



MINNESOTA DEPARTMENT OF TRANSPORTATION

CENTRAL MINNESOTA REGIONAL FREIGHT STUDY

RECOMMENDATIONS

DECEMBER 2012

INTRODUCTION

The Central Minnesota Freight Study is a multimodal transportation planning effort that includes highway (commercial vehicle operations), rail, air cargo, and intermodal transportation. The study is sponsored by the Minnesota Department of Transportation (MnDOT).

This freight planning effort builds upon prior planning activities by MnDOT's Office of Freight and Commercial Vehicle Operations (OFCVO) with assistance from MnDOT District 3. The purpose of the study is to provide a better understanding of the demands from freight being placed on the regional transportation infrastructure and provide a framework that addresses the following goals:

- Examine regional and local issues to build upon those from previous freight transportation study/planning efforts, including freight issues specific to the region. The primary focus will include but is not limited to agriculture, energy, bulk commodities, minerals, timber, manufacturing, global gateways including intermodal and oversize/overweight cargo movements (e.g., super routes), interregional truck routes, and last mile connections.
- Document the existing freight transportation system in Central Minnesota, including facilities, service levels and current and projected commodity flows.
- Identify significant existing and projected needs, bottlenecks, infrastructure and regulatory issues, and other constraints in the region's freight transportation and their implications;
- Plan for improvements to freight movements specific to the regions, through a combination of operating and program efficiencies, infrastructure upgrades and investments, public/private initiatives and innovative funding, regulatory initiatives, and communications;
- Strengthen freight considerations in public project planning and investment decision-making.

Key Issues Identified

These are the key issues identified and recommended

- Address freight rail access in the region
- Establish a regional freight advisory committee
- Designated Super Haul corridors
- Support restoring commercial passenger/air cargo throughout the region
- Designated a Truck Network
- Explore ITS and Operational Options for Improving Commercial Vehicle Travel Reliability and Safety
- Build TH 24 connection: Clear Lake to I-94 Clearwater improvements
- Address urban freight mobility in significant freight corridors, particularly on IRC
- Demonstrate Advanced Technologies For Truck Productivity
- Increase truck parking at Fuller Lake rest area west of Clearwater

KEY ISSUES OVERVIEW AND RECOMMENDATIONS

Based on the information gathered through data analysis, meeting with key experts and business representatives and freight stakeholder meetings the following recommendations are made for the Central Minnesota Freight region. MnDOT District 3 in collaboration with OFCVO will develop an action plan to address the recommendations.

ADDRESS FREIGHT RAIL ACCESS IN THE REGION

The *Minnesota Comprehensive Statewide Freight and Passenger Rail Plan* states - the growth of rail freight volumes in Minnesota will be influenced by the interplay of a variety of factors that will have a bearing on transportation demand. These factors include overall population and employment growth, changes in national and global logistics patterns, and the evolution of the State's industry structure.

The Central Minnesota study area is on the western fringe of the expanding greater Minnesota-St. Paul Region. Population and economic growth in the short and long term, will sustain growth in the St. Cloud area's already sizable construction industries. As a regional center, St. Cloud also has a relatively large retail sector. At the heart of Minnesota dairy industry, St. Cloud continues to have a large farming sector, though its contribution to jobs in the economy is declining. St. Cloud has a much larger manufacturing than Minnesota, accounting for 14 percent of the jobs compared to 10 percent in the State. Manufacturing is more dependent on freight transportation than most other industry sectors and counts on the reliability and connectivity provided by the rail and road networks to produce and deliver products.

Between 2000 and 2009, the population of the Central Minnesota Study area increased an average of 14.65 percent, bringing the population to 641,889. From 2009 to 2030 the population is expected to continue increasing an average of 27 percent to 956,850. In particular, the following counties will experience the most significant increases in population and percentage growth by 2030: Wright (221,490 pop/44.9 percent), Stearns (188,750 pop/21 percent), and Sherburne (161,990 pop/45 percent).

