DEPARTMENT OF TRANSPORTATION

10-Year Capital Highway Investment Plan 2020 - 2029

MinnesotaGO
A Collaborative Vision for Transportation

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PURPOSE OF 10-YEAR CAPITAL HIGHWAY INVESTMENT PLAN

The 10-Year Capital Highway Investment Plan is updated annually to communicate MnDOT's proposed capital investments for the next ten years. It serves as an annual check-in during MnDOT's 20-Year State Highway Investment Plan update cycles. MnSHIP was last fully updated in January 2017. An adjustment to the investment direction was made in February 2019 to reflect the additional transportation funding from the 2017 and 2018 Legislative Sessions. The annual CHIP also creates the opportunity to compare investments to the investment guidance established in MnSHIP, ensuring accountability. The primary objectives of the CHIP are to:

- Detail MnDOT capital investments over the next ten years on the state highway network
- Compare planned and programmed projects with the investment priorities established in MnSHIP, and explain any change in direction or outcomes
- Facilitate coordination between MnDOT districts and local units of government on future investments
- Improve the transparency of MnDOT's proposed capital investment and decision-making

The CHIP includes projects in two time periods:

- Years 5-10 which represent MnDOT's planned projects
- Years 1-4, called the State Transportation Improvement Program, which represent projects MnDOT selected for funding and committed to delivering

Selecting projects on the state highway system is an annual process. MnDOT starts identifying potential projects 10 years in advance. MnDOT district staff work each year with MnDOT central office and specialty office staff to complete a 10-year list of projects for each district on the state highway system. MnDOT then combines the districts' project lists into the 10-Year Capital Highway Investment Plan.

MnSHIP is MnDOT's vehicle for deciding and communicating capital investment priorities for the state highway system. It is updated every five years.

Each year MnDOT staff develops investment guidance to ensure that collectively MnDOT is achieving the outcomes established in its highway investment document, MnSHIP.

Notable Changes from the Previous CHIP

There were three notable changes from the 2019-2028 CHIP. In early 2019, MnDOT adjusted the MnSHIP investment direction to reflect additional revenue and changes to revenue projections which occurred during the 2017 and 2018 Legislative Sessions. Also new for this year, the projects included in the 2020-2029 CHIP reflect the MnDOT's new project selection policy. New Corridors of Commerce projects have also been added with funding provided to the program during the 2017 and 2018 Legislative Sessions.

IMPACT OF 2017 AND 2018 LEGISLATIVE SESSIONS

Since the 20-year Minnesota State Highway Investment Plan was last updated in 2017, the Minnesota Legislature provided additional funding for state highway construction projects. In the 2017 Legislative Session, MnDOT received $804 million for state road construction

from additional Trunk Highway bonding authority and a transfer from the State's General Fund to the Highway Use Tax Distribution Fund, from which MnDOT receives a portion for state road construction. This additional funding was passed after the adoption of the 2018-2037 Minnesota State Highway Investment Plan in January 2017. Therefore, it was not reflected in the plan's final investment direction. The Legislature also authorized Trunk Highway bonding and funds for the Corridors of Commerce program in both the 2017 and 2018 sessions.In February 2019, MnDOT adjusted the MnSHIP investment direction to account for this additional revenue. The 2020-2029 CHIP investments will be compared to the adjusted MnSHIP investment direction.

PROJECT SELECTION POLICY

In 2017, the Minnesota Legislature directed the Minnesota Department of Transportation to develop and implement a new transparent and objective project selection policy. MnDOT adopted the new project selection policy in November 2018 and implemented the policy during the development of the 2020-2029 CHIP. State highway projects in the CHIP this year identify the project score and the project selection program it was selected from. There is an exception for projects which were selected before the implementation of the project selection policy. Projects which were selected and included in the 2019-2022 STIP do not have a score listed. More information on the project selection policy can be found here: http://www.dot.state.mn.us/projectselection/.

CORRIDORS OF COMMERCE

The 2013 Minnesota Legislature created the Corridors of Commerce program in order to provide additional highway capacity on segments where there are currently bottlenecks in the system, to improve the movement of freight, and reduce barriers to commerce. Corridors of Commerce is a legislative program with project selection criteria separate from the MnSHIP investment direction. It is also considered to be funding on top of MnDOT's regular program of projects. In 2018, MnDOT selected Corridors of Commerce projects with funding authorized by the Legislature in 2017. MnDOT held a public recommendation period for projects in early 2018 and selected four projects for funding (**Figure 1**). MnDOT selected an additional three projects in late May with additional funding authorized by the Legislature during the 2018 legislative session (**Figure 2**). The projects selected for funding are listed in the two tables below.

Figure 1: 2018 Selected Corridors of Commerce Projects

GEOGRAPHIC REGION	TRUNK HIGHWAY	PROJECT DESCRIPTION
Greater Minnesota	US Highway 169	In Elk River, from Hwy 101 to 197th Avenue, convert to a freeway
Greater Minnesota	I-94	From St. Michael (Hwy 241) to Albertville (County Road 37), add an auxiliary lane
Metro District	I-494	From France Avenue to Hwy 77 eastbound and from Hwy 77 to I-35W westbound, add MnPASS lanes in both directions
Metro District	I-494/I-35W	Complete Phase 1 of the I-494/I-35W turbine interchange, northbound to westbound directional ramp

Figure 2: Additional 2018 Selected Corridors of Commerce Projects

GEOGRAPHIC REGION	TRUNK HIGHWAY	PROJECT DESCRIPTION
Greater Minnesota	US Highway 14	Expand Highway 14 from two lanes to four lanes between Owatonna and Dodge Center, completing a continuous four-lane roadway between I-35 and Rochester.
Greater Minnesota	MN Highway 23	Complete two gaps to create a continuous four-lane roadway from Willmar to St. Cloud.
Metro District	MN Highway 252 / I-94	Convert to a freeway and add MnPASS lanes Dowling to Hwy 610.

* $31 million of this project is being provided by local governments.

MnDOT Project Selection

As required by MnDOT's Project Selection Policy, MnDOT uses scores to prioritize and select highway construction projects. Project selection is the decision to fund a project and add it to the list of projects to be constructed. Selected projects are listed in the 10-year Capital Highway Investment Plan and 4- year State Transportation Improvement Program. The score assigned to candidate projects is a key factor in the project selection decision, but MnDOT may consider other factors in addition to the score. MnDOT provides a short explanation when a high scoring project is not selected or when a lower scoring project is selected. Those explanations and the full list of candidate projects considered for selection can be found here: http://www.dot.state.mn.us/projectselection/

MnDOT scores and selects stretches of pavement and specific bridges that need work typically five to ten years before construction. Once selected, MnDOT identifies and evaluates alternatives as well as 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 all of 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 development of the project.

For other types of projects, such as targeted safety improvements or major expansions of the system, MnDOT usually selects projects three to six years before construction. MnDOT manages a variety of special programs with specific objectives. Each program scores candidate projects against a set of criteria. Cities, counties and other groups may apply for funding or suggest specific project ideas for many of these programs. Examples include the Highway Safety Improvement Program, Transportation Economic Development Program, and Corridors of Commerce Program.

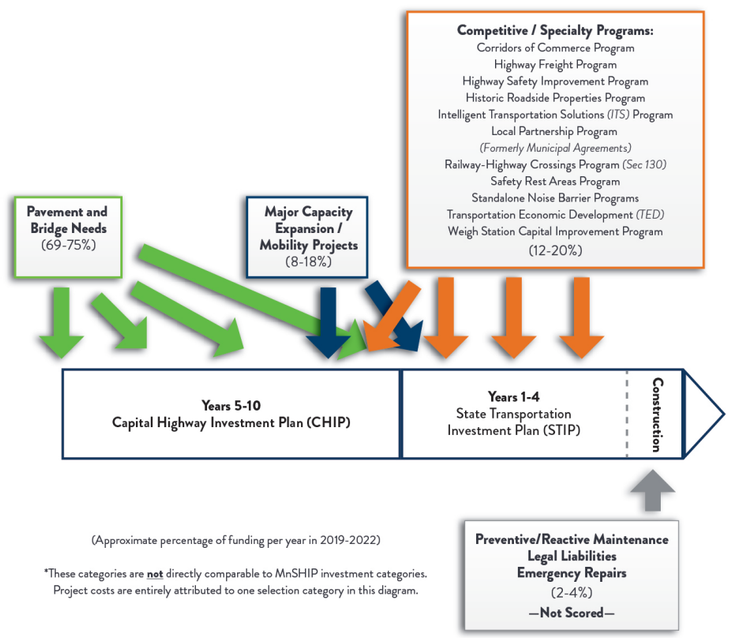
MnDOT also sets aside funding to fix and maintain things like rest areas, traffic cameras and ramp meters, historic roadside properties, truck weigh stations, noise walls, and other infrastructure. Each of these programs has its own selection process. Projects are typically scored and selected two to five years before construction.

