



# Manufacturers' Perspectives on Minnesota's Transportation System

*District 1 / Northeastern Minnesota*

June 2017



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## Executive Summary

The Minnesota Department of Transportation’s (MnDOT) mission is to “[p]lan, 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 ship their products over Minnesota roads and bridges to local, state, national, and international markets. The transportation system, when aligned with shippers’ needs and priorities, can play a significant role in supporting state and regional economic vitality.

## Purpose and Methodology

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MnDOT collected and analyzed information on manufacturers’ perspectives in MnDOT District 1 (northeastern Minnesota) to:

- better understand their perspectives and priorities,
- build relationships to better align the transportation system in the long-term with shippers’ needs, and
- support continuous improvement at MnDOT with ongoing input from this customer segment.

The District 1 project methodology primarily consisted of interviews with manufacturers because they generally provide relatively stable, high-paying jobs, and they bring resources into their region by selling to markets beyond their immediate location. Businesses were identified using a traded regional industry cluster analysis, with additional input from economic development organizations in northeastern Minnesota and District 1 staff.

In addition to manufacturers, MnDOT included businesses in the timber, tourism, and mining industries due to their importance to the regional economy. Freight shippers were also included because they provide services to manufacturers and often have transportation-related needs, especially if they ship oversize, fragile, or time-sensitive loads. Understanding and responding, when possible, to the specific transportation challenges that shippers face can lower their costs, improve their competitiveness, and support the regional and state economy.

Cross-disciplinary interview teams comprised of MnDOT staff and partners conducted the interviews. Interviewers were asked to gather input on low-cost/high-benefit transportation improvements that could be met in the near-term with existing or few additional resources. Interview scripts allowed interviewers the flexibility to explore various topics that related to transportation and the regional economy.

## Results

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Seventy-eight businesses (73 percent) agreed to be interviewed. These included:

- 39 manufacturing businesses,
- 11 shipping/distribution/warehousing businesses,
- nine wholesale traders,
- six hospitality/tourism businesses,

- three mines, and
- one timber company, among others.

The region’s strongest traded clusters represented were (number of businesses in parentheses):

- Transportation and Logistics (9).
- Distribution and Electronic Commerce (7).
- Recreational and Small Electric Goods (7).
- Hospitality and Tourism (6).
- Wood Products (5).

Businesses’ customer markets included:

- 69 businesses (88 percent) that ship products within Minnesota,
- 51 businesses (65 percent) that ship nationally,
- 25 businesses (32 percent) that ship to Canada, and
- 22 businesses (28 percent) that ship to countries other than Canada.

Additional information about businesses:

- Most of the 78 businesses interviewed had at least 20 employees.
  - 19 businesses (24 percent) had 100 or more employees.
- All of the businesses interviewed used trucks for at least a portion of their shipping.
  - 38 businesses (49 percent) used more than one mode to transport goods.
- 62 businesses (79 percent) responded that trucks were the most critical mode for their shipping.

The District 1 Manufacturers’ Perspectives study sought to identify actionable transportation problems that businesses in District 1 currently face. Businesses described a range of transportation concerns, including those that may be addressed by short-term, lower-cost actions, improvements already included in MnDOT’s plans for the next four years, and more complicated problems that would require considerable new transportation funding, such as large-scale pavement projects. District 1 is already addressing some of the short-term, lower-cost concerns and will evaluate other feedback as staff plan for future years. Staff will analyze feedback against project criteria, such as pavement condition metrics, traffic volumes, and safety, as well as available state and federal funding.

## Findings

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Respondents complimented MnDOT on incorporating features they believe enhance safety, such as wide shoulders and passing lanes, into recent road projects. Many of the transportation-related challenges that District 1 businesses experience relate to business priorities and the district’s unique physical characteristics.



## District 1 Business Priorities

Many businesses value their location for its proximity to suppliers or customers and for the transportation assets that they depend on. Specifically, some mentioned that they serve businesses at the center of an economic cluster and that they value being located close to those businesses. For them, transportation needs frequently reflect the transportation needs of a customer or supplier—the anchor business in their cluster—including 10-ton roads, passing lanes, and passable bridges.

Tourists also enjoy the area’s natural resources and appreciate good signage and wide shoulders to access lakes, rivers, forests, and scenic views. The combination of strong tourism, manufacturing, and other industries contributes to congestion as shippers and tourists share travel routes. The volume and diversity of traffic can also physically stress all types of transportation infrastructure, increase costs for shippers, and lead to safety hazards for all travelers.

## Characteristics that Affect the Transportation System

Unlike previous districts that have participated in the Manufacturers’ Perspectives study, which were primarily composed of prairieland and farmland, District 1 is mostly forested, with terrain varying from flat to rugged and with numerous wetlands, streams, rivers, and lakes, ranging from Lake Superior to small streams and swamps. This terrain and its waterway features create challenges for highway design and have resulted in narrow, winding roads that traverse steep hills. Large vehicles, such as trucks, need more time climb steep hills which makes other traffic anxious to pass, leading to business requests for additional lanes. Hills and curves also create sight obstructions and complicate hazardous conditions during ice storms and snowstorms.

The Duluth area is a regional transportation hub, due in part to its location on Lake Superior. Given the large amount of traffic that flows through the district, especially to or from Wisconsin and Canada, businesses frequently requested policy alignment with other states and provinces, such as compatible weight restriction laws. The variety of traffic that flows through District 1 increases the importance of strong communication about road closures and the availability of alternative routes.

District 1 has 567 bridges, 3,700 lane miles, and comprises nearly a quarter of Minnesota’s land area.

## Recommended Next Steps

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Thorough analysis of District 1 business perspectives (described later in this report) suggested potential next steps for MnDOT. Businesses provided concrete, location-specific feedback that will inform future improvements in infrastructure, maintenance and operations, communication, safety, and policy. Moving forward, MnDOT will develop, prioritize, and implement workable solutions, as resources allow, to improve transportation systems in District 1 and across Minnesota.

The following broad recommendations will help MnDOT District 1 and MnDOT Central Office staff incorporate input from the 78 interviews to existing transportation system improvement plans and include input in future planning efforts.

## MnDOT District 1 Recommendations

**1. Incorporate business feedback into the District 1 short-term and long-term planning processes. Include suggestions and findings from the study in the Statewide Transportation Improvement Program (STIP) and modify upcoming road projects and maintenance plans as feasible to address business issues.**

MnDOT District 1 staff can:

- Develop a plan for categorizing feedback in this study and embedding it in the district’s existing work processes.
- Develop a plan to continue collecting business feedback that can be incorporated into future projects.
- Consider improving pavement quality on stretches of road that businesses identified as having rough surfaces.
- Assess and prioritize business requests for additional signage, advance warning lights, and other lower-cost suggestions that improve safety and efficiency.
- On existing or planned construction projects, consider adding lanes that allow opportunities to pass, wherever possible.
- Explore ways to improve navigation of the Duluth port area, such as adding directional signage.
- Consider widening or paving shoulders in areas where businesses identified this as important. In cases where shoulder improvements are not feasible, MnDOT District 1 could create intermittent opportunities for trucks to pull over and include signage that informs drivers of the next opportunity to pull over.

**2. Consider innovative ways that MnDOT District 1 can partner with the community and build stronger relationships with businesses, city and county engineers, economic development professionals, and other stakeholders.**

MnDOT District 1 staff can:

- Identify stakeholder groups and key staff contacts to monitor changes or developments that originated, completely or in part, from study findings.
- Convene groups around common concerns that businesses identified and develop solutions. For example, MnDOT District 1 can connect with anchor businesses in key industry clusters to further explore their transportation needs and concerns. Opportunities may include business involvement with regional transportation advisory groups.
- Consider upgrading additional roadways or roadway segments to 10-ton highways in partnership with city/county engineers, within the context of MnDOT’s policies, priorities, and resource constraints.
- Explore additional opportunities to inform the public of pending road construction projects and restrictions, including start and end dates and available alternative routes. Possible strategies may include the use of social media.

- Consider methods for managing traffic during events by increasing collaboration with event organizers and the community.
- Develop a system to track and learn about important developments for District 1's economy and assess their implications for the district's transportation system. Sources of this information could include updates from lead economic development organizations in the area and studies from the University of Minnesota Duluth's Bureau for Business and Economic Research.

### **MnDOT Central Office Recommendations**

The following broad recommendations can help the MnDOT Central Office apply interview results to statewide transportation system improvement.

#### **3. Use feedback from District 1 businesses to make improvements to existing systems and consider business input in future statewide planning efforts and for the development of best practices.**

MnDOT Central Office staff can:

- Ensure that the processes for determining spring weight restrictions are as consistent and clear as possible, and provide regular communication about updates to seasonal restrictions.
- Review weight restriction policies in neighboring states and Canada to identify potential opportunities for policy alignment; evaluate practices regarding weight restrictions and discrepancies, including communication and messaging, to inform businesses of state and federal policy.
- Examine the use and effectiveness of the various methods used to melt snow and ice and their impacts on vehicles. Assess potential improvements to current methods of snow and ice removal.
- Work with businesses to determine preferred routes around construction or bridge restrictions.
- Share interviewee feedback on topics other than District 1 state highway transportation to relevant authorities, such as feedback businesses provided on county highway systems with county engineers, to inform their continuous improvement practices.

*Update:* MnDOT has implemented goals to reduce its chloride use in response to environmental concerns and is researching methods to bring about that reduction.

#### **4. Use the combined findings and recommendations from the Manufacturers' Perspectives studies in districts 1, 2, 4, and 8 to better understand business needs to improve the state's transportation system. Incorporate a continuous improvement approach to the Manufacturers' Perspectives studies.**

MnDOT Central Office staff can:

- Examine ways to combine findings from the Manufacturers' Perspectives studies in districts 1, 2, 4, 8, and future studies with broader statewide findings, themes, and recommendations. Present findings broadly in public forums, including conferences. Incorporate information gained in this study into the Statewide Freight System Plan and its ongoing Freight Action Agenda.

- Reflect on the outcomes of previous Manufacturers’ Perspectives studies, reassess primary study intent, and modify the study approach, as necessary. Consider developing performance measures for the overall project that align with MnDOT’s existing performance measures around safety, and expand them to address freight issues such as reduced product and equipment damage, decreased shipping time, etc.
- Explore other ways that MnDOT can better understand and more closely work with manufacturers and other relevant businesses to strengthen economic vitality in Greater Minnesota. For example, manufacturers could be invited to serve on Regional Transportation Advisory Committees, Area Transportation Partnerships, and other transportation planning groups. MnDOT could also include support for business expansion as a performance measure.
- Evaluate the feasibility of developing cross-district planning forums with staff from districts 1, 2, 4, and 8 to share findings and work to frame broader collaborative solutions to address statewide issues.
- Strengthen communications about the Manufacturers’ Perspectives study, including developing a plan to communicate findings from the study for both District 1 staff and audiences external to MnDOT.
- 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.

*Update:* Central Office staff plan to synthesize findings from the four studies that have taken place and also evaluate how best to incorporate improvements into subsequent Manufacturers’ Perspectives studies, especially in communications. MnDOT has also created a Manufacturers’ Perspectives study website to highlight successes and assist in maintaining relationships with businesses. MnDOT staff are currently planning an interactive mapping application to better capture locations of problem areas raised in interviews. This database will be available to district project managers and others on an ongoing basis.

### **District 1 Progress Update – Early Benefits**

District 1 has begun analyzing and mapping feedback from businesses interviews and has already identified near-term opportunities to make adjustments that would help the businesses interviewed:

- A manufacturer located on Highway 53 in Virginia described shift changes for businesses in its area as “Daytona,” saying congestion creates challenges for trucks and employees. District 1 is investigating ways to add turn lanes to Highway 53 to ease congestion.
- After several businesses complained of event congestion in downtown Duluth, District 1 is considering adding changeable message signs to inform drivers of places to park in order to access downtown businesses more easily.
- After many requests for passing lanes, District 1 is evaluating the feasibility, including cost, of adding them to key areas on major highways, including Highway 53 and Highway 61.
- On highways where passing lanes or continuous shoulders are not feasible due to terrain, District 1 is considering creating “safety zones”—periodic points along the road where trucks can pull over for emergencies or to secure loads—and developing a standard for MnDOT to use them in similar locations.

- Several businesses in District 1 questioned the use of chloride in snow and ice removal because it is corrosive and damages vehicles. As part of a larger MnDOT effort to reduce the use of chloride, District 1 is researching alternatives and will participate in a pilot program that equips plow trucks with alternative chemicals. Early findings suggest that the alternative chemicals are more effective than anticipated.
- Several businesses mentioned that tourism causes traffic to back up along Highway 61 in Two Harbors, increasing travel time along the North Shore. District 1 acknowledged that congestion in Two Harbors has been challenging for a long time. In collaboration with the City of Two Harbors and Lake County, District 1 will upgrade signal systems and add turn lanes along Highway 61 as part of a 2018 mill and overlay project.
- In response to pavement quality concerns along Highway 53, MnDOT will add a thin layer of pavement on the roughest parts of the road as a stopgap until funding and overall road quality justify a major corridor-level repair or replacement.

### *Ongoing Benefits*

Business interviews also have increased familiarity between MnDOT and District 1 businesses, allowing for more timely and open communication. Since participating in interviews, several businesses have contacted District 1 staff about additional transportation concerns. District 1 is also encouraging maintenance operators to suggest and try innovative solutions to reduce chloride use.

# Introduction

Transportation infrastructure plays an important and positive role in the economic development of northeastern Minnesota and the state as a whole. Minnesota’s investment in its transportation system provides businesses with access to supplies, allows workers to reach their jobs, and boosts the quality of life for area residents. Minnesota-based manufacturers, one of the Minnesota Department of Transportation’s (MnDOT) most important customer segments, ship their products via Minnesota roads to local, state, national, and international markets. When appropriately aligned with their needs, a well-maintained transportation system can increase efficiencies, lower costs, and boost productivity, contributing significantly to state and regional economic vitality. This has led MnDOT to seek feedback on Minnesota’s transportation system from the businesses that create and sustain high-quality jobs in the state.

## Background

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Since 2013, MnDOT has taken a district-by-district approach in gathering the perspectives of manufacturers. To date, MnDOT has completed 324 business interviews in four of eight MnDOT districts.<sup>1</sup> The project’s intent is to:

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

## Project Design

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The District 1 (northeastern Minnesota) Manufacturers’ Perspectives study methodology was closely modeled after methodologies used in districts 2, 4, and 8. This included collaborative, cross-disciplinary interview teams and semi-structured, face-to-face interviews with businesses identified by regional industry cluster analysis. Interview questions focused on issues that could be addressed in the next four years and with existing or few additional resources. A list of businesses interviewed for the District 1 project can be found in Appendix A.

A team comprised of MnDOT staff and external partners provided project management and coordination, data analysis, and report writing. External partners also assembled the list of businesses to contact and engaged

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<sup>1</sup> Other districts were District 8 (southwestern Minnesota) in 2013-2014, District 4 (west central Minnesota) in 2014-2015, and District 2 (northwestern Minnesota) in 2015-2016. See MnDOT district map at <http://www.dot.state.mn.us/information/districts.html>.

economic development organizations as partners. Interviewers included MnDOT staff from District 1, MnDOT Central Office staff, the external project team, members from regional tourism associations, and economic development organizations (EDOs). MnDOT also invited county and city transportation engineers and the Wisconsin Department of Transportation to attend interviews.

All MnDOT staff, external partners, and EDOs that participated in the study are listed in Appendix B.

## **Business Suggestions for Short-term Fixes, Long-term Plans**

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The District 1 Manufacturers' Perspectives study sought to understand transportation changes and projects that could better address businesses' needs in the region, with a focus on specific improvements MnDOT could make to existing roads, highways, and other infrastructure within the next four years. The business interviews identified some ideas for short-term, low-cost actions with potentially significant impacts for businesses. District 1 staff are already looking at options for addressing suggestions that lead to possible improvements.

Other suggestions from businesses aligned directly to MnDOT's existing transportation plans, confirming that projects already included in the district's current four-year State Transportation Improvement Program (STIP) also will benefit shippers. Four of the six main District 1 transportation corridors that businesses talked about are slated for improvements under existing MnDOT plans, according to an engineer in District 1. Existing plans already address some of the ideas from the businesses, and some can be addressed through adjustments or overlays to existing plans.

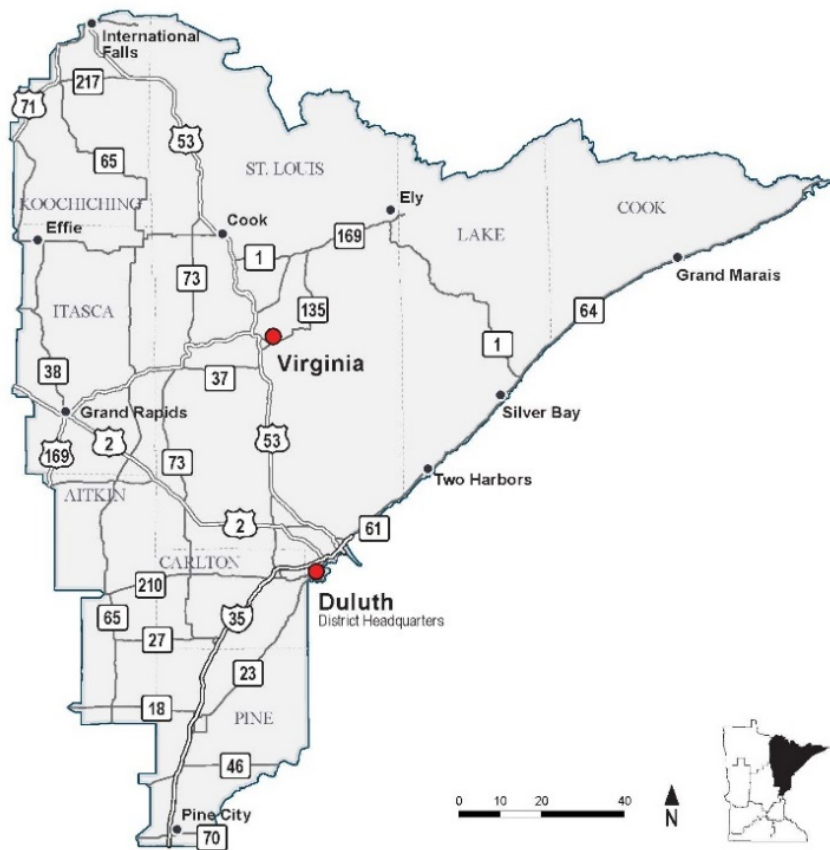
In many interviews, businesses also raised concerns that would require long-term plans and large-scale pavement projects. Examples include suggestions for new passing lanes, widened lanes, and even widened shoulders. District 1 will consider these types of projects as it develops plans for pavement projects in future years, within the context of project criteria such as traffic volumes, pavement condition and preservation goals, safety, and existing and anticipated resources. The number, type, and scale of projects possible will depend heavily upon state and federal funding over the next several decades. Current and projected funding make many of the improvements shippers would like in this part of the state not feasible.

As a result of this study, District 1 is working on process changes and information management approaches that will allow district staff to more easily incorporate suggestions from businesses into the transportation planning process going forward.

# District 1 Background

District 1 is geographically the largest of MnDOT’s eight districts, covering nearly 20,000 square miles in the northeast corner of Minnesota (approximately 25 percent of the state). Figure 1 shows the eight counties served by District 1. The district spans from International Falls east to Grand Marais, and south to Pine City.<sup>2</sup> The district is also home to Duluth, the second largest metropolitan area in the state, and the cities of Virginia and Grand Rapids. In 2015, an estimated 355,238 people (6.5 percent of the state population) lived within District 1 boundaries.<sup>3</sup>

**Figure 1: Map of MnDOT District 1**



District 1 contains approximately 360 manufacturers, more than half of which are in St. Louis County.<sup>4</sup> These companies use roads to reach other parts of Minnesota, as well as Wisconsin, Canada, and other areas around the U.S. and the world. Mineral and timber resources have drawn businesses to the area, and natural attractions draw tourists.

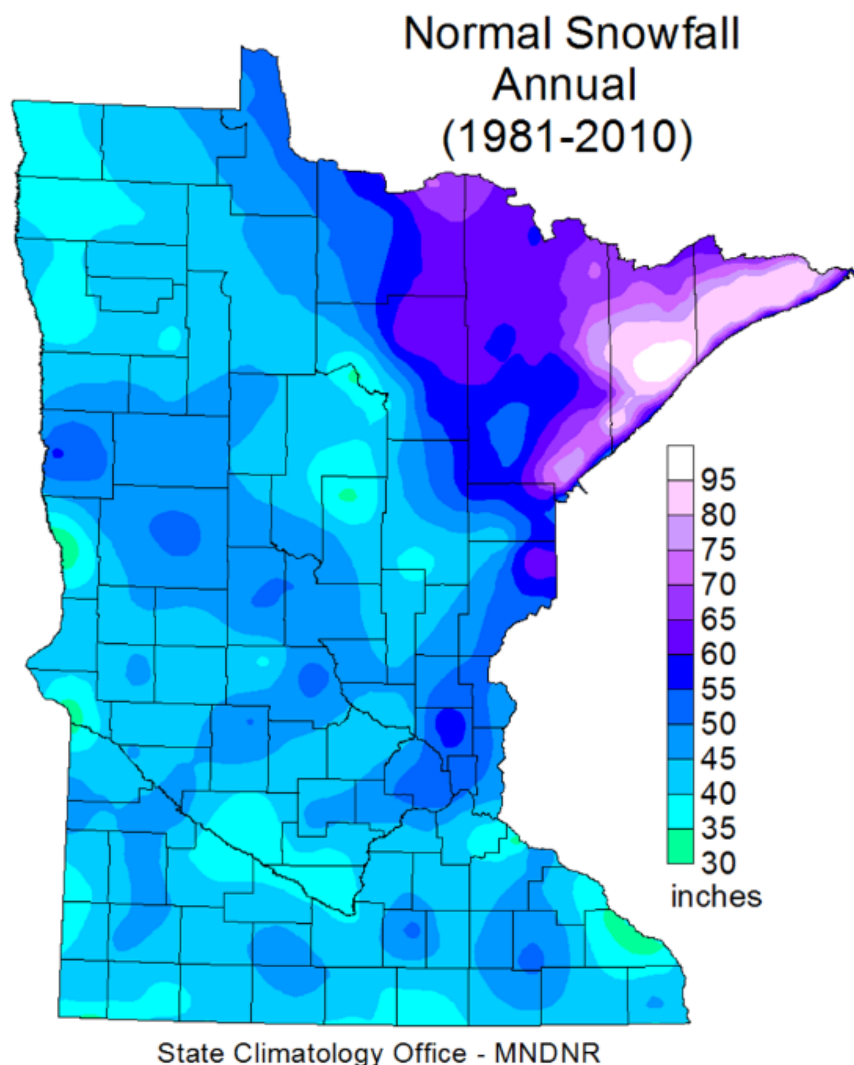
<sup>2</sup> District 1 includes all of Carlton, Cook, Lake, Pine, and St. Louis Counties, as well as parts of Aitkin, Itasca, and Koochiching Counties.

<sup>3</sup> Population data from Northeast Minnesota Area Transportation Partnership.

<sup>4</sup> Data from 2014 County Business Patterns.



