

10-Year Capital Highway Investment Plan 2019 - 2028



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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 updated in January 2017. 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**.

New Money from 2017 Legislative Session

In 2017, the Legislature provided additional funding to MnDOT through statutorily transferring some existing transportation related revenues to the Highway Users Tax Distribution Fund including sales tax on auto parts, motor vehicle rental and sales tax, and motor vehicle lease sales tax. The Legislature also provided authorization for Trunk Highway bond sales. In total, MnDOT received \$164 million in Trunk Highway funds and \$640 million through bond sales. This additional funding was passed following the approval of the latest Minnesota State Highway Investment Plan. Therefore, it was not reflected in the final investment direction.

During the MnSHIP public outreach process, MnDOT asked stakeholders what their priorities would be should MnDOT receive additional funding. Stakeholders, including the public, generally agreed that any extra funding MnDOT receives for capital improvements on the state highway network should be spent maintaining and repairing MnDOT's existing assets. The next priorities were safety, congestion improvements and regional priorities. Therefore, investment priorities for this new funding were as follows:

- Long-term pavement preservation projects to improve pavement condition and remaining service life, including upscoping short-term

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.

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pavement preservation projects into long-term improvements

- Additional bridge repairs and replacements to continue to meet performance targets
- Initial investments in major urban corridor projects like I-94 from St. Paul to Minneapolis, and Twin Ports Interchange in Duluth
- Other priority investment areas that were funded below the amount that the public and stakeholders desired, such as traveler safety, rest areas, and accessible pedestrian infrastructure
- Areas identified by Districts as risks within their existing program, including main street reconstruction projects, drainage infrastructure improvements, and multi-use shoulders

Projects were selected in a similar manner as other currently programmed projects with the new funding. Asset preservation projects were chosen using the pavement, bridge or other asset management systems. Safety projects came from District Safety Plans or in response to other documented safety problems. Projects to address regional priorities were selected after consultation with regional stakeholders.

Figure 1 shows the investment breakdown of projects which were partially or completely funded with the additional legislative funding. The total investment in the figure below represents a mix of both existing funding and new funding. Some existing projects have Trunk Highway funds and were upscoped with the new funding to complete a larger, longer life improvement.

Figure 1: Investment Breakdown by MnSHIP Investment Categories for Projects with New Legislative Funding

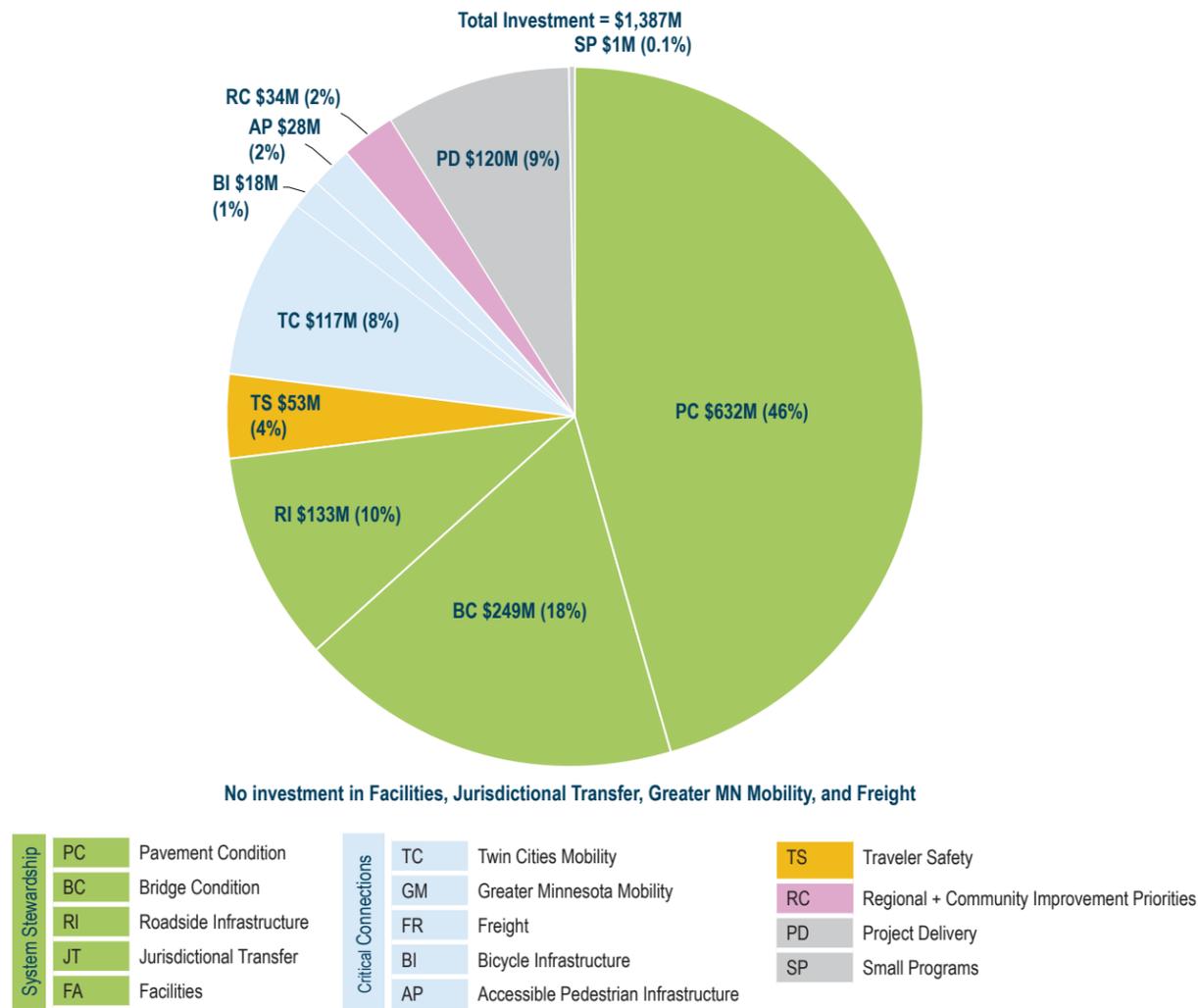
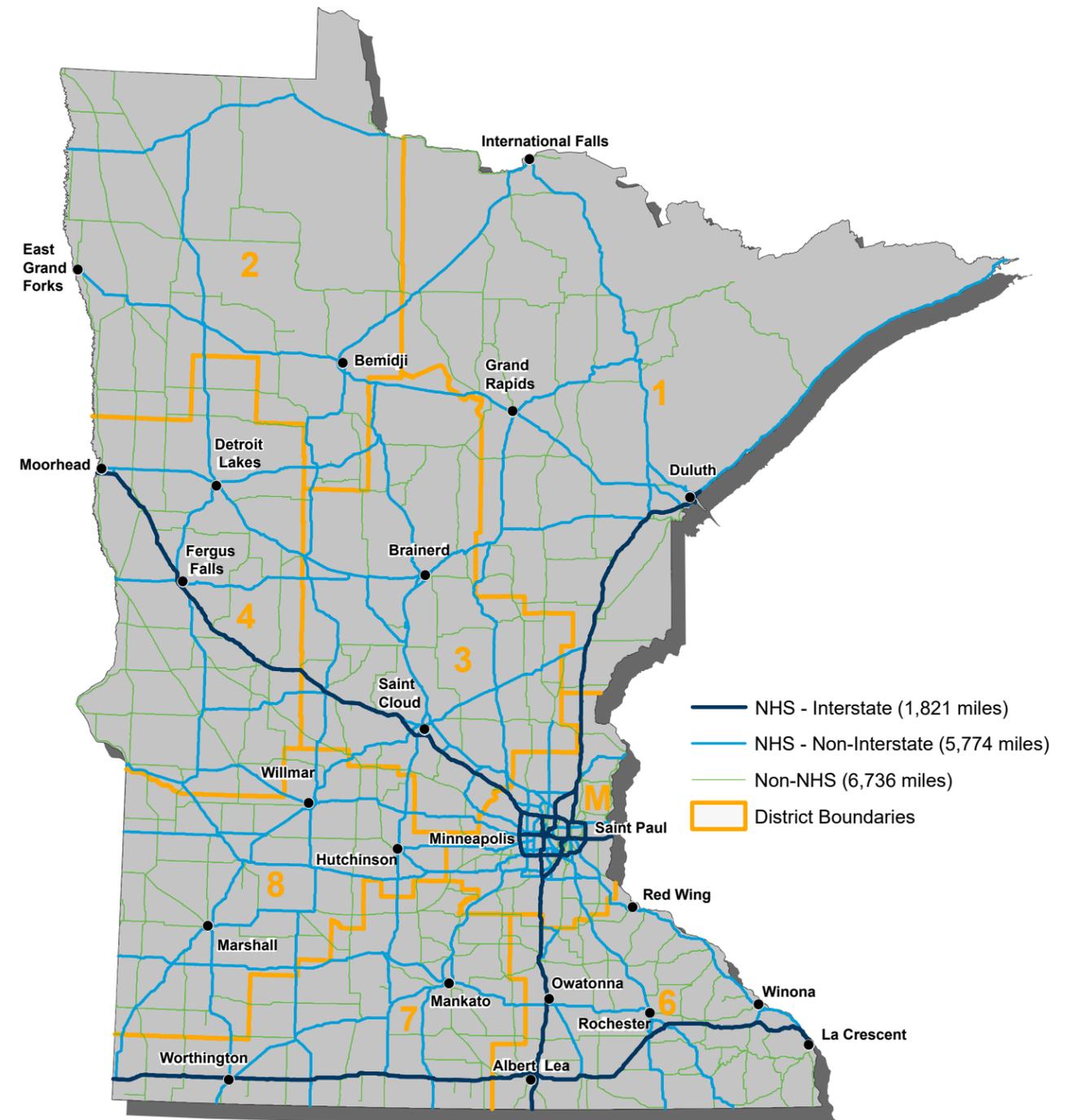


