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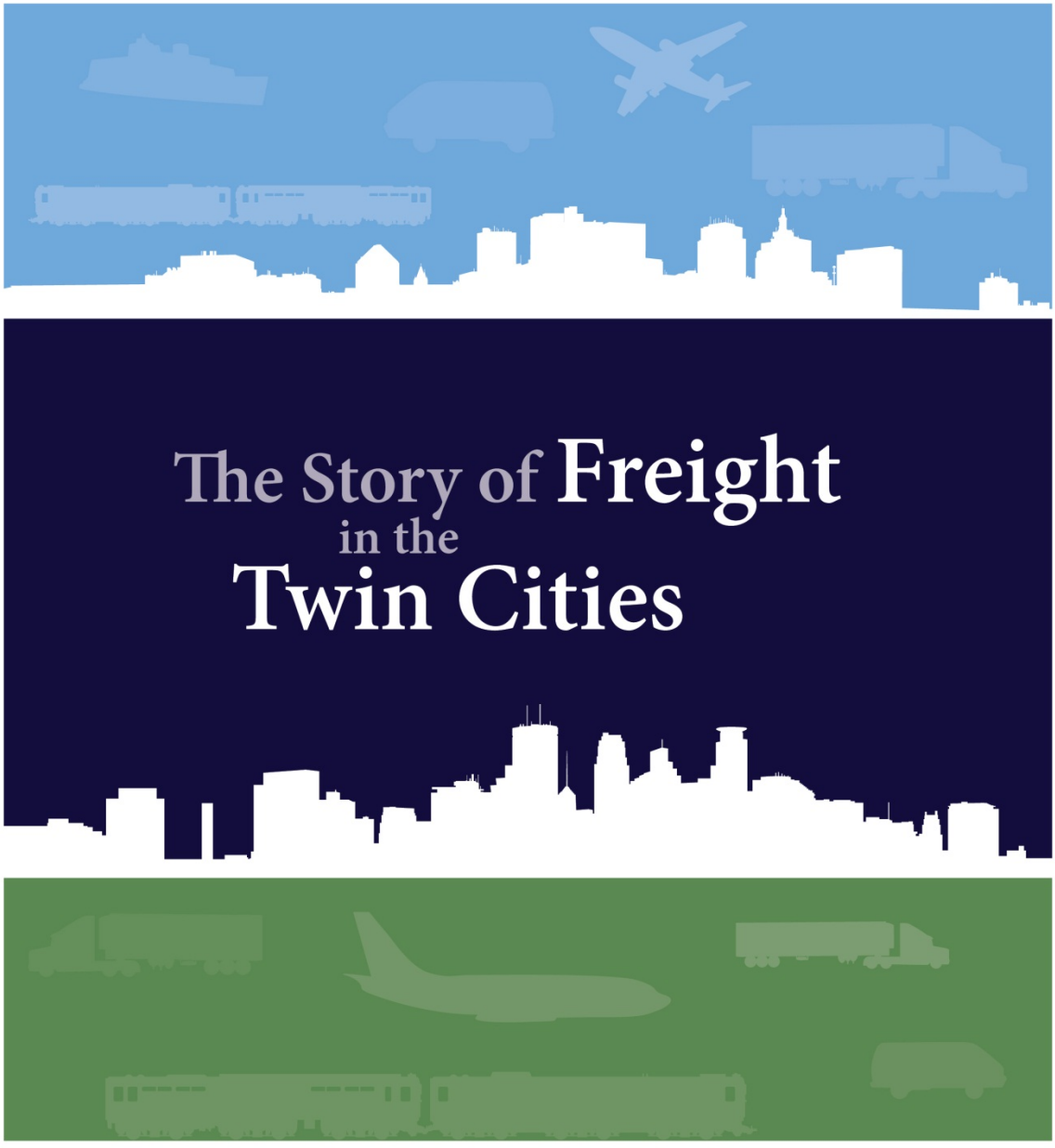

The Story of Freight in the Twin Cities

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Executive Summary

Overview

The Twin Cities metropolitan (metro) region (the "region") is the center of trade and business activity in the northwestern area of the U.S. Midwest.[1] It is third in total size behind only Chicago and Detroit for the entire Midwest[2] and accounts for almost three-quarters of the gross domestic product (GDP) of the state of Minnesota.[3] The region is home to numerous Fortune 500 industries and businesses; it is also the birthplace of a host of national and global companies.

The region is the head of navigation for the Mississippi River system. Located within the region are transcontinental rail routes, two Interstate highways, numerous pipelines and refineries, and two air express hubs. These facilities and others make the region a critical part of many global supply chains. Additionally, the region's two major rail container intermodal yard operations make it a crucial hub for containerized freight traffic moving across the multi-state area.

The region's natural resources, including timber, wheat, and minerals, supported the growth of robust transportation networks and services over time. Access to plentiful energy and a constantly evolving system of abundant, efficient transportation for goods and passengers also made it possible for manufacturing and milling businesses to develop in the region.

As in other areas throughout the country, the region is grappling with challenges that significantly impact the freight system, such as congestion, aging infrastructure, capacity limits, environmental concerns, population and employment shifts, land use conflicts, and funding uncertainties.

While some challenges exist, a well-developed system of multi-modal freight connections and robust distribution options has evolved in the region that supports a vital, competitive economy and a high quality of life for about 3 million people. The region also boasts numerous examples of unique and effective movement of commercial goods, from loaded grain barges and unit trains of coal, ethanol, and containers to overnight emergency outbound shipments of artificial hearts and inbound shipments of hi-tech consumer goods and exotic foods. While transportation has historically supported the region's industries, it continues to be a major business in its own right, including the newly emerged area of global logistics management.

The public sector plays an important role in influencing the region's freight transportation system although the private sector owns and operates a large portion of this system. By working together in specific ways, the public and private sectors ensure that the system is safe, efficient, and continues to support the region's economic vitality and high quality of life.

[1] There are various geographic definitions of the Twin Cities' region described in more detail elsewhere in this document.

[2] This figure compares the definition of the region used by the U.S. Census Bureau to that of Chicago and Detroit. The U.S. Census Bureau defines the region as the Minneapolis-St.Paul-Bloomington metropolitan statistical area (MSA), which is composed of 11 counties in Minnesota and two counties in Wisconsin. U.S. Census Bureau. *2009 Population Estimates*. Available at www.census.gov/popest/metro/CBSA-est2009-annual.html

[3] GDP figures are from the U.S. Bureau of Economic Analysis (BEA). The BEA uses the U.S. Census Bureau's Minneapolis-St.Paul-Bloomington MSA to define the region.

Purpose

The purpose of this document is to highlight the importance of the region's freight transportation system to businesses and residents, particularly in terms of its contributions to regional economic development and quality of life.

Chapter 1 provides an overview of the region, the attributes that make it an important economic hub for Minnesota and the Upper Midwest, and the overall role of freight transportation modes in contributing to regional economic development. It also introduces the agencies and organizations that own and use freight transportation vehicles, facilities, and infrastructure. Chapter 2 describes how a well-functioning, well-planned regional freight transportation system can support multiple strategic goals including economic competitiveness, infrastructure preservation, safety/security, mobility/accessibility, and community/environmental sustainability. Chapter 3 explains the significant role the freight transportation system has played in developing the region over time as well as supporting economic vitality and quality of life. Chapter 4 outlines trends and challenges that currently (and might in the future) affect the region's freight transportation infrastructure and goods movement. Further, it highlights projects that demonstrate where agencies and organizations have taken action to improve goods movement. Chapter 5 explains how these agencies and organizations (particularly those in the public sector) plan for and manage the regional freight transportation system today and in the future. Finally, Chapter 6 summarizes the important themes of this document. It also notes some ways in which public sector agencies (namely the Metropolitan Council [Met Council] and the Minnesota Department of Transportation [MnDOT]) could more strongly consider freight in the future, especially in outreach, planning, and programming activities.

Region

Met Council, the designated metropolitan planning organization (MPO) for the region, covers the seven counties of Anoka, Carver, Dakota, Hennepin, Ramsey, Scott, and Washington. MnDOT's Metro District encompasses these seven counties and Chisago County to the north. The focus of this document is on the urbanized areas within the MPO's region; however, issues relating to freight highway planning have also been included for Chisago County.

The region is the economic and population hub for both the state and the Upper Midwest area and is at the epicenter of freight transportation issues, including highway and rail traffic congestion, aging infrastructure, economic development/land use conflicts, and community acceptance.

The freight transportation system in the region evolved over time to better connect with the rest of the state and other areas beyond Minnesota. Further, two of the region's major population centers—Minneapolis and Saint Paul—were founded along waterways to take advantage of the easy access offered to trade centers in the Upper Midwest. Today, highways, railroads, waterways, air services, and pipelines converge on and connect in the region, supporting a growing population and further developing the region's industrial and commercial bases. Freight transportation networks are well developed and include all modes (highway, water, railroad, air, and pipeline) as well as intermodal movements, supporting a diverse regional economy.

Reliance on Freight

A diverse variety of industries and businesses, including some of the country's largest revenue-producing corporations, rely on the region's freight transportation system to move goods within

the region and to markets around the state, country, and the world on a daily basis. These businesses expect and require the freight system to be reliable, safe, and efficient to ensure that goods are transported to customers where and when they are needed. Similarly, the region's residents demand a high-functioning freight system to provide access to competitively priced goods. Whether it is a package delivered to a doorstep or food available at a grocery store, the majority of items and products used or consumed by local residents must be transported to, within, or through the region via truck, airplane, barge/ship, pipeline, rail, or a combination of these modes.

Role of the Public Sector

While private industry owns and operates a large portion of the freight system (particularly railroads), public sector organizations play a significant role in influencing policy, planning, and funding for regional freight enhancements. These public entities develop freight regulations and oversee compliance, maintain specific components of freight infrastructure (especially highways), and fund critical transportation projects, including those that affect goods movement. This document will focus primarily on the role of public agencies—particularly MnDOT and Met Council—in influencing policy, planning, and funding for regional freight enhancements.

There are challenges to operating, maintaining, and expanding the region's freight transportation system; however, there are many examples where MnDOT and Met Council have worked with regional partners to address these issues and improve goods movement. In addition to working together, MnDOT and Met Council regularly coordinate with others in both the public and private sectors to plan for the current and future regional freight transportation system and ensure that it continues to support a thriving regional economic environment.

Chapter 1: Context for the Regional Freight Transportation System

This chapter provides an overview of the region and some of the unique attributes that make it an essential economic hub for Minnesota and Upper Midwest. This chapter also describes the important ways in which the freight transportation system supports the region's economic competitiveness and quality of life.

1.1 Overview of the Region

Met Council covers the seven counties of Anoka, Carver, Dakota, Hennepin, Ramsey, Scott, and Washington. MnDOT's Metro District encompasses these seven counties and Chisago County to the north. The focus of this document is on the urbanized areas within the MPO's region; however, issues relating to freight highway planning have also been included for Chisago County.[4]

The region is the hub of many freight transportation supply chains in the Upper Midwest for goods produced and consumed in the area (supply chains refer to a system of activities, organizations, or technologies that describe how a product moves from producer to consumer). It is also a hub for freight moving through the region to other areas in all directions.

The region is a major population center in the U.S. In 2010, the metropolitan population within the seven-county area was about 3 million.[5] The most populous cities in the region are Minneapolis (with 328,578 people in 2010) and Saint Paul (with 285,068 in 2010).[6] Of all cities in the U.S. with over 100,000 residents, Minneapolis ranked 48th and Saint Paul ranked 67th in terms of population.[7] By 2030, the region is estimated to have nearly one million more residents, representing about a one-third increase from the 2010 population.[8]

The region is part of the Great Lakes megaregion, an area that includes the cities of Chicago, Detroit, and St. Louis, as well as other population centers located within 400 miles of Chicago.[9] Minneapolis is the third most populous city within the Chicago megaregion. The region also serves as an economic and transportation hub for North and South Dakota, Wisconsin, the entire State of Minnesota, and parts of Canada. As a hub, the region is at the forefront of many of the mobility and access issues affecting the freight transportation system in Minnesota. Issues such as highway and rail traffic congestion, aging infrastructure, land use conflicts over the most appropriate uses of land (especially along the Mississippi riverfront where recreational and commercial redevelopment could encroach on land currently used for freight and industrial activities), and community acceptance (regarding the use of land for freight activities) affect the region's economic competitiveness and the economic vitality of Minnesota and nearby states.

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[4] For more information on different geographic conceptualizations of the region, see Met Councils "Geographic Definitions" website at http://stats.metc.state.mn.us/stats/geographicdefinitions.aspx.

[5] The actual enumerated population figure is 2.85 million. *Community Profile for Twin Cities Region*. Met Council. 2011. http://stats.metc.state.mn.us/profile/detail.aspx?c=R11000#avgannunemploy.

[6] The majority of residents in the region live in urban areas. Specific figures on the breakout of urban versus rural residents in the region will be available from the U.S. Census Bureau in 2012.

[7] Figures are from 2009. U.S Census Bureau Population Estimates. www.census.gov/popest/cities/SUB-EST2009.html

[8] This population figure is estimated for the seven-county region. Met Council TPP, p. 1.

[9] America 2050. High Speed Rail in America. See www.america2050.org/pdf/HSR-in-America-MR-Great-Lakes.pdf

In 2009, the region's GDP was nearly $190 billion[10] (the Minnesota GDP was about $258 billion), making it the 14th largest state economy in the nation.[11] About 1.54 million people work in the region,[12] representing about 60 percent of all employed residents across the state (2.6 million people are employed in non-farm industries in Minnesota as a whole).[13] Diverse economic activity also occurs in the region, but key industries include health care, manufacturing, retail trade, and educational services.[14] Many of these industries, as well as the transportation and warehousing industries, rely on freight transportation and provide essential employment opportunities. (Overall, transportation and warehousing industries represent about 3 percent of the state's overall GDP).[15]

1.2 Regional Attributes

The region has a unique set of attributes that contribute to its importance as a business and freight hub. It is one of the most innovative and productive metropolitan areas in the country as measured by a variety of factors such as the number of patents issued, entrepreneurial activity, and new publicly traded companies.[16] It ranks highly (14th) among all regions in the U.S. for wages, outperforming Midwestern and national counterparts.[17] Additionally, it has one of the highest concentrations of global businesses in the country and is home to 20 Fortune 500 companies, the most per capita nationally.[18] Many other companies have chosen to locate in the region due to the presence of Fortune 500 companies and other large retail corporate headquarters.[19]

With the confluence of a strong transportation system and other key factors, including a high quality of life, vibrant industry, a strong culture of innovation and creativity, and a diversified economy, the region has become an important national economic center as well as for the Upper Midwest. In fact, the region has the third largest economy in the Great Lakes region,[20] behind Chicago and Detroit,[21] and is poised to grow given its opportunities and assets.[22]

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[10] GDP figures are from the U.S. Bureau of Economic Analysis (BEA), which uses the U.S. Census Bureau's Minneapolis-St.Paul-Bloomington MSA to define the region.
[11] http://stats.metc.state.mn.us/stats/pdf/RegionalEconomicIndicators_2011.pdf
[12] This employment figure refers to the seven-county region. See *Community Profile for Twin Cities Region*. Met Council. 2011. http://stats.metc.state.mn.us/profile/detail.aspx?c=R11000#avgannunemploy
[13] Current Employment Statistics. Minnesota DEED. July 2011. http://www.positivelyminnesota.com/apps/lmi/ces/Results.aspx
[14] Community Profile for Twin Cities Region. Met Council. 2011. http://stats.metc.state.mn.us/profile/detail.aspx?c=R11000#employmentbyindustry
[15] Transportation and warehousing industries contribute about $7.25 billion of $258 billion total state GDP. The transportation and warehousing figure is from the U.S. Bureau of Economic Analysis 2010.
[16] *Metropolitan Area Competitiveness Report 2007.* Beacon Hill Institute. http://www.hhh.umn.edu/centers/slp/economic_development/documents/DistributionServicesClusterReport.pdf
[17] Minneapolis-St. Paul Regional Business Plan (2011)., p. 7: http://minnesota.uli.org/~/media/DC/Minnesota/Minnesota%20Docs/BrookingsRegionalBusinessPlanAPRIL.ashx
[18] Minneapolis and St. Paul Business Plan Update. April 2011. http://minnesota.uli.org/~/media/DC/Minnesota/Minnesota%20Docs/BrookingsRegionalBusinessPlanAPRIL.ashx
[19] Distribution Services Cluster Report. University of Minnesota. May 2010. http://www.hhh.umn.edu/centers/slp/economic_development/documents/DistributionServicesClusterReport.pdf
[20] MnDOT 2009 Statewide Freight and Passenger Rail Plan, p. 3-2.
[21] Even though these economies have contracted in the past several years, they still represent the first- and second-largest economies in the Great Lakes region, according to 2011 BEA statistics. For more information, see the Bureau of Economic Statistics website: http://www.bea.gov/newsreleases/regional/gdp_metro/2011/pdf/Highlights_GL_0211.pdf.
[22] Minneapolis-St. Paul Regional Business Plan (2011)., p. 3: http://minnesota.uli.org/~/media/DC/Minnesota/Minnesota%20Docs/BrookingsRegionalBusinessPlanAPRIL.ashx

1.3 Role of the Freight Transportation System

The freight transportation system plays a critical role in supporting the region's economic status, competitiveness, and quality of life, allowing it to stand out as an important business and transportation hub. For example, the Twin Cities rank 5th nationally for transportation infrastructure[23] and Minneapolis ranks 5th nationally for business.[24] In 2006, *Logistics Today* named the Twin Cities a top ten logistics-friendly area based on categories that included road conditions, infrastructure, and access to ports and railroads.[25]

Without a safe, efficient, reliable, and robust freight transportation system, many residents would not have access to the goods and materials they need to live, work, and for recreation. Many businesses would not be able to distribute their products to customers or receive shipments needed to manufacture items.