To address future industry and population demands, accessible, reliable and efficient rail service is needed. Therefore three recommendations are suggested to MnDOT District 3:

- Aid to provide rail service to industrial parks when warranted;
 - Develop local support – businesses, public agencies, or perspective users
 - Research to determine rail facility characteristics – land size, number of tenants, infrastructure needs, ease of rail operation
 - Engage the rail road in design and operation specifications
 - Access available resources: MnDOT Freight Office, DEED, FRA
- Support and promote rail improvement projects
 - The Minnesota Rail Service Improvement Program (MRSI) provides loans to shipper to improve the efficiency, condition and capacity of their rail operation.

- Promote rail inclusion in economic development planning
 - Encourage public (counties, cities, townships, associations and non-governmental organization, etc..) and private agencies to include rail access as part of economic development planning

ESTABLISH REGIONAL FREIGHT ADVISORY COMMITTEE

MnDOT has established guidelines for public involvement, but has not developed practices or guidelines specifically for engaging the private sector in planning activities. To its credit MnDOT formed the first statewide freight advisory committee in 1997. The Minnesota Freight Advisory Committee (MFAC) continues to meet 3-4 times each year, but the group advises primarily on policy and research issues and does not have a role in the project programming process.

To facilitate greater participation in state and metropolitan transportation planning, federal legislation encourages States and Metropolitan Planning Organizations (MPOs) to provide opportunities for various interested parties to provide input into the development of transportation plans and programs. For example, the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA LU) stipulates that MPOs and States shall provide freight shippers and providers of freight transportation services with reasonable opportunities to comment on transportation plans and programs.

A significant issue for many freight movements is that freight often knows no boundaries; i.e. while many if not most commuter's stay in a single state or urban area and travel on a single mode each day, freight more often than not travels longer distances across multiple geo-political boundaries and multiple modes of transportation. The Central Minnesota Freight Study demonstrated that many of the issues affecting the freight community extend across borders, and sometimes are caused by state and/or municipal boundaries. Forming a regional Freight Advisory Committee (FAC) is likely to provide a good platform for pursuing many of the other recommendations that follow in this report.

In addition, developing a regional FAC could provide an opportunity to:

- Reach consensus among diverse stakeholders on multimodal freight needs, and facilitate successful solutions,
- Assist the implementation of regional freight projects by raising the level of shared knowledge between public and private sector stakeholders on freight concerns.
- Establish strong partnerships with key private sector economic leaders in the freight industry.
- Help promote and maintain a high quality of life in Minnesota by ensuring that freight needs are considered and that freight growth is addressed.

MnDOT District 3 should spearhead the formation of a Regional Freight Advisory Committee. The purpose of a Regional FAC would be to facilitate strategic information exchange and coordination among regional business leaders and other diverse freight stakeholders regarding freight needs and potential solutions to help build a better transportation system and quality of life in the region. A number of other recommendations resulting from this study may also provide an initial work plan for the group.

The formation of a Regional FAC could provide a platform for actions to address regional differences. Other function of a Regional FAC could include but not limited to:

- Serve as a forum for discussions about freight movement in the regional and for providing advice to District leadership about freight issues
- Set criteria for selecting projects
- Prioritize projects
- Review and develop quick start projects (less than \$50,000)

A district-level FAC could also be closely coordinated with Minnesota’s statewide MFAC, as well as regional St. Cloud APO planning committee, through cross membership. Many of the stakeholders contacted through the course of the Regional Freight Study were eager to share comments and ideas, and would provide a ready opportunity for an initial contact list.

