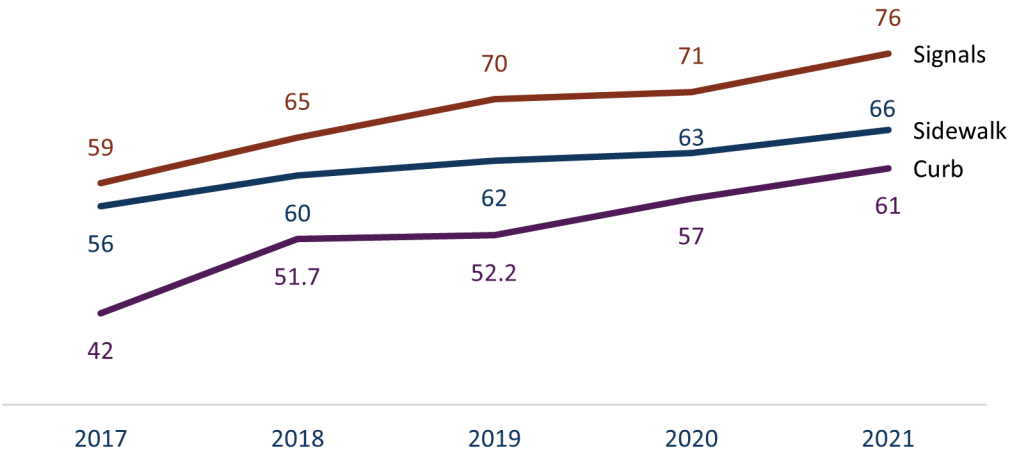


PEDESTRIAN AND BICYCLE

Minnesota's statewide walking, rolling and bicycling trends can be seen in the results of MnDOT's Omnibus Survey, where respondents are asked which transportation modes they used over the past year. MnDOT's Omnibus Survey is a biennial public opinion survey that provides department leadership, managers and program staff with public feedback on MnDOT's core operations. The 2017 Omnibus Survey indicated 28% of respondents either walked or used a wheelchair or mobility device at least a few times per week, while 9% said they bicycle at least a few times per week. In 2019, 31% of respondents indicated they either walked or used a wheelchair or mobility device at least a few times per week, while 8% said they bicycle at least a few times per week. During 2020, COVID-19 had a substantial impact on the frequency of bicycling and walking statewide. Twenty percent of survey respondents indicated they walked or used a wheelchair more due to COVID-19 and 13% of survey respondents indicated they bicycled more due to COVID-19.

MnDOT also measures the condition of curb ramps and sidewalk (miles) and tracks the percentage that is compliant with ADA standards. ADA compliance is a federal standard that ensures accessibility for people with disabilities. Figure 2-9 shows the percent compliance of pedestrian infrastructure on state highways. Since 2017, MnDOT has made great progress on ADA compliance. Each pedestrian infrastructure asset is at least 60% compliant statewide. MnDOT is on track to meet its goal of being substantially compliant with ADA by 2037.

Figure 2-9: Percent Substantially Compliant, 2017-2021



HEALTHY EQUITABLE COMMUNITIES: CONDITIONS AND TRENDS

LOCAL PARTNERSHIPS

MnDOT does not have adopted performance measures for Local Partnerships but tracks investments in this category in several ways. For jurisdictional transfers, MnDOT tracks the miles of roadway transferred to other jurisdictions. For Transportation Economic Development, MnDOT counts the number of projects funded, jobs supported through transportation investment and leveraged local and private funds. For the Local Partnership Program, MnDOT tracks the number of projects partnered on and leveraged funds. For landscape partnerships and municipal agreements, MnDOT tracks the miles of roadway with green infrastructure improvements.

Partnering with local communities has increased in importance as local partners have received competitive grants for projects on the state highway system. MnDOT will continue to identify how many projects and how much investment is led by our local partners.

MAIN STREETS/URBAN PAVEMENTS

Main Streets/Urban Pavements is a new investment category in MnSHIP. Currently, there is not a performance measure for this category, but these investments support the pavement condition targets. Investment in Main Streets/ Urban Pavements also helps achieve goals for ADA compliance, pedestrian and bicycle system completion and partnering with local communities.

OTHER: CONDITIONS AND TRENDS

PROJECT DELIVERY

Project Delivery is critical to ensuring timely and efficient delivery on all projects constructed on the state highway system. While performance is not measured for this category, MnDOT tracks how much it has spent on Project Delivery investments as part of its overall investment program.

Historically, Project Delivery has accounted for approximately 20% of MnDOT's annual capital investment program. However, the Project Delivery percentage changes year-to-year based on the mix of investments it supports. For example, when MnDOT delivers a program that includes a number of expansion projects, it invests more on Project Delivery due to the increased need for right of way purchases and design of more complex projects. When the majority of MnDOT's program consists of asset preservation projects in settings that are less complex such as rural areas, a smaller percentage of its overall program goes toward Project Delivery. MnDOT strives to reduce the overall need for Project Delivery through innovative design, early project identification and shared services.


MIDWEST DIESEL
TRUCK & TRAILER REPAIR

CHAPTER 3

REVENUE OUTLOOK

MnSHIP is a fiscally constrained plan, meaning it sets investment priorities only for the revenues that are expected to be available during the next 20 years. MnDOT identified the various revenue sources that are used to fund the state highway system and analyzed the trends affecting these revenues. This analysis provided the information necessary to develop revenue assumptions and projections for the 20-year planning period.

Several state and federal revenue sources provide dedicated transportation funding including for construction projects on the state highways system (Figure 3-1). Four primary sources provide funding to the State Trunk Highway Fund. These sources are:

- Federal gas tax and general funds
- State gas tax
- Motor Vehicle Registration Tax
- Motor Vehicle Sales Tax

In 2017, the Minnesota Legislature provided additional funding by statutorily transferring some existing transportation related revenue (e.g., sales tax on auto parts) to the Highway User Tax Distribution Fund. These transfers are assumed to continue. Existing state trunk highway bonds (i.e., bonds authorized by the Minnesota Legislature at the time MnDOT developed the revenue projections) are also included in the MnSHIP revenue projections.

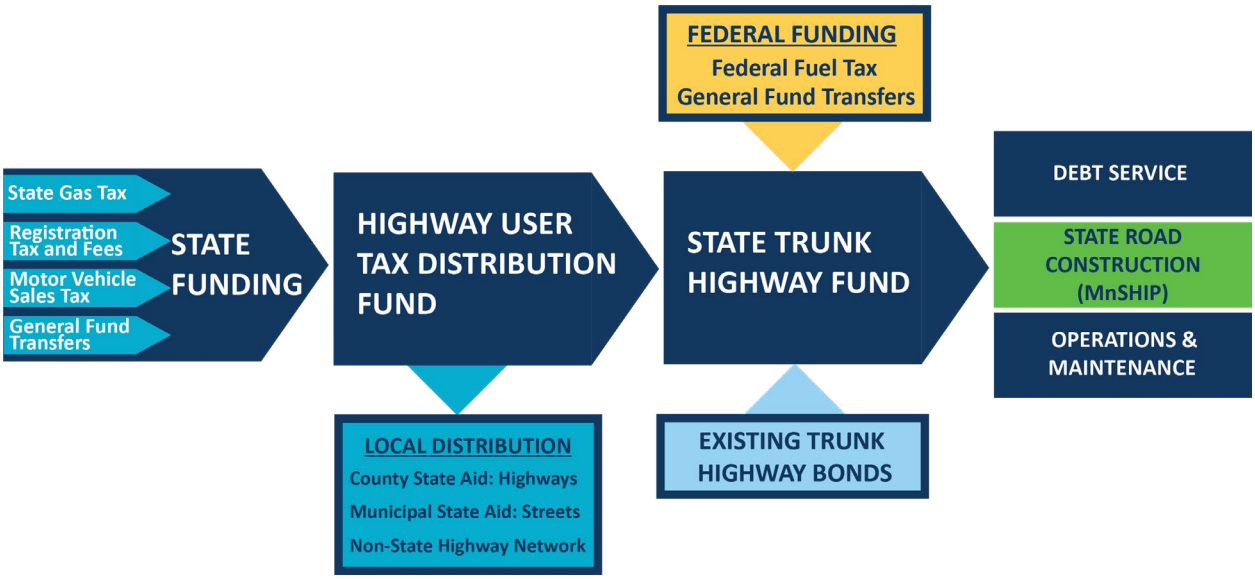
CHAPTER 3

Revenue Outlook

20-year projections inherently have a high degree of uncertainty. To account for potential new federal or state laws, trends and other funding factors that could change the anticipated future revenue, MnDOT developed a series of revenue scenarios. These revenue scenarios present a range of possible funding estimates over the 20-year planning horizon, but do not represent all possible combinations or possible futures. Based on these revenue scenarios, MnDOT used a range of $30 to $33 billion to inform the development of an initial draft investment direction.

In 2023, after the revenue projections had been completed and a draft investment direction had been developed, the Minnesota legislature passed a bill providing additional funding for transportation. This increased the anticipated capital funding for state highways by $5.2 billion over the next 20 years. The sections below describe the process for developing the original MnSHIP revenue scenarios as well as changes due to the 2023 legislation.

Figure 3-1: Minnesota's Primary Transportation Funding Sources for State Highways



Based on revenue scenarios, MnDOT used a range of $30 to $33 billion to inform the development of an initial draft investment direction.

Federal Revenue Trends

Federal funding of state highways comes primarily through taxes on the sale of gasoline and diesel fuel which are collected in the Highway Trust Fund. The federal gas tax remains at 18.4 cents-per-gallon and was last raised in 1993. Since 2008, revenue from the federal gas tax has not been sufficient to cover federal spending on transportation. As of 2022, congress has transferred $200 billion from the Treasury's unrestricted-use General Fund to the dedicated Highway Account to cover that additional spending.

INFRASTRUCTURE INVESTMENT AND JOBS ACT

The Infrastructure Investment and Jobs Act (IIJA), also known as the Bipartisan Infrastructure Law, was signed into law in November 2021. For the purposes of MnSHIP, IIJA provides federal formula funding from 2022 to 2026 for highways and bridges as well as competitive grant funding. MnDOT must make some assumptions about the levels of future federal funding after the bill ends in 2026. MnDOT anticipates most federal formula program funding for highways to continue past the IIJA years.

FEDERAL DISCRETIONARY GRANT PROGRAMS

IIJA includes an unprecedented amount of competitive grant funding (more than $100 billion) to states that strive to improve outcomes in areas of safety, asset preservation, carbon reduction, climate resiliency, restorative justice, technology and more. Minnesota will be eligible to compete for this funding and is well positioned to add new programs, plans and funding for carbon reduction, climate resiliency, restorative justice, broadband and electric vehicle infrastructure into the transportation system. It is likely that MnDOT will receive grants from these federal discretionary programs for state highway projects. Since these programs are competitive, MnDOT cannot assume a funding level from these programs. As a result, these funds are not included in the MnSHIP revenue projections. Any federal discretionary grants awarded to MnDOT would be in addition to the MnSHIP revenue projections.

CHAPTER 3

Initial State Revenue Trends

STATE GAS TAX

The 28.5 cents-per-gallon state gas tax was fixed and has not increased or decreased with the price of gas. This has changed with the 2023 legislation. Those changes are detailed in the Final 20-year Revenue Projection section.

Recently, state gas tax revenues fell slightly due to less travel during the COVID-19 pandemic. While the forecast anticipates state gas tax revenues to rebound post-pandemic, improvements in vehicle fuel efficiency mean that a tank of gas will go farther in the next 20 years. The overall impact is a slight annual decline of -0.5% in state gas tax revenue, turning what was, before the pandemic, the number one contributor to state highway funding into the 3rd largest source of state revenue by the mid-2030s.

MOTOR VEHICLE REGISTRATION TAX

Popularly known as “tab fees”, revenue growth is based on the growing average vehicle prices and increasing numbers of vehicles registered in the state. Tab renewal fees, based on initial vehicle pricing, provide an ongoing revenue boost. Electric vehicles also pay an additional $75 surcharge in registration tax. The motor vehicle registration tax (including the EV surcharge) is predicted to be the largest revenue source in the State Trunk Highway Fund by 2025. The method for calculating the annual fee for vehicles was changed by the 2023 Legislature.

MOTOR VEHICLE SALES TAX

While new vehicle sales have slowed recently, higher vehicle prices are driving the growth of revenues. Motor Vehicle Sales Tax is predicted to rise at a higher rate than anticipated in the previous revenue projections for the 2017 MnSHIP. The 2023 Minnesota Legislature also increased the sales tax rate of motor vehicles, which will increase the amount of revenue generated by the tax.

GENERAL FUND TRANSFER REVENUES

In 2017, sales tax on auto parts, motor vehicle rental and sales tax and motor vehicle lease sales tax were transferred from Minnesota’s General Fund to the Highway User Tax Distribution Fund by the Minnesota Legislature. These funds provided a modest boost to transportation funding. These transfers are assumed to continue and grow slightly over the next 20 years. However, these taxes are different than the other three state revenue sources because they are not constitutionally dedicated to transportation and could be transferred back to the General Fund by the Minnesota Legislature.

STATE BONDING

In addition to the four main sources of funding, Minnesota also sells transportation bonds to support highway improvements. The primary purpose of these and other transportation bonds is to enable MnDOT to accelerate the delivery of projects and avoid construction cost increases due to inflation. However, bonds should be understood as a financing approach, as they must be repaid with interest from state trunk highway funds.

Since 2017, the Minnesota Legislature has authorized $1.2 billion in trunk highway bonds for improvements to the state highway system and $900 million in bonding for the Corridors of Commerce program. It is anticipated that $1.4 billion of these bonds will fund projects in the first 4-5 years of this MnSHIP.

Only existing state trunk highway bonds are considered a part of the MnSHIP revenue projections. Any potential bonding that comes after the adoption of this plan is not reflected in the investment direction in MnSHIP.

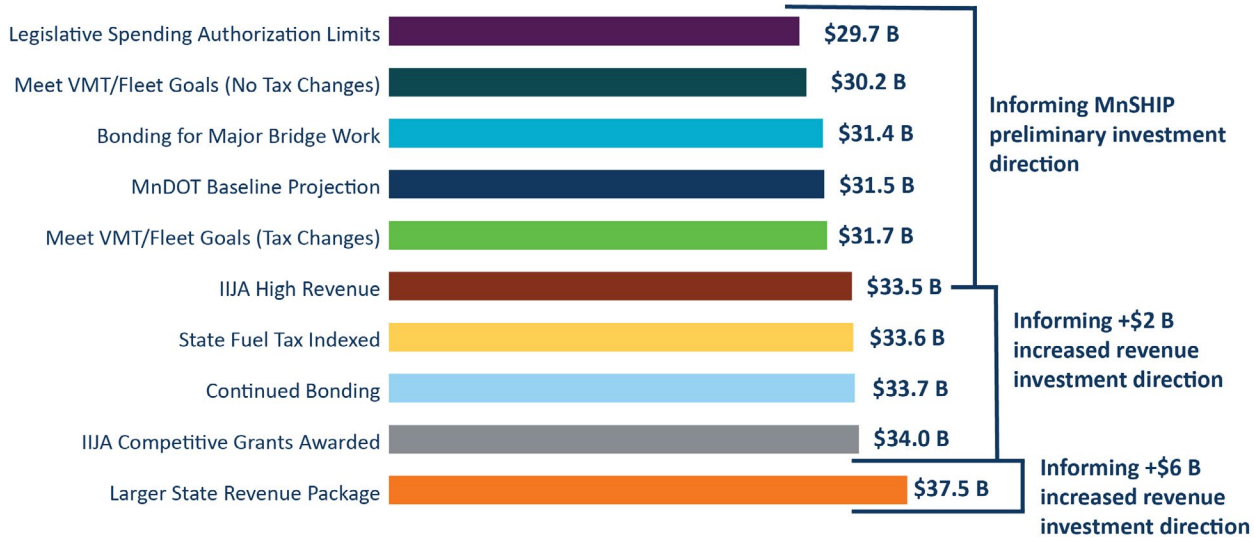
Initial 20-Year Revenue Projection

MnDOT developed a series of revenue scenarios representing a range of possible funding over the 20-year planning horizon to account for potential new federal or state laws, trends and other funding factors that could change the anticipated future revenue. Based on these revenue scenarios, MnDOT used a range of $30 to $33 billion to inform the development of a draft investment direction. The MnSHIP project team used the midpoint of this range to set the preliminary investment direction of $31.5 billion. Figure 3-2 presents the full range of initial revenue scenarios from $29.7 billion on the low end to $37.5 billion on the high end over the 20-year planning horizon.

The increasing revenue scenarios set the basis for the increased revenue budget that was used for the second round of public engagement. The public was asked for their priorities to spend up to an additional $6 billion for state highways.

More detail on these revenue scenarios is available in Appendix C: Financial Summary.

Figure 3-2: Revenue Scenarios Impact on Draft MnSHIP Investment Direction



Final 20-year Revenue Projection

Immediately after the second round of public engagement closed, the state legislature passed a bill that increased transportation funding for MnDOT.

These changes resulted in an estimated additional $5.2 billion for state highways over the next 20 years. The change in funding by component is:

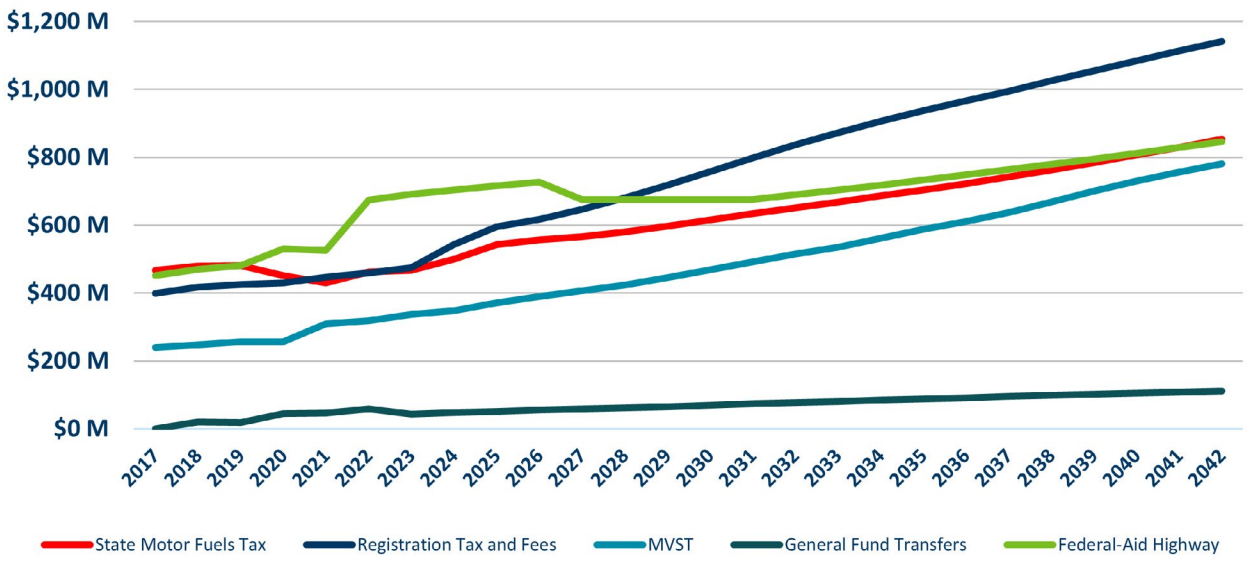
• Gas Tax: +$2.5 billion. Starting in 2024, the per-gallon state gas tax rate will be tied to historical levels for MnDOT's construction cost index (CCI) which tracks inflation for building roads and bridges. Annual rate increases will be capped at 3% from 2026 onward (the annual average CCI growth rate has exceeded 4% over the long run). Because crude oil is a major cost driver for pump prices as well as construction activity, indexing the gas tax in this way is designed to better balance tax revenue and investment cost.

• Registration Tax: +$2.0 billion. Upcoming adjustments include raising the registration tax rate—from 1.285% to 1.575%—and slowing the vehicle depreciation schedule over the lifetime of cars and trucks. In combination, the higher rate and vehicle value factors generate annual growth of 4.5%, widening the lead that registration tax is expected to hold over all other funding sources in the later years of the plan.

• Motor Vehicle Sales Tax: +$400 million. The sales tax rate on motor vehicles will match the general state sales tax rate of 6.875%, up from today's 6.5%. Modestly accelerating future MVST growth, it is still forecast to remain the smallest share of constitutionally dedicated revenues.

• General Fund Transfer: +$300 million. Previously held at a fixed amount, the General Fund contribution from auto parts sales will be adjusted to increase over time, with annual inflation modeled at 3%. All elements of the General Fund transfer remain subject to revision in future legislation, but this risk is limited by the size of the transfer relative to total funding allocated to construction—less than 10% for the duration of the plan.

Figure 3-3: State and Federal Revenue Trends (state highway share): Flows into Trunk Highway Fund through 2042



Summary

The final 20-year revenue projection for MnSHIP is $36.7 billion for state highway construction. This is the funding level used for development and adoption of the final investment direction as described in Chapter 6: Investment Direction.


NORTH
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SCHOOL

CHAPTER 4

INVESTMENT NEEDS

Substantial capital investments are needed to keep Minnesota's almost 12,000-mile state highway system in a condition that supports a strong economy and a high quality of life for Minnesotans. Chapter 4 provides a cost analysis of the investments needed on the state highway system through the year 2042 in six investment areas: System Stewardship, Climate Action, Transportation Safety, Critical Connections, Healthy Equitable Communities and Other. The rest of this chapter contains a breakdown of the investment need by MnSHIP investment category and explains how MnDOT developed its needs and assumptions.

Definition of Needs in MnSHIP

MnDOT defines needs as either the costs necessary to meet performance-based targets or the costs related to achieving key system goals. Satisfying both sets of transportation needs would allow MnDOT to align outcomes on the state highway system with the 16 legislative goals for transportation and the objectives outlined in the Minnesota GO Vision and the Statewide Multimodal Transportation Plan and manage the largest risks in its investment categories. MnDOT calculated the needs of each investment category based on this definition.

To arrive at the costs associated with meeting performance-based targets and other key goals for the state highway system, technical work groups used both performance measures and risk assessment to define performance levels in each investment category. Each performance level outlines a different amount of potential investment along with the improvements, outcomes, risks and strategies associated with it. The highest performance level for each investment category typically corresponds to the total need described in this chapter. The total need for the state highway system is estimated to be up to $57 billion over 20 years, compared to $37 billion in available revenue.

In addition to the MnDOT identified need process, MnDOT conducted engagement with city and county engineers regarding local improvement priorities on the state highway system. These stakeholders identified an additional $5 billion in state highway needs beyond the MnSHIP identified needs.

Investment Category Folios provide more detail regarding the performance levels for each category.

CHAPTER 4

NEEDS ASSOCIATED WITH ACHIEVING PERFORMANCE TARGETS

As described in Chapter 1: Plan Overview, MnDOT has used performance measures to help guide capital investment and operational decisions since the 1990s. The process of tracking, reviewing and reporting on conditions on the state highway system helps MnDOT and the public evaluate the impact and effectiveness of MnDOT programs.

Historically, MnDOT has set targets designed to achieve optimal or desired performance levels in particular investment categories. These targets have typically been based on lowest life-cycle costs, customer expectations or a policy priority. Others have been trend-based – set by looking at trends and outcomes associated with historical spending levels. More recently, MnDOT has also established performance targets that it determines to be an acceptable risk. Current performance condition and adopted performance measures and targets are at minnesotago.org.

MnDOT used performance measures and costs associated with implementing performance-related strategies to develop its needs estimates in the following MnSHIP categories:

- Pavement Condition
- Bridge Condition
- Roadside Infrastructure
- Rest Areas
- Freight
- Traveler Safety
- Highway Mobility
- Pedestrian

NEEDS ASSOCIATED WITH OTHER KEY SYSTEM GOALS

State highway system needs also include investments that are important for delivering an efficient and diversified program of capital improvements that achieve multiple benefits. The categories listed below do not currently have established performance measures or targets or MnDOT does not have a method to estimate the impact of investment on a related performance measure. Nevertheless, they are critical in helping MnDOT to make progress toward the Minnesota GO Vision and Legislative Goals:

- Climate Resilience
- Advancing Technology
- Bicycle
- Local Partnerships
- Main Streets/Urban Pavements
- Project Delivery
- Small Programs

Without current performance measures or targets, MnDOT used alternative methods to estimate the needs in these categories. These needs were based on the following:

- The cost to implement statewide and district modal plans. The investment needs for bicycle infrastructure are based on completing improvements identified in the district bicycle plans and a portion of the needs for pedestrian improvements—those unrelated to 1990 Americans with Disabilities Act compliance—are based on implementing needs identified in the Statewide Pedestrian System Plan.

- The cost to address emerging needs. This plan includes multiple new investment areas that are emerging need areas for transportation: climate resilience, advancing technology and livability. Needs in these areas were calculated to manage the greatest risks and meet the goals identified in the Minnesota GO Vision and the SMTP.
- The cost to manage greatest risks. MnDOT calculated needs for the Local Partnerships and Main Streets/ Urban Pavements categories by determining the amount needed to manage the greatest risks in this category.
- The cost to support delivery of the capital program. Project Delivery needs are the costs necessary to bring all identified needs in other categories from conception to completion based on historical expenditures in this area.
- The cost to implement programs. Investment need for specific programs within each category are the costs to implement those programs. This includes federal programs with set funding such as the Highway Safety Improvement Program and National Highway Freight Program as well as MnDOT led programs such as Small Programs.

Summary of Needs

In developing its assumptions for MnSHIP, MnDOT projected the investments necessary to meet state highway transportation needs through 2042. The total need for the Minnesota state highway system is calculated to be up to $57 billion over 20 years. Figure 4-1 shows a comparison between available revenue and total need. Figure 4-2 shows the distribution of need by investment category. This level of investment would ensure that the state highway system meets all federal and state performance requirements and makes substantial progress toward realizing the Minnesota GO Vision. It would also allow MnDOT to effectively manage its greatest risks in each investment category. Figure 4-3 summarizes what MnDOT would be able to accomplish in each investment category under a program with no fiscal constraints. Please note: Needs below are listed by objective category. The order does not reflect priority.

In addition to the MnDOT identified need process, MnDOT conducted engagement with city and county engineers regarding local improvement priorities on the state highway system. These stakeholders identified an additional $5 billion in state highway needs beyond the MnSHIP identified needs.

Figure 4-1: Comparison of Investment Need and Available Revenue

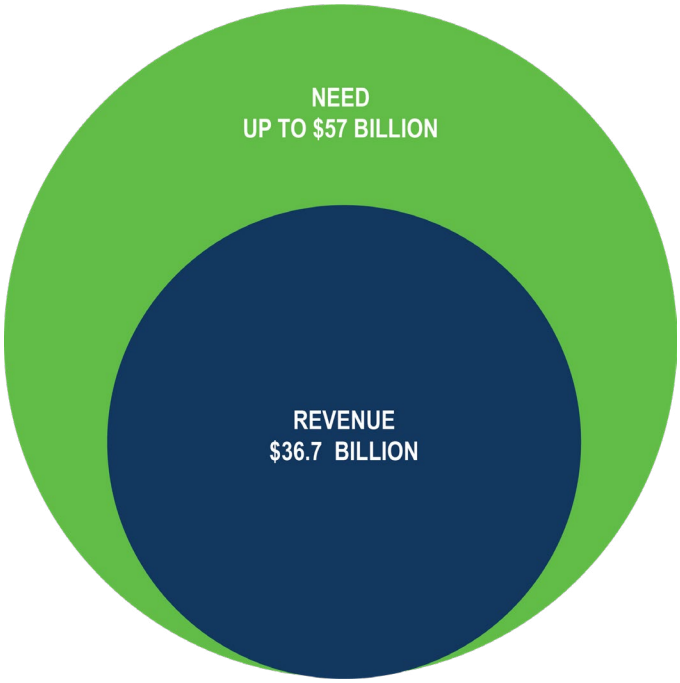

Figure 4-2: 20-Year Capital Highway Transportation Needs (by Investment Category)

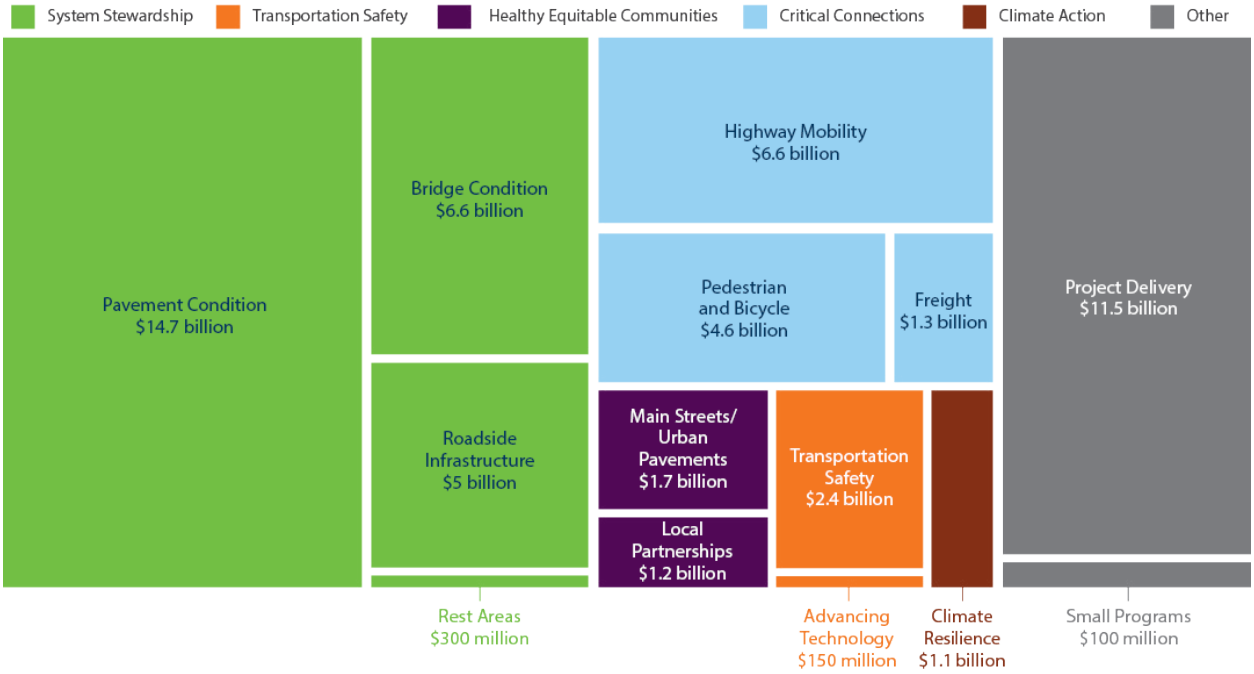

Figure 4-3: 20-Year Capital Highway Transportation Needs and Projected Outcomes (by Investment Category)

INVESTMENT CATEGORY	OBJECTIVE AREA	20-YEAR OUTCOMES BASED ON PERFORMANCE TARGETS OR OTHER KEY SYSTEM GOALS	ESTIMATED 20-YEAR NEED	TOTAL (%) OF NEED
Pavement Condition	System Stewardship	Meet pavement performance target of 2% poor and 70% good condition on Interstates, 4% percent poor and 65% good condition on non-Interstate NHS, 8% poor and 60% good condition on non-NHS.	$14.7 billion	25.6%
Bridge Condition	System Stewardship	Meet bridge performance target of 5% poor and 55% good condition on NHS bridges, 8% poor and 50% good condition on non-NHS bridges.	$6.6 billion	11.5%
Roadside Infrastructure	System Stewardship	Meet performance targets listed in the Transportation Asset Management Plan for the condition of roadside infrastructure assets such as culverts, lighting, traffic signals, overhead signs and noise walls.	$5.1 billion	8.9%
Rest Areas	System Stewardship	Meet performance target of 4% of rest area buildings in poor condition and resurface a rest area pavement every 1-2 years.	$300 million	0.5%
Climate Resilience	Climate Action	Invest in program to address infrastructure needs related to extreme weather events and implement the Minnesota Statewide Pedestrian System Plan climate change mitigation strategy to add/improve green infrastructure along state highways.	$1.2 billion	2.1%
Transportation Safety	Transportation Safety	Continue delivering the Federal Highway Safety Improvement Program and address locations that have a fatal/serious injury crash rate in the top 10%.	$2.4 billion	4.2%
Advancing Technology	Transportation Safety	Increase Intelligent Transportation Systems (ITS) solicitation to fund the Transportation System Management and Operations Business Plan, invest in immediate and medium fiber network needs, pilot programs to invest in roadway improvements to integrate with changing vehicle technology.	$150 million	0.3%
Freight	Critical Connections	Address major freight bottlenecks. Maintain weigh stations and highway rail crossing equipment. Expand truck parking at MnDOT owned locations.	$1.3 billion	2.3%
Highway Mobility	Critical Connections	In the Twin Cities Metro, invest to meet delay target of 9 minutes per workday per person. In Greater Minnesota, invest in spot mobility improvements at locations identified in the Greater MN Mobility study.	$6.6 million	11.5%
Pedestrian and Bicycle	Critical Connections	Bring all sidewalks, curb ramps and signalized intersections to total ADA-compliance by 2037, address pedestrian network gaps, add new pedestrian bridges and implement the District Bicycle Plans.	$4.6 billion	8.0%

INVESTMENT CATEGORY	OBJECTIVE AREA	20-YEAR OUTCOMES BASED ON PERFORMANCE TARGETS OR OTHER KEY SYSTEM GOALS	ESTIMATED 20-YEAR NEED	TOTAL (%) OF NEED
Local Partnerships	**Healthy Equitable Communities**	**Expand partnerships with stakeholders, increased landscaping, implement the 2014 Jurisdictional Realignment Project Report and pilot program for livability improvements.**	**$1.2 billion**	**2.1%**
Main Streets/ Urban Pavements	**Healthy Equitable Communities**	**Provide funding on urban pavement projects to address ADA compliance, complete streets and local priorities.**	**$1.7 billion**	**3.0%**
Project Delivery	**Other**	**Efficiently deliver projects through adequate consultant services, supplemental agreements, construction incentives and right of way acquisition.**	**$11.5 billion**	**20.0%**
Small Programs	**Other**	**Continue to fund unforeseen issues and historic property improvements.**	**$100 million**	**0.2%**
TOTAL			$57 BILLION	100%

SYSTEM STEWARDSHIP NEEDS

MnDOT estimates that it would cost $27.8 billion to meet performance targets and other key objectives for System Stewardship through 2042.

Figure 4-4: System Stewardship Investment Needs

SYSTEM STEWARDSHIP	INVESTMENT NEED
Pavement Condition	**$14.7 billion**
Bridge Condition	**$6.6 billion**
Roadside Infrastructure	**$5.1 billion**
Rest Areas	**$300 million**
TOTAL	$27.8 BILLION

PAVEMENT CONDITION NEEDS

Using the Pavement Management System model, MnDOT projected its future pavement needs for MnSHIP by calculating the 20-year investment needed to fulfill its performance goals. MnDOT used the following targets for the Interstate system, non-Interstate NHS and non-NHS roadway pavement miles:

- Interstate pavements: 2% in poor condition and 70% in good condition
- Other NHS pavements: 4% in poor condition and 65% in good condition
- Non-NHS pavements: 8% in poor condition and 60% in good condition

These are targets that would best position MnDOT to meet its federal and state requirements while also meeting customers' ride quality expectations.

Pavement Condition need is estimated to be $14.7 billion. At this level of investment in Pavement Condition, MnDOT would be able to:

- Invest in NHS and non-NHS roads to meet all pavement condition targets by 2042

BRIDGE CONDITION NEEDS

MnDOT measures its bridge performance based on structural condition, and has established targets for bridges on NHS and non-NHS highways:

- NHS bridges: 5% in poor condition and 55% in good condition (by deck area)
- Non-NHS bridges: 8% in poor condition and 50% in good condition (by deck area)

MnDOT uses the Bridge Office Replacement and Improvement System (BORIS) prioritization tool to identify its bridge investments. The total need amount in Bridge Condition is based on investing in all state highway bridges at optimal points in their life-cycles over the next 20 years. BORIS also accounts for other factors in ranking priority for bridge projects, such as traffic volume, highway classification and special vulnerabilities.

Bridge Condition need is estimated to be $6.6 billion. At this level of investment in Bridge Condition, MnDOT would be able to:

- Meet all performance-based bridge needs

ROADSIDE INFRASTRUCTURE NEEDS

MnDOT measures its Roadside Infrastructure performance based on structural condition and asset service life, depending on the asset. As part of the Transportation Asset Management Plan (TAMP) process, MnDOT set performance targets for 12 roadside assets. MnDOT used the following targets for estimating need:

- Culverts and Deep Stormwater Tunnels: 10% in poor condition
- High-Mast Light Towers: 6% in poor condition
- Intelligent Transportation Systems infrastructure: Various targets depending on the asset
- Noise Walls: 8% in poor condition
- Overhead sign structures: 6% in poor condition
- Traffic signals and lighting: 2% beyond useful life

Roadside Infrastructure need is estimated to be $5.1 billion. At this level of investment in Roadside Infrastructure, MnDOT would be able to:

- Meet performance targets (for those assets with adopted targets)
- Upgrade all pavement markings and traffic barriers to new standards

MnDOT will continue to refine its approach to estimating needs in this category through its asset management planning process.

REST AREA NEEDS

MnDOT measures rest area building condition through periodic assessments. As part of the 2022 TAMP, MnDOT set a target for rest area building condition of no more than 4% of buildings in poor condition. That would equate to 2 buildings on the system in poor condition at any time. MnDOT also began assessing parking lot pavement condition in terms of percent of parking lots in poor condition. There is no set condition target for parking lot pavement currently. Rest Area need is estimated to be $300 million. At this level of investment in Rest Areas, MnDOT would be able to:

- Meet performance target of 4% of rest area buildings in poor condition
- Resurface a rest area pavement every 1-2 years

CLIMATE ACTION NEEDS

MnDOT estimates that it would cost approximately $1.2 billion to meet its Climate Action needs through 2042. This is a new objective area in the SMTP. The Climate Resilience investment category is the only category under the Climate Action objective area. Investments in this category improve state highway infrastructure to withstand increasingly extreme weather events. Types of investments include addressing locations with recurring flooding issues and making proactive resilience improvements to limit weather impacts on the state highway system before they occur.

Climate Resilience need is estimated to be $1.2 billion. At this level of investment, MnDOT would be able to:

- Address 20-25 locations with flooding problems or locations that develop flooding issues in the future
- Fund 10-20 projects per year to proactively address infrastructure needs related to extreme weather events such as addressing vulnerable culverts
- Address all high return on investment snow trap sites
- Implement Minnesota State Pedestrian Plan climate change mitigation strategy to add/improve green infrastructure along 475 miles of state highways

TRANSPORTATION SAFETY NEEDS

MnDOT estimates that it would cost approximately $2.5 billion to meet its Transportation Safety needs through 2042.

Figure 4-5: Transportation Safety Investment Needs

TRANSPORTATION SAFETY	INVESTMENT NEED
Transportation Safety	$2.4 billion
Advancing Technology	$150 million
TOTAL	$2.5 BILLION

TRANSPORTATION SAFETY NEEDS

MnDOT estimated needs in Transportation Safety over the next 20 years by calculating the cost of implementing projects at locations with a high fatal or serious injury crash rate. This would enable MnDOT to address many sustained crash locations while also continuing its support of the Toward Zero Deaths initiative.

Transportation Safety need is estimated to be $2.4 billion. At this level of investment, MnDOT would be able to:

- Continue delivering the Federal Highway Safety Improvement Program
- Address intersections and segments that have a fatal/serious injury crash rate in the top 10% with additional safety investments

ADVANCING TECHNOLOGY

MnDOT estimated needs in Advancing Technology over the next 20 years by calculating the cost to implement the Transportation System Management and Operations Business Plan, invest in priority corridors for fiber network expansion and roadway improvements to integrate with changing vehicle technology.

Advancing Technology need is estimated to be $150 million. At this level of investment, MnDOT would be able to:

- Increase Intelligent Transportation Systems (ITS) solicitation to fund the Transportation System Management and Operations Business Plan
- Invest in immediate and medium fiber network needs
- Pilot programs to invest in roadway improvements to integrate with changing vehicle technology

CRITICAL CONNECTIONS NEEDS

MnDOT estimates that it would cost approximately $12.5 billion to meet its targets and key objectives for Critical Connections through 2042.

Figure 4-6: Critical Connections Investment Needs

CRITICAL CONNECTIONS	INVESTMENT NEED
Highway Mobility	**$6.6 billion**
Freight	**$1.3 billion**
Pedestrian and Bicycle	**$4.6 billion**
TOTAL	$12.5 BILLION

HIGHWAY MOBILITY NEEDS

MnDOT calculated its 20-year needs for Highway Mobility in the Twin Cities region by projecting the costs needed to meet the regional delay target of 9 minutes per workday per person. In doing so, MnDOT would increase investment in Active Traffic Management, transit-supportive improvements, spot mobility improvements, build out a majority of planned E-ZPass express lanes and fund strategic capacity expansion projects.

As part of the SMTP, MnDOT adopted a target to reduce per capita vehicle miles travelled 14% by 2040. Meeting that vehicle miles traveled reduction target would reduce highway mobility need in the Twin Cities area by $5 billion.

For Greater Minnesota, MnDOT identified its 20-year needs for Highway Mobility as the cost to implement spot mobility improvements at locations identified in the Greater Minnesota Mobility Study.

Highway Mobility need is estimated to be $6.6 billion. At this level of investment in Highway Mobility, MnDOT would be able to:

- Build out the traffic management system regionwide
- Support up to 10 arterial Bus Rapid Transit projects on or across state highways
- Fund over 200 spot mobility improvements in the Twin Cities region
- Build out the planned E-ZPass express lane system
- Increase investment in strategic capacity projects such as interchanges or auxiliary lanes
- Implement spot mobility improvements at 75-100 locations on the NHS in Greater Minnesota
- Fund top 8-10 larger expansion priorities or 15-20 smaller capacity expansion projects in Greater Minnesota

FREIGHT NEEDS

The Freight investment category includes needs for multiple areas including freight mobility and safety, weigh stations, state highway rail crossings and truck parking. Needs were based on statewide planning efforts for most areas including weigh stations, truck parking and freight bottlenecks.

Freight need is estimated to be $1.3 billion. At this level of investment, MnDOT would be able to:

- Continue the National Highway Freight Program and increase investment to address 6 major freight bottlenecks and safety improvements
- Maintain existing weigh stations and construct 3-7 new weigh stations in the state
- Replace all equipment at state highway rail crossings on a 20-year cycle and convert one passive crossing to active per year
- Expand truck parking at existing MnDOT owned locations and add 3 new locations in the state

PEDESTRIAN AND BICYCLE NEEDS

Pedestrian and bicycle investment and needs have been combined into one category for this plan. However, the needs were identified separately.

MnDOT calculated its 20-year needs for bicycle infrastructure as the costs required to implement the District Bicycle Plans and maintain existing and new separated bicycle facilities. MnDOT calculated its 20-year needs for pedestrian infrastructure as the costs needed to comply with the Americans with Disability Act (ADA), implement the Statewide Pedestrian System Plan investment strategies and improve pedestrian crossings over state highways.

Pedestrian and Bicycle need is estimated to be $4.6 billion. At this level of investment in Pedestrian and Bicycle, MnDOT would be able to:

- Be 100% ADA compliant by 2037 across all asset types
- Address network gaps in all areas of top 6.5% pedestrian needs on the state highway system (400-500 miles of roadway with improved pedestrian facilities)
- Add 10-15 pedestrian bridges
- Implement the District Bicycle Plans
- Maintain existing and new separated bicycle facilities to maintain a smooth ride

HEALTHY EQUITABLE COMMUNITIES

MnDOT estimates that it would cost approximately $2.9 billion to meet its key objectives for Healthy Equitable Communities through 2042.

Figure 4-7: Healthy Equitable Communities Investment Needs

HEALTHY EQUITABLE COMMUNITIES	INVESTMENT NEED
Local Partnerships	**$1.2 billion**
Main Streets/Urban Pavements	**$1.7 billion**
TOTAL	$2.9 BILLION

LOCAL PARTNERSHIP NEEDS

The Local Partnerships investment category includes needs for multiple areas including jurisdictional transfer, livability improvements and landscaping and municipal agreements. Jurisdictional Transfer needs are based on implementing the recommendations from the Jurisdictional Realignment Project Report.

Local Partnerships need is estimated to be $1.2 billion. At this level of investment in Local Partnerships, MnDOT would be able to:

- Transfer over 600 miles of highways
- Add 155 miles of shade trees, planters and pervious surface on state highway right-of-way
- Pilot livable communities program

MAIN STREETS/URBAN PAVEMENT NEEDS

Main Streets/Urban Pavement is a new investment category for this plan. Needs were identified in this category as urban pavement locations with ADA or local community needs that are not planned for a pavement reconstruction project.

Main Streets/Urban Pavements need is estimated to be $1.7 billion. At this level of investment in Main Streets/Urban Pavements, MnDOT would be able to:

- Address 225-250 urban pavement candidate locations to address ADA compliance and other local priorities

OTHER NEEDS

MnDOT estimates that it would cost approximately $11.6 billion for Project Delivery and Small Programs through 2042.

Figure 4-8: Other Investment Needs

OTHER	INVESTMENT NEED
Small Programs	$100 million
Project Delivery	$11.5 billion
TOTAL	$11.6 BILLION

SMALL PROGRAMS NEEDS

MnSHIP assumes MnDOT will continue to need a fixed amount of funds throughout the 20-year timeframe to respond to short-term, unforeseen issues and continuing commitments. This plan assumes $5 million per year or less than 1% of its total projected revenue to cover investments in Small Programs. Investments in Small Programs include historic properties, flood and slide repair and cleaning up contaminated materials.

If MnDOT does not fully spend its annual allocation for Small Programs in a given year, it directs the funds toward its highest unaddressed risks in the capital program.

PROJECT DELIVERY NEEDS

MnDOT estimates that achieving its targets and key objectives in the areas of System Stewardship, Climate Resilience, Transportation Safety, Critical Connections and Healthy Equitable Communities would require approximately $11.5 billion in Project Delivery through 2042.

MnDOT analyzed the amount historically spent in this category to establish the proportion of the overall investment that would be required to design, engineer and construct projects over the next 20 years. Approximately 20% of MnDOT's annual capital investment typically goes to supporting the delivery of projects. Project Delivery includes consultant services, construction incentives and supplemental agreements and right of way. The percentage of spending in project delivery has increased since 2017 MnSHIP as a result of more thorough analysis of actual expenditures and increased requirements for MnDOT projects.


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MnDOT

CHAPTER 5

DEVELOPMENT OF INVESTMENT DIRECTION

MnDOT used various factors, including an extensive public engagement process, to develop priorities for investments on the state highway system over the next 20 years. This chapter describes the process MnDOT used to develop the investment direction, described in more detail in Chapter 6: Investment Direction. During this process, MnDOT considered many criteria, including:

- Federal and state requirements
- MnDOT policy goals and objectives
- Technical information on the condition of the state highway system
- Investment needed to maintain the system in a state of good repair
- Estimated revenue over the 20 years of the plan
- Management of key risks to the system
- Public and stakeholder input

The process helped MnDOT complete several key tasks, including communicating future outcomes for the state highway system and gauging the degree to which different investment approaches align with public, stakeholder and agency expectations.

CHAPTER 5

DEVELOPMENT OF INVESTMENT APPROACHES

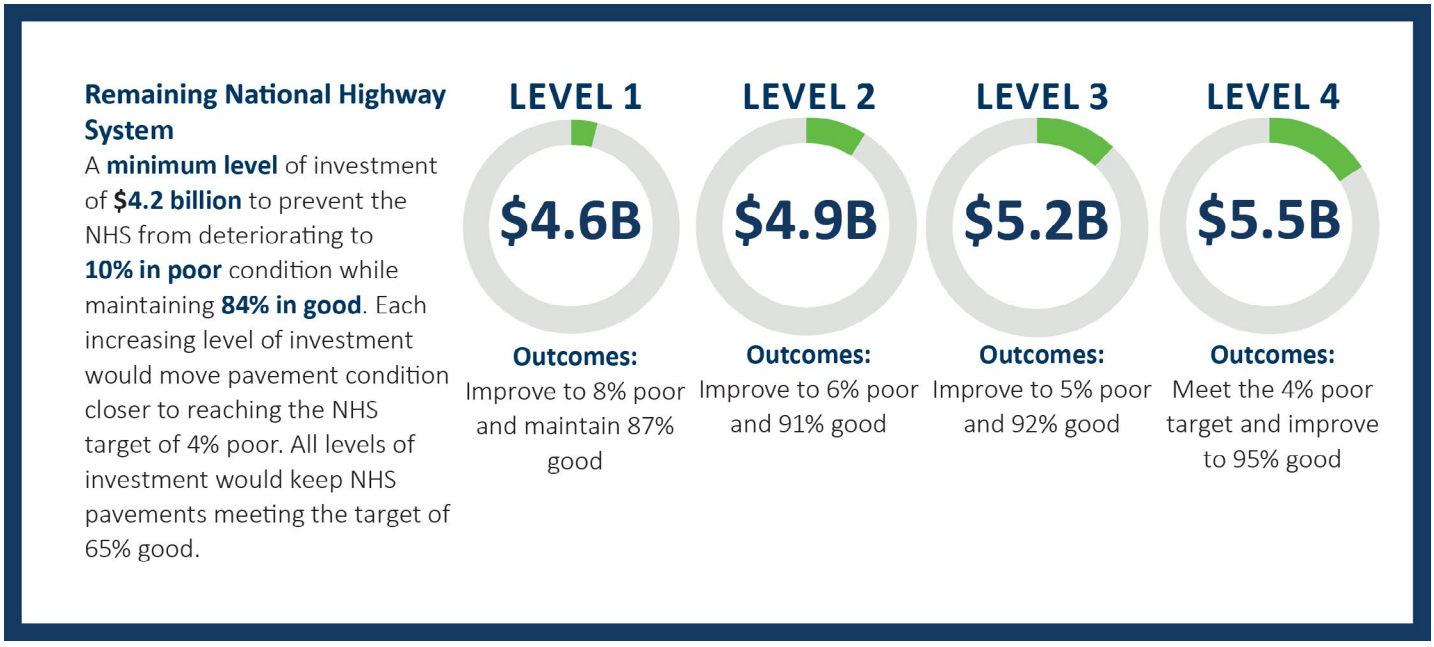
MnDOT identified investment needs up to $57 billion over the next 20 years (Chapter 4: Investment Needs) and projects to have $36.7 billion in revenue (Chapter 3: Revenue Outlook). Given that investment needs exceeded available revenue, trade-off decisions are necessary to balance numerous competing priorities. To illustrate these trade-off decisions, MnDOT developed performance levels for each investment category. These performance levels were the basis for an online budget tool and the six investment approaches used for public outreach.

DEVELOPMENT OF PERFORMANCE LEVELS

During 2021, MnDOT formed workgroups for each investment category. These workgroups, composed of planning and engineering staff from MnDOT as well as staff from other agencies, assisted in creating performance levels. Performance levels represent an investment amount for each investment category to reach specific outcomes identified by the workgroup. Each category had three to five performance levels (Performance Level 0 to Performance Level 2, 3 or 4). MnDOT used both performance measures and risk to define a potential range of investment in each category.

The lowest performance level, PL0, represents the minimum level of investment that is acceptable given MnDOT's responsibility for public safety and basic system functionality. The highest investment levels allow MnDOT to meet the goals and objectives for each investment category and to make more progress toward the Minnesota GO Vision. Each performance level corresponds with a different set of improvements, outcomes and risks (Figure 5-1). The Investment Category Folios provide more information on how performance levels were developed.

Figure 5-1: Excerpt from the Pavement Condition Investment Category Folio



CONVERSION OF PERFORMANCE LEVELS INTO INVESTMENT APPROACHES

MnDOT packaged different combinations of performance levels for each of the investment categories into six fiscally-constrained investment approaches as shown in Figure 5-2. These approaches were developed and named to highlight different potential focus areas of investments. At in-person events, MnDOT staff used the approaches with qualitative statements as part of paper surveys as shown in Figure 5-3.

Figure 5-2: Investment Approaches Developed for Public Outreach

Figure 5-3: Public Outreach Questionnaire Example

Each approach used the same baseline assumptions:

- $31.5 billion in revenue is available over the next 20 years (2023-2042).
- Each investment category must be funded to at least the lowest performance level.
- The Project Delivery investment category requires a constant amount of funding to deliver the program based on historical spending patterns.
- MnDOT will meet Americans with Disabilities Act substantial compliance standards for pedestrian infrastructure by 2037.
- MnDOT needs to meet federal and state legislative requirements.

MnDOT used these approaches to show how available funding could be divided among the investment categories over the next 20 years based on different priorities. This demonstrates a range of possible investments and outcomes.

In addition to the investment approaches, MnDOT used the performance levels in an online investment tool for the public to build their own state highway budget. The public engagement process is described in more detail in the following section.

PUBLIC ENGAGEMENT SUMMARY

The plan update process included several engagement phases. The focus of engagement was different in each phase. Engagement Phase 1 (July to September 2022) focused on different investment scenarios. MnDOT asked participants to identify which scenario they preferred and which investment categories are most important. Members of the public could also build their own investment scenario using an online budget tool. Engagement Phase 2 (March to May 2023) focused on getting feedback on the draft investment direction. MnDOT asked participants to review and comment on the draft investment direction, identify what they like or would change, and prioritize investments if additional funding was available.

The overall process used innovative strategies for in-person engagement, online engagement and engagement of traditionally underserved communities. MnDOT expanded its use of public engagement techniques from the 2017 plan including piloting a new web-based budget tool to gather input from transportation partners, stakeholders and the public on priorities for investment. This feedback helped MnDOT identify priorities for developing the 20-year investment direction.

The overall goals for public engagement for the MnSHIP plan were to:

- Create meaningful, equitable and safe opportunities for public involvement early and often, including a range of engagement opportunities, both in-person and online, that reduce barriers to participation.
- Use innovative engagement methods to reach more individuals statewide and pilot new tools to reach underrepresented communities in statewide planning engagement efforts.
- Offer a variety of platforms to provide input, including online and in-person engagement opportunities.
- Understand priorities from transportation partners, stakeholders, underrepresented communities and the public for investing on the state highway system.