Finally, MnDOT holds a small amount of funding to fix damage caused by each winter season or to make emergency repairs. The department selects these projects the same year they are constructed. They are not selected using numeric scoring and are not included in the CHIP.

The chart below provides an overview of the timing of MnDOT's project selection categories and programs.

Figure 3: Overview of Project Selection Timing

Program Funding Distribution



MnDOT's selection of state highway construction projects follows the policy direction established in the Statewide Multimodal Transportation Plan and the investment guidance in the 20-Year State Highway Investment Plan (MnSHIP).

MnSHIP establishes an overall distribution of expected revenue to meet the objectives, strategies and performance measures in the Statewide Multimodal Transportation Plan on the state highway system. The plan also includes expected outcomes and performance targets the agency uses to inform project selection. MnSHIP dedicates the majority of funding to fixing pavement and bridges, but also allocates funding to other categories such as safety, congestion relief, other roadside infrastructure, and improvements for pedestrians, bicyclists and freight.

Based on the investment guidance in MnSHIP and federal and state laws, MnDOT divides available and planned funding into programs and categories within which projects are selected. For projects selected within each of the agency's eight districts (see map below), MnDOT distributes anticipated funding using formulas, which consider the condition of pavement and bridges, size of the network, and use of the system within each district.

Project Selection Processes

MnDOT selects projects within categories based on types of projects and within specialty and competitive programs. Each category and program has a separate process to evaluate, prioritize and select projects.

The majority of MnDOT projects are selected within categories of project based on the guidance of the 20-year Minnesota State Highway Investment Plan. These categories include:

- Asset management: the rehabilitation and replacement of pavement, bridges and other infrastructure
- Targeted safety improvements: improvements 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, travel time reliability, the movement of freight or connections for active transportation users

ASSET MANAGEMENT PROJECTS

Projects selected under the asset management category include the rehabilitation and replacement of pavement, bridges and other infrastructure.

The majority of MnDOT highway construction projects are pavement and bridge projects. MnDOT scores these projects based on pavement and bridge needs. Projects are selected to address a primary pavement or bridge need and added to the 10-year Capital Highway Investment Plan.

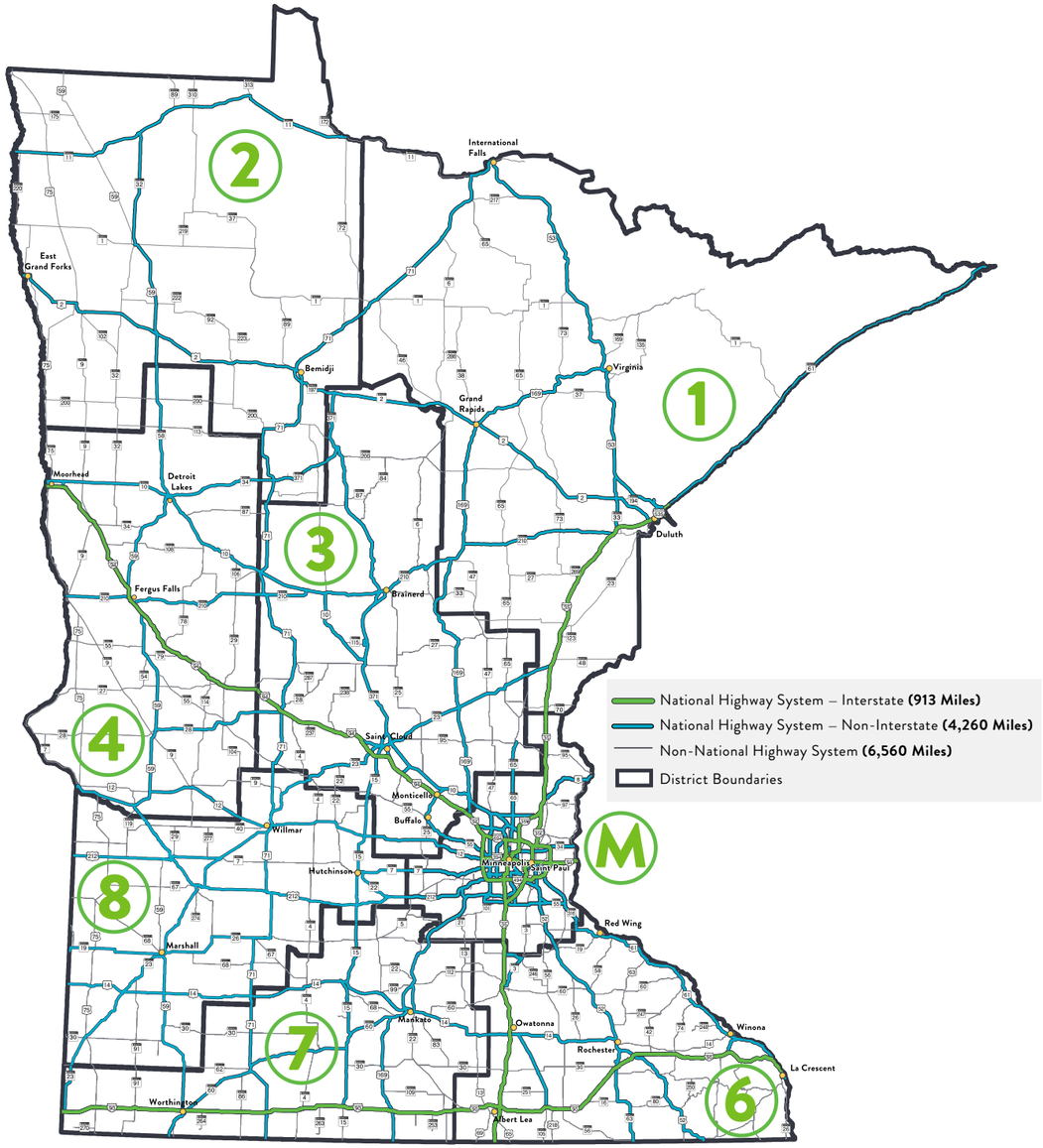
The selection of pavement and bridge projects are informed by district staff, experts from MnDOT's bridge and materials offices and two asset management software programs: the Highway Pavement Management Application and the Bridge Replacement and Improvement Management System. MnDOT's approach to managing pavement and bridge conditions is based on:

- Investment direction, performance measures and planned outcomes in MnSHIP
- National goals and performance targets for interstates and the National Highway System
- Guidance and strategies in the Transportation Asset Management Plan

Pavement and bridges on the NHS are scored and selected separately from pavement and bridges off the system. A map of the state highway system showing which roads are part of the NHS is included in Figure 4 on the next page.

Once selected, MnDOT then identifies and evaluates alternatives and other needs, legal requirements, issues and opportunities in coordination with local partners, and considers public input. In the process, pavement work may be added to a bridge project or vice versa. The department follows a context sensitive complete streets approach, which considers the needs of all users. The final project may address a substantial number of needs beyond the pavement or bridge need that precipitated the project. Projects may move years based on local coordination, project delivery, timing of other nearby construction projects, and funding shifts. The need score remains unchanged unless the project no longer addresses the precipitating need, or if the project changes to meet one of the thresholds for major capacity expansion and mobility projects.

Figure 4: State Highway System



TARGETED SAFETY IMPROVEMENTS

MnDOT evaluates options to improve safety as part of every project. Not every safety concern can always be addressed on every project, but MnDOT makes a concerted effort to address the safety of all users during the project development process.

