

Chapter 8

Freight Investment Direction

Overview

The transportation movement of freight plays a critical role in supporting the region's economy, economic competitiveness and quality of life, enabling that allows the region to stand out as an important business and transportation hub. With a safe, efficient, reliable, and robust freight transportation system, the region's residents have access to the goods and materials they need to live and work. Without an effectively operation freight transportation system, and businesses would not be able to distribute their products goods to customers or receive shipments needed to manufacture items products.

As described in the Introduction of this plan, the The growth of the Twin Cities region for over the past 150 years has always been tied to its function as a major trade shipping center. While the region does not carry a major share of national through-moving freight movement on the national scale when compared to major shipping ports such aslike Los Angeles, or rail hubs such aslike Chicago, the Twin Cities region is the primary freight hub for Minnesota and the upper Midwest. The metro region is the major distribution hub center for goods produced and consumed in Minnesota, Wisconsin, North and South Dakota and eastern Montana. The region offers freight connections to national and international markets for businesses throughout Minnesota.

As a freight hub, the Twin Cities region is at the center of many of the mobility and access issues affecting the freight transportation system in Minnesota. Because of this broad reach, the Metropolitan Council does not plan for freight within the region by itselfalone, but works closely with the Minnesota Department of Transportation (MnDOT) and other partners to ensure that the regional freight system continues to support a thriving and sustainable economy for the region and the entire state and beyond.

The federal government's role in freight planning expanded in 2011 with the adoption of the surface transportation bill known as Moving Ahead for Progress in the 21st Century (MAP 21), which included a new National Freight Policy and goals, and provisions for designateding a National Freight Network that will focused on improving freight roadway connections between major metropolitan areas. The Federal Highway Administration was also directed to establish freight system performance measures for states and regions to utilize apply in long range plans. For example, these measures included, such as truck travel time and travel time reliability to monitor congestion on highways over time.

The Twin Cities region is fortunate to be served by fourfive modes of freight transportation, each with its own role in moving goods into, out of, through and within the region. These modes include:

- <u>Trucks Roadways servecarry</u> freight <u>carried in truckson roadways</u>, including long-haul trucks traveling through the region, <u>connections</u> to riverports and rail yards, direct truck service to <u>and from</u> distribution facilities and freight-generating industries such as manufacturers and processing plants, as well as deliveries to <u>a variety of</u> businesses <u>and retail establishments</u> and <u>directly to</u> consumers! homeshouseholds.
- Railroads move a variety of commodities, especially heavy bulk goods and containerized
 freight. The region's rail_roads_lines_provide important local and regional connections
 that serve_to the national railroad network, serving national markets and international
 trade coastal_through east and west coast_ports_for international trade.
- Barges provide water transportation over the inland river system and offer less
 costlylower cost and higher-volume shipping options than other modes, which is a
 particular advantagely beneficial for transporting long distance bulk freight over long
 distances. A number of key industries rely on the affordability provided by water barge
 freight transportation.
- Air freight services allow regional <u>businesses companies</u> to ship low-weight, high-value and/or time-sensitive goods to <u>both domestic and international marketscities in the U.S.</u> and around the world.
- Pipelines provide another less obvious, yet important mode for safe and efficient
 transport of large quantities of fuel products to regional oil refineries. The metropolitan
 area has an extensive pipeline network to convey crude oil, refined oil and natural gas
 for consumption by the transportation, residential heating and manufacturing economic
 sectors.

Other chapters of this long-range plan explain the existing freight system in the region (link to Chapter 1) and future public investments to be made in in infrastructure to support two of these fourthe five freight modes, readways highways (insert link to Chapter 5) and air aviation (insert link to Chapter 9). In addition, the 20162 Transportation System Performance Evaluation (insert link to TSPE) contains a more detailed discussion about freight movement in the region, as does "The Story of Freight in the Twin cities" (insert current link to pdf).

Although the region's roadshighways and airports are publicly owned, many freight-related improvements will beare the responsibility of private entities that own and operateowners and operators of transportation modes and freight terminal facilities. Freight railroads are privately owned and each individual railroad company makes its own plans for future infrastructure investments. The federal Army Corps of Engineers maintains and operates the Mississippi River waterway Waterway system, including the Minnesota River and St. Croix Rivers, so the federal governmentand is responsible for investment decisions onmaintaining and updating locks and dams, and for maintaining the waterways themselves through extensive channel dredging operations on these vital waterways. The pipeline system is owned by private companies and is managed and regulated by the US Departments of Transportation and Energy through the

<u>Pipeline and Hazardous Materials Safety Administration and the Federal Energy Regulatory</u> <u>Commission, respectively</u>

Existing Freight System

A safe, efficient, high-capacity freight transportation system is essential to the economic well-being of the region and the state. Producers and consumers alike bothof freight rely on an effective and efficient freight_transportation system to prosper. Although regional transportation planning primarily focuses on facilities for travel within the region, the region's freight system is inseparable from goods movement nationally and internationally. Like passengers, freight may movemoves by many multiple modes. Private entities own and operate many of these modes and freight terminal facilities. Public freight-related improvements are limited to those components of the transportation system operated and maintained by the public sector, such as highways and connecting roadways, navigable rivers, riverport terminals and airports. The existing freight system in this region includes several modes of freight travel and intermodal facilities.

