



Manufacturers' Perspectives on Minnesota's Transportation System: A Pilot Study in Southwest and West Central Minnesota

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- Minnesota Department of Transportation District 8, Offices of Freight/Commercial Vehicle Operations and Customer Relations
- Hubert H. Humphrey School of Public Affairs
- University of Minnesota Extension Center for Community Vitality

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Executive Summary

Context and Purpose

One of MnDOT's most important customer segments are Minnesota-based manufacturers that ship their products over Minnesota roads and bridges en route to local, statewide, national and international markets. These businesses rely on the Minnesota Department of Transportation (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, economic vitality results when economic development and transportation systems are well aligned.

In 2013, MnDOT initiated a project in its District 8 region (twelve counties in southwest and west central Minnesota) to better understand freight customers' transportation priorities and challenges, and to incorporate their input into MnDOT's planning and project development. Better understanding these customers' business and transportation needs will enable MnDOT to better align its work to support their success and, by extension, the economic vitality of the region and state.

Scope

The project's scope was intentionally focused on soliciting input that would inform low cost/high benefit projects, which can be accomplished in the next one to four years, assuming available resources. Given MnDOT's resource constraints, existing maintenance obligation and necessarily lengthy planning schedule for new, significant infrastructure, the District Engineer directed that discussions with manufacturers and carriers focus on understanding their concerns, not offer solutions, and not raise expectations that could not reasonably be met. The questionnaire was structured to get feedback and requests for improvement that could likely be met with:

- Existing resources (e.g., facilitating a permit process, including a manufacturer on a road condition electronic email distribution list),
- Some additional resources (e.g., additional signage in particularly circuitous detour routes, wider shoulders on key roadway segments), and
- Consultation with MnDOT staff (e.g., determining a workable route that would accommodate an oversized load when primary routes are under construction).

Methods

The District 8 project piloted a new process for systematically collecting customer information, building relationships among MnDOT staff, manufacturers and carriers in District 8 and regional economic development professionals. Throughout the almost year-long project the project team built in participation opportunities for internal and external stakeholders whose engagement is key to ensuring that the effort does not end as a point-in-time project but rather evolves into a continuous improvement process.

The project team:

- Developed cross-discipline teams of MnDOT, local economic development staff (EDOs) and transportation and economic researchers to interview manufacturers and strengthen relationships for current and future system improvement. This approach was a departure from a typical data gathering method, such as conducting a survey. MnDOT's use of interdisciplinary teams that included economic development staff as well as its own staff also was innovative as MnDOT typically uses consultants to conduct interviews.
- Provided training to MnDOT and economic development staff prior to conducting interviews. The training provided the project purposes, time to review the script, observe and participate in mock interviews and allow MnDOT and EDOs to make each other's acquaintance or renew existing ties.
- Led a day-long information sharing and planning session with District 8 and some Central Office staff to review initial findings and engage the staff who would ultimately be responsible for reviewing and responding to many of the interview results.
- Hosted an information sharing and feedback session with the district's city and county engineers to share overall themes, discuss shared challenges, and gather their perspectives on increased coordination, in particular.

The State and Local Policy Program (SLPP) at the University of Minnesota's Humphrey School of Public Affairs, the consultant conducting the study, used a Regional Industry Cluster Approach to identify groups of key District 8 industries and their relationships – industries and businesses integral to the economic health of the region – for inclusion in the project. This list was supplemented with EDO recommendations.

The project took place January through December 2013.

Results

Business Characteristics

Interviewing teams met with 75 of the region's businesses: 60 manufacturers, 14 carriers and one distributor. The region's strongest industry clusters were in the areas of processed food, agricultural products, information technology, building fixtures, equipment, and services, and heavy machinery.

Over 80 percent of interviewed manufacturers collectively sell their products in all 48 contiguous states and about half of the firms ship their products to international customers.

Employment ranged from very small, but growing manufacturers to plants that employ hundreds of people. Over half of manufacturers and carriers reported employing between 20 and 99 employees and 18 businesses had 100 or more employees.

Business Priorities, Challenges and Suggestions

Respondents complimented MnDOT's work in executing new projects and clearing snow and ice from roadways.

Areas of concern and suggested improvements included:

- **Infrastructure:** Regarding one of the regions most used highways (Highway 23); respondents reported a need for smoother roads in some areas, better snow and ice removal along some segments, and attention to intersections perceived as dangerous. Some interviewees also cited problems with bridge clearance, emphasized the importance of wide shoulders, and expressed concerns about roundabouts, particularly for oversized loads.
- **Operations and Maintenance:** Smooth pavement was seen as very important to the movement of certain goods. Rough roads were cited a perceived risk to driver safety, and damaging to materials and products, trucks, and live cargo. These damages resulted in increased costs. Interviewees appreciated the benefits of construction projects and suggested improvements related to project communication that included signage, scheduling, and, in particular, coordination among the state, counties and cities in planning and scheduling projects to minimize extended detours.
- **Communications:** Respondents requested enhancements to 511mn.org, a commonly-used source of information for road conditions and closures among these interviewees. Businesses recommended that MnDOT provide earlier communication about construction projects so that businesses could plan well ahead of time to avoid costly delays. Manufacturers and carriers preferred email for most types of communication.
- **Policy:** Many respondents identified size and weight restrictions as a concern. Several respondents expressed concern with federal changes to hours of service suggesting they would decrease business efficiency; crowd limited parking at MnDOT's rest areas and exacerbate the impacts of construction and weather delays.

Analysis and Next Steps

This project provided new customer perspectives regarding the transportation system in District 8 and statewide. Respondents offered concrete and often location specific feedback that can inform near term infrastructure, maintenance, operations, and communications and policy improvements. The piloted 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.

To apply results to system improvement, MnDOT is currently:

1. Developing an action plan for continued analysis and incorporation of respondents' priorities and suggestions into District 8's planning and operations, as appropriate and feasible within resource constraints. For example, the district can plan to:

- Enhance signage during construction,
- Work with potentially affected businesses one year ahead of a project to select detour routes, and
- Provide additional communication during snow storms.

MnDOT can continue its outreach and communication with manufacturers and carriers through email, phone calls and problem solving meetings, as needed, to provide more information and assistance regarding road construction and alternative route planning, which would include updates on adverse winter road conditions.

2. Reviewing District 8 data to identify recommendations that can inform statewide planning, development and best practices. For example, MnDOT could:

- Improve processes related to www.511mn.org functionality and reliability,
- Consider widening shoulders on key road segments that are already programmed for maintenance,
- Explore adapting existing roundabouts on key freight routes to accommodate oversized vehicles,
- Enhance coordination with counties to minimize construction impacts on businesses, and
- Consider freight movement needs when selecting projects.

3. Developing an action plan for building upon District 8's/MnDOT's relationships among manufacturers, carriers, and economic development professionals so that these stakeholders provide ongoing input into District 8 planning and project development, aligning transportation system improvements with manufacturers' transportation priorities to the extent feasible and appropriate.

4. Adapting and refining the District 8 "Manufacturers' Perspectives" study approach for application in other regions of the state. 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 and economic vitality.

Introduction

Among the Minnesota Department of Transportation's (MnDOT)'s most important customer segments are 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 multimodal infrastructure for freight transportation. State, regional and local governments rely on these businesses to employ residents and contribute to economic vitality. In short, economic vitality results when economic development and transportation systems are well aligned.

In 2013, MnDOT initiated a 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. Freight customers include manufacturers and carriers. MnDOT has a wealth of quantitative information regarding freight transportation, such as congestion measures and proportions of freight transported by various modes. However, the Department sought more qualitative information from customers to form a more complete picture of the region's needs.

The project's second objective was to build and strengthen relationships among MnDOT, the region's manufacturers and carriers and local economic development professionals in order to lay the groundwork for anticipating business needs and opportunities for economic development. To meet this objective, the team designed and piloted an innovative information gathering process.

Specifically, the project's objectives were to:

- **Meet with manufacturers 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 greatest use of the system and derive some of its greatest 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 basis for both near term and ongoing transportation system improvement.
- **Pilot a new process** for soliciting and analyzing customer information—building relationships in the process—and determine its usefulness for future projects. This process included using a Regional Industry Cluster Approach in the project's methodology and analysis, using joint MnDOT/economic development professionals to conduct interviews, and hosting several engagement meetings to share mid-project findings.
- **Support continuous improvement and develop recommendations** for District 8 and statewide transportation systems and practices to better support freight transportation.

This report describes the project's methodology, including lessons learned, and describes the characteristics of District 8 manufacturers. The report then focuses on interview results and their implications. The report's conclusion provides report implementation activities, incorporating results into statewide best practices and developing concrete action steps. Throughout the report vignettes describe selected manufacturers and carriers that participated in this project.

Project team and participants

MnDOT Project team:

- Jon Huseby, P.E.; District Engineer, MnDOT District 8
- Dave Christianson; Senior Transportation Planner, Office of Freight and Commercial Vehicle Operations
- Jarrett Hubbard; Senior Transportation Planner, MnDOT District 8
- Donna Koren; Project Manager, Market Research Director, Customer Relations Office
- Mary Safgren; Acting Planning Director, MnDOT District 8

State and Local Policy Program (SLPP) and Extension Center for Community Vitality (Extension), University of Minnesota

- Lee Munnich, SLPP Director
- Frank Douma, SLPP Associate Director
- Michael Darger, Extension Center for Community Vitality, Director, Business Retention & Expansion
- Jonathan Dworin, SLPP Research Assistant
- Lisa Hermanson, SLPP Research Assistant
- Matt Schmit, Research Specialist, SLPP

MnDOT would like to thank in particular the economic development staff who volunteered many hours, drove across the region to meet with manufacturers and carriers and documented their interviews which formed the basis for this report. The EDOs' enthusiasm for the project and their participation in meetings with local businesses added value to this effort. MnDOT employees in District 8 look forward to working with these EDOs in the future to identify opportunities to support the region's economic vitality.

Economic Development Organizations & Regional Development Commission participants

Adeel Ahmed, Associate Extension Professor, Extension Educator, St. Cloud
Annette Bair, Physical Development Director, Southwest Regional Development Commission
Windy Block, Commissioner, Economic Development Authority, City of Clara City
Cal Brink, Executive Director, Marshall Area Chamber of Commerce
Jennifer Frost, Executive Director, Swift County Regional Development Agency
Suzanne Hedtke, Executive Director, Meeker County Economic Development Authority
Betsy Herding, Southwest Regional Development Commission
Mary Hodson, President, Hutchinson Area Chamber of Commerce and Tourism
Anne Johnson, Executive Director, Redwood Area Chamber & Tourism
Nicholas Johnson, City Administrator, City of Canby

Jeff Jones, President, City of Pipestone Economic Development Authority
Lindsey Knutson, Upper Minnesota Valley Regional Development Commission
Susie Lang, Development Assistant, Renville County Housing & Economic Development
Liz Larkin, Lincoln County Enterprise Development
Mark Larson, City Administrator, City of Glencoe
Pam Lehmann, Executive Director, Lac Qui Parle Economic Development Authority
Neil Linscheid, Community Economics Educator, Extension Center, Marshall
Josh Malchow, City Administrator, City of Slayton
Les Nelson, Economic Director, Mid-Minnesota Regional Development Commission
Laurie Ness, Mayor of the City of Pipestone
Julie Rath, Economic Development Specialist, Redwood Area Development Corporation
Steve Renquist, Executive Director, Kandiyohi County and City of Willmar Economic
Development Commission
Amy Rucker, Murray County Economic Development Director
Dee Schutte, Executive Director, Litchfield Chamber of Commerce
Kathy Schwantes, Southwest Regional Director, University of Minnesota Extension, Willmar
Charlie Seipel, Community Development Coordinator, City of Cottonwood
Jean Spaulding, Assistant Director, Kandiyohi County and Willmar Economic Development
Commission
Angie Steinbach, Community Development Director, City of Montevideo
Dennis Van Hoof, Director, Economic Development Authority at City of Granite Falls
Ken Warner, President, Willmar Lakes Area Chamber of Commerce
Donn Winkler, Executive Director, Mid-Minnesota Regional Development Commission

Background

District 8

MnDOT's District 8 serves 12 counties in southwest/west central Minnesota.¹ These counties represent about ten percent of the state's total land area and under five percent of the total population. District 8's metropolitan areas include Hutchinson, Marshall and Willmar. The district is home to many firms that manufacture and ship products such as heavy machinery, processed foods and agricultural products.²

District 8 staff plan, design, construct and maintain the state and federal highway systems within district boundaries. The district also:

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

Project Consultant and Study Phases

In late 2012, District 8 management, Customer Relations Office and the Freight and Commercial Vehicle Operations Office (Freight) solicited proposals for a pilot assessment of manufacturers' freight transportation needs. MnDOT awarded the project to the State and Local Policy Program (SLPP) at the University of Minnesota's Humphrey School of Public Affairs in partnership with the University of Minnesota Extension. The project started in January and was completed in December 2013.