Contributions of Freight Modes

Each freight mode contributes to the region's economic development. For example:

- **Roadways** provide access for truck freight (including long-haul trucks traveling through the region), direct service to freight-generating industries such as manufacturers and processing plants, and last-mile connections for distribution facilities, ports and rail yards, retail establishments, and home deliveries to consumers.

- **Railroads** move a variety of commodities, especially heavy bulk goods, as well as intermodal containers**.** The region's railroads provide important local and regional connections to the national railroad network, serving national markets and coastal ports for international trade.

- **Waterways** (primarily barges as well as secondary connections to Great Lakes ports) offer less costly and higher volume shipping options than other modes, particularly for long-distance bulk freight. A number of key industries rely on the affordability provided by water freight transportation.

- **Air freight and air express services** allow regional businesses to ship high-value and/or time-sensitive goods to both domestic and international locations.

- **Pipeline system** moves a significant volume of natural gas, petroleum products, and crude oil. Users depend on these materials for power, electricity, and heating/cooling. These materials are crucial to support the operations of businesses, households, and transportation in the region.

Chapter 3 provides more details on the historic evolution of each of these modes and their infrastructure in the region. Along with the region's strategic geography, an extensive and robust freight transportation system makes the region a competitive location for freight-reliant businesses.

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[23] DEED. www.positivelyminnesota.com/Data_Publications/Data/Research_Reports/Industry_Fact_Sheets_Reports/Manufacturing_Industries.pdf

[24] How We Found the Best Business Cities. MarketWatch. December 2010. http://www.marketwatch.com/story/how-we-found-the-best-business-cities-2010-12-20

[25] News Archive: The Top 50 Logistics-Friendly Cities in the US. Global Institute of Logistics. http://www.globeinst.org/news/news.php?id=7241

1.4 Addressing Challenges and Planning for the Future

The region has a well-developed and reliable freight transportation system, yet several key challenges affect the use, operation, and maintenance of this system.

Highway congestion and traffic bottlenecks produce costly delays for trucks and threaten timely deliveries. Aging rail infrastructure and a growing shortage of capacity in the face of historic levels of rail traffic could limit the growth of rail freight and, in turn, cost competitive commodity movement in the region. Redevelopment of the riverfront that excludes industrial uses, such as barge terminal operations, may lead to increases in local and regional truck traffic, exacerbating highway congestion and system effectiveness.[26] Security concerns, fuel costs, and limits to easy truck access will affect use of the Minneapolis-Saint Paul (MSP) Airport for cargo shipments, which along with other airports nationwide has experienced a decline in air cargo traffic.[27] Chapter 4 explores these and other challenges in greater detail.

To address these challenges and plan for future transportation needs, the organizations, institutions, and agencies that own and use the region's freight transportation system must work closely together. The sections below provide more information about the system's owners and users.

Owners

Freight transportation system owners include federal, state, and local organizations as well as private sector businesses. Major shippers typically build and maintain proprietary freight facilities in the area. Truck users also establish and maintain private vehicle fleets in the region and use a network of contract or common carriers available for hire. MnDOT owns much of the region's major highway infrastructure while local jurisdictions own and maintain local streets and arterials.[28] Additionally, MnDOT owns much of the region's principal arterial highway system. The Metropolitan Airports Commission (MAC), a public agency, owns and operates MSP.

Several different entities own the region's barge facilities, vehicles, and infrastructure. The Saint Paul Port Authority owns some of the barge facility infrastructure along the Mississippi River in Saint Paul, but private businesses operate these facilities. Many of these river barge facilities are also privately owned (a few examples of private barge owners include CHS and Archers Daniel Midland). Private industry owns most, if not all, water freight equipment, including towboats and barges that run on the region's waterways while the U.S. Army Corps of Engineers is responsible for maintaining the region's inland waterway system (including the navigation channel as well as locks and dams).[29]

The vast majority of rail freight and pipeline infrastructure and operations are privately owned.[30] Nearly 500 miles of rail in the region are owned and operated by the Union Pacific, Burlington Northern Santa Fe Railway, Canadian Pacific, and Canadian National railroads. Over 150

[26] For example, the City of Saint Paul is now leading a study to assess options to redevelop 17 acres of riverfront St. Paul into public parks and open spaces. This redevelopment could have significant impacts on barge operators in the area. The University of Minnesota conducted a similar study on the topic, finding that local truck traffic would significantly increase if barge activity was eliminated.
[27] Minneapolis-St. Paul Air Cargo Study. SITA Logistics Solutions. 2001. http://www.dot.state.mn.us/aero/avoffice/pdf/mspaircargostudy.pdf
[28] MnDOT Statewide Freight and Passenger Rail Plan. 2010. MnDOT. pp. 6-9.
[29] The U.S. Army Corps of Engineers is responsible for maintaining the nation's inland water ways system, including that portion of the system located in the region. More information about what waterways are part of this system is available in "An Overview of the U.S. Inland Waterway System." 2005. U.S. Army Corps of Engineers. http://www.corpsnets.us/docs/other/05-NETS-R-12.pdf
[30] MnDOT Statewide Freight and Passenger Rail Plan. 2010. MnDOT. pp. 6-9.

additional miles of rail in the region are owned and operated by smaller railroads such as the Minnesota Commercial Railroad and the Twin Cities Western Railroad. The public sector does own a few of the region's Class III railroads[31] along with contracted private operators.[32] Additionally, pipeline facilities are owned and operated by private companies, including Koch and Magellan.

Users

Freight transportation system users are typically private sector companies, including shippers, carriers, and third-party logistics (3PL) providers who operate vehicles and use freight transportation facilities and infrastructure.

- **Shippers** provide their own logistics support or purchase freight transportation services to deliver their products and materials to stores, warehouses, or the end consumers. Examples of shippers include Best Buy, SUPERVALU, Target, and the U.S. Postal Service.[33]

- **Carriers** provide freight transportation services for shippers. Carriers include trucking companies, railroads, airlines, pipelines, and barge companies that move shippers' freight from one location to another. Spee-Dee Delivery Service, Incorporated, is an example of a trucking carrier servicing the region.[34] Spee-Dee transports a wide variety of products and materials, including hazardous materials, throughout the region and particularly in the northwest metro area. Another example of a carrier is the Twin Cities and Western Railroad, a regional railroad servicing Minnesota and South Dakota. The railroad operates 229 miles of track and carries agricultural products, coal, aggregate, and agricultural machinery.

- **3PL providers** offer freight logistics services for other companies, including warehousing, shipping, and tracking.[35] Many 3PLs contract with trucking companies; others use their own vehicles and distribution centers. C.H. Robinson Logistics, located in Eden Prairie, is the nation's largest 3PL provider. In 2010, C.H. Robinson handled 9.1 million shipments and worked with nearly 50,000 transportation providers to move freight worldwide via every mode except pipelines.[36] Other examples of 3PLs operating in the region include Koch Logistics in Saint Paul and the Murphy Warehouse Company in Minneapolis.

Appendix A provides more examples of freight system users in the metro area.

[31] Class III railroads are described in more detail in Chapter 3. Class III railroads are those that have annual carrier operating revenues of less than $20 million.
[32] MnDOT Statewide Freight and Passenger Rail Plan. 2010. MnDOT. pp. 6-9.
[33] National Highway Institute. "Integrating Freight in the Transportation Planning Process."
[34] http://www.speedeedelivery.com/
[35] Freight Transportation: Global Highlights. Bureau of Transportation Statistics. 2010. http://www.bts.gov/publications/freight_transportation/pdf/entire.pdf
[36] "About Us." C.H. Robinson, Inc. http://www.chrobinson.com/en/us/About-Us/

Coordination

Freight transportation system owners and users (e.g., state and local public agencies, private sector businesses) can work together with the general public to preserve and improve the current system and to address current and future challenges.

Coordination among stakeholders is needed to:

- **Plan and develop** policies, strategies, and priorities to guide freight investment.
- **Program** or identify funding to implement and schedule projects that improve freight system performance.
- **Operate** the freight transportation system, which involves day-to-day management and oversight.
- **Maintain** all modal facilities and infrastructure that are part of the freight transportation system such as by inspecting equipment and bridges, repairing vehicles, and removing snow and ice from roads and other infrastructure.
- **Regulate** the freight transportation system by developing and implementing policies and strategies to ensure a safe and effective system.

Chapter 5 contains more information about how public agencies and private businesses work together to plan and program transportation in the region, including freight transportation.

Chapter 2: Freight Transportation Fosters Quality of Life and Economic Health

This chapter describes how a well-functioning, well-planned freight transportation system is critical to the health of the region. This system can support multiple goals as described below.[37]

2.1 Economic Competitiveness

The freight transportation system supports economic competitiveness by:

- **Providing needed jobs for the region.** Freight offers wage-competitive jobs for a large number of residents. In 2009, about 20 percent of all jobs in the region (approximately 300,000) were related to the manufacturing, transportation, and warehousing industries.[38] [39] Many of these jobs directly deal with moving freight.

- **Keeping businesses in the region.** Transportation is a critical consideration for many of the region's businesses. Rough roads, congestion, and poor connections from major highways to final destinations are all factors that affect companies' transportation costs. Businesses struggling with high transportation costs might relocate outside the region or to other states where operating costs are lower, leading to a business "drain" that would negatively affect the regional economy. A robust, efficient freight transportation system helps attract and retain businesses, supporting overall economic vitality. It also helps distinguish the metro area as an economically prosperous region that continues to provide a high quality of life.[40]

2.2 Safety and Security

The regional freight transportation system supports safety and security goals by:

- **Reducing hazards.** Freight movement sometimes involves the transport of hazardous materials. Incorporating or implementing sound operational requirements and regulations and ensuring that freight users comply with these regulations, can help prevent and/or mitigate any potential impacts from transporting these materials.

- **Mitigating freight theft and freight trespassing; improving freight security.** Freight theft refers to theft of cargo being transported as part of a commercial shipment of goods. Freight trespassing is another security and safety concern. Trespassers who illegally use the region's railroad corridors or bridges as shortcuts put themselves and freight operators at risk. Incorporating policies and regulations that discourage or prevent freight theft and trespassing can mitigate these activities and improve freight security.

- **Improving grade-crossing safety.** Railroads sometimes cross roads at the same level (i.e., at grade), creating potentially hazardous intersections. There are approximately 699 public and 210 private rail crossings in the region [41] Federal regulations, guidelines, and standards exist to help ensure that grade crossings are built with safety in mind and

[37] http://www.fhwa.dot.gov/infrastructure/infrafact.cfm
[38] These statistics reflect the U.S. Census Bureau's Minneapolis-St.Paul-Bloomington MSA definition of the region. See http://www.metromsp.org/DataCenter/workforce_MSAemployment.htm
[39] http://www.metromsp.org/DataCenter/workforce_MSAemployment.htm
[40] Growth & Justice – Improving Travel Time (2009).
[41] These figures include the seven-county metro region as well as Chisago County. It is difficult to confirm the number of private rail crossings in this area since these crossings are not under MnDOT's control or jurisdiction. MnDOT. Email communication. 2011.

that train operators take certain precautions (such as sounding a train horn if an area is not located in a "quiet zone") when approaching an at-grade crossing. State and local government agencies in the region also work with private railroad owners to remove grade crossings that meet certain criteria and pose a heightened safety risk.[42]

2.3 Mobility, Accessibility, and Economic Development

The regional freight transportation system supports mobility, accessibility, and economic development by:

- **Providing efficient access to freight facilities throughout the region.** To ensure timely movements of goods, businesses need to be able to efficiently and reliably access industrial sites. These sites may include a terminal on the Minnesota River, the airport, a warehouse loading facility or a railroad siding. Regional congestion can adversely affect businesses' ability to access such sites. The region was recently ranked the 11th most congested metropolitan area in the nation with respect to roadway traffic[43] although congestion in the region is less than it was in the mid-2000s.[44]

- **Providing consumers access to products they need for everyday life.** Essentially everything purchased by consumers in the region, including food, gas, and merchandise, needs to get to the region and/or be transported within the region via truck, train, barge, plane, or pipeline. Consumers require a well-functioning, reliable freight transportation system to access the products they want and need, when and where they want and need them.

- **Increasing system productivity and decreasing the cost of business operations.** Businesses must build the expense of material and product transport into the cost of their goods to turn a profit. Reducing distribution costs through an enhanced freight system that operates more reliably and efficiently can ultimately enable businesses to price products more competitively for the benefit of consumers.

2.4 Sustainability and Livability

The regional freight transportation system supports sustainability and livability by:

- **Mitigating environmental and community impacts.** The general public often exhibits mixed emotions about the freight industry. While they value access to competitively priced goods, they voice objections about real and perceived environmental and community impacts. For example, diesel exhaust from vehicles can contribute to greenhouse gases and other pollutants (e.g., particulate matter and nitrous oxides).[45] Freight movement also raises concerns about conflicting land uses and noise impact on communities. Carefully crafted land use and mitigation strategies can help minimize these negative impacts.

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[42] Envision Freight: A Roadmap to Freight Compatibility. Transportation Research Board. 2010. http://www.envisionfreight.com/.
[43] Figure is from 2010 and reflects the U.S. Minneapolis-St.Paul-Bloomington MSA definition of the region. Congestion was measured as a percentage of the number of congested vehicle miles traveled during peak hours of the day. *2010 Annual Report*. INRIX National Traffic Scorecard. http://www.inrix.com/scorecard/Top100Metros.asp
[44] *Annual Urban Mobility Report* - Performance Measure Summary. Texas A&M University. 2009. http://mobility.tamu.edu/files/2011/09/minne.pdf
[45] Freight and Air Quality Handbook. Federal Highway Administration. http://www.ops.fhwa.dot.gov/publications/fhwahop10024/sect1.htm#1_0

Chapter 3: Multimodal, Connected, and Evolving: The Regional Freight Transportation System

This chapter explores historic and current linkages between freight transportation and the region's development. While one mode of transportation might have dominated the region's culture and economy during a specific era, each mode has played an important role in shaping the freight (and passenger) transportation systems and in creating the vibrant area that exists today.

3.1 Overview of Freight Transportation Infrastructure Development

Multimodal and efficient freight movement has historically supported the region's growth. Several international corporations located in the region, including SUPERVALU and Cargill, began as small companies that grew by taking advantage of the region's diverse transportation networks. Later on, other companies (particularly wholesale traders and distributors) chose to locate their operations in the region to access existing retailers or freight infrastructure.[46]

The following sections present information about the historic evolution of each mode in the region.

Water Freight

Barge traffic on the Mississippi River has been particularly important to the early and continued evolution of both Minneapolis and Saint Paul. The region is located at the head of the commercially navigable section of the Mississippi River, which provides easy access to and from southern markets. Minneapolis developed on the river in a location where it was easy to move heavy goods via water transportation and access timber from nearby forests for hydropowered mills.[47] In the late 1800s, Minneapolis was known as the "Flour Milling Capital of the World" due to its intensive use of hydropower to mill flour. By 1900, Minneapolis became recognized as the "Sawmill Capital of the World" due to its production of lumber using hydropowered sawmills.[48] Saint Paul also developed on the river to take advantage of easy access to water transportation.[49] Over time, the Mississippi River allowed for the growth of both Minneapolis and Saint Paul as important centers for trade and transportation to the Upper Midwest.