A map of freight infrastructure <u>systemThe metropolitan freight system</u> in the region is shown in Figure 8-1-5. Maps depicting traffic volumes are depicted in the subsequent figures.

Figure X: Metropolitan Freight System

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Trucks on HighwaysRoads

Within this region, freight_will-continues to move primarily by truck_-Since the majority of freight in the region moves by truck,and highways are continue to be a critical element of the freight transportation system and the region's economic sustainability. Interstate freeways, and other roadways, including state and county highways, and city arterials support the movement of goods through the metropolitan region. Principal arterial highway routes also provide important interregional connectors, providing access to the other major economic centers of the state such as Duluth, Rochester, and St. Cloud.

The I-94/I-90 corridor to Chicago is of particular significance as volumes of freight trucked via I-94/I-90 to and from that city's rail and air freight hubs continues to grow. In 2016 MnDOT adopted a new statewide freight plan which reflects the National Primary Highway Freight System (NPHFS) designated in the FAST act and other Interstate highways within the state which are important to freight movement. Interstate 94 provides a particularly provides an important freight link, connecting the Twin Cities region to other parts of metro areas in the Upper Midwest. Figure 1-6 shows the relationship of Minnesota to the rest of the country via a heat map of truck flows. The heaviest Minnesota-connected truck activity is via along the I-94/I-90 corridor between Chicago and the Twin Cities, and St. Cloud. The next highest Other high-volume truck corridors are include I-94 west to Fargo, North Dakota, via I-94 and along I-35

between Des Moines, Iowa and Duluth. The region's minor arterials, consisting of mostly county highways, are also important in providing "first and last mile" connections to freight-dependent businesses and industries., Minnesota

Operations and maintenance highways are critical, especially snow removal to assure timely all-weather freight delivery. Rebuilding and replacing both bridges and pavement is very important for freight movement. Bridges which have having weight restrictions caused by their due to "poor "conditions can greatly affect trucks which may have to spend by adding a significant amount of time and fuel costs detouring to alternative alternate crossings. Recent freight research with businesses in Minnesota showed that poor pavement quality can cause significant damage to cargo (such as precision instruments and high tech machinery) in addition to causing significant damaging thedamage to trucks itself.

In addition to the PHFS the FAST Act also requires state and major metropolitan regions to designate other "critical urban and rural freight corridors." These routes, as well as the PHFS and other Interstates, are eligible for the FAST act freight specific formula funding discussed above. The critical urban and rural freight corridors in this region are a subset of the Tier One truck highways identified in that study. The region's PHFS and critical urban and rural freight corridors are shown on Fig 8-2x and will beare included in the Statewide Freight System Plan updated in 2017. State Freight Investment Plan, expected to be adopted by the end of 2017. The tiered Regional Truck Freight Corridors are shown in Fig 8-3.

Figure 81-2: PHFS and critical urban and rural freight corridors

Figure 8 3: Regional Truck Freight Corridors Truck Traffic – Minnesota and United States

Figure 1-7 depicts highway commercial traffic, illustrating the significant dependence of freight traffic on the highway system.

Formatted: Normal, Normal - Body

Heavy Commercial Vehicle
Average Daily Traffic Volume (2011)

5 - 1450

1451 - 4850

4851 - 12300

Wright

Reference Items

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Figure 1-7: Commercial Vehicle Traffic

Barges on Waterways

Portions of the Mississippi and Minnesota rivers in the region are navigable by barge via channels and locks maintained by the U.S. Army Corps of Engineers. Barges carry bulk commodities such as grain, minerals, fertilizer, and aggregate to domestic and international markets. Today, there are three-two major river ports in the Twin Cities metro region, including the Ports of Minneapolis and of Saint Paul on the Mississippi River, and the Port of Savage on the Minnesota River. In addition, there are multiple private barge terminals in Burnsville and between St. Paul and Hastings on the Mississippi River. The St Anthony Falls Lock and Dam and the-Minneapolis Upper Harbor were closed in 2015. Freight is hauled by barge more than 1,800 miles downriver from the Twin Cities to the Port of New Orleans where it is loaded onto oceangoing ships for export to global markets. Most recently, sand for fracture mining of natural gas has begun to be transported by barge down the Mississippi and up the Ohio River to river terminals in Pennsylvania. In 2015 the region had roughly 30 active freight terminals that collectively handled more than 9.2 millions tons of barge-hauled freight. The region's three two river ports contain 32 active freight terminals, which collectively handle an average of about 8.4

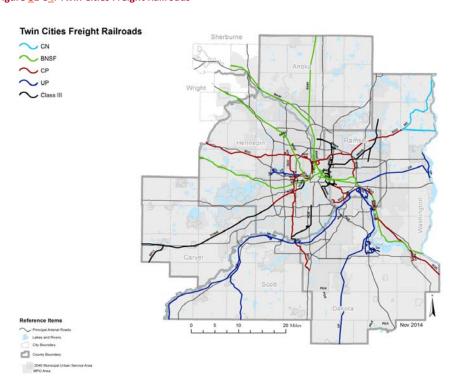
million tons of freight annually. It should be noted that the St Anthony upper locks and the Minneapolis Upper Harbor terminal are scheduled to close in 2015, leaving St Paul and Savage as the remaining river ports in the region.