Figure 2: State Highway System



Notable Changes from the Previous CHIP

MnDOT adopted a new investment direction and added four new investment categories as part of the 2017 MnSHIP update. Those changes are reflected in the 2019-2028 CHIP. MnDOT also redesigned the CHIP and how its information is being presented. This includes a revised section on how potential state highway projects are identified, developed, and ultimately selected for funding in the STIP.

INCREASED MOBILITY SPENDING

With the additional investment in long-life pavement and bridge projects selected with new revenue from the 2017 legislative session, predicted pavement performance outcomes showed measurable improvement at the end of the ten year CHIP compared to previous projections. Given the improvement in projected pavement and bridge performance, MnDOT decided to shift \$50 million per year of pavement investment on the National Highway System towards investment in Twin Cities mobility in fiscal years 2024, 2025 and 2026. In MnSHIP, Twin Cities mobility investment was scheduled to end in 2023 as the investment direction shifted to a primary focus of preserving the existing system. A portion of the additional funding transferred to the Highway Users Tax Distribution Fund will be directed to continue funding Twin Cities mobility improvements. This transfer is assumed to continue indefinitely although the legislature can reverse the transfer in future years.

Project Selection Process

The 10-Year CHIP is updated annually to include new projects identified in Year 10 and adjust any projects from the previous CHIP based on new information. Planned projects listed in Years 5-10 can and will fluctuate as MnDOT begins to look at the needs of those projects and work with regional and local transportation partners to identify any local needs or concerns. By the time projects reach Year 4 of the CHIP, the projects become part of the **State Transportation Improvement Program**. Projects listed in the four years of the STIP represent the projects MnDOT is committed to constructing over the next four years. Prior to Year 4, projects do not have funding committed to them.

MnDOT districts work closely 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. ATPs sign off on the district's list of programmed projects in the STIP.

With funding committed, MnDOT begins designing the project in preparation for construction starting in year 1 of the STIP. Just like the 10-Year CHIP, the STIP is updated annually. Once a project reaches year 1, it becomes part of MnDOT's construction program for that fiscal year.

In 2017, the Minnesota Legislature directed the Minnesota Department of Transportation to develop and implement a new, transparent and objective project selection policy. The new project selection policy will be implemented with the 2020-2029 Capital Highway Investment Plan, which will include the scores for projects assigned under the new policy. MnDOT will also post the scores for projects considered but not selected and the reasoning behind selection decisions.

More information about the new project selection policy is available at: www.mndot.gov/projectselection

TYPICAL PROJECT DEVELOPMENT TIMELINE

The timeline below represents a development for a typical state highway project. Some types of projects such as those selected through a solicitation process (i.e. Corridors of Commerce, TED) may not follow this timeline.

Year 10: Project Identification

MnDOT identifies potential state highway projects 10 years in advance. In coordination with the District, MnDOT central office, and specialty offices, the projects are identified using guidance developed from the MnSHIP investment direction. Districts also provide initial estimates of how projects costs will break out into the MnSHIP investment categories. Year by year these projects move forward towards construction in Year 1.

Years 6-9: Refining Project Concepts

As projects progress towards construction in Year 1, districts work with **Area Transportation Partnerships, Metropolitan Planning Organizations**, and other key partners to recommend adjustments to project scope and timing. A district may also make changes to the project based on additional studies, MnDOT planning and policy recommendations, new condition information, MPO policy direction, or new legislative mandates and requests.

Year 5-6: Initial Project Scoping

During Year 5 or 6, projects begin initial project scoping and scheduling. Districts identify specific project needs related to areas such as non-motorized transportation, safety, or the condition of roadside infrastructure. The goal is to have the projects enter the STIP by Year 4. However, a project may be held in Year 5 for a few years before being listed in the STIP due to funding availability.

Year 2-4: Programed and Committed to Delivery

In Years 2-4, districts update a project's scope, schedule and cost estimate annually based on designing and engineering the project. Projects listed in Years 2-4 represent a commitment to deliver the project. If necessary, MnDOT works to complete any studies and identifies any impacts a project may have on the surrounding environment.

Year 1: Annual Construction Program

When a project reaches Year 1, it becomes part of MnDOT's annual construction program and begins construction.

FUNDING PROGRAMS

MnDOT invests in state highway projects through the Statewide Performance Program and the District Risk Management Program. The purpose of establishing these two programs is to ensure the agency efficiently and effectively works toward common statewide goals—in particular, meeting identified outcomes of the MnSHIP investment direction—while maintaining some flexibility to address unique risks and circumstances at the district level.

What is the Statewide Performance Program?

MnDOT created the Statewide Performance Program in 2013 to respond to changes in federal requirements. Federal legislation places greater emphasis on **National Highway System** performance and requires MnDOT to make progress toward national performance goal areas, including those related to condition, safety, and travel time reliability on the NHS. Failure to do so results in the loss of some federal funding flexibility. The SPP manages investment and project selection on the NHS to meet performance outcomes listed in the MnSHIP investment direction.