The project team conducted interviews in two phases. The first 50 interviews were completed in March and April, 2013, and focused on manufacturers. In April, in response to manufacturers' unexpectedly high interest in participating, MnDOT and SLPP extended the project end date from September 30 to December 31 to conduct additional interviews, obtain carrier input and host, or participate in, community, stakeholder, and partner meetings to describe the project and engage in preliminary planning. The second round of interviews occurred between May and September, 2013. Interview teams completed 75 interviews.

¹ A map of the area is provided in Appendix A. The district includes the counties of Chippewa, Kandiyohi, Lac qui Parle, Lincoln, Lyon, McLeod, Meeker, Murray, Pipestone, Redwood, Renville and Yellow Medicine.

² See study results for more information on the characteristics of District 8 industries.

Methods Overview and Lessons Learned

Methods Overview

Major components of the project are described below and Appendix B provides additional detail.

Cross-disciplinary Interview Teams

The project piloted a new interviewing approach, forming cross-discipline teams of MnDOT, local economic development officers and transportation and economic researchers to interview manufacturers and carriers at their worksites. This approach was a departure from MnDOT's typical data gathering, such as surveys and consultant-only interviewers. Interview teams were usually composed of two interviewers—one project staff and one local economic development professional. Project staff included staff from SLPP, University of Minnesota Extension Center (UMEC), and MnDOT District 8 and Central Office. Local economic development professionals included staff from Regional Development Commissions (RDCs), economic development organizations (EDOs) based in the region, and UMEC educators. Interviewers participated in two training sessions in March 2013. (See Appendix B for training session description.)

Regional Industry Cluster Approach

SLPP used a regional industry cluster approach to identify key industries and manufacturers within District 8.³ "Clusters" are geographically concentrated groups of interconnected companies, universities and related institutions that arise out of linkages or externalities across industries. "Clusters" refer to firms within similar industries *and* their interactions with each other. These interactions are important in painting the 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 8, each playing a larger role within the regional economy and beyond.

Clusters can be seen as main drivers of growing economies because they draw revenue into the regional economy and stimulate growth.⁴ A cluster approach helps people understand the competitive advantage of regions by better understanding the competitive advantages of the most prominent industries.⁵

Researchers use a cluster approach to assess how concentrated particular clusters in a region are compared to the nation.⁶ Each industry cluster is defined by a series of sub-clusters.⁷

³ This tool was developed by Michael Porter's Institute for Strategy and Competitiveness at Harvard Business School.

⁴ ICF Consulting. "California's Future: It Starts Here: UC's Contributions to Economic Growth, Health, and Culture. An Impact Study for the University of California." March 2003.

http://www.universityofcalifornia.edu/itstartshere/full_report.pdf.

⁵ Rosenfeld, Stuart. "A governor's guide to cluster-based economic development." *Washington DC: National Governors Association*. 2002. <http://www.nga.org/files/live/sites/NGA/files/pdf/AM02CLUSTER.pdf>.

⁶ An initial analysis on District 8 metropolitan areas (Hutchinson, Marshall and Willmar) revealed several strong industries within the region. Maps of each metropolitan area's cluster make up show linkages between clusters and the relative strength based on the location quotient. Location quotients (LQs) are used to assess industry concentration levels. The location quotient is calculated by comparing the industry's share of regional employment with its share in national employment. Typically, industries with very high LQ's are export oriented. If an industry

SLPP used the cluster mapping method to identify industries that formed the economic base of communities in District 8, both in direct employment and in their ability to spur additional economic development. The method assured that the list of prospective interviewees was representative of the region's industries and clusters.

District 8 Industry: NuCrane Manufacturing, LLC

- Hutchinson, McLeod County
- Heavy Construction Services
- Main District 8 highways used: 7, 15



NuCrane builds cranes for nuclear power plants which lifts reactors, turbines, spent fuel casks and other equipment; some pieces measure 125 feet long and 14 feet tall and weigh up to 130,000 pounds. There are four new plants being built in the US and the company has customers in China.

Their oversized loads make transportation—particularly navigating roundabouts—extremely challenging. They are unable to navigate roundabouts so they must re-route trucks to avoid these intersections. Because they are surrounded on three sides by roundabouts they are worried about being cut off completely. Additionally, smooth pavement is particularly important as poor pavement conditions can affect electronic components. While NuCrane feels MnDOT does a good job on snow and ice removal, they note roads need to be plowed early because their employees commute from as far as an hour away.

Business Recruitment

SLPP used the Million Dollar Directory (MDD) from Dun & Bradstreet⁸ to create an initial list of prospective interviewees. SLPP also consulted with EDOs to identify key manufacturers and created an EDO generated list.⁹ A final list of prospective interviewees included manufacturers who:

- Represented a diverse group of District 8 manufacturing companies, clusters and counties, ensuring that every county was represented in the project by at least one manufacturer.
- Had at least ten employees (exceptions were made when economic development partners recommended smaller firms).

has a location quotient of one, this means that the share of an industry in the regional economy is the same as the industry's share in the national economy. If the location quotient is higher than one, it means that the industry is more concentrated in the region than average, while a location quotient lower than one suggests that the region has a lower than average concentration. Maps of metropolitan areas' cluster make up are shown in Appendix C.

⁷ 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. See: *Introduction to NAICS Codes* at <http://www.census.gov/eos/www/naics/>.

⁸ The Dun & Bradstreet list directory of public and private companies that provides information on firms by the industry, size and location. Dun & Bradstreet. "The Million Dollar Directory." <http://www.mergentmddi.com/>.

⁹ See Appendix B for a workflow map that provides an overview of the business recruitment process.

SLPP recruiters followed a script when calling and recruiting businesses and used Google Spreadsheets to track the recruiting process and schedule interviews (see Appendix D).

Questionnaire

The project team developed a questionnaire to gather manufacturer and carrier perspectives and priorities for various aspects of the transportation system:¹⁰

- Infrastructure, such as shoulder width, turn lanes, and roundabouts
- Operations and maintenance, such as road construction, snow removal, and signage
- Communications, such as www.511mn.org and road condition alerts
- Policy, such as size and weight restrictions

As part of the interview, interviewers often asked the businesses to identify, on a map, their major routes as well as locations that they had concerns about from an infrastructure or operational standpoint. SLPP used online Google Maps to document these specific locations for future analysis by MnDOT District 8 staff.

Analysis, report writing and recommendation developments

SLPP and MnDOT project staff analyzed results in fall 2013, with the final report released in early 2014.

Project Lessons Learned

The implementation of this project's methodology provides several "lessons learned" for future Manufacturers' Perspectives projects intended to gather customer information, build relationships and advance MnDOT's goal to provide a safe, efficient transportation system that is responsive to customers' needs and supports regional and statewide economic vitality.

When Identifying and Recruiting Businesses

- **Business identification:** The Million Dollar Directory is one of the better tools for identifying companies to recruit for study interviews, however, lists should be reviewed by locally-based MnDOT and economic development staff to identify omissions created by classification or lack of current information and for other reasons that warrant inclusion. Given the project's relationship building objective, recruitment should err on the side of inclusiveness while still maintaining a reasonable project scope.
- **Calling businesses:** The best times to call businesses were on weekdays from 9:00 am–11:30 am and 1:15 pm–3:30 pm. Friday afternoons were somewhat difficult, especially during holiday weeks. It was best to recruit firms for "face-to-face interviews" rather than mentioning a survey. Businesses associated surveys with completing a form and sending it to MnDOT. Except in rare cases SLPP discouraged written responses in place of interviews.

¹⁰ See Appendices E and F for manufacturer and carrier questionnaire, respectively.

- **Carrier screening question:** In many instances interview teams found that when they started the interview many manufacturers contracted out at least some of their freight shipping to carriers thereby shortening some interviews considerably.

Project staff should add a screening question when calling manufacturers to determine if they contract for their shipping and, if so, ask for their carrier's contact information. Staff could then set up the interview with the carrier instead of with a manufacturer, in some cases, who may not have much information to provide.

In the interest of relationship building it may still be beneficial to meet with these manufacturers, however, the interview guide should be adapted accordingly. The focus, content and interview team for these meetings should be determined by the MnDOT project team on an individual basis.

When Scheduling Interviews

- **Travel time:** The time estimates on Google maps is often inaccurate as they do not account for special weather conditions or other factors. It's important to build extra time into the schedule. Also, travelling interviewers generally preferred 1½ day interviews instead of two full days of interviews to allow for some travel time during business hours. This complicated scheduling in distant portions of the district but interviewers allowed additional interviews in those locations.
- **Accessing and managing schedules:** Businesses generally favored interviews scheduled three to seven days after the recruiting call. Interviewers, however, preferred at least two weeks' notice to facilitate planning whereas a week's notice often led to scheduling changes, frustration, and confusion.¹¹ Clearer communication of expectations between interviewers and schedulers could help address this issue. While the first priority is to accommodate manufacturers' and carriers' schedules, a close second priority is to accommodate the EDOs who volunteer their time for this project. The consultant and MnDOT staff will likely need to provide the most flexibility in future iterations of this model. Other scheduling problems included MnDOT calendars not always accessible to SLPP schedulers and some interviewers did not having internet access.

When Conducting Interviews

- **Interviewer contacts with each other:** Interviewers should plan to contact one another in the days leading up to the interviews, especially when interviewers have not met one another. Prior contact enhanced coordination, prevented confusion and late arrivals. Also, because usually at least one interviewer was familiar with the region, prior contact allowed interviewers to establish a meeting place and time and provide local information to the travelling interviewer.

¹¹ This was attempted, but not often achieved, and some interviewers received their schedule the day before the interview. **This is to be avoided in future iterations of this project.**

Results:

Regional Clusters & Business Characteristics

Response Rates

SLPP contacted 172 businesses to request an interview and garnered a 77 percent response rate. Each county was represented by at least one business.¹² See table, below, for contact rates and response rates and Appendix G for a full list of businesses interviewed.

Companies recruited

	Contact rate		Response rate
Contacted total	172		
Accepted invitation to interview	75	44%	77%
Rejected invitation to interview	23	13%	23%
Did not respond to initial contact or were otherwise unable to be reached	74	43%	
Total		100%	100%

Business Characteristics

Use of carriers

Forty-six of the 60 manufacturers interviewed use outside shippers either exclusively or in conjunction with their own trucks. This finding, identified early in the study, made it apparent that carrier input was essential to the project for a detailed understanding of haulers' experiences, priorities and challenges regarding the system.

Industry clusters

SLPP grouped the six manufacturer respondents into industry clusters using a regional industry cluster approach based on NAICS codes.¹³ As seen in Figure 1, the most interviewed clusters, with four to nine interviewees, were Processed Food, Heavy Construction Services, Business Services and Production Technology. Table 1 provides a brief definition of these services as examples of regional firms that were in these clusters.

¹² Forty three percent (74) did not respond to the project contacts, had closed, had disconnected numbers or otherwise were not able to be reached.

¹³ As noted earlier, the North American Industry Classification System (NAICS) is the standard used by Federal statistical agencies for classifying business establishments in order to collect, analyze, and publish statistical data about the U.S. business economy. 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) U.S. Cluster Mapping website. The U.S. Cluster Mapping Project is a national economic development initiative that is designed to benchmark the economic performance of U.S. regions.

<http://clustermapping.us/>

Nine clusters were represented by two to three interviewees, such as analytical instruments and real estate, construction and development, and 14 clusters were represented by one interviewee (e.g., agricultural products and textile mills).

The focus of this project—primarily manufacturers—are a component of what are commonly called traded clusters. Traded clusters sell to markets in other regions and countries thereby bringing new resources into the local economies in which they operate. They are subject to competition from other regions and can choose from a variety of locations from which to operate. They are more mobile than industries that are primarily resource-based (e.g., forestry, mining) by definition. Although traded clusters usually represent less than 30 percent of the jobs within a given region, they typically pay much higher wages than local businesses, bring wealth into a region and contribute more support to the local economy than their job share would otherwise indicate.

This project was scoped to focus on manufacturers largely because of the significant, positive economic impact that manufacturers provide to communities, as described above. In addition, MnDOT has historically had less information about the nature of manufactured goods (and their inputs) with respect to transportation infrastructure requirements such as fragile products and the need for smooth pavement to prevent product damage or the challenges posed by extremely oversized loads. This project sought to close this qualitative knowledge gap. That said another significant economic cluster in this region is agriculture. Although the characteristics of agriculture shipments are fairly well understood the project team wanted some representation from this sector and, indeed, new information was gathered from the interviews. The project included interviews with:

- nine processed foods businesses,
- two livestock processors,
- one agriculture products business, and
- one veterinary service related to livestock processing.

