Preserving Minnesota’s Economic Competitiveness

“The economic competitiveness of our state is directly linked to how, why and where our businesses move their goods. Understanding these freight movements enables us to target policies and resources at highway, rail, water, and air corridors that will improve the State’s competitive position.”

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Commissioner of Transportation

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Statewide Freight Flows

Freight movement plays a major role in the economic prosperity of the state of Minnesota. Through a number of efforts, the Minnesota Department of Transportation (Mn/DOT) is working in the interests of businesses throughout Minnesota to identify potential improvements to the statewide freight transportation system. An important first step in targeting resources is to understand how goods move through the State and what corridors are critical to freight movement and the State’s economic vitality. The Minnesota Statewide Multimodal Freight Flows Study was commissioned to determine how goods move in the State and to identify key corridors where improvements should occur.

Nearly 400 million tons or $350 billion\textsuperscript{1} of goods move through Minnesota each year, supporting businesses in every corner of the state.

This study is intended as a significant first step down a path to more actively engage the State’s business community in planning and programming activities that lead to transportation investments which support the economic vitality of Minnesota. The study represents an initial effort by Mn/DOT to identify logistics patterns that result in demands for transportation services (and infrastructure) by Minnesota businesses competing in a global economy. The results of this study also underscore the need to reconcile the public and private views of transportation: e.g., public infrastructure versus supply chain management; 15-year planning horizons versus 15-minute just-in-time delivery windows.

The goal of this study was to provide data, recommendations, and direction regarding Minnesota freight flows to Mn/DOT and the Minnesota Freight Advisory Committee (MFAC), including:

- The volume, density, and character of major freight flows in the State by mode and corridor;
- The origins and destinations of freight flows by mode to and from major regional centers in the State;
- Critical freight transportation planning, infrastructure, and policy issues; and

\textsuperscript{1}Source: 1997 TRANSEARCH Database, Reebie Associates.
• Data, freight system performance measures, and recommendations to support and compliment the Interregional Corridors Study, which identified priority and at-risk interregional highway corridors connecting the State’s regional trade centers.

While this study provides a better understanding of logistics patterns for existing and emerging industries in Minnesota, it is limited by currently available data. Available “off-the-shelf” data sources vary both in quantity and quality in regards to transportation mode. This is a significant challenge to future freight transportation planning efforts since businesses often view their data as proprietary.

**Total Freight Flows Associated with Minnesota**

*Out of 395 million tons in 1997, 120 million moved only within the State, 135 million moved outbound from the State, 90 million moved inbound to the State, and 50 million traveled through the State without stopping.*
**Key to Economic Prosperity**

Minnesota’s transportation network plays an integral role in maintaining the State’s competitive economic advantages. Whether it is a bulk cargo ship of grain traveling on the Great Lakes, a trainload of coal bound for St. Cloud, packaged cereals traveling by truck to supermarkets in the Midwest, or medical goods flying out of Rochester to the East Coast - Minnesota’s economy is linked to the State’s ability to move goods.

**Minnesota is a key production state that exports 50 percent more than it imports. It is the ninth largest state for outbound interstate shipments by weight, following only Illinois and the large coal and oil-producing states.**

Taconite mining, agriculture, and coal shipments from Wyoming are responsible for nearly two-thirds of the tonnage of all goods moved in Minnesota. The logistics of moving these goods requires the State to maintain a strong multimodal freight system for local truck moves, short- and long-haul rail moves, and long-haul waterborne moves. Products used by Minnesota’s cities constitute over half of the total value of goods moved. These require fast and efficient truck, intermodal rail, and air cargo service across North America and the globe.

An extensive system of highways, rail lines, water ports, and airports supports goods movement within the State, as well as to and from other states and countries. As global competition increases, maintaining the quality and capacity of this system is crucial to the economy of Minnesota.
Total Interstate Commodity Flows by Weight from Minnesota

1997 destinations and volumes of the 135 million tons of goods originating in Minnesota, with the originating regions of the State shaded according to volume.
Challenges Facing Minnesota’s Freight Transportation System

Minnesota’s economy requires a multimodal approach to freight transportation, focusing on:

- Highways, because trucks move most consumer products and account for the majority of freight movements by value;
- Rail, because the largest share of freight movements by weight, representing the State’s major export commodities, are carried by the extensive rail network;
- Waterborne freight, because important bulk shipments of coal, iron ore, and grain move through the State’s ports and waterways; and
- Air freight, because the highest-value shipments move on airplanes.