MnDOT tracked demographics as part of this outreach effort. All engagement tools that were completed anonymously asked participants to identify their zip code, age, gender and race/ethnicity. Answering these questions was optional and voluntary. The project team collected and analyzed the data throughout the engagement effort to determine if certain populations were missed. The data helped refine the engagement strategy from month-to-month to address any shortfalls. After analyzing the data, MnDOT adjusted the engagement focus to increase the participation from traditionally underserved communities through targeted Facebook ads and a partnership with community-based organizations. The intended outcome was to reach a population that is representative of Minnesota's demographic makeup.

CHAPTER 5

ENGAGEMENT OVERVIEW

IN-PERSON ENGAGEMENT

MnDOT conducted in-person engagement to get feedback from a variety of participants, including transportation partners, stakeholders, underrepresented communities and the public.

- Stakeholder meetings informed partner agencies, government organizations and other stakeholder groups about the project so they could advise on plan elements and the overall project direction.
- MnDOT attended community events to collect survey results and share project information via poster boards and handouts. Events were selected to cover a range of locations and a diverse group of Minnesotans.

COMMUNITY-BASED ENGAGEMENT

MnDOT partnered with four community-based organizations to extend engagement to populations and locations where these groups had greater reach. MnDOT also used the following engagement tools and techniques to reach traditionally underserved populations.

- Tribal Outreach
- Facebook Targeted Ads
- University Student Groups Outreach

ONLINE ENGAGEMENT

MnDOT developed an interactive budgeting tool that allowed viewers to make budgeting decisions and trade-offs. Respondents expressed investment priorities in the context of the MnSHIP budget. The tool included an option to start from an initial investment direction or create your own budget based on the ranges available and included optional demographic questions. The budget tool was shared through social media, project website, stakeholder engagement and community events.

The survey that was used at in-person events was also available online. The online survey was distributed through partner and stakeholder online and social media networks and was translated into Spanish, Hmong and Somali. During Phase 1, the survey asked participants to identify their preferred approach among six potential investment approaches.

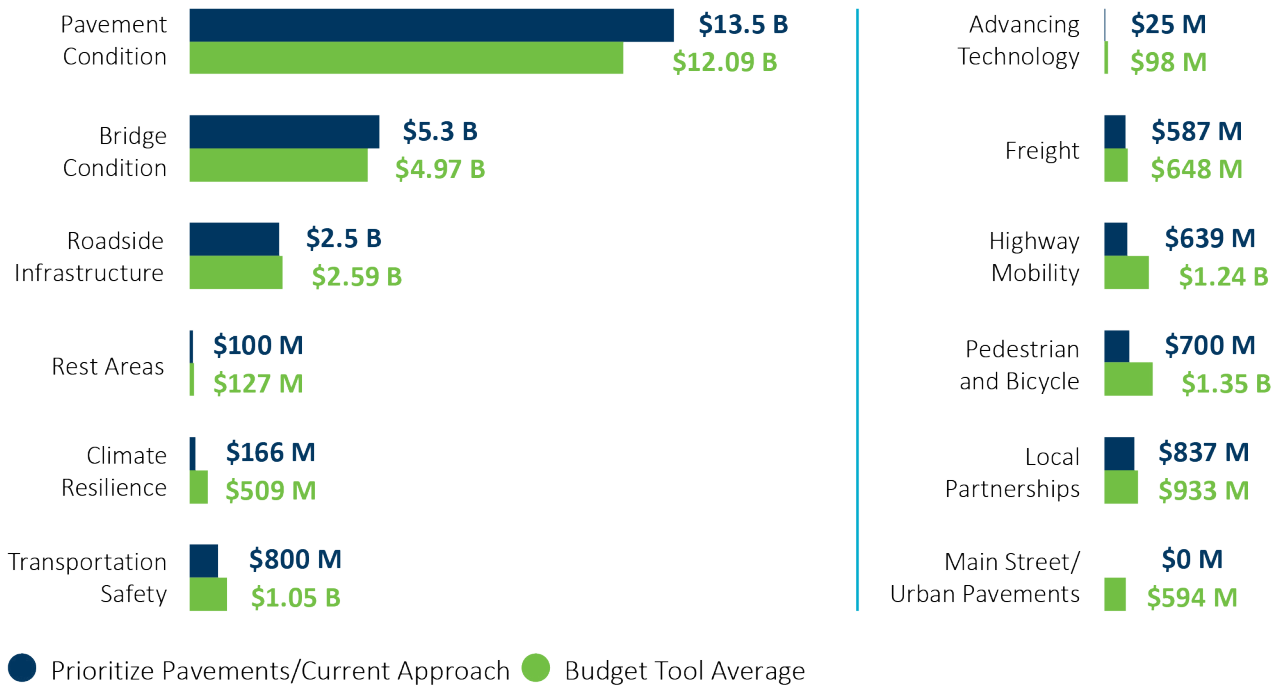
A full public outreach summary is available in Appendix B: Public Engagement Summary.

PHASE 1 ENGAGEMENT RESULTS

BUDGET TOOL

More than 1,000 people selected investment priorities in the online budget tool. On average, these people prioritized more funding towards Climate Resilience, Transportation Safety, Advancing Technology, Highway Mobility, Pedestrian and Bicycle and Main Streets/Urban Pavements than the current approach. People also selected less funding to Pavement Condition on average than the "Prioritize Pavement/Current Approach" scenario.

Figure 5-4: Online Budget Tool Funding Results



SURVEY

Almost 1,000 people filled out the MnSHIP survey to select a preferred investment approach. The most selected preferred approach was Improve Mobility for All Highway Users. However, no approach received a majority. Three other approaches were selected around 20% of the time. The current approach received the third most selections at 20%. Between the Prioritize Bridge and Prioritize Pavement approach, 27% of participants selected an approach which prioritizes maintaining the system over other approaches.

Figure 5-5: Preferred Investment Approach

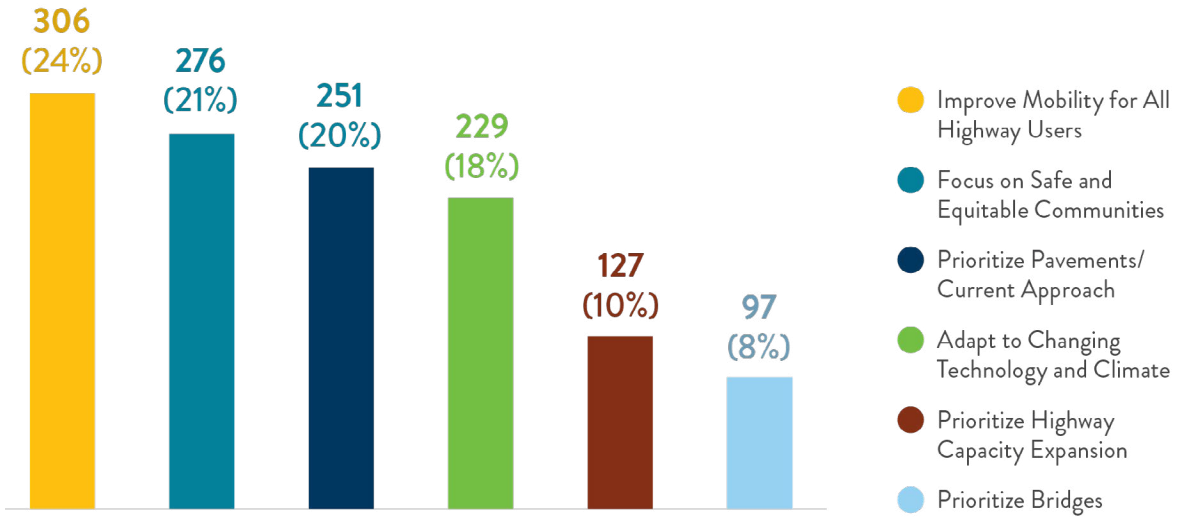
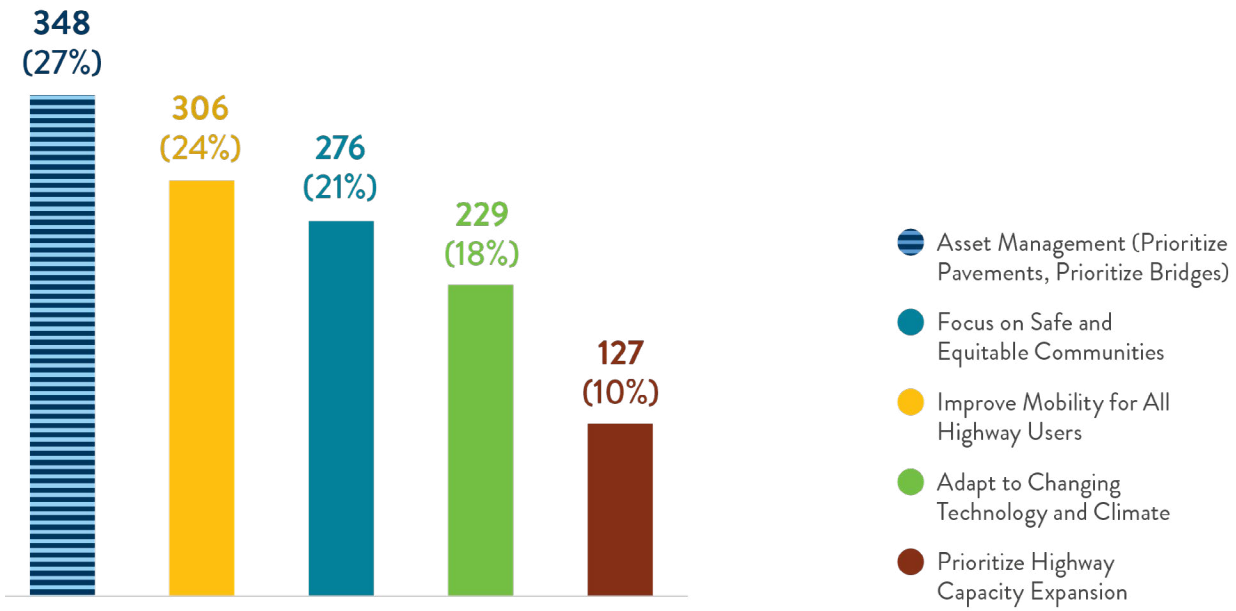


Figure 5-6: Preferred Investment Approaches with Combined Asset Management Responses

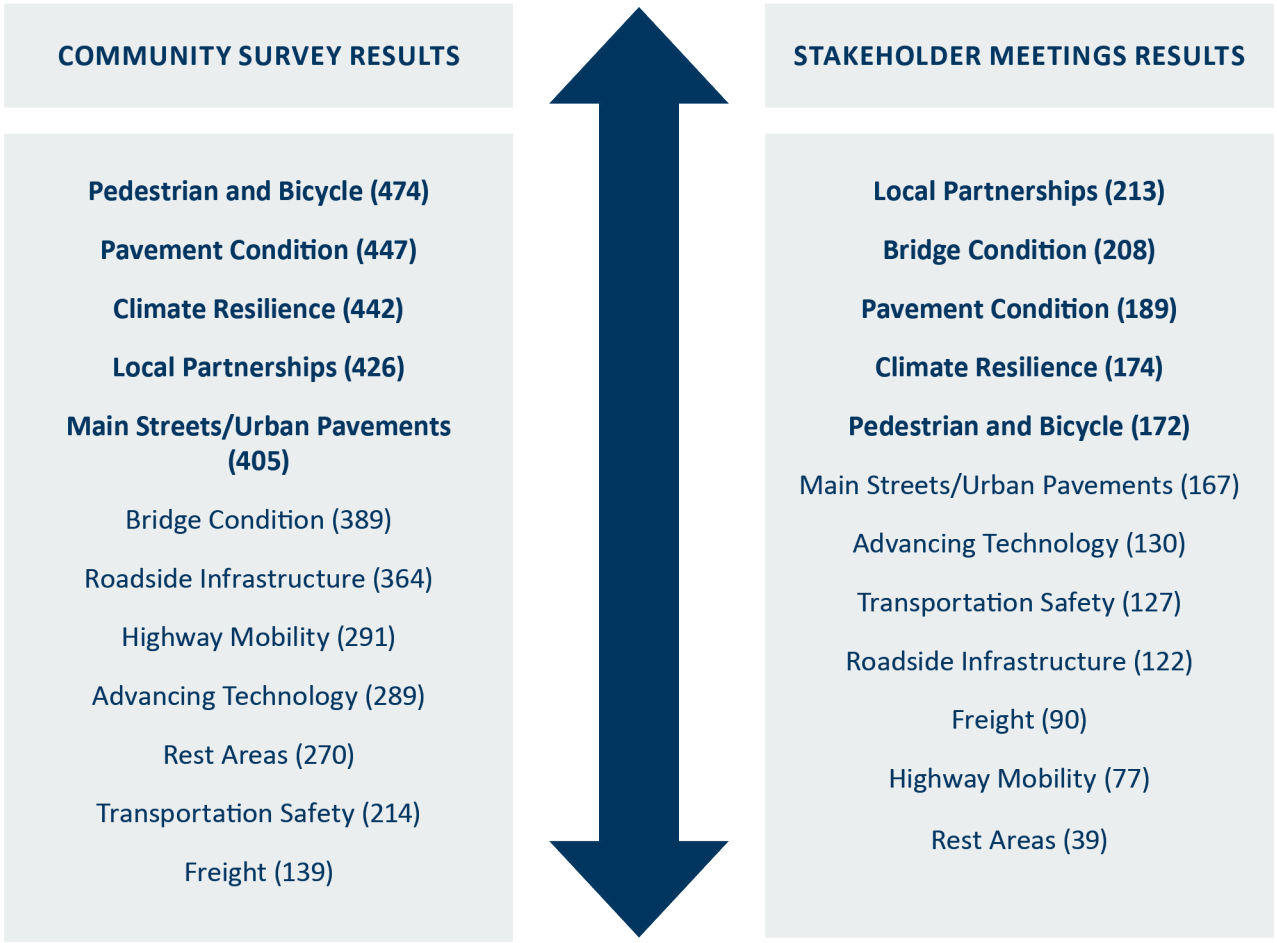


The short surveys asked respondents to select their top five priorities for state highway investment from a list of 12 investment categories. The plain language for each investment category is shown on the left in Figure 5-7. The MnSHIP Investment Category name is shown on the right along with the number of survey responses.

Figure 5-7: Top Improvements Selected from Survey Results

MnDOT distributed the survey to the public and to partner agencies, governments and stakeholders. These two groups expressed similar interests but in different order of priority. Community members were more likely to emphasize pedestrian and bicycle infrastructure, while stakeholders emphasized the importance of local partnerships.

Figure 5-8: Priorities Expressed by Community Members vs. Stakeholders



OPEN-ENDED COMMENTS

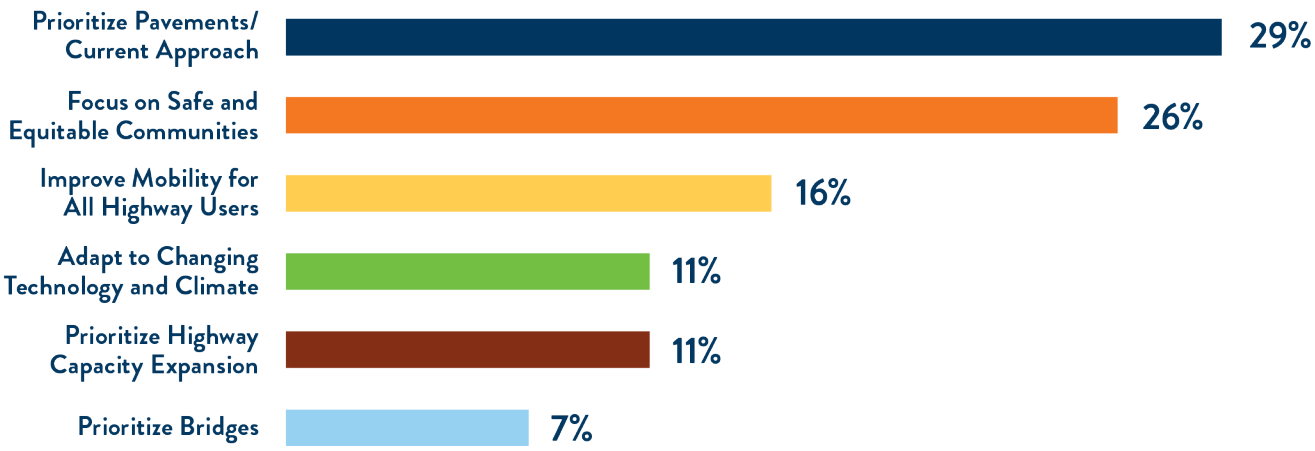
The paper and online surveys provided space for respondents to add open-ended comments. Over 300 of these open-ended responses were received. These responses are summarized in a word cloud below. Survey respondents expressed concern that maintenance of existing infrastructure was falling behind and an interest in improving safety and equity through infrastructure investments.

Figure 5-9: Word Cloud of Common Themes from Open Ended Comments

INPUT FROM MNDOT SENIOR LEADERSHIP AND KEY AGENCY STAFF

Following the public engagement efforts, MnDOT staff provided feedback on the investment approaches and strategies. The top four approaches for MnDOT staff were the same as the public but in a different order of preference (Figure 5-10). Prioritize Pavements/Current approach was a much higher preference for MnDOT staff than the public. Prioritize Pavements/Current Approach and Focus on Safe and Equitable Communities were the top two preferred approaches for MnDOT staff.

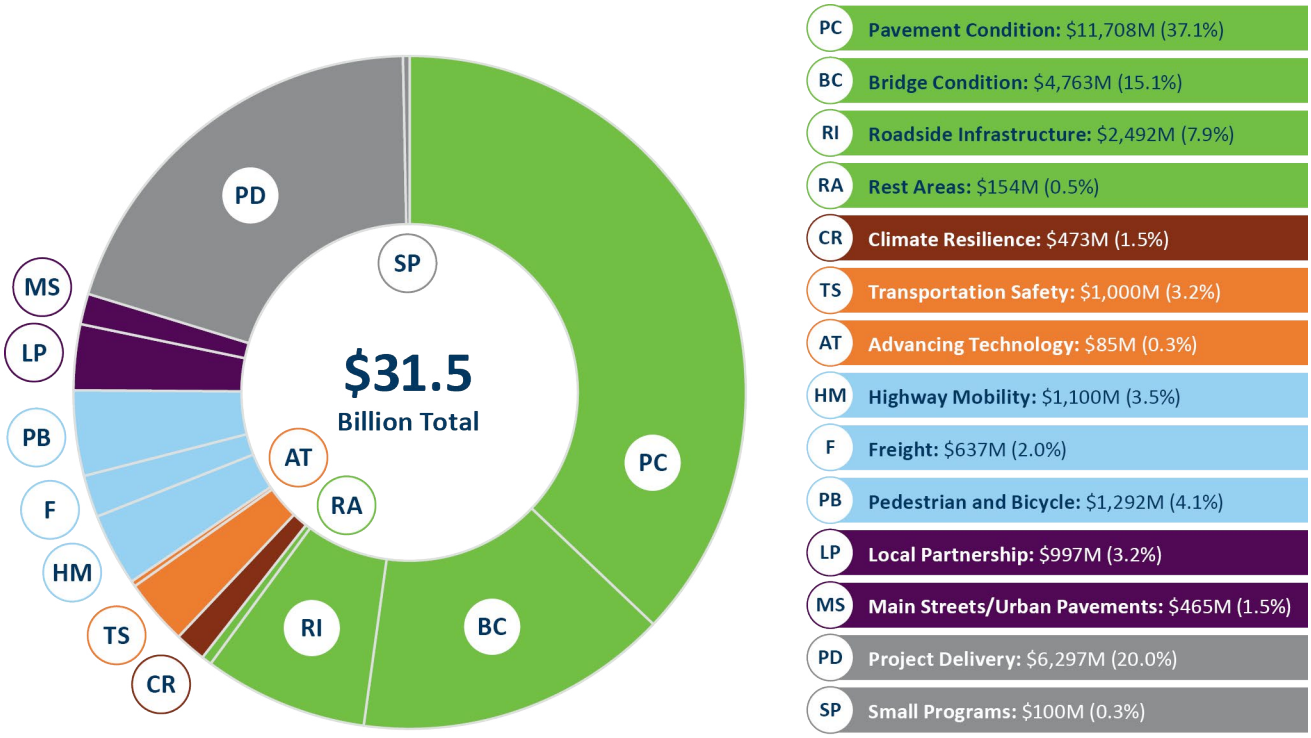
Figure 5-10: MnDOT Staff Approach Preference



SETTING A DRAFT 20-YEAR INVESTMENT DIRECTION

MnDOT used the public and stakeholder feedback in Phase I of public engagement as the basis for the development of the draft MnSHIP investment direction. MnDOT staff averaged the results from the in-person and stakeholder surveys as well as the online budget tool. Investment levels were aligned with identified performance levels, where possible. The preliminary draft investment direction was reviewed by the MnSHIP Technical Advisory Committee and Policy Advisory Committee and MnDOT leadership. Figure 5-11 shows the approved draft investment direction for public engagement.

Figure 5-11: Draft Investment Direction for Second Round of Public Engagement



MnDOT developed four themes to communicate the priorities of the draft investment direction. These are:

- Invest to maintain the existing system
- Improve mobility, accessibility and safety for all
- Begin to adapt to a changing future
- Focus on communities and livability

EQUITY REVIEW

MnDOT reviewed the investment direction-setting process and outcomes through an equity lens and analyzed the Phase I engagement results by demographics. With an Equity Work Group, MnDOT staff discussed who are the beneficiaries of the proposed direction and who is potentially burdened.

In discussing potential burdens and benefits, MnSHIP staff focused on both continuing benefits and burdens as well as who benefits more or is burdened more from the changes resulting from the draft investment direction.

POTENTIAL BENEFICIARIES

- All users of the state highway system are the intended beneficiaries
- Populations that may benefit more from the changes from the previous investment direction:
- People with disabilities
- Tribal communities especially in Greater Minnesota
- Those who don't drive (either by choice or by circumstance)
- People living near state highways

POTENTIAL BURDENS

- No significant reversal of past or continuing burdens such as noise/air pollution, size and impact of existing system, and induced demand and traffic to surrounding areas
- Limitations on MnSHIP funding beyond right-of-way to make improvements off-system
- Mobility improvements could result in additional right-of-way
- For many, the goal of reaching ADA compliance by 2037 is too long
- Rural low-income populations who rely on driving could see increased burdens and cost caused by deteriorating pavement condition

The Equity Work Group reviewed the MnDOT analysis and generally agreed with the conclusions and did not have objections to the proposed investment direction. The group stressed that equity considerations will be even more important when MnSHIP is applied at the project level. The MnSHIP investment direction guides MnDOT but the real implementation and realization of equitable outcomes happen through project selection and implementation.

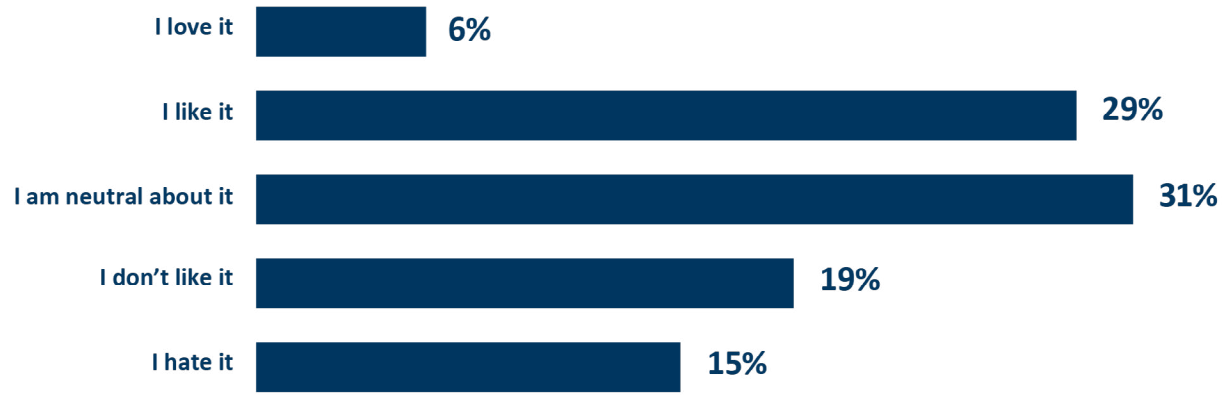
PUBLIC OUTREACH ON DRAFT INVESTMENT DIRECTION

MnDOT conducted a second round of public outreach in spring 2023. This phase included presentations to stakeholders and an online survey on the draft investment direction. MnDOT ran social media ads to drive traffic to the online survey for responses. The survey asked the following questions:

- How do you feel about the draft investment direction?
- Why do you feel this way? What would you adjust?

Responses to the draft investment direction were generally neutral or positive. Approximately equal number of people liked the investment direction, were neutral about it and didn't like it. Figure 5-12 shows the breakdown of responses.

Figure 5-12: Responses to the Draft Investment Direction



Response to the draft investment direction also included open-ended comments about what people would adjust and why. The section below summarizes what people liked or didn't like about the draft investment direction.

WHAT IS POSITIVE ABOUT THE DRAFT PLAN?

- Focus on pavement and bridge funding
- An increased focus on pedestrian and bicycle infrastructure

People who responded positively to the plan were less likely to mention reasons for their positivity. Those that did, highlighted the importance of pavement and bridge investment.

WHAT IS NEGATIVE ABOUT THE DRAFT PLAN?

- Too much investment in highway mobility and pavement
- Not a transformational plan. Does not do enough to address greenhouse gas emissions and vehicle miles traveled
- Not enough funding for bicycle and pedestrian infrastructure

The top reasons why people didn't like the draft investment direction was its highway mobility and pavement investment. These responses generally focused on the highway system's role in Greenhouse Gas emissions and MnDOT's target for reducing Vehicle Miles Traveled (VMT). Respondents wanted MnDOT to adopt a more transformational plan that removed state highways from the system to help reduce VMT and emissions from transportation.

Pedestrian and bicycle sentiment was split. Some people didn't like the draft investment direction because it spent too little on pedestrian and bicycle infrastructure. Some people didn't like the draft investment direction because it spent too much on pedestrian and bicycle infrastructure.

INCREASED REVENUE PRIORITIES

In addition to getting feedback on the draft investment direction, the second round of public engagement also focused on getting feedback for increased revenue priorities. Respondents used the online budgeting tool to prioritize up to $6 billion in additional funding beyond the draft investment direction. They were able to select increased investments for each of the MnSHIP investment categories.

The average additional investment selected by the public was $5.8 billion. The average additional investment amount by category is shown below.

Figure 5-13: Average Increased Revenue Priority Responses

INVESTMENT CATEGORY	PUBLIC FEEDBACK INCREASED REVENUE	% OF INCREASE
Pavement Condition	**$1.2 B**	**20.8%**
Bridge Condition	**$512 M**	**8.8%**
Roadside Infrastructure	**$484 M**	**8.3%**
Rest Areas	**$21 M**	**0.4%**
Climate Resilience	**$265 M**	**4.6%**
Transportation Safety	**$446 M**	**7.7%**
Advancing Technology	**$37 M**	**0.6%**
Highway Mobility	**$741 M**	**12.7%**
Freight	**$114 M**	**2.0%**
Pedestrian and Bicycles	**$1.1 B**	**19.3%**
Local Partnerships	**$394 M**	**6.8%**
Main Streets/Urban Pavements	**$472 M**	**8.1%**
TOTAL	$5.8 B	100.0%

The average dollar amount selected by category is only one way to look at the increased revenue data. Another way is how many people opted to invest above the draft investment direction level for each category. The most selected categories for additional revenue were:

1. Transportation Safety (74%)
2. Pavement Condition (72%)
3. Main Streets/Urban Pavements (68%)
4. Bridge Condition (68%)
5. Pedestrian and Bicycle (63%)

The least selected categories for additional revenue were:

1. Rest Areas (34%)
2. Advancing Technology (42%)
3. Freight (43%)
4. Highway Mobility (45%)
5. Roadside Infrastructure (48%)

NEW REVENUE

During the 2023 Minnesota Legislative session, MnDOT received additional transportation revenue beyond the amount anticipated in the baseline revenue scenario. The bill was finalized after the second round of public outreach was completed. With the new revenue, MnDOT projects it will have $36.7 billion over the next 20 years for MnSHIP, $5.2 billion more than the draft investment direction level.

DRAFT INVESTMENT DIRECTION ADJUSTMENTS

MnDOT needed to make changes from the draft investment direction to plan for the increase in revenue. MnSHIP staff met with the MnSHIP Technical Advisory Committee, Policy Advisory Committee and MnDOT leadership groups to review the public feedback and make recommendations for changes to the draft investment direction. MnDOT used the input on the draft investment direction and the increased revenue priorities to prioritize which investment categories to increase and to what degree.

Figure 5-14: Adjustments to Draft Investment Direction

INVESTMENT CATEGORY	INVESTMENT ABOVE DRAFT	% OF INCREASE
Pavement Condition	**$1.8 B**	**34.3%**
Bridge Condition	**$1.2 B**	**22.7%**
Roadside Infrastructure	**$300 M**	**5.9%**
Rest Areas	**$0 M**	**0.0%**
Climate Resilience	**$100 M**	**1.5%**
Transportation Safety	**$250 M**	**5.1%**
Advancing Technology	**$<50 M**	**0.3%**
Highway Mobility	**$50 M**	**1.1%**
Freight	**$100 M**	**1.6%**
Pedestrian and Bicycle	**$-100 M***	**-1.6%**
Local Partnerships	**$0 M**	**0.0%**
Main Streets/Urban Pavements	**$450 M**	**7.8%**
Project Delivery	**$1 B**	**20.0%**
Small Programs	**$0 M**	**0.0%**
TOTAL	$5.2 B	100.0%

*The total investment in Pedestrian and Bicycle is lower than the draft investment direction. This is due to a revised cost estimate for pedestrian bridges. That change resulted in a reduction of $168 million. The outcomes for Pedestrian and Bicycle are expected to be the same or better than the draft investment direction even with the lower investment amount.

Based on input from the public and transportation stakeholders and MnDOT's own internal priorities, MnDOT prioritized spending additional funding on:

- Maintaining and repairing existing assets on the state highway system
- Reconstructing Main Streets
- Improving safety

This increased investment would allow MnDOT to limit the number of bridges and miles of pavement in poor condition, especially on the non-NHS. MnDOT is also able to address many more urban reconstruction, or Main Street, projects. These projects allow local governments to improve amenities and facilities along the state highway. The increased safety investment will address more locations with high fatal and serious injury crash rates and provide safety improvements for pedestrians and bicyclists. Smaller increases for Freight and Climate Resilience allow for construction of expanded truck parking at MnDOT owned locations and more locations addressed with climate resilience infrastructure improvements. Additional investments in pedestrian and bicycle infrastructure are focused on improving compliance with the ADA and expanding the bike system on state highways.

CHAPTER 6

INVESTMENT DIRECTION

The investment direction presented in this chapter is focused on four main themes over the next 20 years. They are:

- Maintain the existing system
- Improve mobility, accessibility and safety for all
- Begin to adapt to a changing future
- Focus on communities and livability

The direction will guide investments so that transportation projects align with statewide goals as much as possible with available funding. This investment direction reflects federal funding from the Infrastructure Investment and Jobs act as well as increases to state funding passed in the 2023 legislative session.

MnDOT districts select and develop projects that are consistent with the investment direction in MnSHIP.

CHAPTER 6

PROJECT SELECTION

While MnSHIP sets MnDOT's investment priorities for a 20-year time period, MnDOT does not identify specific projects over the 20 years. MnDOT identifies potential projects in the first 10 years of the plan through the 10-Year Capital Highway Investment Plan (CHIP). The CHIP translates the 20-year investment direction into planned and programmed projects that collectively achieve the outcomes identified in MnSHIP. The CHIP consists of two time periods. Projects in Years 1-4 are a part of the State Transportation Improvement Program (STIP). Projects are programmed and scheduled in the STIP. MnDOT is committed to delivering these projects over the next four years. Projects in Years 5-10 are not yet committed. They are in the budget, but project timing, scope and cost may change. Together, projects in Years 1-10 comprise the 10-Year CHIP. The following sections explain how the investment direction will influence project selection in each year of the 20-year plan.

PROJECT SELECTION POLICY

In 2017, the Minnesota Legislature directed MnDOT to develop and implement a new transparent and objective project selection policy for construction projects on the state highway system. The project selection policy was first implemented with the 2020-2023 State Transportation Improvement Program and 2020-2029 Capital Highway Investment Plan.

The policy requires that MnDOT use scores to prioritize and select highway construction projects. The scores inform project selection decisions, but MnDOT may consider other factors in addition to the score. MnDOT selects projects within various categories and programs. Each category and program has a separate process to evaluate, prioritize and select projects.

Broadly, these categories and programs include:

- Asset management: the rehabilitation and replacement of pavement, bridges and other infrastructure.
- Targeted safety improvements: enhancements to reduce the number of crashes and people injured or killed on Minnesota state highways.
- Mobility and capacity expansion: improvements to traffic flow, congestion relief and travel time reliability, freight movement, or creating new connections for active transportation users such as people walking and bicycling.

Each broad category has sub-categories within which projects are evaluated and selected. For example, pavement projects are scored and prioritized separately from bridge projects. MnDOT also manages a variety of special programs with specific objectives, which typically do not fund asset management projects. MnDOT posts all candidate projects, scoring methodologies and project selection reasoning at MnDOT's project selection website.

Once a project is selected, MnDOT develops and evaluates alternatives to address the identified need and other legal requirements, opportunities to advance legislative goals, objectives in state plans, and other repairs and improvements that make sense to do at the same time. The department follows a complete

streets approach, which considers the needs of all the different types of vehicles and people who will use the road or bridge. MnDOT balances the identified needs and opportunities against the funding guidance of MnSHIP and looks for cost-effective and affordable solutions. MnDOT also works with local and regional partners, metropolitan planning organizations, tribal governments and regulatory agencies, and seeks public input during the project's development.

INFLUENCE OF INVESTMENT DIRECTION ON PROJECT SELECTION IN YEARS 1-4

For the STIP years (2023-2027) of MnSHIP, MnDOT has already committed to projects based on the investment direction in the 2017 MnSHIP. MnDOT has spent funding to scope and develop these projects using that investment guidance. MnDOT tries to avoid any changes to projects in the STIP, if possible. Therefore, this investment direction does not change projects in years 2023 to 2027.

INFLUENCE OF INVESTMENT DIRECTION ON PROJECT SELECTION IN YEARS 5-10

The draft MnSHIP investment direction guided project selection from 2028 through 2033 for the 2024-2033 CHIP. MnDOT developed this CHIP before the MnSHIP investment direction was finalized. The final MnSHIP investment direction described below will be reflected in the 2025-2034 CHIP. The current projects listed in the 10-Year CHIP will be updated to reflect the MnSHIP investment direction and MnDOT will work to try to limit the changes to these projects. New projects will need to be identified to ensure that selected projects follow the investment direction in this plan.

INFLUENCE OF INVESTMENT DIRECTION ON PROJECT SELECTION IN YEARS 11-20

MnDOT does not identify individual projects beyond 10 years in MnSHIP. Investment in those years is identified by investment category only. However, the CHIP is updated annually so new projects are added to year 10 with each version of the CHIP. These new projects will follow the investment direction established in this document. Additional information on project selection and investment programs can be found in Appendix C: Financial Summary.

CHAPTER 6

INVESTMENT SUMMARY

The 20-year investment direction focuses on maintaining the existing state highway system, improving mobility, accessibility and safety for all, beginning to adapt to a changing future and improvements for communities and livability. This approach reflects both public and stakeholder input and meets key requirements and agency commitments. The investment direction does not affect the projects already developed and programmed in Years 2023 through 2027. The priorities identified in this plan will be reflected in investments and projects starting in 2028. Figure 6-1 shows the distribution of expenditures through all years of the plan.

Figure 6-1: 20-Year Capital Highway Investment Direction

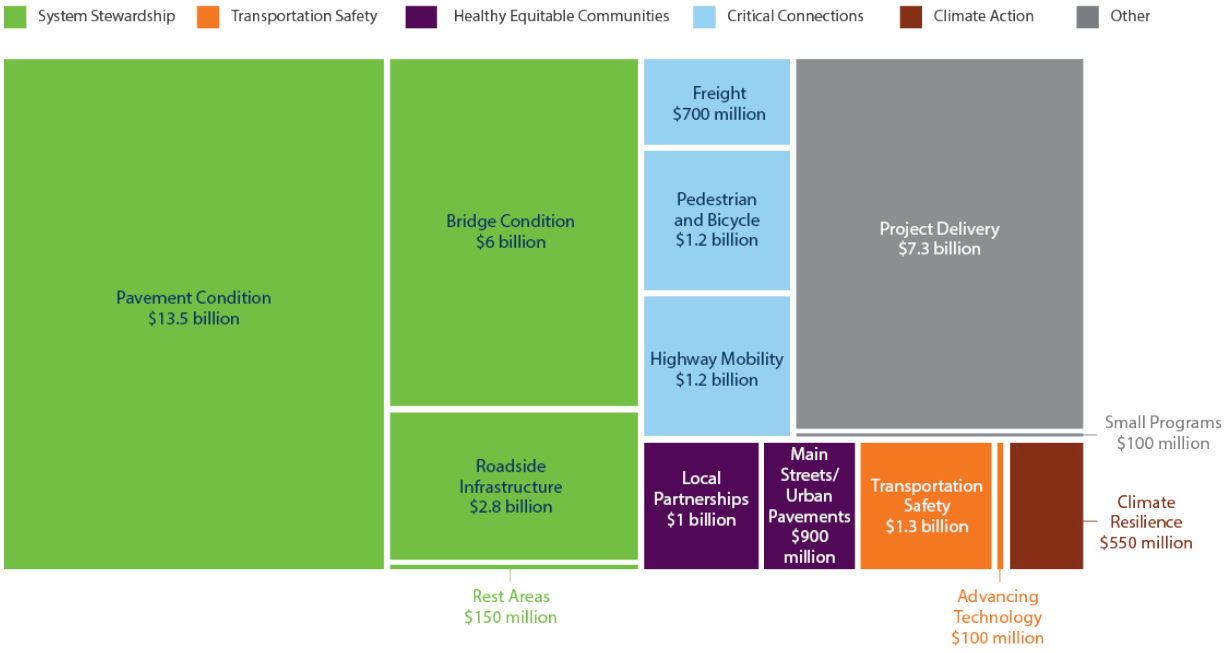


Figure 6-2 on the following page summarizes the total amount of investment for MnSHIP. It also includes current conditions and associated outcomes for each of the 14 investment categories.

Figure 6-2: Total Investments, Outcomes and Current Condition

INVESTMENT CATEGORY	OBJECTIVE AREA	CURRENT CONDITIONS (2022)	PROJECTED OUTCOME(S) IN 2042	TOTAL INVESTMENT (2023-2042)
Pavement Condition	**System Stewardship**	**Meet MnDOT targets for all pavement systems.** • **Interstate: 0.5% poor** • **Other NHS: 0.5% poor** • **Non-NHS: 1.0% poor**	**NHS and Non-NHS pavement condition worsen. Interstate condition meets MnDOT targets and federal minimum threshold.** • **Interstate: 2% poor** • **Other NHS: 6% poor** • **Non-NHS: 10% poor**	**$13.5 billion**
Bridge Condition	**System Stewardship**	**NHS bridge condition slightly exceeds MnDOT's target. Non-NHS meets MnDOT targets for bridge condition.** • **NHS: 6.3% poor** • **Non-NHS: 4.2% poor**	**Non-NHS bridge conditions worsen, while NHS bridge condition is maintained. Federal minimum threshold for NHS bridge condition is met.** • **NHS: 5.0% poor** • **Non-NHS: 10% poor**	**$6.0 billion**
Roadside Infrastructure	**System Stewardship**	**Roadside infrastructure condition is not meeting targets (2020 and 2021 data).** • **Culverts: 17% poor** • **Lighting: 12% beyond useful life** • **Noise walls: 6% poor** • **Overhead sign structures: 14% poor** • **Traffic signals: 9% beyond useful life**	**The condition of all roadside infrastructure assets will deteriorate. Condition will not be met. Maintenance can delay assets dropping into poor condition.** • **Culverts: 36% poor** • **Noise walls: 22% poor** • **Lighting: 25-30% beyond useful life** • **Overhead sign structures: 20-25% poor** • **Signals: 30-35% beyond useful life**	**$2.8 billion**
Rest Areas	**System Stewardship**	**6% of rest areas are in poor condition.**	**16% of rest areas will be in poor condition. Rest area buildings will be ADA compliant.**	**$150 million**
Climate Resilience	**Climate Action**	**50% of projects planted with native plantings.** **61% of projects seeded with native seeding.**	**Address highest risk flooding and snow trap locations. Increase green assets on state highways.**	**$550 million**
Transportation Safety	**Transportation Safety**	**Roadway fatalities and serious injuries have spiked since 2020. 444 fatalities and over 1,900 serious injuries in 2022.**	**Increased investment to address locations with high crash rates and non-motorized safety issues**	**$1.3 billion**

INVESTMENT CATEGORY	OBJECTIVE AREA	CURRENT CONDITIONS (2022)	PROJECTED OUTCOME(S) IN 2042	TOTAL INVESTMENT (2023-2042)
Advancing Technology	**Transportation Safety**	**No identified performance measures.**	**Expand ITS to 200-250 miles of state highways and address immediate and medium needs for fiber network expansion.**	**$100 million**
Highway Mobility	**Critical Connections**	**Interstate and Other NHS over 93% reliable. 9.7 minutes of delay per person in the Twin Cities (2018).**	**Traveler delay to increase to 11-12 minutes per person in the Twin Cities. Reliability likely to remain stable in Greater Minnesota.**	**$1.2 billion**
Freight	**Critical Connections**	**Truck Travel Time Reliability (TTRI) is meeting federal targets.**	**MnDOT does not forecast TTRI. MnDOT will address highest priority freigh improvment locations and expand truck parking.**	**$700 million**
Pedestrian and Bicycle	**Critical Connections**	**Progress is being made towards ADA compliant pedestrian infrastructure.** • **Curb ramp compliance: 61%** • **Sidewalk compliance: 66%** • **Signals compliance: 76%** **In 2021, 34% of Minnesotans report walking or biking at least weekly.**	**Pedestrian infrastructure will be substantially compliant with ADA by 2037.** **MnDOT will make some progress towards implementing the Pedestrian System Plan and District Bike Plans.**	**$1.2 billion**
Local Partnerships	**Healthy Equitable Communities**	**No identified performance measures.**	**MnDOT will be able to respond to local priorities through the Local Partnership Program, TED and partnering on locally-led projects. Livable communities program funded.**	**$1 billion**
Main Streets/ Urban Pavements	**Healthy Equitable Communities**	**No identified performance measures.**	**125-145 candidate locations addressed.**	**$900 million**
Project Delivery	**Other**	**Invest the amount necessary to deliver projects in the other categories.**	**Invest the amount necessary to deliver projects in the other categories.**	**$7.3 billion**
Small Programs	**Other**	**No identified performance measures.**	**Continue to invest in small programs such as off-system bridges and historic properties.**	**$100 million**
TOTAL				$36.7 BILLION

INVESTMENT DIRECTION THEMES

MAINTAIN THE EXISTING SYSTEM

MnDOT continues to invest the majority of capital funds to maintain existing state highway infrastructure including pavements, bridges and roadside infrastructure. With additional state and federal funding, MnDOT is able to meet performance targets for Interstate pavement as well as NHS and non-NHS bridge condition.

IMPROVE MOBILITY, ACCESSIBILITY AND SAFETY FOR ALL

The MnSHIP investment direction increases funding to improve mobility for all users of the state highway system. This includes motorists, freight haulers, transit users, pedestrians and bicyclists. In particular, the investment direction includes increased funding for pedestrian infrastructure to achieve compliance with the Americans with Disabilities Act (ADA) and help implement the Statewide Pedestrian System Plan and District Bicycle Plans. Safety funding is increased to improve safety at locations with high crash rates and to address safety for vulnerable road users.

BEGIN TO ADAPT TO A CHANGING FUTURE

Minnesota's climate is changing and will continue to do so for the foreseeable future. This plan includes a new Climate Resilience investment category under the Climate Action objective area to advance a sustainable and resilient transportation system.

New technology is also transforming the way the transportation system is used. The MnSHIP investment direction includes funding to ensure state highways are best equipped for Connected and Automated Vehicles and enhanced Intelligent Transportation Systems (ITS) to meet emerging technology needs.

FOCUS ON COMMUNITIES AND LIVABILITY

Transportation can be a barrier, especially for underserved communities such as Black, Indigenous, and people of color, people with disabilities, people with low incomes and others. This plan funds a livable communities pilot program to improve connectivity across state highways. These include enhanced crossings, small freeway cap projects and under-bridge improvements.

Many state highways serve as a major commercial corridor in cities and towns throughout the state. Cities, counties and communities have many needs on these corridors. The MnSHIP investment direction includes a substantial increase in funding for urban pavement projects to address community priorities and deliver a more holistic and multimodal project. There are other enhanced funding areas for local partnerships including the Local Partnership Program. The investment direction also maintains existing funding to support economic development through the Transportation Economic Development program.

CHAPTER 6

SYSTEM STEWARDSHIP

The MnSHIP investment direction aligns with the System Stewardship objective and strategies in the Statewide Multimodal Transportation Plan (SMTP). This objective is to strategically build, maintain, operate and adapt the transportation system based on data, performance and community needs.

Throughout the 20-year plan, MnDOT will prioritize infrastructure improvements on NHS routes and hold these roads to a higher performance standard than non-NHS routes. This approach allows MnDOT to comply with federal law and manage risks related to statewide travel.

While MnSHIP's emphasis is on maintaining the existing system, MnDOT strives to achieve multiple objectives through coordinated investments. For example, drainage infrastructure (Roadside Infrastructure) helps pavements last longer. Investing in Pavement Condition can enhance the bicycle and pedestrian network. MnDOT will ensure that the dollars spent in System Stewardship achieve optimal outcomes through:

- Innovation: Developing new materials, design standards and procedures
- Low-cost maintenance and repairs: Using recycled materials, innovative design and preventive maintenance treatments to extend the useful life of infrastructure without increasing costs
- Alternate bidding: Planning for two comparable repair strategies (concrete versus bituminous) for some projects so contractors can bid the most cost-effective solution

In addition to capital investments, MnDOT will continue to use planning and research to guide its stewardship of state highway assets. MnDOT recently updated its risk-based Transportation Asset Management Plan (TAMP) in 2022. The plan helps MnDOT coordinate pavement, bridge and roadside infrastructure investments in order to make the most effective use of limited dollars and maximize asset life.

INVESTMENT PRIORITIES

Figure 6-3 shows that System Stewardship is expected to constitute approximately 61% ($22.4 billion) of MnDOT's overall program for the 20-year planning period of MnSHIP.

Figure 6-3: System Stewardship Investments in MnSHIP

PAVEMENT CONDITION

Pavement Condition investments include preventive maintenance, overlays, mill and overlays, concrete pavement repair and reconstruction of existing roads.

PROJECT SELECTION

MnDOT uses its Pavement Management System to predict future pavement conditions and develop a list of suggested fixes on NHS and non-NHS routes. The system uses funding assumptions based on statewide investment goals established in MnSHIP. The management system creates a preliminary 10-year list of potential projects. Projects on the NHS are selected through the Statewide Performance Program to achieve statewide outcomes on the NHS. MnDOT districts then modify the list based on a number of considerations such as local knowledge of conditions, input from stakeholders and timing of other projects in the area. The result is a list of projects that are included in the CHIP.

Districts also plan pavement improvements on non-NHS routes through the District Risk Management Program. In this program, the districts have more flexibility to set priorities for non-NHS pavement projects provided that the projects collectively meet the MnSHIP investment guidance.

The SPP and DRMP is currently under review by MnDOT's Programming Update Workgroup. Changes to this process are expected within the next year.

OUTCOMES

Overall, MnDOT expects that the miles of pavement in poor condition will increase significantly by the end of the 20-year planning period, particularly on lower volume roadways. Interstate pavements are expected to meet MnDOT targets for good and poor and the federal minimum thresholds. Pavement condition is expected to decline due to two key factors: 1) current pavement condition is very good, and 2) the age of Minnesota's roadways, many of which were constructed more than 40 years ago and require more expensive fixes.

The percentage of pavement in good and poor condition and the percentage of vehicle miles travelled (VMT) on poor roads is expected to be as follows in 2042:

- Interstate pavements: 86% good and 2% poor
  - 5% of VMT on poor roads
  - Will meet MnDOT good target (70% or more good)
  - Will meet MnDOT poor target (2% or less poor)
  - Is expected to meet federal minimum thresholds through 2042
- Other NHS pavements: 91% good and 6% poor
  - 3% of VMT on poor roads
  - Will meet MnDOT good target (65% or more good)
  - Will not meet MnDOT poor target (4% or less poor)
- Non-NHS pavements: 89% good and 10% poor
  - 6% of VMT on poor roads
  - Will meet MnDOT good target (60% or more good)
  - Will not meet MnDOT poor target (8% or less poor)

EQUITY EVALUATION

MnDOT reviewed the investment for each category through an equity lens. With an Equity Work Group, MnDOT staff discussed the potential benefits from the MnSHIP investment direction and potential burdens resulting from that investment. Potential benefits of pavement investment include:

- Provides an opportunity to improve roadway conditions and design
- May provide benefits to lower income communities and on tribal lands where roadways were under designed without/narrow shoulders or safe places for walking/biking

Potential burdens of pavement investment include:

- Prioritizing pavement condition may steer more investment to less expensive fixes on rural roadways and away from more investment in urban areas
- Pavement investment strategy maintains the existing roadway footprint without considering whether the existing roadway is overbuilt and the possibility of reducing lane miles

RISK MANAGEMENT RESULTS

The Pavement Condition workgroup identified highway capital risks related to state highway pavements. These risk statements were scored for likelihood and impact (high, medium, low) based on MnDOT's current investment approach and the investment direction in this plan. Each risk statement and its respective score is shown in Figure 6-4.

Figure 6-4: Pavement Risk Management Results

RISK STATEMENT	RISK LEVEL CURRENT APPROACH	RISK LEVEL WITH MNSHIP INVESTMENT DIRECTION
Increase in poor pavement condition requiring more maintenance projects	High	High
Increase costs to users from poor pavement quality	Medium	Medium
Maintenance budgets require more reactive repairs due to lack of capital investment	High	Medium
Inability to meet federal legislative requirements/performance thresholds	Low	Low
Inability to invest in more long-term pavement projects at the right time	Medium	Medium
Not meeting public expectations for roadway conditions	Medium	Medium

Pavement risk levels generally do not change compared to the current investment approach. Pavements are MnDOT's largest and most expensive asset to maintain. It takes a large amount of investment to appreciably change outcomes.

SYSTEM INVESTMENT STRATEGIES

MnDOT may implement any of the following strategies to address the risks that remain with the level of investment in Pavement Condition:

- Focus on preventive maintenance activities to keep good pavements in good condition
- Use of operational budget for maintenance of pavements
- Apply a mix of fixes to extend useful life and reduce life-cycle costs

CHAPTER 6

BRIDGE CONDITION

Bridge Condition includes the replacement, repair and maintenance of bridges.

PROJECT SELECTION

As is the case with Pavement Condition, MnDOT prioritizes more investments in Bridge Condition on NHS roads than on non-NHS state highways.

MnDOT determines which bridges to invest in based on the Bridge Office Replacement and Improvement System (BORIS) analysis and prioritization tool which assesses bridge condition, traffic demand, criticality and other structural ratings to determine bridges in greater need of investment. Experts from the Bridge Office, District bridge engineers and District planners then decide which bridges need to receive future investment and when to program those investments.

OUTCOMES

Bridge conditions on the NHS will be maintained over the next 20 years. Non-NHS condition will worsen overall. However, the projected condition of NHS and bridges is expected to meet the federal minimum thresholds and MnDOT targets for percent poor. The percentage of bridges in poor condition on the non-NHS and good condition for both systems are not expected to meet targets.

The percentage of bridge deck area in good and poor condition is expected to be as follows in 2042:

- NHS Bridges: 53% good and 5% poor
  - Will likely meet MnDOT poor target (5% or less poor)
  - Will likely not meet MnDOT good target (55% or more good)
  - Will likely meet the federal minimum threshold (10% or less poor)
- Non-NHS bridges: 42% good and 10% poor
  - Will likely not meet MnDOT poor target (8% or less poor)
  - Will likely not meet MnDOT good target (50% or more good)

EQUITY EVALUATION

MnDOT reviewed the investment for each category through an equity lens. With an Equity Work Group, MnDOT staff discussed the potential benefits from the MnSHIP investment direction and potential burdens resulting from that investment. Potential benefits of Bridge Condition investment include providing opportunities for more replacement/redesign of bridges to incorporate improved connections for all modes.

RISK MANAGEMENT RESULTS

The Bridge Condition workgroup identified highway capital risks related to state highway bridges. These risk statements were scored for likelihood and impact (high, medium, low) based on MnDOT's current investment approach and the investment direction in this plan. Each risk statement and its respective score is shown in Figure 6-5.

Figure 6-5: Bridge Condition Risk Management Results

RISK STATEMENT	RISK LEVEL CURRENT APPROACH	RISK LEVEL WITH MNSHIP INVESTMENT DIRECTION
Increased number of bridges deteriorate into poor condition	Medium	Low
Bridge investment needs are continually deferred	Medium	Low
Unable to make timely and appropriate fixes during a bridge's lifespan	Medium	Medium
Inability to meet performance thresholds outlined in federal legislation	Medium	Low
Additional non-bridge needs driving the replacement of a bridge sooner than the end of the bridge's life	Low	Medium

The MnSHIP investment direction substantially increases investment in Bridge Condition. This increased investment results in lowered risk levels for most bridge-related risks. In particular, bridge condition performance risks drop to low levels with the MnSHIP investment direction.

SYSTEM INVESTMENT STRATEGIES

MnDOT may implement any of the following strategies to address the risks that remain with the level of investment in Bridge Condition:

- Perform maintenance activities focused on preventive repairs
- Complete individual bridge management plans for high priority preservation bridges
- Evaluate deterioration models and performance targets to better forecast investment needs

CHAPTER 6

ROADSIDE INFRASTRUCTURE

Roadside Infrastructure elements include culverts, traffic signals, signs, lighting, retaining walls, fencing, noise walls, guardrails, overhead structures, ITS and pavement markings.