Figure 2: Minnesota mean annual snowfall, 1981-2010



Northeastern Minnesota typically receives more snow per year than any other part of the state. Figure 2 shows that some areas of District 1 received an average of 95 inches of snow per year between 1971 and 2000, compared to 40 to 50 inches elsewhere in the state.<sup>5</sup> The position of District 1 along Lake Superior makes it vulnerable to lake effect snow: moisture-rich wind moves from the lake up onto land, where it turns into precipitation.<sup>6</sup>

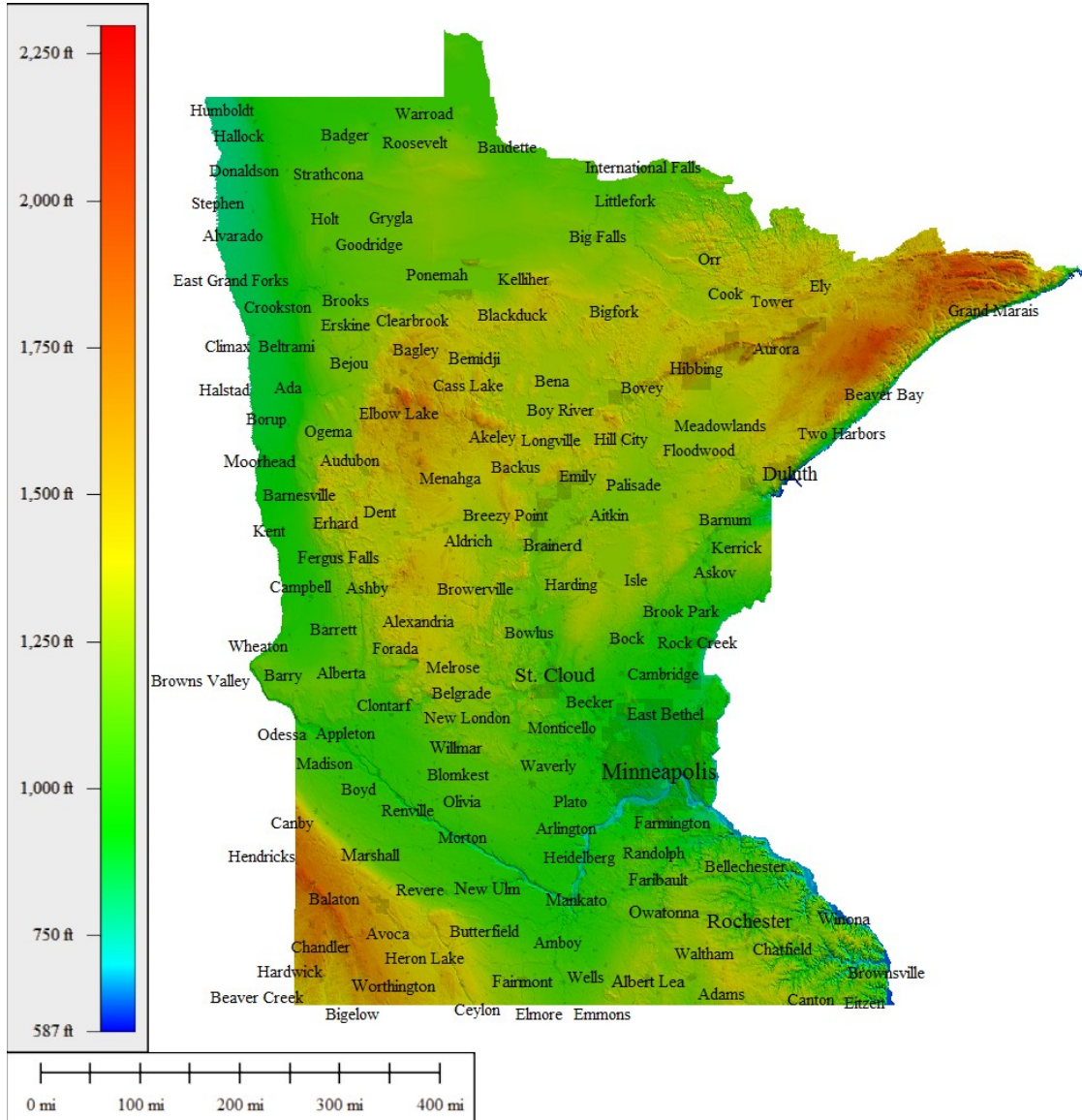
Besides climate, the district's topography and location present other transportation challenges. Figure 3 shows that District 1 has some of the most mountainous terrain in the state. Roads must follow the curves in the natural terrain, which can create a variety of challenges for maintenance and drivers. The quality of the road

<sup>5</sup> [https://stormwater.pca.state.mn.us/index.php?title=File:Annual\\_snowfall\\_1981-2010.png](https://stormwater.pca.state.mn.us/index.php?title=File:Annual_snowfall_1981-2010.png).

<sup>6</sup> <http://www.dnr.state.mn.us/climate/faqs.html>.

grade differs from other districts, meaning that all things equal, it can be more expensive to make additional road improvements, like widening shoulders.

**Figure 3: Elevation in Minnesota<sup>7</sup>**



Duluth has strong economic ties to Superior, Wisconsin and the movement of goods and people between the two cities is largely dependent on two bridges spanning the St. Louis Bay of Lake Superior.

<sup>7</sup> Topo Creator. (2009) Retrieved from [http://topocreator.com/download\\_city\\_a.php](http://topocreator.com/download_city_a.php).

MnDOT staff in District 1 plan, design, construct, and maintain the state and federal trunk highways within the district. The team also manages the aid and assistance provided to local governments that qualify for state and federal transportation funding for roadways, bridges, trails, and transit systems. The district has offices in Duluth (district headquarters) and Virginia, and 19 truck stations across the district.

## Methodology

### Interview Purpose

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The primary purposes of the business interviews were to:

- Gather actionable information about businesses' specific experiences, priorities, and challenges regarding the transportation system.
- Build relationships and communication channels among MnDOT, regional businesses, and economic development professionals.

### Interview Teams

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Interview teams involved at least two people: typically an economic development professional led the interview, and a District 1 staff member documented the conversation. This combination ensured that MnDOT received the businesses' feedback within both economic and transportation contexts and that MnDOT staff received the feedback firsthand. The interview teams visited the businesses in-person and asked questions from the interview guides.<sup>8</sup>

A cross-disciplinary group, including those listed below, conducted interviews:

- MnDOT District 1, Operations, and Freight and Commercial Vehicle Operations staff.
- Researchers from the State and Local Policy Program (SLPP) at the University of Minnesota's Humphrey School of Public Affairs.
- City, county, and regional economic development professionals.
- Consultants from Management Analysis and Development (MAD), a division of Minnesota Management and Budget.

The University of Minnesota Extension Center for Community Vitality recruited economic development professionals, and MnDOT selected and invited internal staff to participate. In total, 50 interviewers

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<sup>8</sup> See Appendix E for interview guides.

participated. District 1 staff also invited county engineers and Wisconsin Department of Transportation (WisDOT) staff to observe some interviews.<sup>9</sup>

## Interviewer Training

In August 2016, two training sessions for interviewers were held in Duluth and Virginia for participating MnDOT staff and economic development professionals. Training goals included:

- Explaining the study purpose and process to interviewers.
- Providing qualitative research instruction, including note-taking guidelines.
- Distributing interview materials and practicing interviewing through role-playing.
- Understanding regional economic perspectives as context for transportation feedback.

## Regional Industry Cluster Analysis

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The SLPP used Regional Industry Cluster Analysis to identify key industries and manufacturers in District 1.<sup>10</sup> Clusters are geographically concentrated groups of interconnected companies, universities, and related institutions that arise out of linkages or externalities across industries. The term *clusters* refers to firms within similar industries and their interactions with one another, such as segments of a supply chain. 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.<sup>11</sup> Understanding these relationships informs 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 1, each playing a significant role within the regional economy and beyond.

Clusters can be grouped into *traded* and *local* clusters. A traded cluster is composed of traded industries concentrated in a geographic region that sell to other regions and nations. A local cluster is composed of local industries that primarily sell within a region and are present in most (if not all) geographic areas.<sup>12</sup> Traded clusters are seen as significant drivers of growing economies because they draw revenue *into* the regional

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<sup>9</sup> In previous districts, many businesses provided feedback not only on state roads, but also on county and local roads, prompting MnDOT to include county engineers. For the District 1 project, MnDOT also invited WisDOT staff both to inform them of feedback on Wisconsin roads and to allow WisDOT to get a first-hand understanding of the project model.

<sup>10</sup> This tool was developed by Michael Porter's Institute for Strategy and Competitiveness at Harvard Business School.

<sup>11</sup> "Oregon Business Plan," accessed Feb. 15, 2017, <http://www.oregonbusinessplan.org/industry-clusters/industry-clusters-faq/>.

<sup>12</sup> U.S. Cluster Mapping, "Glossary of Terms." Accessed March 1, 2017, <http://www.clustermapping.us/content/glossary-terms>.

economy and stimulate growth, while local clusters circulate money *within* a region.<sup>13</sup> Researchers use a traded cluster analysis to assess how strong particular industry clusters in a region are compared to the nation.

Regional economic competitiveness depends heavily on the competitiveness of its most prominent industries.<sup>14</sup> Each industry cluster is defined by a series of sub-clusters.<sup>15</sup> The SLPP used the cluster mapping method to identify industries that form the economic base of communities in District 1, both in direct employment and in their ability to spur additional economic development.

This project focuses on manufacturers for several reasons:

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

MnDOT and economic development organizations also suggested businesses in local and other traded clusters based on significant economic contribution to the region or known heavy reliance on the transportation system.

Figure 4 illustrates the largest manufacturing clusters in District 1 based on the location quotient (except metal mining), a comparison of the employment in a particular industry in District 1 to the employment in that industry nationally. Clusters with location quotients greater than one (y-axis) are more concentrated in District 1 than in the nation as a whole.<sup>16</sup> Clusters with a change in location quotient greater than zero (x-axis) are growing within the district. This study focused on manufacturing clusters with the highest location quotients and employment levels, such as the mining and forestry clusters.

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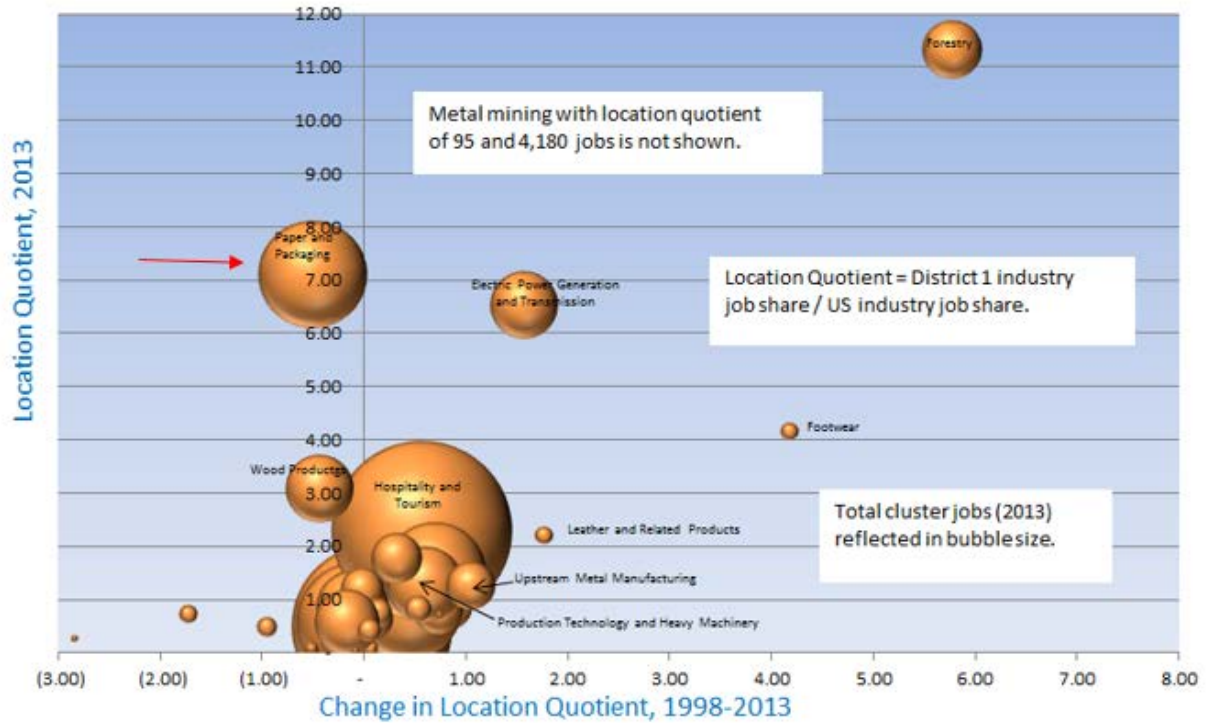
<sup>13</sup> U.S. Cluster Mapping, “Clusters 101.” <http://clustermapping.us/content/clusters-101>. Accessed March 1, 2017.

<sup>14</sup> Rosenfeld, Stuart, “A Governor’s Guide to Cluster-Based Economic Development.” National Governors Association. 2002. <http://www.nga.org/files/live/sites/NGA/files/pdf/AM02CLUSTER.pdf>. Accessed March 1, 2017.

<sup>15</sup> Sub-clusters are represented by six-digit NAICS codes. The North American Industry Classification System (NAICS) is the standard used by federal statistical agencies for classifying business establishments to collect, analyze, and publish statistical data about the U.S. business economy. For more information, see “Introduction to NAICS” at <http://www.census.gov/eos/www/naics/>. Accessed March 1, 2017.

<sup>16</sup> Appendix C includes MnDOT District 1 location quotients for traded clusters by county. Appendix D shows MnDOT District 1 employment by traded cluster and county.

Figure 4: MnDOT District 1 traded clusters by employment and specialization (location quotient), 1998–2013<sup>17</sup>



For example, Figure 4 indicates the Paper and Packaging Cluster (red arrow) has a location quotient of about 7.00. This indicates that this cluster employs, on average, seven times as many people in District 1 than other places in the United States. The location of the Paper and Packaging bubble slightly behind zero on the Y axis indicates that the cluster experienced a small decline in employment relative to other parts of the country from 1998 to 2013.

## Business Recruitment

The SLPP used the Reference USA database to identify businesses that fit the Regional Industry Cluster Analysis criteria based on the businesses’ NAICS code.<sup>18</sup> MnDOT District 1 staff and economic development professionals identified other key businesses. The list of businesses contacted for interviews represented a diverse group of industries from each county in District 1.

<sup>17</sup> Cluster map for District 1 developed by the SLPP with data from the U.S. Cluster Mapping website at <http://clustermapping.us>.

<sup>18</sup> The cluster categories were developed by the Harvard Business School’s Institute for Strategy and Competitiveness, led by Professor Michael Porter, and are used by the Economic Development Administration (EDA). The U.S. Cluster Mapping Project is a national economic development initiative that is designed to benchmark the economic performance of U.S. regions. More information can be found at <http://clustermapping.us>.

In August 2016, MnDOT mailed letters to those businesses, inviting them to participate in the study. MAD followed up with businesses via phone, asked them to participate in the study, and scheduled interviews. Interviews were conducted from September 6 to November 17, 2016.

### **Businesses in Other Districts**

In addition to the interviews conducted within the district’s boundaries, seven interviews were conducted with businesses in other areas. Because of the strong economic ties between the cities of Duluth and Superior, Wisconsin, interviewers visited six businesses in Superior, four of which were shippers<sup>19</sup> who serve Minnesota businesses. The team also interviewed a shipper based in the Twin Cities that serves District 1 manufacturers.

### **Other Industries Interviewed**

Previous studies in districts 2, 4, and 8 included perspectives from businesses outside of the manufacturing industry that were important to the district’s economy. Given the value of those interviews, MnDOT included in the District 1 study businesses involved in shipping and hospitality/tourism. Explore Minnesota Tourism and the tourism-focused Minnesota Arrowhead Association identified businesses in the hospitality/tourism industry. Researchers developed a list of carriers using business responses to questions about who they contract with for shipping and whether researchers could contact them.<sup>20</sup> MnDOT staff and external partners also suggested shippers to contact.

## **Data Collection and Analysis**

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### **Questionnaire**

MnDOT and MAD developed an interview questionnaire for manufacturers based on those used in previous studies and on input from District 1 staff. The District 1 questionnaire allowed for semi-structured interviews, meaning that interviewers followed the questionnaire but could pursue other relevant topics as they arose. MnDOT and the external partners developed separate questionnaires for hospitality/tourism businesses and shipping/distribution/warehousing businesses to capture information unique to those respective industries.<sup>21</sup>

MAD consultants aggregated and coded interview responses, analyzed results, and developed findings. They provided actionable, location-specific business feedback to District 1 staff, who will analyze the detailed feedback to identify potential system improvements. MnDOT will share information with city and county engineers, WisDOT, and other districts that is relevant to their respective jurisdictions.

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<sup>19</sup> For the purposes of this report, “carriers” are considered trucking firms with which businesses contract to transport their goods. “Shippers” is a broader term that includes carriers, distributors, and warehouses—all of which are involved in the shipment, but not manufacture of, products.

<sup>20</sup> See Appendix E interview guides.

<sup>21</sup> See Appendix C: Location Quotients for Traded Clusters, 2013.

# Results

## Response Rates

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One hundred and sixty-three (163) businesses were invited to interview. The response rate was 73 percent.<sup>22</sup> Table 1 shows the number of businesses interviewed, the number that rejected the invitation, and the number that were not interviewed but did not reject an interview.<sup>23</sup>

**Table 1: Recruitment results**

<b>Result</b>	<b>Number/percent of businesses</b>
Businesses contacted for interviews	163
Total businesses reached	107
Accepted invitation to interview	78
Rejected invitation to interview	29
Businesses that did not respond to invitation to interview	56
Acceptance rate of businesses contacted	48%
Acceptance rate of businesses reached	73%

## Types of Businesses Interviewed

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Table 3 shows that over half of businesses interviewed (39) were manufacturers. Given the prominence of the tourism, mining, and timber industry clusters, interviews also included fifteen businesses in those industries, as well as 11 shipping/distribution/warehousing firms. Other businesses interviewed were closely related to manufacturing, mining, forestry and logging, tourism, or shipping, such as timber sales and concrete businesses.

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<sup>22</sup> Methods for contact and response rates are consistent with processes for previous studies. The response rate is calculated using the number of completed interviews and number of refusals (in American Association for Public Opinion Research terms, Completed Interviews/Completed Interviews + Partial Interviews + Refusals). This calculation excludes the 56 businesses that could not be reached or did not provide a yes or no response. For more information on this calculation, see

[http://www.aapor.org/AAPOR\\_Main/media/publications/Standard-Definitions20169theditionfinal.pdf](http://www.aapor.org/AAPOR_Main/media/publications/Standard-Definitions20169theditionfinal.pdf).

<sup>23</sup> “Businesses that did not accept nor decline interview” includes businesses that did not answer phone calls and businesses that spoke to MAD and initially did not decline an interview, but subsequent contact with the business did not result in an interview.



**Table 2: Number of businesses interviewed by industry**

<b>Industry</b>	<b>Businesses interviewed</b>
Manufacturing	39
Shipping/distribution/warehousing	11
Wholesale trade	9
Tourism and hospitality	6
Mining	3
Retail	3
Professional and other services	2
Information	2
Construction	2
Timber	1
<b>Total</b>	<b>78</b>

## Industry Clusters

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Of the 78 interviews conducted, 64 were with firms in 23 traded industry clusters, and 14 were with firms in five local industry clusters. Clusters differ from industry classifications, such as those listed in Table 2, because they include interconnected companies from across discrete industries based on the interactions of the companies with one another as well as their end products or services.

### Industry Clusters Interviewed

Figure 6 illustrates the traded and local clusters represented by the business interviews. Table 4 provides descriptions<sup>24</sup> and examples of traded clusters that were most prominent.<sup>25</sup>

The Transportation and Logistics cluster had the largest number of interviews (nine). Businesses in this cluster were carriers identified by District 1 manufacturers. The Recreational and Small Electric Goods; Distribution and Electric Commerce; and Local Real Estate, Construction and Development clusters each had seven businesses

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<sup>24</sup> Definitions of industry clusters are taken from the US Cluster Mapping website, “Traded Clusters Appendix.” Accessed March 1, 2017,

<http://clustermapping.us/sites/default/files/files/page/Traded%20Clusters%20Appendix.pdf>.

<sup>25</sup> Clusters defined in this section are traded clusters that were represented by two or more businesses interviewed in District 1. A full list of industry clusters interviewed for the District 1 study and their descriptions in can be found in Appendix E.

interviewed. While Local Real Estate, Construction and Development is not manufacturing, construction was included because of its extensive use of the transportation network.

Six interviews were conducted with businesses in the Hospitality and Tourism cluster. The Hospitality and Tourism cluster is the largest employer in the region with 6,663 employees in 2013, and its location quotient has increased from 1.75 in 1998 to 2.21 in 2013, indicating an increased importance of tourism to the region.

Wood products (five interviews) and Paper and Packaging (four interviews) are important clusters for the region, though both have lost employees in recent years. The Wood Products cluster employed 960 people in 2013, with a location quotient of 3.10. The Paper and Packaging cluster employed 2,380 people in 2013, with a location quotient of 7.12.

The six traded clusters in District 1 with the highest location quotients in 2013 were:

- Metal Mining (95.46).
- Forestry (11.34).
- Paper and Packaging (7.12).
- Electric Power Generation and Transmission (6.55).
- Footwear (4.17).
- Wood Products (3.10).

