






Twin Cities Highway Mobility Needs Analysis

The Twin Cities Highway Mobility Needs Analysis was conducted to establish a performance measure for highway mobility in the region and to recommend a performance target to establish the investment need through year 2040. This summary provides an overview of the importance of this investment area, the selection of the performance measure, and the outcomes associated with the recommended target.

The Cost of Congestion

Congestion costs Twin Cities and Greater Minnesota residents and businesses through a range of factors such as lost time, wasted fuel, injuries and damage from crashes, and other environmental and public health costs. In total, the Metropolitan Council conservatively estimates that Twin Cities congestion costs at least \$2.6 billion annually.

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|---|--|-----------------|
|  Commuter Costs | Lost time; wasted fuel; travel time reliability; vehicle maintenance; stress; quality of life | \$2,078M |
|  Safety Costs | Crashes; road rage; diversion onto the local roadways; delayed emergency response | \$50M |
|  Freight Costs | Freight delays; wasted fuel; increased shipping cost; supply chain impacts; unreliable pick-up and delivery times | \$217M |
|  Environmental and Public Health Costs | Wasted fuel; higher levels of localized air pollutants resulting in negative health effects including premature death | \$225M |
|  Reduced Economic Competitiveness | Less access to jobs; smaller labor markets; negative impacts to economic competitiveness; delays to MSP airport, river ports and freight terminals | Undetermined |
| Total Annual Cost of Congestion | | \$2,600M |

Source: Metropolitan Council. White Paper #1: The negative effects of traffic congestion on the Twin Cities, 2020

Establishing a Performance Measure

Five categories of performance measures were considered for Twin Cities highway mobility: these include **Access, Delay, Productivity, Reliability, and System Congestion**. Each of these provide a different view of mobility performance from the user or system perspective. The measures were also assessed across four criteria to identify those that best meet the performance evaluation needs:

- **Responsiveness** – measures are responsive to highway mobility investments strategies.
- **Alignment** – measures assess progress toward priorities identified in Thrive MSP 2040, 2040 TPP, or Minnesota GO.
- **Feasibility** – measures can be forecasted using currently available data and tools.
- **Simplicity** – Measures provide performance results that are easily understood by policy makers and the public.

This evaluation concluded that delay best met each of these criteria and was most suitable for measuring highway mobility. Delay per person was determined to be relatable to travelers, was responsive to anticipated investments, supports planning policies, and can be estimated using available data and tools.

PERFORMANCE MEASURE RECOMMENDATION

The Twin Cities Highway Mobility Needs Analysis recommends MnDOT and the Council develop a measure using traveler delay per capita to quantify MnDOT's 20-year Twin Cities highway mobility investment need. This would be supported by a series of outcome measures to gauge the societal and economic impacts at each investment level: ► **Job Accessibility** ► **Travel Time Cost Savings** ► **Freight Bottlenecks Addressed** ► **Greenhouse Gas Emissions**

Investment Scenarios

A series of investment scenarios were considered to evaluate the region's highway mobility performance over the next 20 years. During this period the region is projected to grow by 500,000 additional residents, resulting in additional travel demand on regional highways.

| Implement Planned Investments | Extend Current Investment | Manage Decline in Regional Mobility | Sustain Regional Mobility | Improve Regional Mobility |
|---|--|---|---|---|
| The lowest level of investment considered was a "zero investment" scenario. This would include no further improvement to the regional highway system beyond what is currently in place or under construction. | This investment level aligns with the Current Revenue Scenario presented in the Metropolitan Council's TPP and is comprised of projects that have been adopted into the plan and are fiscally constrained based on projected revenues through year 2040. | This scenario includes projects presented in the TPP Increased Revenue scenario, which includes improvements that have advanced through some level of development but are not fiscally constrained within projected revenues. | To sustain mobility at existing performance levels through year 2040, this scenario includes additional investment beyond Level 2. These include TPP guided investments, as well as improvements not previously explored. The purpose was to improve highway mobility in the region, but not to isolate specific highway improvement locations. | This scenario uses the same approach as Level 3 but applies more aggressive delay thresholds and mobility improvements to further enhance performance and outcomes, resulting in highway mobility that improves upon existing levels of delay per person. |

Performance and Outcomes

The measures and outcomes of the performance investment levels were estimated using the regional travel demand model. The summary on the reverse side shows how these change as highway mobility investment increases. Delay per person, job accessibility, travel time cost savings, and freight bottlenecks are all meaningfully improved with additional investment.

