



Manufacturers' Perspectives on Minnesota's Transportation System

District 3 / Central Minnesota

mi DEPARTMENT OF
TRANSPORTATION

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Executive Summary

The mission of the Minnesota Department of Transportation (MnDOT) is to “Plan, build, operate and maintain a safe, accessible, efficient and reliable multimodal transportation system that connects people to destinations and markets throughout the state, regionally and around the world.” Minnesota-based manufacturers use Minnesota’s roads, bridges, airports, railways, and waterways to ship their products to local, state, national, and international markets. When it is aligned with shippers’ needs and priorities, the transportation system plays a significant role in supporting state and regional economic vitality.

Purpose and Methodology

MnDOT collected and analyzed information from manufacturers’ perspectives in MnDOT District 3 (Central Minnesota) to:

- **Learn their perspectives and priorities to aid in identifying potential low-cost, high-value transportation system improvements that can be accomplished now or in the short term.**
- **Build relationships to better align the transportation system with shippers’ needs in the long term.**
- **Support continuous improvement at MnDOT, with ongoing outreach to and input from this customer segment.**

The District 3 project methodology primarily consisted of interviews with manufacturers because manufacturing generally provides stable, high-paying jobs and brings revenue into the region by selling to markets beyond the immediate area. A sample of businesses to interview were identified using an analysis of traded regional industry clusters, with additional input from economic development professionals in Central Minnesota and from MnDOT District 3 staff.

Due to the very high volume of manufacturers in District 3,¹ MnDOT designed this project as a hybrid of the methodologies from its Greater Minnesota districts’ Manufacturers’ Perspectives studies and Metro District’s Urban Freight Perspectives (Phase 1) study. Interviews with manufacturers in the north half of District 3 were modeled after those done in past Manufacturers’ Perspectives studies in Greater Minnesota. Interviews with the manufacturers in the south half of District 3 and with all the carriers were structured more similar to those done in the Metro District, to include scheduled discussion time to address congestion and provide overviews of current and upcoming major I-94 construction projects that would significantly impact their freight movement.

Cross-disciplinary interview teams were composed of MnDOT staff and external partners. Interviewers gathered input on low-cost and high-benefit transportation improvements that can be made in the near term with existing or limited additional resources.

¹ Number of Primary NAICS Manufacturers with 10+ employees: District 3 has nearly half as many as the Metro District and significantly more than other districts in Greater Minnesota, on average. See the Methodology section of the report for more details.

Results

Of the 465 businesses contacted, MnDOT reached and invited 265 (57% of the sample) to participate in this project. A total of 126 business interviews were conducted (27% of the sample and 49% of businesses reached). These included 104 manufacturing businesses and 22 carriers (shipping, distribution, or freight-forwarding businesses).

Listed in order, the region's strongest traded clusters represented are:

1. Trailers, Motor Homes, and Appliances
2. Construction Products and Services
3. Wood Products
4. Livestock Processing
5. Recreational and Small Electric Goods
6. Printing Services
7. Furniture
8. Metalworking Technology
9. Production Technology and Heavy Machinery
10. Vulcanized and Fired Materials
11. Agricultural Inputs and Services
12. Food Processing and Manufacturing
13. Plastics
14. Downstream Metal Products
15. Downstream Chemical Products

Markets of interviewed businesses include 69 businesses that ship products within Minnesota, 86 businesses that ship nationally, and 45 businesses that ship internationally. Additionally:

- Over half of the 126 businesses interviewed have fewer than 100 employees.
 - Four businesses have 500 or more employees.
- All manufacturers interviewed use trucks either to receive or ship products.
 - Forty-three manufacturers use more than one mode to transport goods.
- Among the 104 manufacturers interviewed, 94 said trucks are the most critical mode for their shipping.

Businesses participating in the District 3 Manufacturers' Perspectives study discussed a range of transportation concerns. As a result, the district has and will continue to identify opportunities to address these concerns with short-term, lower-cost actions whenever possible. Additionally, some of the identified concerns will be addressed through maintenance, operational traffic changes (signals, etc.) and previously scheduled improvements included in MnDOT's four-year construction program.

Where businesses indicated a desire for more costly large-scale infrastructure projects to address business needs, staff will consider this feedback in future long-range plans, analyzing it against project criteria, such as pavement condition metrics, traffic volumes, safety, and highway context (i.e., urban or rural environment), as well as against state and federal funding constraints.

General Findings

District 3, located in Central Minnesota, serves 13 counties and is home to 19 cities that each have more than 5,000 people, including Baxter (District 3 headquarters) and St. Cloud, where a second MnDOT office is located (see District 3 map on page 7 of the full report). District 3 also has a strong manufacturing presence. These factors, along with the presence of major corridors such as Minnesota Highways 15 and 23, US Highway 10, and Interstate 94, make District 3 a prime location for truck traffic moving across the state, region, and country.

Construction

Businesses said construction projects create congestion and contribute to traffic incidents, which causes shipping delays and makes moving products less efficient. Businesses emphasized that advance communication about construction projects and provision of adequate alternate routes can help businesses plan ahead and mitigate costs associated with delays. Businesses also commonly indicated that nighttime and weekend construction have less of an impact on their daytime shipping needs and personal commutes.

Congestion

Businesses said congestion affects their daily operations because it delays shipping and increases costs (e.g. labor, fuel, overtime), which they attempt to mitigate by changing shipping schedules to avoid peak congestion times, finding alternate routes, and paying employees overtime. Several businesses said congestion is particularly problematic in the City of St. Cloud, which has been a challenge for employee commuting and hiring and retaining employees, and it has negatively affected business sales and driving routes.

Infrastructure

Businesses in District 3 provided mixed opinions of roundabouts. Common challenges include the design of roundabouts, such as size, apron slope, and lack of signage. Businesses also mentioned the need for public education on the safe use of roundabouts. Additionally, businesses discussed the signalized intersection on US Highway 10 in Royalton as a significant contributor to congestion in the area, particularly on Fridays and summer holidays. Businesses mentioned using alternate routes to avoid this intersection (adding time and cost) or shifting delivery schedules to avoid backups. Several businesses discussed the need for additional Mississippi River crossings.

Businesses generally reported liking highway features that improve safety and increase efficiency, such as intersection warnings (e.g., “Prepare to Stop When Flashing” Advanced Warning Signs). Other types included bypass lanes, passing lanes, acceleration lanes, turn lanes, and wide, paved shoulders. Businesses often had positive feedback about variable messaging signs (VMS), including the accuracy of time estimates and directional language (e.g., which lane to move into). Businesses also noted that these signs are helpful for drivers in planning for adjustments in their route to avoid delays related to crashes, congestion, and weather. In general, businesses said they would like to have more of these signs in the district and that they could be

used to communicate additional information, such as the number of open parking spots at upcoming rest stops, safety messages, and information on Minnesota’s hands-free law.

Operations and Maintenance

Businesses were split in opinion on pavement quality in the district; the number of businesses not experiencing issues on MnDOT routes was similar to those experiencing challenges. Most commonly, businesses said rough pavement can cause shifting freight, wear and tear on trucks and equipment, and driver fatigue or injury. Businesses also commonly said shifts in freight can cause damage to product, which can be costly to fix or replace.

Quickly clearing roads of snow and ice is important to businesses, and businesses generally provided positive feedback on MnDOT’s performance. Businesses that maintain continuous or near-continuous operations most often reported issues with employees arriving at work when roads are not cleared quickly enough. When employees are delayed it can negatively affect production schedules and product or supply deliveries.

Communications

Most businesses said they had heard of the 511 traveler information system, and they use it to check for updates about road conditions in the winter and during construction season. Most often businesses praised the ability to get visuals of road conditions in real time through the traffic and snowplow cameras. Businesses also provided suggestions for improvement, including more real-time alerts on road conditions and making the 511 system more user-friendly.

Most businesses said they are satisfied with MnDOT’s overall communication efforts around construction, adverse weather events, and congestion. Businesses offered suggestions for improvement of general communication, including more advance notification about road closures due to construction and adverse weather events. Businesses also suggested more traffic cameras, increased use of VMS, and more real-time updates via the 511 system.

Policy

Businesses said policies around oversize and overweight restrictions in Minnesota affect business operations and shipping costs. In an effort to comply with restrictions, businesses are often unable to carry full loads and have to split up loads or delay shipments until restrictions are lifted, which can add to shipping timelines and costs. Additionally, oversize loads involve added restrictions including curfew hours and police escorts, which can lead to extra costs and longer timelines for scheduling. Businesses noted that these added requirements can affect their ability to remain competitive. Furthermore, businesses expressed frustration with different weight restrictions between Minnesota and neighboring states, which make it challenging to ship efficiently between states. For example, businesses noted that higher load limits in neighboring states, such as Wisconsin and Iowa, mean that businesses have to split loads to meet load limits in Minnesota.

Businesses also discussed electronic logs (e-logs) and loss of driving hours as a significant transportation challenge. Most commonly, businesses noted that operation costs have increased due to longer shipping timelines and additional costs, such as overnight stays for drivers.

Other Findings

Businesses said there is a lack of both public and private truck parking in District 3. They said this can cause delayed deliveries, a need for drivers to make it home by the end of the day or to sleep at the shipper or receiver location, and unsafe conditions when trucks park on exit ramps or shoulders.

Businesses also noted a lack of access to rail in the district. They also said waiting for trains at railroad crossings can lead to delayed shipments and employees being late for work.

Businesses said it is difficult to get next-day air service in at least some parts of the region. Shipments that must leave from Minneapolis–St. Paul International Airport can be difficult to get out on time due to congestion, particularly on Fridays.

Economic Development Considerations

Businesses in the region like their proximity to the Twin Cities Metro area. They are close enough to enjoy the benefits of the metro region, such as good shipping prices, but far enough away that they do not have to regularly contend with challenges in the metro, such as congestion.

Next Steps

Business concerns and priorities about the transportation system were identified in the District 3 Manufacturers' Perspectives study. These concerns and priorities support many of MnDOT's current plans for the district and help inform existing and future initiatives.

District 3 has realized several benefits of the project to-date, including:

- Reviewing and assigning urgent, short-term action items (e.g., safety-related items) to key staff members for follow-up.
- Reviewing and assigning all identified action items (nearly 750) to staff members for categorization and prioritization.
- Committing to learning more about congestion, infrastructure, and operations and maintenance in the district, based on a review of preliminary report findings.
- Initially sharing preliminary study findings with the MnDOT and consultant project team working on the District 3 Freight Plan. Later, sharing a draft of this full report with the district's Freight Plan team.
- Sharing study findings about weight and size enforcement with staff in MnDOT's Office of Freight and Commercial Vehicle Operations (OFCVO).

A full list of recommendations for MnDOT District 3 and MnDOT Central Office can be found in the body of the report.

Introduction

Manufacturers and other freight shippers are unique and important customers for the Minnesota Department of Transportation (MnDOT). This has led MnDOT to seek feedback on the state transportation system from these businesses, which often provide high-quality jobs in their communities. Through the transportation system manufacturing and freight businesses have access to supplies, employees are able to arrive at work safely and on time, and businesses can get goods to customers. A well-maintained transportation system, aligned with business needs, can increase efficiencies, lower costs, and boost productivity, contributing to healthy state and regional economies.

Background

Since 2013, MnDOT has taken a district-by-district approach to gather manufacturers' perspectives on the transportation system. Prior to initiation of the District 3 study, 572 business interviews were completed in seven of the eight MnDOT districts.² The intent of the Manufacturer's Perspectives study is to:

- **Meet with manufacturers and other leading industries in each region to understand their perspectives and priorities** for the transportation system and improve MnDOT's knowledge of industries that depend heavily on the reliability of the transportation system.
- **Systematically collect and analyze customer information** to inform practical, near-term planning and operations, policy development, and decision-making about investments.
- **Build relationships** among MnDOT, economic development professionals, manufacturers, and freight transporters to sustain both short-term and ongoing transportation system improvement.
- **Support statewide continuous improvement and develop recommendations** for enhancing transportation systems and practices to support freight movement.

District 3 Background

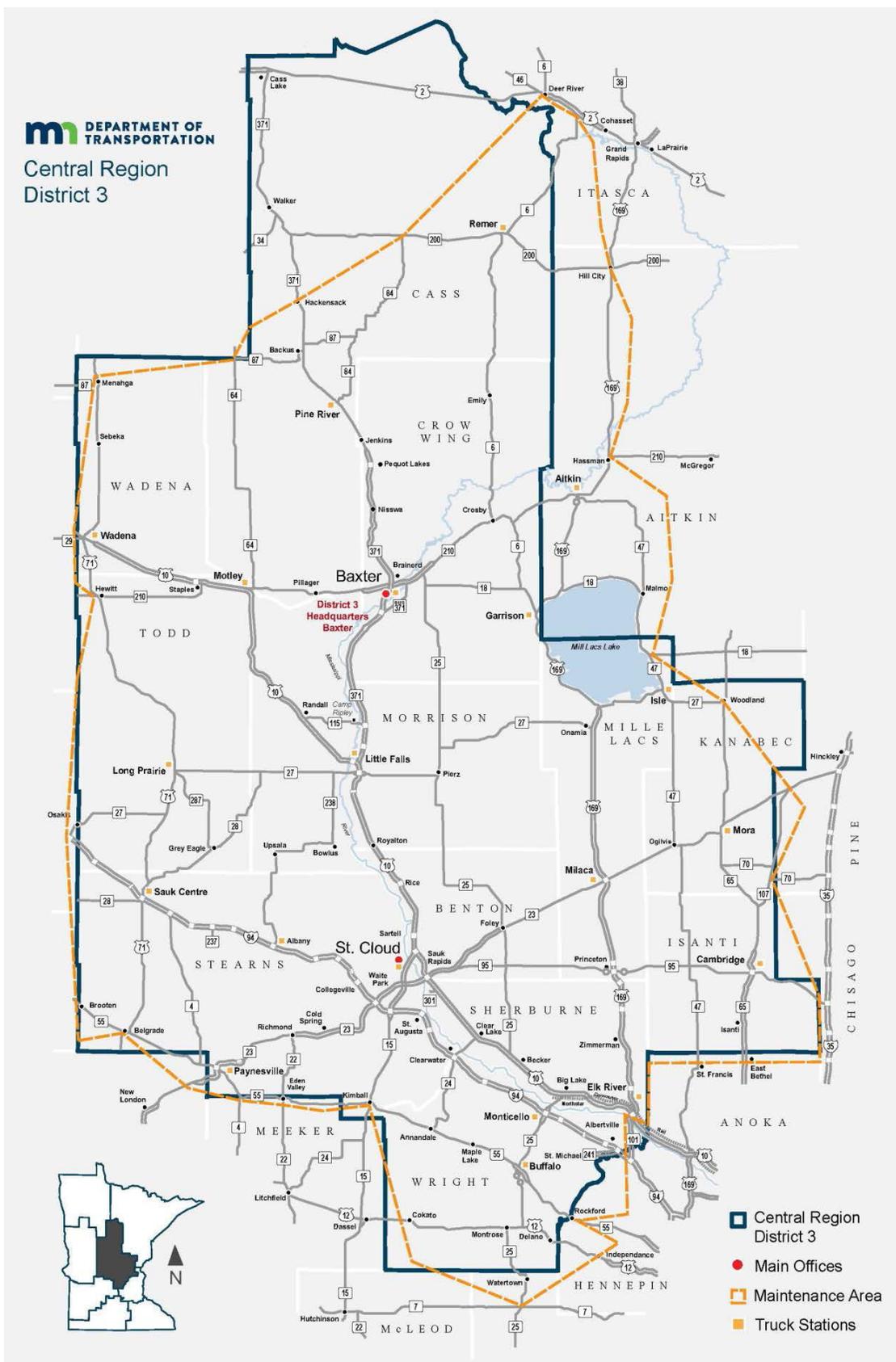
Geographically, District 3 covers 10,209 square miles in the Central region of Minnesota (12.8% of the state's total area) and has a population density of 67 people per square mile.³ **Figure 1** shows the 13 counties served by District 3. It spans from Cass County in the north to Wright, Sherburne, and Stearns Counties in the south, bordering the Twin Cities metro area.⁴

² The other districts are District 8 (Southwest Minnesota) in 2013–2014, District 4 (West Central Minnesota) in 2014–2015, District 2 (Northwest Minnesota) in 2015–2016, District 1 (Northeast Minnesota) in 2016–2017, District 6 (Southeast Minnesota) in 2017–2018, and District 7 (South Central Minnesota) in 2018–2019. The Metro District is occurring in phases; phase one occurred in 2018–2019. Refer to the MnDOT district map at mndot.gov/information/districts.html.

³ 2020 MnDOT District 3 fact sheet: mndot.gov/d3/about.html.

⁴ District 3 includes Aitkin, Benton, Cass, Crow Wing, Isanti, Kanabec, Mille Lacs, Morrison, Sherburne, Stearns, Todd, Wadena, and Wright Counties. For more information, refer to mndot.gov/d3/about.html.

Figure 1. County map of MnDOT District 3



District 3 is one of the fastest-growing regions in Greater Minnesota and has nearly 13% of Minnesota’s population living in the region — ranking second to the Twin Cities Metro area.⁵ The district is home to 19 cities that each have a population of more than 5,000 people⁶, including Baxter (District 3 headquarters) and St. Cloud, where a second MnDOT office is located. The largest city in the district, St. Cloud, is the 10th largest city in the state and has a population of more than 68,000 people.⁷ St. Cloud is part of the St. Cloud Metropolitan Statistical Area (MSA), which is composed of Benton and Stearns Counties, and has a combined estimated population of nearly 200,000.⁸

The St. Cloud Area Planning Organization (APO) is the metropolitan planning organization that serves the St. Cloud metropolitan area, including the cities of St. Augusta, St. Cloud, St. Joseph, Sartell, Sauk Rapids, and Waite Park. The St. Cloud APO is responsible for the development and coordination of transportation plans for the area. Significant highways within the MSA include Minnesota Highways 15 and 23, US Highway 10, and Interstate 94, which provide important interstate and intrastate connections for freight and those traveling through Minnesota.

MnDOT District 3 staff plans, designs, constructs, and maintains more than 4,000 lane miles of state and federal trunk highway and 426 bridges (more than 10 feet) within the district.⁹ Staff also manage the financial aid and assistance provided to local governments that qualify for state and federal transportation funding and oversees transit, trail, and rail coordination systems.

Methodology

Interview Purpose

The primary purposes of the business interviews, conducted between October 2019 and March 2020, were to:

- Gather actionable information about businesses’ specific experiences, priorities, and challenges regarding the transportation system, with a focus on MnDOT’s District 3.
- Build relationships and communication channels among MnDOT staff in District 3 with its manufacturing businesses, freight carriers, and area economic development professionals.
- Disseminate construction project highlights and direct interviewees to District 3 staff contacts for several major construction projects that were either underway at the time of the interviews or scheduled for later, in the 2020–2022 construction seasons.

⁵ Data from the 2017 US census five-year estimates.

⁶ District 3 cities with more than 5,000 people include Albertville, Baxter, Big Lake, Brainerd, Buffalo, Cambridge, Delano, Elk River, Isanti, Little Falls, Monticello, Otsego, St. Cloud, St. Joseph, St. Michael, Sartell, Sauk Rapids, Waite Park, and Zimmerman.

⁷ City of St. Cloud population estimate data from the 2018 American Community Survey one-year estimates, accessed May 2020 at census.gov/quickfacts/fact/table/stcloudcityminnesota/PST120219.

⁸ Data for Benton and Stearns Counties from the Minnesota Demographic Center 2018 estimates. Accessed May 2020 at mn.gov/admin/demography/data-by-topic/population-data/our-estimates/.

⁹ 2020 MnDOT District 3 fact sheet: mndot.gov/d3/about.html.

Project Design

The District 3 Manufacturers’ Perspectives study methodology was closely modeled after methodologies used for the same studies in Greater Minnesota Districts 1, 2, 4, 6, 7, and 8, as well as for the Metro District. Like past studies, the District 3 study included collaborative, cross-disciplinary interview teams and semi-structured, face-to-face interviews with businesses identified by a regional industry cluster analysis. Interview questions focused primarily on issues that could be addressed in the next few years with existing or fewer additional resources. A list of businesses interviewed for this project can be found in **Appendix A** (page 84).¹⁰

Due to the very high volume of manufacturers in District 3,¹¹ MnDOT designed this project as a hybrid of the methodologies from its Greater Minnesota districts’ Manufacturers’ Perspectives studies and Metro District’s Urban Freight Perspectives (Phase 1) study. Interviews with manufacturers in the north half of District 3 were modeled after those done in past Manufacturers’ Perspectives studies in Greater Minnesota. Interviews with the manufacturers in the south half of District 3 and with all the carriers were structured more similar to those done in the Metro District, to include scheduled discussion time to address congestion and provide overviews of current and upcoming major I-94 construction projects that would significantly impact their freight movement.

A team composed of MnDOT staff and external partners managed and coordinated the project, analyzed data, and wrote the report. External partners also assembled the list of businesses to contact and MnDOT invited economic development organizations (EDOs) as partners. Interviewers included MnDOT District 3 staff, MnDOT Central Office staff, and EDO representatives. In total, 97 individuals (73 MnDOT staff and 24 EDOs) participated in planning and interviewing. All MnDOT staff, EDOs and other project partners who participated in the study are listed in Appendix B (page 86).

Interview Teams

All interview teams included at least two people¹² who visited the businesses in person, with one asking questions from interview guides¹³ and the other documenting the interview.

For the 44 interviews with manufacturers in the north half of District 3, an EDO typically led the interview while a MnDOT staff member documented the conversation.¹⁴ MnDOT, with assistance from project partners, recruited economic development professionals, and MnDOT selected and invited internal staff to participate. As with all of the interviews conducted in the seven other Greater Minnesota Manufacturers’ Perspectives studies, the combination of MnDOT and economic development staff ensured that MnDOT received the

¹⁰ Participants in this study are referred to as *businesses* and include manufacturers and carriers.

¹¹ Number of Primary NAICS Manufacturers with 10+ employees: District 3 has nearly half as many as the Metro District and significantly more than other districts in Greater Minnesota, on average. The North American Industry Classification System (NAICS) is the standard used by federal statistical agencies for classifying business establishments to collect, analyze, and publish statistical data about the U.S. business economy. For more information, see “Introduction to NAICS” at [census.gov/eos/www/naics/](https://www.census.gov/eos/www/naics/), accessed April 13, 2020.

¹² For several of the interviews, the District 3 Engineer also participated.

¹³ See Appendix F on page 104.

¹⁴ In a few cases, MnDOT staff led the North D3 Manufacturer interviews.

businesses' feedback firsthand, within both transportation and economic contexts. For the 82 interviews with carriers and manufacturers in the south half of District 3, primarily MnDOT staff both led and documented the conversation¹⁵, the same as was done for this study conducted in MnDOT's Metro District. This format provided MnDOT dedicated discussion time to address congestion and provide overviews of current and upcoming major I-94 construction projects that would significantly impact freight mobility in the area.

Business Selection Method

The University of Minnesota Humphrey School's State and Local Policy Program (SLPP) used Regional Industry Cluster Analysis to explore important segments of the District 3 economy and identify key industries and manufacturers in District 3.¹⁶ SLPP then further used this cluster analysis to identify manufacturing firms for project interviews about transportation issues in the district.

The term *cluster* refers to firms within similar industries and their interactions with one another, such as segments of a supply chain. Clusters are geographically concentrated groups of interconnected companies, universities, and related institutions that arise out of linkages or externalities across industries, and in this way they contribute significantly to economic growth and development in a region.

Businesses in a cluster are linked together by business-to-business sales that contribute to the production of the same or similar products or services. These networks of connected businesses often use similar technologies, employ workers with similar skill sets, and serve common markets.¹⁷ MnDOT is intent on understanding these relationships to inform smarter policy and investment to support regional economies.

Many clusters are complementary in nature, providing services or specialized supplies to firms in other industries. This study focused on a wide array of industry clusters within District 3, each playing a significant role within the regional economy and beyond.

Clusters can be grouped into *traded* and *local* clusters. A local cluster is composed of industries that primarily sell within a region and are present in most (if not all) geographic areas.¹⁸ A traded cluster is composed of industries concentrated in a geographic region that sell to customers in other regions and nations.

Traded clusters are significant drivers of growing economies because they draw revenue *into* the regional economy and stimulate growth, while local clusters circulate money *within* a region.¹⁹ Researchers use a

¹⁵ On a couple occasions, a project consultant partner replaced one of the two MnDOT staff on these interview teams. For many of the interviews with the manufacturers in South D3, a representative from area economic development organizations (EDOs) was invited to attend and joined the MnDOT team during the interviews.

¹⁶ This process / U.S. Cluster Mapping tool was developed by Professor Michael Porter at the Institute for Strategy and Competitiveness, Harvard Business School.

¹⁷ Oregon Business Plan, "Industry Clusters FAQ," accessed April 13, 2020, oregonbusinessplan.org/industry-clusters/industry-clusters-faq/.

¹⁸ U.S. Cluster Mapping, "Glossary of Terms," accessed April 13, 2020, clustermapping.us/content/glossary-terms.

¹⁹ U.S. Cluster Mapping, "Clusters 101," accessed April 13, 2020, clustermapping.us/content/clusters-101.

traded cluster analysis to assess the strength of particular industry clusters in a region compared with the nation as a whole.

When it comes to economic development and growth, a region's economic competitiveness depends heavily on the competitiveness of its most prominent industries.²⁰ Each industry cluster is defined by a series of sub-clusters.²¹ SLPP used a cluster mapping method to identify industries that form the economic base of communities in District 3, both in direct employment and in their ability to spur additional economic activity.