Interviews with businesses in these six clusters accounted for 10 of the 78 total interviews.<sup>26</sup>

Based on employment levels alone, rather than location quotients, the following six clusters stand out for District 1, and the project team conducted 19 interviews of businesses in these clusters:<sup>27</sup>

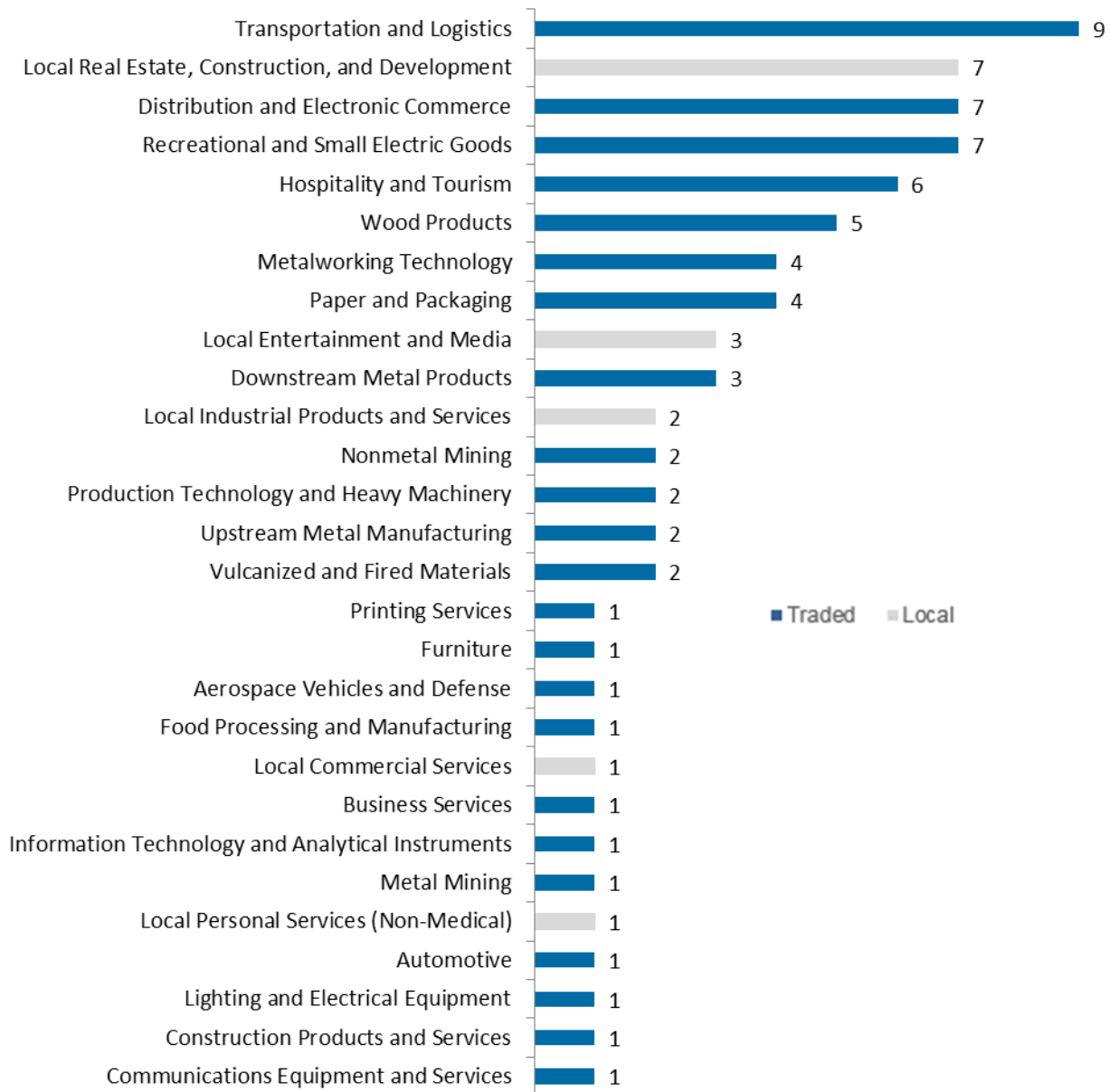
- Hospitality and Tourism.
- Business Services.
- Metal Mining.
- Distribution and Electronic Commerce.
- Education and Knowledge Creation.
- Paper and Packaging.

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<sup>26</sup> See Appendix C for location quotients for District 1 and by county.

<sup>27</sup> See Appendix D for employment information for District 1 and by county.

**Figure 5: Traded and local clusters represented in interviews**



The six with the highest growth in location quotient are Forestry, Footwear, Leather and Related Products, Electric Power Generation and Transmission, Upstream Metal Manufacturing, and Aerospace Vehicles and Defense. Of those, businesses in Upstream Metal Manufacturing and Aerospace Vehicles and Defense were included in the interviews. While Forestry firms were not included, five Wood Products manufacturing firms were interviewed.

**Table 3: Descriptions of most common traded clusters represented in District 1 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/unloading.	Broking's Transport
Recreational and Small Electric Goods	This cluster contains establishments that manufacture end use products for recreational and decorative purposes. These products include games, toys, bicycles, motorcycles, musical instruments, sporting goods, art supplies, office supplies, shades, and home accessories. This cluster also incorporates firms that produce small, simple electric goods like hairdryers, fans, and office machinery.	Charmaster Products
Distribution and Electronic Commerce	This cluster consists primarily of traditional wholesalers as well as mail order houses and electronic merchants. The companies in this cluster mostly buy, hold, and distribute a wide range of products such as apparel, food, chemicals, gasses, minerals, farm materials, machinery, and other merchandise. The cluster also contains firms that support distribution and electronic commerce operations, including packaging, labeling, and equipment rental and leasing.	Lake Superior Warehousing
Hospitality and Tourism	This cluster contains establishments related to hospitality and tourism services and venues. This includes sport venues, casinos, museums, and other attractions. It also includes hotels and other accommodations, transportation, and services related to recreational travel such as reservation services and tour operators.	Lutsen Resort
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.	Duluth Timber Co. Inc.
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.	Minnpack
Metalworking Technology	The establishments in this cluster manufacture machine tools and process metal for use in metal working. The cluster also contains the downstream manufacture of metal fasteners and hand tools.	Iracore International Inc.
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.	TRITEC Steel Fabrication
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).	Black Iron Rubber Co.

## Interviewee Cluster Alignment

Overall, clusters attributed to businesses interviewed did not strongly align with the industry highest-concentrated clusters identified in District 1. This occurred for two reasons.

First, in addition to regional cluster analysis, the study sought input for the business list from external partners and economic development professionals who have experience in the district and a practical understanding of the region's major businesses. Analysts did not vet these suggestions based on industry cluster affiliation. A high volume of business suggestions from these sources likely contributed to some misalignment of industry clusters with the businesses interviewed.

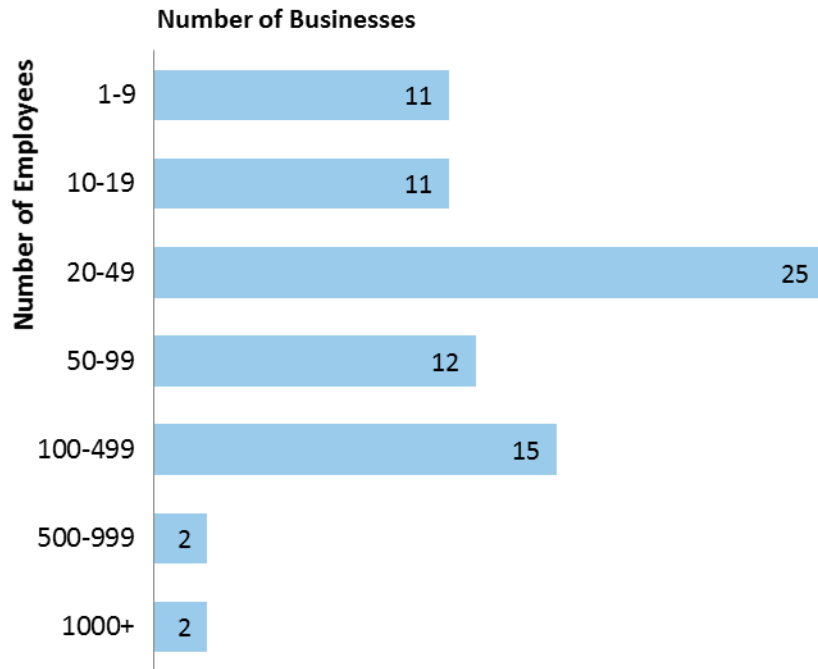
Second, the size and volume of businesses affected the number of businesses that were contacted for interviews. Many of businesses in industries with the highest growth in location quotient—for example, Footwear, Forestry and Logging, and Leather and Related Products—are all relatively small employers. This may explain why they did not appear on the business interview list, which used a threshold of 10 or more employees. Conversely, mines are large employers, but few mines were operating in District 1 in the fall of 2016. Interview teams talked to many types of businesses in the district that support the District 1 mining industry, however standard cluster methodologies do not classify the same business types as part of the Metal Mining cluster because in a nationwide context, these businesses more commonly fit with other clusters.

## Number of Employees

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The 78 businesses interviewed collectively employ more than 9,400 people. Figure 6 shows the distribution of businesses by number of employees. Most businesses interviewed have 50 or fewer employees, but four businesses have more than 500 employees. The average number of employees was 121, while the median number of employees was 32. This reflects the small number of businesses that employ a large number of employees, which is characteristic of the economy in District 1. The largest businesses were in industries that involve tourism or natural resources.

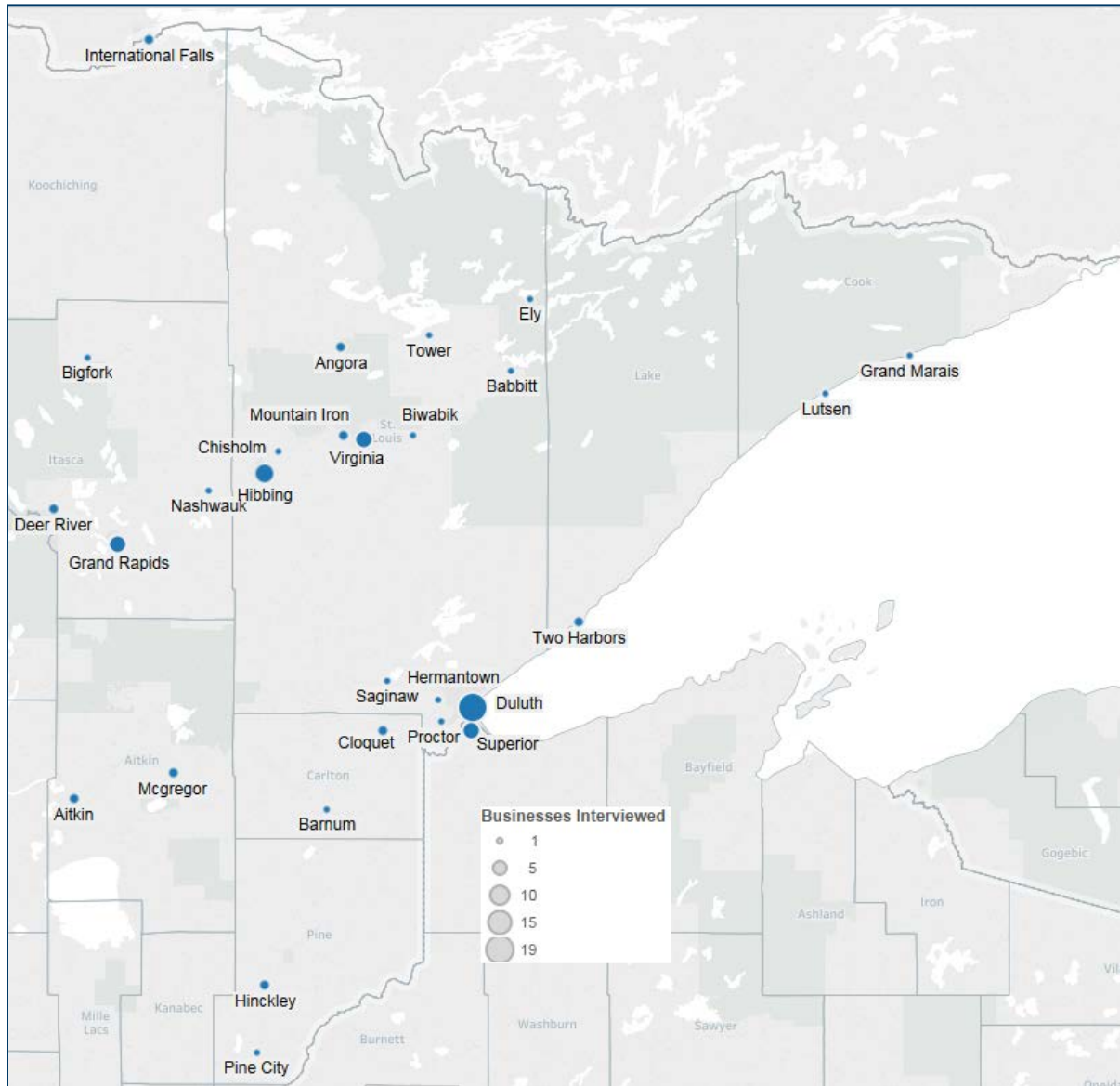
**Figure 6: Number of employees at each business interviewed**



## Geographic Distribution of Businesses

Interviewers visited businesses in each county in District 1. Figure 7 is a map of all businesses interviewed in District 1. The size of each circle represents the number of businesses interviewed in that location. Businesses were widely dispersed throughout the district. Cities with many interviews (large circles) are consistent with the district's economic centers: Duluth, Grand Rapids, Hibbing, and Virginia.

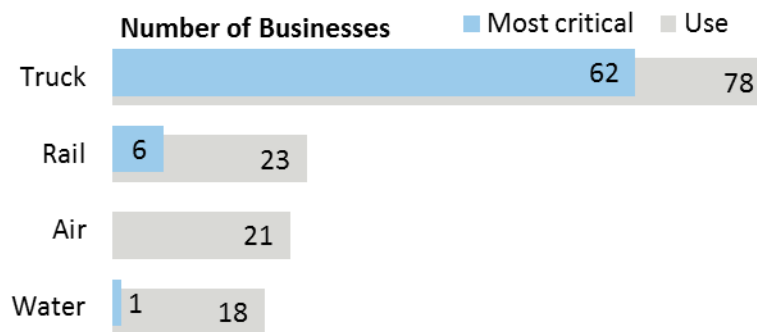
**Figure 7: Locations of businesses interviewed**



## Modes of Transportation Used

All businesses interviewed said they use trucks to either receive supplies or ship products, and 40 of them reported that they also use at least one other mode of transportation (rail, air, or water). Figure 8 illustrates the number of businesses that said they use each transportation mode. Of the 78 businesses interviewed, 62 (79 percent) said trucks were the most critical mode of transportation to their business.

**Figure 8: Modes of transportation used and most critical to business<sup>28</sup>**

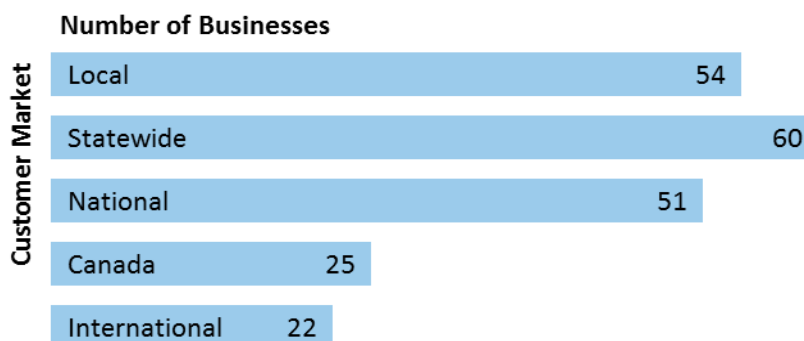


Thirty-two of the businesses interviewed (41 percent) own their own truck(s) and ship at least some of their product themselves. Six businesses interviewed (excluding shippers) ship all their products in-house, 43 businesses contracted all their shipping to commercial carriers, and 17 businesses shipped some of their own products and contracted the rest.

## Customer Markets

Businesses in District 1 that were interviewed for this study produce and ship goods not only to local markets, but also throughout the U.S. and around the world. Figure 9 and Figure 10 illustrate the reach of District 1 businesses.

**Figure 9: Customer markets of District 1 businesses**

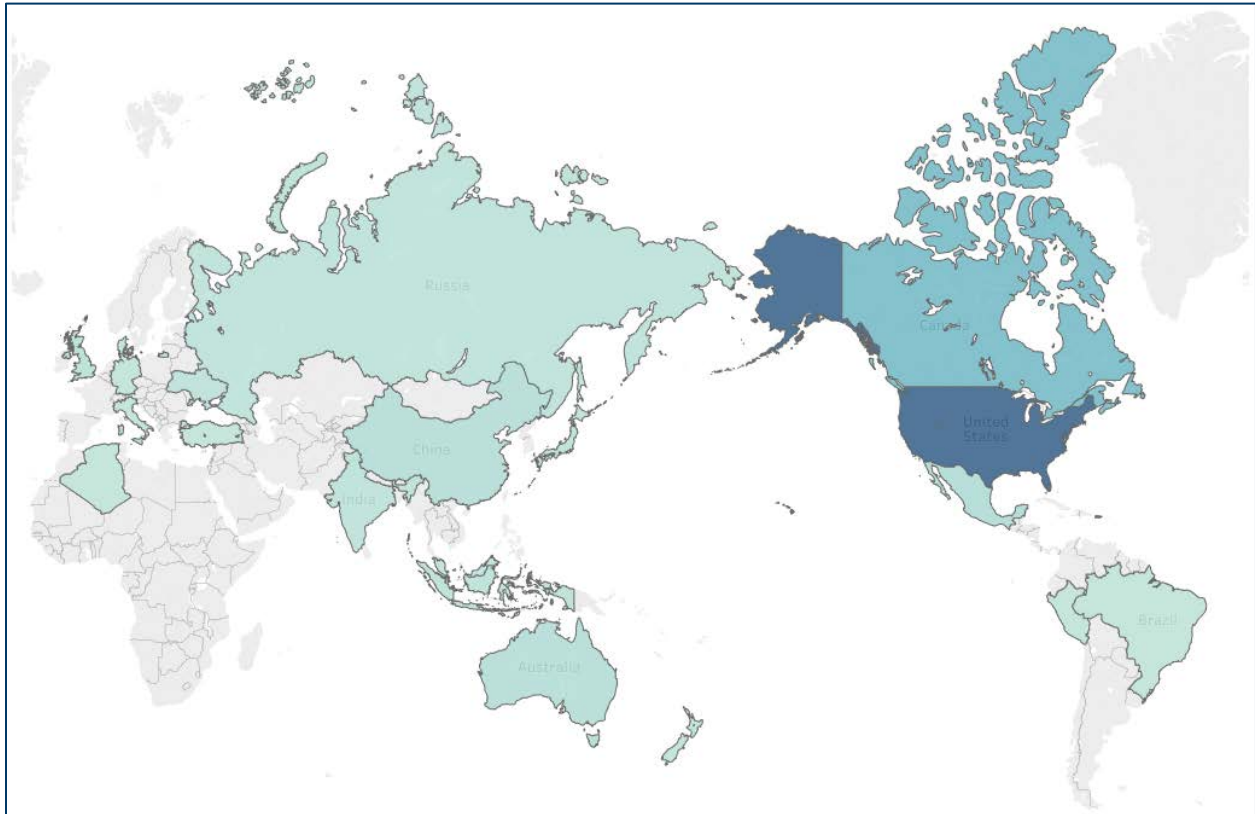


<sup>28</sup> Not every business answered every question. Some businesses used more than one mode of transportation.



Figure 10 shows countries that purchase products from District 1 businesses interviewed. Countries included in District customer markets include, but are not limited to: Algeria, Australia, Brazil, China, Denmark, Germany, India, Indonesia, Italy, Japan, Malaysia, Mexico, New Zealand, Peru, Russia, Turkey, Ukraine, and the United Kingdom.

**Figure 10: International markets reached by District 1 manufacturers**



In addition, many businesses provided general responses, such as “Europe” or “South America.” Figure 10 does not include these.

## Findings Overview

This section presents broad themes drawn from District 1 interviews to provide context for the more detailed findings that follow. Interviews illustrated strong connections between the district’s geographical characteristics, transportation infrastructure, and major industries (manufacturing, tourism, forestry and logging, and mining).

### District 1 Business Priorities

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Most of the District 1 businesses interviewed for this study commented on the transportation infrastructure in the context of business considerations and economic development. They cited major highways and Interstate 35 as vital routes. “A robust roadway infrastructure is essential to our commerce activities and continued business growth here,” said one business. Several businesses pointed to free-flowing traffic and well-maintained roads as positives. Several other businesses talked about the negative impacts of rough roads, poor road conditions in the winter, and weight restrictions.

#### Strong Cluster Relationships

Several businesses commented on the importance of major businesses in the area as customers for their products and services. They cited their own proximity to these major businesses as a key reason they operate in District 1. Within the field of economic development, these cluster relationships among different types of related businesses are important to the productivity, competitiveness, and vitality of a region.

Several District 1 manufacturers involved in fabrication and sheet metal work, for example, cited the importance of the mines to their location decisions and ongoing success. Other businesses depend upon interconnections among firms in key District 1 industry clusters such as Hospitality/Tourism, Paper and Packaging, and Wood Products. Consequently, the transportation needs of dominant businesses in these clusters matter to District 1. For example, 10-ton roads are important to the Wood Products and Paper and Packaging clusters because they allow efficient delivery of timber. Similarly, bridge restrictions and alternative routes are important to businesses that haul equipment for mines, and safe intersections are important to businesses that haul explosives to mines. Good signage and wide shoulders are important to tourism.

#### Shared Roads but Different Types of Transportation

The tourism and shipping industries meet on District 1’s highway system. The District’s picturesque landscape, proximity to Lake Superior, and other attractions draw tourists in all seasons, and the Duluth area serves as a regional transportation hub, where four shipping modes meet. Although the tourism and shipping industries have different objectives, the priorities the businesses expressed in interviews often overlapped.

For example, both industries value free-flowing traffic. Both tourists and truck drivers want to be able to pass other vehicles safely. Many businesses mentioned that during peak tourist seasons and special events, such as the Tall Ships Festival in Duluth, tourists often create significant congestion. When traffic slows down, drivers may become frustrated and attempt to pass trucks, even when passing is unsafe or unlawful.

Conversely, slow recreational or non-motorized vehicles, such as bicycles or vehicles hauling boats and trailers, can keep trucks from reaching their destination on time, which increases business costs. For example, several businesses explained that they must pay staff to work additional hours to unload trucks delayed by congestion.

Businesses cited a need for passing lanes and good signage to keep traffic moving, drivers happy, and roads safe.

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*“Passing lanes are really nice and something Minnesota seems to lack. A perfect case is when you’re going up to International Falls – you leave Cook on MN-53, and if you happen to get behind a 40-foot motor home with a guy from Illinois going 55 miles an hour, Gheen Hill is only place you have a passing lane between Cook and International Falls.”*

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## District 1 Characteristics that Affect the Transportation System

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As discussed in the District Background section, many of the characteristics that distinguish District 1 from other MnDOT districts affect its transportation structure, maintenance, and use. Its hilly terrain, snowy climate, and borders with Wisconsin and Canada present challenges.

**Figure 11: Steep hill sign**



### Infrastructure: Bypass and Passing Lanes

The terrain in District 1 sometimes requires curvier and steeper roads than many other parts of the state. As one business put it, “Highway 1 in Minnesota is the worst road ever made—there are lots of curves. It’s scenic but not great for semis.” Many of these roads require bypass and passing lanes to prevent traffic from getting stuck behind trucks slowly navigating hills. Businesses mentioned that other drivers are sometimes too eager to pass slow trucks when there are no passing lanes, creating a safety hazard for all parties.

### Operations and Maintenance: Snow and Ice Removal

Because District 1 is prone to long, cold, and snowy winters—more so than elsewhere in the state—there is an ongoing need to plow and treat roads in the winter and fix damaged roads in the summer. Businesses generally

praised MnDOT’s snow and ice removal within the district, but many also described how the rough roads and chemical treatments or brines can damage their vehicles and increase business costs. As one shipper explained, “Smooth pavement does so much to prevent fatigue, save tire life, undamaged freight, equipment damage-wear and tear. District 1 has rougher terrain than in the Metro District and District 3 [east central]. We know that there’s the lake effect and more snow; it’s a nightmare to keep up.”

### **Policy: Weight Restrictions**

Lake Superior is a major transportation asset for District 1, allowing a strong intermodal shipping system and shipping options for area businesses. As part of this relationship between highway, rail, and water transportation, many of the trucking companies that support District 1 businesses are located in Superior, Wisconsin. This cross-border relationship has led to several requests for similar or compatible policies, particularly related to weight restrictions.

In addition to requests about general weight restrictions, businesses repeatedly cited challenges with weight restrictions on bridges. District 1 is home to various water systems—lakes, creeks and streams, rivers, and swamps—many of which require bridges or other modifications for transportation. Restricted bridges in the district often force trucks—especially oversized trucks—to take alternative routes, which increases shipping costs. This also means that businesses rely on access to direct, high-quality alternative routes and face steep barriers when major bridges, such as the Blatnik Bridge in Duluth, shut down without a nearby alternative route. For example, one carrier described a circuitous route their trucks take in Virginia to avoid a weight-restricted bridge on Highway 53.