Railroads

Four Class I railroads operate more than 500 miles of track in the metro region: the-Burlington Northern Santa Fe-Railway, Canadian National, Canadian Pacific-Railway, and the-Union Pacific railwaysroad Company. Class I railroads link-connect the region with-to-major national markets and also carry a large amount of cross-country freight that moves through the region.

Five Four Class III (short line) railroads (Minnesota Prairie Line, Progressive Rail, St. Croix Valley, Twin Cities & Western, and Minnesota Commercial Railroad) operate about 160 miles of track within the region. Class III lines predominantly operate performcarry out local service freight transfers, generally within 100 miles of the region core cities.

Figure 81-84: Twin Cities Freight Railroads



Rail intermodal Ccontainer-based shipping has substantially increased the efficiency of goods movement over the last 30 to 40 years, allowing an easy transition between modes allowing for great increases in efficiency and, through partnerships with trucking carriers, creating multimodal delivery networks made possible through time-saving intermodal transfers.

- There are two major intermodal container terminals in the region, serving all of
 Minnesota and parts of western Wisconsin; the which are owned and operated by the
 BNSF (StSaint Paul Midway Hub) and Canadian Pacific's (Northeast Minneapolis
 Shoreham Intermodal Yard in northeast Minneapolis).
- There is also a bi-modal rail terminal near Highway 280 owned by Union Pacific Railroad
 and operated by Triple Crown with their unique system of "Road-Railer" containers that
 operate with drop-down steel wheels running directly on the rails.
- About 20 independently operated truck-rail transload/warehouse centers also support the intermodal distribution of freight in the metro area.

The railroad industry has continuously grown since the 1980s, and rail lines continue as an increasingly important component of the region's freight system, especially for bulk

commodities and containers. Over the last few yearsSince about 2010 an increasing number of trains traversing the region are have been shipping sand west from Wisconsin and other states to be used in the fracture mining of the Bakken-oil fields in North Dakota, and shipping oil east from North Dakota to Chicago and the East Coasteastern U.S. destinations; althoughhowever, the number of oil trains has dropped in the last two years since new pipelines have begunbegan operation to shiptransporting oil out of North Dakota in 2016s. The oilOil trains are primarily using the BNSF and Canadian Pacific rail lines mainlines, while sand also-utilizes these and other railroad routes lines.

Congestion occurs on portions of the regional rail system, creating seven at least xx major rail bottlenecks in the region as identified in the MN-Minnesota State Rail plan. Hoffman Junction east of Union Depot is the most congested bottleneck in the metro area. The mainline tracks of three major Class I railroads intersect atnear Union Depote ast of downtown St Paul where That junction, where the mainline tracks of three major Class I railroads intersect, handles as much as 5% of the nation's freight rail operations during seasonal peaks (about 10,000 rail cars per day). Growth of freight rail usage is also impacting the region's only existing passenger train service, the NorthStar commuter rail to Big Lake and the Amtrak service between Seattle, St Paul, and Chicago, as these trains share tracks with heavily traveled freight routes—to Chicago and North Dakota.

Air Freight

High-value, low-weight and /or time-sensitive goods are shipped via the air freight system, especially when moving over long distances. High-tech and biomedical companies in the region rely heavily on air freight service to make timely shipments of medical supplies to hospitals throughout the nation.

Minneapolis-St. Paul International Airport (MSP) handles air freight, not only for the Twin Cities metro area, but for most of Minnesota and adjacent parts areas in Wisconsin and North and South Dakota. Major air freight carriers include Federal Express, and UPS- and DHL, as well as commercial airlines. As the headquarters for the former Northwest Airways, MSP became a major regional hub in the 1960s, and today remains a significant passenger hub for Delta Airlines, which merged with Northwest Airlines in 2009, offering direct flights to many worldwide destinations. This has made it possible for the region to continue taking advantage of "belly freight" opportunities for shipping freight in the baggage compartments of passenger aircraft.

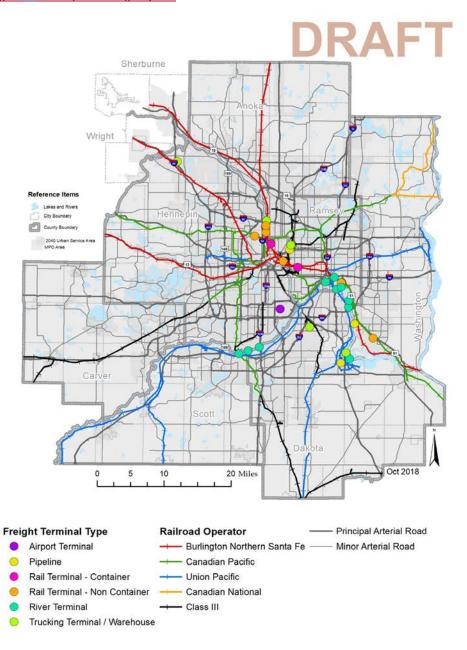
Goods shipped as "belly freight via passenger aircraft represent less than 20%, on average, of overall air freight volume tonnage shipped via moving through MSP; more than 80% is shipped via through the three majorinternational air freight carriers.