This project focused on manufacturers for several reasons:

- Manufacturers usually represent traded clusters, which bring dollars into the region from other states and countries.
- Manufacturing provides relatively stable and well-paying jobs, which maximize returns on state investments and support healthy communities.
- Manufacturers often have distinct needs regarding the transportation system.

Economic development researchers use calculations called *location quotients* to help assess a region's economic competitiveness. **Figure 2** illustrates the largest traded clusters in District 3 based on location quotients. Location quotients compare the employment in a particular District 3 industry with the employment in that industry nationally. Clusters with location quotients greater than one (the horizontal axis) are more concentrated in District 3 than in the nation as a whole.²² Clusters with a change in location quotient greater than zero (the vertical axis) are growing within the district. This study focused on traded manufacturing clusters with the highest location quotients and employment levels, such as the clusters for Construction Products and Services and Wood Products.

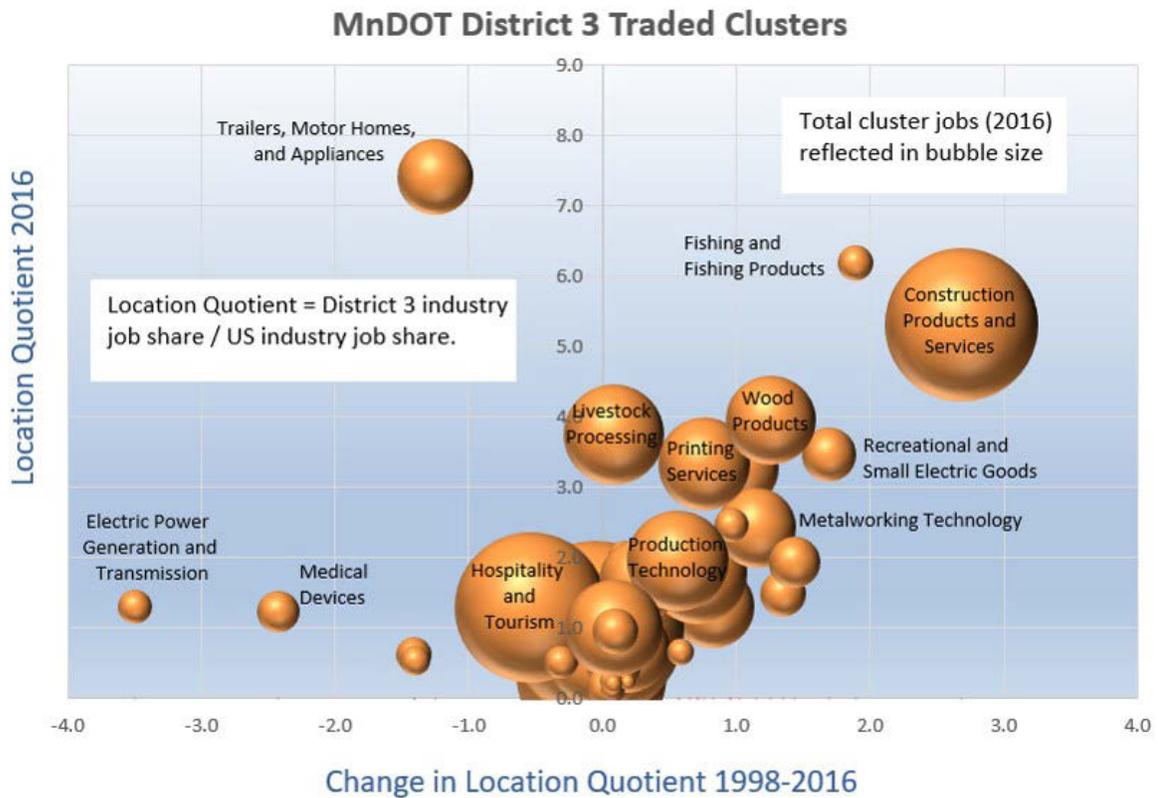
Figure 2 shows traded clusters by employment and specialization. The arrows in the figure are included to illustrate examples noted here in this paragraph. For example, the Construction Products and Services cluster, noted by the thin blue arrow and composed of firms engaged in construction materials and components that include those made of sand, stone (e.g., granite), gravel, asphalt, cement, concrete, and other earthen substances, has a location quotient of over five. This indicates that this cluster employs, on average, over five times as many people in District 3 than would be expected based on industry employment in the United States as a whole. As another example, the location of the Medical Devices bubble, noted by the thick green arrow, shows that this cluster had a location quotient over one but experienced a decline in employment share from 1998 to 2016 relative to other parts of the country. The size of the bubble indicates the number of jobs. For example, **Figure 2** shows that more workers in the District 3 area are employed in Construction Products and Services than in Wood Products.

²⁰ Stuart Rosenfeld, "A Governor's Guide to Cluster-Based Economic Development," National Governors Association, 2002, accessed April 13, 2020, [researchgate.net/publication/278008907AGovernor'sGuidetoCluster-BasedEconomicDevelopment](https://www.researchgate.net/publication/278008907AGovernor'sGuidetoCluster-BasedEconomicDevelopment).

²¹ Subclusters are represented by six-digit NAICS codes.

²² Appendix C on page 90 includes MnDOT District 3 location quotients for traded clusters by county. Appendix D on page 94 shows MnDOT District 3 employment by traded cluster and county.

Figure 2. MnDOT District 3 traded clusters by employment and specialization (location quotient), 1998–2016²³



(Note: Arrows in **Figure 2** are for illustrative purposes only and are referenced in the paragraph above. The thin blue arrow highlights a cluster with a significantly higher and increasing employment share in District 3 relative to the nation, and the thick green arrow highlights a cluster that experienced a decline in employment share in the district relative to the nation.)

Data Collection and Analysis

The 126 interviews conducted were guided by questionnaires that allowed for semi-structured interviews, meaning interviewers followed the guides but participants could pursue other relevant topics as they arose.

MnDOT developed two interview guides for manufacturers (for both the North and South regions of District 3) and another guide for all carriers interviewed, based on interview guides from previous MnDOT studies, and input from District 3 staff and consultants from SRF Consulting Group (SRF). The South D3 Manufacturer and Carrier guides aligned in that they, unlike the North D3 Manufacturers’ version, included questions to address congestion and discussion points to provide overviews of current and upcoming major I-94 construction projects that would significantly impact freight mobility in the area.

²³ Cluster map for District 3 developed by SLPP with data from the U.S. Cluster Mapping website at clustermapping.us, accessed April 13, 2020.

Consultants from Management Analysis and Development (MAD) aggregated and coded interview responses, analyzed results, and developed findings. MAD consultants provided actionable, location-specific business feedback to MnDOT; District 3 staff will further study the detailed feedback and action items to identify potential system improvements. MnDOT will share relevant information with city and county engineers and other MnDOT districts.

Results

Response Rates

MnDOT contacted 465 businesses to participate in an interview. Of the 265 businesses that were reached and invited to interview, 126 businesses accepted (27% of the sample and 49% of the businesses reached). **Table 1** shows the number of businesses interviewed, the number that rejected the invitation, and the number that did not respond to the interview invitation.²⁴

Table 1. Recruitment results

Result	Number or percentage of businesses
Businesses contacted for an interview	465
Businesses reached and invited to interview	265
Accepted invitation and were interviewed	126
Rejected invitation to interview or accepted and then did not interview	139
Did not respond to invitation to interview	200
Acceptance rate of businesses contacted for an interview	27%
Acceptance rate of businesses reached and invited to interview	48%

Types of Businesses Interviewed

Most businesses interviewed (104) were manufacturers, as seen in **Table 2**.

²⁴ Businesses that “did not respond to invitation to interview” includes businesses that did not answer or return phone calls and businesses reached who initially did not decline an interview, but subsequent contact with the business did not result in an interview.

Table 2. Number of businesses interviewed by industry

Industry	Businesses interviewed
Manufacturer	104
Carrier	22
Total	126

Industry Clusters

Of the 126 interviews conducted in District 3, 106 were with firms in 22 traded industry clusters, and the other 20 were with firms in six local industry clusters. Of the 104 manufacturers interviewed, 96 are classified as Manufacturing by their primary NAICS code (31–33) and eight firms have other related primary NAICS codes.

The other 22 firms interviewed are carriers that service these manufacturers and / or other firms within MnDOT District 3. Clusters differ from industry classifications, such as those listed in **Table 2**, because clusters include interconnected companies across discrete industries based on the interactions of the companies with one another as well as their related end products or services. Therefore, the businesses interviewed fit into the industries listed in **Table 2** but reflect 28 different clusters, listed in **Figure 3**.

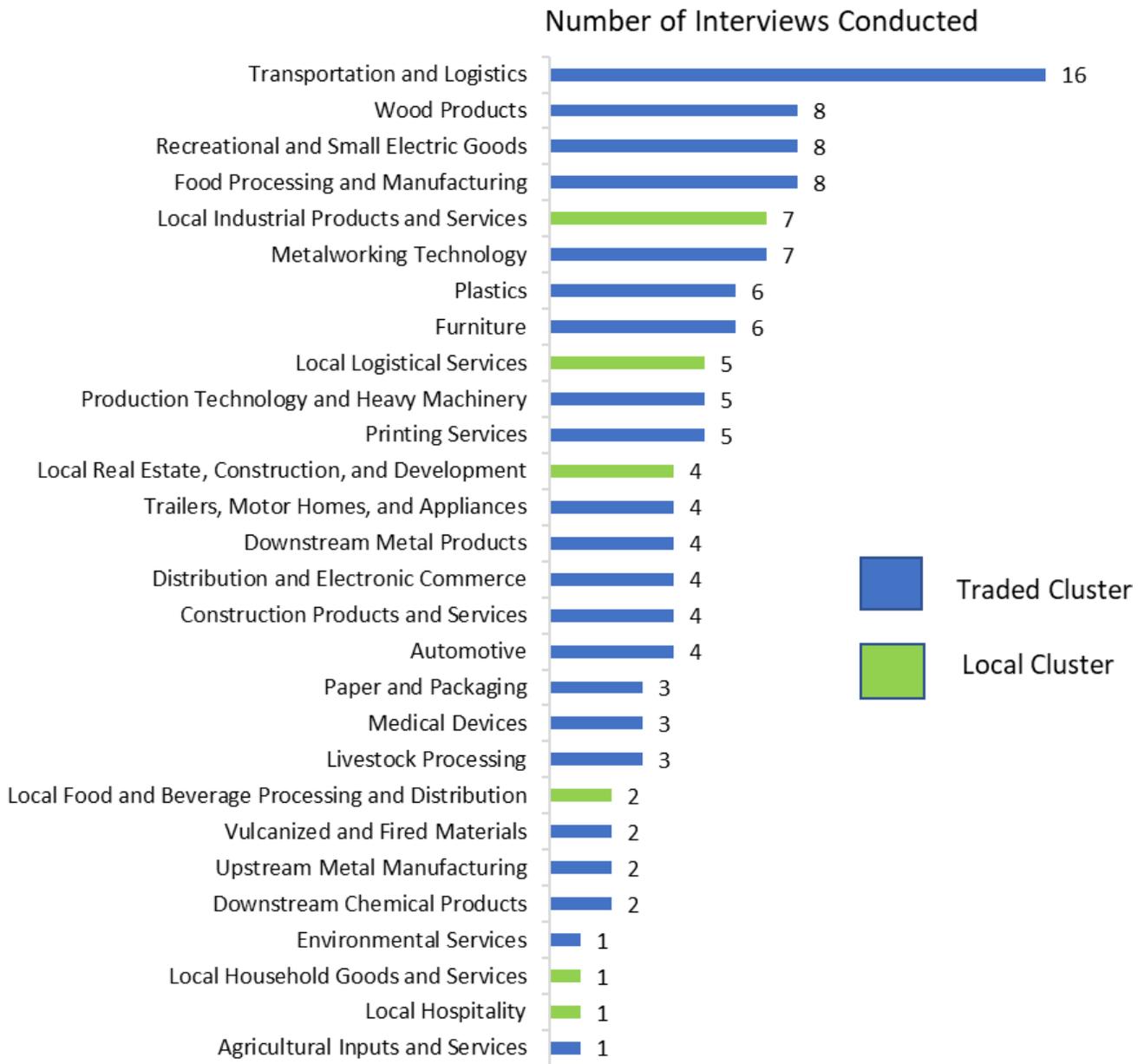
Industry Clusters Interviewed

Figure 3 on the next page illustrates all the traded and local clusters represented by the business interviews. Listed below, in order, are 15 of those clusters with the largest location quotients in 2016 – that is, a quotient above 1.0 and thus with a disproportionately concentrated presence in District 3 compared with the nation as a whole. These 15 traded clusters accounted for 73 of the interviews:²⁵

1. Trailers, Motor Homes, and Appliances (7.42 location quotient) — 4 interviews
2. Construction Products and Services (5.31) — 4 interviews
3. Wood Products (3.96) — 8 interviews
4. Livestock Processing (3.75) — 3 interviews
5. Recreational and Small Electric Goods (3.47) — 8 interviews
6. Printing Services (3.33) — 5 interviews
7. Furniture (3.28) — 6 interviews
8. Metalworking Technology (2.43) — 7 interviews
9. Production Technology and Heavy Machinery (1.96) — 5 interviews
10. Vulcanized and Fired Materials (1.94) — 2 interviews
11. Agricultural Inputs and Services (1.82) — 1 interview
12. Food Processing and Manufacturing (1.77) — 8 interviews
13. Plastics (1.70) — 6 interviews
14. Downstream Metal Products (1.55) — 4 interviews
15. Downstream Chemical Products (1.49) — 2 interviews

²⁵ See Appendix C on page 90 for industry cluster location quotients by county for District 3.

Figure 3. Traded and local clusters represented in District 3 interviews



The businesses interviewed were from industry clusters that accounted for a significant number of jobs in District 3. The following 12 traded clusters each have more than 1,500 employees within the district’s 13 counties. The project team conducted 64 interviews of businesses in these clusters:²⁶

²⁶ See Appendix D on page 94 for industry cluster employment by county for District 3.

1. Distribution and Electronic Commerce (9,901 jobs) — 4 interviews
2. Construction Products and Services (7,591)— 4 interviews
3. Livestock Processing (3,260) — 3 interviews
4. Production Technology and Heavy Machinery (3,220) — 5 interviews
5. Food Processing and Manufacturing (3,184) — 8 interviews
6. Printing Services (2,705) — 5 interviews
7. Wood Products (2,508) — 8 interviews
8. Automotive (2,175) — 4 interviews
9. Plastics (2,053) — 6 interviews
10. Metalworking Technology (2,011) — 7 interviews
11. Furniture (1,939) — 6 interviews
12. Trailers, Motor Homes, and Appliances (1,794) — 4 interviews

The eight traded clusters with the greatest growth in location quotient from 1998 to 2016 are Construction Products and Services (268% increase), Fishing and Fishing Products (189% increase), Recreational and Small Electric Goods (169% increase), Vulcanized and Fired Materials (143% increase), Downstream Chemical Products (135% increase), Wood Products (126% increase), Metalworking Technology (115% increase), and Furniture (102% increase). MnDOT was able to conduct interviews with businesses in seven of these eight clusters. Included were eight interviews each with Recreational and Small Electric Goods businesses and Wood Products businesses, seven interviews with Metalworking Technology businesses, six interviews with Furniture businesses, four interviews with Construction Products and Services businesses, and two interviews each with Vulcanized and Fired Materials businesses and Downstream Chemical Products businesses. No interviews were conducted with Fishing and Fishing Products businesses.

The largest number of manufacturing firm interviews were from the following traded clusters: Food Processing and Manufacturing (8), Recreational and Small Electric Goods (8), Wood Products (8), Metalworking Technology (7), Plastics (6), and Furniture (6). Of the 16 firms interviewed in the Transportation and Logistics cluster, most were carriers identified as interview targets by the District 3 manufacturers who participated in the study. There were also five carriers interviewed from the Local Logistical Services cluster. **Table 3** provides descriptions²⁷ and examples of traded clusters that were most prominent in District 3 interviews.²⁸

Table 3. Descriptions of the most common traded clusters represented in District 3 interviews

Cluster name	Description	Business example
Transportation and Logistics	This cluster contains all air, rail, bus, and freight transportation services. It also includes related operation services and support activities such as inspections, maintenance, repairs, security, and loading and unloading.	Gold Country Trucking, LLC
Food Processing and Manufacturing	This cluster includes firms involved in the processing of raw food materials and the manufacturing of downstream food products for end users. This includes millers and refineries of rice, flour, corn, sugar, and oilseeds. These upstream products contribute in part to producing specialty foods, animal foods, baked	Canoe Wild Rice / Mille Lacs Wild Rice

²⁷ Definitions of industry clusters are taken from the U.S. Cluster Mapping website, “Traded Clusters Appendix.” clustermapping.us/sites/default/files/files/page/Traded%20Clusters%20Appendix.pdf.

²⁸ Clusters defined in this section are traded clusters that were represented by three or more businesses interviewed in District 3. A full list of industry clusters interviewed for the District 3 study and their descriptions can be found in Appendix E on page 98.

Cluster name	Description	Business example
	goods, candies, teas, coffees, beers, wines, other beverages, meats, packaged fruits and vegetables, and processed dairy products.	
Recreational and Small Electric Goods	This cluster contains establishments that manufacture end use products for recreational and decorative purposes. These products include games, toys, bicycles, motorcycles, musical instruments, sporting goods, art supplies, office supplies, shades, and home accessories. This cluster also incorporates firms that produce small, simple electric goods such as hairdryers, fans, and office machinery.	Electro Industries Inc.
Wood Products	The establishments in this cluster are primarily engaged in making upstream wood materials and manufacturing non-furniture wood products. Upstream establishments include sawmills, plywood and hardwood manufacturers, cut stock manufacturers, and wood preservation services. Downstream establishments produce windows, doors, flooring, wood containers, prefabricated wood buildings, and related products.	Bayer Interior Woods
Metalworking and Technology	The establishments in this cluster manufacture machine tools and process metal for use in metalworking. The cluster also contains the downstream manufacture of metal fasteners and hand tools.	Metal Coatings & Manufacturing Company
Plastics	Establishments in this cluster manufacture plastic materials, components, and products. The plastics and foams are manufactured for packaging, pipes, floor coverings, and related plastic products. The cluster also includes the upstream manufacturing of plastic materials and resins, as well as the industrial machines used to manufacture plastics.	Plastic Products Co. Inc.
Furniture	This cluster contains establishments that manufacture furniture, cabinets, and shelving for residential homes and offices. It also includes establishments that produce manufactured homes. The products in this cluster can be made of wood, metal, plastic, and textiles.	Dura Supreme Cabinetry

Geographic Distribution of Businesses

Figure 4 and Figure 5 show the locations of manufacturers and carriers interviewed in District 3, respectively. The size of each circle on the map represents the number of businesses interviewed in that city. Businesses were widely dispersed throughout the district. Some organizations had headquarters located in the Twin Cities Metro area, so were interviewed there.

Figure 4. Locations of District 3 manufacturers interviewed

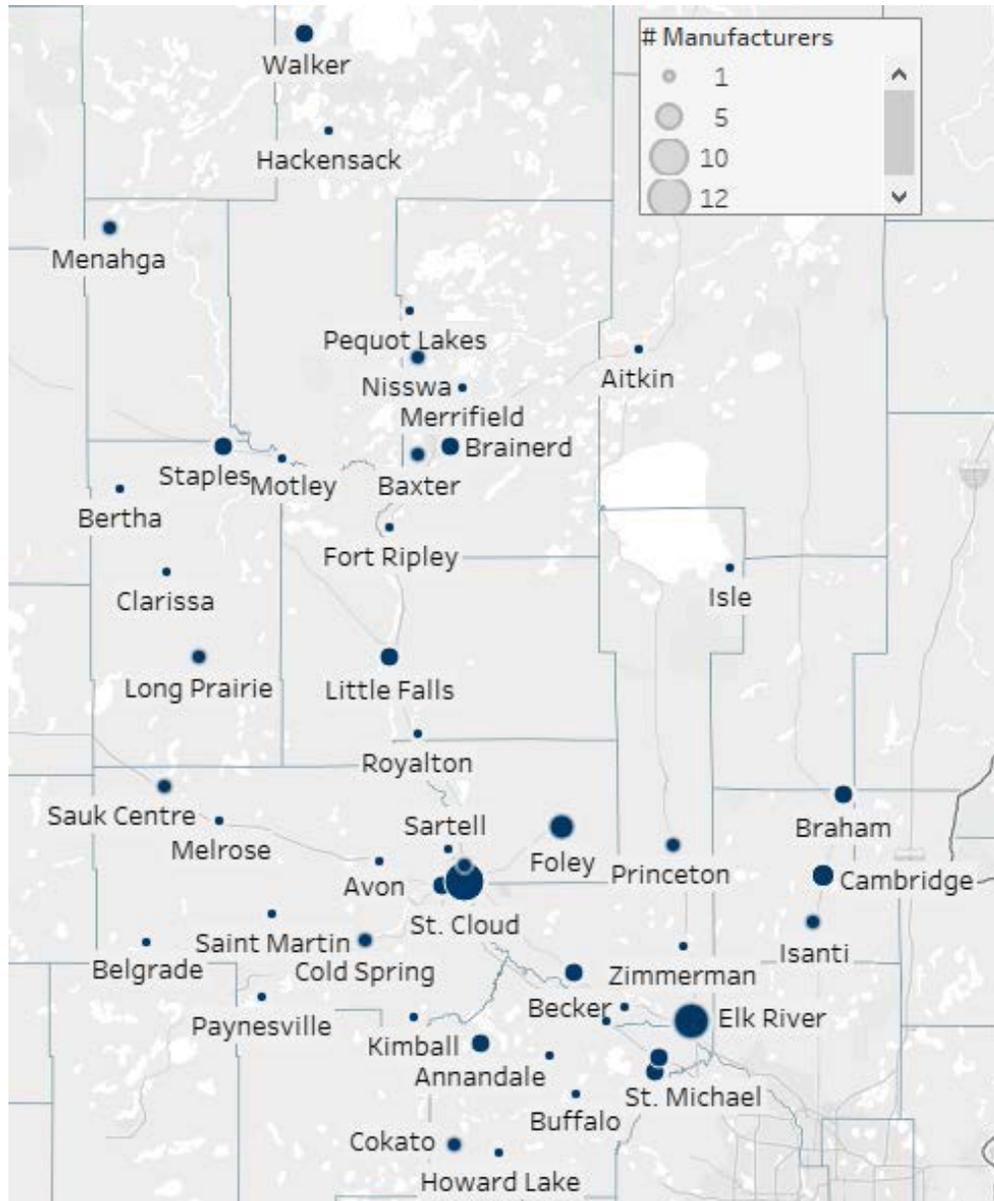


Figure 5. Locations of District 3 carriers interviewed

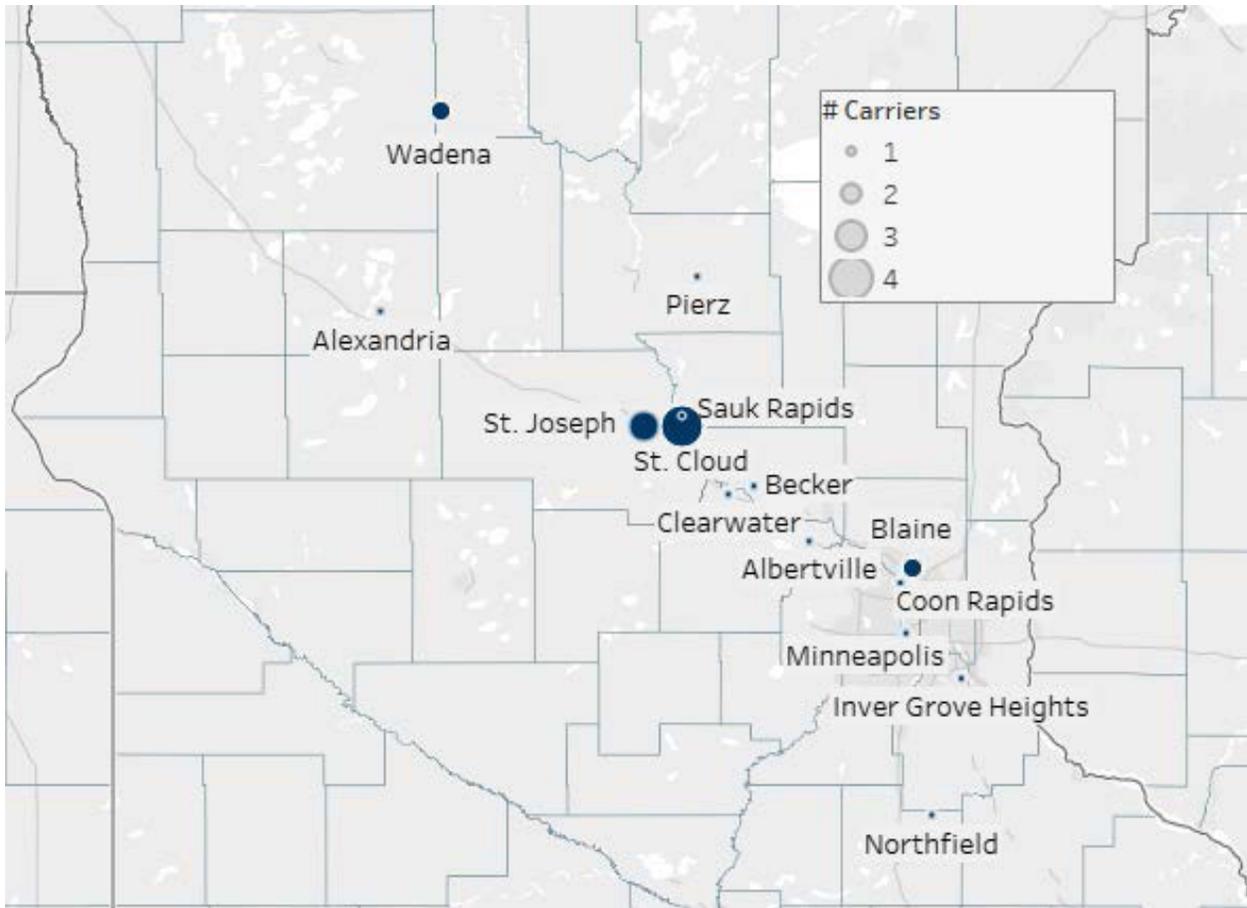


Photo 1. The 22 carriers interviewed move freight in, out and through MnDOT District 3

Number of Employees

Employment data was collected during the 126 business interviews. Those 126 businesses collectively employ more than 10,300 people. **Figure 6** shows the distribution of businesses by number of employees. Over two-thirds of the businesses interviewed have fewer than 100 employees, and only four businesses have more than 500 employees. The average number of employees was 90, while the largest proportion of businesses had between 20 and 49 employees.