DESIGNATE SUPER HAUL CORRIDORS

As part of developing Super Haul Corridor routes, MnDOT identified key characteristics for these routes. Super-load Corridors can accommodate a loaded vehicle with a 14-foot height limit, a 10-foot width limit, a 110-foot length limit and an 80,000 pound weight limit. These corridors in combination with portions of the Expanded Envelope Corridors cover about 80 percent of all over-size load movements in Minnesota. Expanded Envelope Corridors are routes that can accommodate much larger loads than the Super Corridors. These routes can be permitted for a loaded vehicle that is 16-feet high, 16-feet wide and 130-feet long with a weight of 235,000 pounds. Special Considerations are sections of corridors that may have constraints or special considerations for transporting over-size loads such as requiring the use of an escort. Other constraints may include roads that have narrow shoulders or low bridges, which require the use of some local routes, and/or curvatures that may require special moving considerations.

As noted, one of the more difficult permitting issues to address is height. Mn/DOT currently designs bridges for 16’ 4”. It also requires that a safety margin of six inches on all moves to account for maintenance overlays and sag verticals. As a result, to move a load that is 16’ high the permit office requires all vertical clearances to be at least 16’ 6”. This policy means that all new bridges that are being built must meet this requirement. It is important to note that most height permits are less than 16 feet and in fact, almost all Trunk Highways can accommodate moves for heights up to 15’ 4. For example, a load that is 15’4” only has to avoid one bridge structure travelling on I-35 from Duluth to Iowa. A load that is 15’6” has to avoid eight low clearance bridges, whereas a load that is 15’8” has to avoid twenty-two structures (as identified on the current Super Corridor route system).

The Super Haul Corridor route map shown in **Figure below** is reflective of routes that that can support a variety of over-size loads. When planning improvements and/or changes along these routes, District staff should try to preserve the ability to accommodate these characteristics or improve upon them if feasible.