As the regional population grew, a diverse manufacturing economy developed.[50] Today, there are three ports in the region, including Minneapolis and Saint Paul on the Mississippi River and Savage on the Minnesota River (the region's river terminals are depicted in Figure 2). Freight can travel 1,811 miles from the region to the Port of New Orleans where it can be loaded onto oceangoing vessels to reach global markets.[51] Together, the region's three ports have 32 active freight terminals and moved about 8.5 million tons of freight in 2009 (nearly 10 percent of all

[46] Minneapolis-St. Paul Metropolitan Region Distribution Services Cluster Report. University of MN. 2010. http://www.hhh.umn.edu/centers/slp/economic_development/documents/DistributionServicesClusterReport.pdf
[47] Minneapolis-St. Paul Metropolitan Region Distribution Services Cluster Report. University of MN. 2010. http://www.hhh.umn.edu/centers/slp/economic_development/documents/DistributionServicesClusterReport.pdf
[48]Minneapolis-St. Paul Metropolitan Region Distribution Services Cluster Report. University of MN. 2010. http://www.hhh.umn.edu/centers/slp/economic_development/documents/DistributionServicesClusterReport.pdf
[49] Twin Cities Metro Area Regional Freight Profile, p. 8
[50] Twin Cities Metro Area Regional Freight Profile. MnDOT. 2010. p. 8
[51] Twin Cities Metro Area Regional Freight Profile. MnDOT. 2010. p. 22.

freight moved in the region).[52] [53] [54] Of all freight moved through the region's ports in 2009, Saint Paul handled about 60 percent (5 million tons), Savage handled about 32 percent (2.7 million tons), and Minneapolis handled about 7 percent (545,000 tons).[55] Business at Minneapolis has contracted in recent years.[56]

Rail Freight and Intermodal Facilities

The confluence of several major railroads in the region initially helped establish a foothold for the Minneapolis and Saint Paul populations and enabled them to grow over time. The railroads also enabled local businesses to access markets around the country; particularly Chicago and the west coast.[57] As the railroads expanded, the region developed its industrial and commercial sectors, solidifying the region's critical role as an upper Midwest hub.

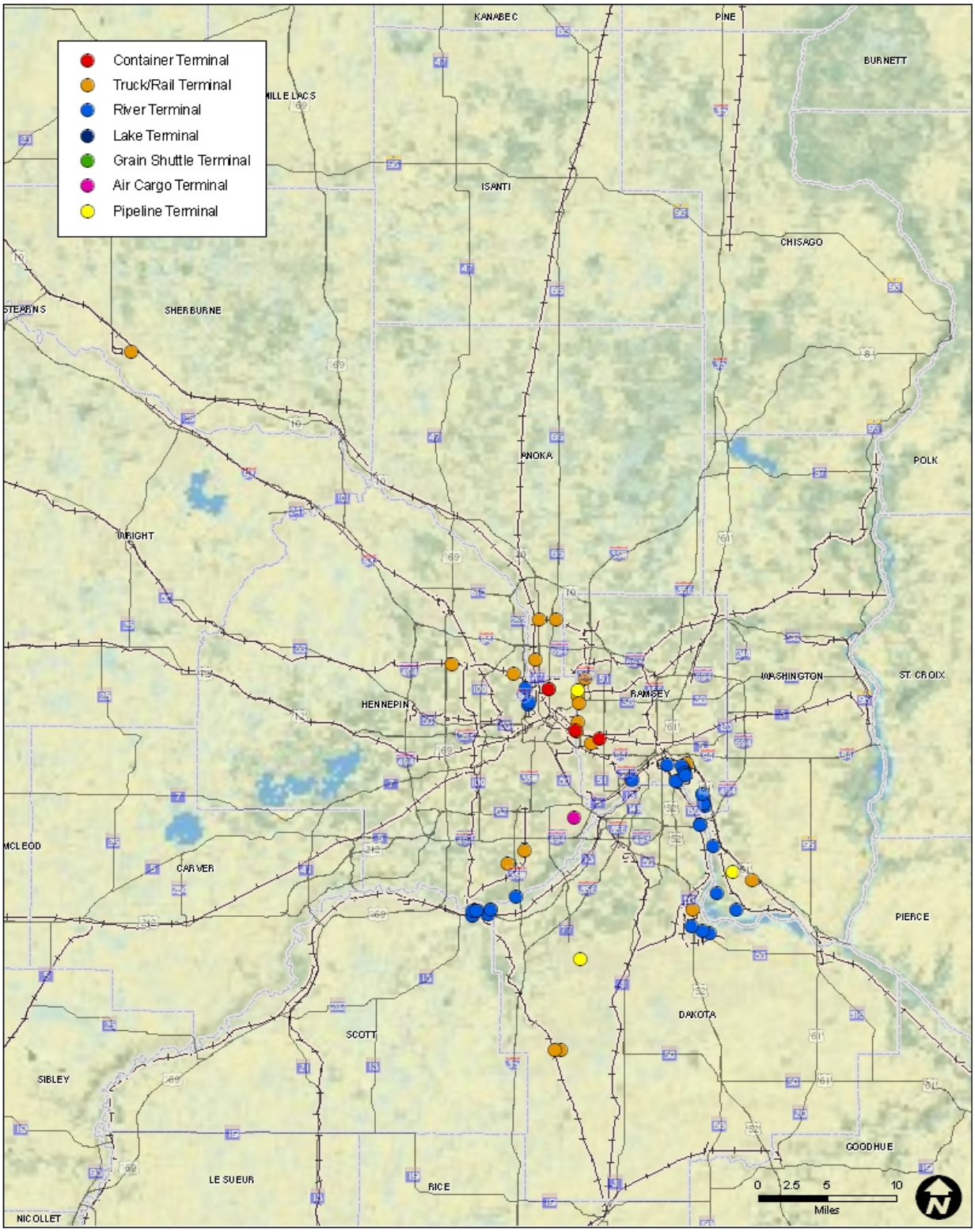
Today, there are several short line (Class III) railroads (Minnesota Prairie Line, Progressive Rail, St. Croix Valley, Twin Cities & Western, Minnesota Commercial Railroad) that operate a few hundred miles of track in the region[58] (see Figure 1). Class III railroads are those that have annual carrier operating revenues of less than $20 million. There are also four Class I railroads (Burlington Northern Santa Fe, Canadian National, Canadian Pacific, and the Union Pacific Railroad Company) with about 500 miles of track.[59] Class I railroads have an annual operating revenue of $250 million or more. Additionally, there are two container terminals, one bi-modal rail terminal, and 20 truck-rail terminals for the transfer of freight (see Figure 2). Together, freight railroads in the region moved nearly 23 million tons of freight to, from, and within the metro area in 2009 (about 8 percent of all freight tonnage moved in the region).[60] This is expected to grow to nearly 39 million tons annually by 2030.[61]

[52] Minneapolis Regional Chamber Development Foundation http://www.metromsp.org/About/location_transp.htm
[53] Twin Cities Metro Area Regional Freight Profile, p. 22
[54] Percentage uses 2007 total for freight moved in the region.
[55] Freight Analysis Framework (FAF) 2009. FAF data use the U.S. Census Bureau's Minneapolis-St. Paul-Bloomington MSA to define the region.
[56] Minneapolis Regional Chamber Development Foundation: http://www.metromsp.org/About/location_transp.htm
[57] St. Paul Transportation Element of Comprehensive Plan
[58] Twin Cities Metro Area Regional Freight Profile, p. 20.
[59] Twin Cities Metro Area Regional Freight Profile, p. 19
[60] FAF 2009.
[61] Twin Cities Metro Area Regional Freight Profile. MnDOT. 2010.

Figure 1. Railroads.[62]

[62] Figure provided by MnDOT.

Figure 2. Intermodal Terminals.[63]



[63] Map provided by MnDOT.

Highways

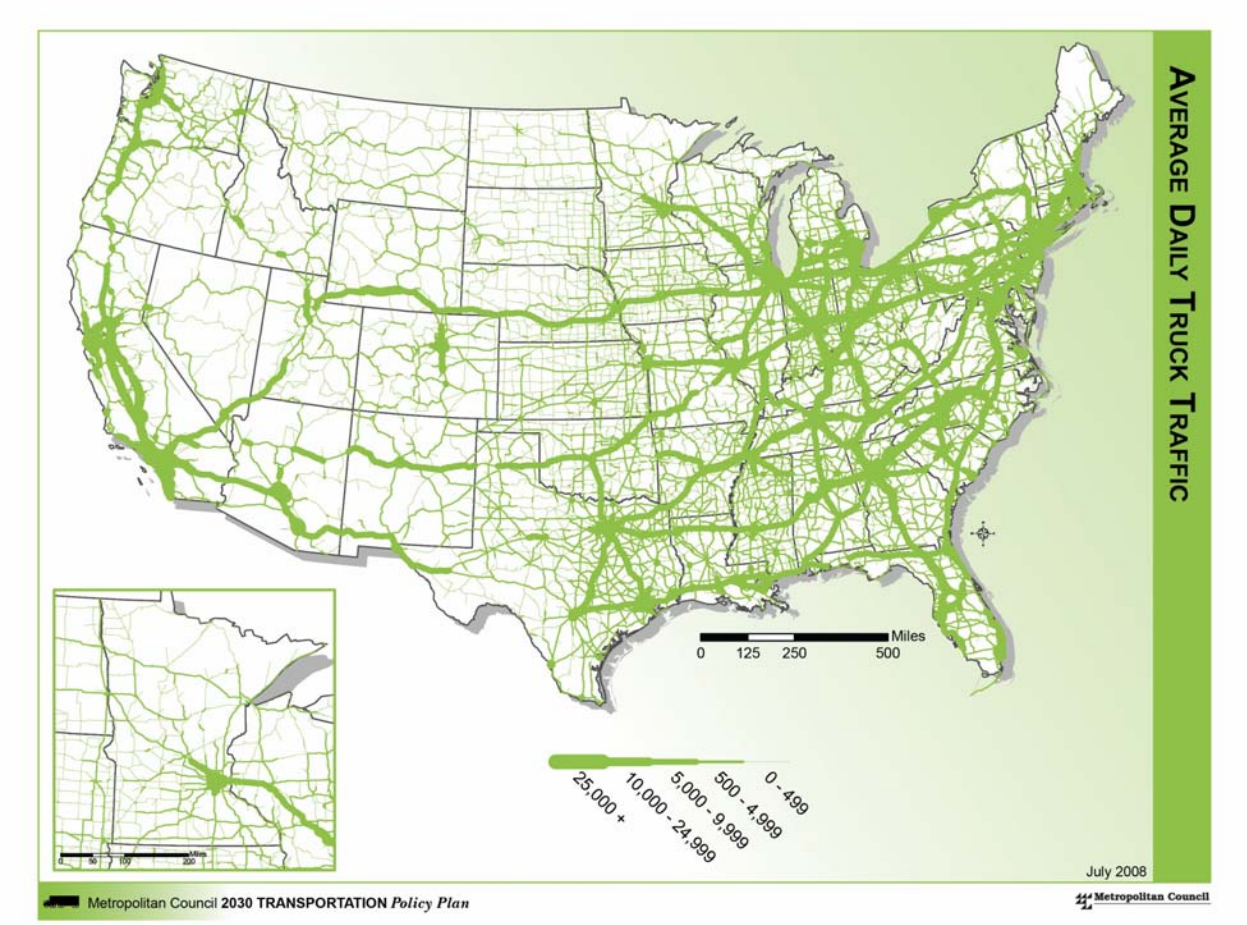
Highways have been important to the region's historic evolution. Since the majority of freight in the region now moves by truck, highways continue to be a critical element of the freight transportation system and the region's economic development.

Initially, highways developed in a radial pattern to connect the region with the rest of the state as well as states and regions beyond Minnesota.[64] The National Interstate and Defense Highways Act of 1956, which allocated funding to develop a network of interstate highways across the nation, was a major driver for developing the interstate system; several interstates now cross through the region. Over time, these highways were extended, new elements were added (such as high-occupancy vehicle lanes), and new highways and connectors were built.[65]

Interstates and other roadways, including state, county, city, and township routes,[66] intersect in the region, supporting movement of people and goods across the country. These routes provide important connectors, allowing access to other major trade centers in the state such as Duluth, Rochester, and St. Cloud, as well as parts of the Upper Midwest.[67] Interstate (I)-94 provides a particularly important freight link, connecting the region to other parts of the Upper Midwest, including Chicago. This corridor is increasing in significance as greater volumes of freight are trucked via I-94 to and from Chicago.

[64] Twin Cities Metro Area Regional Freight Profile. MnDOT. 2010.
[65] Politics and Freeways: Building the Twin Cities Interstate System. Patricia Cavanaugh/University of Minnesota. October 2006. http://www.cts.umn.edu/Publications/ResearchReports/pdfdownload.pl?id=1602
[66] Twin Cities Metro Area Regional Freight Profile. MnDOT. 2010.
[67] MnDOT 2005 Statewide Freight Plan p 2-2

Figure 3. Average Daily Truck Traffic on the National Highway System (NHS).[68]



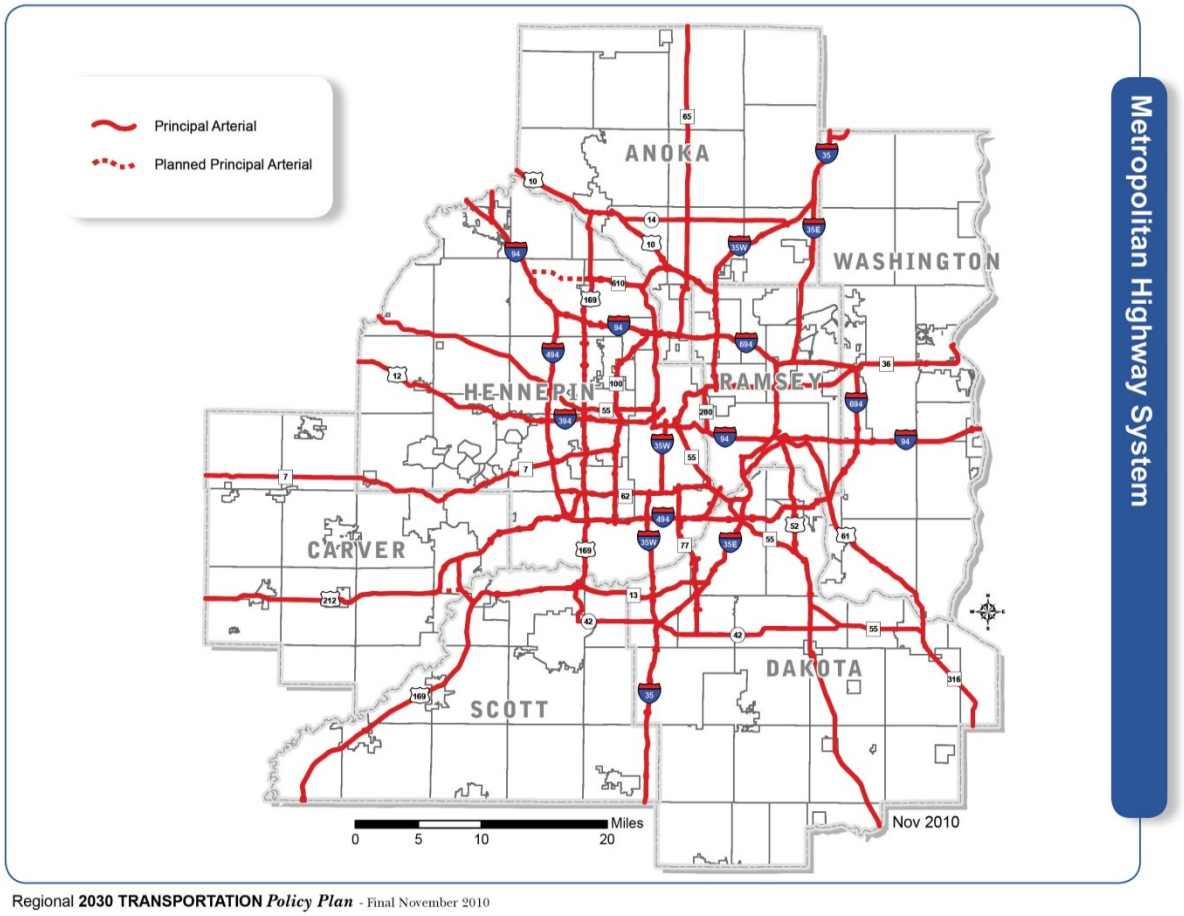
The region has about 900 miles[69] on the metro highway system (see Figure 4), which includes all principal arterials[70] in the seven-county area. These principal arterials account for a small percentage of all the region's roadways but carry just over half of all vehicle miles traveled in the region.[71] The 2,800-mile[72] regional highway system includes these principal arterials as well as "A" minor arterials that supplement the mobility of principal arterials and provide more land access than freeways or expressways (see Figure 5).[73] "A" minor arterials are particularly important for freight transportation as they support "last mile" access for freight connections. In addition to the metro highway system and regional highway system, the region has "B" minor arterials, collectors, and local roads.[74] [75]

[68] The region appears in the inset at the bottom left-hand corner of the map. Map from the Met Council TPP.
[69] Miles include ramps and loops. Excluding ramps and loops, the metro highway system is about 680 miles. Met Council. Email communication with Rachel Wiken, Met Council GIS Technician. 12/13/11.
[70] Principal arterials consist primarily of Interstate highways and other freeways or expressways that provide mobility but very limited land access. Met Council TPP, p. 64. See www.metrocouncil.org/planning/transportation/TPP/2010/6_Highways.pdf
[71] Met Council TPP. P. 64
[72] Mileage includes ramps and loops. Excluding ramps and loops, the regional highway system is about 2,600 miles. Email communication with Rachel Wiken, Met Council GIS Technician. 12/13/11.
[73] Met Council TPP, p. 64.
[74] Further, the region has miles on the NHS, but these roads are identical what is included as part of the metro highway system.
[75] Met Council focuses its planning efforts on the regional highway system. MnDOT primarily plans and manages the metro highway system.