PROJECT SELECTION

MnDOT often repairs or replaces roadside infrastructure as part of a larger pavement, bridge or intersection project. Sometimes MnDOT carries out corridor-wide, stand-alone roadside infrastructure projects for assets such as culverts, signage or lighting. Roadside infrastructure damaged from weather or vehicle impacts are usually repaired as part of routine maintenance and funded through the operations and maintenance budget.

OUTCOMES

In general, by 2042, the condition of the system's roadside infrastructure elements is expected to decline substantially. However, NHS routes will receive more frequent upgrades to roadside infrastructure elements compared to non-NHS routes due to the relative frequency of pavement and bridge projects.

The percentage of roadside infrastructure in poor condition is expected to be as follows in 2042:

- Culverts: 36% poor
  - Will not meet target (10% or less poor)
- Deep Storm Water Tunnels: 0% poor
  - Will meet target (10% or less poor)
- Lighting: 25-30% beyond useful life
  - Will not meet target (2% beyond useful life)
- Noise Walls: 22% poor
  - Will not meet target (8% or less poor)
- Overhead Signs (structure only): 20-25% poor
  - Will not meet target (6% or less poor)
- Signals: 30-35% beyond useful service life
  - Will not meet target (2% or less poor)

In addition to the roadside infrastructure assets listed above, MnDOT invests in ITS assets that have varying performance targets, retaining walls that have targets based on inspections, and pavement marking and traffic barriers which do not have an established performance target.

EQUITY EVALUATION

MnDOT reviewed the investment for each category through an equity lens. With an Equity Work Group, MnDOT staff discussed the potential benefits from the MnSHIP investment direction and potential burdens resulting from that investment. Specific benefits and burdens for Roadside Infrastructure were not identified.

RISK MANAGEMENT RESULTS

The Roadside Infrastructure workgroup identified highway capital risks related to roadside infrastructure assets. These risk statements were scored for likelihood and impact (high, medium, low) based on MnDOT's current investment approach and the investment direction in this plan. Each risk statement and its respective score is shown in Figure 6-6.

Figure 6-6: Roadside Infrastructure Risk Management Results

RISK STATEMENT	RISK LEVEL CURRENT APPROACH	RISK LEVEL WITH MNSHIP INVESTMENT DIRECTION
Equipment/systems exceeds service life or are damaged and are no longer functional	High	High
Reduction in replacement and repair	Medium	Medium
Delayed replacement and repair cycles not aligned with optimal life-cycle	Medium	Medium
Inability to adapt to climate change and extreme weather events	Medium	Medium
Risk of technology, material and installation obsolescence and inability to modernize the system	Medium	Medium

Roadside Infrastructure risk levels do not change from the current approach as the funding level is similar. MnSHIP investment in the Climate Resilience investment category will likely reduce the Roadside Infrastructure risk of inability to adapt to climate change and extreme weather events. Remaining risks are high and medium for Roadside Infrastructure. This is an investment category that has a relatively high unmet need. Many assets are expected to deteriorate over the MnSHIP planning period.

SYSTEM INVESTMENT STRATEGIES

MnDOT may implement any of the following strategies to address the risks that remain with the level of investment in Roadside Infrastructure:

- Repair and replace infrastructure in poor condition or infrastructure beyond its service life
- Replace infrastructure with greatest exposure to the traveling public, mostly through pavement and bridge projects
- Apply the risk mitigation strategies identified in the Transportation Asset Management Plan
- Institute a ten-year cycle of inspections for retaining walls to ensure that they meet the performance target

CHAPTER 6

REST AREAS

Rest Areas investment category includes the repair and maintenance of existing state highway rest area buildings, sites and parking lots including investments to make them compliant with ADA.

PROJECT SELECTION

The Safety Rest Area Program funds construction, repair and rehabilitation of rest areas and waysides. Candidate projects are identified based on the physical condition of rest area buildings and pavements, accessibility and building code compliance, partnership potential and availability of alternative funding sources. MnDOT Districts may also identify rest area capital investment projects. These typically focus on the physical condition of rest area vehicular pavements and ramps. These projects typically use one-time funding.

OUTCOMES

With increased investment in rest areas in MnSHIP, ADA compliance will be addressed at all rest area locations by the end of the plan. The percentage of facilities needing significant renovation or replacement is projected to increase to 16% poor, above the MnDOT target.

EQUITY EVALUATION

MnDOT reviewed the investment for each category through an equity lens. With an Equity Work Group, MnDOT staff discussed the potential benefits from the MnSHIP investment direction and potential burdens resulting from that investment. Potential benefits of Rest Areas investment includes providing funding to make rest area buildings and sites to be accessible for people with disabilities.

RISK MANAGEMENT RESULTS

The Rest Areas workgroup identified highway capital risks related to MnDOT rest areas. These risk statements were scored for likelihood and impact (high, medium, low) based on MnDOT's current investment approach and the investment direction in this plan. Each risk statement and its respective score is shown in Figure 6-7.

Figure 6-7: Rest Areas Risk Management Results

RISK STATEMENT	RISK LEVEL CURRENT APPROACH	RISK LEVEL WITH MNSHIP INVESTMENT DIRECTION
Potential closure of rest areas due to decreased replacement and renovation creating unsafe conditions	High	Medium
Inability to make appropriate and timely repairs	Medium	Medium
Inability to meet state of good repair for rest areas through capital funding	Medium	Low
Fewer rest area reconstruction projects to address non-compliant ADA infrastructure	Medium	Low

Risks related to rest areas are reduced substantially with the MnSHIP investment direction. This reflects increased investment in Rest Areas, particularly related to ADA compliance. This investment will address Rest Areas' biggest needs and risks.

SYSTEM INVESTMENT STRATEGIES

MnDOT may draw from the following strategies, when necessary, to prioritize projects and address risks that are associated with Rest Areas:

- Prioritize health- and safety-related repairs to rest areas unless replacement is warranted
- Prioritize ADA improvements
- Coordinate rest area improvements with truck parking improvements and pavement projects

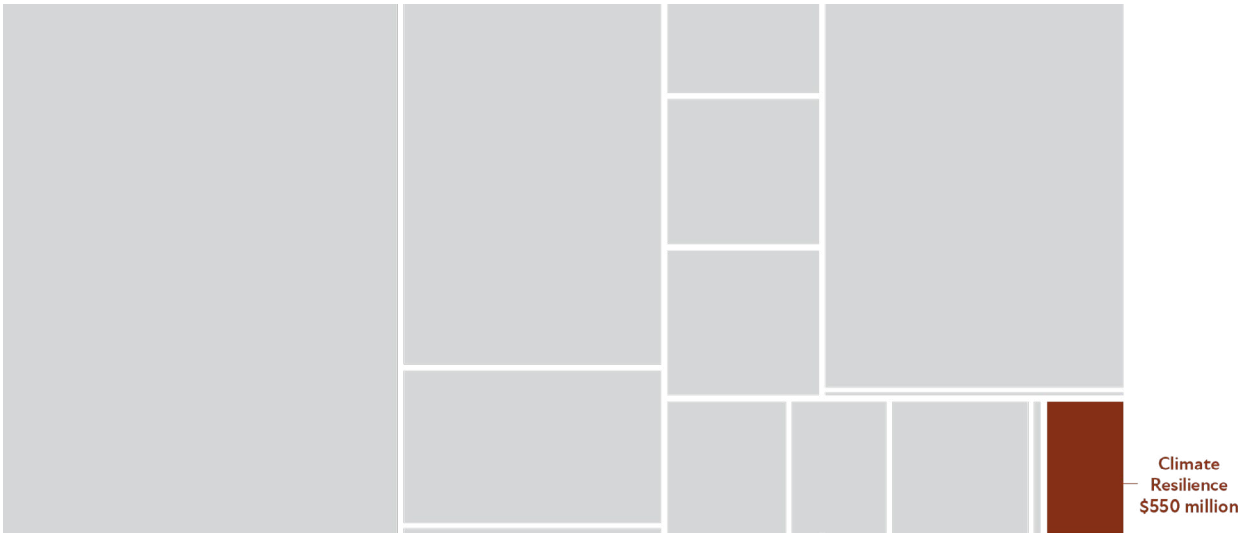
CLIMATE ACTION

Following the policy direction in the SMTP, MnSHIP includes an objective area and investment category related to Minnesota's changing climate. Investments in other categories may also help with climate resilience but investments in this area are specifically to address Minnesota's changing climate.

INVESTMENT PRIORITIES

As shown in Figure 6-8, MnDOT anticipates spending approximately 1.5% of its program on Climate Action for the 20-year planning period of MnSHIP.

Figure 6-8: Climate Action Investments in MnSHIP



CLIMATE RESILIENCE

Climate resilience includes four different strategies. They are:

- Flood mitigation projects
- Proactive resilient infrastructure
- Snow fence projects
- Planting and implementation of green assets

PROJECT SELECTION

Snow fence projects and green asset investment are identified and prioritized by the MnDOT districts. These investments are often completed as part of a pavement or bridge project. Snow fences can also be implemented as a standalone project.

Flood mitigation projects and resilient infrastructure projects may also be completed in conjunction with a pavement or bridge project. These investments are more likely to be standalone projects. The resilient infrastructure investment is new with this plan, so project selection details are still being determined.

OUTCOMES

Outcomes related to climate change are extremely difficult to forecast. MnDOT has not identified specific performance measures for capital investments in this area. With the investment direction in MnSHIP, the following climate resilience investments will be completed:

- Up to 10 flood mitigation projects
- 10-20 climate resilient projects per year
- 10-20% of highway culverts with climate resilience enhancements
- 450-500 snow trap sites addressed
- Majority of trees on construction projects replaced and 100-200 miles of roadway with new or improved green infrastructure

EQUITY EVALUATION

MnDOT reviewed the investment for each category through an equity lens. With an Equity Work Group, MnDOT staff discussed the potential benefits from the MnSHIP investment direction and potential burdens resulting from that investment. Potential benefits of Climate Resilience investments include:

- Green infrastructure will be focused in urban areas that may be more affected by climate change – high priority areas would need to be selected based on various safety, health, and equity criteria
- Improvements after highway projects such as replacing/adding more trees and incorporation of native plantings and seeding can restore/improve environment around highways and benefit local communities

Potential burdens of Climate Resilience investments include:

- Limitations on the use of state highway funds within right-of-way limits restorations and broader benefits to the surrounding communities

RISK MANAGEMENT RESULTS

The Climate Resilience workgroup identified highway capital risks related to Minnesota's changing climate. These risk statements were scored for likelihood and impact (high, medium, low) based on MnDOT's current investment approach and the investment direction in this plan. Each risk statement and its respective score is shown in Figure 6-9.

Figure 6-9: Climate Resilience Risk Management Results

RISK STATEMENT	RISK LEVEL CURRENT APPROACH	RISK LEVEL WITH MNSHIP INVESTMENT DIRECTION
More frequent service interruptions and road closures	High	High
Local economies and communities could see increased vulnerability due to increases in extreme weather events	High	Medium
Increased extreme weather events (flash flooding, snow drifts, etc.) cause dangerous conditions on roadways	High	Medium
MnDOT roadway and drainage systems could cause flooding on private properties	Low	Low
MnDOT may not maximize the health of Minnesota's people, environment and economy	High	Medium

Four out of five risks drop from a high risk to a medium risk with investment in this category. This reflects the increased investment for Climate Resilience in this plan.

SYSTEM INVESTMENT STRATEGIES

MnDOT may draw from the following strategies, when necessary, to prioritize projects and address risks that are associated with lower performance or investment in Climate Resilience:

- Coordinate on planned and programmed projects to identify resilience needs
- Implement priorities identified in the Resilience Improvement Plan and the Carbon Reduction Strategy
- Implement priorities identified in the SMTP
- Implement actions in the 2022 Minnesota Climate Action Framework

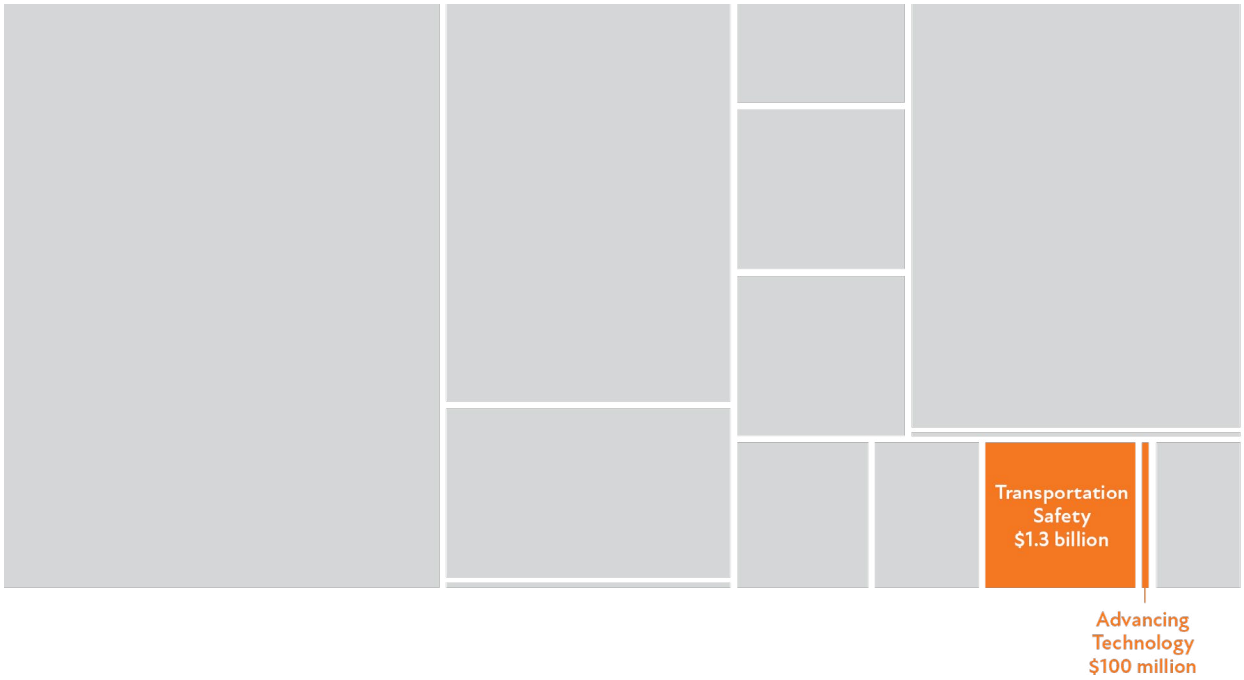
TRANSPORTATION SAFETY

Funding for Transportation Safety in MnSHIP will allow MnDOT to continue its comprehensive approach to improving safety on state highways for all users. Since the last MnSHIP was completed, traffic fatalities and serious injuries have spiked, sparking an increased attention on traffic safety. The MnSHIP investment direction increases investment in traffic safety improvements.

INVESTMENT PRIORITIES

As shown in Figure 6-10, MnDOT anticipates spending approximately 3.7% of its program on Transportation Safety for the 20-year planning period of MnSHIP.

Figure 6-10: Transportation Safety Investment in MnSHIP



TRANSPORTATION SAFETY

As described in Chapter 1: Plan Overview, MnDOT currently uses a combination of three types of safety investments in its effort to improve safety and reduce the number of fatalities and serious injuries on Minnesota roads:

- Proactive lower cost, high-benefit safety features
- Improvements at sustained crash locations
- Investments and coordination as part of the Towards Zero Deaths initiative

MnDOT funds many of these improvements through the Highway Safety Improvement Program (HSIP), a federal program that emphasizes data-driven, strategic approaches to improving highway safety. HSIP projects correct a hazardous road location or address a fatal and serious injury crash problem. The Transportation Safety category also includes non-motorized safety improvements and other standalone safety investments beyond HSIP.

PROJECT SELECTION

MnDOT currently includes safety improvements as a part of pavement and bridge projects. As these projects are developed, safety improvements are identified which could be made in conjunction with the project. MnDOT also funds safety investments on state highways through HSIP, a federal program. These funds are distributed among MnDOT Districts and local agencies. Project identification and selection for the non-motorized safety improvements and additional safety improvements in the MnSHIP investment direction are still being determined but will include coordination between the districts and Office of Traffic Engineering.

OUTCOMES

Safety outcomes are inherently difficult to project but MnDOT can estimate crash reduction factors for specific improvements at specific locations. The additional safety investment beyond HSIP will allow MnDOT to address roughly 40 intersections and 50 miles of highway segments with high crash rates. If these improvements are successful, MnDOT would be able to save 30-50 lives and prevent 60-100 serious injuries from happening on state highways. Investments in non-motorized safety would prevent 100-200 serious or fatal pedestrian/bicycle crashes from occurring. MnDOT districts will continue installing safety features through HSIP and as part of pavement projects.

EQUITY EVALUATION

MnDOT reviewed the investment for each category through an equity lens. With an Equity Work Group, MnDOT staff discussed the potential benefits from the MnSHIP investment direction and potential burdens resulting from that investment. Potential benefits for the non-motorized safety program include:

- Provides benefits for those who don't drive, either by choice or by circumstance through adding connections and improving safety along and across highways
- Investment need calculation incorporated priorities based on equity considerations

RISK MANAGEMENT RESULTS

The Transportation Safety workgroup identified highway capital risks related to highway safety. These risk statements were scored for likelihood and impact (high, medium, low) based on MnDOT's current investment approach and the investment direction in this plan. Each risk statement and its respective score is shown in Figure 6-11.

Figure 6-11: Transportation Safety Risk Management Results

RISK STATEMENT	RISK LEVEL CURRENT APPROACH	RISK LEVEL WITH MNSHIP INVESTMENT DIRECTION
Inability to implement new proactive safety treatments	Medium	Low
Reduced educational or enforcement programs like MnDOT's TZD program	Medium	Low
Limited ability to invest in pedestrian and bicycle infrastructure	Medium	Low
New and existing safety infrastructure may not be able to be maintained due to limited maintenance budgets	Low	Medium
An increase in safety investments and infrastructure requiring additional staff time and agency resources	Low	Medium

Three risks drop from medium to low. The increased investment reduces MnDOT's risks related to transportation safety. The final two risks go up with additional investment. This reflects the staffing and maintenance needs for new safety infrastructure.

SYSTEM INVESTMENT STRATEGIES

MnDOT may draw from the following strategies, when necessary, to prioritize projects and address risks that are associated with lower performance or investment in Transportation Safety:

- Invest in high priority, lower cost proactive projects such as rumble strips, high tension cable barrier and intersection lighting
- Reactively install roundabouts and J-turns at sustained crash locations
- Implement non-motorized safety countermeasures at priority locations
- Modify the design of highways for appropriate speeds based on land use context and user needs

CHAPTER 6

ADVANCING TECHNOLOGY

Advancing Technology includes investments in Intelligent Transportation Systems (ITS), Transportation System Management and Operations and Connected and Automated Vehicles. Investments in this category expand technology infrastructure to address transportation safety and mobility needs.

PROJECT SELECTION

Most advancing technology investments are prioritized and selected through the ITS solicitation. Each year, districts apply for funding for ITS projects. The Office of Traffic Engineering scores and selects projects. MnDOT also funds the CAV-X office to plan for and implement strategies and capital investments to prepare Minnesota's roadways for the widespread adoption of connected and automated vehicle technology.

OUTCOMES

Outside of ITS infrastructure condition, MnDOT does not have adopted performance measures or targets related to advancing technology. The investment in this category will expand ITS to 200-250 miles of state highways and address immediate and medium needs for fiber network expansion.

EQUITY EVALUATION

MnDOT reviewed the investment for each category through an equity lens. With an Equity Work Group, MnDOT staff discussed the potential benefits from the MnSHIP investment direction and potential burdens resulting from that investment. Specific benefits and burdens for Advancing Technology investment were not identified.

RISK MANAGEMENT RESULTS

The Advancing Technology workgroup identified highway capital risks related to technology on state highways. These risk statements were scored for likelihood and impact (high, medium, low) based on MnDOT's current investment approach and the investment direction in this plan. Each risk statement and its respective score is shown in Figure 6-12.

Figure 6-12: Advancing Technology Risk Management Results

RISK STATEMENT	RISK LEVEL CURRENT APPROACH	RISK LEVEL WITH MNSHIP INVESTMENT DIRECTION
Inability to keep pace with shifts in technology	Medium	Medium
Inadequate funding for maintaining technology assets	Medium	Medium
Limited implementation and piloting of CAV technology	Medium	Medium
Lack of investments in technology on state highway system	Medium	Medium
Lack of available funding leading to unequal technology investment across the state	Low	Low

Risks related to advancing technology did not change from the current investment approach. This reflects minimal changes to the investment types and amounts for advancing technology in MnSHIP versus the existing approach.

SYSTEM INVESTMENT STRATEGIES

MnDOT may implement any of the following strategies to address the risks that remain with the level of investment in Advancing Technology:

- Traveler information: Provides current and anticipated travel and weather conditions, route and mode options (and other information) via dynamic message signs, 511, web, social media and text
- Invest in road weather management systems
- Utilize traffic signal optimization that is currently available
- Develop adaptive ramp optimization and monitoring

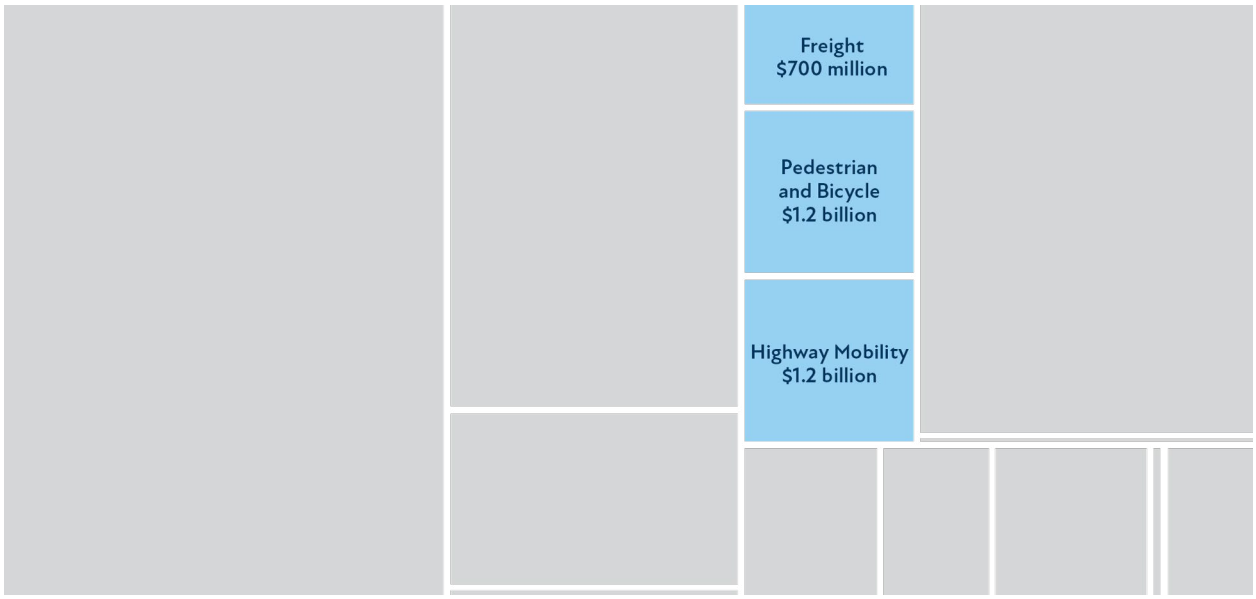
CRITICAL CONNECTIONS

Critical Connections includes mobility investments for many types of highway users, including those driving motor vehicles, freight carriers, bicyclists and pedestrians. MnSHIP's investment categories within Critical Connections recognize the importance of the multimodal connections detailed in the SMTP. The Highway Mobility and Freight investment categories improve mobility for drivers and freight carriers. Safe walking and bicycling networks are necessary for the mobility of all Minnesotans, and Pedestrian and Bicycle investments help MnDOT make progress toward this objective. MnDOT's Critical Connections investment strategies seek to increase options, improve travel time reliability and reduce excessive delay, while reducing the average amount of driving Minnesotans need to access the goods, services and opportunities important to their quality of life. Investment categories in the Critical Connections objective area received substantial increases in investment from the previous plan. This increased investment will allow MnDOT to improve mobility for state highway users, particularly pedestrians and bicyclists.

INVESTMENT PRIORITIES

Critical Connections is expected to constitute 8.4% of MnDOT's investment through all years of the plan (Figure 6-13).

Figure 6-13: Critical Connections Investment in MnSHIP



HIGHWAY MOBILITY

The Highway Mobility investment category focuses on improving the movement of people and freight on the NHS. MnDOT's strategy for maintaining travel reliability in the Twin Cities metropolitan area has moved away from traditional highway expansion. The investments in this category follow a tiered, phased approach focused on implementing lower cost, spot improvements and transit-supportive investments. Highway Mobility strategies include four types of mobility improvements:

- Active Traffic Management (ATM) and transit-supportive investments (Twin Cities Metro)
- Spot mobility improvements
- E-ZPass lanes (Twin Cities Metro)
- Strategic capacity investments

The investment strategies for Highway Mobility in the Twin Cities region align with the investment direction established in the Metropolitan Council's 2040 Transportation Policy Plan (TPP) and the SMTP. The MnSHIP investment direction funds ATM, spot mobility improvements and E-ZPass lanes but does not fund strategic capacity investments. Capacity expansion projects are expensive and may hinder MnDOT from meeting its goal for reduction of vehicle miles travelled as mentioned in Chapter 2: Existing Conditions and Trends.

Capacity expansion projects on the state highway system may be funded through other programs like Corridors of Commerce or through the Metropolitan Council's regional solicitation.

PROJECT SELECTION

Within the Twin Cities, mobility projects are selected based on asset management and return on investment criteria, along with priority in regional plans and studies. Direction for the latter comes from the Metropolitan Council's 2040 TPP and various region-wide system studies, such as the Principal Arterial Intersection Conversion Study and the MnPASS (now E-ZPass) System Study. Standalone mobility projects in Greater Minnesota are chosen by individual MnDOT districts and emphasize criteria based on safety and travel time reliability. These project locations have been identified and prioritized in the Greater Minnesota Mobility Study.

In addition to the Highway Mobility investment category, MnDOT selects projects for the Corridors of Commerce program. That program has its own legislatively directed funding and selection criteria that does not follow MnSHIP investment direction guidance. More information on Corridors of Commerce is available at its website.

In 2023, the Minnesota Legislature created new requirements for highway capacity expansion projects to be consistent with MnDOT's targets for Greenhouse Gas emissions and per capita VMT. Any expansion project programmed after February 1, 2025 that is not consistent with those targets will need to have associated mitigation programmed.

OUTCOMES

MnDOT tracks federal performance measures for reliability on the NHS. MnDOT also recently adopted a vehicle miles travelled (VMT) per capita target and a travel time delay performance measure and target for the Twin Cities area. The measures and targets are:

- 90% of person-miles traveled on the NHS are reliable
- 14% reduction in VMT per capita by 2040 (compared to 2019)
- 9 minutes of delay per person in the Twin Cities

Based on the investment direction in MnSHIP, MnDOT will be able to address travel delay in the Twin Cities region at specific locations. Delay for most state highway users will increase from current levels. Over the 20-year plan period, MnDOT and the Metropolitan Council will invest in Highway Mobility to implement the following:

- Build out the traffic management system
- Support 10 arterial Bus Rapid Transit lines on state highways
- Complete over 100 spot mobility improvements
- Add E-ZPass lanes on four corridors

While these projects will help improve travel reliability and mitigate travel delay, delay is still anticipated to worsen through 2042 relative to today due to anticipated regional growth and the related increase in mobility needs across the system. Delay in the Twin Cities metro is expected to rise from 9.7 minutes per

person per weekday (in 2018) to 11-12 minutes per person per weekday by the end of the plan. Shifts in travel behavior including continued teleworking, use of transit and increase in bicycling and walking could significantly change these anticipated outcomes.

Mobility investments in Greater Minnesota can complete improvements at up to 50 locations on the NHS. These improvements will address the biggest mobility issues at specific locations. In addition, other funding such as Corridors of Commerce and federal competitive solicitations may fund larger expansion projects in Greater Minnesota. Due to these investments, it is anticipated that travel time reliability in Greater Minnesota will remain stable over the MnSHIP planning period.

EQUITY EVALUATION

MnDOT reviewed the investment for each category through an equity lens. With an Equity Work Group, MnDOT staff discussed the potential benefits from the MnSHIP investment direction and potential burdens resulting from that investment. Potential benefits of Highway Mobility investments include:

- Transit-supportive (bus shoulders/ramps, transit signal priority, safety enhancements) and managed lane investments provide advantages for transit users which historically made up of a higher percentage of lower income populations than the overall population

Potential burdens of Highway Mobility investments include:

- Expansion benefits those with cars and those traveling through a community, not those living near the state highway
- Added lanes can burden communities near roadways through an increase air pollution, noise pollution, and can induce demand and traffic to surrounding area
- Adding a lane can mean taking property from communities that have been harmed in the past

Overall, there are more investments in Highway Mobility that add or continue burdens rather than address inequities.

RISK MANAGEMENT RESULTS

The Highway Mobility workgroup identified highway capital risks related to the movement of people and goods on the NHS. These risk statements were scored for likelihood and impact (high, medium, low) based on MnDOT's current investment approach and the investment direction in this plan. Each risk statement and its respective score is shown in Figure 6-14.

Figure 6-14: Highway Mobility Risk Management Results

RISK STATEMENT	RISK LEVEL CURRENT APPROACH	RISK LEVEL WITH MNSHIP INVESTMENT DIRECTION
MnDOT may not address local and regional partner mobility priorities and the legislature directs funding toward capacity projects	High	Medium
Undesirable delay could increase with rising travel demand	Medium	Medium
Congestion hinders development of reliable and efficient transit service	Medium	Medium
The Twin Cities region may be unable to adapt to shifting travel and land use patterns	Medium	Low
Less predictable travel times and unstable traffic flow at key locations on the NHS	Medium	Low
Increased congestion could result in less reliable trips for freight carriers	Medium	Low
Unstable traffic flow at certain locations may raise the risk of crashes	High	Medium
Investment approach may over-build capacity that doesn't match future travel demand	Low	Low
Current investment approach focused on car-centric mobility may create induced demand	Low	Medium

Highway mobility investment in this plan is substantially increased over current investment levels. That investment reduces remaining risk, particularly on the NHS in Greater Minnesota. Three risks drop to low and no risk remains at a high level with this investment. The risk related to induced demand rises to a medium risk with this investment approach. At higher levels of investment in Highway Mobility, that risk increases. The MnSHIP investment direction focuses on spot mobility improvements and transit-supportive investments which mitigates potential induced demand from investments in this category.

SYSTEM INVESTMENT STRATEGIES

MnDOT may draw from the following strategies, when necessary, to prioritize projects and address risks that are associated with lower performance or investment in Highway Mobility:

- Focus on low-cost spot mobility projects that provide safety benefits and reduce delays
- Focus on investments that provide reliable congestion-free options on Twin Cities metro area corridors
- Focus investment to improve travel time reliability through operational improvements such as upgraded traffic signals, ITS, turn lanes and passing lanes

CHAPTER 6

FREIGHT

The Freight category includes projects that are eligible for funding as part of the National Highway Freight Program (MHFP). These include addressing freight bottlenecks, freight safety and mobility improvements, first-last mile connections and intermodal freight improvements. Freight investments also include preservation and upgrades for truck weigh stations, at-grade rail crossings on the state highway system and truck parking at the state's rest areas.

PROJECT SELECTION

Highway freight projects are selected through the MHFP, which allocates federal funding for freight. The MHFP selects projects through a solicitation process that includes three project categories:

- Safety
- Congestion/efficiency improvements
- First/last mile connections

Allocation of funds between these three categories is based on the investment direction in the Minnesota Statewide Freight System and Investment Plan. Weigh station and weight enforcement projects are selected through the Weigh Station Capital Improvement Program with input from MnDOT District offices and the Weight Enforcement Unit of the Minnesota State Patrol. Projects are identified and prioritized for the Capital Improvement Program based on a number of scoring criteria, including condition, geographic coverage, freight considerations, roadway characteristics and enforcement and safety criteria.

State highway rail crossing projects are selected through the Railway-Highway Crossings program which solicits projects annually from local road authorities, railroads and MnDOT districts. The program includes three project categories: closures/consolidations, antiquated equipment and grade crossing control.

OUTCOMES

Truck Travel Time Reliability Index (TTRI) is a performance measure that MnDOT monitors and is a required federal performance measure. TTTRI measures the variation in commercial truck travel times on the Interstate system. MnDOT cannot project this measure into the future. Currently, MnDOT is meeting the federal target for TTRI. Investment in the Freight category remained relatively flat from the current investment approach but includes an increased investment in truck parking expansion. With investment in Freight, MnDOT will be able to achieve the following:

- 60-100 first/last mile or freight safety improvements
- Maintain weigh stations so that none become obsolete
- Replace rail crossing signals at 3 locations per year and 1 passive crossing converted to active per year
- Expand truck parking at 8-10 existing locations and add 2-3 new truck parking locations on MnDOT right-of-way

EQUITY EVALUATION

MnDOT reviewed the investment for each category through an equity lens. With an Equity Work Group, MnDOT staff discussed the potential benefits from the MnSHIP investment direction and potential burdens resulting from that investment. Specific benefits and burdens for Freight investment were not identified.

RISK MANAGEMENT RESULTS

The Freight workgroup identified highway capital risks related to freight movement in Minnesota. These risk statements were scored for likelihood and impact (high, medium, low) based on MnDOT's current investment approach and the investment direction in this plan. Each risk statement and its respective score is shown in Figure 6-15.

Figure 6-15: Freight Risk Management Results

RISK STATEMENT	RISK LEVEL CURRENT APPROACH	RISK LEVEL WITH MNSHIP INVESTMENT DIRECTION
Reduced funding could affect MnDOT's ability to fund freight improvements as part of existing or stand-alone projects	Low	Low
Reduced funding could lead to closing of weigh stations and the Department of Public Safety cannot perform necessary weight enforcement and safety inspections	Medium	Medium
Investment in weigh stations and weight enforcement may be below federal expectations	Medium	Low
Freight intermodal connectors may not be identified and adequately maintained	Low	Low

Freight investment reduces risks slightly compared to the current approach. This reflects the similar investment in freight across the two approaches. At the end of the MnSHIP planning period, most freight related risks are rated low.

SYSTEM INVESTMENT STRATEGIES

MnDOT may draw from the following strategies, when necessary, to prioritize projects and address risks that are associated with lower performance or investment in Freight:

- Use public-private partnerships where possible
- Use advanced technology
- Integrate freight considerations in public agency decision-making
- Add truck parking at MnDOT-owned facilities

CHAPTER 6

PEDESTRIAN AND BICYCLE

Pedestrian and bicycle investments provide infrastructure for people to walk and bicycle safely along and across state highways. Examples of MnDOT investments include sidewalks, accessible curb ramps, accessible pedestrian signals at intersections, shared use paths or separated trails, bicycle lanes and grade-separated facilities.

PROJECT SELECTION

Most improvements for people walking and bicycling on the state highway system are constructed as part of pavement and bridge projects. Following the complete streets approach, MnDOT evaluates options to improve the safety, efficiency and functionality of the highway system for people walking and bicycling on every project. Standalone pedestrian and bicycle projects are also occasionally funded, often in coordination with local agencies.

Each district has varying pedestrian and ADA infrastructure needs. The districts select their 10-year pedestrian investments based on planned bridge and pavement projects, ADA needs identified via MnDOT's ADA Transition Plan and inventory and highest-risk pedestrian areas. Through collaboration between MnDOT districts and MnDOT's ADA Unit, MnDOT identifies existing non-compliant sidewalks along any scheduled pavement or bridge project. MnDOT takes the opportunity to repair the sidewalk to bring it into compliance. Some additions of ADA-compliant facilities and elimination of pedestrian "gaps" are also completed where needed. Stand-alone ADA projects can also be selected to repair non-compliant sidewalks in locations where there is not an upcoming pavement or bridge project identified.

MnDOT District Bike Plans, completed in 2019, identify priority corridors for bicycle infrastructure investments and connections. Bicycle investments in MnSHIP are based on building out these corridors with a focus on improvements in urban areas.

OUTCOMES

MnDOT measures the condition of curb ramps and sidewalk (miles) and tracks the percentage that is compliant with ADA standards. MnDOT projects that the state highway system will be substantially compliant with ADA by 2037 including pedestrian bridges. In addition, MnDOT will be able to improve pedestrian facilities on 100-150 miles of roadway and at 200-250 intersections.

Bicycle infrastructure does not have a forecastable performance measure or target. Outcomes include progress towards implementing the District Bike Plans and supporting the SMTP target of 60% of Minnesotans bicycling or walking at least weekly. Bicycling infrastructure investments also support MnDOT's long term goal of no one dying or being seriously injured while bicycling on the transportation system. With the bicycle investment identified in MnSHIP, MnDOT will be able to:

- Add over 150 miles of bicycle lanes and 20 miles of separated bicycle facilities in urban areas
- Add 10-15 miles of improvements along US bicycle routes in rural areas
- Maintain existing separated bicycle facilities and ramp connections

EQUITY EVALUATION

MnDOT reviewed the investment for each category through an equity lens. With an Equity Work Group, MnDOT staff discussed the potential benefits from the MnSHIP investment direction and potential burdens resulting from that investment. Potential benefits of Pedestrian and Bicycle investments include:

- Provides benefits for those who don't drive, either by choice or by circumstance through adding connections and improving safety along and across highways. Investment need calculation incorporated priorities based on equity.
- Addresses and rectifies the barriers caused by existing pedestrian infrastructure that is not compliant with ADA including sidewalks, curb ramps, and crossing signals

Potential burdens of Pedestrian and Bicycle investments include:

- Need to ensure benefits to communities living near improvement, not just those using facility to travel through – a bike path does not always translate to advancing equity
- Reaching ADA compliance by 2037 is too long of a wait and continues burdens until then

Overall, the Equity Work Group determined that implementation is key as to whether investments advance equity or continue burdens.

RISK MANAGEMENT RESULTS

The Pedestrian and Bicycle workgroup identified highway capital risks related to walking and bicycle. These risk statements were scored for likelihood and impact (high, medium, low) based on MnDOT's current investment approach and the investment direction in this plan. Each risk statement and its respective score is shown in Figure 6-16.

Figure 6-16: Pedestrian and Bicycle Risk Management Results

RISK STATEMENT	RISK LEVEL CURRENT APPROACH	RISK LEVEL WITH MNSHIP INVESTMENT DIRECTION
The state highway system presents a barrier to people who want to cross or travel along it	High	Medium
Limited investment in increased mobility options and increased system connections	Medium	Medium
Poor planning, design and/or construction of pedestrian assets	Medium	Medium
Not meeting federal compliance or the intent of ADA	Low	Low
Ad hoc investment based on pavement and bridge projects (bike)	Medium	Medium
Inability to maintain the system in good repair (bike)	Medium	Medium
Inability to invest in separated bicycle facilities and the recommended, context-appropriate facility as identified in the Statewide Bicycle System Plan	Medium	Medium

Increased investment in pedestrian infrastructure reduces the highest risk of the state highway system being a barrier for people. The MnSHIP investment direction includes funding to fill gaps in the sidewalk system and address ADA issues with pedestrian bridges which should help reduce that risk. Most bicycle-related risk levels are similar to the current approach. The MnSHIP investment direction does not increase bicycle investment at the same level as pedestrian infrastructure. Bicycle investment has one of the highest unmet needs as described in Chapter 7: Unmet Needs.

SYSTEM INVESTMENT STRATEGIES

MnDOT may draw from the following strategies, when necessary, to prioritize projects and address risks that are associated with lower performance or investment in Pedestrian and Bicycle:

- Use Priority Areas for Walking Score (PAWS) and Suitability for the Pedestrian and Cycling Environment (SPACE) tool to prioritize locations for pedestrian and bicycle improvements
- Make pedestrian improvements via complete streets and to complete gaps in the network
- Focus 70% of bicycle investments in urban areas and 30% percent of investments in rural areas
- Add to existing bridge and pavement projects to improve safety and connectivity of the state bikeway system

HEALTHY EQUITABLE COMMUNITIES

Following the policy direction in the SMTP, MnSHIP includes an increased emphasis on equity. The Healthy Equitable Communities objective area includes two categories, Local Partnerships and Main Streets/Urban Pavements that aim to reduce disparities, enhance livability and partner with local communities. Although MnDOT pursues these objectives in all investment areas, these two categories are the primary outlet for collaboration with local agencies and to help meet local needs.

INVESTMENT PRIORITIES

As shown in Figure 6-17, MnDOT anticipates spending approximately 5.2% of its program on Healthy Equitable Communities for the 20-year planning period of MnSHIP.

Figure 6-17: Healthy Equitable Communities Investments in MnSHIP

LOCAL PARTNERSHIPS

The Local Partnerships investments support local priorities on the state highway system where MnDOT partners with local communities to deliver improvements to the state highway system. These include landscaping/beautification projects, improvements supporting economic development, safety and improvements that help to integrate the highway into the local community and improve livability. The category also includes highway ownership realignment agreements where the roadway is transferred from one roadway authority to another.

PROJECT SELECTION

The Local Partnership category is a collection of programs; each has its way of selecting projects. For example, roadway transfers rely on MnDOT negotiating with the receiving agency and restoring the road to an acceptable condition before transferring. The Transportation Economic Development (TED) program has a competitive application process that scores project economic benefits and trunk highway modifications. Landscaping agreements are contingent on location and available MnDOT funds. The Local Partnership Program is competitive and requires a selection committee, scoring criteria and various other factors. Livable Community partnerships are driven by the livability framework that prioritizes public health, environment, economics, sense of place, safety, meaningful physical, social, and cultural community connections, equity and community trust.

OUTCOMES

MnSHIP will invest nearly $1 billion in Local Partnerships through 2042. Most investments will be completed through the Local Partnership Program and partnering on locally-led projects on state highways. MnDOT does not have performance measures or targets related to partnering with communities. With investment in Local Partnerships, MnDOT will be able to:

- Fund 40 large TED projects or 350 smaller projects, which may support the creation and retention of an estimated 20,000 to 55,000 jobs throughout the state
- Fund 550-650 local partnership projects
- Partner on 15-20 locally-led projects on state highways
- Transfer an additional 70 miles of roadway
- Complete 1-3 small cap or stitch projects over state highways and up to 100 smaller under-bridge improvements

EQUITY EVALUATION

MnDOT reviewed the investment for each category through an equity lens. With an Equity Work Group, MnDOT staff discussed the potential benefits from the MnSHIP investment direction and potential burdens resulting from that investment. Potential benefits of Local Partnerships investments include:

- Reduces system size and future maintenance burden allowing for more investment towards priorities that better advance equity
- Provides additional opportunity for improvements especially in urban areas where a MnDOT project may not be upcoming
- Potential benefits in partnering on locally-led projects and investment targeting urban areas

Potential burdens of Local Partnerships investments include:

- Differing visions and interest between MnDOT and local partners can lead to inability to advance equity and can continue inequitable outcomes

RISK MANAGEMENT RESULTS

The Local Partnerships workgroup identified highway capital risks related to community priorities, livability and equity. These risk statements were scored for likelihood and impact (high, medium, low) based on MnDOT's current investment approach and the investment direction in this plan. Each risk statement and its respective score is shown in Figure 6-18.

Figure 6-18: Local Partnerships Risk Management Results

RISK STATEMENT	RISK LEVEL CURRENT APPROACH	RISK LEVEL WITH MNSHIP INVESTMENT DIRECTION
Inability to capitalize on opportunities to advance economic competitiveness and address local priorities	Medium	Medium
Continue to manage roadways which could be more effectively managed by local governments	Medium	Medium
Funding unavailable to facilitate an agreed transfer with local governments	Medium	Medium

Despite increased investment in Local Partnerships, the risk levels do not change from the current approach. This reflects the limited increase in jurisdictional transfer investments that aligns with the final two risks.

SYSTEM INVESTMENT STRATEGIES

MnDOT may draw from the following strategies, when necessary, to prioritize projects and address risks that are associated with lower performance or investment in Local Partnerships:

- Maintain the TED program
- Expand partnerships with local agencies/communities that leverage funds to complete larger projects

MAIN STREETS/URBAN PAVEMENTS

Investment in Main Streets/Urban Pavements provides additional funding for projects in cities and towns to deliver more improvements along state highways. This includes segments of the state highway that are non-freeways and function both as a state highway and as a city street in an urban context. Additional improvements addressed could be local utilities under the road, drainage infrastructure, a longer-term ADA fix, or redesigning the roadway to meet the community's quality of life, and transportation equity needs. Specifically, the Main Streets/Urban Pavements funding covers additional pavement costs related to adding a project in an urban area or changing the scope of a planned pavement resurfacing project to allow more substantial work in conjunction with the project.

PROJECT SELECTION

This is a new investment category. The project identification and selection process has not begun for these investments. The section below describes how the process will work in the future.

Urban pavement projects are selected based on predicted pavement condition, other infrastructure needs in a community and how substantial a fix the pavement surface requires. District staff will work with the Materials Office and MnDOT's ADA unit to determine the best location for Main Streets/Urban Pavements funding. Oftentimes, this will involve adding funding to an existing urban pavement project to address other needs. In other locations, Districts may add a new urban pavement project with this funding.

OUTCOMES

MnDOT will be able to track the outcome of Main Streets/Urban Pavements investment by how many selected projects would be upgraded to complete, holistic projects and how many additional unselected candidate locations become funded projects. With the MnSHIP investment, MnDOT will be able to address 125-145 candidate urban locations in Minnesota (note more than one candidate location may be in the same city). These investments may improve the pavement outcomes described previously under the Pavement Condition investment category.

MnDOT also measures the condition of curb ramps and sidewalk (miles) and tracks the percentage that is compliant with ADA standards as a part of Pedestrian and Bicycle investment. ADA compliance is a federal law that ensures accessibility for people with disabilities. Tracking ADA compliance as a part of implementation will also show the effectiveness of Main Streets/Urban Pavement investments.

EQUITY EVALUATION

MnDOT reviewed the investment for each category through an equity lens. With an Equity Work Group, MnDOT staff discussed the potential benefits from the MnSHIP investment direction and potential burdens resulting from that investment. Potential benefits Main Streets/Urban Pavements investments include:

- Ability to address local safety concerns, improve/add non-motorized infrastructure, urban aesthetic improvements for the surrounding community
- Helps mitigate/balance pavement projects between rural and urban

RISK MANAGEMENT RESULTS

The Main Streets/Urban Pavements workgroup identified highway capital risks related to state highway pavements in urban areas. These risk statements were scored for likelihood and impact (high, medium, low) based on MnDOT's current investment approach and the investment direction in this plan. Each risk statement and its respective score is shown in Figure 6-19.

Figure 6-19: Main Streets/Urban Pavements Risk Management Results

RISK STATEMENT	RISK LEVEL CURRENT APPROACH	RISK LEVEL WITH MNSHIP INVESTMENT DIRECTION
Inability to capitalize on opportunities to advance health, transportation options and address local priorities	High	Medium
Growth in unaddressed improvements from under investing in Urban Pavements/Main Streets	High	Medium
Unable to prevent deferring ADA improvements with pavement projects and making more long-term ADA improvements	High	Medium
Continuing to make piecemeal improvements requiring multiple projects in the same location	High	Medium
Inability to align with local funding opportunities and coordination lead time to plan and deliver complex projects	High	Medium
Inability to increase opportunities to address safety in urban areas	Medium	Medium

Risks related to urban pavements were scored highly by MnDOT staff. MnDOT districts have been struggling to complete these projects while addressing local needs and completing projects in rural areas. These projects are very expensive and can often be delayed due to lack of funding. The creation and funding of this category in MnSHIP will help reduce the highest risks related to partner coordination, ADA and multimodal needs in urban areas.

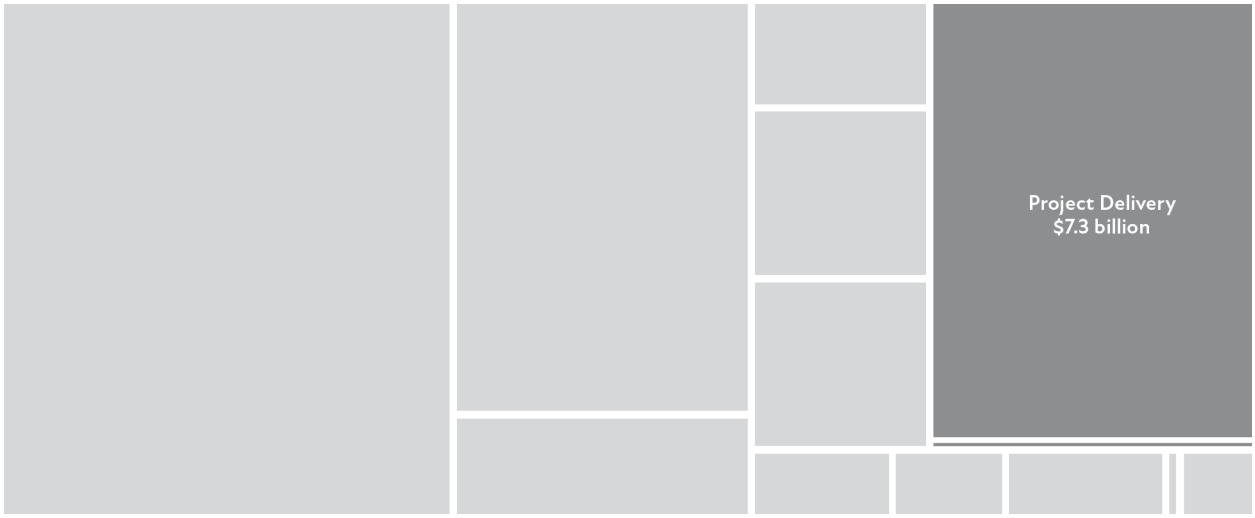
CHAPTER 6

OTHER

INVESTMENT PRIORITIES

MnDOT anticipates spending approximately 20.3% of its program on Small Programs and Project Delivery in all years of the plan (Figure 6-20).

Figure 6-20: Other Investment in MnSHIP



PROJECT DELIVERY

Project Delivery includes components of projects that are critical to ensure the timely and efficient completion of highway projects. These components include right of way costs, consultant services, supplemental agreements and construction incentives (see Chapter 1: Plan Overview, for more detail on the components of Project Delivery). Historically, MnDOT has spent an average of 20% of total capital revenues on Project Delivery.

PROJECT SELECTION

Investments in project delivery are the costs associated with delivering projects for the rest of the program. This category does not fund stand-alone projects.

OUTCOMES

MnDOT assumes that it will continue to spend approximately 20% of its funds in this category. This is consistent with recent averages for the MnDOT capital program.

SMALL PROGRAMS

Small Programs is used to fund short-term, unforeseen issues and one-time priorities/needs as they arise. Some programs do not easily fit into a MnSHIP investment category. If funding is required beyond the short-term, an effort is made to incorporate the program into a MnSHIP investment category during the next MnSHIP update. Small Programs in MnSHIP include funds for historic properties, flood and slide repair and cleaning up contaminated materials Project Selection

The project selection process for Small Programs varies depending on the program. However, projects are typically prioritized and selected centrally instead of at the district level.

OUTCOMES

MnDOT will invest $100 million in Small Programs through 2042.

CHAPTER 7

UNMET NEEDS

Over the next 20 years, MnDOT estimates there will be $36.7 billion in available revenues to address $52-57 billion in identified transportation needs, resulting in a funding gap of approximately $15-20 billion. Recent increases in revenue have substantially reduced the unmet need for MnSHIP. However, over the planning period, revenues are not expected to keep pace with forecasted inflation for the construction-related sector. Additional capital improvements are needed to maintain aging infrastructure and meet Minnesotans' growing transportation needs.

The unmet needs presented in this chapter refer to the same set of needs presented in Chapter 4: Investment Needs. For the state highway system, the difference between the 20-year needs and the amount MnDOT plans to spend in each investment category over this timeframe is shown in Figure 7-1. MnDOT estimates there will be a funding gap of between $15 and $20 billion over the next 20 years. This is a slight reduction from the $21 billion unmet need identified in the 2017 MnSHIP document. The range reflects the reduction in Highway Mobility need if MnDOT is successful at achieving its vehicle miles travelled reduction target. Both immediate investment needs and those expected to arise over the next 20 years will not be fully addressed. As a result, the state will fall short of meeting its performance-based goals.

Figure 7-1: Summary of Unmet Needs through 2042

INVESTMENT CATEGORY	20-YEAR NEEDS	20-YEAR EXPENDITURES	UNMET NEEDS	UNDERFUNDED IMPROVEMENTS
Pavement Condition	$14.7 billion	$13.5 billion	$1.8 billion	Other NHS and Non-NHS pavement condition
Bridge Condition	$6.6 billion	$6.0 billion	$600 million	Non-NHS bridge condition
Roadside Infrastructure	$5.1 billion	$2.8 billion	$2.3 billion	All roadside assets including culverts, signage, lighting, noise walls
Rest Areas	$300 million	$150 million	$150 million	Rest area condition
Climate Resilience	$1.2 billion	$550 million	$600 million	Most climate resilience upgrades and snow trap locations are not addressed
Transportation Safety	$2.4 billion	$1.3 billion	$1.2 billion	Some sustained crash locations are not addressed
Advancing Technology	$150 million	$100 million	$50 million	Fiber network expansion
Highway Mobility	$6.6 billion*	$1.2 billion	$5.4 billion	E-ZPass express lanes, strategic capacity and spot mobility improvements
Freight	$1.3 billion	$700 million	$600 million	Freight bottlenecks
Pedestrian and Bicycle	$4.6 billion	$1.2 billion	$3.4 billion	Sidewalk system completion, implementing district bike plans
Local Partnerships	$1.2 billion	$1 billion	$200 million	Jurisdictional transfer
Main Streets/Urban Pavements	$1.7 billion	$900 million	$900 million	Some urban pavement locations with ADA and/or local community needs are not addressed
Small Programs	$100 million	$100 million	-	Not applicable
Project Delivery	$11.5 billion	$7.3 billion	$4.2 billion	Cost to deliver capital projects based on analysis of historic expenditure patterns
INVESTMENT CATEGORY TOTAL	TOTAL=$52-57 BILLION	TOTAL=$36.7 BILLION	TOTAL=$15-20 BILLION	

SYSTEM STEWARDSHIP: UNMET NEEDS

PAVEMENT CONDITION

Based on the spending strategies outlined in Chapter 6: Investment Direction, Interstate pavement condition is projected to meet performance targets by 2042. Pavement condition on the Other NHS and Non-NHS roadways are projected to be slightly worse than targets. Projected outcomes on both systems have improved significantly with the additional funding received in the 2023 legislative session.