Capital Investment Estimates

Capital costs for the investment performance levels were estimated based on typical construction bid prices and the total mileage of trunk highway improvements. Low, medium, and high cost ranges are provided for each scenario, ranging from less than \$1 billion to nearly \$6 billion over the next 20 years. Capital investment is one among several strategies to reach the highway mobility target.

PERFORMANCE TARGET RECOMMENDATION

The Twin Cities Highway Mobility Needs Analysis recommends MnDOT and the Metropolitan Council target an annual performance of 40 hours of delay per person. This provides an improvement over existing conditions of 42 hours of delay per person and a significant benefit compared to current investment direction of 56 hours of delay per person. The outcome of this investment level includes: ► **Job Accessibility increase of 180,000+ jobs per resident** ► **Annual travel time cost savings of \$800 per household.** ► **Freight bottlenecks improved at 95% of locations** ► **Greenhouse gas emissions were not found to be meaningfully impacted** (further analysis planned in this area in 2022)
The investment needed to achieve this highway mobility target is projected to be approximately \$4-\$6 billion over the next 20 years.

2040 Investment Scenarios

The Twin Cities Highway Mobility Needs Analysis was conducted to establish a performance measure for highway mobility in the region and to recommend a performance target to establish the investment need through year 2040. This effort identifies five scenarios of investment in Twin Cities highway mobility over the next 20 years. With \$4-6 billion in highway mobility investment over the next 20 years, MnDOT expects to limit Twin Cities travel delay in the year 2040 to less than 40 hours per person per year. This represents a 5% improvement relative to 2018, when average annual delay was 42 hours. Additional scenarios identify levels of investment associated with higher levels of travel delay.



| Scenario | Implement Planned Investments | Extend Current Investment | Manage Decline in Regional Mobility | Sustain Regional Mobility | Improve Regional Mobility |
|---|---|--|---|---|---|
| 20-Year Investment | \$0-\$375 million | \$1-\$2 billion | \$2-\$3 billion | \$3-\$5 billion | \$4-\$6 billion |
| Annual Delay per Capita <small>📅 = An 8 hour workday -- = Delay per capita in 2018</small> | 🕒 56 hours <small>14 hours > 2018</small> | 🕒 52 hours <small>10 hours > 2018</small> | 🕒 48 hours <small>6 hours > 2018</small> | 🕒 44 hours <small>2 hours > 2018</small> | 🕒 40 hours <small>2 hours < 2018</small> |
| Jobs Accessible to Typical Twin Cities Resident <small>(within 30 minute drive during AM peak) 📁 = 200,000 jobs accessible</small> | 🚶 740k jobs <small>Same as 2018</small> | 🚶 820k jobs <small>80k jobs > 2018</small> | 🚶 860k jobs <small>120k jobs > 2018</small> | 🚶 900k jobs <small>160k jobs > 2018</small> | 🚶 920k jobs <small>180k jobs > 2018</small> |
| 2040 Benefit from Travel Time Savings <small>💰 = 100 dollars per household</small> | N/A | 💰💰 \$200 | 💰💰💰💰 \$400 | 💰💰💰💰💰💰 \$600 | 💰💰💰💰💰💰💰💰 \$800 |
| Freight Bottlenecks Addressed | 🚛 0% | 🚛 39% | 🚛 65% | 🚛 90% | 🚛 95% |
| Greenhouse Gas Emissions | 4 million metric tons per day in 2040 (Substantial decreases in greenhouse gas emissions through year 2040 are projected based on vehicle efficiency improvements; the overall magnitude of regional emissions in 2040 are not greatly influenced by these highway mobility investment scenarios, but further study is needed.) | | | | |
| Risk of Not Reaching Delay Target | HIGH | HIGH | MODERATE | MODERATE | LOW |