Pipelines

Pipelines represent a major infrastructure network developed to safely and efficiently transport fuel products to and within the Twin Cities metro area. While not readily apparent as a transportation mode (as all pipelines are buried underground), they significantly reduce the volume of trucks that would otherwise be required to haul fuel on the region's highways. Major pipelines in the region lead to the region's two major petroleum refineries located in Saint Paul Park and Rosemount and to the Magellan pipeline terminal in Roseville.

All of these modes of transportation have terminal and/or distribution facilities that, combined with the region's roadways, rail lines and river waterways, make up the metropolitan freight system displayed in Figure 8-1.

Figure 8-1: Metropolitan Freight System



Freight Challenges and Opportunities

While the Introduction overview of this plan discusses general challenges and opportunities for transportation within the region, there are some challenges unique to the freight system.

Freight Capacity and Congestion

Economic and population growth in the metropolitan area continues to increase the amount of freight movement in the region. Deregulation of motor carriers and railroads have also added to the total amount of freight through increased competition and lowered shipping costs. Together, these forces will continue to increase the size of and need for an efficient freight transportation system.

All goods movement relies on a high-capacity freight transportation system. Freight shippers, carriers, and other users have expressed concern that the freight system is not adding capacity to meet growing freight needs in the region. Some freight modes are already hampered by an existing lack of capacity. In particular, truck movement in the region is impacted by recurring highway congestion, in addition to that caused by incidents such as weather and crashes. Freight motor carriers have taken steps to avoid driving in peak-congestion periods when possible, but the growing duration and extent of congested highways and local roads reduces the efficiency and competitiveness of the region's freight system.

The significant gOver the last decade, Ggrowth of in fracture mining of the Bakken oil field area in North Dakota and Montana in the last decade has also caused significant congestion increased traffic on the east-west rail mainlines through the northern part of the country. although In recent years, construction of new pipelines has reduced the need to transport oil by train, alleviating some of the rail congestion experienced between 2010 and 2016. Undersized Insufficient capacity of terminal facilities, restrictive or outdated bridges, limited track capacity, and a lack of options for alternative routes and interchanges also contributed to rail congestion.

High Fuel Costs

The cost of fuel used in freight movement, including diesel and jet fuel, has varied but generally has increased in recent years. Some goods movement may shift from trucks to (comparatively fuel efficient) rail or barge modes, but limited rail and waterway coverage to national markets and few intermodal terminal connections may dampen any shift away from trucks. In addition, Class I railroads in the region are already operating near capacity on some corridors.

Demand for ethanol as a passenger automobile fuel has also grown as gasoline prices spiked in recent years. Since Minnesota is a leading producer of ethanol, significant quantities of ethanol must be transported through the state. Ethanol is a caustic fuel that cannot be transported by pipeline, so shipment of ethanol places further demand on limited rail and highway capacity within the state and the metro region.

Connectivity

Freight connectivity is another issue in the region. Some major freight truck and intermodal terminals within the region have poor connections to major highways. Although the metropolitan highway system is designed for loads of 10-tons per axle, some of the rural areas within the seven-county region have an underdeveloped 10-ton road network. These roads are important for freight connections from farms and other businesses in rural areas in the region.

Exacerbating the connectivity issue is the steady growth of large semi trucks for expanded parcel and local delivery networks. Many minor arterials and collector streets in the urbanized area were designed for smaller delivery trucks, and newer traffic control strategies like roundabouts and curb bump-outs are not always designed with consideration for the turning radius needs of these larger trucks.

Freight Safety

Increased concern over safety affects the freight system. Trucking is a regulated industry with strict operating rules that improve safety for freight movement and motorists, but continued enforcement and inspection of vehicles, a state responsibility, is critical to ensuring safe roads, bridges, and highways. Trucking companies develop and implement driver training and apply performance measures to monitor safety and compliance with regulations.

For railroads, safety is also a primary consideration. While the rail freight industry enjoys lower accident and fatality rates than the truck industry, rail accidents are high-profile events with serious liability concerns for the railroad and safety concerns for the public and railroad employees. The recent surge of hHighly volatile Bakken crude oil moving in unit trains through the region has multiplied increased the possible risks in the last 8 to 10 years. involved in this essential transport, with eight daily trains by early 2014 and more expected in the future.

To improve rail safety, the Federal Railroad Administration has developed a National Rail Safety Action Plan. The plan identifies a number of possible actions for the nation's freight and passenger railroads to improve safety, including the implementation of grade-crossing improvements, application of in-vehicle safety devices, and strengthening railcars used in transporting hazardous materials. New technologies and careful routing will allow railroads to identify potential risk factors and make routing decisions that maximize rail safety.