BRIDGE CONDITION

NHS bridge condition is projected to meet performance targets by 2042. Non-NHS bridges in poor condition will double and not meet their performance target. Despite this, projected non-NHS bridge outcomes have improved significantly with the additional funding received in the 2023 legislative session.

ROADSIDE INFRASTRUCTURE

There is additional funding for Roadside Infrastructure in the MnSHIP investment direction that will help reduce the projected increase in poor roadside assets, but conditions are expected to decline and not meet targets. This is one of the largest unmet needs in MnSHIP. Deteriorating roadside infrastructure leads to increased maintenance and capital costs for MnDOT.

REST AREAS

The condition of rest areas will continue to deteriorate. Rest areas will make progress towards complying with the Americans with Disabilities Act standards.

CHAPTER 7

CLIMATE ACTION: UNMET NEEDS

CLIMATE RESILIENCE

The Climate Resilience investment category received an increase in funding from the existing investment approach. Highest priority flood mitigation locations and locations for new and improved green infrastructure are funded. With the MnSHIP investment direction, MnDOT will not be able to address all high return on investment snow trap locations or all highway culverts that need resilience fixes.

TRANSPORTATION SAFETY: UNMET NEEDS

TRANSPORTATION SAFETY

Safety outcomes are difficult to project. Recent years have seen an increase in transportation fatalities and serious injuries in Minnesota. These recent trends have made reaching statewide short-term and long-term safety targets increasingly difficult. The increased investment in Transportation Safety in the MnSHIP investment direction will help reduce fatalities and serious injuries on state highways, particularly for pedestrians and bicyclists. The highest priority locations for pedestrian and bicycle safety improvements are funded. Despite the increase in safety funding, MnDOT will not be able to address all state highway locations with fatal/serious injury crash rate in the top 10%.

ADVANCING TECHNOLOGY

Needs for advancing technology will largely be met. MnDOT will be able to invest in immediate and medium needs for fiber network expansion but will not be able to meet long-term needs.

CRITICAL CONNECTIONS: UNMET NEEDS

HIGHWAY MOBILITY

In the Twin Cities region, highway mobility needs related to active traffic management, transit-supportive investments and spot mobility improvements will be addressed. MnDOT will not be able to fully build out E-ZPass lanes or implement strategic capacity improvements where needed. Because of this lack of investment, the region is not expected to meet its target for highway delay per person.

In Greater Minnesota, highway mobility investments will be able to address the highest priority needs for spot mobility improvements on the NHS. Strategic capacity needs will not be addressed with the MnSHIP investment direction.

It is important to note that additional investments in highway mobility are likely outside of MnSHIP. These include investments funded through the Corridors of Commerce program, federal solicitations and state bonding.

FREIGHT

MnDOT is able to fund the greatest needs for freight movement on state highways including truck parking and weigh station maintenance. Unmet needs include addressing major freight bottlenecks throughout the state and the construction of new weigh station facilities. Future increases to VMT and delay would negatively impact freight movement in Minnesota and potentially lead to higher costs for businesses and customers.

PEDESTRIAN AND BICYCLE

The biggest area of unmet need for the Pedestrian and Bicycle investment category is implementation of the district bike plans. Pedestrian investment is prioritized. MnDOT is able to achieve its goal of substantial compliance with ADA by 2037. The highest priority needs for sidewalk system completion are funded however MnDOT will not be able to fully fund the needs identified in the Statewide Pedestrian System Plan.

The majority of improvements identified in the district bike plans will not be addressed with the MnSHIP investment direction. Some standalone bicycle improvements and priority state bikeways will be funded. The majority of bicycle improvements will be made as part of pavement and bridge projects. State highways may continue to be barriers to bicycle movement in many locations, although they will continue to allow bicycle movement along them.

CHAPTER 7

HEALTHY EQUITABLE COMMUNITIES: UNMET NEEDS

LOCAL PARTNERSHIPS

MnDOT will continue to partner with local agencies through the Local Partnership Program and the Transportation Economic Development program but will not be able to address all needs. In addition to the needs identified by MnDOT, transportation partners identified an additional $5 billion in local needs on the state highway system. These improvements are not funded in MnSHIP and are not included in the needs identified in Chapter 4: Investment Needs.

MnDOT has limited ability to find opportunities to realign roadways under the correct agency through jurisdictional transfer. Roadways that are currently owned by MnDOT but would better serve the traveling public if owned by a local agency will not be repaired or transferred. This results in potentially foregone savings from future maintenance and capital costs.

MAIN STREETS/URBAN PAVEMENTS

Despite a substantial increase in investment, MnDOT will not be able to fully address its needs for Main Streets/Urban Pavements. Half of candidate urban locations will not be addressed within the timeframe of the plan.

OTHER: UNMET NEEDS

SMALL PROGRAMS

MnSHIP assumes MnDOT will continue to need a fixed amount of funds throughout the 20-year timeframe to respond to short-term, unforeseen issues and continuing commitments. MnDOT currently plans $5 million per year or 0.3% of its total projected revenue to cover investments in Small Programs.

If MnDOT does not fully spend its annual allocation for small programs in a given year, it directs the funds toward its highest unaddressed risks in the capital program.

PROJECT DELIVERY

MnDOT estimates that achieving its targets and key objectives in the areas of System Stewardship, Climate Action, Transportation Safety, Critical Connections and Healthy Communities would require approximately

$11.5 billion in Project Delivery through 2042. The MnSHIP investment direction includes $7.3 billion for Project Delivery. An additional $4.2 billion would be required for Project Delivery if MnDOT were to deliver a program that meets the needs in all of the MnSHIP investment categories.

MnDOT estimated the amount historically spent in this category to establish the proportion of the overall investment that would be required to design, engineer and construct projects over the next 20 years. Approximately 20% of MnDOT's annual capital investment typically goes to supporting the delivery of projects. The percentage of spending in project delivery has changed significantly since 2017 MnSHIP as a result of more thorough analysis of actual expenditures and increased requirements for MnDOT projects.

REMAINING RISKS

Each investment category workgroup identified highway capital risks related to their investment area. These risk statements were scored for likelihood and impact (high, medium, low) at the end of the MnSHIP planning period based on MnDOT's current investment approach and the investment direction in this plan. Due to an increase in funding, many risks were reduced compared to the current investment approach. Figure 7-2 shows the risks that were reduced from a high risk in the current investment approach.

Figure 7-2: High Risks Reduced with MnSHIP Investment Direction

INVESTMENT CATEGORY	RISK STATEMENT	RISK LEVEL CURRENT APPROACH	RISK LEVEL WITH MNSHIP INVESTMENT DIRECTION
Pavement	Maintenance budgets require more reactive repairs due to lack of capital investment	High	Medium
Rest Areas	Potential closure of rest areas due to decreased replacement and renovation creating unsafe conditions	High	Medium
Climate Resilience	Local economies and communities could see increased vulnerability due to increases in extreme weather events	High	Medium
Climate Resilience	Increased extreme weather events (flash flooding, snow drifts, etcetc.) cause dangerous conditions on roadways	High	Medium
Climate Resilience	MnDOT may not maximize the health of Minnesota's people, environment and economy	High	Medium
Highway Mobility	MnDOT may not address local and regional partner mobility priorities and the legislature directs funding toward capacity projects	High	Medium
Highway Mobility	Unstable traffic flow at certain locations may raise the risk of crashes	High	Medium
Pedestrian and Bicycle	The state highway system presents a barrier to people who want to cross or travel along it	High	Medium

Despite the increased investment in MnSHIP, not all risks are reduced. Figure 7-3 shows the remaining high risks for MnDOT capital investment. The highest remaining risks are related to pavement and roadside infrastructure condition and maintenance and the impacts of extreme weather events. Pavement and Roadside Infrastructure are two investment categories that saw smaller percentage increases in funding for this plan. These are also investment areas that require large investment amounts to achieve tangible outcomes. Pavement Condition is set to receive over $13 billion in funding in MnSHIP. Roadside Infrastructure is set to receive $2.8 billion.

MnDOT will continue to implement strategies identified in Chapter 6: Investment Direction and the Transportation Asset Management Plan to manage these assets to their lowest costs and lengthen their service life.

The impact of Minnesota's changing climate on state highways is an increasing risk. It is an area of focus in the SMTP and led to the creation of the Climate Resilience category in MnSHIP. Despite a new investment category and additional funding in this plan for climate resilience improvements, the risks remain. Service interruptions and road closures are expected to continue and will likely increase given projected climate trends.

Figure 7-3: Remaining Risks with the MnSHIP Investment Direction

INVESTMENT CATEGORY	RISK STATEMENT	RISK LEVEL WITH MNSHIP INVESTMENT DIRECTION
Pavement Condition	Increase in poor pavement condition requiring more maintenance projects	High
Roadside Infrastructure	Equipment/systems exceeds service life or are damaged and are no longer functional	High
Climate Resilience	More frequent service interruptions and road closures	High

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CHAPTER 8

MOVING FORWARD

Despite recent increases in funding, MnDOT does not have enough funding to meet all of its capital highway needs. MnDOT will use strategies and process improvements to ensure that the state achieves the maximum positive impact from all of the investments on state highways. These strategies will help close the gap between desired outcomes and the projected outcomes in MnSHIP. Several new planning processes are also underway and will be completed between now and the next MnSHIP update, including completing the Resilience Improvement Plan, State Freight Plan and the Strategic Highway Safety Plan. MnDOT also plans to make process improvements that will help the agency and stakeholders make more informed decisions on projects and investments.

CHAPTER 8

STRATEGIES TO STRETCH PROJECTED REVENUE

MnDOT will pursue a mix of strategies that will stretch existing revenue to accomplish additional priorities beyond those identified in MnSHIP. In some cases, these strategies will require further study prior to implementation and support from MnDOT's transportation stakeholders. These strategies can be a means for achieving more desirable outcomes on the state highway system.

- **Explore state and federal funding opportunities.** In addition to the funding identified in MnSHIP, there are potential state and federal funding opportunities. The current federal transportation reauthorization bill contains an unprecedented number of competitive solicitation programs. MnDOT is aggressively pursuing these programs and coordinates with local partners on their applications for state highway projects. State funding opportunities include the Corridors of Commerce program and additional state bonding.
- **Implement asset management principles from the Transportation Asset Management Plan (TAMP).** The TAMP includes best practices for asset management and life-cycle planning to model the costs of different management approaches. MnDOT will use this information to better manage its state highway assets.
- **Continue to employ high return-on-investment strategies that deliver the majority of benefits at a reduced cost.** MnDOT has increased its use of performance-based designs. These designs help ensure MnDOT does not deliver projects beyond what is needed to meet agency performance targets or other key agency objectives. By continuing to expand the use of this design flexibility, MnDOT will increase its ability to help manage project costs and ensure that the most efficient investment is made to try to meet performance-based designs.

- **Manage investments to achieve multiple objectives such as improving economic competitiveness, public health, equity and climate resilience.** Early coordination and participation in the planning process help MnDOT combine resources and leverage investments to achieve improved outcomes. For example, in most cases, it is far more cost-effective to include a bicycle element or a freight accommodation during construction of a larger bridge or highway project than as an independent project.
- **Continue evaluating the jurisdictional alignment of the state highway system to ensure transportation decisions occur at the right level of government.** MnDOT, in conjunction with local governments across the state, completed a study that explored potential roadways for jurisdictional transfer. An additional assessment of state law and other policy considerations are necessary to determine how this type of system refinement will increase long-term system sustainability and place transportation decisions at the right level of government.
- **Coordinate with local units of government and other state agencies to achieve better transportation outcomes for the public, transportation stakeholders and partners.** By improving local participation, MnDOT will be better positioned to engage in collaborative planning efforts with stakeholders and to pursue outcomes that achieve multiple purposes. This includes coordination on regional and federal grant applications and project development.
- **Pursue research and innovation to improve efficiency and minimize impacts to the traveling public.** With all the challenges facing Minnesota's transportation system, innovation is a key strategy. Creativity and innovation need to permeate every aspect of transportation service delivery, from how revenues are generated to how projects are constructed.

CHAPTER 8

WORK PLAN

MnSHIP covers the 20-year period between 2023 and 2042. It is updated every five years to reflect changes in federal and state policy, system conditions and revenue projections. The current MnSHIP update refined MnDOT's planning and programming process to address these changes.

MnDOT will initiate the activities listed below before MnSHIP is updated in five years. These activities are not necessarily specific to any one objective or strategy but represent key areas for MnDOT to advance. Taken together, these activities will help realize the overall policy direction laid out in this plan. The list is not meant to be all inclusive. There are many other activities in each of these areas and other areas that MnDOT will advance in the upcoming years to help move this plan forward.

PLANNING ACTIVITIES

- **Complete and implement the Resilience Improvement Plan and Carbon Reduction Strategy.** As part of the Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation (PROTECT) and Carbon Reduction Program, MnDOT is required to complete a Resilience Improvement Plan (RIP) and Carbon Reduction Strategy.
  - The RIP will document how Minnesota identified climate vulnerabilities and best practices for addressing those vulnerabilities. The RIP will also document the process for prioritizing and programming how to invest PROTECT funds. The RIP is anticipated to be completed and adopted by spring 2024.
  - The Carbon Reduction Strategy builds off the existing 2022 Minnesota Climate Action Framework, 2022 Statewide Multimodal Transportation Plan and 2019 Pathways to Decarbonizing Transportation to identify three high-level categories to reduce carbon emissions from surface transportation. Each category will identify strategies and subsequent implementable project types to achieve the goal of reducing carbon emissions in Minnesota. The CRS will identify how to prioritize and select projects that support the reduction of carbon emissions bringing policies into implementation.

Related Objectives: System Stewardship, Climate Action

- **Complete Corridor Plans.** MnDOT is initiating a corridor planning effort to better coordinate with local partners and achieve the MinnesotaGO goals and guiding principles.

Related Objectives: Healthy Equitable Communities, Open Decision Making

- **Update the Strategic Highway Safety Plan.** Last updated in 2020, the SHSP will be updated starting in 2024. The plan is updated in collaboration with the Minnesota Department of Public Safety and the Minnesota Department of Health. The SHSP is Minnesota's plan to reduce fatal and serious injury crashes and, over time, eliminate the loss of life on Minnesota roads.

Related Objectives: Transportation Safety

- **Update the Statewide Bicycle System Plan.** Last updated in 2016, the Statewide Bicycle System Plan will be updated starting in 2024. The Bike Plan will look to advance MnDOT's commitment to safe, comfortable, and convenient bicycling in alignment with existing state transportation policy. The plan will be developed at a statewide level, though recommendations will be targeted to local-level impacts that provide benefits at the community level. Building on the 2021 Pedestrian System Plan, the plan will include themes of climate, equity, and an evaluation of MnDOT processes to identify barriers and opportunities for collaboration.

Related Objectives: Transportation Safety, Critical Connections, Healthy Equitable Communities

PROCESS IMPROVEMENTS

- **Improve pavement the bridge performance models.** The Bridge Office and Materials Office will be developing and implementing new performance models to better forecast and prioritize investments in MnDOT's most expensive and extensive assets. The new bridge model will allow MnDOT to understand how bridges deteriorate according to the National Bridge Elements and how this data can be used to extend bridge life in the most cost-effective manner.

Related Objectives: System Stewardship

- **Better plan for and track preventive maintenance and preservation activities**. Preventive maintenance and preservation of infrastructure prolongs its life and lowers long-term costs. This task includes the development and tracking of preventive maintenance performance measures for major state highway assets.

Related Objectives: System Stewardship

- **Quantify the impact capital investments have on maintenance and operations needs and expenditures.** Reduced capital investment can often result in increased operations and maintenance needs. MnDOT will examine the relationship between capital investments and operations and maintenance since preventive maintenance is often seen as helping to extend the life of the facility or asset.

Related Objectives: System Stewardship, Open Decision-Making

- **Investigate pedestrian and bicycle facility maintenance.** The 2021 Pedestrian System Plan identified inconsistent maintenance as a barrier to walking and directed MnDOT to investigate process improvements related to maintaining these facilities. MnDOT will continue to work internally and with local partners to determine best practices and identify the needs and costs associated with maintaining bicycle and pedestrian infrastructure. Planning work will be completed to understand the potential costs of seasonal maintenance on facilities that are likely to be constructed within the next ten years.

Related Objectives: System Stewardship, Critical Connections, Healthy Equitable Communities

- **Build internal planning and design capacity for walking and biking infrastructure.** MnDOT's primary design documents for walking and biking will be updated starting in 2024. The Bicycle Facility Design Manual will be updated to incorporate changes in the anticipated 5th edition of the AASHTO Guide for Development of Bicycle Facilities. Similarly, Chapter 8 of the Facility Design Guide will be updated to incorporate new guidance. Staff trainings on the Statewide System Plans and these guides will be conducted.

Related Objectives: Critical Connections, Healthy Equitable Communities

- **Implement Greenhouse Gas emissions and vehicle miles traveled legislative requirements.**

Related Objectives: Climate Action, Critical Connections

- **Continue to coordinate improvements with local partners to reduce burdens.** Early engagement with local partners on projects in Years 5-10 of the CHIP will allow for coordinated construction activities and to ensure that funds leverage the highest possible outcomes and communities are not overly burdened by construction.

Related Objectives: Healthy Equitable Communities, Open Decision Making

- **Leverage MnSHIP funding to address equity in local communities.** MnDOT has a large construction program that touches all parts of the state. The MnSHIP construction program can leverage funding from local partners, regional and federal grant programs to achieve more equitable outcomes and address local priorities.

Related Objectives: Healthy Equitable Communities

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The 2023 Minnesota State Highway Investment Plan would not have been possible without the contributions of many individuals and partners.

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APPENDIX B: MnSHIP PUBLIC ENGAGEMENT SUMMARY

The Minnesota Department of Transportation updated the 20-year Minnesota State Highway Investment Plan and integrated public engagement throughout the plan process. This appendix includes a summary of public and stakeholder engagement activities completed, audiences reached, results and outcomes. This summary includes engagement activities for all project stages.

Engagement Approach

The overall goals for public involvement on the plan update were to:

Create meaningful, equitable, and safe opportunities for public involvement early and often, including a range of engagement opportunities, both in-person and online, that reduce barriers to participation.

Use innovative engagement methods to reach more individuals statewide and pilot new tools to reach communities underrepresented in statewide planning engagement efforts.

Understand priorities of transportation partners, stakeholders, underrepresented communities, and the public for investing on the state highway system.

Offer a variety of platforms to provide input, including online and in-person engagement opportunities.

ENGAGEMENT PHASES

The plan update process included several engagement phases. The focus of engagement was different in each phase. The following table provides more detail.

Figure B-1: Engagement Phases

PROJECT PHASE	FOCUS OF ENGAGEMENT
Project initiation phase	Engagement consisted of getting the word out about the plan update and MnDOT asked for input on the scope of the Public Participation Plan.
Primary engagement phase (Phase 1): July to Sept 2022	Engagement focused on different investment scenarios. MnDOT asked participants to identify which scenario they preferred and which investment categories are most important.
Second engagement phase (Phase 2): March to May 2023	Engagement focused on getting feedback on the draft investment direction. MnDOT asked participants to review and comment on the draft investment direction, identify what they like or would change, and prioritize investments if additional funding was available.
Formal public comment period	Engagement focused on getting the word out that the draft MnSHIP plan was available for review. MnDOT asked participants to provide comments, if interested.

OVERVIEW OF ENGAGEMENT ACTIVITIES

The following sections include a summary of the public engagement techniques that MnDOT used in its plan update process, with a specific focus on equity in engagement. The engagement techniques included a balance of in-person and online tools to maximize the volume and effectiveness of engagement statewide. Engagement techniques were implemented using materials written in plain language and all materials were tested and revised as necessary to ensure they were effective and clear.

IN-PERSON ENGAGEMENT

The following sections include a summary of the activities completed including a brief description of the activity, timeline, and participation.

STAKEHOLDER MEETINGS

MnDOT hosted and attended in-person and virtual stakeholder and community organization meetings throughout the duration of the project. Stakeholder meetings included transportation partner agencies, internal and external agency groups, and other local and regional government organizations including Metropolitan Planning Organizations (MPO). The stakeholder meetings were intended to inform and empower these stakeholders to advise on and eventually implement plan elements. Other stakeholder groups with an interest in transportation were also updated with project information. At any point in the plan update process, groups could request a presentation on the plan status.

MnDOT received feedback through meeting notes and in-meeting surveys. In addition to providing informational briefings to these partners, MnDOT also asked the groups for guidance on the overall project direction. Partner and stakeholder briefings began in September 2020 during the development of the project scope. As of December 2022, MnSHIP staff presented at 141 meetings.

COMMUNITY EVENTS

MnDOT attended 19 community events as part of Phase 1 (July – September 2022) to collect survey results and share project information with the public via poster boards and handouts. Events included tabling at

- **MnSHIP identified 12 categories of improvements MnDOT makes on the state highways. From the improvements, please select your top five priorities that you feel are most important.**
- **What is your vision for how the state highway system should look in 20 years? Below are six different statements. Please select the one that aligns best with what is important to you.**
- **What else would you like us to know?**
- **Optional demographic questions**

farmers' markets and community events across the state. Events were selected to cover a range of locations within the state and to reach a diverse group of Minnesotans.

A paper survey was created as a simple way to provide feedback on budget priorities and investment direction in parallel with the investment tool. Below are the survey questions that were asked at the community events in Phase 1:

The paper and online versions of the survey were translated into Spanish, Hmong, and Somali.

COMMUNITY-BASED ORGANIZATION ENGAGEMENT PARTNERSHIPS

MnDOT partnered with four community-based organizations to help engage their networks and communities through the organization's communication and outreach channels. Below is a summary of the work the organizations completed in fall 2022
during Phase 1.

- **PROJECT FINE** (Winona area) held in-person engagements with immigrant and BIPOC community members. Approximately 35 online surveys and five investment tool surveys were completed from these events.
- **PARTNERSHIP4HEALTH** (Clay County area) conducted in-person and digital outreach at Pelican Rapids Farmer's Market and Turkey Plant, as well as collecting/entering surveys from community members in Detroit Lakes, Otter Tail, Fergus Falls among others. Approximately 40 online surveys and four investment tool surveys were completed at these events.
- **COPAL** (Mankato and St. Peter area) shared the survey during vaccination, tabling events at COVID-19 testing sites in Mankato, St. Peter, Windom, and via social media. Over 50 online surveys were completed from these events.
- **HACER** (Metro area and southcentral MN) engaged in person at several Twin Cities and Mankato community events and with vaccination events. HACER also used social media posts and boosted posts in the Metro area resulting in 3,764 impressions. Approximately 76 online surveys were completed from these engagement efforts.

ONLINE ENGAGEMENT ACTIVITIES

Online engagement began in July 2022 and reached thousands of online participants. Most online engagement activities took place during the primary engagement phase (July – September 2022). However, some activities occurred throughout the duration of the project. The following sections summarize each activity.

ONLINE BUDGET TOOL

As part of Phase 1, an interactive budgeting tool was developed as one of the ways to collect feedback on investment directions, which allowed viewers to simulate budgeting decisions and trade-offs. The tool included an option to start from an initial investment direction or create your own budget based on the ranges available and included optional demographic questions. The budget tool was shared through social media, project website, stakeholder engagement and community events.

SURVEY

In Phase 1, the same survey questions used at in-person community events were used in an online survey for community partner outreach. The online survey was distributed through partner and stakeholder online and social media networks and was translated into Spanish, Hmong, and Somali.

COMMUNICATION STRATEGIES AND ACTIVITIES

PROJECT WEBSITE

The existing MnSHIP project website was updated with new information about the plan update. Interactive elements and information about engagement events, and a translation link was available for non-English speakers. The website also included short videos to explain each investment category, which were available in Somali, Hmong, Spanish, and English.

INVESTMENT TOOL STATISTICS

Figure B-2: Pageview Statistics

PAGEVIEW STATISTICS	
Total Page Views	1,221
Total Unique Page Views	1,064
Average Time on Page	4:02

Figure B-3: Pageviews by Device Type

PAGEVIEWS BY DEVICE TYPE	
Desktop	916
Mobile	294
Tablet	11

Figure B-4: Pageviews by Source

PAGEVIEWS BY SOURCE	
Direct	674
Referral	339
• Facebook	187
• Agency & Partner Sites	62
• Misc.	49
• Twitter	24
• LinkedIn	15
• Gmail	2
Organic Search (Google, Bing, Yahoo)	172
Email (GovDelivery)	38

SOCIAL MEDIA

The project team used social media as an outreach strategy that included posts from MnDOT's official social media pages on Facebook and Twitter, as well as targeted Facebook ads. These posts and ads encouraged the public to attend engagement events, use the online budgeting tool, and engage directly by commenting with feedback.

Figure B-5: Kimley-Horn Ad Sets July - September 2022

SOCIAL MEDIA AD	REACH	IMPRESSIONS	COMMENTS	REACTIONS	SAVES	SHARES	LINK CLICKS	UNIQUE LINK CLICKS	COST PER LINK CLICK	COST PER UNIQUE LINK CLICK
Original Post	11,720	40,133	5	10	0	2	156	137	$0.96	$1.09
MnSHIP survey - September reminder	35,879	71,437	59	62	12	11	945	884	$0.53	$0.57
MnSHIP survey - last call	13,089	40,434	0	17	1	0	322	300	$1.09	$1.17
MnSHIP survey - last call - English	13,853	24,998	13	17	4	3	345	330	$0.43	$0.45
MnSHIP survey - last call	28,817	46,729	20	30	5	24	839	790	$0.30	$0.32

NEWSLETTER AND STAKEHOLDER EMAILS

Emails were sent to members of the existing GovDelivery master stakeholder list, and members of the public were encouraged to sign up for email updates. General email updates were sent to the full list for key project milestones and input opportunities, and more targeted emails around specific engagement opportunities were sent to relevant stakeholders.

MULTICULTURAL AND COMMUNITY MEDIA ADVERTISING

To reach underrepresented black, indigenous, persons of color, and diverse immigrant communities, advertising was bought in
these channels:

- **RADIO** – KMOJ, KALY Somali, KGQO Hmong; Indigenous Radio (KAXE, KBFT, KSRQ, WTIP)
- **PRINT** – MShale, Minnesota Spokesman-Recorder, North News, La Voz Latina, Matraca, Somali American
- **DIGITAL** – MShale, Somali American, La Prensa de Minnesota, El Minnesota de Hoy

Based on estimated listeners, circulation, and visits, 539,000 consumers of these channels were reached.

STAKEHOLDER MEETINGS

During the first round of engagement, MnSHIP staff presented at 38 stakeholder meetings. These meetings included:

- **District 1 ATP Meeting,** *Duluth,* July 13, 2022
- **Southwest Regional Development Commission Technical Advisory Committee Meeting,** *virtual,* July 18, 2022
- **ROCOG TAC Meeting Presentation,** *virtual,* July 19, 2022
- **MnDOT's internal PCMG/CMG meeting,** *Duluth,* July 19, 2022
- **LaCrosse Policy Board Briefing,** *virtual,* July 20, 2022
- **Met Council TAC Funding and Programming Meeting Presentation,** *virtual,* July 21, 2022
- **Metro COG Policy Board Briefing,** *in-person and virtual,* July 21, 2022
- **Region 7W Policy Board Presentation,** *in-person and virtual,* July 28, 2022
- **St. Cloud APO TAC Presentation,** *in-person,* July 28, 2022
- **MPO Directors Meeting,** August 2, 2022
- **R5DC TAC Presentation,** *in-person and virtual,* August 3, 2022
- **Forks MPO TAC Presentation,** *in-person and virtual,* August 10, 2022
- **Metro COG MPO TAC Presentation,** *in-person and virtual,* August 11, 2022
- **St. Cloud APO Policy Board Briefing,** August 11, 2022
- **Met Council TAC Planning Meeting Presentation,** *virtual,* August 11, 2022
- **Lakeville Chamber of Commerce Briefing,** August 12, 2022
- **Metro CIC Presentation,** *virtual,* August 12, 2022
- **MIC MPO TAC Presentation,** August 16, 2022
- **MN Bike/Walk Leadership Network Webinar,** *virtual,* August 17, 2022
- **Forks MPO Policy Board Briefing,** August 17, 2022
- **MIC MPO Policy Board Briefing,** August 17, 2022
- **Met Council TAB Briefing,** August 17, 2022
- **Mankato MPO TAC Presentation,** August 18, 2022
- **FHWA-MN Division Presentation,** August 31, 2022
- **HRDC TAC Presentation,** *Bemidji,* September 1, 2022
- **Mankato MPO Policy Board Briefing,** *Mankato,* September 1, 2022
- **District 6 ATP Meeting,** *Rochester,* September 9, 2022
- **District 7 ATP Meeting,** *Mankato,* September 9, 2022
- **NW RDC TAC Presentation,** *Warren,* September 12, 2022
- **7W TAC Presentation,** *St. Cloud,* September 14, 2022
- **District 4 ATP Meeting,** *virtual,* September 15, 2022
- **Region 9 Development Commission TAC Presentation,** *Mankato,* September 16, 2022

COMMUNITY EVENTS

During the first round of engagement, MnSHIP staff presented at 19 community events. These included:

- **DULUTH SIDEWALK DAYS,** July 14, 2022
- **ROSEAU COUNTY FAIR,** July 16, 2022
- **WILLMAR ROCKIN' ROBBINS,** July 19, 2022
- **MARSHALL NATIONAL NIGHT OUT,** August 2, 2022
- **EAGAN MARKET DAYS,** August 3, 2022
- **THE LITTLE MARKET THAT COULD | SMOKE SIGNALS COMMUNITY FARMERS MARKET,** *Prior Lake,* August 4, 2022
- **ST. LOUIS COUNTY FAIR,** *Chisolm,* August 6, 2022
- **WALKER BAY DAYS,** August 6, 2022
- **WIND DOWN WEDNESDAY,** *Albert Lea,* August 10, 2022
- **EAST LAKE OPEN STREETS,** *Minneapolis,* August 13, 2022
- **ALIVE AFTER 5,** *Mankato,* August 18, 2022
- **DETROIT LAKES FARMERS MARKET,** August 20, 2022
- **ROCHESTER FARMERS MARKET,** August 27, 2022
- **WEST BROADWAY OPEN STREETS,** *Minneapolis,* September 10, 2022
- **ST. PAUL FIESTA LATINA,** September 10, 2022
- **BLAINE WORLD FEST,** September 17, 2022
- **ST. CLOUD PRIDE IN THE PARK,** September 17, 2022
- **ALEXANDRIA FARMERS MARKET,** September 24, 2022
- **WORTHINGTON FARMER'S MARKET,** September 24, 2022

PUBLIC ENGAGEMENT PHASE 1 OVERVIEW

The first public engagement period ran from July through September. The targeted audience for the first engagement period included the public, key transportation partners, and other stakeholders.

The purpose of the first public engagement period was to:

- **Provide an overview on MnSHIP and the available funding for the state highway system**
- **Highlight the gap between $30-$33 billion of available revenue and $52-$57 billion needed over the next 20 years**
- **Discuss the minimum investment needed to manage the highest risks ($23.5 billion) and meet existing requirements and obligations on the state highway system**
- **Gather feedback on priorities for remaining $7-9 billion investment above the minimum level of investment through two main questions**
  - What would be your approach to investment in state highways?
  - What types of improvement are most important?

The information gathered was used to develop a draft investment direction.

WHO DID WE REACH?

MnDOT received 2,448 responses during the first public engagement period and reached over 600,000 people through promotion of engagement through events, meetings, social media, and multicultural/community media advertising.

Through promotion of engagement, MnDOT was able to reach over **600,000** Minnesotans including:

- An estimated **539,000** through community and multicultural media ads
- Over **90,000** through social media ads
- Almost **750** through stakeholder meetings

The number of responses included:

- **1,110** submissions through online budget tool
- **353** responses at stakeholder meetings
- **821** community event surveys completed
- **164** surveys completed through community partnerships

Both tools included location and demographic questions which participants had the option to fill out to help MnDOT track who we were engaging with and filter results by different locations and demographic groups. The optional information requested was:

- Zip Code
- Race/Ethnicity
- Age
- Gender Identity

Engagement materials and the short survey were translated into Spanish, Somali, and Hmong. Translation of the budget tool was also available through Google translate. The number of surveys and submissions completed include:

- **58** surveys were completed in Spanish
- **1** survey was completed in Hmong
- **1** budget tool submission in Spanish

GEOGRAPHIC DISTRIBUTION OF RESPONSES

MnDOT received 1,965 engagement responses with zip codes from all corners of the state and 34 responses with zip codes from surrounding states. MnDOT also tracked engagement responses by MnDOT district based on zip code or meeting location.

Figure B-6: Geographic Distribution of Responses

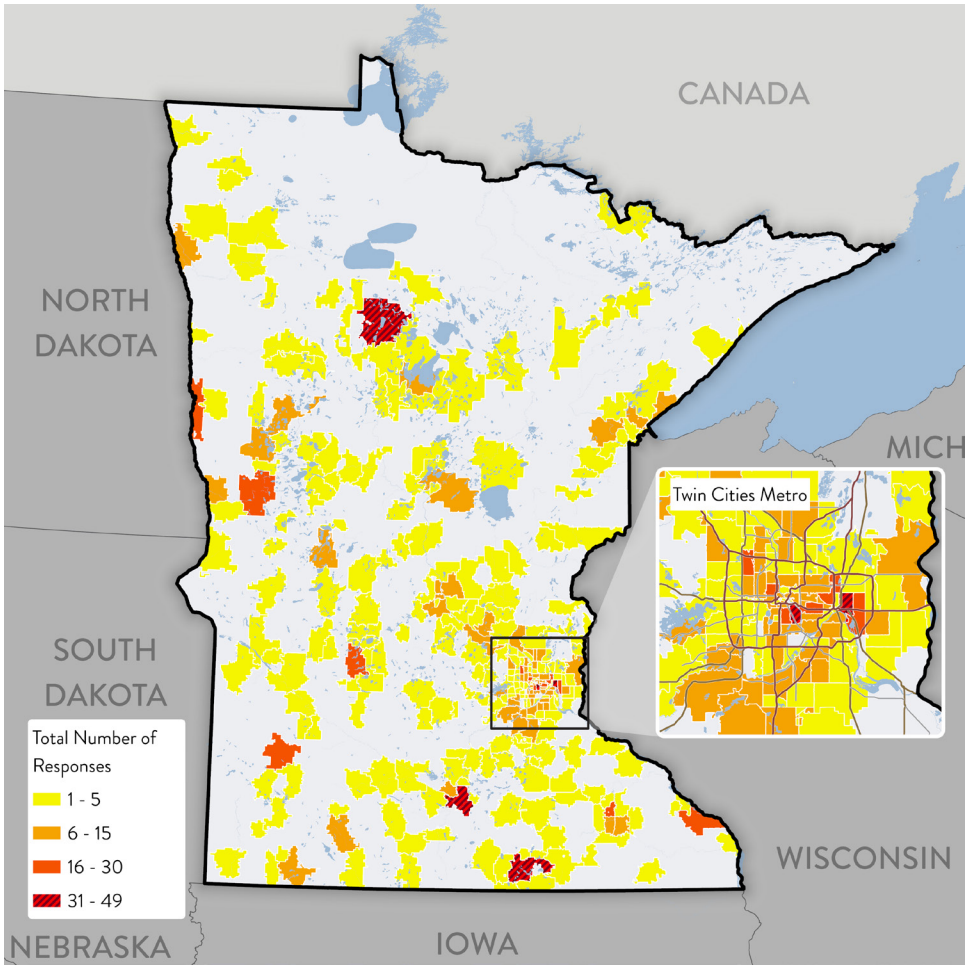


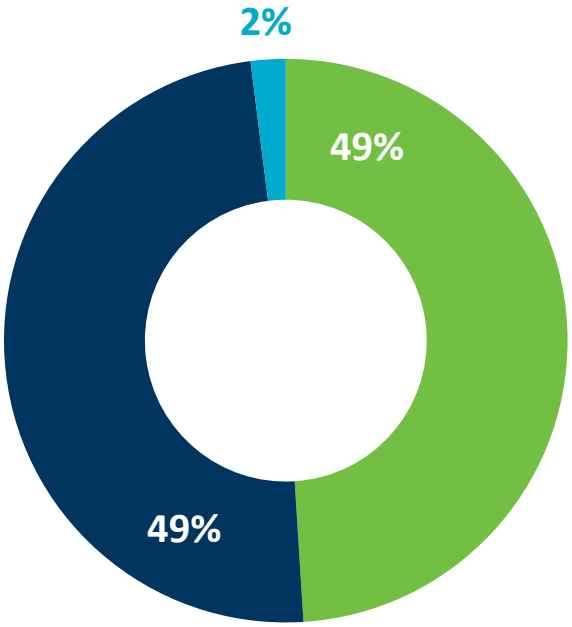
Figure B-7: Responses by District

DISTRICT (By Zip Code or Meeting Location)	NUMBER OF RESPONSES	% OF RESPONSES
District 1	142	7%
District 2	85	4%
District 3	182	9%
District 4	167	8%
District 6	204	10%
District 7	152	8%
District 8	91	5%
Metro District	942	48%

GENDER IDENTITY OF RESPONSES

MnDOT received 1,712 engagement responses which included gender identity.

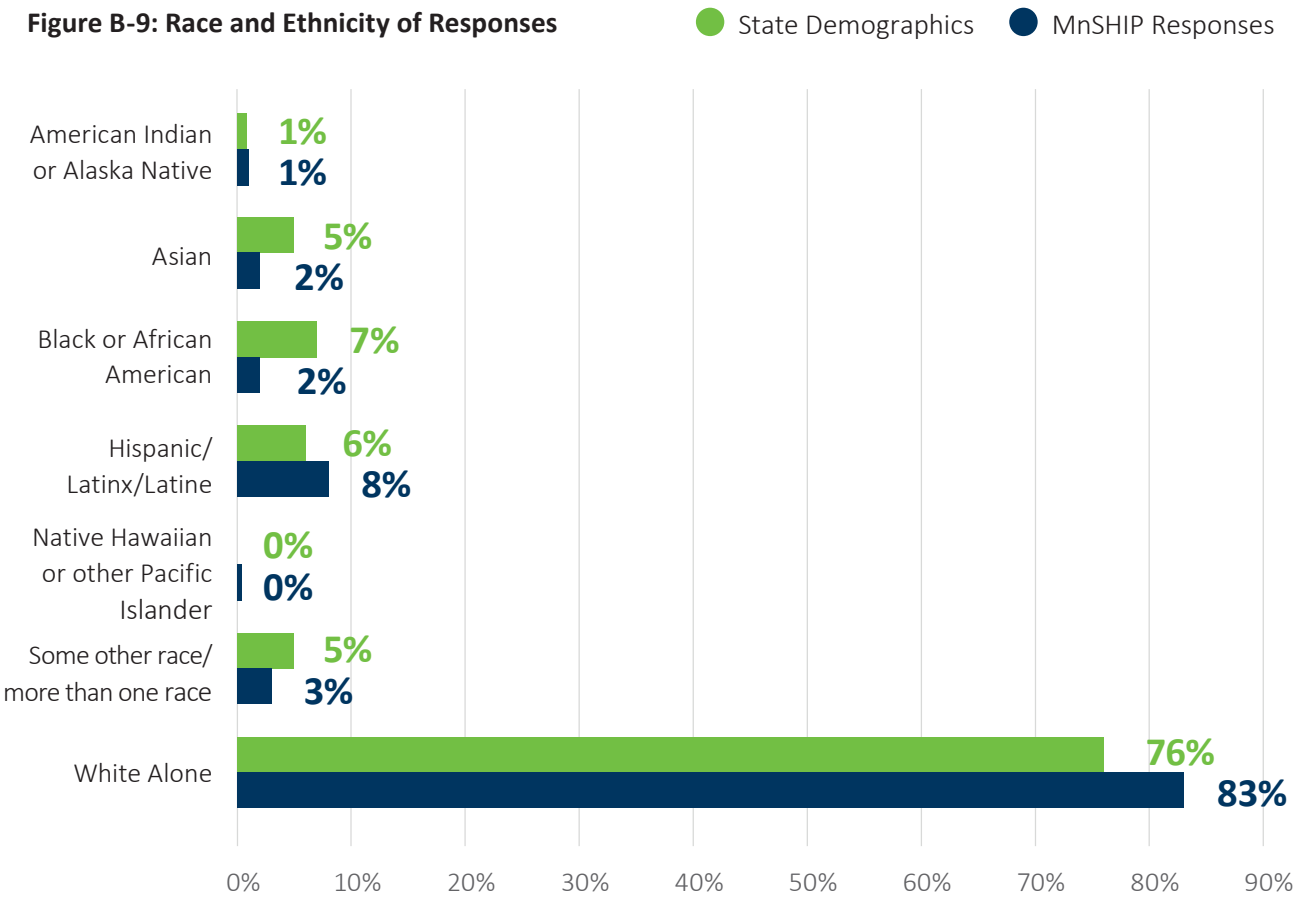
Figure B-8: Gender Identity of Responses



RACE/ETHNICITY OF RESPONSES

MnDOT received 1,636 engagement responses which included race or ethnicity.

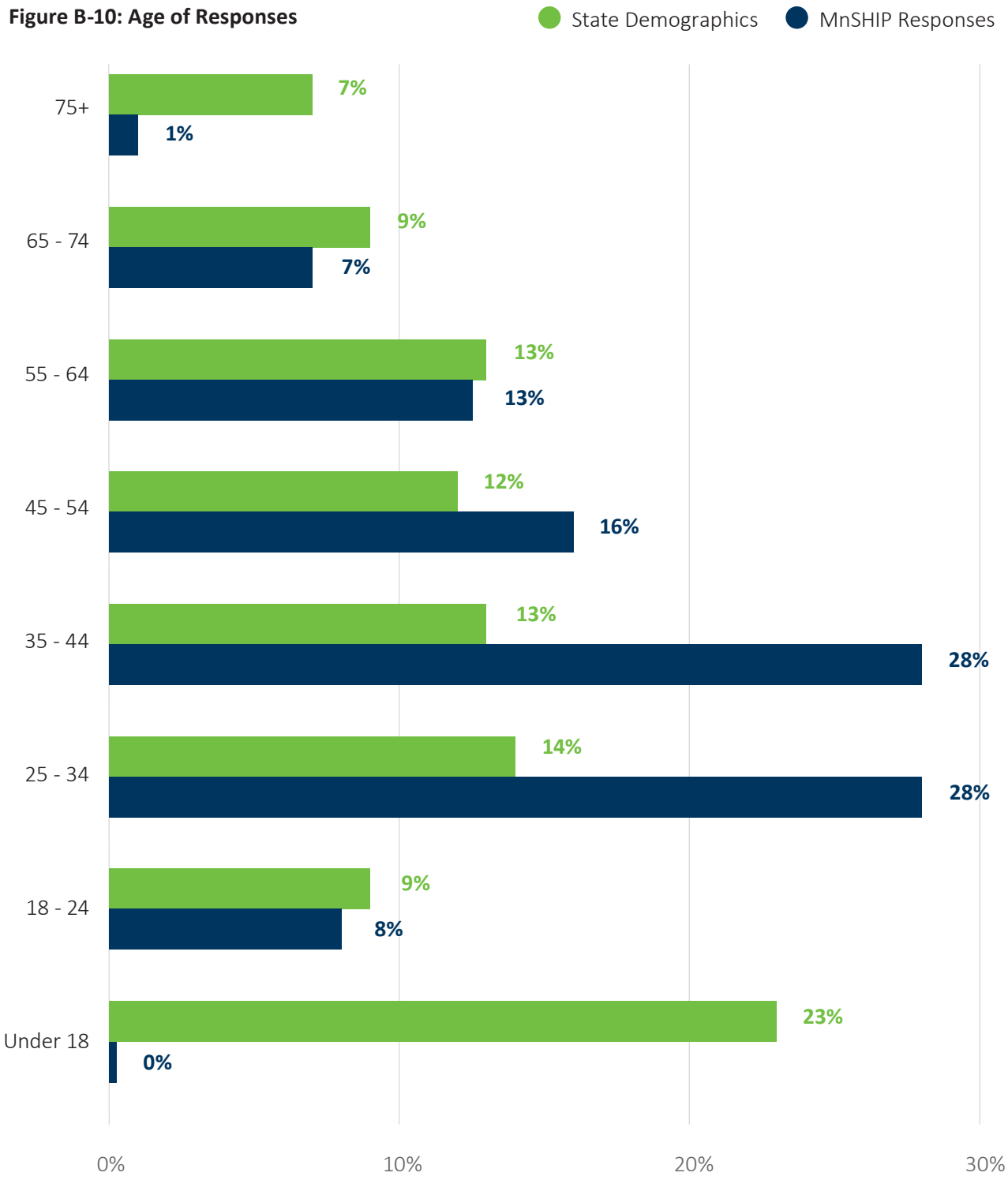
Figure B-9: Race and Ethnicity of Responses



AGE OF RESPONSES

MnDOT received 1,799 engagement responses which included age.

Figure B-10: Age of Responses

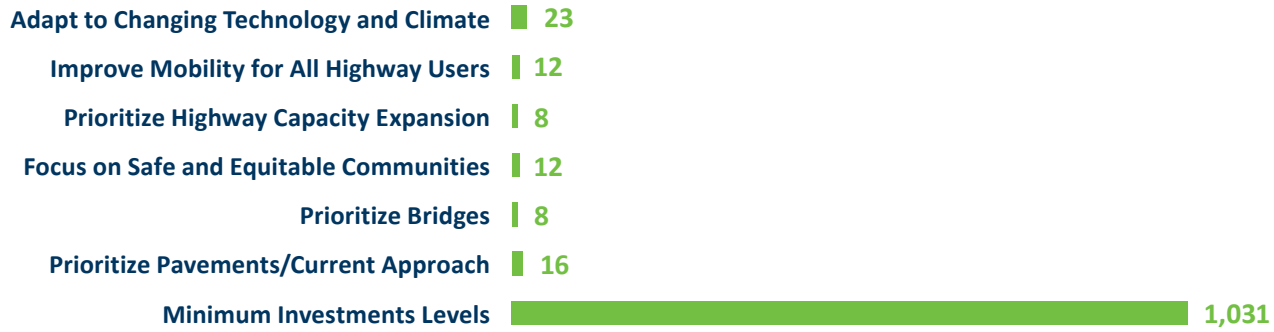


WHAT DID WE HEAR?

ONLINE BUDGET TOOL RESULTS

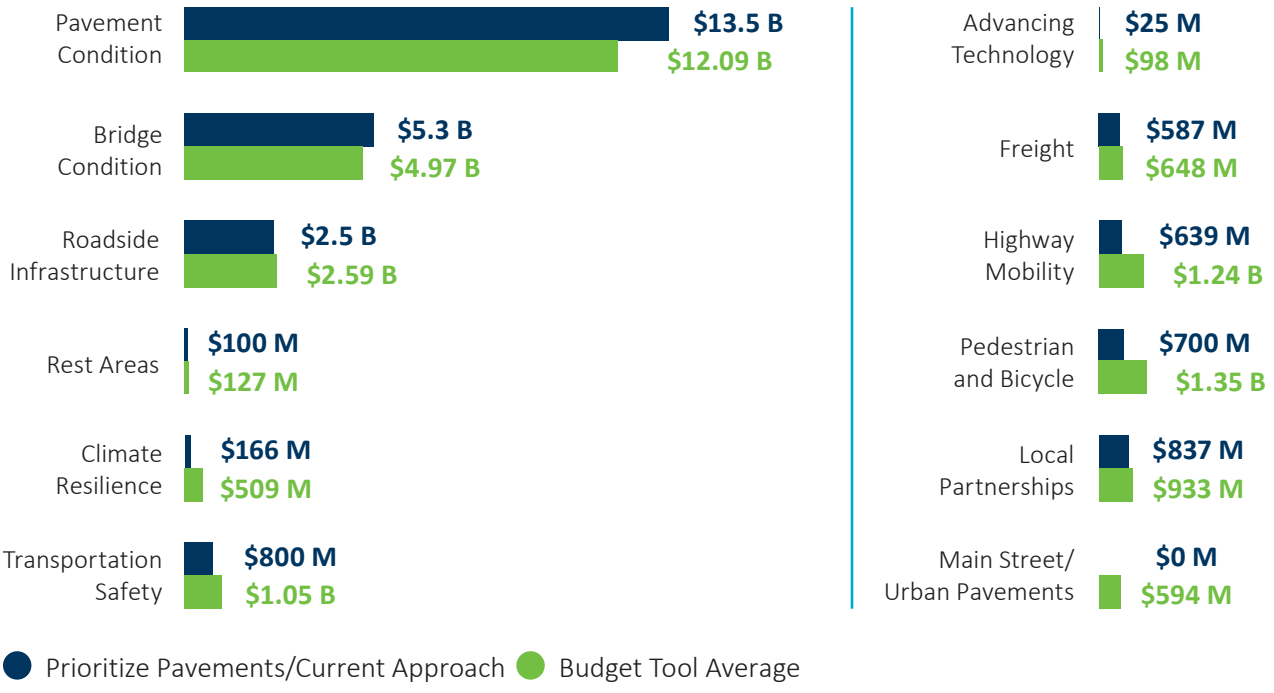
Participants were given the option to start putting together their budgets from one of the six investment approaches or start from the minimum levels in each investment category and create a custom budget for the state highway system. Most participants choose to start from the minimum investment levels and create a custom budget.

Figure B-11: Online Budget Tool Priorities Results



The budget tool allowed people to tell MnDOT where they would prioritize the $30-$33 billion in funding over the next 20 years. Overall, submitted budget totals averaged at $32.6 billion, on the high end of the range. People prioritized more funding towards Climate Resilience, Transportation Safety, Advancing Technology, Highway Mobility, Pedestrian and Bicycle and Main Streets/Urban Pavements than the current approach. People also prioritized less funding to Pavement Condition.

Figure B-12: Online Budget Tool Funding Results



DISTRIBUTION OF SELECTION FREQUENCY OF INVESTMENT CATEGORY FUNDING LEVELS

The charts below show the frequency people selected a funding level option for each investment category in the online budget tool. Most investment categories had six levels except for Roadside Infrastructure, Main Streets/Urban Pavements, and Freight which had five. Each funding level has an associated performance outcome for each investment category. The lowest levels represent the least amount of funding required in each category to manage the highest risks to the system, construct projects MnDOT has committed to delivering, meet federal or state requirements, or implement federal funding programs. The maximum levels represent the funding needed to meet existing performance targets or investment goals in each category.

Figure B-13: Online Budget Tool Responses by Category

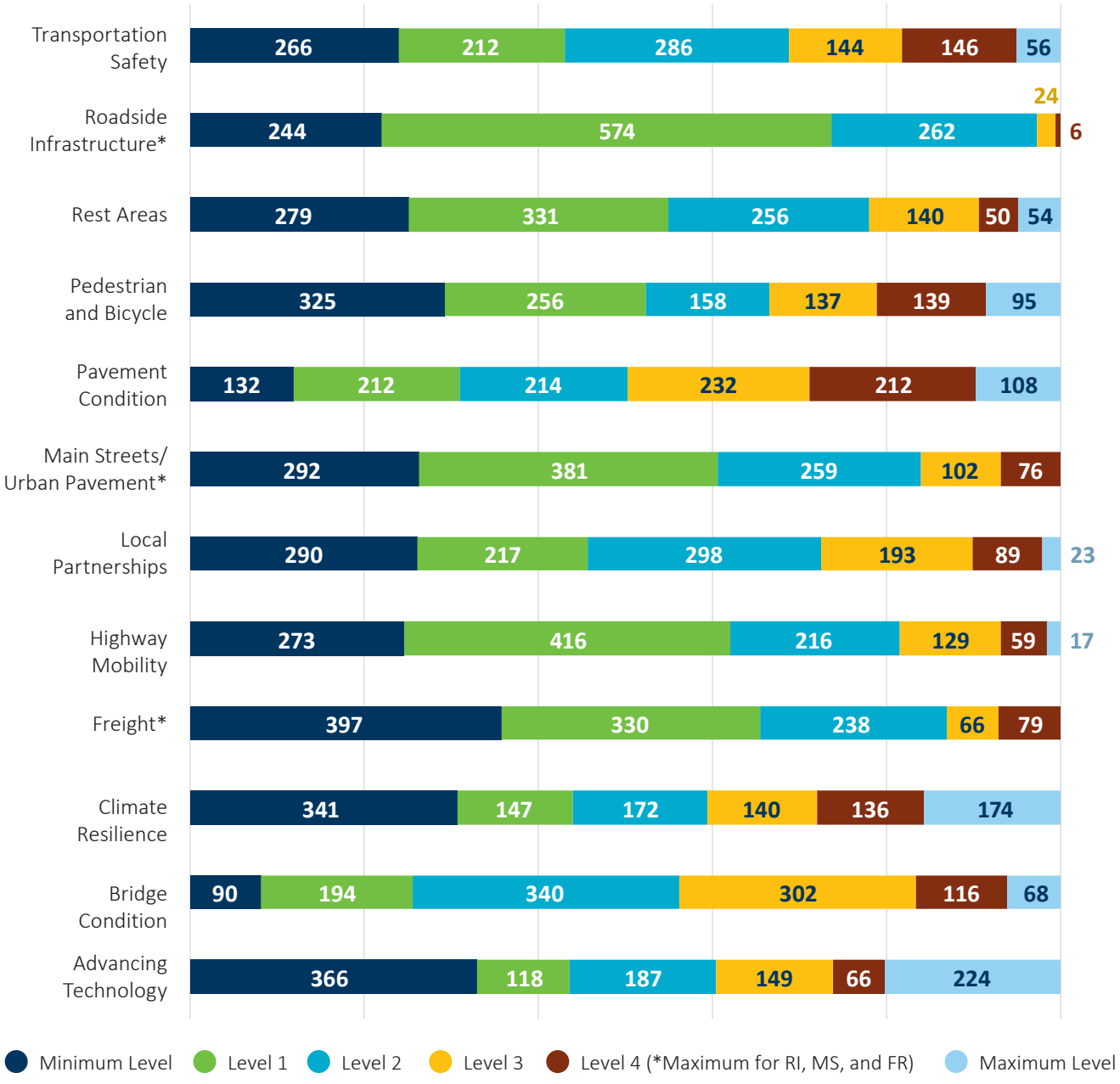


Figure B-14: Funding in Each Budget Tool Level by Category

INVESTMENT CATEGORIES	MINIMUM LEVEL	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5
Advancing Technology	$25 M	$53 M	$85 M	$112 M	$176 M	$219 M
Bridge Condition	$2.8 B	$4.4 B	$4.8 B	$5.3 B	$6.2 B	$6.7 B
Climate Resilience	$116 M	$279 M	$341 M	$605 M	$848 M	$1.2 B
Freight	$433 M	$587 M	$794 M	$944 M	$1.3 B	N/A
Highway Mobility	$362 M	$639 M	$1.7 B	$2.6 B	$3.3 B	$6.6 B
Local Partnerships	$556 M	$691 M	$837 M	$997 M	$2.3 B	$3.4 B
Main Streets/Urban Pavements	$0 M	$465 M	$929 M	$1.1 B	$1.7 B	N/A
Pavement Condition	$9.9 B	$11.2 B	$11.5 B	$12.2 B	$13.5 B	$14.7 B
Pedestrian and Bicycle	$451 M	$700 M	$1.3 B	$1.5 B	$2.3 B	$4.6 B
Rest Areas	$55 M	$100 M	$154 M	$177 M	$257 M	$277 M
Roadside Infrastructure	$1.9 B	$2.5 B	$3.2 B	$4.4 B	$5.4 B	N/A
Transportation Safety	$800 M	$900 M	$1.0 B	$1.1 B	$1.2 B	$2.5 B

The results of the budget tool are broken out in the charts below by location and demographic information provided with responses. Where possible, an analysis was completed to determine if differences between demographic groups or geographic locations were statistically significant.