MnDOT also manages the Highway Safety Improvement Program, which specifically targets improvements that reduce the number of fatal and serious injury crashes. In addition, the Railway-Highway Crossings Program, Intelligent Transportation Systems Program and Safety Rest Area Program each fund projects that increase and support safe travel on state highways. Other competitive programs such as the Corridors of Commerce Program, Minnesota Highway Freight Program, Local Partnership Program, and Transportation Economic Development Program include safety factors in the scoring process.

MOBILITY AND CAPACITY EXPANSION

MnDOT evaluates options to improve the safety, efficiency and functionality of the transportation system as part of every project. When developing pavement and bridge projects, MnDOT looks for opportunities to make targeted improvements that address traffic flow and travel time reliability, the movement of freight, or connections for people walking, rolling or biking. Most significant capacity expansion and mobility projects (for example, converting a signalized intersection into an interchange or adding lanes to a freeway) are now selected through competitive programs like the Corridors of Commerce Program, Minnesota Highway Freight Program or the Transportation Economic Development Program. However, MnSHIP does allocate some funding to address congestion relief and improve mobility, primarily in the Twin Cities metropolitan area.

Smaller improvements (costing less than $10 million) identified through the Congestion Management Safety Plans, Metropolitan Planning Organization Long Range Transportation Plans, or the Greater Minnesota Mobility Study do not need to a separate score if delivered as part of a pavement or bridge project. Projects initiated by cities and counties on the state highway system meeting one of the criteria above that receive competitive funding through the Metropolitan Council's Regional Solicitation or federal competitive programs like INFRA, TIGER or BUILD do not need be to be scored to receive MnDOT match funds. They are considered selected through that competitive process.

SPECIALTY AND COMPETITIVE PROGRAMS

MnDOT manages a variety of special programs with specific objectives. The programs either are established in state or federal statutes, have a limited specialized purpose and/or use a competitive application process to select projects. Cities, counties and other groups may apply for funding or suggest specific project ideas for most of these programs.

The current list of competitive programs includes:

- Corridors of Commerce Program: funds additional highway capacity on segments where there are currently bottlenecks in the system or projects that improve the movement of freight and reduce barriers to commerce.
- National Highway Freight Program: funds projects with measurable benefits for freight transportation.
- Highway Safety Improvement Program: funds projects that reduce fatal and serious injury crashes.
- Local Partnership Program (Formerly District Cooperative/Municipal Agreement Programs): funds locally initiated improvements to state highways, particularly locations where the local transportation network intersects with the state system and an improvement would benefit both systems.

- Railway-Highway Crossing Program: funds the elimination of hazards at railway-highway crossings, including the closure and consolidation of crossings, replacement of antiquated equipment, and new grade crossing controls.
- Stand Alone Noise Barriers Program: fund construction of new noise barriers along state highways in locations where no noise abatement measures currently exist and no major construction projects are currently programmed.
- Transportation Economic Development Program: funds projects that support job creation and retention as well as other improvements with measurable economic benefits.

Other current specialty programs include:

- Historic Roadside Properties Program: funds the repair, rehabilitation and preservation of roadside properties that are either listed on, or eligible for, the National Register of Historic Places.
- Intelligent Transportation Systems Program: funds the installation of new or upgrade of existing electronics, communications, or information processing systems or services to improve the efficiency and safety of the state highway system.
- Safety Rest Area Program: funds construction, repair and rehabilitation of rest areas and waysides.
- Weigh Stations Capital Improvement Program: funds the installation, repair and replacement of the physical infrastructure necessary for the enforcement of state and federal weight and size commercial motor carrier laws

Role of Public and Stakeholder Involvement

The public and stakeholders can influence MnDOT construction projects through participation in the planning, programming and project development processes.

MnDOT conducts public and stakeholder involvement when developing the Statewide Multimodal Transportation Plan, MnSHIP and other plans, which set the framework for project selection and how projects are developed. Participation in other MnDOT, metropolitan, regional and local plans and studies also shape individual projects and project prioritization.

MnDOT engages partners, stakeholders and the public in the project development process. Involvement at this stage influences the details of what is included and not included in a project, as well as the timing, delivery mechanism, and traffic mitigation of a project among other details.

While involvement in the planning process and project development offer the greatest opportunity to influence the projects MnDOT delivers, the public and stakeholders can also review and comment on MnDOT's draft project selection decisions. As part of the project selection process, MnDOT districts work with a broad range of stakeholders through Area Transportation Partnerships. These partnerships provide a collaborative decision-making process for the selection of projects that are recommended to receive federal funds. In addition, ATPs provide a local perspective on potential state-funded projects. Prior to finalizing the State Transportation Improvement Program, MnDOT posts a draft for public review and comment. Beginning with the 2020-2023 STIP, MnDOT will also post the scores for projects considered but not selected and the reasoning behind selection decisions with the drafts.

In urban areas with populations of 50,000 or more, project selection happens as part of a cooperative, continuous and comprehensive planning process between MnDOT and a Metropolitan Planning Organization. All federally funded and regionally significant MnDOT highway construction projects within MPO planning boundaries must be included or consistent with the metropolitan long-range transportation plan and included in the region's four year Transportation Improvement Program (TIP). Each MPO in the state posts their draft TIP for public review and comment.

MnDOT developed the 10-Year Capital Highway Investment Plan to improve early project stakeholder coordination. The District CHIP documents will include the scores for projects. MnDOT will also post the scores for projects considered but not selected and the reasoning behind selection decisions. The public and stakeholders can review and submit comments on the CHIP at any time.

A few competitive programs, such as the Corridors of Commerce Program, allow the public and stakeholders to submit project ideas as well as express support for specific candidate projects

Description of Investment Categories

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. MnDOT tracks capital investment in highways by investment categories which are components of projects. A single MnDOT project can include investment from multiple different investment categories. The 2017 MnSHIP identified 14 investment categories. The individual categories are separated in five major objective areas as illustrated in Figure 5. 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 widening gap between MnDOT's projected transportation revenues and investment needs.