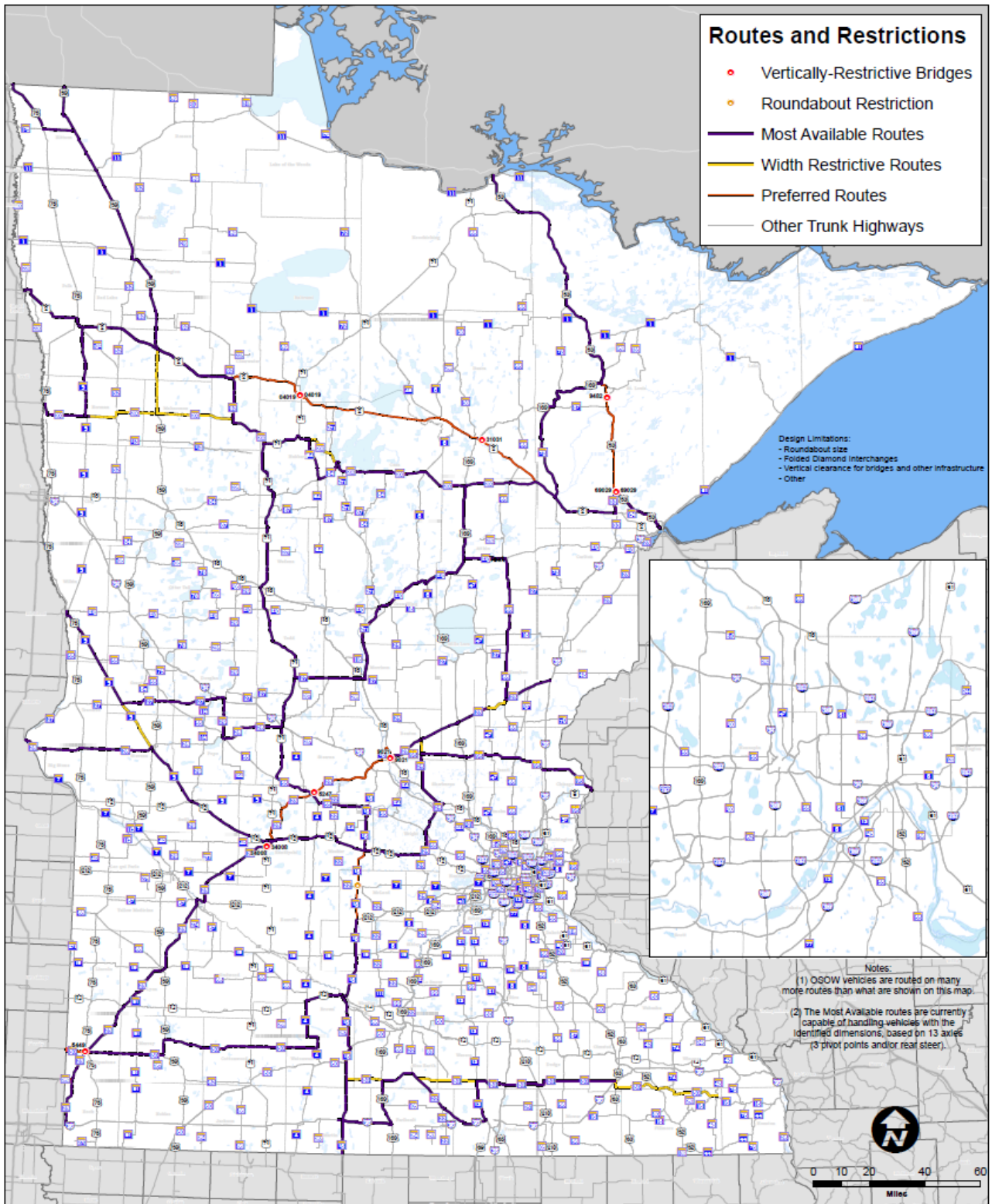


MINNESOTA PROPOSED OSOW SUPERLOAD CORRIDORS

16' tall x 16' wide x 150' long x 250,000 lbs

Draft Version: October 13, 2011

MINNESOTA DEPARTMENT OF TRANSPORTATION



SUPPORT RESTORING AND RETAINING COMMERCIAL PASSENGER/AIR CARGO SERVICE THROUGHOUT THE REGION

The Central Minnesota/St. Cloud/Brainerd areas are home to various high-tech industries manufacturing high value, time sensitive products that depend on reliable air freight service

St. Cloud Regional Airport is an on-demand air cargo facility that can provide belly-hold cargo activity. The airport has two runways and serves private, commercial, corporate, cargo and military operations. In the past approximately 100 aircraft are based at the field with over 200 aircraft operations averaged daily. Although this is the largest airport in the region and has two runways, it does not serve as a major freight airport. At present, the St. Cloud Regional Airport does not have scheduled commercial air service.

At present, the Brainerd Lakes Regional Airport provides scheduled air cargo service. Mesaba a Delta airline partner operates daily service to Brainerd. This airport serves the upper central Minnesota region. Discussions are currently underway to consider other airline carriers to replace Mesaba.

DESIGNATED TRUCK NETWORK/TIERED NETWORK

Designating a tiered roadway network highlights the roads that are most important to truck traffic. Combining the existing designated systems together results in a system that was too large to provide any investment guidance. The tiered approach combines truck traffic and roadway design characteristics to identify the roadways essential to the efficient movement of freight.

Heavy commercial annual average daily traffic (HCAADT) was used to validate the existence of elevated levels of HCAADT on the existing systems. HCAADT is an estimate of the total number of vehicles with at least two axles and six tires, using a specific segment of roadway on any given day of the year. Heavy commercial vehicles include trucks only. Based on observed statewide data, tiers were classified based on breaks of 650 and 300, resulting in the following tiers:

- Tier 1: Roads on the network with HCAADT greater than 650
- Tier 2: Roads on the network with HCAADT between 301 and 650
- Tier 3: Roads on the network with HCAADT less than 300

The three tiers together form the designated truck network. Roadway design characteristics were then used to verify appropriate design for each tier and to identify network deficiencies. Multi-lane segments of roadways provide a safe route for a vehicle envelope of 14' tall, 14' wide and 67' long. Almost all segments of multi-lane roadways are on tier 1. In addition, shoulders of at least 10' in width provide a similar safety benefit. Roadway segments with shoulder width less than 10' are sporadically distributed across the network.