Figure B-15: Online Budget Tool Average Responses by White Non-Hispanic and Black, Indigenous, and People of Color

INVESTMENT CATEGORIES	WHITE NON-HISPANIC (804)	%	BIPOC RESPONSES (122)	%
Pavement Condition	$11.98 B	37%	$12.12 B	37%
Bridge Condition	$4.95 B	15%	$4.85 B	15%
Roadside Infrastructure	$2.61 B	8%	$2.61 B	8%
Rest Areas	$126 M	<1%	$138 M	<1%
Climate Resilience	$541 M	2%	$507 M	2%
Transportation Safety	$1.07 B	3%	$1.03 B	3%
Advancing Technology	$101 M	<1%	$108 M	<1%
Freight	$636 M	2%	$643 M	2%
Highway Mobility	$1.20 B	4%	$1.25 B	4%
Pedestrian and Bicycle	$1.44 B	4%	$1.32 B	4%
Local Partnerships	$964 M	3%	$853 M	3%
Main Street/Urban Pavements	$623 M	2%	$656 M	2%
Project Delivery	$6.30 B	19%	$6.30 B	19%
Small Programs	$100 M	<1%	$100 M	<1%
Total	**$32.63 B**	**100%**	**$32.48 B**	**100%**

Figure B-16: Online Budget Tool Average Responses from White Non-Hispanic, Black/African Americans, and Asian Americans

INVESTMENT CATEGORIES	HISPANIC (32)	%	BLACK OR AFRICAN AMERICAN (19)	%	ASIAN AMERICAN (25)	%
Pavement Condition	$11.98 B	37%	$11.80 B	36%	$12.42 B	38%
Bridge Condition	$4.80 B	15%	$4.53 B	14%	$4.93 B	15%
Roadside Infrastructure	$2.58 B	8%	$2.42 B	7%	$2.65 B	8%
Rest Areas	$125 M	<1%	$155 M	<1%	$127 M	<1%
Climate Resilience	$605 M	2%	$444 M	1%	$431 M	1%
Transportation Safety	$984 M	3%	$1.03 B	3%	$976 M	3%
Advancing Technology	$99 M	<1%	$96 M	<1%	$110 M	<!%
Freight	$605 M	2%	$735 M	2%	$606 M	2%
Highway Mobility	$1.56 B	5%	$1.59 B	5%	$1.16 B	4%
Pedestrian and Bicycle	$1.32 B	4%	$1.34 B	4%	$1.19 B	4%
Local Partnerships	$793 M	2%	$995 M	3%	$795 M	2%
Main Street/Urban Pavements	$495 M	2%	$864 M	3%	$696 M	2%
Project Delivery	$6.30 B	19%	$6.30 B	19%	$6.30 B	19%
Small Programs	$100 M	<1%	$100 M	<1%	$100 M	<1%
Total	**$32.33 B**	**100%**	**$32.39 B**	**100%**	**$32.50 B**	**100%**

Figure B-17: Online Budget Tool Average Responses from Native Americans, Pacific Islanders, and Multiple/Some Other Race

INVESTMENT CATEGORIES	NATIVE AMERICANS (17)	%	PACIFIC ISLANDERS (5)	%	MULTIPLE/SOME OTHER RACE (39)	%
Pavement Condition	$12.01 B	37%	$12.54 B	39%	$12.08 B	37%
Bridge Condition	$4.78 B	15%	$4.62 B	14%	$5.01 B	15%
Roadside Infrastructure	$2.64 B	8%	$2.66 B	8%	$2.65 B	8%
Rest Areas	$118 M	<1%	$156 M	<1%	$145 M	<1%
Climate Resilience	$607 M	2%	$236 M	1%	$576 M	2%
Transportation Safety	$1.09 B	3%	$1.20 B	4%	$1.03 B	3%
Advancing Technology	$118 M	<1%	$133 M	<1%	$106 M	<1%
Freight	$596 M	2%	$577 M	2%	$650 M	2%
Highway Mobility	$1.17 B	4%	$473 M	1%	$1.28 B	4%
Pedestrian and Bicycle	$1.58 B	5%	$970 M	3%	$1.32 B	4%
Local Partnerships	$934 M	3%	$1.30 B	4%	$728 M	2%
Main Street/Urban Pavements	$757 M	2%	$653 M	2%	$486 M	1%
Project Delivery	$6.30 B	19%	$6.30 B	20%	$6.30 B	19%
Small Programs	$100 M	<1%	$100 M	<1%	$100 M	<1%
Total	**$32.78 B**	**100%**	**$31.92 B**	**100%**	**$32.45 B**	**100%**

Figure B-18: Online Budget Tool Average Responses by Gender

INVESTMENT CATEGORIES	WOMEN (434)	%	MEN (522)	%	NON-BINARY/ GENDER FLUID (28)	%
Pavement Condition	$12.09 B	37%	$12.02 B	37%	$11.26 B	34%
Bridge Condition	$5.02 B	15%	$4.91 B	15%	$4.53 B	14%
Roadside Infrastructure	$2.59 B	8%	$2.61 B	8%	$2.50 B	8%
Rest Areas	$125 M	<1%	$128 M	<1%	$123 M	<1%
Climate Resilience	$539 M	2%	$498 M	2%	$840 M	3%
Transportation Safety	$1.04 B	3%	$1.07 B	3%	$1.17 B	4%
Advancing Technology	$90 M*	<1%	$107 M*	<1%	$131 M	<1%
Freight	$620 M*	2%	$660 M*	2%	$558 M	2%
Highway Mobility	$1.16 B	4%	$1.27 B	4%	$1.19 B	4%
Pedestrian and Bicycle	$1.27 B*	4%	$1.45 B*	4%	$2.20 B	7%
Local Partnerships	$940 M	3%	$937 M	3%	$1.17 B	4%
Main Street/Urban Pavements	$584 M	2%	$629 M	2%	$737 M	2%
Project Delivery	$6.30 B	19%	$6.30 B	19%	$6.30 B	19%
Small Programs	$100 M	<1%	$100 M	<1%	$100 M	<1%
Total	**$32.46 B**	**100%**	**$32.68 B**	**100%**	**$32.81 B**	**100%**

Statistically significant difference between priorities of men and women

Figure B-19: Online Budget Tool Average Responses by Location, Greater Minnesota vs. Twin Cities

INVESTMENT CATEGORIES	GREATER MINNESOTA (394)	%	TWIN CITIES METRO (635)	%
Pavement Condition	$12.55 B*	39%	$11.76 B*	36%
Bridge Condition	$5.02 B	15%	$4.91 B	15%
Roadside Infrastructure	$2.57 B	8%	$2.61 B	8%
Rest Areas	$120 M*	<1%	$130 M*	<1%
Climate Resilience	$397 M*	1%	$587 M*	2%
Transportation Safety	$991 M*	3%	$1.09 B*	3%
Advancing Technology	$83 M*	<1%	$109 M*	<1%
Freight	$662 M	2%	$635 M	2%
Highway Mobility	$1.23 B	4%	$1.24 B	4%
Pedestrian and Bicycle	$1.01 B*	3%	$1.57 B*	5%
Local Partnerships	$921 M	3%	$946 M	3%
Main Street/Urban Pavements	$499 M*	2%	$666 M*	2%
Project Delivery	$6.30 B	19%	$6.30 B	19%
Small Programs	$100 M	<1%	$100 M	<1%
Total	**$32.46 B**	**100%**	**$32.65 B**	**100%**

Statistically significant difference between priorities of Greater MN and Twin Cities responses

Figure B-20: Online Budget Tool Responses by Location: Greater Minnesota MPO Area and Twin Cities (Urban vs. Suburban)

INVESTMENT CATEGORIES	GREATER MINNESOTA MPO AREA (394)	%	TWIN CITIES EXURBAN/ SUBURBAN/ RURAL (635)	%	TWIN CITIES URBAN (635)	%
Pavement Condition	$12.09 B	37%	$12.16 B	37%	$11.50 B	35%
Bridge Condition	$4.89 B	15%	$5.03 B	15%	$4,838 M	15%
Roadside Infrastructure	$2.78 B	9%	$2.64 B	8%	$2.60 B	8%
Rest Areas	$129 M	<1%	$131 M	<1%	$130 M	<1%
Climate Resilience	$531 M	2%	$484 M	1%	$656 M	2%
Transportation Safety	$1.01 B	3%	$1.04 B	3%	$1.13 B	3%
Advancing Technology	$101 M	<1%	$95 M	<1%	$118 M	<1%
Freight	$626 M	2%	$691 M	2%	$597 M	2%
Highway Mobility	$1.00 B	3%	$1.46 B	4%	$1.07 B	3%
Pedestrian and Bicycle	$1.27 B	4%	$1.09 B	3%	$1.90 B	6%
Local Partnerships	$971 M	3%	$869 M	3%	$991 M	3%
Main Street/Urban Pavements	$561 M	2%	$534 M	2%	$753 M	2%
Project Delivery	$6.30 B	19%	$6.30 B	19%	$6.30 B	19%
Small Programs	$100 M	<1%	$100 M	<1%	$100 M	<1%
Total	**$32.35 B**	**100%**	**$32.61 B**	**100%**	**$32.68 B**	**100%**

Figure B-21: Online Budget Tool Average Responses by Age

INVESTMENT CATEGORIES	UNDER 18 (%)	18-24 (%)	25-34 (%)	35-44 (%)	45-54 (%)	55-64 (%)	65-74 (%)	75+ (%)
Pavement Condition	38%	36%	37%	37%	38%	38%	38%	38%
Bridge Condition	17%	15%	15%	15%	16%	16%	16%	17%
Roadside Infrastructure	8%	8%	8%	8%	8%	8%	8%	9%
Rest Areas	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%
Climate Resilience	1%	2%	2%	2%	1%	1%	1%	1%
Transportation Safety	3%	3%	3%	3%	3%	3%	3%	3%
Advancing Technology	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%
Freight	2%	2%	2%	2%	2%	2%	2%	2%
Highway Mobility	2%	4%	4%	4%	5%	4%	3%	2%
Pedestrian and Bicycle	7%	5%	5%	4%	3%	4%	3%	3%
Local Partnerships	2%	3%	3%	3%	3%	3%	2%	2%
Main Street/Urban Pavements	1%	2%	2%	2%	1%	2%	1%	2%
Project Delivery	20%	19%	19%	19%	19%	20%	20%	19%
Small Programs	<1%	<1%	<1%	<1%	<1%	<1%	<1%	<1%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

PREFERRED APPROACH RESULTS

The short surveys asked participants to identify their preferred approach among six potential investment approaches. The six approaches were described by vision statements highlighting the priorities of the approach. Below is the language used to describe the six approaches.

Figure B-22: Investment Approaches Developed for Public Outreach

PRIORITIZE PAVEMENTS/CURRENT APPROACH

"I'd like to see the existing system maintained first before expanding or adding to the system. A smooth road surface when driving is most important. Roads which become rough should not stay that way for long."

PRIORITIZE BRIDGES

"Whatever additional resources are available should be put towards improving and maintaining bridges. MnDOT should not be in a position where it would need to close or limit traffic on bridges because they need repairs."

FOCUS ON SAFE AND EQUITABLE COMMUNITIES

"Highways should be safer for people to use, including for walking and bicycling. Improvements on highways should support strategies for reconnecting divided communities and other livability improvements."

PRIORITIZE HIGHWAY CAPACITY EXPANSION

"In the future, there needs to be fewer delays and less congestion. Population continues to grow and MnDOT should be planning for and accommodating the increase in vehicle traffic."

IMPROVE MOBILITY FOR ALL HIGHWAY USERS

"Minnesota is growing but we cannot build ourselves out of traffic congestion. In addition to addressing vehicle mobility, the highway system needs improvements for freight and for people walking, bicycling, and taking transit."

ADAPT TO CHANGING TECHNOLOGY AND CLIMATE

"Highways should be made more resistant to the growing extreme weather events and support changing transportation technology. Highways also need to be designed to support more walking and bicycling."

The most selected preferred approach was Improve Mobility for All Highway Users. However, no approach received a majority.
Three other approaches were selected around 20% of the time. The current approach received the third most selections at 20%. Between the Prioritize Bridge and Prioritize Pavement approach, 27% of participants selected an approach which prioritizes maintaining the system over other approaches.

Figure B-23: Preferred Investment Approaches

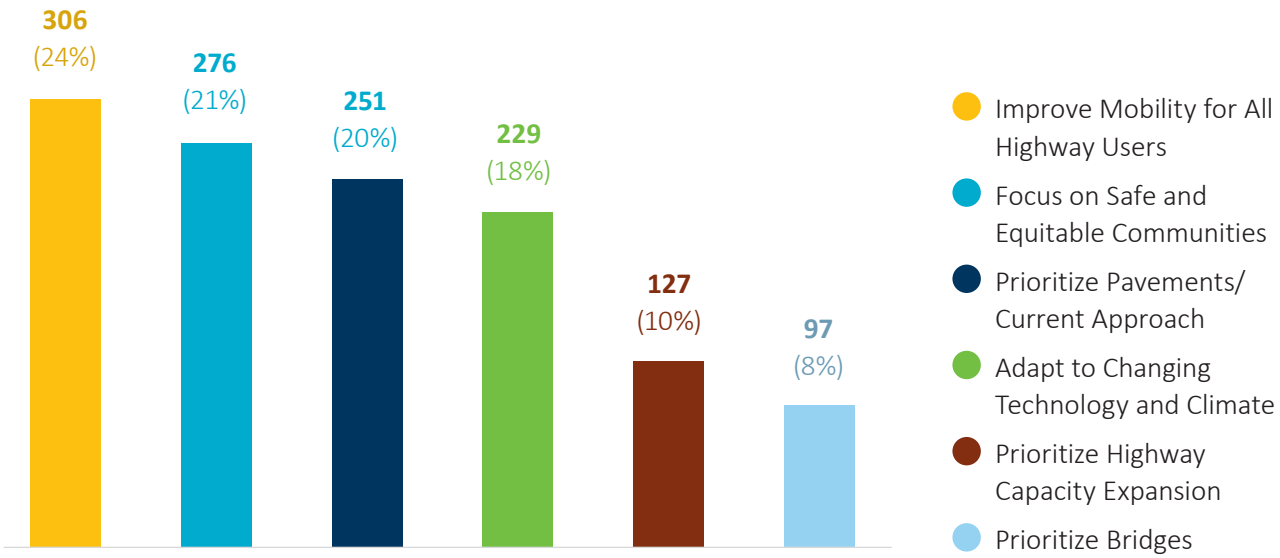
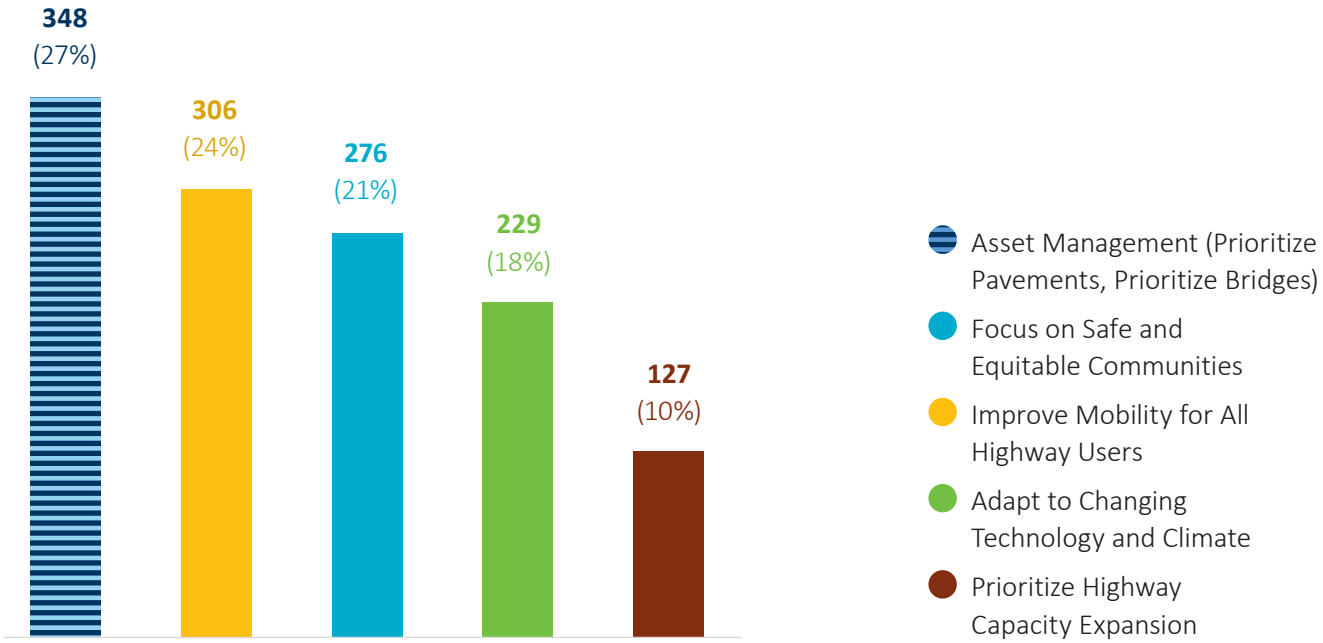


Figure B-24: Preferred Investment Approaches with Combined Asset Management Responses



PREFERRED APPROACH SELECTION BY LOCATION AND DEMOGRAPHIC GROUPS

The results of the preferred approach question are broken out in the charts below by location and demographic information people provided with their responses.

TOP 3 PREFERRED APPROACH BY GENDER:

MALE

312 RESPONSES

- 24% Improve Mobility for All Highway Users — 75 RESPONSES
- 20% Prioritize Pavements/ Current Approach — 63 RESPONSES
- 19% Adapt to Changing Technology and Climate — 59 RESPONSES

FEMALE

390 RESPONSES

- 27% Focus on Safe and Equitable Communities — 106 RESPONSES
- 25% Improve Mobility for All Highway Users — 97 RESPONSES
- 20% Adapt to Changing Technology and Climate — 77 RESPONSES

NON-BINARY

13 RESPONSES

- 38% Adapt to Changing Technology and Climate — 5 RESPONSES
- 38% Improve Mobility for All Highway Users — 5 RESPONSES
- 23% Focus on Safe and Equitable Communities — 3 RESPONSES

**Statistically significant difference between priorities of men and women*

TOP 3 PREFERRED APPROACH BY RACE/ETHNICITY:

WHITE NON-HISPANIC

545 RESPONSES

- 23% Improve Mobility for All Highway Users — 128 RESPONSES
- 21% Focus on Safe and Equitable Communities — 117 RESPONSES
- 20% Adapt to Changing Technology and Climate — 107 RESPONSES

BLACK OR AFRICAN AMERICAN

20 RESPONSES

- 50% Focus on Safe and Equitable Communities — 10 RESPONSES
- 30% Improve Mobility for All Highway Users — 6 RESPONSES
- 15% Adapt to Changing Technology and Climate — 3 RESPONSES

HISPANIC/LATINX

89 RESPONSES

- 30% Improve Mobility for All Highway Users — 27 RESPONSES
- 21% Focus on Safe and Equitable Communities — 19 RESPONSES
- 17% Adapt to Changing Technology and Climate — 15 RESPONSES

ASIAN

16 RESPONSES

- 44% Improve Mobility for All Highway Users — 7 RESPONSES
- 25% Adapt to Changing Technology and Climate — 4 RESPONSES
- TIE
  - 13% Focus on Safe and Equitable Communities — 2 RESPONSES
  - 13% Prioritize Pavements/ Current Approach — 2 RESPONSES

AMERICAN INDIAN/ ALASKA NATIVE

10 RESPONSES

- 40% Improve Mobility for All Highway Users — 4 RESPONSES
- 20% Prioritize Highway Capacity Expansion — 2 RESPONSES
- TIE
  - 10% Focus on Safe and Equitable Communities — 1 RESPONSES
  - 10% Adapt to Changing Technology and Climate — 1 RESPONSES
  - 10% Prioritize Bridges — 1 RESPONSES
  - 10% Prioritize Pavements/ Current Approach — 1 RESPONSES

NATIVE HAWAIIAN/ PACIFIC ISLANDER

1 RESPONSE

- 100% Adapt to Changing Technology and Climate — 1 RESPONSE

OTHER RESPONSE/ MORE THAN ONE RACE

15 RESPONSES

- 47% Adapt to Changing Technology and Climate — 7 RESPONSES
- TIE
  - 20% Improve Mobility for All Highway Users — 3 RESPONSES
  - 20% Focus on Safe and Equitable Communities — 3 RESPONSES

TOP 3 PREFERRED APPROACH BY AGE GROUPS:

UNDER 18
5 RESPONSES

TIE
- 60% Improve Mobility for All Highway Users — 3 RESPONSES
- 20% Focus on Safe and Equitable Communities — 1 RESPONSES
- 20% Prioritize Pavements/ Current Approach — 1 RESPONSES

18 - 24
42 RESPONSES

- 36% Focus on Safe and Equitable Communities — 15 RESPONSES
- 26% Adapt to Changing Technology and Climate — 11 RESPONSES
- 24% Improve Mobility for All Highway Users — 10 RESPONSES

25 - 34
142 RESPONSES

- 27% Focus on Safe and Equitable Communities — 39 RESPONSES
- 25% Improve Mobility for All Highway Users — 36 RESPONSES
- 24% Adapt to Changing Technology and Climate — 34 RESPONSES

35 - 44
194 RESPONSES

TIE
- 24% Focus on Safe and Equitable Communities — 47 RESPONSES
- 24% Improve Mobility for All Highway Users — 47 RESPONSES
- 20% Prioritize Pavements/ Current Approach — 39 RESPONSES

45 - 54
121 RESPONSES

- 23% Improve Mobility for All Highway Users — 28 RESPONSES
- 21% Adapt to Changing Technology and Climate — 25 RESPONSES
- 20% Focus on Safe and Equitable Communities — 24 RESPONSES

55 - 64
128 RESPONSES

- 27% Improve Mobility for All Highway Users — 35 RESPONSES
- 21% Adapt to Changing Technology and Climate — 27 RESPONSES
- 17% Prioritize Pavements/ Current Approach — 22 RESPONSES

65 - 74
80 RESPONSES

- 25% Improve Mobility for All Highway Users — 20 RESPONSES
- 20% Prioritize Pavements/ Current Approach — 16 RESPONSES
- 19% Focus on Safe and Equitable Communities — 15 RESPONSES

75+
19 RESPONSES

- 32% Adapt to Changing Technology and Climate — 6 RESPONSES

TIE
- 16% Improve Mobility for All Highway Users — 3 RESPONSES
- 16% Prioritize Highway Capacity Expansion — 3 RESPONSES

TIE
- Focus on Safe and Equitable Communities — 3 RESPONSES
- Prioritize Bridges — 3 RESPONSES

TOP 3 PREFERRED APPROACH BY LOCATION:

GREATER MINNESOTA
416 RESPONSES

- 26% Prioritize Pavements/ Current Approach* — 161 RESPONSES
- 24% Improve Mobility for All Highway Users — 150 RESPONSES
- 17% Adapt to Changing Technology and Climate — 105 RESPONSES

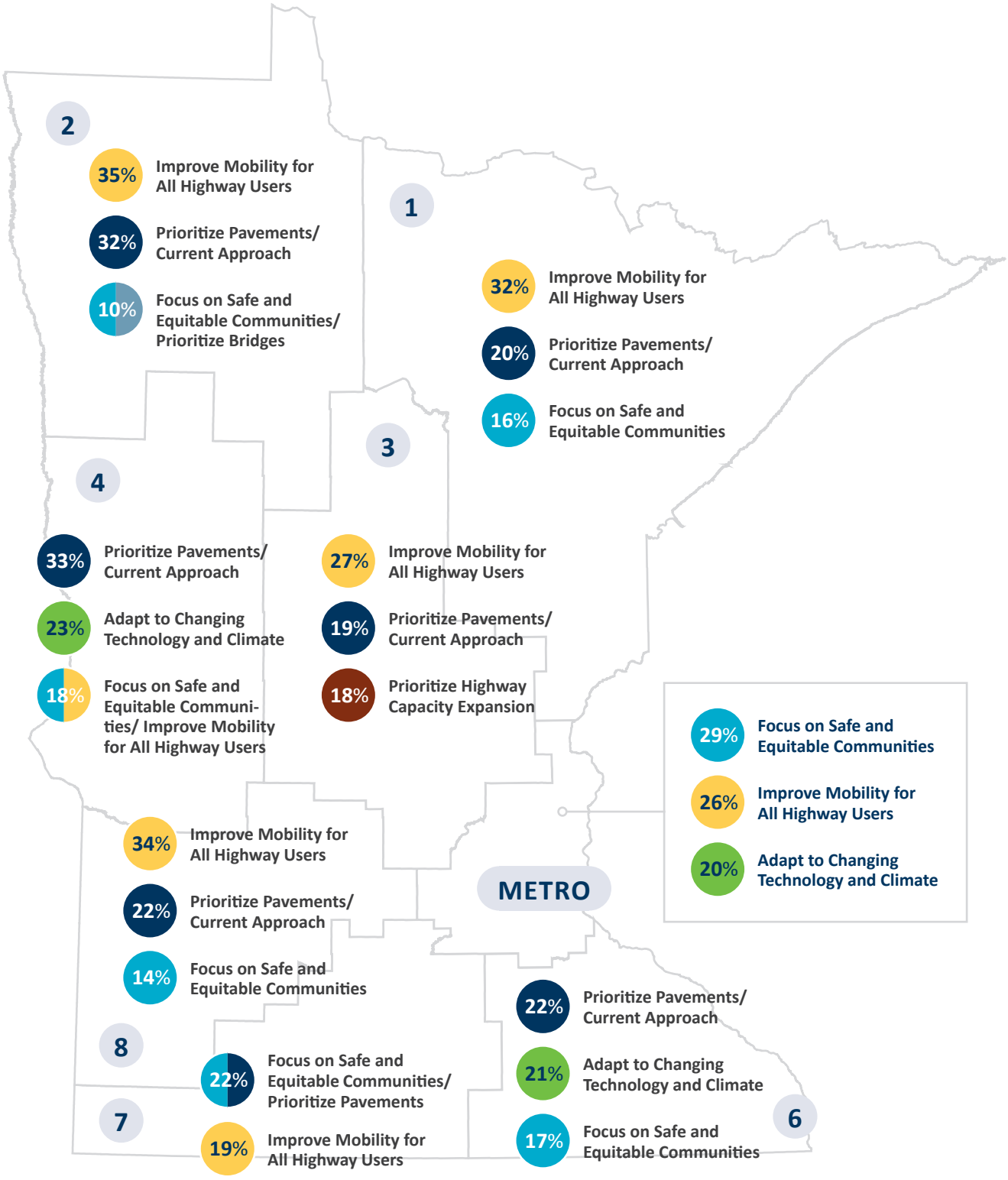
TWIN CITIES METRO AREA
216 RESPONSES

- 29% Focus on Safe and Equitable Communities* — 83 RESPONSES
- 26% Improve Mobility for All Highway Users — 77 RESPONSES
- 20% Adapt to Changing Technology and Climate — 57 RESPONSES

**Statistically difference between priorities of Greater Minnesota and Twin Cities responses*

TOP 3 PREFERRED APPROACH **BY MnDOT DISTRICT:**

Figure B-25: Top 3 Preferred Approach by MnDOT District



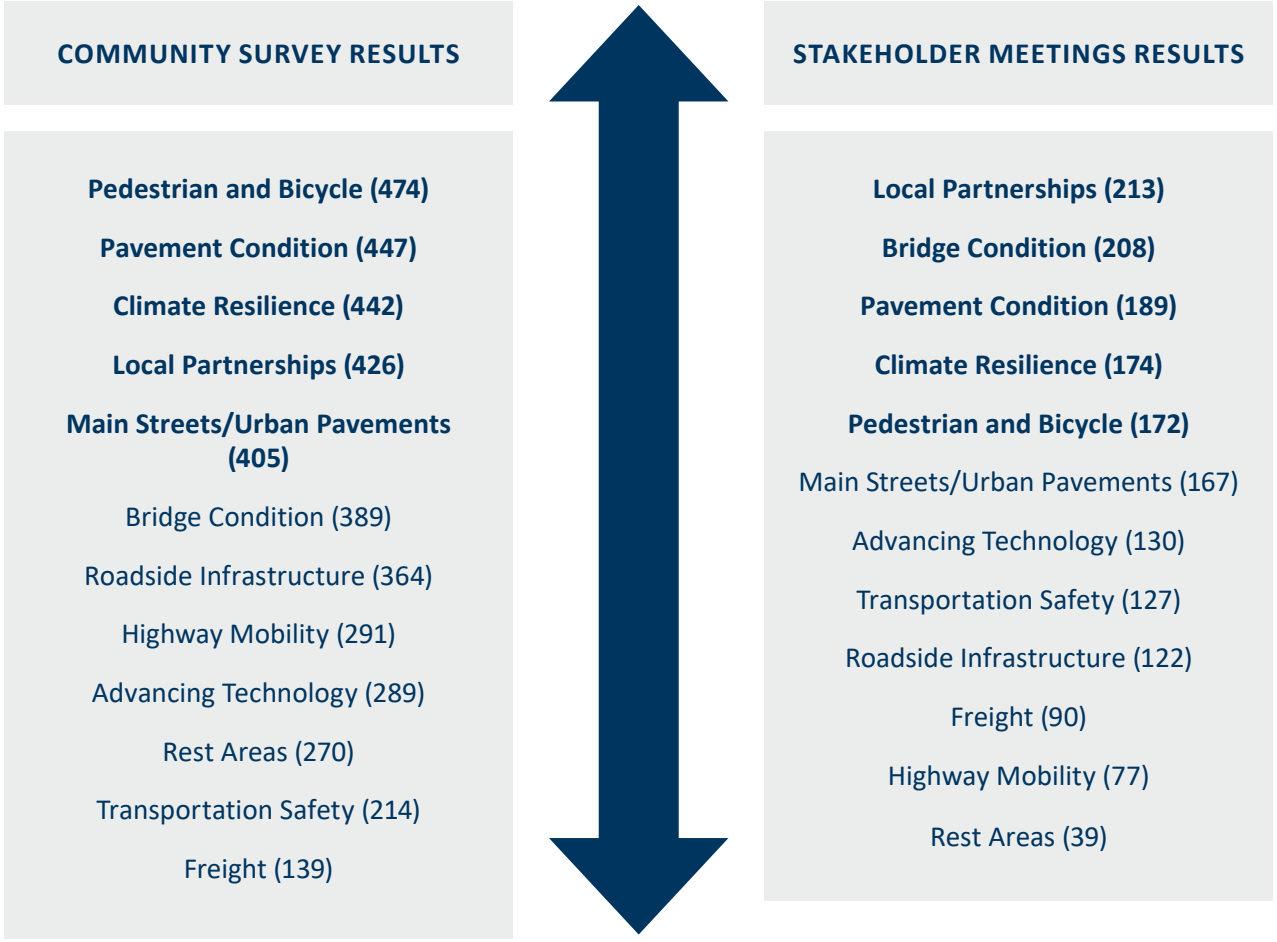
TOP 5 MOST IMPORTANT IMPROVEMENTS RESULTS

The short surveys asked respondents to select their top five priorities for state highway investment from a list of 12 investment categories. The plain language investment category language is shown on the left below. The MnSHIP Investment Category name is shown on the right along with the results from all survey responses.

Figure B-26: Top 5 Improvements Selected from Survey Results

MnDOT is able to break down the results by engagement activity to show priorities between responses from community surveys, which were more likely members of the public, and stakeholder meetings, which were more likely to include city and county officials and staff. Between these two groups, the top six most frequently selected improvements are the same but the order of frequency is different.

Figure B-27: Priorities Expressed by Community Members vs. Stakeholders



IMPROVEMENTS FREQUENTLY SELECTED OUTSIDE OF THE TOP 5 OVERALL

Different investment types were important to different groups of people. We noted where some trends may not have fallen in the top 5, but were more important to a specific group than the average response.

Figure B-28: Improvements Selected Frequently Outside of Top 5 Overall

MAIN STREETS/URBAN PAVEMENTS

- Hispanic/Latinx/Latine: **1st - 50 responses**
- Ages 18-24: **1st - 27 responses**
- Multiple/Some Other Race: **2nd - 12 responses**
- Non-Binary/Gender Fluid: **2nd - 8 responses**
- Twin Cities: **3rd - 128 responses**
- Black/African American: **3rd - 8 responses**
- Native American: **4th - 4 responses**
- Ages 45-54: **4th - 59 responses**
- Women: **5th - 185 responses**
- Greater MN: **5th - 286 responses**
- Ages 35-44: **5th - 92 responses**
- Ages 25-34: **5th - 80 responses**
- Ages 65-74: **5th - 37 responses**

TRANSPORTATION SAFETY

- Ages 18 and Under: **2nd - 3 responses**
- Black/African American: **3rd - 8 responses**
- Asian American: **3rd - 7 responses**
- Non-Binary/Gender Fluid: **3rd - 7 responses**
- Native American: **4th - 4 responses**
- Multiple/Some Other Race: **5th - 6 responses**

ROADSIDE INFRASTRUCTURE

- Native American: **1st - 5 responses**
- Asian American: **1st - 10 responses**
- Black/African American: **3rd - 8 responses**
- Hispanic/Latinx/Latine: **5th - 40 responses**
- Non-Binary/Gender Fluid: **5th - 6 responses**
- Ages 75+: **5th - 7 responses**

HIGHWAY MOBILITY

- Black/African American: **3rd - 8 responses**
- Asian American: **3rd - responses**
- Multiple/Some Other Race: **5th - 6 responses**

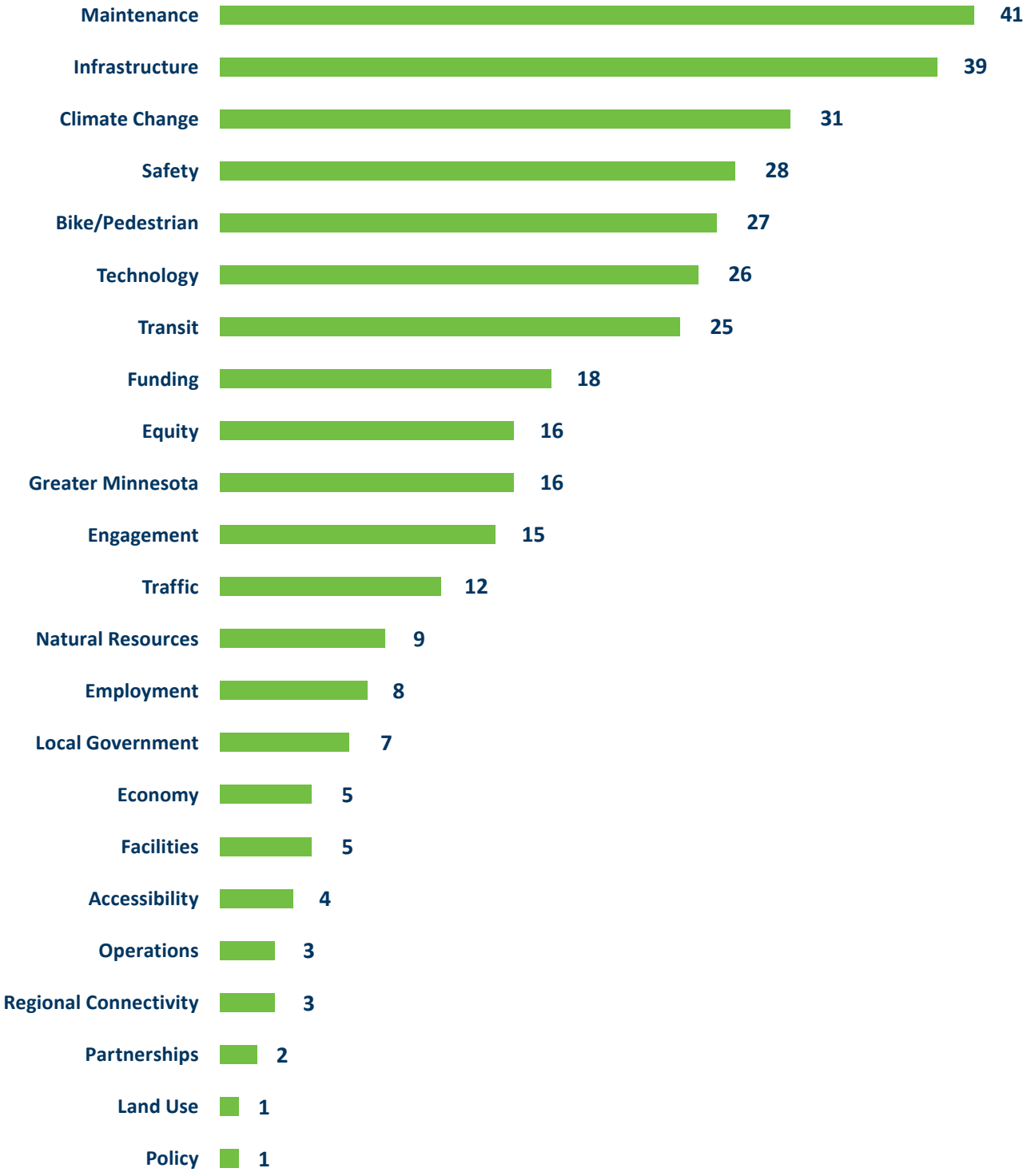
ADVANCING TECHNOLOGY

- Native American: **4th - 4 responses**
- Multiple/Some Other Race: **5th - 6 responses**

OPEN COMMENT RESPONSES

The MnSHIP paper and online survey included an opportunity to provide open-ended feedback. The key topics covered in over 300 open-ended responses are summarized below. Twenty-three topics were derived from these comments. Those that received significant support from commenters are expanded upon below.

Figure B-29: Open-Ended Survey Comments by Topic



SUMMARY OF COMMENT THEMES

MAINTENANCE

Prioritize maintenance of infrastructure

- Repair potholes and bridges, smooth pavements, repaint road striping, maintain gravel roads.
- Avoid deferring maintenance as costs continue to increase.

Do not build beyond infrastructure that can be maintained

- Perception that highway needs are already falling behind, and keeping up with the deterioration of our current infrastructure before adding to that system is recommended.

INFRASTRUCTURE

Reduce highway/road capacity

- Narrow roads or eliminate highway lanes to reduce road capacity.
- Reduce highway demand, vehicle miles traveled, and climate impact of vehicles on the road.
- Correct overbuilt roads and do not consider more highway expansions.
- Harm done to communities by the building and expansion of highways should be corrected.

Widen Roads

- Widen roads to improve multimodal traffic safety by adding space between cars and bicycles.
- Improve the capacity for large or wide vehicles including semi-trucks and harvest equipment.

CLIMATE CHANGE

Mitigate impacts of climate change and emissions

- Address climate concerns directly by reducing emissions and vehicle miles traveled.
- More solar and wind energy generation, move away from cars towards transit, and replace oil-based pavements.

SAFETY

Improve safety

- Use technology and infrastructure to address safety concerns.
- Use technology to reduce speeds, including cameras and speed radars or low-tech solutions, such as ticketing, signage, and safe design features.
- Speeding and reckless driving is increasing danger.

BIKE/PEDESTRIAN

Expand and improve bicycle and pedestrian facilities

- More walking and cycling trails in communities.
- Wider shoulders along highways could improve safety for road cyclists.
- More sidewalks and improved lighting for walkers at night.

TECHNOLOGY

Invest in infrastructure for electric vehicles and electric bicycles

- Increase in electric vehicles will require new infrastructure.
- Provide more charging stations for electric vehicles on freeways and at rest stops.
- Add charging stations on bicycle paths and bus stops for electric bikes.

TRANSIT

Expand and improve public transit

- Build more public transit and improve the system that exists in both metro and rural areas.
- Increase punctuality and capacity of transit, add more stops in low-income areas, and make transit free.
- More transit in general, high-speed rail and bus-only lanes.

FUNDING

- Questions of whether there will be new taxes.
- Fund projects that align with policy priorities like Complete Streets.
- Be frugal with spending.

EQUITY

- Define equity explicitly in policies.
- Emphasize quality of life improvements over expanded highways.
- Provide funding for climate justice and support for communities impacted.

GREATER MINNESOTA

Prioritize investment in Greater Minnesota

- Invest in rural communities and small towns outside of the Twin Cities metro area.
- Greater Minnesota is often left out of updating and reconstruction projects.
- Small towns typically do not have the funding for large road projects. Support them to help fill the gap and improve their infrastructure.

ENGAGEMENT

Provide education on roadways and MnSHIP process

- Educate public on the MnSHIP process and funding.
- Educate public on roadway etiquette including passing lane usage, roundabout usage, and zipper merging.

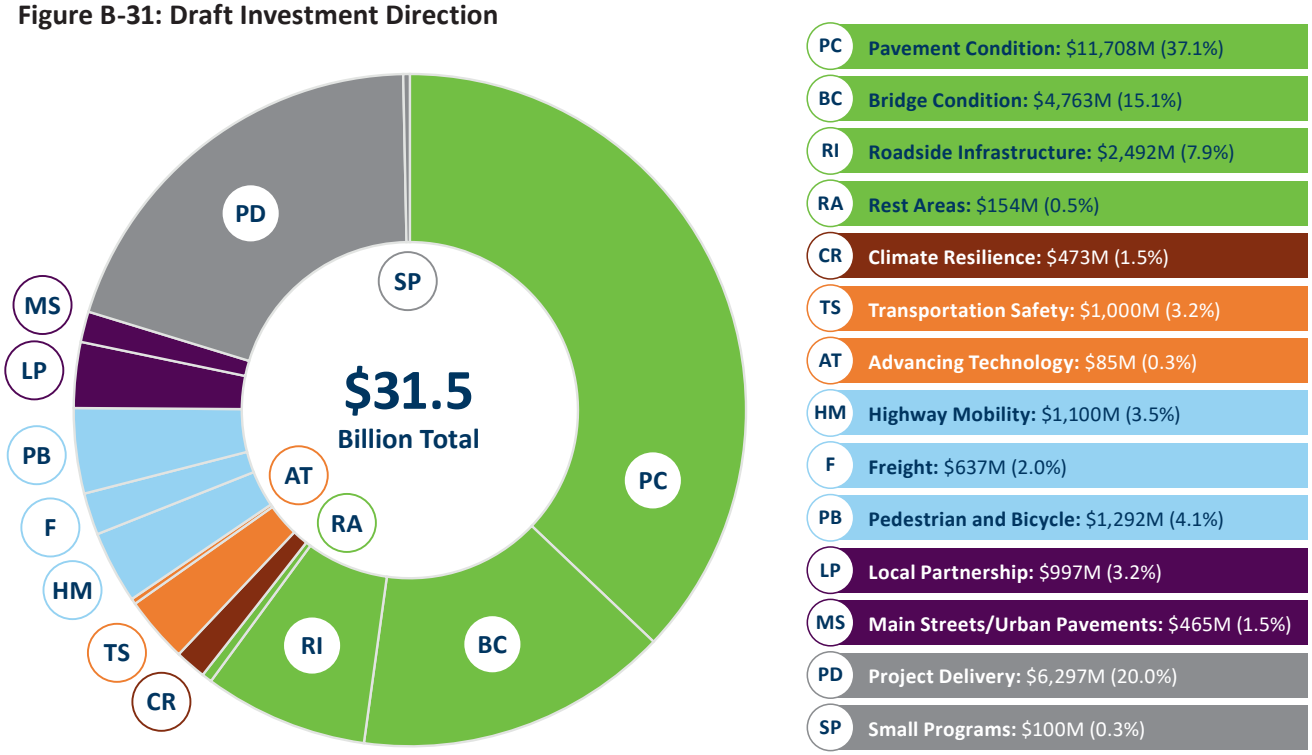
Figure B-30: Word Cloud of Common Themes from Open Ended Comments

SETTING AN INVESTMENT DIRECTION

DRAFT 20-YEAR INVESTMENT DIRECTION

MnDOT used the public and stakeholder feedback in the first phase of public engagement as the basis for the development of the draft MnSHIP investment direction. MnDOT staff averaged the results from the in-person and stakeholder surveys as well as the online budget tool. Investment levels were aligned with identified performance levels, where possible. The preliminary draft investment direction was reviewed by the MnSHIP Technical Advisory Committee and Policy Advisory Committee and MnDOT leadership. Figure 16 shows the approved draft investment direction for public engagement.

Figure B-31: Draft Investment Direction



MnDOT developed four themes to communicate the priorities of the draft investment direction.

Invest to maintain the existing system

Improve mobility, accessibility, and safety for all

Begin to adapt to a changing future

Focus on communities and livability

EQUITY REVIEW

MnDOT reviewed the investment direction setting process and outcomes through an equity lens and analyzed results from the first engagement phase by demographics. With the Equity Workgroup, MnSHIP staff discussed who are the beneficiaries for the proposed direction and who is potentially burdened.

In discussing potential burdens and benefits, MnSHIP staff focused on both continuing benefits and burdens as well as who benefits more or is burdened more from the changes resulting from the draft investment direction.

POTENTIAL BENEFICIARIES

- All users of the state highway system are the intended beneficiaries
- Populations that may benefit more from the changes from the previous investment direction:
  - People with disabilities
  - Tribal communities especially in Greater Minnesota
  - Those who don't drive (either by choice or by circumstance)
  - People living near state highways

POTENTIAL BURDENS

- No significant reversal of past or continuing burdens such as noise/air pollution, size and impact of existing system, and induced demand and traffic to surrounding areas
- Limitations on MnSHIP funding beyond right-of-way to make improvements off system
- Mobility improvements could result in additional right-of-way
- For many, the goal of reaching ADA compliance by 2037 is too long
- Rural low-income populations who rely on driving could see increased burdens and cost caused by deteriorating pavement condition

PUBLIC ENGAGEMENT PHASE 2 OVERVIEW

PURPOSE

MnDOT conducted a second phase of public outreach in spring 2023 to get feedback on the draft investment direction developed with findings from the first phase of outreach. This phase included presentations to stakeholders and an online survey on the draft investment direction. MnDOT ran social media ads to drive traffic to the online survey for responses. The survey asked the following questions:

- How do you feel about the draft investment direction?
- Why do you feel this way? What would you adjust?

Participants were also asked to identify investment priorities for an additional $6 billion.

WHO DID WE REACH?

COMMUNITY-BASED ORGANIZATION ENGAGEMENT PARTNERSHIPS

MnDOT partnered with four community-based organizations to help engage their networks and communities through the organization's communication and outreach channels. Below is a summary of the work the organizations completed in spring 2023 during Phase 2.

Project FINE (Winona area) held in-person engagements with advisory group members to share the investment tool and encourage participation, and shared via social media.

Partnership4Health (Clay County area) shared the investment tool digitally and in person. Partnership4Health participated in the MSUM Earth Day and handed out 100 flyers and advertised on Detroit Lakes Radio, Facebook, and various channels.

HACER - Hispanic Advocacy and Community Empowerment through Research (Minnesota) shared on three occasions via their Facebook, Instagram, and LinkedIn accounts. The postings resulted in 378 impressions, 277 reached, and 31 engagements.

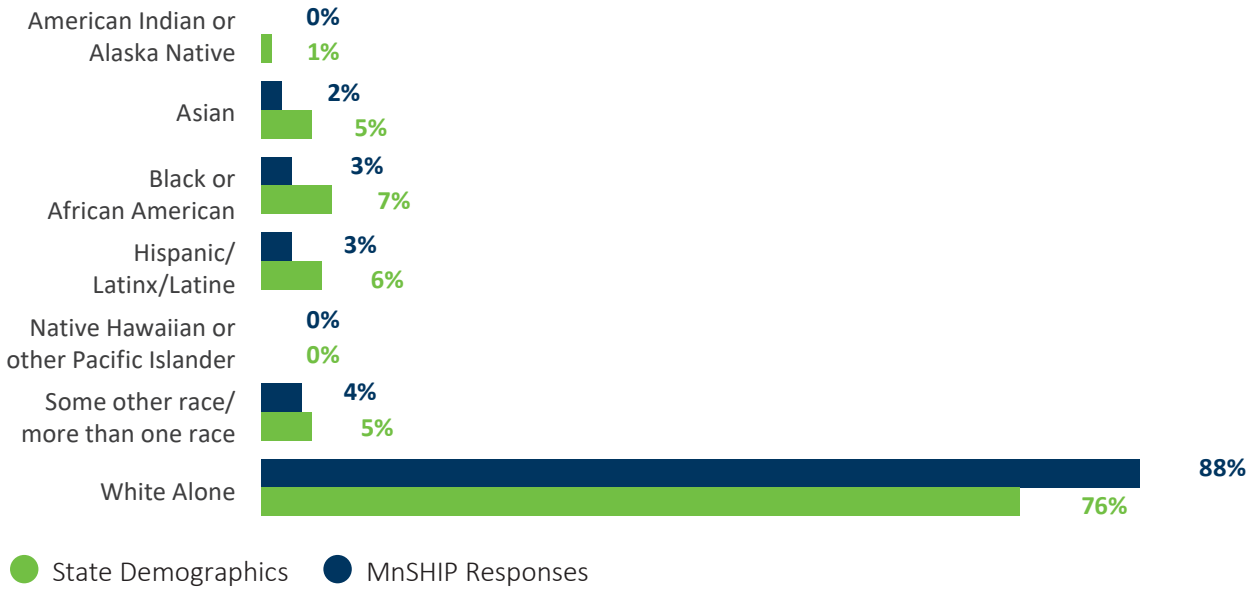
COPAL – Comunidades Organizando el Poder y la Acción Latina (South-Central MN and Minnesota) communicated via email with their core 54 community leaders (Comité General de MN) and distributed flyers in vaccination events in the Mankato area.

BIPOC Student Organizations in Minnesota Colleges and Universities. MnDOT identified and reached out to 78 student organizations including Hmong and Asian, Latine, Black, African, and other multicultural groups at 18 Minnesota colleges and universities. Shared via emails, calls, and with social media project postings.

RACE/ETHNICITY OF RESPONSES

The proportion of respondents describing themselves as White Alone was 88% compared to 76% for Minnesota's overall population.

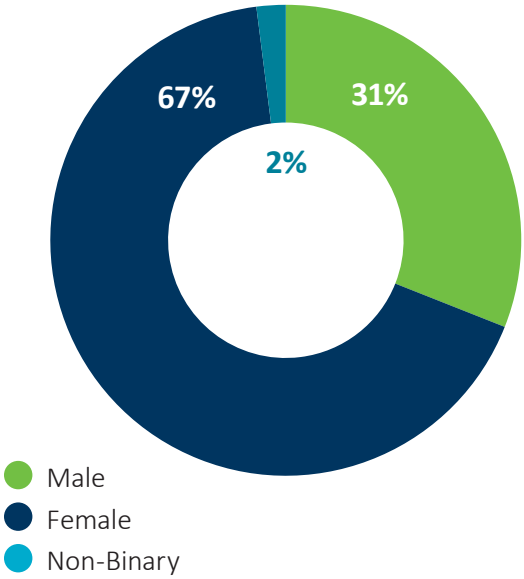
Figure B-32: Race and Ethnicity of Responses



GENDER IDENTITY OF RESPONSES

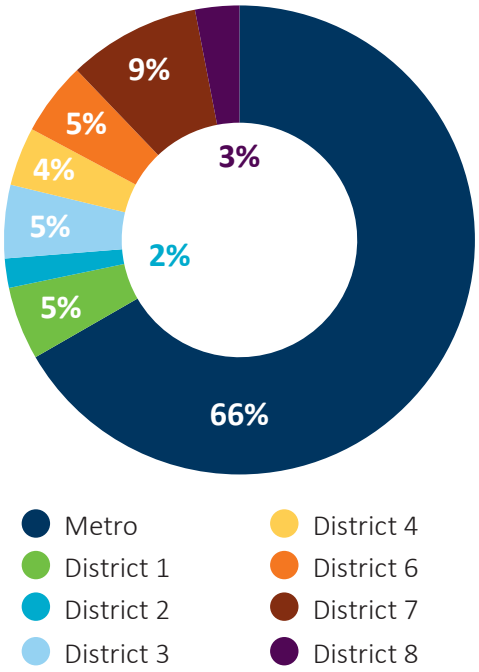
Almost two thirds of respondents in this phase described themselves as female.