Project Selection Through the Statewide Performance Program

The SPP includes projects that help MnDOT achieve NHS performance outcomes identified in MnSHIP. Staff from MnDOT's central office, district offices, and specialty offices collaborate to develop a list of potential projects and planned investments through the SPP. Each



year, SPP projects advance through the CHIP. MnDOT adds new SPP projects annually in year 10 of the CHIP. Each MnDOT district coordinates with **Area Transportation Partnerships**, MPOs, and other key partners to recommend adjustments to project scope and timing. Upon final selection in the STIP, each MnDOT district is responsible for designing and delivering selected projects. The following are types of projects selected through the SPP.

INTERSTATE AND REMAINING NHS PAVEMENT PROJECTS

Projects focus on rehabilitation or replacement of existing pavements to bring a segment of highway into good condition. MnDOT's Office of Materials and Road Research uses a Pavement Management System to predict future pavement conditions and develop a schedule of suggested fixes on the Interstates and remaining NHS. The Office of Materials and Road Research manages its program to meet NHS performance outcomes listed in MnSHIP. The districts suggest modifications to the project list based on a number of considerations, including

local knowledge of conditions, input from stakeholders and timing of other scheduled improvements in the area.

NHS BRIDGE PROJECTS

Projects focus on rehabilitation or replacement of existing bridges to bring the bridges into good condition. As is the case with pavement projects, MnDOT's prioritizes bridge projects on high-volume NHS roads. MnDOT's Bridge Office uses the Bridge Replacement and Improvement Management process to recommend future bridge improvements based on condition and risk factors, including length of detour and traffic volume. The Bridge Office and district offices generate a list of bridge projects on the NHS based on the results of the BRIM process. In modifying the BRIM results, districts consider stakeholder input and local expertise to coordinate timing with other planned projects in the region. Districts primarily choose projects with long-term fixes for NHS bridges.

NHS MOBILITY PROJECTS

Projects focus on improvements that address performance related to mobility and travel time reliability in the Twin Cities metropolitan area and Greater Minnesota. In the Twin Cities Metro area, MnDOT's Metro District worked in collaboration with the Metropolitan Council to develop a list of Twin Cities Mobility cost-constrained projects that align with MnSHIP.

The 2017 Minnesota State Highway Investment Plan identified the National Highway System as the priority network for mobility investments in Greater Minnesota. The plan allocated \$13 million in investments in 2022 and 2023 for a total of \$26 million. To determine the best way to invest the funding in this category, MnDOT undertook a study to identify locations that are experiencing mobility issues. The study used consistent, data-driven analysis in order to identify mobility and reliability needs on the NHS in Greater Minnesota. The study used travel time reliability, fatal and serious crashes, roadway characteristics and other measures to evaluate locations. These factors were combined into an overall score in order to rank and prioritize the locations for each district. Greater Minnesota mobility funding will be distributed to the districts by formula in 2018 and each district can begin selecting and scoping their top priority mobility improvements. These projects will appear in the 2020-2023 STIP which will be approved in 2019.

STATEWIDE SOLICITATIONS

MnDOT selects several types of projects through solicitation. Each program has different requirements and different goals for investment. These projects are not identified 10 years in advance like pavement or bridge projects. They are selected when funding for these programs becomes available.

Transportation Economic Development Program

Established in 2010, the Transportation Economic Development program provides competitive grants to construction projects on state highways that provide measurable economic benefits. The Minnesota Department of Transportation, in partnership with the Minnesota Department of Employment and Economic Development, administers the program. The TED solicitation occurs every two years. The most recent solicitation in 2017 selected \$18 million of projects in seven different communities across the state. These projects are reflected in the 2019-2028 CHIP.

Minnesota Highway Freight Program

The Fixing America's Surface Transportation Act created a new funding program that provides money to Minnesota to make highway improvements that benefit freight movement. All public roads, including county and city roads, are eligible for this money. In order to select projects that will be funded with this money, MnDOT created the Minnesota Highway Freight Program. The MHFP provides funding to construction projects on public roads that provide measurable freight transportation benefits. Project proposals are solicited from cities, counties, MnDOT districts and other road authorities for three categories of projects: safety, congestion/efficiency improvements, and first/last mile connections. While most of the projects selected were on the local road system, there are three Freight Program projects on the state highway system.

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. When comparing MnSHIP investment guidance and the planned 10-year program of projects, Corridors of Commerce funding is not reflected to ensure a consistent comparison. 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 3**). MnDOT selected an additional three projects in late May with additional funding authorized by the Legislature during the 2018 legislative session. The projects selected for funding are listed in the two tables below.



Figure 3: Initial 2018 Selected Corridors of Commerce Projects

GEOGRAPHIC REGION	TRUNK HIGHWAY	PROJECT DESCRIPTION	PROJECT BUDGET	EARLIEST LIKELY CONTRACT DATE
Greater Minnesota	TH 169	In Elk River, from TH 101 to 197th Avenue, convert to a freeway	\$157 million	2022
Greater Minnesota	I-94*	From St. Michael (Trunk Highway 241) to Albertville (County Road 37), add an auxiliary lane	\$56 million	2020
Metro District	I-494	From France Avenue to Trunk Highway 77 eastbound and from Trunk Highway 77 to I-35W westbound, add MnPASS lanes in both directions	\$134 million	2021
Metro District	I-494/I-35W	Complete Phase 1 of the I-494/I-35W turbine interchange, northbound to westbound directional ramp	\$70 million	2021

*This is the lowest-priced alternative that was submitted. It does not include the interchanges or the Commercial Development road. Those could be added with a local contribution.

Figure 4: Additional 2018 Selected Corridors of Commerce Projects

GEOGRAPHIC REGION	TRUNK HIGHWAY	PROJECT DESCRIPTION	PROJECT BUDGET	EARLIEST LIKELY CONTRACT DATE
Greater Minnesota	TH 14	Owatonna to Dodge Center construct 2 to 4 lane conversion	\$160 million	TBD
Greater Minnesota	TH 23	Willmar to St. Cloud - construct 2 to 4 lane conversion	\$105 million	TBD
Metro District	TH 252 / I-94	Convert to a freeway and add MnPASS lanes Dowling to TH 610.	\$163 million*	TBD

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

JURISDICTIONAL TRANSFER PROJECTS

Jurisdictional Transfer investments are capital investments needed to improve highways so they can be transferred from MnDOT to a local government or vice versa. Typically, a planned project is modified to include longer-term improvements and/or additional enhancements with an agreement that the local agency would take ownership of the road. Transferring a road requires the agreement of both MnDOT and the local agency.

FACILITIES PROJECTS

The Facilities investment category includes investments made to MnDOT buildings along state highways. These assets include rest areas, weight enforcement buildings and weigh scales. Facilities investments were previously made through either Roadside Infrastructure

Condition or special capital programs. New or renovated buildings are completed as stand-alone projects while pavement work on exit ramps or parking lots are typically completed in conjunction with another project on the adjacent highway.

INCLUSION OF OTHER INVESTMENTS ON SPP PROJECTS

While a project in the SPP is one of the project types listed above, a portion of SPP project costs may include additional improvements to address other roadside infrastructure, improve traveler safety, or improve bicycle or pedestrian connections. However, they do not drive the project selection process in the SPP. For example, while scoping a pavement project, there may also be a need to repair culverts, improve lighting, add a turn lane for safety, or repair an existing sidewalk within the highway right-of-way. Those improvements are tracked by the 14 investment categories in MnSHIP. The CHIP shows how projects costs are broken down into the 14 investment categories once the project is scoped.