### **Communications: Road construction**

Many businesses emphasized the importance of information relating to road construction and detours. District 1 shippers rely on several key corridors, including highways 2, 53, 61, and 169. Of those highways, all but 169 funnel into Interstate 35, a critical link between District 1 and the southern parts of Minnesota and ultimately markets outside the state. Construction on Interstate 35 can hamper the movement of people and goods into and out of the district, increasing business costs and frustrating tourists. One shipper commented, “MnDOT does a great job keeping the roads open in winter. It’s the construction closures that are killing us.”

### **Other**

The Duluth area connects not only many of the key highways within District 1, but also links the Great Lakes system with Minnesota roads. Several businesses in the area mentioned that the lack of competition between railroads makes rail a less affordable option, forcing reliance on trucks. Unlike other districts that have participated in Manufacturers’ Perspectives studies, District 1 businesses did not mention a shortage of trucking options. Shippers did mention a shortage of drivers, but less often than in other districts.

# Detailed Transportation Findings

The following sections explore in detail the themes that arose from the interviews regarding infrastructure, operations and maintenance, communications, policy, and other findings.<sup>29</sup>

## Infrastructure

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*“It’s important to keep transportation infrastructure in good condition. Lots of trucks on the road.”*

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### Intersections

#### *Intersection Warnings and Approaches*

About one-quarter of the businesses interviewed provided input on intersection warnings and approaches. Nearly all of these businesses said they appreciated advance warning lights. Advance warning lights increase driver awareness, allow drivers more time to react, and provide safer intersections. One company stated that advance warning lights reduce the risk for product loss. Interview respondents also suggested MnDOT include intersection approaches and warning lights for:

- All intersections with four-way stops.
- Intersections with higher speed limits.
- Railroad crossings.

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*“The advance warning-flashing lights are so very appreciated and helpful for semis which need to prepare to stop.”*

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Businesses identified areas where advance intersection warnings may be particularly beneficial, including:

- Highway 53 in Virginia.
- Highway 169 and County Road 92 in Hibbing.
- Highway 2 entering Adolph.

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<sup>29</sup> Detailed findings follow a number of conventions, including:

- The use of quotations from interview notes to illustrate themes. Wherever possible, these quotations are verbatim, as written by the interviewers. Researchers edited for spelling, grammar, and clarity only when necessary to enhance the meaning of the quote.
- Rather than specific numbers or percentages, analysts used relative proportions and terms such as “few,” “some,” “many,” and “most” to illustrate how commonly businesses provided feedback.
- The findings in this section are generalizations grouped into themes based on data collected in the interviews. District 1 has received a comprehensive list of location-specific feedback.

**Figure 12: Solar powered sign that warns of vehicles approaching an intersection**



### *Stoptlights*

About one-fifth of businesses provided various types of comments about stoplights. Several respondents requested additional stoplights in specific locations, such as Highway 61 (London Road) and Interstate 35 in Duluth and highways 65 and 210 in McGregor. Some also mentioned the timing of certain signals that may not be ideal for traffic flow, such as Highway 71 and Keenan Drive in International Falls. In particular, several businesses expressed concern that the frequency and timing of stoplights in Two Harbors cause congestion and increase the time it takes to get through town.

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*"By the time larger/logging trucks get going, the next light turns red, causing back-ups."*

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Other stoplight feedback included inconsistent motorist behavior at blinking left turn arrows (see Figure 14), the sun causing blind spots at a stoplight in Chisholm, and the need for lights to accommodate tall loads. One company noted that they have 120 trucks on the road daily, and every day at least one driver will notice a person unlawfully drive through a controlled intersection without stopping.

**Figure 13: Blinking left turn arrow**



## Roundabouts

About one-quarter of businesses provided feedback on roundabouts. Many of them said roundabouts are not ideal for trucks<sup>30</sup> because they can damage truck tires, require trucks to occupy multiple lanes, may cause truck instability, and can be confusing for truck drivers and other motorists. However, a few companies noted that roundabouts decrease congestion and reduce accidents.

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*“Other drivers don’t realize that the trailer will swing into the other lane, and we get side-swiped.”*

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Specific feedback on roundabouts includes:

- Apron<sup>31</sup> tapering/sloping reduces tire damage and helps drivers stay in their lane.
- Signs need to be far enough back on the apron to help drivers stay in their lane.
- Removable signs or signs that are made to pop up or down based on weight would be helpful.
- Larger radii help drivers stay in their lane.

## Other Traffic Signals

Businesses also provided the following feedback on other traffic signals:

- Traffic signals where ramps meet the freeway shorten the room to accelerate.
- Vehicles pull out in front of trucks on the blinking yellow arrow.
- Traffic signal sensors do not always recognize motorcycles.

## Lanes

### *Bypass and Passing Lanes*

Over half of businesses provided feedback on bypass and passing lanes. Many of these companies said they liked bypass and passing lanes and recognized that many recent projects have included them. Businesses explained that these lanes reduce frustration for drivers and increase traffic flow, both in general and especially on steep hills. They also said they felt that providing designated areas for vehicles to pass improves safety.

Many companies noted they would like more bypass or passing lanes, with a few companies suggesting that wider and longer passing lanes would be helpful.

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<sup>30</sup> Respondents mentioned trucks from 24 to 70 feet long.

<sup>31</sup> Aprons are curbs at the center of the roundabout that have gradual slopes to allow trucks to navigate the roundabout without striking fixed objects or other vehicles, while discouraging other motorists from crossing it and approaching the center.

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*“The more the merrier. Should be every 5 miles on two-lane rural highways with limited sight distance or heavy recreational vehicle usage.”*

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Examples of specific requests for bypass lanes included:

- Highway 169 southbound to Highway 47.
- Highway 53 between Orr and International Falls, periodically.
- Periodically (every five to ten miles) on rural highways.

**Figure 14: Bypass lane**



Several businesses mentioned the need for passing lanes on Highway 37 from Hibbing to Highway 53. Several others cited passing lanes on Highway 2 as a good example of their use. Other suggestions for passing lanes included:

- Highway 61 between Two Harbors and Grand Marais.
- Highway 210 (stretch unspecified).
- Highway 169 between Virginia and Tower.

### *Turn and Acceleration Lanes*

Over half of the businesses provided input on turn and acceleration lanes. Most businesses appreciate that acceleration and turn lanes help truck drivers safely enter and exit busy highways. Businesses said that they allow traffic to flow more freely, improve fuel efficiency by reducing the number of times trucks need to stop and restart, provide for smoother and steadier travel, and reduce product damage by minimizing sudden stops. One company said they liked the acceleration lane east of Chisholm on Highway 169.

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*“The entrance was very busy, so it’s nice to have a long lane; it makes the traffic flow better when there are a lot of cars trying to get around.”*

---



Businesses suggested locations that might benefit from an acceleration lane, including:

- Midway Road at Highway 2 going north in Adolph.
- Highway 53 where it intersects St. Louis County Highway 13, northwest of Duluth.
- Old Highway 5 and Highway 169 in Hibbing.

Respondents recommended turn lanes, or longer turn lanes, in the following areas:

- Highway 1 between Ely and the Ely Airport.
- Intersection of Highway 2 and Highway 65 in Swan River.
- Intersection of Highway 61 to Lake County Highway 2.

### *Multiple Lane Highways*

Several businesses requested additional lanes along stretches of District 1 highways. They suggested an expansion to four lanes of Highway 2 from Duluth to Grand Rapids and of Highway 169 all the way through the Iron Range, including from Bovey to Pengilly (now two lanes). Another business requested that MnDOT expand a stretch along Interstate 35 to six lanes to reduce weekend congestion, on whichever segment that MnDOT determines to be best.

## **Shoulders**

### *General Comments*

About half of all respondents provided feedback on shoulders, saying they are important for the safety of truck drivers and others. For example, businesses said shoulders:

- Provide more stability, reducing the chance of rollovers and other incidents.
- Allow trucks to move aside when a car is passing.
- Help trucks avoid cyclists.
- Keep debris off the road.
- Provide an area for drivers to pull over to check or secure their load.
- Allow trucks a roadside place to change tires.
- Provide “peace of mind” for big trucks.

---

*“All around here (except [Highway] 1) major highways have them [shoulders]. It helps tremendously. [Highways] 46 and 6 are far better than they were 20 years ago.*”

---

One business said that when there are no shoulders, drivers sometimes swerve to avoid hazards in the road. This can shift truckloads and cause product damage.

## *Wide Shoulders*

One-third of businesses said they appreciated wide shoulders because they allow trucks to leave the roadway safely when necessary. For example, one business said it allows them to avoid hitting deer in the road. Another said it is “certainly key for goods to be on roads with wide shoulders.” Some respondents also noted that wide shoulders provide room for overhanging and oversized loads, while one business mentioned that narrow shoulders can lead to collisions with mailboxes.

---

*“The wider, the better.”*

---

*“Width is more important than material type. As long as the gravel isn’t in the road, it’s ok.”*

---

Businesses identified narrow shoulders on the following stretches:

- Highway 61 up the North Shore.
- Highway 6 from Big Falls to Highway 1.
- Highway 210 from Aitkin to Brainerd.
- Highway 73 north of Chisholm.
- Highway 65 north of Nashwauk.
- Highway 1, entire stretch.

In a few areas, such as Highway 65 in Aitkin County and Highway 38 in Itasca County, businesses complained of narrow shoulders but acknowledged that the terrain makes it difficult to widen them.

## *Paved Shoulders*

Some businesses mentioned they have observed additional safety benefits from shoulders that are paved. When trucks need to pull over, pavement provides stability for the vehicles. In contrast, “soft dirt” shoulders increase the risk of a truck tipping over or needing to be towed. One business said they preferred paved shoulders and “won’t head for gravel or composite.” Another company noted that paved shoulders reduce the potential loss of product. In their case, pulling onto an unpaved shoulder can cause bottles to leak.

**Figure 15: Paved shoulder**



## Bridges

### *Clearance*

Several businesses mentioned bridge clearance as a challenge. Generally, these businesses preferred higher or wider bridge clearance wherever possible. Bridges that businesses identified include:

- Bridge on Highway 2 between Highway 194 and Highway 33 in Saginaw is narrow and has low clearance.
- Sherman Overpass west of Buhl on Highway 169 has low clearance.
- BNSF bridge over Highway 2 at the Prairie River in LaPrairie: trucks have had to lower equipment to drive underneath.
- Highway 53 at Highway 37 south of Virginia (scheduled for replacement in 2018).

One company that hauls oversized equipment stated that clearance issues were common. Another company said they often need to reroute, adding miles to their drive.

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*“When shipping 14’6”, knowing the right routes is important. Sensors with flashing lights should be on every low bridge/clearance.”*

---

### *Capacity*

Many of the businesses that commented on bridge capacity said avoiding routes with weight restrictions or rerouting can cause delays and increase costs. For temporary construction-related restrictions, one business said they can limit the impact when they can plan for restrictions and communicate with their contractor prior to the restriction.

# Profile: Kirscher Transport

Kirscher Transport provides shipping services to the mining industry in northeastern Minnesota and is headquartered in Virginia, MN. Specializing in substantial oversize and overweight shipping since 1954, the company's website prominently states, "We Haul Everything 24/7." Kirscher Transport is highly responsive to mining conditions, expanding more than four-fold when mining operations peak.

Among Kirscher Transport's biggest concerns is access to the mines, its primary customers. Kirscher pointed out how bridges can add length (and costs) to their hauls. With loads often reaching 17 feet, low bridge clearance causes Kirscher to re-route trucks onto the county systems. For example, Kirscher trucks re-route to county roads to avoid three bridges on Highway 53 and one across Highway 169. Both routes add marginal time for one truck, but those costs accumulate quickly when multiple trucks are travelling on the same route.

Weight restrictions mean that Kirscher must spend time obtaining permits. But they also said they have good working relationships with District 1 and MnDOT Permitting Office, and that staff have been very helpful.

Kirscher works closely with MnDOT and the Department of Public Safety on hauling oversized loads. State Patrol officers help moderate traffic, waiting until 15 to 20 cars back up before allowing traffic to pass a Kirscher truck. They have also worked with MnDOT to navigate large loads through construction zones.

Kirscher says they prefer paved shoulders because they keep sand and rocks off the road. They also requested that signage be kept above or away from the road, far enough away to avoid hitting them. Similarly, they requested removable signs in roundabout medians, so oversized trucks can drive through the medians if necessary.

**Number of employees**  
13

**Cluster**  
Transportation and Logistics

**Location**  
Virginia, MN  
St. Louis County



## Signage

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*“Good signage is critical for directing tourists to their potential destinations.”*

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Nearly half of the businesses interviewed commented on signage. A few of them said that current signage meets their needs. Business requests for signage varied, ranging from requests for more technologically advanced signs to signs warning of a hazard or road condition.

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*“We have good signing in Minnesota. It is equal to or the best in the country.”*

---

Specifically, businesses requested:

- Electronic signage that can change as needed.
- Solar-powered digital signage.
- Sensors with flashing lights for low bridge and bridge clearance signs.
- “Reduced Speed Ahead” signs.
- Notifications of travel times during congestion.
- Designated truck route in Cloquet.
- Signs in Duluth that provide information for trucks, including directions to the port and around the airport.
- Lighted signs for easier visibility.
- Signs where there is a potential hazard: approaching a grade, bridges, weather, etc.
- Improved signage for construction detours; early notification of upcoming construction.
- Signs placed higher than 17 feet above ground for truck clearance.
- Signs that remove gender references from the language about workers.
- Directional signs to businesses.

A few businesses said construction signage on Highway 53 during the 2016 construction season was confusing to drivers heading southeast on Highway 53, causing them to miss the sign to Duluth and accidentally go to Gilbert, instead. A few businesses also noted that Duluth tourism traffic can cause backups and delays, especially during large events such as Grandma’s Marathon. They said more electronic signs would better inform drivers about these events and help them find alternative routes.

## Other Infrastructure

A few businesses mentioned rumble strips, requesting them along fog lines but not on centerlines. Another business requested MnDOT use more visible paint for fog lines.

## Duluth's Bridges

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Figure 16: Workers examining the Blatnik Bridge



The Blatnik (Interstate 535) and Bong (Highway 2) bridges between Duluth and Superior serve as a microcosm of transportation issues and demonstrate the importance of individual pieces of infrastructure. One-fifth of businesses interviewed mentioned one or both bridges in some context.

Business comments highlighted the importance of the bridges. One Duluth business mentioned that nearly half of its employees commute across these bridges from Wisconsin to Minnesota every day. Shipping and wholesale firms interviewed in Superior rely on the bridges to bring products into and out of Minnesota. As one business explained, “The 12 miles we’d have to drive around without a bridge doesn’t seem like much, but we have 30-35 trucks a day going over. That adds 15-20 minutes a day [for each truck]. That’s lots of fuel—for trucks, trailers, employees.”

Although area businesses understand that the bridges require occasional maintenance, they also expressed frustration with construction-related closures and traffic. Several companies highlighted how bridge construction forces their employees to shift their hours to avoid traffic. One manufacturer noted, “When the

Blatnik is down, like it is now, we sometimes have people arrive late, which affects our production.” Another company explained that congestion on the bridge can halve the amount of daily product they get to their client across the state line. Interviewees stressed the need for good communication about construction, as well as about bridge weather and traffic conditions.

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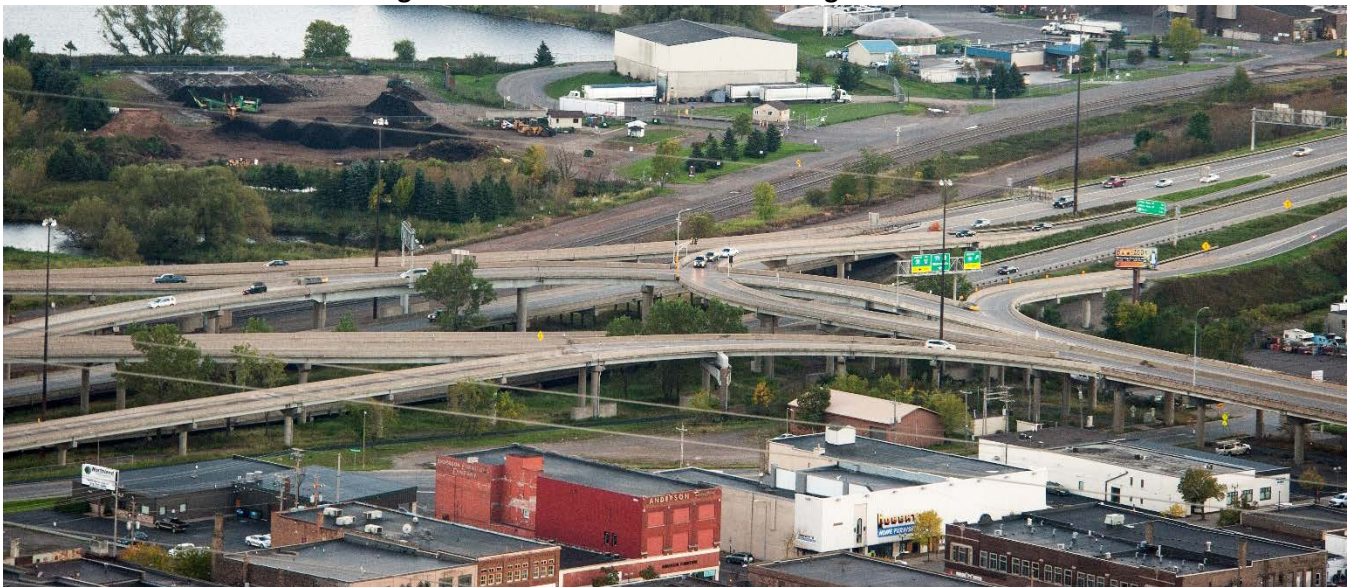
*“The partnership between MnDOT and WisDOT is a good one and we’re happy that more maintenance is happening on the bridges, especially after they have been so neglected in the past. One thing that is very important is clear signage. For example, signage prior to coming on to bridges: high wind, slippery conditions. Electronic signage that can change as needed is particularly good.”*

---

A few businesses acknowledged that the Blatnik Bridge may need to be replaced within the foreseeable future.<sup>32</sup> They expressed concerns about how that will affect the area and suggested specific design features for the replacement bridge, including:

- Higher weight limits for trucks than the current allowance.
- Lanes that can accommodate 14-foot-wide loads.
- Pedestrian sidewalks.

**Figure 17: “Can of Worms” interchange in Duluth**



Businesses also provided feedback on Duluth’s “Can of Worms,” the complex interchange between Interstate 35, Interstate I-535, and Highway 53. Many businesses expressed concerns about the safety of the intersections,

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<sup>32</sup> The bridge was constructed in 1961 and is being considered for replacement as soon as Fiscal Year 2028. In 2008, 2012, and 2016 District 1 conducted rehabilitation projects to maintain the carrying capacity of this bridge, which require periodic, temporary bridge closures.

including concerns about insufficient turn and acceleration lane length, inability to accommodate overweight trucks, and poor sight lines, which are highlighted throughout the Detailed Findings section of this report.

## Operations and Maintenance

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### Road Conditions

#### *Smooth Pavement*

About one-third of businesses said smooth pavement is important because it reduces product damage, truck maintenance, and fuel consumption.

Several respondents said that MnDOT does a good job keeping up on road maintenance. The examples they mentioned include:

- Highway 1: MnDOT has made improvements to road conditions.
- Highway 23: MnDOT is addressing potholes.
- Highway 37: MnDOT has improved road conditions.
- Highway 61 to Duluth: MnDOT has improved road conditions.

---

*“We appreciate having nicely paved roads, two lanes on Highway 61.”*

---

#### *Rough Pavement*

About half of businesses provided input on rough pavement, and many of their comments reflected the importance of smooth pavement. One business explained that rough pavement causes their product to rock and shift, which can cause damage. Another said that if rough pavement damages the product during transit, they sometimes have to sell the product at a discounted price.

---

*“[The] problem up here is springtime frost bumps—Hibbing to Virginia in February/March on 169 is pretty rough. From Chisholm to Virginia specifically—it doesn’t damage product because it’s only 15-20 minutes, but over the course of time it certainly doesn’t help the trucks at all.”*

---

Businesses identified specific stretches of highway that have rough pavement, and noted that poor pavement conditions worsen or become more common during winter and spring months. In particular, a few businesses said Highway 169 from Hibbing to Virginia is generally rough. Other areas where businesses reported rough pavement include:

- Highway 1 from Cook to the Effie/Bigfork area.
- Highway 2 between Grand Rapids and Duluth.
- Highway 6 from Big Falls to Deer River.
- Highway 65 from McGregor to Pengilly.



MnDOT has existing plans to resurface many of the highways businesses identified as rough, including those listed above. Most of these resurfacing projects will occur in the next two to three years.

**Figure 18: Rough pavement east of Grand Rapids**



### *Impacts of Rough Pavement on Businesses*

Businesses said rough pavement increases truck maintenance costs, product damage, and travel hazards. Impacts include:

- Increased wear on truck tires, suspensions, steering, and frames.
- Broken truck springs.
- Loosened bolts.
- Damaged paper rolls.
- Loosened load straps.
- Jostled pallets and crates, causing them to fall apart or making them difficult to unload.
- Damaged mining pumps.
- Crumbled wood pulp, rendering it unusable.
- Damaged ducts and other sensitive cargo.
- Difficulty shifting gears, causing fatigue for drivers.
- Increased hazards for people on motorcycles and bicycles.

---

*“The rough pavement is damaging to our equipment and product. Product damage: shifting, moving, rubbing paint off, denting, hard to keep load secure because it’s bouncing, loosening the straps. If you’ve got irregular pieces, they rattle around and get loose and bang into each other, shift underneath the binding, then you have stop and rebind the load, so you need to find a safe place to do that. This is a big one, roughness of the road, we’ve had a lot of issues with that the past couple of years. Especially on 65 and 169. We’ve had shocks broken, upper ball joints, tie rods broken. Driving heavy equipment that takes a pounding.”*

---

# Profile: Superior Fuels

Superior Fuels delivers home heating fuels to 4,000 to 4,500 customers along the North Shore and into eastern portions of the Iron Range, including residential, manufacturing, timber, and tourism facilities. The company recently moved its headquarters to Duluth from Superior, Wisconsin.

Superior Fuels appreciates that in winter—their peak season—they can haul 10 percent heavier loads. This allows them to deliver fuel in larger volumes to more customers per trip. Once spring weight restrictions go into effect, their loads are reduced by half, which means they must use twice as many trucks for delivery, increasing costs. Recently, Superior Fuels has added newer, lighter trailers to maximize the product they haul.

Rough roads are challenging for Superior Fuels because they cause truck springs to break. Broken springs are not only costly to repair, but also mean one less truck on the road. This is particularly

troublesome after a storm when there can be widespread heating outages.

Bypass lanes are important to Superior Fuels, especially in Minnesota, where it is illegal to pass on the shoulder. Frequent starts and stops are dangerous with liquid cargo, so the less their trucks have to stop, the better. Superior Fuels also requested wider shoulders along the North Shore. The ability to pull over in an emergency or to avoid a hazard is particularly important with flammable cargo. They further suggested an expansion of London Road, citing frequent congestion.