Figure B-33: Gender Identity of Responses



RESPONSES BY DISTRICT

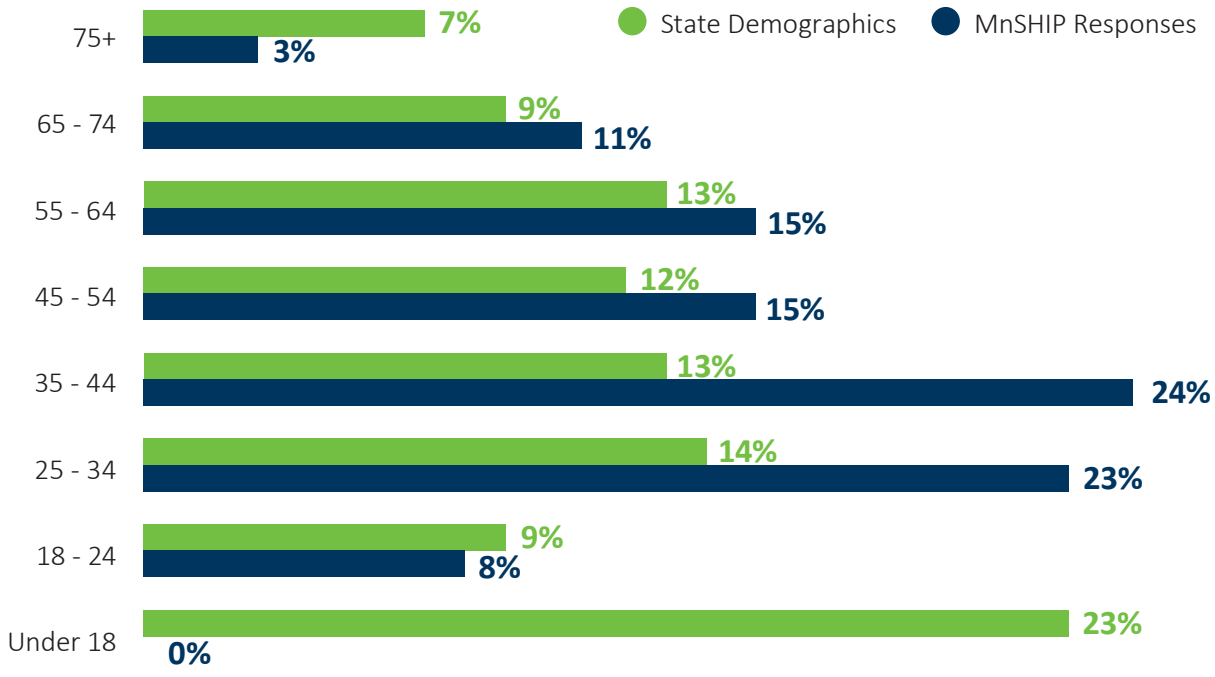
Figure B-34: Responses by District



AGE OF RESPONSES

Responses were most likely to come from people ages 35-44 and 25-34.

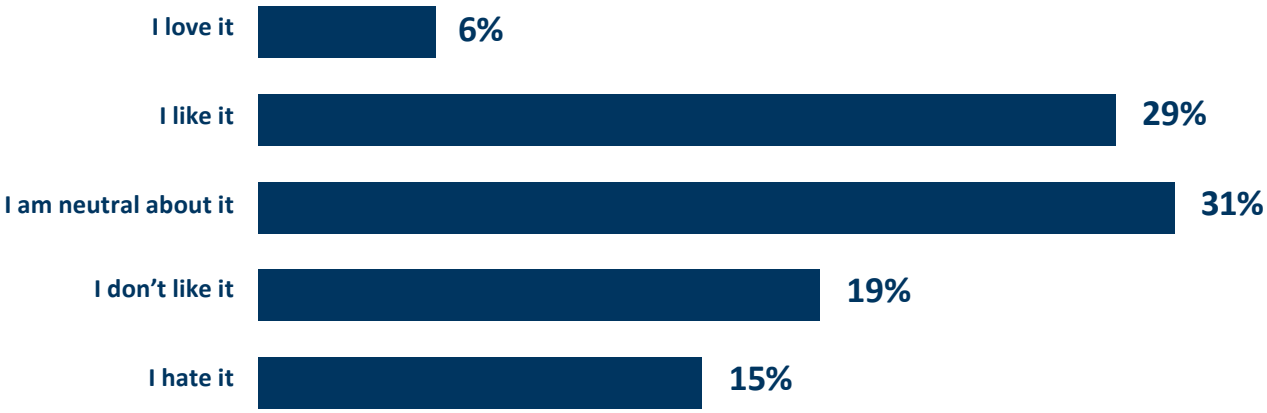
Figure B-35 Ages of Responses



WHAT DID WE HEAR?

Responses to the draft investment direction were generally neutral or positive. An approximately equal number of people liked the investment direction, were neutral about it, and didn't like it. Figure 21 shows the breakdown of responses.

Figure B-36: Responses to the Draft Investment Direction



Response to the draft investment direction also included open-ended comments about what people would adjust and why. The section below summarizes what people liked or didn't like about the draft investment direction.

WHAT DO PEOPLE LIKE ABOUT THE PLAN?

- Focus on pavement and bridge funding
- An increased focus on pedestrian and bicycle infrastructure

WHAT DON'T PEOPLE LIKE ABOUT THE PLAN?

- Too much investment in highway mobility and pavement
- Does not do enough to address greenhouse gas emissions and vehicle miles traveled
- Not enough funding for bicycle and pedestrian infrastructure

People who responded positively to the plan were less likely to mention reasons for their positivity. Those that did, highlighted the importance of pavement and bridge investment.

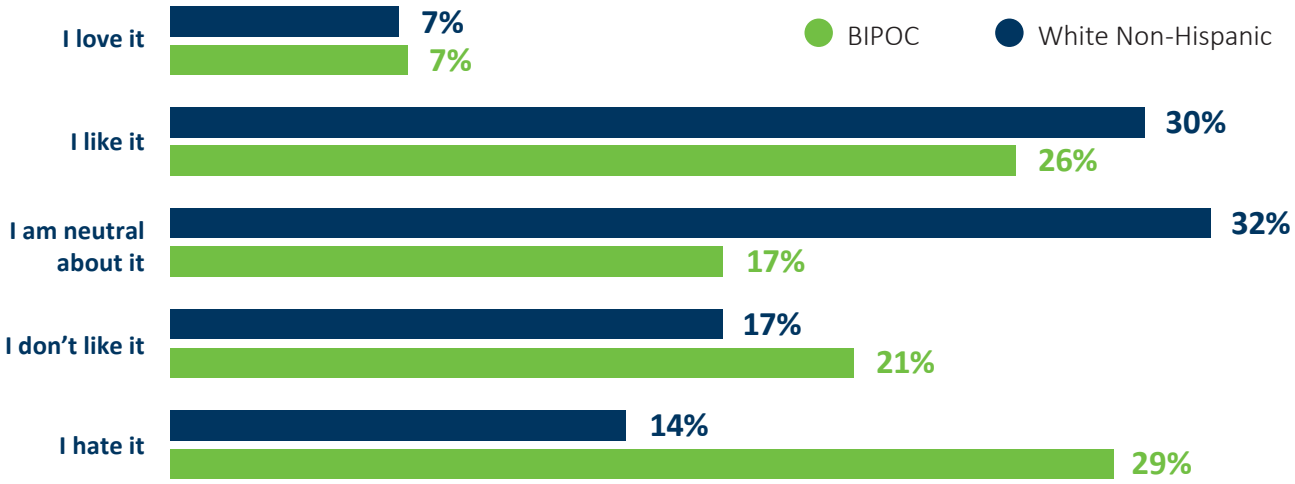
The top reasons why people didn't like the draft investment direction were its focuses on highways and pavement. These responses generally focused on the highway system's role in Greenhouse Gas Emissions and MnDOT's target for reducing VMT. Respondents wanted MnDOT to adopt a more transformational plan that removed state highways from the system to help reduce VMT and emissions from transportation.

Pedestrian and bicycle sentiment was split. Some people didn't like the draft investment direction because it spent too little on pedestrian and bicycle infrastructure. Some people didn't like the draft investment direction because it spent too much on pedestrian and bicycle infrastructure.

RESPONSES BY DEMOGRAPHICS AND LOCATION

The results of Phase 2 engagement were broken out in the figures below by location and demographic information. White non-Hispanic people were more likely to respond positively or neutrally to the investment direction. BIPOC respondents were more likely to respond negatively.

Figure B-37: Investment Direction Responses from White Non-Hispanic/BIPOC



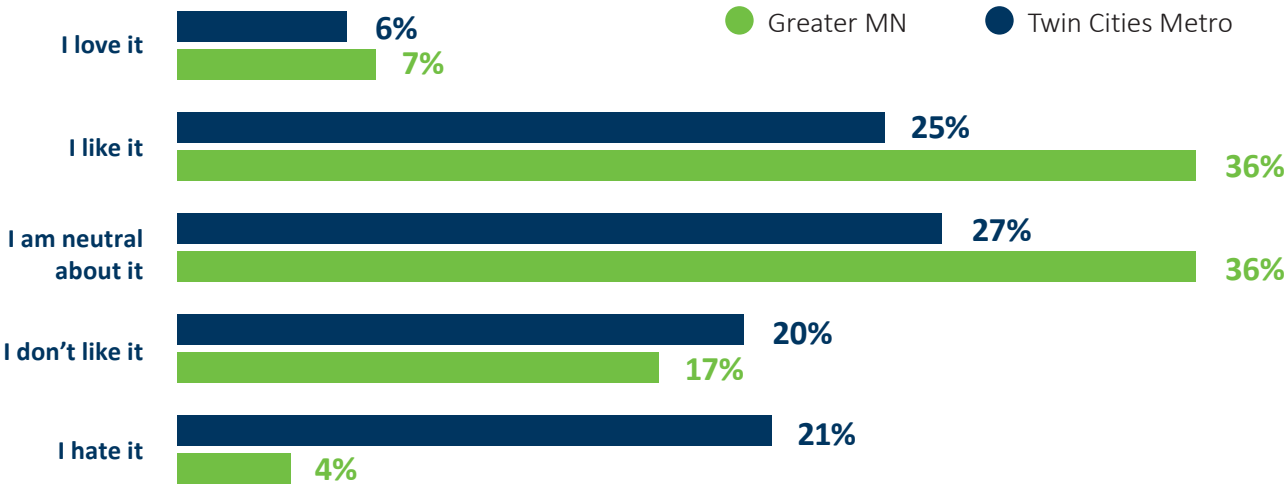
Responses from BIPOC were analyzed to determine what they would change about the investment direction. Those who said they did not like it or hated it tended to want more investment in bike/ped, transit, and climate measures, and less investment in pavement.

Figure B-38: Responses from BIPOC

SENTIMENT	MORE INVESTMENT	LESS INVESTMENT
I love it	N/A	N/A
I like it	Ped & Bike (3)	N/A
I am neutral about it	Climate (3)	Ped & Bike (3)
I don't like it	Ped & Bike (4) Climate (3) Pavement (3) Bridge (3) Transit (3) Safety (3)	Pavement (3)
I hate it	Ped & Bike (7) Transit (5) Climate (4) LPP/Main St (3)	Pavement (7) Mobility (4)

Residents of greater MN were more likely to like the investment direction or be neutral about it than metro area residents and less likely to hate it.

Figure B-39: Investment Direction Responses by Twin Cities Metro/Greater MN



INCREASED REVENUE PRIORITIES

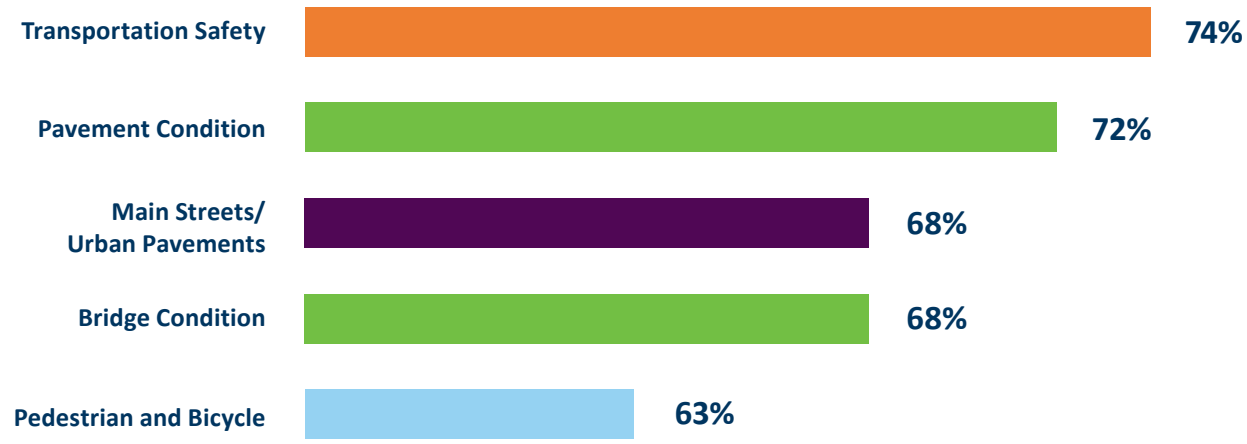
In addition to getting feedback on the draft investment direction, the second phase of public engagement also focused on getting feedback for increased revenue priorities. Respondents used the online budgeting tool to prioritize up to $6 billion in additional funding beyond the draft investment direction. They were able to select increased investments for each of the MnSHIP investment categories.

The average additional investment selected by the public was $5.8 billion. The average additional investment amount by category is shown in Figure 24 below.

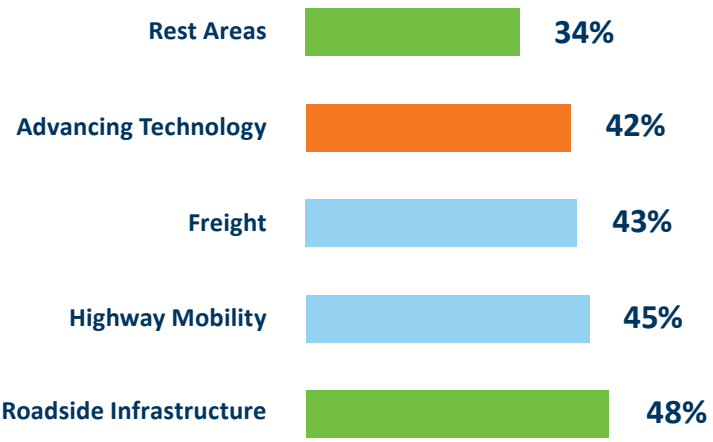
Figure B-40: Average Increased Revenue Priority Responses

INVESTMENT CATEGORY	PUBLIC FEEDBACK INCREASED REVENUE	% OF INCREASE
Pavement Condition	$1.2 B	20.8%
Bridge Condition	$512 M	8.8%
Roadside Infrastructure	$484 M	8.3%
Rest Areas	$21 M	0.4%
Climate Resilience	$265 M	4.56%
Transportation Safety	$446 M	7.66%
Advancing Technology	$37 M	0.63%
Highway Mobility	$741 M	12.74%
Freight	$114 M	1.95%
Pedestrian and Bicycle	$1.1 B	19.28%
Local Partnerships	$394 M	6.77%
Main Streets/Urban Pavements	$472 M	8.12%
TOTAL	$5.8 B	100%

Based on the percentage of respondents who selected more investment for a category, the top priorities for additional revenue are:



Based on the percentage of respondents who selected more investment for a category, the lowest priorities for additional revenue are:



APPENDIX C – FINANCIAL SUMMARY

The 20-year Minnesota State Highway Investment Plan (MnSHIP) is a fiscally constrained plan, meaning it sets investment priorities only for the revenues that are expected to be available during the next 20 years. MnDOT identifies anticipated revenue based on current federal and state law, trend analysis and other assumptions. Based on these factors, MnDOT initially identified a baseline revenue projection of $31.5 billion over the 20-year planning horizon (state fiscal years 2023-2042) for state road construction.

20-year projections inherently have a high degree of uncertainty. To account for potential new federal or state laws, trends and other funding factors that could change the anticipated future revenue, MnDOT developed a series of different revenue scenarios. These revenue scenarios present a range of possible funding over the 20-year planning horizon, but do not represent all possible combinations or possible futures. Based on these revenue scenarios, MnDOT used a range of $30 to $33 billion to inform the development of a draft investment direction

In 2023, after the revenue projections had been completed and a draft investment direction had been developed, the Minnesota legislature passed a bill providing additional funding for transportation. This increased the anticipated capital funding for state highways by $5.2 billion over the next 20 years. The sections below describe the process for developing the original MnSHIP revenue scenarios as well as changes due to the 2023 legislation.

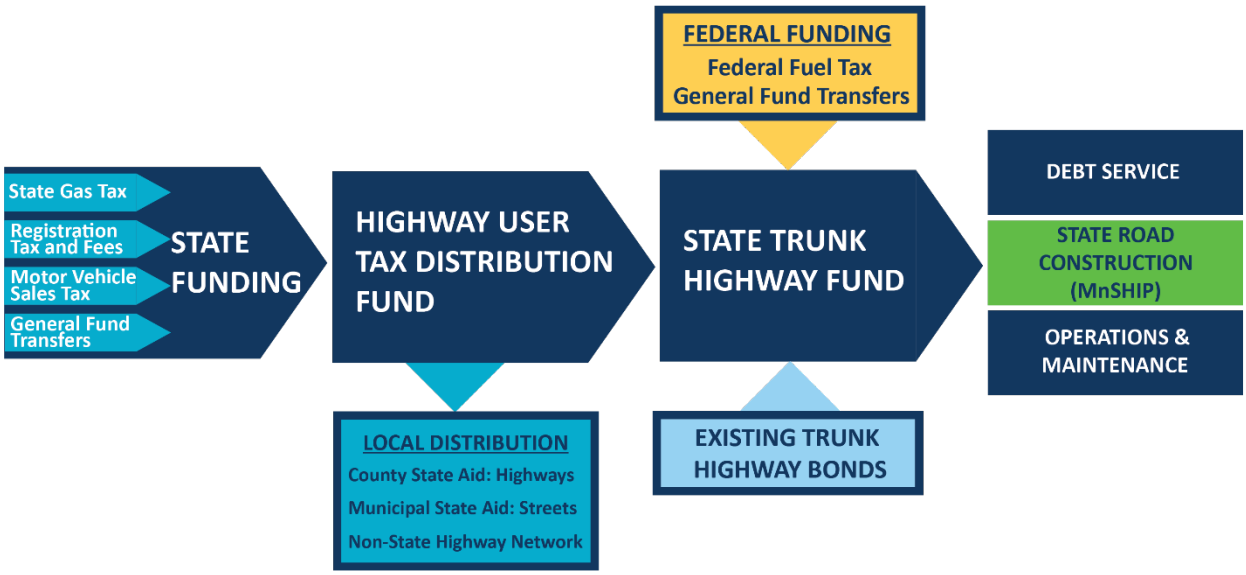
REVENUE PROJECTIONS

Several state and federal revenue sources provide dedicated transportation funding including for construction projects on the state highway system (*Figure C-1*). Four primary sources provide funding to the Highway User Tax Distribution Fund, which in turn provides funding to the State Trunk Highway Fund. These sources are:

- Federal Motor Fuel Tax and General Funds
- State Motor Fuel Tax (commonly referred to as the State Gas Tax)
- Motor Vehicle Registration Tax
- Motor Vehicle Sales Tax which are dedicated in Minnesota's constitution to transportation.

In 2017, the Minnesota Legislature provided additional funding through statutorily transferring some existing transportation related revenue (e.g., sales tax on auto parts) to the Highway User Tax Distribution Fund. These transfers are assumed to continue. Federal revenue sources include the Federal Fuel Tax and other general fund transfers to the federal highway trust fund. Existing state trunk highway bonds (i.e., bonds authorized by the Minnesota Legislature at the time MnDOT developed the revenue projections) are also included in the MnSHIP revenue projections.

Figure C-1: Minnesota's Primary Transportation Funding Sources for State Highways



INITIAL STATE REVENUE TRENDS

STATE GAS TAX

The 28.5 cents-per-gallon state gas tax was fixed and has not increased or decreased with the price of gas. This has changed with the 2023 legislation. Those changes are detailed in the Final 20-year Revenue Projection section.

Recently, state gas tax revenues fell slightly due to less travel during the COVID-19 pandemic. While the forecast anticipates state gas tax revenues to rebound post-pandemic, improvements in vehicle fuel efficiency mean that a tank of gas will go farther in the next 20 years. The overall impact is a slight annual decline of -0.5% in state gas tax revenue, turning what was, before the pandemic, the number one contributor to state highway funding into the 3rd largest source of state revenue by the mid-2030s.

MOTOR VEHICLE REGISTRATION TAX

Popularly known as “tab fees”, revenue growth is based on the growing average vehicle prices and increasing numbers of vehicles registered in the state. Tab renewal fees, based on initial vehicle pricing, provide an ongoing revenue boost. Electric vehicles also pay an additional $75 surcharge in registration tax. The motor vehicle registration tax (including the EV surcharge) is predicted to be the largest revenue source in the State Trunk Highway Fund by 2025. The method for calculating the annual fee for vehicles was changed by the 2023 Legislature.

MOTOR VEHICLE SALES TAX

While new vehicle sales have slowed recently, higher vehicle prices are driving the growth of revenues. Motor Vehicle Sales Tax is predicted to rise at a higher rate than anticipated in the previous revenue projections for the 2017 MnSHIP. The 2023 Minnesota Legislature also increased the sales tax rate on motor vehicles, which will increase the amount of revenue generated by the tax.

GENERAL FUND TRANSFER REVENUES

In 2017, sales tax on auto parts, motor vehicle rental and sales tax and motor vehicle lease sales tax were transferred from Minnesota's General Fund to the Highway User Tax Distribution Fund by the Minnesota Legislature. These funds provided a modest boost to transportation funding. These transfers are assumed to continue and grow slightly over the next 20 years. However, these taxes are different than the other three state revenue sources because they are not constitutionally dedicated to transportation and could be transferred back to the General Fund by the Minnesota Legislature.

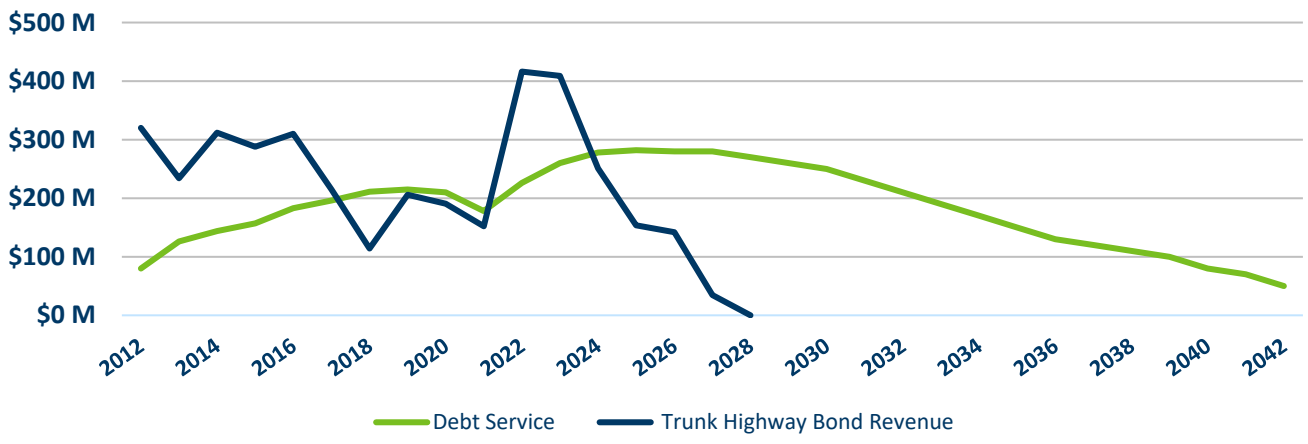
STATE BONDING

In addition to the four main sources of funding, Minnesota also sells transportation bonds to support highway improvements. The primary purpose of these and other transportation bonds is to enable MnDOT to accelerate the delivery of projects and avoid construction cost increases due to inflation. However, bonds should be understood as a financing approach, as they must be repaid with interest from state trunk highway funds.

Since 2017, the Minnesota Legislature has authorized $1.2 billion in trunk highway bonds for improvements to the state highway system and $900 million in bonding for the Corridors of Commerce program. It is anticipated that $1.4 billion of these bonds will fund projects in the first 4-5 years of this MnSHIP.

Only existing state trunk highway bonds are considered a part of the MnSHIP revenue projections. Any potential bonding that comes after the adoption of this plan is not reflected in the investment direction in MnSHIP.

Figure C-2: Trunk Highway Bond Revenues (currently authorized) and Debt Service Trends through 2042



FEDERAL REVENUE TRENDS

Federal funding of state highways comes primarily through taxes on the sale of gasoline and diesel fuel which are collected in the Highway Trust Fund. The federal gas tax remains at 18.4 cents-per-gallon and was last raised in 1993. Additionally, since 2008 more than $140 billion has been transferred within the federal budget from the Treasury's unrestricted-use General Fund to the dedicated Highway Account. This federal revenue is then distributed to Minnesota and other states, for use on eligible state and local roads, by a formula that takes into account factors including the size and usage of each state's highway network.

INFRASTRUCTURE INVESTMENT AND JOBS ACT

The Infrastructure Investment and Jobs Act (IIJA), also known as the Bipartisan Infrastructure Law, was signed into law in November 2021. For the purposes of MnSHIP, IIJA provides federal formula funding from 2022 to 2026 for highways and bridges as well as competitive grant funding. After the bill ends in 2026, MnDOT must make some assumptions about the levels of future federal funding. MnDOT anticipates several federal formula program funding for highways to continue past the IIJA years. However, the future of two new programs remains unclear.

The new PROTECT Program provides funding to make infrastructure more resilient to natural hazards, including climate change, flooding, extreme weather events, and other natural disasters. It is funded through the Highway Trust Fund, the main source of federal infrastructure funding. Historically, programs funded through the Highway Trust Fund were more likely to continue to be funded in future federal infrastructure bills. MnDOT is assuming that this program will continue past the end of IIJA.

The new Bridge Replacement, Rehabilitation, Preservation, Protection, and Construction Program is funded through the General Fund and not the Federal Highway Fund. That may signify that the program may not continue past IIJA.

Two other new programs are not included in the MnSHIP Federal Revenue assumptions. The Carbon Reduction Program and National Electric Vehicle Infrastructure Formula Program funding are eligible to be used on the state highway system and local system. With information about these new programs still emerging, decisions on how these funds are used and what the breakdown of funding will be between the state highways and local system will be made separate from the MnSHIP process.

FEDERAL DISCRETIONARY GRANT PROGRAMS

IIJA also includes an unprecedented amount of competitive grant funding (more than $100 billion) to states that strive to improve outcomes in areas of safety, asset preservation, carbon reduction, climate resiliency, restorative justice, and technology and more. Minnesota will be eligible to compete for this funding and is well positioned to add new programs, plans and funding for carbon reduction, climate resiliency, restorative justice, broadband, and electric vehicle infrastructure into our transportation system.

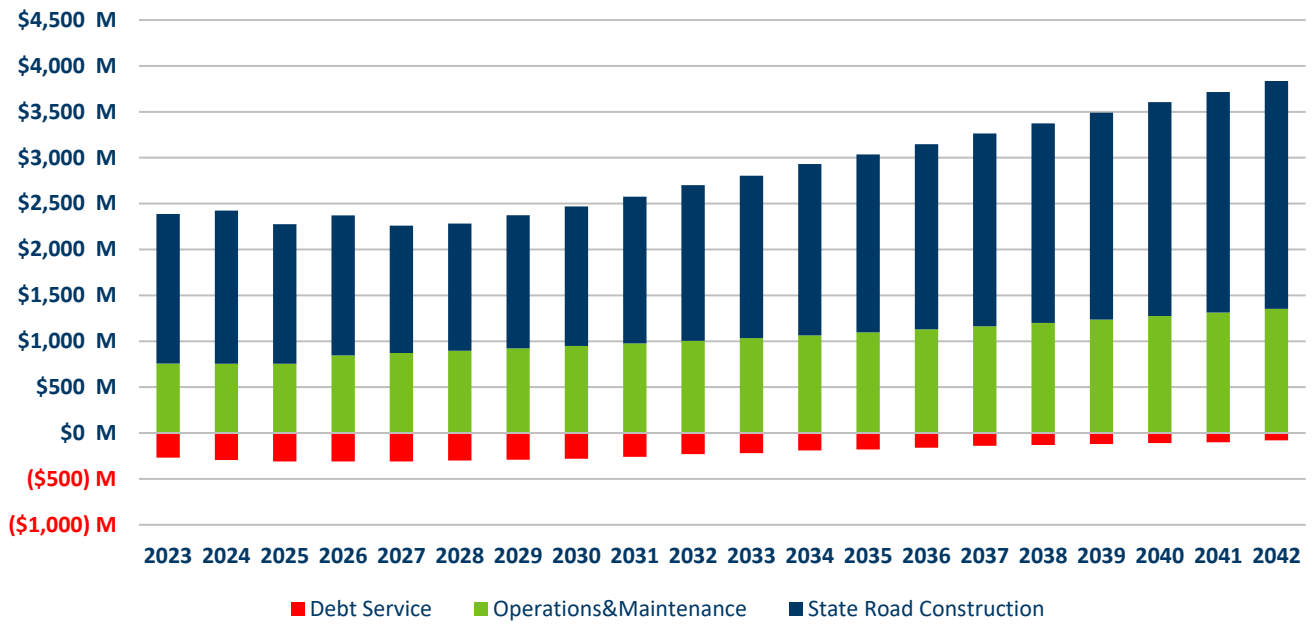
STATE TRUNK HIGHWAY FUND BREAKDOWN

MnDOT manages the State Trunk Highway Fund to support three broad types of expenditures related to the state highway system:

- Debt Service, for bond repayment
- Planning, Operations and Maintenance, combining traffic management, snow removal, pavement patching, design and engineering work and other agency management expenses
- State Road Construction, representing the capital program for new construction and reconstruction of state highways and bridges

Minnesota state law requires MnDOT to make its annual debt repayments prior to making any other investments. The split between State Road Construction and Operations and Maintenance was determined by assuming the impacts of inflation are shared equally between the two expenditures. Figure 4 shows the divide between these three expenditures over the next 20 years.

Figure C-3: State Trunk Highway Fund Projected Revenues by Expenditures from 2023 to 2042



INITIAL BASELINE REVENUE PROJECTION

Analysis of current federal and state revenue trends presented in this section informed MnDOTs baseline revenue projection. Based on these revenue trends and other assumptions, MnDOT identified a baseline revenue projection of $31.5 billion over the 20-year planning horizon (state fiscal years 2023-2042) for state road construction.

For federal revenues, this projection assumes there would not be a new federal bill right away after IIJA but a series of resolutions continuing forward the funding levels of IIJA. [1] While history suggests a future federal reauthorization will likely increase funding, assuming flat federal funding for the years immediately following a federal authorization matches Minnesota's programming practice and helps to ensure future programming decisions align with this MnSHIP. This projection also assumes the new federal bridge program would not continue past IIJA given it is funded by General Funds. The PROTECT program is assumed to continue in this projection since it is funded by the Highway Trust Fund.

REVENUE SCENARIOS

While MnDOT identifies a baseline revenue projection based on current factors, there could be new federal or state laws, trends or other funding factors that change the anticipated revenue. To account for changes in projected revenue MnDOT developed nine different revenue scenarios. These scenarios were used to develop the draft investment direction. In 2023, MnDOT received additional state funding for transportation that changed those revenue estimates. The final revenue numbers are described in the Final 20-year Revenue Projection section.

MnDOT identified these revenue scenarios based on different factors and assumptions and how they could impact the amount of funding available for state road construction. The revenue scenarios present a range of possible funding from $29.7 billion on the low end to $37.5 billion on the high end over the 20-year planning horizon. The scenarios are separated into decreasing and increasing revenue scenarios in this section.

DECREASING REVENUE SCENARIOS

MnDOT staff identified three scenarios that would result in less revenue than the baseline over the next 20 years.

- Legislative Spending Authorization Limits
- Meeting Vehicle Miles Travelled Reduction and Fleet Goals (no tax changes)
- Bonding for Major Bridge Work

[1] See Scenario 5 below for a discussion of how the revenue projection would change without this assumption

SCENARIO 1: LEGISLATIVE SPENDING AUTHORIZATION LIMITS

While MnSHIP forecasts available funding in the State Trunk Highway Fund, MnDOT requires spending authority from the Minnesota Legislature to use the funding. MnDOT does not always receive authorization to spend the full amount in the State Truck Highway Fund, leaving a balance. MnDOT may be authorized to spend the balance of the State Trunk Highway Fund in the future. There have also been instances where the fund balance has been used for Legislative priorities such as the Corridors of Commerce Program and not on the general State Road Construction budget.

This can make planning future state trunk highway projects difficult if the anticipated spending authority level fluctuates or is less than what MnDOT planned for. In this scenario, MnDOT assumes that the Legislature only authorizes spending 93% of anticipated State Trunk Highway Funds. This has been the historic level of spending authority in Years 3 and 4 of the State Transportation Improvement Program during the past three Minnesota Legislative budget sessions. This does not preclude MnDOT from receiving the remaining fund balance at a future date. However, in this scenario MnDOT assumes the balance would not be available to plan state highway projects long term.

The projected 20-year funding total for Scenario 1 is $29.7 billion—a reduction of $1.8 billion (-5.7%) from the baseline revenue scenario.

SCENARIO 2: MEETING VMT REDUCTION AND FLEET GOALS (NO TAX CHANGES)

MnDOT's recently adopted 2022 Statewide Multimodal Transportation Plan (SMTP) provides updated VMT reduction and electric vehicle sales targets in alignment with state goals and agency priorities. The goals identified in the SMTP are for a 14% reduction in per capita VMT by 2040 and for 100% of light duty vehicle sales to be battery or plug-in electric vehicles by 2040. For the purposes of this scenario, MnDOT used the SMTP electric vehicle and VMT reduction targets, and 2019 as a baseline year.

The projected impact of meeting these goals would be a 20-year funding total of $30.2 billion—a reduction of $1.3 billion (-4.1%) from the baseline revenue scenario. In this scenario, the biggest impact would be to the state motor fuels tax as Minnesotans would be driving less and using less gas with a higher portion of vehicles being electric. This would be partially offset by annual surcharges currently imposed on electric vehicles collected with

annual registration fees (tab fees). This scenario assumes no changes are made to taxes or fees to offset any of these revenues.

SCENARIO 3: BONDING FOR MAJOR BRIDGE WORK

While the baseline revenue projection includes only existing trunk highway bonds, this scenario shows the impact of a new bonding package in the early years of MnSHIP. MnDOT anticipates several major state highway bridges will need major rehabilitation or replacement over the next 10 years. This bridge work will require more than the anticipated annual funding available. In this scenario, it is assumed the Minnesota Legislature authorizes $1 billion in new bonds to address this need.

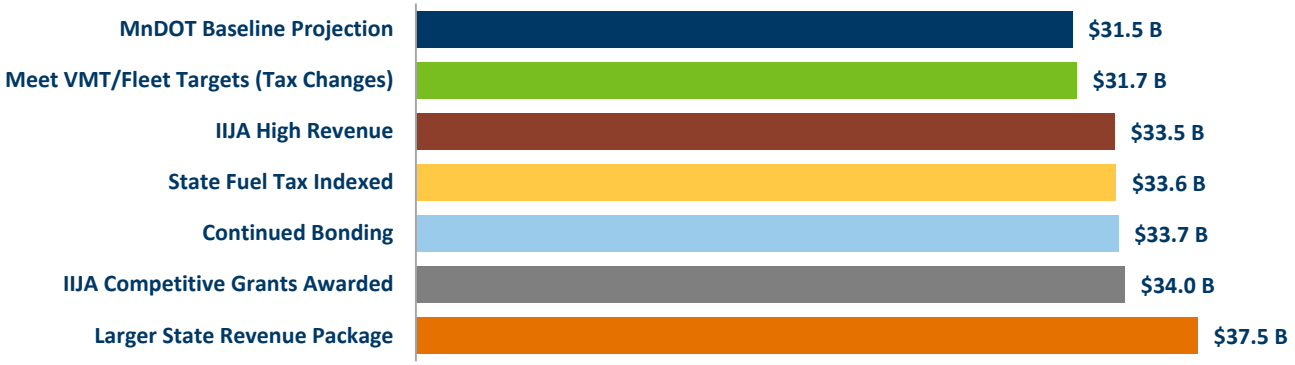
While bonding provides additional funding in the near term, MnDOT will need to repay these new bonds over time with interest. Overall, MnDOT would see an additional $1 billion total between 2025 and 2027. However, debt service would increase over the remaining years and reduce overall projected revenue by $0.1 billion (-0.3%) to $31.4 billion over the next 20 years.

INCREASING REVENUE SCENARIOS

MnDOT staff identified six revenue scenarios that would result in more revenue over the 20 years covered by this updated plan.

- Meeting Vehicle Miles Travelled Reduction and Fleet Goals (tax changes)
- IIJA High Revenue
- State Fuel Tax Indexed to Inflation
- Continued Bonding at Near Capacity
- IIJA Competitive Grants Awarded
- Larger State Revenue Package

Figure C-5: Increased Revenue Scenarios Overview



SCENARIO 4: MEETING VMT REDUCTION AND FLEET GOALS (TAX CHANGES)

MnDOT looked at the impact to revenues if both Scenario 2 and increases to annual fees for battery electric vehicles and plug-in hybrid electric vehicles were to occur. Annual fees for BEVs would increase from $75 to $229 and PHEVs would have a new annual fee of $115. These dollar amounts are based on proposed state legislation in the 2022 legislative session.

In this scenario, Minnesota would meet the VMT and fleet goals and see increased fees for BEVs and PHEVs. This scenario increases projected revenue by $0.2 billion (+0.6%) above the baseline revenue scenario for a 20-year total of $31.7 billion.

SCENARIO 5: IIJA HIGH REVENUE

While MnDOT identified $14.6 billion in federal funding for the baseline revenue projection, there are possibilities for increased federal funding based on different assumptions about what happens at the end of IIJA. This higher IIJA revenue scenario assumes that the new federal bridge program continues beyond 2026 and that federal aid will increase by 2% starting in 2027. This scenario increases the federal projected revenue by $2 billion (+6.3%) above the baseline revenue scenario for a 20-year total of $33.5 billion.

SCENARIO 6: STATE FUEL TAX INDEXED TO INFLATION

Over the past few years, several proposals have been discussed by the Minnesota Legislature to provide increased transportation funding. Indexing the state motor fuels excise tax to inflation is one of the proposed mechanisms to provide increased transportation funding. The rates for this tax currently do not increase or decrease with prices at the pump. Under this scenario, rates would be linked to regional retail gasoline and diesel prices. Motor fuels price indexing would provide an additional $2.1 billion (+6.7%) above the baseline revenue scenario for a 20-year total of $33.6 billion.

SCENARIO 7: CONTINUED BONDING AT NEAR CAPACITY

While the baseline revenue projection includes existing and currently authorized bonds, this scenario shows the impact of the state continuing to bond into the future. By policy, debt service is limited to no more than 20% of annual state revenues to the Trunk Highway Fund. In this scenario, MnDOT assumes the Minnesota Legislature authorizes $4 billion in new bonds over the next 20 years and these bonds would be available to the State Road Construction budget. The bonds begin at $15 million in 2024 and increase to a peak of $480 million in 2037. Additional debt service would also increase starting in 2024 and is structured to use existing bonding capacity while remaining within MnDOT current bonding level policy. Debt service is also assumed to continue beyond the end of MnSHIP in 2042. The difference between the bond revenues and additional debt service would increase the funding available in MnSHIP by a net total $2.2 billion (+7%) above the baseline revenue scenario for a 20-year total of $33.7 billion. Note debt service would extend beyond the 20 years, but that is not reflected in the $33.7 billion.

The largest effect from bonding is that more funding would be available in the near term. However, towards the end of the 20 years, the increased funding from bonds is limited by the rising annual debt service payments.

SCENARIO 8: IIJA COMPETITIVE GRANTS AWARDED

IIJA provides an unprecedented amount of competitive grant funding. MnDOT will seek to leverage and build partner relationships to identify strong projects on state highways and the local system for competitive grant applications. This scenario assumes:

- Minnesota receives 2% of all available discretionary funds (approximately Minnesota's share of United States population)
- Of that 2%, MnDOT assumes 40% would be awarded to state highways
- All IIJA discretionary programs will continue over the 20-year MnSHIP planning horizon

This scenario results in an additional $2.5 billion (+7.4%) above the baseline revenue scenario for a 20-year total of $34 billion.

SCENARIO 9: A LARGER STATE REVENUE PACKAGE

Over the past several years, various long-term increased revenue proposals for transportation were discussed during the Legislative sessions. These proposals included various combinations of increases to existing tax and fee rates as well as bonding. Using the assumptions from a recent increased revenue proposal, MnDOT created this scenario to model the anticipated impact if a long-term transportation revenue proposal were to pass the legislature. This scenario assumes:

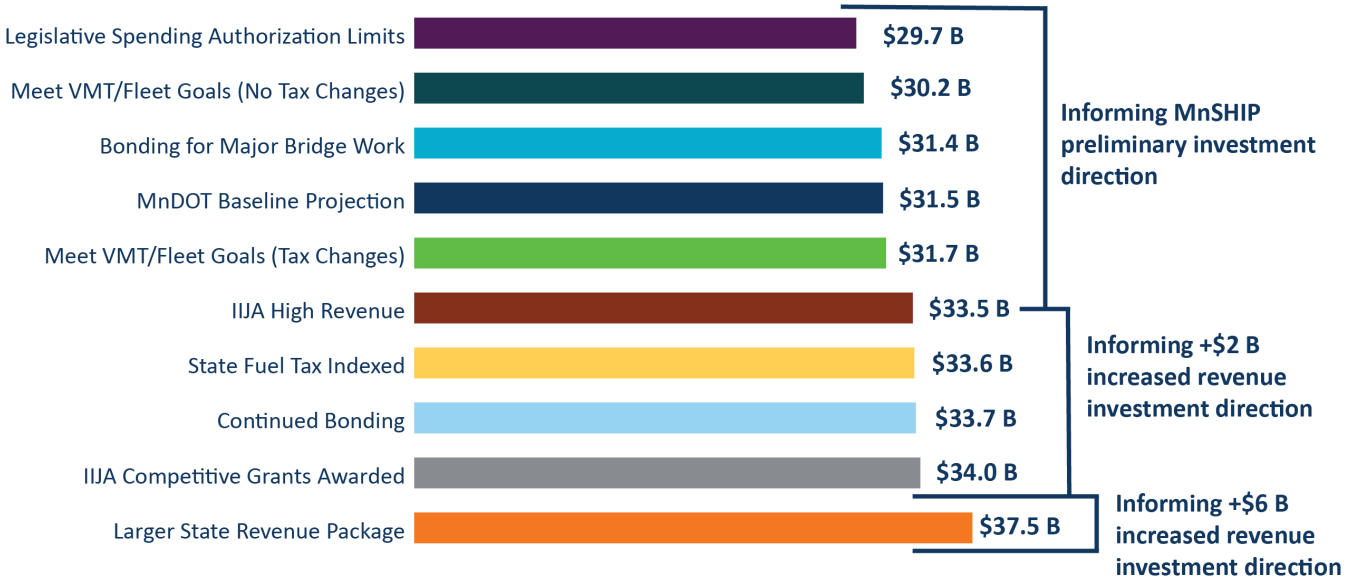
- The Gas Tax rate would increase by 5 cents and be indexed to inflation
- The Registration Fee would see a moderate change to the depreciation schedule
- The Motor Vehicle Sale Tax would increase from 6.5% to 6.875%
- $1 billion in Trunk Highway Bonding would be approved

This scenario results in an additional $6 billion (+19%) above the baseline revenue scenario for a 20-year total of $37.5 billion.

REVENUE SCENARIOS AND MNSHIP INVESTMENT DIRECTION

MnDOT's baseline revenue projection and revenue scenarios show a range of factors and assumptions that can influence the amount of funding available over the next 20 years. *Figure 6* shows the full range of revenue scenarios and their impact on the MnSHIP investment direction.

Figure C-6: Revenue Scenarios Impact on MnSHIP Investment Direction



The revenue scenarios that informed the draft MnSHIP investment direction ranged from $30 billion on the low end to $33 billion on the high end. The MnSHIP project team used the midpoint of this range to set the preliminary investment direction of $31.5 billion. The MnSHIP draft investment direction also aligned with MnDOT's baseline revenue projection.

FINAL 20-YEAR REVENUE PROJECTION

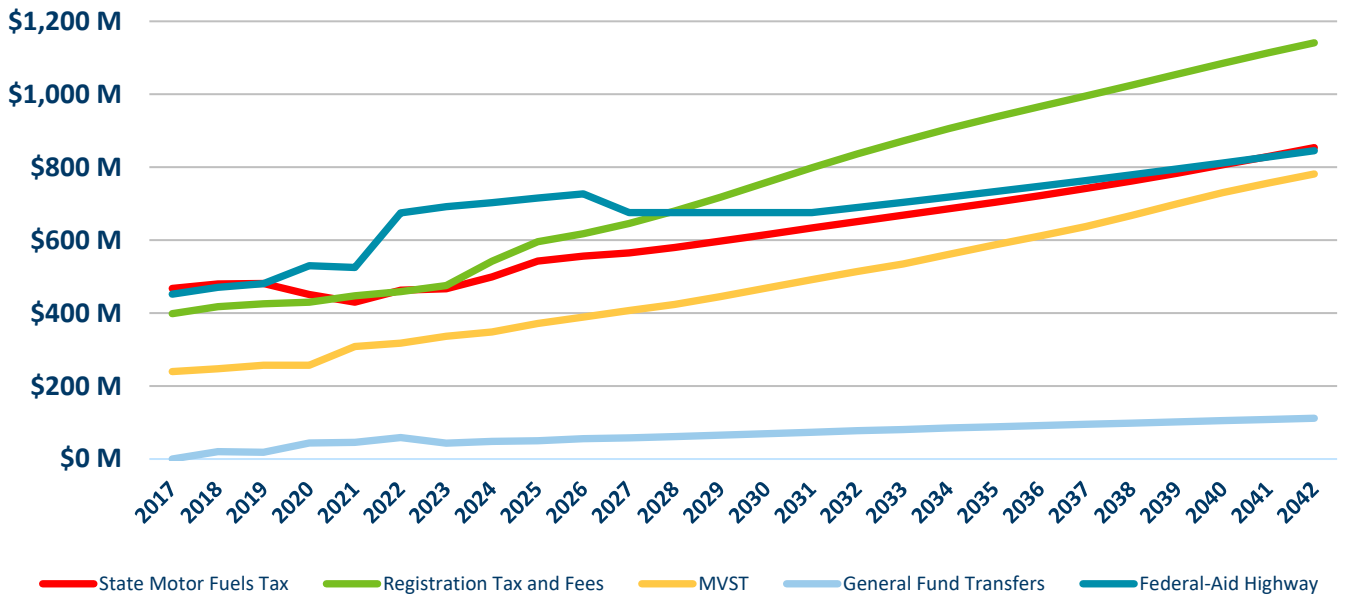
Immediately after the second round of public engagement closed, the state legislature passed a bill that increased transportation funding for MnDOT.

These changes resulted in an estimated additional $5.2 billion for state highways over the next 20 years. The change in funding by component is:

- Gas Tax: +$2.5 billion. Starting in 2024, the per-gallon state gas tax rate will be tied to historical levels for MnDOT's construction cost index (CCI) which tracks inflation for building roads and bridges. Annual rate increases will be capped at 3% from 2026 onward (the annual average CCI growth rate has exceeded 4% over the long run). Because crude oil is a major cost driver for pump prices as well as construction activity, indexing the gas tax in this way is designed to better balance tax revenue and investment cost.

- Registration Tax: +$2.0 billion. Upcoming adjustments include raising the registration tax rate—from 1.285% to 1.575%—and slowing the vehicle depreciation schedule over the lifetime of cars and trucks. In combination, the higher rate and vehicle value factors generate annual growth of 4.5%, widening the lead that registration tax is expected to hold over all other funding sources in the later years of the plan.
- Motor Vehicle Sales Tax: +$400 million. The sales tax rate on motor vehicles will match the general state sales tax rate of 6.875%, up from today's 6.5%. Modestly accelerating future MVST growth, it is still forecast to remain the smallest share of constitutionally dedicated revenues.
- General Fund Transfer: +$300 million. Previously held at a fixed amount, the General Fund contribution from auto parts sales will be adjusted to increase over time, with annual inflation modeled at 3%. All elements of the General Fund transfer remain subject to revision in future legislation, but this risk is limited by the size of the transfer relative to total funding allocated to construction—less than 10% for the duration of the plan.

Figure C-7: State and Federal Revenue Trends (state highway share): Flows into Trunk Highway Fund through 2042



APPENDIX D - ENVIRONMENTAL JUSTICE AND TITLE VI ANALYSIS

MnSHIP provides the framework for MnDOT decision-making and for prioritizing investments on Minnesota's highway system. This appendix provides an analysis of how investment priorities established in MnSHIP may positively or negatively impact the state's environmental justice populations. Similar to the Statewide Multimodal Transportation Plan (SMTP), this environmental justice analysis is general and qualitative in nature. This is due to the fact that while MnSHIP identifies investment categories for implementation over the next 20 years, specific project details and associated details such as potential project limits and impacts have not yet been identified. Minnesota Department of Transportation (MnDOT) will complete additional environmental justice analyses for modal plans, other plans and studies and capital investment projects. Those individual project analyses identify specific impacts on communities and neighborhoods. The analysis completed during project planning processes and related project design decisions helps avoid, minimize or mitigate adverse impacts.

ENVIRONMENTAL JUSTICE AND TITLE VI OVERVIEW

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

- Avoid, minimize or mitigate disproportionately high adverse human health and environmental effects, including social and economic effects, on minority and low-income populations.
- Ensure the full and fair participation by all potentially affected communities in the transportation decision-making process.
- Prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations.

Executive Order 12898 and U.S. Department of Transportation define minority populations as:

- Black – a person having origins in any of the black racial groups of Africa.
- American Indian and Alaskan Native – a person having origins in any original people of North America and who maintains cultural identification through tribal affiliation or community recognition.
- Asian – a person having origins in any of the original peoples of the Far East, Southeast Asia or the Indian subcontinent.

- Native Hawaiian or Other Pacific Islander – a person having origins in any of the original people of Hawaii, Guam, Samoa and other Pacific Islands.
- Hispanic – a person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race.

The executive order and U.S. Department of Transportation also define low-income populations as:

- Low-income – a person whose household income (or in the case of a community or group, whose median household income) is at or below the U.S. Department of Health and Human Services poverty guidelines.

Executive Order 13166: Improving Access to Services for Persons with Limited-English Proficiency, issued in 2000, further clarified Title VI of the Civil Rights Act of 1964. It stated that individuals who do not speak English well and who have a limited ability to read, write, speak or understand English are entitled to language assistance in order to access public services or benefits for which they are eligible. MnDOT is a recipient of federal funds from the Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) and other federal agencies. Accordingly, MnDOT is required to have a Language Assistance Plan. More information can be found in MnDOT's Language Assistance Plan.

Executive Order 14096: Revitalizing Our Nation's Commitment to Environmental Justice for All, issued in 2023, expanded environmental justice populations to include persons with disabilities. It also clarified the administrations Justice 40 initiative whereby 40% of the overall benefits of certain federal investments flow to disadvantage communities.

While not identified by Title VI, Executive Order 12898 or Executive Order 13166, this analysis also includes people age 65 and older, people age 17 and younger and zero vehicle households because these groups have unique transportation needs. These groups in addition to those listed in the executive orders will collectively be referred to as "EJ and Title VI populations" unless referred to specifically.

TRANSPORTATION EQUITY STATEMENT OF COMMITMENT

ACKNOWLEDGMENT OF PAST HARMS

MnDOT acknowledges the transportation system and agency decisions have underserved, excluded, harmed and overburdened some communities. We understand some of our past decisions denied Black and Indigenous communities as well as people with disabilities the full participation of transportation benefits. These and other underserved communities have historically carried disproportionate burdens of transportation decisions.

WHAT EQUITY MEANS TO MNDOT

MnDOT is committed to creating an equitable transportation system.

Transportation equity means the benefits and burdens of transportation systems, services and spending are fair and just, which historically has not been the case. Transportation equity requires ensuring underserved communities, especially Black, Indigenous and People of Color, share in the power of decision making.

The journey of transforming our transportation systems, services and decision-making processes will require ongoing listening, learning, changing, implementing and adapting.

Everyone in our agency regardless of position or work assignment has a role to advance transportation equity. We will partner with community members, community-based organizations, transportation service providers, Tribal Nations and government institutions to evolve our work and to change outcomes for our communities.

OVERVIEW OF MINNESOTA'S POPULATION

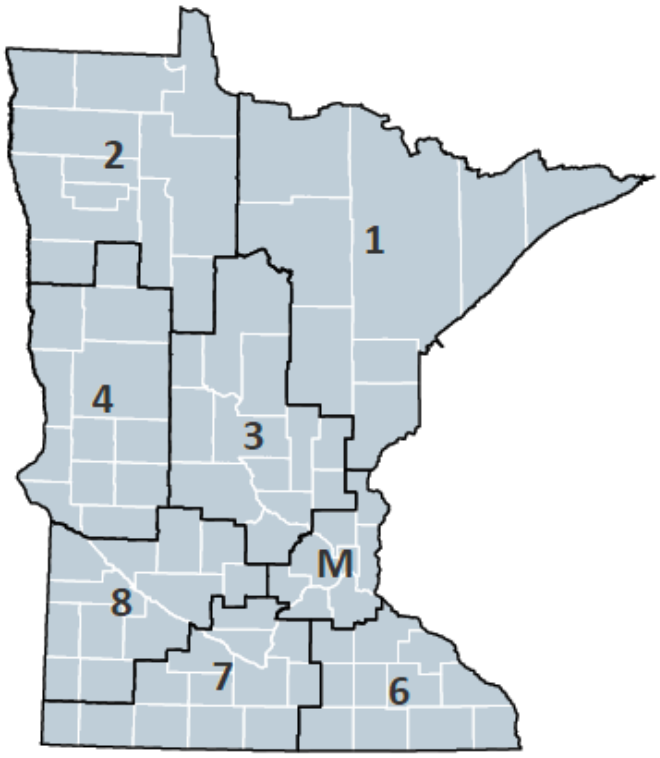
According to the U.S. Census, 2017 – 2021 American Community Survey five-year estimates, 5,670,472 people live in Minnesota. Figure D-1 shows the population based on race, ethnicity, disability status, limited-English proficiency, low income and households with zero vehicles. While Figure D-1 provides a statewide overview, population is not evenly distributed across the state. The following pages provide a breakdown of these populations based on Area Transportation Partnership (ATP) boundaries as shown in Figure D-2. While not exact, the ATP boundaries closely follow MnDOT district boundaries. Each ATP breakdown by population has a corresponding map locating areas with higher concentrations of populations and their relation to the National Highway System (NHS).