The region also has 552 miles of National Network and Twin Trailer Network roads, which are designated truck networks (see Figure 6).[76] Further, there are 1,580 miles of 10-ton roadways, which serve as essential freight roadway networks.[77]

Overall, trucks transport about 182 million tons of goods in the region, about 67 percent of all tonnage.[78]

Figure 4. Metro Highway System.[79]



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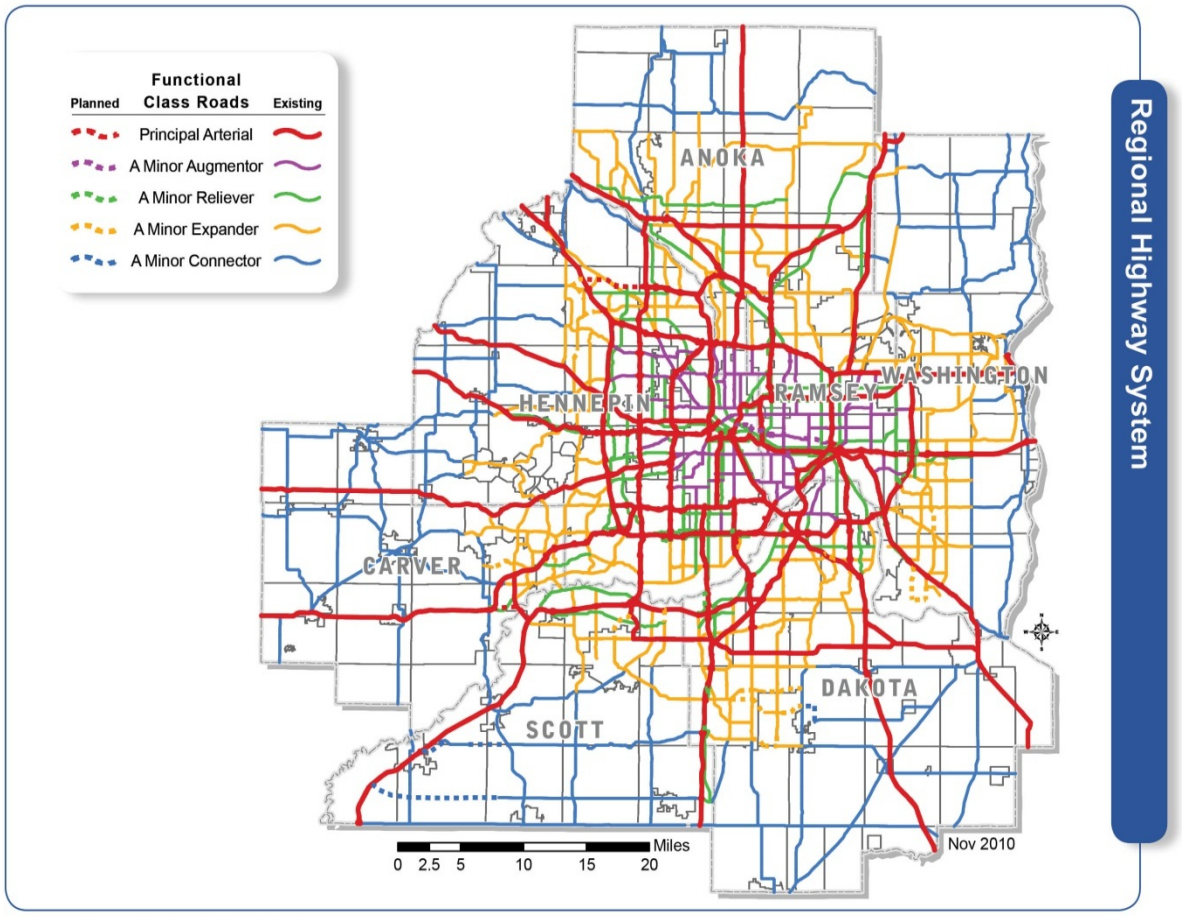
[76] This includes road-miles in Chisago County. Twin Cities Metro Area Regional Freight Profile, p. 12.
[77] This includes Chisago County. Twin Cities Metro Area Regional Freight Profile, p. 14
[78] FAF 2009.
[79] Met Council TPP, p. 65. See www.metrocouncil.org/planning/transportation/TPP/2010/6_Highways.pdf

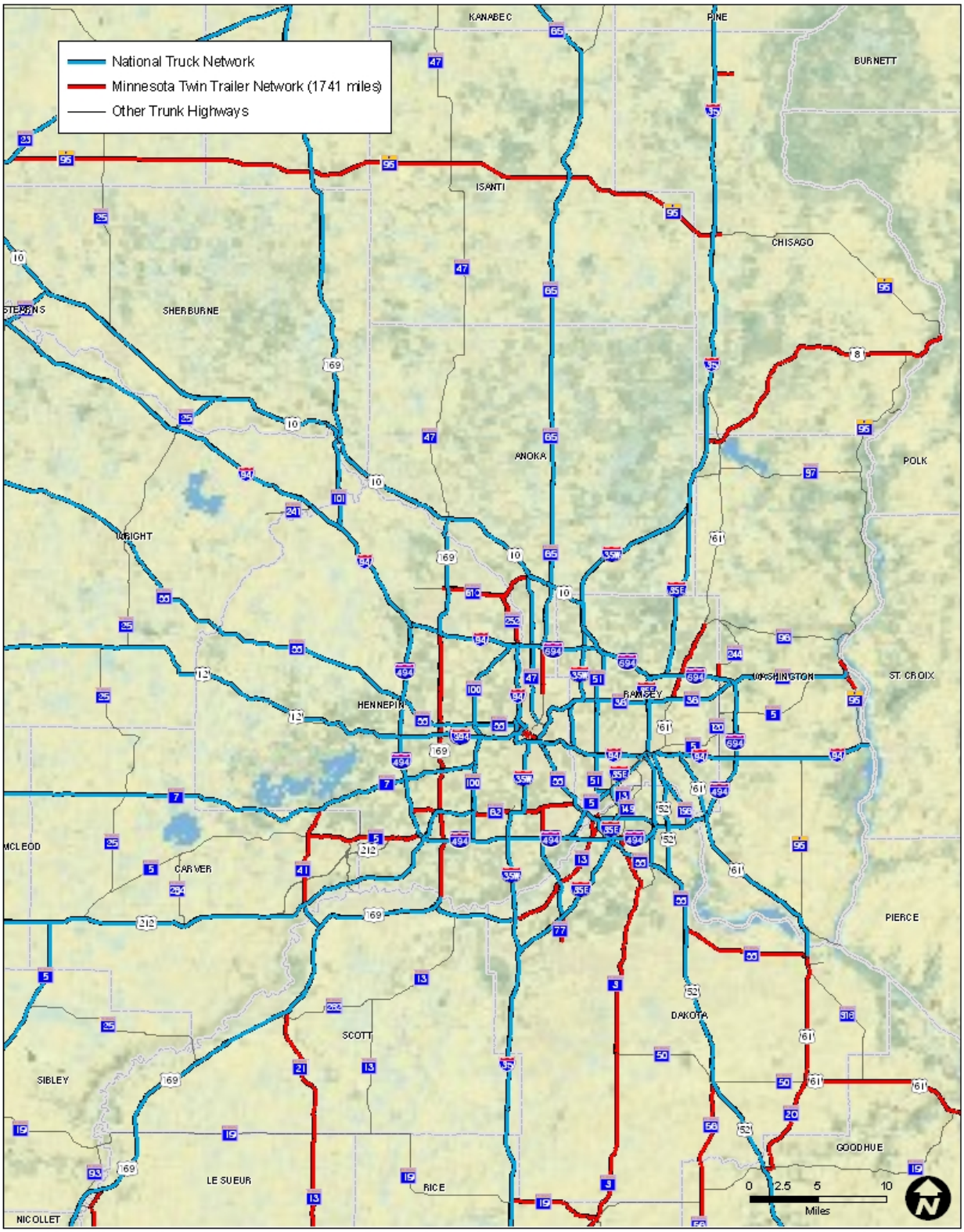
Figure 5. Regional Highway System.[80]



Regional **2030 TRANSPORTATION** ***Policy Plan*** - Final November 2010

[80] Met Council TPP, p. 66. See www.metrocouncil.org/planning/transportation/TPP/2010/6_Highways.pdf

Figure 6. Designated Truck Networks.[81]



[81] Map provided by MnDOT.

Air

Air networks have been very important to the development of the region, particularly for businesses that rely on transportation of time-sensitive freight to national and international locations.

Within the eight-county region (including Chisago County), MSP is the only facility offering air cargo services. Passenger service began in 1929 and MSP became the world headquarters for Northwest Airways in the 1960s. Although Northwest was recently absorbed into Delta Air Lines, headquartered in Atlanta, Georgia,[82] MSP remains a major passenger hub. In 2011, it ranked 12th in the nation for passenger service and 22nd in the nation for freight transport.[83]

In 2010, MSP handled approximately 212,000 tons of air freight, representing the majority of air freight moved throughout the state.[84] However, less than one percent of the region's total freight movement (by tonnage) is attributed to air.[85] While MSP provides important connections for air freight shippers, airport use is generally declining due to business relocations, security concerns, and other factors. These challenges are shared by other air freight facilities across the country. Today, a significant amount of international air freight leaving the region is trucked to Chicago, where O'Hare airport handles a much larger volume of international freight.[86] This somewhat limits the region's time-sensitive freight capabilities.

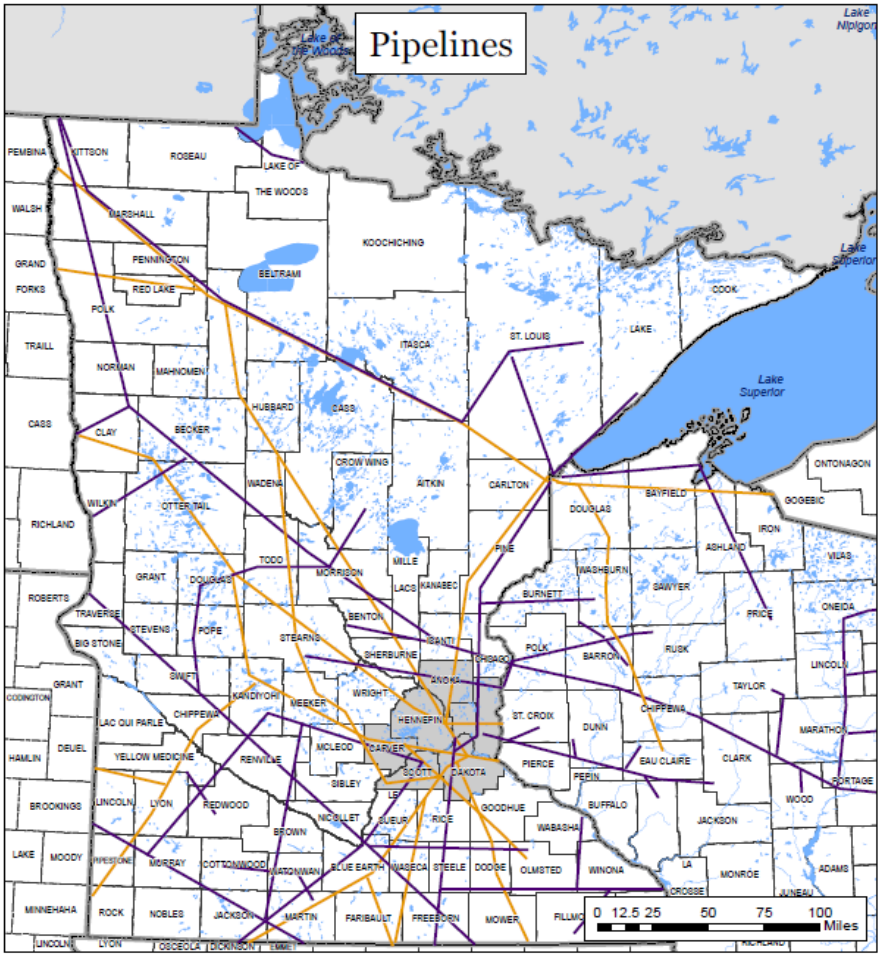
Pipelines

The region is a hub for pipeline activity, moving about 41 million tons of natural gas and hazardous liquids (about 15 percent of all freight movement in the region), including more than 75 different types of crude oil and natural gas (see Figure 7).[87] However, most (80 percent) of the natural gas entering the state is shipped through to Wisconsin and Iowa on the way to other markets.[88] The region's pipeline network developed over time as private sector companies invested in building and expanding this infrastructure.

Today, there are two refineries within the region: Pine Bend Refinery, which is owned by Flint Hill Resources, a Koch Industries subsidiary; and the Saint Paul Park Refinery of Marathon Oil, served by Enbridge Energy pipelines, the Kaneb Pipeline Company, the Koch Pipeline Company, CenterPoint Energy, Xcel Energy, and others for crude, products, and gas.[89] [90]

[82] Minneapolis-St. Paul Airport website. http://www.mspairport.com/about-msp/history.aspx
[83] Both figures are from July 2011. http://www.transtats.bts.gov/airports.asp?pn=1
[84] This figure includes only air movements. It does not include truck-to-air movements that originated at MSP. http://mspairport.com/about-msp/statistics/operations-and-passenger-reports.aspx
[85] FAF 2009.
[86] http://flychicago.com/PDF/Statistics/1209SUMMARY.pdf
[87] Since pipelines are owned and operated by private sector companies, it is difficult to confirm the total amount of tonnage moving through the region's pipelines. Twin Cities Metro Area Regional Freight Profile, p. 22
[88] Freight-Related Issues and Trends. Volpe Center. 2010.
[89] Volpe Center. Metro Regional Freight Issues and Trends.
[90] Volpe Center. Metro Regional Freight Issues and Trends.

Figure 7. Pipeline Network.[91]



3.2 Freight Flows

In 2007, about 127 million tons of freight valued at approximately $208 billion was moved annually in the region.[92] In 2008, the region was ranked 14th in the country for the value of its exports (about $19 billion in total) with machinery being the region's single most valuable export.[93] [94]

Most of the region's freight value and tonnage (including movements into, out of, and within the region) are attributed to freight moved by truck (see Figures 8 and 9). Trucks are anticipated to carry even more of the region's freight by 2030.[95] Comparatively little freight (by both value and tonnage) is carried by water, rail, and air modes although these modes are critical for particular industries such as agriculture, aggregates, medical instruments, and others.

[91] Twin Cities Metro Area Regional Freight Profile. MnDOT. 2010.
[92] Value is in 2007 dollars. The region includes Chisago County. Twin Cities Metro Area Regional Freight Profile. MnDOT. 2010.
[93] Export Nation: How U.S. Metros Lead National Export Growth and Boost Competitiveness. Brookings. July 2010. http://www.brookings.edu/~/media/Files/rc/reports/2010/0726_exports/0726_exports_istrate_rothwell_katz.pdf.
[94] For sake of comparison, in 2002, over 19 billion tons of freight, valued at $13 trillion, was carried in the U.S. as a whole. Freight in America: National Picture. Bureau of Transportation Statistics. January 2006. http://www.bts.gov/publications/freight_in_america/pdf/entire.pdf
[95] The region includes Chisago County. Twin Cities Metro Area Regional Freight Profile. MnDOT. 2010.