Figure 1: Industry Clusters Interviewed (Excluding Carriers)

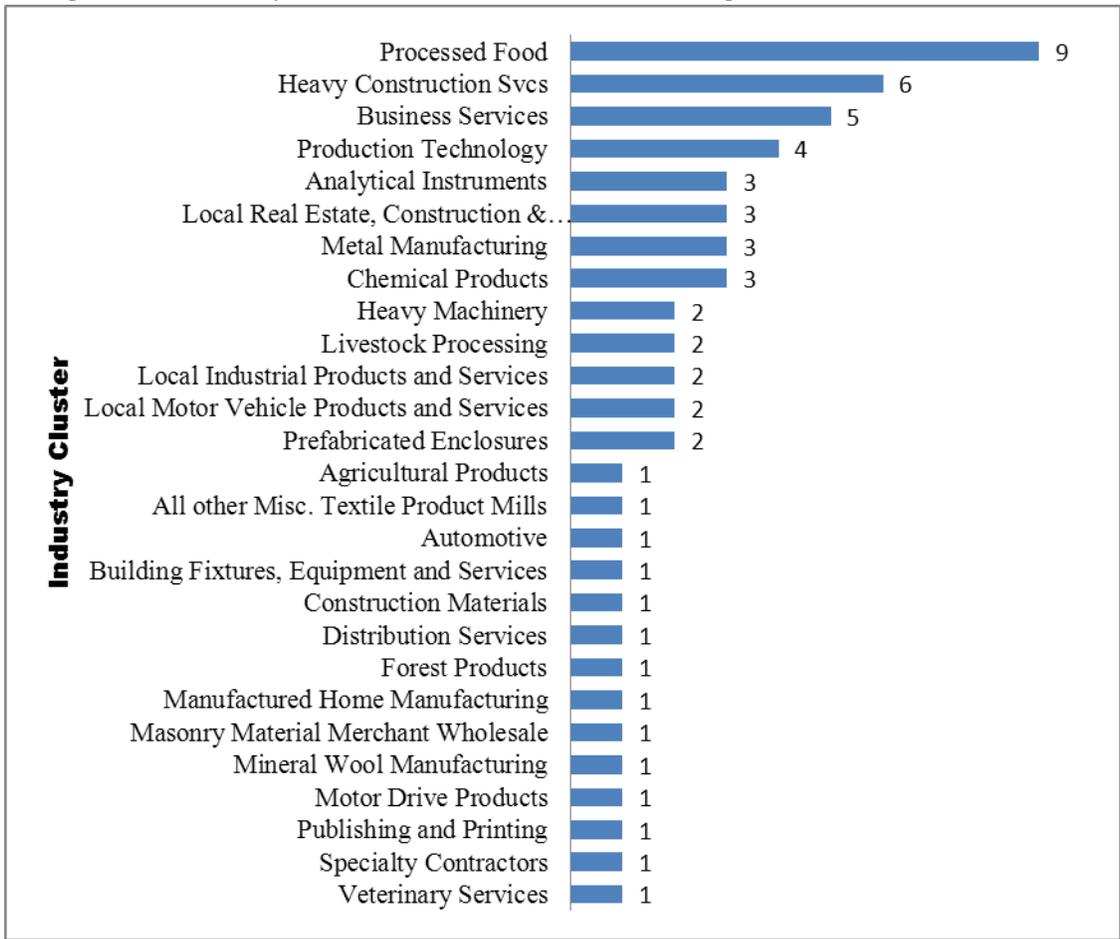


Table 1: Examples of Major Industry Clusters in District 8¹⁴

Cluster	Definition	Example
Processed Food	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 oilseed. It also includes wholesalers of grains, beans and livestock. These upstream products contribute, in part, to producing specialty foods, baked goods, candies, teas, coffees, beers, wines, meats, packaged fruits and vegetables and processed dairy products.	Noah's Ark Processing
Heavy Construction Services	The establishments in this cluster supply construction materials, components, products and services. Heavy construction services includes the materials and components include those made of wood, sand, stone, gravel, asphalt, cement, concrete and other earthen substances, as well as the processes needed to procure these materials. Construction products include pipes and heat exchangers. Construction services include the construction of pipelines for water, sewer, oil and gas, power, communication and building services for homes and industrial buildings.	NuCrane
Business Services	The establishments in this cluster include services primarily designed to assist other businesses. This includes consulting, computer, engineering, placement and other professional services.	Henle Printing
Production Technology	Establishments in this cluster primarily manufacture machines designed to produce parts and devices used in the production of downstream products. This includes the production of materials such as ball bearings, metal plating, and power valves in addition to the manufacturing of much of the equipment needed for the manufacturing process.	Polytank
Analytical Instruments	This cluster consists of the analytical instruments used for controlling and measuring processes. The cluster also includes the standard and precision electronics used by these products (For example; circuit boards and semiconductor devices).	Hutchinson Technology

¹⁴ Many of these definitions are taken from Delgado, M., M.E. Porter, and S. Stern (2013), "Defining Clusters of Related Industries." Because the definitions of this report were made to define enhanced cluster definitions, modifications were made for the definition of the Base Cluster Definitions (BCD) used in this study. These modifications were made in order to provide more than just the NAICS codes as definitions. The original BCD definitions can be found in Porter, Michael. "The economic performance of regions." *Regional studies* 37.6-7 (2003): 545-546."

Cluster	Definition	Example
Local Real Estate, Construction & Development	This cluster, which is comprised of the businesses within the local economy that carry out real estate and construction services, includes real estate brokers and lessors, general and specialty contractors, developments, construction companies and wholesalers, architectural services and building equipment distributors.	Extreme Panel Technologies
Metal Manufacturing	This cluster includes establishments that manufacture both upstream and downstream metal products. Upstream metal products include items such as pipes, tubes, metal closures, wires, springs and related products. Also included are iron and steel mills, metal forgeries and foundries, as well as related metal processing techniques. Downstream metal goods included in the cluster are metal containers, prefabricated metal structures and end user metal products such as tool manufacturing, watch and clock parts and household products.	West Central Steel
Chemical Products	Establishments in this cluster manufacture complex chemical products for end users. These products include adhesives, beauty products, soaps, cleaners, film processing chemicals, dyes, paints and explosives.	3M
Heavy Machinery	This cluster includes heavy machinery used for industrial, agricultural, construction, commercial, service industry and related purposes.	Tebben Enterprises
Livestock Processing	This cluster includes firms in the processing and procurement of livestock, including cattle and poultry.	Jennie-O
Local Industrial Products and Services	The establishments in this local cluster include businesses related to the support of local industry such as equipment repair, wholesale of industrial supplies and equipment and other similar machinery related products and services.	Chandler Enterprises
Local Motor Vehicle Products and Services	This local cluster includes businesses that service or manufacture products for motor vehicles. This includes automobile dealerships, companies related to automotive repair, gasoline stations, parking services and other areas such as tire dealers or vehicle part wholesalers.	Northern Factory Sales
Prefabricated Enclosures	This cluster contains establishments that manufacture prefabricated metal structures such as motor and mobile homes, caskets, elevators, trailers, refrigerators and freezers, and the manufacturing of alumni sheet, plate, and foil.	Friendship Homes

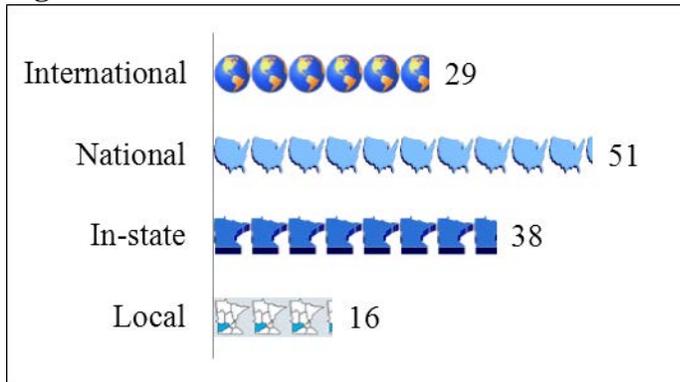
Customer markets

Interviewers asked manufacturers if their customers were located locally, in-state, nationally and/or internationally (multiple responses were allowed). Of the 61 manufacturers and distributors:

- **Over three quarters of respondents (84 percent) shipped products to U.S. states other than Minnesota**, as seen in Figure 2. Many indicated shipping in the Midwest, to Wisconsin, Iowa, Nebraska, North Dakota and South Dakota. All 48 contiguous states receive products manufactured in District 8.

- **Nearly two thirds (62 percent, n=38) shipped products in-state**, while 26 percent (n=16) shipped locally.
- **Approximately half (48 percent, n=29) shipped products internationally.** Destination countries included Canada, Korea, Japan, Thailand, China, India, South Africa, Saudi Arabia, Ireland, Italy, Germany, Switzerland, Spain, Mexico and the Caribbean. Several manufacturers also reported shipping “from all over to all over.”

Figure 2: Customer Markets



Products’ destinations were indicative of manufacturers’ highway use. Most international shipments were sent to a metropolitan center for distribution. In-state and nationally bound shipments were likely to use a wider variety of highways. For example:

- **Minnesota Rubber and Plastics** is known worldwide, with large markets in North America, Europe and Asia. The company belongs to the Construction Materials industry cluster—it molds and assembles elastomer and thermoplastic products.
- **SL Montevideo Technology**, in the Production Technology cluster, manufactures precision, high-performance motors, drives and controllers and winding components. The company has a facility in Mexico in addition to an international market.
- **Polytank**, also in the Production Technology cluster, has dealers in ten countries. The company manufactures over 200 products from polyethylene, having started with calf nurseries.
- **Fagen, Inc.** is an international contractor in the Specialty Contractors cluster.

District 8 Industry: Chandler Industries

- Montevideo, Chippewa County
- Local Industrial Products and Services
- Main District 8 highways used: 7 and 212

Headquartered in Montevideo, Chandler Industries has offices in Germany and China with production facilities in the United States and Europe. Chandler Industries manufactures various gauges for medical device companies and large corporations such as Emerson and Boeing. Its products are made of soft metal. Because of the precision needed, they are unusable if they have the slightest nick.



Therefore, smooth roads are essential to ensure product cost and safety. Many of Chandler’s customers have little storage and require just-in-time delivery.

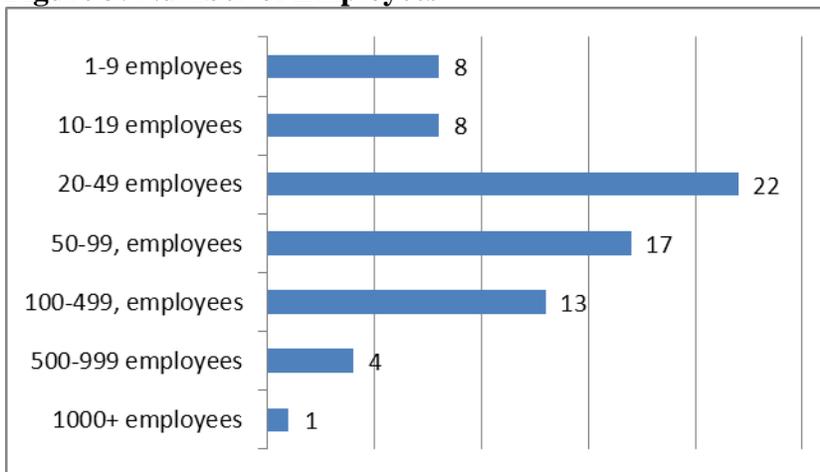
Because Chandler Industries provides just-in-time shipping to many of its customers, dependable routes are important for Chandler to meet deadlines and airport slot times, which can be delayed by hours if the driver is late. Chandler also depends on its 130 employees’ ability to arrive at work on time and has even considered providing shuttles to and from work during the winter months.

Chandler also has numerous Less-than Truck Load (LTL) loads, which led them to buy their own truck. The ability to haul LTL allows them to remain competitive with metropolitan suppliers. To fill the truck, they sometimes offer unused space to neighboring businesses.

Business size

Manufacturers and carriers were asked how many of their employees worked in District 8. See Figure 3 for approximate employee counts.¹⁵

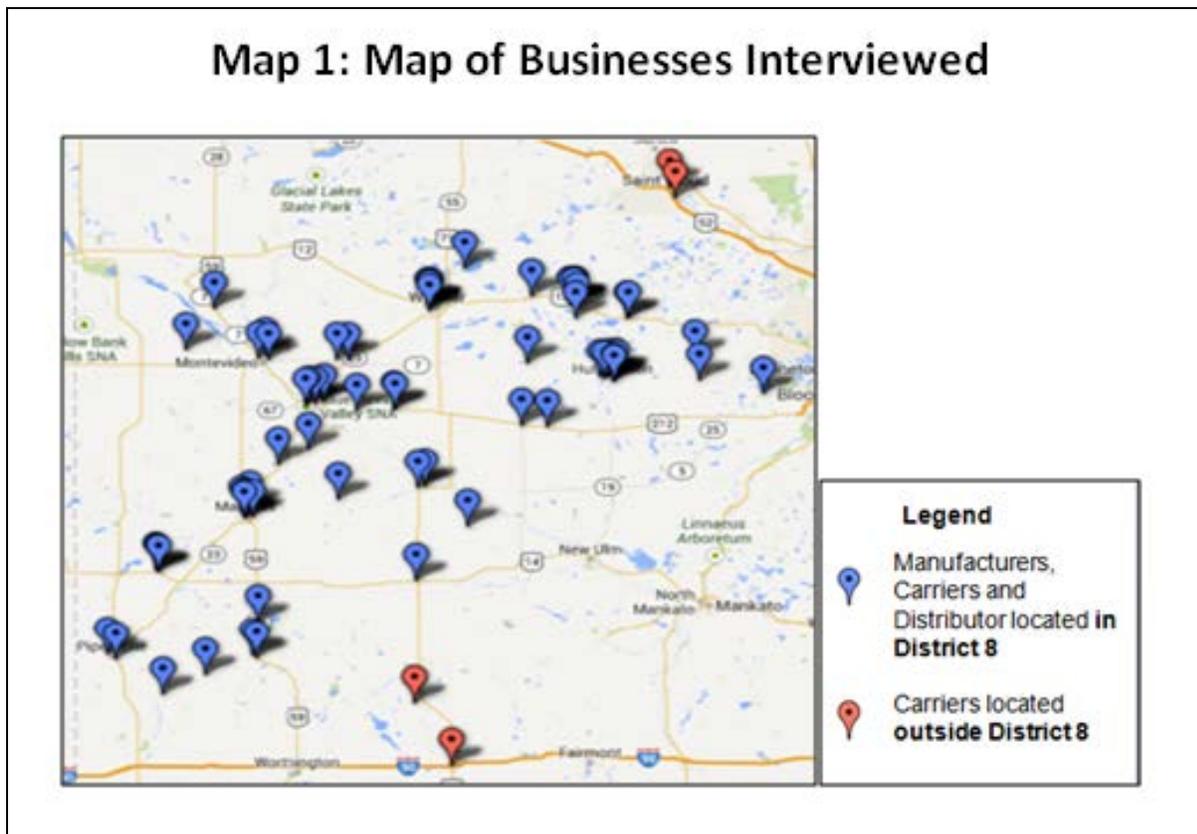
Figure 3: Number of Employees



¹⁵ In some cases, respondents gave a range (example: 25–30). In those instances, the lower number was used to produce a conservative estimate.

