

Manufacturers' Perspectives on Minnesota's Transportation System

District 4

May 2015



Report prepared by: Management Analysis & Development

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Executive Summary

Context and Purpose

One of MnDOT's most important customer segments is Minnesota-based manufacturers that ship their products over Minnesota roads and bridges to local, statewide, national and international markets. The transportation system, when aligned with shippers' needs and priorities, can play a significant role in supporting state and regional economic vitality.

In 2013, MnDOT initiated a pilot project in southwest/west-central Minnesota (MnDOT District 8) to learn more about freight transportation customers' needs and incorporate their input into MnDOT planning and project development. In 2014, MnDOT used the findings from the District 8 project to initiate another manufacturers' perspectives project in District 4, located in west-central Minnesota. The District 4 project had similar goals to the District 8 project: to build and strengthen relationships among MnDOT, the region's manufacturers and carriers and local economic development professionals. Accomplishing these goals will lay the groundwork for anticipating and responding to business needs, when feasible, and supporting opportunities for economic development.

Scope

The project's scope was focused on soliciting input to inform low-cost/high-benefit projects, that can be accomplished within the next four years, assuming available resources. The interview questionnaire was structured to get feedback and requests for improvements that could likely be met with:

- Existing resources (e.g., including a manufacturer on a road construction electronic email distribution list, facilitating a permitting process);
- Some additional resources (e.g., additional signage such as to better identify truck routes or intersections, wider shoulders on key roadway segments); or
- Consultation with MnDOT staff (e.g., determining a workable route that would accommodate an oversized load when primary routes are under construction).

Methods

The project process involved systematically collecting customer information while building relationships among MnDOT staff, businesses and regional economic development professionals in District 4.

The project approach included four main components:

- 1) The State and Local Policy Program (SLPP) at the University of Minnesota's Humphrey School of Public Affairs used regional industry cluster analysis to identify key industries and manufacturers within District 4. This list was supplemented with Economic Development Organization (EDO) recommendations.

- 2) Training was provided to MnDOT and economic development staff prior to conducting interviews. The training included the project purpose, role-playing, note-taking guidelines, review of the interview script and opportunity for interviewers to meet each other before conducting interviews.
- 3) A cross-disciplinary group of MnDOT employees, EDO staff and transportation and economic researchers conducted interviews. The interviewers conducted face-to-face interviews, usually in teams of two, at the business. These teams interviewed manufacturers and carriers and strengthened relationships for current and future system improvement.
- 4) MnDOT District 4 and Central Office staff attended a planning and implementation session. There, they reviewed the initial findings and engaged staff who will be involved in the implementation changes and improvements associated with the feedback from businesses.

Results

Interview teams met with 103 businesses in the region: 82 manufacturers, 15 carriers and 6 other businesses that serve tourists, such as hotels and casinos. The region's strongest industry clusters were in the areas of:

- Distribution and eCommerce (14);
- Production Technology and Heavy Machinery (13);
- Local Real Estate, Construction and Development (10);
- Transportation and Logistics (9); and
- Food Processing (7).

Customers

The District 4 companies interviewed serve an array of customers in the United States and around the world. Nearly all (92) businesses shipped products to a state that borders Minnesota, 61 businesses shipped nationally and 31 shipped internationally.

Business size

Most of the businesses interviewed employed fewer than 100 people; nineteen businesses employed 100 people or more.

Business Priorities, Challenges and Suggestions

Overall, respondents complimented MnDOT's work in executing road construction/improvement projects and clearing snow and ice from roadways.

Primary areas of concern and suggested improvement included:

- **Signage:** To improve safety and efficiency, respondents requested signage to better identify truck routes, intersections, businesses and exits. "Prepare to stop when flashing" signs were frequently requested, in addition to general requests for more lighted signs.

- **Acceleration, turn and passing lanes:** Respondents requested acceleration, turn and passing lanes for added safety and convenience.
- **Snow and ice removal:** Prompt snow and ice removal is important to businesses, and respondents noted that MnDOT generally does a good job in this area.
- **Pavement quality:** Smooth pavement is important to businesses to prevent product and truck damage.
- **Construction project communication:** Some businesses felt well-informed about projects while others did not. Some were not aware that they could receive email updates from MnDOT on particular road construction projects and wanted to sign up.
- **Permitting policy:** Restrictions lead some businesses to adapt their business practices to meet permitting requirements, e.g. size/weight of products and production calendar to ship before/after spring weight restrictions.
- **Permitting process:** Some businesses said that obtaining a permit often takes a day—longer than in nearby states—and causes delays with shipping. They suggested that Minnesota’s permitting be more automated, similar to other states’ systems. Businesses would also like the permitting web site and 511 to reflect consistent information about road restrictions and closures.

Recommended Next Steps

The District 4 Manufacturers’ Perspectives Project provided new customer perspectives regarding the transportation system in District 4 and statewide. Respondents offered concrete and often location-specific feedback that can inform near-term infrastructure, maintenance and operations, and communication and policy improvements. The in-person interview method was generally successful in further developing relationships among MnDOT and regional partners, and obtaining information for improving regional and statewide transportation systems. District 4 and Central Office staff are currently analyzing the location-specific data for alignment with existing MnDOT plans and priorities.

The following broad recommendations can help MnDOT District 4 apply interview results to their transportation system improvements:

1. **Develop an action plan for continued analysis and incorporation of respondents’ priorities and suggestions into its planning and operations work, as appropriate and feasible within resource constraints.**

For example:

- Increase signage to better identify truck routes, intersections, businesses and exits
- Add advance warning lights, such as “Prepare to stop when flashing” signs or lighted LED stop signs to some priority intersections.
- Consider business requests for acceleration, turn and passing lanes.
- Ensure smooth pavement to prevent product and truck damage.

2. **Develop an action plan for building upon District 4 relationships among businesses, MnDOT, city and county engineers and economic development professionals.**

- Enhance coordination with counties and cities and jointly address issues that involve the state and local governments.
- District 4 can work with local entities on the feedback from some businesses that road maintenance and snow removal is better on state roads and before state highways were turned over to counties.

3. Build on current communication mechanisms to enhance and assure better communications with businesses about road construction project updates and road conditions.

- Businesses are using the information MnDOT provides to make decisions regarding business practices, production and transportation. They are interested in as much real-time, easily-accessible information as MnDOT can provide.
- There are opportunities for MnDOT to maximize its current communication tools, such as the option for businesses to sign up for e-mail updates on particular construction projects. For example, MnDOT could build a higher awareness of the road construction projects e-mail updates or reach out to key businesses directly to ensure they are receiving e-mail updates.

The following broad recommendations can help the MnDOT Central Office apply interview results to the District 4 transportation system improvement:

4. Review District 4 interview data to identify recommendations to incorporate into statewide planning, development and best practices, as appropriate and feasible within resource constraints.

For example:

- Analyze concerns and incorporate permitting suggestions for improving web site and process/timing for issuing permits, as indicated.
- Ensure that the permitting web site and 511 reflect consistent information.
- Promote 511 for road construction updates—511 is well-used for winter road conditions updates, but is used less for road construction updates.
- Ensure that new roundabouts are designed to accommodate trucks, including over-dimensional loads, as feasible.

5. Build upon the work of the manufacturers’ perspectives projects in District 4 and 8 and adapt and refine the approach as the model is implemented statewide.

Project results indicate the value of this project and its approach. Cluster analysis, systematic information gathering and cross-discipline interview teams allowed MnDOT to gain a much better understanding of a key customer component. Respondents also provided practical recommendations that will be useful to all MnDOT districts, ultimately improving the state’s transportation system.

With future projects:

- Look at ways to combine the findings from the District 4, 8 and future manufacturers' perspectives projects into broader statewide findings, themes and recommendations.
- Examine research methods to look for areas where improvements may be possible to streamline the project, such as the approach to scheduling interviews.

Introduction

Among the Minnesota Department of Transportation's (MnDOT)'s most important customer segments are the Minnesota-based manufacturers that ship their products over Minnesota roads to local, statewide, national and international markets. These businesses rely on MnDOT to maintain a safe, efficient multi-modal infrastructure for freight transportation. State, regional and local governments rely on these businesses to employ residents and contribute to economic vitality. In short, the transportation system, when aligned with shippers' needs and priorities, can play a significant role in supporting state and regional economic vitality.

Background from Pilot Project

In 2013, MnDOT initiated a pilot project in southwest/west-central Minnesota (MnDOT District 8) to learn more about freight transportation¹ customers' needs and incorporate their input into MnDOT planning and project development. The project was also introduced to build and strengthen relationships among MnDOT, the region's manufacturers and carriers and local economic development professionals, lay the groundwork for anticipating business needs and support opportunities for economic development.

District 4 Project Overview

Project Goals

In 2014, MnDOT used the results and learnings from the District 8 project to initiate another manufacturers' perspectives project in District 4, located in west-central Minnesota. The project had similar objectives to the District 8 pilot project:

- **Meet with manufacturers, other key industries and their carriers to better understand their perspectives and priorities** for the transportation system and improve MnDOT's knowledge of Greater Minnesota industries that make the most use of the system and derive some of its largest benefits.
- **Systematically collect and analyze customer information** to inform practical, near-term planning and operations, policy development and investment decision making.
- **Build relationships** among MnDOT, economic development professionals and freight transportation customers as a resource for both short-term and ongoing transportation system improvement.
- **Support continuous improvement and develop recommendations** for improving District 4 and statewide transportation systems and practices to better support freight transportation.

¹ Freight customers include manufacturers and carriers.

Project Approach

The District 4 project used an approach similar to the one used in the District 8 project: cross-disciplinary interviews, a regional industry cluster approach to identify businesses and a qualitative interview guide focused on system issues that could potentially be addressed in the next four years and with existing resources.

This report describes the project methodology and the characteristics of District 4 manufacturers. The report then focuses on the interview results and their implications. The conclusion provides possible implementation activities and next steps. The report also contains vignettes describing select manufacturers and carriers who participated in the project.

Project team and participants

The District 4 manufacturers' perspectives project included a project team comprised of MnDOT staff as well as external partners that provided project management and coordination, data analysis and report writing. The external partners also worked to assemble the list of businesses to contact and brought the local economic development organizations into the project as partners on interviews.

The MnDOT project team and external partners are listed in Appendix A. Besides the project team, close to 20 other MnDOT staff from both the District 4 office and the MnDOT central office (Office of Freight and Commercial Vehicle Operations) in interviews for the project. The additional MnDOT staff are also listed in Appendix A.

Economic Development Organizations (EDOs)

MnDOT would like to thank, in particular, the economic development staff who volunteered many hours and drove across the region to meet with manufacturers and carriers and documented their interviews, which formed the basis for this report. The EDOs' enthusiasm and their participation in meetings with local businesses added significant value to the project. MnDOT staff in District 4 look forward to working with these EDOs in the future to identify opportunities to support the region's economic competitiveness.

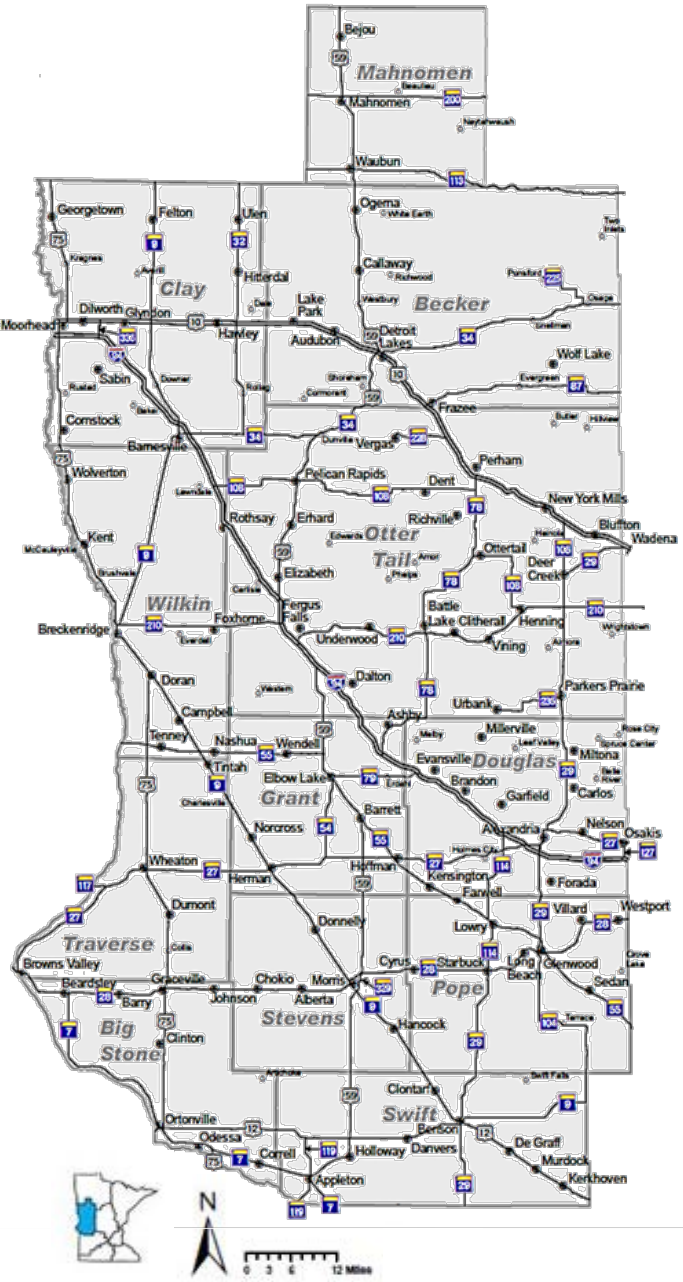
The economic development staff who participated in interviews are listed in Appendix A.

District 4 Background

MnDOT’s District 4 serves 12 counties in west-central Minnesota,² which make up 12 percent of the state’s land area. Located in District 4 are the Fargo/Moorhead Metropolitan Statistical Area and three Micropolitan Statistical Areas: Alexandria, Fergus Falls and Wahpeton, ND.³ The district’s population of 243,000 makes up 4.5 percent of Minnesota’s population.

The more than 500 manufacturing and 400 trucking firms located in District 4 depend on the highway system for the safe and efficient movement of goods. Manufacturers in District 4 supported over 11,000 jobs in 2012.⁴

Interstate 94 connects District 4 industries to Minneapolis/St. Paul and Chicago to the east and to Fargo, Billings and Seattle (via Interstate 90) to the west. Connections to major cities allow for access to urban markets and to global markets by providing direct access to intermodal shipping capabilities. In addition to Interstate



² Counties include Becker, Big Stone, Clay, Douglas, Grant, Traverse and Wilkin.

Stevens, Swift,

³ The Wahpeton, ND Micropolitan Statistical Area includes two counties: Richland County, ND and Wilkin County, MN.

⁴ US Census Bureau. County Business Patterns (CBP). <Combined 2012 data for Fargo/Moorhead Metropolitan Statistical Area and three Micropolitan Statistical Areas: Alexandria, Fergus Falls and Wahpeton, ND.> <http://www.census.gov/econ/cbp/>.

94, major highways include 10, 29 and 59.

The MnDOT team in District 4 plans, designs, constructs and maintains the state and federal highway systems within district boundaries. Maintenance services—including snow removal—are provided out of 17 truck stations located throughout the District. The district also:

- Manages the aid and assistance given to county and city systems that qualify for state and federal dollars.
- Provides transit, trail and rail transportation services.

In recent years, District 4 has seen increased rail traffic due to the transportation of oil and an overall increase in demand for shipping in Minnesota. This has led to a shortage of shipping options in the region leading to increased truck transport.

Methodology

Interview Teams

Interviews were conducted by a cross-disciplinary group of MnDOT central office and District 4 staff;⁵ researchers from the State and Local Policy Program (SLPP) at the University of Minnesota Humphrey School of Public Affairs; University of Minnesota Extension Center for Community Vitality (CV) Educators; city, county and regional economic development professionals; and consultants from Management Analysis & Development (MAD), a division of Minnesota Management & Budget. CV educators recruited economic development professionals, and MnDOT selected and invited internal staff to participate. In total, 49 interviewers participated.

MAD and CV conducted two trainings in October in Detroit Lakes and Alexandria to explain the project to interviewers, provide qualitative research instruction and distribute interview materials. The trainings included role-playing, note-taking guidelines and review of the interview script to set a foundation for consistency for the interviews and resulting notes.

Interview teams generally consisted of two interviewers:⁶ one to ask questions and one to document the interview. When possible, MAD ensured one interviewer was an economic development professional to balance the perspectives and expertise in the room.

Interview Overview/Purpose

The primary purposes of the interviews were to:

- Gather qualitative information to learn about businesses and understand their specific experiences, priorities and challenges regarding the transportation system.
- Build relationships and communication channels among MnDOT, regional businesses and economic development professionals.

Regional Industry Cluster Approach

SLPP used a Regional Industry Cluster Approach to identify key industries and manufacturers within District 4.⁷ Clusters are geographically concentrated groups of interconnected companies, universities and related institutions that arise out of linkages or externalities across

⁵ A key distinction between District 8 interviews and District 4 interviews is that District 4 involved many more interviewers from MnDOT. While five people from MnDOT (two central office staff, the district engineer and two district planners) participated in the District 8 project, 22 people from MnDOT (five central office staff, including four from the Office of Freight and Commercial Vehicle Operations; two district engineers; and 15 District 4 staff, engineers and planners) participated in the District 4 project.

⁶ When it was apparent that businesses would include a significant number of staff, more interviewers were included in the interview.

⁷ This tool was developed by Michael Porter's Institute for Strategy and Competitiveness at Harvard Business School.

industries. Clusters refer to firms within similar industries *and* their interactions with each other. These interactions are important in painting a picture of the entire regional economy. Many clusters are complementary in nature, providing services or specialized supplies to firms in other industries. As a result, this project focused on a wide array of industry clusters within District 4, each playing a larger role within the regional economy and beyond.

Clusters can be grouped into traded and local clusters. A traded cluster is composed of traded industries, which are concentrated in a subset of geographic areas and sell to other regions and nations. A local cluster is composed of local industries, which primarily sell locally, and are present in most (if not all) geographic areas.⁸

Traded clusters can be seen as the main drivers of growing economies because they draw revenue into the regional economy and stimulate growth, as opposed to local clusters, which circulate money within a region.⁹ A traded cluster approach helps people understand the competitive advantage of regions by better understanding the competitive advantages of the most prominent industries.¹⁰ Researchers use a traded cluster approach to assess how concentrated particular industry clusters in a region are compared to the nation. Each industry cluster is defined by a series of sub-clusters.¹¹ SLPP used the cluster mapping method to identify industries that formed the economic base of communities in District 4, both in direct employment and in their ability to spur additional economic development. This information helped ensure that the list of prospective interviewees was representative of the region's industries and clusters.

This project also included businesses from a number of local clusters selected for interviews by MnDOT and economic development organizations because of their significant economic contribution to the region.