Figure 8. Regional Freight Modal Split by Value.[96]

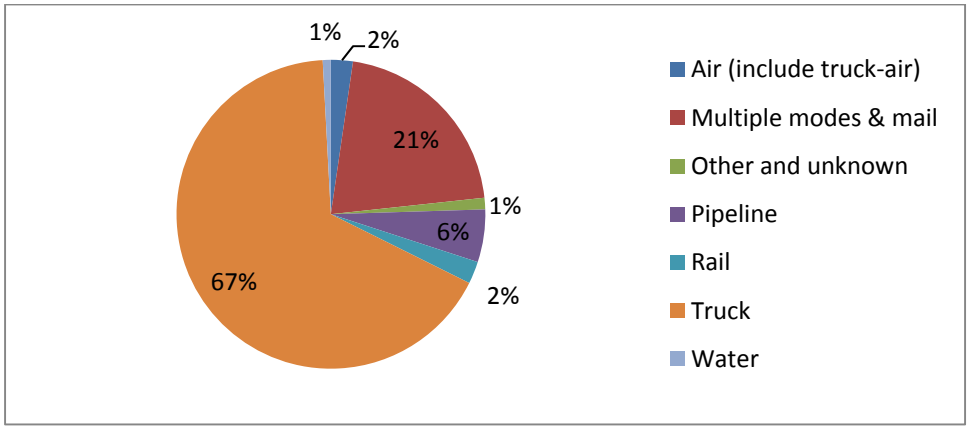
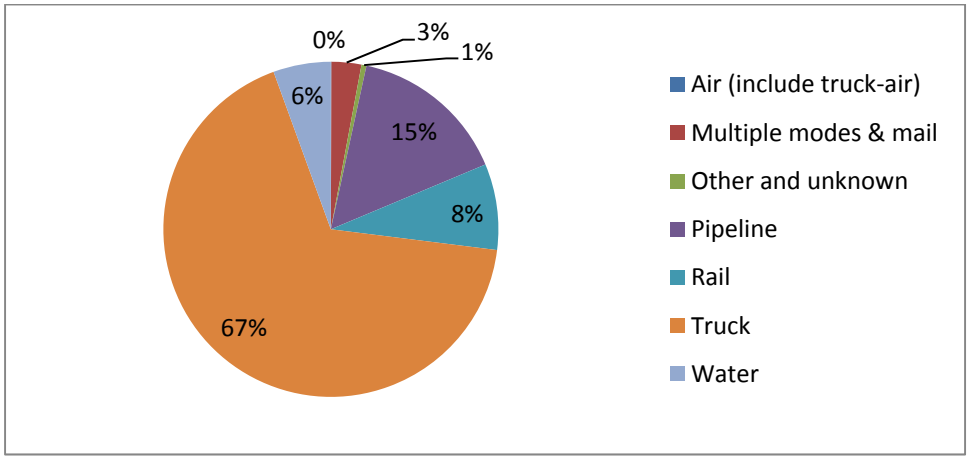


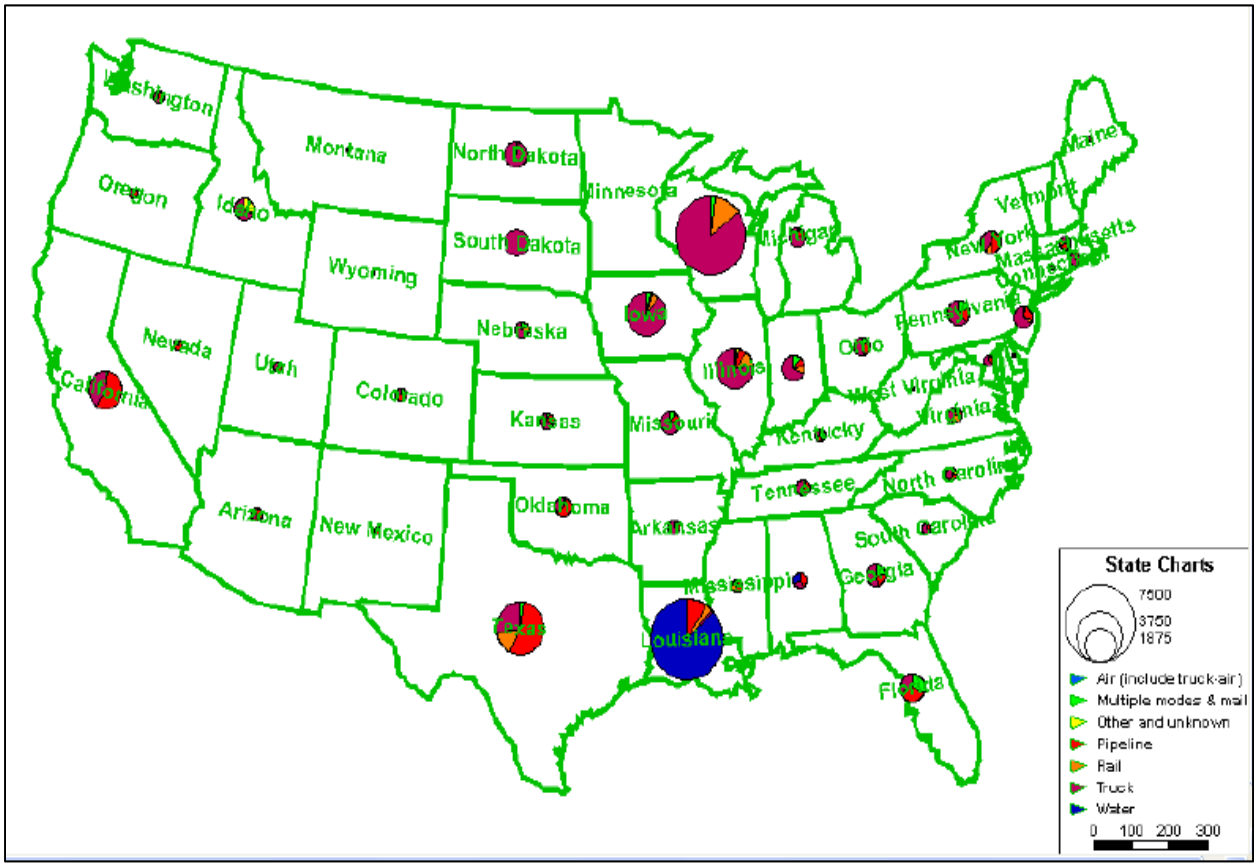
Figure 9. Regional Freight Modal Split by Tonnage.[97]



Some of the region's most important domestic trading partners include other areas throughout Minnesota, North and South Dakota, Wisconsin, Iowa, Illinois (particularly the Chicago area), Texas, Louisiana, and California (see Figure 10).[98]

[96] FAF2009.
[97] FAF2009.
[98] Met Council TPP p. 161. June 2010.

Figure 10. Freight Flows from Region to Other States.[99]



Overall, about half of the total freight moved within the region (by tonnage) derives from imports (materials originating in other areas that terminate in the region) or from materials that move through the region without stopping on their way to or from other locations.[100] [101] For example, a large amount of coal from Montana is moved through the region by rail and hazardous liquids from Canada flow through regional pipelines. True imports to the region include grains from the Midwest states and electronics, paper, and base metals from both domestic and international locations.

The region also circulates a variety of products that start and remain within the region, including machinery and waste/scrap products. About 17 percent of the region's total freight movement (by tonnage) can be attributed to local movements that originate and terminate within the region.[102]

Exports (to either domestic or international locations) represent nearly one-third of the region's total freight movement.[103] Important exports include machinery and precision instruments shipped primarily by air (or via truck and then air), plastics/rubber shipped by air, and

[99] Volpe Center. Metro Region Issues and Trends.
[100] Figures in this paragraph and others below use 2007 TRANSSEARCH data. Twin Cities Metro Area Regional Freight Profile.
[101] Volpe Center. Metro Region Issues and Trends.
[102] Twin Cities Metro Area Regional Freight Profile, p. 28
[103] Twin Cities Metro Area Regional Freight Profile, p. 28

pharmaceuticals shipped by air. A significant amount of warehoused products (e.g., coal and cereal grains) are distributed by truck and barge from the region to the Midwest and Plains states.[104]

Both the amount by tonnage and value of freight moved in the region are expected to grow significantly by 2030.[105] These increases will likely be related to growth in imports to the region.[106]

3.3 Business Profile

Many companies rely on the region's freight transportation system to distribute products to domestic and international markets or consider freight transportation as a key factor in business decision-making. For example, Murphy Warehouses, which operates nine warehouses in the region, requires rail access when deciding where to locate its facilities. The company believes that intermodal (truck-to-rail) access is critical for its business and it currently has six facilities served by Class I railroads.[107]

The next pages present a profile that highlights a Fortune 500 company, SUPERVALU, which has its headquarters in the region. The profile details how SUPERVALU uses the region's freight system as well as some of the important issues that it considers when making transportation decisions.

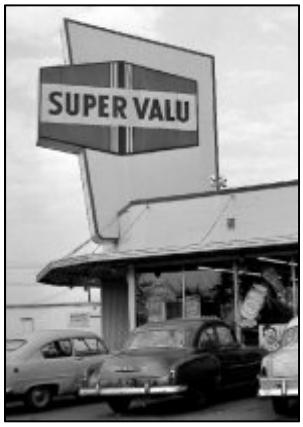
[104] MN 2005 Statewide Freight Plan
[105] Twin Cities Metro Area Regional Freight Profile, p. 28.
[106] Twin Cities Metro Area Regional Freight Profile, p. 28
[107] National Cooperative Freight Research Program 13: Freight Facility Location Selection: A Guide for Public Officials. 2011. http://onlinepubs.trb.org/onlinepubs/ncfrp/ncfrp_rpt_013.pdf

SUPERVALU: Moving Grocery Products To and Within the Region

When residents purchase food or pharmacy products from their local grocery store, there is a strong likelihood that SUPERVALU played a role in getting these products to the shelf.

> Our business grew up in the Twin Cities region. The business environment in this region is very good and the region's transportation [network] is conducive to delivering goods to a broad segment of the population.
>
> -SUPERVALU

SUPERVALU, a 2011 Fortune 500 company with worldwide headquarters in Eden Prairie, Minnesota, is one of the nation's largest grocery retailers. The company was founded in the region in 1954. Today, it supplies over 4,000 stores nationwide with food and pharmacy products (about half of these stores are independently owned), as well as to some stores in international locations such as the Bahamas. The company also owns several grocery chains, including approximately 50 Cub Foods stores. It also services and supplies 70 independent grocery stores. Approximately 5,000 SUPERVALU employees work in the region, including those working at the corporate headquarters, Cubs Foods stores, and SUPERVALU's regional distribution center in Hopkins, located east of Minnetonka.[108]



Within the region, SUPERVALU primarily relies on trucks to transport products from the Hopkins distribution center to individual stores (the company has 29 distribution centers nationwide). Both within and outside the region, the vast majority of SUPERVALU's products are transported via truck, but a small number of products are transported via intermodal (rail-to-truck) movement.

Trucks arrive at the Hopkins distribution center from all over the country and other parts of Minnesota carrying produce, pharmacy products, canned and packaged goods, and many other items. Using a highly automated process, products are unloaded, sorted, and stored in the warehouse until selected for distribution. Once selected, products are organized and consolidated into truckloads, loaded into trailers, and then delivered to individual retail stores.

SUPERVALU uses a large private fleet (supplemented by other 3PL providers' fleets) to service its company and independent stores. SUPERVALU's national fleet includes approximately 1,200 trucks and 5,500 trailers. Overall, approximately 60 trucks and 300 trailers service the region. SUPERVALU estimates that its trucks drive over 3 million miles on an annual basis to service stores in the region.

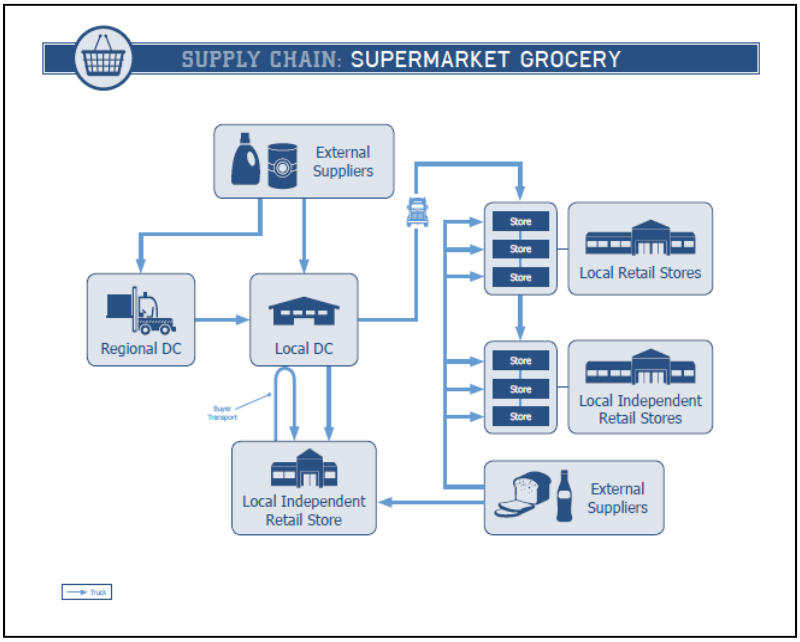
Over time, SUPERVALU has found that more stores have opened in rural areas at the edge of the region rather than in more urban areas, most likely due to the region's unique growth patterns. As a result, the number of trucks being routed to stores in outlying areas of the region has increased.

[108] Photo of SUPERVALU store from www.SUPERVALU.com/sv-webapp/about/history.jsp. Photo of SUPERVALU truck courtesy of SUPERVALU.

Transportation Decision-Making[109]

The Hopkins distribution center, which is one million square feet, was built over the site of another SUPERVALU-owned facility. The Hopkins center is one of the three largest facilities in the SUPERVALU network). SUPERVALU considered several factors when expanding this facility, including its proximity to interstates.

Within the metro region, SUPERVALU delivers to stores on a regular schedule that ranges from three to six times per week. Delivery frequency is based almost solely on store volume and a store's need for new products. In addition to regular deliveries, SUPERVALU also runs trucks that deliver products "on demand" and sometimes might add additional product to a truck that is already routed and can make another delivery to a store located along that route.



To determine what truck route will be most efficient, the company uses an optimization computer program. This program takes several factors into consideration, such as time of day and congestion trends. Routes are run through the program daily and routing changes are made if necessary. In general, however, SUPERVALU has found that its truck routes are fairly consistent over time.

When routing trucks in the region, SUPERVALU tries to avoid certain areas and certain times of the day where congestion is more likely. Weather can also affect the company's operations in the region; winter storms and spring construction can require truck routing changes. The company has developed protocols about what shipments it will work with when roads are closed due to snow. However, SUPERVALU believes that routing and operating trucks in the region is not as difficult as in some other areas due to the fact that the region has few truck curfews and relatively less congestion as compared to some other metro areas. SUPERVALU does receive some feedback from drivers and stores on the region's road conditions. Generally, this feedback has been positive.

By using certain packing materials and practices, SUPERVALU can ensure the stability of products even over a long route. Loss of product due to poor road conditions is not a concern for the company.

[109] Supply chain graphic represents a generalized supply chain for grocery distributors. Graphic from the National Cooperative Freight Research Program "Understanding Urban Goods Movement." Transportation Research Board and Wilbur Smith Associates. August 2010.

Transportation Trends

In the future, SUPERVALU believes that it will rely more on intermodal shipping (e.g., truck to flat railroad car), particularly because the company is planning to make changes in the way that it purchases produce. Currently, the company purchases produce for each of its grocery chains on a regional basis. SUPERVALU will consolidate orders in the future, purchasing produce for several chains at one time. This change will increase the volume of produce that SUPERVALU must initially purchase. Rail-to-truck movements, therefore, might be used more frequently to transport larger product volumes and lower overall transportation costs.

SUPERVALU is also investigating ways to promote transportation sustainability. First, it is considering use of compressed natural gas (CNG) for truck fuel and is piloting use of this fuel in some east coast locations. It has already adopted a number of practices and policies (such as reducing idle time and turning off trucks while unloading) that help to mitigate fuel use but is now experimenting with new truck tires that could further reduce fuel use and save costs.

The company also closely monitors federal and state transportation regulatory changes to better understand the regulatory environment in which it operates. Its regional fleet is 100 percent compliant with federal electronic on-board computer regulations.

Chapter 4: Trends, Challenges, and Opportunities for Freight in the Region

This chapter examines trends likely to impact freight transportation infrastructure and goods movement within the region. These trends identify some of the current and future challenges that the region faces as well as opportunities for public and private organizations to work with the general public to advance transportation improvement initiatives that benefit freight. For instance, MnDOT has worked with Met Council, transit and private bus operators, and neighboring city government offices to complete two freeway interchanges with expected benefits for both freight and passenger movement. These interchange projects are described in more detail later in this chapter.