County Distribution

The project team interviewed at least three manufacturers or carriers from each District 8 county, except for Lac qui Parle (one interviewee). The team interviewed more than ten businesses in McLeod and Meeker counties. Though all carriers interviewed served businesses in District 8, not all carrier offices were located in the district. These represented the “other” category. Map 1 offers a spatial distribution of businesses interviewed.



Interview Findings

Overview

As noted, MnDOT used project teams consisting of project staff and economic development professionals to interview manufacturers and carriers. The primary purposes of the interviews were to:

- Gather qualitative customer information, to learn about their businesses and understand their experiences, priorities and challenges regarding the transportation system,
- Build relationships and communication channels among MnDOT, regional businesses, and economic development professionals, and
- Pilot this new data collection approach for application in other Minnesota regions.

Table 2 provides a snapshot of some of the major topics discussed by interviewees related to transportation infrastructure, operations and maintenance, communications, policy and other issues. Detail in each area is provided immediately following the table.

Twenty or more respondents referred to the following operational aspects:

- Road construction, such as delays that add shipping costs and, in some cases, could threaten animal safety,
- Signage issues, including the need for new signs identifying changes such as detour routes,
- Snow and ice removal, noting that MnDOT does a good job,
- Communication, noting that www.511mn.org is useful, and manufacturers/carriers would welcome greater functionality, and
- Size and weight restrictions, with respondents wanting more information about restrictions and alternate routes.

Table 2: Summary of Key Issues Raised by Interviewees

Infrastructure	Summary of respondent comments
Highway 23	Respondents reported needs for smoother roads in specific segments, better snow and ice removal in some areas, a review of intersections perceived as dangerous and a preference for a four lane expansion in some areas.
Bridge clearance and capacity	Respondents cited problems with certain bridge clearances. Spring weight restrictions also were somewhat of a concern.
Shoulders	Respondents emphasized the importance of wide shoulders for pull-off options in emergency situations. The shoulders need not be paved, but they should be strong enough to handle heavy loads.
Roundabouts	Interviewees expressed concerns about navigating tight radii, especially for oversized loads.
Four lane Highways	Almost a dozen interviewees requested that MnDOT expand parts or all of highways to four lanes (e.g., Highways 212, 23 and 12), to increase economic expansion, potentially improve safety and yield other benefits.

Operations and Maintenance	
Pavement Conditions	Smooth pavement was seen as very important for moving goods. Rough roads were cited as a risk to driver safety, materials, trucks and live cargo with damages resulting in increased costs.
Road Construction	Interviewees appreciated construction project results. Some also discussed ways to improve project communication, signage, timing and coordination across state, county, and city efforts.
Snow and Ice Removal	Many respondents complimented MnDOT's snow and ice removal. Many who requested that S&I removal be more aligned with their work shifts and shipment schedules and provided specific locations where this is important.
Signage	Respondents requested new types of signage to identify new truck routes, detour routes and advance warning stop signs. Many requests for signage were location specific.
Communications	
511 (traveler information phone number)	Improvement suggestions included development of a web-based feed where drivers could report incidents and road condition changes, coordinated 511 information across bordering states and additional information about lane or road closures.
Construction Projects	Respondents requested earlier and more communication about projects so they could plan ahead and avoid costly delays.
Preferred Communication	Many businesses preferred communication via email; however, about a third of manufacturers/carriers said they would attend annual, or semi-annual, MnDOT meetings.
Policy	
Size and Weight Restrictions:	Over half of the respondents identified size and weight restrictions as a concern. Respondents generally asked for more information about restrictions and alternate routes.
Hours of Service:	Several respondents expressed concern with federal changes to hours of service suggesting they would decrease business efficiency; crowd limited parking in Safe Rest Areas and exacerbate the impacts of construction and weather delays.
Safety emphasis	
Safety	Without being specifically asked, more than a third of respondents discussed safety hazards such as intersections perceived as dangerous or other (non-truck) motorists not giving trucks enough space.

Detailed Findings

Infrastructure

Respondents reported a need for smoother roads, better snow and ice removal in some areas, attention to intersections perceived as dangerous and expansion to a four lane highway in some areas. As a main north/south corridor in District 8, Highway 23 was the most heavily used and feedback on this highway, in some respects, reflects general feedback from around the district.

- **Favorable comments:** Respondents appreciated recent improvements and bypasses around Cottonwood, Paynesville and Willmar, which is similar to the general response that bypasses save drivers time by allowing faster speeds and providing fewer stops.
- **Suggestions:** However, there are still challenging areas:
 - Some parts of Highway 23 were reported as rough, making driving difficult and a few sections were identified for improved snow and ice removal.
 - Likewise, rough segments were reported on commonly used highways in District 8, such as 7, 12, 15 and 19; among others.
 - Several intersections, particularly where the highway intersects county and city highways, were considered difficult or perceived as safety hazards by respondents.
 - Other intersections perceived to be unsafe were reported along Highways 7, 30, 59 and 212.
 - There were several requests to expand some sections to four lane highways on Highway 23 as well as along Highways 7, 12, 15, 19, 59, 71 and 212.

Bridge clearance and capacity

Respondents were asked if they had any problems with bridge capacity in the district. Eight businesses responded that spring weight restrictions were a problem. One respondent suggested using culverts in lieu of bridges where possible.

However, bridge *clearance* was the most common issue, discussed by thirteen interviewees. Respondents described two railroad bridges that do not meet clearance regulations and are complicated by steep dips in the road. Respondents perceived low clearances as both a safety hazard and costly in terms of product or truck damage. Several suggested advanced warning signs of low bridge clearance so that drivers have options to turn onto another highway. Another suggested installing a laser that, if tripped by a truck, turns on a lighted sign that indicates the truck is too high for the upcoming bridge.

District 8 Industry: Pipestone Veterinary Clinic

- Pipestone, Pipestone County
- Veterinary Services
- Main District 8 highways used: 14, 23, 30, 75



Pipestone Veterinary Clinic is involved in the wholesale of animal products, particularly swine, and has locations in South Dakota and Iowa. From the Midwest, they provide services to livestock producers, both locally and in all 50 states. Because pigs are sensitive to heat, delays due to construction are very dangerous and can threaten animal lives. Moreover, to prevent the spread of disease, there are federal regulations on the proximity between a truck loaded with pigs and any pig farm it passes, so some detours are not feasible. For these reasons advanced knowledge of construction projects and detours are appreciated.

Another specific concern is a low clearance bridge in Pipestone. (The road dips steeply to pass underneath, resulting in a low clearance). This causes trucks to scrape the bottom of the bridge. They also suggest posting information about bridge clearance. Pipestone Veterinary Clinic appreciates passing lanes and wide shoulders, as well.

Shoulders

Respondents emphasized the importance of wide shoulders that are strong enough to handle heavy loads. For safety reasons, wide shoulders were seen as a key roadway feature.

Respondents reported that truck drivers are alert for ways to avoid accidents and shoulders are often the best option. Shoulders also provide a place for trucks to pull over and let other drivers pass and they give oversized trucks additional room to navigate turns. Though respondents generally said shoulders need not be paved, it is necessary that they are strong enough to handle heavy loads.

Roundabouts

Some shippers and carriers lauded roundabouts as a safer, smoother way of controlling intersections. However, more expressed concern about navigating tight radii, especially for oversized loads. This was illustrated by one respondent, who said, “Roundabouts are good because they save lives, but they need to be multilane and large enough for trucks.”

Four lane highways

Almost a dozen interviewees requested that MnDOT expand parts or all of various highways to four lanes (e.g., Highway 212, 23 and 12), as a way to support economic expansion, improve safety and provide other benefits.

Although these respondents said that four lane highways are ideal for truck drivers, it was understood that this requires a significant amount of resources.

Benefits of four lane highways: Respondents who requested four lane highways provided several reasons:

- They would create corridors that allow for increased economic expansion, for example, along Highway 212 or one connecting Minneapolis and Sioux Falls,
- Four lane highways were perceived to be safer by providing wind protection, eliminating unsafe intersections and allowing other drivers to pass trucks,
- Four lane highways decrease transit time and sometimes congestion, especially through communities which usually have lower speed limits and often 90 degree turns,
- Opinions were mixed regarding passing lanes provided in segments, such as along Highway 212. While some appreciated the additional flexibility, other respondents experience them as frustrating rather than convenient. Another respondent commented that other drivers will often speed up once a passing lane is added, making passing them difficult or impossible and,
- As one respondent said, “People get tired of two-to four-lane transitions. Find alternatives.”

Operations and Maintenance

Pavement Conditions

Smooth pavement was seen as very important to the movement of goods. Some cited rough roads as a risk to driver safety, materials, trucks and live cargo with damages resulting in increased costs. Rough roads are expensive to manufacturers in terms of product damage, loosened loads and truck maintenance noted respondents. In the case of one manufacturer, rough roads and/or handling caused damage to approximately 20 percent of the products shipped. Likewise, rough roads caused damage to trucks resulting in more frequent vehicle maintenance, costing manufacturers thousands of dollars. Finally, rough pavement was reported to threaten safety of both drivers and any live cargo, such as pigs, turkeys, chickens or other livestock. One interviewee summarized, “Nothing is better than a nice wide, smooth road, both from a safety and comfort perspective.”

District 8 Industry: Extreme Panel Technologies

- Cottonwood, Lyon County
- Local Real Estate, Construction and Development
- Main District 8 highways used: 19, 23 and 212

Extreme Panel Technologies manufactures Structural Insulated Panels (SIPs) for home and light commercial use. SIPs significantly reduce air flow into the building, thereby reducing energy use by up to 50 percent. Since its founding in 1992, the business has expanded twice and received the 2011 and 2012 SIPA Excellence Awards. With 27 employees it represents small business in District 8, but its market is international.



The Extreme Panel staff member who was interviewed was also an Emergency Medical Technician. He spoke extensively about safety concerns and frequent accidents on area highways, particularly on intersections along Highway 23. He is concerned that, with the anticipated addition of industry in Cottonwood, traffic will increase and safety hazards, such as other drivers passing on the right, will be exacerbated. He also thought that general lack of courtesy on the part of other drivers presents another safety hazard.

Extreme Panel appreciates MnDOT's work on communicating information about construction projects. They also appreciate smooth pavement and find roads with a lot of potholes, specifically those that "jiggle the load," unnerving. They appreciate in-person discussions to discuss their needs for Minnesota's transportation system.

Road Construction

Interviewees appreciated construction projects, but discussed problems related to project communication, signage, timing and coordination across state, county and city efforts.

- **The pros and cons of construction projects:** While interviewees generally expressed understanding and appreciation for construction projects, when they are underway, they can adversely affect shipping. Twenty respondents raised concerns regarding construction, such as detours that slow operations and add costs. For trucks carrying livestock, interviewees said that extended transit time increased the amount of time fragile animals spent in summer heat and threatened their safety.
- **Communication and coordination:** Respondents mentioned problems with detour signage, project timing and project communication (discussed further in the communications section). In one instance state highway construction occurred at the same time city and county projects nearly cutting off one business and forcing employees and truck drivers to take such complex routes that they sometimes got lost. Four businesses recommended increased coordination between MnDOT and local government in planning the region's construction projects.