Figure 1 illustrates the largest manufacturing clusters in District 4 based on location quotient, a comparison of the employment of a particular industry in District 4 to the employment of that industry nationally. Clusters with location quotients greater than one are more concentrated in District 4 than in the nation as a whole.¹² Clusters with a change in location quotient greater

⁸ US Cluster Mapping, "Glossary of Terms." Accessed April 3, 2015,

<http://www.clustermapping.us/content/glossary-terms>.

⁹ US Cluster Mapping, "Clusters 101." Accessed April 3, 2015, <http://clustermapping.us/content/clusters-101>.

¹⁰ Rosenfeld, Stuart, "A Governor's Guide to Cluster-Based Economic Development." *National Governors Association*. 2002. Accessed April 3, 2015,

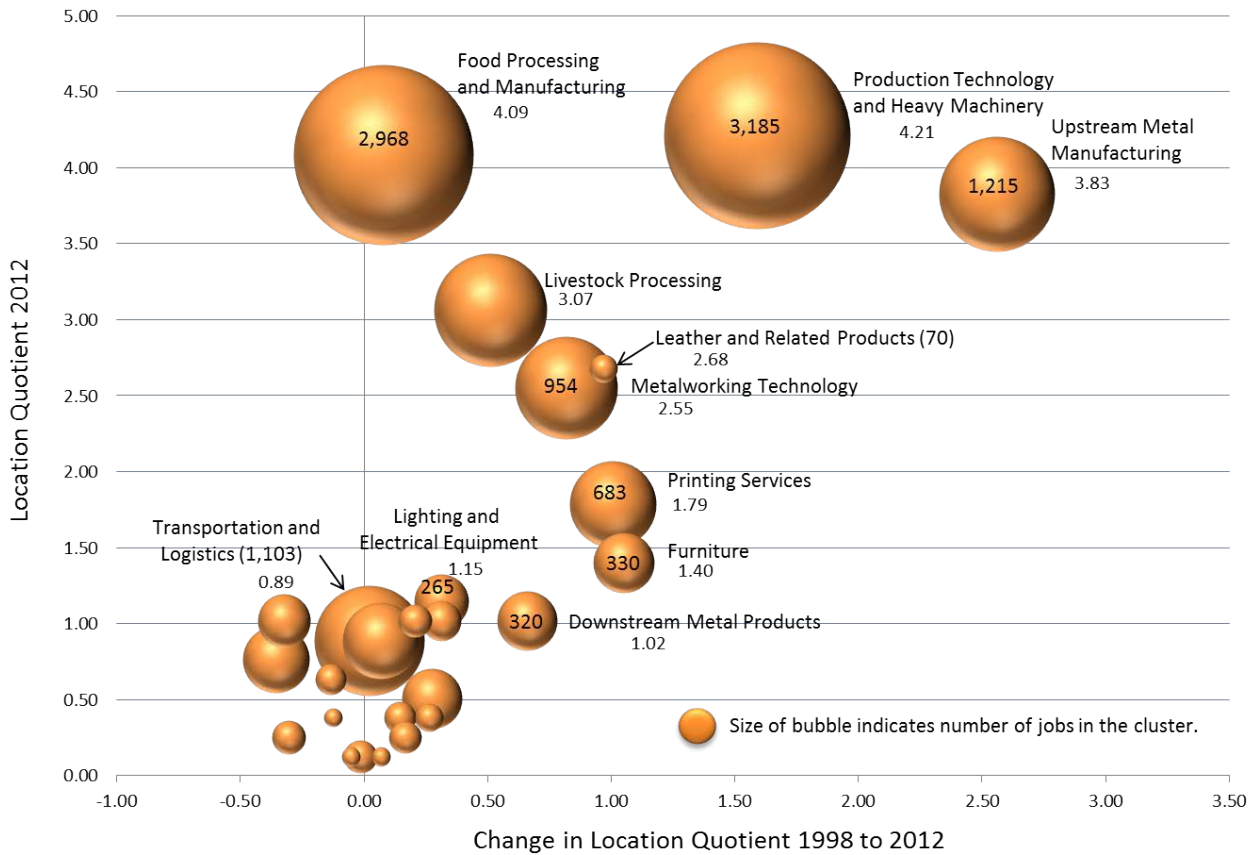
<http://www.nga.org/files/live/sites/NGA/files/pdf/AM02CLUSTER.pdf>.

¹¹ Sub-clusters are represented by six-digit NAICS codes. The North American Industry Classification System (NAICS) is the standard used by Federal statistical agencies for classifying business establishments to collect, analyze and publish statistical data about the U.S. business economy. For more information, see "Introduction to NAICS" at <http://www.census.gov/eos/www/naics/>.

¹² Appendix G includes MnDOT District 4 location quotients for traded clusters by county. Appendix H shows MnDOT District 4 employment by traded cluster and county.

than zero are growing within the district. This study focused on manufacturing clusters with the highest location quotients and most growth over time, such as Production Technology and Heavy Machinery and Upstream Metal Manufacturing.

Figure 1: MnDOT District 4 Traded Clusters in Manufacturing by Employment and Specialization (Location Quotient), 1998–2012¹³



Business Recruitment

SLPP used the Reference USA database to identify businesses that fit the regional industry cluster analysis criteria based on the businesses’ NAICS code.¹⁴ In addition, economic development professionals and MnDOT District 4 staff provided insights to key businesses that the database did not identify. A final list of prospective interviewees included businesses that

¹³ Cluster map for District 4 developed by SLPP with data from the US Cluster Mapping website at <http://clustermapping.us>.

¹⁴ The cluster categories were developed by the Harvard Business School’s Institute for Strategy and Competitiveness led by Professor Michael Porter and used in the Economic Development Administration’s (EDA) The U.S. Cluster Mapping Project is a national economic development initiative that is designed to benchmark the economic performance of U.S. regions. More information can be found at <http://clustermapping.us>.

represented a diverse group of District 4 industries, ensured that each county was represented by at least one business and each business had at least ten employees.

MnDOT sent a letter to all businesses on the list in October 2014, inviting them to participate in the project. MAD followed up with phone calls to businesses asking them to participate and scheduled the interviews. Interviews were conducted from November 5, 2014 to January 29, 2015.

Scope Expansion

When SLPP conducted the industry cluster analysis on manufacturers, Hospitality and Tourism emerged as an important industry cluster in District 4 that was outside the scope of manufacturers. The project team determined that because it was a rather large cluster, it was necessary to speak to businesses in the Hospitality and Tourism cluster to gain an understanding of their transportation needs. District 4 staff identified key businesses in the Hospitality and Tourism cluster, and SLPP added them to the master list of businesses.

It became apparent during the District 8 Manufacturers' Perspectives pilot project¹⁵ that, to better understand the needs of manufacturers, MnDOT must also interview the carriers that serve them. Manufacturers that indicated they hire carriers for shipping were asked if MnDOT could contact their carriers for more information. MAD used their responses to compile a list of carriers that served District 4 manufacturers. Interviews with carriers were conducted with the same two-person team design as interviews with other businesses.

Data Collection and Analysis

Questionnaire

MnDOT developed an interview questionnaire for manufacturers based on the one used in the District 8 pilot. The purpose of the interview was to gather perspectives and priorities in various areas, such as road construction, infrastructure features, communication and snow removal. The questionnaire was designed for a semi-structured interview, meaning that interviewers followed the questionnaire, but could pursue other pertinent topics.

MnDOT developed separate questionnaires for tourism-related businesses and carriers to capture information unique to those respective industries.¹⁶

¹⁵ During the pilot project, researchers encountered several manufacturers that hired outside carriers and were therefore unaware of the transportation system's impacts on their products once they left the facility. Some manufacturers volunteered their carriers as interviewees. MnDOT collected carrier contact information and added them to the list of potential interviewees. This introduced another dimension to the project by collecting unique, mile-by-mile and policy-specific information about products travelling within the district.

¹⁶ See Appendix C for the manufacturer questionnaire, Appendix D for the carrier questionnaire and Appendix E for the tourism questionnaire.

Analysis, findings and next steps

MAD consultants coded and aggregated interview responses. MnDOT and MAD consultants analyzed results and developed preliminary findings and presented them at the Minnesota Transportation Conference in March 2015. This report will be presented at the Center for Transportation Studies Conference in late May 2015. MnDOT will provide a copy of the report to all companies that were interviewed.

District 4 and other MnDOT staff will analyze the detailed feedback to identify potential system improvements. They will incorporate the feedback into future projects, as resources allow. They are also evaluating amending policies with feedback they received from businesses in mind.

Results

Response Rates

MAD contacted 208 businesses to request and schedule an interview. The response rate was 75 percent.¹⁷ Each county was represented by at least one business. Table 1 shows the number of businesses interviewed, the number that declined the invitation and the number that did not accept or decline an interview.¹⁸

Table 1: Recruitment results

| Result | Number of Businesses | Contact Rate | Response Rate |
|---|----------------------|--------------|---------------|
| Businesses interviewed | 103 | 50% | 75% |
| Businesses that declined invitation to interview | 34 | 16% | 25% |
| Businesses that did not accept or decline interview | 71 | 34% | n/a |
| Total businesses contacted | 208 | 100% | 100% |

Business Characteristics

Industry Clusters

As seen in Figure 2, the most interviewed clusters were Distribution and eCommerce (14); Production Technology and Heavy Machinery (13); Local Real Estate, Construction and Development (10); Transportation and Logistics (9); and Food Processing (7). Tables 2 and 3 provide a brief definition of these services as examples of regional firms that were in these clusters.

¹⁷ For this report, response rate is calculated using the number of completed interviews and number of refusals (in American Association for Public Opinion Research terms, Completed Interviews /Completed Interviews + Partial Interviews +Refusals). This calculation excludes the 71 businesses that could not be reached or did not provide a yes or no response. For more information on this calculation, see <http://www.aapor.org/AAPORKentico/Education-Resources/For-Researchers/Poll-Survey-FAQ/Response-Rates-An-Overview.aspx>.

¹⁸ “Businesses that did not accept or decline interview” includes businesses that did not answer phone calls and businesses that spoke to MAD and initially did not decline an interview, but subsequent contact with the business did not result in an interview.

Figure 2: Industry Clusters interviewed

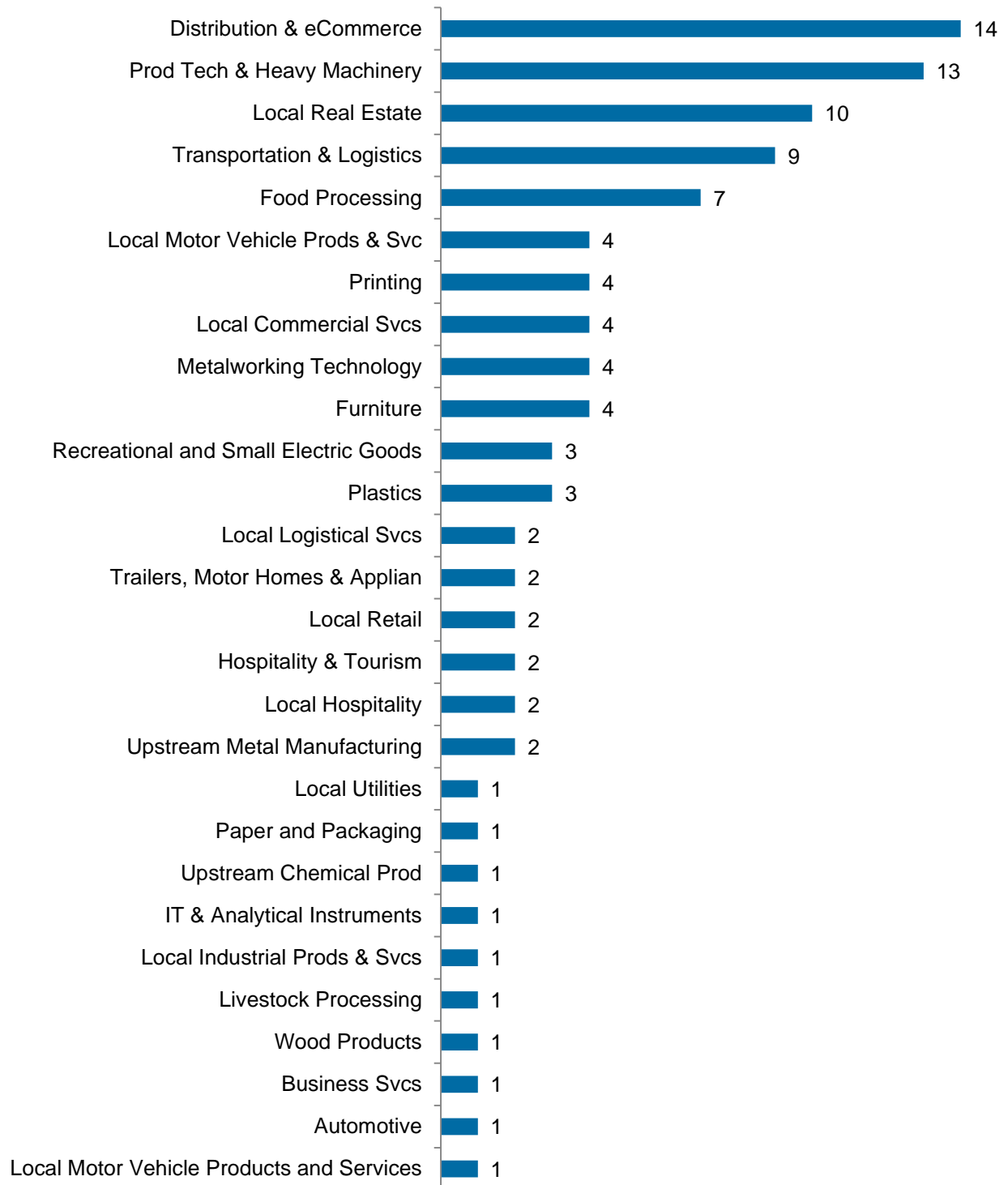


Table 2: Definitions and Examples of Traded Industry Clusters in District 4¹⁹

| Cluster | Definition | Example |
|---|---|-----------------------|
| Automotive | This cluster includes establishments along the value chain that are necessary for manufacturing cars, trucks, and other motorized land-based transportation equipment (other than motorcycles). This includes metal mills and foundries, manufacturers of metal automotive parts, and manufacturers of completed automobiles. | Alexandria Industries |
| Business Services | Firms in this cluster include establishments and services primarily designed to support other aspects of a business or to assist unrelated companies. This includes corporate headquarters. Professional services such as consulting, legal services, facilities support services, computer services, engineering and architectural services, and placement services. All for-hire ground passenger transportation services are also present in this cluster. | DLS Worldwide |
| Construction Products and Services | The establishments in this cluster supply construction materials, components, products, and services. Construction materials and components include those made of sand, stone, gravel, asphalt, cement, concrete, and other earthen substances. Construction products include pipes and heat exchangers. Construction services include the construction of pipelines for water, sewers, oil and gas, power, and communication, as well as building services for homes and industrial buildings. | Rausch Granite |
| Distribution and Electronic Commerce | This cluster consists primarily of traditional wholesalers as well as mail order houses and electronic merchants. The companies in this cluster mostly buy, hold, and distribute a wide range of products such as apparel, food, chemicals, gasses, minerals, farm materials, machinery, and other merchandise. The cluster also contains firms that support distribution and electronic commerce operations, including packaging, labeling, and equipment rental and leasing. | Clyde Machines Inc. |

¹⁹ US Cluster Mapping, "Traded Clusters Appendix." Accessed March 3, 2015, <http://clustermapping.us/content/cluster-mapping-methodology>

| Cluster | Definition | Example |
|--|---|------------------------------|
| Food Processing and Manufacturing | This cluster includes firms involved in the processing of raw food materials and the manufacturing of downstream food products for end users. This includes millers and refineries of rice, flour, corn, sugar, and oilseeds. These upstream products contribute in part to producing specialty foods, animal foods, baked goods, candies, teas, coffees, beers, wines, other beverages, meats, packaged fruits and vegetables, and processed dairy products. | Barrel o' Fun |
| Furniture | This cluster contains establishments that manufacture furniture, cabinets, and shelving for residential homes and offices. It also includes establishments that produce manufactured homes. The products in this cluster can be made of wood, metal, plastic, and/or textiles. | Graceville Cabinet Co. |
| Hospitality and Tourism | This cluster contains establishments related to hospitality and tourism services and venues. This includes sport venues, casinos, museums, and other attractions. It also includes hotels and other accommodations, transportation, and services related to recreational travel such as reservation services and tour operators. | Thumper Pond Resort |
| Information Technology and Analytical Instruments | This cluster consists of information technology and analytical products such as computers, software, audio visual equipment, laboratory instruments, and medical equipment. The cluster also includes the standard and precision electronics used by these products (for example, circuit boards and semiconductor devices). | Proximity Controls |
| Livestock Processing | This cluster contains establishments engaged in processing meat from livestock and livestock wholesaling. | Spring Prairie |
| Metalworking Technology | The establishments in this cluster manufacture machine tools and process metal for use in metal working. The cluster also contains the downstream manufacture of metal fasteners and hand tools. | Industrial Finishing Service |
| Paper and Packaging | This cluster contains the paper mills and manufacturers of paper products used for shipping, packaging, containers, office supplies, personal products, and similar products. | Pactiv |
| Plastics | Establishments in this cluster manufacture plastic materials, components, and products. The plastics and foams are manufactured for packaging, pipes, floor coverings, and related plastic products. The cluster also includes the upstream manufacturing of plastic materials and resins, as well as the industrial machines used to manufacture plastics. | Consolidated Container Co. |

| Cluster | Definition | Example |
|--|---|--------------------------|
| Printing Services | Establishments in this cluster are primarily engaged in commercial printing, digital printing, and binding. The cluster includes upstream products and services necessary for printing (for example, ink and prepress services). It also includes end products such as books, greeting cards, business forms, and related goods. | Quinco Press |
| Production Technology and Heavy Machinery | Establishments in this cluster primarily manufacture machines designed to produce parts and devices used in the production of downstream products. This cluster also includes end use heavy machinery such as air and material handling equipment. The machines are used for industrial, agricultural, construction, commercial industry, and related purposes. | Brenton Engineering Co |
| Recreational and Small Electric Goods | This cluster contains establishments that manufacture end use products for recreational and decorative purposes. These products include games, toys, bicycles, motorcycles, musical instruments, sporting goods, art supplies, office supplies, shades, and home accessories. This cluster also incorporates firms that produce small, simple electric goods like hairdryers, fans, and office machinery. | Alderon Industries |
| Trailers, Motor Homes, and Appliances | This cluster includes establishments that manufacture trailers, campers, and motor homes, as well as major household appliances. | Bear Track Products Inc. |
| Transportation and Logistics | This cluster contains all air, rail, bus, and freight transportation services. It also includes related operation services and support activities such as inspections, maintenance, repairs, security, and loading/unloading. | Daggett Trucking |
| Upstream Chemical Products | This cluster consists of firms that manufacture basic organic and inorganic chemicals and gases. The chemicals are usually separate elements that could be used as inputs for more complex downstream chemical products. | Green Plains |
| Upstream Metal Manufacturing | The establishments in this cluster manufacture upstream metal products such as pipes, tubes, metal closures, wires, springs, and related products. The cluster includes iron and steel mills and foundries, as well as related metal processing techniques. | BTD Manufacturing |

| Cluster | Definition | Example |
|----------------------|---|----------------|
| Wood Products | The establishments in this cluster are primarily engaged in making upstream wood materials and manufacturing non-furniture wood products. Upstream establishments include sawmills, plywood and hardwood manufacturers, cut stock manufacturers, and wood preservation services. Downstream establishments produce windows, doors, flooring, wood containers, prefabricated wood buildings, and related products. | Vector Windows |