These modes are facing major challenges.

The number of truck trips are increasing due to the dynamic growth of those sectors of the economy - such as high-technology - that produce or consume high-value products for which rapid and reliable delivery is a priority. Also, changes in business practices for shippers, manufacturers, and motor carriers are creating a greater reliance on trucking. Just-in-time manufacturing and distribution systems and increased emphasis on customer service and e-commerce are having major impacts on carrier operations.

Logistics trends are placing increasing strain on the State’s roadway infrastructure, which already is under pressure from the State’s continued strong economic growth.
Minnesota’s Freight Transportation System

Competitive pressures facing the rail, water, and air freight modes in the State are shifting some trips - both in rural areas and the Metro region - to trucks.

Planning for traffic delays and lower speeds is part of a carrier’s business practices, but it increases operating costs and lowers
profit margins. Missing a delivery window outright frequently results in shipper-imposed penalties on the carrier.

**Urban Congestion is Causing Delays and Increases in Operating Costs That Affect the Efficiency of Truck Travel and Thus the Competitive Position of Minnesota.**

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**Recommended Strategies for Highway Freight**

1. Develop major investment strategies and performance standards to facilitate freight movement on the key truck highway corridors.

2. Examine the designation of the I-94 corridor as a Corridor of National Significance for funding under the U.S. DOT’s Borders and Corridors Program.

3. Ensure that the local roadway system can meet the requirements of truck transport, including solving “hot spots” with high levels of congestion or accidents; developing new truck lanes, bypass ramps, staging areas and haul roads; improving port/terminal and farm to market access roads; and reassessing the statewide 80,000 pound weight limit and springtime local road restrictions.

4. Undertake efforts that result in closer coordination between the freight and highway planning functions of Mn/DOT and the motor carrier regulatory activities of the Office of Motor Carrier Services and the Commercial Vehicle Section of the State Patrol. Such coordination would help ensure consistent truck regulatory policies and enforcement across Minnesota and the Upper Midwest, as well as leverage opportunities for coordination and data exchange in the application of ITS for regulatory and information purposes.

5. Pursue the development of more public and private truck rest stops and parking areas on key corridor routes and in congested metropolitan areas.

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As a major producer and transshipper of bulk commodities such as iron ore, coal, and grain, Minnesota relies heavily on its railroads and waterways. Maintaining the roles of these modes is critical for the health of the State’s economy and transportation system, particularly to avoid the diversion of freight trips to the highway system with the resulting impacts to the roadways themselves and to quality of life for the State’s residents. Each mode is facing new challenges.
Total Freight by Mode

*Tons*

- Rail 47%  
  159,000,000
- Water 21%  
  71,000,000
- Truck 32%  
  108,000,000
- Air 0%  
  350,000

*In 1997, trucks carried the largest amount of freight by value, but railroads carried the largest amount by weight.*

*Dollars*

- Rail 12%  
  $ 35.0 Billion
- Water 3%  
  $ 7.6 Billion
- Truck 84%  
  $ 252.0 Billion
- Air 1%  
  $ 4.4 Billion

In the case of railroads, the challenge is the competitive pressures nationwide from other modes that are encouraging railroad consolidation and retrenchment - evidenced by increasing weight limits and the use of “shuttle” unit trains.

**Large railroads are merging to consolidate their operations and to reduce costs. The entire North American continent is now served by only six large rail systems.**

This trend potentially threatens the State’s sizeable investment in maintaining and growing a healthy short-line network, and could result in changing logistics patterns whereby short lines and smaller country grain elevators are bypassed via trucking to larger...
consolidation centers. On the other hand, the emerging trend toward grain identity preservation (for example, by excluding genetically altered grains for transshipment to European Union countries), has the potential to change logistical patterns away from large bulk carload shipment toward intermodal containerized or truck-only shipments.

**RECOMMENDED STRATEGIES FOR RAILROADS**

1. Continue to actively intervene in railroad merger cases before the STB; ensure that existing rail service remains and is competitive with other modal options.
2. Take steps to maintain a healthy short-line industry including reducing capital costs through loan assistance; encouraging public/private partnerships that stimulate more capital investment; supporting regulatory zoning, land subsidies, and master planning efforts where needed; and proactively developing strategies to deal with identity preservation grain issues, including single grade elevators and intermodal grain ramps.
3. Identify a strategic rail network and conduct major investment studies on key freight corridors.
4. Expand intermodal service by helping to identify base-load customers in currently under-served markets, and facilitating or partnering in terminal development.

