

# Minnesota’s Freight Performance Measures Working Group

Recommended Performance Measures

## Contents

Freight Measures ..... 2

Safety Measures ..... 5

Pavement Measures ..... 6

Bridge Measures ..... 7

## Initial Freight Measures

Initial Measures (Recommended)	Data Availability and Description	Originating MnDOT Office	Current Reporting Schedule	Scalable to Corridor Level	Spatial Attributes?
Annual Hours of Truck Delay (AHTD)	The National Performance Management Research Data Set (NPMRDS) is the intended source for AHTD data. MnDOT currently has a access to the dataset but is awaiting final FHWA requirements before implementing NPMRDS analysis in performance measure reporting. The dataset will likely be richer for the metro areas of the state.	Performance Measures and Investment Analysis Office	Data is updated monthly	Yes	Yes
Truck Reliability Index (RI80)	The National Performance Management Research Data Set (NPMRDS) is the intended source for truck reliability data. MnDOT currently has a access to the dataset but is awaiting final FHWA requirements before implementing NPMRDS analysis in performance measure reporting. The dataset will likely be richer for the metro areas of the state.	Performance Measures & Investment Analysis Office	Data is updated monthly	Yes	Yes
Total domestic shipments to, from or between Minnesota locations	FHWA Freight Analysis Framework (FAF)-based data, measured in value and ton-miles, updated intermittently. Excludes international shipments and "through" shipments.	Office of Freight & Commercial Vehicle Operations	Data updated annually, projections updated in 5-year increments	No	Yes
Freight Mode Share in Minnesota	Freight Analysis Framework (FAF)-based data supplied by the MnDOT Office of Freight and Commercial Vehicle Operations. Reported by <i>value</i> , 2002-2011	Office of Freight & Commercial Vehicle Operations	Data updated annually, projections updated in 5-year increments	No	Yes
Freight Mode Share in Minnesota	Freight Analysis Framework (FAF)-based data supplied by the MnDOT Office of Freight and Commercial Vehicle Operations. Reported by <i>ton miles</i> , 2002-2011	Office of Freight and Commercial Vehicle Operations		No	Yes
Heavy Commercial Vehicle Miles Traveled (HCVMT)	Commercial vehicle miles traveled on the Minnesota State Highway System (in billions). A product of automatic traffic recorder (ATRs), and road cost user studies.	Transportation Data & Analysis Office	Annually, July/August	Yes	Yes

Initial Measures (Recommended)	Data Availability and Description	Originating MnDOT Office	Current Reporting Schedule	Scalable to Corridor Level	Spatial Attributes?
Heavy Commercial Average Annual Daily Traffic (HCAADT) by Corridor	Commercial vehicle miles traveled on the Minnesota State Highway System (in billions). A product of automatic traffic recorder (ATRs), and road cost user studies.	Transportation Data & Analysis Office	Annually, July/August	Yes	Yes
Annual Rail Shipments in Minnesota (in millions of tons)	Currently collected by MnDOT staff from Association of American Railroads (AAR) for Annual Performance Report. Also available from annual STB waybill sample (more precise) or FAF database. Requires STB approval.	Office of Freight and Commercial Vehicle Operations	Annually, varies	Yes	Yes
Annual Container Lifts in Twin Cities intermodal yards (in thousands)	Currently obtained by MnDOT staff from facility operators. Also available from annual STB waybill sample analysis. Requires STB approval.	Office of Freight and Commercial Vehicle Operations	Annually, varies	N/A	N/A
Annual Port Shipment Tonnage (in millions of tons)	Currently obtained by MnDOT Ports and Waterways staff for Annual Performance Report	Office of Freight and Commercial Vehicle Operations	Annually	N/A	N/A

## Potential Freight Measures

1. **Metro-area specific freight performance measures**—The metro-area has a substantial amount of freight generation and demand, as well as the benefit of additional data and information resources that could support specific and localized performance measures. Recent research by the University of Minnesota could provide a basis for this.
2. **Economic competitiveness of freight infrastructure**—Performance Measure working group discussions revealed that perhaps current freight measures are more a measure of freight demand than performance. One suggested approach was to identify metrics that accurately measure economic aspects of the state’s freight transportation system, such as economic competitiveness of freight services, and “lane competitiveness” for freight shippers to access various markets.
3. **Corridor-specific and connector-specific data focus areas**—There are a number of opportunities to drill-down the recommended performance measures and highlight how specific corridors and key connectors are performing as components of the freight system. The majority of data across the freight, safety, pavement, and bridge categories is scalable with little to moderate data processing for this purpose.