Table 3: Definitions and Examples of Local Industry Clusters in District 4²⁰

| Cluster | Description | Example |
|--|--|------------------------|
| Local Commercial Services | This cluster contains local professional establishments that provide legal services, accounting services, temporary help, and office administrative activities. This cluster also contains building support and security services, commercial printing and signmaking, professional laundry services (including dry cleaning), testing laboratories, and office supply stores. | MR Sign Company |
| Local Hospitality | Establishments in this cluster primarily consist of local hospitality establishments that serve food and beverages (alcoholic and non-alcoholic), as well as recreational facilities including country clubs, fitness clubs, and bowling centers. This cluster also contains gift and souvenir retail stores. | Arrowwood |
| Local Industrial Products | This cluster primarily consists of firms that provide maintenance, wholesaling, and distribution for local industrial goods and services. This cluster also includes consumer rental and leasing for electronics, appliances, and general equipment. | Urbank Machine Co. |
| Local Logistical Services | This cluster primarily contains establishments that offer local passenger transportation and local transportation of freight and goods, including moving companies and couriers. This cluster also includes local storage facilities, truck and RV leasing, and passenger car rental services. | B & D Trucking |
| Local Motor Vehicle Products and Services | Establishments in this cluster consist of local motor vehicle wholesalers and dealers, as well as auto repair services, gas stations, parking lots, car washes, and vehicle towing. | Bert's Truck Equipment |

²⁰ US Cluster Mapping, "Traded Clusters Appendix."

| Cluster | Description | Example |
|---|---|------------------------------|
| Local Real Estate, Construction, and Development | Establishments in this cluster primarily provide local real estate services, general contracting, and specialty contracting for the building, purchasing, and renting of homes and related local infrastructure. This cluster also contains firms that support land development, concrete manufacturing, highway and street construction, as well as building equipment distribution. | Aggregate Industries |
| Local Retail | This cluster consists of local retail stores, department stores, and warehouse clubs that sell apparel, jewelry, luggage, sewing supplies, and general merchandise. | Rollies Sales & Service Inc. |
| Local Utilities | Establishments in this cluster provide local communications services, energy distribution, as well as sanitary services for sewage and waste treatment. | Otter Tail Power Co. |

Types of businesses interviewed

District 4 manufacturers were the primary focus of this study and comprised 82 of the 103 interviews. The Industry Cluster Analysis revealed that the tourism also has a significant economic impact in District 4 and is dependent on the transportation system.

Other businesses

In District 4, 65 of the 82 manufacturers interviewed reported using a carrier either some or all of the time. MnDOT conducted 15 interviews with carriers identified by District 4 manufacturers. Researchers decided to include a small number of businesses that contribute to tourism, such as hotels, casinos, event centers and outdoor sports equipment dealers, which made up six of the 103 interviews. Of these, four interviews were with hospitality-related businesses and two interviews were with retail businesses.

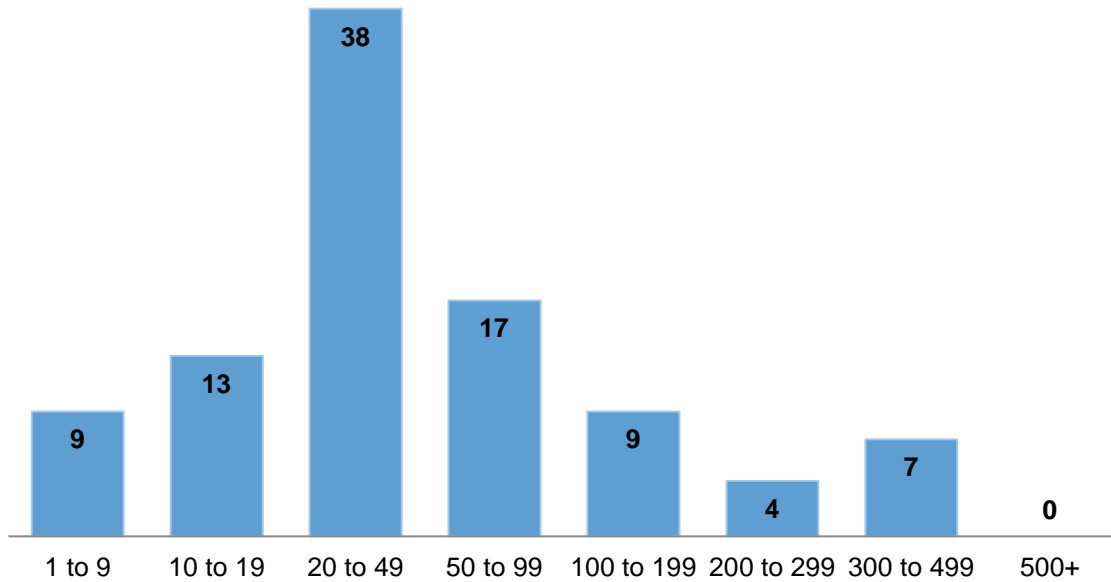
Business size

Participating businesses reported employing a combined 8,700 to 9,110 people in District 4.²¹ Of those, 4,990 to 5,270 people were employed by manufacturers. Figure 3 illustrates the distribution of businesses by number of employees. While most businesses employed less than 100 people, 19 businesses employed 100 people or more. Excluding carriers, businesses interviewed generate over \$2.5 billion in annual revenue.²²

²¹ All businesses except carriers were asked to report the number of employees at their location. Carriers were asked how many employees served District 4. Some businesses provided ranges to reflect seasonal fluctuations or uncertainty on the exact number.

²² Reference USA, "U.S. Businesses Database." Accessed September 2014, <http://www.referenceusa.com/>.

Figure 3: Number of employees

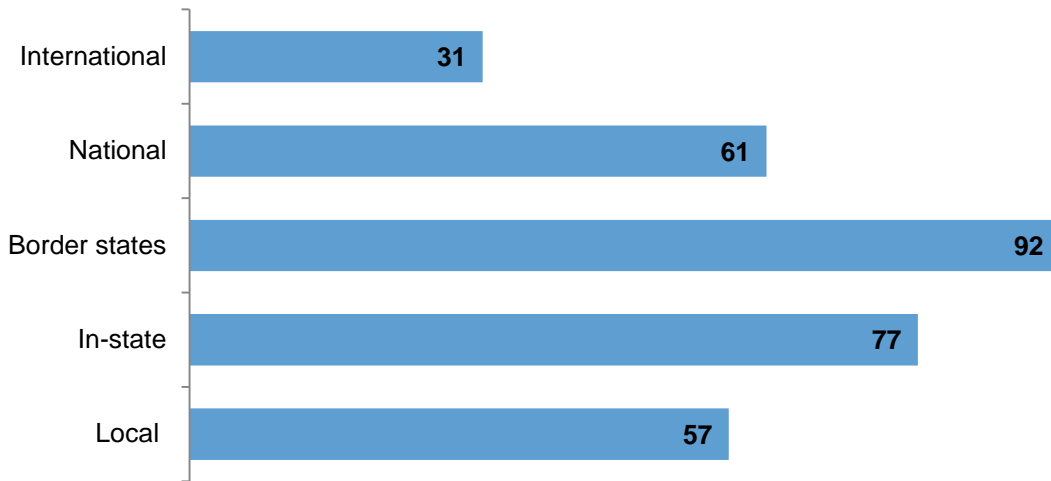


Customer markets

District 4 companies serve an array of customers in the United States and overseas. While some businesses generally serve customers within a 150 or 200 mile radius of their location, others serve the entire state, region or nation. Some of the 61 businesses that ship nationally reported serving all of the lower 48 states. Nearly all (92) of the businesses shipped products to a state that borders Minnesota.

The 31 businesses with international customers reported serving customers in Europe, Asia, Africa and South America, in addition to North America. Specific countries cited include, but are not limited to, Brazil, Canada, Chile, China, India, Japan, Jordan, Mexico, Russia, Singapore, Spain, Sudan, Turkey and Turkmenistan. As one manufacturer stated, their customers “could be almost anywhere.”

Figure 4: Number of Businesses with Customers in Each Market



Location

Figure 5 illustrates the number of businesses interviewed from each county. At least one business from each county was interviewed. In most counties, the number of businesses interviewed was proportionate to the number of businesses provided in the business list. Douglas County had slightly fewer interviews than expected, while Otter Tail County had more interviews than expected. The maps on the next page illustrate the geographic distribution of the businesses interviewed in District 4.

Figure 5: Business Location by County

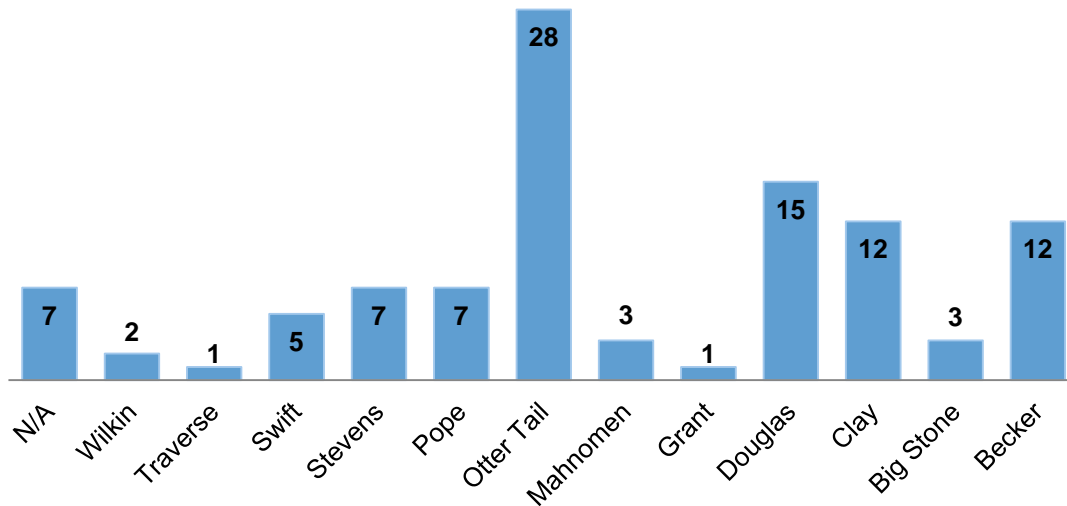
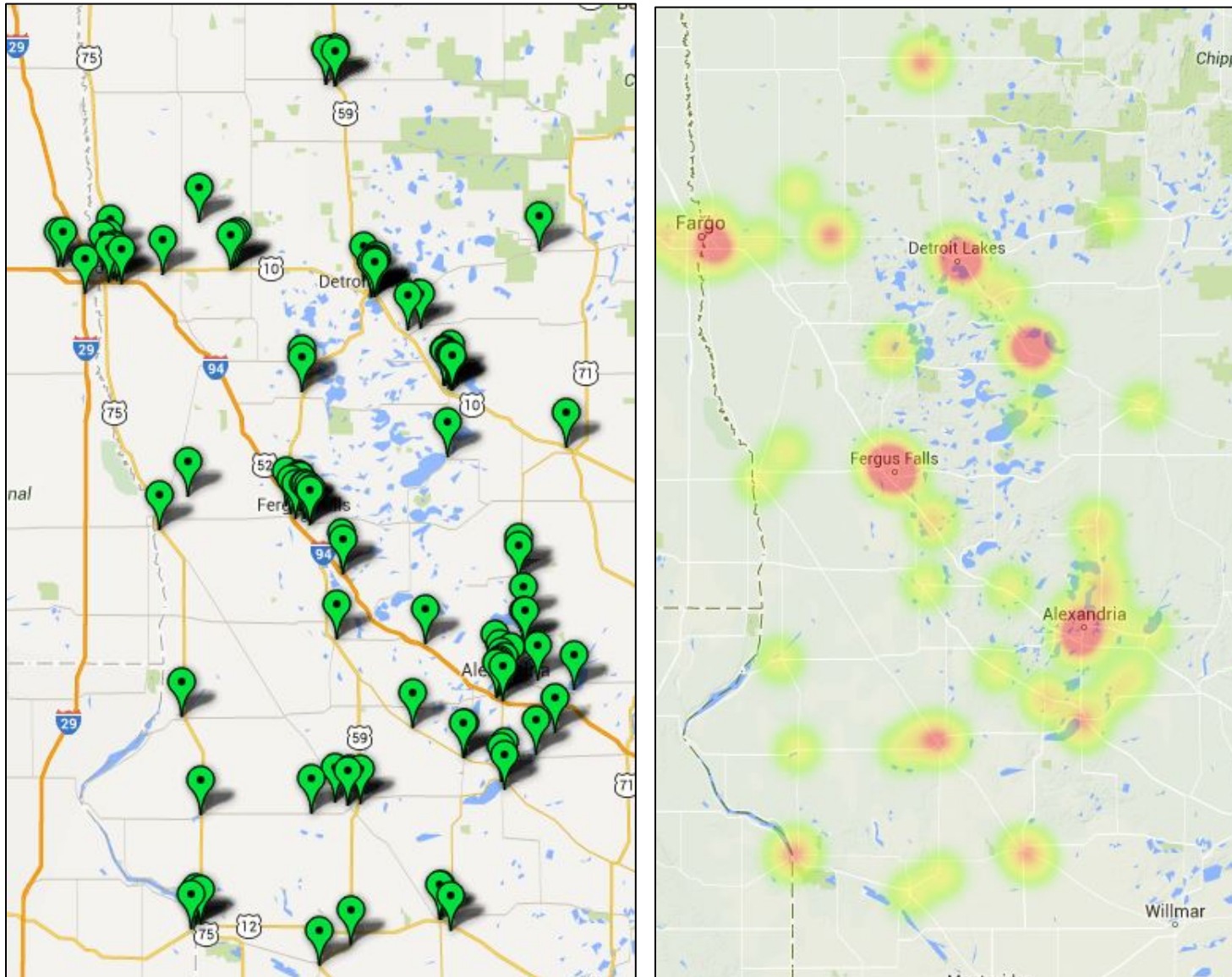


Figure 6: Map of District 4 businesses interviewed



Interview Findings

Overview of Key Findings

Businesses were generally forthcoming with information and gave candid feedback about their experience with the transportation system. Businesses complimented District 4 on its willingness to seek their input and on recent efforts to improve the transportation infrastructure. They strongly valued the transportation system present in District 4. They appreciate Interstate 94 and other main highways throughout District 4—such as Highways 7, 9, 10, 29, 59, and 210—as integral to doing business in the region.

The oil boom in North Dakota has affected the transportation system in District 4 in two primary ways: truck driver shortages and increased rail use. A shortage of truck drivers in west-central Minnesota makes it difficult for manufacturers to ship their goods affordably. There has also been an increased use of railways to transport oil, which has increased demand for railcars and often causes shipping delays for businesses in the District. Increased train traffic has also created traffic delays at many rail crossings in the District.

Summary of Key Issues

Businesses provided a great deal of feedback in the areas of transportation infrastructure, operations and maintenance, road construction, safety, policy/permitting and communication. The following themes were mentioned most frequently:

- **Signage:** To improve safety and efficiency, respondents requested signage to better identify truck routes, intersections, businesses and exits. They also preferred that signs at intersections—such as stop signs or signs warning drivers of an upcoming intersection—have (flashing) lights.
- **Turn and passing lanes:** Respondents requested turn and passing lanes for added safety and convenience.
- **Snow and ice removal:** Prompt snow and ice removal is important to businesses and respondents noted that MnDOT generally does a good job in this area.
- **Pavement quality:** Smooth pavement is important to businesses to prevent product and truck damage.
- **Construction project communication:** Some businesses felt well-informed about projects and others did not. Some were not aware that they could receive email updates from MnDOT on particular road construction projects and wanted to participate.
- **Permitting policy:** Restrictions lead some businesses to adapt their business practices to meet permitting requirements, e.g. changing the size/weight of products and the production calendar to ship before/after spring weight restrictions.
- **Permitting process:** Some businesses said that obtaining a permit often takes a day—longer than in nearby states—and causes shipping delays. They suggested that Minnesota's permitting be more automated, similar to other states' systems. Businesses

would also like the permitting web site and 511 to reflect the same information about road restrictions and closures.