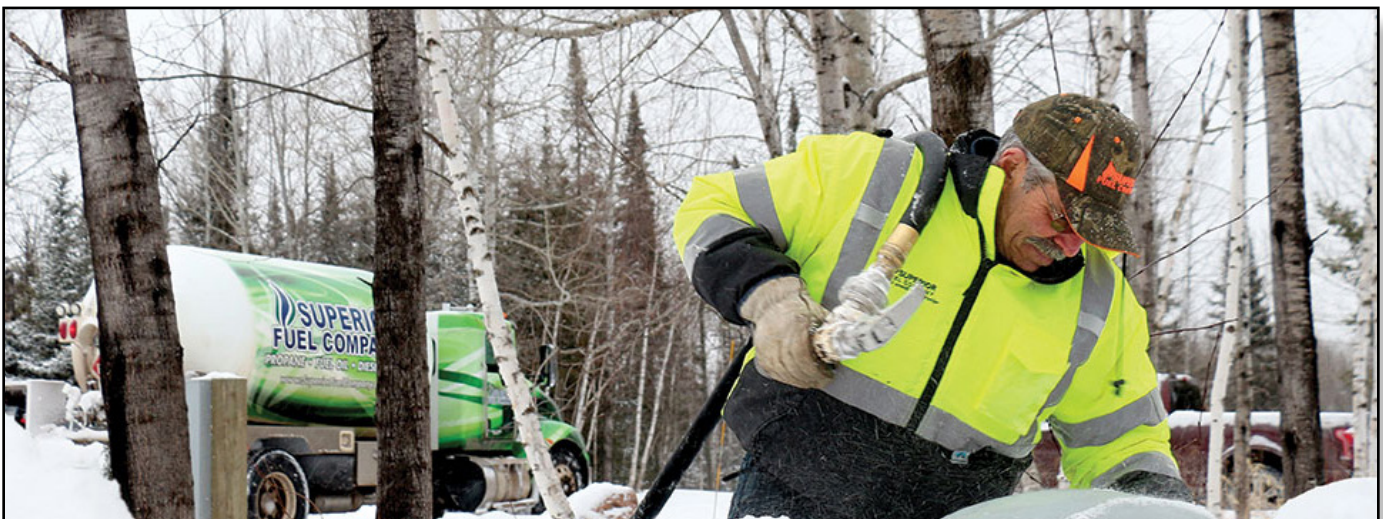
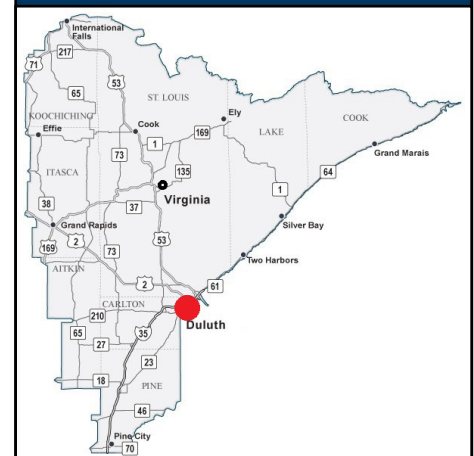
Prompt snow and ice removal is crucial to Superior Fuels' ability to do business. They said that MnDOT typically does a good job keeping the roads clear.

Superior Fuels continues to expand its customer base and service area. As a result, they may purchase additional trucks for delivery.

**Number of employees**  
27

**Cluster**  
Distribution and Electronic Commerce

**Location**  
Duluth, MN  
St. Louis County



## Snow and Ice Removal

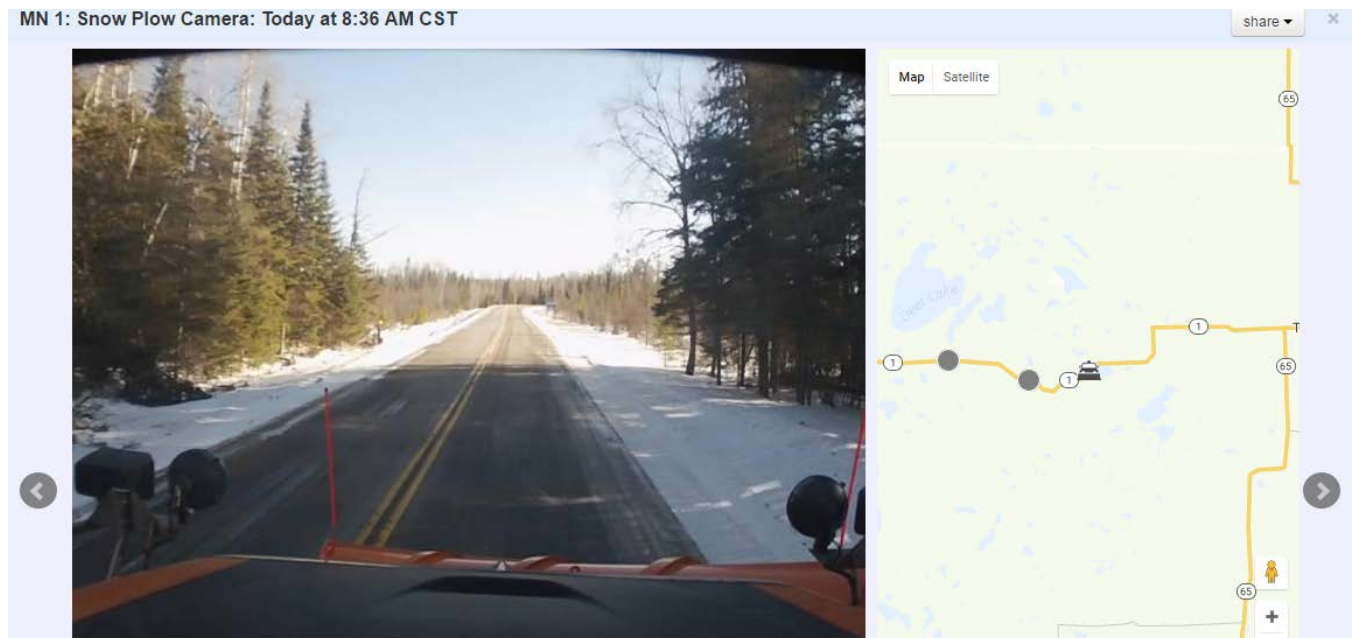
About two-thirds of businesses provided feedback on snow and ice removal. Some businesses said that prompt and effective snow and ice removal is important to ensure their outgoing and incoming deliveries are on time. Delayed arrival of supplies and staff can delay production, while delays in outgoing product delivery can affect customers and increase business costs due to overtime pay for staff.

For example, several businesses said the timing of snow and ice removal can delay employees' arrival to work. One business explained that transportation problems for workers can add hours or days onto production time, and they are forced to increase overtime costs because the 50 to 60 percent of the workforce that arrives for work must put in longer hours. The same business said it has a client that will not travel to their location due to road conditions, particularly during inclement weather.

Over half of the businesses that provided feedback on snow and ice removal said MnDOT does a good job clearing snow, and that roads are well maintained in the winter. Examples of well-maintained locations that businesses mentioned include:

- Highway 37 and Highway 169 in Hibbing.
- Highway 2 to Bong Bridge in Duluth.
- Highway 61 up the North Shore.

**Figure 19: 511 image from snowplow on Highway 1**



### *Areas Suggested for Improved Snow and Ice Removal*

Over one-third of the businesses identified locations that they felt require additional snow removal or are prone to ice buildup—especially on hills, curves, and bridges. Examples of these locations include:

- Highway 135 south of Highway 21 in Embarrass: not enough traction on hills during snow events.
- Highway 169 bridge in Hibbing: ice builds up on the bridge.
- Highway 61 near Grand Marais: trees shadow road and prevent snow from melting.

### *Effects of Chemicals and Brines for Melting Snow and Ice*

Several businesses commented on the chemicals and brines MnDOT uses for snow and ice removal. Almost all of these businesses said that the chemicals and brines corrode trucks and trailers. For example, one business mentioned a trailer that they have used once per week for fourteen years is no longer in service due to corrosion, despite regular washes. Another business attributed its recurring loss of license plates to the use of chemicals and brines.

---

*“It gets in every crack and factory wiring harness. It gets under the straps for molding and you can’t seal against it or wash it out. It’s caused trucks to leak fuel... It probably costs us \$50,000-100,000 per year or more in additional upkeep. We notice we’re just not getting the life out of our trucks that we used to.”*

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## **Communications**

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### **General Communications**

More than one-third of businesses provided positive feedback on MnDOT communications, often saying they feel well informed of road construction. Many of these businesses expressed general feedback, such as “excellent job communicating.” A few respondents specifically mentioned that they like MnDOT mailing lists, television news updates, and newspaper articles, and they have noticed general improvements in communication.

---

*“It seems that MnDOT provides more information now than they did in the past.”*

---

A few businesses said they do not feel well-informed on construction dates. Among these, some of them learned about 511 in the interviews and noted that it might be a useful source of construction-related information. Others that said they do not feel well informed did not give specific suggestions for improvement.

### *Suggestions for Improvement*

About one-quarter of businesses provided suggestions for future MnDOT communications. Most commonly, they suggested that MnDOT use social media more often for updates. A few businesses mentioned that most companies use Facebook, while one suggested MnDOT tweet updates. One business also suggested that MnDOT have a meeting with all area trucking companies prior to each construction season to discuss road closures and alternative routes. Other suggestions include:

- Add more updates to local media, newspapers, and morning radio.
- Provide more training on communication options available and how to use them.
- Increase schedule signage that identifies times and dates for road construction.

**Figure 20: Road construction schedule signage**



### **511**

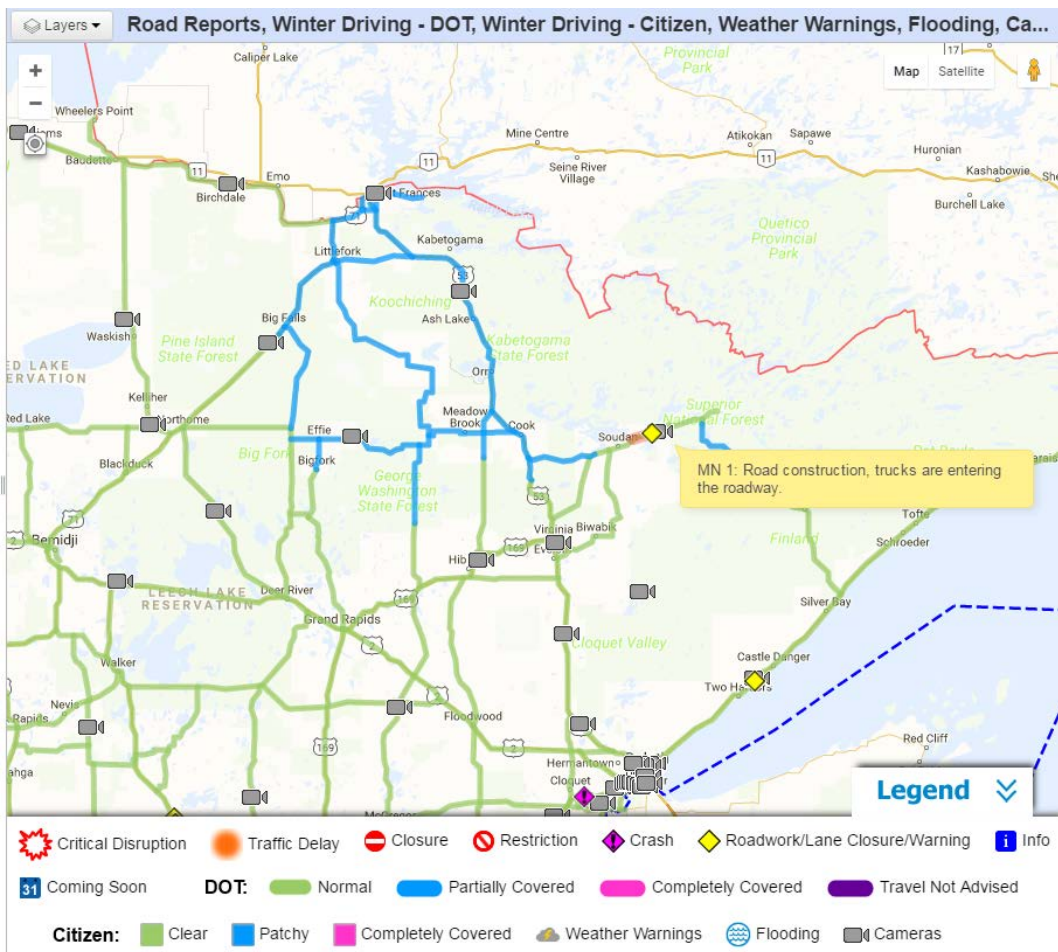
Three-quarters of companies responded to questions about 511. Of them, half said they use 511, one-quarter said they were not aware of 511, and the remaining quarter said they knew about 511 but did not use it.

In general, businesses that own trucks were more likely to know about and use 511, compared to businesses that contract all their shipping. About two-thirds of the businesses that said they use 511 have their own company trucks, while the remaining one-third contract with others for their shipping. By contrast, all of the businesses that said they were not aware of 511 contract with other companies for their shipping, although a few of those companies also ship some of their own product. Likewise, nearly all the businesses that knew about 511 but did not use it contract with other businesses for all their shipping.

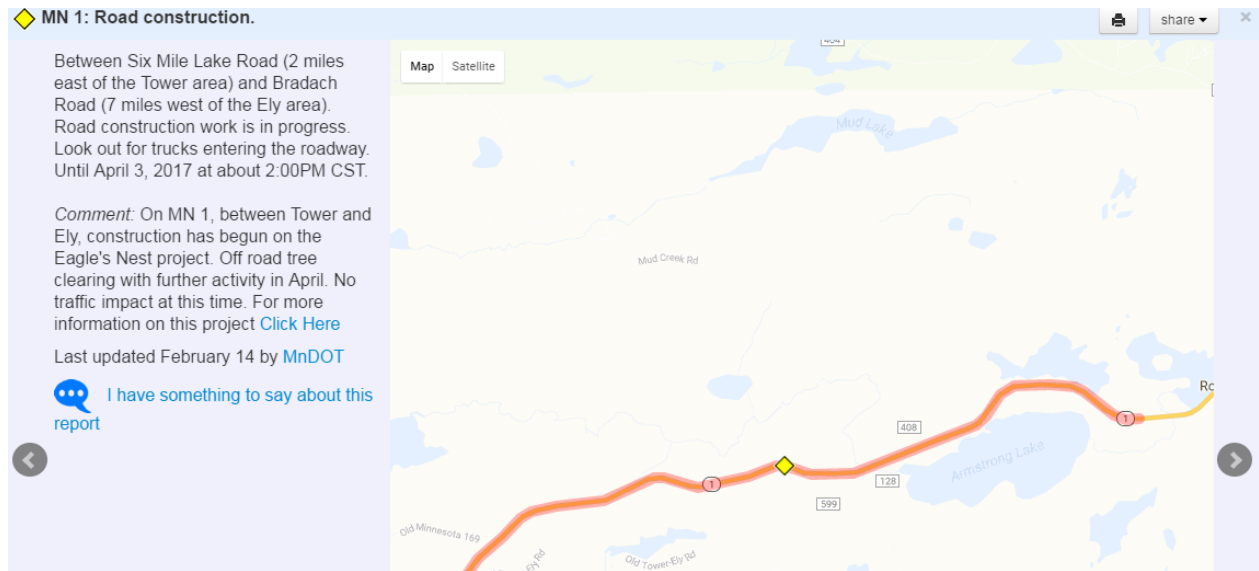
Several businesses that use 511 suggested ideas for improving the service, including:

- Introduce the 511 application as part of driver education classes.
- Allow more input from the State Patrol and people who use the road.
- Include an overview of the weight and width restrictions, including information about when and where.

**Figure 21: 511 road incident screenshot #1 (road condition overview)**



**Figure 22: 511 road incident screenshot #2 (pop-out from screenshot 1 in Figure 21 describing road condition)**



## Road Construction

Over half of businesses interviewed provided feedback on road construction, and half of the feedback was general in nature. Several businesses explained that road construction can cause navigation problems for their drivers or customers, while others saw increased business after construction was complete. A few businesses said they understand the need for road construction to keep the transportation infrastructure in good condition.

More than one-third of companies described how road construction can negatively affect their business. Examples include:

- Blatnik and Bong construction or shutdowns lengthened employee commutes and increased delivery times.
- Highway 61 construction in Grand Marais increased delivery times.
- Rice Lake Road, Haines Road, and Highway 53 construction in Duluth caused additional driving and delayed deliveries.

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*"[The] Highway 53 expansion helped, but resulted in a change of address for the business that cost thousands of dollars."*

---

Businesses suggested ways MnDOT could help businesses prepare for and navigate road construction, including:

- Using good detour signage.
- Keeping a lane open.
- Adding more signage at the site of construction prior to closure.

# Profile: Savanna Pallets

Savanna Pallets' 100 employees produce 30,000 pallets per week, in addition to other wood materials, making it the largest manufacturer of new wood pallets in the region. Its location in McGregor is important because it allows the business to be no more than 60 miles from the majority of its timber supply.

Savanna Pallets is keenly aware of the relationship between transportation and efficient operations. While they see the nearby network of well-plowed 10-ton highways as an asset, they also acknowledge that Michigan and Wisconsin allow even heavier trucks (and therefore lower delivery costs). Weight restrictions in Minnesota make it more difficult for Savanna Pallets to compete with pallet companies in other states, and limit the amount of

supplies they can receive. Rough highways can also add costs because they jostle and damage pallets. Savanna Pallets mentioned Highway 210 from McGregor to Aitkin, where it connects with Highway 169 as an example of a rough road.

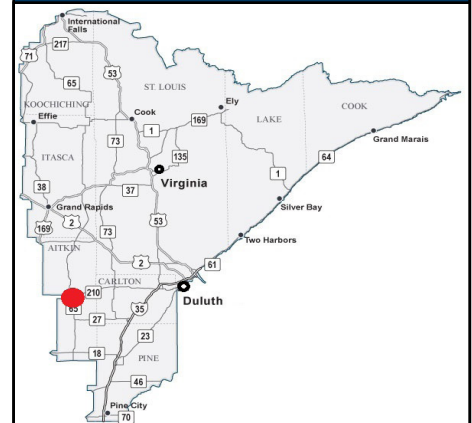
The inability of trucks to travel at a consistent speed also affects costs. According to Savanna Pallets, slow-moving recreational traffic and a lack of turn lanes cause their trucks to frequently decelerate and accelerate.

Savanna Pallets also suggested stoplights, which, in addition to reducing stops and starts, reduce confusion at intersections. One location they said would benefit from a stoplight is the intersection of highways 210 and 65 in McGregor.

**Number of employees**  
100

**Cluster**  
Wood Products

**Location**  
McGregor, MN  
Aitkin County





## Policy

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### Weight Restrictions

The majority of businesses interviewed contract their shipping to an external company, and less than half of businesses work with oversize-overweight (OSOW) shipments. However, more than two-thirds of businesses commented on logistical challenges and increased costs caused by weight restrictions.

Overall, respondents requested flexibility from MnDOT when it comes to weight restrictions. Many respondents who mentioned weight restrictions sought ways to haul heavier loads, including:

- Requesting roads being upgraded to 10-ton status year-round.
- Allowing heavier trucks for a broader range of special products.
- Leniency in weight restrictions to account for cases when ice develops on trucks en route or to allow businesses to fit slightly more product into a truck.

About one-quarter of respondents who provided feedback on weight restrictions expressed interest in reciprocity among Minnesota and neighboring states and Canada. Most requests involved increasing weights to be more competitive or consistent with other states, while some sought exceptions when travelling only a few miles into Minnesota. A few respondents mentioned that Canada's weight restrictions are per load and not per axle, so trucks loaded in Canada may not comply with Minnesota weight limits.

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*"[Permitting challenges include] different requirements between states; you could be too long, too heavy, too wide."*

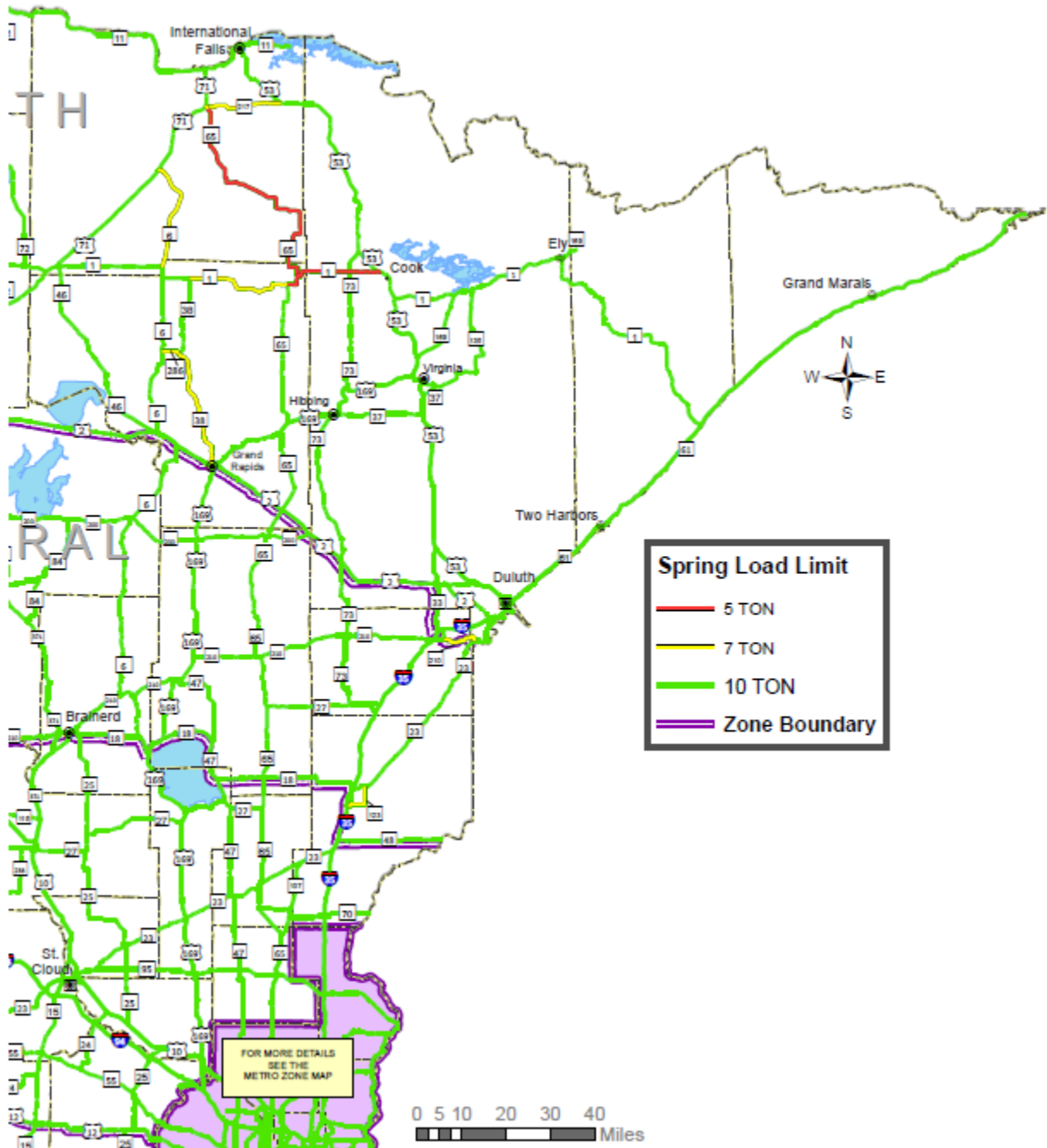
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A few other respondents, however, noted that current weight restrictions allow for safe travel through Minnesota without worries about overloaded trucks.