FIGURE D-1: MINNESOTA'S DEMOGRAPHICS

Population Group	Total Group Population	Percent of Total Population
Total Population	5,670,472	100.00%
White alone	4,441,935	78.33%
Black alone	371,249	6.55%
American Indian or Alaskan Native alone	46,371	0.82%
Asian alone	281,572	4.97%
Native Hawaiian or other Pacific Islander alone	2,047	0.04%
Some other race alone	17,042	0.30%
Two or more races	190,428	3.36%
Hispanic	319,828	5.64%

Age 65 and older	901,517	16.06%
Age 17 and under	1,323,569	23.57%
Persons with a disability	616,470	10.98%
Total Households	2,229,100	100.00%
Households below the poverty level	206,178	9.25%
Limited English-speaking households	48,431	2.17%
Households with zero vehicles	144,942	6.50%

FIGURE D-2: AREA TRANSPORTATION PARTNERSHIPS



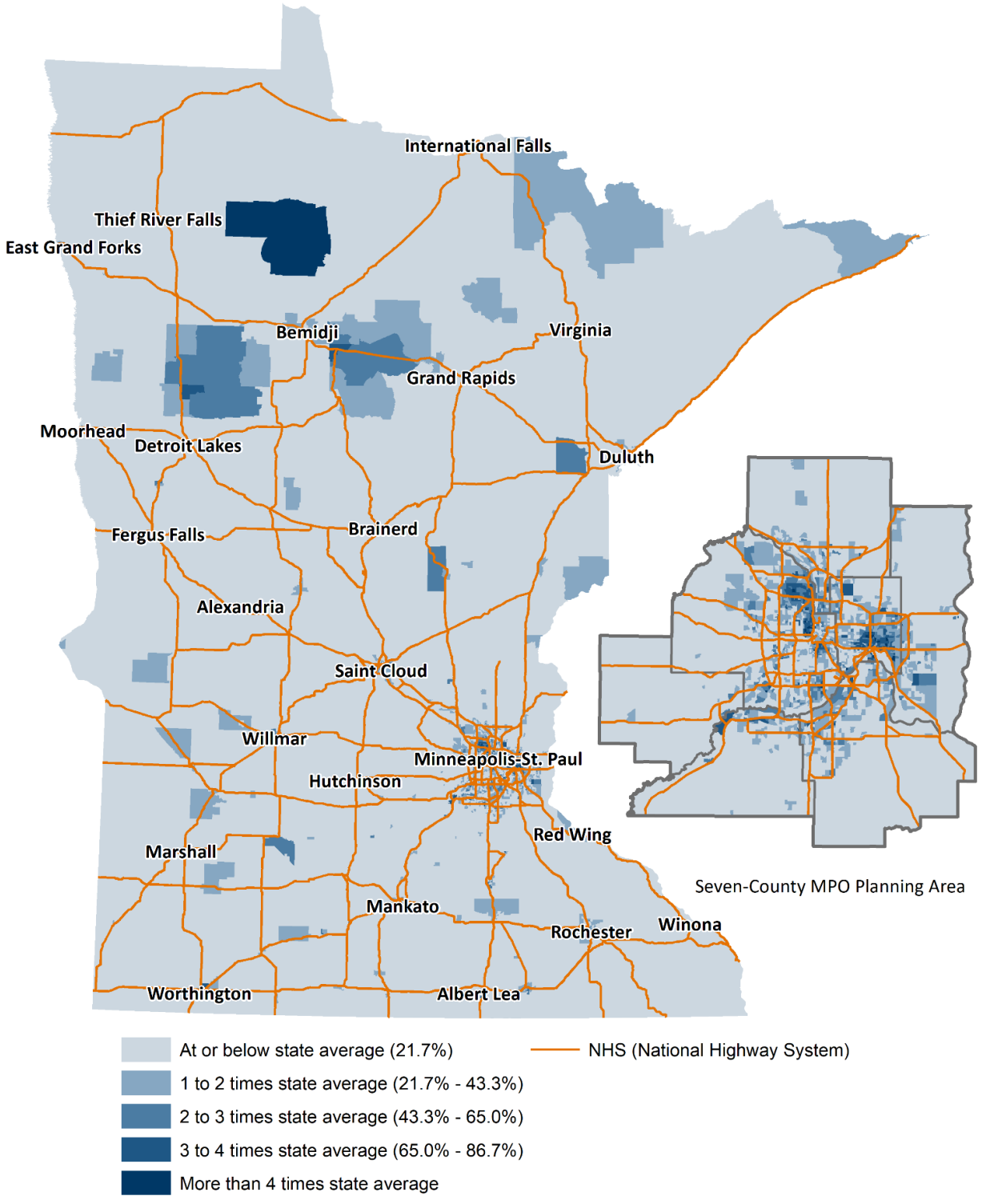
From a population perspective, the Metro ATP has the greatest number of the different population groups compared to the other ATPs. However, from a percentage of total ATP population, it varies by group. While Metro ATP has the state's largest American Indian population, ATP 2 follows it closely. After Metro ATP, ATP 6 has the state's largest Asian and Hispanic populations while ATP 3 has the largest Black populations. Populations that self-identify as part of a race, or multiple races, other than those five the US Census Bureau tracks are estimated to

make up 3.7% of that state's population. Figure D-4 shows the relation of higher concentrations of minority populations to the NHS. Most census blocks are near an NHS route with a few exceptions; most notably the Red Lake Nation in Northern Minnesota.

FIGURE D-3: MINNESOTA'S RACIAL AND ETHNIC POPULATIONS BY AREA TRANSPORTATION PARTNERSHIP

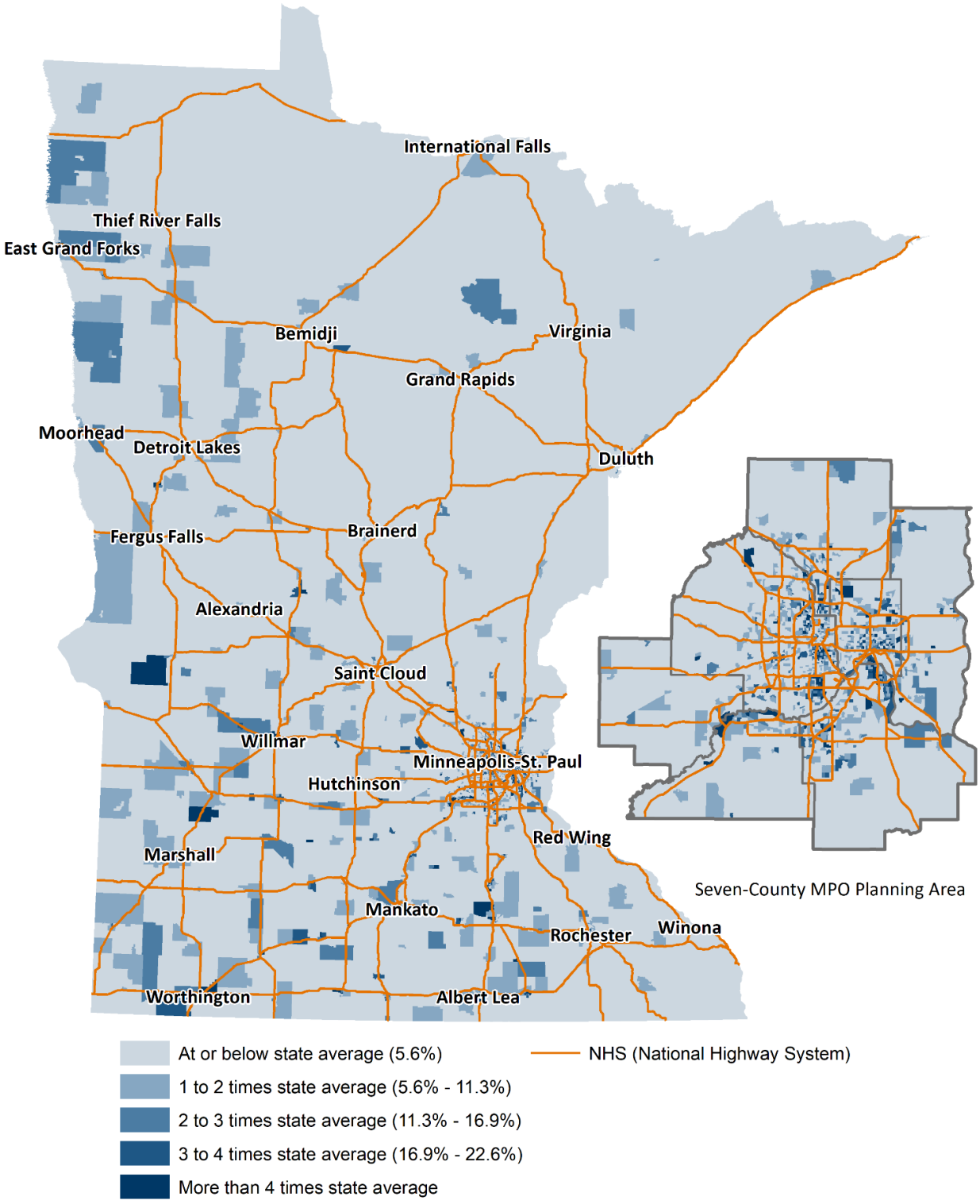
ATP	Total Population	White Alone	Black Alone	American Indian or Alaskan Native Alone	Asian Alone	Native Hawaiian or Other Pacific Islander Alone	Some Other Race Alone	Two or More Races	Hispanic
1	354,781	319,789	5,022	8,068	2,806	85	519	11,797	6,695
1	100%	90.14%	1.42%	2.27%	0.79%	0.02%	0.15%	3.33%	1.89%
2	163,937	137,615	1,830	10,745	1,516	72	396	5,957	5,806
2	100%	83.94%	1.12%	6.55%	0.92%	0.04%	0.24%	3.63%	3.54%
3	686,717	611,177	20,121	5,689	8,218	129	2,083	18,871	20,429
3	100%	89.00%	2.93%	0.83%	1.20%	0.02%	0.30%	2.75%	2.97%
4	255,621	227,031	4,346	5,527	2,138	360	376	6,693	9,150
4	100%	88.82%	1.70%	2.16%	0.84%	0.14%	0.15%	2.62%	3.58%
Metro	3,192,704	2,281,632	310,210	12,946	243,312	807	12,039	123,938	207,820
Metro	100%	71.46%	9.72%	0.41%	7.62%	0.03%	0.38%	3.88%	6.51%
6	515,553	433,700	19,434	1,135	16,094	309	844	13,196	30,841
6	100%	84.12%	3.77%	0.22%	3.12%	0.06%	0.16%	2.56%	5.98%
7	289,918	248,492	6,243	734	4,668	88	372	5,925	23,396
7	100%	85.71%	2.15%	0.25%	1.61%	0.03%	0.13%	2.04%	8.07%
8	211,241	182,499	4,043	1,527	2,820	197	413	4,051	15,691
8	100%	86.39%	1.91%	0.72%	1.33%	0.09%	0.20%	1.92%	7.43%

FIGURE D-4: LOCATIONS OF HIGHER CONCENTRATIONS OF RACIAL MINORITIES IN MINNESOTA



Source: 2021 American Community Survey, 5-year estimates

FIGURE D-5: LOCATIONS OF HIGHER CONCENTRATIONS OF HISPANIC POPULATIONS IN MINNESOTA



Source: 2021 American Community Survey, 5-year estimates

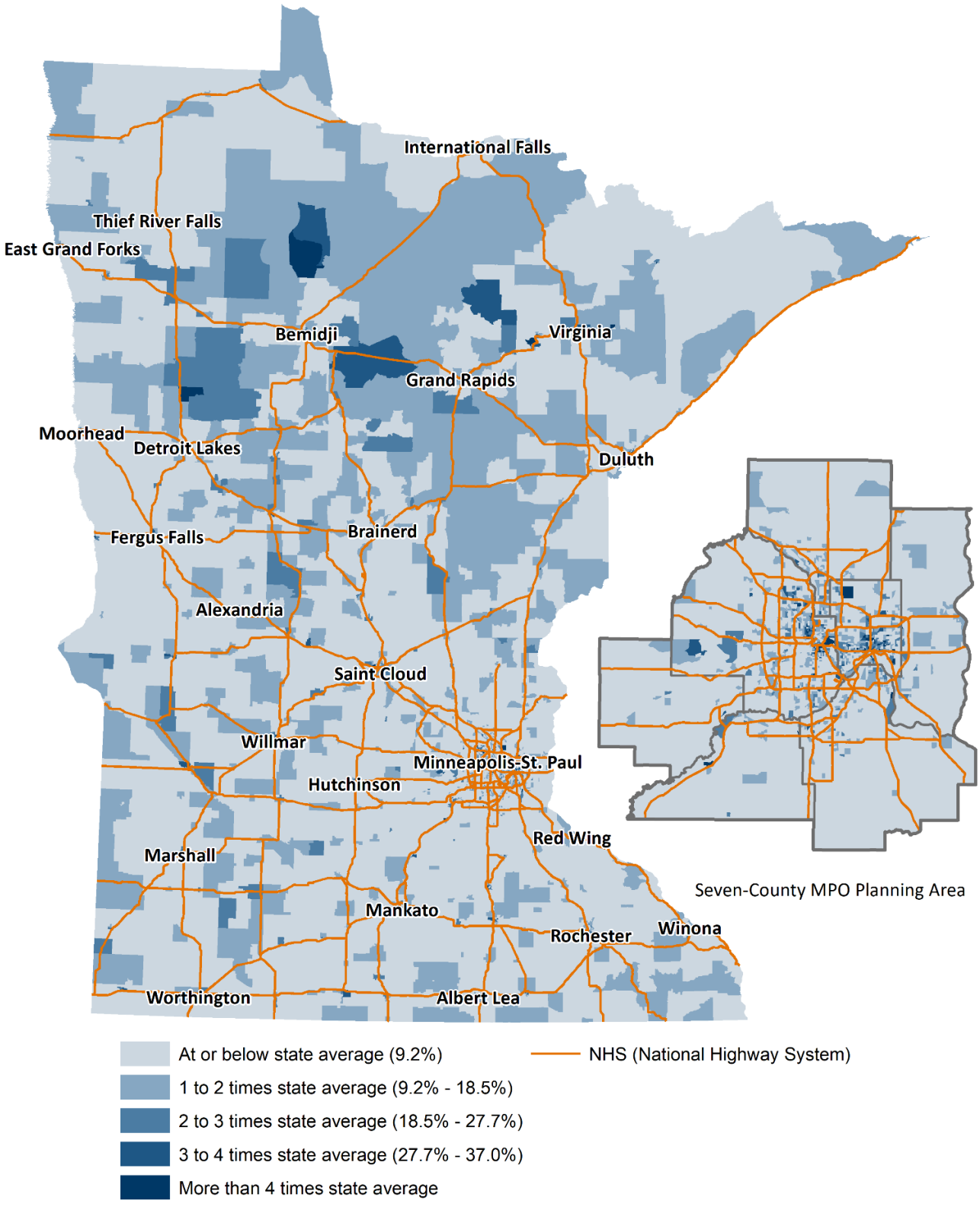
LOW INCOME

Figure D-6 provides a summary of low-income population within each ATP. Low-income populations include all persons whose median household income is at or below the guidelines set by the Department of Health and Human Services. Statewide, 9.3% percent of households were below the poverty level. ATP 1 and 2 had the highest percentage of their population below the poverty level, 12.5% and 12.2% respectively. The Metro area had the lowest, at 8.2%. As shown in Figure D-7, most areas of higher concentrations of low-income population are located within portions of the Twin Cities urban core communities and in northern Minnesota.

FIGURE D-6: MINNESOTA'S LOW-INCOME POPULATIONS BY AREA TRANSPORTATION PARTNERSHIP

ATP	Total Households	Households Below Poverty Level	% Households Below Poverty Level
1 Northeast	148,033	18,539	12.5%
2 Northwest	64,522	7,886	12.2%
3 Central	261,394	24,583	9.4%
4 West Central	104,272	11,910	11.4%
Metro	1,248,352	102,826	8.2%
6 Southeast	204,016	19,052	9.3%
7 South Central	114,300	12,893	11.3%
8 Southwest	84,211	8,489	10.1%
Total	**2,229,100**	**206,178**	**9.3%**

FIGURE D-7: LOCATIONS OF HIGHER CONCENTRATIONS OF LOW-INCOME HOUSEHOLDS IN MINNESOTA



Source: 2021 American Community Survey, 5-year estimates

PERSONS WITH A DISABILITY

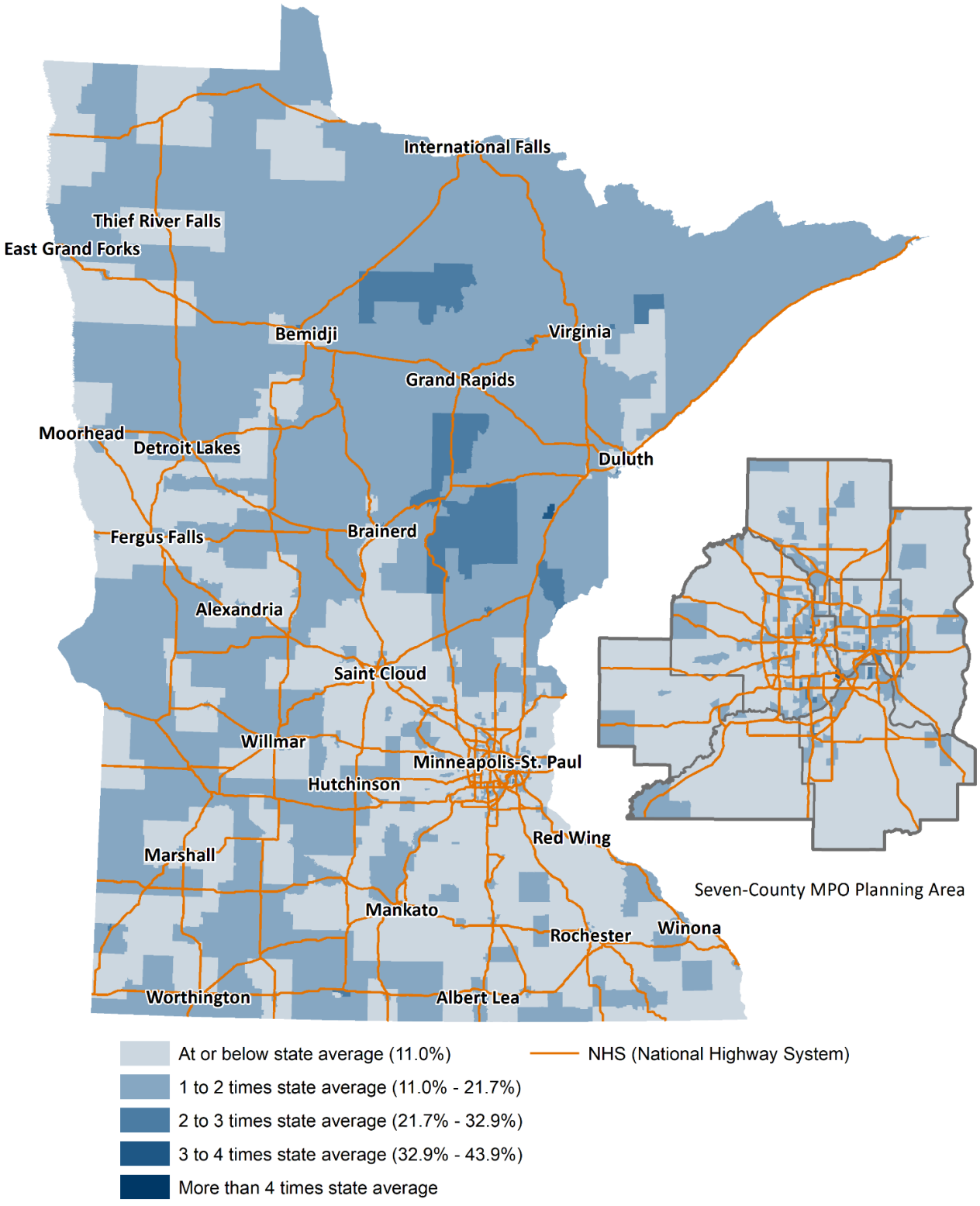
In 2023, the federal government expanded the definition of environmental justice to include persons with disability. This population was not included in the previous environmental justice review for the 2017 edition of MnSHIP but is included in this year's update.

In Minnesota, persons with disability are spread relatively evenly across the state as shown in Figure D-9. The highest percentage of persons with a disability is in ATP 1 and the lowest is in the Metro area.

FIGURE D-8: PERSONS WITH DISABILITY BY AREA TRANSPORTATION PARTNERSHIP

ATP	Civilian Noninstitutional Population	Persons with a Disability	% Persons with a Disability
1 Northeast	347,227	53,882	15.5%
2 Northwest	161,819	22,259	13.8%
3 Central	679,676	78,999	11.6%
4 West Central	252,896	32,607	12.9%
Metro	3,170,322	316,336	10.0%
6 Southeast	508,060	52,371	10.3%
7 South Central	286,350	33,863	11.8%
8 Southwest	208,418	26,153	12.6%
Total	**5,614,768**	**616,470**	**11.0%**

FIGURE D-9: LOCATIONS OF HIGHER CONCENTRATIONS OF PERSONS WITH DISABILITIES IN MINNESOTA



Source: 2021 American Community Survey, 5-year estimates

LIMITED ENGLISH SPEAKING

A person's ability to speak English, at least moderately well, can be a barrier to participation in the transportation planning process. The American Community Survey estimates the number of individuals aged 5 years and older who speak English "less than very well." Figure D-10 provides a summary of limited English-speaking populations by ATP and as a percentage of the total population. Limited English speakers make up approximately 48,431 or 2.2% of Minnesota's households. The majority, 77%, live in the Metro ATP. ATP 2 had the fewest number of persons who spoke English less than "very well."

FIGURE D-10: MINNESOTA'S LIMITED ENGLISH SPEAKING HOUSEHOLDS BY AREA TRANSPORTATION PARTNERSHIP

ATP	Total Households	Limited English Proficiency Households	% Limited English Proficiency
1 Northeast	148,033	556	0.4%
2 Northwest	64,522	351	0.5%
3 Central	261,394	2,098	0.8%
4 West Central	104,272	659	0.6%
Metro	1,248,352	37,330	3.0%
6 Southeast	204,016	4,310	2.1%
7 South Central	114,300	1,883	1.7%
8 Southwest	84,211	1,244	1.5%
Total	**2,229,100**	**48,431**	**2.2%**

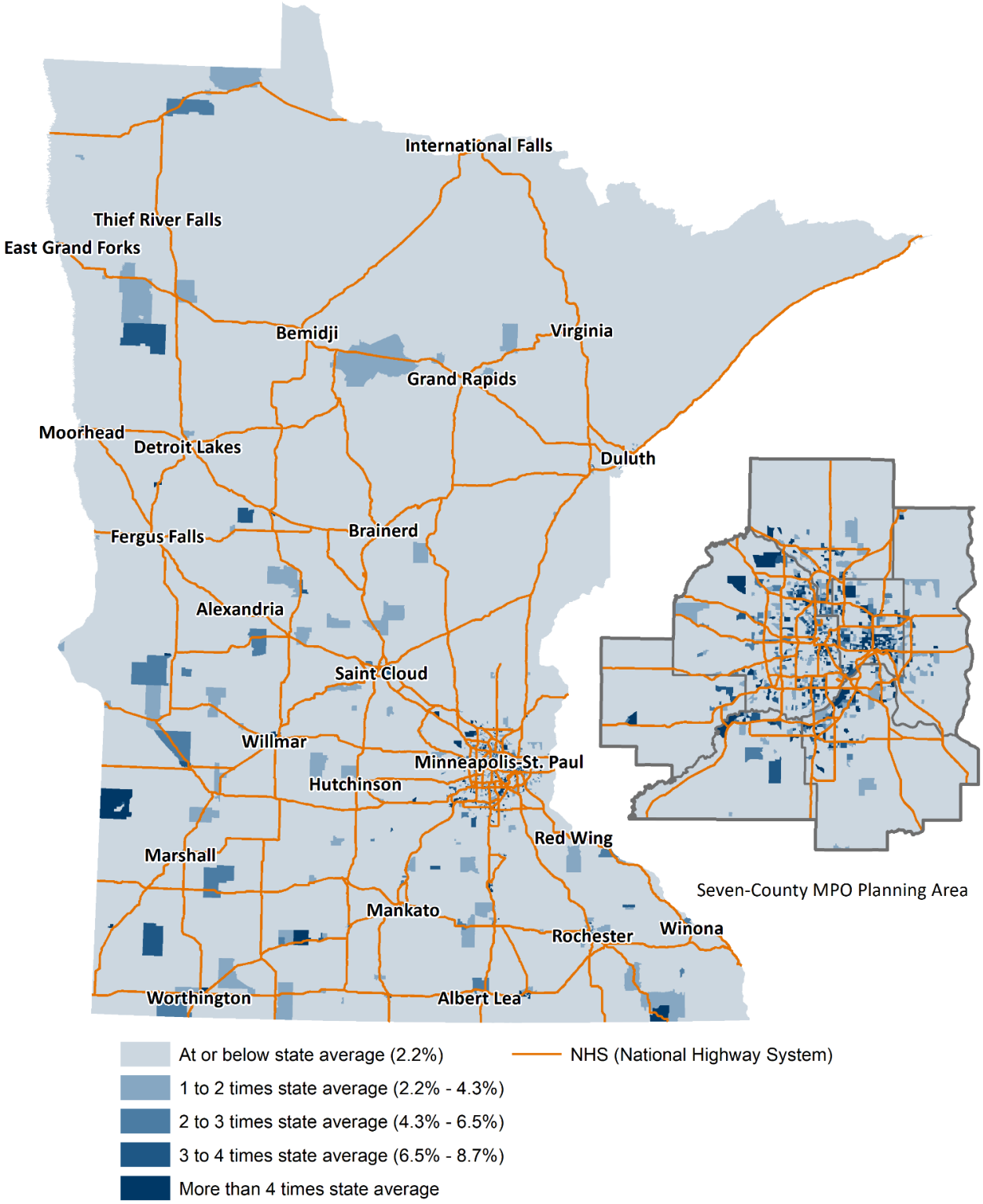
Figure D-11 compares languages spoken at home and what percentage of each community speaks limited English. Spanish is by far the highest, followed by Hmong and African languages (this category includes Swahili, Somali, Amharic, Ibo, Twi, Yoruba and Bantu, amongst others). More than half of Khmer, Thai, Lao and Vietnamese speakers are also limited in their English.

Figure D-12 shows a map of areas of higher concentration of limited English-speaking population by Census Block Group. Not surprisingly, most of the higher concentration areas are within the Twin Cities area. There are additional higher concentrations in western and southern Minnesota. Most of these areas are concentrated around an NHS route.

FIGURE D-11: LANGUAGE SPOKEN AT HOME IN MINNESOTA

Language Spoken at Home	Number	% of Total Population	Speaks English less than "very well"	% of Population Speaking English less than "very well"
Speaks only English	4,733,194	88.0%	NA	NA
Spanish	205,084	3.8%	80,809	39.4%
Somali, Amharic or Other Afro-Asiatic Languages	89,687	1.7%	36,170	40.3%
Hmong	75,827	1.4%	29,265	38.6%
Khmer, Thai, Lao or Other Languages of Asia	37,408	0.7%	22,661	60.6%
Hindi (including Urdu), Nepali, Bengali or Other Indic Languages	24,438	0.7%	5,344	21.9%
Chinese (including Mandarin, Cantonese)	23,461	0.4%	9,328	39.8%
Vietnamese	22,187	0.4%	14,106	63.6%
French (Including Creole, Cajun)	20,336	0.4%	5,353	26.3%
German or Other West Germanic Languages	19,611	0.4%	3,141	16.0%
Yoruba, Twi, Igbo, or Other Languages of Western Africa	19,195	0.4%	5,543	28.9%
Arabic	14,981	0.3%	4,689	31.3%
Russian	13,747	0.3%	6,018	43.8%
Swahili or Other Languages of Central, Eastern, and Southern Africa	13,027	0.2%	4,028	30.9%
Tagalog (including Filipino) or other Austronesian Languages	12,836	0.24%	3,880	30.2%
Telugu, Tamil or Other Dravidian Languages	11,926	0.22%	2,218	18.6%
Other Slavic Languages	11,859	0.22%	4,112	34.7%
Other Languages	27,852	0.52%	5,629	20.2%

FIGURE D-12: LOCATION OF HIGHER CONCENTRATIONS OF LIMITED ENGLISH SPEAKING HOUSEHOLDS IN MINNESOTA



Source: 2021 American Community Survey, 5-year estimates

YOUTH AND SENIOR

Figure D-13 provides a summary of Minnesota senior and youth populations by ATP. While not specifically required as part of the EJ analysis it is important to consider how these populations use transportation and could be adversely affected by investments. Those 17 years old and under make up 23.3% of Minnesota's population, while seniors make up 15.9%. Minnesota's youth and senior populations total 2,225,086 or 39% of the state. Senior populations in the state are estimated to increase significantly over the next 30 years and by 2035 there are projected to be over 1.2 million seniors in Minnesota.

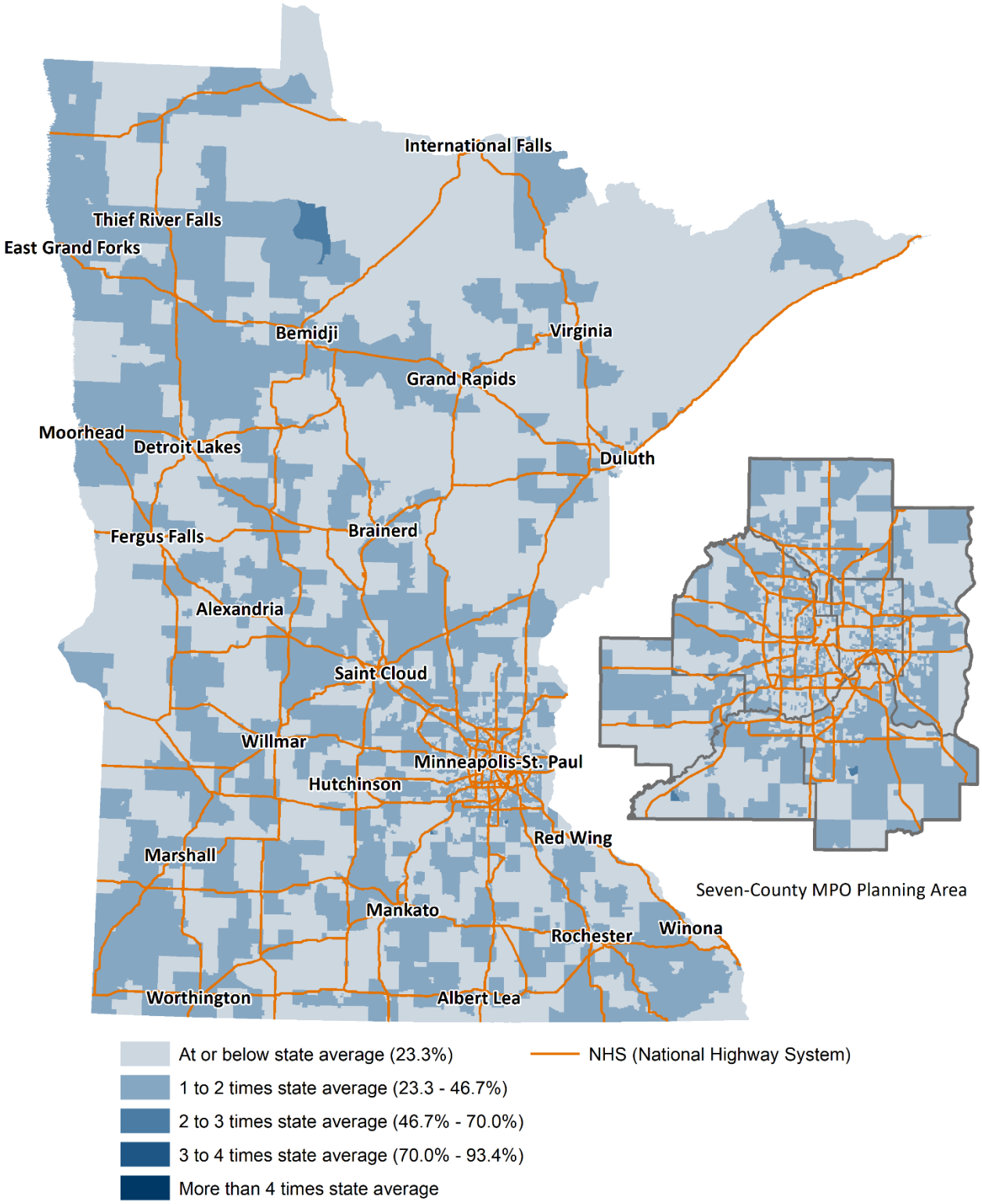
ATP 1 has the largest percentage (21.1%) of persons age 65 and older. The Metro area has the smallest percentage (14.1%) of those age 65 and older. ATP 3 has the highest percentage of those age 17 and younger (24.7%), while ATP 1 has the smallest percentage (19.5%) of those 17 and younger.

FIGURE D-13: MINNESOTANS AGE 17 AND UNDER AND AGE 65 AND OLDER BY AREA TRANSPORTATION PARTNERSHIP

ATP	Total Population	Age 65 and Older	% 65 and Older	Age 17 and Younger	% 17 and Younger
1 Northeast	354,781	74,677	21.1%	69,132	19.5%
2 Northwest	163,937	31,492	19.2%	39,486	24.1%
3 Central	686,717	109,856	16.0%	169,732	24.7%
4 West Central	255,621	50,837	19.9%	59,393	23.2%
Metro	3,192,704	451,225	14.1%	749,025	23.5%
6 Southeast	515,553	89,736	17.4%	119,770	23.2%
7 South Central	289,918	51,808	17.9%	65,896	22.7%
8 Southwest	211,241	41,886	19.8%	51,135	24.2%
Total	**5,670,472**	**901,517**	**15.9%**	**1,323,569**	**23.3%**

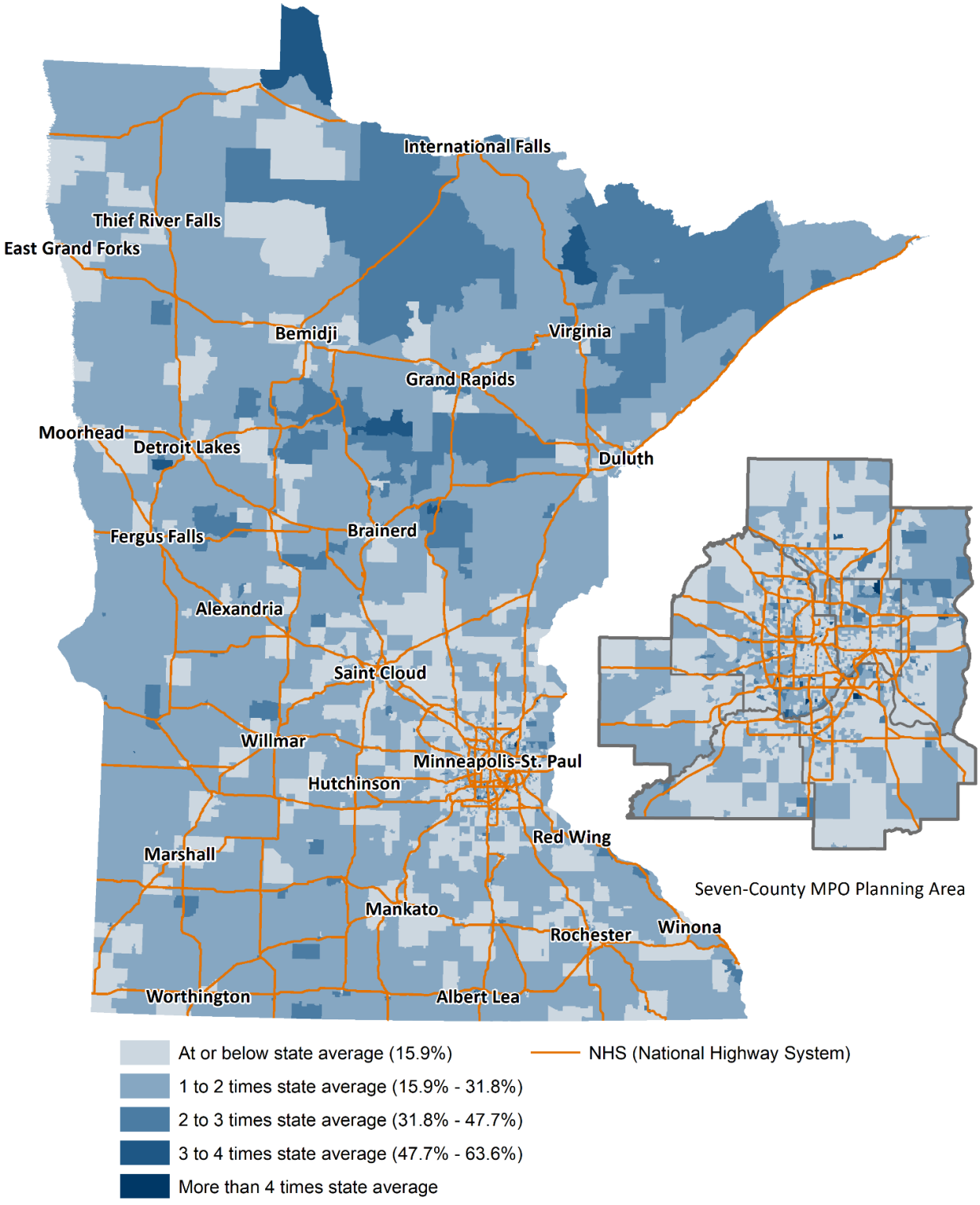
Figure D-14 shows a map of youth population by Census Block Group. Figure D-15 shows a map of senior population by Census Block Group. Senior population is spread out across the state with slightly higher concentration of seniors in northern Minnesota as well as the Twin Cities suburbs. Likewise, Minnesota's youth population is spread out across the state without many areas of high concentration.

FIGURE D-14: LOCATION OF HIGHER CONCENTRATIONS OF POPULATIONS AGE 17 AND UNDER IN MINNESOTA



Source: 2021 American Community Survey, 5-year estimates

FIGURE D-15: LOCATION OF HIGHER CONCENTRATIONS OF POPULATIONS AGE 65 AND OLDER IN MINNESOTA



Source: 2021 American Community Survey, 5-year estimates

ZERO-VEHICLE HOUSEHOLDS

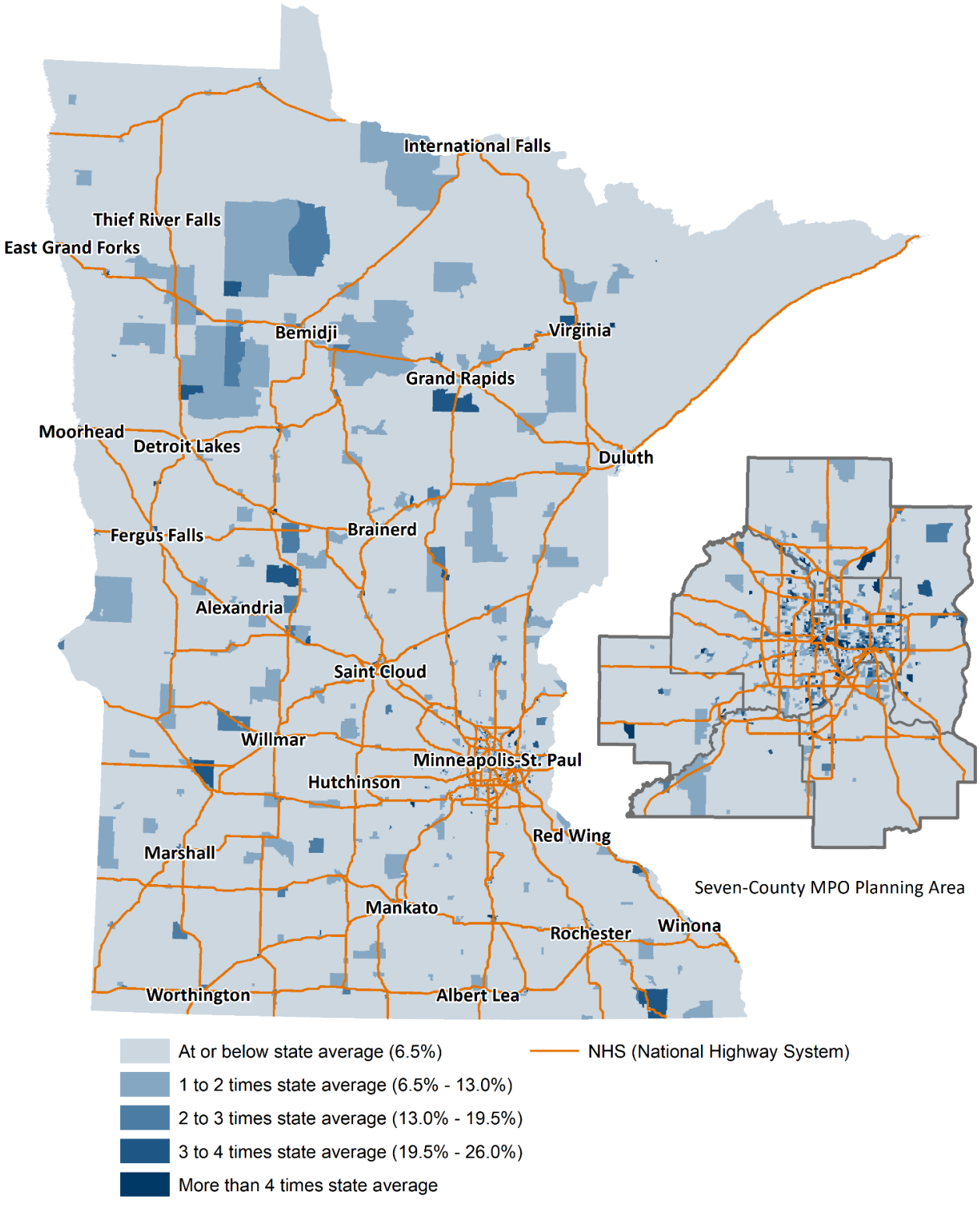
Households with zero vehicles may have a greater reliance on transit and non-motorized transportation. Figure D-16 shows the estimated number of Minnesota households that have zero vehicles. The American Community Survey estimated that 7.3 percent, or approximately 153,366 Minnesota households, do not have a vehicle. Zero vehicle households tend to use the transportation system differently by relying more on transit, biking, walking, taxis and more recently car-sharing and ride-sharing services (e.g Uber).

FIGURE D-16: MINNESOTA HOUSEHOLDS WITH ZERO VEHICLES BY AREA TRANSPORTATION PARTNERSHIP

ATP	Total Households	Households with No Vehicle	% Households with No Vehicle
1 Northeast	148,033	10,389	7.02%
2 Northwest	64,522	4,074	6.31%
3 Central	261,394	12,157	4.65%
4 West Central	104,272	5,690	5.46%
Metro	1,248,352	89,937	7.20%
6 Southeast	204,016	12,177	5.97%
7 South Central	114,300	6,030	5.28%
8 Southwest	84,211	4,488	5.33%
Total	2,229,100	144,942	6.50%

Figure D-17 shows a map of households without vehicles. Most of the higher concentrations of zero vehicle households are within the urban core of the Twin Cities area. There are also concentrations of zero vehicle households in northern Minnesota which seem to correlate with the location of tribal nations.

FIGURE D-17: LOCATION OF HIGHER CONCENTRATIONS OF HOUSEHOLDS WITH ZERO VEHICLES IN MINNESOTA



Source: 2021 American Community Survey, 5-year estimates

JUSTICE 40

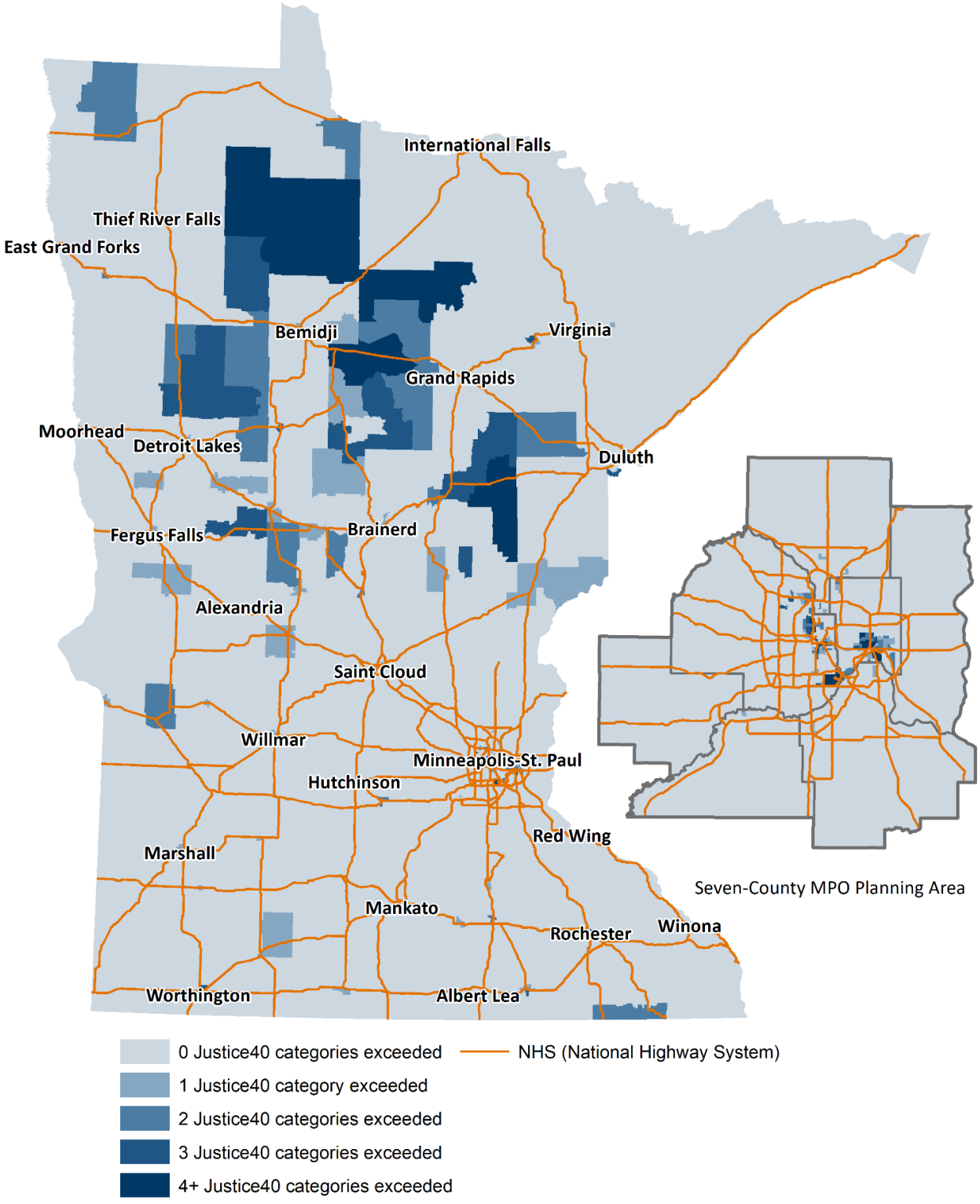
Justice 40 is an initiative that began in January 2021 when President Biden signed Executive Order 14008: Tackling the Climate Crisis at Home and Abroad. It strives to deliver 40% of the overall benefits of investments in climate, clean energy, and related areas to disadvantaged communities and tasked the Council on Environmental Quality (CEQ) with developing a new screening tool to target federal programs to communities with the greatest needs. The tool incorporates low-income census tracts, which it defines as those at or above the 65th percentile for the percentage of the population living in households at or below 200% of the Federal poverty level, excluding post-secondary students. It then identifies the low-income tracks that face particular burdens in eight major areas:

- Climate change
- Energy
- Health
- Housing
- Legacy pollution
- Transportation
- Water/wastewater
- Workforce development

Justice 40 defines a disadvantage as being at or above the 90th percentile in at least one major risk area.

For climate, these include expected agriculture loss rate, expected building loss rate, expected population loss rate, projected flood risk, and projected wildfire risk. For energy, they include energy cost and PM2.5 in the air. For health, they include rates of asthma, diabetes, heart disease and low life expectancy. For housing they include historic underinvestment, housing cost, lack of green space, lack of indoor plumbing and lead paint. For legacy pollution, they include having at least one abandoned mine, formerly used defense sites, proximity to hazardous waste facilities, proximity to Superfund sites, and proximity to Risk Management Plan facilities. For transportation, they include diesel particulate matter exposure, transportation barriers, and traffic proximity and volume. For water and wastewater, they include underground storage tanks and releases and wastewater discharge. For workforce development, they include linguistic isolation, low median income, poverty and unemployment, as well as another requirement that at least 10% of the population over the age of 25 lack a high school diploma. The screening tool also includes census tracks at or above the 50th percentile for low income that are surrounded by tracks with specific burdens. The map below shows Minnesota's census tracts with shading that reflects that number of disadvantages in each low-income tract.

FIGURE D-18: OVERBURDENED AND UNDERSERVED CENSUS TRACTS AS IDENTIFIED BY THE JUSTICE 40 INITIATIVE



Source: Climate and Economic Justice Screening Tool, 2022 Update

ENVIRONMENTAL JUSTICE AND MNSHIP

MnDOT met with an equity workgroup throughout the MnSHIP process to review MnSHIP materials and approach to public engagement. MnDOT reviewed the investment direction-setting process and outcomes through an equity lens and analyzed the Phase I engagement results by demographics. With the Equity Work Group, MnDOT staff discussed who are the beneficiaries of the proposed direction and who is potentially burdened.

ANALYSIS OF INVESTMENT CATEGORIES

MnDOT reviewed each of the MnSHIP investment categories to determine who are potential beneficiaries of investment in that category and who may potentially be burdened. This informed the development of the investment approaches used for public engagement.

PAVEMENT CONDITION

Identified benefits

- Provides an opportunity to improve roadway conditions and design
- Provide benefits to lower income communities and on tribal lands where roadways were under designed without/narrow shoulders or safe places for walking/biking

Identified burdens

- Prioritizing pavement condition may steer more investment to less expensive fixes on rural roadways and away from more investment in urban areas
- Pavement investment strategy maintains the existing roadway footprint without considering whether the existing roadway is overbuilt and the possibility reducing lane miles

BRIDGE CONDITION

Identified benefits

- Provides opportunities for more replacement/redesign of bridges to incorporate improved connections for all modes

ROADSIDE INFRASTRUCTURE

- Benefits or burdens not identified

REST AREAS

Identified Benefits

- Provides funding to make rest area buildings and sites to be accessible for people with disabilities

CLIMATE RESILIENCE

Identified Benefits

- Green infrastructure focused in urban areas could be a benefit if in areas that will be more affected by climate change – high priority areas would need to be selecting based on various safety, health, and equity criteria
- Improvements after highway projects such as replacing/adding more trees and incorporation of native plantings and seeding can restore/improve environment around highways

Identified Burdens

- Limitations on the use of trunk highway funds within right-of-way limits restorations and broader benefits to the surrounding communities

TRANSPORTATION SAFETY

Identified Benefits

- Non-Motorized Safety
    - Provides benefits for those who don't drive, either by choice or by circumstance through adding connections and improving safety along and across highways
    - Investment need calculation incorporated priorities based on equity

ADVANCING TECHNOLOGY

It was difficult to assess/predict benefits and burdens of Advancing Technology with limitations of trunk highway funding and types of improvements being discussed. There are potential benefits with upgrades to traffic signal technology and readiness for new intersection technology.

FREIGHT

- Benefits or burdens not identified

HIGHWAY MOBILITY

Identified Benefits

- Transit-supportive (bus shoulders/ramps, transit signal priority, safety enhancements) and managed lane investments provide advantages for transit users which historically made up of a higher percentage of lower income populations than the overall population

Identified Burdens

- Spot mobility, managed lane, and capacity/expansion improvements
    - Expansion benefits those with cars and those traveling through a community, not those living near the state highway

    - Added lanes burdens communities near roadway such as increase air pollution, noise pollution, and can induce demand and traffic to surrounding area
    - Adding a lane can mean taking property from communities that have been harmed in the past
    - Overall, there are more investments in Highway Mobility that add or continue burdens rather than address inequities

PEDESTRIAN AND BICYCLE

Identified benefits

- Provides benefits for those who don't drive, either by choice or by circumstance through adding connections and improving safety along and across highways
    - Investment need calculation incorporated priorities based on equity
- Addresses and rectifies the barriers caused by existing pedestrian infrastructure that is not compliant with the America's with Disabilities Act including sidewalks, curb ramps, and crossing signals

Identified burdens

- Need to ensure benefits to communities living near improvement, not just those using facility to travel through – a bike path do not always translate to advancing equity
- Identified goal of reaching ADA compliance by 2037 is too long of a wait and continues burdens
- Implementation is key to whether investments advance equity or continue burdens

LOCAL PARTNERSHIPS

Identified Benefits

- Reduces system size and future maintenance burden allowing for more investment towards other priorities that better advance equity
- Provides additional opportunity for improvements especially in urban areas where a MnDOT project may not be upcoming
    - Potential benefits in partnering on locally-led projects and investment targeting urban areas 62% of BIPOC populations live within Greater MN urban areas

Identified Burdens

- Differing visions and interest between MnDOT and local partners can lead to inability to advance equity and continue inequitable outcomes

MAIN STREETS/URBAN PAVEMENTS

Identified Benefits

- Ability to address local safety concerns, improve/add non-motorized infrastructure, urban aesthetic improvements for the surrounding community
- Helps mitigate/balance pavement projects between rural and urban

EQUITY EVALUATION ON THE MNSHIP INVESTMENT DIRECTION

As part of the investment direction development for MnSHIP, MnDOT staff worked with the equity workgroup to complete an equity evaluation of the plan process including analysis of public engagement results, the investment direction and strategy recommendations.