Infrastructure Findings

Key Findings

| | |
|--------------------------------------|---|
| Roundabouts | Respondents gave mixed feedback on roundabouts. Some liked roundabouts, while others expressed concerns about tight turns (for trucks) and said the islands need a gentler slope. |
| Advance warning lights | Respondents generally liked advance warning lights (especially those with flashing lights) and suggested using them to a greater extent. |
| Traffic Signals | Businesses were mixed in their feedback on signalized intersections. Some reported that frequent stopping can be inconvenient, but considered stoplights preferable to four-ways stops. |
| Signage | There were 26 requests for additional signage to better identify truck routes, intersections, businesses and exits. |
| Acceleration, turn and passing lanes | Respondents requested acceleration, turn and passing lanes for added safety and convenience. |
| Bypass requests | Respondents requested bypasses around towns, especially around Alexandria. |
| Shoulders, Rumble strips | Respondents liked wide—usually paved—shoulders because they provide space for trucks to pull over. Respondents also liked rumble strips on the center and fog lines, but said that rumble strips on or inside the fog lines can be irritating for wide loads. |
| Bridges | Respondents expressed few concerns about bridges. Most businesses keep bridge clearance and weights in mind when they plan their truck routes. |

Intersections

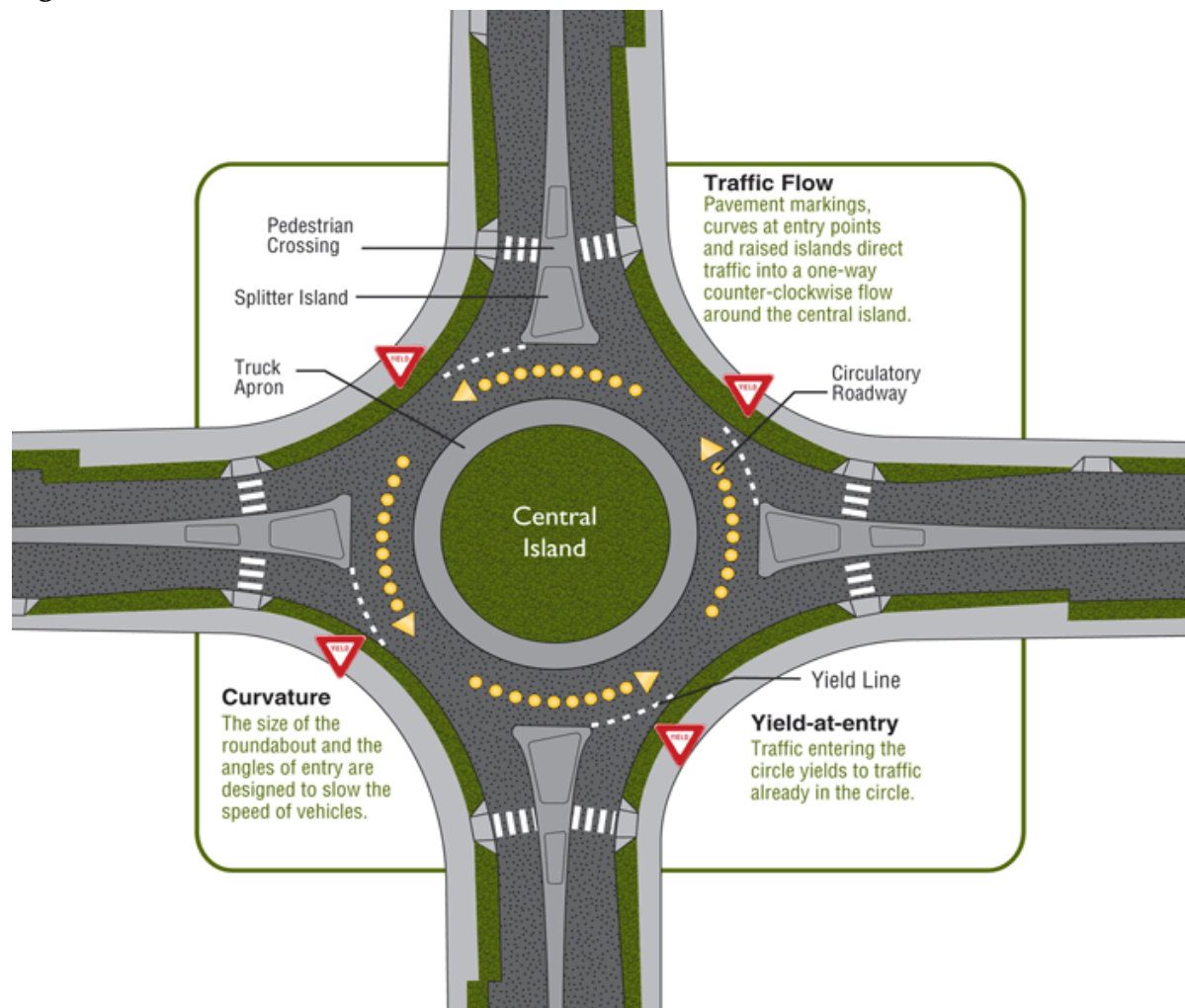
Much of the feedback businesses provided regarding infrastructure involved intersections, including roundabouts, advance warning lights and other traffic signals. Generally, businesses indicated that they valued safety, ease of use and fewer stops.

Roundabouts

Though roundabouts are known to improve safety and efficiency for passenger vehicles,²³ businesses had mixed reactions to their use. Some businesses supported roundabouts because they improve safety at intersections. In contrasting roundabouts with stoplights or four-way stops, respondents noted that trucks encounter fewer vehicles—reducing the chance of a crash—and do not have to stop and restart—reducing fuel costs and minimizing downshifting.

²³ Insurance Institute of Highway Safety “Two-lane roundabouts bring benefits but also some confusion,” *Status Report*, Vol. 48, No. 2, March 14, 2013. <http://www.iihs.org/iihs/sr/statusreport/article/48/2/3>.

Figure 7: Roundabout Illustration



Concerns about roundabouts were split evenly between manufacturers and carriers and between businesses that worked with oversize or overweight loads and those with regular-sized loads. Businesses that expressed concern said the curves of roundabouts are too tight for trucks to navigate and recommended that MnDOT reduce the slope of the curb and truck apron that surrounds the central island (see Figure 7). Some businesses said they reroute trucks to avoid roundabouts. Businesses were also hesitant about planned roundabouts, such as that on Highway 29 in Alexandria, saying they would “have to be huge” to allow trucks to pass freely.

Respondents identified two specific intersections with roundabouts as problematic:

- Highway 75 and County Highway 12, south of Moorhead
- Highway 59 and Willow Street in Detroit Lakes

The roundabouts south of 75 [at Highway 75 and County Highway 12] in Moorhead and [Highway 59 south of] Detroit Lakes are a problem because our trucks can't make the curves and still keep our loads balanced. Those tire marks along the curves are from hauling trucks. These load balance and curvature angle challenges also strain our truck axles.

Advance Warning Lights

Respondents like advance warning lights and signage that says “Prepare to stop when flashing,” and requested that they be used at more intersections.²⁴ Respondents also appreciated stop signs with flashing LED. According to businesses, lighted signs enhance safety. For example, one carrier said “It would be good to have more places with flashing warning lights to warn about stops or intersections or speed zone changes. It can be tough to slow down/stop a rig without adequate notice.”

Some areas where respondents said that warning lights would be helpful include:

- Intersection of Highway 75 and 12 in Ortonville (in the southwest corner of the district). “Because of a hill at this intersection, many drivers do not see the stop sign. It would be nice to have a stop light or at least flashing LEDs on the stop signs at this intersection.”
- Intersection of Highway 210 and Otter Tail County Road 82 [Old Highway 59] near Fergus Falls. “The stop lights at Highways 210 and 59, while great, could be enhanced by a ‘Prepare to Stop’ sign or flashing light.”

²⁴ This is consistent with findings from District 8, where businesses also appreciated “Prepare to stop when flashing” signs.

Figure 8: Advance Warning Sign with Flashing Lights



Traffic Signals

Businesses were mixed in their feedback on traffic signals. While businesses generally agreed that stoplights improve safety and are preferable to four-way stops—and some businesses asked for additional stoplights at some locations—they also found them inconvenient and gave examples of safety concerns that stoplights present.

Respondents explained that stoplights make it easier for them to enter and leave facilities. For example, businesses appreciated a traffic signal recently installed in Hawley, saying it was a major improvement. One business said the new signal was a significant factor in relocating their business to that community. Businesses also identified current four-way intersections, such as Highways 12 and 75 in Ortonville (referenced above), that would benefit from a stoplight because some drivers do not see the stop signs. Stoplights were generally preferred to four-way stops because they reduce the number of stops and restarts, when trucks lose their momentum and use more fuel.

The most commonly cited traffic signal inconvenience was their frequency. As one carrier said “When it comes to stoplights, less is more.” Another business explained that stopping and restarting causes loads to shift, which can present a safety hazard. Congested intersections with stoplights were also a concern, particularly in Alexandria and Detroit Lakes, because they cause delays and increase the likelihood of crashes.

Signage

Respondents requested new or additional signage to identify interstate exits, truck routes, intersections and businesses. Most requests for signage were location-specific. The list below provides some, but not all, examples of signage requests from interview respondents.

Interstate exit signage requested

- Traveling east on Interstate 94 (coming from North Dakota), more visible signage at Exit 6 to notify drivers that it is the last opportunity to access Highway 10.

Signage to identify businesses requested

- Directional signage to specific businesses in the Morris, Perham and Benson areas and in the industrial park on Highway 10 in Detroit Lakes.
- In Morris, with the Highway 59 bypass, additional signage would improve travel, including:
 - Additional and more visible signs for the industrial park, especially because interviewees said that Google maps currently misplaces businesses in this area.
 - More visible signage on the south end of Morris, particularly along Highway 9, Highway 59 and County Road 22 (Old Highway 59).

Truck routes signage and safety

Respondents requested extra signage to identify truck routes but also recognized that many people are now using GPS. They mentioned that occasionally signs are at eye level for trucks and in their blind spot.

Intersection signage

Respondents identified some difficult or problematic intersections, generally due to lack of clear signage or warning lights.

Some examples of intersections where respondents suggested additional signage:

- A sign at the intersection of Otter Tail County Roads 80 and 8 directing traffic to Highway 10 "would help the semi traffic get to Highway 10 more quickly and help with the traffic in the City of Perham."
- Businesses found the intersection of Highways 27 and Interstate 94 on the west side of Alexandria to be confusing and suggested more visible signage.
- Intersection of Highways 59 and 200 in Mahanomen, "road signs telling the cars where to stop would help."

A couple of respondents expressed appreciation for current signage and hinted that there may be too many signs, with one saying "It's impossible to get lost here."

Turn and Passing Lanes, Bypasses

Businesses generally favored turn lanes, passing lanes and bypasses. Most of the feedback consisted of requests for either additional lanes or entire bypasses.

Turning and Passing Lanes

- Six requests for turn lanes in front of different businesses. Businesses cited safety considerations related to congestion at shift changes for businesses that are located on highways.
- Several requests for passing lanes on different highways.

- An example of a request was for adding passing lanes on Highway 34, both eastbound and westbound. A MnDOT employee explained that as part of the Corridors of Commerce Program, there is a project—started in 2014 and finishing in 2015—that will add passing lanes between Detroit Lakes and Nevis.
- Another example was a request for passing lanes on Highway 59 north and south of Detroit Lakes.

Coming from Alexandria (Highway 29), there are lots of turn lanes, and that really helps. I notice trucks using them a lot. When there are no turn lanes, there's the temptation to go around. We actually had a situation on Highway 10 where a driver rear-ended one of our drivers. Our driver was stopped in the lane waiting to turn left, and the other driver didn't see them. Turn lanes make it safer for everyone.

Bypasses

Businesses provided mixed feedback on bypasses. While most references to bypasses were requests for bypasses around towns, one business was concerned about possible MnDOT plans to add a bypass around their town. In addition to a request to extend the Highway 59 bypass in Morris to Highway 28, there were three requests for a bypass around Alexandria. Respondents that requested a bypass in Alexandria said that they would like to avoid downtown Alexandria because it is congested and has many stoplights. They would like more convenient access to Interstate 94.

Shoulders

Respondents mentioned that wide shoulders are important and generally prefer paved shoulders for added safety and convenience.²⁵ Trucks have a place they can pull over in the event of an emergency without worrying about steep ditches or weak shoulders. Wide, paved shoulders are also helpful when supporting wide loads because truck drivers can use the shoulders to increase the space between their truck and oncoming traffic. Comments in favor of wide, paved shoulders came from businesses that work with regular loads and those that work with oversized loads.

The following list includes highways where businesses suggested wider shoulders:

- Highway 12, from Benson to Ortonville—especially at Highway 59 junction

²⁵ This is a departure from the findings in the District 8 pilot, where businesses generally said shoulders need not be paved but must be wide and strong enough to hold a loaded truck.

- Highway 55
- Highway 34, in some places
- Highway 9, from Breckenridge and Barnesville

They widened the shoulders when they redid [Highway] 29. [Highway] 29 is a good example for a road.

Some businesses described paved shoulders as making travel safer and easier for trucks. Soft, unpaved shoulders limit drivers' ability to pull over during a breakdown or emergency. As one carrier explained, "Paved shoulders are nice. If our truck is meeting another wide load, [we] need to get off on shoulders and end up throwing rocks on the car behind us. They already hate us. And sometimes the roads are soft." One business also mentioned that they prefer concrete to asphalt because jacks can sink into the asphalt during hot summer days.

Rumble Strips

A few respondents commented on rumble strips. Most comments were favorable, saying rumble strips serve a good purpose in helping drivers stay alert. Businesses requested rumble strips in both the center line and outsides of the lanes. Yet respondents did note that rumble strips can be bothersome for wide loads and asked that MnDOT ensure rumble strips are placed outside the fog lines so that drivers of wide loads do not hear the constant "hum" of driving over rumble strips.

Bridges

Businesses are aware that they need to watch bridge weight and height limits. While businesses cited bridge concerns in other Minnesota districts, they said Minnesota as a whole generally does a good job keeping bridge clearances at an acceptable height. The restrictions present challenges for a few businesses, but most plan truck routing with bridge limits in mind. One respondent requested that MnDOT ensure that bridges heights are labeled, saying "all bridges should have their height marked [on the bridge itself]." Another suggested that culverts may be sufficient in place of some eight-ton bridges, where only one truck axle is on the bridge at any time.

Profile: Thumper Pond

Thumper Pond is a golf and recreational resort near Otter Tail Lake with lodging, golf, indoor waterpark, trails and meeting space for conferences, weddings and special events. The resort commonly sees tourists from Duluth, Moorhead and the Twin Cities in Minnesota; Fargo and Minot in North Dakota; and Rapid City, South Dakota.

Among its visitors is a Miata club from Saint Paul that has stayed at Thumper Pond for its annual car cruise. Resort representatives said that the Miata club chose this area not only because it is scenic, but because the roads are in good condition. In the representative's words, "If the roads were torn up, [it] wouldn't have worked." Similarly, motorcycle riders have become a big focus for the tourism industry. Some groups will come early and pre-test the roads to make sure they are

Number of employees

90 (off-season), 160 (in-season)

Cluster

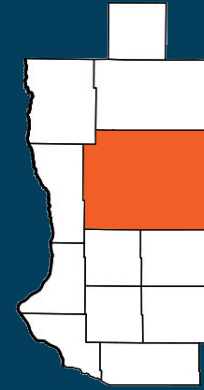
Hospitality and Tourism

Highways used



Location

Ottertail, Otter Tail County



in good condition for riding. From a tourism perspective, Thumper Pond also appreciates additional bicycle lanes.

As a tourist destination, the Thumper Pond representative said that road construction can impact its guest and restaurant counts. Dinner guests come from a 50-mile radius and inaccessible highways may discourage them from choosing Thumper Pond.

Thumper Pond recently added a RV park and was told by a contractor that they would need to modify their entrance and pave the shoulder leading up to the entrance. Thumper Pond was concerned that the cost of the modifications would be unaffordable. Since the interview, Thumper Pond and MnDOT are working together to find a solution and Thumper Pond is finalizing development plans.



Thumper Pond attracts visitors from across the midwest, and depends good roads to attract new customers.

Maintenance and Operations Findings

Key Findings

| | |
|----------------------|---|
| Snow and Ice Removal | Though generally positive about snow and ice removal, respondents requested more prompt snow and ice removal on secondary state roads, during shift changes and in the early morning. |
| Pavement Quality | Respondents mentioned that smooth pavement is very important; rough roads can cause product damage and increased truck damage. |

Snow and Ice Removal

Many businesses had positive feedback for MnDOT on snow and ice removal, particularly on main arteries. Respondents also provided general compliments, such as “MnDOT does a very good job of clearing the roads.”

*Weather is by far our most consistent challenge.
MnDOT's ability to quickly remove snow and ice makes
a huge impact.*

Some businesses emphasized the need for consistent, expeditious snow and ice removal on secondary state roads. Respondents also stressed the importance of prompt snow removal and road condition information during shift changes and in the early morning. Businesses acknowledged that it is difficult to keep roads clear in the western part of the state due to frequent snow storms, wind and blowing snow.

*No one says MnDOT is neglecting on S&I. You can
almost predict the weather by when/how they apply
treatment.*

Respondents identified some particular highways with snow and ice removal issues:

- Several businesses mentioned Highway 210 between Fergus Falls and Breckenridge as particularly prone to blowing snow, hazardous driving conditions and periodic closure. While interviewees acknowledged the challenge of keeping Highway 210 clear, they would like MnDOT to explore solutions, such as snow fences.
- A few interviewees mentioned state highways that they would prefer be plowed earlier:
 - Highway 228 (off of Highway 10 between Frazee and Perham)
 - Highway 9 (between Breckenridge and Barnesville and from Morris to Benson). One business mentioned that Highway 9 does not get plowed as early or often as when it was first resurfaced.

A few businesses also questioned how MnDOT decides to pull plows off the road. A few carriers commented that salt and other road treatments are corrosive to their trucks.

Pavement Quality

Respondents see smooth pavement as critical for moving goods effectively. Travel on rough roads can cause product damage and increased truck damage, which can be costly for businesses.

Positive comments about pavement quality

Comments on Highway 9 resurfacing:

- “Smooth pavement is important so freight does not move around. We have not had issues since Highway 9 was redone.”
- “Highway 9 was an issue for winter driving until it was resurfaced.”

Truck damage due to pavement quality

Some interviewees, especially carriers, explained that rough roads are more likely to cause truck damage. One interviewee said “smooth pavement means less equipment maintenance costs.” Another interviewee explained “smooth pavement is a big issue for maintenance of vehicles. Rough roads break vehicles down, especially the internal workings such as kingpins, bearings, ball joints and U joints.”

Figure 9: Poor Pavement Quality Caused by Ice Heaves



Product damage due to pavement quality

Businesses mentioned the importance of smooth pavement to prevent product damage from rough roads. Many businesses gave examples of goods that get damaged in shipment over rough roads. They cited examples of travel over rough roads causing bolts to shake loose, dings/scratches on products, chipped paint, bent products and broken glass. Examples of goods in District 4 that get damaged by transport over rough roads include:

- Granite countertops
- Heating/cooling compressors
- Aluminum machine components
- Gaming machines
- Boats
- Cabinets
- Windows
- Concrete culverts
- Coated/painted plastic products
- Truck booms and buckets

Examples of roads with pavement issues

Interviewees mentioned various highways throughout the District with stretches of rough pavement. Only two highways were mentioned by more than one respondent as having rough pavement—sections of Highway 75 and Highway 12 in the southwestern portion of the district. A couple of interviewees also mentioned different portions of Highway 210, specifically between Fergus Falls and Foxhome.

Several interviewees mentioned that they feel that they experienced better maintenance of some “turnback roads” when they were state highways. Of note, very few businesses identified potholes as a major issue. When businesses spoke of potholes, their statements were broad and did not provide specific locations.²⁶

²⁶ This is a departure from District 8 findings, where interviewees commonly brought up potholes. The differences between pothole comments in District 4 and District 8 may be due to the timing of interviews. Researchers conducted District 4 interviews from November to January, and District 8 interviews were conducted from March to June (potholes tend to appear in the spring, a result of recurrent freeze-thaw cycles).

Profile: Cosmos Enterprises

Cosmos Enterprises is a machine shop that manufactures custom components. They provide precision machining, including both milling and turning, along with fabricating and assembly services to a wide variety of industries. For example, they make parts for a floor scrubber manufacturer, custom marine winches, military-grade vehicle doors and parts for linear actuators, which control movement of heavy equipment from hospital beds.