Figure 5: Investment Category Descriptions

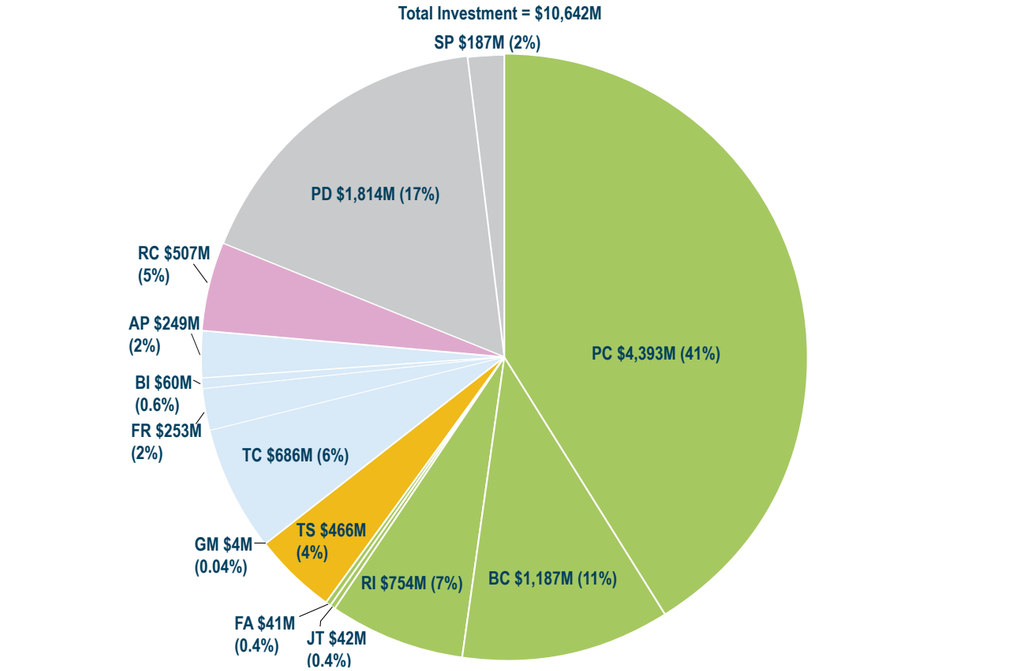
INVESTMENT CATEGORY	CATEGORY DESCRIPTION
Pavement Condition	Pavement Condition investments include overlays, mill and overlays, full-depth reclamations, and reconstructions of existing state highway pavement.
Bridge Condition	Bridge Condition investments include replacement, rehabilitation, and painting of state highway bridges. The Bridge Condition category does not include supporting elements for bridges, such as signs, pavement markings, or lighting.
Roadside Infrastructure Condition	Roadside Infrastructure Condition elements include drainage and culverts, traffic signals, signs, lighting, retaining walls, fencing, noise walls, guardrails, overhead structures, rest areas, Intelligent Transportation Systems (ITS), and pavement markings.
Jurisdictional Transfer	Jurisdictional Transfer includes the costs associated with transferring ownership of a road to or from MnDOT. Transfered roads provide the right level of service, and better meet customer expectations for maintenance, ride quality, and safety.
Facilities	Facilities investments include rehabilitation and replacement of the 52 MnDOT-owned rest areas and 10 weight enforcement operational buildings and weigh scales. The Facilities investment category does not include buildings such as district headquarters or other operational facilities.
Traveler Safety	MnDOT currently uses a combination of three types of safety investments in its effort to improve safety and reduce the number of annual fatalities and serious injuries on Minnesota roads; Proactive lower cost, high-benefit safety features; Improvements at sustained crash locations; Railway-highway crossing improvements
Twin Cities Mobility	MnDOT pursues the following strategies to address regional mobility issues in the Twin Cities metro area: **Active Traffic Management.** Operational improvements to help manage the effects of congestion, which include variable message signs (traveler information systems), freeway ramp metering, dynamic signing and re-routing, bus-only shoulder lanes, reversible lanes, dynamic speed signs, 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 freeway and intersection geometric design changes, short auxiliary lane additions, and traffic signal modifications to ease merging and exiting traffic. **MnPASS express 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. In the Twin Cities, this system is called MnPASS, which currently operates on I-394, I-35E, and I-35W. **Major capacity investments.** Projects aimed at enhancing mobility, safety, multimodal, or freight movements such as improved or new interchanges. General-purpose lanes may be considered in order to correct lane continuity or in other rare instances where MnPASS has been evaluated and found not to be feasible.
Greater Minnesota Mobility	Investments in this category include projects that improve travel time reliability for people and freight on the National Highway System outside of the Twin Cities area. The NHS is the priority network for mobility investment in MnSHIP. Typical investments include low-cost improvements such as upgraded signals, turn lanes, intersection improvements, or passing lanes.
Freight	Freight includes the movement of all goods that originate or terminate in Minnesota across all modes. Investment in this category comes from the National Highway Freight Program created in the FAST Act.
Bicycle Infrastructure	This category includes reconstructed and new infrastructure to accommodate bicyclists along or across state highways. Typical improvements include bike lanes, signage for bicycle routes, crossings over or under state highways, at-grade crossings and maintaining shoulders on identified priority routes.
Accessible Pedestrian Infrastructure	Typical improvements include projects to bring curb ramps into compliance with ADA standards, installation of accessible pedestrian signals and other pedestrian improvements across and along state highways.
Regional & Community Improvement Priorities	RCIPs are collaborative investments that respond to regional and local concerns beyond system performance needs. Typical improvements include intersection improvements, projects that support multimodal connectivity, landscape improvements, bypass or turning lanes, access management solutions, improvements that support complete streets, and regional or spot capacity projects.
Project Delivery	Project Delivery includes components of projects that are critical to ensure the timely and efficient delivery of highway projects. These components include right-of-way costs, consultant services, supplemental agreements, and construction incentives.
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.

SUMMARY OF INVESTMENT PLAN

Investments by category in MnDOT's 10-Year CHIP (2020-2029) are shown in the pie chart below (**Figure 6**).

The investment priorities in this plan are consistent with those established in MnSHIP (see Figure 9 for comparison). As in MnSHIP, investments are focused on system stewardship (pavement condition, bridge condition, roadside infrastructure condition) with a lesser mix of other investments. The individual projects in the 10-Year CHIP have been mapped and are available at MnMAP, MnDOT's online mapping application. Projects are also displayed in the District Investment Plans.

Figure 6: 10-Year Capital Highway Investments, 2020-2029



Performance Outcomes

As part of the 10-Year CHIP process, MnDOT projects performance outcomes based on planned projects. **Figure 9** displays projected performance through 2029.

With the investments in the 10-Year CHIP, MnDOT is expecting to achieve most of the results planned for in MnSHIP. Pavement Condition outcomes are in-line with those established in MnSHIP. Bridge condition is the exception. Bridge condition on the NHS and Non-NHS is projected to be worse than the anticipated outcomes in MnSHIP. While investment levels in the CHIP are comparable to MnSHIP, revised estimates of future bridge projects identified higher project costs leading to less bridges being addressed with allocated funding.

The performance outcomes in other categories are more difficult to project as they are subject to changes in the economy, driving behavior, and demographics, and are not fully the result of MnDOT investments. Given that the spending levels for these categories are similar to the levels established in MnSHIP, MnDOT expects the outcomes in these categories for the 10-Year CHIP to be similar.

PAVEMENT INVESTMENT STRATEGIES

- Increase preventive maintenance spending on the Interstate and NHS pavements to increase their life
- Use low cost preventive maintenance strategies such as crack sealing, chip seals and micro surfacing will be utilized to prolong the pavement life, as pavement conditions deteriorate these resources will be redirected towards reactive maintenance needs
- Use innovative strategies such as thin concrete overlays over bituminous to evaluate cost/benefit of alternative pavement fixes
- Continue to assess pavement condition and evaluate options to respond to those highways that display the highest needs that are cost effective and will optimize pavement life

OUTCOMES

Despite significant investment, pavement condition on the NHS and non-NHS is projected to worsen over the next ten years. Less than 2 percent of NHS interstate pavement miles will be in poor condition in 2029 MnSHIP target. Non-interstate NHS poor pavement miles will increase from 1.7 percent in 2018 to 5.1 percent in 2029, missing the 4 percent MnSHIP target. Non-NHS poor pavement miles will increase from 5.7 percent to 9.0 percent in 2029, remaining below and meeting the MnSHIP target of 10 percent (**Figure 7**).

Figure 7: MnDOT Pavement and Bridge Assets

DISTRICT	CENTERLINE MILES	NUMBER OF BRIDGES (INCLUDING BRIDGE CULVERTS)
1	1,886	545
2	1,500	353
3	1,573	419
4	1,559	324
6	1,421	841
7	1,273	468
8	1,427	356
Metro	1,093	1,284
Total	11,732	4,590

BRIDGE INVESTMENT STRATEGIES

- Strategic preventive maintenance for bridges to keep assets in good condition longer

OUTCOMES

Bridge condition on the NHS is projected to deteriorate from 1.6 percent poor in 2019 to 6.1 percent poor in 2029. Non-NHS bridges will also worsen going from 3.6 percent to 9.5 percent poor in the same time span. By 2029, NHS bridges will be well over their target of 2 percent poor while non-NHS bridges will be slightly over their target of 8 percent poor (**Figure 9**).

ROADSIDE INFRASTRUCTURE INVESTMENT STRATEGIES

- Continue to coordinate roadside infrastructure investments (culverts, guardrail, signing) with other preservation projects
- Replace infrastructure with greatest exposure to the traveling public, mostly through pavement/bridge projects

OUTCOMES

In general, the system's roadside infrastructure elements are expected to deteriorate relative to today's levels. 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 on those roads.

JURISDICTIONAL TRANSFER INVESTMENT STRATEGIES

- Leverage other dedicated funding
- Pursue turnbacks of Non-NHS roadways by working closely with local jurisdictions and optimizing funding sources
- Balance investment between the Twin Cities area and Greater Minnesota
- Identify projects in the CHIP where investments could facilitate the transfer of ownership

OUTCOMES

The Jurisdictional Transfer investment level in the CHIP In combination with the $50 million annually allocated to jurisdictional transfers through the Highway Flex Fund, investment would facilitate more transfers identified in the 2014 Minnesota Jurisdictional Realignment Project report.