Figure 6. Number of employees at interviewed businesses

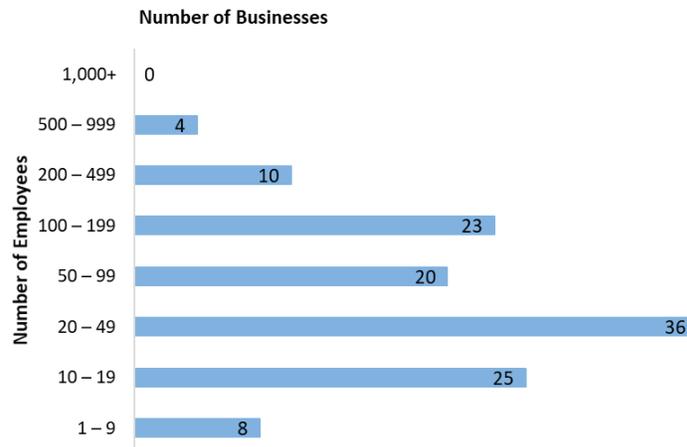


Photo 2. Employee commutes can be challenging on highways with busy signalized intersections

Modes of Transportation Used

All (104) manufacturers said they use trucks either to receive supplies or ship products, with less than half of them (43 businesses / 41%) reporting they also use at least one other mode of transportation (rail, air, or

water).^{29, 30} **Figure 7** shows the number of manufacturers that said they use each transportation mode. Of the 104 manufacturers,³¹ 94 (90%) said trucks are the mode of transportation most critical to their business.

Figure 7. Modes of transportation used and most critical to manufacturers³²

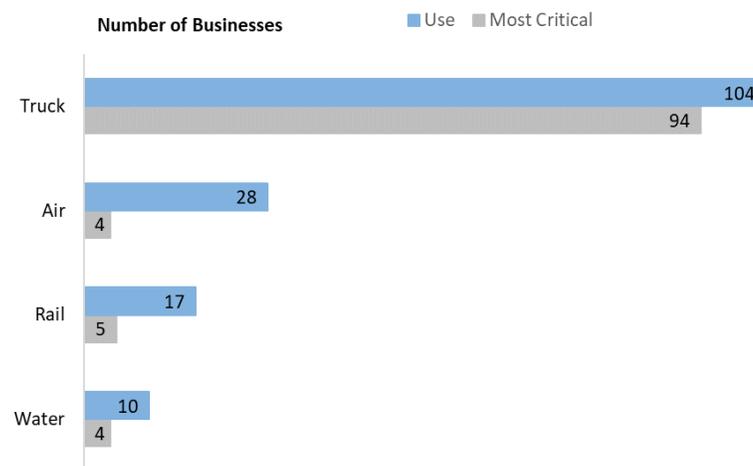


Photo 3. All manufacturers interviewed said they use trucks either to receive supplies or ship products

Sixty-two of the 104 manufacturers interviewed (60%) own their truck(s). Fleets range in size from one truck to 120 trucks, and manufacturers average seven trucks in their fleet. Ten manufacturers ship all their own products, and 52 ship some of their own products and contract out for the rest. Thirty-nine manufacturers contract with commercial carriers for all their shipping.

²⁹ Manufacturing businesses were asked to identify both inbound and outbound shipping methods, whereas carriers were asked if they used any non-truck modes and to identify the types of transportation services they provide to meet their customers’ transportation needs (e.g., outbound shipping).

³⁰ Data not available for all businesses.

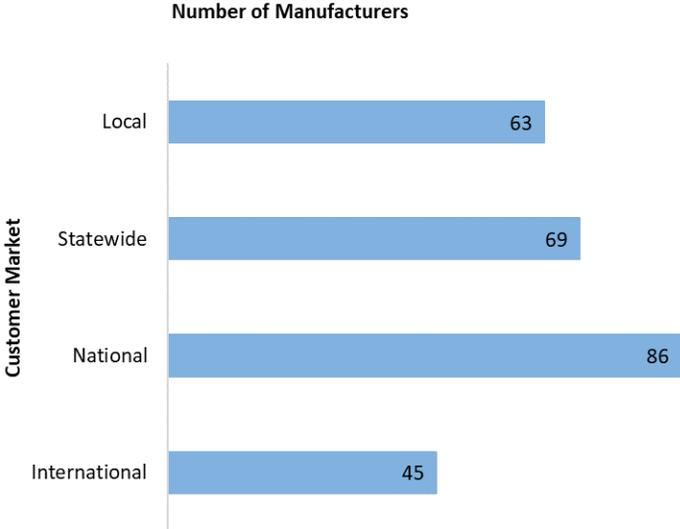
³¹ Carriers were not asked about the most critical mode of transportation.

³² Not every business answered all questions. Some businesses use more than one transportation mode.

Customer Markets

Many manufacturers interviewed for this study produce and ship goods not only to local markets but also throughout the United States and around the world. **Figure 8** illustrates the geographic reach of District 3 businesses that were interviewed.

Figure 8. Customer markets of District 3 manufacturers



Countries that District 3 manufacturers ship to include, but are not limited to: Australia, Brazil, Canada, China, Costa Rica, France, Germany, Greenland, Hungary, Iceland, India, Ireland, Italy, Japan, Mexico, Philippines, Russia, Saudi Arabia, South Africa, and Switzerland. In addition, businesses provided general responses, such as “Europe” or “South America.”

Detailed Transportation Findings

Construction

MnDOT has initiated several construction projects that are underway to improve the transportation system in District 3. In an effort to understand how current construction projects affect businesses' truck transportation, MnDOT asked businesses³³ for their feedback on the following ongoing construction projects:³⁴

- **Interstate 94 — Maple Grove to Rogers:** Multi-year effort that involves bridges, lanes, ramps, and roads, covering a period from August 2019 through the fall of 2021.
- **Interstate 94 — St. Michael to Albertville:** Multi-year (2019 — 2021) project that consists of reconstructing six miles of freeway between Minnesota Highway 241 in St. Michael to Wright County Road 19 in Albertville.
- **Interstate 94 — Monticello to Clearwater:** Consists of completing 14 miles of freeway between Minnesota Highway 25 in Monticello to Minnesota Highway 24 in Clearwater. Project work began in 2019 and is scheduled to be completed in 2022.
- **Interstate 94 — Albertville to Monticello:** Once the above listed projects are completed, a four-lane section on Interstate 94 between Albertville and Monticello will eventually need to be constructed, when additional funding is available.

When asked, nearly all businesses provided feedback on construction, including Interstate 94 construction projects, their preferred timing for construction project work, and impact of construction on business operations.

Nearly one-third of businesses that discussed construction mentioned current transportation projects, with several expressing enthusiasm for the planned Interstate 94 improvements, noting that it will help traffic flow more smoothly and improve congestion in the area.

"We are looking forward to the Highway 23 improvement from Paynesville to Richmond and the [Interstate] 94 widening."

³³ Only manufacturers located in the south half of the district and all carriers were asked about this.

³⁴ I-94 Maple Grove to Clearwater projects: mndot.gov/i94-mg-clearwater/index.html.



Photo 4. Interstate 94 from Monticello to Clearwater: Crews widen shoulders and medians to prepare for traffic switches for 2021 construction

A few businesses said construction projects will affect them negatively because it adds to their travel time and makes it difficult to ship more efficiently. A few businesses also discussed previous construction projects that MnDOT has completed, highlighting that construction can be difficult for their schedules due to congestion and slow traffic.

“It can be very hard — for shipping, it is going to be bad this next summer [2020]! The quality of product and service are threatened with additional time delays; it takes longer and you are using more fuel.”

When asked, businesses indicated that nighttime and weekend construction reduces shipping delays for their businesses. Among businesses that discussed construction, nearly half said they prefer nighttime construction and about one-third said they prefer weekend construction, as it reduces daytime and weekday congestion and has less of an impact on their daytime shipping needs and personal commutes.

“Nighttime and weekend construction would improve or reduce shipping delays. Specifically, weekend construction since our trucks are always back by the weekend. This would help reduce trucks sitting in congestion and delays due to construction during the weekdays.”



Photo 5. Night work in city of Aitkin on US Highway 169 and Minnesota Highway 210

A few businesses, however, indicated that night and weekend construction would affect their shipping needs negatively because that is when they are on the road and it would slow them down. A few businesses said that shifting construction times would not affect their shipping and operations.

Over half of the businesses that discussed construction provided feedback on the impact of construction on their shipping needs and employee commute. While the majority of businesses said construction has minimal impact with proper planning, several businesses noted that construction creates congestion and traffic incidents, causing shipping delays and challenges with moving their products efficiently. Several businesses also discussed safety or cost concerns; for example, having drivers on the road longer, or the cost of hiring additional drivers due to longer shipping timelines as a result of congestion and delays. As described elsewhere in this report, with drive time restrictions due to truck driver Hours of Service regulations, businesses must maximize the time drivers spend in traffic.

“For outbound [shipping], the construction in the Twin Cities or on the interstate [I-94] causes delays. Especially with the 8-hour restriction drive time for truckers.”



Photo 6. Interstate 94 construction significantly impacts freight shipping to and from District 3

While most businesses that discussed the impact of construction on employee commute said it is not a barrier because most employees live nearby, a few businesses said it occasionally causes delays for employees.

Most often, businesses recommended more advance communication about upcoming projects and better signage to help them plan accordingly. A few businesses also suggested improving alternate route information to help them ship more efficiently.

“It is a big impact, but we understand construction is needed. We do work around it. Planning ahead helps and communication is always needed. Construction does slow us down if we can’t avoid it.”

Congestion

Given the impacts of congestion, interview teams asked carriers and manufacturers in the south region of District 3 questions about congestion, including its current daily impact on their business; expected impact in the future; how businesses adjust to compensate for congestion; and what information would help businesses plan for projected increases in congestion. Throughout these discussions, businesses noted highways and geographic areas of concern. Several businesses in the north region of District 3 also commented on congestion within the district, though they were not directly asked about it. Overall, many of the businesses discussed congestion.

Areas of Concern

Many businesses that discussed congestion shared both general and specific congestion problem areas. Several businesses said congestion is their biggest transportation challenge or concern, noting heavy traffic on US Highway 10 during rush hour, heavy traffic on Fridays, and seasonal summer traffic as problems. Several businesses also described congestion as a weakness of the area. In addition to US Highway 10, businesses

mentioned US Highway 71 as problematic, particularly in the months with vacation traffic. Most commonly, businesses cited Interstate 94 as being heavily congested, particularly near Rogers.

“Coming from the Twin Cities, traffic is never-ending. Here to Maple Grove is almost like a weeklong rush hour.”

The city of St. Cloud and the Twin Cities Metro were the geographic areas most commonly mentioned as having congestion challenges. Businesses said congestion in the Twin Cities Metro is particularly difficult, given the restrictions on driving time for truck drivers. That is, time spent sitting in traffic is counted against drive time, which may affect the distance a driver is able to travel in one day. One business felt that drive time restrictions have increased the number of trucks on roads in order to meet shipping needs, further contributing to congestion. Several businesses also said railroad crossings contribute to congestion, such as the crossings on Minnesota Highway 95 in Cambridge, in Baxter south of the intersection of Minnesota Highways 210 and 371, and at the intersection of US Highway 10 and Minnesota Highway 24 in Clearwater.



Photo 7. Passenger vehicles and trucks on a congested road

More specifically, businesses commonly noted congestion concerns on the following MnDOT routes:

- **Minnesota Highway 23:** From Paynesville to Richmond; in Foreston; and in Cold Spring.
- **Minnesota Highway 24:** Between Clearwater and US Highway 10; in Monticello; and at the intersection of 179th Street.
- **Minnesota Highway 55:** In Annandale and at the US Highway 52 interchange.
- **Minnesota Highway 95:** In Elk River and Cambridge.
- **Minnesota Highway 210:** From Motley to Baxter; from Motley to Brainerd; and from Brainerd to Aitkin.
- **Minnesota Highway 371:** From Jenkins to Walker; at the intersection of Veteran’s Drive; and near the intersection with Minnesota Highway 210; and Excelsior Road in Brainerd.
- **US Highway 10:** At the signalized intersection in Royalton; heading to northbound US Highway 169; at the interchange with Minnesota Highway 23; and in Wadena.
- **Interstate 94:** From Maple Grove to the Minnesota Highway 23 interchange.

Several businesses mentioned safety concerns related to congestion, noting that there seem to be more crashes in areas with high traffic volume.

Business Impacts

Just over three-quarters of the businesses that discussed congestion mentioned impacts on daily operations. One-quarter of these businesses, which were generally manufacturers, reported no or minimal impacts on daily operations. More than one-third of the businesses that discussed impacts, most of which own their trucks, discussed delays in shipping. These businesses mentioned a variety of delays, including missed delivery or loading times (which can cause congestion at loading docks), delay or cancellation of shipments, and delays in one shipment causing delays in shipments scheduled later in the day. A few businesses said delays are particularly challenging when delivering raw materials or perishable goods. A few businesses also said carriers and drivers may decline deliveries on Fridays in the summer or during storms (e.g., snow events, winter weather conditions) if they are originating from the Twin Cities Metro area. A few businesses discussed delays in employee commute related to congestion.

Several businesses, most of which own their trucks, discussed the impact of congestion on business costs, citing the cost of labor, fuel, and overtime. Businesses noted that longer trip times affect the bottom line; for example, one business said they may elect to put more drivers on the road if enough time is lost to congestion.

Several businesses discussed the impact of electronic logs (e-logs) and drive time restrictions as they relate to congestion. These businesses tended to be carriers or businesses that own their trucks. These businesses said drivers are not always able to make the trip home if they run out of hours due to congestion, that drivers can run out of hours while sitting in traffic, and that drivers may not make deliveries or pickups if they run out of time.

“Increased congestion means less hours [of] work (less miles traveled) and therefore losing time.”

Businesses were asked if the impact on daily operations differs (or not) if congestion stems from different causes, such as weather, traffic incidents, or road construction. Several businesses said the reason for delays does not matter.

Several businesses discussed delays due to weather. A few businesses said that delays due to weather have no impact on their daily operations. A few of them mentioned that their shipping and receiving can be flexible, or that they generally have a surplus of materials to work with during weather delays. A few businesses said weather-related delays are more acceptable to customers, though several businesses said these types of delays have a negative impact on their business. In addition to delaying shipments, according to businesses, weather-related delays may require rerouting of shipments, increase cost for expedited shipping, result in employee overtime when staff must stay until trucks arrive, and prevent truck drivers from entering the yard if gates are closed. One business said they may lose additional business if customers cannot access their location for shipping or receiving.



Photo 8. Weather-related congestion can cause costly shipping delays

Several businesses discussed congestion related to traffic incidents. A few businesses said this type of congestion does not greatly affect their daily operations. One business noted that they often learn about traffic incidents too late to change their plans. Another business said customers are less accepting of delays related to traffic incidents. In addition to late shipments, businesses said that drivers may not be able to access business locations if they have closed for the day, and that start times may need to change if there are known incidents (e.g., starting earlier or later in the day).

Several businesses discussed congestion due to road construction. About half of these businesses said congestion related to road construction does not have a significant impact on their daily operations, and one business said they would not change their shipping schedules due to construction. The other half of these businesses said delays due to road construction negatively affect their business, and a few said they start their shipping schedules earlier when they know about projects on their routes.

Businesses were also asked how congestion affects their future business plans. Three-quarters of the businesses that discussed impacts of congestion answered this question, with nearly two-thirds saying congestion does not affect their future business plans at all.

“[Congestion is] not affecting us at all. It is just part of trucking.”

A few businesses were unsure of the future impact and just over one-quarter said congestion does affect their plans for the future. Businesses that said congestion affects their future business plans noted it is a factor they consider when looking at new locations; one business said they will probably move their current business location due to congestion. Businesses also said congestion costs them money and affects their hours of service. A few businesses said they will be adjusting their business hours to avoid peak congestion times and one business said they would increase their delivery fees if they have to pay hourly drivers more when they spend time in traffic.

Businesses that reported they were unsure of the impact of congestion on their future plans and businesses that reported no foreseeable impact less often had their own trucks and were generally larger businesses compared with those that said they did anticipate an impact on their future business plans. This may suggest that businesses that have their own trucks and smaller businesses may be able to provide MnDOT with additional feedback on how congestion could affect businesses in the region.

Business Solutions

Half of the businesses that discussed congestion mentioned methods for mitigating its effects on their business. Several businesses reported using more than one method. Most commonly, businesses said they try to move their shipping schedules around to avoid rush hour peaks. This frequently included earlier start times and planning around congestion in the Twin Cities Metro. Often, businesses mentioned earlier start times due to congestion in the Twin Cities Metro. A few businesses said they plan around congestion on US Highway 10. A few businesses also said they may plan shipments on different days of the week (e.g., midweek) to avoid peak days (e.g., Fridays). A few other businesses said they may add a shipment to the next day’s load or try to load the shipment the night before. One business mentioned opening outside of business hours to allow for delivery drop-offs.

Several businesses reported avoiding certain routes and finding alternate routes. Most commonly, businesses said when there is heavy traffic they avoid US Highway 10 and Interstate 94, though St. Cloud was also generally mentioned as an area they avoid. One business said they stay away from country roads and stick to trunk highways when they anticipate congestion, while another business said they avoid trunk highway congestion and do the “back road boogie.”

A few businesses said they extend employee shifts and pay for overtime and one business said they increase their shipping prices. Only one business said they would actually increase their shipping window.

“[We] throw money at the problem. More planning, earlier start times, allow more overtime.”

A few businesses said they do not do anything to account for congestion. One business said it is just something to deal with in the industry, and another business said they cannot change their operations because they rely on overnight and next-day deliveries.

MnDOT Information for Planning

Businesses were asked what kind of information from MnDOT would help them plan for projected increases in congestion in the next 10 to 20 years. Just over one-third of the businesses that discussed congestion answered this question. More than half of these businesses said they did not need additional information at the time of their interview. A few businesses gave reasons for not needing additional information, including:

- Not including transportation in their business plan
- Focusing the business plan more on market prices than transportation
- Focusing the business plan on customer needs rather than transportation
- “It is what it is.”
- “We just deal with it.”

Just over one-third of the businesses requested information from MnDOT to plan for projected congestion increases, including information on:

- Construction projects (e.g., where will they be, when will they be occurring)
- Historic traffic flow on main corridors, particularly peak times
- A long-term forecast on congestion
- Traffic routing and road closures

A few businesses suggested implementing more variable messaging signs that include drive time estimations so that drivers are aware of delays ahead of time and can select alternate routes.

Spotlight on Congestion in St. Cloud

The city of St. Cloud is centrally located in Minnesota, approximately an hour and a half northwest of the Twin Cities Metro. St. Cloud is home to more than 68,000 Minnesotans and has seen a nearly 4% increase in population since 2010.³⁵ MnDOT routes that run through St. Cloud include Minnesota Highways 15 and 23, US Highway 10, and Interstate 94.

During interviews, several businesses discussed concerns about congestion in the area. Most commonly, these businesses noted significant congestion when trying to travel across the city, with a few businesses considering it a weakness of the area. Several businesses mentioned congestion in St. Cloud as a transportation challenge for employees and a few businesses said they have difficulty hiring or retaining employees due to the congestion.

"It is difficult for us to find employees from St. Cloud as they don't want to travel on Highway 23 to get here ... with all the stop lights on 23 it can take nearly half an hour to cross St. Cloud."

Businesses also talked about how congestion in St. Cloud can affect business.

"Sales to the west side of St. Cloud are problematic because of congestion on Highway 23 in St. Cloud. ... It's easier to sell to [customers] east of St. Cloud because there is less congestion."

Minnesota Highway 23 (Division Street) was most commonly discussed as being problematic for congestion, particularly during afternoon rush hour and on the west side of the city. A few businesses also noted Minnesota Highway 15 as a congestion challenge, as well as US Highway 10. One business likened the amount of traffic in St. Cloud to that in the Twin Cities Metro.



Photo 9. Minnesota Highway 23 at Lincoln Avenue in St. Cloud

One business mentioned drivers avoiding the city whenever possible.

"I will avoid St. Cloud. ... The traffic is really bad, mostly Division Street. Our drivers that work in that area have figured it out, but for non-knowledgeable drivers, St. Cloud is a chore."

A few businesses offered suggestions to ease congestion in the city, including:

- Developing alternate routes (e.g., Minnesota Highway 15, US Highway 10) to keep trucks off Minnesota Highway 23.
- Diverting traffic around St. Cloud entirely.
- Adding more variable messaging signs that include travel times or information about road closures.

³⁵ U.S. Census Bureau QuickFacts City of St. Cloud: [census.gov/quickfacts/fact/table/stcloudcityminnesota/PST120219](https://www.census.gov/quickfacts/fact/table/stcloudcityminnesota/PST120219).

Infrastructure

Infrastructure was a major topic of discussion during interviews, including access to trunk highways, intersections and interchanges, lanes, shoulders, bridges, signage, and bike and pedestrian infrastructure.

Access to Trunk Highways

District 3 has 13.7% of the state's lane miles of trunk highways and includes major highways such as Minnesota Highways 23, 25, and 371, US Highway 10, and Interstate 94.³⁶ More than half of the businesses interviewed discussed access to trunk highways in the district. Three-quarters of the businesses that discussed access to trunk highways said they have good access, commonly noting their business location as an economic strength. For example, businesses reported that it is easy to get shipments onto and off of highways, and that it is easy for their employees and customers to access their business. MnDOT routes noted as having particularly good access included Minnesota Highways 15, 18, 23, 25, 27, 28, 55, 65, 95, 210, 371, and 371B, US Highways 10, 12, 71, and 169, and Interstate 94.

Several businesses that discussed access to trunk highways noted challenges accessing highways, such as:

- Entering trunk highways from a non-signalized intersection, which can cause delays leading to late shipments, and was also noted as a general safety concern for employees and trucks (e.g., Minnesota Highway 23, US Highway 71).
- Busy locations due to summer travel congestion, the amount or type of businesses in the area (e.g., shopping centers), or the amount or interaction of interchanges in an area (e.g., Minnesota Highway 15, US Highway 10, Interstate 94 in St. Cloud).
- Difficulty accessing travel heading north or south in Wright County.
- Being located far away from main corridors, such as Interstate 35, or not being located near a trunk highway generally (i.e., no direct access).
- Challenges for oversized trucks with accessing trunk highways.

Several businesses that discussed access to trunk highways shared mixed opinions, noting that while it can be easy to access northbound or southbound travel, it can be difficult to access eastbound or westbound travel (or vice versa).

Intersections and Interchanges

When asked about different types of intersections, many businesses provided feedback about topics including roundabouts, signalized intersections, J-turns, advance warning features, and interchanges.

³⁶ 2020 MnDOT Statewide Fact Sheet: mndot.gov/d3/about.html.

Spotlight on Roundabouts

District 3 currently has a total of 10 roundabouts on state highways within its jurisdiction, or 10.4% of all roundabouts in the state.³⁷ Nearly two-thirds of the businesses interviewed discussed roundabouts, with over one-third of those businesses liking or generally supporting roundabouts and a similar number of businesses disliking roundabouts.

Businesses that said they like roundabouts most commonly praised their ability to improve traffic flow and safety in an area. A few businesses also mentioned that roundabouts improve access to businesses, improve access to trunk highways, and allow trucks to move safely and easily through an intersection. A few businesses said they prefer roundabouts to other types of intersection design (e.g., signalized intersections, continuous Green-T Intersections),³⁸ drivers just need time to get used to using them, and they have noticed improvements in the design of some roundabouts (e.g., more gradual apron slopes). An example of a preferred roundabout on a MnDOT route was the Minnesota Highway 95 roundabout in Princeton.



Photo 10. Roundabout at Minnesota Highways 95 and 29 in Princeton

³⁷ 2020 MnDOT Statewide Fact Sheet: mndot.gov/d3/about.html.

³⁸ Photos of continuous Green-T intersection is shown on page 42, under Intersections and Intersection Characteristics.

“We really like what they did with the roundabouts [on] Highway 10. They did a fantastic job and it’s really improved access onto the frontage road to our business. Those roundabouts alone have resulted in [fewer] accidents and allow traffic to move more quickly.”

Among businesses that said they dislike roundabouts, they most commonly said roundabouts are built too small to navigate with a truck, which a few noted is particularly problematic in the winter. Several businesses cited safety concerns with roundabouts, including:

- Passenger vehicles traveling too close to trucks in roundabouts, where trucks are already cramped for space (i.e., trucks often need to use multiple lanes in a roundabout, in addition to mounting the apron).
- Trucks tipping over if traveling too quickly through a roundabout.
- Pedestrian safety when trucks mount curbs to navigate roundabouts.