What is the District Risk Management Program?

Whereas the SPP focuses funding on addressing key performance targets on the NHS, the DRMP focuses funding on non-NHS highways as well as other non-performance-based needs (RCIPs) on all state highways. The majority of the program supports pavement and bridge rehabilitation or replacement projects. The DRMP project selection process is structured to give districts the flexibility to address their greatest regional and local risks. Districts are also able to make additional investments on the NHS if the proposed project is in response to a high risk.

Resource Distribution Method

MnDOT created a resource distribution formula for the purpose of distributing funds that are in the DRMP program among the eight districts. The funds each district receives in order to program its DRMP projects are determined through this target formula.

The Resource Distribution Method considers five factors: a district's projected condition for non-NHS pavement (20%) and non-NHS bridges (20%), along with a district's portion of total trunk highway lane miles (30%), vehicle miles traveled (VMT) (24%), and heavy commercial VMT (6%).

MnDOT revises the distribution annually with updated data, and applies it to Years 5-10 in the CHIP. DRMP funding in the first four years in the current CHIP remain unaffected. This gives districts fixed funding in Years 1-4 for programming and finalizing the scope of projects. The yearly update ensures that the distribution is based on the current district conditions and system size data as construction projects are completed and pavement and bridge conditions change.

Project Selection Through the District Risk Management Program

In the DRMP, each MnDOT district is responsible for selecting projects that mitigate their highest risks that are not addressed through the SPP. Each MnDOT district works with stakeholders, local governments, and the public when developing the scope and timing of projects. The majority of DRMP projects are pavement, bridge, and safety projects on non-NHS routes.

NON-NHS PAVEMENT PROJECTS

The [Office of Materials & Road Research](#) generates an initial project list for district consideration. However, it is the districts' responsibility to identify and select non-NHS pavement projects. The districts select projects based on a number of considerations, including local knowledge of conditions, input from stakeholders, and timing of other scheduled improvements in the area.

NON-NHS BRIDGE PROJECTS

The [Bridge Office](#) generates an initial project list for district consideration. However, it is the districts' responsibility to identify and select

bridge projects. The districts select projects based on a number of considerations, including local knowledge of conditions, input from stakeholders and timing of other scheduled improvements in the area.

SAFETY PROJECTS

Districts select stand-alone safety projects based on the location of fatal and serious injury crashes and share these with the Office of Transportation System Management and Operations for approval. Funding for these projects comes from the Highway Safety Improvement Program. HSIP projects are generally identified only three years before construction, unlike pavement and bridge projects.

OTHER PROJECTS

While the majority of projects districts select are pavement, bridge, or safety projects, districts can select other projects in the DRMP. These can include stand-alone roadside infrastructure improvements such as replacing culverts, guardrails, signs or lighting, mobility improvements, bicycle improvements, or pedestrian improvements.

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 tacks capital investment in highways by investment categories 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 investments allow MnDOT to continue to work with our local government partners to agree on and commit to additional roadway transfers that would align the travelers expectations of the facility with the proper level of investment and also lower future maintenance and capital costs to MnDOT.
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 feature; Sustained crash locations treatment; Improvements at sustained crash locations; Railway-Highways Crossings

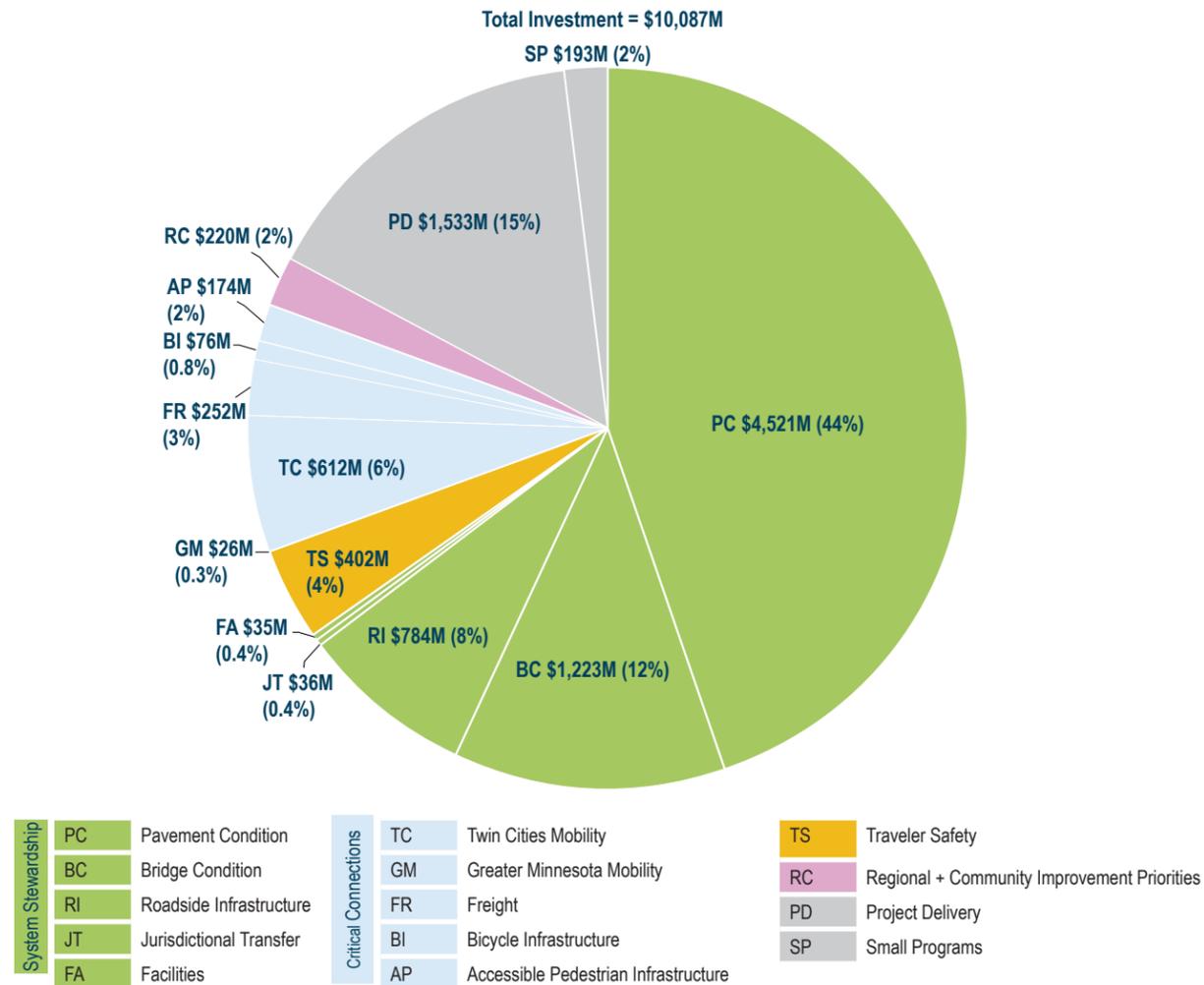
INVESTMENT CATEGORY	CATEGORY DESCRIPTION
Twin Cities Mobility	MnDOT pursues the following strategies to address regional mobility issues in the Twin Cities metro area: Active Traffic Management. Operational improvements to help manage the effects of congestion, which include variable message signs (traveler information systems), freeway ramp metering, dynamic signing, 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. Priced managed 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. Strategic capacity enhancements. Projects in the form of new interchanges, non-priced managed lanes, and limited general-purpose lanes that may be needed to address corridor congestion and/or provide lane continuity for an existing facility or to complete an unfinished segment of the Metropolitan Highway System.
Greater Minnesota Mobility	The Greater Minnesota Mobility investment category replaced the Interregional Corridor Mobility category used in the previous MnSHIP. Through federal legislation, the National Highway System was expanded and performance measures for mobility on the NHS has been developed. For these reasons, the investment category was modified to reflect that the NHS is now the priority network for mobility investment in MnSHIP. Improvements in this category include projects that improve travel time reliability for people and freight on the NHS outside of the Twin Cities area. 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	MnDOT typically constructs bicycle improvements concurrently with pavement and bridge projects, but also implements some stand-alone projects.
Accessible Pedestrian Infrastructure	Most pedestrian improvements are implemented as part of a pavement or bridge project. Stand-alone projects, especially ADA improvements, are implemented as well.
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, internal project delivery, 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 PLANS

Investments by category in MnDOT's 10-Year CHIP (2019-2028) 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.