The following turnbacks are programmed:

- MN Highway 253 from Bricelyn to I-90, resurface road for transfer from MnDOT to Faribault in 2020
- MN Highway 254 from County Hwy 254 Frost to I-90, resurface road for transfer from MnDOT to Faribault in 2020
- MN Highway 237 from Stearns County Highway 237 to the north ramps of I-94, transfer from MnDOT to Stearns County in 2021

FACILITIES INVESTMENT STRATEGIES

- Prioritize health- and safety-related repairs to rest areas unless replacement is warranted
- Focus investments on weigh scale mechanics and existing weigh station buildings

OUTCOMES

At the level of investment included in MnSHIP, MnDOT expects the percentage of facilities needing significant renovation or replacement to increase. Investments in rest areas and weigh stations will be reactive, increasing maintenance costs and limiting MnDOT's ability to keep many facilities in a state of good repair.

TRAVELER SAFETY INVESTMENT STRATEGIES

- Prioritize crash locations based on existing problems and the effectiveness of specific, cost effective solutions in addressing the problem
- Support local Safe Routes to School (SRTS) planning efforts
- Coordinate safety investments, as appropriate, with other preservation projects and local jurisdictions to minimize disruption to travelers

OUTCOMES

Fatalities have been reduced substantially over the past 10 years. However, Minnesota experienced an increase in fatalities from 361 in 2014 to 411 in 2015. In 2016, the number of fatalities reduced to 392, and continued down to 358 in 2017. In 2018, the number increased to 381 (**Figure 9**). While MnDOT will continue to make investments in traveler safety, the goal of TZD cannot be achieved through infrastructure improvement alone. Even full implementation of all identified safety projects may do little to prevent fatalities and serious injuries that are a result of driver behavior such as distracted or impaired driving.

GREATER MINNESOTA MOBILITY INVESTMENT STRATEGIES

- Focus investment to improve travel time reliability through low-cost, high-benefit operational improvements such as upgraded traffic signals, ITS, turn lanes and passing lanes

OUTCOMES

MnDOT will select projects based on the results of the recently completed Greater Minnesota Mobility Study, which identified locations with reliability or mobility issues on the NHS system. MnDOT will invest $13 million per year in 2022 and 2023 to complete several operational and low-cost capital improvements on the NHS.

TWIN CITIES MOBILITY INVESTMENT STRATEGIES

- Focus on investments that provide reliable congestion-free options on Twin Cities metro area corridors
- Focus on low cost spot mobility projects that provide safety benefits and reduce delays

OUTCOMES

MnDOT and the Metropolitan Council will be able to continue to invest in Twin Cities Mobility to implement the following:

- Several additional and expanded spot mobility improvements
- Completion of one to two managed lane projects

While these projects will help improve travel time reliability, it is still anticipated to worsen through 2029 relative to today due to anticipated regional growth and the related increase in mobility needs across the system.

FREIGHT INVESTMENT STRATEGIES

- System investment strategies that were identified in the recently completed Freight Investment Plan include safety related improvements and freight congestion/efficiency improvements on the NHS as well as establishing first/last mile connections to the non-NHS.
- Implement projects to address freight needs identified in the Manufacturer's Perspectives Study

OUTCOMES

MnDOT will invest Freight funding in the above areas on both critical urban and critical rural freight corridors. Nearly 20 projects have been identified in fiscal years 2020-2023, such as freight planning studies, expansion and interchange projects, and rest area improvements.

BICYCLE INFRASTRUCTURE INVESTMENT STRATEGIES

- Continue the Local Partnership Program to strategically improve the bicycle network by partnering with local units of government where possible
- Focus investments on priority network routes as identified in the District Bicycle Plans
- Support the implementation of the State Bicycle Plan and Minnesota Walks

OUTCOMES

MnDOT will continue to invest its limited bicycle infrastructure funds. Minimal funds curtail the ability to make new bicycle improvements and to maintain existing bicycle infrastructure as a part of pavement and bridge projects. Existing bicycle infrastructure will deteriorate and negatively affect the goal of promoting and increasing bicycling in Minnesota.

ACCESSIBLE PEDESTRIAN INFRASTRUCTURE INVESTMENT STRATEGIES

- Focus more investment in sidewalks, curb ramps and accessible pedestrian signals
- Make other pedestrian improvements, including eliminating gaps in the network, via complete streets via complete streets
- Continue addressing identified ADA needs in communities through standalone and preservation projects

OUTCOMES

MnDOT is committed to achieving substantial ADA compliance of the state pedestrian network by 2037. Districts will fund a range of pedestrian and ADA projects based on their needs. Investments will be primarily curb ramps, sidewalks and accessible pedestrian signals at intersections, implemented concurrently with pavement and bridge projects. MnDOT will be able to complete some stand-alone ADA improvements, focusing on complete streets and filling gaps in the sidewalk network.

REGIONAL AND COMMUNITY IMPROVEMENT PRIORITIES INVESTMENT STRATEGIES

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

OUTCOMES

MnSHIP will invest $330 million in RCIPs through 2037. Most investments will be completed through partnerships and design add-ons to existing projects. Stand-alone RCIP projects will be limited. The vast majority of improvements will be made through the TED program. With the addition of Corridors of Commerce projects, actual RCIP investment in the CHIP is higher than MnSHIP levels.

PROJECT DELIVERY INVESTMENT STRATEGIES

- Increase planning and prioritization at the District level
- Anticipate and provide funding for supplemental agreements, cost overruns, incentives, right-of-way, and consultants to support and deliver the district program

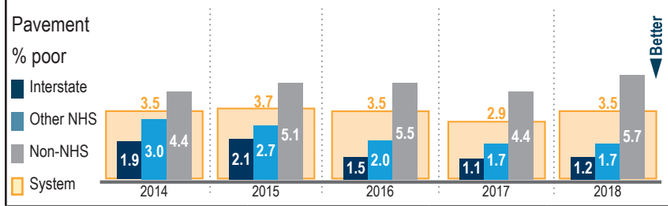
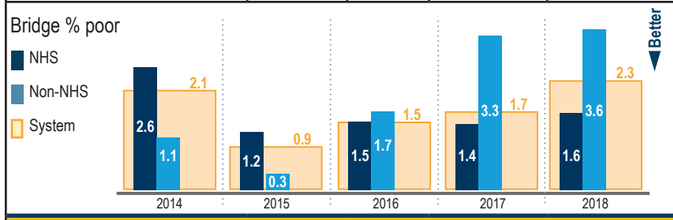
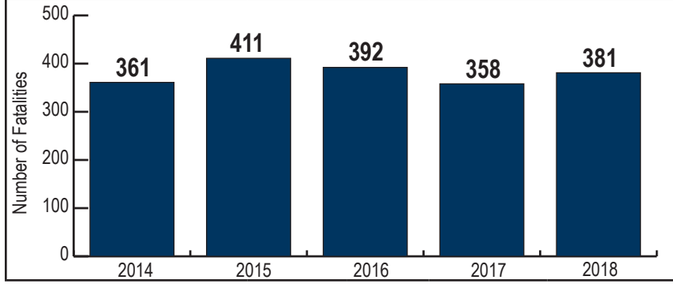
OUTCOMES

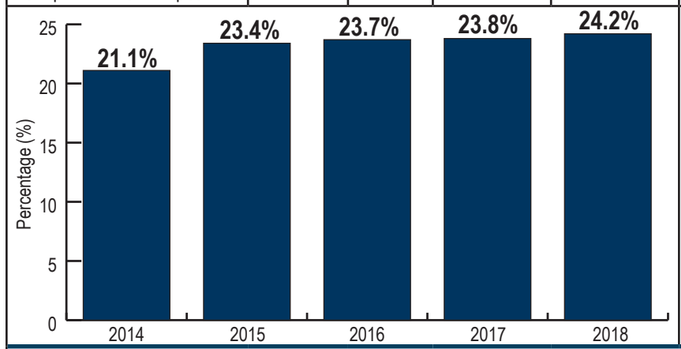
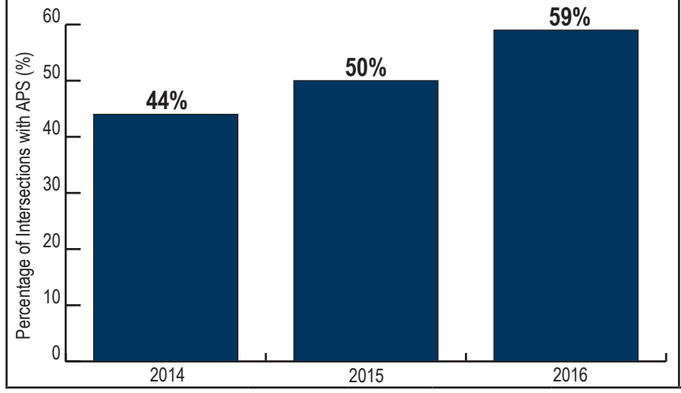
MnDOT assumes that it will continue to spend approximately 16 percent of its funds in this category. This is consistent with recent averages due to the similarity in improvement types scheduled through 2029.