4.1 Regional Trends

There are many trends likely to impact freight transportation in the region:

- **Funding uncertainties.** With continuing uncertainties in transportation funding at the national level, it will become necessary implement lower-cost/high-benefit projects in the region.[110] It may also be important to identify transportation investment priorities and emphasize policies or approaches (e.g., stronger partnerships and innovation) that can help leverage limited funding as MnDOT has done as part of its 20-year *Highway Investment Plan* (HIP).[111]

- **Energy concerns.** Volatile fuel costs could affect national and regional distribution patterns as freight shippers seek alternative shipping routes that require less fuel, shorter supply chains, or modes that are comparatively more fuel efficient, such as rail. The region currently has direct intermodal (i.e., container) service to the Pacific Northwest. Volatile fuel costs could make it more attractive for shippers to use this service more frequently or for more goods. Modal diversion from trucks to rail and waterways could also occur with higher fuel costs. However, some industries might not be able to ship products via rail or on waterways if these modes are not conducive for transport of certain products (e.g., high-value, time-sensitive products). Also, rail capacity/intermodal capacity may be limited in certain areas. In these areas, the expanded use of rail may not be possible even if fuel costs escalate.[112]

- **Population growth.** Population in the region is increasing.[113] In fact, the region is expected to add nearly one million residents between 2000 and 2030[114] and is likely to remain the focus of growth for both the state and the Upper Midwest.[115] Increasing population is likely to result in more vehicles on the roads and increased congestion for travelers and freight providers. An influx of new consumers will also heighten the demand for goods. As freight users and owners seek to fulfill the demands of more

[110] Volpe Center. Metro Region Issues and Trends.
[111] MnDOT Statewide 20-Year Highway Investment Plan: 2009-2028. www.dot.state.mn.us/planning/stateplan/Final%20Plan%20Documents/Highway%20Investment%20Plans/Statewide/Entire/Statewide%2020-year%20Highway%20Investment%20Plan%202009-2028.pdf
[112] Met Council TPP, p. 143.
[113] http://stats.metc.state.mn.us/stats/pdf/PopulationEstimates_MS2009.pdf
[114] Met Council TPP, p. 1.
[115] MnDOT Statewide Freight and Passenger Rail Plan, p. 3-7.

consumers reliably and efficiently, the region's freight transportation system will be taxed further, particularly in areas already experiencing significant congestion.

- **Capacity limits.** In the region as in other areas of the state and country, a number of freight facilities are nearing capacity. For example, the region's rail lines are projected to exceed capacity in 2030 even if improvements are made.[116] [117] Experts anticipate continued growth in freight transportation that will further contribute to capacity challenges and overwhelmed facilities. This trend could ultimately constrain growth of the region's freight transportation system or limit the system's ability to deliver goods quickly, reliably, and affordably.[118]

- **Aging infrastructure.** Many transportation facilities in the region, as others throughout the state and the U.S., are aging and in need of repair or replacement. Aging infrastructure can damage freight and increase wear on vehicles. In addition, it might exacerbate congestion and cause bottlenecks, decreasing economic productivity and leading to changes in trading patterns as carriers seek new routes to avoid certain transportation facilities. This presents challenges to the safe, reliable, and efficient movement of goods.

- **Congestion.** As in other areas of the country, congestion is an issue in this region, although there are more miles of highway per capita here than in most regions with comparable population.[119] Regional congestion decreased in 2008, following a national trend of decreasing congestion likely related to rising unemployment rates, increasing fuel prices, and the economic recession. As noted in Chapter 2, congestion in the region, as measured by percentage of peak vehicle miles traveled, is less overall than it was the mid-2000s. However, the region experienced a three-percent increase in congestion in 2010, the second consecutive year in which congestion increased.[120] Additionally, heavy commercial vehicle miles traveled (HCVMT) have, as a whole, increased steadily since 1992, particularly in the region (where HCVMT has increased by 21 percent from 1992 to 2010).[121] It is expected that congestion will continue to increase in the region as economic activity rebounds. The duration of morning and afternoon congestion peaks are spreading to the adjacent hours of the day.[122] Freight flows in the region are estimated to grow 200 percent by 2030 (primarily due to increased agricultural freight demand), placing additional pressures on the region's infrastructure.[123]

  Congestion is costly because businesses must deploy more vehicles or acquire additional inventory to ensure reliable and efficient distribution and delivery of goods. The Bureau of Transportation Statistics (BTS) estimated that congestion cost the region about $1 billion in 2002; in 2005, BTS ranked the area 17th in the nation for its annual congestion cost.[124] Congestion-related costs decrease the region's economic productivity and increase business expenses, which generally results in higher

[116] Volpe Center. Metro Region Issues and Trends.
[117] Figure from Figure 1.3 of the Minnesota Comprehensive Statewide Freight and Passenger Rail Plan.
[118] FHWA Freight Story 2008, p. 1 (graphic on p. 4).
[119] Met Council Transportation Policy Plan, p. 48.
[120] *Metropolitan Freeway System Congestion Report* 2010, p. 3. http://www.dot.state.mn.us/congestionreport/CongestionReport2010.pdf
[121] MnDOT. *2010 VMT Trends.* Planners Video Conference.
[122] MnDOT.
[123] http://www.tcbmag.com/industriestrends/economicdevelopment/98277p3.aspx
[124] http://www.bts.gov/publications/national_transportation_statistics/2004/html/table_01_66.html

consumer prices. For example, General Mills estimated that for every one mile-per-hour reduction in the average speed of its vehicles, the company's annual transportation costs increased by $2 million.[125]

In addition to increasing consumer costs and placing pressures on the freight system, increasing congestion and unreliability might mean that businesses will establish shorter supply chains and store inventories closer to where products are consumed.

- **Environmental concerns.** Freight transportation adds significant amounts of nitrogen oxides and particulate matter to the air; worldwide, transportation vehicle emissions is estimated to be the second-largest contributor of greenhouse gases.[126] Noise from freight vehicles or facilities can impact neighboring communities. Many policies already exist to help mitigate noise and other environmental impacts, but heightened environmental concerns may lead to increased regulations that will limit the expansion of the freight system and affect regional freight operations, project implementation, planning, and other activities. Concerns about climate change are making locally-produced products more desirable to some segments of the market who believe that local goods are more environmentally friendly, because they are not shipped extensively and therefore contribute a reduce amount of emissions.

- **Transportation safety and security concerns.** Freight transportation safety is improving nationally and in Minnesota. In recent years, there have been fewer accidents involving trains, and fewer fatalities involving large trucks across the nation.[127] In 1970, 392 crashes and 36 fatalities occurred on at-grade railroad crossings in Minnesota. By 2010, these numbers dropped to 35 crashes (seven in the region) and two fatalities.[128] In the past ten years, truck-related crashes decreased from 4,976 in 2001 to 4,181 in 2010.[129]

  Despite improved safety trends, there are still concerns about how to ensure the safe and secure movement of goods, particularly for hazardous materials. A terrorist attack aimed at damaging a pipeline or disrupting flights could significantly affect the region's and the nation's ability to distribute critical items. It might also lead to shifts in freight movements in other areas that affect the metro area. The region might also be impacted by new policies or regulations concerning the secure movement of goods to and from Canada.

- **Job growth and employment shifts.** Traditionally, job growth is a prime generator of peak-period highway travel, potentially leading to congestion and bottlenecks during certain hours of the day. While the region's job growth has occurred more slowly in recent years,[130] the Minnesota Department of Employment and Economic Development (DEED) predicts approximately nine percent employment growth in the region between 2009 and 2019 (from 1,685,505 jobs to 1,829,604 jobs).[131] Certain industries are likely to

[125] http://www.tcbmag.com/industriestrends/economicdevelopment/98277p3.aspx
[126] BTS. Freight Transportation: Global Highlights. http://www.bts.gov/publications/freight_transportation/pdf/entire.pdf
[127] http://www.rita.dot.gov/publications/transportation_vision_2030/html/freight_transportation.html
[128] MnDOT Statewide Freight Plan. 2005. P. 5-2.
[129] Minnesota Motor Vehicle Crash Facts. 2010. Minnesota Department of Public Safety. https://dps.mn.gov/divisions/ots/educational-materials/Documents/CRASH-FACTS-2010.pdf
[130] Met Council TPP p. 2.
[131] http://www.positivelyminnesota.com/apps/lmi/projections/

experience slower or faster growth. For example, the transportation and material moving industries currently provide a substantial number of jobs (about 90,000), but employment is expected to increase only about one percent from 2009 to 2019.[132] Construction and extraction industries currently provide about 57,000 jobs and are expected to grow by about 14 percent over the same period.[133] The region's biotech and research and development sectors are growing as well.

- **Freight-related land use conflicts.** The increasing value and attractiveness of urban lands create a major impediment to expansion of freight facilities, because land is desired for uses (e.g., residences and commercial centers) that are incompatible with significant freight operations and industrial uses.

  For example, the Shoreham, Midway, and Triple Crown rail yards are located in urban areas where land is highly desirable. Any proposed increase in the capacities of these yards would likely be met with local resistance. Another potential point of conflict is the area near the University of Minnesota. The University supports research and technology-oriented development, a land use that conflicts with the expansion of nearby freight facilities. The University has also supported the removal of existing grain elevators and rail facilities to accommodate new development.

  An example of land use conflict in the region is the Minneapolis and Saint Paul riverfronts, which are undergoing extensive redevelopment. Land once dominated by freight and industrial facilities is now under consideration for residential, commercial, and recreational development. This change will likely impact the current port operations handling gravel, waste, scrap materials, chemicals, and other materials. Farther from the central urban areas, land use conflicts may be less significant. Specifically, there are a number of underused industrial parks in Lakeville and Cottage Grove that offer the potential for suburban warehousing and distributions facilities that would ease urban congestion, providing for more reliable travel times and lower costs.[134]

- **Adjusting to shifting demand for freight rail.** Demand for intermodal (e.g., rail-to-truck movement) transportation is the fastest growing segment in rail transportation over the past 25 years. Intermodal traffic has grown from 3 million trailers and containers in 1980 to 11.7 million in 2005.[135] In fact, while domestic traffic dropped almost 30 percent overall in 2009, intermodal traffic declined only by 12 percent. It has since regained all of its lost volumes and its growth is likely to continue.[136] Currently, the region has intermodal links to the Pacific Northwest and Chicago, but existing intermodal terminals in the region are located in urban areas and are at times congested. Their potential to expand is limited due to land use conflicts. Additionally, if passenger rail services were to increase in the region, it would likely lead to questions about how best to manage the shared use between freight and passenger operations on rail corridors. Existing at-grade crossings on minor streets might garner greater scrutiny if higher speed passenger trains were implemented.

[132] DEED. http://www.positivelyminnesota.com/apps/lmi/projections/Results.aspx?dataset=1&geog=2709TC0000&code=530000
[133] DEED. http://www.positivelyminnesota.com/apps/lmi/projections/Results.aspx?dataset=1&geog=2709TC0000&code=530000
[134] Volpe Center. Metro Region Issues and Trends.
[135] FRA cited in Volpe Center. Metro Region Issues and Trends.
[136] MnDOT.

- **Railroad service changes.** Finally, changes in the levels of railroad service might impact the region. The abandonment of rail lines outside of the region may lead to increased truck transport and congestion, particularly at intermodal terminals. In addition, the shift to longer (e.g., 100+ rail car) unit grain trains could place more focus on long-haul routes. While the region already has very limited rail service to ports, with Savage being an exception, this shift could possibly threaten even reduced service to the region's manufacturing and industrial sites. It may also place competitive pressure on the region's short-line rail services.[137]

4.2 Current Activities to Improve Goods Movement

There are several examples of how freight activities and efforts are making a positive difference to improve the freight transportation system in the region. Some of these projects have already been implemented or are under construction; others are being planned for future implementation.

State-of-the-art interchanges provide increased safety

MnDOT is now completing interchanges at two locations within the region, both of which will support freight movements.

One of the projects will reconstruct an interchange between US 169 and I-494 and convert an expressway to a freeway by removing remaining stoplights. The project is expected to benefit freight as well as passenger traffic through increased safety and mobility in the corridor.[138] In the near term, this project is also expected to lead to direct and indirect economic benefits for the region through the creation of jobs and income. Because MnDOT must work with a variety of entities, including Met Council, transit and private bus operators, and neighboring city governments to implement the project successfully, the effort is also helping to foster cooperation and collaboration throughout the region.

The second project (for which funds came from the American Recovery and Reinvestment Act of 2009 [ARRA]) will address an interchange at Trunk Highway (TH) 101/TH 13. This project will improve freight traffic flows to and from the Port of Savage, located approximately one mile east of the intersection, and will benefit overall freight and passenger traffic flows and safety.

Congestion and Safety Management Plan prioritizes low-cost, high-benefit projects

MnDOT is also implementing projects from its Congestion Management and Safety Plan (CMSP).[139] The CMSP identified a variety of techniques to select lower-cost/high-benefit projects that support cost-efficient, innovative, infrastructure improvements and help to mitigate safety and mobility issues on the region's highway system. MnDOT has identified what projects to implement from the CMSP. One project, completed in October 2011, involved adding an eastbound auxiliary lane on I-94 between US 61 and White Bear Avenue. Another project to add a lane and modify the I-694/US 10/MN 51 (Snelling) interchange is currently under construction. It is expected that these projects and others resulting from the CMSP would positively impact freight. Any project implemented from the CMSP program would require coordination with Met

[137] Volpe Center. Metro Region Issues and Trends.
[138] http://www.dot.state.mn.us/federalrecovery/docs/freightandcommutertiger.pdf
[139] http://www.dot.state.mn.us/metro/projects/cmsp/

Council as well as the public and officials representing the local jurisdiction(s) in which the project will occur.

Transportation projects that create jobs and foster business development

The Transportation Economic Development (TED) program is a collaborative effort between MnDOT and DEED. Through TED, funding is available to communities for highway improvement and infrastructure projects that create jobs and support economic development. Several potential TED projects will benefit goods movement. In Hennepin County, a project is being planned to add a new entrance ramp and auxiliary lane to northbound I-35W, reducing congestion in an area with a high concentration of jobs and creating a more direct route for both trucks and autos from downtown Minneapolis to northbound 35W.[140]

MnDOT has invested in high-occupancy toll (HOT) lanes that permit single-occupant drivers to pay a user fee to access these lanes. Speeds and capacity of the HOT lanes are maintained by dynamically changing the toll according to demand and use (currently, HOT lane tolls range from $0.25 to $8.00). These HOT lanes are designed to facilitate traffic movement on general purpose lanes and therefore benefit all users, including truckers.

As part of the Port Development Program, MnDOT has completed other projects benefitting freight such as rehabilitating or improving rail and truck access to intermodal facilities, dock walls at barge terminals, building roofs, sprinkler and electrical systems, and mobile handling equipment at port buildings, as well as adding warehouse capacity.[141]

Met Council's Transportation Policy Plan (TPP) calls for the development of a system of managed lanes similar to the MnPASS/HOT lanes already developed along I-394 and I-35W, as well the application of Active Traffic Management (ATM) strategies.[142]

While the planned network of managed lanes for the Metropolitan Highway System is not based directly on specific freight-related congestion points, implementing managed lanes will have multiple benefits for local and regional freight moved by trucks. MnPASS/HOT lanes will directly benefit shipments by single-unit commercial vehicles by allowing those vehicles to "buy in" to the lane to receive the benefit of an uncongested trip. Specifically, dual-axle trucks less than 26,000 pounds are allowed to use the MnPASS network with an on-board transponder and valid MnPASS account. These vehicles are already using the I-394 and I-35W MnPASS lanes and this practice will likely continue for future MnPASS corridors. This is especially beneficial for air freight companies like Federal Express and UPS, which transport freight for biomedical, high-tech, and other industries that rely on expedited deliveries of high-value, time-sensitive products.

The development of a managed lane network may also benefit traditional freight movements by large trucks. Based on findings from other metropolitan areas, converting shoulders to HOT lanes provides added operational capacity to specific corridors, thereby freeing up capacity and reducing congestion in general purpose lanes. Delaying the frequency and duration of breakdowns in general purpose lane traffic flow can minimize the total hours of corridor

[140] The project will likely receive about $13.5 million. For more information on TED, see http://www.positivelyminnesota.com/Government/Financial_Assistance/Business_Development_Funding/Transportation_Economic_Development_Program_4.aspx

[141] c

[142] Additional information on MnPASS is available at www.mnpass.org/.

congestion, thus improving conditions for moving freight. In addition, implementing ATM strategies, such as speed harmonization, variable sign messaging, and dynamic rerouting along congested corridors (as recommended in the *Metropolitan Highway Investment Study* completed in 2010[143]), may further reduce breakdowns in traffic flow and improve safety for other vehicles using the general purpose lanes.