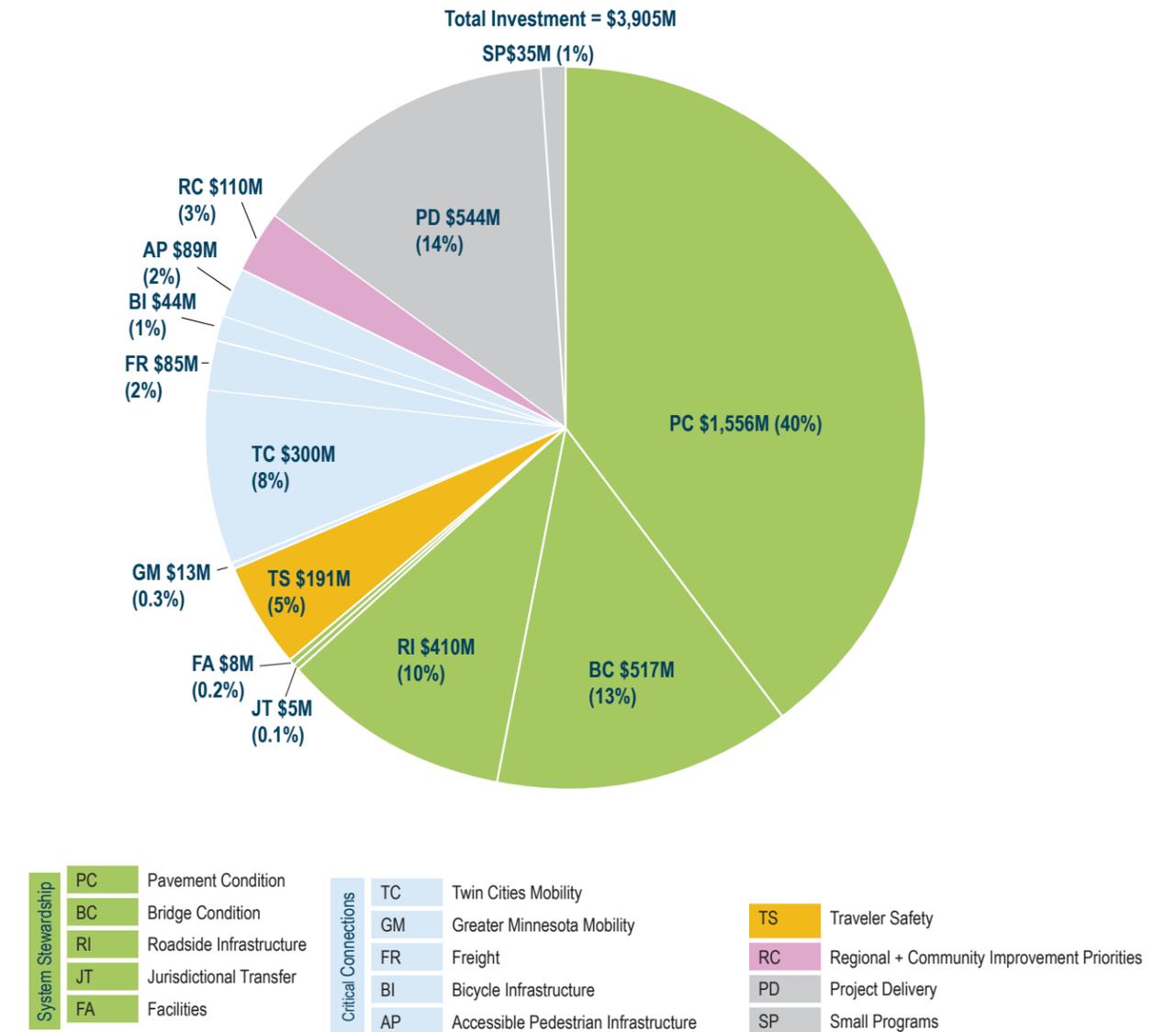
Figure 6: 10-Year Capital Highway Investments, 2019-2028



Summary of STIP Investments

The Statewide Transportation Improvement Program (STIP) is MnDOT's four year program of projects. The projects in the STIP are viewed as commitments by the department. The investments in year 2022 of the 2019-2022 STIP (Figure 7) are influenced by guidance from the 2017 MnSHIP, whereas the investments made in years 2019-2021 are still being influenced by the guidance set in 2013 MnSHIP.

Figure 7: STIP Investments, 2019-2022



Performance Outcomes

As part of the 10-Year CHIP process, MnDOT projects performance outcomes based on planned projects. **Figure 9** displays projected performance through 2028.

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. 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 in the direct control 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.

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.

PAVEMENT INVESTMENT STRATEGIES

- Increase preventative 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. 2.8 percent of NHS interstate pavement miles will be in poor condition in 2028-- missing the 2017 MnSHIP target of 2 percent. This is an increase of 1.7 percentage points from the 2017 mark of 1.1 percent. Non-interstate NHS poor pavement miles will increase from 1.7 percent in 2017 to 5.4 percent in 2028-- missing the 4 percent MnSHIP target. Non-NHS poor pavement miles will increase from 4.4 percent to 8.6 percent in 2028--remaining below and meeting the MnSHIP target of 10 percent (**Figure 7**).

Figure 8: MnDOT Pavement and Bridge Assets

DISTRICT	MILES OF PAVEMENT	NUMBER OF BRIDGES
1	1,542	545
2	1,802	353
3	1,598	419
4	1,567	324
6	1,411	841
7	1,300	468
8	1,441	356
Metro	1,087	1,284
Total	11,748	4,590

BRIDGE INVESTMENT STRATEGIES

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

OUTCOMES

Performance for bridges on the NHS is projected to deteriorate from 1.5 percent poor in 2017 to 5.3 percent poor in 2028. Non-NHS bridges will also worsen going from 1.7 percent to 9.2 percent poor. By 2028, 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

In combination with the \$50 million annually allocated to jurisdictional transfers through the Highway Flex Fund, this additional level of investment would facilitate more transfers identified in the [2014 Minnesota Jurisdictional Realignment Project report](#).

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 412 in 2016. In 2017, the number of fatalities reduced to 392 (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

Based on the shift of an additional \$50 million of investment to Twin Cities Mobility compared to what MnSHIP guidance had allocated, 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 reliability, it is still anticipated to worsen through 2028 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 2019-2022, ranging from 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 invest in Bicycle Infrastructure at 75 percent of the current rate of investment. This will limit 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 completing 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 \$310 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.



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 2028.