Cosmos Enterprises has quite a bit of experience with District 4 highways because of its location. The business is located 11 miles off of Interstate 94 via Highway 79 and at the confluence of four state highways: 59, 54, 55 and 79. Cosmos explained how small operating margins can be affected by location and transportation: “[Our customers] are in Minnesota on the [Interstate] 94 corridor, mainly the Twin Cities area. We can’t compete with a shop in Duluth or along [Interstate] 35. By the time we pay for freight, we’re not competitive.”

Rough roads are a concern because they can damage Cosmos’ products. “We can’t have scratches or dings on the components. Some components are made out of aluminum which scratches very easily. We individually wrap each part; but if they bang around, they still will scratch; that’s how delicate they are. And our customers

will reject them.”

Cosmos provided the following examples of rough roads near their business:

- Highway 79 is a very rough road between Elbow Lake and Erdahl (which is their business’ shortest route to Interstate 94), particularly in the spring. They take a longer route, through Hoffman and then to Alexandria, to avoid the issues with Highway 79. Highway 79 also gets frost heaves in the spring, which makes it unusable given their freight needs. This road will be resurfaced in 2016.
- Highway 55, just a few miles north and west of Elbow Lake, is an uneven road with many blind hills and has little or no shoulders. They said that, though MnDOT fixed numerous potholes on Highway 55 last summer, the road remains rough. This road will be resurfaced in 2015.

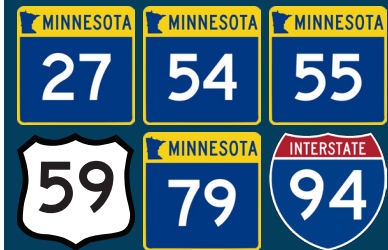
Number of employees

25

Cluster

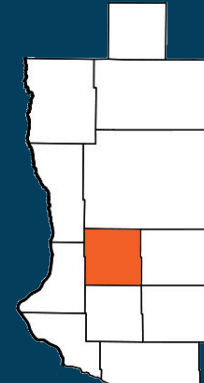
Upstream Metal Manufacturing

Highways used



Location

Elbow Lake, Grant County



Cosmos Enterprises provides precision machining, including milling (above).

Road Construction Findings

Key Findings

| | |
|------------------------------------|--|
| Recent construction projects | Businesses liked recent construction projects that improved road conditions and widened roads. |
| Road construction timing | Some businesses suggested improvements to the timing of projects and detours that would streamline projects and minimize disruptions to their business. |
| Construction project communication | Some businesses felt well-informed about projects and others did not; some were not aware that they could receive email updates from MnDOT on particular road construction projects and wanted to participate. |

Interviewees provided generally positive comments regarding road construction and indicated that they value MnDOT's effort to build and maintain high-quality roads. Interviewees made such remarks as "we are in Minnesota so have learned to live with weather and construction" and "most everyone here liked the Hawley project." Multiple businesses commented favorably about the Highway 29 project in the summer of 2014. Particularly, they said the stretch from Highway 210 to Alexandria progressed quickly with few delays and MnDOT handled traffic well.

Other improvements that businesses cited include:

- The traffic signal used during culvert construction in Mahanomen
- Resurfacing on Highway 7 in Ortonville
- The passing lane project on Highway 34
- Resurfacing on Highway 27
- Gradual widening of Highway 200
- Resurfacing and culvert work
- Main artery roads re-done in a timely manner

Feedback on construction projects

Most businesses that provided constructive feedback about road construction cited detours as their main concern. Although they accept that detours are necessary to complete projects, project timing and communication of projects were the most commonly suggested areas for improvement.

Project timing

Some businesses suggested ways for MnDOT to change its timing of construction projects to more closely meet their needs. Generally, businesses requested more intense, corridor-focused projects that are completed in a shorter timeframe. One business said they would "rather just see the construction done than have it continue year after year." Suggested ways to reduce the duration of closures and projects as a whole included:

- Completing more work overnight
- Doing fewer, more related projects more rapidly

- Working on construction projects 24 hours per day

One business suggested that Minnesota allow use of roads in the construction zone when workers are not actually working on that road. They said many other states, including Wisconsin, open portions of roadways that are not under construction at that time for evening and weekend travel.

Communication about projects

Businesses varied in their feedback on communication of road construction projects. Some businesses reported feeling very well-informed, but others said they would like to be more informed or did not receive any communication from MnDOT about construction projects. A few businesses provided suggestions.

Those that felt well-informed cited the MnDOT website, signing up for email updates on construction projects and local media as their sources of information. One business said he received some communication from MnDOT on 2015 road construction plans and found this to be very helpful. The interviewee said he looks at the MnDOT website with his safety team and uses the information to re-route trucks.

Road construction that is not known causes delays.

Suggestions for improvement included meetings with regional carriers, mailings prior to construction projects and easier access to information. One business stated, "I think you have to look for the information." Businesses were mixed on whether advance signage was helpful. Some liked having the information far in advance of the beginning of construction work, but a few businesses felt the signs were posted too far in advance, which caused confusion.

Profile: Valley Cartage

Valley Cartage is a third-generation, family-owned freight carrier transporting goods in Minnesota and neighboring states that serves many manufacturers in District 4. The company's trucks travel 5.7 million miles per year, about half of them in Minnesota. They run six to eight routes daily in the District and make about 160 stops per day in the region.

Valley Cartage likes the benefits of road construction/improvement projects but would prefer fewer concurrent projects in favor of faster completion of any one project. Company representatives reported that, "Doing fewer projects but doing them faster would increase safety and speed of transit. And it would be better if more of the work takes place overnight." They also mentioned that large construction projects on Interstate 94 significantly hurt transit time. They explained that for

a small overnight carrier like Valley Cartage, "Cycle time is key; and if we get out of cycle, it leads to inefficiencies and poor customer service."

Smooth pavement is a big issue for maintenance of Valley Cartage's vehicles. "Rough roads break vehicles down, the internal workings—the stuff that you don't see takes a beating." They estimate spending about \$1.5 million annually on maintaining their fleet due to traveling on rough roads.

Valley Cartage strongly supports roundabouts that are built for trucks with the middle or center as small as possible, and a gradual slope to prevent tire rubbing. They believe that roundabouts help to improve safety—compared to intersections—because trucks encounter fewer vehicles and do not have to come to a complete stop. Valley Cartage has helped Wisconsin DOT test new roundabouts

Number of employees

270

Cluster

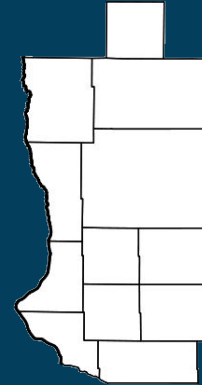
Transportation and Logistics

Highways used



Location

Lake Elmo, Washington County



for compatibility with trucks and has offered to do the same with MnDOT.



Valley Cartage provides transportation and logistics services to many businesses in District 4.

Communication Findings

Key Findings

| | |
|-------------------------|---|
| 511 use | Most businesses are familiar with 511 and use it for road condition information. 511 use is more common for winter conditions than it is for road construction. |
| 511 feedback | Most businesses that use 511 provided positive feedback. Constructive feedback included wanting more frequent updates and mixed reviews on new winter road classifications. |
| Suggested communication | Businesses would like more real time communication from MnDOT to inform their decision making. |

511 Website, Phone Service and Mobile App

Most businesses interviewed use 511.²⁷ Many of these businesses said they use the 511 website for weather-related road condition updates. In particular, businesses use 511 to gather road condition information to make decisions, such as:

- Daily production levels
- Length of shifts
- Whether to allow their trucks to leave the facility

Interviewees mentioned that they use 511 to inform direct suppliers, guests, business visitors, customers and carriers coming to their facility of road conditions.

Fewer businesses indicated using 511 for road construction updates. Some businesses reported using the website to gather information on road closures and which roads they could use for over-dimensional loads. There was no correlation between those who felt inadequately informed about road construction projects and those who did not use 511 for construction information.

Businesses that were aware of 511 but did not use it were a mix of carriers, manufacturers that shipped their own products and manufacturers that contracted their shipping. One business commented, "If we have to go, we go regardless of conditions." Other businesses said they wait until the next day if the weather is severe.

Of those who were unaware of 511, most were manufacturers that contracted their shipping to carriers.

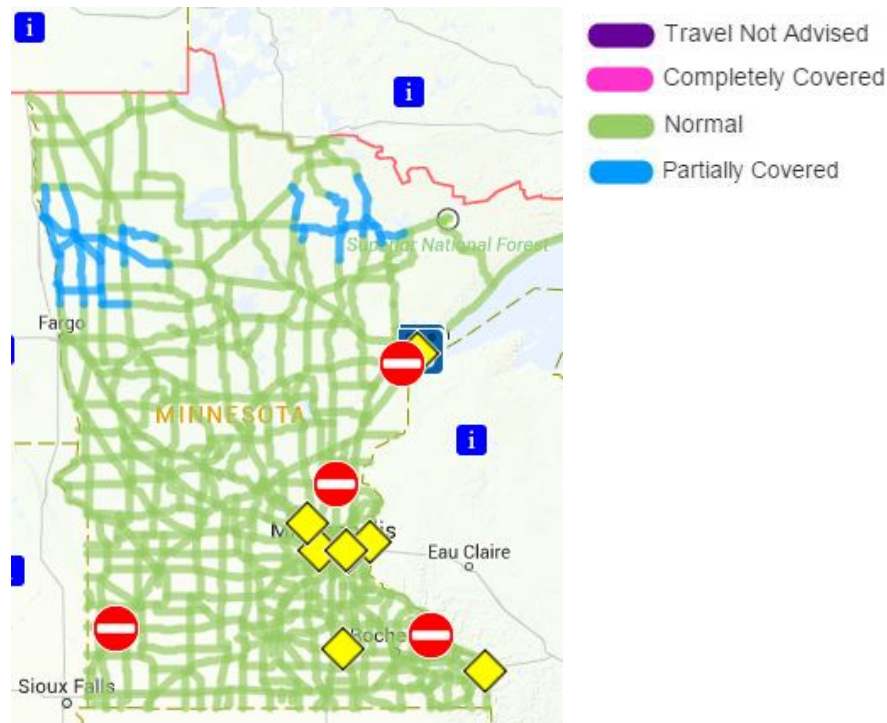
²⁷ 511 is MnDOT's traveler information service. It is available via phone, web and as an app. 511 provides continual updates about weather-related road conditions, road work, commercial vehicle restrictions, road closures and other travel information.

511 Feedback

Businesses that used 511 were generally positive about the website, often calling it a “great tool.” Manufacturers and carriers that handle oversize/overweight (OS/OW) loads provided more comments on 511 issues than those who did not handle such loads.

Businesses said 511 generally seems accurate. According to an interviewee in the tourism industry, fifteen years ago they boarded stranded travelers during 90 percent of storms. Today that figure has fallen to 30 percent of storms. The business credited this change to improved communication by MnDOT.

Figure 10: 511 map²⁸



Many businesses that used and valued 511 also provided feedback. One business commented “I love 511, but sometimes it’s so overloaded that it barely works; it can be very slow in the winter.” Some businesses did not think of using 511 for information about road construction.

The following list includes suggestions from businesses on how to improve 511:

- Provide cameras in more areas
- Make the website faster, with more intuitive navigation
- Provide estimates on when roads will reopen after closures due to inclement weather
- Allow drivers to track their permits to 511
- Increase consistency between 511 and permitting website

²⁸ Screenshot taken from MnDOT 511 website on March 19, 2015.

One business thought the new winter road condition categories (see Figure 9) were an improvement and said they refer people to 511 for travel information. A carrier said, “If we see purple, we won’t go.” A few businesses saw the new categories as oversimplified or more difficult to use.

Businesses provided mixed feedback on the frequency of 511 updates. While some felt the website was generally up-to-date, others requested more frequent updates. One interviewee explained that during storms, he wakes up at 3:00 a.m. and has to determine whether to delay or shut down production based on his employees’ ability to safely commute to work. He said he uses 511 to help inform his decision, and the more up-to-date information he has, the more confident he can be in making production decisions.

Suggested communication

Some businesses complimented MnDOT’s communication of the work they are doing and how it impacts the public.

Many businesses expressed interest in receiving email communications from MnDOT regarding construction, road closures due to inclement weather and other MnDOT updates. One business said “More information is better than less. Email is good.” Though MnDOT provides the option to sign up for email updates on particular construction projects, businesses were generally unaware of this service and interested in learning more about it. A business located along Interstate 94 mentioned that they shut down based on interstate closures in their area and that they would be interested in communication from MnDOT during closures to inform their decision making and planning.

Other comments regarding communication included:

- Suggestions for improved communication of classes and training, such as the permitting and overweight class.
- Support for the new parking availability system.²⁹

To perform well, MnDOT communication must remain open and a top priority.

²⁹ MnDOT provides parking availability information along Interstate 94.

Profile: Pactiv

Pactiv is a manufacturer of molded fiber products. Its primary product is egg cartons made from recycled newspaper. Pactiv is a unique business with only seven similar plants in North America. They receive 48 tons of newspapers and produce 800,000 egg cartons each day.

Transportation plays a huge role in Pactiv's ability to do business competitively. Trucks are used to bring in supplies and transport finished products. The Pactiv representative said they find their location in Moorhead advantageous because they are centrally located within the country at a crossroads for their products. They find that close proximity to Interstate

Number of employees

180

Cluster

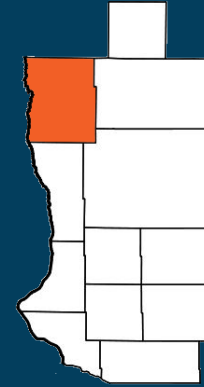
Paper and Packaging

Highways used



Location

Moorhead, Clay County



94 is also critical.

Other than the rough winter conditions of the region, Pactiv has few issues. They shut down their plant based on Interstate 94 closures at 34th Street. They would like more notifications from MnDOT

during interstate closures to help inform their decision-making and planning. They currently do not use the 511 web site for road condition updates because they contract out their shipping services.



Interstate 94 is a critical connection for Pactiv and other businesses in District 4.

Safety Findings

Key Findings

| | |
|---------------------|--|
| Turn lanes | Businesses generally saw turn lanes as safety improvements and requested additional turn lanes. |
| Intersections | Businesses identified needs for safety improvements at specific intersections—most often requesting additional warning lights, signs and stoplights. |
| Speed | Businesses provided feedback on speed limits and identified areas where speed limits changed as safety hazards. |
| Concerns for public | Businesses were concerned about cell phone use, pedestrian safety and the recent narrowing of Highway 29 through Alexandria. |

Anything done for safety is always helpful, (bigger, better, brighter).

Many safety issues cited in this section are mentioned in other areas of this report, but are included in this section to highlight specific safety concerns that interviewees identified. In general, safety concerns fall into the following categories: turn lanes, intersections, speed and concerns for the public.

Turn lanes

Businesses provided specific feedback regarding turn lanes and safety. One business noted that without turn lanes, people are tempted to go around trucks on the shoulders. Some respondents requested turn lanes as an added safety feature when their employees are entering and leaving their facilities. One manufacturer noted “It gets tricky outside our facility at this intersection. You get 250 people getting off work at 4:30 and turning onto a state highway with people going 55 mph.” A manufacturer also cited congestion on Highway 12 during shift change as a safety hazard and suggested right and center-left turn lanes.

In one instance, a driver was rear-ended because they were stopped, waiting to turn left and the other driver did not see them. Interviewees generally believed that turn lanes would reduce the risk of these crashes.

Not all businesses saw additional turn lanes as solutions to safety issues. In the northwest portion of the district, sugar beet season causes congestion along Highway 75. To alleviate some congestion, MnDOT added a turn lane at Clay County Road 18. Though one interviewee thought MnDOT had the “right intention” in adding this lane, he is afraid that a truck in the turn lane may pull out in front of a car and cause a crash. The interviewee requested a temporary stoplight during beet season as a solution.

Intersections

As stated in the Infrastructure Findings section of this report, businesses indicated intersections as being particularly hazardous. Most examples of safety concerns and safety improvements relate to the need for or recent addition of advance warning lights, signage and traffic signals.

Below are specific intersections businesses perceived as safety hazards:

- Highway 12 and 30th Ave in Benson is a very “dark” corner.
- Many crashes have occurred at the intersection of Highways 55 and 75 north of Wheaton. One business feared that the flashing lights MnDOT added for safety may have been insufficient in alerting drivers of the upcoming intersection.
- Highways 75 and 12 in Ortonville needs advance warning lights or rumble strips to warn drivers of the upcoming four-way stop. People often drive through the stop signs.
- Highway 29 and 50th Avenue in Alexandria is very congested, causing safety hazards.
- Highway 28 at both railroad crossings in Morris has suffered fatalities. Businesses said that drivers need to be made more aware of the railroad’s locations.

A few businesses also perceived roundabouts as unsafe because of their tight corners.

Businesses identified three intersections as areas where safety has improved because of MnDOT’s recent modifications:

- Highways 10 and 9 intersection in Glyndon is a “good improvement for safety,” since MnDOT added a traffic signal.
- Several businesses mentioned improvements in Hawley after MnDOT added a traffic signal to the intersection of Highway 10 and Clay County Road 31.
- Highways 79 and Grant County Road 10 east of Elbow Lake has become safer since MnDOT and Grant County installed flashing stop signs.

Speed

A few businesses said that higher speeds create safety hazards. Several businesses said that places where speed limits change or where there are tight corners are most dangerous. Others suggested that current speed limits are too high. One business requested advance warning signs for speed limit changes.

Concerns about the public

Businesses highlighted a few concerns about the general public. One respondent said they frequently saw people using cell phones while driving, and they look like “drunk drivers.” Another business said there are always people walking and running along Highway 59 in Mahanomen and asked if there was a way to make the area safer for pedestrians. MnDOT has since incorporated a pedestrian crossing into an existing construction project on Highway 59.

A couple businesses cited recent changes to Highway 29 in Alexandria, where MnDOT had narrowed the street by two feet on each side to widen the sidewalks. Respondents said there is not enough room for people to get out of their cars, it is difficult to see when entering from side streets and it is difficult for trucks to drive in the confined space.

Profile: Superior Industries

Superior Industries manufactures equipment for the construction aggregates, metals mining, and marine industries. These products are used for conveying and stockpiling large volumes of bulk materials. Its customers are located throughout the United States and internationally, including South America, Australia and Russia.

In 2012, Superior Industries approached MnDOT about a possible turn lane into their

facility on Highway 28 in Morris. The company was concerned for the safety of its employees during shift change. The speed limit on that stretch of Highway 28 is 55 miles per hour, and employees have to enter and exit the busy, two lane highway during three shift changes. MnDOT determined that Superior Industries met the criteria for a turn lane and that it fit into a larger project already being planned for the area. The new turn lane outside Superior Industries is scheduled to be constructed in the summer of 2015.