**IN CONTRAST TO THE DYNAMIC ENVIRONMENT IN THE RAILROAD INDUSTRY, THE MAJOR CHALLENGE TO WATERBORNE TRANSPORTATION IS THE RELATIVE COMPLACENCY AND STAGNATION WITHIN THE SYSTEM.**

Waterborne transportation, like rail, is a key component of the State’s bulk transport system and its decline would result in diversion of large bulk shipments to heavy trucking in volumes the current roadways can not possibly handle. The waterborne transportation system is constrained by narrow Great Lakes locks that cannot accommodate larger more-efficient ships, and short Mississippi River locks that prevent long cost-effective barge tows north of St. Louis. Decision-making and control over this infrastructure is in the hands of the Canadian and U.S. federal governments. The 1990 U.S. increase in user maintenance fees and the 1904 Cargo Preference Act, which requires that government cargoes be shipped on U.S. vessels only, restrict competitive lake service.
Air freight, though constituting a relatively small share of total volume (particularly by weight), is a rapidly growing mode that is critical to the emerging high-technology sector of the economy. Air freight is intricately linked to truck transportation, since almost all air freight is ultimately picked up or delivered by a truck, and landside congestion near the Minneapolis/St. Paul airport is becoming severe. Minnesota has reacted well to business demands with new and planned air cargo facilities, however demand and congestion are already undermining these improvements.

IN 1997, 350,000 TONS OF AIR CARGO PASSED THROUGH THE STATE. BY 2020, THAT NUMBER IS EXPECTED TO GROW TO 1,320,000.\(^2\) THE OVERSEAS MARKET IN PARTICULAR IS PREDICTED TO GROW SUBSTANTIALLY.

RECOMMENDED STRATEGIES FOR WATERBORNE FREIGHT

1. Proactively partner with the U.S. Army Corps of Engineers and the Canadian government to support dam and lock improvements on the Mississippi River and Great Lakes/St. Lawrence Seaway systems.
3. Work with the cities along the upper Mississippi River and the Metropolitan Council to ensure that the ongoing assessment of the best and highest use of the riverfront fully considers the needs of freight transportation.
4. Address highway congestion and maintenance issues on key terminal access routes such as Route 13 in Savage.

RECOMMENDED STRATEGIES FOR AIR FREIGHT

1. Proactively investigate the development of air cargo facilities at the second-tier airports around the State in order to mitigate growth at MSP and reduce long-haul truck traffic.
2. Identify opportunities for large hubbing or consolidation activities that would benefit from avoiding airside congestion and operating costs associated with Chicago.
3. Continue to support efforts to mitigate landside congestion at MSP and potentially other airports that evolve into secondary air cargo hubs.

\(^2\)Minnesota Statewide Air Cargo Study, 1998.
Focus on Key Corridors

Infrastructure investment should focus on the major freight corridors that link Minnesota’s economy to other states and nations—highways, rail lines, rivers, lakes, and air corridors. These are the critical links for moving cargo between Minnesota and the rest of the world; increasing their safety and efficiency is required to ensure future growth of the State’s economy.

Interstate and intrastate freight movement is heavily concentrated on a handful of key corridors, many of which face significant capacity constraints. These corridors focus on the principle freight hubs of Minneapolis/St. Paul and Duluth/Superior and include key multimodal interstate corridors to the Eastern, Southeastern and Northwestern United States, as well as primary intrastate corridors between the Metro region and the Central, South Central and Southeast Minnesota districts. These intrastate corridors are dominated by truck and rail transport, while most of the key interstate corridors are important to every mode.
The top six corridors and the regions they serve have been identified, with volume indicated by shading and arrow width. The East corridor - including I-94, the Burlington Northern Santa Fe and Canadian Pacific railroads to Chicago, and the Great Lakes waterways - carried 93 million tons to and from Minnesota in 1997.
Top Intrastate Commodity Flow Corridors by Weight

Two-way commodity flows of over one million tons among regions within Minnesota. The State is divided into eight Area Transportation Partnership (ATP) regions plus Douglas County, Wisconsin.
Freight Planning at Mn/DOT

Freight transportation service in Minnesota is provided largely by the private sector - in contrast to passenger transportation, where government is involved in nearly all aspects of the system. Identifying potential improvements to the freight transportation infrastructure to maintain or increase Minnesota’s competitive position is an important part of maintaining future economic prosperity. The traditional role of government with respect to freight has been to provide infrastructure funding through modal trust funds and to tax and regulate use of the system. Mn/DOT has an opportunity to work with the private sector to plan for and manage key elements of the freight transportation system.