[143] The study is available at http://www.metrocouncil.org/planning/transportation/MHSIS/index.htm.

Chapter 5: Understanding Public Sector Freight Planning

This chapter explores how MnDOT and Met Council, along with other agencies and partners throughout the region, plan for the region's freight transportation system and make decisions about what activities to pursue.

5.1 Introduction

Most goods and products that residents and businesses consume, purchase, and use on a daily basis need to be transported from outside the region and/or within the region by a combination of highway, rail, water, and air transportation modes. Similarly, goods produced in the region rely on an integrated transportation system for distribution within and to outside the region. Chapter 1 noted that many partners, both public and private, own, or operate freight transportation systems. Effective collaboration among these partners is essential to ensure a safe, reliable, and efficient freight system. This, in turn, supports the economic competitiveness of the region.

This chapter describes how agencies and organizations—particularly those in the public sector—plan for the region's freight transportation system and how these organizations collaborate as well as the specific roles of public organizations. Public organizations' freight-related activities typically include identifying current and future freight needs, researching underlying causes of issues, developing policies to benefit freight movement, prioritizing among possible actions to address issues, making capital investments, and addressing maintenance or operational issues. Private sector planning and decision-making is largely market-driven and focused on the portion of the freight transportation system it owns and operates (especially the rail and waterways system, as well as air freight). Public sector agencies such as MnDOT and Met Council (as well as other state agencies and federal institutions such as the Federal Highway Administration [FHWA]) have a number of key points of influence that shape those private sector decisions whether through public planning, infrastructure investment, operations, or regulation.

5.2 Partners

MnDOT and Met Council are primarily responsible for comprehensively planning the future of the regional public freight transportation system. These organizations and their freight-related functions are outlined below:

- **MnDOT** develops policy documents and investment plans to guide the future of the state's freight transportation system and manages initiatives, such as the *Statewide Multimodal Plan*. MnDOT's freight office (Office of Freight and Commercial Vehicle Operations) identifies freight needs and assesses strategies for addressing those needs through publicly accessible studies and reports, including the Statewide Freight Plan. MnDOT's Metro District Office specifically focuses on transportation improvements in the metro area, producing a HIP that provides a framework for regional transportation investments. While the HIP does not specifically call out freight improvements, it references investments to increase throughput and improve safety generally, which typically have a positive impact on truck movement.

- **Met Council** is the MPO for the region, a federally required planning organization for areas with populations of 50,000 or more. Met Council is responsible for regional transportation planning, including for highway, aviation, and transit systems. In planning

the region's future, Met Council establishes policies that influence the future development of transportation infrastructure, including freight infrastructure and investments. Met Council also creates a regional land use and planning framework (called the Regional Development Framework), which influences freight-related location decisions and a TPP that presents the Metropolitan Council's policies and plans to guide development of the region's transportation system to the year 2030.

Several other public agencies support MnDOT and Met Council in freight planning, or at least help define the framework in which transportation planning conversations take place.

- **DEED**, the state's main economic development agency, informally supports MnDOT and Met Council in planning the future of the regional freight transportation system through sharing regional economic information and data. These data can include transportation information since transportation is an important consideration for many of the region's businesses. MnDOT uses DEED's analyses to identify regional freight needs, develop studies, conduct research, and generally better assess how freight contributes to regional economic development.

- **City and county (local) government agencies** plan for communities' transportation needs and develop policies to support a community's transportation vision, although these policies are not often focused on freight. Local government agencies work closely with other organizations, such as MnDOT and Met Council, to coordinate their policies and funding decisions and ensure they benefit the region.

- The **Saint Paul Port Authority** is the redevelopment authority for the City of Saint Paul and the east part of the metropolitan region. It focuses on brownsfields clean-up and marketing sites for private development on landside properties. It also promotes business development by assisting companies with site selection and helping finance business expansion efforts. The Authority focuses less on planning for river terminal improvements or riverside development and does not produce a comprehensive plan. The Authority currently coordinates with MnDOT's Ports and Waterways Office and participates as a member of the Minnesota Freight Advisory Committee (MFAC) (more information on MFAC is provided later in this chapter). However, beyond these forums there is currently minimal interaction between the Authority, Met Council, and MnDOT.

- **MAC, a public corporation,** was created by state law in 1943. MAC plans and operates the third largest aviation system in the nation, which consists of the Minneapolis-Saint Paul International Airport and six reliever airports in the region. MAC develops strategic and long-term plans that articulate goals and strategies to address the region's air transportation needs. MAC also coordinates with Met Council on planning activities (for instance, Met Council has approval authority over MAC's capital program and long-range plan). MAC is represented on MFAC. However, beyond this forum there is currently minimal interaction between MAC, Met Council, and MnDOT.

Other important freight partners include representatives from the private, nonprofit, and academic sectors, as well as the general public. Several of these partners are outlined below:

- **Private sector freight representatives** own and use many components of the freight transportation system. As owners and users, private sector partners have an clear understanding of freight system needs, challenges, and issues that they can share with

the public sector through multiple venues (such as MFAC, described in more detail later in this chapter).

- **State and city chambers of commerce.** The Minnesota Chamber of Commerce and chambers of commerce for cities in the seven-county metro area represent businesses and conduct activities that support an area's economic development. These organizations can provide important networking opportunities for public sector organizations to communicate with private businesses and learn more about their freight needs and challenges. While Met Council does not work directly with chambers of commerce on freight issues, it has had some involvement with these organizations in planning for major regional highway improvements (which have some implications for freight). MnDOT does not regularly work directly with chambers of commerce.

- The **Itasca Project** is an employer-led alliance of about 50 members, including private sector chief executive officers and leaders from the public sector such as the Minnesota governor, the mayors of Minneapolis and Saint Paul, and the chair of Met Council. The Itasca Project promotes initiatives to advance Minnesota's economic development, civic leadership, and quality of life. One such recent initiative is called Greater MSP, a group developed to market the region to promote new business development.[144] One of the Project's priorities is to promote a unified, comprehensive transportation approach for the region. MnDOT does not currently coordinate directly with the Itasca Project. While the chair of Met Council is part of the Itasca Project, Met Council does not regularly directly coordinate with this alliance.

- The **University of Minnesota,** and in particular its Center for Transportation Studies (CTS), is an important resource for MnDOT, Met Council, and others involved in freight planning. CTS researches transportation topics, including freight issues. MnDOT, Met Council, and others can use the results of this research to help develop freight reports, plans, and other documents. CTS also sponsors an annual Freight and Logistics Symposium (usually held in early December) to convene freight partners from private, public, and nonprofit organizations to share information. The symposium provides a useful opportunity for MnDOT, Met Council, and others to learn about critical trends affecting the freight transportation system and notable practices for addressing challenges.

- The **general public** also plays an important role in the regional freight transportation system both as consumers of goods and users of the passenger transportation system, which interacts with the freight system. There are many opportunities for the public to participate in conversations about the freight system. For example, MnDOT and Met Council conduct extensive public outreach when developing their long-range metropolitan and statewide transportation plans to ensure that public input is heard. When developing its Statewide Freight and Passenger Rail Plan, for instance, MnDOT held two rounds of open houses, addressing over 78 stakeholder groups. Met Council conducts extensive public outreach as part of its metropolitan transportation planning process to ensure that feedback from diverse stakeholder groups is considered as part of its TPP and other planning efforts.

[144] "New Image for the Twin Cities." October 2011. www.startribune.com/business/131565708.html

5.3 Planning for Freight in the Public Sector

The private sector owns and operates most of the freight transportation system outside of highways, and market forces largely determine how and where facilities are located, routes are chosen, and when, how, and what improvements are made. Nonetheless, public sector agencies such as MnDOT and Met Council (in addition to other agencies such as DEED, the state legislature, the Minnesota Department of Public Safety, or federal entities such as FHWA) have a number of points of influence in shaping the overall regional freight transportation system. For example, public sector investment plans (such as MnDOT's HIP) provide a framework for how and where government intends to make transportation investments. Along with policy documents, such as the MnDOT *Statewide Multimodal Plan*, MnDOT *Statewide Freight Plan*, the regional TPP, or a city comprehensive plan, public sector plans and policies guide how the public sector works with other government agencies and organizations, the private sector, the general public, and other partners such as nonprofits and academic institutions. Community and regional land use policies affect where private sector freight partners can locate and expand new facilities. Safety regulations affect when, where, and how freight can operate. Investment incentives such as tax credits[145] or funding arrangements (e.g., public-private partnerships) affect when, where, and how freight improvement projects can be programmed, constructed, operated, and maintained.

Freight is also integrated into public planning and programming through the MnDOT *Road Design Manual*, which outlines specifications for climbing lanes, turning radii, and other design elements that would affect highway freight movement.

Figure 11 (on the next page) illustrates aspects of the transportation planning and project programming process in the region and how freight is currently considered in these activities. The planning and programming process primarily involves MnDOT, Met Council, and local jurisdictions.

Generally, the transportation planning and project programming process involves several stages, including the relatively informal stage of identifying and assessing transportation needs and researching underlying causal factors, moving to the more formal prioritization process, as well as project selection and programming. Freight is a factor in these stages although there are many factors and criteria that MnDOT and Met Council consider when deciding what transportation projects to advance. This chapter, however, focuses primarily on planning and programming activities related to freight.

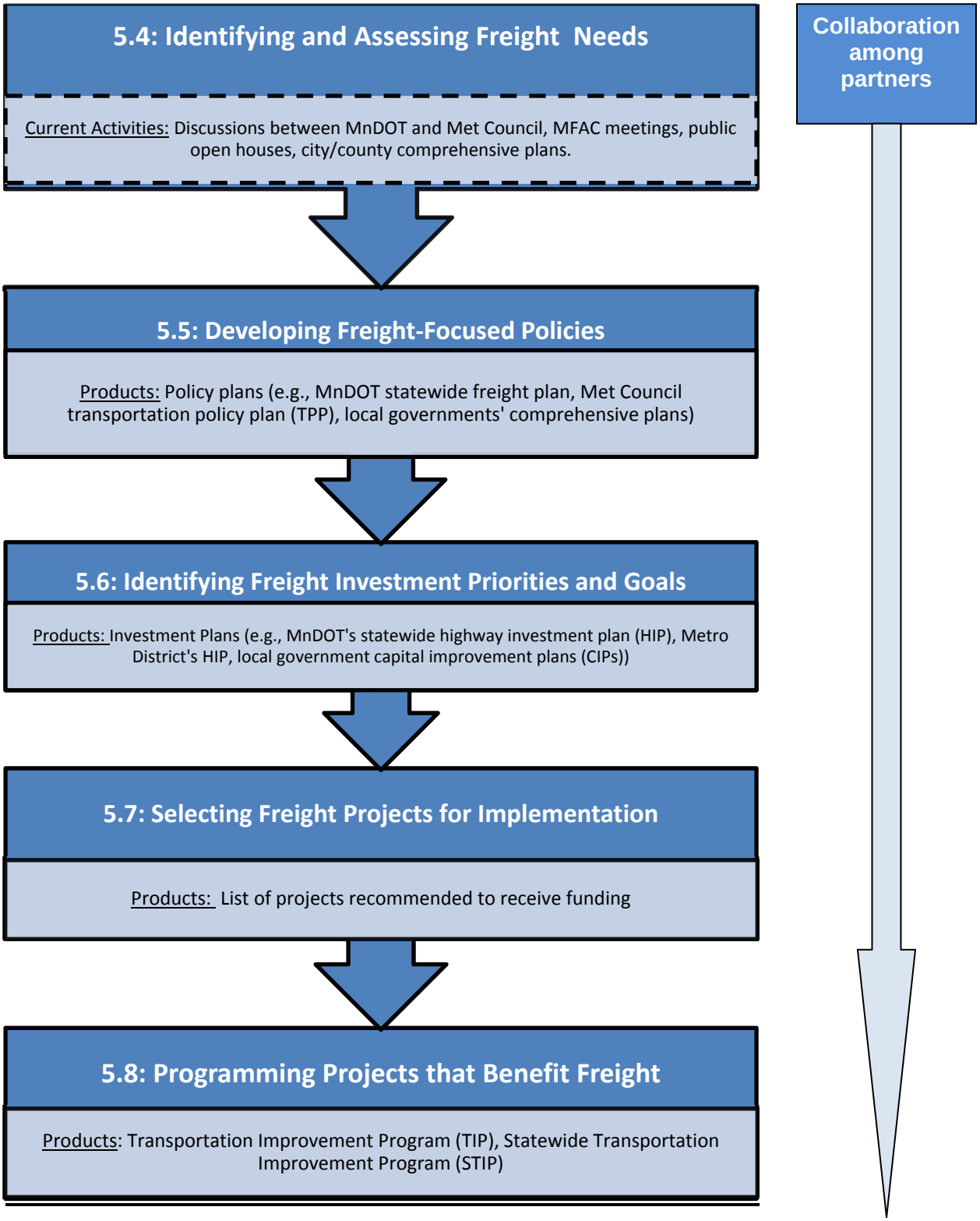
Figure 11 presents a simplified overview of the process, focusing on those activities that affect, link to, or advance freight; in application, stages might overlap or occur simultaneously rather than in a linear fashion. Other activities are critical, such as implementation, operations and maintenance, but occur after a transportation project is programmed and are not shown in the graphic.

As part of planning for the freight transportation system, MnDOT conducts research and studies focused on freight transportation issues, current and future needs, feasible options and strategies, and challenges or constraints. MnDOT's Freight Planning website provides specific

[145] There have been extensive efforts at both the state and federal levels to institute tax credits for freight capital improvements, especially on railroad short lines. A federal tax credit does exist, but is not currently matched by a Minnesota tax credit, which has so far prevented any application of this incentive in the region or state. Nonetheless, tax credits are an important part of present and future investment tools in the region and state.

examples of past and ongoing freight research and studies. Other aspects of the process that advance freight are associated with federal or state transportation requirements. For example, within the seven-county metropolitan area, all federally funded highway and transit projects—including projects that might have freight implications—must be added to the regional Transportation Improvement Program (TIP) to be eligible to accept these funds. The Statewide Transportation Improvement Program (STIP) is then amended to include the TIP.

Figure 11. Transportation Planning and Programming Process: Activities that Advance Freight in the Region.



5.4 Identifying and Assessing Freight Needs

Needs identification and assessment focuses on freight problems and challenges to address or consider as part of developing a regional freight agenda. Public agencies, private organizations, and others come together in a variety of ways to discuss and identify freight needs.

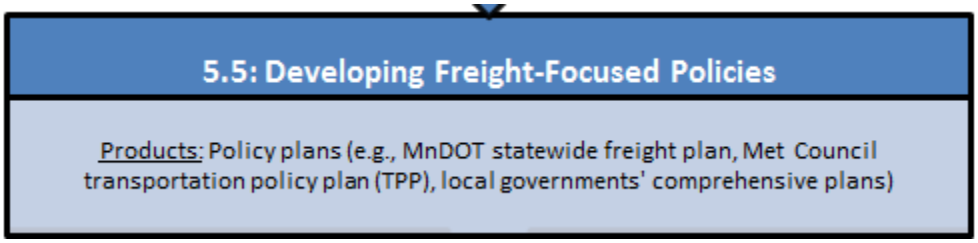
MFAC serves as an important mechanism for MnDOT to inform private sector freight representatives of current state and federal initiatives, plans, and policies and to discuss their relevance for the state and/or region. For example, MnDOT often presents its plans and studies to MFAC for comment. It enables MnDOT and Met Council to learn about industry issues, trends, and needs. MFAC, which includes 50-70 representatives from all modes, generally meets two to three times per year.

MnDOT and Met Council staff may discuss ideas for particular improvements, or may identify new needs from data obtained through DEED, CTS, or from findings and recommendations detailed in freight studies, plans, or reports. There are also opportunities for the public to help identify freight needs such as during interactions with local elected officials (e.g., town hall meetings) or at public open houses and meetings held when MnDOT and Met Council develop their policy plans.

Local comprehensive and capital improvement plans are not required to address freight. Few local governments in the region include freight considerations as part of these documents. MnDOT and Met Council thus have some mechanisms for identifying where local jurisdictions are concerned about freight or how freight impacts their communities. However, these jurisdictions have not recently reported any significant freight issues.