District 3 may wish to adopt the tiered network metrics as a means to identify, consider and/or integrate commercially advantageous freight-related improvements into the project prioritization process. Projects on the Tier 1 network in particular could be prioritized into their ATP/STIP

process as an element of highway investment that directly impacts the competitiveness and access for local businesses that are significant freight generators. District 3 should focus on Tier routes due to their higher freight volumes and higher cost effectiveness for identified freight improvements. Tier 2 and 3 routes also may exert some influence in project prioritization to a much lesser degree, with the logical exception of short segments that may be directly influenced by the activities of specific industrial site. A list of freight related evaluation criteria is provided below:

- Heavy Commercial Average Daily Traffic for the Tier 1 freight network

- Proximity of key freight generators to the Tier 1 freight network

- Pavement conditions on key Tier 1 freight routes

- Roadways with shoulders less than 10 feet

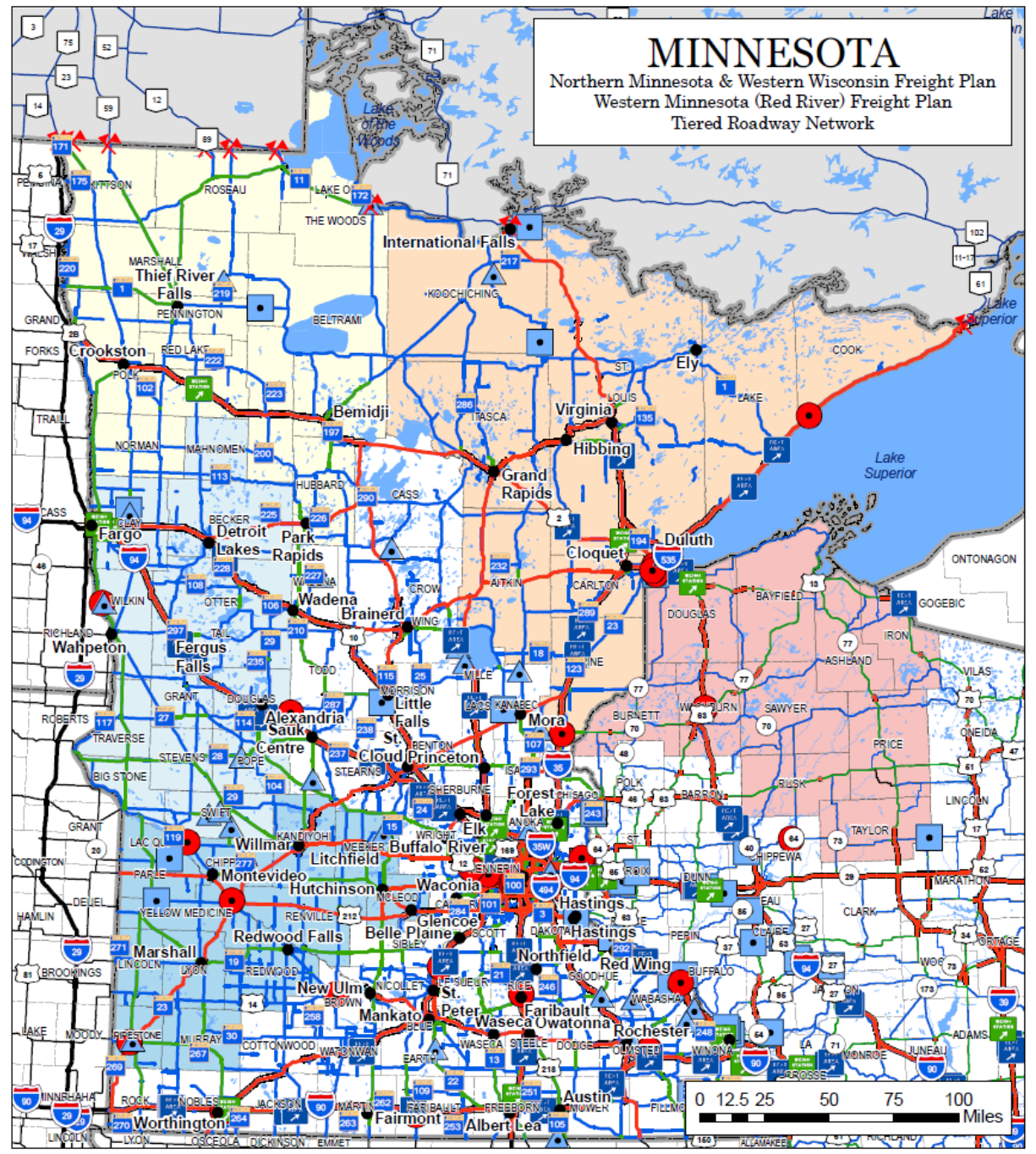
- Two lane rural roadways with daily volumes over 11,200