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. Components of Small Programs in MnSHIP include centrally managed programs and historic property investments.

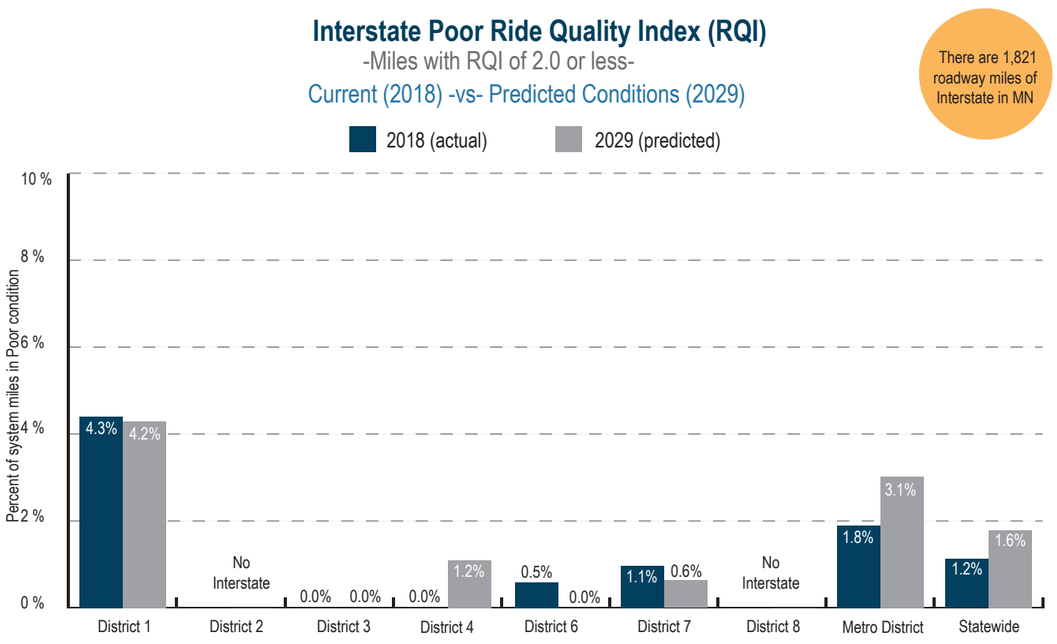
Figure 8: Investment Plan Performance Summary

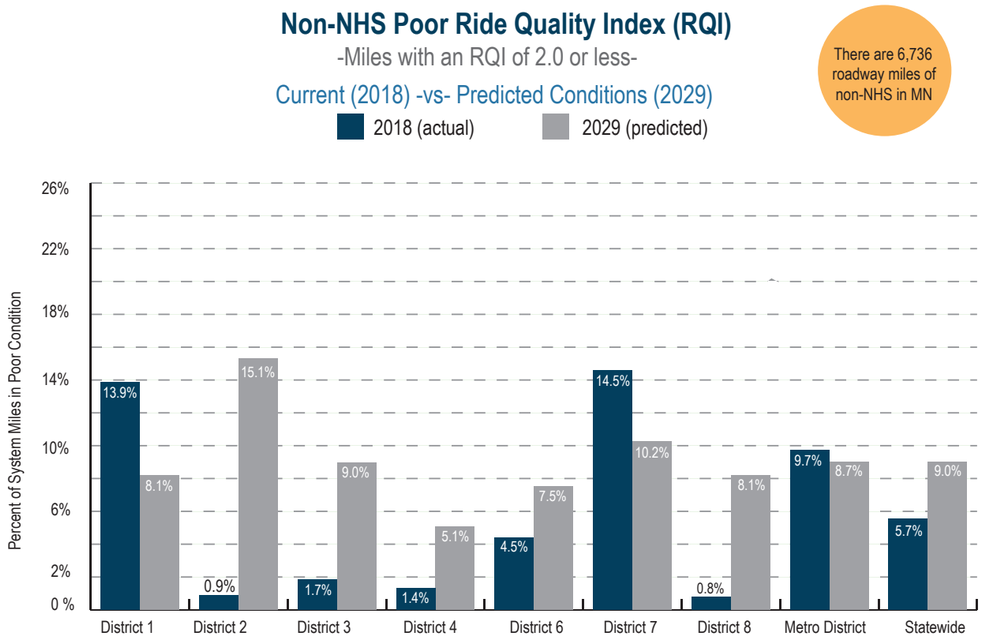
	2018 Condition	MnSHIP Target	Projected Result 2023	Projected Result 2029	10-Year Trend
System Stewardship					
Pavement Condition Interstate, % poor	1.2%	2%	▲ 2.4%	● 1.6%	Better ↔ Performance expected to continue at current levels
Pavement Condition Non-Interstate NHS, % poor	1.7%	4%	▲ 4.2%	▲ 5.1%	Better ↗ Performance expected to worsen through the full 10 years
Pavement Condition Non-NHS, % poor	5.7%	10%	● 7.7%	● 9.0%	
					The percentage of pavements in poor condition increased in 2018 on the Non-NHS and Interstate. Subsequently, the statewide system's condition declined from 2.9 percent in 2017 to 3.5 percent in 2018.
Bridge Condition: NHS, % poor	1.6%	2%	● 0.9%	⬢ 6.1%	Better ↗ NHS and Non-NHS conditions are currently meeting targets but are projected to decline significantly over the next ten years.
Bridge Condition: Non-NHS,% poor	3.6%	8%	● 2.3%	▲ 9.5%	
					The percentage of poor bridge deck area on the NHS and non-NHS has increased since 2015. The overall system poor condition percentage has increased by 1.4 percentage points between 2015 and 2018.
Traveler Safety					
Minnesota Traffic Fatalities: All state and local roads	381	300 by 2020	N/A	N/A	Better ↘ Performance expected to improve, but at a slower rate
					Fatalities resulting from vehicle crashes increased sharply from 361 in 2014 to 411 in 2015. In 2016 and 2017, fatalilties decreased-- to a new low of 358 in 2017. However, in 2018, fatalities jumped to 381. MnDOT anticipates fatalities will decline from 2018 levels but at a slower rate due to a reduction in Traveler Safety funding and increasing vehicle travel.