“When the roundabout is occupied by other vehicles the risk of conflict or crash increases greatly with trucks. It’s difficult to determine what the other drivers’ intentions are with their blinkers. Is it the first turn, second turn, or third turn they intend to use? We will typically wait for the entire roundabout to be clear prior to entering, to avoid conflict.”

Several businesses mentioned concerns with shifting or falling freight when mounting a roundabout apron, which can lead to product and equipment damage. A few businesses also discussed general driver frustration with navigating roundabouts and the potential for increased business costs (i.e., increased travel and shipment time) when drivers select longer routes to avoid using roundabouts. Other concerns expressed by a few businesses included:

- Building roundabouts too close to signalized intersections, causing congestion that can delay employees and shipments.
- Other drivers not understanding how to properly use roundabouts.
- Roundabouts being practical for passenger vehicles, but not for trucks.

Several businesses said they have no issues with or concerns about roundabouts; in a few cases, these businesses noted that they do not have any roundabouts on their routes.

Businesses that reported liking roundabouts were more often larger manufacturers with large truck fleets, whereas businesses that reported disliking roundabouts were more often carriers or businesses with trucks.

Nearly half of the businesses that discussed roundabouts suggested improvement ideas, half of which noted the need for more education for both truck drivers and passenger vehicles on how to properly navigate this type of intersection, particularly in the presence of trucks. Half of the businesses that discussed improvements also mentioned the importance of designing a large enough radius to accommodate trucks, which they felt are often too small even when mounting the curb.

“Roundabouts are built too small. The issue seems to be that the truck takes up both lanes and the cars are in the way and being rude. Better signage or education may help this.”



Photo 11. Semi-truck driving over apron to navigate roundabout

“Our trucks feel so cramped on roundabouts. Yes, we do use the concrete apron – we have to. Bigger is better – they seem like they are not designed for big trucks. I think you guys need to develop “sharing signage” to prepare non-truck drivers for the roundabout. Also, roundabouts don’t seem consistent in design or size. Consistent, BIGGER standards are needed!”

Several businesses suggested better signage for roundabouts, particularly signage warning passenger vehicles that trucks use multiple lanes. One business noted it is important not to put intersection approach signs on the apron because it prevents trucks from mounting the curb. Other improvement ideas included:

- More gradual tapering of the curb to make mounting the apron more truck-friendly (i.e., less shifting, more accommodating to lowboys).
- Lower rise on the roundabout center so that fewer blind spots are created when navigating through the roundabout, which would improve safety for pedestrians.
- A few businesses suggested not building too many roundabouts in any one community.

Signalized Intersections and Signals

One-third of the businesses discussed signalized intersections. Among those businesses, one-third discussed signal timing issues. These businesses mentioned avoiding lights that last too long because they can delay shipments and that some lights change too quickly or are placed too close together, which contributes to issues with both passing through an intersection on a changing light and congestion. These businesses said that when such timing and placement issues result in congestion, it is challenging to receive supplies and can contribute to loss of business because customers do not want to sit in congestion to visit their location.

Several businesses commented on the signalized intersections on Minnesota Highway 23 (Division Street) in St. Cloud, noting that these intersections are particularly problematic and contribute to congestion. One business said it can be difficult to hire employees because they do not want to deal with the eastbound and westbound commute across St. Cloud. Another business said the signalized intersections on Minnesota Highway 23 create bottlenecks, which are a safety concern for both their carriers and passenger vehicles. Businesses that discussed timing issues tended to be smaller manufacturers with their own, smaller fleets.



Photo 12. Busy signalized intersection on Minnesota Highway 23

One-quarter of the businesses that discussed signalized intersections said they avoid routes with signals because of the congestion caused by these types of intersections. One business suggested alternative intersection management techniques, such as keeping lights green during the day or increasing the length of time the traffic lights are green on main corridors. Several businesses discussed signalized intersections on US Highway 10 in Royalton and St. Cloud as problematic, as well as on US Highway 169 in Zimmerman. The signalized intersection on US Highway 10 in Royalton was mentioned the most often, with businesses noting that congestion is particularly bad at this intersection on Fridays and holidays in the summer. These businesses said this intersection adds time to the route, which affects costs. One business mentioned shifting delivery times on Fridays to avoid backups associated with this intersection.



Photo 13. Signalized intersection on US Highway 10 in Royalton

“Highway 10 is also a challenge in Royalton with the stoplight. In the summer, traffic gets backed up for miles. Some drivers are also getting off before Royalton and taking back roads, which is causing safety concerns because they are driving too fast in neighborhoods. I’m hoping a solution can be found to make Royalton easier to get through with less backups.”

Businesses that discussed avoiding signalized routes included both carriers and manufacturers with smaller fleets.

A few businesses suggested adding signalized intersections to improve access to certain trunk highways, including in:

- Foley at Minnesota Highway 23 and 4th Avenue
- Wadena at US Highway 10 and 2nd Street SE
- Brainerd at Minnesota Highway 371 and Gull Dam Road

These businesses said the addition of a signalized intersection at these locations would provide safer access onto trunk highways and would alleviate congestion at the few signalized intersections that do exist.

A few businesses also mentioned interest in more flashing yellow turn arrows for left turns.

“On Highway 15, north of Highway 23 (near Veterans, 12th Street, and 3rd Street) you can get stuck with a red arrow when there is no oncoming traffic. When semi-trucks do finally get a green light, they are much slower accelerating than passenger vehicles, which causes other vehicles not to be able to get through the intersection or to go through on a red light. This causes backup to traffic for both trucks and personal vehicles; if there was a flashing yellow at these intersections it could help alleviate these issues.”

Spotlight on Reduced Conflict Intersections

Nearly one-third of businesses discussed reduced conflict intersections (RCI), also known as a J-turn, or an RCUT (restricted crossing U-turn intersection). An RCI is a type of intersection that allows drivers to cross four-lane highways one set of lanes at a time, by requiring them to turn right, followed by a U-turn to turn left.

Nearly half of the businesses that discussed RCIs said this type of intersection is not an issue, or that they have no concerns. Several of these businesses noted that they have not encountered any RCIs on their routes.

More than one-quarter of the businesses that discussed RCIs said they dislike this type of intersection, most often citing design or safety reasons. In terms of design, interviewees said RCIs are difficult to navigate in a truck (i.e., turn is too sharp), particularly for newer drivers; they need better deceleration and acceleration lanes; and trucks may avoid using them, which can result in driving many miles out of their way, potentially delaying shipments. Safety issues included concerns about navigating RCIs during winter weather when roads are icy, and recent fatalities at an intersection where there is an RCI.³⁹

“The general consensus of freight carriers is that they don’t like J-turns because they are tough to navigate, especially for newer drivers.”

A few businesses said they dislike RCIs because they are confusing, and truck and passenger vehicles do not know how to use them. One of these businesses expressed concern that drivers may start using other roads (causing congestion on those roads) to avoid using roads with J-turns installed.

³⁹ This intersection is located in the Metro District.

Several businesses said they like RCIs, noting that they improve safety and traffic flow. One business suggested making RCIs wider for trucks to navigate. Another business mentioned that they were looking forward to an upcoming project that will include an RCI to reduce congestion and improve safety.

“Intersection designs such as [diverging diamond interchanges], roundabouts, and J-turns work great and should be talked about and implemented more often.”



Photo 14. New RCI at US Highway 169 and Mille Lacs County Road 11

A few businesses provided mixed opinions on RCIs. One business said that although some of their drivers recognize the safety value of RCIs, they do not like the amount of time it takes to navigate them. Another business said they thought J-turns could improve safety but are difficult to navigate.

Businesses that said they liked RCIs often had their own trucks, while businesses that said they disliked RCIs more often included businesses without trucks. Additionally, about half of the businesses that said they were not concerned about RCIs had their own trucks. These differences may suggest that opinions of J-turns could be more of a personal preference than a business impact; it may also reflect that there are few RCIs in the region.

Intersection Warnings

Advance warning signal systems include Advance Warning Flashers at traffic signals and Rural Intersection Conflict Warning Systems (RICWS) at non-signalized intersections. Advance Warning Flashers include a sign that reads “PREPARE TO STOP WHEN FLASHING” along with flashing yellow lights. Rural Intersection Conflict Warning Systems include signs with flashing lights that use vehicle detection to notify highway traffic that a vehicle on the side road is entering the intersection, and vice versa. When asked about intersection warnings, nearly half of the businesses provided input.



Photo 15. Truck approaching Minnesota Highway 210 with Rural Intersection Conflict Warning System (RICWS), a safety sign used at unsignalized intersections

Two-thirds of the businesses that discussed intersection warnings said they like this infrastructure feature because it improves safety by letting drivers know when to start slowing down, it helps decrease product damage, it decreases equipment damage (e.g., brakes), and it keeps traffic flowing. Businesses also said this feature is particularly beneficial on high-speed roads, at signalized intersections where lights change from yellow to red quickly, and during the winter when it is more challenging to stop a truck. The intersection warning at Minnesota Highway 55 in Buffalo was mentioned as a good example of a helpful intersection warning.

“We really like the warning lights [at] stoplights on highways when a light is about to turn yellow. It helps preserve our products by not making our drivers slam on brakes and it improves safety for all drivers. The warning lights should be put at every highway stoplight throughout the state!”

One-quarter of the businesses that discussed intersection warnings suggested additional locations, including:

- On Minnesota Highways 18, 25, and 65 generally
- At Minnesota Highway 210 and County Road 21
- On Minnesota Highway 15 going into St. Cloud
- At Minnesota Highway 25 and County Road 2 (increase size of the flashing stop sign)
- At US Highway 10 and Minnesota Highway 23 (flashing stop sign needed)
- In Staples at the east end of town near the speed reduction area

Businesses also provided more general responses calling for an increase in intersection warnings, such as locations where speed limits are over 30 miles per hour (mph), at all signalized intersections, and places where trucks may be slowing down to make turns into high-speed traffic. Businesses also suggested adding warnings to other types of infrastructure, such as low bridges or sharp curves.

One-quarter of the businesses said they have no concerns about intersection warnings. A few businesses said drivers know the roads well enough to not need them, or that while they like this feature, it is not needed in the area.

Several businesses cited issues with intersection warnings, including:

- Some flash all the time, not just when a light is changing to red (e.g., Minnesota Highway 23 in Cold Spring).
- Traffic-approaching lights do not always come on quickly enough (e.g., Minnesota Highway 23 west of Mora).
- They let drivers know something is at the intersection, but it is not always clear what it is.
- They are placed too far away and drivers speed up to try to beat the light.
- Local residents ignore the warnings, making them less effective (e.g., the warnings are more helpful for people who are not familiar with the area).

Intersection warnings may be of particular interest to businesses that own trucks: many businesses that said they like intersection warnings or would like to see more of them had their own trucks, while many businesses that said intersection warnings were not a concern, or not needed, did not have their own trucks. Additionally, most of the businesses that noted issues with intersection warnings had their own trucks. Businesses with trucks may be particularly helpful for providing additional feedback on intersection warnings.

Interchanges

Several businesses discussed interchanges. While a few businesses noted having no issues with interchanges, half of the businesses focused on problem locations, including:

- At Minnesota Highway 101 and Interstate 94 in Rogers, which is scheduled for improvement⁴⁰
- At Minnesota Highway 23 and US Highway 10, where it is difficult to access US Highway 10 from St. Cloud, and where general congestion occurs (interchange scheduled for improvement)⁴¹

⁴⁰ Interstate 94 Maple Grove to Clearwater: mndot.gov/i94-mg-clearwater/index.html.

⁴¹ Interchange reconstruction at US Highway 10 and Minnesota Highway 23—East St. Cloud: mndot.gov/d3/stc/index.html.

- At Minnesota Highway 23 and Interstate 94, which included general safety concerns such as high speeds and crashes (improvement completed summer 2020)⁴²
- At Minnesota Highways 15 and 23
- At US Highway 10 and Minnesota Highway 24, where a railroad crossing contributes to significant congestion
- On Minnesota Highway 64 in Motley



Photo 16. Minnesota Highway 23 and US Highway 10

Cloverleaf interchange designs were also generally discussed as problematic for trucks. Many of the businesses that discussed specific interchanges were excited to learn about scheduled improvements.

Other Intersections and Intersection Characteristics

A few businesses discussed other types of intersections. The continuous Green-T intersections at US Highway 12 and Minnesota Highway 25 (East of Montrose and south of Buffalo) and at Minnesota Highways 65 and 107 (in Braham) were mentioned as particularly helpful.⁴³ Continuous green T intersections allow for a continuous flow of traffic in one direction (e.g., southbound), while oncoming traffic (e.g., northbound) is prepared to stop. A few businesses did note that the continuous green T intersection at Minnesota Highways 65 and 107 is still problematic, even with the new design.

⁴² Interstate 94: mndot.gov/d3/i94/index.html; mndot.gov/d3/i94/images/Hwy23-i-94interchangeimproves2019-2020.pdf.

⁴³ Minnesota Highways 65 and 107 continuous Green-T intersection: mndot.gov/d3/projects/braham/.



Photo 17. Continuous Green-T Intersection at Minnesota Highways 65 and 107

A few businesses also said they liked diverging diamond interchanges, though one business noted that these could be confusing to navigate.⁴⁴

Lanes

When asked about different types of lanes, nearly three-quarters of the businesses provided feedback about additional lanes, bypass lanes, passing lanes, acceleration lanes, and turn lanes.

Four-Lane Highways

Several businesses discussed adding lanes to existing highways, with more than three-quarters noting highways that would benefit from a four-lane design. Businesses provided general responses, such as “more lanes everywhere” or “on major routes,” or naming the entirety of a highway or interstate.



Photo 18. New Minnesota Highway 371 bypass in Pequot Lakes area

⁴⁴ Diverging diamond interchanges: mndot.gov/roadwork/divdiamonds.html.

Businesses also provided specific suggestions for additional lanes, including on:

- Minnesota Highway 15 south of St. Cloud
- Minnesota Highway 23 from Paynesville to Richmond to ease congestion⁴⁵
- Minnesota Highway 23 from Foley to Milaca, to create safer driving conditions⁴⁶
- Minnesota Highway 23 south of St. Cloud, to ease employee commutes to St. Cloud and Sartell⁴⁷
- Minnesota Highway 65 from the Twin Cities Metro to Mora
- Minnesota Highway 65 from Cambridge to Mora
- Minnesota Highway 210 from Brainerd to Aitkin, to ease congestion
- Minnesota Highway 210 from Motley to Baxter, to ease congestion and reduce crashes
- Minnesota Highway 371 from Jenkins to Walker, to assist with deliveries to the north⁴⁸
- Interstate 94 from Rogers to Clearwater, to ease employee commute, particularly on Fridays when there are significant backups⁴⁹
- Interstate 94 between Maple Grove and Clearwater, to ease weekend congestion

“From Paynesville to Richmond is the worst congestion and it’s unpredictable. I can leave 10 minutes early and still arrive 10 minutes late. If you get that slow person in front of you who is not going 50 or 60 [mph], then there is a tendency for backups and with all the curves you really aren’t able to pass them. After Richmond you can get on the two-lane and then pass. Again, it’s so curvy there aren’t really any passable spots.”

A few interviewees mentioned that they are looking forward to upcoming projects, or appreciate improvements already made, including:

- The Interstate 94 project from Maple Grove to Clearwater
- The Pequot Lakes area Minnesota Highway 371 bypass project
- The upgrades to Minnesota Highway 23 in St. Cloud

⁴⁵ Planned expansion of Minnesota Highway 23 North: mndot.gov/d8/projects/hwy23northgap/index.html. (This is a Corridors of Commerce-funded project on Highway 23 in both District 8 and District 3 that is being led by District 8, with D3 staff administering the construction of the north segment, located in D3.)

⁴⁶ Planned improvement project for Minnesota Highway 23 from Foley to Milaca: mndot.gov/d3/projects/h23foleytomilaca/index.html; Road safety audit of Minnesota Highway 23 from Foley to Milaca: mndot.gov/d3/projects/h23safetyaudit/index.html.

⁴⁷ Planned expansion of Minnesota Highway 23 South: mndot.gov/d8/projects/hwy23southgap/index.html.

⁴⁸ Highway 23 Expansion Study project for Jenkins to Pine River: mndot.gov/d3/projects/hwy371/index.html.

⁴⁹ I-94 Maple Grove to Clearwater: mndot.gov/I94-mg-clearwater/index.html.

Bypass Lanes

Bypass lanes are implemented on some two-lane highways to improve traffic flow by facilitating movement around left-turning vehicles. Nearly one-third of businesses discussed bypass lanes. Several businesses, all of which owned their trucks, said they like bypass lanes because they make the roads safer for all drivers. A few businesses suggested making bypass lanes longer to accommodate large trucks and so that bypassing vehicles do not get too close to turning trucks. One business praised the bypass improvements on US Highway 12.

Several businesses, nearly all with trucks, suggested MnDOT routes that would benefit from the addition of bypass lanes, including on:

- Minnesota Highway 23 from Foley heading east
- US Highway 71 in Menahga near the industrial park
- Minnesota Highway 95 from Princeton to Taylors Falls
- Minnesota Highway 95 from Minnesota Highway 23 to the east

Businesses also provided general feedback on the addition of bypass lanes, suggesting they be added to all areas with high traffic volumes, that more are needed across the state, and that more are needed on rural two-lane highways where agricultural equipment is prevalent.

A few businesses expressed safety concerns related to bypass lanes, noting that people sometimes use them as parking spots. One business also mentioned that it is dangerous to alternate right-turn-only lanes and bypass lanes along one corridor.⁵⁰

Passing Lanes

Passing lanes are included on some two-lane highways where hills and higher volumes of passenger vehicles and truck traffic are present. Businesses discussed passing lanes, with nearly one-third providing feedback on this feature. Among businesses that discussed passing lanes, over one-third said they have no concerns about this highway feature. A few of these businesses said they do not encounter many passing lanes, there is not a need for passing lanes on their routes, or they do not do much long-haul trucking, so their need for passing is low. Most of these businesses own their trucks.

Several businesses said they like passing lanes because they reduce congestion on two-lane highways, and they help passenger vehicles move around trucks safely. Nearly all of these businesses have their own fleets, which were often larger in size. One business suggested that passing lanes could be made longer.

More than one-quarter of the businesses that discussed passing lanes suggested additional locations, including on:

- Minnesota Highway 15 from Interstate 94 to Hutchinson
- Minnesota Highway 15 down to Kimball, to improve safety
- Minnesota Highway 23 from Foley to the east

⁵⁰ Combination right turn and bypass lanes are no longer being built in District 3 and such existing lanes are being removed to reduce confusion among drivers.

- Minnesota Highway 25 from Foley to the north, to ease congestion in Foley
- Minnesota Highway 95 from Princeton to Taylors Falls, to more easily move around slow traffic
- Minnesota Highway 95 from Minnesota Highway 23 to the east
- Minnesota Highway 210 between Baxter and Motley, where there are two-lane sections of road with hills and curves
- Minnesota Highway 210 from Motley to Brainerd, to ease congestion
- US Highway 12 from Cokato to the Twin Cities Metro

Businesses also provided more general suggestions, such as adding passing lanes to the entirety of some highways, within entire cities, or “as many as possible.”

A few businesses mentioned safety concerns, noting that drivers do not always use passing lanes properly and that some travelers speed up in the slow lane to stay ahead of passing vehicles.

Acceleration Lanes

Acceleration lanes aid drivers with merging onto roads with higher traffic volumes. Just over one-third of businesses discussed acceleration lanes during their interviews. Several businesses, nearly all with their own trucks, said they like acceleration lanes. These businesses said acceleration lanes are helpful for ensuring trucks can reach highway speeds before merging into traffic. One business said Minnesota does a good job of building acceleration lanes long enough for trucks to reach highway speeds.

Several businesses, however, suggested improvements to acceleration lanes. Many of these businesses have their own trucks, some with larger fleets. These businesses said acceleration lanes need to be long enough to allow trucks to reach highway speeds, because when they are built too short, passenger vehicles do not always allow trucks to enter. They noted that this was of particular concern for fully loaded trucks. A few businesses also suggested adding signage to acceleration lanes, so that drivers on the highway know it is an entrance lane and not an additional traveling lane, and so that truck drivers know when they are on a particularly short entrance ramp.

A few businesses provided examples of preferable acceleration lanes in the district, including the:

- Eastbound ramp out of Clearwater on Interstate 94, where the acceleration lane was extended
- Additional lane in Sauk Rapids that allows for easier entrance onto US Highway 10
- Knife River acceleration lanes onto Minnesota Highway 23 near Sauk Rapids
- Acceleration lane from 165th onto westbound US Highway 10, which helps with employee commutes



Photo 19. Minnesota Highway 23 acceleration lane at Knife River Corporation / Ready-Mix Plant, heading toward Sauk Rapids

Nearly one-third of the businesses that discussed acceleration lanes suggested additional locations for these lanes. Nearly all of these businesses own their own trucks, some of which include larger fleets. Most often, businesses provided general feedback on acceleration lane location, such as “more is better” or “in heavy trucking areas.” Specific suggestions included:

- US Highway 10 toward Little Falls, where agricultural vehicles pull into traffic, causing crashes or hard stops
- US Highway 10 in St. Cloud⁵¹
- US Highway 10 and County Road 3
- Interstate 94 and Minnesota Highway 23
- Interstate 94 and County Road 75, to increase efficiency and improve traffic flow and safety
- Minnesota Highway 210 and County Road 1

A few businesses also suggested building acceleration lanes where trucks exit a business onto a trunk highway to reduce the risk of accidents, prevent backups, and improve safety when business driveways involve blind approaches, such as hills. One business noted that drivers may be forced to use shoulders as acceleration lanes onto a trunk highway when exiting a business.

Just over one-quarter of businesses that discussed acceleration lanes said they have no concerns or issues with this feature. Nearly all of these businesses have their own trucks, which tended to be smaller fleets.

Turn Lanes

Nearly half of the businesses interviewed discussed turn lanes. A few carriers mentioned liking this highway feature. Several businesses, nearly all with their own trucks, suggested improvements to existing turn lanes,

⁵¹ Planned interchange reconstruction at US Highway 10 and Minnesota Highway 2—East St. Cloud: mndot.gov/d3/stc/index.html.

such as making them longer to allow trucks more time to decelerate (especially during heavy congestion when many passenger vehicles may be behind a truck), making turn lanes wide enough to accommodate turning radii of trucks (especially turning into and out of businesses), and improving turn lane signage. One business mentioned noticing recent improvements in turn lane lengths.

Two-thirds of the businesses that discussed turn lanes suggested additional locations for this feature. Nearly all of these businesses have their own trucks, several with larger fleets. Additional locations for turn lanes include general comments, such as “more is better” or “more on high-volume roads.” Specific locations for additional turn lanes included on:

- Minnesota Highway 25 and County Highway 75 in Monticello, to add a dual turn lane
- Minnesota Highway 25 and Glen Street in Foley
- Minnesota Highway 25 and County Road 113 north of Buffalo
- Minnesota Highway 55 and US Highway 71 in Belgrade, to improve safety
- Minnesota Highway 55 and Spruce Avenue in Maple Lake, where traffic congestion is a result of vehicles trying to make a left turn
- Minnesota Highway 55 and Donnelly Drive in Maple Lake, where crashes occur with vehicles making a right turn
- US Highway 71 from Interstate 94 near Sauk Center to approximately one mile south, where truck traffic may increase
- US Highway 71 at 350th Street in Menahga
- Minnesota Highway 95 from Princeton to Taylors Falls

Similar to acceleration lanes, a few businesses also suggested building turn lanes where trucks enter and exit businesses to improve safety and ease congestion, particularly on Fridays.

A few businesses mentioned specific safety concerns involving turn lanes:

- At Minnesota Highway 65 and County Roads 30 and 43, there is confusion about which driver has right-of-way at the turns.
- At the intersection of Minnesota Highway 241 and Quam Road, the southbound right lane turns into a right turn-only lane. However, drivers do not realize the lane becomes a turn-only lane. This results in some drivers passing through the turn lane as a regular driving lane (i.e., not making the turn), leading to crashes.



Photo 20. On Minnesota Highway 241 / County Highway 36, the southbound right lane turns into a right turning lane to Quam Road Ave N.E. in St. Michael

One-third of the businesses that discussed turn lanes said they did not have any concerns or issues with this feature, but they did not provide a reason why.

Other Lanes and Lane Characteristics

Several businesses discussed other lanes or lane characteristics, most commonly focusing on truck routes. Several businesses said they would like to see commercial or truck lanes built on highways (to reduce congestion and improve traffic flow) or in towns. One business expressed some concern that dedicated truck routes would increase the likelihood that passenger vehicles would speed around these lanes. Businesses also said construction projects would benefit from developing truck routes around the projects.

Shoulders

Nearly half of the businesses interviewed discussed shoulder paving, shoulder width, and shoulder problem locations. Nearly two-thirds of the businesses that discussed shoulders mentioned shoulder paving, with several reporting that it is preferable to have paved shoulders. These businesses said unpaved shoulders can have ruts, which can cause trucks to jerk to the side, and that gravel is hard on trucks compared with pavement (especially oversized trucks). Conversely, they said paved shoulders provide a safe place for truck drivers and highway patrol to stop, they can be used for bike or pedestrian travel, and they do not kick up rocks. One business mentioned US Highway 71 as a good example of a road with well-paved shoulders.