Finally, adequate right-of-way adjacent to rail tracks is an important safety feature to provide a clear space in the event of a derailment or material spill. Encroachment on rail property by adjacent properties or other interests increases the risk of accident and injury.

Freight Security

Security is a major concern in freight transportation. Security includes the protection of goods and commodities as well as safeguards against potential threats of terrorism. Nationwide, initiatives to improve freight security have included electronic tracking of shipments, sealed

freight containers, vehicle-tracking technologies, and inspection of vehicles at security-sensitive facilities and destinations.

Rail trespassing is a safety concern as well as a security concern. Rail bridges and corridors are sometimescan be attractive (though illegal) shortcuts for pedestrians and cyclists, with sometimes fatal results. Nationally, over 500 people die each year in railroad trespass-related incidents. In Minnesota, more people die from pedestrian/rail accidents than from vehicular/rail accidents. Unlike the policies in 48 other states, state and local law enforcement statutes in Minnesota do not support railroad policing of their own property to address this problem.

Rail is also the mode of choice for many hazardous materials, including dangerous chemicals and nuclear material, and rail trespassers pose a security threat to these shipments.

Automated Trucks

The development of automated truck technology is moving very quickly as the size of the trucking industry makes it a lucrative target. Although there is much uncertainty as to when technical and regulatory hurdles will be overcome for any self driving vehicles, widespread usage of self-driving trucks may occur even sooner than for automobiles. Logistics companies will quickly turn over their fleets to self-driving trucks when there are financial incentives to do so, whereas widespread usage of autonomous cars will be dependent on the decisions of individual drivers, who will factor in emotional and cultural as well as financial considerations.

Self-driving trucks have many advantages for the freight industry, as they could alleviate the current and growing shortage of truck drivers and they could remain in service at all times, rather than having to stop for federally mandated driver rest breaks. This would get freight delivered more quickly, as well as make better use of the capital invested in trucks. Even before fully autonomous vehicles are available, the trucking industry is already making use of many advanced technologies such as collision avoidance, speed governors, automatic vehicle location and automatic braking to improve safety and security. Automated lane steering will be added within a few years.

It is likely that the first use of self-driving trucks will be on long haul trips in rural areas, especially on Interstate freeways and other highways with lower traffic volumes and more controlled environments than city streets (e.g., grade-separated interchanges without traffic signals and conflicting non-motorized modes).

As experimental driverless truck platoons are being deployed and widespread implementation of semi- and fully-autonomous trucks is within reach, there are concerns from organized labor within the trucking industry regarding the eventual, but certain, impacts to employment. Today there is a growing shortage of truck operators for long haul shipping, and a rapid deployment of the technology would create the short-term benefit of reducing, or even eliminating the shortage. There will always be a need for manned trucks to haul goods in dense urban areas,

and the current technology used in demonstration projects requires an operator in the lead truck of a multi-unit "road train;" however, in the longer term, many drivers would be displaced by automated technology. The biggest challenge in the adoption of automated trucks may be how to implement the technology at an acceptable pace that remains in balance with the current and projected supply of truck operators.

Freight Terminals and Adjacent Land Use

The metro region has a variety of freight terminals located on rivers, in industrial centers with access to the freeway system, in proximity to railroad main lines, and at Minneapolis Saint Paul International Airport. Trucking terminals can be located in a wide variety of locations, as long as they have roadway connections, and are often specifically located in industrial areas to be near potential shippers and away from housing and other incompatible land uses. However, terminals for rail and barge freight modes are limited to locations which are adjacent to a navigable river or a rail line spur.

Over the last few decades in the Twin Cities there has been increasing competition for land adjacent to the Mississippi River system. Many industrial uses have been redeveloped into residential, non-industrial commercial, or park land as demand for industry adjacent to the river has declined over time. The Mississippi River Critical Area identifies an Urban Diversified district whose the purpose of which purpose is to maintain the present diversity of uses, including the barge transportation, use of the river. However, some cities report that there has been pressure from regulators to constrain these historic and important industrial uses. The Council will continue to work with local units of government, the Department of Natural Resources and park agencies to balance these various uses, as there remains will always be a need for freight riverport terminals activities adjacent to the rivers, especiallyon the Mississippi and Minnesota Rivers in Saint Paul and the Savage/Burnsville areas on the Minnesota RiverSavage, to handle bulk commodities that are most efficiently cost-effectively carried by water transported by barge.

To address congestion, environmental impacts, and the state's-region's economic competitiveness, railroads remain a viable alternative for many of our freight transportation needs. One train can take over 400 trucks off the highway system, at one-fifth of the fuel use and one-third of the cost. However, the growth of intermodal rail/truck movement over the past three decades has also increased conflicts between the-rail intermodal container terminals and adjacent nearby residential neighborhoods. This is of particular concern in the Shoreham area of northeast Minneapolis and the Midway area of Saint Paul. Cities and counties will need to continue working with MnDOT and the Council to ensure an that adequate road access minor arterial system exists to provide accommodate trucks access between these intermodal rail terminals and the principal arterial system region's major highways and freeways.