District 8 Industry: Noah's Ark Processing

- Dawson, Lac qui Parle County
- Processed Food
- Main District 8 highways used: 212

Noah's Ark Processing produces kosher deli meat products, distributed throughout the United States. In 2013, they added a deli, which increased their production from 30,000 pounds to 50,000 pounds and have a goal of reaching 75,000 pounds. At the same time, they have increased the number of employees in Dawson from ten to 35, and they are still hiring. For them Highway 212 is a lifeline. They appreciate smooth roads because it saves on gas and truck maintenance.



The Noah's Ark Processing representative shared an experience from last summer, when surrounding state and city roads were closed, which made it difficult to reach the facility. As a result salesmen, trucks and even plant employees were getting lost. She recommended increased coordination and signage as ways to avoid this happening elsewhere. In addition, they would like greater communication and advanced notice about construction projects.

Snow and Ice Removal

Without being specifically asked, 35 of the 75 interviewees were very complimentary of MnDOT's snow and ice removal efforts. Some others appreciated the quality but requested that certain roads or segments be cleared earlier or more frequently. Respondents offered specific suggestions for locations where efforts could be improved.

- **Favorable comments:** Winter weather persisted long into 2013, with snowstorms lasting into late April and frigid temperatures into May. The majorities of interviews were conducted during this time and may have resulted in extra emphasis on snow and ice removal. Overall, respondents commented positively on MnDOT's work on snow and ice removal, indicating that MnDOT does a good job and that managing winter weather is part of living in Minnesota. One respondent complimented both the state and the county on snow removal, saying simply "They do a good job."
- **Suggestions:** The leading suggestion for improvement, provided by 18 respondents, was that MnDOT clear roads earlier than they do now. Respondents wanted to ensure that employees could arrive to work on time. Late arrivals can delay-or halt-production, they said. The inability to be on time meant employees would have to use paid leave time and have issues with childcare. Many respondents (17) identified specific locations where snow and ice removal could be improved.

District 8 Industry: First District Association

- Litchfield, Meeker County
- Processed Food Cluster
- Main District 8 highways used: 12, 13, 22, 23, 71



The First District Association transports milk and milk products, such as powder and cheese. It has a long history in Minnesota, dating back to the 1920s, and held together when dairy associations in other states were being absorbed by larger corporations. The First District Association employs 150 people and supports over 1,000 more jobs on supplying farms, contributing to a \$2.5 billion industry in Minnesota. They haul 7 million pounds of milk per day. Of that, 5 million goes to Litchfield. Milk needs to be at the plant three hours after leaving the farm. This means that being able to rely on its routes is of prime importance to the First District Association and road closures due to snow and ice cause long delays that threaten the product.

The First District Association says that Minnesota generally does a good job on infrastructure compared to other states, with well-designed roads and good shoulders. Wide roads and shoulders were important for allowing drivers to see the road during inclement weather. The First District Association is also a proponent of increased coordination between state and counties and they are open to joining additional conversations.

Signage

There were 44 requests for change in signage, but there were no clear trends in types of signage requested. Examples of requested signage included identifying truck routes, detour routes, advance warning stop signs, advanced bridge clearance information, indication of smaller maintenance projects (such as repainting lines), clearer directional signage, directional signage for industrial parks or particular businesses and indication of right of way at uncontrolled intersections. There were two requests for fewer signs. Many requests for signage were location-specific.

Communications

www.511mn.org or 511 (Traveler information phone number)

MnDOT's www.511mn.org website provides instant access to updated road information throughout Minnesota. Over half of the respondents (41) indicated that they used 511 and found it valuable. One respondent said it was "used every day by every driver here. It's a must."

Recommendations for 511 developments included:

- Provide a web-based feed function where drivers could report incidences and changes in conditions. The feed could be checked for up-to-the-minute details on specific locations.
- Coordinate Minnesota's 511 information system with 511 systems in bordering states to provide overlapping information. For example, Minnesota 511 could provide information on road conditions from the border to Interstate 29 in South Dakota.
- Synchronize 511 with GPS.
- Provide additional information about lane or road closures and, if possible, more advanced notice when lanes or roads would be closed and reopened.

District 8 Industry: Daktronics

- Redwood Falls, Redwood County
- Publishing and Printing
- Main District 8 highways used: 19, 23, 71



Daktronics produces LED video message signs, scoreboard displays and high-end video display boards, such as those in the Twins stadium. The company has offices nationwide and is recognized around the world as a leader in its industry.

All of its shipping is contracted to outside carriers, with 90 percent of its shipments being Less-than Truck Load (LTL). Cost is a main priority to Daktronics, as it has seen transportation costs rise in the last ten years from five to eight percent of total costs to nearly ten percent.

Daktronics commented that Highways 19 and 71 are well-kept roads, but they would like to see an improved road surface along Highway 19 (outside of town) and left turn lanes added to the intersection of Redwood County Highways 101 and 19/71. A main concern for Daktronics is bridge height and clearance. Daktronics thinks MnDOT's communication is good and uses 511 to monitor road conditions. One suggestion for 511 was to coordinate with bordering states because they are constantly driving back and forth between Minnesota and South Dakota. A unified website would both simplify the process of monitoring conditions and clarify differences between states.

Construction Projects

As previously addressed, road construction can present challenges to manufacturers but some issues could be resolved by enhancing communication about projects. Respondents requested more and earlier communication—they would appreciate prior notice even on smaller projects, such as repainting roads—because delays can be costly particularly with just-in-time shipping. With advanced notice, manufacturers said they could plan accordingly by changing the timing of production or re-routing trucks.

Preferred Communication

One third of all respondents indicated they would attend an annual, or semi-annual, MnDOT meeting about construction projects. Four respondents said they would attend via webinar and four said that they would attend regional meetings. Thirty two respondents said that they preferred email. Other preferred types of communication were phone calls and face-to-face conversations or interviews.

Policy

Size and Weight Restrictions

Identified as a concern by 39 respondents, issues with size and weight restrictions accounted for the majority of concerns in terms of policy. Generally, respondents asked for more information about restrictions and alternate routes. Several issues cited were with spring weight restrictions but respondents generally understood the need to protect the roads and would rather avoid those roads in the spring than pay for them to be upgraded for year-round use. The recent automation of permitting is appreciated but some still perceived the permitting process to be complex and take longer than necessary.

District 8 Industry: Fortune Transportation

- Windom, Jackson County
- Carrier
- Main District 8 highways used: 7, 12, 14, 19, 23, 59, 60, 71, 75, 212



Fortune Transportation is a large carrier throughout District 8 with 185 employees. The carrier works with some of District 8's largest businesses, such as Jennie-O and Schwans, as well as other major manufacturers throughout the state. They also hauled the sod for the Minnesota Twins stadium from Colorado.

Fortune Transportation was prepared for project interviewers with nine representatives including owners, accountants, drivers, IT, safety and operations directors. They presented the interviewers with a PowerPoint presentation in response to the interview questions provided and detailed perceived safety hazards and opportunities for improvement.

Challenges outlined by Fortune Transportation included soft shoulders, snow and ice removal—in terms of lost workdays and safety hazards—and poor pavement conditions due to rough roads and potholes. Though shoulders need not be paved, Fortune Transportation requires wide shoulders that can support the truckload and so that drivers can use the shoulders to prevent crashes.

Fortune Transportation also would like more information on construction and detour routes. Regarding issues about inclement weather and road conditions, they expressed concern that information on MnDOT's 511 website is not updated frequently enough and suggested that MnDOT implement live cameras to view road conditions in real time. Finally, Fortune Transportation expressed apprehension about changes in federal law pertaining to drivers' hours of service.

Fortune Transportation appreciates flashing stoplight warning signs and thinks they should be used at every intersection with a stoplight, with a focus on high speed intersections. In addition, they suggest MnDOT fund and develop projects with a corridor focus and become more involved with the Minnesota Trucking Association.

Other Findings

Hours of Service

Eight respondents expressed concern with recent federal changes to the hours of service. One respondent indicated that the changes will decrease business efficiency by 46 percent. Others expressed concern that the new hours would mean drivers will have to stop more often, crowding already limited parking for trucks, particularly at safe rest areas along Interstate 94. Finally, some interviewees anticipate that the changes will exacerbate the effects of road construction and maintenance as well as weather delays.

Safety

While not directly asked, 26 respondents raised concerns about safety, such as perceived dangerous intersections or other drivers.

- Specifically in rural areas, some intersections were perceived as dangerous because drivers weren't aware of how, or whether, the intersection was controlled.
- Another perceived safety hazard is the lack of turn lanes at intersections. One respondent gave an example of a truck stopped, waiting to turn left. Another driver did not see the truck in time and hit it at full speed, fatally injuring the driver.

Respondents also mentioned that another perceived safety hazard is other drivers. As one respondent mentioned, "Some drivers do not see, or appreciate, commercial truck needs." Particularly, respondents mentioned other drivers' lack of courtesy and not giving trucks enough space.

In addition, respondents mentioned passenger vehicles passing in unsafe ways, such as on the right, where truck drivers' vision is limited.

Early Benefits

Pilot success

The project provided important insights regarding ways in which MnDOT could improve the transportation system in District 8 as well as statewide. Respondents offered detailed feedback that will be analyzed and reviewed to inform near term infrastructure, maintenance, operations, communications and policy improvements. The findings also indicate that the piloted method for gathering and analyzing information—and for building relationships among MnDOT, manufacturers, carriers and local economic development professionals—was successful in meeting project goals.

Early benefits: In looking to expand the pilot project to other areas of the state, it is important to understand some of benefits that MnDOT, businesses and communities realized even before the project was completed. These same types of benefits are likely for future projects.

- For instance, based on an interview that MnDOT staff participated in, the District Engineer and the Freight Office facilitated the expansion of a manufacturer of oversized, pre-fabricated homes by addressing oversized-permitting issues. This facility expansion will allow the manufacturer to meet the demand from customers in a bordering state for these homes.
- The district also held several meetings with a dairy cooperative regarding their need to be able to receive inputs and transport their product around the clock, including during snowstorms and throughout construction season.
- In addition, as noted, MnDOT is reviewing the feedback for common-sense best practices and improvements that can be applied statewide in the near term. These projects and improvements can potentially reduce businesses' operations costs—supporting them and Minnesota's economy.
- In response to the common request for more up-to-date information regarding construction related traffic conditions and winter roadway conditions, District 8 invited, by email, the manufacturers and carriers to sign up for district email updates that provide this information whenever travel conditions warrant these alerts.

MnDOT staff: The project also has benefitted MnDOT staff in District 8 and participating staff from Central Office. When presented with the findings and feedback from manufacturers in a day-long planning workshop, engineers, planners and other staff indicated that much of what manufacturers told MnDOT was new information that could directly affect their work. MnDOT staff realized through these manufacturers' experiences how much the department's day-to-day work and decisions affect the operations and success of these businesses that employ their families and neighbors and sustain the region, as well as, the state. The project team anticipates similar experiences in other districts and other areas of the department as the project model is applied in additional areas.

The region's city and county engineers: The project team hosted an information session with city and county engineers working within District 8 borders, representing the 12 counties and seven State Aid cities. The purpose of the meeting was to share overall themes, discuss shared challenges and gather their perspectives on increased coordination in particular.

Next Steps

District 8 and Central Office staff are currently analyzing the more specific interview data for alignment with existing MnDOT plans and priorities and building upon the mid-project planning meetings with larger MnDOT staff and city and county engineers. Strategies include:

1. **Continuing to analyze manufacturers' and carriers' recommendations for potential implementation.** MnDOT staff has already engaged in some problem solving for concerns raised by some respondents. Feedback documented in this report and interview data are being reviewed for the 2013–2014 snow and ice and construction seasons. MnDOT will continue its review of actionable items and create specific plans for implementation, as appropriate and feasible. Broadly, these will likely include:
 - **Coordinating road construction planning** across state, county and city levels to reduce delays that add costs and can adversely affect perishable or live cargo or otherwise provide direct consultation to district manufacturers and carriers on alternative routes that meet shipping demands.
 - **Maintaining a focus on safety and roadway quality** by reviewing the infrastructure for safety features highlighted by haulers such as wide shoulders, turn lanes and intersection warning signals, among others. Although everyone enjoys smoother roads, this feature is essential for successful transport of certain fragile inputs and products such as livestock and hi-tech equipment, respectively.
 - **Increasing signage** to identify route changes such as along construction detours and detailing lane width restrictions in construction work zones. (This is potentially applicable statewide).
 - **Analyzing snow and ice removal schedules to potentially improve conditions along high priority routes.** While noting MnDOT's good job in this area, specific businesses requested earlier removal to facilitate large numbers of employees arriving at work on time, as well as avoiding peak rush hours for transport to the Twin Cities.
 - **Assuring better communication with manufacturers and carriers** through email, on-site problem solving meetings, as appropriate and other means to provide more information regarding road construction and alternative routes that accommodate weight, size and other restrictions.