PUBLIC ENGAGEMENT

How did public engagement results from different demographic groups influence the development of the initial draft investment direction?

MnSHIP asked optional demographic information and tracked results during the first round of public engagement. The MnSHIP team analyzed the results by different locations and demographic groups to determine differing priorities. Overall, results between different demographic groups were very close. For example:

- Men most selected approach was Improve Mobility for All Highway Users while women selected most often the Focus on Safe and Equitable Communities. Improve Mobility for All Highway Users was the 2nd most selected approach among women.
- The top investment approach selected by both BIPOC responses and White non-Hispanic responses was Improve Mobility for All Highway Users.
- Results from the online budget tool showed no sizable differences were BIPOC respondents vs White non-Hispanic respondents would prioritize investment.
- BIPOC responses were more likely to Main Streets/Urban Pavement and Roadside Infrastructure in their Top 5 most important improvements while White non-Hispanic responses were more likely to have Pavement Condition and Bridge Condition in their Top 5. However, both groups included Pedestrian & Bicycle, Climate Resilience and Local Partnerships most frequently in their Top 5.
- Women were more likely to have Climate Resilience in their Top 5 most important improvements while Men were more likely to have Bridge Condition. But the other four Top 5 improvements were the same between Men and Women. Both had Local Partnerships, Pedestrian & Bicycle, Pavement Condition, Main Streets/Urban Pavements in their Top 5.

The results from different demographics groups were analyzed to ensure the draft investment direction was aligned with the priorities identified by different demographic groups. The draft investment direction shifts towards investing more in priorities that will help address existing inequities such as:

- Increasing investment in Pedestrian and Bicycle investment to address infrastructure that is not compliant with the Americans with Disabilities Act and address gaps in the existing pedestrian and bicycle networks
- Creating a livable communities program to provide funding such as improved aesthetics, creative use of right of ways into community spaces, and pilot 1-3 smaller cap/stitch projects to reconnected communities separated by the state highway system
- Investing in transit-supportive infrastructure where it uses or crosses state highway such as bus-only ramps or shoulders, signal priority, or improvements around stations such as lighting, signals, or pedestrian infrastructure

INVESTMENT DIRECTION

Who are the potential beneficiaries of the draft investment direction and investment priorities?

All users of the state highway system are the intended beneficiaries of the MnSHIP investment direction. The 2023 MnSHIP investment direction incorporates an increased revenue outlook from both federal and state revenue sources from the 2017 plan. It shifts the primary focus from minimizing miles of pavements in poor conditions towards more fully addressing the impacts of climate change, supporting multimodal investments, and investing in urban areas and communities.

How have proposed changes from the current 2017 MnSHIP investment direction impacted who are the beneficiaries?

Some of the populations which will benefit from the proposed changes to the investment direction include people with disabilities, tribal communities especially in Greater MN, those who don't drive (either by choice or by circumstance), and people living near state highways. People may also experience greater benefits if several of these characteristics apply to them.

PEOPLE WITH DISABILITIES

Increased investment in Pedestrian and Bicycle, Rest Areas, Transportation Safety, and Main Streets/Urban Pavements will benefit people with disabilities. The 2023 MnSHIP investment direction commits to address non-compliant infrastructure by 2037 including:

- Sidewalks
- Curb ramps
- Signals
- Pedestrian bridges

In addition, the investment direction includes funding for addressing accessibility at rest areas and with multiuse trails. Investment in Pedestrian and Bicycle will allow for filling gaps in the pedestrian infrastructure network including 100-150 miles of sidewalks and 200-250 intersection improvements and providing a more complete system.

Transportation Safety investment includes non-motorized safety to implement safety countermeasures as a part of projects to reduce pedestrian and bicyclist fatalities and serious injuries.

The creation of a Main Streets/Urban Pavements investment category focuses funding on urban projects to help cover the cost of expanding a project from a resurfacing project to a larger reconstruction fix. Reconstruction projects provide the opportunity to do more than manage the pavement condition. MnDOT receives request to provide more complete projects that address local priorities such as:

- Local utilities under the roadway
- Address pedestrian infrastructure that is non-compliant
- Implement safer roadway designs for all users in urban areas

GREATER MN TRIBAL COMMUNITIES

State highways through tribal lands were often under designed lacking infrastructure for safe crossings or infrastructure for pedestrian and bicyclists that were provided in other communities in Minnesota. MnDOT has and continues to work to improve conditions and make additional improvements through the implementation of the 2013 and 2017 MnSHIP investment directions. This investment direction provides the opportunity through funding priorities to provide more resources to continue to address those inequities at a greater rate including:

- Investing in new safety improvements
- Addressing impacts of climate changes on state highways
- Preventing detours caused by flooding or roadway washouts
- Improving the pedestrian and bicycle connectivity and accessibility
- Prioritizing more funding towards reconstruction projects on state highways in communities across the state including tribal communities

Increasing investments in urban reconstruction projects provides opportunities to redesign and reconfigure the existing state highway to improve safety, better accommodate walkers and bicyclists, and address community concerns.

THOSE WHO DO NOT DRIVE

Those who do not drive, either by choice or circumstance, are also beneficiaries from the areas of increased investment compared to the 2017 investment direction. There is additional focus to improve the state highway system for pedestrian, bicyclists, and transit users.

Transit users historically include of a higher percentage of lower income people than the overall population. The Highway Mobility investments provide additional funding for transit-supportive investments. Funding helps to expand advantages for transit that travels on or crosses the state highway in the Twin Cities metro area. This funding does not go towards funding operations or capital costs for transit service but include improvements to accommodate transit on the state highway system such as:

- Expanding bus-only shoulders and ramps
- Transit signal priority
- Safety enhancements around transit stops
- E-Z Pass lanes which buses which provide a congestion free option to buses and other users

Those who do not drive also see benefits from investments in Transportation Safety, Pedestrian and Bicycle, and Bridge Condition. All these categories would bring improved connectivity and safety to the system for walkers and bicyclists. Transportation Safety investment includes a non-motorized safety program to implement safety countermeasures as a part of projects to reduce pedestrian and bicyclist fatalities and serious injuries. Investment in Pedestrian and Bicycle will allow for:

- Filling gaps in the pedestrian infrastructure network including 100-150 miles of sidewalks and 200-250 intersection improvements and providing a more complete system
- Adding over 150 miles of bicycle lanes and 20 miles of separated bicycle lanes
- Repair or replacing pedestrian bridges that are not ADA compliant

Increased investment in Bridge Condition provides more opportunities to reconstruct bridges to include better accommodations and provide connections for walkers and bicyclists across barriers such as other highways or rivers.

PEOPLE LIVING NEAR STATE HIGHWAYS

Other beneficiaries include people who live near state highway which historically have been lower incomes communities and Black, Indigenous, and People of Color. Like the groups above, people living near state highways would benefit from increased investment in Pedestrian and Bicycle, Transportation Safety and Main Streets/Urban Pavements.

People living near state highways will also see benefits from investments in Local Partnerships and Climate Resilience. Through Local Partnership investments, there will be funding available to partner on projects led by local governments to address community priorities and improving livability through a new Livable Communities program. This program could fund up to 100 smaller projects or improvements that creatively use MnDOT right of way including:

- Reuse of under bridge areas for community spaces
- Incorporate better lighting
- Aesthetic improvements to better integrate infrastructure into the surrounding community
- Pilot between 1-3 small bridge caps or "stitches" to improve connections between communities divided by state highways
    - Examples of existing stitches in Minnesota include in Duluth over I-35 connecting downtown to the lake front or in Minneapolis over Highway 55/Hiawatha connecting Southeast Minneapolis to Minnehaha Park.

Investments in Climate Resilience would:

- Fund up to 10 flood mitigation projects at locations with existing flooding issues
- Address locations which could be impacted more by our changing climate due to culverts not designed to handle increase stormwater run-off and slopes that may fail to cover or wash out roads
- Add 100-200 miles of new or improved green infrastructure along state highways such as:
    - Planting more shade trees to reduce heat island effects
    - Incorporate more native plantings
    - Add natural stormwater management systems such as rain garden/bioswales to handle run-off and filter pollutants and salt from entering the surrounding lakes and streams

The new federal infrastructure bill, the Infrastructure Investment and Jobs Act, funds several new and existing competitive solicitation programs including the Reconnecting Communities Pilot Program and the RAISE (Rebuilding America's Infrastructure with Sustainability and Equity) discretionary grants program. MnSHIP does not assume Minnesota is successful in securing any funding from these programs in the investment direction. However, the MnSHIP investment direction holds $230 million for the potential state match to any successful federal grant awards that fund new state highway projects.

WHO IS POTENTIALLY BURDENED, OR EXCLUDED, FROM THIS INVESTMENT DIRECTION AND PRIORITIES?

There are several continuing burdens that would still exist to people who use or live near state highways.

- Adding more localized/intersection mobility improvements and E-Z Pass lanes can continue burdens to those living around state highways
    - Expansion benefits those with cars and those traveling through a community, not those living near the state highway
    - Added lanes burdens communities near roadway such as increase air pollution, noise pollution, and can induce demand and traffic to surrounding area
    - Improving mobility can mean taking property from communities that have been harmed in the past
- Investment direction will not significantly reverse past or continuing burdens
    - Air and noise pollution continues to be a burden especially for those living near state highways
    - Limitations on the use of trunk highway funds within right-of-way limits restorations and broader benefits to the surrounding communities
- The investment direction does continue the status quo that maintains the existing roadway footprint based on historic commitments and won't repair all past harms from historic transportation decisions. There are resources for strategies like 4 to 3 lane conversions in urban areas to improve safety and provide space for bicyclists on roadways.
- For those with a disability, the identified goal of reaching ADA compliance by 2037 is too long of a wait and continues burdens.
- Prioritizing pavement condition may also steer more investment to less expensive fixes on rural roadways and away from more investment in urban areas and addressing historic inequities.
- Rural low-income populations that rely on driving would see an increased burden. Pavement conditions are projected to decrease substantially on lower volume state highways over the next 20 years. Though the pavement outcomes from this plan are substantially better than the 2017 MnSHIP.

STRATEGY RECOMMENDATIONS

HOW DOES THE INVESTMENT DIRECTION AND PRIORITIES INCLUDE FOCUS ON INCREASING TRANSPORTATION EQUITY?

The 2023 MnSHIP investment direction begins to shift investment towards investment categories and investment strategies that would support increasing transportation equity. As demonstrated previously, investments in certain areas will provide benefits to groups that have seen inequitable outcomes and burdens due to previous transportation decisions and work to correct those inequities.

WHAT ARE SOME WAYS THAT THIS INVESTMENT DIRECTION COULD CHANGE SO THAT IT INCREASES TRANSPORTATION EQUITY?

MnSHIP is a broad 20-year statewide investment plan and does not and cannot identify with any specificity where investments will be made on the system, only how much investment we would put together different priorities. The state road construction funds, which is the funding considered in MnSHIP, can only be used within the state

highway right-of-way and only used for a trunk highway purpose. There are other sources of funding available to address other priorities not on the state highway system.

There is not enough funding over the next 20 years to address all priorities on the state highway system. But there is significant funding outside of MnDOT's state road construction budget. As stated above, MnDOT is holding $230 million to match additional funding through competitive solicitations and discretionary grants. Additional funding opportunities include:

- Federal discretionary grant programs
- Met Council's Regional Solicitation Program
- State legislative bonding
- New state transportation revenue or budget surplus

There are other plans, reports, business processes and project selection criteria that could further advance equity.

Implementation and project selection will also be key to ensuring further increasing transportation equity. MnSHIP will continue the discussion of advancing equity through implementation strategies, work plan tasks, and additional planning to be completed after the adoption of MnSHIP and before the next update in five years. Example items include:

- Equity needs to be a factor in funding distribution and project selection
- Through MnDOT's own project selection process, there is a need to develop projects that ensure improvements benefit the communities living near improvement, not just those using facility to travel through and does not further inequities. A new bike path does not always translate to advancing equity.

TITLE VI ANALYSIS

Title VI and its regulations require MnDOT to take reasonable steps to ensure meaningful access to the department's information and services. What constitutes reasonable steps to ensure meaningful access is contingent on a four-factor analysis established by the U.S. Department of Justice[1]. The four-factor analysis is an individualized assessment that should be applied to all districts, offices, programs, and activities to determine what reasonable steps must be taken to ensure meaningful access for individuals with limited-English proficiency (LEP).

FACTOR 1: DEMOGRAPHY

The number or proportion of LEP individuals in the service area who may be served or likely to be encountered by MnSHIP.

MnDOT has reviewed the 2018-2022 ACS five-year estimates and identified Spanish, Hmong, and Amharic, Somali or other Afro-Asiatic languages as the top three LEP groups in Minnesota (see Figure D-19). The third category includes several languages. As of 2018, the Minnesota State Demographer's Office reported Somali-born Minnesotans were the second-largest group of foreign-born immigrants living in Minnesota[2]. Therefore, programs providing statewide information to the public should consider Spanish, Hmong and Somali as the primary languages for any necessary language assistance services.

Although these are the primary languages in Minnesota for necessary language assistance services, languages needing assistance vary throughout the state. It's important that when doing public engagement it is understood what language assistance services are in highest demand.

[1] Enforcement of Title VI of the Civil Rights Act of 1964 - National Origin Discrimination Against Persons with Limited English Proficiency, effective August 11, 2000,https://www.justice.gov/sites/default/files/crt/legacy/2010/12/14/eolep.pdf.
[2] Immigration and Language: Key Findings, accessed January 21, 2002, https://mn.gov/admin/demography/data-by-topic/immigration-language/

FIGURE D-19: LANGUAGE SPOKEN AT HOME IN MINNESOTA

Language Spoken at Home	Number	% of Total Population	Speaks English less than "very well"	% of Population Speaking English less than "very well"
Speaks only English	4,733,194	88.0%	NA	NA
Spanish	205,084	3.8%	80,809	39.4%
Somali, Amharic or Other Afro-Asiatic Languages	89,687	1.7%	36,170	40.3%
Hmong	75,827	1.4%	29,265	38.6%
Khmer, Thai, Lao or Other Languages of Asia	37,408	0.7%	22,661	60.6%
Hindi (including Urdu), Nepali, Bengali or Other Indic Languages	24,438	0.7%	5,344	21.9%
Chinese (including Mandarin, Cantonese)	23,461	0.4%	9,328	39.8%
Vietnamese	22,187	0.4%	14,106	63.6%
French (Including Creole, Cajun)	20,336	0.4%	5,353	26.3%
German or Other West Germanic Languages	19,611	0.4%	3,141	16.0%
Yoruba, Twi, Igbo, or Other Languages of Western Africa	19,195	0.4%	5,543	28.9%
Arabic	14,981	0.3%	4,689	31.3%
Russian	13,747	0.3%	6,018	43.8%
Swahili or Other Languages of Central, Eastern, and Southern Africa	13,027	0.2%	4,028	30.9%
Tagalog (including Filipino) or other Austronesian Languages	12,836	0.24%	3,880	30.2%
Telugu, Tamil or Other Dravidian Languages	11,926	0.22%	2,218	18.6%
Other Slavic Languages	11,859	0.22%	4,112	34.7%
Other Languages	27,852	0.52%	5,629	20.2%

FACTOR 2: FREQUENCY

The frequency with which LEP persons come in contact with MnSHIP.

MnDOT staff reviewed the frequency of interactions with LEP individuals. MnSHIP engagement occurred throughout the state. For each engagement effort, staff reviewed data for those areas to see if there would be potential interactions with LEP individuals. At times engagement efforts were directly coordinated with community-based organizations that primarily spoke a language other than English. In these instances, documents were translated and an interpreter was present.

The Minnesota GO website can be translated using Google Translate and requests for translation services can be made by one of the following language assistance services listed in the MnDOT Language Assistance Plan.

FACTOR 3: IMPORTANCE

The nature and importance of the program, activity or service provided by the MnSHIP to people's lives.

The more important the activity, information, service or program or the greater the possible consequences of the contact to the LEP individuals, the greater the need for language assistance services. MnSHIP project staff determined whether denial or delay of access to services or information had serious implications for the LEP individual. Generally, programs providing information and services related to accessing benefits, opportunities, or rights are considered high importance.

VITAL DOCUMENTS

Vital documents are paper or electronic written material containing information that is:

1. Critical for accessing programs, services, benefits, or activities;
2. Directly and substantially related to public safety; or
3. Required by law

Whether a document (or the information it solicits) is "vital" may depend upon the importance of the program, information, encounter or service involved, and the consequence to the LEP person if the information in question is neither accurate nor timely. Sometimes a large document may include both vital and non-vital information. For these documents, vital information may include providing notice in the necessary non-English languages explaining where an LEP individual can obtain an interpretation or translation of the document.

Although the SMTP is required by law to be completed and contains information for policy direction related to transportation safety, MnDOT has opted to take the following approach:

1. The document has been made available online at MinnesotaGO.org. The Minnesota GO website can be translated using Google Translate.
2. The following LEP notice will be placed on the inside cover of the SMTP in English, Spanish, Hmong and Somali.
    - To request this document in another language, please send an e-mail with the document attached to languageservices.dot@state.mn.us.

- Para pedir este documento en otro idioma, envíe un correo electrónico y adjunte el documento a languageservices.dot@state.mn.us.
- Yog xav kom muab daim ntawv no sau ua lwm hom lwm, thov sau ntawv nrog daim ntawv tuaj rau ntawm languageservices.dot@state.mn.us.
- Si aad u codsato dukumeentigan oo ku qoran luqad kale, fadlan e-mail u soo dir oo ku soo lifaaq dukumiintiga languageservices.dot@state.mn.us.

MnDOT took this approach to language assistance for the MnSHIP because of (1) the significant time and resources required to translate a document of this size, and (2) the nominal impact on the lives of the LEP public caused by this information not being readily available in non-English languages. However, MnDOT is committed to providing meaningful access to LEP individuals and will promptly respond to any requests for specific SMTP information in non-English languages.

Within the MnSHIP document development process, the vital documents were the notices of public engagement.

FACTOR 4: RESOURCES

MnDOT's available resources and the costs of providing language assistance services may impact the steps taken to provide meaningful access to LEP individuals. Generally, MnDOT should have sufficient resources to provide meaningful access through reasonable language assistance measures. However, language assistance measures may cease to be reasonable where the costs imposed substantially exceed the benefits.

The four-factor analysis necessarily implicates a spectrum of language assistance measures. For instance, written translations can range from translation of an entire document to translation of a short description of the document, and interpretation services may range from using telephone-based interpretation services to providing in-person interpretation at a public event. Language assistance measures should be based on what is necessary and reasonable after considering the four-factor analysis.

For the SMTP, staff ensured any resource limitations were documented and explained before using this factor as a reason to limit language assistance. MnDOT staff proactively identified how to provide language assistance services efficiently and cost-effectively while ensuring meaningful access to LEP individuals. An example of this was during Phase 1 public events, where MnDOT provided a Spanish speaker to administer surveys at locations that had a large Spanish speaking population.

COMPLIANCE WITH LANGUAGE ASSISTANCE PLAN

The MnSHIP update process was conducted in accordance with MnDOT's Language Assistance Plan.

APPENDIX E: PLANNING REQUIREMENTS

The 20-Year Minnesota State Highway Investment Plan (MnSHIP) update process is guided by federal and state requirements. The Minnesota Department of Transportation (MnDOT) also has policies and initiatives that inform the planning process. Below outlines where that guidance and requirements can be found in the 2023 MnSHIP.

FEDERAL REQUIREMENTS

Statewide long-range transportation plans are guided by requirements set out in the code of federal regulations (CFR). Title 23 part 450 subpart B covers the Statewide and Nonmetropolitan Transportation Planning and Programming.[1] The state must demonstrate how the requirements are met with the long-range transportation plan. MnDOT's family of plans, including MnSHIP, collectively address these requirements. Some requirements may be addressed fully or in part by the Statewide Multimodal Transportation Plan or another modal plan instead of MnSHIP. How MnSHIP meets the requirements are categorized by federal planning factors, performance-based planning, cooperation, coordination and consultation, environmental mitigation, Environmental Justice and Title VI.

PLANNING FACTORS

Minnesota must carry out a continuous, cooperative and comprehensive statewide transportation planning process. The process is used when considering and implementing projects, strategies and services that address 10 federal planning factors. The factors must be considered and reflected, as appropriate, in the statewide transportation planning process. Table E-1 shows how federal planning factors for the transportation system influenced the development of the SMTP objectives and related MnSHIP investment categories.[2]

TABLE E-1: FEDERAL PLANNING FACTORS AND RELATED MNSHIP OBJECTIVES

FEDERAL PLANNING FACTOR	RELATED OBJECTIVE(S)
Support the economic vitality of the United States, the states, metropolitan areas, and non-metropolitan areas, especially by enabling global competitiveness, productivity and efficiency.	• Critical Connections • Healthy Equitable Communities
Increase the safety of the transportation system for motorized and non-motorized users.	• Transportation Safety

[1] 23. *Statewide and nonmetropolitan transportation planning*, U.S. Code § 135(f)(1), (f)(3), https://uscode.house.gov/view.xhtml?req=(title:23%20section:135%20edition:prelim); Code of Federal Regulations, *Development and content of the long-range statewide transportation plan*, 23 CFR 450.216, https://www.ecfr.gov/current/title-23/chapter-I/subchapter-E/part-450/subpart-B#450.216.

[2] 23. *Statewide and nonmetropolitan transportation planning*, U.S. Code § 135(d)(1), https://uscode.house.gov/view.xhtml?req=(title:23%20section:135%20edition:prelim); Code of Federal Regulations, *Scope of the statewide and nonmetropolitan transportation planning process*, 23 CFR 450.206(a), https://www.ecfr.gov/current/title-23/chapter-I/subchapter-E/part-450/subpart-B#450.206.

FEDERAL PLANNING FACTOR	RELATED OBJECTIVE(S)
Increase the security of the transportation system for motorized and non-motorized users.	• Transportation Safety
Increase accessibility and mobility of people and freight.	• System Stewardship • Critical Connections • Healthy Equitable Communities
Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns.	• System Stewardship • Climate Action • Critical Connections • Healthy Equitable Communities
Enhance the integration and connectivity of the transportation system, across and between modes throughout the state, for people and freight.	• Critical Connections • Healthy Equitable Communities
Promote efficient system management and operation.	• Transportation Safety • System Stewardship • Critical Connections
Emphasize the preservation of the existing transportation system.	• System Stewardship • Critical Connections
Improve the resiliency and reliability of the transportation system and reduce or mitigate stormwater impacts of surface transportation.	• System Stewardship • Climate Action • Critical Connections
Enhance travel and tourism.	• Critical Connections • Healthy Equitable Communities

PERFORMANCE-BASED PLANNING

Statewide transportation plans must establish and use a performance-based approach to transportation decision making that supports the national goals as identified in Figure E-1. [3]

Federal performance measure target selection must be coordinated with metropolitan planning organizations (MPOs) to ensure consistency. In areas not represented by MPOs, the selection of public transportation performance measure targets must be coordinated with public transportation providers.

The statewide planning process must integrate, either directly or by reference, the goals, objectives, performance measures and targets developed to meet federal requirements. Details on how Minnesota considers these federal requirements when developing policies, programs and investment priorities can be found in the Statewide

[3] 23. *Statewide and nonmetropolitan transportation planning*, U.S. Code § 135(d)(2), https://uscode.house.gov/view.xhtml?req=(title:23%20section:135%20edition:prelim); Code of Federal Regulations, *Scope of the statewide and nonmetropolitan transportation planning process*, 23 CFR 450.206(c),[3] https://www.ecfr.gov/current/title-23/chapter-I/subchapter-E/part-450/subpart-B#450.206; Code of Federal Regulations, Development and content of the long-range statewide transportation plan, 23 CFR 450.216(f), https://www.ecfr.gov/current/title-23/chapter-I/subchapter-E/part-450/subpart-B#450.216.

Multimodal Transportation Plan (SMTP) – Appendix I. Performance targets related to state highway investment are discussed in in Chapter 4.

COOPERATION, COORDINATION AND CONSULTATION

Statewide transportation plans must be developed in coordination with MPOs, cooperation with nonmetropolitan officials, and in consultation with tribal governments and state, tribal and local agencies responsible for land use management, natural resources, environmental protection, conservation and historic preservation. [4] Additionally, statewide transportation planning processes are required to develop and use a documented public involvement process that provides opportunities for public review and comment at key decision points.[5] Information on how MnDOT coordinated, cooperated and consulted with transportation partners and the public can be found in Chapter 5 with detailed information regarding the public engagement process found in Appendix B – Engagement Summary. MnDOT completed a review of plans from more than 100 transportation partners including peer agencies, MPOs, RDOs and others.

ENVIRONMENTAL MITIGATION

Statewide transportation plans must include a discussion of potential environmental mitigation activities and potential areas to carry out these activities. Further, the plans must include activities that may have the greatest potential to restore and maintain the environmental functions affected by the long-range statewide transportation plan. The discussion may focus on policies, programs or strategies, rather than at the project level. This must be developed in consultation with applicable federal, state, regional, local and Tribal land management, wildlife and regulatory agencies. The state may establish reasonable timeframes for performing this consultation.[6][7] MnSHIP has components of climate change mitigation and resiliency in the investment direction and strategies. System Stewardship includes practicing environmental stewardship to protect and improve natural resources.

ENVIRONMENTAL JUSTICE AND TITLE VI

Statewide transportation plans must identify and address disproportionately high and adverse human health or environmental effects on minority and low-income populations.[8] Compliance is demonstrated through the public participation plan and an analysis of the plan's recommendations.

The plan's recommendations and public outreach activities cannot result in discriminatory efforts or disparate impacts on the basis of race, color and national origin, including the denial of meaningful access for limited

[4] 23. *Statewide and nonmetropolitan transportation planning*, U.S. Code § 135(f)(2), https://uscode.house.gov/view.xhtml?req=(title:23%20section:135%20edition:prelim); Code of Federal Regulations, *Coordination of planning process activities*, 23 CFR 450.208, https://www.ecfr.gov/current/title-23/chapter-I/subchapter-E/part-450/subpart-B#450.208.

[5] Code of Federal Regulations, *Interested parties, public involvement, and consultation*, 23 CFR 450.210, https://www.ecfr.gov/current/title-23/chapter-I/subchapter-E/part-450/subpart-B#450.210.

[6] 23. *Statewide and nonmetropolitan transportation planning*, U.S. Code § 135(f)(4), https://uscode.house.gov/view.xhtml?req=(title:23%20section:135%20edition:prelim); Code of Federal Regulations, *Development of programmatic mitigation plans*, 23 CFR 450.214, https://www.ecfr.gov/current/title-23/chapter-I/subchapter-E/part-450/subpart-B#450.214.

[7] Code of Federal Regulations, *Development and content of the long-range statewide transportation plan,* 23 CFR 450.216(k), https://www.ecfr.gov/current/title-23/chapter-I/subchapter-E/part-450/subpart-B#450.216.

[8] William J. Clinton, Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income, February 16, 1994, United States Environmental Protection Agency, https://www.epa.gov/laws-regulations/summary-executive-order-12898-federal-actions-address-environmental-justice; U.S. Department of Transportation, *Final DOT Environmental Justice Order 5610.2(a)*, May 12, 2012, https://www.transportation.gov/transportation-policy/environmental-justice/department-transportation-order-56102a; U.S. Department of Transportation, Federal Highway Administration, *FHWA Order 6640.23A*, June 14, 2012, https://www.fhwa.dot.gov/legsregs/directives/orders/664023a.cfm; U.S. Department of Transportation, Federal Transit Administration, *Environmental Justice Policy Guidance for Federal Transit Administration Recipients 4703.1*, July 17, 2012, https://www.transit.dot.gov/regulations-and-guidance/fta-circulars/environmental-justice-policy-guidance-federal-transit.

English proficient persons.[9] Compliance is demonstrated through the public participation plan and the environmental justice analysis of the plan's recommendations.

A summary of how MnDOT complied with Title VI and environmental justice requirements can be found in Appendix D – Environmental Justice. Details for the public engagement process are found in Chapter 5 and Appendix B – Public Engagement Summary.

STATE REQUIREMENTS

The State of Minnesota has established transportation goals for MnDOT as well as additional requirements for MnSHIP.

LEGISLATIVE GOALS FOR TRANSPORTATION

The Minnesota Legislature has identified 16 goals for transportation. These goals are listed in Figure E-2. The SMTP must also identify performance targets for measuring progress and achievement of the goals, objectives or policies.[10]

Figure E-2 outlines the state transportation goals and the related MnSHIP investment category support the goal. Further details on each of the objectives can be found in Chapter 5.

TABLE E-2: STATE TRANSPORTATION GOALS AND RELATED SMTP OBJECTIVES AND KEY STRATEGIES

STATE GOALS FOR THE TRANSPORTATION SYSTEM	RELATED INVESTMENT CATEGORY	INVESTMENT DIRECTION DESCRIPTION
Minimize the fatalities and injuries for transportation users throughout the state.	Transportation Safety	Increase investment to address locations with high crash rates and non-motorized safety issues
Provide multimodal and intermodal transportation facilities and services to increase access for all persons and businesses and to ensure economic well-being and quality of life without undue burden placed on any community.	Pedestrian and Bicycle Local Partnerships	• Be substantially compliant with the Americans with Disabilities (ADA) act by 2037. • Improve pedestrian facilities on 100-150 miles of roadway and at 200-250 intersections • Add over 150 miles of bicycle lanes and 20 miles of separated bicycle facilities in urban areas • Support 10 arterial Bus Rapid Transit lines on state highways • Complete up to 100 livability projects that improve connections across state highways

[9] 42. *The Public Health and Welfare,* U.S. Code § 2000d, https://www.govinfo.gov/app/details/USCODE-2011-title42/USCODE-2011-title42-chap21-subchapV-sec2000d; Code of Federal Regulations, *Part 200 – Title Vi Program and Related Statutes – Implementation and Review Procedures*, 23 CFR 200, 23 CFR §200 Title Vi Program And Related Statutes - Implementation And Review Procedures - Code of Federal Regulations (ecfr.io); Code of Federal Regulations, *Nondiscrimination in Federally-Assisted Programs of the Department of Transportation – Effectuation of Title VI of the Civil Rights Act of 1964*, 49 CFR 21, https://www.ecfr.gov/current/title-49/subtitle-A/part-21?toc=1;William J. Clinton, Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, August 11, 2000, The U.S. Department of Justice, https://www.justice.gov/crt/executive-order-13166; U.S. Department of Transportation, Federal Transit Administration, *Title VI Requirements and Guidelines for Federal Transit Administration Recipients 4702.1B*, October 1, 2012, https://www.transit.dot.gov/regulations-and-guidance/fta-circulars/title-vi-requirements-and-guidelines-federal-transit.

[10] Minnesota Statutes 2022, section 174.01, subdivision 2, https://www.revisor.mn.gov/statutes/cite/174.01; Minnesota Statutes 2022, 174.03, subdivisions 1a and 12, https://www.revisor.mn.gov/statutes/cite/174.03.

STATE GOALS FOR THE TRANSPORTATION SYSTEM	RELATED INVESTMENT CATEGORY	INVESTMENT DIRECTION DESCRIPTION
Provide a reasonable travel time for commuters.	Highway Mobility	• Build out the traffic management system • Support 10 arterial Bus Rapid Transit lines on state highways • Complete over 100 spot mobility improvements • Add E-ZPass lanes on four corridors
Enhance economic development and provide for the economical, efficient, and safe movement of goods to and from markets by rail, highway, and waterway.	Freight Local Partnerships	• Address 60-100 first/last mile freight connection issues or freight safety • Maintain weigh stations so that none become obsolete • Replace rail crossing signals at 3 locations per year and 1 passive crossing converted to active per year • Expanded truck parking at 8-10 existing locations and add 2-3 new truck parking locations on MnDOT right-of-way • Fund 40 large Transportation Economic Development projects or 350 smaller projects, which may support the creation and retention of an estimated 20,000 to 55,000 jobs throughout the state
Encourage tourism by providing appropriate transportation to Minnesota facilities designed to attract tourists and to enhance the appeal, through transportation investments, of tourist destinations across the state.	Rest Areas Small Programs	• Maintain building condition and address ADA compliance at all rest areas. • Maintain historic properties and roadside amenities on state highways
Provide transit services to all counties in the state to meet the needs of transit users.	N/A	N/A
Promote accountability through systematic management of system performance and productivity through the utilization of technological advancements.	Advancing Technology	• Expand Intelligent Transportation Systems to 200-250 miles of state highways and address immediate and medium needs for fiber network expansion
Maximize the long-term benefits received for each state transportation investment.	System Stewardship	MnSHIP includes strategies to stretch available revenue. These strategies are:

STATE GOALS FOR THE TRANSPORTATION SYSTEM	RELATED INVESTMENT CATEGORY	INVESTMENT DIRECTION DESCRIPTION
		• Implement asset management principles from the Transportation Asset Management Plan • Continue to employ high return-on-investment strategies that deliver the majority of benefits at reduced cost • Manage investments to achieve multiple objectives such as improving economic competitiveness, public health, equity and climate resilience
Provide for and prioritize funding of transportation investments that ensures that the state's transportation infrastructure is maintained in a state of good repair.	Pavement Condition Bridge Condition Roadside Infrastructure Rest Areas	Over 60% of investment in MnSHIP is going towards maintaining the existing state highway system. End of planning period (2042) outcomes from this investment include: • Interstate pavements: 86% good and 2% poor • Other NHS pavements: 91% good and 6% poor • Non-NHS pavements: 89% good and 10% poor • NHS bridges: 53% good and 5% poor • Non-NHS bridges: 42% good and 10% poor
Ensure that the planning and implementation of all modes of transportation are consistent with the environmental and energy goals of the state.[11]	Critical Connections Climate Action	The MnSHIP investment direction prioritizes multimodal access including increased investment for pedestrian infrastructure, bicycle infrastructure and transit-supportive investments. Highway Mobility investments are focused on spot mobility improvements. Highway capacity expansion is not funded in MnSHIP.
Promote and increase the use of high-occupancy vehicles and low-emission vehicles.	Highway Mobility	Highway mobility includes investments that promote or prioritize high-occupancy vehicles and transit, including: • Support 10 arterial Bus Rapid Transit lines on state highways • Add E-ZPass lanes on four corridors which can be for free by carpoolers and transit
Provide an air transportation system sufficient to encourage economic growth and allow all regions of the state the ability to participate in the global economy.	N/A	N/A
Increase use of transit as a percentage of all trips statewide by giving highest priority to the transportation modes with the greatest people-moving capacity and lowest long-term economic and environmental cost.	Highway Mobility	• Support 10 arterial Bus Rapid Transit lines on state highways • Add E-ZPass lanes on four corridors which can be for free by carpoolers and transit

[11] Minnesota Statutes 2021, section 216H.02, subdivision 1, https://www.revisor.mn.gov/statutes/cite/216H.02#stat.216H.02.2; Minnesota Statutes 2021, 216B.1691, subdivision 2a, https://www.revisor.mn.gov/statutes/cite/216B.1691.

STATE GOALS FOR THE TRANSPORTATION SYSTEM	RELATED INVESTMENT CATEGORY	INVESTMENT DIRECTION DESCRIPTION
Promote and increase bicycling and walking as a percentage of all trips as energy-efficient, nonpolluting, and healthy forms of transportation.	Pedestrian and Bicycle	Increased investment in bicycle and pedestrian infrastructure including: • Becoming compliant with ADA by 2037 • Improve pedestrian facilities on 100-150 miles of roadway and at 200-250 intersections • Add over 150 miles of bicycle lanes and 20 miles of separated bicycle facilities in urban areas • Add 10-15 miles of improvements along US bicycle routes in rural areas
Reduce greenhouse gas emissions from the state's transportation sector.	Highway Mobility Pedestrian and Bicycle	The MnSHIP investment direction includes several investments that promote non-polluting modes such as bicycling and walking as well as lower emissions modes such as carpooling (E-ZPass lanes) and transit
Accomplish these goals with minimal impact on the environment.	Climate Resilience	Majority of trees on construction projects replaced and 100-200 miles of roadway with new or improved green infrastructure

OLMSTEAD PLAN

The Minnesota Olmstead Plan states that "Transportation is a key aspect in an individual's independence and quality of life. Transportation is also part of a community's foundation and recognizes the importance, significance and context of place— not just as destinations, but also where people live, work, learn and enjoy life regardless of socioeconomic status or individual ability."[12] The Olmstead Plan goes on to state that MnDOT in conjunction with Department of Human Services will integrate the Olmstead principles in the state's transportation system. MnDOT can do this by continuing to provide accessibility improvements in the right-of-way and improving transit access and ridership. MnSHIP maintains MnDOT's commitment to achieving substantial compliance with ADA including at rest areas. Additionally, Minnesota can ensure that transportation is as integrated as possible and that transportation allows people with disabilities to participate in their communities.

TRIBAL CONSULTATION

Beyond the federal requirement to consult with Tribes, Minnesota Executive Order 19-24 directs MnDOT to develop and maintain ongoing consultation with the 12 federally recognized sovereign governments located in Minnesota related to each area where MnDOT's work intersects with Minnesota Tribal Nations.[13] See later in this document section "MnDOT Policies & Initiatives" more about Tribal consultation.

[12] Minnesota Olmstead Implementation Office, "Putting the Promise of *Olmstead* into Practice: Minnesota's 2013 Olmstead Plan, Olmstead Implementation Office, revised April 2021, https://mn.gov/olmstead/assets/2021-04-26-mn-olmstead-plan-revision_R_tcm1143-509266.pdf.

[13] "Affirming the Government to Government Relationship between the State of Minnesota and Minnesota Tribal Nations: Providing for Consultation, Coordination, and Cooperation," Executive Order 19-24, Tim Walz, Governor of the State of Minnesota, April 4, 2019, https://mn.gov/governor/assets/2019_04_04_EO_19-24_tcm1055-378654.pdf.

PLAIN LANGUAGE

All state agencies must communicate using plain language. Plain language is communication that an audience can understand the first time they read it or hear it. The goal of using plain language is to provide Minnesotans better state services by reducing confusion, saving time and improving customer satisfaction.[14]

In MnSHIP, MnDOT has attempted to use language commonly understood by the public. At times this is difficult as there is transportation terminology that cannot be easily replaced by common terms. Despite this challenge, MnDOT has tried to present information in a format that is easy-to-find and easy-to-understand.

MNSHIP LEGISLATIVE REQUIREMENTS

In addition to the over-arching state and federal long-range planning requirements, the Minnesota legislature has established specific requirements related to the content of MnSHIP (Minnesota statute 174.03, Subd. 1c). Within one year of completion of the SMTP, MnDOT is required to complete MnSHIP. The legislative requirements for MnSHIP and the respective location in the plan document are shown below in Figure E-3.

FIGURE E-3: MNSHIP LEGISLATIVE REQUIREMENTS

MINNESOTA STATUTES FOR MNSHIP (SECTION 174.03, SUBD. 1C)	LOCATION IN MNSHIP
• Incorporates performance measures and targets for assessing progress and achievement of the state's transportation goals, objectives and policies identified [in this statute] for the state trunk highway system and those goals, objectives and policies established in the Statewide Multimodal Transportation Plan. Performance targets must be based on objectively verifiable measures, and address, at a minimum, preservation and maintenance of the structural condition of state highway bridges and pavements, safety and mobility	• Chapter 2 • Chapter 4
• Summarizes trends and impacts for each performance target over the past five years.	• Chapter 2
• Summarizes the amount and analyzes the impact of the department's capital investments and priorities over the past five years on each performance target, including a comparison of prior plan projected costs with actual costs.	• Chapter 2 • Appendix E
• Identifies the investments required to meet the established performance targets over the next 20-year period.	• Chapter 4
• Projects available state and federal funding over the 20-year period, including any unique, competitive, time-limited, or focused funding opportunities.	• Chapter 3 • Appendix C
• Identifies strategies to ensure the most efficient use of existing transportation infrastructure, and to maximize the performance benefits of projected available funding.	• Chapter 6 • Chapter 8
• Establishes investment priorities for projected funding which must:	• Chapter 6

[14] "Implementing Plain Language in the Executive Branch," Executive Order 14-07, Mark Dayton, Governor of the State of Minnesota, March 4th, 2014, https://www.leg.mn.gov/archive/execorders/14-07.pdf.

MINNESOTA STATUTES FOR MNSHIP (SECTION 174.03, SUBD. 1C)	LOCATION IN MNSHIP
○ provide for cost-effective preservation, maintenance and repair to address the goal under section 174.01, subd. 2 (state of good repair) in a manner that aligns with other goals in that section ○ As appropriate, provide a schedule of major projects or improvement programs for the 20-year period ○ Identify resulting projected costs and impact on performance measures	• Capital Highway Investment Plan
• Identifies those performance targets identified under clause (1) not expected to meet the target outcome over the 20-year period together with alternative strategies that could be implemented to meet targets.	• Chapter 7 • Chapter 8

PREVIOUS FIVE-YEAR CAPITAL INVESTMENT ANALYSIS

As a part of state legislative requirements, MnSHIP must summarize the amount and analyze the impact of the department's capital investments and priorities over the past five years on performance targets, including a comparison of prior plan projected costs with actual costs. The five-year investment lookback analysis covers fiscal years 2018-2022.

FISCAL YEARS 2018 THROUGH 2022

Starting with the 2013 Minnesota 20-Year State Highway Investment Plan, MnDOT has tracked spending on state road construction projects in ten investment categories. In 2017, MnDOT added four additional categories into the investment direction: facilities, jurisdictional transfer, freight and small programs. Figure E-4 compares the planned investment by category in years 2018 to 2022 in the 2017 MnSHIP compared to the actual investment in those years.

FIGURE E-4: COMPARISON BETWEEN PLANNED AND ACTUAL INVESTMENT IN FISCAL YEARS 2018 TO 2022

Investment Category	Planned Investment	Actual Investment
Pavement Condition	**$1.84 B**	**$1.87 B**
Bridge Condition	**$680 M**	**$760 M**
Roadside Infrastructure	**$500 M**	**$600 M**
Jurisdictional Transfer	**$9 M**	**$7 M**
Facilities	**$6 M**	**$16 M**
Traveler Safety	**$220 M**	**$350 M**
Twin Cities Mobility	**$310 M**	**$170 M**
Greater Minnesota Mobility	**$13 M**	**<$1 M**
Freight	**$80 M**	**$70 M**
Bicycle Infrastructure	**$50 M**	**$60 M**

Investment Category	Planned Investment	Actual Investment
Accessible Pedestrian Infrastructure	**$110 M**	**$130 M**
Regional and Community Improvement Priorities	$150 M	$300 M
Project Delivery	$720 M	$1.0 B
Small Projects	$60 M	$30 M
Total	$4.75 B	$5.38 B

From 2018 to 2022, the total investment was higher than what was planned. This is due to additional funding from the legislature for the Corridors of Commerce program. The state legislature created the Corridors of Commerce program in 2013. In 2017 and 2018, MnDOT received substantial funding for this program after the completion of the 2017 MnSHIP. MnDOT delivered approximately $800 million worth of Corridors of Commerce projects between 2018 and 2022. The additional funds were primarily spent on Bridge Condition, Roadside Infrastructure, Traveler Safety, Regional and Community Improvement Priorities and Project Delivery.

Project Delivery was the category that increased the most. Planned project delivery totals are based on an expected percentage of the entire construction program. This was set at 16% for planning purposes in the 2017 MnSHIP, but the actual number (18%) was higher than expected over this period. Over the last five years, MnDOT has incurred additional project delivery costs to deliver more complex projects, like the Twin Ports Interchange in Duluth and Corridors of Commerce projects, which required more project delivery expenses. In addition, the program itself was larger which required more funds to deliver the increased construction program.

The only categories that saw less investment than planned were Twin Cities Mobility and Greater Minnesota Mobility. Investments in Greater Minnesota Mobility were planned to begin in 2022. Investments in this category were delayed to 2023 and later. The additional investment in Corridors of Commerce projects balances out the reduced investment in mobility projects as they have similar project goals and outcomes.

PERFORMANCE ANALYSIS

PAVEMENT CONDITION MEASURES

A focus on pavement investment in the last two plans and an increase in funding has led to steadily improving condition on all pavement systems over the past five years. Current condition is meeting performance targets on all systems for percent good and percent poor.

FIGURE E-5: PAVEMENT IN POOR CONDITION FROM 2018-2022

Measures	Target	2018	2019	2020	2021	2022
Interstate Poor Ride Quality (RQI)	**2%**	1.2%	1.3%	0.3%	0.4%	0.5%
Other NHS Poor Ride Quality (RQI)	**4%**	1.7%	1.4%	0.6%	0.5%	0.5%
Non-NHS Poor Ride Quality (RQI)	**8%**	5.7%	6.2%	2.6%	2.0%	1.0%

FIGURE E-6: PAVEMENT IN GOOD CONDITION FROM 2018-2022

Measures	Target	2018	2019	2020	2021	2022
Interstate Good Ride Quality (RQI)	**70%**	82.8%	81.5%	87.0%	92.5%	92.2%
Other NHS Good Ride Quality (RQI)	**65%**	72.1%	73.8%	79.9%	82.2%	83.1%
Non-NHS Good Ride Quality (RQI)	**60%**	67.0%	65.4%	72.2%	77.2%	77.5%

BRIDGE CONDITION MEASURES

Over the past five years, bridge investments were higher than what was planned in the 2017 MnSHIP. Despite this increased investment, the number of bridges in poor condition on the NHS has increased and is not meeting its target. The percent of non-NHS bridges in poor condition has increased as well but is currently meeting its target.

FIGURE E-7: BRIDGES IN POOR CONDITION FROM 2018-2022

Measures	Targets	2018	2019	2020	2021	2022
NHS Bridges in Poor Condition	**5%**	1.0%	3.3%	3.1%	6.3%	6.3%
Non-NHS Bridges in Poor Condition	**8%**	3.9%	3.1%	3.8%	4.4%	4.2%

TRAVELER SAFETY MEASURES

While traffic fatalities have generally declined in recent years, variables like weather and driver behavior make it difficult to tie the outcome directly to the investment in new safety improvements. However, through engineering improvements and non-engineering strategies, traffic fatalities had been decreasing over time prior to the pandemic. MnDOT and the Department of Public Safety have invested in the Towards Zero Death program which includes investment in non-engineering strategies including education, enforcement, and emergency response. In 2020 and 2021, there was a sharp increase in traffic fatalities. Due to the COVID-19 pandemic, 2020 and 2021 are unique years, greatly reducing vehicles on our roadways and making it difficult to measure multiyear trends. However, this sharp increase in traffic fatalities indicates that much more still needs be done to accomplish the goal of zero traffic fatalities on Minnesota roads.

FIGURE E-8: TRAFFIC FATALITIES ON MINNESOTA ROADWAYS FROM 2018-2022

Measure	2018	2019	2020	2021	2022	2025 Target
All Traffic Fatalities	381	364	394	488	444	<225
Non-Motorized Traffic Fatalities	48	52	60	55	64	0

HIGHWAY MOBILITY

Investment in Twin Cities Highway Mobility has played a part in managing the growth of congestion on the state highway system. In 2018 and 2019, ongoing significant construction projects along Interstate 35W likely led to increases in congestion on the overall system. In 2020, the COVID-19 pandemic led to greatly reducing vehicles on our roadways and freeway congestion. Since 2020, congestion has increased but is still below pre-pandemic levels.

FIGURE E-9: CONGESTION ON TWIN CITIES FREEWAYS FROM 2018-2022

Measure	2018	2019	2020	2021	2022
Twin Cities Freeway Congestion	24.2%	24.4%	0.9%	5.8%	13.7%

MnDOT also tracks reliability on the NHS. Travel time reliability is important for the public and freight operators. For individual travelers, reliability may dictate what mode or travel route to use, or it may impact departure times. It is also a required federal measure. Figure x shows reliability on the Interstate and Other NHS since 2018. Due to the COVID-19 pandemic, reliability considerably improved in 2020 and has remained well above the target of 90% reliable.

FIGURE E-10: TRAVEL TIME RELIABILITY ON THE INTERSTATE AND NHS, 2018-2022

Measure	Target	2018	2019	2020	2021	2022
Interstate Reliability	90%	81.9%	81.0%	99.0%	94.4%	93.8%
Other NHS Reliability	90%	90.0%	88.8%	97.0%	96.1%	94.4%

FREIGHT MEASURES

Truck Travel Time Reliability Index (TTTRI) is a performance measure that MnDOT monitors and is a required federal performance measure. TTTRI measures the variation in commercial truck travel times on the Interstate system. An index value of 1 is the lowest possible score and indicates the highest level of travel reliability. MnDOT's target is 1.5. In 2022, the most recent data available, Minnesota's TTTRI was 1.32. The COVID-19 pandemic caused fewer people to be on the road and resulted in lower TTTRI for 2020 and 2021 before picking up in 2022. However, the 2022 TTRI is still below pre-pandemic levels.

FIGURE E-11: TRUCK TRAVEL TIME RELIABILITY, 2018-2022

Measure	Target	2018	2019	2020	2021	2022
Truck Travel Time Reliability	1.5	1.44	1.48	1.21	1.24	1.32

ACCESSIBLE PEDESTRIAN MEASURES

Accessible Pedestrian Infrastructure investments have mainly targeted bringing existing pedestrian infrastructure into compliance with the Americans with Disabilities Act (ADA). Figure x shows the compliance rates of sidewalks, curb ramps, and accessible pedestrian signals. Increased investment from the last plan has steadily increased pedestrian infrastructure compliance with ADA. MnDOT is on track to meet its target of substantial compliance by 2037.

FIGURE E-12: PEDESTRIAN INFRASTRUCTURE COMPLIANCE WITH ADA, 2017-2021

Measures	Target	2017	2018	2019	2020	2021
Curb Ramp Compliance	**100%**	42.0%	51.7%	52.2%	57.0%	61.0%
Sidewalk Compliance	**100%**	56.0%	60.0%	62.0%	63.0%	66.0%
Signals Compliance	**100%**	59.0%	65.0%	70.0%	71.0%	76.0%

MNDOT POLICIES & INITIATIVES

MnDOT has adopted policies and initiatives that guide the direction of the agency. The Complete Streets and Tribal Nations Government-to-Government policies expand upon state and federal requirements to create a comprehensive approach to the development of MnSHIP.

COMPLETE STREETS

MnDOT's Complete Streets policy commits the department to addressing the safety and accessibility needs of users of all ages and abilities.[15] MnDOT must follow a complete streets approach in all stages of planning, scoping, design, construction, operation and maintenance activities. Complete streets consider the needs of pedestrians, bicyclists, transit users, motorists, commercial vehicles and emergency vehicles moving along and across roads, intersections and crossings. The approach is sensitive to local context and recognizes that needs vary across urban, suburban and rural settings.

MnSHIP sets investment targets for multimodal project components necessary to achieve complete streets goals. The MnSHIP investment direction increased investment for pedestrian and bicycle infrastructure on state highways which should allow for more multimodal improvements on MnDOT projects. It also increased investment for safety improvements to address the safety of all highway users, including pedestrians and bicyclists.

TRIBAL CONSULTATION

MnDOT seeks to foster and facilitate positive government-to-government relations between MnDOT and all federally recognized Minnesota Tribal Nations. MnDOT requires that the principles of the *Minnesota Tribal Nations* policy are considered at all phases of planning and project development in the establishment, development, operation and maintenance of a comprehensive, integrated and connected multimodal transportation system.[16]

To be consistent with Minnesota Executive Order 19-24, MnDOT concentrates on three focus areas:

- Transportation System
- Employee Training and Outreach
- Additional Resources

Within the Transportation System focus area, planning is identified. Specifically, MnDOT must employ early, continuous and meaningful involvement of the public and the full range of affected stakeholders throughout its planning processes and must reach out to populations who may be under-represented or under-served by the transportation system. Additionally, Tribal Nation interests will be addressed using transparent, effective and project appropriate public involvement processes. Tribal engagement occurs through consultation, collaboration and coordination.

[15] Minnesota Department of Transportation, "Complete Streets Policy OP004," Office of Transportation System Management, revised May 20, 2016, http://www.dot.state.mn.us/policy/operations/op004.html.

[16] Minnesota Department of Transportation, "Minnesota Tribal Nations Government-to-Government Relationship with MnDOT AD005," Office of Government Affairs, effective February 25, 2014, http://www.dot.state.mn.us/policy/admin/ad005.html#:~:text=Policy%20statement,-The%20Minnesota%20Department&text=MnDOT%20requires%20that%20the%20principles,and%20connected%20multimodal%20transportation%20system.

- **Consultation** is government-to-government communication in a timely manner by all parties about a proposed or contemplated decision to secure meaningful tribal input and involvement in the decision-making process and to advise the tribe of the final decision and provide an explanation.
- **Collaboration** is when all parties involved in carrying out planning and project development work together in a timely manner to achieve a common goal or objective.
- **Coordination** is when each party shares and compares in a timely manner its transportation plans, programs, projects and schedules with the related plans, programs, projects and schedules of the other parties; and adjusts its plans, programs, projects and schedules to optimize the efficient and consistent delivery of transportation projects and services.

For this update of the MnSHIP, MnDOT engaged with Tribal Nations through a government-to-government process. Tribal Nations were asked to provide tribal transportation plans as part of the planning review process. To ensure Tribal Nations interests are included in these high-level decisions, Minnesota Indian Affairs Council helped to designate representatives to serve on plan advisory committees (see Appendix A – Acknowledgments). Three tribes participated in staff-to-staff coordination meetings: Bois Forte, Prairie Island Indian Community and White Earth Nation. Additionally, staff presented to the Advisory Council for Tribal Transportation a key decision points: project start, public launch, draft investment direction development and public comment period. More details about coordination and consultation with Tribal Nations can be found in Appendix B – Engagement Summary.