Highway Mobility

DEPARTMENT OF TRANSPORTATION

MnDOT estimates $30-33 billion in available funding for the state highway system over the next 20 years. A minimum of $23.5 billion is needed to manage highest risks and meet legal requirements. This folio provides information on potential Highway Mobility investment strategies, funding levels, and outcomes for the estimated $7-9 billion of remaining investment.

1 | WHAT IS HIGHWAY MOBILITY?

The Highway Mobility investment category focuses on improving the movement of people and freight on the National Highway System (NHS), the priority network for the Minnesota State Highway Investment Plan. The system totals more than 5,200 miles of roadway in Minnesota, with approximately 58 percent in the Twin Cities and 42 percent in Greater Minnesota. Through investments in Highway Mobility, MnDOT aims to increase mobility throughout the state, increase job accessibility, improve trip reliability, and enhance travel options.

GOAL AND OBJECTIVES OF INVESTMENT

The overarching goal of Highway Mobility is to enhance the movement of people and freight in Minnesota. Objectives in Greater Minnesota include minimizing mobility issues on critical routes with the highest vehicle and freight volumes that connect major centers and regions of the state. Objectives specific to the Twin Cities include managing delay by providing cleaner, convenient, and reliable alternatives in congested corridors, including transit supportive investments, while minimizing negative impacts on the environment and neighboring communities.

TYPES OF IMPROVEMENTS

The Highway Mobility investment category contains a number of strategies for improving mobility on the state's highway network. One of the main strategies for investment in both the Twin Cities and Greater Minnesota is spot mobility improvements. These can include improvements like intersection or interchange modifications, auxiliary lanes, and passing lane projects in more rural locations. If a spot mobility improvement cannot meet the facility's need, strategic capacity expansion is considered which can range from interchange development on principal arterials and modifications to freeway system interchanges to the addition of travel lanes on existing roadways.

Some investment strategies are specific to the Twin Cities metro area, such as investment in active traffic management systems, managed lane (E-ZPass) corridor improvements, and funding for transit development along state trunk highways, such as shoulder lanes and roadway improvements that complement arterial bus rapid transit development.

HOW DOES MNDOT CURRENTLY SELECT HIGHWAY MOBILITY IMPROVEMENTS?

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

Many mobility projects are now funded through a set of competitive grant programs, including Corridors of Commerce, the Minnesota Highway Freight Program, and the Transportation Economic Development program. These competitive grant programs tend to use scoring criteria that emphasize factors such as return on investment, safety, reliability, freight impacts, and consistency with policy objectives.

2 | WHY IS INVESTING IN HIGHWAY MOBILITY IMPORTANT?

Investment in highway mobility improvements supports several of the official state transportation goals, as identified in state statute. These include:

- To provide multimodal transportation facilities and services to increase access for all persons and businesses, and to ensure economic well-being and quality of life without undue burden on any community
- To enhance economic development and provide for the economical, efficient, and safe movement of goods to and from markets by rail, highway and waterway
- To provide a reasonable travel time for commuters
- To reduce greenhouse gas emissions from the state's transportation sector

Minnesota is projected to add over 600,000 residents statewide between 2020 and 2040 according to the State Demographer, with much of this growth taking place in the Twin Cities region. Maintaining reliable and safe connections between and within the state's regions and urban centers while accommodating this growth remains an important objective of highway mobility.

Within the Twin Cities metro area, these growth pressures are accompanied by competing demands for continued reductions in emissions to ensure acceptable levels of air quality, while also maintaining the benefits of high levels of access to opportunities that make it attractive to residents and businesses. Highway mobility investments can promote these objectives through network improvements that smooth traffic flow and also enhance bus service on shoulder lanes and in managed lanes.

MnDOT has adopted a preliminary goal to reduce vehicle miles traveled by 20% per capita by 2040. Meeting that goal would reduce mobility investments needed to meet performance targets. Higher investment levels in this category may jeopardize reaching that goal.

HOW DOES HIGHWAY MOBILITY SUPPORT EQUITABLE OUTCOMES?