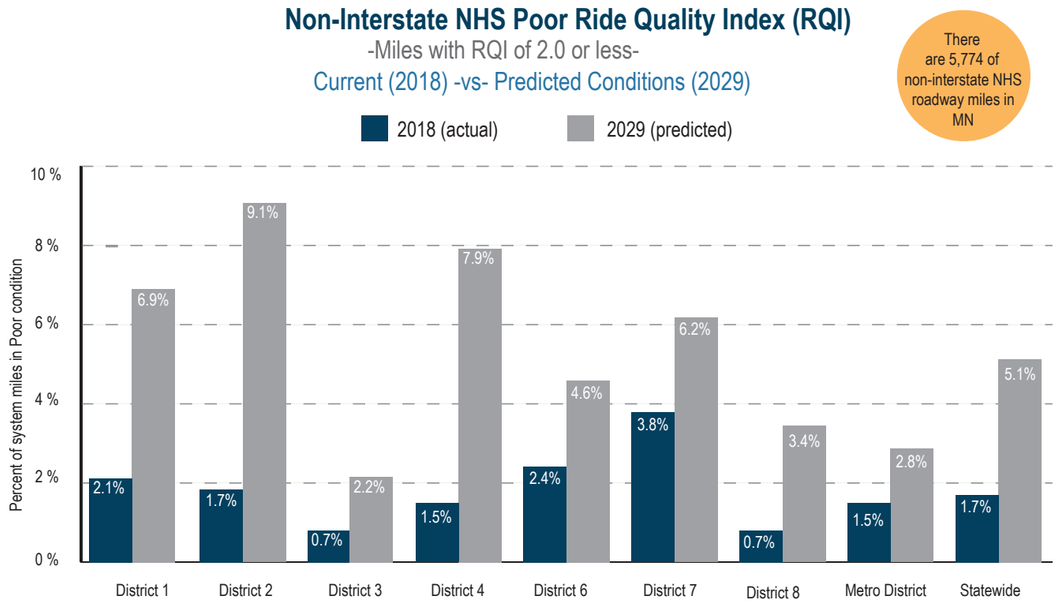
	2018 Condition	MnSHIP Target	Projected Result 2023	Projected Result 2029	10-Year Trend
Critical Connections					
Twin Cities Mobility: % of metro freeway miles below 45 mph in AM or PM peak	24.2%	Tracking Indicator	N/A	N/A	Better ↔ Performance expected to continue at current levels
					Congestion is affected by economic conditions, population growth, fuel prices and other factors that increase travel demand. Since 2014, freeway congestion has increased every year.
Pedestrians & ADA					
% of sidewalks miles in poor condition (Non-Compliant)	51% (2016)	Tracking Indicator	N/A	N/A	Better ↔ Performance expected to continue at current levels
% of curb ramp in poor condition (Non-Compliant)	65% (2016)	100%	N/A	N/A	Better ↘ Target expected to be achieved by 2037
% of state highway intersections with accessible pedestrian signals	59% (2016)	100%	▲ 70-80%	▲ 70-80%	Better ↗ Target expected to be achieved by 2037
					Accessible pedestrian infrastructure is typically addressed as part of highway reconstruction projects. As a result, the percentage of sidewalks in poor condition is likely to improve as mill and overlay projects still address ADA compliance. Accessible pedestrian signals (APS) will continue to be installed at state highway intersections as existing signals reach the end of their useful life. MnDOT anticipates achieving system-wide APS compliance by 2037.

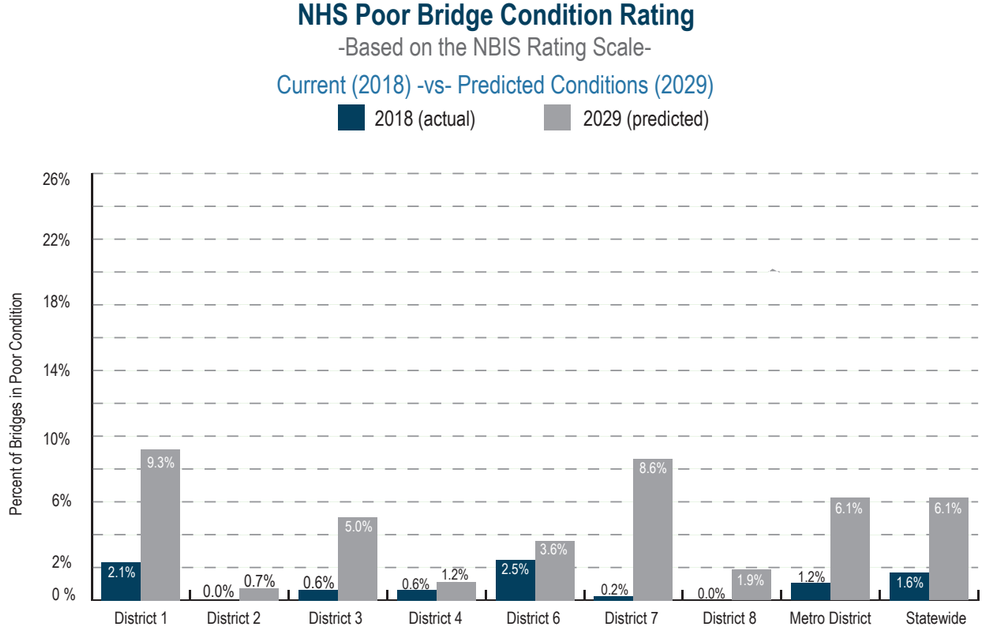
DISTRICT PERFORMANCE OUTCOMES

Figure 9: District Performance Outcomes





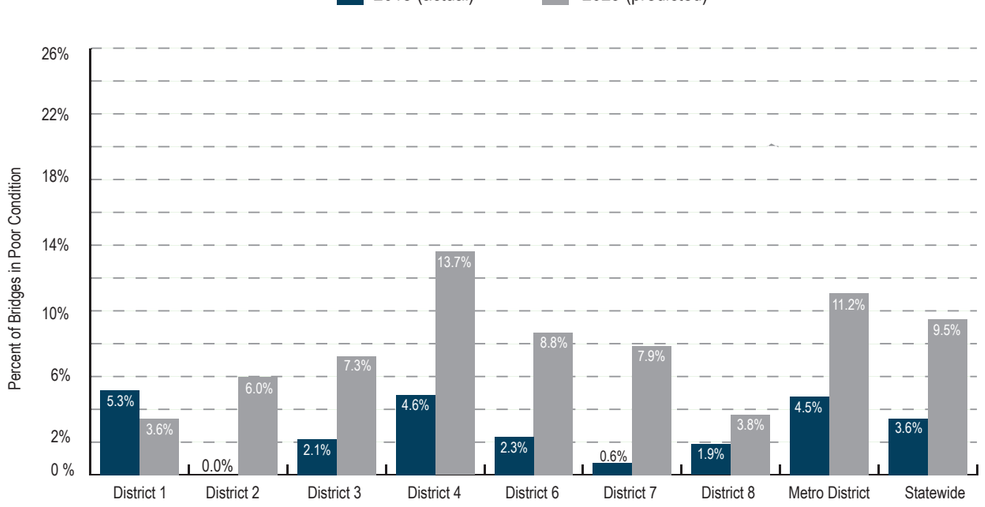




Non-NHS Bridge Condition Rating

-Based on the NBIS Rating Scale-

Current (2018) -vs- Predicted Conditions (2029)



DISTRICT PROJECT HIGHLIGHTS

MnDOT will complete many important projects during the next ten years. The following projects are highlighted for their complexity and/or their advancement of the **Minnesota GO Vision**. The years listed refer to state fiscal year, which runs July 1 - June 30th. Multi-year projects are listed in their first year of construction.

Pavement	Route	District	Year
Reconstruct Hwy 87 between Hwy 71 and Hubbard County Rd 6/Lake St in Hubbard	MN 87	2	2024
Replace concrete roadway on Hwy 2, eastbound lane from Hwy 32 (Marcoux) to 1.8 miles west of Hwy 59 (Erskine) and repair bridge 91262 over a stream, 1.0 miles west of Erskine	US 2	2	2021
Reconstruct from Wright CR 39 in Monticello to Hwy 24 in Clearwater (three-year project)	I-94	3	2020
Resurface highway east of Monticello to west of County Hwy 19	I-94	3	2025
Reclaim including spot safety improvements from Hwy 210 in Baxter to south of Nisswa	MN 371	3	2029
Complete streets reconstruction and pedestrian accessibility improvements in Frazee, from Hwy 10 to east city limits	MN 87	4	2022
Urban reconstruction project on Hwy 59 and Hwy 108 in Pelican Rapids	US 59	4	2024
Resurface road, traffic management system, drainage, signing, lighting, median barrier and ADA improvements on I94 from Hwy 120 in Oakdale to St. Croix River in Lakeland	I-94	Metro	2023
Reconstruction southbound on Hwy 52 from Hwy 60 to 2.2 miles south of Hwy 19. It will include six bridge replacements, access management, intersection improvements, and construction of a new interchange at Hwy 52/Hwy 57 near Hader	US 52	6	2021
Repaving and ADA improvements on Hwy 60 from Hwy 52 to Hwy 63 near Zumbro Falls. Also includes replacing three bridges	MN 60	6	2022
Reclaiming pavement, resurfacing, and ADA improvements for Hwy 60 from the junction with Hwy 14 east of Mankato to the junction with Hwy 13 at Waterville	MN 60	7	2021
Resurface road on the north side of Mankato to Minnesota River bridge at St. Peter. The recently completed Highway 22 Corridor Study will help inform this project's lane configuration, bicycle and pedestrian connectivity, etc.	MN 22	7	2024
Urban reconstruction in the City of Worthington. The City and MnDOT have initiated a public engagement process to create a long-term vision in the community	US 59	7	2027