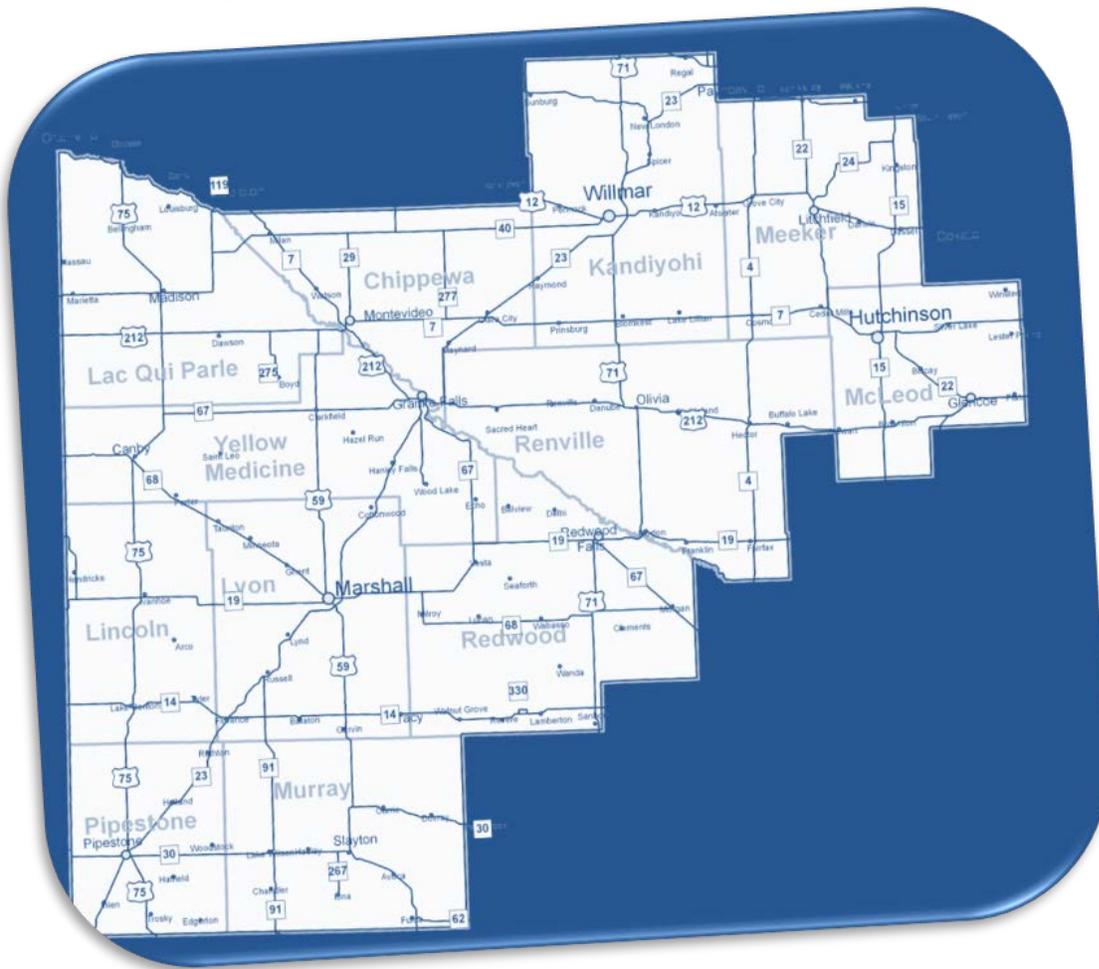
2. **Review District 8 data to identify recommendations to incorporate into statewide planning, development and best practices.** In addition to items listed in #1 above, statewide improvement possibilities include:
 - **Expand 511 functionality.** Many manufacturers and carriers said that they used and benefited from www.511mn.org and offered the following suggestions:
 - Expand to seamless coverage across state lines,
 - Include city and county construction project information so that businesses have a “one-stop shop” for construction impacts and detours,
 - Enable a live-feed functionality so that carriers can report real time roadway information and conditions, and
 - Ensure that the posted information is as current or real-time as possible, particularly during bad weather events and construction season.

- **Adapt specific roundabouts to accommodate freight.** Roundabouts were source of concern especially for those shipping oversize and overweight loads. Businesses saw them as obstacles so substantial that they consider avoiding highways that have roundabouts. MnDOT can explore the possibility of adapting existing roundabouts to allow oversize loads with permits to pass through directly and designing future roundabouts with these accommodations included.
 - **Explore the possibility of “Super Fragile” and “Super Load” route designation** to accommodate key corridors throughout the state.
 - **Enhance coordination with counties, year-round, regarding construction and alternative route detours as well as snow and ice removal.** This is essential so that shipments can be made on time and so that shippers and carriers do not get “boxed in” when carrying time sensitive and perishable loads.
 - **Continue focus on low cost/high benefit projects.** Although some manufacturers preferred four lane highway expansions many expressed greatest appreciation for projects that provide benefits for relatively lower costs such as wide-but not necessarily paved-shoulders, turning lanes, flashing lights ahead of intersections and advance signage for detours and bridges. That is, communication along the roadways to help drivers more safely navigate them and provide enough lead time for decision making.
3. **Develop an action plan for building upon District 8 relationships among manufacturers and carriers, MnDOT, regional city and county engineers and economic development professionals** so that these stakeholders provide ongoing input into District 8 planning, project development and problem solving efforts. This project began the important process of identifying and enhancing relationships among industry, economic development and transportation. MnDOT can build on these relationships to facilitate on-going communication and partnership into the future to shape a transportation system that is most likely to meet the needs of all involved parties. Specific activities mentioned in interviews could include:
- Meeting with carriers and manufacturers with unique shipping challenges (OS/OW, fragile, perishable and otherwise challenging loads) ahead of construction season to ensure that they have viable routes.
 - Distribute a pre-construction webinar to regional manufacturers and shippers, highlighting upcoming projects, timing and “what it means for them.”
 - Host a booth at the annual Minnesota Trucking Association conference and attend other industry forums.
 - Provide city and county engineers in D8 with interview feedback specific to their jurisdictions and jointly address issues that involve the state and local governments.
4. **Build upon the work of the District 8 pilot and adapt and refine it for use in another MnDOT district.** Specific elements of this project to replicate in other areas include:
- **Reaching out** to regional manufacturers to conduct face-to-face interviews, to learn what MnDOT does not know and support ongoing communication that facilitates early identification of problems or conflicts, and opportunities for business support and expansion.

- **Using interview teams** of economic development professionals and MnDOT project staff to foster relationships among businesses, MnDOT and economic development activities.
- **Employing a systematic approach** to recruit and interview key businesses, including identifying industries using cluster analysis and EDO recommendations.
- **Lessons learned** in business recruiting and interviewing include:
 - Using the Million Dollar Directory as a tool for identifying companies to recruit for study interviews;
 - Asking manufacturers a screening question regarding whether they used carriers;
 - Refining methods for scheduling to ensure a positive experience for economic development volunteers as well as MnDOT staff; and
 - Documenting interviews and developing documents at levels of detail that meet the needs of various audiences and types of analysis.

Appendix A: Map of District 8

- 12 counties in southwest/west central Minnesota
- Major cities
 - Willmar
 - Hutchinson
 - Marshall
- No Interstates, but
 - Surrounded by them
 - Access to them is important
- Interregional Corridors (IRCs)
 - Highways 23, 212, and a segment of Highway 22
- Variety of industries
 - Focus of this study is on manufacturing and their potentially unique transportation challenges



Appendix B:

Additional Methodology Details

Identifying companies and initial clusters

SLPP identified manufacturing companies for interviews representing the diverse manufacturing industries, clusters and all 12 District 8 counties.¹⁶ SLPP used two lists to identify these companies. They used the Million Dollar Directory (MDD) from Dun & Bradstreet, a directory of public and private companies, to gather information on firms by industry, size and location.¹⁷ An initial data search for the “Manufacturing” sector yielded 698 firms. For additional information SLPP developed a second list consisting of recommendations from EDOs within District 8. The second list also included carriers who manufacturers said in interviews took care of their hauling needs.

Mapping

During study interviews SLPP asked firms to identify, on a map, their major routes and also the roadway segments or bridges about which they had concerns. The project team used online Google Maps to transfer this information to an interactive map reflecting these locations in the district.¹⁸

Team Composition

Interview teams were generally composed of two interviewers:

- Someone affiliated with the project: staff from SLPP, University of Minnesota Extension Center (UMEC) or MnDOT staff (Central Office or District 8). There were nine UMN/MnDOT interviewers (four UMN, five MnDOT).
- The second interviewer usually was an economic development professional. The UMEC recruited 23 economic development professionals throughout District 8. These volunteers were from Regional Development Commissions (RDCs), Economic Development Organizations (EDOs), or they were University of Minnesota Extension Educators
- In some interviews with large firms more than two interviewers usually were present.

EDO/RDCs were reimbursed for mileage but otherwise not paid for their participation in this project. However, many said that they appreciated the opportunity to facilitate these conversations and learn more about transportation’s importance to business operations and success. Likewise, MnDOT staff appreciated having EDOs perspectives in the conversations.

¹⁶ Selection also was based on number of employees and total sales. Generally, interviewees had at least ten employees.

¹⁷ Dun & Bradstreet. “The Million Dollar Directory.” <http://www.mergentmddi.com/>.

¹⁸ Google Maps is a free, online web mapping service technology that offers street maps of locations around the world. The interactive Google map created for this project was exported as a Keyhole Markup Language file (.kml) and uploaded to Google’s Fusion Table service, an online data visualization tool. See Appendix A for more information.

Questionnaire Development

SLPP drafted a questionnaire with ten open-ended questions. EDOs/RDCs used probes to collect information on the district's strengths and challenges related to infrastructure, operations and maintenance, communications and policy. The questionnaire was designed for a semi-structured interview meaning that interviewers followed the questionnaire closely but could pursue other pertinent topics. The questionnaire included an introduction to the project and was formatted to allow space for note taking. It also included data privacy information.¹⁹ SLPP and MnDOT staff pre-tested the questionnaire to ensure the questions clarity and validity. District 8, MnDOT staff and logistics professionals also reviewed the questionnaire and provided feedback.

SLPP developed a separate questionnaire for carriers, based on the manufacturers' questionnaire, with changes to wording or context based on carrier perspectives (see Appendix E for manufacturer question and Appendix F for carrier questionnaire).

Interviewer Training

Prior to meeting with manufacturers, SLPP and MnDOT hosted two interviewer training sessions, in Willmar and Marshall, in March, 2013. SLPP and the MnDOT project team described the project's dual purposes, methodology and interviewer roles. The team discussed principles of qualitative research such as objectivity and confidentiality and reviewed the manufacturers' questionnaire. Interviewers reviewed the questionnaire and conducted mock interviews to become familiar with the process and conversation flow.

SLPP also gave trainees a list of potential interviewees. EDOs and RDCs provided feedback on the list regarding businesses that had closed or were difficult to reach. EDO/RDC suggestions were used to compile a second business list to supplement the MDD.

Scheduling Pairs

Almost all interviews were conducted by at least two interviewers (see *Team Composition* above). SLPP used several Google applications to coordinate scheduling given each interviewer's availability, geographic restrictions and business schedules. The project required a flexible, yet explicit, plan in place before recruiting began.

MnDOT, UMN, EDO and RDCs indicated their availability on calendar printouts, usually by half-days. SLPP coordinated scheduling. Sometimes MnDOT/UM staffs were scheduled in two day increments, meeting with one EDO or RDC one day and another the next day. This was done to save travel costs and simplify the scheduling process.

SLPP used Google calendars to record interviewer availability and visualize possible interviewer matches. A separate Google calendar documented the interview schedule. SLPP emailed interview information to both interviewers to provide information and facilitate communication between the parties. SLPP tried to ensure that each interviewer had at least two weeks' notice before a scheduled interview.

¹⁹ The questionnaire included an explanation that interview data was public information but company names would not be tied to specific information in publicly available documents without prior consent. Researchers informed interviewee that their identity could be deduced by others in cases where the company was highly specialized, located in a smaller city, etc.