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.

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Figure 9: Investment Plan Performance Summary

	2017 Condition	MnSHIP Target	Projected Result 2022	Projected Result 2028	10-Year Trend
System Stewardship					
Pavement Condition Interstate, % poor	1.1%	2%	▲ 2.4%	▲ 2.8%	▼ Better ↗ Performance expected to worsen through the full 10 years
Pavement Condition Non-Interstate NHS, % poor	1.7%	4%	▲ 4.2%	▲ 5.4%	▼ Better ↗ Performance expected to worsen
Pavement Condition Non-NHS, % poor	4.4%	10%	● 6.8%	● 8.6%	
Pavement % poor 	<p>The percentage of pavements in poor condition continued decreasing in 2017. However, pavement condition is expected to worsen on all systems through 2028. NHS and non-Interstate NHS pavements are expected to miss the targets. Non-NHS will meet its target.</p>				▼ Better
Bridge Condition: NHS, % poor	1.4%	2%	● 0.6%	● 5.3%	▼ Better ↗ NHS and Non-NHS are projected to decline. MAP 21 prioritizes NHS bridges, which subsequently reduces non-NHS funding. This change is projected to produce a jump in poor condition on the non-NHS by 2028.
Bridge Condition: Non-NHS, % poor	3.3%	8%	● 1.8%	▲ 9.2%	
Bridge % poor 	<p>The percentage of poor bridge deck area on the NHS and non-NHS remained unchanged from 2016 to 2017. The overall system percentage increased slightly by 0.2% in 2017. Bridge condition on the NHS and non-NHS are expected to decline and miss the targets by 2028.</p>				▼ Better
Traveler Safety					
Minnesota Traffic Fatalities: All state and local roads	392	300 by 2020	N/A	N/A	▼ Better ↘ Performance expected to improve, but at a slower rate
Number of Fatalities 	<p>Fatalities resulting from vehicle crashes increased sharply from 361 in 2014 to 411 in 2015 and maintained at 412 in 2016. In the 2017, the number of fatalities decreased to 392. MnDOT anticipates fatalities to decline from 2015/16 levels but at a slower rate due to a decrease in Traveler Safety funding.</p>				

	2017 Condition	MnSHIP Target	Projected Result 2022	Projected Result 2028	10-Year Trend
Critical Connections					
Twin Cities Mobility: % of metro freeway miles below 45 mph in AM or PM peak	23.8%	Tracking Indicator	N/A	N/A	▼ Better ↔ Performance expected to continue at current levels
Freeway Congestion 	<p>Congestion is affected by economic conditions, population growth, fuel prices and other factors that increase travel demand. Since 2013, freeway congestion has increased every year.</p>				
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 Signals (APS) 	<p>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.</p>				

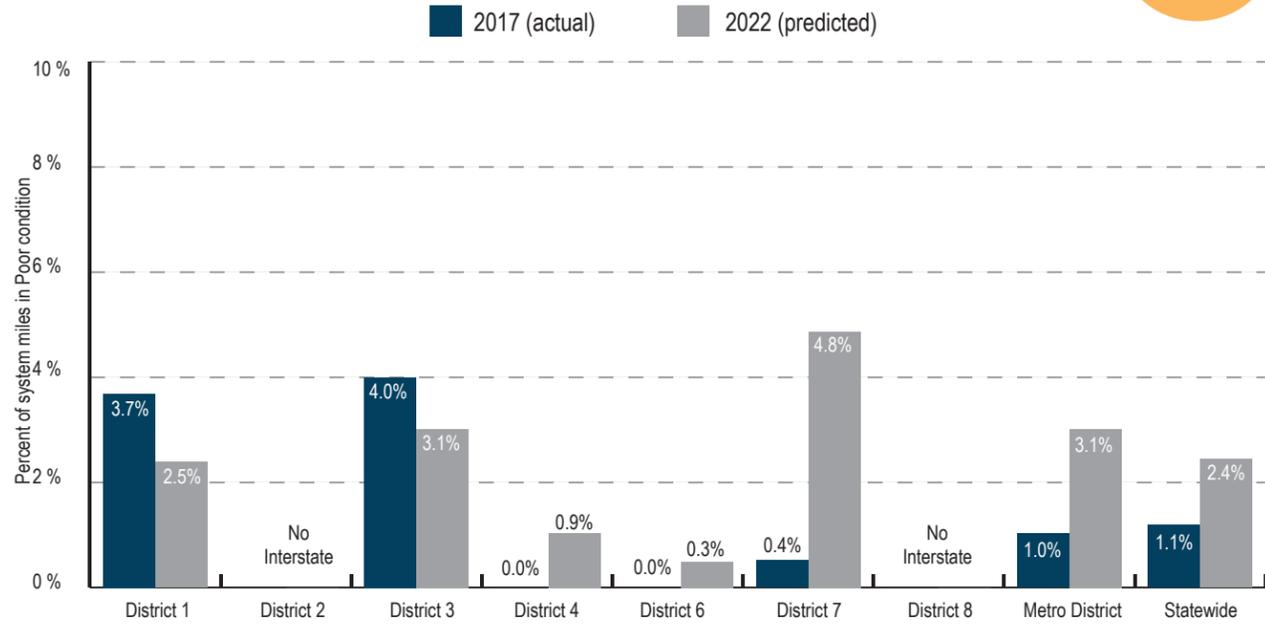
DISTRICT PERFORMANCE OUTCOMES

Figure 10: District Performance Outcomes

Interstate Poor Ride Quality Index (RQI)

-Miles with an RQI of 2.0 or less-
Current (2017) -vs- Predicted Conditions (2022)

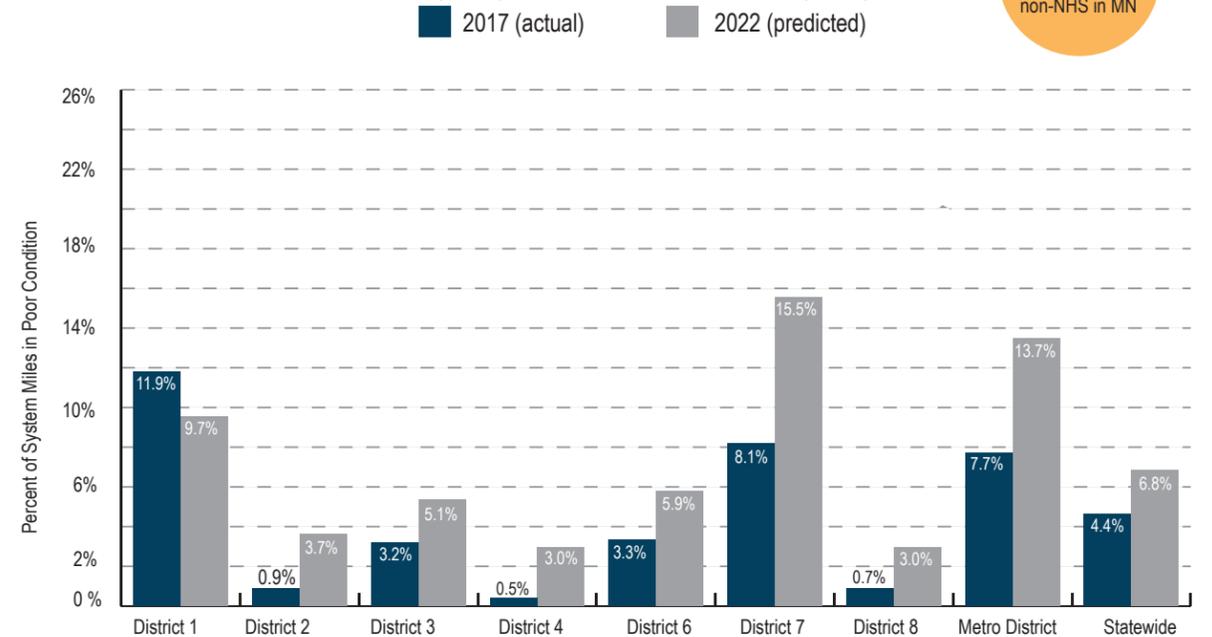
There are 1,821 roadway miles of Interstate in MN