Once freight needs are identified (whether through informal internal discussions, conversations with the public, research and studies, interactions with local governments, or other mechanisms), MnDOT and Met Council reference different types of information, including policy documents such as the statewide multimodal transportation plan or quantitative data, to better understand if a need is worth pursuing.

5.5 Developing Freight-Focused Policies



Public agencies develop policies to guide freight strategies, actions, or investments. MnDOT, Met Council, and local government agencies present these policies in plans. These plans outline a framework in which to prioritize freight needs and ensure that freight improvements advance an agency's overall goals. Organizations reference previously developed freight plans to make sure that new policies and planned investments are consistent with overall goals.

Major policy documents with freight implications are outlined below:

- MnDOT's 2005 ***Statewide Freight Plan*** identifies major freight system trends, needs, and issues and outlines policy directions to guide investment decision-making. The statewide freight plan adapts policies from Minnesota's statewide transportation plan to address freight issues.

  MnDOT's 2010 ***Statewide Freight and Passenger Rail Plan*** establishes a vision for rail in Minnesota to guide future decisions related to the freight and passenger rail system. It also identifies actions that will allow the state to reach this vision, such as addressing critical network bottlenecks. MnDOT also creates other plans focused on particular modes or topics (e.g., highway safety). Together with the *Statewide Multimodal Plan*, these documents are known as the "family of plans."

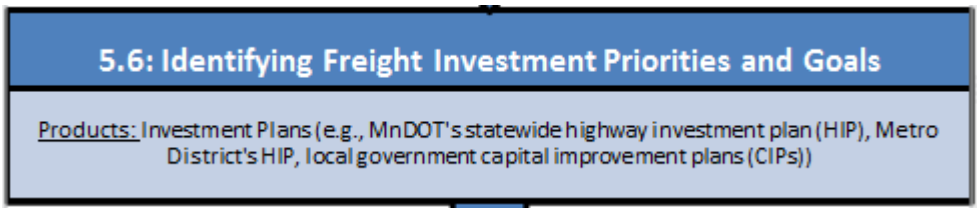
- Met Council produces a long-range transportation planning document, the *Transportation Policy Plan* (**TPP**) for the seven-county metropolitan area, which includes a chapter dedicated to freight. The TPP is influenced by MnDOT's family of plans (policies from the family of plans might help guide what policies are incorporated into the TPP). The TPP outlines components of the region's freight transportation system, describes trends affecting freight in the region, and identifies policies that will help to strengthen and improve it. When Met Council develops the TPP's freight chapter, it reviews MnDOT's *Statewide Freight Plan*, *Statewide Multimodal Plan*, and other plans (collectively called the "family of plans").

  Met Council also develops the Regional Development Framework that establishes a long-range vision and growth and development policy for the region. Given the close connection of regional freight and economic development, this Framework has special significance.

  Minnesota law requires local governments within the seven-county metropolitan area to create comprehensive plans and requires numerous components of the plans, including a transportation element. The comprehensive plans outline how communities want to grow over a 20-year planning horizon and must be updated every ten years. Currently, plans are not required to include freight as a specific plan element. However, several cities and counties in the region do address freight. For example, the *City of Saint Paul Comprehensive Plan* acknowledges freight and includes a policy to "establish freight corridors." Saint Paul also maintains a commercial truck route and parkways map to establish where trucks are permitted and encouraged to travel. Finally, the plan established a goal to create freight corridors to facilitate deliveries and mitigate air and noise pollution in surrounding neighborhoods. This goal somewhat typifies the stance taken by many cities in that it emphasizes protecting neighborhoods from freight impacts rather than on improving freight mobility or preserving ever scarce industrial land. The *Dakota County Transportation Plan* also acknowledges the importance of freight operations in the county for multiple modes.

Local government agencies, the private sector (including MFAC), the public, and others help shape MnDOT's and Met Council's freight policies by reviewing draft policies, identifying needs for new policies, and sharing ideas with public agencies on helpful future policies. MnDOT also invites public agencies, academia, the public, and the private sector to review and comment on its draft *Statewide Freight Plan*.

5.6 Identifying Freight Investment Priorities and Goals



Local governments reference the Met Council's TPP and MnDOT's family of plans when developing their capital improvement programs/plans (CIPs), which identify projects that will be funded over a specific timeframe. MnDOT's Metro District develops its Highway Investment Plan (HIP), which outlines investment goals and priorities, by referencing the TPP as well as MnDOT's statewide freight plan, statewide transportation plan, and family of plans. Metro District's HIP also informs the MnDOT statewide HIP.

Public outreach is an important component of developing investment priorities. When developing the statewide HIP, MnDOT solicits feedback from the public and private stakeholders during a series of outreach meetings. While MFAC does not comment formally on the MnDOT HIP, MFAC members can provide feedback on MnDOT's statewide policy plans. MFAC's input is taken into consideration when MnDOT develops the HIP. MFAC members have also provided informal feedback during the Met Council's TPP update process.

MnDOT also administers several programs that invest in freight, such as the Rail Safety Program, the Minnesota Rail Service Improvement Program (MRSI), the Port Development Assistance Program, and the Airport Maintenance and Operations Program. For example, MnDOT's MRSI program provides low-interest loans (and sometimes no-interest loans and grants) to railroads and rail shippers to improve rail shipping. The MRSI program has been specifically used to rehabilitate deteriorating rail lines and build rail spurs, among other projects.

MnDOT and Met Council also set freight priorities by identifying freight routes eligible for certain categories of funding. As the MPO, Met Council and the Transportation Advisory Board (TAB) define the metropolitan highway system in collaboration with MnDOT. Met Council has also worked with MnDOT and other partners to identify intermodal freight connector routes to be included in the NHS. Freight connectors include local highways and arterials that directly link major freight terminals to the Interstate system.

MnDOT has worked with counties to identify a 10-ton road network capable of withstanding heavy trucks. The network has freight impacts in providing for increased truck access to communities in situations where building new roads or rebuilding existing roads is not possible. Additionally, MnDOT and Met Council worked together with the City of Savage on a project that improves access to a Port of Savage terminal along TH 13, a major freight route.

Further, MnDOT has worked with cities in the region to identify freight facilities and routes that connect them to major highways, analyze routes based on their ability to efficiently move freight, and designate particular routes as intermodal connectors. For example, MnDOT and Met Council coordinated with Hennepin County to designate Lowry Avenue as part of the NHS so that it is eligible to receive federal funds.

5.7 Selecting Freight Projects for Implementation

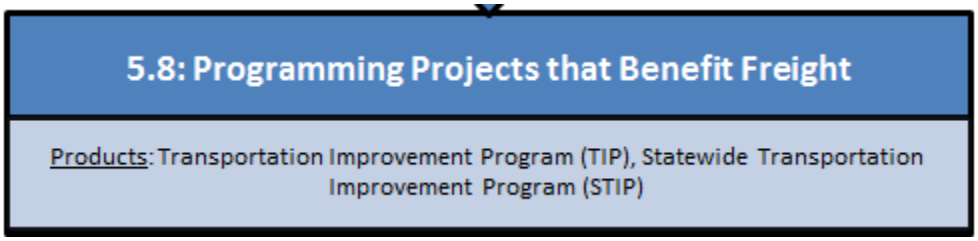
Implementation is defined as methods or processes that deliver or build freight or freight-significant projects and improvements and ensure linkages between freight planning and project delivery.

As part of selecting freight projects for implementation, public agencies identify transportation projects or strategies for the region that are proposed to receive funding. To choose these projects, Met Council, through a biennial regional solicitation, asks state and local government agencies to submit projects that are ready or near to being ready for implementation. The Transportation Advisory Committee (TAC) of the TAB scores all projects using evaluation criteria and forwards its recommendations to the TAB for review. The TAB reviews this list and recommends to Met Council the projects to be included in the region's TIP. The solicitation process requires Met Council staff to work closely with agencies submitting projects for funding consideration.

The solicitation process also involves close coordination with MnDOT. For example, Met Council worked with MnDOT's Office of Freight and Commercial Vehicle Operations to ensure that the regional solicitation process included criteria for freight.

MnDOT sometimes identifies specific projects for which funding is already available from federal and other sources. These projects would be added by the TAB to the regional TIP. Through its Bridge Program, which will provide $2.5 billion in state and federal funding through 2018, MnDOT has identified critical bridges on the state trunk highway system, including in the metro area that are in need of repair or replacement, and recommended an appropriate level of investment. Funding is also available through the TED program for improvements that support businesses statewide, including in the metro area, to make transportation improvements, such as a new interchange that enables highway access to a business park.

5.8 Programming Projects that Benefit Freight



Programming matches a project or action with a funding source. MnDOT and Met Council consider many different factors and criteria, including freight-related factors, when determining what projects to fund. The TIP and STIP formalize a list of projects that have committed funding over a particular timeframe. Met Council adopts the regional TIP after reviewing the list of

recommended projects submitted by the TAB. MnDOT references the TIP to develop its STIP, which documents projects that will use both federal and state funding over a four-year time period.

Programming projects can involve coordination among public agencies to determine how to allocate special federal or state funding packages. For example, Minnesota was awarded about $600 million in federal funds through ARRA. MnDOT, Met Council, and the TAB collaborated to identify how to best allocate ARRA funds. Ultimately, Met Council, the TAB, and MnDOT's Metro District allocated over $300 million for highway, transit and transportation enhancement projects in the region.

Developing the TIP and STIP requires close coordination with a variety of partners. These documents draw on the policy and investment plans developed by state, regional, and local government agencies and thus have used the same outreach processes (described throughout this chapter) involved in developing these plans. In addition to these outreach processes, MnDOT makes a draft STIP available for comment and Met Council holds public meetings and public hearings to solicit feedback on the draft TIP prior to finalization.

Once programmed, constructing and operating a freight project also requires continuing and close coordination with a variety of partners. For example, MnDOT works with railroads and local communities when making grade crossing improvements or other work that could impact the freight rail system. MnDOT's grade crossing program, MRSI, and Port Development Program all involve partnerships with the private sector and other public agencies. Through these programs, MnDOT funds construction of freight-related projects although MnDOT is not directly involved in operating these projects.

Chapter 6: Looking to the Future

This story has demonstrated the essential connections between the freight transportation system and the economic development, vitality, and quality of life in the region.

Natural geography played an important role in the region's settlement and development, but freight transportation infrastructure was, and continues to be, a critical element supporting the region's growth. Over time, various freight modes played key roles in increasing the metro area's population and expanding its industrial base. Today, the region's freight transportation system enables the annual transport of millions of tons of goods worth billions of dollars. Freight movements have made it possible for the region to become a leading economic hub within the U.S., as well as a hub for the state and the Upper Midwest. The region's residents and many of its industries depend on a robust and effective freight transportation system to live and work and for recreation and trade.

Keeping the freight transportation system running and in good shape requires collaboration and coordination among many partners. While private sector organizations own and operate most of the freight transportation system, public sector agencies have important roles to play in planning for the future of the system, setting overall policy directions for transportation, funding projects that benefit goods movement, and owning and maintaining some infrastructure, particularly highways. MnDOT and Met Council, along with other organizations that influence freight planning, already work together in important ways to ensure that the system continues to support a thriving and sustainable regional economic environment.

There are several points of influence where MnDOT and Met Council might have an ability to more strongly influence the direction and impact of the region's freight transportation system in the future. MnDOT and Met Council are already working together to build a more active partnership of cross-agency staff professionals. MnDOT and Met Council also help convene several stakeholders in freight conversations (such as through MFAC).

In the future, MnDOT and Met Council could target outreach to existing or new partners to encourage a more consistent and effective dialogue on freight. Whether this outreach is conducted through informal or formal venues, resulting conversations could help to better surface freight issues and needs that might exist but are not necessarily reflected in the public sector's freight planning process or in associated planning documents, such as local comprehensive plans. These dialogues could then help inform MnDOT and Met Council decision-makers in developing, selecting, and programming projects that positively impact goods movement. Additionally, while MnDOT and Met Council have already planned or implemented a number of projects that benefit freight, they could more explicitly integrate freight into planning and programming activities. For example, MnDOT could develop or promote the use of freight criteria and performance measures to increase opportunities for selecting freight projects (or projects with freight benefits) to include in the STIP.

MnDOT and Met Council currently engage in a number of activities that support a safe, reliable, and efficient region freight transportation system. There are opportunities where these agencies might be able to more strongly affect the region's future freight transportation system. Exploring these opportunities could help strengthen connections between freight, robust economic development, and a high quality of life, while ensuring that the system best serves the needs of businesses and residents.

Appendix A. Examples of Businesses Likely to Rely on Freight in the Region

Several examples of Fortune's "Global 500 companies" that rely on the freight system have already been mentioned in earlier sections of this story. These "Global 500" companies, as well as others who likely rely on the regional freight transportation system,[146] are listed below.[147]

The examples are categorized according to the U.S. Census Bureau's North American Industry Classification System, which classifies businesses according to their primary revenue-generating activity. These examples demonstrate the wide range of businesses that rely on the regional freight transportation system.

Printing and Related Support Activities	**Petroleum and Coal Products Manufacturing**	**Plastics and Rubber Product Manufacturing**
Merrill Corporation	Certainteed Corporation	Toro Manufacturing Corporation
Imagine Print Solutions, Inc.	Flint Hills Resources, LP	Anagram International, Inc.
Deluxe Corporation	Western Petroleum	Northland Aluminum Products, Inc.
Travel Tags, Inc.	Bituminous Roadways, Inc.	Up North Plastics, Inc.
Pgi Companies, Inc.	American Polywater Corporation	The Protomold Company, Inc.
Banta Direct Marketing, Inc.	Expert Driveways, Inc.	Thermotec, Inc.
GLS Companies	Eliot Mfg., Inc.	Eaton Hydraulics LLC
Northstar Computer Forms, Inc.	Tiller Corporation	T. O. Plastics, Inc.
Deluxe Corporation		Thermotec, Inc.
Bolger, LLC		Promed Molded Products, Inc.

Fabricated Metal Product Manufacturing	**Machinery Manufacturing**	**Computer and Electronic Product Manufacturing**
Waterous Company	Donaldson Company, Inc.	Medtronic, Inc.
Modern Tool, Inc.	DataCard Corporation	Starkey Laboratories, Inc.
Colder Products Company	The Toro Company	Rosemount Inc.
Chart Industries, Inc.	3M Precision Optics, Inc.	Lockheed Martin Corporation
RMS Company	Caterpillar Paving Products Inc.	ADC Telecommunications, Inc.
Silgan Containers Corporation	Thermo King Corporation	Cyberpower Systems (usa), Inc.
Hoffman Enclosures, Inc.	Nilfisk-Advance, Inc.	St. Jude Medical, Inc.
Bermo, Inc.	Tennant Company	Ncs Pearson, Inc
Greatbatch-Globe Tool, Inc.	Schwing America, Inc.	Imation Enterprises Corp.
Deltak, LLC	Eaton Hydraulics, Inc.	Empi, Inc.

[146] Businesses with high location quotients were identified as likely users of the freight system. Location quotients are the ratio between a local economy and the economy of a reference economy. This information was sourced from the 2009 Quarterly Census of Employment and Wages, Minnesota Dept. of Employment and Economic Development. Available at http://www.bls.gov/cew/.

[147] The source for the list of business was ReferenceUSA.

Miscellaneous Manufacturing	**Merchant Wholesalers, Durable Goods**	**Furniture and Home Furnishings**
3M Company	Buy Best Purchasing LLC	Select Comfort Retail Corporation
Lake Region Manufacturing, Inc.	Medtronic USA Inc	HOM Furniture, Inc.
Smead Manufacturing Company	Medtronic World Headquarters	Slumberland, Inc.
Smiths Medical	Ziegler Inc.	Gabberts Design Studio & Fine Furnishings
Accellent, Inc.	Indoff, Incorporated	Room & Board, Inc.
3M Company	Manheim Auctions, Inc.	Macy's Retail Holdings, Inc.
Gn Hearing Care Corporation	St. Jude Medical S.C., Inc.	D. A. Distribution, Inc.
Landscape Structures, Inc.	Munters Corporation	Target Commercial Interiors, Inc.
Minntech Corporation	McKesson Medical-Surgical Minnesota Supply Inc.	Wickes Furniture Company, Inc.
Brunswick Corporation	3M Company	Select Comfort Retail Corporation

Air Transportation	**Publishing Industries**
Mesaba Aviation, Inc.	Lawson Software, Inc.
Federal Express Corporation	Lifetouch, Inc.
Ghi-CA Corporation	Merrill Corp
Aviation Charter, Inc.	Northwest Publications, Inc.
MN Airlines, LLC	Optum Insight
	Oracle
	Pioneer Press
	Star Tribune Media, Co.