Businesses favored year-round 10-ton roads as a solution to complications resulting from weight restrictions. Year-round 10-ton roads are predictable, which simplifies planning and permitting for businesses. One business recommended that whenever MnDOT is due to replace a road, they should replace it with a year-round 10-ton road.

A few companies that deliver OSOW loads mentioned that construction or bridge restrictions can create long or circuitous routes. For example, one business said that construction restrictions on Highway 53 between Orr and Virginia caused them to travel 60-70 miles out of their way to get from the Duluth area to International Falls because they could not cross Highway 1.

Figure 23: MnDOT 2017 road restriction map northeast quadrant spring load limitations



### Spring Restrictions

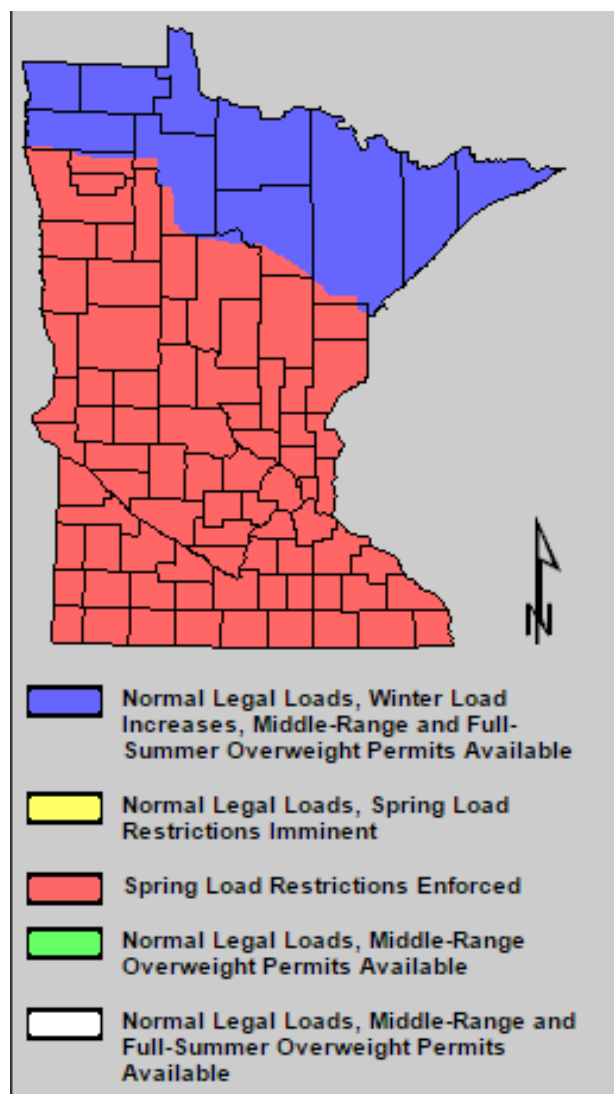
About one-quarter of businesses mentioned spring load restrictions, with nearly all of them saying they affect their ability to do business. This was especially apparent for businesses involved in moving timber. According to a few businesses, timber companies prefer to stockpile logs during the winter and have only a small window—from February until spring restrictions go into effect—to deliver a year’s worth of timber to their customers. This

results in a cap on the amount of supplies paper and other wood product companies have for that year's production. In the construction industry, spring restrictions create a challenge for getting necessary equipment for roofing, such as cranes or boom trucks, to the job site.

A few businesses mentioned they adapt to spring restrictions by adding axles or doubling the number of trucks that deliver. Both solutions increase costs.

A few other businesses said that while spring restrictions affect their work, they understand why the restrictions are necessary and plan ahead as much as possible, although they would prefer more notice than MnDOT currently provides.

**Figure 24: MnDOT seasonal load status as of March 15, 2017**



## Permitting Process

Overall, about one-fifth of businesses commented on the process of obtaining a permit. Comments were split evenly between businesses that found obtaining a permit relatively simple and those that found the process difficult.

Those that found the process simple said:

- They are happy with the MnDOT staff they work with.
- The process is streamlined.
- It does not take long to get a permit.

Those that found the process challenging said:

- The requirement for separate permits from different jurisdictions—including city, county, and state government—is excessive.
- The time it takes to get a permit approved can cause shipping delays.
- The online system to apply does not always function and boots people off before they can complete their application.

One business mentioned splitting large loads in to multiple smaller ones in an attempt to sidestep process requirements.

---

*"[Challenges include] permitting, not knowing the required permits and doing it correctly. Nobody wants to be illegal."*

---

About half of the businesses that commented on obtaining permits referred to challenges related to routing. Examples of routing challenges include:

- Routing around bridges due to clearance, even if the load is slightly lower than the bridge clearance.
- Routing inconsistencies with width restrictions.
- Routing that favors construction zone routes over county roads.

A few businesses noted that the load calculations needed to obtain permits can be confusing.

Businesses also suggested improvements to the permitting process, such as:

- Allowing businesses to use an interactive interface to highlight areas where there is an error in restrictions.
- Allowing businesses to save truck and trailer information on the permitting website for future use.
- Providing a MnDOT point person that businesses can work with to get all their permitting done ahead of time.
- Creating a constant heavyweight corridor (no location specified).

## Other Policies

### *Inspections*

Several businesses offered feedback on roadside inspections and weigh stations, even though the questionnaire did not include questions about these topics. In general, businesses did not object to inspections or enforcement of policy, but they provided insights into how inspections affect their work.

Most commonly, businesses sought a consistent, pragmatic approach to enforcement. A few businesses said that inconsistent interpretation or enforcement of policy made it difficult for them to understand and follow the laws.

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*“For example, there are six guys in Saginaw, which means I’ll get six different opinions. I need to know whether I can run a route or not... We get authorization [from MnDOT] for a route. But a trooper might not look at the permit in our truck and have a different interpretation of the law, and then I have to go fight them in court. I can fight but it takes time, and our DOT number is jeopardized.”*

*“There should be a program where you call the DOT or OSHA, and they come out to help you do a self-audit for your equipment (no fines).”*

---

One business cited challenges with the last mile, when a truck needs to travel a short distance onto a city or county road to access its customer. They said other states would overlook the need for a permit on that road due to the short distance, but Minnesota enforces it. This means the business needs to lighten its load to comply with its weight restrictions and access its customer.

A few businesses also mentioned that inspections are sometimes detrimental or costly. For example, one business that carries perishable products said it often sees products go to waste because they expire during inspection. Another said that the drivers feel pressure to avoid inspections or scales because they risk having to pay for an infraction that may be out of their control.

### *Shipping Policies*

Several businesses provided feedback on federal hours-of-service limitations. Half of these businesses said there was a shortage of rest areas due to increased demand for space at these stops because of hours-of-service requirements. A few others mentioned that the regulations have made truck driving less profitable for drivers and caused a driver shortage. One business said they liked the new restrictions and felt they improved safety. Another suggested Minnesota allow longer hours for drivers that stay within its borders, like in Wisconsin.

### *Speed*

Some businesses requested that MnDOT increase speed limits, or at least not decrease them. In a few cases, they wanted increased speeds so employees and customers could access their location more quickly. Many of these responses requested increased speeds at specific locations to improve traffic flow.

Other specific speed requests include:

- More gradual reduction from 50 mph to 30 mph on eastbound Highway 2 approaching Grand Rapids.
- Reduced speed limit outside a business facility to increase employee safety.
- Limit the frequency of speed limit changes on Highway 2 near Deer River.

## Safety

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### Intersections

**Figure 25: Highway 2 and County Highway 63 in Grand Rapids**



About one-third of businesses expressed concerns about intersection safety. Primary concerns include sight obstructions involving hills, turns, or trees, and drivers of all types unlawfully going through controlled intersections, such as rolling through stop signs. Examples of intersections that businesses perceived as unsafe include:

- Several intersections along Highway 169.
- Highway 65 and Highway 2 in Swan River: drivers run stop signs.
- Highway 2 and County Road 63 in Grand Rapids: traffic turning right from westbound Highway 2 to northbound Highway 63 does not stop for red light.

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*“Port Terminal access to Interstate 35 [southbound] is a very blind intersection and [we] have to change lanes once [we’re] onto the freeway in rapid fashion.... The intersection for the Interstate 35 [southbound] off-ramp to Central Avenue is extremely busy and makes turning left to go to the plant dangerous. Trucks basically have to pull out in front of people because the traffic is getting heavier in that area of town.”*

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### *Intersections along 169*

Of the comments regarding intersection safety, about one-quarter involved Highway 169. Comments spanned the entire stretch of 169 in District 1—from Ely to Aitkin—and varied in nature from congestion to tight turns and sight obstructions. Examples of concerns about intersections along Highway 169 include:

- Iron World Road crossing Highway 169 in Chisholm: hill and curve block sight when crossing or turning onto Highway 169.
- At St. Louis County Road 21 in Ely: difficult to judge speed of vehicles pulling onto northbound 169 as they are accelerating.
- At 41<sup>st</sup> Street West (frontage road) in Hibbing: difficult for trucks to get in and out due to tight turns and challenging angles.
- At Highway 65 in Nashwauk: merging traffic from Highway 65 collides with westbound traffic.

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*“The intersections near Walmart [Highway 7 and Highway 53, Highway 169 and Mud Lake Road]... are increasingly congested and people don’t know what to do; they are confused.”*

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### **Distracted Driving**

Several businesses expressed concern about distracted driving among truck drivers and other motorists. Almost all of them noted the use of cell phones and texting as the primary causes of distracted driving. A few businesses noted crashes they believe happened because drivers were not paying attention.

# Profile: UPM Blandin

UPM Blandin manufactures roll publication paper for magazines and catalogs across the country. The company's forestry unit and paper mill employs 400 people in Grand Rapids, where the company has been a fixture since 1901.

Even after its sale to Finland-based UPM in 1997, Blandin has remained a household name as one of the region's largest employers. UPM Blandin Forestry, also in Grand Rapids, owns and manages nearly 188,000 acres and is nationally recognized for its sustainability practices.

Among UPM Blandin's greatest transportation challenges is getting timber to its plant. Because loggers harvest timber in the winter months, much of the annual delivery happens in the spring, the same time

that MnDOT enhances weight restrictions to protect vulnerable roadways. The restrictions further limit the amount of wood a single truck can deliver. UPM Blandin cited highways 38 and 286 as particularly challenging during spring weight restrictions.

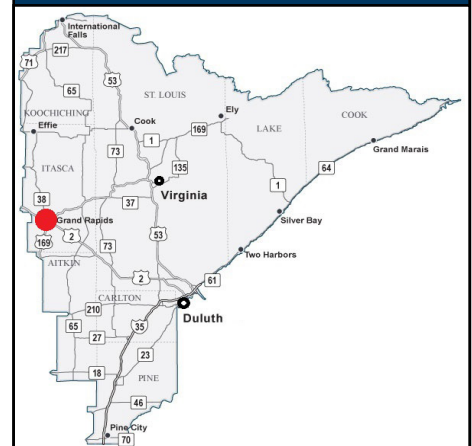
UPM Blandin also mentioned that the removal of two traffic signals in Grand Rapids at Highway 2 and 2nd Ave Northwest, and at Highway 169 and River Road, have caused confusion for trucks leaving the facility. Trucks use city streets instead to access Highway 169 via a controlled intersection.

In addition to trucking, UPM Blandin depends heavily on rail transportation for both incoming raw materials and outgoing products.

**Number of employees**  
400

**Cluster**  
Paper and Packaging

**Location**  
Grand Rapids, MN  
Itasca County





## Other Safety Concerns

Over half of businesses identified other perceived safety hazards. Many of these concerns were mentioned in other sections of this report, such as the Advance Warning Lights and Snow and Ice Removal sections. Examples of other safety concerns include the need for more:

- Education for drivers about merging safely.
- Education for youth on sharing the roads with large trucks.
- Truck-hauling signage near trucking businesses.
- Roadway and intersection lighting.
- Emergency pull-off lanes at railroad crossings (similar to a runway lane).
- “Merge ahead” signage to help drivers understand who has the right of way.
- Brush removal at intersections to improve sight lines.

In addition, businesses said drivers unlawfully pass on Highway 38 south of Marcel and that the highway provides few shoulders or other barriers between the road and water. Another company said Highway 169 north of Aitkin is very narrow, making it challenging for a truck to pass another truck.

## Other Findings

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### Congestion

Almost two-thirds of businesses interviewed provided feedback about congestion. Most often, businesses discussed ongoing congestion issues, like traffic at shift changes and during morning and evening commutes. Several businesses also cited construction as a source of congestion. A few businesses highlighted construction on Interstate 35 and the Duluth bridges as projects that have affected their deliveries and customers. At the same time, some businesses cited free-flowing traffic and a lack of congestion as a positive for the region, demonstrating that experiences with congestion vary in the district depending on business location and travel routes.

**Figure 26: Traffic congestion**



Compared to businesses interviewed in other districts, businesses in District 1 more often mentioned tourism-related congestion. Several businesses, including manufacturers and shippers, discussed congestion on Friday and Sunday nights, especially during the summer and fall—the height of the tourism season in northeastern Minnesota. They also mentioned congestion from special events, such as Grandma’s Marathon and local festivals, particularly along Interstate 35 and Highway 61.

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*“Tourism traffic can cause backups and delays. Especially during large events such as Tall Ships, Grandma’s Marathon, and Bentleyville. We would like MnDOT to take more advantage of electronic signs to let travelers know of these events and to take different routes.”*

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Manufacturers and shippers explained that congestion causes delayed shipments, which can increase business costs and affect their customer relationships. Businesses suggested additional turn lanes, adjusted traffic lights, and improved or additional signage to allow better traffic flow.

**Figure 27: Travel time sign for construction-related congestion**



Some of the specific changes requested by businesses include:

- Adjust the timing of stoplights in Two Harbors on Highway 61 during heavy traffic periods.
- Add passing lanes on Highway 37 to allow cars to pass slow-moving trucks.
- Create a left turn lane from Highway 53 South onto Highway 169 West.

# Profile: Grand Casino Hinckley

Grand Casino Hinckley is one of two casinos owned by the Mille Lacs Band of Ojibwe and is the largest employer in the area. The casino includes an amphitheater with a capacity of 7,000, 867 hotel rooms, 50 chalets, a camping recreational vehicle site with 271 spaces, and a championship golf course.

The Mille Lacs Band uses casino revenues to build and improve schools, health care facilities, community centers, a water treatment facility, roads, and ceremonial buildings. The casinos also donate to hundreds of causes and are stewards to improving the communities and lives of the people in East Central Minnesota.

Grand Casino Hinckley enjoys its location: halfway between the Twin Cities and Duluth; off of Interstate 35, which is easy for guests to find; and along well-maintained state roads, which ease guest and employee commutes. However, during periods of road construction, Interstate 35 can back up for

several miles on the weekends. This slows down travelers and requires alternative routes on state and county highways.

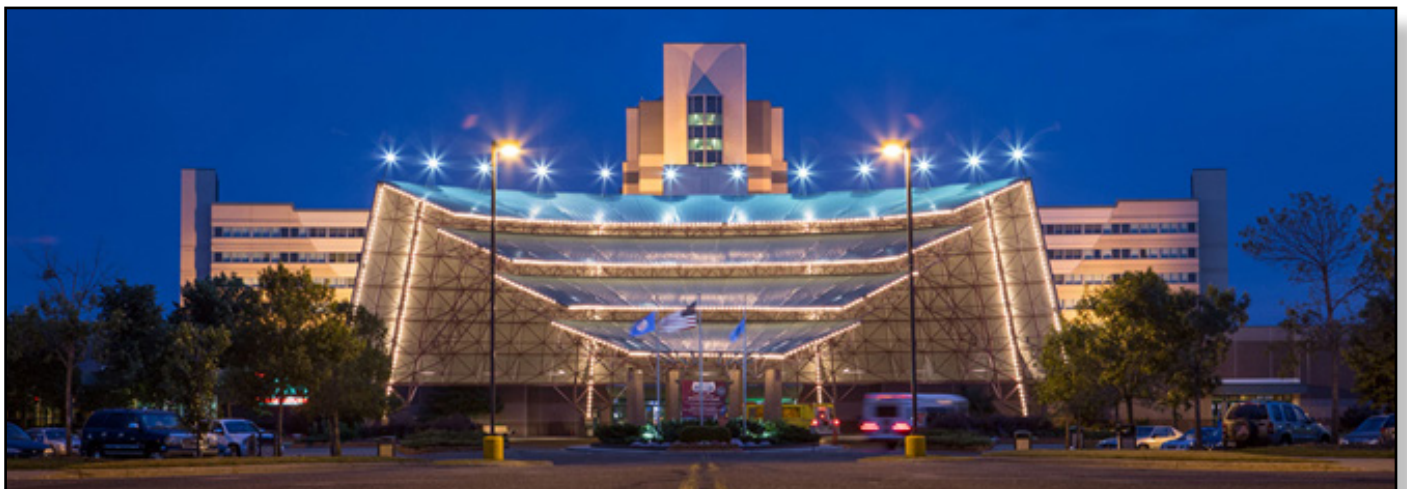
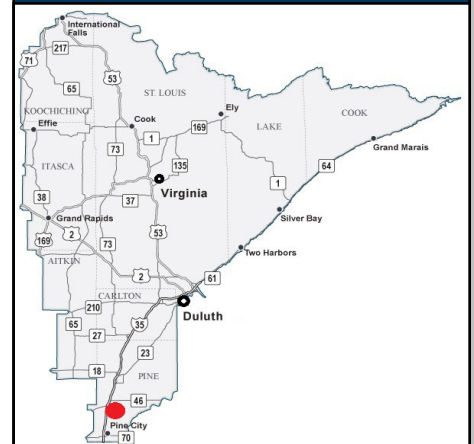
Guests are less often aware of alternative routes and can create congestion on roadways, especially Highway 48. As one representative put it, “Thousands of motorists travel onto Highway 48 and I-35 after a big event in our amphitheater and sometimes traffic backs up.” Casino representatives asked if there was a way MnDOT could work with them to time signals during events to increase traffic flow.

In terms of snow and ice removal, Grand Casino Hinckley is satisfied with MnDOT’s work, saying, “The highways are well maintained for our guests and employees to get to work.” They said that most employees and guests use 511 for information on road conditions, which helps determine the amount of time it would take to drive to the casino. They appreciate that the website is informative.

**Number of employees**  
1700

**Cluster**  
Hospitality and Tourism

**Location**  
Hinckley, MN  
Pine County



## Shipping in District 1

In other districts, businesses mentioned shipping challenges, such as being located far from large economic centers, a shortage of shipping companies and drivers (including difficulty finding and retaining qualified drivers), and insufficient railcar capacity. However, District 1 respondents mentioned these sorts of shipping challenges less often than businesses in other districts.<sup>33</sup> They more often discussed the impacts of weather, congestion, and construction on their businesses.

Several businesses in remote areas highlighted how their location makes shipping more of a challenge. They said they sometimes struggle to find reliable shippers to serve them, and a few specifically mentioned the issue of “deadhead” trips, in which a truck has cargo for only one direction of the trip. Shipping companies try to avoid these because the revenue for the trip often cannot cover the cost. Other businesses in remote areas mentioned that Google Maps and GPS devices sometimes cannot find their locations, and that their location limits how often shippers will visit them.

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*“It can be difficult to make our shipping window due to our business’ ‘rural designation.’ For example, FedEx Freight only comes on Mondays and Thursdays because of the rural designation. If the shipping window is small, and trucks only come two days out of the week, it can be hard to make the process work.”*

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<sup>33</sup> This is likely due, in part, to the shutdown of the Bakken Oil Fields in North Dakota. Businesses in previous Manufacturers’ Perspectives studies mentioned that the operation of oil fields adds pressure to Minnesota’s shipping industry, increasing costs and reducing efficiency.

# Profile: Lake Superior Warehousing

Lake Superior Warehousing is a third-party logistics company that allows District 1 companies access to markets they could not otherwise reach using the intermodal system. Sea, rail, and highway transportation converge at their facility, and they help their customers find the best possible shipping solutions, which amounts to 4,500 railroad cars and 25,000 truckloads per year.

They also provide warehousing space for customers, particularly when their materials are available in larger volumes than customers can store. Lake Superior Warehousing will warehouse supplies and deliver smaller shipments to the customer as needed. Among other things, they handle clay for papermaking, steel coils, mining equipment, forest products, and energy (wind, solar, electrical, and gas) components.

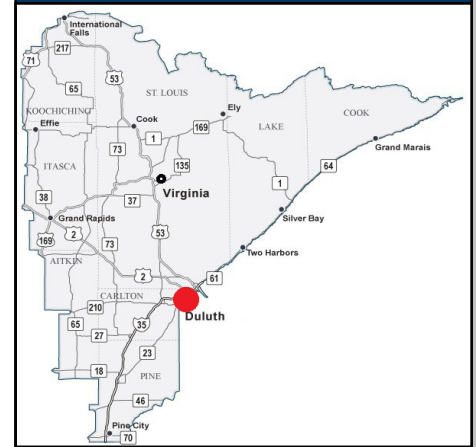
Lake Superior Warehousing has observed increasing load sizes over time, creating shipping challenges. For example, weight restrictions in the Can of Worms interchange in Duluth result in circuitous routing for trucks to access the highway system outside the port. Across the district, they requested moveable traffic signals to accommodate large loads and said they often need to route around bridges with low clearance.

Locally, Lake Superior Warehousing says they field several phone calls every day from drivers that need directions to the port. They recommended additional signage on major highways in Duluth that direct drivers to the port, especially for drivers who are not familiar with the area.

**Number of employees**  
250

**Cluster**  
Distribution and Electronic

**Location**  
Duluth, MN  
St. Louis County



## Transportation Modes beyond Truck

Figure 28: Several shipping modes meet in the Duluth port



The Duluth-Superior metro area provides District 1 businesses with multiple modes for shipping and other transportation needs. At least half of businesses interviewed use another transportation mode in addition to trucking, including water, rail, and air. While many District 1 businesses use multiple transportation modes, they still consider trucking a dependable, affordable, and critical way to transport goods. Most of the businesses cited trucking as both a mode they use and the most critical mode.

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*“Truck; can always get raw product by truck.”*

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*“What helps trucking in this area is that we have rail and ships.”*

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### *Port*

Several businesses commented on the Duluth port and its surrounding area. Most commonly, businesses noted that the port area is difficult to navigate and suggested additional signage and modifications to intersection controls.

A few businesses said that while it was less expensive to transport goods via water to locations around the Great Lakes, water transportation is more complicated to arrange than truck or rail because it requires more paperwork.

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*“All of the [raw supplies] comes in on the ships; the port is the source of the business.”*

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## *Rail*

One-third of businesses provided feedback on rail. Several businesses said their proximity to rail was an asset, especially those served by more than one rail company. Business perspectives on reasons to use or not use rail conflicted, especially in reference to its affordability.

The most common reasons to use rail include:

- Works well when oil fields are not in operation.
- Less expensive than trucking.
- Works well with carriers.

The most common complaints include:

- Lack of competition for rail business limits competitive pricing.
- Difficult to access railcars at loading areas.
- Expensive.
- Railroads can be difficult to work with.
- Inefficient.

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*“Our [products] need to move; we don’t have room for them to pile up... [We] had delivery issue in fall—had to truck [products] to Superior due to rail availability shortage. Caused [customer] shut down of furnaces due to lack of [supplies].”*

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## *Air*

Several businesses mentioned they use air to transport goods, such as mechanical parts, but some also fly in customers. Businesses said air transportation is useful when timeliness or speed are the highest priorities, but it can also be expensive, complicated, and sometimes unreliable. A few businesses said they sometimes need to split shipments to meet size and weight requirements for air shipment.