Non-NHS Poor Ride Quality Index (RQI)

-Miles with an RQI of 2.0 or less-
Current (2017) -vs- Predicted Conditions (2022)

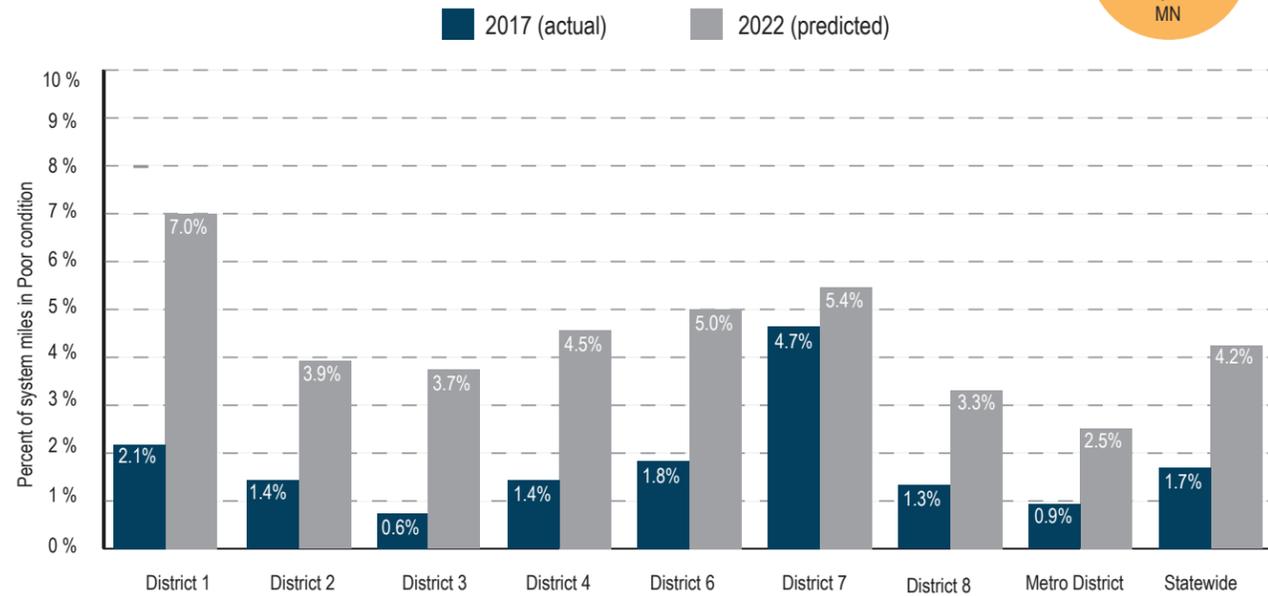
There are 6,736 roadway miles of non-NHS in MN



Non-Interstate NHS Poor Ride Quality Index (RQI)

-Miles with an RQI of 2.0 or less-
Current (2017) -vs- Predicted Conditions (2022)

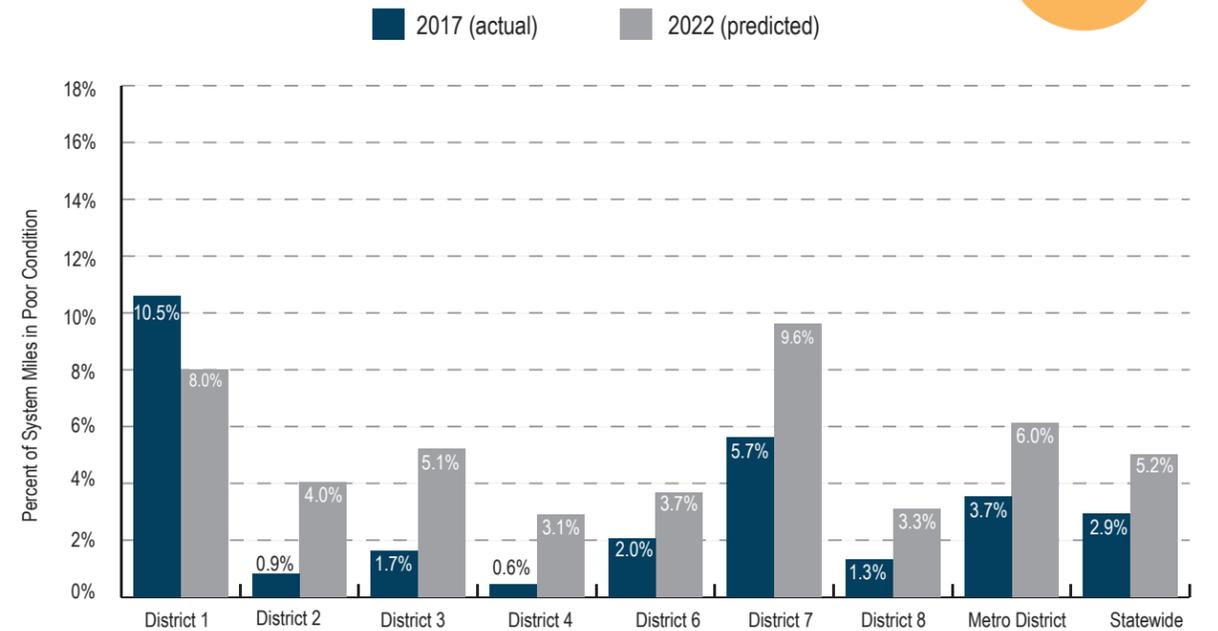
There are 5,774 of non-interstate NHS roadway miles in MN



State Highway Poor Ride Quality Index

-Miles with an RQI of 2.0 or less-
Current (2017) -vs- Predicted Conditions (2022 & beyond)

There are 14,331 roadway miles of state highway in MN



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
<ul style="list-style-type: none"> Urban reconstruction through the City of Red Lake including pavement resurfacing from Hwy 89 to 2.2 miles east of Hwy 89, and pedestrian accessibility and drainage improvements 	MN 1	2	2019
<ul style="list-style-type: none"> Eastbound concrete replacement from Marcoux to Fosston (2018, 2021, 2022). In 2021 and 2022, 24 of the 27 miles will be completed. The project will improve drainage, traffic safety, and pedestrian accessibility along the corridor 	US 2	2	2021
<ul style="list-style-type: none"> Pavement reconstruction from Wright CR 39 in Monticello to Hwy 24 in Clearwater 	I-94	3	2020
<ul style="list-style-type: none"> From east side of Monticello to MN 241 in St. Michael, unbonded overlay 	I-94	3	2025
<ul style="list-style-type: none"> MN 23, from MN 23 in Foley to east city limits, reconstruction including ADA work 	MN 23	3	2027
<ul style="list-style-type: none"> Resurfacing from Frazee to Becker/Wadena County line including complete streets improvements 	MN 87	4	2022
<ul style="list-style-type: none"> Grading bituminous and concrete paving, ADA improvements and signals on US 75 to west junction of US 10 through Moorhead 	US 75	4	2025
<ul style="list-style-type: none"> Unbonded overlay from MN 120 in Woodbury to Wisconsin border 	I-94	Metro	2023
<ul style="list-style-type: none"> Reconstruction southbound on Hwy 52 from Hwy 60 to 2.2 miles south of Hwy 19. It will include six bridge replacements, access management, and intersection improvements 	US 52	6	2021
<ul style="list-style-type: none"> Repaving and ADA improvements on Hwy 60 from Hwy 52 to Hwy 63 near Zumbro Falls 	MN 60	6	2022
<ul style="list-style-type: none"> 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	2020
<ul style="list-style-type: none"> Medium mill and overlay on the north side of Mankato to Minnesota River bridge at St. Peter. The Highway 22 Corridor Study is currently being conducted and will inform this project's lane configuration, bicycle and pedestrian connectivity, etc. 	MN 22	7	2024
<ul style="list-style-type: none"> 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