Many of the businesses that discussed paved shoulders said they have no issues with current paving. Businesses that said it would be preferable to have paved shoulders were more often carriers or businesses with larger truck fleets than those that said there were no issues with current shoulder paving.

Nearly three-quarters of the businesses that discussed shoulders mentioned shoulder width. About half of these businesses said it is preferable to have wide shoulders, or that shoulders need to be widened because it is safer

to pull over on a wider shoulder, it provides large trucks with more room to navigate, wider shoulders can be used for bike or pedestrian travel, and wide shoulders are helpful deceleration spaces into turn lanes. One business noted that US Highways 10 and 71 and Interstate 94 were good examples of roads with wide enough shoulders.

“We like wide shoulders because it is safer for truck drivers if there is something wrong; they have a place to pull over. They save lives because it gives us a place to go. Drivers can take the shoulder and have a place to go. If you go off road, especially in rural Minnesota, it is dangerous ... you’d go into water or trees.”

Nearly half of the businesses that discussed shoulder width said they have no issues with current shoulder width. There were no significant differences between businesses that supported wider shoulders and those that reported experiencing no issues with current shoulder width.

Several businesses discussed shoulder problem locations, including on:

- Minnesota Highway 25 both generally and in Pierz
- Minnesota Highway 29 in Wadena
- Minnesota Highway 34 generally
- Minnesota Highway 64 both generally and from Motley to Bemidji
- Minnesota Highway 55 in Annandale

Bridges

District 3 has 426 state-owned bridges within its boundaries.⁵² Just over three-quarters of businesses discussed bridges, with many saying they have no issues with bridge clearance or capacity on MnDOT routes. Several of these businesses noted that they do not ship oversized or overweight products, and that carriers handle permitting or shipping needs. One business said that the overpass on Main Street NE and Minnesota Highway 65 in Cambridge has good clearance for both truck and train loads.

A few businesses cited issues with county or township bridges, or bridges in the Twin Cities Metro area, in terms of clearance or capacity. A few other businesses mentioned issues with bridge clearance or capacity on MnDOT routes within the district, including:

- Challenges with bridge clearance on Minnesota Highway 27 in Osakis
- Issues with bridge capacity (i.e., weight restrictions) on the Rum River bridge in the west end of Cambridge

⁵² 2020 MnDOT Statewide Fact Sheet: mndot.gov/d3/about.html.

Several businesses commented on the need for additional bridge locations, most commonly noting the need for additional Mississippi River crossings. Other suggestions for additional bridge locations (not related to river crossings) included:

- Minnesota Highway 65, north of Cambridge
- Minnesota Highway 107 in Braham
- The intersection of Minnesota Highways 15 and 23



Photo 21. Improvements on Minnesota Highway 24 Mississippi River crossing in Clearwater

Signage

There are many different types of signs on District 3 routes, including general road signs and variable messaging signs (VMS); many businesses discussed signs within the district. More than half of these businesses discussed what they like about general road signs, or how they would improve such signs. Many felt that current signage is sufficient, though a few businesses said there is too much signage, which can distract drivers.

“MnDOT does a good job of informing about upcoming construction projects through signage.”

Several businesses said they would like to see more signage located in advance of construction, notifying drivers of detours, alternate routes, or truck routes.

Several businesses suggested changes to existing signs, such as increasing color contrast and night visibility (e.g., use of florescent colors) so that signs can be read from greater distances. Several businesses suggested posting more safety-related signs, such as:

- Horse and buggy signs near Amish communities
- Turning truck signs (or trucks hauling signs) near plants or businesses where trucks enter and exit (preferably signs that flash)
- Signs that read speed as vehicles enter towns where speed limits drop (on trunk highways), in addition to more speed limit signs; more graduated speed reduction signs when entering towns; and more portable speed limit signs to alter speed limits during inclement weather
- Slippery bridge signs
- “Slow traffic keep right” signs

Several businesses said they would like to see signs for businesses or industrial parks where businesses are located, to help truck drivers locate their businesses and to encourage customers to visit their businesses. Similarly, a few businesses said they would like to see signs for community organizations or resources, such as truck stops and community centers.

A few businesses said they would like to see more signage in advance of intersections or exits, such as left exits, lanes that turn into turn-only lanes, and roundabouts (warning that trucks use multiple lanes). A few businesses also mentioned that it would be helpful to have hinged signposts for moving oversized loads so that signs do not have to be removed and reinstalled.



Photo 22. Advanced warning sign on Minnesota Highway 371

Variable Messaging Signs

Variable messaging signs (VMS) allow for changeable message text on the sign face. These signs can be in portable or fixed format and alert drivers about road conditions, highway delays, construction-related activities, and truck parking availability. There are 31 VMS within the district.⁵³

Two-thirds of the businesses that discussed signage specifically mentioned VMS, with more than half providing positive feedback. These businesses said VMS are generally helpful for drivers and help them plan for adjustments in their route to avoid delays related to crashes, congestion, and weather. Businesses expressed appreciation for the accuracy of time estimates on VMS, and directional language, such as which lane to move into (which gives truck drivers more time to move over, increasing safety for all drivers). Businesses said VMS are also helpful for planning fuel stops and breaks, and can provide other helpful information, such as AMBER Alerts.

Only a few businesses provided negative feedback on VMS, noting that the time estimates are not always accurate, and that signs placed on the side of the road (versus fixed to an overhead sign or bridge) can cause drifting as drivers try to read them.

Businesses said the following types of information are the most helpful for posting on VMS:

- Upcoming crashes, travel time, road closures, and alternate routes
- Number of open parking spots at upcoming rest stops

“Rest areas are tight and sometimes do not have enough parking, but we understand that’s how it is. Information about availability on highways is helpful and allows drivers to plan accordingly.”



Photo 23. Sign indicates the number of open parking spaces at an upcoming rest stop

⁵³ 2020 MnDOT Statewide Fact Sheet: mndot.gov/d3/about.html.

Businesses did note that VMS need to be updated regularly and placed far enough away from an event that an alternate route can be selected, in order to be the most useful. A few businesses suggested using VMS to communicate additional information, such as information on Minnesota’s hands-free law, or other safety messages (e.g., “buckle up”).⁵⁴

More than half of the businesses that discussed VMS said there are too few of these signs within the district, and nearly one-quarter said there are enough. None of the businesses said there are too many VMS in the district. Businesses that said more VMS are needed in District 3 more often had their own trucks and larger fleets, compared with businesses that said there were enough VMS in the district.

More than one-quarter of businesses that discussed VMS suggested additional locations for VMS, with several providing general locations, such as within certain cities, “on every highway in the state,” along the entirety of a corridor, or “close to rest areas.”

Specific locations included on:

- Minnesota Highway 55 east of Buffalo
- US Highway 10 in St. Cloud and west of St. Cloud
- Interstate 94 at multiple sections, including:
 - Just before Rogers
 - South of Monticello
 - West of Monticello
 - From Monticello to St. Cloud
 - From Rogers to Hasty
 - From Rogers to Clearwater
 - West of Clearwater
 - At river crossings in Monticello, Clearwater, and St. Cloud

Bike and Pedestrian Infrastructure

Many businesses were asked about bike and pedestrian infrastructure, and many provided feedback.⁵⁵ Over one-third of the businesses that discussed bike and pedestrian infrastructure discussed shared roads, with most expressing safety concerns. Most commonly, businesses were concerned about pedestrian traffic on trunk highways that run through small towns, noting that passenger vehicles often speed through small towns, and that there are not many crosswalks at controlled intersections (or in general). Businesses suggested placing more pedestrian warning signs where blind spots exist (e.g., hills) and having pedestrians wear reflective gear after dusk. Several businesses also mentioned concerns about pedestrian traffic on county or city roads, particularly around school zones.

⁵⁴ Minnesota’s hands-free law: dps.mn.gov/divisions/ots/hands-free/Pages/default.aspx.

⁵⁵ Safety questions about bike and pedestrian infrastructure were not included in the initial version of the North D3 manufacturers’ interview guide. A total of 103 interviewees were asked questions about bike and pedestrian infrastructure (South D3 manufacturers, carriers, and 22 of 44 North D3 manufacturers).



Photo 24. Pedestrian Crossing on Hwy 210 in Aitkin

Several businesses said they would like to see more training offered for cyclists, whose behavior can be erratic and confusing to both truck drivers and passenger vehicle drivers, especially when dedicated bike lanes are not available. Businesses mentioned that groups of cyclists sometimes take over roads without regard for motorized vehicles and that cyclists often disobey traffic signals. One business suggested providing training to drivers regarding what cyclists are allowed to do on roadways.

“Belgrade is trying to promote the idea of biking and walking areas and we don’t really have a good way to cross [Highways] 71 and 55 to combine that. If there could be some way to connect the north half of town with the south half of town without having to cross a busy road that would be great.”

Several businesses said they would like to see more safety improvements related to the Amish community, including:

- Use of reflective tape or safety vests (or other visibility requirements) so that vehicles can easily see horse and buggy on roads
- More warning signs where Amish communities are likely to be traveling (e.g., horse and buggy signs)

Businesses noted that it can be difficult to safely pass a horse and buggy on two-lane roads, and that it is difficult to see them where blind spots exist (e.g., hills) until it is too late, which can result in fatalities.

Businesses that expressed safety concerns about shared roads were more likely to have trucks, have a larger fleet of trucks, and be a larger business compared with businesses that did not express concerns.



Photo 25. Crews working on a new multi-use tunnel beneath Minnesota Highway 6, connecting paved Cuyuna Lakes State Trail between Portsmouth Mine Lake and Croft Mine Historical Park in Crosby. Now completed, the new tunnel provides safer trail access for bicyclists, pedestrians and wildlife.

More than one-quarter of the businesses that discussed bike and pedestrian infrastructure mentioned creating separate paths and lanes so that cyclists and pedestrians are not mixed with trucks. A few businesses said they would not want these paths created at the expense of motorized lanes because it could increase congestion in an area to accommodate a relatively low volume of bike and pedestrian traffic. A few businesses suggested having cyclists and pedestrians use sidewalks to travel. One business was concerned that if narrow bike lanes were implemented on roads to accommodate both cyclists and trucks, trucks could face challenges when making turns, due to narrower driving lanes.

“I think it is inherently dangerous. If I was on a bike, I would choose to ride on the sidewalk. We need more dedicated bike and pedestrian paths instead of sharing roadways.”

A few businesses mentioned additional safety concerns, including bridges being especially narrow for shared roads, and that not all shoulders are wide enough to accommodate bike and pedestrian traffic.

Several businesses said they would like to see a separate grade or farther distancing for bike and pedestrian paths, so that they are not mixed with truck traffic. A few businesses said they would like to see wider paths. One business pointed out that the addition of this infrastructure could promote and increase opportunities for recreation in an area. A few businesses suggested funding bike lanes by taxing cyclists.



Photo 26. Separate bike path

Specific locations mentioned for additional bike and pedestrian trails included:

- On US Highway 71 from Sauk Centre to Wadena
- Adding a paved shoulder or extending the bike path on County Road 117 (Industrial Park Road) from Minnesota Highway 371B to County Road 45 in Brainerd, to enhance employee commute

“We see a lot of bicyclists using the shoulder of [Highway] 371. This is frustrating when there is a paved trail a stone’s throw away. They [bicyclists] use it because they don’t like all of the stop signs on the trail.”

One business mentioned that the city of Monticello has done a particularly good job of implementing bike and pedestrian infrastructure.

Businesses that discussed separate bike and pedestrian paths were more often carriers, businesses that own trucks, businesses that have larger fleets, and businesses located in the south part of District 3.

More than one-third of the businesses that discussed bike and pedestrian infrastructure said they have no concerns about the existing infrastructure or shared roads. A few of the businesses mentioned that there is not a lot of bike or pedestrian activity in their area, that they had noticed recent improvements in the area, or that safe infrastructure already exists.

Other Infrastructure and Infrastructure Characteristics

Several businesses discussed other infrastructure features, including median barriers, bypass routes, and rumble strips. A few businesses suggested adding rumble strips to roads to alert drivers, particularly those who may be distracted.

A few businesses said they like cable median barriers and thought more should be added. One business suggested moving these barriers to the middle of the median, rather than along the road, to reduce multiple-car pileups and congestion when crashes do occur. Another business recommended building tall concrete barriers, rather than short barriers with pylons on top, to reduce the strobe effect of headlights for oncoming traffic.

A few businesses suggested building bypass routes around communities in general, or building bypass rings around St. Cloud and from Monticello to Faribault.

Operations and Maintenance

Operations and maintenance were other major topics of discussion during interviews, including pavement conditions and snow and ice removal.

Pavement

District 3 maintains 4,015 lane miles of trunk highways.⁵⁶ When asked about pavement, nearly three-quarters of the businesses provided feedback on pavement quality, with more than half providing positive feedback.

Two-thirds of the businesses that provided positive feedback said they have no issues with rough pavement in District 3. A few businesses said that while they experience issues with rough pavement on county or city roads, MnDOT routes are well-maintained. Minnesota Highways 23 and 25 and US Highway 169 were noted as particularly well-maintained routes. Businesses also mentioned noticing improvements on US Highway 10 and Interstate 94.



Photo 27. Two views of completed 21-mile repave project on Minnesota Highway 4 between Sauk Centre and Paynesville

⁵⁶ 2020 MnDOT Statewide Fact Sheet: mndot.gov/d3/about.html.

Half of the businesses that discussed pavement focused on problem areas within the district. Specific locations mentioned are currently under review by district staff, though businesses commonly noted issues with pavement quality on Minnesota Highways 23, 25, 210, and 371, US Highway 10, and Interstate 94. Businesses also discussed more general pavement issues, such as frost heaves and potholes.

“US 12, in the Montrose area, is one of the, if not the worst sections of road in the state. It is hard on the equipment we haul and is a concern with tie down chains breaking because of the rough ride.”

A few businesses provided pavement improvement ideas, including paving roads with materials other than concrete (which was perceived as a more slippery material) and making it easy for drivers to report potholes.⁵⁷

One-third of the businesses that discussed pavement also noted how rough pavement affects their business. Most commonly, businesses said rough pavement can result in freight shifting, wear and tear on trucks and equipment, and driver fatigue or injury. Businesses also commonly said shifts in freight can damage product, which can be costly to fix or replace. One business mentioned investing in additional and specialized packaging to lessen product damage during transport. A few businesses mentioned drivers will avoid routes where pavement is too rough, and that rough pavement causes trucks to slow down to avoid product damage, resulting in both lost time and money. A few businesses said rough pavement has no effect on their operations.

Businesses that discussed problem areas were more often carriers and businesses with trucks, compared with businesses that provided positive feedback. Businesses that discussed problem areas also had smaller fleets and were smaller businesses on average, compared with businesses that provided positive feedback. Businesses also more often provided negative feedback about MnDOT routes in the north and more often provided positive feedback about MnDOT routes in the south part of District 3.

Snow and Ice Removal

District 3 experiences an average of 27 snow events each year and accumulates an average of 65.5 inches of snow annually, making MnDOT’s ability to effectively remove snow and ice a high priority.⁵⁸ Almost all businesses discussed snow and ice removal, including MnDOT’s effectiveness in clearing roads, implications of removal on business operations, and use of chemicals.

More than half of the businesses that discussed snow and ice removal provided positive feedback on MnDOT’s performance, often describing removal services as “excellent,” “impressive,” and “phenomenal.” Businesses most often mentioned Minnesota Highway 371 and US Highway 10 as examples of roads that are cleared of

⁵⁷ Report a pothole, graffiti, and other roadside issues: mndot.gov/information/potholes/reporting.html.

⁵⁸ 2020 MnDOT Statewide Fact Sheet: mndot.gov/d3/about.html.

snow and ice well. A few businesses noted that weather is a factor to consider when operating in Minnesota and MnDOT does a good job of clearing snow and ice, given the weather events they must regularly contend with.

“I think they do [a] fantastic job. Live in another state and you’ll never complain about Minnesota again. Go to North Dakota or Wisconsin. Anybody who complains about MnDOT snow clearing has not lived in another state. MnDOT is a rock star!”



Photo 28. Views from plows clearing snow and ice on US 71 in Wadena and on Minnesota Highway 371 between Nisswa and Pequot Lakes

Several businesses said that while MnDOT clears their routes of snow and ice well, county and city roads are often problematic. Several businesses provided mixed opinions of snow and ice removal in the district. These businesses often said MnDOT does a good job removing snow and ice generally, but certain roads could be cleared better.

Several businesses that discussed snow and ice removal provided only negative feedback on these services. Specific locations mentioned for improved snow and ice removal are currently under review by district staff, though businesses commonly noted issues with Minnesota Highways 15, 23, 25, 47, 87, 95, and 210, US Highways 10 and 71, and Interstate 94. Businesses also provided more general locations for snow and ice removal, such as “all routes” or “turn lanes everywhere.” Several businesses said MnDOT needs to start plowing earlier in the morning either because their operations start early (e.g., 4:30 a.m.) or because they have continuous operations with second and third shifts.

“It takes the plows too long to clear the roads with how much weather information we have ahead of snowstorms. It slows down deliveries and also causes some of our employees to be late getting into work because the roads aren’t clear.”



Photo 29. Crews load up plows to head out in Baxter

Businesses that provided only negative or mixed feedback on snow and ice removal more often included carriers compared with businesses that only provided positive feedback on snow and ice removal. Businesses that provided only negative feedback also tended to have their own fleets, have larger fleets, and be larger in size compared with businesses that provided mixed feedback or only positive feedback. This may suggest that larger businesses with trucks can provide MnDOT with additional or specific feedback on where and how to improve snow and ice removal in the district. Positive and mixed feedback was more often provided by businesses in the south portion of the region, which may suggest more effective clearing in that part of the district.

One-quarter of the businesses that discussed snow and ice removal mentioned impacts to their business, both positive and negative. Most commonly, businesses said when snow and ice are not effectively cleared, employees and drivers cannot get to work safely, which can lead to longer shifts and overtime. These businesses said the impact on employee commute is particularly relevant when employees need to arrive early in the morning (e.g., 4:30–6:00 a.m.), have long shifts (e.g., 12 hours), or work for businesses that operate continuously or near continuously (i.e., employees need consistent access to the worksite).

Conversely, businesses that provided positive comments about snow and ice removal noted that effective clearing has helped ensure that their employees arrive at work safely. Businesses also commonly mentioned that ineffective clearing can lead to canceled or rescheduled deliveries or pickups, or drivers that are ordered to stay in place until roads are cleared (which is problematic both generally and for time-sensitive materials). A few of these businesses also noted that delays on their end have a negative impact on their customers' business. Only a few businesses said snow and ice removal have no impact on their business.

Several businesses provided suggestions for improving weather event management. A few businesses recommended communicating road closures earlier, noting that this type of communication is as important (if not more) as clearing the roads themselves. These businesses said early communication helps reroute drivers or reschedule deliveries as needed. Businesses suggested updating 511 more often with weather and road closure information.

“Weather alerts are important to know — and it’s important to know when they are going to close roads down. We need more notice ... It would be nice to have a countdown to shutdown. For example, post: ‘MnDOT estimates that within three hours this route will be closed.’”

A few businesses also recommended using trees or building more permanent snow fences to help with blowing snow.⁵⁹

Several businesses discussed the use of chemicals, and opinions were mixed. A few businesses said MnDOT uses too much product to treat roads, which degrades fleets and equipment more quickly. One of these businesses suggested using more sand and fewer chemicals to treat roads. A few businesses said that while chemicals degrade their equipment more quickly, road treatment is a necessity during the winter. A few businesses said ice melt chemicals do not always work effectively because of temperature fluctuations (i.e., freezing, thawing), though a few businesses felt pretreatment is helpful and does make a difference. One business noted a concern for lakes in Central Minnesota that may be affected by the heavy use of salt, though a few businesses suggested using more salt or sand to treat roads and fewer chemicals. On average, District 3 uses 27,395 tons of rock salt per year (13.2% of state usage), 560,023 gallons of liquid salt brine per year (17.1% of state usage), and 1,815 tons of sand and salt mixture per year (4.7% of state usage).⁶⁰

Other Operations and Maintenance Needs

A few businesses mentioned sight lines as a challenge in District 3. One of these businesses noted that trees are sometimes located too close to roads, which does not provide drivers with enough time to stop when deer or other animals cross roadways. Another business said mowing rural Minnesota ditches more frequently in the fall would provide drivers with better opportunities to see deer or other animals entering roadways.



Photo 30. Safety delineator posts installed along all four-lane rural highways aid travelers at night and during bad weather when pavement marks are difficult to see

⁵⁹ District 3 has 30.8 snow fence miles (21% of snow fence miles in the state): mndot.gov/d3/about.html.

⁶⁰ 2020 MnDOT Statewide Fact Sheet: mndot.gov/d3/about.html.

Communications

511 Traveler Information System

The 511 traveler information system provides travelers and truckers dedicated access to “updates about weather-related road conditions, road work, commercial vehicle restrictions, road closures and other travel information” via the 511mn.org website and mobile phone application. Additionally, a dial-in phone option offers voice response or touch-tone options to request road-specific information.⁶¹

When asked if they had heard of the 511 Traveler information system, nearly all interviewees responded and just over three-quarters of the businesses said they had heard of it. About one-third of these businesses indicated that they liked the system. Most often, businesses praised the ability to get a visual of the road conditions through the highway and snowplow cameras.

“[We are] using 511 for road closures on [US Highway] 10 due to blowing and drifting snow, or other weather conditions. [It is] working well to get employees to work.”

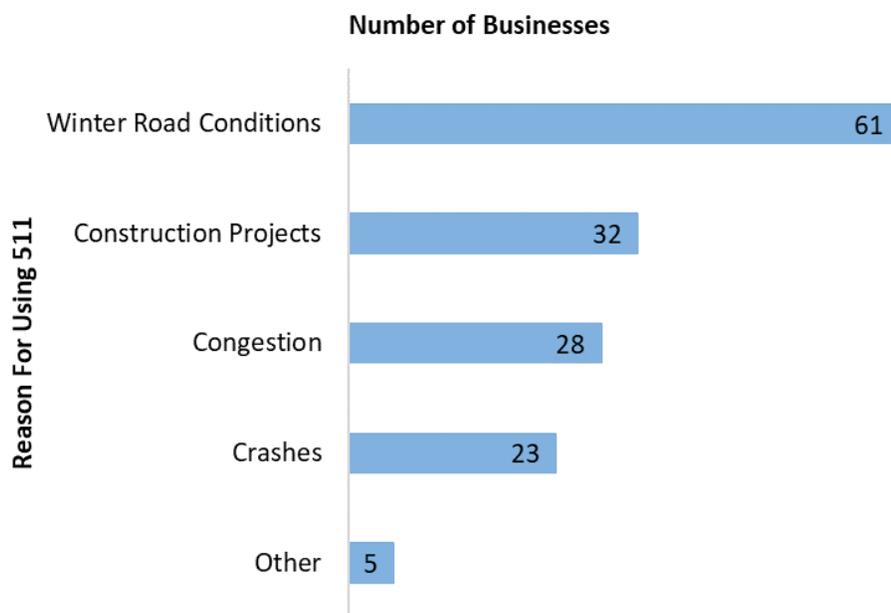
Nearly two-thirds of the businesses who had heard of 511 said they mainly use it to check for updates about winter road conditions.⁶² Many also indicated they use it to check for updates on construction projects, congestion, and crashes, as shown in **Figure 9**. A few businesses indicated that they use it for other reasons, including finding information about flooding, oversized loads, and alternative routes and for their personal use.

“I use 511 primarily for dispatch in the wintertime. We probably have about six terminals to go to for product and so, based on what I see on 511, I may not send a driver into a wreck. I might send them a different direction and away from bad roads. It’s a pretty easy decision because you will see the roads are in ‘red’ condition.”

⁶¹ Minnesota Department of Transportation, “About 511,” accessed May 15, 2020, hb.511mn.org/About.html.

⁶² Not all businesses answered this question. Those business that indicated they used 511 also selected multiple reasons for using 511.

Figure 9. Businesses use of 511



Several businesses said they knew of 511 but do not use it, and a few businesses said they had not heard of the 511 traveler information system at all. All but one of these businesses were manufacturers, with the majority operating their own trucks, suggesting that outreach efforts on 511 to businesses might be useful.

Similarly, several businesses said they had not heard of MnDOT’s new Truckers’ Information page⁶³ on the 511mn.org website, and a similar number indicated they were not sure.⁶⁴ A smaller share of businesses said they had heard of the Trucker’s Information page.⁶⁵ These findings also indicate there is potential for awareness and outreach to businesses about this resource.

Several businesses provided feedback on how to improve the 511 system, including:

- Putting additional cameras on roads.
- Increasing real-time alerts and notifications on road conditions including snow removal and traffic, for example.
- Upgrading the system to improve speed and make it more user-friendly.
- Providing the ability to integrate with other systems, such as electronic logging devices (ELDs) and Google Maps.
- Sharing detailed information about 511.

⁶³ MnDOT 511 Truckers’ Info page: Trucker Reports, Weather Warnings, Google Traffic Speeds, Weigh Stations, Other States’ Info.