Freight transportation issues cut across all aspects of state transportation planning, and require strong stakeholder contacts and the ability to interface with the global freight planning community in both the public and private sectors. Therefore, it is critical that Mn/DOT maintain a dedicated freight planning office as represented by the current Office of Freight, Railroads & Waterways (OFR&W). Mn/DOT has unique opportunities to address the challenges to its freight transportation network, given a variety of recent institutional and policy developments at the state level. These include:

- The new Mn/DOT positions for corridor and modal operations managers;
- The continued evolution of the MFAC with the initiation of two new subcommittees on motor carriers and metropolitan area issues; and
- The State’s aggressive focus on implementing rail passenger transportation programs in the Metro Area, which has the potential to relieve roadway congestion, but also may require multiple uses of freight transportation lines.
**Recommended Course of Action**

Minnesota’s role in the North American economy demands reliable connections to the domestic and international transportation infrastructure. The OFR&W can lead Mn/DOT’s efforts in a number of ways.

1. **Facilitate the development of multimodal freight transportation options and choices for shippers.**
   - Accommodate growth in trucking activity by reducing urban bottlenecks and improving key truck routes, particularly those that connect farms and forests to elevators, terminals and mills.
   - Ensure the long-term viability of competitive rail service on key corridors throughout the State and encourage expansion of intermodal service.
   - Overcome barriers to the growth of water transportation, particularly by supporting the upgrading of outdated locks and other infrastructure.
   - Accommodate growth in air freight by improving ground access to MSP and encouraging growth in air freight service outside of the Twin Cities.
   - Support safe and efficient transfer of goods between these modes at airports, water ports, and rail terminals by improving intermodal infrastructure and operations and encouraging coordinated intermodal planning.

2. **Focus investment in key freight corridors.**
   - Measure the existing and future performance of these key corridors to guide investment decisions.
   - Develop multimodal strategies for key freight movement corridors, whether they are interregional (within the State), interstate, or international.
   - Combine infrastructure investment with innovative operational and technology-based solutions.
   - Identify projects that generate the greatest economic and efficiency benefits at the least cost.
3. Develop public/private partnerships.

- Strengthen the role of the MFAC in providing ongoing input to Mn/DOT’s freight transportation policies, plans, and programs.
- Encourage districts and MPOs to create or maintain similar freight advisory committees.
- Coordinate with other states on improvements to key interstate freight corridors, particularly those affecting the Great Lakes and the Mississippi River.
- Coordinate with U.S. and Canadian federal agencies regarding improvements to key international freight corridors.
- Encourage MPOs, counties, and cities within Minnesota to work in partnership to address freight movements at a regional scale that cut across existing jurisdictional boundaries.
- Identify innovative partnerships and funding programs to accelerate freight projects on critical corridors so that needed improvements can occur on a timeframe consistent with business needs; consider implementation of a Multimodal Fund available to high-priority studies and projects.

4. Maintain OFR&W activities in freight policy and shipper/carrier contact.

- Provide technical assistance on freight-related issues to other Mn/DOT offices, MPOs, and municipalities throughout the State.
- Develop and maintain databases and decision support tools, including a set of performance measures for evaluating freight projects across mode, commodity and geography; and the incorporation of the freight flow data developed for this project into MPO travel demand forecasting models to support a higher degree of precision in modeling large freight flows on the State’s highway system.
- Continue to work with private sector freight stakeholders, including shippers and carriers, to better incorporate their viewpoints into the planning process, including strengthening the role of the MFAC in providing private sector input.
- Ensure coordination of freight issues across Mn/DOT offices, and in particular with the Office of Motor Carrier Services (OMCS) and Metro Division Modal Planning.
5. **Strengthen freight planning activities in Mn/DOT.**

- Develop a Statewide Freight Plan, building on the recommendations of this study, for inclusion in the Statewide Transportation Plan Updates; encourage the update of the statewide plan every two years.

- Encourage Mn/DOT’s Statewide/District Plan Steering Committee to evaluate and select a department template to be used in the district planning efforts for identifying and recommending freight transportation improvements. Mn/DOT’s Metropolitan Division has developed one approach, and Section 7 of this report provides another.

- Pursue innovative approaches to project financing and implementation, including accessing available federal funds and promoting public/private partnerships.