Superior Industries and its affiliated companies in Morris look forward to working with MnDOT on additional projects and concerns. The company is keenly aware of the safety and efficiency advantages roundabouts provide

but wants to make sure future roundabouts are large enough for its trucks and carriers to use.

The company would also like to work with MnDOT on ensuring its products are within permitting specifications, as many of its products are oversized. Shipping costs have increased by 30 percent recently and Superior Industries is interested in modifying its products and loads based on fixed dimension standards. Superior Industries has learned to adapt its business practices to spring weight restrictions and trains its international customers to order accordingly.

Number of employees

350

Cluster

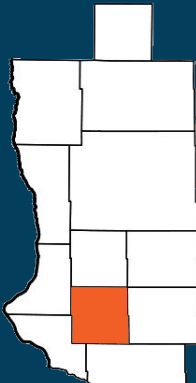
Production Technology and Heavy Machinery

Highways used



Location

Morris, Stevens County



Superior Industries builds conveyor equipment such as the Powerstacker, a stacking conveyor, seen above.

Policy and Permitting Operations Findings³⁰

Key Findings

| | |
|---------------------------|---|
| Permitting-related policy | <ul style="list-style-type: none"> ▪ Businesses sometimes adapt their products to size and weight restrictions. ▪ Pilot car certification requirements add to driver shortage. ▪ Businesses would like to haul heavier loads. |
| Permitting process | <ul style="list-style-type: none"> ▪ Businesses said obtaining a permit often takes an entire day—which is longer than other states—and causes shipping delays. ▪ Businesses suggest that Minnesota’s permitting be more automated, similar to their experience with other states’ systems. ▪ Businesses would like the permitting website and 511 to reflect consistent and up-to-date information regarding road restrictions and closures. |
| Other policies | <ul style="list-style-type: none"> ▪ Interviewees reported that federal hours of service requirements decrease driver productivity and restrict flexibility, increasing costs. ▪ Carriers fear that increasing biodiesel concentration requirements may damage trucks and increase costs. ▪ Businesses expressed appreciation for inspections overall, as they enhance roadway safety, but expressed frustration over perceived inconsistency in implementation. |

Permitting and OS/OW

About 40 percent (42 of 103) of all businesses interviewed and nearly all businesses that work with oversize/overweight (OS/OW) loads provided feedback about permitting. Comments were

³⁰ “Policy” is used broadly in this section, referring to federal law, state law, rules and more general MnDOT operating decisions. MnDOT has varying degrees of influence on these layers of policy. For example, the pilot car escort driver certification program referenced in this section was enacted by the Minnesota Legislature several years ago and is administered by the State Patrol. MnDOT determines when, how many, and what type of escorts are required, based on factors including overall loaded dimensions, topography/line of sight, congestion, motorist safety, etc. Federal hours of service is a good example of a policy over which MnDOT has no direct authority. However, MnDOT potentially could provide feedback regarding its understanding of the policy’s impacts on freight haulers, such as those gathered through this project, to the U.S. Department of Transportation.

This project and report are not intended in any way to provide a review or evaluation of freight permitting—in general or as administered at MnDOT—and this report should not be read as such. That type of study is outside of the scope of this project and would require a separate effort given the complexity of issues. Consequently, shippers’ and carriers’ perspectives presented in this report have not been validated or responded to in this report; they are presented as users’ experience of the system. However, understanding how freight haulers are experiencing the system is valuable and welcomed, so that MnDOT can review its and other jurisdictions’ policies and practices, and develop and evaluate potential responses or improvements, as feasible.

evenly split (40 each) between permitting policy and permitting process. Common routes for all businesses with comments about permitting are Highways 94, 10, 29, 59 and 75. Less prominent routes—but routes that are still used by the businesses—are Highways 12, 27, 55 and 28.

Permitting Policy

Both businesses hauling OS/OW loads and regular loads commented about permitting policies. Most policy comments were about Minnesota policies on dimensions, weights and costs and policies in other states. One carrier provided an example of how various policies, including other states' in relation to Minnesota's, can intersect and result in unintended consequences and negative economic impacts.

"There is a national company that makes bridges in Carlos, Minnesota and Ft. Wayne, Indiana. If it is more expensive to transport their product in Minnesota, then the company will make the product in Ft. Wayne. This is what makes Minnesota more expensive: If I have to go through the Metro area, I can only do that at night [between midnight and 5 a.m.]; and I need to pay for escorts. That's an extra \$1,000 per load, per night. But I can only run in Wisconsin *after* sunrise; so, we sit on the off-ramp until sunrise. That takes an extra day, an extra day's expenses, to get to the end-customer. Because my customer is charged for an extra day of transportation, they build the bridge components in Indiana."

Dimension policies

Businesses who commented about policies for over-dimensional loads often gave examples of how they have adapted their products to meet height and width specifications. Common methods of adapting products included disassembling or scaling down products and modifying trailers. One manufacturer struggled to find a way to obtain necessary supplies that fit permitting guidelines. Another manufacturer explained "We have to break down our large stacker to ship [internationally]. It's a huge deal too. We spent up to 20 percent more to make bolt-together equipment for shipping." Other carriers reroute their shipments into bordering states to avoid size restrictions, sometimes avoiding travel in Minnesota altogether. One carrier said "If I'm over 95 ft., the route is shorter in Minnesota, but I'll go to the Dakotas to avoid the escort expense."

Businesses expressed desire for more consistent height and width policies among states, generally favoring the less-restrictive policies in bordering states. One business mentioned paying \$4,000 for a permit and pilot car to travel 25 miles from its location in Minnesota to the North Dakota border, where they did not need the permit or pilot car.

Pilot Car Certification

Respondents believed that recent changes to policies that require drivers of pilot cars and escorts to be certified have contributed to the driver shortage. Businesses also expressed uncertainty about the need for a pilot car. For example, one business was unsure why a truck that is over-length but within width restrictions is required to have a pilot car in Minnesota, but not in South Dakota. Another business mentioned that they would be willing to attempt to fit

within the standard for loads that do not need pilot cars, but they have not been able to find information on such a standard.

Weight restrictions

Some businesses (both OS/OW and regular) said they had no issues working within current weight restrictions and indicated that they are an improvement over former weight policies. Other businesses indicated they “live and die by weight per axle laws.” As a result, a few of those businesses have modified their practices, such as breaking down products or lightening trailers, to work within the weight restrictions as much as they can.

Some businesses continue to have issues and provided suggestions that would allow them to be more competitive. Persistent challenges include:

- Loads where including one more item—such as a pallet or necessary tool to complete a job (pumps, welders, etc.)—makes the truck overweight. Businesses can either risk being 100 to 200 pounds overweight or use a second truck, which costs money and increases truck volume on roads.
- International customers that don’t understand Minnesota’s weight limits and send supplies in volumes that are difficult to break down for shipping.
- Inconsistent weight restrictions among different states. A truckload can be legal in one state and need a permit in another.

Many businesses also suggested MnDOT increase the amount of weight they can haul. Suggestions varied but included:

- Allowing all shippers to carry ten percent more weight per axle on more roads or year-round.
- Ensuring all roads allow a minimum per axle weight. Suggested per axle weight varied from seven to nine tons, but businesses said they appreciated ten ton roads.
- Increasing limit on many roads to 90,000 pounds.
- Allowing shippers to add another axle, increasing the overall weight to 105,000 pounds.

Spring weight restrictions

One business said, in reference to spring weight restriction, “[We] understand why they’re in place, but they can make it difficult.” Some businesses have found ways to adapt to spring weight restrictions, including:

- Decreasing production by 25 percent and partially loading trucks
- Reducing shipment loads by 25 percent
- Stockpiling items and waiting to ship
- Training customers on Minnesota spring weight restrictions and how to order products accordingly
- Halving truck loads, ultimately doubling the number of trucks and the number of trips needed to deliver products

One business also noted that in North Dakota, businesses can pay an extra permitting fee to drive overweight.

Expense

A few businesses commented on the expense of permits. One business mentioned using a longer route in North Dakota rather than a shorter route in Minnesota to avoid permit costs.

Other states and Canada

Businesses that spoke of other states referred mostly to North Dakota's OS/OW policies. Specific policies cited include allowing trucks to transport additional trailers, less frequently needing permits and allowing trucks to add an axle or pay extra to carry additional weight.

In general, businesses said Minnesota was more restrictive than other states. For example, Minnesota's restrictions require trucks to carry lighter loads than in other states. Minnesota also does not allow double trailers, triple trailers or stacking trailers. North Dakota, South Dakota and Canada allow trucks to haul additional trailers.

Permitting Process

All businesses that spoke of the permitting process ship OS/OW. Comments about the permitting process fell into three main areas:

- Amount of time it took to obtain a permit
- Permitting office staff and hours
- Permitting website

Obtaining a permit

Several businesses commented about the amount of time it takes to get a permit. While businesses said annual permits are rather simple to obtain, permits for over-dimensional (OD) loads—particularly wide loads—can be cumbersome because they need to be reviewed manually. Businesses said the process for obtaining a permit for a wide load typically takes about one day. One business explained the permitting process from their perspective, saying,

“You send in a permit and sometimes you're approved right away, but sometimes you can send it in the morning and it doesn't get looked at until later. Then if there's one thing wrong they send it back ... The challenge is if you have any issues you need to solve them by 3:00 or you sit [until the next business day].”

Another business mentioned that, though it is not required, shippers feel their trucks should be completely loaded before applying for a permit to ensure the dimensions on the permit match the load. If the driver cannot obtain a permit for the load, they cannot travel on any Minnesota highways. Businesses gave examples of drivers having to wait just across the border or rent hotel rooms for the weekend because their permit was delayed.

Permitting Office staff and hours

Businesses complimented Permitting Office staff as “good to deal with,” but were concerned that staff’s workloads were too heavy to process permits in a timely manner. Additionally, several businesses reflected that they can only call the Permitting Office from 8:00 a.m. to 12:00 p.m. and 1:00 p.m. to 3:30 p.m. Businesses said this schedule often did not allow them enough time to apply for permits and resolve issues within a business day, which sometimes meant drivers had to stay overnight or over weekends.

A few businesses suggested that the Permitting Office be open on weekends and possibly holidays, particularly those that fall on Mondays, to be more reflective of the hours that truck drivers operate.

Obtaining permits in other states

Some businesses mentioned that Minnesota is among states that take the longest to issue a permit. One carrier said “If I have to move a load ... from Alexandria or Morris and take it across Minnesota, Iowa, Wisconsin, Ohio, and Pennsylvania, I can have permits for all of those states but still have to wait four to five hours for Minnesota’s.”

The amount of time to obtain a permit in other states spanned from a reported five minutes in South Dakota to an hour in North Dakota.³¹ Respondents said Minnesota’s relatively longer wait affects their ability to do business.

Businesses also provided examples of how bordering states issue permits:

- North Dakota’s new system is always open and completely automated.
- South Dakota can issue permits in five minutes. Drivers can also contact the on-duty officer to get through on evenings and weekends.
- Iowa’s system is completely automated.
- Wisconsin updated its permitting system two years ago. They still have office hours similar to Minnesota’s, but can issue permits in five minutes.

Permitting website

Some businesses said they were glad that they could apply for permits using the permitting website. They also like that the website stores their information, which not all states do.

Other businesses said the website is not easy to navigate and uses outdated technology. They were unsure how to figure out where construction and weight restrictions begin and end. One business said the automated routing tool is hard to use because it provides a “circuitous trip.” Because some businesses enter and leave highways using county roads, they suggested using mile posts, intersections, geographic coordinates or syncing with Google maps to enter their routes.

³¹ Interviewees also mentioned that they can obtain a permit in about 15 minutes in Pennsylvania.

Permitting Website and 511

Many businesses mentioned that the permitting website and 511 do not always display the same information. For example, 511 can indicate a construction project is finished and restrictions are lifted, but the permitting website still restricts the area. When this happens, drivers need to call the Permitting Office and staff resolve the issue manually.

Businesses suggested that the permit website be linked to the 511 website and enable them to track their permits on 511. They said it would be beneficial not only for more up-to-date construction and weight restriction information, but they could track their routes along with road conditions and winter weather.

Other Policies

Businesses provided feedback on other policies specific to shipping. These generally referred to federal hours of service requirements, biodiesel requirements and inspections and scales. The federal Hours of Service Final Rule took effect on February 27, 2012 and limits the amount of time drivers can operate a commercial motor vehicle.³² Most comments regarding hours of service mentioned that delays and other work count toward driving time, which increases costs and decreases driver productivity. The new rule also restricts driver flexibility.

Effective July 1, 2014, trucks in Minnesota must be fueled by ten percent biodiesel from April through September.³³ Carriers explained that their trucks were meant to run on diesel and are concerned that incremental increases in biodiesel mandates may damage trucks.³⁴

Businesses provided feedback about inspections and scales. While some businesses voiced appreciation for inspections, saying "It's good they're out there; there's a lot of junk on the road," other businesses felt they were being unfairly targeted for inspections and citations. Businesses also cited inconsistencies with policy interpretation and lack of consideration for business time commitments as areas of frustration.

Traffic laws

Businesses also commented on traffic laws. Most comments referred to speed limits, and businesses were split on whether current speed limits are appropriate or should be increased or decreased, depending on the specific location. Another business commented about cell phone use by passenger car drivers, saying laws should further restrict the use of cell phones while driving.

³² See the "Hours of Service of Drivers" final rule at <http://www.fmcsa.dot.gov/regulations/rulemaking/2011-32696>.

³³ Minnesota Statute § 239.77, subdivision 2.

³⁴ Biodiesel begins to gel in cold weather.

Profile: United Sugars

United Sugars' products include both bulk sugar and byproducts from sugar beets, used primarily in products for cattle. Core customers include nine of the ten major food manufacturers in the U.S.

Transportation is essential to United Sugars in getting the sugar beets from the farm fields to the production plants where the sugar is made. Transportation is also critical in getting the bulk sugar to the food companies across the country. When plants are running 24/7, they are not equipped to store product for more than a short period. United Sugars ships approximately 700 truckloads of packaged products per week during peak production periods. In addition, they ship 200 loads per week of bulk and liquid products.

Number of employees

250–300

Cluster

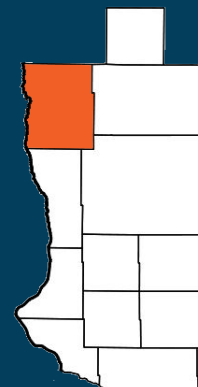
Food Processing

Highways used



Location

Moorhead, Clay County



Weight limits impact shipping for United Sugars. Each pallet is approximately 2,500 pounds and if the 80,000 pound truck weight limit is exceeded by 100–200 pounds, an entire pallet needs to be removed. New emission standards have also added approximately 400 pounds to trucks. United

Sugars' representative said that the ability to haul 88,000 pounds year-round (not just during harvest season) would be great. Also, the federal rule changes that took place in July 2013 around hours of service have impacted their planning logistics.



United Sugars processes sugar beets, and efficient transportation is essential during harvest season.

Other Findings

Key Findings

| | |
|-----------------|---|
| Main arteries | Access to Interstate 94 and other key highways in District 4 was very important to businesses. |
| Driver shortage | A shortage of truck drivers in northwest Minnesota is making it difficult for manufacturers to ship their goods affordably. |
| Rail | Increased demand for railcars causes shipping delays. Also, increased train traffic has created traffic delays. |
| Congestion | Some businesses reported seasonal congestions and congestion around shift change and the beginning and end of the school day. |

Main arteries

Many businesses valued access to the network of interstate and state highways across District 4. Some businesses even selected their locations based on proximity to major roads, including Highways 7, 10, 12, 29, 75, 78 and 210 and Interstate 94.

Interstate 94 was the most commonly-cited asset, with thirty-six businesses identifying it as one of the biggest strengths to their location. The interstate provides businesses with access to major Midwest markets, such as Fargo, Minneapolis/St. Paul and Chicago. Businesses used words like “important” and “essential.” One business said, “94 is a lifeline, and I think that’s why Alexandria has thrived.”

Driver shortage

Manufacturers identified increased demand on carriers as one of their biggest and most recent challenges. Some manufacturers suggested much of the change in shipping demand has come from the oil industry in North Dakota. Similarly, carriers are experiencing a driver shortage because drivers can command higher salaries in oil-rich areas. Increased demand and driver shortages have created delays and increased shipping costs.

Manufacturers with less profitable shipments—such as less-than-truckload—struggle to find carriers, but some manufacturers close to Interstate 94 can secure space in empty trucks travelling to or from the Twin Cities.

Rail

Businesses have also noticed capacity issues with railcars with the recent oil industry growth in North Dakota. Businesses said railcars are sporadically available and difficult to schedule. Limited availability for railcars has caused delays—in some cases doubling turn-around time—and increased the cost of shipping by rail. One business said they have experienced a 33 percent reduction to productivity due to difficulties associated with rail shipments.

Increased rail traffic through District 4 has led to delays on highways as well. Train timing has become unpredictable and backs up traffic. One business said they experience one to two-hour delays each day; another business said that unpredictable waits of 15–20 minutes can keep their

employees from getting to work on time. Businesses identified Benson, Detroit Lakes, Fergus Falls, Mahanomen and Perham as places where back-ups have been troublesome.

Congestion

Some businesses observed an overall increase in congestion in District 4. A few thought the congestion was somewhat seasonal, with more traffic from April to November. Others thought it could be an effect of the growing oil industry in North Dakota. Shift changes and school days increase congestion at specific times of day.

Most comments about congestion in District 4 referred to areas in Alexandria, along Highway 29 and east of Alexandria on Interstate 94. A couple businesses also mentioned Fergus Falls and Ortonville as congested areas.

Profile: Barrel O'Fun & Kenny's Candy

Barrel O'Fun and Kenny's Candy are part of KLN Family Brands, which is a family-owned company that also includes Tuffy's Pet Foods and NutHead's Chocolate Factory.

Barrel O' Fun

Barrel O' Fun produces snack foods, mainly various types of potato and tortilla chips. It has an estimated 40 trucks incoming and 45 trucks outgoing each day. The company receives large semis of potatoes year-round, and spring weight restrictions can be an issue for

shipping potatoes. The Barrel O' Fun representative said they would like to see better coordination between North Dakota and Minnesota on the closing of Interstate 94.

Kenny's Candy Company

Kenny's Candy manufactures licorice products. The company is one of the major producers of licorice in the U.S. Kenny's ships smaller quantities than Barrel O' Fun; 90 percent of the candy ships in less than a truckload and 50 percent ships in single pallets. The

company uses the MnDOT 511 site when dispatching trucks.

Both organizations said that access to Highway 10 is an asset. Challenges included the need for adequate signage identifying KLN companies at Highways 10 and County Road 34 and identification of the County Road 34 exit. Additionally, the current shortage of truck drivers has made it difficult for the companies to find enough trucks to haul their products.



Barrel O' Fun produces snack foods, such as products above. Spring weight restrictions can cause issues for the trucks bringing in potatoes.