The set of investment strategies identified within the Highway Mobility category provide for broad-based improvements in mobility in both the Twin Cities region and Greater Minnesota. They reduce the cost of moving both within and between various regions of the state, while reducing the risks (such as safety) of doing so. While Highway Mobility, as part of MnSHIP, necessarily emphasizes movement on the state highway network, it allows for improved mobility and job accessibility by multiple user groups, including transit users who may or may not have access to a vehicle.

HOW DOES MNDOT MEASURE PERFORMANCE, CONDITION, OR OUTCOMES?

There are several performance measures that MnDOT uses to evaluate levels of highway mobility, both statewide and within the Twin Cities metro area. As part of federally-required performance measurement, MnDOT calculates and reports the percentage of person-miles of travel on the Interstate and non-Interstate portions of the NHS that are considered reliable. This measure plays an important role in identifying mobility needs in Greater Minnesota.

Within the Twin Cities, MnDOT measures the percent of urban freeway miles that are congested (below 45 miles per hour). A related measure based on delay that was developed as part of the Twin Cities Highway Mobility Needs Analysis has been recommended as a target for developing MnDOT's 20-year investment needs for metro-area mobility on the state highway system. The target for this measure is 9 minutes of delay per person per day, a 10% reduction from 2018 levels.

3 | OPTIONS FOR INVESTING OVER THE NEXT 20 YEARS

Active Traffic Management (ATM) & Transit-Supportive Investments (Metro only)

The **minimum level** MnDOT would invest in this strategy is **$30 million**. At this level, the existing active traffic management system would be maintained, up to 50 miles of bus-only shoulders and 1-2 larger bus shoulder projects would be added on state highways, and no additional investments in Bus Rapid Transit projects would be made.

LEVEL 1

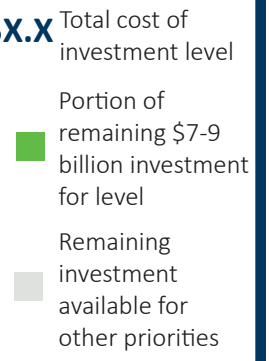
Outcomes: Traffic management system expanded to 2-4 corridors and 1-3 arterial BRT projects on state highways

LEVEL 2

Outcomes: Traffic management system expanded to 4-6 corridors and 3-5 arterial BRT projects on state highways

LEVEL 3

Outcomes: Traffic management system built out region-wide and 5 arterial BRT projects on state highways



Spot Mobility Improvements

The **minimum level** MnDOT would invest in this strategy is **$152 million**. In the Twin Cities, improvements would be made at 68 sites identified in Phase 4 of the Congestion Management System Plan. In Greater Minnesota, spot mobility improvements would be made at up to 5 locations.

LEVEL 1

Outcomes: Greater MN: Up to 35 locations improved Twin Cities: 103 locations improved

LEVEL 2

Outcomes: Greater MN: Up to 75 locations improved Twin Cities: 148 locations improved

LEVEL 3

Outcomes: Greater MN: Up to 100 locations improved Twin Cities: 218 locations improved

Managed Lanes/E-ZPass (Metro only)

The **minimum level** MnDOT would invest in this strategy is **$180 million**. At this level, 15 miles of new managed lanes would be added on 252/I-94 and I-494.

LEVEL 1

Outcomes: First two phases of I-494 and 252/I-94; I-94 first phase of 35W-N Gateway

LEVEL 2

Outcomes: I-494; 52/I-94; I-35W North Gateway; first phase of 36

LEVEL 3

Outcomes: Level 2 plus: 36; 77 NB, first 2 phases of 169; I-35W S extension

LEVEL 4

Outcomes: Level 3 plus: 169; I-94 in Maple Grove; 2 phases of 694; I-35E extension

Strategic Capacity Expansion

The **minimum level** MnDOT would invest in this strategy is **$0**. At this level, there would be no improvements led by MnDOT.