For the analysis and mapping elements, roadways with shoulders less than 6-feet were analyzed to comply with the Statewide Transportation Policy Plan 2009-2028. However, for Tier 1 roadways, District 3 should strive to incorporate shoulder improvements on Tier 1 routes that have shoulders less than 10-feet, which will improve safety and increase efficiency along these routes, as Tier 1 roadways generally provide the greatest benefit to shippers when moving freight.

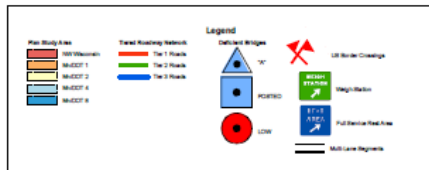
As part of the Tiered Truck Network, 10-ton roadways provide important connections between intermodal freight facilities, major freight generators and other key freight destinations throughout the state. These roadways generally include city and county routes that receive state aid funding, as well as trunk highways, interstates and some local roads. Year-round, 10-ton roadways also provide a predictable freight roadway network, whereas all other roadways are subject to axle load limitations, including seasonal load restrictions.

MINNESOTA

Northern Minnesota & Western Wisconsin Freight Plan
Western Minnesota (Red River) Freight Plan
Tiered Roadway Network



Map produced by Minnesota Department of Transportation, Office of Freight and Commercial Vehicle Operations



January 30, 2009

EXPLORE ITS (Intelligent Transportation System) AND OPERATIONAL OPTIONS FOR IMPROVING COMMERCIAL VEHICLE TRAVEL RELIABILITY AND SAFETY

For the commercial vehicle operator, having access to corridor-wide information can be of great value for increasing the efficiency and reliability of long-distance travel. While the I-94 corridor segment between the Twin Cities and St. Cloud is relatively short, a significant amount of commercial vehicle traffic in the corridor comes from outside the study area, from locations such as Winnipeg and Chicago. When reliable travel information is shared throughout the network, drivers can make better-informed routing choices and reduce or better utilize their travel time.

Interstate 94 (I-94) through the Central Minnesota Study Area, is a principal arterial route and a designated Interregional Corridor. Recent analysis of truck GPS data shows that average truck speeds along the corridor in 2010 between St. Cloud and the Twin Cities to be as low as 49 miles per hour (mph) during evening peak and 46 mph during the morning peak. The average peak period truck speeds range between 49 and 54 mph. FHWA projects by 2040 peak period truck traffic from the North Dakota border to the Twin Cities will be classified as “Highly Congested”.

District 3 is faced with significant preservation needs along the I-94 corridor between St. Cloud and the Twin Cities. Because of the importance of this corridor in supporting goods movement and trade, consideration should be given to developing technology driven projects that address the need to preserve truck speed performance, truck operator efficiency, and other operational deficiencies along the corridor.