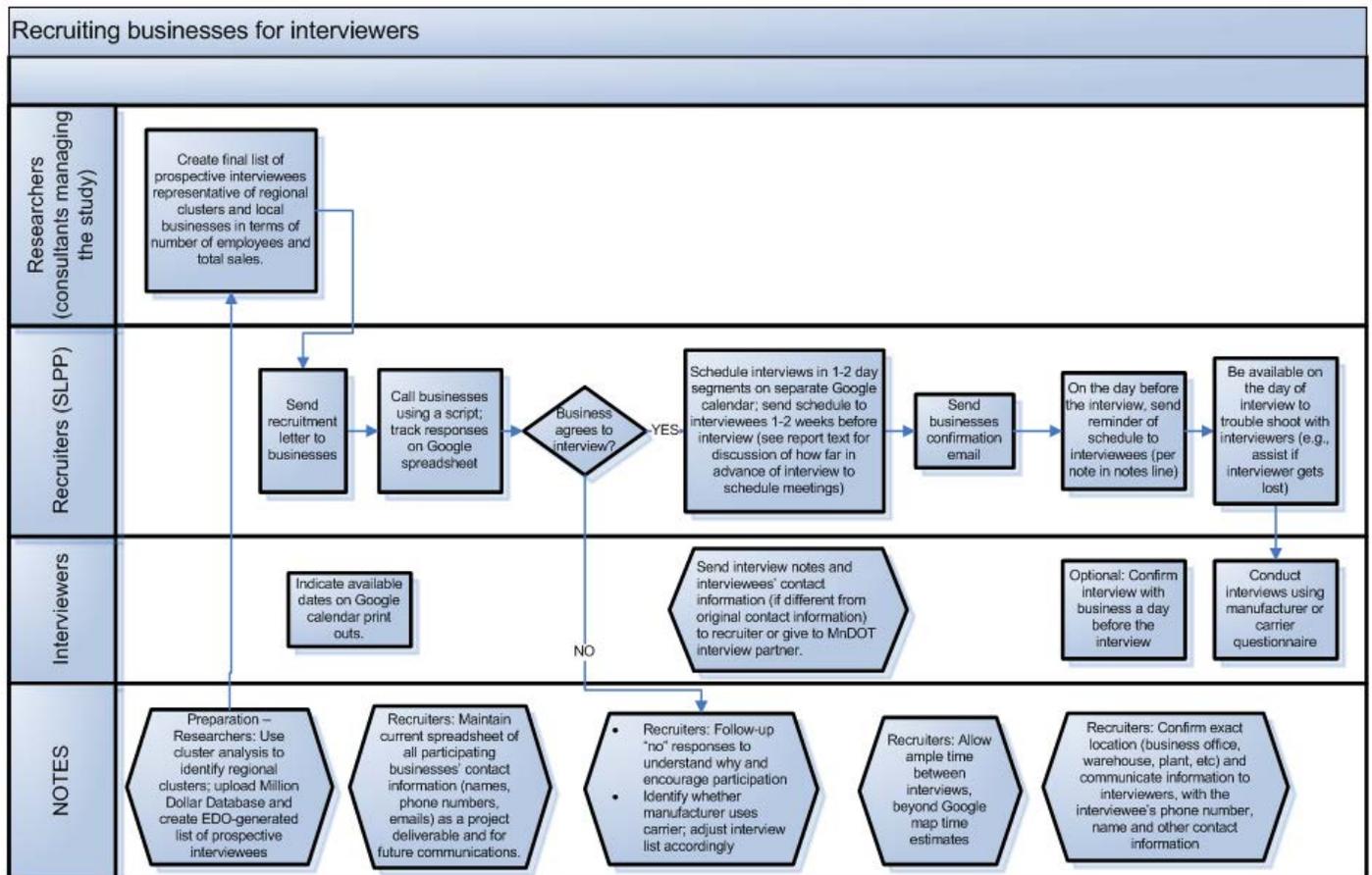
SLPP estimated that interviews would take about an hour, not including travel time. In future iterations of this model extra flex time should be built into the schedule to:

- Accommodate interviews that run longer, when interviewees want to take more time to explain their businesses, and their transportation priorities and challenges.
- Allow for more travel time, as Google maps were not always accurate and do not account for factors such as weather delays (or construction detours!)²⁰
- Give interviewers a 30 minute lunch time that does not include travel.

On most days each interviewer could be scheduled for about 3–4 interviews.

EDOs and RDCs generally stayed within their geographic service area. This option respected their time and provided the expected benefit of participating in the project—EDOs and RDCs made connections with businesses they served. The service area of each pair ranged from a single city to a multiple county region.

Recruiting Businesses for Interviews



²⁰ For example, if interview 1 was in Slayton and interview 2 was in Marshall and Slayton and Marshall are 30 minutes apart, the interviews should be scheduled two hours apart to allow for delays.

Interview phases

The first interview phase focused on manufacturers. Fifty interviews were completed by project midpoint (April 22, 2013), well within the goal of 40–60 interviews. Twelve businesses declined. SLPP and MnDOT decided to extend the project end date from September 30 to December 31 to follow-up on many leads, respond to manufacturers' enthusiasm for the project and obtain carrier input. SLPP contacted 50 additional businesses. By early September, the end of phase 2, interviewers completed a total of 75 interviews across both interview phases.

Manufacturer calls

1. SLPP uploaded each list of manufactures into a Google Spreadsheet for tracking (i.e., the Dun & Bradstreet generated list and the EDO recommended list). Manufacturers occasionally turned down interviews because they did not have time (it was the busy season for some). They sometimes referred callers to a logistics or supply chain staff. This person was often a better fit than the original contact. Some firms were noncommittal, saying they would be around that day or to call them on the interview day to see if they were free. Interviewers could use their discretion in scheduling these meetings.
2. The recruiters used a script when calling businesses to recruit them for an interview (see Appendix D) and documented “yes” or “no” responses in a spreadsheet. If a business did not want to participate callers asked probing questions to understand and address reasons for lack of interest and encouraged their participation. For businesses that agreed to be interviewed, the recruiter scheduled the interview.

Carrier calls

1. SLPP created and uploaded a list of carriers into Google as another business spreadsheet when it became apparent that some manufacturers relied heavily on external carriers. Carriers required a little more of a time commitment than manufacturers but were more enthusiastic about the project. They rarely answered the phone the first time but returned calls in response to a voice mail message. The biggest challenge was finding a time when carriers were available, especially during holiday weeks. Many wanted to speak with drivers, or include them in the interview, which also limited their availability. Carriers were also more widely disbursed, in and outside of the district, making it more difficult to assign interviewers.
2. Generally interviewers followed the same script and provided carriers with a brief description of District 8 (“from just north of Willmar to just north of Interstate 90, and from west of an imaginary line between Hutchinson and Redwood Falls to the South Dakota border”).

Documenting Calls and Interviews

1. SLPP used Google Spreadsheets to track the recruiting process (e.g., businesses called, result of the call and interview schedule). Google was chosen over other applications because it allowed live changes from multiple people and it was easy to share internally.
2. SLPP highlighted information by color on the Google spreadsheet to denote the status of each interview (e.g., completed, declined, left message).
3. The spreadsheet included business names, interviewers and business contacts, interview time and dates, emails and any additional notes.
4. SLPP send a confirmation email to businesses as soon as the interview was scheduled.
5. On interview day SLPP emailed a copy of the schedule to both interviewers with contact information and any other notes (e.g., “has a lot to say about Highway XX.”). Initially, SLPP also sent route maps but they were time consuming to create and their usefulness is not known. SLPP’s email also indicated if a business was both a manufacturer and carrier and attached the appropriate interview guide. Some interviewees found it useful to contact the business a day or two before the interview for confirmation.

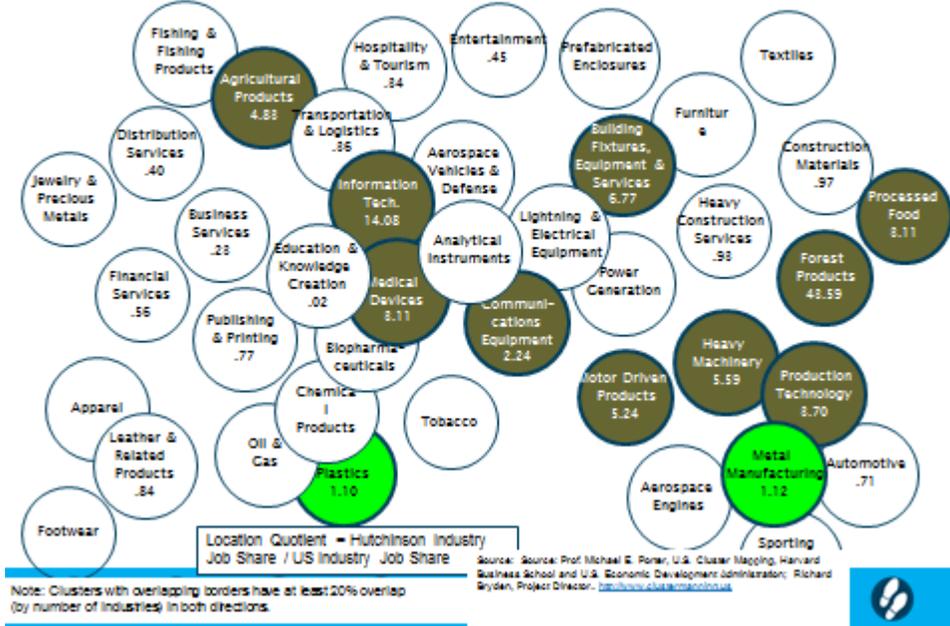
More information on engaging the efforts of the public, private and non-profit sectors

- Within MnDOT, the effort was substantial. From the Operations Division Director facilitating a cross-functional group discussion on implications of the findings, to maintenance supervisors contributing practical solutions, a range of MnDOT staff were substantively involved in the process including the District Engineer, District and Freight Office engineers and planners, communications and customer relations staff from both the district and Central Office. Cross sections of MnDOT staff:
 - Conducted about half of the interviews with manufacturers and carriers,
 - Planned and participated in larger staff planning sessions, analyzing the results and drafting action plans, and
 - Presented to community and civic organizations, internal teams and other researchers.
- Prior to launching interview teams, SLPP, Extension Services and MnDOT provided joint training to approximately 25 **economic development staff** based in southwest/west central Minnesota, including chambers of commerce directors and local government officials, on how to conduct the in-depth, qualitative interviews with businesses. MnDOT will maintain these relationships with EDOs into the future.
- The team also held a results meeting with **city and county engineers** to review the project process and findings and share the manufacturers’ and carriers’ stories about the difficulties they encounter. The meeting confirmed some experiences, provided new insights and laid the groundwork, through large and small group discussion and planning, for greater coordination around construction and snow and ice removal.

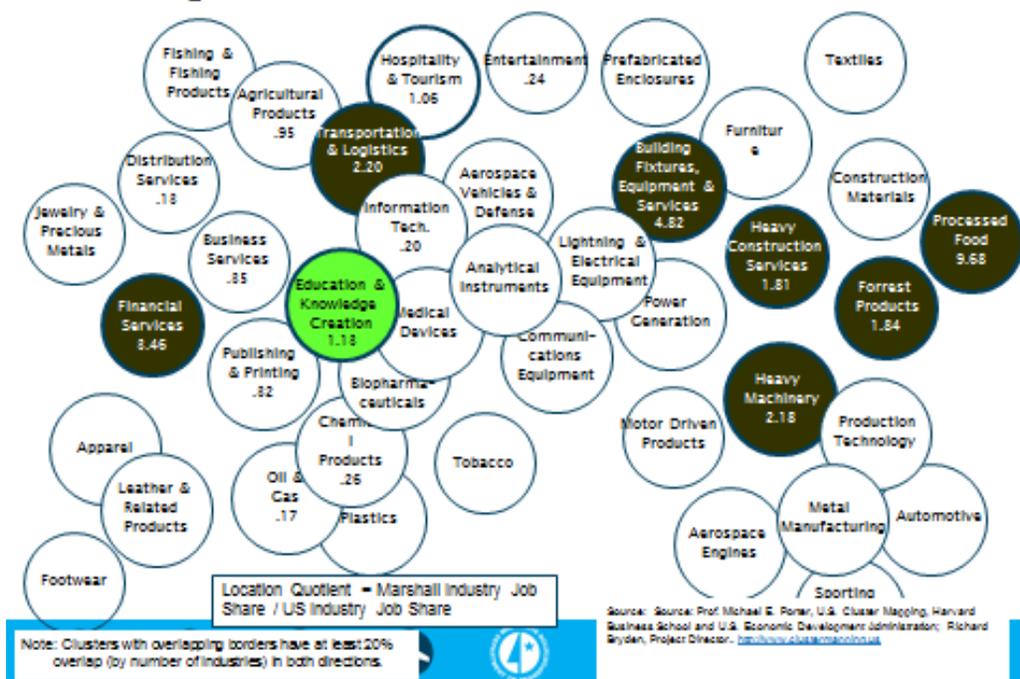
- The **University of Minnesota’s State and Local Policy Program and Extension Center** provided research and administrative support for the project, identifying businesses through an industry cluster analysis and inviting the Extension Service’s network of local economic development offices. In addition, SLPP took the lead on scheduling interviews, participated in and documenting many of the interviews, and took the lead on interview analysis.
- The **manufacturers and carriers** themselves, throughout and beyond the district, contributed hundreds of staff hours to provide MnDOT with their feedback. Many businesses brought several operations and logistics staff, dispatchers and executives to the table to describe their businesses, their priorities for the system and their unique challenges, given their inputs and products. Some brought innovative solutions such as developing MnDOT’s 511 website to take live feeds from their drivers en route. MnDOT has followed up with a number of these firms already and looks forward to working with them in the future to explore options that will meet their transportation related needs.