LEVEL 1

Outcomes: Greater MN: 1-2 larger or 3-4 smaller projects Twin Cities: Improvements at 5-7 intersections

LEVEL 2

Outcomes: Greater MN: 3-5 larger or 6-8 smaller projects Twin Cities: Improvements at 10-15 intersections

LEVEL 3

Outcomes: Greater MN: 6-8 larger or 12-15 smaller projects Twin Cities: Improvements at 15-20 intersections

LEVEL 4

Outcomes: Greater MN: 8-10 larger or 15-20 smaller projects Twin Cities: improvements at 15-20 high priority or 20-25 medium priority intersections

4 | HIGHWAY MOBILITY RISKS

WHAT ARE THE RISKS OF UNDERINVESTING?

As a part of developing performance levels for various programs and strategies, MnDOT identified the risks associated with underinvesting in Highway Mobility. Nine separate risks were identified and rated as low to high risks based on investment at the minimum investment level for all Highway Mobility strategies. The nine risks and their impacts are identified below.

HIGH RISKS

Risk: MnDOT may not address local and regional partner mobility priorities and the legislature directs funding toward capacity projects. **Impact**: Could delay planned projects and strain MnDOT's project development resources.

MEDIUM RISKS

Risk: Undesirable delay could increase with rising travel demand. **Impact**: Longer periods of delay and less predictable travel times for passengers and freight.

Risk: Congestion hinders development of reliable and efficient transit service. **Impact**: Lower people-moving capacity and limits ability to address inequities in transportation.

Risk: The region may be unable to adapt to shifting travel and land use patterns. **Impact**: Access to jobs and other desired destinations may be limited.

Risk: Less predictable travel times and unstable traffic flow at key locations on the NHS. **Impact**: System users may experience longer travel times and lower fuel economy when traveling between regions of the states or between urban centers.

Risk: Increased congestion could result in less reliable trips for freight carriers. **Impact**: Freight and logistics costs could rise for businesses and consumers, reducing the state's economic competitiveness.

Risk: Unstable traffic flow at certain locations may raise the risk of crashes. **Impact**: Fatalities and serious injuries could increase as a result of additional crashes.

LOW RISKS

Risk: Current investment approach focused on car-centric mobility may create induced demand. **Impact**: MnDOT is unable to meet the preliminary VMT and established greenhouse gas emission reduction goals.

Risk: Investment approach may over-build capacity that doesn't match future travel demand. **Impact**: Inefficient use of capital resources and added operations/maintenance costs, stormwater runoff, and other environmental impacts.

WHAT LEVELS OF INVESTMENT REDUCES THE RISKS' SEVERITY?

The table below provides a summary of how risk levels changed with increased investment in Highway Mobility.

RISK STATEMENT	SHIFTS FROM HIGH TO MEDIUM RISK	SHIFTS FROM MEDIUM TO LOW RISK
MnDOT may not address local and regional partner mobility priorities and the legislature directs funding toward capacity projects	Investment Level 2	Investment Level 4
Undesirable delay could increase with rising travel demand	Already at Medium Risk	Investment Level 3
Congestion hinders development of reliable and efficient transit service	Already at Medium Risk	Investment Level 3
The region may be unable to adapt to shifting travel and land use patterns	Already at Medium Risk	Investment Level 2
Less predictable travel times and unstable traffic flow at key locations on the NHS	Already at Medium Risk	Investment Level 2
Increased congestion could result in less reliable trips for freight carriers	Already at Medium Risk	Investment Level 2
Unstable traffic flow at certain locations may raise the risk of crashes	Already at Medium Risk	Investment Level 4

The low risk related to induced demand grows significantly with additional investment to become a high risk at Investment Level 4.

To find out more details about Highway Mobility planning and projects, go to:

Project Selection: www.dot.state.mn.us/projectselection/

Greater Minnesota Mobility Study: www.dot.state.mn.us/planning/program/mobility/index.html

Met Council 2040 Transportation Policy Plan: https://metrocouncil.org/Transportation/Planning-2/Key-Transportation-Planning-Documents/Transportation-Policy-Plan.aspx

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