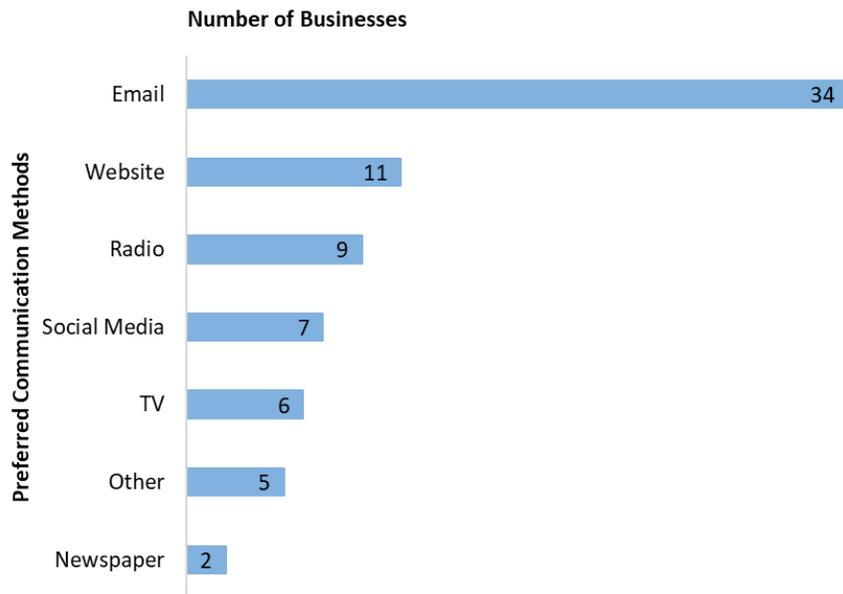
⁶⁴ Businesses were only asked this question if they owned their trucks and had heard of 511 traveler information system.

⁶⁵ A response to this question was not obtained in 25 interviews where this was asked.

MnDOT Communication Efforts Overall

Nearly all businesses were asked about MnDOT communication generally, beyond the 511 traveler information system. When asked about the best methods for MnDOT to communicate with businesses about construction projects and road conditions, most often businesses indicated they prefer email, the MnDOT website, radio, and social media, as shown in **Figure 10**.⁶⁶ Less frequently, businesses indicated they would prefer the newspaper, TV, and other sources, including text messages, in-person or public meetings, mail or by phone, and various smartphone applications.

Figure 10. Preferred communication methods



A majority of businesses were also asked for feedback about how MnDOT can improve communication during construction season, adverse weather events, and general congestion.⁶⁷

⁶⁶ Question was only included in the North D3 Manufacturers’ guide (n = 44). Not every business answered every question. Some businesses had multiple communication preferences.

⁶⁷ Twenty-three businesses were not asked this question regarding construction season communications, as it was not included in an early version of the North D3 Manufacturers’ interview guide.

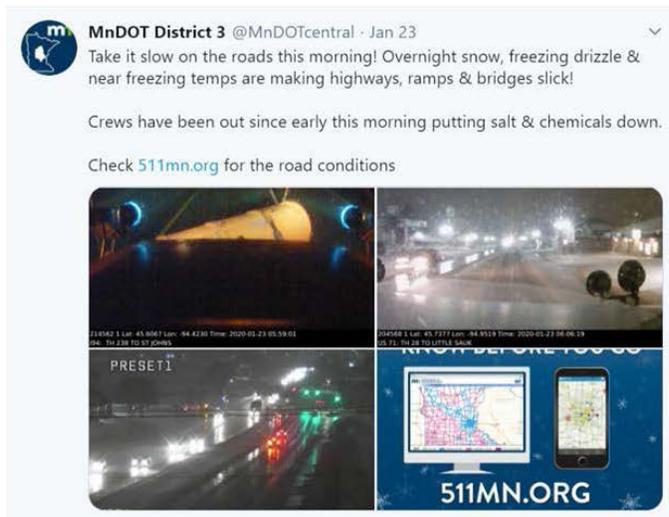


Photo 31. District 3 Twitter posts about weather advisory, snowplow cameras, and 511

Construction Season Communication

More than two-thirds of businesses, who were asked about additional communication that would be helpful, provided feedback about construction-related communication. Half of those businesses said they are satisfied with how MnDOT currently communicates with them. More than one-third of these businesses offered suggestions for improvement. Many of the businesses who offered suggestions included manufacturers and carriers who operate their own trucks. A majority of these businesses said they would like to receive more advance notice about construction projects to inform their shipping and planning needs. A few also indicated that they would like to be able to sign up for email alerts, or receive alternate route information, indicating that there is opportunity for MnDOT outreach to businesses. A few offered other suggestions, including increased signage and traffic cameras, and coordination of construction-related communication with other sources of news, such as local news and travel mapping websites.

Adverse Weather Communication

More than two-thirds of businesses, who were asked about additional communication that would be helpful, provided feedback on communication during adverse weather conditions. Half of these businesses indicated they have no issues, and several businesses had positive feedback about how MnDOT communicated about adverse weather events. Several other businesses also provided suggestions for improvement, with a majority indicating they would like to receive advance notice about weather-related road closures. A few of these businesses said email or phone alerts about road closures would be helpful. A few businesses said they would like to see more cameras on highways because they use these visuals to inform their shipping schedules. A few other businesses said that a more user-friendly 511 app would be helpful, and one business suggested increasing use of VMS for notification about road closures.

“More cameras on Highway 10. There seems to be a gap west of Round Lake Boulevard and west of Ferry Street on Highway 10.”

General Congestion Communication

Nearly one-third of businesses provided feedback about general congestion communication. Nearly half of these businesses said they have no issues with communication related to congestion. A few of these businesses said they appreciate MnDOT communication about congestion, including advance notification and VMS. Several businesses provided suggestions for improvement, mostly about advance notice of road closures. Businesses suggested more traffic cameras, increased use of VMS, increased email updates (especially in the city of St. Cloud), and more advanced notification via the 511 traveler information system.

Alternate Routes

All businesses who owned their trucks were asked if they used MnDOT information to find alternate routes, and nearly half of these businesses provided feedback on this question. While several businesses said they use MnDOT information, over half of these businesses said they do not rely on MnDOT information. A few businesses specified they use specialized mapping software, including Google Maps or Waze. A few also said they use travel mapping websites and suggested better linkage between 511 and such websites. One business suggested including travel time for alternate routes on the 511 app.

Satisfaction with MnDOT Communication Efforts

About one-third of businesses offered positive comments about how well MnDOT keeps them informed. As described earlier, several of these businesses said they are satisfied with MnDOT communication about upcoming construction projects and road conditions and are pleased with the various mediums used to relay information.

“[MnDOT] does a good job keeping us informed during construction season. This is helpful in planning routes.”

However, a few businesses said they do not feel informed. Those that said they needed more information inquired about how to receive more advance notice (e.g., sign up for email alerts) about construction season and road closures, indicating a need for MnDOT outreach to businesses in the region about these resources.

About one-third of businesses provided improvement ideas for overall communications. As highlighted above, the majority of suggestions were about improving advance notice on construction and weather-related road closures. Other notable suggestions included:

- Communications geared toward improving public awareness and safe driving.
- More specific details about construction projects.
- Alternate route information during construction.
- More public education on the use of roundabouts.
- Public meeting information online.
- More cameras, on roads, that can be accessed with mobile devices.
- Add VMS in additional locations.
- More information about oversize and overweight rule changes, including providing information packets with renewal notice of oversize and overweight permits.
- A way to report pavement conditions such as potholes.
- Improve MnDOT technology to carry out transactions online.

Policy

Businesses were asked for feedback about various policy areas, including general size and weight restrictions, spring weight restrictions, and permitting processes. In some cases, businesses also discussed federal trucking policies and other policies, laws, and regulations.

General Size and Weight Restrictions

In the state of Minnesota, maximum truck weights vary based on the type of vehicle, number of axles, and the type of road. Generally, though, in Minnesota weight may not exceed 80,000 pounds on five or more properly spaced axles for most types of products unless operating under an overweight permit or other special permit.⁶⁸ Additionally, weight restrictions vary from state to state, with some states allowing more weight to be transported along their roads. When asked, nearly three-quarters of the businesses discussed weight and size restriction policies.

Overweight Restrictions

When asked, nearly two-thirds of the businesses specifically discussed weight restrictions, with a majority indicating that they have no issues with the existing restrictions because they primarily operate under weight limits. However, several businesses discussed specific challenges they have experienced. These businesses included carriers and manufacturers, with a majority operating their own trucks. Over one-third of these businesses noted that weight restrictions have a direct impact on business operations and increase costs, with several of these businesses indicating they would like to see increased weight limits on Minnesota highways.

⁶⁸ Minnesota Commercial Truck and Passenger Regulations 2020: dot.state.mn.us/cvo/mntruckbook/index.html.

Businesses noted that restrictions require them to take longer routes to avoid highways with weight restrictions, plan around curfew hours, and obtain police escorts, which increases operating costs and shipping timelines. A few of these businesses noted that this can make it difficult to remain competitive, both generally and with businesses in other states.

“Size and weight restrictions have a direct impact on shipping costs. Lengthier routes to avoid certain bridges and other restrictions can increase costs. Alternately, increasing the trailer size [or number of axles] also increases costs.”

A few of these businesses also discussed varying weight restrictions between Minnesota and neighboring states, including Wisconsin and Iowa, which have higher load limits. According to these businesses, the different weight limits affect their ability to ship product between states cost effectively (e.g., splitting loads to meet load limits, additional shipping timelines associated with patrol escorts and night moves). A few businesses mentioned that it also directly affects their ability to remain competitive because they lose business to companies based in those states that can ship higher loads.

A few businesses specifically highlighted that weight restrictions on county and township roads and unpaved roads are a challenge for their business because it can affect their ability to access their business locations. A few businesses discussed the need for improved communication, including better and timelier signage and information about restrictions.

Spring Weight Restrictions

Heavy trucks are restricted from operating on some roads during the spring thaw when pavement is in a weakened state. Spring weight restrictions affect specific paved roads that do not meet the 10-ton spring load design standard.

Several businesses that discussed permitting policy specifically mentioned challenges with spring weight restrictions. Similar to comments about general weight restrictions, a majority of businesses that discussed spring weight restrictions said they increase business operating costs. Businesses cited challenges including inability to carry full loads, having to split up loads, and delaying shipments until restrictions are lifted, all which affect business operations and shipping costs.

“If a customer needs 16 tons of fertilizer and road restrictions are on, I will have to send out two 8-ton loads instead of one 16-ton load. Just extra time and equipment that I can’t send somewhere else.”

One business noted that it would be helpful to have more communication about rules, processes, and advance notice of spring weight restrictions for business planning purposes. A few businesses suggested more timely signage when restrictions are on and off to alert drivers.

Oversize Restrictions

Over one-third of the businesses discussed oversize restrictions, with a majority indicating they have no issues with existing size restriction policies because they do not ship oversize loads. However, several businesses highlighted specific challenges associated with size restrictions that add to business operation costs. All but one of these businesses operate their own trucks. A few businesses noted that most challenges are associated with local county and township roads, but they did not provide additional details on those challenges.



Photo 32. Oversize load

A few businesses said that some highway features such as RCIs, roundabouts, cloverleaf interchanges, and U-turns are difficult to navigate with oversize loads. They noted that carriers must often travel farther to avoid highways with these features. A few businesses noted that restrictions in Minnesota include curfew hours (e.g., night moves) and police escorts for oversize loads. A few businesses clarified that restrictions can add to business costs, including overnight hotel stays for drivers and longer timelines for scheduling (because police escort requires 24 hours' notice), and have an overall impact on their ability to remain competitive in general and with businesses in other states.

“Friday afternoons and Sunday afternoons are restricted for oversize, so we sometimes have trucks wait until Saturday to come home. We shift schedules and incur some costs (hotel stay to try to mitigate the rules [oversize / overlength restrictions]). We understand it’s a safety problem, so we just have to deal with it.”

Permitting Process

Nearly one-third of the businesses that discussed permitting provided feedback on MnDOT permitting processes. Almost half of these businesses had positive feedback, indicating that they do not encounter issues or challenges with MnDOT processes.

About one-third of these businesses provided feedback for improving permitting processes, with a few businesses suggesting that the online permitting system could be improved to make it more user-friendly (e.g., upgrade the platform, improve speed of the system). Another business noted that it would be helpful to have customer service support when seeking a permit, should businesses need clarity or have questions. Other suggestions for improving the permitting processes included:

- An interstate permitting system, or platforms that are similar
- Improving the routing process in the permitting system
- Improving permitting process for local permits

Federal Trucking Policies

Although businesses were not directly asked about federal trucking policies, several businesses mentioned federal trucking laws and regulations during their interviews. A majority of these businesses said electronic logs (e-logs) negatively affect their business.

Several businesses said e-logs and truckers’ Hours of Service regulations with limits on drive time have added to business operation costs, with a few mentioning that e-logs are one of the biggest transportation challenges they face. Most commonly, businesses noted that operation costs have increased due to longer shipping timelines and additional costs, such as overnight stays for drivers. A few businesses noted that drive time restrictions coupled with congestion and construction-related delays in the Twin Cities Metro area also adds to these costs. A few businesses said that due to drive time restrictions there are more trucks on the road during peak congestion time, and there is a need for additional rest stops along major routes so drivers can get off the road before they run out of time.

Several businesses also discussed other regulations and policies that affect their shipping. A few businesses specifically said they find inspections in Minnesota to be too burdensome, including having to pull over frequently on Minnesota highways. A few others suggested better signage and locations for weigh stations.

General Laws and Policies

Several businesses discussed general laws, rules, or policies during their interviews, though they were not directly asked questions about these topics.

Over one-third of those that discussed general laws, rules, or policies mentioned increased funding and taxes to maintain Minnesota roads and highways. A few of these businesses specifically noted that more funding should go toward maintaining and improving highway transportation systems in Greater Minnesota.

“I would encourage MnDOT to keep the rural roads in good repair. They can deteriorate fairly fast and they get a lot of heavy use because of truck traffic. I would encourage them to invest money into the rural infrastructure of highways.”

Half of the businesses that discussed this topic specifically talked about speed limits, with a majority commenting about the need to reduce speeds at specific locations near their business. One business noted that speed reduction zone changes on highways can be problematic for trucks with heavy loads because it takes them longer to slow down. Another said that when considering truck lanes, speed is an important factor to ensure roads are safe for everyone, including non-truck drivers. According to that business, lower speed limits in truck-only lanes can cause non-truck traffic to drive erratically, speeding to pass them.

A few businesses also provided feedback on other general laws and policies including:

- Meeting requirements for patrol escorts for oversize loads is time consuming and difficult to coordinate.
- Increasing law enforcement to prevent passing on the right shoulder on Minnesota Highway 55.
- Preventing trucks from using the left lane because it can slow down traffic.
- Eliminating discrepancies in the fines issued for truck drivers and non-truck drivers using mobile phones.

Safety

Many businesses discussed safety throughout their interviews; general safety themes, concerns, and suggestions have been provided throughout this report in sections such as Infrastructure, and Operations and Maintenance. Interviewees also discussed additional safety concerns not described elsewhere, such as speeding, distracted driving, and passenger vehicle drivers' awareness of trucks.

Several businesses discussed speeding as a safety concern, with speeding through towns discussed most often. These businesses said vehicles often speed through towns on trunk highways, where speed limits drop. Businesses noted the following locations where vehicles often speed through towns:

- Minnesota Highway 23 in Foreston
- Minnesota Highway 55 in South Haven

- Minnesota Highways 65 and 107 in Stanchfield
- US Highway 12 in Howard Lake

A few businesses mentioned general speeding concerns in District 3, and a few businesses noted that some vehicles speed up to make it through a yellow light.

Several businesses also discussed distracted driving. A few of these businesses commented on passenger vehicle drivers using their phones (particularly texting) while driving, and a few suggested developing an application that disables phones when in a vehicle. A few businesses said the hands-free law seems to be helping with distracted driving, though a few businesses noted that cell phone usage is still a problem with the driving public.⁶⁹ One business suggested greater enforcement of the hands-free law. A few businesses also commented on drivers not paying attention generally, for a variety of reasons, as a safety concern.

Several businesses mentioned passenger vehicles pulling into traffic in front of trucks, cutting off truck drivers, as a safety concern. These businesses noted that when passenger vehicles pull into traffic they often do not leave enough room for trucks to slow down.

“I wish more people would understand how long it takes to start and stop a semi. My drivers tell me stories all the time about a car pulling out in front of them. The public doesn’t realize when they pull out in front of [truck] drivers, that they are putting their own lives in danger.”

A few businesses recommended providing more public education on how trucks operate, including how much they weigh and how long it takes to stop.

“Honestly, I would say the hardest part of a driver’s job is to safely make it down the road when there are so many people in cars who don’t understand how trucks work. I feel that the average everyday driver needs more education, before they get their license, as to how semis operate, how heavy they are and how long they take to stop. This might reduce the amount of cars that cut in front of semis and may also reduce the amount of crashes. I don’t think that the average person understands that when the driver is in that truck and you are too close to their bumper, they literally can’t see you.”

⁶⁹ Minnesota’s hands-free law: dps.mn.gov/divisions/ots/hands-free/Pages/default.aspx.

Spotlight on Driver Education and Awareness

During some interviews, businesses brought up the need for driver education, for both truck drivers and motorists. Most commonly, businesses discussed the need for education on the proper use of roundabouts.

“Roundabout planned at the TH 241 and Kwik Trip entrance is concerning because people don’t know how to drive them ... [the] public needs to learn how to use roundabouts. Truck drivers see a lot of incorrect usage.”

Half of the businesses that suggested improvement ideas for roundabouts also noted the need for more education. They pointed out the need for educating drivers on how to properly navigate this type of intersection, particularly in the presence of trucks using roundabouts.

“Roundabouts need to be bigger. If you have a trailer – they don’t know [the] center curb can be driven on. They need to be well-signed and directional. More education [is] needed on these.”

Businesses reported other unsafe driving practices in roundabouts. One noted that passenger vehicles often crowd or ride alongside trucks in roundabouts and the cars are in the way and being rude, and that education may help with this.

In addition to education on roundabout use and safety for the driving public, businesses suggested providing education to truck drivers on the use of roundabouts. More specifically, they said that it would be helpful for all truck drivers to know that they can and should drive over aprons, and be

better informed on the reason for and benefits of roundabout intersections, such as improved safety and efficiency.



Photo 33. Semi-truck navigates roundabout

“I personally love roundabouts. What a lot of people don’t realize is that there is a short curb that they can actually go over. [Provide] some more education to the trucking business on roundabouts and why they are there. People say that people can’t go on curbs but that is how they are designed.”

Some businesses mentioned safe driving education more generally, noting that there needs to be education on driving safely near / around trucks.



Photo 34. Car in a truck blindspot

"[Need] public outreach -- General public awareness of oversize loads, e.g. not room for them in the roundabout alongside loads, even though there are two lanes."

A few businesses recommended providing more public education on how trucks operate, including how much they weigh and how long it takes to stop (e.g. loaded trucks need extra stopping distance, etc.). One business noted impacts to its business including having to add dash cams to its trucks, as a business need, due to lack of general public awareness of drivers around trucks.

"I feel that the average everyday driver needs more education ... as to how semis operate, how heavy they are and how long they take to stop."



Photo 35. Keeping a safe distance

Overall, it was clear that based on business input there is a need to create greater awareness of safe driving practices for both truck drivers and, especially, the drivers of other vehicles around them.



Photo 36. Safety tips for driving around large trucks

Other Findings

Truck Parking

MnDOT has observed greater concern about truck parking⁷⁰ with the advent of e-logs and Hours of Service regulations and has worked concertedly on this issue, since 2016, with seven neighboring states.⁷¹

During interviews, businesses were asked for feedback on truck parking in Central Minnesota to better understand whether there is additional need for parking facilities.

More than half of the businesses discussed available parking areas, of which about one-quarter said there is sufficient parking in District 3. Nearly one-third indicated they do not use rest stop parking. These businesses often reported having truck stops or rest stops nearby, having parking available in their own lots, or making same-day short-haul trips.

“We are running routes. They depart from here and return here. We are not concerned with overnight parking areas.”



Photo 37. In 2019, 15 new truck / trailer parking spaces, more lighting, and other improvements were completed at the Fuller Lake Rest Area in Clearwater

⁷⁰ Truck parking in Minnesota: mndot.gov/ofrw/freight/truckparking/index.html.

⁷¹ Truck Parking Information Management System (TPIMS): trucksparkhere.com/project-history.

More than one-third of the businesses that discussed the availability of truck parking in District 3 said there is not sufficient parking in the region, with many noting that both public rest stop and private truck stop parking is lacking. Alexandria, Elk River, Princeton, St. Cloud, and Sauk Centre were all noted as needing more parking, as were areas along Minnesota Highway 23, US Highways 10 and 169, and Interstate 94.

Several businesses discussed the effects of insufficient parking on their operations, including:

- Having to make arrangements with other businesses to use their facilities for parking.
- Asking drivers to sleep at the shipper or receiver location.
- Arriving late to some locations.
- Forcing drivers to make it home by the end of the day.
- Trucks parking on shoulders or exit ramps, creating safety problems.



Photo 38. Trucks parked on ramps and shoulders can create potential safety hazards

“The rest areas are so crowded. You can’t get into a parking spot, then if you can’t park there and have to do your ELD [e-logs] you are screwed.”

Several businesses praised MnDOT’s signage indicating availability of parking at rest stops and asked for more of such signage. One business said it would be helpful if that information could be integrated into 511, or an app, similar to one some drivers use called Trucker Path, which allows drivers to find information on truck stops,

available parking, fuel prices, and weigh stations.⁷² Another business suggested allowing parking at weigh stations, which is allowed in some states.⁷³

Employee Commute

District 3 businesses were asked about transportation issues associated with their employees traveling to and from work. Nearly all businesses provided input, with half reporting no challenges with their employees' commute. These businesses often mentioned a local employee base. A few talked about weather or construction issues, but they noted that these are known issues that do not have a significant impact on employee commute. Businesses that reported no challenges with employee commute tended to be smaller.

“Winter driving conditions are our biggest concern. Keeping the roads open for our employees to get to work and back home safely.”

Less than half of the businesses said their employees face challenges in getting to work. Many noted winter weather as an issue. A few businesses that operate multiple shifts or continuous operations, or that start operations very early in the morning, said plowing can be an issue both for employees getting to work on time and for getting drivers out on the road to make deliveries. Businesses that reported challenges with employee commute tended to be larger.

“Inclement weather is the biggest problem. MnDOT does a great job of keeping Trunk Highway 371 clear of snow and ice. Trunk Highway 87 from Trunk Highway 64 to Backus, on the other hand, is plowed late and rarely sanded. It is bad in the early morning hours when employees are driving to work.”

Delays due to construction and congestion also create problems for employees getting to work. Several businesses talked about congestion in and around St. Cloud, causing employees to be late for work and also causing deliveries to be late.

A few businesses also noted that Friday traffic congestion is particularly problematic. A couple of other businesses noted it is difficult for them to hire employees from St. Cloud, or employees who would have to drive through St. Cloud, because of the congestion issues they would face on their commute. A few businesses said a lack of transit is a challenge for them in getting employees or potential employees to their location.

⁷² Trucker Path: truckerpath.com/trucker-path-app

⁷³ Federal Highway Administration, “Study of Adequacy of Commercial Truck Parking Facilities,” March 2002, fhwa.dot.gov/publications/research/safety/01158/3.cfm.

Non-Highway Transportation and Drayage

Non-Highway Transportation

Nearly one-third of businesses talked about non-highway transportation, with most focusing on rail. Several of those businesses said waiting for trains at railroad crossings causes congestion and sometimes delays employees or trucks. A few businesses said there is a lack of rail access near their facilities. A few also noted weather, either winter snows or spring floods, have led to rail delays in getting product to their facilities.



Photo 39. Railroad crossing

Several businesses talked about air transportation. A few said it is difficult to get next-day air service in at least some parts of the region. Others said they use air transportation rarely, or in an emergency only. Air transportation is time-sensitive; a few businesses said they avoid shipments on Friday, due to increased traffic congestion, especially if the shipments need to leave from the Minneapolis–St. Paul airport.

“It would be good if a better air freight option could be brought to the St. Cloud Airport so more product could be routed there versus MSP. The airport was going to be key to this industrial park, but the recession of 2008 was a setback and the air carriers just haven’t seen the capacity to justify more passenger service, etc. out of St. Cloud Airport.”

Only a few businesses talked about water or intermodal transportation. Flooding is an issue for one business that relies heavily on Mississippi River barges. One business is very happy with their intermodal transportation options, while another said there could be significant delays with containers sitting for up to two weeks before being moved.

Drayage

Several businesses talked about drayage and related challenges. Businesses in District 3 reported having drayage distances that ranged from 25 miles to 180 miles, though most are in the 60- to 70-mile range. While a few businesses reported no challenges around drayage, several did mention issues. During discussions about drayage, businesses said congestion and construction can mean drivers are delayed, which leads to increased costs. One business also noted snow may keep carriers from getting to their business's location on time.

Economic Development Considerations

Businesses were asked to reflect on both the strengths and weaknesses of their location for meeting their business needs. All businesses discussed topics related to economic development and their business. Most of those businesses noted positive aspects of the region, or the particular location of their business. Businesses also talked about negative attributes of their business location or the region in general. The same aspect, such as location, was discussed both positively and negatively by some businesses. For example, a rural location might be a strength to one business and a weakness to another.

More than three-quarters of businesses talked about positive aspects of their location in District 3. More than half noted access to trunk highways as a strength of their location, most commonly noting good access to Minnesota Highways 23, 65, and 95, US Highway 10, and Interstate 94. Being centrally located in the state, or between the Twin Cities and Fargo, was a positive for several businesses. Several businesses also said proximity to the Twin Cities Metro area is a strength. A few businesses said being near the Twin Cities Metro area was good for hiring, while a few others said they were able to get good shipping prices due to their location.

"The Twin Cities is close with good access without actually being in the Twin Cities."

Several businesses said a positive for their location was affordable land, which can make it easier to expand. For several businesses, their rural location also means they can avoid congestion and related challenges, such as delayed shipments or employees showing up late for work.