<ul style="list-style-type: none"> Reduced conflict intersection (J-turn) in New London on Hwy 23 and Hwy 9 	MN 23	8	2022
<ul style="list-style-type: none"> Medium mill and overlay plus ADA improvements in Madison on Hwy 75 and Hwy 40 	MN 40/ US 75	8	2023
<ul style="list-style-type: none"> Reconstruction of Hwy 19 in Downtown Marshall 	MN 19	8	2025

 Bridge	Route	District	Year
<ul style="list-style-type: none"> Blatnik Bridge main span replacement between Duluth and Superior Wisconsin over the St. Louis River 	I-535	1	2028
<ul style="list-style-type: none"> Rehabilitate Bridge #5923 over the Pigeon River 	MN 61	1	2023
<ul style="list-style-type: none"> Redecking of I-394 over Dunwoody blvd. It includes rehab of nine adjacent bridges as part of a two year process 	I-394	Metro	2026
<ul style="list-style-type: none"> Four bridge replacements and three bridge rehabilitations on I-90 through Austin 	I-90	6	2023

 Safety	Route	District	Year
<ul style="list-style-type: none"> US 59 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 	MN 1	2	2020
<ul style="list-style-type: none"> Install signal and related safety improvements at CR 54 in Detroit Lakes 	US 10	4	2020

 Mobility	Route	District	Year
<ul style="list-style-type: none"> Roseville to Blaine pavement resurfacing. It includes noise wall installation, bridge replacements, and a new MnPASS lane 	I-35W	Metro	2019

 Freight - Other	Route	District	Year
<ul style="list-style-type: none"> Twin Ports Interchange in Duluth. It includes reconstruction of bridges and access into the Duluth port 	I-35	1	2019

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 years 1-10 of MnSHIP (2019-2028). With the additional funding from the Legislature, the investment mix for this ten year period has adjusted from the MnSHIP investment direction. Most investment categories saw an increase in funding. Some of the changes to note include:

- Pavement Condition investment increased by \$249 million compared to guidance due to the additional funding.
- Roadside Infrastructure Condition and Traveler Safety investments also saw an increase compared to guidance. Most of the increase is attributed to the increased amount of pavement projects and the additional roadside infrastructure assets and safety issues that will be addressed as a part of those projects.
- Twin Cities Mobility investment increased due to the shift of \$50 million per year from pavement investment in years 2024, 2025, and 2026.
- Freight investment is under programmed in the STIP because some of the projects are on local roads and not on the state highway system.
- Accessible Pedestrian Infrastructure is lower than guidance especially in year 5-10. This may be due to these projects not have been through the scoping process.

Figure 11: Investment Plan Investment Comparison

INVESTMENT CATEGORY	10-YEAR CHIP	2017 MNSHIP GUIDANCE	DIFFERENCE FROM MNSHIP	DIFFERENCE FROM MNSHIP (\$ IN MILLIONS)
Pavement Condition	44.9%	45.0%	-0.1%	\$249
Bridge Condition	12.1%	12.5%	-0.4%	\$38
Roadside Infrastructure Condition	7.8%	7.2%	0.6%	\$102
Jurisdictional Transfer	0.4%	0.4%	0.0%	\$1
Facilities	0.4%	0.3%	0.1%	\$4
Traveler Safety	4.0%	3.3%	0.7%	\$88
Greater MN Mobility	0.1%	0.3%	-0.2%	\$0
Twin Cities Mobility	6.1%	4.9%	1.2%	\$148
Freight	2.5%	2.8%	-0.3%	-\$14
Bicycle Infrastructure	0.8%	0.7%	0.1%	\$11
Accessible Pedestrian Infrastructure	1.7%	2.4%	-0.7%	-\$49
RCIPs	2.2%	1.6%	0.6%	\$66
Project Delivery	15.2%	15.1%	0.1%	\$103
Small Programs	1.9%	3.6%	-1.7%	-\$144
TOTAL (\$ IN MILLIONS)	\$10,087	\$9,483		\$604

DISTRICT INVESTMENT COMPARISON

Figure 12 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.

REMAINING RISKS (COMMON ACROSS THE DISTRICTS)

- Funding is strained for complete streets urban reconstruction projects
- It is challenging to program complete projects that address issues such as sustained crash locations, roadside hazards, narrow shoulders, drainage/erosion, turning lanes, etc.
- There is a lack of adequate funding for system expansion, modernizing interchanges and bridges, handling capacity, demand, and operational improvements without special programs and funding sources
- Preventative maintenance funds need to be maintained in order to keep the District's pavements preserved long term
- The increase in the number of planned projects as well as large complex projects have stretched the Project Delivery budgets needed to conduct pre-engineering and right-of-way acquisition for projects

Figure 12: District Investment Comparison

INVESTMENT CATEGORY	1	2	3	4	6	7	8	METRO	CO	TOTAL INVESTMENT (\$ IN MILLIONS)
Pavement Condition	44%	52%	59%	60%	55%	56%	54%	39%	0%	\$4,521
Bridge Condition	29%	10%	8%	3%	15%	8%	6%	12%	0%	\$1,223
Roadside Infrastructure Condition	8%	11%	10%	9%	9%	10%	8%	7%	0%	\$784
Jurisdictional Transfer	0%	0%	0%	1%	0%	0%	0%	0%	5%	\$36
Facilities	0%	0%	0%	0%	0%	0%	0%	0%	5%	\$35
Traveler Safety	4%	6%	4%	6%	5%	6%	5%	2%	5%	\$402
Greater Minnesota Mobility	0%	0%	0%	0%	0%	0%	0%	0%	4%	\$26
Twin Cities Mobility	0%	0%	0%	0%	0%	0%	0%	16%	0%	\$612
Freight	0%	0%	0%	0%	0%	0%	0%	2%	28%	\$252
Bicycle Infrastructure	1%	1%	0%	1%	1%	1%	1%	1%	0%	\$76
Accessible Pedestrian Infrastructure	1%	3%	3%	2%	2%	2%	2%	2%	0%	\$174
RCIPs	1%	1%	1%	1%	1%	0%	5%	2%	10%	\$220
Project Delivery	12%	15%	15%	18%	12%	18%	18%	16%	15%	\$1,533
Small Programs	0%	1%	0%	1%	1%	1%	0%	0%	27%	\$193
TOTAL INVESTMENT (\$ IN MILLIONS)	\$1,325	\$508	\$977	\$608	\$944	\$857	\$465	\$3,825	\$592	\$10,087

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