Kenny's Candy is one of the largest producers of licorice products. However, most of their shipments are less than truckload.

Number of employees

Barrel O' Fun: 900–1,000
Kenny's Candy: 130–150

Cluster

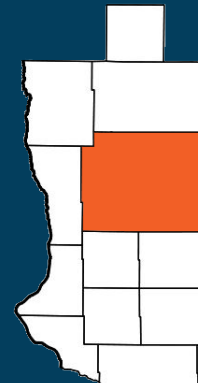
Food Processing

Highways used



Location

Perham, Otter Tail County



Recommended Next Steps

The District 4 Manufacturers' Perspectives Project provided new customer perspectives regarding the transportation system in District 4 and statewide. Respondents offered concrete and often location-specific feedback that can inform near-term infrastructure, maintenance and operations, and communication and policy improvements. The in-person interview method was generally successful in further developing relationships among MnDOT and regional customers and partners and obtaining information for improving regional and statewide transportation systems. District 4 and Central Office staff are currently analyzing the more detailed and location-specific interview data for alignment with existing MnDOT plans and priorities.

The following broad recommendations can help MnDOT District 4 apply interview results to their transportation system improvements:

1. Develop an action plan for continued analysis and incorporation of respondents' priorities and suggestions into its planning and operations work, as appropriate and feasible within resource constraints.

For example:

- Increase signage to better identify truck routes, intersections, businesses and exits
- Add advance warning lights, such as "Prepare to stop when flashing" signs or lighted LED stop signs to some priority intersections.
- Consider business requests for acceleration, turn and passing lanes.
- Ensure smooth pavement to prevent product and truck damage.

2. Develop an action plan for building upon District 4 relationships among businesses, MnDOT, city and county engineers and economic development professionals.

- Enhance coordination with counties and cities and jointly address issues that involve the state and local governments.
- District 4 can work with local entities on the feedback from some businesses that road maintenance and snow removal is better on state roads and before state highways were turned over to counties.

3. Build on current communication mechanisms to enhance and assure better communications with businesses about road construction project updates and road conditions.

- Businesses are using the information MnDOT provides to make decisions regarding business practices, production and transportation. They are interested in as much real-time, easily-accessible information as MnDOT can provide.
- There are opportunities for MnDOT to maximize its current communication tools, such as the option for businesses to sign up for e-mail updates on particular construction projects. For example, MnDOT could build a higher awareness of the road construction

projects e-mail updates or reach out to key businesses directly to ensure they are receiving e-mail updates.

The following broad recommendations can help the MnDOT Central Office apply interview results to the District 4 transportation system improvement:

4. Review District 4 interview data to identify recommendations to incorporate into statewide planning, development and best practices, as appropriate and feasible within resource constraints.

For example:

- Analyze concerns and incorporate permitting suggestions for improving web site and process/timing for issuing permits, as indicated.
- Ensure that the permitting web site and 511 reflect consistent information.
- Promote 511 for road construction updates—511 is well-used for winter road conditions updates, but less for road construction updates.
- Ensure that new roundabouts are designed to accommodate trucks, including over-dimensional loads, as feasible.

5. Build upon the work of the manufacturers' perspectives projects in District 4 and 8 and adapt and refine the approach as the model is implemented statewide.

Project results indicate the value of this project and its approach. Cluster analysis, systematic information gathering and cross-discipline interview teams allowed MnDOT to gain a much better understanding of a key customer component. Respondents also provided practical recommendations that will be useful to all MnDOT districts, ultimately improving the state's transportation system.

With future projects:

- Look at ways to combine the findings from the District 4, 8 and future manufacturers' perspectives projects into broader statewide findings, themes and recommendations.
- Examine research methods to look for areas where improvements may be possible to streamline the project, such as the approach to scheduling interviews..

Appendices

Appendix A: List of Project Team and Interviewers

Minnesota Department of Transportation Interviewers

MnDOT Project team

- Jody Martinson, District Engineer, MnDOT District 4
- Donna Koren, Market Research Director, MnDOT Customer Relations Office
- Jerimiah Moerke, Public Affairs Coordinator, MnDOT District 4
- Mary Safgren, District Planning Director, MnDOT District 4
- Shiloh Wahl, Program Development Manager, MnDOT District 4

Additional MnDOT interviewers

- Brian Bausman, Project Manager, Minnesota Department of Transportation
- Brad Cegla, Project Supervisor
- Craig Collison, District 2 District Engineer
- Ted Coulianos, Office of Freight and Commercial Vehicle Operations
Oversize/Overweight Permits Supervisor
- Mike Ginnaty, Program Delivery Manager
- Lonnie Hoffman, Alexandria Sub-area Supervisor
- Brent Holland, Fergus Falls Sub-area Supervisor
- Rob Holschbach, Office of Freight and Commercial Vehicle Operations Permit
Technician
- Shawn King, Detroit Lakes Sub-area Supervisor
- Marcia Lochner, Communications and Web Coordinator
- Tom Lundberg, Project Manager
- Al Milbradt, Moorhead Sub-area Supervisor
- Tom Pace, Project Manager
- Jeff Perkins, Operations Manager
- Darrick Rust, Morris Sub-area Supervisor
- Joe Stagmaier, Maintenance Superintendent
- John Tompkins, Freight Planner

Economic Development Interviewers

- Adam Altenburg, Community & Transportation Analyst, Fargo-Moorhead Metropolitan
Council of Governments
- Dick Dreher, Executive Director, Pope County Housing & Redevelopment
Authority/Economic Development Authority
- Guy Fischer, Economic Development Authority, Becker County
- Scott Formo, Executive Director, Glenwood Lakes Area Chamber of Commerce
- Jen Frost, Executive Director, Swift County Rural Development Authority

- Michael Haynes, Executive Director, Stevens County Economic Improvement Commission
- Wayne Hurley, Planning Director, West Central Initiative
- Chuck Johnson, Economic Development Director, City of Perham
- Matt Maslowski, Economic Development Authority Director, City of Moorhead
- Sean Mork, Councilmember, City of Hawley
- Vicki Oakes, Community Development Coordinator, Ortonville Economic Development Authority
- Larry Remmen, Community Development Director, City of Detroit Lakes
- Germaine Riegert, City Clerk, City of Wauban
- Don Solga, Assistant Treasurer of Economic Development Authority, City of Pelican Rapids
- Stan Thurlow, Economic Development, Cities of Breckenridge/Dilworth
- Mark Vaux, Executive Vice President, Business Development, Greater Fargo Moorhead Economic Development Corporation
- Greg Wagner, Economic Development Planner, West Central Initiative
- John Young Jr, Vice Mayor, City of Hawley

Project Partners Team Interviewers

All project of the external project partner teams participated in interviews.

State and Local Policy Program, Humphrey School of Public Affairs, University of Minnesota

- Lee Munnich, SLPP Director
- Frank Douma, SLPP Associate Director
- Thomas Krudel, SLPP Research Assistant

Extension Center for Community Vitality

- Michael Darger, Director Business Retention & Expansion
- Ryan Pesch, Extension Educator
- Rani Bhattacharyya, Community Economics Extension Educator
- Ben Anderson, Regional Director, University of Minnesota Extension Moorhead Regional Office

Management Analysis & Development (MAD), Minnesota Management & Budget (MMB)

- Karen Gaides, Management Consultant
- Lisa Hermanson, Management Consultant
- Demian Moore, Management Consultant

Appendix B: Invitation Letter



Minnesota Department of Transportation

1000 Highway 10 West
Detroit Lakes, MN, 56501

Office: 218-846-3600

October 15, 2014

Dear:

I would like to invite you to participate in an interview regarding your freight, shipping, and transportation infrastructure needs. My goal is to hear from businesses in my district about specific concerns, needs, and priorities that MnDOT could work to address roughly within the next four years.

For example, as we prioritize our resources for maintenance and operations, my staff and I want to understand the relative value of smooth pavement, snow and ice maintenance, passing lanes, highway design features, and other factors important to your business as you manage your freight shipping. Please also share any priorities you may have regarding MnDOT policies and regulations. While I can't promise that we'll be able to meet all of your needs, as resources are limited, we want to understand your business' needs.

A secondary goal of this effort is to increase familiarity between MnDOT District 4 staff (our district serves west-central Minnesota) and area businesses, to open lines of communication. We want to ensure that we are responsive and provide access points for area manufacturers/shippers to raise issues in a timely manner. This project team will also include local economic development staff to further develop these connections among our organizations.

You may have participated in a freight study conducted in 2009; this current project has a much more operational focus. Your interview, along with those of other manufacturers located in west-central Minnesota, will help us to identify shorter-term, actionable, and high-benefit/lower-cost improvements that can provide tangible benefits to area manufacturers.

MnDOT completed its first project, using this interview model, in southwest Minnesota in 2013. Several challenges and requests raised by this region's manufacturers have been already addressed and resulted in improvements to the district's planning and communications. Other specific feedback has been reviewed and incorporated in various ways into the district's planning processes. We expect that we'll be able to have similar successes as we learn about your and other shippers' specific transportation priorities and challenges.

Interviews will be conducted by a small (2-3 person) team comprised of staff from: MnDOT; regional economic development organizations; Minnesota Management & Budget, (project analysts); and University of Minnesota transportation/economic development researchers and Extension personnel.

Please expect Minnesota Management & Budget/Management Analysis & Development staff to call you within the next few weeks to follow up on this invitation and schedule your interview, which we would like to take place in late October or November, if possible. The interview will take about an hour and we would come to your office at a time that is convenient for you. I have enclosed a draft of the interview guide/topics, if you prefer to review it ahead of time.

I hope that you can make time in your schedule to talk with us. On behalf of MnDOT, we look forward to working with you to support your business and strengthen economic vitality in west-central Minnesota, and the state.

If you have any questions about the project, please call our project manager, Donna Koren, MnDOT's Market Research Director (651-366-4840).

Sincerely,

Jody Martinson
Transportation District Engineer
MnDOT District 4

Enc: Draft Manufacturer's Perspective Interview Guide/Topics

Appendix C: Manufacturer Interview Guide

INTERVIEW OVERVIEW

FOR MnDOT DISTRICT 4 MANUFACTURERS

1. Introductions
2. Approximately how many people are employed at this location? _____
3. Please describe your company's primary products.
4. Broadly, what role does transportation play in your ability to competitively do business?
5. Please provide a brief overview of your primary **suppliers**.
 - 5a. Which modes are used to get resources/inputs from them? Which routes do they use?
6. Please provide a brief overview of your primary **customers**.
 - 6a. Which modes do you use to transport your products to them? Which routes do they use?
7. Do you transport your products in-house, or contract with private commercial transportation service providers? If the latter, could you tell us with whom you work? Could we contact them to get their perspectives as well?
8. What are the **strengths** of your current location for meeting your firm's transportation needs? What works well regarding transportation?
9. What are your transportation **challenges** or concerns in receiving supplies/inputs and shipping your products/services?

Infrastructure (e.g., passing and turn lanes, intersection geometry, pavement condition)

Operations (snow and ice removal, slow-downs due to maintenance and construction work, workability of detours, communication from MnDOT about same)

Minnesota policies/regulations (e.g., permitting restrictions, etc.)
10. To what extent do you consider your firm's transportation needs representative of companies in your particular industry? If not, how are they different?
11. What else, if anything, would you like MnDOT to be aware of?

Thanks again for your time. If you have any follow up questions or thoughts, please share them with our project manager, Donna Koren, MnDOT's Market Research Director at 651-366-4840 or donna.koren@state.mn.us

Appendix D: Carrier Interview Guide

MnDOT Manufacturers' Perspectives Project Freight Carriers

INTERVIEW GUIDE

INTRODUCTIONS

1. Introductions all around (name, title, organization)
2. Please describe the types of carrier services you provide (fragile, perishable, oversized, types of products manufactured by your customers in west-central Minnesota, etc.)
3. Broadly, how does Minnesota's transportation system help or hinder your ability to provide carrier services to businesses in west-central Minnesota?
4. About how many manufacturers does your company provide service for in this area (SHOW DISTRICT 4 MAP)?
 - 2a. And roughly how many staff do you have supporting hauling in this area? How many employees are at this location?
 - 2b. Are there any transportation issues associated with your employees getting to work and back?
- 2c Probe: Are there additional drivers who travel through this part of the state?
5. Please provide a brief overview of your primary customers in MnDOT's District 4 (west-central Minnesota).
 - 5a. Which modes do you use to transport your products to them? Which routes do you use to get in, out, and around District 4?
6. What are the **strengths** of west-central Minnesota, in terms of enabling your company to meet your customers' shipping requirements? What works well regarding transportation?
7. What are your transportation **challenges** or concerns in this part of the state?

Infrastructure (e.g., passing and turn lanes, intersection geometry, pavement condition)

What highway **features** are important to moving your freight?

Smooth pavement?

Wide and/or paved shoulders?

Stop lights?

What about bridge capacity? Is that a factor?

Operations (snow and ice removal, slow-downs due to maintenance and construction work, workability of detours, communication from MnDOT about same)

Are there specific times of day that your customers commonly request pick-ups and/or deliveries? If so, when are they? Which routes are most important for snow and ice clearing, and when?

Would different signage, to identify truck route designation, be helpful? If so, where?

Do you know about 511? (<http://www.511mn.org/>)

How often or under what conditions do you use it?

How well does it meet your company's/drivers' information needs regarding road conditions?

What improvements would you like to see to 511?

How well-informed do you feel during construction season about how construction and maintenance operations will affect your routes? If not, what could MnDOT do that would be more helpful?

Law/regulations (e.g., permitting restrictions, etc.)

What problems, if any, do you run into regarding weight restrictions?

9. What else, if anything, would you like MnDOT to be aware of?

10. We appreciate you sharing this information. MnDOT is interested in continuing this conversation with businesses about their transportation needs and experiences. District 4 staff want this to be more than just an opportunity for you to raise transportation issues every several years. What types of meetings or communication methods would work well for you, to keep the conversation going between your business and MnDOT, so that your input continues to inform their planning processes?

Thanks again for your time. If you have any follow up questions or thoughts, please share them with our project manager, Donna Koren, MnDOT's Market Research Director at 651-366-4840 or donna.koren@state.mn.us . (Interviewers may also offer their own contact info, if they wish)

Appendix E: Conference Center & Resort Interview Guide

INTERVIEW GUIDE

for MnDOT DISTRICT 4 **Conference Centers and Resorts**

1. Introductions
2. Approximately how many people are employed at this location? _____
- 2a. Are there any transportation issues associated with your employees getting to and from work?
3. Please describe your business, its services, etc.
4. Broadly, what role does transportation play in your ability to competitively do business?
5. Please provide a brief overview of your primary **suppliers**, for the goods, food, etc., that you provide here.
6. Please provide a brief overview of your guests.
7. What are the **strengths** of your current location for meeting your firm's transportation needs? What works well regarding transportation?
8. What are your transportation **challenges** or concerns regarding getting your guests here safely and easily, as well as bringing supplies here?
9. To what extent do you consider your firm's transportation needs representative of businesses in your particular industry? If not, how are they different?
10. What else, if anything, would you like MnDOT to be aware of?

Appendix F: List of Businesses Interviewed

| | | |
|--|---------------------------------------|----------------------------------|
| 3M Alexandria | GoFasters Powersports & Marine | ProBuild |
| Agassiz Granite | Golden Ring Trucking | Professional Agronomy |
| Aggregate Industries | Graceville Cabinet Co. | Proximity Controls |
| Alderon Industries | Green Plains Inc. | Quinco Press |
| Alexandria Industries | Hancock Concrete | R & R Ready Mix Inc. |
| Alexandria Pro-Fab Co. | Heritage Transport | R/C Machining Co. |
| Arrowwood Resort Hotel & Conference Center | Hoot's Sports | Rapat Corporation |
| B & D Trucking | HR Construction | Rausch Granite |
| Barrels o' Fun Snacks | Industrial Finishing Services, Inc. | RDO |
| Bear Track Products Inc. | ITW Heartland | Reile's Transfer & Delivery Inc. |
| Bert's Truck Equipment | Kenny's Candy Co. | Rollies Sales & Service, Inc. |
| Big Wood Event Center | Kensington Elevators | Shooting Star Casino |
| Bongard's Creameries | Lake Area Docks | S-M Enterprises |
| Brenton Engineering Co. | Lakeland Manufacturing Inc. | Snappy Co. |
| BTD Manufacturing | Lorenz Manufacturing | Spring Prairie Meats |
| Cargill | Lowry Manufacturing Co. | Stein's Inc. |
| Case New Holland Benson | Lowry Transfer | SunOpta |
| CHS Inc. | Massman | Superior Industries |
| CJ Inc. | Metal Sales Manufacturing Corporation | Swanson Repair Inc. |
| Clyde Machines Inc. | Midnite Express | SWI Interiors |
| Concrete of Morris Inc. | Monsanto | Theile Technologies |
| Consolidated Container Co. | M-R Sign Co. Inc. | Thumper Pond Resort |
| Cosmos Enterprises | Mycogen Seeds | United Sugars Corporation |
| Cretex | Nelson Creamery Association | Urbank Machine Co. |
| Daggett Trucking | Northern Contours | Valley Cartage |
| DLS Worldwide | Northern Geo | Vector Windows |
| Donnelly Custom Manufacturing | Old Dominion | Victor Lundeen Co. |
| Excel Plastics | Olson Oil | Wensman Seed |
| F&M Transport | Ortonville Independent | West-Con |
| FedEx | Otter Tail Power Co. | Westmor Industries |
| Foltz Trucking | Pactiv | Wheaton Dumont Agronomy Center |
| FORCE America | Perham Egg | White Oak Metals |
| Forum Communications Printing | Pfeninger Trucking & Warehousing | Wilkins Industries Inc. |
| Friesen's Inc. | Prairie Trailer | Winter Truck Line In |
| Gappa Oil Co. | | |