Challenges and Barriers to Economic Development

More than three-quarters of businesses discussed negative impacts of transportation on business costs. Several businesses talked about congestion as a weakness, noting that when shipments need to get to or from the Twin

Cities, traffic can be problematic. Several businesses also said summer traffic, particularly on Fridays, is a source of frustration.

While a rural location is a positive for some companies, it is a negative for others. Several businesses said their rural location is too far from customers and suppliers, which drives up shipping and freight costs. A few noted a lack of fuel stops near their location, while a few others said their location makes it difficult to find employees.

Being located in Central Minnesota can mean a lack of rail and port access, as well as next-day air service, and a limited pool of couriers and trucking companies, according to a few of the businesses. A few also said they lack direct access to trunk highways, which can make trips longer, or more complicated.

A few businesses said construction is a negative for their location, noting that impacts on infrastructure, such as detours, make it difficult to get into or out of their particular location. Others said confusion about weight restrictions in their area have negatively affected their business.

Businesses talked about expansion plans, with nearly half saying they have expansion plans, and more than half saying they have no expansion plans. Several businesses talked generally about potential plans to expand, with some expanding on the same site or very near their current site. A few businesses said they had recently completed an expansion, with a few others citing a lack of space or lack of funds to expand.

Next Steps

The District 3 Manufacturers' Perspectives study revealed businesses' concerns and priorities about the regional and statewide transportation system. Comments, ideas, and suggestions from the business interviews carried out for this District 3 project confirm many of MnDOT's current priorities and approaches for the district and provide useful input to inform and enhance both existing efforts and future initiatives. This section describes next steps for using the feedback from this interview project, both for work MnDOT is already carrying out and for future plans, including public engagement.

MnDOT District 3

1. Incorporate business feedback into District 3's short- and long-term planning processes and, as feasible, modify upcoming road projects and maintenance plans to address business issues.

MnDOT District 3 staff can:

- Continue work started in late 2019 and continued through summer 2020 to categorize ideas, suggestions, and requests from the District 3 business interviews, assess if action is possible and practical, and prioritize possible action items.
- Continue to review immediate, short-term action items from this Manufacturers' Perspectives study, assign high-priority items, address them to the extent possible and practical, and track progress.
- To the extent possible, continue to use findings to inform long-term action items into the District 3 processes for the State Transportation Improvement Program (STIP), the longer-term Capital Highway Investment Plan (CHIP), and charters for future projects, and track decisions and progress going forward.
- Provide businesses with more advance information on construction projects and traffic routing or road closures, information on historic traffic flows, and a long-term forecast on congestion.

- Assess opportunities to understand what design enhancements could be improved, such as extension of turn lanes, or designs that better facilitate large truck use of roundabouts.
- Evaluate the signalized intersection on US Highway 10 in Royalton to identify alternative traffic control solutions, or alternate routes, to reduce congestion.
- Explore the potential to add additional VMS to the district, or to future projects. Consider also using VMS to communicate truck parking availability.
- Maintain District 3 efforts to keep commerce moving during the winter through successful snow and ice removal and explore opportunities for improvement. Additionally, consider outreach to employers with continuous or near continuous operations to provide information on the district’s current snow and ice removal efforts.
- Work with the Office of Freight and Commercial Vehicle Operations to determine whether federal freight funds are available to expand parking at existing rest areas or at weigh stations to address business concerns about insufficient truck parking and loss of hours spent on the road (due to e-logs, which are used to track adherence to Hours-of-Service restrictions).
- Explore the opportunity to maximize freight options and capacity at the St. Cloud airport so businesses can avoid traveling to the Minneapolis–St. Paul International Airport to access air services.
- Share District 3 businesses’ feedback with city and county engineers about their respective road systems, particularly challenges around size and weight restrictions, rough pavement, and clearing of snow and ice.

2. Consider innovative ways District 3 can build stronger relationships and partnerships with businesses, city and county engineers, economic development professionals, and other stakeholders.

MnDOT District 3 staff can:

- Communicate with businesses about progress on ideas and any actions taken, suggestions, and requests drawn from the business interviews.
- Consider the methods and successes for engaging District 3 businesses from the Manufacturers’ Perspectives study and determine how to best build on the experience to collect input and feedback from businesses, as well as other stakeholders and constituencies, in the future.
- Use contacts and relationships established with economic development organizations for the Manufacturers’ Perspectives study as a base for continued interaction and cooperation.
- Explore other ways MnDOT can better understand and more closely work with manufacturers and other relevant businesses to strengthen economic vitality in Greater Minnesota. For example, additional manufacturers could be invited to serve on regional Transportation Advisory Committees, and other transportation planning groups.
- Continue to use a mix of media to alert the public and businesses of road closures and dangerous driving conditions including message boards, local media, and social media.
- Promote use of various 511 tools and its user-friendly, real-time information, including traffic maps and live images from highway and plow cameras.
- Increase education of the traveling public about driving safely near and around trucks (e.g. loaded trucks need extra stopping distance) and provide truck driver education on use of different highway features (e.g., roundabouts).

MnDOT Central Office

3. Use feedback from District 3 businesses to make improvements to existing systems. Consider business input in future statewide planning efforts and for the development of best practices.

MnDOT Central Office staff can:

- Review weight restriction policies in neighboring states to identify potential opportunities for policy alignment. More broadly, evaluate practices regarding weight restrictions and discrepancies, including communication and messaging to inform businesses of state and federal policy.
- Provide businesses with information on the reasons for weight restrictions at the time of permit application and gather feedback from businesses that move products across state borders regarding the challenges they experience.
- Review federal e-log policies and work with districts and businesses to identify infrastructure and training-related solutions to current business challenges.
- Continue improving the 511 system, such as providing earlier notice of road restrictions and closures, and more frequent updates on weather conditions. Continue targeted outreach to businesses that operate their own trucks about the 511 traveler system, including the Truckers' Page, to improve use of these resources.

4. Use the combined findings and suggestions from the Manufacturers' Perspectives studies completed in Districts 1, 2, 3, 4, 6, 7, 8, and the Metro to understand business needs and improve the state's transportation system. Incorporate a continuous improvement approach to the Manufacturers' Perspectives studies.

MnDOT Central Office has:

- Created a Manufacturers' Perspectives study website (mndot.gov/mps) to share the reports and results, and assist in communicating with businesses.

MnDOT Central Office staff can also:

- Continue to synthesize findings from this Manufacturers' Perspectives study, along with the others, for communications, transportation improvements, and planning.
- Examine ways to combine findings from the Manufacturers' Perspectives studies with broader statewide findings, themes, and recommendations for use in MnDOT's Statewide Freight System Plan and its ongoing Freight Action Agenda; in District Freight Plans; and in other relevant plans and initiatives.
- Evaluate the feasibility of developing cross-district planning forums with staff from Districts 1, 2, 3, 4, 6, 7, and 8 to share findings and frame broader collaborative solutions that address statewide issues.
- Strengthen communications about this Manufacturers' Perspectives study, including a plan to communicate findings from the study to both District 3 staff and audiences external to MnDOT. Also present findings in public forums, including conferences.
- Develop a process for districts that have participated in Manufacturers' Perspectives studies to provide feedback, both internally and externally, about their progress on study findings.

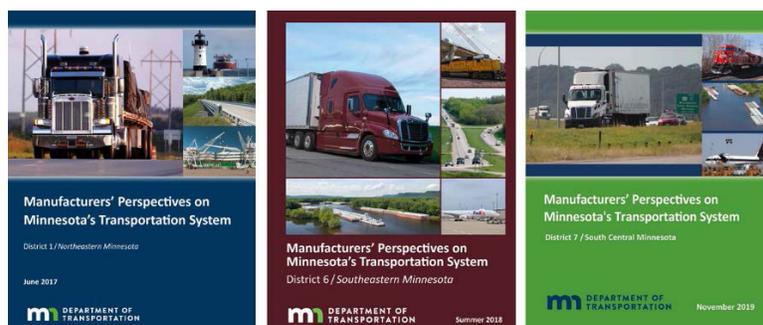


Photo 40. Findings from Manufacturers' Perspectives studies completed in other districts can be combined to present broader statewide findings, themes, and recommendations

District 3 Progress Update — Early Benefits

District 3 is analyzing feedback from interviews with businesses and has already acted on some near-term feedback based on this study.

In February 2020, District 3 staff received the Short-term Action Items list, which itemized the most urgent items and safety-related items from the interviews, and assigned those items to key staff members for review and follow up.

In April, several MnDOT District 3 staff who were part of the project team (District Engineer, Assistant District Engineer, and Maintenance, Planning, and Public Engagement leads) reviewed the preliminary report findings of the District 3 Manufacturer’s Perspectives study and identified the need to learn more about the following areas: congestion, infrastructure, and operations and maintenance.

In May, District 3 staff provided the report’s preliminary findings to the MnDOT and consultant project team working on the District 3 Freight Plan, which is currently underway. In addition, District 3 staff provided the interview comments about weight and size enforcement to staff in MnDOT’s Office of Freight and Commercial Vehicle Operations (OFCVO), who oversee the weigh stations and commercial vehicle permitting.

The district later received the study’s full Action Items list (with nearly 750 items). In July, that list was divided up and assigned to various staff for categorization and prioritization, and each item was assigned an action time frame (i.e. short-, medium-, or long- term). District staff continued work on prioritizing the action items throughout the summer of 2020.

In August, a draft of this full report was also provided to the team developing the district’s Freight Plan for review. Information that supports the Freight Plan — or outlines transportation system needs within the district — will be included in it, as deemed relevant.

Appendix A: List of Businesses Interviewed

3M Fabrication Service	Custom Caseworks Inc.	Heritage Transport, Inc.
Advanced Extrusion	Cymbet Corporation	Hunkes Transfer
Allied Graphics	D & D CNC Machining Inc.	Interior Components Group, Inc.
AMCON Concrete Products, LLC	D.J.V. Label & Packaging	JJJ Specialty Co.
American Axle & Manufacturing Inc.	Dan's Prize, Inc.	JCT Transport Inc.
Arfsten Transport	DBL Labs, Inc.	Kilian Truck Line, Inc.
Arrow Tank & Engineering Co.	DeZURIK	Koronis Parts, Inc.
Aurelius Manufacturing Co.	Diamond Tool & Engineering, Inc.	Lakes Printing
Barrett Petfood Innovations	Distinctive Cabinet Design	Lampert's Cabinets
Bayer Interior Woods	Diversified Bronze & Manufacturing Inc.	LDI Fibers
Belgrade Co-Op	Dombrovski Meats	Liberty Clark, Inc.
Blow Molded Specialties, Inc.	Dura Supreme Cabinetry	Little Falls Machine
Braham Monument / Braham Pre-Cast Step Co.	Dynamic Precision Manufacturing	Log Homes Minnesota, Inc.
Brenny Transportation, Inc. & Brenny Specialized, Inc.	E.A. Sween Co.	Long Haul Trucking, Inc.
Brett Admixtures	Electro Industries Inc.	L.S. Starrett Company
BTD Wood Powder Coating	Elite Transportation Systems, Inc.	Magnum Logistics
Canoe Wild Rice / Mille Lacs Wild Rice	Falls Fabricating	Malco Products Inc.
Capital Granite	Felling Trailers, Inc.	Metal Coatings & Manufacturing Company
Cargill Animal Nutrition	Gold Country Trucking, LLC	Metal Craft
Cargill Kitchen Solutions	Grand Champion Meats	Microbiologics
Central Bi-Products Rendering	Granger Machine, Inc.	Mold-Tech, Inc.
Clow Stamping Company	Halvor Lines, Inc.	MP Barrett Trucking, Inc.
Cold Spring Bakery Inc.	Hardware Distributors LTD	My Cull Fixtures, Inc.
Coldspring	Harvest Hill Beverage Company	Nahan
Contour Mold	Hawkins Sawmill, Inc.	National Vision, Inc.
Cretex Companies, Inc.	Helena Chemical Company	New Flyer
Crow Wing Recycling	Helo Sauna & Steam	Night Train Trucking, Inc.
		North Metro Saw, Inc.

Northwoods Dock	Styme
Old Dominion Freight Line, Inc.	Super One Foods — Walker
Oldcastle Building Envelope	Superior Iron, LLC
Omega Hardwoods	TC / American Manufacturing Division
Pace Industries — Prod Tech Div	Thompson Tool and Die, Inc.
Palmer Printing	Tischler Wood Products, Inc.
Paradigme Engineering, LLC	TJ Potter Trucking, Inc.
Patriot Converting, Inc.	TKI Intermodal
Pellco Machine, Inc.	Trident Seafoods Corporation
Pequot Tool & Manufacturing Inc.	Trueman-Welters, Inc.
Perkins Specialized Transportation Contracting, Inc.	U.S. Water Services Inc. / Kurita America Inc.
Plastic Products Co. Inc.	Ultraviolet Resources International
Polman Transfer, Inc.	Vitaldyne Medical, Inc.
PouchTec Industries, LLC	Wabash National — Little Falls Operations
Pro Ag Farmers Co-Op	Watson Company
Proliant Dairy	Woodcraft Industries Inc.
Radco Truck Accessory Center	XPO Logistics
Rainville-Carlson Inc.	
Rock On Trucks	
Rotochopper, Inc.	
Salo Manufacturing, Inc.	
Scherer Trucking	
SPEE-DEE Delivery Service Inc.	
Stern Companies, Inc.	
Stern Rubber Company	
Stewart's Forest Products, Inc.	
Stonehouse Coffee & Roastery	

Appendix B: Project Team, Interviewers, Data Collectors, and Project Partners

Minnesota Department of Transportation

MnDOT Core Project Team

- Domingo Aguilar, Maintenance Superintendent, District 3
- Andrew Andrusko, Principal Planner, Office of Freight and Commercial Vehicle Operations, Central Office
- Stephanie Castellanos, Public Engagement Coordinator, District 3
- Claudia Dumont, Project Manager / Engineering Specialist, District 3
- Michelle Edin, Executive Assistant, District 3
- Mike Ginnaty, Transportation District Engineer, District 3
- Jim Hallgren, Assistant District Engineer – Program, District 3
- Kelvin Howieson, Assistant District Engineer–State Aid, District 3
- Tony Hughes, Assistant District Engineer – Construction, District 3
- Jamie Hukriede, Assistant District Engineer–Maintenance, District 3
- Jon Mason, Senior Planner, District 3*
- Darren Nelson, Project Development Engineer, District 3
- Laurie Ryan, D3 Manufacturers’ Perspectives Project Manager and Partner Relations Liaison, Public Engagement & Constituent Services, Central Office
- Todd Sangren, Maintenance Superintendent, District 3
- Steve Voss, Transportation Planning Director, District 3
- Betty Jo Winterowd, District Administrative Manager, District 3

**As of March 2020, Jon Mason is the Planning Director for MnDOT District 2.*

Additional MnDOT Staff on Interview Teams

- Jeanne Aamodt, Public Engagement Manager, Public Engagement & Constituent Services, Central Office
- Amer Abdulrazzak, Graduate Engineer 2, District 3
- Rob Abfalter, Project Manager / Engineering Specialist, District 3
- Adam Ahrndt, Maintenance Operations Bridge Engineer, District 3
- Kirk Allen, Project Manager / Engineering Specialist Senior, District 3
- Chad Balfanz, Transportation Specialist, District 3
- Kristy Barhorst, Office and Administrative Specialist Senior, District 3
- Jeff Berg, Real Estate Representative, District 3
- Tom Boser, Lab Supervisor / Engineering Specialist Senior, District 3
- Lori Carry, Account Clerk Senior, District 3
- Kayla Dean, Market Research Coordinator, Public Engagement & Constituent Services, Central Office
- Russell Fellbaum, Project Manager / Senior Engineer, District 3
- Dave Field, Transportation Generalist Senior, District 3

- Jesse Friedrich, Transportation Operations Supervisor II, District 3
- Joe Gilk, Transportation Generalist Senior, District 3
- David Gohman, Senior Land Surveyor, District 3
- Todd Grater, Engineer Specialist Senior, District 3
- Ken Hansen, Traffic Principal Engineer, District 3
- Michelle Hoff, Transportation Specialist, District 3
- Lisa Hoheisel, Engineering Specialist, District 3
- Matt Indihar, Acting Resident Engineer, District 3
- Sara Johnson, Materials Engineer, District 3
- Mike Kiley, Transportation Operations Supervisor II, District 3
- Jeff Lenz, Program Coordinator / Engineering Specialist, District 3
- Dan Meinen, Transportation Operations Supervisor II, District 3
- Ben Meister, Environmental Coordinator / Transportation Program Specialist, District 3
- Kevin Metz, Principal Land Surveyor, District 3
- Bob Miller, Plan Development and Hydraulics Principal Engineer, District 3
- Eric Montague, Senior Real Estate Representative, District 3
- Jed Mulder, Transportation Operations Supervisor II, District 3
- Dan Muyres, Transportation Operations Supervisor I, District 3
- Lynn Nielsen, Engineering Specialist Senior, District 3
- Sam Nigon, Senior Engineer, District 3
- Terri Odegaard, Project Manager / Senior Engineer, District 3
- Tim Paul, Engineering Specialist Principal, District 3
- Renee Raduenz, Acting Office Director, Public Engagement & Constituent Services, Central Office
- Krista Rydberg, Communications – Public Affairs Coordinator, District 3
- Tadesse Saifu, Graduate Engineer, District 3
- Eric Schiller, Project Manager / Senior Engineer, District 3
- Kevin Schmidt, Principal Engineer, District 3
- Pam Schubloom, Training and Development Specialist, District 3
- Jenny Seelen, Communications – Graphic Design / Web / Public Affairs, District 3
- Jim Skoog, Acting Ombudsman, Public Engagement & Constituent Services, Central Office
- Brett Stark, Engineering Specialist Senior, District 3
- Amy Staudinger, Transportation Program Specialist, District 3
- Tony Steenburgh, Transportation Materials Technician, District 3
- Randy Strassburg, Transportation Operations Supervisor I, District 3
- Shawn Terning, Transportation Materials Supervisor, District 3
- Dave Totzke, Engineering Specialist, District 3
- Nate Walton, Graduate Engineer 2, District 3
- Luke Wehseler, Project Manager / Senior Engineer, District 3
- Dan Whebbe, Transportation Operations Supervisor II, District 3
- Zachary Whitley, Graduate 2 / Assistant District Traffic Engineer, District 3
- Marcus Young, Artist in Residence, Office of Land Management, Central Office
- Michael Young, Account Clerk, District 3
- Will Young, Heavy Equipment Mechanic, District 3
- Scott Zeidler, Engineering Specialist Senior, District 3

Economic Development Partners

- Carol Anderson, Executive Director, Morrison County Community Development
- Stephanie Barney, Business Loan Developer, Region Five Development Commission
- Brad Brzezinski, Northeast Region Business Development Manager, Minnesota Department of Employment and Economic Development
- Tad Erickson, Senior Regional Planner, Region Five Development Commission
- Tyler Glynn, Economic Development Officer, Brainerd Lakes Area Economic Development Corporation
- Stan Gustafson, Economic Development Director, City of Cambridge
- Staci Headley, Regional Development Planner, Region Five Development Commission
- David Heyer, West Central Region Business Development Manager, Minnesota Department of Employment and Economic Development
- Kari Howe, Northwest Region Business Development Manager, Minnesota Department of Employment and Economic Development
- Matt Kallroos, Regional Development Planner, Region Five Development Commission
- Hanna Klimmek, Community Development Director, City of Big Lake
- Stacie Michels, President, Sauk Centre Area Chamber of Commerce
- Marie Pflipsen, Community Development Director, City of Becker
- Debbi Rydberg, Executive Director, Elk River Area Chamber of Commerce
- Sheila Sellman, Community Development Director, City of Isanti
- Penny Simonsen, Transportation Director, East Central Region Development Commission
- Heidi Steinmetz, Director, Kanabec County Economic Development Authority (EDA)
- Luan Thomas-Brunkhorst, Director, Long Prairie Area Chamber of Commerce and Long Prairie Economic Development Authority
- Beth Thorp, Community Development Director, City of Mora
- John Uphoff, Executive Director, Benton Economic Partnership
- Bob Voss, Executive Director, East Central Region Development Commission
- Dan Weber, Assistant County Administrator, Sherburne County
- Mike Wimmer, Economic Development Manager, Mille Lacs County
- Jordan Zeller, Economic Developer, East Central Region Development Commission



Photo 41. MnDOT staff and economic development professionals attend training for this project at MnDOT – Baxter, MN

Consultant Project Partners

Extension Center for Community Vitality, University of Minnesota

- Neil Linscheid, Educator, Community Economics – St. Cloud, MN
- Ryan Pesch, Educator, Community Economics – Moorhead, MN

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

- Jessica Burke, Senior Management Consultant
- Ashley Johnson, Senior Management Consultant
- Mariyam Naadha, Senior Management Consultant

SRF Consulting Group

- Dan Anderson, Senior Project Manager
- Chris Brown, Transportation Planner
- Lauren Falkanger, Project Coordinator / Administrative Assistant
- Samantha Matuke, Project Coordinator / Planner
- Andy Mielke, Project Manager / Division Lead – Regional Offices
- Chris Ryan, Senior Associate

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

- Heidi Corcoran, Research Manager
- Lee Munnich Jr., Senior Fellow



Photo 42. Teams of MnDOT staff and economic development professionals conduct mock interviews during training for this project at MnDOT – St. Cloud, MN

Appendix C: Location Quotients for District 3 Traded Clusters⁷⁴

Traded Cluster	District 3	Aitkin	Benton	Cass	Crow Wing	Isanti	Kanabec	Mille Lacs	Morrison	Sherburne	Stearns	Todd	Wright	Wadena
Trailers, Motor Homes, and Appliances	7.42	2.89	-	6.74	-	-	-	-	-	-	16.95	-	0.62	-
Fishing and Fishing Products	6.19	-	-	4.37	-	-	-	-	188.28	-	-	-	-	-
Construction Products and Services	5.31	0.98	2.17	0.17	1.26	4.46	-	0.24	0.66	3.92	9.20	-	5.23	3.24
Wood Products	3.96	21.50	18.14	5.45	3.75	4.90	-	7.13	1.48	1.77	2.37	1.83	2.27	5.47
Livestock Processing	3.75	-	1.56	0.31	-	0.36	1.08	-	-	0.14	5.06	43.41	0.17	-
Recreational and Small Electric Goods	3.47	5.07	-	1.04	4.54	7.12	3.60	1.30	2.39	4.00	1.12	-	11.65	13.26
Printing Services	3.33	0.86	0.48	0.33	7.55	0.38	8.12	3.89	2.31	1.03	3.54	13.39	1.95	-
Furniture	3.28	1.18	4.10	0.73	3.32	1.52	-	0.26	2.06	9.38	1.78	0.49	6.14	17.10
Nonmetal Mining	2.47	34.02	-	-	-	-	-	1.19	1.96	6.07	1.94	2.02	3.63	-
Metalworking Technology	2.43	-	0.70	0.33	4.77	9.59	-	1.65	5.67	7.98	0.42	3.34	2.45	9.09
Environmental Services	2.01	-	9.79	1.78	1.64	2.04	-	1.12	-	7.36	0.32	1.90	2.93	-
Production Technology and Heavy Machinery	1.96	8.28	4.30	-	2.55	1.70	11.16	1.45	1.71	1.29	1.76	0.35	1.84	0.35

⁷⁴ A location quotient measures the share of an industry cluster's employment in a region as a ratio of that cluster's share of employment in the U.S. as a whole. This generates an indicator of industry concentration or specialization within a region. A location quotient exceeding 1.00 can indicate that an industry cluster employs a higher proportion of workers in a region than the proportion for that same industry cluster nationally. On this table, location quotients of 1.3 or higher are shaded in blue to indicate the most competitive clusters for the region and each county. Because the shares of employment in these industry clusters for District 3 and the counties exceed the national shares, it is assumed that these clusters produce more goods and services than what is needed locally, and are therefore selling output to buyers outside the local area, making them traded clusters.