Also, crashes involving commercial vehicles can be reduced when informed operators are able to avoid or plan around congested areas, incidents, inclement weather and availability of overnight parking. Drivers and trucking companies also have a strong interest in increasing the reliability of planned travel times. Having accurate traveler information available enables operators and operating companies to more accurately plan routes without needing to build in large amounts of delay recovery time.

BUILD NEW TH 24 CONNECTION: TH 24 CLEAR LAKE TO I-94 CLEARWATER IMPROVEMENTS

The Central Minnesota Freight Study findings support the recommendation for a new TH 24 freeway connection, linking TH 10 Clear Lake to I-94 Clearwater. Refer to Final Environmental Impact Statement (November 2006)

ABSTRACT

The need for an improved interregional connection between I-94 and TH 10 initially established in a comprehensive transportation study completed by MnDOT in 1996. Since that time, additional transportation policies, studies and forecasting have reconfirmed and strengthened the need for improvements to the transportation system connection between I-94 and TH 10. Problems and needs to be addressed by the proposed project include:

Highways I-94, TH 10 and TH 24 in the study area are important linkages that connect regional centers throughout the state. They are designated as part of the National Highway System (NHS) as well as Minnesota's High-Priority Interregional Corridor (IRC) System. The TH 24/TH 10 corridor (as the connection currently in highest use by interregional travelers) was designated as a High-Priority IRC, with performance standards that include the need to maintain a minimum travel speed of 60 mph, with a preferable travel speed of 65 mph.

Increasing transportation demand on existing corridors connecting I-94 and TH 10 coupled with limited opportunities in existing corridors to increase capacity. This results in increased congestion and the inability to meet the IRC performance standards described above.

The existing TH 24 corridor currently experiences crash rates similar to statewide averages for similar roadways; however, the severity of crashes is higher than the state average. Safety problems in the TH 24 corridor will likely increase as traffic levels rise since the ability to find gaps in traffic to cross or access TH 24 will become more difficult and motorists will take greater risks. Also, pedestrian, bicyclist and snowmobile safety issues will continue to worsen as volumes rise and more modal conflicts result.

Impacts of congestion on the communities through which interregional traffic is traveling (Clearwater and Clear Lake) will lead to increasing delays for local traffic trying to cross the corridor. This will also decrease the 'quality' of downtown areas bisected by the highways.

The existing at-grade crossing of TH 24 with the BNSF rail line results in increased congestion at the TH 10/TH 24 intersection and in downtown Clear Lake when a train passes through stopping vehicular cross-traffic on TH 24.

ADDRESS URBAN FREIGHT MOBILITY IN SIGNIFICATE FREIGHT CORRIDORS, PARTICULARLY ON IRC'S

Between 2000 and 2010, the population of the Central Minnesota Study area increased an average of 14.65 percent bring up the population to 645,447. From 2009 to 2030 the population is expected to continuing increasing an average of 27 percent to 956,850. In particular, the following counties will experience the most significant increases in population and percentage growth by 2030: Wright (221,490 pop/44.9 percent), Stearns (188,750 pop/21 percent), and Sherburne (161,990 pop/45 percent).

The population growth will have a direct and dramatic impact upon truck traffic growth. In the study area, the commercial vehicle volume is expected to increase significantly, and on some counties in excess 2 percent per year. The impact of this growth mainly affects urban freight mobility and truck volumes on the IRC. 65% of goods originate or terminate in major urban area.

Early in 2012, the National Academy of Sciences, Transportation Research Board is expected to publish the results of a National Cooperative Freight Research *effort: A Guidebook Urban Goods Movement (NCFRP Report 14)*. The objective of this guidebook is to improve public decisions affecting urban commercial motor vehicle movements for goods delivery. The guidebook provides details about urban supply chains and offers case studies exploring both supply-side and demand-side options for relieving congestion associated with urban goods movements. Supply-side strategies include some of the capacity enhancements and operational improvements already discussed under this section. Demand-side strategies include options such as working with shippers and carriers to move deliveries to off-peak or night-time hours, encouraging the development distribution centers or consolidation hub operations that move truck traffic out of congested corridors.