Appendix G: MnDOT District 4 Location Quotients* for Traded Clusters, 2012

Matrix with location quotients by county

| Traded Cluster | District 4 | Becker | Big Stone | Clay | Douglas | Grant | Mahnomen | Otter Tail | Pope | Stevens | Swift | Traverse | Wilkin |
|---|-------------|--------------|--------------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------|--------------|
| Production Technology and Heavy Machinery | 4.21 | 0.73 | 1.40 | 0.57 | 8.28 | 1.75 | - | 1.04 | 11.19 | 12.21 | 19.88 | 1.55 | - |
| Food Processing and Manufacturing | 4.09 | 0.17 | 1.46 | 4.22 | 3.65 | 7.19 | 0.48 | 9.68 | 0.21 | 1.53 | 6.01 | 9.70 | 2.59 |
| Upstream Metal Manufacturing | 3.83 | 14.74 | - | - | 8.00 | - | - | 0.17 | - | 0.78 | - | - | - |
| Agricultural Inputs and Services | 3.70 | 1.52 | 13.10 | 1.77 | 1.44 | 8.17 | - | 2.59 | 3.77 | 9.14 | 9.18 | - | 29.55 |
| Livestock Processing | 3.07 | 0.16 | - | 0.24 | 2.90 | 11.82 | - | 10.31 | 2.73 | 1.26 | - | 3.00 | - |
| Environmental Services | 2.81 | 0.88 | - | 1.37 | 6.66 | - | - | - | 13.09 | - | 2.65 | - | 4.27 |
| Leather and Related Products | 2.68 | - | - | 1.82 | - | - | - | 11.97 | - | - | - | - | - |
| Metalworking Technology | 2.55 | 0.65 | - | - | 10.44 | 3.49 | - | 2.56 | 1.21 | - | - | - | - |
| Printing Services | 1.79 | 6.83 | 2.71 | 0.24 | 1.04 | - | - | 1.04 | 2.34 | - | 0.47 | - | - |
| Education and Knowledge Creation | 1.66 | 0.03 | - | 7.61 | 0.22 | - | 0.89 | 0.09 | 0.13 | - | - | - | 0.13 |
| Water Transportation | 1.66 | - | - | - | - | - | - | 8.56 | - | - | - | - | - |
| Furniture | 1.40 | 4.83 | 4.27 | 0.67 | 1.41 | - | - | 0.42 | 0.61 | - | - | - | - |
| Hospitality and Tourism | 1.28 | 1.29 | 1.79 | 0.51 | 1.47 | 1.39 | 11.53 | 0.92 | 0.39 | 1.07 | 0.31 | 0.99 | 0.38 |
| Nonmetal Mining | 1.28 | - | 17.15 | 0.77 | 1.89 | - | - | 0.85 | - | 7.97 | - | - | 4.84 |
| Electric Power | 1.15 | - | - | - | 0.50 | - | - | 2.69 | - | - | 9.53 | - | - |

| Traded Cluster | District 4 | Becker | Big Stone | Clay | Douglas | Grant | Mahnomen | Otter Tail | Pope | Stevens | Swift | Traverse | Wilkin |
|---------------------------------------|------------|-------------|--------------|------|-------------|-------------|----------|-------------|-------------|--------------|--------------|-------------|-------------|
| Generation and Transmission | | | | | | | | | | | | | |
| Lighting and Electrical Equipment | 1.15 | 4.74 | - | 0.21 | - | - | - | 1.62 | 0.67 | - | - | - | - |
| Music and Sound Recording | 1.15 | - | - | - | 6.41 | - | - | - | - | - | - | - | - |
| Apparel | 1.02 | - | 10.12 | 0.46 | - | - | - | 0.50 | - | - | 10.64 | - | 2.85 |
| Downstream Metal Products | 1.02 | 1.42 | - | - | 2.69 | - | - | 1.38 | - | 1.62 | 0.61 | - | - |
| Upstream Chemical Products | 1.02 | - | - | - | 0.43 | - | - | 2.33 | - | 1.82 | 8.25 | - | - |
| Wood Products | 1.02 | 1.69 | - | 0.19 | 0.69 | 2.60 | - | 2.68 | - | - | - | - | - |
| Construction Products and Services | 0.89 | 0.86 | - | 0.25 | 0.10 | 1.16 | 0.62 | 0.92 | - | 11.46 | - | 2.06 | 0.52 |
| Distribution and Electronic Commerce | 0.89 | 0.27 | 3.24 | 0.78 | 0.95 | 1.86 | 0.41 | 0.60 | 2.73 | 0.49 | 1.05 | 2.21 | 2.36 |
| Transportation and Logistics | 0.89 | 1.59 | 1.82 | 0.54 | 0.79 | 1.62 | 0.86 | 1.20 | 0.37 | 0.40 | 0.30 | 2.01 | 0.73 |
| Performing Arts | 0.77 | 0.24 | - | 0.38 | 0.70 | 2.63 | - | 1.88 | - | - | 1.48 | 4.67 | - |
| Plastics | 0.77 | - | - | 0.65 | 2.09 | 1.28 | - | 0.61 | - | - | 2.16 | 4.55 | - |
| Recreational and Small Electric Goods | 0.64 | 0.48 | - | 0.37 | 0.46 | 5.18 | - | 0.16 | 2.39 | 1.93 | 1.46 | - | - |
| Automotive | 0.51 | 1.22 | - | 0.44 | 0.09 | - | - | 0.48 | 1.40 | - | - | 1.79 | - |
| Business Services | 0.51 | 1.45 | 0.13 | 0.35 | 0.16 | 0.16 | - | 0.47 | 0.47 | 0.58 | - | 0.14 | 1.45 |
| Financial Services | 0.51 | 0.41 | 1.40 | 0.35 | 0.38 | 0.87 | - | 0.66 | 0.10 | 1.79 | 0.37 | - | 0.59 |
| Downstream Chemical Products | 0.38 | 1.96 | - | 0.25 | - | - | - | - | - | - | - | - | - |
| Forestry | 0.38 | 1.21 | 20.81 | - | - | - | - | - | - | - | - | - | - |
| Marketing, Design, | 0.38 | - | - | 0.29 | 0.36 | - | - | 0.96 | 0.31 | 0.25 | 0.38 | - | 1.83 |

| Traded Cluster | District 4 | Becker | Big Stone | Clay | Douglas | Grant | Mahnomen | Otter Tail | Pope | Stevens | Swift | Traverse | Wilkin |
|---|------------|--------|-----------|------|---------|-------|----------|------------|------|---------|-------|----------|--------|
| and Publishing | | | | | | | | | | | | | |
| Paper and Packaging | 0.38 | - | - | 1.19 | - | - | - | 0.19 | - | - | - | 4.16 | - |
| Trailers, Motor Homes, and Appliances | 0.38 | - | - | 0.53 | 0.64 | - | - | - | - | 2.72 | - | - | - |
| Aerospace Vehicles and Defense | 0.26 | - | - | - | 0.14 | - | - | 0.13 | 2.20 | - | 0.45 | - | - |
| Communications Equipment and Services | 0.26 | 0.18 | - | 0.28 | 1.19 | - | - | - | - | - | - | - | - |
| Information Technology and Analytical Instruments | 0.13 | - | - | 0.06 | - | - | - | 0.45 | 0.19 | - | - | - | 0.36 |
| Insurance Services | 0.13 | 0.10 | 0.90 | 0.12 | 0.15 | 0.56 | - | 0.14 | 0.13 | - | 0.16 | - | 0.25 |
| Medical Devices | 0.13 | - | - | - | 0.55 | - | - | 0.25 | - | - | - | - | - |
| Oil and Gas Production and Transportation | 0.13 | - | - | 0.09 | 0.11 | - | - | 0.29 | - | - | 0.69 | 2.18 | - |
| Video Production and Distribution | 0.13 | - | - | - | 0.45 | - | - | - | - | - | - | - | - |
| Vulcanized and Fired Materials | 0.13 | - | - | - | 0.31 | - | - | - | 1.64 | - | - | - | - |
| Biopharmaceuticals | | 0.33 | - | - | 0.31 | - | - | - | - | - | - | - | - |
| Textile Manufacturing | | 2.43 | - | - | - | - | - | 0.69 | - | - | - | - | - |

* A location quotient measures the share of an industry cluster's employment in a region as a ratio of the share of the cluster's employment in the U.S. as a whole. This generates an indicator of industry concentration or specialization within a region. A higher location quotient significantly exceeding 1 can indicate that an industry cluster is exporting its products or services outside of the region and is referred to as a traded cluster. On this table, location quotients of 1.3 or higher are in bold type to indicate the most competitive clusters for the region and each county.

Source: Institute for Strategy and Competitiveness, Harvard Business School. "U.S. Cluster Mapping." <http://clustermapping.us>.

Copyright © 2014 President and Fellows of Harvard College. All rights reserved. Research funded in part by the U.S. Department of Commerce, Economic Development Administration.

Calculations by State and Local Policy Program, Humphrey School of Public Affairs, University of Minnesota.

Appendix H: MnDOT District 4 Employment by Traded Cluster

| Traded Cluster | District 4 | Becker | Big Stone | Clay | Douglas | Grant | Mahnomen | Otter Tail | Pope | Stevens | Swift | Traverse | Wilkin |
|---|------------|--------|-----------|-------|---------|-------|----------|------------|------|---------|-------|----------|--------|
| Business Services | 4,444 | 1,960 | 10 | 616 | 228 | 20 | - | 745 | 255 | 195 | - | 10 | 405 |
| Education and Knowledge Creation | 4,000 | 10 | - | 3,770 | 90 | - | 60 | 40 | 20 | - | - | - | 10 |
| Distribution and Electronic Commerce | 3,856 | 184 | 130 | 692 | 693 | 120 | 50 | 487 | 760 | 85 | 240 | 80 | 335 |
| Production Technology and Heavy Machinery | 3,185 | 90 | 10 | 90 | 1,075 | 20 | - | 150 | 555 | 375 | 810 | 10 | - |
| Food Processing and Manufacturing | 2,968 | 20 | 10 | 640 | 455 | 79 | 10 | 1,341 | 10 | 45 | 235 | 60 | 63 |
| Hospitality and Tourism | 2,890 | 499 | 40 | 253 | 600 | 50 | 780 | 415 | 60 | 103 | 40 | 20 | 30 |
| Upstream Metal Manufacturing | 1,215 | 760 | - | - | 435 | - | - | 10 | - | 10 | - | - | - |
| Livestock Processing | 1,165 | 10 | - | 20 | 195 | 70 | - | 770 | 70 | 20 | - | 10 | - |
| Transportation and Logistics | 1,103 | 317 | 21 | 139 | 165 | 30 | 30 | 280 | 30 | 20 | 20 | 21 | 30 |
| Metalworking Technology | 954 | 40 | - | - | 679 | 20 | - | 185 | 30 | - | - | - | - |
| Financial Services | 719 | 100 | 20 | 110 | 98 | 20 | - | 191 | 10 | 110 | 30 | - | 30 |
| Printing Services | 683 | 435 | 10 | 20 | 70 | - | - | 78 | 60 | - | 10 | - | - |
| Construction Products and Services | 525 | 80 | - | 30 | 10 | 10 | 10 | 100 | - | 265 | - | 10 | 10 |
| Marketing, Design, | 409 | - | - | 60 | 60 | - | - | 179 | 20 | 10 | 20 | - | 60 |

| Traded Cluster | District 4 | Becker | Big Stone | Clay | Douglas | Grant | Mahnomen | Otter Tail | Pope | Stevens | Swift | Traverse | Wilkin |
|--|-------------------|---------------|------------------|-------------|----------------|--------------|-----------------|-------------------|-------------|----------------|--------------|-----------------|---------------|
| and Publishing | | | | | | | | | | | | | |
| Plastics | 405 | - | - | 70 | 185 | 10 | - | 60 | - | - | 60 | 20 | - |
| Water Transportation | 385 | - | - | - | - | - | - | 385 | - | - | - | - | - |
| Automotive | 330 | 130 | - | 60 | 10 | - | - | 60 | 60 | - | - | 10 | - |
| Furniture | 330 | 195 | 10 | 35 | 60 | - | - | 20 | 10 | - | - | - | - |
| Downstream Metal Products | 320 | 70 | - | - | 140 | - | - | 80 | - | 20 | 10 | - | - |
| Agricultural Inputs and Services | 300 | 20 | 10 | 30 | 20 | 10 | - | 40 | 20 | 30 | 40 | - | 80 |
| Lighting and Electrical Equipment | 265 | 175 | - | 10 | - | - | - | 70 | 10 | - | - | - | - |
| Wood Products | 250 | 70 | - | 10 | 30 | 10 | - | 130 | - | - | - | - | - |
| Environmental Services | 190 | 10 | - | 20 | 80 | - | - | - | 60 | - | 10 | - | 10 |
| Performing Arts | 190 | 10 | - | 20 | 30 | 10 | - | 90 | - | - | 20 | 10 | - |
| Insurance Services | 162 | 20 | 10 | 30 | 30 | 10 | - | 32 | 10 | - | 10 | - | 10 |
| Upstream Chemical Products | 140 | - | - | - | 10 | - | - | 60 | - | 10 | 60 | - | - |
| Electric Power Generation and Transmission | 130 | - | - | - | 10 | - | - | 60 | - | - | 60 | - | - |
| Apparel | 100 | - | 10 | 10 | - | - | - | 10 | - | - | 60 | - | 10 |
| Communications Equipment and Services | 100 | 10 | - | 20 | 70 | - | - | - | - | - | - | - | - |
| Information | 100 | - | - | 10 | - | - | - | 70 | 10 | - | - | - | 10 |

| Traded Cluster | District 4 | Becker | Big Stone | Clay | Douglas | Grant | Mahnomen | Otter Tail | Pope | Stevens | Swift | Traverse | Wilkin |
|---|------------|--------|-----------|------|---------|-------|----------|------------|------|---------|-------|----------|--------|
| Technology and Analytical Instruments | | | | | | | | | | | | | |
| Aerospace Vehicles and Defense | 90 | - | - | - | 10 | - | - | 10 | 60 | - | 10 | - | - |
| Paper and Packaging | 90 | - | - | 70 | - | - | - | 10 | - | - | - | 10 | - |
| Recreational and Small Electric Goods | 84 | 10 | - | 10 | 10 | 10 | - | 4 | 20 | 10 | 10 | - | - |
| Nonmetal Mining | 80 | - | 10 | 10 | 20 | - | - | 10 | - | 20 | - | - | 10 |
| Oil and Gas Production and Transportation | 80 | - | - | 10 | 10 | - | - | 30 | - | - | 20 | 10 | - |
| Textile Manufacturing | 80 | 60 | - | - | - | - | - | 20 | - | - | - | - | - |
| Downstream Chemical Products | 70 | 60 | - | 10 | - | - | - | - | - | - | - | - | - |
| Leather and Related Products | 70 | - | - | 10 | - | - | - | 60 | - | - | - | - | - |
| Medical Devices | 30 | - | - | - | 20 | - | - | 10 | - | - | - | - | - |
| Trailers, Motor Homes, and Appliances | 30 | - | - | 10 | 10 | - | - | - | - | 10 | - | - | - |
| Vulcanized and Fired Materials | 30 | - | - | - | 10 | - | - | - | 20 | - | - | - | - |
| Biopharmaceuticals | 20 | 10 | - | - | 10 | - | - | - | - | - | - | - | - |
| Forestry | 20 | 10 | 10 | - | - | - | - | - | - | - | - | - | - |
| Music and Sound | 20 | - | - | - | 20 | - | - | - | - | - | - | - | - |

| Traded Cluster | District 4 | Becker | Big Stone | Clay | Douglas | Grant | Mahnomen | Otter Tail | Pope | Stevens | Swift | Traverse | Wilkin |
|---|-------------------|---------------|------------------|--------------|----------------|--------------|-----------------|-------------------|--------------|----------------|--------------|-----------------|---------------|
| Recording | | | | | | | | | | | | | |
| Video Production and Distribution | 10 | - | - | - | 10 | - | - | - | - | - | - | - | - |
| Total Traded Clusters | 32,617 | 5,365 | 311 | 6,895 | 5,658 | 499 | 940 | 6,292 | 2,160 | 1,338 | 1,775 | 281 | 1,103 |
| Percent of Total Traded Clusters | 100% | 16% | 1% | 21% | 17% | 2% | 3% | 19% | 7% | 4% | 5% | 1% | 3% |

Source: Institute for Strategy and Competitiveness, Harvard Business School. "U.S. Cluster Mapping." <http://clustermapping.us>.

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Table prepared by State and Local Policy Program, Humphrey School of Public Affairs, University of Minnesota.

Appendix I: Early Benefits of the Project

The project provided important insights regarding ways MnDOT could improve the transportation system in District 4, as well as statewide. Respondents offered detailed feedback that will be analyzed and reviewed to inform near-term infrastructure, maintenance, operations communications and policy/permitting improvements.

It is important to understand some of the benefits that MnDOT, businesses and communities realized even before the project was completed. More benefits are likely to follow as other suggestions from the businesses are analyzed and inform future District 4 planning.

Next Steps Planned or Underway

MnDOT will review and further analyze the detailed findings and take action as appropriate and feasible within resource constraints.

- District 4 staff will develop an action plan for continued analysis and incorporation of respondents' priorities and suggestions in its planning and operations work, as resources allow. An example of a recommendation where District 4 is taking action is to respond to requests for more information regarding construction-related traffic conditions. District 4 staff will invite the manufacturers and carriers to sign up for district project email updates and media notification lists, which provide up-to-date information on major projects in the district and weather-related road conditions.
- MnDOT Central Office staff will also develop an action plan for continued analysis and incorporation of respondents' priorities and suggestions in its planning and policy work, as resources allow.
 - For example, the Office of Freight and Commercial Vehicle Operations, which includes the Permitting Office, has been in a continuous process of improving its permitting software, recognizing that other states may have more robust or newer systems that take advantage of technological improvements. Permitting staff are evaluating, in the context of resource constraints, whether to undertake major improvements to the current system or implement a full replacement that optimizes recent technology advances. The Permitting Office also added a dedicated phone line that is staffed for longer periods than the general information line, to make it faster for annual permit holders to get pre-trip route approval.

MnDOT Direct Follow-up

Another benefit of the project is when District 4 staff was able to initiate a resolution to a business' issue directly after the interview. This immediate follow-up and problem-solving demonstrated direct benefits of businesses' participation in interviews.

Here are several examples of where MnDOT staff was able to follow-up on business requests after interview:

- A business in Moorhead was concerned about a bridge that showed a restricted weight limit on 511, but they knew the bridge had been reconstructed recently. It required manual intervention every time they wanted to route an overweight load over the bridge. After the interview, the MnDOT interviewer found that the 511 staff had updated the database and removed the weight restriction. He followed up with the business the next day and informed them that the restriction was gone.
- Businesses that frequently use Highway 12 between Ortonville and Highway 59 brought up concerns about two curves on the highways and shoulder widths. MnDOT staff communicated that the district is currently reviewing potential solutions to the issues--including widening the pavement by two feet to improve safety.
- A Parkers Prairie business requested turn lanes (both right and left turn lanes, but a right turn lane in particular) near their business due to traffic volume and truck traffic. MnDOT staff communicated to the business that MnDOT will add a southbound right turn lane in conjunction with a 2016 Parkers Prairie Complete Streets project.
- A Mahnomen business expressed concern about the number of people walking and running along Highway 59 and asked if there was a way to make Highway 59 safer for pedestrians. The interviewer brought this concern to the attention of the MnDOT Project Manager. MnDOT has since incorporated a new pedestrian crossing into an existing 2017 construction project on Highway 59 in Mahnomen.

Benefits to MnDOT staff

The project has also benefitted MnDOT staff in District 4 and participating staff from Central Office. MnDOT staff realized how much the department's day-to-day work and decisions affect the operations and success of these businesses that sustain the region, as well as the state. MnDOT expects similar experiences in other districts as the project model is applied in additional areas.