Pavement	Route	District	Year
Resurface Hwy 40 from the E jct of US Hwy 75 to Western Ave and from the N jct of Hwy 40 and US Hwy 75 to 8th St in Madison	MN 40/ US 75	8	2023
Reconstruction of Hwy 19 in Downtown Marshall	MN 19	8	2025

Bridge	Route	District	Year
Repair or replace Blatnik Bridge between Duluth and Superior Wisconsin over the St. Louis River	I-535	1	2028
Redecking of I-394 over Dunwoody blvd, including rehab of nine adjacent bridges	I-394	Metro	2026
Replace four bridges and rehabilitate three others in Austin	I-90	6	2023

Safety	Route	District	Year
Corridor improvements in Thief River Falls. It includes reconstruction on the west side of Thief River Falls, roundabouts, a multi-use trail, new frontage roads, and drainage improvements	US 59	2	2027
Eastbound and Westbound from MN 89 to Beltrami CSAH 9, series of reduced conflict intersections to improve safety along this corridor	US 2	2	2021
Install signal and related safety improvements at CR 54 in Detroit Lakes	US 10	4	2020
Construct reduced conflict intersections at US 169/MN 65, in Nashwauk	US 169	1	2020
Construct reduced conflict intersection (J-turn) in New London on Hwy 23 and Hwy 9 and construct mid-block crossing at the high school in New London	MN 23	8	2022

Mobility	Route	District	Year
Corridors of Commerce Projects on I-494 and Hwy 252/I-94. These projects are both multi-year projects and will continue into the CHIP years.	I-494	Metro	2024

COMPARISON TO MNSHIP

Each year the 10-Year Capital Highway Investment Plan compares planned and programmed investments to the guidance established in MnSHIP. **Figure 11** shows the comparison between the 10-Year CHIP investment and the investment in corresponding years of MnSHIP (2020-2029). With the additional highway funding from the 2017 Legislative Session, MnDOT revised the MnSHIP investment direction to account of the impact of additional revenue. There are some differences between the revised MnSHIP guidance and the planned investment in the CHIP. Some of the differences to note include:

- Corridors of Commerce projects selected in 2018 are included for the first time in this CHIP. Overall investment over the next ten years is higher than planned investment due to their inclusion.
- Pavement Condition investment decreased by over $300 million compared to guidance due to several factors including revised funding estimates from legislative bonding, additional bridge project needs, and increased investment in the Local Partnership Program.
- With the decrease in Pavement Condition investment, Roadside Infrastructure, and Bicycle Infrastructure also decreased. Roadside Infrastructure and Bicycle Infrastructure investments are often made as a part of pavement projects.
- Traveler Safety investments also saw an increase compared to guidance. Most of the increase is related to Twin Port Interchange project in Duluth.
- Twin Cities Mobility investment increased due to additional mobility projects funded through the Corridors of Commerce program.
- Freight investment is under programmed in the STIP because some of the projects are on local roads and not on the state highway system.
- RCIP investment increased due to inclusion of the Corridors of Commerce projects in greater Minnesota and increased investment in the Local Partnership Program.
- Project Delivery investment increased to deliver the Corridors of Commerce projects.

Figure 10: Investment Plan Investment Comparison

INVESTMENT CATEGORY	10-YEAR CHIP	REVISED MNSHIP GUIDANCE	DIFFERENCE FROM MNSHIP	DIFFERENCE FROM MNSHIP ($ IN MILLIONS)
Pavement Condition	41.3%	46.6%	-5.3%	-$283
Bridge Condition	11.2%	10.8%	0.4%	$102
Roadside Infrastructure Condition	7.1%	8.1%	-1.0%	-$59
Jurisdictional Transfer	0.4%	0.4%	0.0%	$4
Facilities	0.4%	0.4%	0.0%	$2
Traveler Safety	4.4%	3.6%	0.8%	$107
Greater MN Mobility	0.0%	0.3%	-0.3%	-$22
Twin Cities Mobility	6.5%	5.5%	0.9%	$133
Freight	2.4%	2.8%	-0.4%	-$25
Bicycle Infrastructure	0.6%	0.7%	-0.2%	-$12
Accessible Pedestrian Infrastructure	2.4%	2.4%	-0.0%	$4
RCIPs	4.8%	1.6%	3.2%	$348
Project Delivery	17.0%	14.8%	2.2%	$327
Small Programs	1.8%	2.0%	-0.2%	-$18
TOTAL ($ IN MILLIONS)	$10,643	$10,033		$609

DISTRICT INVESTMENT COMPARISON

Figure 11 displays the investment percentages for each district over the ten year period. Each district has different needs and the mix of investment varies from district to district. MnDOT is committed to meeting performance outcomes on a statewide level but each district has the flexibility to prioritize its own projects, particularly on the non-NHS.

Figure 11: District Investment Comparison

INVESTMENT CATEGORY	1	2	3	4	6	7	8	METRO	CO	TOTAL INVESTMENT ($ IN MILLIONS)
Pavement Condition	33%	55%	51%	60%	48%	55%	47%	40%	0.1%	$4,393
Bridge Condition	29%	7%	8%	3%	12%	6%	5%	11%	0%	$1,187
Roadside Infrastructure Condition	9%	13%	7%	12%	8%	10%	8%	5%	0%	$754
Jurisdictional Transfer	0%	0%	0.1%	0%	0%	0%	0%	0%	6%	$42
Facilities	0%	0%	0%	0.1%	0%	1%	0%	0%	4%	$41
Traveler Safety	7%	6%	4%	5%	5%	5%	5%	2%	7%	$466
Greater Minnesota Mobility	0%	0.2%	0%	0.2%	0%	0.2%	0%	0%	0%	$4
Twin Cities Mobility	0%	0%	0%	0%	0%	0%	0%	19%	0%	$686
Freight	4%	0%	0%	0%	0%	0%	0%	0.1%	26%	$253
Bicycle Infrastructure	0.3%	2%	0.4%	0.6%	0.7%	1%	1%	1%	0%	$60
Accessible Pedestrian Infrastructure	2%	4%	2%	3%	2%	2%	4%	3%	0%	$249
RCIPs	0.4%	1%	12%	1%	13%	1%	15%	2%	8%	$507
Project Delivery	14%	13%	16%	14%	11%	19%	16%	17%	25%	$1,814
Small Programs	0.4%	0.1%	0%	0%	0%	0%	0%	0%	24%	$187
TOTAL INVESTMENT ($ IN MILLIONS)	$1,418	$549	$1,152	$644	$1,024	$817	$576	$3,632	$741	$10,643

REMAINING RISKS

While MnDOT tries to manage and mitigate risks to the state highway system, there are several risks which without additional funding and resources will continue to be undermanaged. Below is the list of those risks that are common across the districts.

- **Project Delivery and Coordination**: Over the next 10 years, MnDOT will be delivering more projects and several large complex projects which will require more resources to deliver and manage traffic impacts caused by construction.
- **Lack of Expansion/Modernization**: With pavement and bridge conditions expected to continue to deteriorate, MnDOT has focused majority of investment to maintain the existing state highway system. The limited investment MnDOT is able put towards expanding capacity and moderizing the state highway system is not sufficient to match the needs or expectations of stateholders and the public.
- **Urban Highway Projects**: State highway projects through urban areas tend be more costly projects to deliver because of their complexity, utilities and other infrastructure and level of required local coordination and public involvement. In many instances, these roads function both as state highways and as city streets. MnDOT is limited in the number of urban projects it can deliver over the next ten years.
- **Pavement and Bridge Condition**: Even with a majority of investment focused on repairing or reconstructing pavement and bridges, pavement and bridge conditions are predicted to worsen over the next ten years under projected funding levels.
- **Non-Pavement and Bridge Needs**: MnDOT will be unable to address all identified safety, bicyle, pedestrian, and other infrastructure needs such as culverts, lighting, or guardrail replacement, with the current level of investment.

CONTACT INFORMATION

Josh Pearson
Planning Program Coordinator
Office of Transportation System Management
Joshua.Pearson@state.mn.us
651-366-3773