Appendix C: District 8 Metropolitan Areas' Cluster Makeup

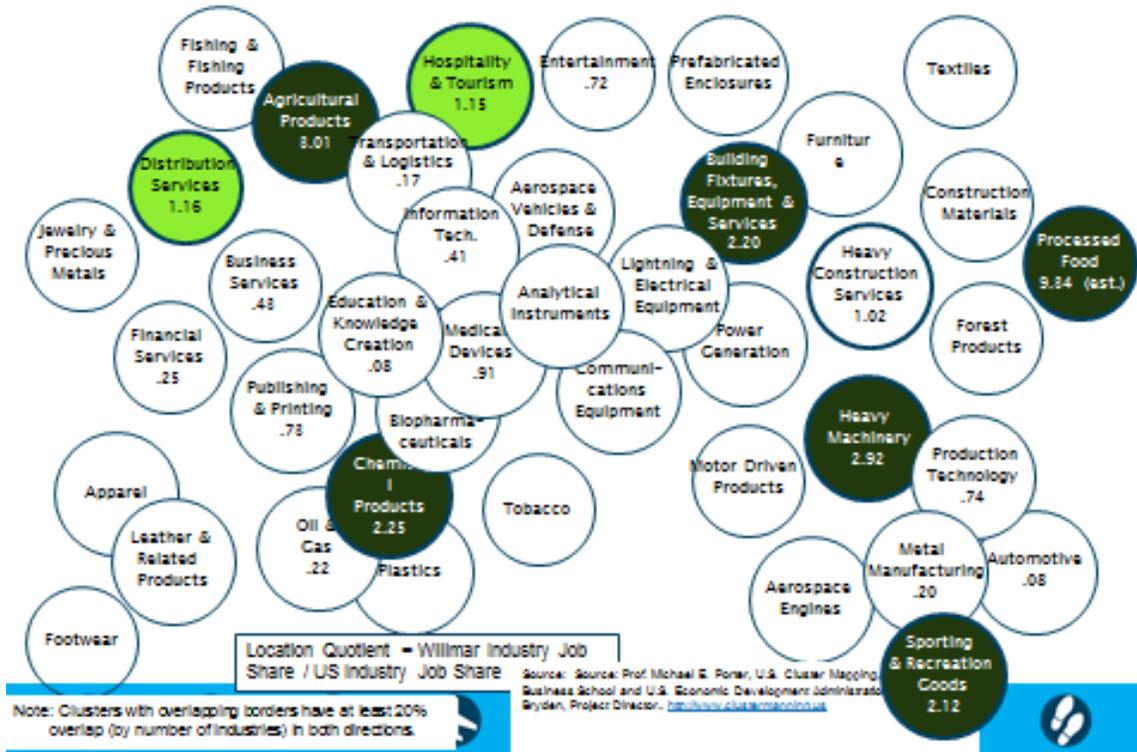
Competitiveness and Composition of Hutchinson Micropolitan Area
Linkages Across Traded Clusters, Location Quotients, 2010



Competitiveness and Composition of Marshall Micropolitan Area
Linkages Across Traded Clusters, Location Quotients, 2010



Competitiveness and Composition of the **Willmar** Micropolitan Area Linkages Across Traded Clusters, Location Quotients, 2010



Appendix D:

Recruiting Script and Invitation Letter

The following was the general script used when calling businesses.

“Hi, my name is _____. I am calling on behalf the Minnesota Department of Transportation regarding a study we are conducting of Western MN* transportation systems. You may have received a letter about two to three weeks ago from MnDOT’s District Engineer for this region, describing this project.”

*When “Southwest MN businesses” was used, some businesses did not consider themselves part of that region, so the more general “Western MN businesses” was used.

Wait for them to respond. Most will acknowledge or deny receiving the letter.

If they acknowledge having received the letter: “Great. Well as the letter states we are interested in getting feedback from manufacturers about how current transportation systems are working, or not working, for them. Would you like to schedule an interview?”

- Some will assume the intent is to interview them at that moment over the phone. Assure them that they won’t be asked to do that and interviewers would meet with them at their location at a time convenient for them.
- Some may be apprehensive that some type of truck or log inspection is going to occur. Assure them that this project is focused on talking with them about their experiences and challenges regarding transporting their materials and products. No inspections will occur.

If they did not receive a letter: “Oh, well, that’s all right. We’re finding that some letters did not reach the intended addresses or people. I can have a copy of the letter emailed to you. What we are trying to do is understand manufacturers’ perspectives of the transportation system as it stands now. We want manufacturers to thrive in western Minnesota and understand that means, at least in part, being able to ship and receive materials as efficiently as possible. Therefore, we are collecting information through interviews with manufacturers--the ones who would know best. I could schedule an interview with you now, if you’re interested.” Businesses were asked for an email address to which the letter could be sent. Offering the letter usually meant that they would want to read it before scheduling an interview. They were contacted again within a week, asked if they have any questions and asked to schedule an interview.

If they said yes to the interview: “Great. Well I actually have interviewers in your region <day, date> if you are available that day.” If there are several times open, they were asked what time worked best for them. If slots for their area were limited they were given options of times available. During, or immediately after, the conversation document the interview in the Google spreadsheet with the interview schedule; and on the business spreadsheet. Mark that business as having scheduled an interview.

Once a time had been chosen: “Great. You are set for <day of the week, date, time>. It looks like you will be interviewing with <University/MNDOT person> and <EDO/RDC name and position or region*>. We will send you an email confirming this time. Thanks, and have a good day.”

*Naming the EDO/RDC interviewer sometimes increased credibility of the interview or made the interviewee more comfortable. Larger businesses were also familiar with the District Engineer.

If they say they do not want to schedule an interview: “(very unthreateningly). That’s fine. Do you mind if I ask why?” Keep probing until they either schedule an interview, let you call them back at another time or give you a reason synonymous with “no” (not interested, business is closing, don’t ship or receive any materials, etc.).



Minnesota Department of Transportation
395 John Ireland Boulevard
Saint Paul, MN 55155

March 11, 2013

Dear [First name],

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 and others as you manage your freight shipping. And you may have priorities regarding MnDOT policies and regulations, which we also want to hear about. I can't promise that we'll be able to meet all of your needs; resources are limited. But, I, and my staff want, to understand your business' needs so that our resource planning and decision making are well informed.

A secondary goal of this effort is to increase familiarity between MnDOT District 8 staff and area businesses and open lines of communication so that we can be more responsive and provide access points for you and other manufacturers/shippers to raise issues in a timely manner. Too, this project involves local economic development staff, who will staff some of the interviews to further develop these connections among our organizations.

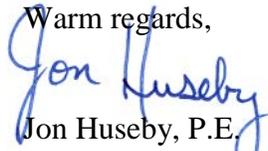
MnDOT has contracted with research staff from the University of Minnesota's Humphrey School of Public Affairs and Extension Service to administer this project. The University's staff bring rigor to this project's methodology and analysis, but this is not simply another study. You may have participated 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, high benefit/lower cost improvements that can provide tangible benefits to area manufacturers. Interviews will be conducted by a small (two to three people) team comprised of Humphrey School and Extension staff, MnDOT staff and/or economic development staff who are based in MnDOT's District 8.

Please expect staff with the University of Minnesota to call you within the next few weeks to schedule your interview which we would like to take place in March or early April. The interview will take about an hour and we would come to your offices. I have enclosed a draft of the interview guide and suggested ideas for 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 south west and west central Minnesota and across the state.

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

Warm regards,



Jon Huseby, P.E.
District Engineer
MnDOT District 8

2505 Transportation Road
Willmar, MN 56201

320-231-5497

Appendix E: Manufacturer's Questionnaire

INTERVIEW GUIDE FOR MnDOT DISTRICT 8 MANUFACTURERS

Thank you for taking the time to meet with us. We are here on behalf of the Minnesota Department of Transportation (MnDOT) and the University of Minnesota who MnDOT has contracted to conduct this study. MnDOT will use the information we collect today as they consider transportation plans and priorities for the next few years.

1. Introductions

2. Approximately how many employees are at this location? Are there any transportation issues associated with your employees getting to work and back?

3. Please describe your company's primary products.

4. Broadly, how does transportation affect your business' ability to compete in your market?

5. Please provide a brief overview of your primary **suppliers**. Where are they located (local, state, national, internationally based?). Which modes are used to get resources and inputs from them? Which routes are most important for receiving your inputs?

5. Please provide a brief overview of your primary **customers**. Where are they located (local, state, national, internationally based?). Which modes do you use to transport your products to them? Which routes do you use most often to ship your products?

6. 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? Would you recommend that we contact them to get their perspectives as well?

7. Please discuss the relative importance of the following factors in your transportation decisions:

- a) Transit time (speed)
- b) Cost
- c) Safety
- d) Reliability
- e) Other

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 and inputs or shipping your products to your customers? What are the pain points and where are they?
[Interviewers will bring state highway map, if helpful]

- a) Infrastructure (e.g., passing and turn lanes, intersection geometry, shoulder width, pavement condition, smoothness, etc.)
- b) Operations (e.g., snow and ice removal, delays due to road maintenance and construction work, communication from MnDOT about same, etc.)
- c) Law/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 contact our project manager, Donna Koren, MnDOT's Market Research Director at 651-366-4840.

Appendix F: Carrier's Questionnaire

INTERVIEW GUIDE

MnDOT Manufacturers' Perspectives Project - Freight Carriers

INTRODUCTIONS

1. Introductions all around (name, title, organization)
2. [SHOW MAP OF D8] Approximately how many employees do you have who provide carrier services this part of the state? _____
 - 2a. Are there any transportation issues associated with your employees getting to work and back?
3. Please describe the types of carrier services you provide (fragile, perishable, oversized, types of products manufactured by your customers in southwest or west central Minnesota, etc.)
4. Broadly, how does Minnesota's transportation system help, or hinder, your ability to provide carrier services to businesses in south west or west central Minnesota?
5. Please provide a brief overview of your primary **customers in MnDOT's District 8 (southwest and 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 8?
6. Please describe how the following factors affect your transportation decisions:
 - ___ Transit time (speed)
 - ___ Cost
 - ___ Safety
 - ___ Reliability
 - ___ Other
7. What are the **strengths** of District 8 in terms of enabling your company to meet your customers' shipping requirements? What works well regarding transportation?
8. What are your transportation **challenges** or concerns in this part of the state?
 - d) Infrastructure (e.g., passing and turn lanes, intersection geometry, pavement condition)

- i. What highway **features** are important to moving your freight?
 - (a) Smooth pavement?
 - (b) Wide and/or paved shoulders?
 - (c) Stop lights?
 - ii. What about bridge capacity? Is that a factor?
- e) Operations (snow and ice removal, delays due to road maintenance and construction work, workability of detours, communication from MnDOT about same)
- i. Are there specific times of day that your customers commonly request pickups and/or deliveries? If so, when are they? Which routes are most important for snow and ice clearing and when?
 - ii. Would different signage to identify truck route designation be helpful?
 - iii. Do you know about 511? (<http://www.511mn.org/>) How often do you use it? How well does it meet your company's and/or drivers' information needs regarding road conditions?
 - iv. How well-informed do you feel during construction season about how construction/road maintenance operations will affect your routes? If not, what could MnDOT do that would be more helpful?
- f) Law/regulations (e.g., permitting restrictions, etc.)
- i. What problems, if any, do you run into regarding weight restrictions?

9. To what extent do you consider your firm's transportation needs representative of this industry? If not, how are they different?

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

11. We appreciate you sharing this information. MnDOT is interested in continuing this conversation with businesses about their transportation needs and experiences. District 8 staff wants 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 G: List of Firms Interviewed

3M, Hutchinson
American Time and Signal Company
Anderson Trucking
Anderson Chemical Company
Backup Power Source, Inc.
Bergh's Fabricating, Inc.
Bradley Trucking
Buffalo Ridge Concrete
Central Minnesota Fabricating, Inc.
Chandler Industries, Inc.
Crow River Press
Daktronics
Eickoff Enterprises
Extreme Panel Technologies
Fagan, Inc.
Farm-Rite Equipment Inc.
Fed Ex
Fortune Transportation
Fox Brothers of Sanborn, Inc.
Friendship Homes of Minnesota, Inc.
GR Daniels Trucking
Granite Falls Energy LLC
Henle Speedy Print, Inc.
Hicks Shipping
Hoffco- Inc.
Hutchinson Manufacturing
Hutchinson Technology, Inc.
Jennie-O Turkey Store
Kalenberg Enterprise
Kottke Trucking Inc.
Lester Building Systems, LLC
Littfin Lumber Co.
Loftness Specialized Farm Equipment, Inc.
Maracom Corporation
McKimm Milk Transit Inc.
Minnesota Rubber and Plastics (Quadion)
Monogram Food Solutions LLC
New Horizons Grain
Noah's Ark Processors Corp.
Northern Factory Sales
Northstar Plastics & Fabricating Inc.
NuCrane Manufacturing
Page One Printers, Inc.
Par Piping and Fabrication LLC
Pipestone Vet Clinic
Polytank, Inc.
Precast Systems, Inc. Concrete Products
Precision Fiberglass
Relco LLC
Rembrandt Enterprises
Schak Trucking
Schmitz Grain
Schult Homes
Sewn Products
SI-Montevideo Technology, Inc.
Sparboe Foods LLC
Specialty Systems
Spee Dee Delivery Service
Swift Manufacturing
Tebben Enterprises, Inc.
Tech-Etch, Inc.
The First District Association
The Schwan Food Company
Track Transport
Trico TC Wind
Turkey Valley Farms LLC
Twin River Technology Inc.
Tyler Building Systems Inc.
Uni-Hydro
United Mills
USF Holland
Warner Manufacturing Company
Wayne's Inc. (Crary Pro)
West Central Steel, Inc.
Western Printing of Marshall, MN