The Council will continue to work with MnDOT to study wayscities by supporting best practices in planning and development that to-minimize the external impacts conflicts between of these essential freight terminals and residential and commercial land uses activities. With respect to

the inherent tension between industrial and residential/commercial uses, it is worthy to note that railroad operations are unique in that, as interstate common carriers, they are regulated by the federal government and not by state and local governments. However, local governments do retain powers over the truck traffic generated by these terminals through local police powers (including traffic routing), land use zoning, and the design, construction, and maintenance of highway connectors.

River and Rail-Accessible Industrial Land

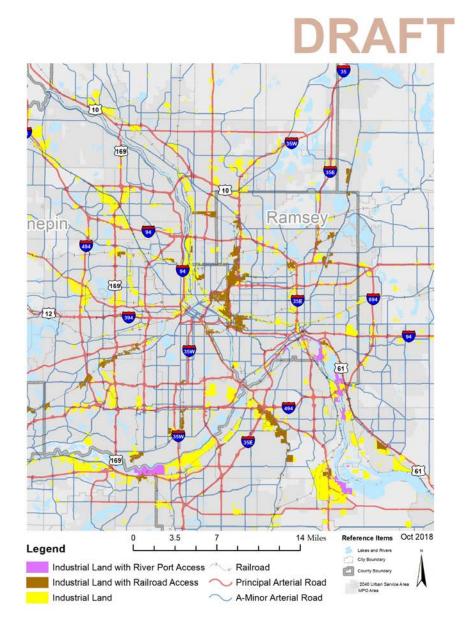
In 2017, the Council conducted an inventory of industrial and manufacturing zoned land throughout the region (see summary report here: insert direct link when available). As part of that effort, an assessment of rail-accessible and river-accessible industrial land was undertaken. The results of that assessment are shown in Table 8-1 and Figure 8-2 below. These data will be tracked over time to identify regional trends in the availability of industrial land overall and of rail and river accessible land for rail and barge-dependent facilities.

Table 8-1. 2016 Metro Industrial Acres by Access Type

		Acres	Total
Land Status	Acres Vacant		Industrial
-River -Accessible Acres	<u>17.7%</u>	<u>82.3%</u>	<u>3.5%</u>
	<u>375</u>	<u>1,739</u>	<u>-2,113</u>
-Rail -Accessible Acres	<u>20.0%</u>	80.0%	<u>16.1%</u>
	<u>1,945</u>	7,782	<u>-9,726</u>
-Other	<u>28.2%</u>	<u>71.8%</u>	80.4%
Industrial Acres	13,702	34,810	<u>-48,513</u>
-Total -Industrial Acres	<u>26.5%</u>	<u>73.5%</u>	100%
	<u>16,022</u>	44,331	<u>-60,352</u>

As Table 8-2 indicates, in 2016 there were more than 60,300 acres of industrial land across the seven-county region. Land accessible to the Mississippi River Waterway system makes up only about 3.5 % of all industrial land, and less than 400 acres of river-accessible land are undeveloped. There are more than 2,100 acres of river-accessible land with existing facilities taken into account. By comparison, there is a much greater amount of land that is or could be made rail accessible to a Class III railroad or an already existing Class I spur track (Class I railroads typically have not provided new and direct industrial access from rail mainlines) with more than 9,700 rail-accessible acres across the region. Of that total, nearly 2,000 acres (or 20%) are not in use and available for development. Considering all industrial land, more than 16,000 acres, or roughly 26%, are potentially available for new development, based on 2016 data.

Figure 8-2. Industrial Land with Riverport and Rail Access (2016)



Freight Investment Direction

Truck Freight Investment Direction

Fixing America's Surface Transportation Act (FAST Act)

The FAST Act was signed into law by President Obama in late 2015 FAST ctand was the first transportation bill to provide dedicated freight funding. It includes a \$4.5 billion competitive grant program for nationally significant freight and highway projects, plus \$6.3 billion in formula-based funds for fiscal years 2016-2020. Minnesota's share of these formula funds is will be roughly \$20 million per year over the five--year period.

Minnesota's share of this new federal formula funding for freight has been allocated for construction of roadway projects through state fiscal year 2022. Additional information about FAST Act funding for freight projects can be found in the *State Freight Investment Plan* (insert link).

The FAST Act established a new National Highway Freight Network (NHFN) with programmed funds exclusive to improving this network. This NHFN incorporatesd all interstates not previously included on the Primary Freight Network created under the Moving Ahead for Progress in the 21st Century Act (MAP-21), plus intermodal connectors included on the National Highway System.

Critical Urban and Rural Freight Corridors

<u>In addition to the interim National Highway Freight Network established by the Federal</u> Highway Administration in the new FAST Act, MnDOT and the Metropolitan Council are responsible for identifying additional roadways to this network through the designation of Critical Urban and Critical Rural Freight Corridors. The law established mileage limits for each state when designating these corridors and Minnesota is limited to 75 urban miles and 150 rural miles, statewide. Due to these constraints a freight investment advisory committee, led by MnDOT in partnership with Met Council, determined that proceeding with a solicitation of statewide projects for federal freight funds should be done ahead of designating specific corridors so that actual demand for highway freight funds could be gauged, and corridors to be designated could be reasonably selected, consistent with areas of greatest need. This is identified in MnDOT's recently updated Statewide Freight System Plan as the Minnesota Highway Freight Program. The resulting freight projects selected for funding, and highway connections to the National Highway Freight Network that were also designated through this process as Critical Urban and Critical Rural Freight Corridors, are shown in Figure 8-3 and Table 8-2 for the metro region. Specific freight project information, including funded amounts through the Minnesota Highway Freight Program, can be found in Table 5-X in the Highway Investment Direction and Plan.