One business said it would like to see the Duluth airport expand to accommodate more flights, thereby providing a better airfreight service, but that business also noted there is a shortage of trained aircraft mechanics and technicians.

## **Personal and Passenger Transportation**

### *Employee Commute*

About one-quarter of businesses provided feedback on causes for transportation-related delays for employees, most often citing congestion, bridge closures, and inclement weather.



About one-third of those businesses said congestion sometimes adds time to commutes. The most commonly cited causes for congestion were shift changes at major businesses, tourist traffic, slow-moving traffic, and the lack of passing lanes on Highway 37. Businesses often said Blatnik and Bong Bridge closures cause delays for employees that live in Wisconsin but work in Minnesota.

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*“Bridge closures have a huge impact on employees getting to and from work. Nearly 50% of [our] employees are from Wisconsin.”*

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Businesses said snow and ice also impact employee commute time. For example, one business noted their employees start work at 5:00 a.m., so most are on the road at 4:00 a.m.—generally before plows have reached their location.

#### Public Transit

Several businesses provided input on public transit, with a few commenting on the need for public transit to serve their employees. Some said employees rideshare or walk several blocks to use the bus. One business referred to its location along a bus route as an asset and something they are proud of, and a few others said they wished they were closer to a bus route.

#### Recreational Transportation

Several businesses in District 1 also provided feedback on other ways people travel or use vehicles for recreation, including bicycles, motorcycles, and snowmobiles.

Businesses that mentioned bike trails expressed gratitude for:

- Bike system proposed from Cook to Tower.
- Bike trails around Ely.
- Extension of the Mesabi bike trail from Grand Rapids to Virginia.
- Progress on the trail from Two Harbors to Grand Marais.

Businesses also mentioned the need for wide shoulders, traffic control, and compliance to enhance bicyclist safety.

Businesses in the tourism industry mentioned the need for additional snowmobile routes. One company said it is critical to have a snowmobile lane on the Rainier overpass bridge in International Falls because there is no other way to cross the Canadian National Rail Road.

**Figure 29: Bicyclist using a bike lane**



One business said MnDOT should “endorse, favor, incentivize, and affirm...vulnerable road users.” For example, the business said, MnDOT could reduce the use of cable barriers and legalize lane splitting to benefit motorcyclists because both would enhance motorcycle safety.

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*“It’s a friendly area for cycles and sleds.”*

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## **Economic and Business Considerations**

Transportation infrastructure on its own is critical to individual businesses and the overall economic health of a region. Roads, rail, shipping ports, and airports carry workers, supplies, and customers to the businesses. Businesses in District 1 acknowledged the importance of transportation in their interviews, with most of the 78 businesses offering comments about the links between transportation infrastructure and business considerations.

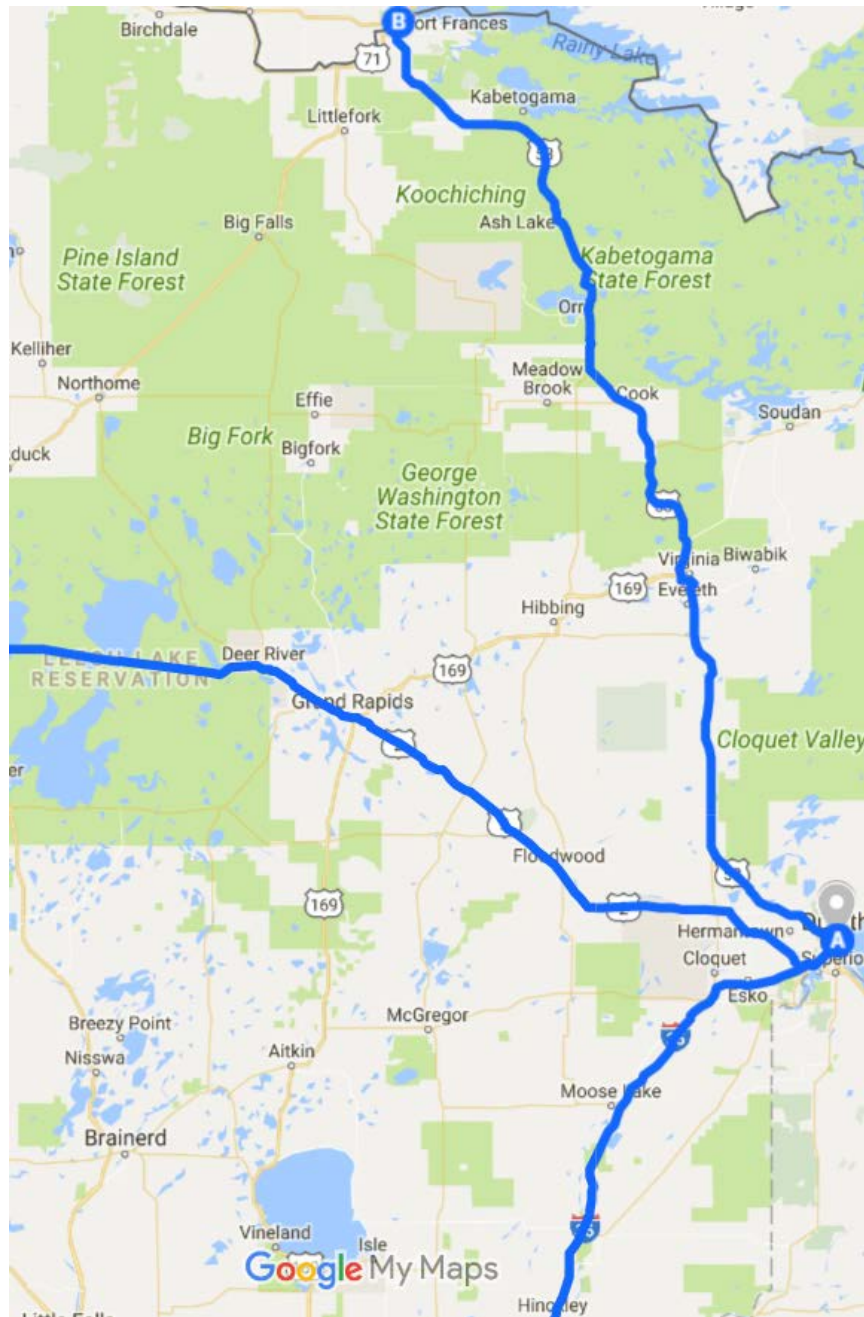
### **Transportation Infrastructure and Access**

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Overall, businesses noted the importance of the transportation infrastructure in District 1 and access to it as a strength for their locations, a regional asset, and a factor that works well for them. Nearly two-thirds of the 78 businesses interviewed cited transportation infrastructure and access as an economic or business factor, as did more than two-thirds of the 39 manufacturers interviewed.

Interviewees cited specific highway routes as important for supplier and customer access to their businesses, and also for their own access to markets and customers located elsewhere. Of the 78 businesses interviewed for this report, almost one in five cited the importance of Interstate 35. More than one in 10 cited the importance of Highway 53, and more than one in 10 cited Highway 2. Businesses also mentioned relying heavily on highways 11, 15, 23, 48, 61, 169, 194, and 210.

**Figure 30: Key routes for District 1 businesses**



*Important routes cited by businesses in District 1 include Interstate 35 going south from Duluth, Highway 2 going west from Duluth, and Highway 53 going north from Duluth.*

For example, one manufacturer in Duluth said, “The location and access to the system is good.... Logistically where we are at is very good.” A company providing business services said, “In Duluth... there currently is enough road system infrastructure to support our current and near foreseeable shipping/receiving traffic needs [and to] allow us to adequately maintain our current commitments and requirements.” A few tourism businesses noted the importance of good roads and convenient access to their locations for guests.

Almost one in 10 of the businesses that offered positive comments about transportation infrastructure and access cited the importance of the Lake Superior port for shipping. A few of the businesses talked about the importance of railroads and the airport, and one of the businesses suggested the need for more flights into Duluth.

## Financial Impacts of Transportation

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The quality of the transportation system affects whether businesses save money or incur additional costs when shipping a product. For example, several businesses mentioned a lack of congestion as an advantage to their District 1 business locations, as free-flowing traffic reduces travel time and associated costs for business. Businesses in the wholesale trade industry and in shipping/distribution/warehousing cited low traffic counts and ease of movement as a strength for their District 1 operations.

Several of the manufacturers interviewed raised concerns about weight restrictions, calling for higher gross vehicle weight limits, which would reduce their business costs. One manufacturer cited restrictions on Highway 23, specifically weight limits for bridges on that route. Another manufacturer said weight restrictions in Minnesota make it difficult to compete with companies based in Wisconsin and Michigan, where the weight limits are higher and consequently delivery costs are lower.

A few businesses said that rough roads add to their costs. One business said moisture and salt in the winter on Highway 61 near Grand Portage deteriorate the road bed. This issue, combined with winter weather, slow travel and decrease the number of times the business' trucks can make the trip to Thunder Bay and back by about 25 percent, adding to labor costs and reducing productivity. Another business said that rough road on Highway 169 between Virginia and Hibbing adds to costs because travel there is difficult, resulting in longer travel times.

Traffic delays also impose costs on businesses. While several businesses noted a lack of traffic congestion in their parts of District 1, several businesses said traffic flow problems in Duluth cause slowdowns, with one citing London Road/Highway 61 specifically. A shipping firm said construction delays on Interstate 35 in Duluth's West End have been problematic but recognized that the delays from construction are hard to avoid.

## Access for Workers

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A few of the businesses commented on the importance of the transportation infrastructure for carrying workers to jobs. One business noted problems for its workers with winter conditions on Highway 73. Bus and bike routes were mentioned as preferred modes for some workers both from a manufacturer in Duluth and a tourism business in Cook County.

## Beyond Transportation: Industry Cluster Connections and Proximity to Customers

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While transportation infrastructure matters to most businesses and consequently to economic development, it ranks as one of many success factors. For some businesses, transportation as a location factor is far less important than their proximity to the businesses that purchase their goods and services. For these businesses, their physical location within a cluster of nearby interrelated businesses drives success more than other factors because their success is tied to the success of the cluster and often to the businesses that anchor the cluster. Proximity to related firms is arguably more important than the quality of the transportation system, when it comes to the competitiveness of these businesses.

A cluster may include both the suppliers that provide goods and services to dominant industry in the region, and the anchor business or businesses within the dominant industry. Using the metal mining cluster in District 1 as an example, several of the businesses interviewed are involved in fabrication and sheet metal work, and a large share of them identified their proximity to the mines as a key strength of their current locations. “The mines are here,” said one. “If you’re going to provide services to the mining industry, especially large fabrications, you’ve got to be close.” Another added, “They’re here, and we try to help them out.” A few other manufacturers also said that the location of the mines in District 1 was significant to their operations. For these businesses, the health of the mining industry drives their own health. Consequently, the transportation infrastructure that serves the mining companies may be as important as—or more important than—the transportation infrastructure they themselves use.

Businesses that anchor other District 1 clusters—Hospitality/Tourism, Paper and Packaging, and Wood Products—are important to the success of other linked businesses in the area. For example, loggers depend on sales to paper and pulp mills, and restaurants in a tourism area depend on guests who stay at nearby lodging establishments.

Businesses from various District 1 industry clusters raised comments about transportation infrastructure factors and issues. Mining companies provided positive comments about the Superior port, rail access, and free-flowing traffic. Businesses in the Paper and Wood Product clusters noted issues with winter road conditions and Minnesota’s weight restrictions, and praised the number of 10-ton roads. Among tourism businesses, several cited the good conditions of the roads, a few commented on the importance of signage, and a few talked about the importance of transportation options for workers.

# Profile: Iracore

Iracore manufactures rubber-lined steel piping and plastics built to withstand “extreme extraction conditions,” mining, sand and gravel quarries, and bridge work. Customers include mines and the Canadian oil sands, but Iracore products also ship as far as Australia, New Zealand, and Peru. They also make small fabricated pieces for local metal fabricators and have their own trucks that deliver locally. When they reviewed their options for shipping modes, Iracore found that rail is costly, and that air and water are complicated, requiring additional paperwork.

Because they rely on trucks for shipping, Iracore cited its location next to Highway 169 as a strength. They added that strong ties to mining can create challenges, saying, “We feel a lot of pain when they are not successful.

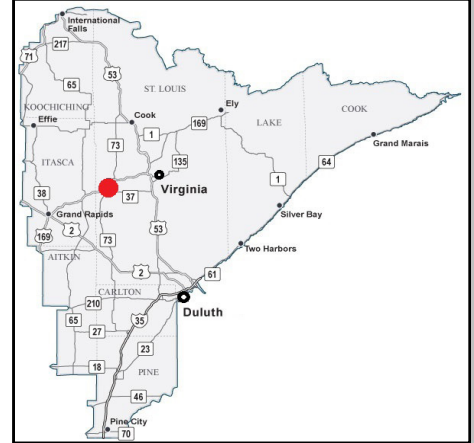
The benefit is that when things go well, it’s great.” The mining and steel industries often receive help from the public when they suffer, but companies like Iracore that support mining and steel do not get the same assistance.

When it comes to transportation, Iracore says rough roads create challenges. Not only do they cause wear and tear on the trucks, but they can shift and loosen loads. This means trucks need to make frequent stops to re-strap pipes and make sure they are secure. Stopping frequently also means that Iracore drivers need wide shoulders—a place to pull over and secure loads. “Width is more important than material type,” an Iracore representative said, with the exception of loose gravel from shoulders. Truck tires kick up loose gravel, creating hazards for vehicles behind them.

**Number of employees**  
70

**Cluster**  
Metalworking Technology

**Location**  
Hibbing, MN  
St. Louis County



# Recommendations

Thorough analysis of District 1 business perspectives suggested potential next steps for MnDOT. Businesses provided concrete, location-specific feedback that will inform future improvements in infrastructure, maintenance and operations, communication, safety, and policy. Moving forward, MnDOT will develop, prioritize, and implement workable solutions, as resources allow, to improve transportation systems in District 1 and across Minnesota.

The following broad recommendations will help MnDOT District 1 and MnDOT Central Office staff incorporate input from the 78 interviews to existing transportation system improvement plans and include input in future planning efforts.

## MnDOT District 1 Recommendations

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**1. Incorporate business feedback into the District 1 short-term and long-term planning processes. Include suggestions and findings from the study in the Statewide Transportation Improvement Program (STIP) and modify upcoming road projects and maintenance plans as feasible to address business issues.**

MnDOT District 1 staff can:

- Develop a plan for categorizing feedback in this study and embedding it in the district’s existing work processes.
- Develop a plan to continue collecting business feedback that can be incorporated into future projects.
- Consider improving pavement quality on stretches of road that businesses identified as having rough surfaces.
- Assess and prioritize business requests for additional signage, advance warning lights, and other lower-cost suggestions that improve safety and efficiency.
- On existing or planned construction projects, consider adding lanes that allow opportunities to pass, wherever possible.
- Explore ways to improve navigation of the Duluth port area, such as adding directional signage.
- Consider widening or paving shoulders in areas where businesses identified this as important. In cases where shoulder improvements are not feasible, MnDOT District 1 could create intermittent opportunities for trucks to pull over and include signage that informs drivers of the next opportunity to pull over.

**2. Consider innovative ways that MnDOT District 1 can partner with the community and build stronger relationships with businesses, city and county engineers, economic development professionals, and other stakeholders.**

MnDOT District 1 staff can:

- Identify stakeholder groups and key staff contacts to monitor changes or developments that originated, completely or in part, from study findings.
- Convene groups around common concerns that businesses identified and develop solutions. For example, MnDOT District 1 can connect with anchor businesses in key industry clusters to further explore their transportation needs and concerns. Opportunities may include business involvement with regional transportation advisory groups.
- Consider upgrading additional roadways or roadway segments to 10-ton highways in partnership with city/county engineers, within the context of MnDOT's policies, priorities, and resource constraints.
- Explore additional opportunities to inform the public of pending road construction projects and restrictions, including start and end dates and available alternative routes. Possible strategies may include the use of social media.
- Consider methods for managing traffic during events by increasing collaboration with event organizers and the community.
- Develop a system to track and learn about important developments for District 1's economy and assess their implications for the district's transportation system. Sources of this information could include updates from lead economic development organizations in the area and studies from the University of Minnesota Duluth's Bureau for Business and Economic Research.

## MnDOT Central Office Recommendations

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The following broad recommendations can help the MnDOT Central Office apply interview results to statewide transportation system improvement.

### **3. Use feedback from District 1 businesses to make improvements to existing systems and consider business input in future statewide planning efforts and for the development of best practices.**

MnDOT Central Office staff can:

- Ensure that the processes for determining spring weight restrictions are as consistent and clear as possible, and provide regular communication about updates to seasonal restrictions.
- Review weight restriction policies in neighboring states and Canada to identify potential opportunities for policy alignment; evaluate practices regarding weight restrictions and discrepancies, including communication and messaging, to inform businesses of state and federal policy.
- Examine the use and effectiveness of the various methods used to melt snow and ice and their impacts on vehicles. Assess potential improvements to current methods of snow and ice removal.
- Work with businesses to determine preferred routes around construction or bridge restrictions.



- Share interviewee feedback on topics other than District 1 state highway transportation to relevant authorities, such as feedback businesses provided on county highway systems with county engineers, to inform their continuous improvement practices.

*Update:* MnDOT has implemented goals to reduce its chloride use in response to environmental concerns and is researching methods to bring about that reduction.

**4. Use the combined findings and recommendations from the Manufacturers’ Perspectives studies in districts 1, 2, 4, and 8 to better understand business needs to improve the state’s transportation system. Incorporate a continuous improvement approach to the Manufacturers’ Perspectives studies.**

MnDOT Central Office staff can:

- Examine ways to combine findings from the Manufacturers’ Perspectives studies in districts 1, 2, 4, 8, and future studies with broader statewide findings, themes, and recommendations. Present findings broadly in public forums, including conferences. Incorporate information gained in this study into the Statewide Freight System Plan and its ongoing Freight Action Agenda.
- Reflect on the outcomes of previous Manufacturers’ Perspectives studies, reassess primary study intent, and modify the study approach, as necessary. Consider developing performance measures for the overall project that align with MnDOT’s existing performance measures around safety, and expand them to address freight issues such as reduced product and equipment damage, decreased shipping time, etc.
- Explore other ways that MnDOT can better understand and more closely work with manufacturers and other relevant businesses to strengthen economic vitality in Greater Minnesota. For example, manufacturers could be invited to serve on Regional Transportation Advisory Committees, Area Transportation Partnerships, and other transportation planning groups. MnDOT could also include support for business expansion as a performance measure.
- Evaluate the feasibility of developing cross-district planning forums with staff from districts 1, 2, 4, and 8 to share findings and work to frame broader collaborative solutions to address statewide issues.
- Strengthen communications about the Manufacturers’ Perspectives study, including developing a plan to communicate findings from the study for both District 1 staff and audiences external to MnDOT.
- 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.

*Update:* Central Office staff plan to synthesize findings from the four studies that have taken place and also evaluate how best to incorporate improvements into subsequent Manufacturers’ Perspectives studies, especially in communications. MnDOT has also created a Manufacturers’ Perspectives study website to highlight successes and assist in maintaining relationships with businesses. MnDOT staff are currently planning an interactive mapping application to better capture locations of problem areas raised in interviews. This database will be available to district project managers and others on an ongoing basis.

## District 1 Progress Update – Early Benefits

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District 1 has begun analyzing and mapping feedback from businesses interviews and has already identified near-term opportunities to make adjustments that would help the businesses interviewed:

- A manufacturer located on Highway 53 in Virginia described shift changes for businesses in its area as “Daytona,” saying congestion creates challenges for trucks and employees. District 1 is investigating ways to add turn lanes to Highway 53 to ease congestion.
- After several businesses complained of event congestion in downtown Duluth, District 1 is considering adding changeable message signs to inform drivers of places to park in order to access downtown businesses more easily.
- After many requests for passing lanes, District 1 is evaluating the feasibility, including cost, of adding them to key areas on major highways, including Highway 53 and Highway 61.
- On highways where passing lanes or continuous shoulders are not feasible due to terrain, District 1 is considering creating “safety zones”—periodic points along the road where trucks can pull over for emergencies or to secure loads—and developing a standard for MnDOT to use them in similar locations.
- Several businesses in District 1 questioned the use of chloride in snow and ice removal because it is corrosive and damages vehicles. As part of a larger MnDOT effort to reduce the use of chloride, District 1 is researching alternatives and will participate in a pilot program that equips plow trucks with alternative chemicals. Early findings suggest that the alternative chemicals are more effective than anticipated.
- Several businesses mentioned that tourism causes traffic to back up along Highway 61 in Two Harbors, increasing travel time along the North Shore. District 1 acknowledged that congestion in Two Harbors has been challenging for a long time. In collaboration with the City of Two Harbors and Lake County, District 1 will upgrade signal systems and add turn lanes along Highway 61 as part of a 2018 mill and overlay project.
- In response to pavement quality concerns along Highway 53, MnDOT will add a thin layer of pavement on the roughest parts of the road as a stopgap until funding and overall road quality justify a major corridor-level repair or replacement.

### Ongoing Benefits

Business interviews also have increased familiarity between MnDOT and District 1 businesses, allowing for more timely and open communication. Since participating in interviews, several businesses have contacted District 1 staff about additional transportation concerns. District 1 is also encouraging maintenance operators to suggest and try innovative solutions to reduce chloride use.

## Appendix A: List of Businesses Interviewed

A.W. Kuettel	Furin & Shea Welding & Fabricating	Northland Machine Inc.
AAR	GPM Inc.	Odyssey Resorts
Advanced Design Awnings & Signs and Lakehead Sign Co.	Grand Rapids Herald Review	Precision Powder Coatings Inc.
Aerostich	Granite Gear LLC	R C Fabricators
American Precision Avionics	Greystar Electronics Inc.	Rainy Lake Houseboat
AMSOIL	H Christiansen Co	Rajala Mill Co
ArcelorMittal Minorca Mine	Hallett Dock Company	Range Cornice Heating-Sheet Metal
Arrowhead Concrete	Halvor Lines	Sappi Fine Paper North America
Bend Tec	Hancock Fabrication Inc.	Savanna Pallets Inc.
Bergquist, a Henkel Co.	Heat Process Inc.	Seppi Bros Concrete Prod Corp.
Black Iron Rubber Co.	Hedstrom Lumber Co. Inc.	Service Printers of Duluth Inc.
Bowstring Resort	Hibbing Fabricators Inc.	St Germain's Cabinet Inc.
Broking's Transport	Hinckley Grand Casino	Stanley LA Bounty Manufacturing Inc.
Cedar Creek	Hydrosolutions of Duluth	Superior Fuels
Charmaster Products	Iracore International Inc.	Team Powder Coating Inc.
Cliffs Natural Resources Inc.	Jeff Foster Trucking	Teemark Manufacturing Inc.
Coca-Cola Bottling Co.	Joy Global Surface Mining Inc.	TRITEC Steel Fabrication
Compass Minerals	Kirscher Transport	Ttek Assemblies Inc.
Dave Evans Transports	Kivi Brothers Trucking	UPM Blandin
Detroit Diesel Remanufacturing	Lake Superior Warehousing	US Steel Corp
Duluth Ready Mix	Lutsen Resort	Valley Cartage
Duluth Timber Co Inc.	M N Star Technologies Inc.	Verso
Dyno Nobel Inc.	Manion Trucking Inc.	Viking Explosives & Supply Inc
Ely Echo	Minnesota Industries	
Engineered Equipment Services Inc.	Minpack	
Floe International	Nagurski Transportation	
Fortune Bay Casino	Nelson Williams Inc.	
	Northern Engine & Supply Inc.	