4. **Refine rail operations**—Current rail shipment information is based on American Association of Railroads (AAR) data and is at a statewide level. An annual or bi-annual request for the 900-byte Surface Transportation Board Waybill Sample would allow for a more granular perspective on goods movement trends on railways in the state.
5. **Compile rail infrastructure information**—Given the proprietary nature of railroad data, much of the network information is not available. However, one suggestion included compiling a database of railroad bridge condition for shortlines (non-Class I's) in the state, which would establish a starting point toward measuring rail infrastructure and identifying needs.
6. **Compile air cargo data**—In addition to MSP, Minnesota has multiple airports that handle air cargo and are also part of the freight network and linked to the NHS system. The Office of Aeronautics and Federal Aviation Administration both maintain annual landed cargo statistics, by airport.
7. Incorporating system performance and **Congestion Mitigation, and Air Quality (CMAQ)** components into freight performance measure framework—As the freight performance measure system evolves, CMAQ and environmental measures that are based on freight movements could be explored. Currently, freight specific emissions, fuel usage, and related data is not available at a meaningful level.

## Initial Safety Measures

Initial Measures (Recommended)	Data Availability and Description	Originating MnDOT Office	Current Reporting Schedule	Scalable to Corridor Level	Spatial Attributes?
Number of Fatalities	MnDOT currently tracks the total number of fatalities resulting from crashes involving a motor vehicle, maintained by MnDOT Office of Traffic, Safety and Technology	Office of Traffic, Safety and Technology	Annually, May	Yes	Requires cross-referencing
Fatality Rate	MnDOT currently tracks the traffic fatality rate on all Minnesota roads (per 100 million VMT)	Office of Traffic, Safety and Technology	Annually, May	Yes	Requires cross-referencing
Number of Serious Injuries	MnDOT currently tracks serious traffic injuries on all Minnesota roads	Office of Traffic, Safety and Technology	Annually, May	Yes	Requires cross-referencing
Serious Injury Rate	MnDOT currently tracks the traffic injury rate on all Minnesota roads (per 100 million VMT)	Office of Traffic, Safety and Technology	Annually, May	Yes	Requires cross-referencing
Severe Crashes Involving Trucks	MnDOT has the ability to extract severe crashes involving trucks from the crash database	Office of Traffic, Safety and Technology	N/A	Yes	Requires cross-referencing
Incidents at Highway/Railroad Crossings	MnDOT extracts crossing incident data from the Federal Railroad Administration (FRA) crossing database	Office of Freight and Commercial Vehicle Operations	N/A	Yes	Requires cross-referencing

## Potential Safety Measures

- Railroad derailments and hazardous material incidents**—given recent public exposure to rail safety issues and concerns regarding hazardous material incidents, MnDOT could begin tracking derailments, spills, or both, and catalog where rail safety events are occurring over time. Similar approaches could be used for other non-highway modes, to track **aviation** and **waterway freight safety incidents**.
- Snow and ice response along key truck routes**—MnDOT currently tracks snow and ice response on its roadways. As the MFN is established, a subset of snow and ice removal data could be applied to key truck routes.
- Multimodal Freight Network commercial vehicle and highway-railroad crossing incidents**—As the MFN is established, it will be important to identify specific safety issues and remediate areas of high exposure between trucks and railroads.

## Initial Pavement Measures

Initial Measures (Recommended)	Data Availability and Description	Originating MnDOT Office	Current Reporting Schedule	Scalable to Corridor Level	Spatial Attributes?
Interstate Pavement in Good, Fair and Poor Condition based on the International Roughness Index (IRI)	IRI data is currently collected, but not reported as MnDOT favors the "Ride Quality" Index, which is a function of collected Roughness Data.	Office of Materials & Road Research	Annually, February	Yes	Yes
Non-Interstate NHS Pavement in Good, Fair and Poor Condition based on the International Roughness Index (IRI)	IRI data is currently collected, but not reported as MnDOT favors the "Ride Quality" Index, which is a function of collected Roughness Data.	Office of Materials & Road Research	Annually, February	Yes	Yes
Pavement Structural Health Index	MnDOT currently measures ride quality on the Interstate system, the non-Interstate National Highway System and on all state highways, and tracks percentage of highways with poor ride quality.	Office of Materials & Road Research	Annually, February	Yes	Yes

## Potential Pavement Measures

1. Corridor and connector-specific pavement conditions
2. Multimodal Freight Network pavement conditions
3. Metro-area network pavement conditions

## Initial Bridge Measures

Initial Measures (Recommended)	Data Availability and Description	Originating MnDOT Office	Current Reporting Schedule	Scalable to Corridor Level	Spatial Attributes?
Percent of Deck Area on Structurally Deficient Bridges	MnDOT currently measures Bridge condition is calculated from the results of inspections performed at least every two years on all state highway bridges.	Bridge Office	Annually, February	Yes	Yes
NHS Bridges in Good, Fair and Poor Condition based on Deck Area	MnDOT currently measures Bridge condition is calculated from the results of inspections performed at least every two years on all state highway bridges.	Bridge Office	Annually, February	Yes	Yes

## Potential Bridge Measures

1. Corridor and connector-specific bridge conditions
2. Multimodal Freight Network bridge conditions
3. Metro-area network bridge conditions