Figure 8-3. National Highway Freight Network in Twin Cities Region

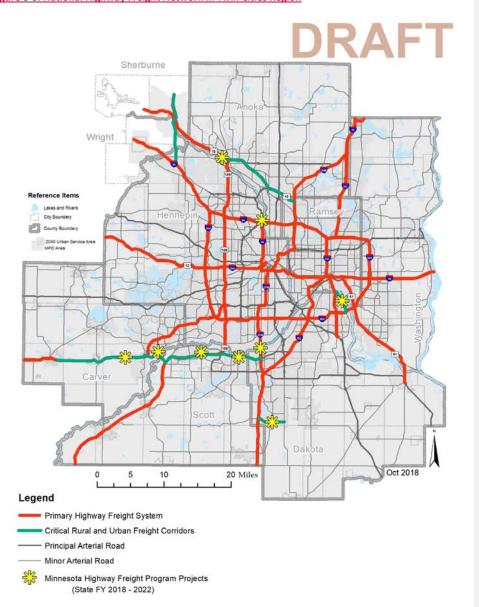


Table 8-2. Critical Urban and Critical Rural Freight Corridors in Twin Cities Region

Critical Urban Freight Corridors						
Agency	<u>Highway</u>	<u>From</u>	<u>To</u>	Length (Mi)		
Carver County	County Road 61	MN 41	<u>Co. Road 11</u>	2.8		
<u>Dakota County</u>	<u>CSAH 70</u>	<u>I-35</u>	<u>Cedar Ave</u>	<u>4.0</u>		
MnDOT	MN 156	<u>I-494</u>	Annapolis St E	<u>3.5</u>		
MnDOT	MN 13	<u>I-35W</u>	<u>US-169</u>	<u>7.2</u>		
MnDOT	<u>US 169</u>	MN 13	MN 41	<u>7.7</u>		
MnDOT	MN 41	<u>US Hwy 169</u>	Co. Road 61	2.2		
		I-35W near	0.5 mile west of			
<u>MnDOT</u>	<u>US 10</u>	Mounds View Blvd.	<u>Thurston Ave</u>	<u>14.2</u>		
MnDOT	MN 252	<u>I-694</u>	70th Ave N	<u>0.7</u>		
MnDOT	MN Hw 101	I-94 in Rogers	US 10/US 169	<u>6.8</u>		
			Sherburne			
<u>MnDOT</u>	<u>US 169</u>	MN 101/US 10	County Rd 33	<u>3.5</u>		
Scott County	<u>CSAH 83</u>	4th Ave East	<u>US 169</u>	<u>1.1</u>		
Critical Rural Freight Corridors						
Carver County	County Road 11	County Road 61	<u>US 212</u>	0.2		
MnDOT	US 212	County Road 11	Tacoma Ave	4.4		
			Carver County			
<u>MnDOT</u>	<u>US 212</u>	<u>Tacoma Ave</u>	Road 34	<u>8.5</u>		
Total Mileage Cr	<u>66.7</u>					

Regional Truck Highway Corridors Study

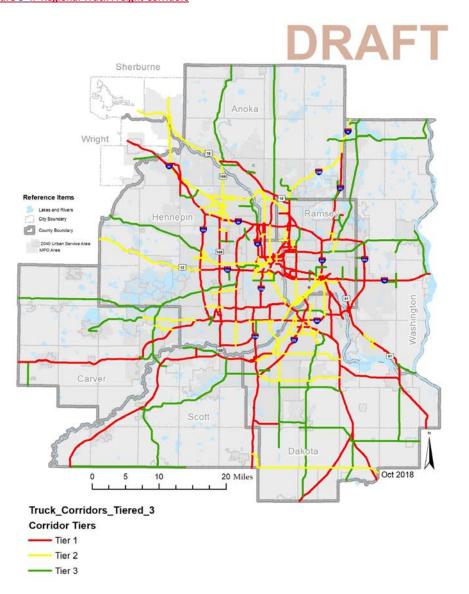
The efficient movement of freight is vital to the economic competitiveness of the Twin Cities metropolitan area, and truck highway corridors comprise a key component of the regional freight transportation system. A Regional Truck Highway Corridors study was completed in 2017 with guidance from a Technical Advisory Group consisting of staff from each of the seven counties, MnDOT, Minnepolis, Saint Paul, the ports of Savage and Saint Paul, as well as a handful of suburban city and private transportation industry representatives. The purpose of the study was to identify and prioritize the region's major highway corridors upon which the trucking industry most relies. The study evaluated the metro area's highway corridors across four primary factors: average annual truck volume, truck percentage of overall traffic, proximity to freight-related economic centers, and proximity to regional freight terminals. The principal and minor arterial highways analyzed were assigned to one of three priority tiers, using a data-driven scoring process. Table 8-3 shows the distribution of lane miles among the tiers and across highway functional class and Figure 8-4 is a map of regional truck freight corridors.