The guidebook and case studies will help decision-makers understand the potential impacts of their decisions on urban goods movements among the following categories: transportation infrastructure and operations; land use and site design; and laws, regulations, and ordinances applicable to urban areas.

DEMONSTRATE ADVANCED TECHNOLOGIES FOR TRUCK PRODUCTIVITY

There are several promising advanced technology options that can be explored as future options for improving truck traffic operations and safety in the I-94 / US-10 corridor between St. Cloud and the Twin Cities.

IntelliDrive¹

One of the most promising technology based operational enhancement that can be explored for application in the I-94 / US-10 corridor is IntelliDrive. IntelliDrive is an initiative focused on leveraging wireless technologies designed to provide connectivity between vehicles, roadway infrastructure and wireless devices to make surface transportation safer, smarter and greener.²

¹ IntelliDrive is a servicemark of the U.S. Department of Transportation.

² U.S. DOT, RITA. IntelliDrive Overview. Accessed online at: <http://www.intelldrivemusa.org/>

Essentially, it would bring together the various ITS applications and apply them to commercial vehicles. The initiative is being developed by the U.S. DOT and the RITA and has yet to become operational in the freight industry.

There are three major categories that IntelliDrive applications for commercial vehicles fall into:

- Safety Technologies,
- Traveler Information Technologies, and
- Wireless Inspection and Enforcement Technologies.

The University of Minnesota may also offer an opportunity to demonstrate “home grown” technology through the IntelliDrive initiative. The ITS Institute at the University of Minnesota is working to enhance the safety and mobility of road and transit operations using of GPS technologies. Currently the Institute has deployed this technology to maintain consistent spacing between automated plows traveling in a gang, and Adaptive Cruise Control (ACC), an in-vehicle technology uses radar sensors to monitor the gap between the ACC-equipped vehicle and the vehicle ahead. This technology has also been deployed in Metro Transit buses to help guide large buses using shoulder lanes. In theory, this technology could be expanded to commercial vehicles as a means of expanding capacity in congested heavy truck use corridors. ACC has the capacity to "squeeze" more vehicles onto a roadway by enabling them to operate closer together than they could using human control alone.

INCREASE TRUCK PARKING AT FULLER LAKE REST AREA

(reference MnDOT Truck Parking Study: Phase 2)

The Interstate 94 West corridor has the most rest areas of all six sited in the MnDOT Truck Parking Study Phase 2. The study identified the I-94 West corridor having more congested rest areas (six) than any other corridor, two of which are over capacity more than 50% of days. Elm Creek, the state’s most congested public rest area, in terms of truck parking, is located near Interstate 94’s confluence with Interstate 494. Twenty-eight miles up the road at Enfield is another eastbound rest area. This rest area has eighteen truck stalls and has minimal congestion. It may be possible to relieve much of the congestion in Elm Creek by making the parking availability information. In addition, providing additional truck parking capacity of about 5 to 8 spaces at Elm Creek, coupled with better information, could provide relief. A similar relationship exists between the Burgen Lake and Middle Spunk Lake rest areas. Making this information available to truckers may be the cheapest and least laborious means of relieving congestion, at least in the short-term. Another option for Burgen Lake is to expand truck parking capacity by 10 to 15 spaces. Capacity improvements of between 5 and 10 spaces could also be considered at the Fuller Lake rest area. Improved information could be useful in relieving congestion at the remaining facilities along this corridor, especially since the Lake Lakota, Lake Iverson, and Hansel Lake rest areas are not as favorable for capacity improvements. Suggested recommendations for District 3 are:

- Capacity enhancement at the Fuller Lake Safety Rest Area facilities.