Traded Cluster	District 3	Aitkin	Benton	Cass	Crow Wing	Isanti	Kanabec	Mille Lacs	Morrison	Sherburne	Stearns	Todd	Wright	Wadena
Vulcanized and Fired Materials	1.94	1.63	-	-	1.75	4.36	-	-	-	2.04	0.11	4.07	9.58	-
Agricultural Inputs and Services	1.82	-	0.34	1.57	1.44	-	5.43	0.98	-	2.16	1.50	1.67	4.51	3.33
Food Processing and Manufacturing	1.77	0.78	0.76	-	0.76	0.35	0.52	3.56	3.06	1.77	1.40	1.45	4.21	-
Forestry	1.77	11.40	-	15.16	2.47	2.67	8.09	2.93	6.97	-	-	2.49	-	11.42
Plastics	1.70	-	3.76	1.35	1.81	2.05	13.61	2.47	0.52	3.35	0.61	-	3.01	0.48
Downstream Metal Products	1.55	0.96	1.86	2.98	0.50	5.11	2.58	0.23	0.86	1.35	0.87	0.80	4.18	-
Downstream Chemical Products	1.49	-	1.36	-	2.05	5.09	-	-	-	-	-	-	8.11	-
Automotive	1.30	-	0.12	-	0.22	4.56	-	0.10	0.19	1.31	1.96	0.17	1.18	2.08
Electric Power Generation and Transmission	1.30	-	-	1.06	0.49	1.21	-	0.66	8.50	8.48	0.19	1.13	0.58	-
Leather and Related Products	1.30	-	7.20	-	-	5.77	-	-	5.80	-	0.45	5.39	1.38	-
Hospitality and Tourism	1.30	3.02	0.59	6.68	2.57	0.55	0.68	6.42	1.27	0.74	0.48	0.39	0.40	0.39
Medical Devices	1.23	-	10.39	0.62	0.29	0.71	-	-	-	0.57	1.07	3.97	-	-
Apparel	1.20	-	5.71	-	0.61	1.52	-	-	1.53	0.61	0.47	-	3.47	2.84
Transportation and Logistics	1.00	0.93	1.00	0.14	0.34	0.30	2.19	0.45	1.08	1.83	1.10	0.57	1.31	0.69
Distribution and Electronic Commerce	0.99	0.49	0.94	1.32	0.75	0.60	0.38	0.53	0.70	1.03	1.14	0.70	1.06	1.56
Upstream Metal Manufacturing	0.96	-	-	-	7.08	2.81	1.42	-	2.83	1.13	-	-	0.79	-
Marketing, Design, and Publishing	0.94	0.30	0.38	0.46	1.38	0.53	2.41	0.15	0.13	0.63	1.35	0.12	0.77	0.74

Traded Cluster	District 3	Aitkin	Benton	Cass	Crow Wing	Isanti	Kanabec	Mille Lacs	Morrison	Sherburne	Stearns	Todd	Wright	Wadena
Jewelry and Precious Metals	0.71	-	-	-	-	-	-	-	-	2.95	0.57	-	1.76	-
Financial Services	0.69	0.62	0.29	0.32	0.86	1.11	0.56	0.20	0.39	0.42	0.95	0.26	0.41	1.54
Textile Manufacturing	0.67	-	10.51	-	0.78	-	-	-	-	-	0.07	-	0.23	-
Paper and Packaging	0.61	-	-	-	-	-	-	0.28	-	3.62	0.70	-	0.12	-
Education and Knowledge Creation	0.59	0.13	0.25	0.95	0.07	0.11	0.17	0.13	1.06	0.55	1.01	0.05	0.14	0.32
Water Transportation	0.53	8.12	0.38	-	0.24	-	-	-	10.59	-	0.05	0.56	-	-
Performing Arts	0.51	2.20	0.30	0.85	0.98	0.98	1.48	0.27	0.49	0.82	0.39	0.46	0.25	-
Information Technology and Analytical Instruments	0.48	-	0.10	0.28	0.89	0.16	-	0.69	0.95	1.55	0.33	-	0.38	-
Biopharmaceuticals	0.46	-	-	-	-	-	-	-	-	-	0.98	-	0.35	-
Business Services	0.34	0.13	0.60	0.21	0.52	0.52	0.22	0.43	0.21	0.23	0.35	0.14	0.25	0.58
Communications Equipment and Services	0.26	-	-	-	1.00	0.41	-	-	0.42	0.33	0.22	-	0.30	-
Lighting and Electrical Equipment	0.26	-	-	-	0.25	4.35	-	0.34	-	0.25	0.05	-	0.30	-
Upstream Chemical Products	0.23	-	-	-	-	-	-	-	6.26	0.42	-	-	-	-
Video Production and Distribution	0.21	-	-	-	0.26	-	-	-	-	-	0.10	-	1.10	-
Insurance Services	0.17	0.24	0.14	0.10	0.18	0.22	0.33	-	0.33	0.35	0.17	-	0.13	0.20
Metal Mining	0.14	-	-	-	1.76	-	-	-	-	-	-	-	-	-
Oil and Gas Production and Transportation	0.13	-	0.20	0.55	-	-	-	0.17	0.63	0.25	0.05	0.29	0.08	0.59

Traded Cluster	District 3	Aitkin	Benton	Cass	Crow Wing	Isanti	Kanabec	Mille Lacs	Morrison	Sherburne	Stearns	Todd	Wright	Wadena
Aerospace Vehicles and Defense	0.08	-	-	-	-	2.06	-	-	-	-	-	-	0.08	-

Appendix D: Number of Employees by Traded Cluster⁷⁵

Traded Cluster	District 3	Aitkin	Benton	Cass	Crow Wing	Isanti	Kanabec	Mille Lacs	Morrison	Sherburne	Stearns	Todd	Wright	Wadena
Distribution and Electronic Commerce	9,901	70	483	485	601	194	40	311	225	826	4,732	240	1,424	270
Construction Products and Services	7,591	20	160	9	144	205	-	20	30	450	5,470	-	1,003	80
Business Services	7,238	40	651	160	880	350	50	525	139	380	3,060	100	693	210
Hospitality and Tourism	7,236	241	170	1,370	1,144	98	40	2,097	227	332	1,104	75	300	38
Livestock Processing	3,260	-	70	10	-	10	10	-	-	10	1,830	1,300	20	-
Education and Knowledge Creation	3,226	10	70	190	30	20	10	40	185	241	2,284	10	106	30
Production Technology and Heavy Machinery	3,220	195	365	-	335	90	195	140	90	170	1,204	20	406	10
Food Processing and Manufacturing	3,184	20	70	-	109	20	10	375	176	255	1,044	90	1,015	-
Transportation and Logistics	3,020	40	155	15	83	29	70	80	104	442	1,378	59	529	36
Printing Services	2,705	10	20	10	490	10	70	185	60	67	1,196	375	212	-
Wood Products	2,508	195	593	127	190	100	-	265	30	90	625	40	193	60
Financial Services	2,329	30	50	40	234	121	20	40	42	115	1,332	30	185	90
Marketing, Design, and Publishing	2,199	10	46	40	258	40	60	20	10	118	1,315	10	242	30
Automotive	2,175	-	10	-	30	245	-	10	10	175	1,360	10	265	60

⁷⁵ Copyright © 2014 President and Fellows of Harvard College. All rights reserved. Research funded in part by the U.S. Department of Commerce, Economic Development Administration. Table prepared by State and Local Policy Program, Humphrey School of Public Affairs, University of Minnesota.

Traded Cluster	District 3	Aitkin	Benton	Cass	Crow Wing	Isanti	Kanabec	Mille Lacs	Morrison	Sherburne	Stearns	Todd	Wright	Wadena
Plastics	2,053	-	235	60	175	80	175	175	20	325	309	-	489	10
Metalworking Technology	2,011	-	30	10	315	255	-	80	150	529	145	95	272	130
Furniture	1,939	10	125	16	157	29	-	9	39	445	437	10	487	175
Trailers, Motor Homes, and Appliances	1,794	10	-	60	-	-	-	-	-	-	1,704	-	20	-
Downstream Metal Products	1,131	10	70	80	29	120	20	10	20	79	264	20	409	-
Information Technology and Analytical Instruments	939	-	10	20	140	10	-	80	60	245	274	-	100	-
Recreational and Small Electric Goods	909	19	-	10	95	60	10	20	20	84	122	-	409	60
Vulcanized and Fired Materials	830	10	-	-	60	60	-	-	-	70	20	60	550	-
Downstream Chemical Products	635	-	30	-	70	70	-	-	-	-	-	-	465	-
Upstream Metal Manufacturing	635	-	-	-	375	60	10	-	60	60	-	-	70	-
Medical Devices	540	-	235	10	10	10	-	-	-	20	195	60	-	-
Insurance Services	483	10	20	10	40	20	10	-	30	80	203	-	50	10
Fishing and Fishing Products	385	-	-	10	-	-	-	-	375	-	-	-	-	-
Paper and Packaging	370	-	-	-	-	-	-	10	-	175	175	-	10	-
Nonmetal Mining	355	70	-	-	-	-	-	10	9	70	116	10	70	-
Electric Power Generation and Transmission	335	-	-	10	10	10	-	10	70	175	20	10	20	-
Performing Arts	325	20	10	20	50	20	10	10	10	42	102	10	21	-

Traded Cluster	District 3	Aitkin	Benton	Cass	Crow Wing	Isanti	Kanabec	Mille Lacs	Morrison	Sherburne	Stearns	Todd	Wright	Wadena
Agricultural Inputs and Services	316	-	3	10	20	-	10	10	-	30	108	10	105	10
Environmental Services	307	-	77	10	20	10	-	10	-	90	20	10	60	-
Water Transportation	275	60	10	-	10	-	-	-	175	-	10	10	-	-
Apparel	245	-	60	-	10	10	-	-	10	10	40	-	95	10
Textile Manufacturing	215	-	175	-	20	-	-	-	-	-	10	-	10	-
Forestry	206	19	-	65	23	10	10	20	26	-	-	10	-	23
Communications Equipment and Services	198	-	-	-	60	10	-	-	10	20	68	-	30	-
Biopharmaceuticals	195	-	-	-	-	-	-	-	-	-	175	-	20	-
Lighting and Electrical Equipment	130	-	-	-	10	70	-	10	-	10	10	-	20	-
Oil and Gas Production and Transportation	130	-	10	20	-	-	-	10	20	20	20	10	10	10
Video Production and Distribution	100	-	-	-	10	-	-	-	-	-	20	-	70	-
Aerospace Vehicles and Defense	70	-	-	-	-	60	-	-	-	-	-	-	10	-
Leather and Related Products	70	-	20	-	-	10	-	-	10	-	10	10	10	-
Upstream Chemical Products	70	-	-	-	-	-	-	-	60	10	-	-	-	-
Jewelry and Precious Metals	30	-	-	-	-	-	-	-	-	10	10	-	10	-
Metal Mining	10	-	-	-	10	-	-	-	-	-	-	-	-	-

Traded Cluster	District 3	Aitkin	Benton	Cass	Crow Wing	Isanti	Kanabec	Mille Lacs	Morrison	Sherburne	Stearns	Todd	Wright	Wadena
Total Traded Clusters	78,028	1,119	4,033	2,877	6,247	2,516	830	4,582	2,502	6,270	32,521	2,694	10,485	1,352
Percent of Total Traded Clusters	100%	1%	5%	4%	8%	3%	1%	6%	3%	8%	42%	3%	13%	2%

Appendix E: Descriptions of Clusters Interviewed

Below is a complete list of all clusters interviewed with descriptions of each cluster and an example of a business interviewed in District 3.

Table 4. Definitions and examples of traded industry clusters in District 3⁷⁶

Cluster	Definition	Business Example
Agricultural Inputs and Services	This cluster includes establishments primarily engaged in farming and related services. Farming includes soil preparation, planting, cultivation, harvest, fertilizer creation, and postharvest activities. It also includes services that supply farm labor, support for animal production, and additional operations management.	Belgrade Co-Op
Automotive	This cluster includes establishments along the value chain that are necessary for manufacturing cars, trucks, and other motorized land-based transportation equipment (other than motorcycles). This includes metal mills and foundries, manufacturers of metal automotive parts, and manufacturers of completed automobiles.	New Flyer
Construction Products and Services	The establishments in this cluster supply construction materials, components, products, and services. Construction materials and components include those made of sand, stone, gravel, asphalt, cement, concrete, and other earthen substances. Construction products include pipes and heat exchangers. Construction services include the construction of pipelines for water, sewers, oil and gas, power, and communication, as well as building services for homes and industrial buildings.	Coldspring

⁷⁶ U.S. Cluster Mapping, “Traded Clusters Appendix,” accessed May 12, 2020, clustermapping.us/sites/default/files/files/page/Traded%20Clusters%20Appendix.pdf.

Cluster	Definition	Business Example
Distribution and Electronic Commerce	This cluster consists primarily of traditional wholesalers as well as mail order houses and electronic merchants. The companies in this cluster mostly buy, hold, and distribute a wide range of products such as apparel, food, chemicals, gases, minerals, farm materials, machinery, and other merchandise. The cluster also contains firms that support distribution and electronic commerce operations, including packaging, labeling, and equipment rental and leasing.	Arrow Tank & Engineering Co.
Downstream 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, explosives, and lubricating oils.	Brett Admixtures
Downstream Metal Products	This cluster contains establishments that manufacture metal containers, prefabricated metal structures, and end user metal products. These end user products include ammunition, kitchenware, hardware, metal bathroom fixtures, and similar metal products used in home finishing such as doors, windows and ornamentation.	Malco Products Inc.
Environmental Services	This cluster contains establishments primarily engaged in collection, treatment, processing, and disposal of hazardous and nonhazardous waste.	Rock On Trucks
Food Processing and Manufacturing	This cluster includes firms involved in the processing of raw food materials and the manufacturing of downstream food products for end users. This includes millers and refineries of rice, flour, corn, sugar, and oilseeds. These upstream products contribute in part to producing specialty foods, animal foods, baked goods, candies, teas, coffees, beers, wines, other beverages, meats, packaged fruits and vegetables, and processed dairy products.	Canoe Wild Rice / Mille Lacs Wild Rice
Furniture	This cluster contains establishments that manufacture furniture, cabinets, and shelving for residential homes and offices. It also includes establishments that produce	Dura Supreme Cabinetry

Cluster	Definition	Business Example
	manufactured homes. The products in this cluster can be made of wood, metal, plastic, or textiles.	
Livestock Processing	This cluster contains establishments engaged in processing meat from livestock and livestock wholesaling.	Dombrovski Meats
Medical Devices	Establishments in this cluster primarily manufacture surgical, medical, dental, optical, ophthalmic, and veterinary instruments and supplies.	DBL Labs, Inc.
Metalworking Technology	The establishments in this cluster manufacture machine tools and process metal for use in metalworking. The cluster also contains the downstream manufacture of metal fasteners and hand tools.	Metal Coatings & Manufacturing Company
Paper and Packaging	This cluster contains the paper mills and manufacturers of paper products used for shipping, packaging, containers, office supplies, personal products, and similar products.	D.J.V. Label & Packaging
Plastics	Establishments in this cluster manufacture plastic materials, components, and products. The plastics and foams are manufactured for packaging, pipes, floor coverings, and related plastic products. The cluster also includes the upstream manufacturing of plastic materials and resins, as well as the industrial machines used to manufacture plastics.	Plastic Products Co. Inc.
Printing Services	Establishments in this cluster are primarily engaged in commercial printing, digital printing, and binding. The cluster includes upstream products and services necessary for printing (e.g., ink and prepress services). It also includes end products such as books, greeting cards, business forms, and related goods.	Lakes Printing
Production Technology and Heavy Machinery	Establishments in this cluster primarily manufacture machines designed to produce parts and devices used in the production of downstream products. This cluster also includes end use heavy machinery such as air and material handling equipment.	Aurelius Manufacturing Co.

Cluster	Definition	Business Example
	The machines are used for industrial, agricultural, construction, commercial industry, and related purposes.	
Recreational and Small Electric Goods	This cluster contains establishments that manufacture end use products for recreational and decorative purposes. These products include games, toys, bicycles, motorcycles, musical instruments, sporting goods, art supplies, office supplies, shades, and home accessories. This cluster also incorporates firms that produce small, simple electric goods such as hairdryers, fans, and office machinery.	Electro Industries Inc.
Trailers, Motor Homes, and Appliances	This cluster includes establishments that manufacture trailers, campers, and motor homes, as well as major household appliances.	Felling Trailers, Inc.
Transportation and Logistics	This cluster contains all air, rail, bus, and freight transportation services. It also includes related operation services and support activities such as inspections, maintenance, repairs, security, and loading and unloading.	Gold Country Trucking, LLC
Upstream Metal Manufacturing	The establishments in this cluster manufacture upstream metal products such as pipes, tubes, metal closures, wires, springs, and related products. The cluster includes iron and steel mills and foundries, as well as related metal processing techniques.	Thompson Tool and Die, Inc.
Vulcanized and Fired Materials	This cluster contains firms that manufacture construction and other materials out of earthen substances such as clay, sand, and rubber at extremely high temperatures. The production processes create goods made of tile, brick, ceramic, glass, and rubber (including refractories and tires).	Stern Rubber Company
Wood Products	The establishments in this cluster are primarily engaged in making upstream wood materials and manufacturing nonfurniture wood products. Upstream establishments include sawmills, plywood and hardwood manufacturers, cut stock manufacturers, and wood preservation services. Downstream establishments produce windows, doors, flooring, wood	Bayer Interior Woods

Cluster	Definition	Business Example
	containers, prefabricated wood buildings, and related products.	

Table 5. Definitions and examples of local industry clusters in District 3⁷⁷

Cluster	Definition	Business Example
Local Food and Beverage Processing and Distribution	This cluster contains firms that sell food and beverages at the wholesale and retail levels. Products sold include meat, seafood, fruit and vegetables, general groceries, tobacco, alcoholic beverages, and specialty foods. The cluster also includes related distribution methods such as vending and direct selling.	Super One Foods — Walker
Local Hospitality Establishments	Establishments in this cluster primarily consist of local hospitality establishments that serve food and beverages (alcoholic and nonalcoholic), as well as recreational facilities including country clubs, fitness clubs, and bowling centers. This cluster also contains gift and souvenir retail stores.	Stonehouse Coffee & Roastery
Local Household Goods and Services	This cluster contains local establishments and services designed to support individual households such as landscape services and electronics repair, as well as retail stores for appliances, hardware, gardening, and furniture.	Diamond Tool & Engineering, Inc.
Local Industrial Products and Services	This cluster primarily consists of firms that provide maintenance, wholesaling, and distribution for local industrial goods and services. This cluster also includes consumer rental and leasing for electronics, appliances, and general equipment.	Pellco Machine, Inc.
Local Logistical Services	This cluster primarily contains establishments that offer local passenger transportation and local transportation of freight and goods, including moving companies and couriers. This	MP Barrett Trucking, Inc.

⁷⁷ US Cluster Mapping, “Local Clusters Appendix,” accessed May 12, 2020, clustermapping.us/sites/default/files/files/page/Local%20Clusters%20Appendix.pdf.

Cluster	Definition	Business Example
	cluster also includes local storage facilities, truck and RV leasing, and passenger car rental services.	
Local Real Estate, Construction, and Development	Establishments in this cluster primarily provide local real estate services, general contracting, and specialty contracting for the building, purchasing, and renting of homes and related local infrastructure. This cluster also contains firms that support land development, concrete manufacturing, highway and street construction, and building equipment distribution	Cretex Companies, Inc.

Appendix F: Interview Guides

North Interview Guide for MnDOT District 3 Manufacturers

For the MnDOT Manufacturers' Perspectives Study in Central Minnesota, the following questions were asked of interviewees to understand the transportation needs and challenges of manufacturers in the north portion of the district. Interviewers asked additional questions and detailed follow-up questions as appropriate.

- Tell us about your business (e.g., primary products, number of employees, use of carriers).
- What transportation methods (truck, rail, waterways, air) does your business use to bring resources to your business and to transport products to your customers? What percentage of your inbound and outbound shipping is done using each of those methods?
- What are your business's biggest transportation challenges or concerns?
- Based on your company's experience, or what you are hearing from drivers, what feedback do you have about changes MnDOT could make to highway features that would help you better move your freight or people? (For example, intersections, passing / turn lanes, shoulder width, pavement quality, rest areas.)
- How do size or weight restrictions affect your business? What feedback do you have on the restrictions and the permitting processes?
- What safety concerns do you have regarding transportation?
- How well or poorly is MnDOT clearing roads of snow and ice in Central Minnesota? Are there particular routes that need to be cleared more quickly and completely, to better facilitate travel and access to / from your business?
- Where would additional or different signage be helpful?
- How well is MnDOT keeping you informed about adverse weather events, detours, lane restrictions, and emergency closures?
- Does your business have any expansions planned in the near future?
- What else would you like MnDOT to be aware of?

South Interview Guide for MnDOT District 3 Manufacturers

For the MnDOT Manufacturers' Perspectives Study in Central Minnesota, the following questions were asked of interviewees to understand the transportation needs and challenges of manufacturers in the south portion of the district. Interviewers asked additional questions and detailed follow-up questions as appropriate.

- Tell us about your business (e.g., primary products, number of employees, use of carriers).
- What transportation methods (truck, rail, waterways, air) does your business use to bring resources to your business and to transport products to your customers? What percentage of your inbound and outbound shipping is done using each of those methods?
- What are your business's biggest transportation challenges or concerns?
- Based on your company's experience, or what you are hearing from drivers, what feedback do you have about changes MnDOT could make to highway features that would help you better move your freight or people? (For example, intersections, passing / turn lanes, shoulder width, pavement quality, rest areas.)
- How do size or weight restrictions affect your business? What feedback do you have on the restrictions and the permitting processes?
- What safety concerns do you have regarding transportation?
- How well or poorly is MnDOT clearing roads of snow and ice in Central Minnesota? Are there particular routes that need to be cleared more quickly and completely, to better facilitate travel and access to / from your business?
- Where would additional or different signage be helpful?
- How well is MnDOT keeping you informed about adverse weather events, detours, lane restrictions, and emergency closures?
- How are your daily business operations affected, if at all, when traffic congestion means that travel times for shipments in or out vary for reasons beyond your control? What do you do to adjust or compensate for travel time variability, if anything?
- What impact does construction in the immediate area have on your company's shipping, or on commuting for your employees? What information would you like MnDOT to have about your business and its shipping needs when we plan construction projects?
- Does your business have any expansions planned in the near future?
- What else would you like MnDOT to be aware of?

Interview Guide for MnDOT District 3 Carriers

For the MnDOT Manufacturers' Perspectives Study in Central Minnesota, the following questions were asked of interviewees to understand the transportation needs and challenges of carriers. Interviewers asked additional questions and detailed follow-up questions as appropriate.

- Tell us about your business (e.g., types of products or commodities shipped, number of businesses served, number of drivers and other staff).
- What non-truck modes of transportation (rail, waterways, air) does your business use to transport products to your customers? How well are those non-truck modes meeting your needs?
- What are your business's biggest transportation challenges or concerns?
- What changes could MnDOT make to highway features that would help you better move freight? (For example, intersections, passing / turn lanes, shoulder width, pavement quality.)
- How do size or weight restrictions affect your business? What feedback do you have on these restrictions and the permitting processes?
- What safety concerns do you have regarding transportation?
- How well or poorly is MnDOT clearing roads of snow and ice in Central Minnesota? Are there particular routes that need to be cleared more quickly and completely, to better facilitate travel and access to / from your business or your customers' businesses?
- Where would additional or different signage be helpful?
- How well is MnDOT keeping you informed about adverse weather events, detours, lane restrictions, and emergency closures?
- How are your daily business operations affected, if at all, when traffic congestion means that travel times for shipments in or out vary for reasons beyond your control? What do you do to adjust or compensate for travel time variability, if anything?
- What impact does construction in the immediate area have on your company's shipping, or on commuting for your employees? What information would you like MnDOT to have about your business and its shipping needs when we plan construction projects?
- Does your business have any expansions planned in the near future?
- What else would you like MnDOT to be aware of?

Appendix G: Business Invitation Letter Sample

Invitation Letter to North D3 Manufacturers

**MnDOT District 3
7694 Industrial Park Road
Baxter, MN 56425**

**(218) 828-5703
mike.ginnaty@state.mn.us**

September 20, 2019

[Name]

[Businesss]

[Address]

[City], MN [Zip Code]

Dear [Name],

I would like to invite you to participate in a 1-hour interview about your business' concerns and priorities regarding freight movement and the transportation system in central Minnesota. My goal is to hear directly from both freight manufacturers and carrier-oriented businesses in the area about specific issues and needs that the Minnesota Department of Transportation (MnDOT) could work to incorporate into future projects.

Our interview with you and other businesses in central Minnesota will help inform MnDOT's resource priorities for maintenance and operations. My staff and I want to understand your thoughts and concerns regarding construction, infrastructure, maintenance operations, safety, and other factors important to your business as you manage freight shipping. We also are interested in feedback you may have regarding MnDOT policies and regulations. With limited resources, I cannot promise that we will be able to address all of your business needs, but I want to ensure you that we will work hard to understand what they are.

A secondary goal of this effort is to foster familiarity between my staff and area businesses and strengthen or open lines of communication. Our district serves 13 counties in the central region and we want to ensure that we are providing access points for freight-oriented businesses in the area to raise issues in a timely manner, whenever they come up.

As part of a statewide effort, MnDOT has completed several similar studies in Greater Minnesota using this interview model. Based on interviews in other regions, MnDOT has been able to address some issues and also use business input to inform maintenance efforts and planning for future projects. Additionally, business input has led to improvements in MnDOT's planning and communication processes. We expect that we'll have similar successes here in the central region as we learn about your transportation priorities and challenges. If you would like to view prior district reports, please visit the addresses below:

District 1 / Northwest (Duluth Area) Manufacturers' Perspectives Report: <http://bit.ly/D1-Report>

District 2 / Northeast (Bemidji Area) Manufacturers' Perspectives Report: <http://bit.ly/D2-Report>

District 4 / West Central (Detroit Lakes Area) Manufacturers' Perspectives Report: <http://bit.ly/D4-Report>

District 6 / Southeast (Rochester Area) Manufacturers' Perspectives Report: <http://bit.ly/D6-Report>

District 8 / Southwest (Willmar Area) Manufacturers' Perspectives Report: <http://bit.ly/D8-Report>

We plan to schedule interviews from September through December. Project consultants from SRF Consulting Group will follow up with you soon to schedule your interview, if you are interested. Interviews generally take about an hour, and the interview team will come to your location at a time when you are available. In addition to MnDOT staff, our interview teams will also include staff from local economic development organizations to further develop connections amongst our organizations.

I have enclosed a few sample questions to give you a general idea of the type of questions we will be asking during our discussion. **Please note that these are just examples and there will be additional questions (yet to be finalized).** Based on these sample questions, please feel free to include others from your organization that may add value to the discussion.

On behalf of MnDOT, we look forward to working with you to support your business and strengthen economic vitality in the central region of the state, as well as Minnesota as a whole.

If you have any questions about this project, please contact MnDOT's Project Manager Laurie Ryan at (651) 366-3658 or Laurie.Ryan@state.mn.us.

Sincerely,

Mike Ginnaty, P.E.

Transportation District Engineer

MnDOT District 3

Enclosure

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