# Appendix B: List of Project Team and Interviewers

## Minnesota Department of Transportation

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### MnDOT Project Team

- Bryan Anderson, Planning Director, MnDOT District 1
- Todd Campbell, Engineer, MnDOT District 1
- Perry Collins, Engineer, MnDOT District 1
- Duane Hill, District Engineer, MnDOT District 1
- Donna Koren, Market Research Director, MnDOT Operations Division
- John McDonald, State Aid Office, MnDOT District 1
- Beth Petrowske, Information Officer, MnDOT District 1

### Additional MnDOT Interviewers

- Steven Baublitz, Sub-Area Supervisor (Duluth), MnDOT District 1
- Chris Cheney, Sub-Area Supervisor (Border), MnDOT District 1
- Scott Collver, Sub-Area Supervisor (South), MnDOT District 1
- Ted Coulianos, Oversize/Overweight Permits Supervisor, OFCVO
- Rob Ege, Engineer Administrative, MnDOT District 1
- Daniel Erickson, Engineer, MnDOT District 1
- Derek Fredrickson, Engineer, MnDOT District 1
- Aaron Gunderson, Engineer, MnDOT District 1
- Adrienne Hedlund, Training & Development Specialist, MnDOT District 1
- Michael Hedlund, Sub-Area Supervisor (Shore), MnDOT District 1
- John Hinzmann, Land Management, MnDOT District 1
- Rob Holschbach, Permit Technician, OFCVO
- Michael Kalnbach, Engineer/Planner, MnDOT District 1
- Jim Kielty, D1 Fleet Manager, MnDOT District 1
- Brian Larson, Project Manager, MnDOT District 1
- Marcia Lochner, Communications and Web Coordinator, OFCVO
- Jim Miles, Engineer, MnDOT District 1
- Kevin Rohling, Bridge Engineer, MnDOT District 1
- Jeff Tillman, Engineer, Principal, MnDOT District 1
- John Tompkins, Railroads and Waterways Planning Program Coordinator, OFCVO
- David Tomporowski, Freight Planner, OFCVO

### Economic Development Partners

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- Chris Belden, Planner, Duluth-Superior Metropolitan Interstate Council (ARDC)
- Jeff Borling, Economic Development Lead, Great River Energy/AMFA
- Brad Brzezinski, Business Development Specialist - NW Region, DEED
- Ron Chicka, Director, Duluth - Superior MDO (ARDC)
- Deb DeLuca, Government and Environmental Affairs Director, Duluth Seaway Port Authority

- Drew Digby, Development, IRRRB
- Sherry Erickson, Finance/HR/Safety Director, City of Virginia
- Kate Ferguson, Director of Business Development, Duluth Seaway Port Authority
- Monica Hayes, Director, Bureau of Business and Economic Research
- Paul Nevanen, Director, Koochiching Economic Development Authority
- Betsy Olivanti, Business Consultant, UMD Center for Econ Development - NE SBDC
- Pete Schultz, President, International Falls Convention and Visitors Bureau
- Bud Stone, President, Grand Rapids Area Chamber of Commerce
- Ian Vincent, Senior Business Developer, APEX
- Ross Wagner, Economic Development & Forest Industry Coordinator, Aitkin County

## Project Partners

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

- Frank Douma, State and Local Policy Program Director
- Lee Munnich, Senior Fellow

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

- Lisa Anderson, Management Consultant
- Matt Kane, Management Consultant
- Kristina Krull, Management Consultant
- Renee Raduenz, Management Consultant

## Observers

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Three county engineers and six Wisconsin Department of Transportation staff participated in interviews for the District 1 Manufacturers' Perspectives study as observers rather than interviewers and talked with the businesses about local transportation concerns.

## Appendix C: Location Quotients<sup>34</sup> for Traded Clusters, 2013

Traded Cluster	District 1	Aitkin	Carlton	Cook	Itasca	Koochiching	Lake	Pine	St. Louis
Metal Mining	95.46	-	-	-	77.05	-	216.53	-	129.42
Forestry	11.34	7.00	13.34	5.35	29.27	74.42	4.10	12.80	3.71
Paper and Packaging	7.12	-	34.00	-	9.83	49.03	-	2.36	2.16
Electric Power Generation and Transmission	6.55	-	8.52	14.10	27.14	3.11	10.80	0.94	3.01
Footwear	4.17	-	-	-	-	-	-	-	6.91
Wood Products	3.10	27.20	-	9.59	2.46	11.29	15.11	1.28	1.14
Hospitality and Tourism	2.31	2.76	0.55	10.04	1.56	1.15	2.39	8.70	1.53
Leather and Related Products	2.22	15.00	-	-	3.04	-	-	-	2.53
Water Transportation	1.79	1.53	-	1.17	-	-	0.89	-	2.79
Construction Products and Services	1.65	1.17	7.79	-	0.83	0.59	-	1.00	1.51
Insurance Services	1.50	0.30	0.74	-	0.19	2.69	-	-	2.16
Production Technology and Heavy Machinery	1.30	3.78	0.33	-	1.87	-	6.78	2.16	0.91
Upstream Metal Manufacturing	1.28	-	-	-	4.08	-	-	-	1.34
Downstream Chemical Products	1.21	-	11.63	-	-	-	1.12	-	0.65
Performing Arts	1.20	2.80	1.45	2.14	2.56	0.71	0.82	0.85	0.91
Agricultural Inputs and Services	1.12	-	1.68	-	-	-	-	1.48	1.49
Apparel	1.11	-	7.11	-	-	-	12.03	1.04	0.13
Downstream Metal Products	1.02	1.17	0.00	0.90	-	-	4.12	2.50	1.01
Education and Knowledge Creation	0.93	0.15	0.37	0.12	0.64	-	0.09	0.66	1.28
Nonmetal Mining	0.92	5.70	3.95	0.00	1.16	-	-	1.74	0.44
Aerospace Vehicles and Defense	0.91	-	-	-	-	-	0.50	-	1.47

<sup>34</sup> A location quotient measures the share of an industry cluster's employment in a region as a ratio of the share of the cluster's employment in the U.S. as a whole. This generates an indicator of industry concentration or specialization within a region. A location quotient exceeding 1.00 can indicate that an industry cluster employs more people than similar industries in other parts of the country. Businesses in this cluster that products or services outside of the region and are referred to as a traded cluster. 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.

Traded Cluster	District 1	Aitkin	Carlton	Cook	Itasca	Koochiching	Lake	Pine	St. Louis
Marketing, Design, and Publishing	0.88	0.72	0.13	0.28	2.98	0.37	-	0.33	0.77
Upstream Chemical Products	0.85	-	0.91	-	-	1.33	-	0.00	1.21
Plastics	0.85	-	1.69	-	2.62	0.00	-	1.27	0.57
Jewelry and Precious Metals	0.85	-	0.00	14.00	-	-	-	-	0.70
Textile Manufacturing	0.78	-	5.01	-	-	-	-	-	0.74
Environmental Services	0.74	-	1.84	-	1.08	-	-	1.62	0.61
Tobacco	0.74	-	-	-	-	-	-	-	-
Automotive	0.70	-	-	-	1.89	0.27	-	-	0.78
Printing Services	0.64	0.94	0.55	-	0.87	-	0.55	0.57	0.70
Metalworking Technology	0.60	-	-	-	0.19	-	-	0.58	0.89
Transportation and Logistics	0.58	2.30	1.40	0.22	0.77	1.60	0.17	0.18	0.40
Distribution and Electronic Commerce	0.58	0.58	0.23	0.25	0.63	0.34	0.29	0.28	0.70
Business Services	0.52	0.38	0.35	0.13	0.21	0.11	0.27	0.20	0.71
Recreational and Small Electric Goods	0.50	2.97	-	-	0.60	3.01	-	0.91	0.26
Food Processing and Manufacturing	0.48	0.97	1.18	-	0.10	-	2.00	0.30	0.45
Furniture	0.47	1.45	0.50	-	0.29	1.46	-	0.44	0.44
Music and Sound Recording	0.46	-	-	-	-	-	-	-	0.77
Oil and Gas Production and Transportation	0.45	-	1.60	-	0.27	-	-	-	0.52
Vulcanized and Fired Materials	0.45	1.92	-	1.47	-	-	-	-	0.59
Communications Equipment and Services	0.34	-	0.34	0.75	0.40	-	0.58	0.30	0.34
Lighting and Electrical Equipment	0.30	-	-	-	2.31	-	-	-	0.06
Fishing and Fishing Products	0.28	-	-	-	-	-	-	-	-
Biopharmaceuticals	0.28	-	-	-	-	-	-	-	0.46
Financial Services	0.27	0.73	0.34	-	0.30	0.12	-	0.22	0.29
Medical Devices	0.12	-	-	-	-	-	-	-	0.20
Coal Mining	0.12	-	-	-	-	-	-	-	-
Livestock Processing	0.11	0.95	-	-	0.19	0.48	-	0.29	0.04
Trailers, Motor Homes, and Appliances	0.09	0.95	-	-	-	-	-	-	0.15
Video Production and Distribution	0.05	-	-	-	-	-	-	-	0.09

Traded Cluster	District 1	Aitkin	Carlton	Cook	Itasca	Koochiching	Lake	Pine	St. Louis
Information Technology and Analytical Instruments	0.04	-	-	-	-	-	-	-	0.07

## Appendix D: Number of Employees by Traded Cluster<sup>35</sup>

Traded Cluster	District 1	Aitkin	Carlton	Cook	Itasca	Koochiching	Lake	Pine	St. Louis
Hospitality and Tourism	6663	184	106	876	513	151	272	1903	2658
Business Services	5344	90	245	40	248	50	110	160	4401
Metal Mining	4180	-	-	-	385	-	375	-	3420
Distribution and Electronic Commerce	3006	70	80	40	373	80	60	110	2193
Education and Knowledge Creation	2600	10	70	10	205	-	10	140	2155
Paper and Packaging	2380	-	760	-	375	750	-	60	435
Insurance Services	2133	10	70	-	30	175	-	-	1848
Construction Products and Services	1223	20	385	-	70	20	-	56	672
Production Technology and Heavy Machinery	1190	80	20	-	195	-	245	150	500
Marketing, Design, and Publishing	1048	20	10	10	405	20	-	30	553
Wood Products	960	195	-	90	87	160	185	30	213
Electric Power Generation and Transmission	920	-	80	60	435	20	60	10	255
Transportation and Logistics	867	80	140	10	131	110	10	20	366
Forestry	699	10	55	10	206	210	10	60	138
Automotive	565	-	-	-	175	10	-	-	380
Plastics	527	-	70	-	185	-	-	60	212
Water Transportation	506	10	-	10	-	-	10	-	476
Financial Services	486	30	40	-	60	10	-	30	316
Upstream Metal Manufacturing	480	-	-	-	175	-	-	-	305
Aerospace Vehicles and Defense	455	-	-	-	-	-	10	-	445
Food Processing and Manufacturing	430	20	70	-	10	-	70	20	240
Downstream Metal Products	374	10	-	10	-	-	60	70	224

<sup>35</sup> Source: U.S. Cluster Mapping (<http://clustermapping.us>), Institute for Strategy and Competitiveness, Harvard Business School.



<b>Traded Cluster</b>	<b>District 1</b>	<b>Aitkin</b>	<b>Carlton</b>	<b>Cook</b>	<b>Itasca</b>	<b>Koochiching</b>	<b>Lake</b>	<b>Pine</b>	<b>St. Louis</b>
Performing Arts	370	20	30	20	90	10	10	20	170
Printing Services	297	10	17	-	46	-	10	20	194
Oil and Gas Production and Transportation	295	-	70	-	20	-	-	-	205
Metalworking Technology	275	-	-	-	10	-	-	20	245
Downstream Chemical Products	273	-	175	-	-	-	10	-	88
Communications Equipment and Services	150	-	10	10	20	-	10	10	90
Apparel	140	-	60	-	-	-	60	10	10
Furniture	140	10	10	-	10	20	-	10	80
Textile Manufacturing	140	-	60	-	-	-	-	-	80
Upstream Chemical Products	140	-	10	-	-	10	-	-	120
Agricultural Inputs and Services	100	-	10	-	-	-	-	10	80
Vulcanized and Fired Materials	100	10	-	10	-	-	-	-	80
Lighting and Electrical Equipment	80	-	-	-	70	-	-	-	10
Recreational and Small Electric Goods	73	10	-	-	10	20	-	10	23
Nonmetal Mining	70	10	20	-	10	-	-	10	20
Leather and Related Products	64	10	-	-	10	-	-	-	44
Biopharmaceuticals	60	-	-	-	-	-	-	-	60
Environmental Services	60	-	10	-	10	-	-	10	30
Footwear	60	-	-	-	-	-	-	-	60
Livestock Processing	50	10	-	-	10	10	-	10	10
Information Technology and Analytical Instruments	40	-	-	-	-	-	-	-	40
Medical Devices	30	-	-	-	-	-	-	-	30
Jewelry and Precious Metals	20	-	-	10	-	-	-	-	10
Coal Mining	10	-	-	-	-	-	-	-	-
Fishing and Fishing Products	10	-	-	-	-	-	-	-	-
Music and Sound Recording	10	-	-	-	-	-	-	-	10
Tobacco	10	-	-	-	-	-	-	-	-
Trailers, Motor Homes, and Appliances	10	-	-	-	-	-	-	-	10

<b>Traded Cluster</b>	<b>District 1</b>	<b>Aitkin</b>	<b>Carlton</b>	<b>Cook</b>	<b>Itasca</b>	<b>Koochiching</b>	<b>Lake</b>	<b>Pine</b>	<b>St. Louis</b>
Video Production and Distribution	10	-	-	-	-	-	-	-	10
Total Traded Clusters	40,123	929	2,683	1,216	4,579	1,836	1,587	3,049	24,214
Percent of Total Traded Clusters	100%	2%	7%	3%	11%	5%	4%	8%	60%

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

## Appendix E: Business Invitation Letter



Minnesota Department of Transportation

District 1 – Northeast District

1123 Mesaba Avenue

Telephone: 218-755-6500

Fax: 218-755-6512

Duluth, MN 55811

August 10, 2016

<Name>

<Business>

<Address>

<City>,<State> <Zip>

Dear <Name>,

I would like to invite you to participate in a 1-hour interview regarding your freight, shipping, and transportation infrastructure needs. My goal is to hear directly from manufacturers and other businesses across northeastern Minnesota about specific concerns, needs, and priorities that MnDOT could work to address within the next four years.

For example, as we prioritize our resources for maintenance and operations, my staff and I want to understand the relative values of: smooth pavement, snow and ice maintenance, passing lanes, highway design features, and any other factors important to your business as you manage your 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 meet all of your business needs; but I do want to ensure that we understand what they are.

A secondary goal of this effort is to increase familiarity between MnDOT District 1 staff and area businesses, to open lines of communication. Our district serves all or portions of eight counties across northeast Minnesota and we want to ensure that we are responsive, by providing access points for area manufacturers/shippers to raise issues in a timely manner. Our project team also will include staff from local economic development organizations, to further develop connections amongst our organizations.

MnDOT has completed three previous studies using this interview model, in southwest Minnesota in 2013, west-central Minnesota in 2014 and northwest Minnesota in 2015. Conversations with manufacturers revealed specific challenges and requests regarding infrastructure and maintenance. The districts were able to address some problems shortly after their projects concluded, and other input is informing planned infrastructure changes and maintenance. Additionally, manufacturers' input led to

improvements in both districts' planning and communication processes. We expect that we'll be able to have similar successes, as we learn about your specific transportation priorities and challenges.

If you would like to view these reports, please visit the addresses below:

District 8 Manufacturers' Perspectives Report: <http://bit.ly/MnDOTD8MPreport>

District 4 Manufacturers' Perspectives Report: <http://bit.ly/MnDOTD4MPreport>

District 2 Manufacturers' Perspectives Report: <http://bit.ly/MnDOTD2MPreport>

We will schedule interviews for late August, September and October. Project consultants from Management Analysis & Development (State of Minnesota) will contact you during that time to schedule your interview. Interviews generally take about an hour, and the interview team can come to your location when it's suitable for you. For your convenience, I have enclosed a draft of the interview guide.

On behalf of MnDOT, we look forward to working with you to support your business and strengthen economic vitality in northeast Minnesota, and Minnesota as a whole. If you have any questions about the project, please contact our project manager, Donna Koren, MnDOT's Market Research Director (651-366-4840 or [donna.koren@state.mn.us](mailto:donna.koren@state.mn.us)).

Sincerely,

Duane Hill, P.E.

Transportation District Engineer

MnDOT District 1

Enclosure

# Appendix F: Interview Guides

## Manufacturers

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### INTERVIEW GUIDE FOR MnDOT DISTRICT 1 MANUFACTURERS

1. Introductions all around (name, title, organization)
2. Do you have any overarching thoughts to share about the importance of transportation infrastructure to your business operations here in Minnesota?
3. Approximately how many people are employed at this location?
4. Please describe your company's primary products.
5. Please provide a brief overview of your primary suppliers.
6. Please provide a brief overview of your primary customers.
7. If your company is using air, rail or other non-truck modes with suppliers or customers, how well are these modes meeting your needs?
8. Do you transport your products in-house, or contract with private commercial transportation service providers?
9. What are the strengths of your current location for meeting your firm's transportation needs? What works well regarding transportation?
10. What are your business's transportation challenges or concerns?
11. Does your business have any expansions planned in the near future?
12. What else, if anything, would you like MnDOT to be aware of?

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

## Shippers

---

### INTERVIEW GUIDE

#### FOR MnDOT DISTRICT 1 SHIPPERS

1. Introductions all around (name, title, organization)
2. Do you have any overarching thoughts to share about the importance of transportation infrastructure to your business operations here in Minnesota?
3. Please describe the types of services you provide in northeast Minnesota.
4. About how many manufacturers does your company serve in District 1?
5. How many of your drivers serve northeast Minnesota?
6. Please provide a brief overview of your primary customers in MnDOT's District 1.
7. What are the strengths of your current location for meeting your firm's transportation needs? What works well regarding transportation?
8. What are your business's transportation challenges or concerns?
9. Does your business have any expansions planned in the near future?
10. What else, if anything, would you like MnDOT to be aware of?

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

## Tourism

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### INTERVIEW GUIDE FOR MnDOT DISTRICT 1 TOURISM

1. Introductions all around (name, title, organization)
2. Do you have any overarching thoughts to share about the importance of transportation infrastructure to your business operations here in Minnesota?
3. Approximately how many people are employed at this location?
4. Please describe your business and its services.
5. First, please provide a brief overview of your primary suppliers.
6. How are these supplies delivered? (FedEx, trucks, postal mail, employees pick up supplies)
7. What do your guests do when they come to this area? (ask about business or leisure travel)
8. What are the strengths of your current location for meeting your business's and guests' transportation needs? What works well regarding transportation?
9. What are your business's transportation challenges or concerns? Once again, this can include recreation-related transportation, such as bicycles, motorcycles, boats, etc., if applicable.
10. Does your business have any expansions planned in the near future?
11. What else, if anything, would you like MnDOT to be aware of?

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

# KNOW YOUR ROUTE.



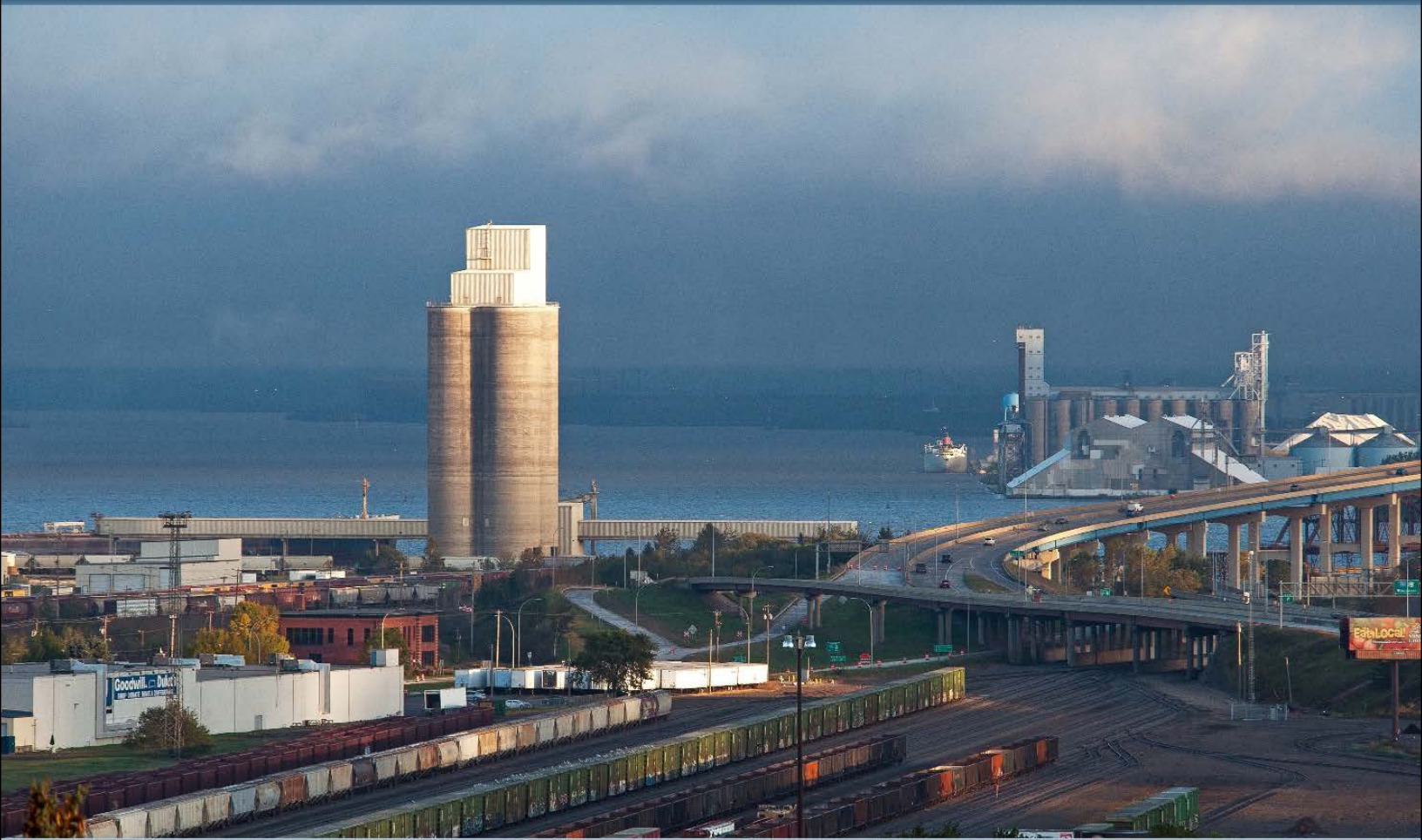
**511mn.org**

## PLAN AHEAD!

*Visit the Truckers' Page on 511*







## Minnesota Department of Transportation

395 John Ireland Boulevard  
Saint Paul, MN 55155-1899  
Telephone 651-296-3000  
Toll-free 1-800-357-3774

[www.dot.state.mn.us](http://www.dot.state.mn.us)