Table 8-3. Centerline Road Miles by Regional Truck Corridor Tier

	Interstate	Principal Arterial	Minor Arterial	Total
Tier One	211	227	108	546
Tier Two	18	111	166	295
Tier Three	0	95	290	385
TOTAL	229	433	564	1226

Nearly all (92%) of the Interstate highway mileage is designated as a Tier 1 truck corridor, which is consistent with their perceived importance to regional trucking overall. For non-Interstate highways, there is a fairly equal distribution between principal (43%) and minor (57%) arterials, overall; principal arterials, designated for longer and higher-speed trips through the region, make up about two-thirds of the non-Interstate mileage for Tier 1 truck corridors, while minor arterials, more closely associated with the last-mile connections to freight centers, make up two-thirds of the Tier 1/Tier 2 non-Interstate truck corridor miles combined.

Figure 8-4. Regional Truck Freight Corridors



Guidelines for Regional Investment

The Council, through its Transportation Advisory Board's regional solicitation process, makes specific categories of federal transportation funds available to MnDOT and local governments for highway improvement programs on a competitive basis. This regional solicitation of federal funds occurs every two years. Final projects selected for this funding are added to the region's Transportation Improvement Program (TIP) for the next unprogrammed, two-year cycle (typically years 5 and 6 in relation to the current 4-year TIP). Many projects funded through different federal highway programs do benefit the movement of freight to the extent they improve overall highway safety, reduce congestion, or increase operational efficiency through transportation system management. Further specifics about these highway programs and the region's project-specific highway investment plan can be found in the Highway Investment Direction and Plan chapter.

As an output of the Regional Truck Highway Corridors Study, the Regional Truck Freight
Corridors shown in Figure 8-4, provide an additional context for evaluating projects submitted
for regional solicitation funds. For this purpose, the Regional Truck Freight Corridors are
designated as regional priorities and should be incorporated as a new scoring criterion through
the regional solicitation. Proposed projects that address safety, congestion, or system efficiency
on segments of a Regional Truck Freight Corridor should be allocated points consistent with the
Tier 1, Tier 2, and Tier 3 priority designations provided in Figure 8-4.

Other Highway Funding Priorities that Benefit Freight

<u>Chapter 5, "Highway Investment Direction and Plan," of this TPP focuses limited financial resources in general funding categories [insert link to Highway Chapter].</u> Investments in all of these areas will benefit truck movements on highways.

Operations and maintenance funding is critical, especially snow removal to assure ensure timely, all-weather freight delivery. Rebuilding and replacing both bridges and pavement is very important for freight movement. Bridges which have weight restrictions caused by their poor condition can greatly affect trucks, which may have to spend a significant amount of time and fuel costs detouring to alternative crossings. Recent freight research with businesses in western Minnesota showed that poor pavement quality can cause significant damage to cargo such as precision instruments and high tech machinery, in addition to damaging the truck itself.

Regional mobility improvements are also important for trucks. The implementation of traffic management technologies on highways, such as traveler information systems, incidence response programs, traffic signal operations and coordination, queue warning systems, and the dynamic rerouting of trucks along congested corridors, may reduce breakdowns in traffic flow. These in turn will benefit freight by maintaining reliability to meet delivery schedules and improving overall safety for trucks and other vehicles.

Implementing <u>"spot mobility" improvements through MnDOT Congestion Management and Safety Program projects</u> will <u>potentially represent the most cost-effective options to relieve</u>

congestion. Some of these improvements, <u>such as on-ramp/off-ramp extensions or collector-distributor auxiliary</u> lanes between freeway interchanges, can alleviate some of the specific congestion problems trucks can create for other vehicles when accelerating up to the same speed as general traffic.

Implementation of an expanded system of MnPASS lanes ,such as those already developed along I-394, I-35W and I-35E, will provide benefits to local and regional freight moved by truck. MnPASS lanes will directly benefit shipments by single-unit commercial vehicles (dual-axle trucks less than 26,000 pounds), vans, pickups and courier cars autos because those vehicles are allowed to "buy in" pay to the lane to receive the benefit of an uncongested trip use these lanes otherwise reserved for transit and high-occupancy vehicles. This is especially beneficial to air freight companies like Federal Express and UPS which transport freight for the biomedical, high-tech and other industries that rely on expedited deliveries of high-value, time-sensitive products.

The development of a MnPASS network may also benefit traditional freight movements by larger trucks because MnPASS lanes can free up capacity and increase traffic flow in adjacent general purpose lanes. By delaying the frequency and reducing the duration of breakdowns in general purpose lanes, the total hours of corridor congestion can be minimized, thereby improving conditions for moving freight.

Future Direction of Freight, Other by Modes

Rail Freight

There has been a surge in rail traffic in and through the Twin Cities area in the last five years decade due to the development of the Bakken oil fields in North Dakota and eastern Montana. The Bakken area initially had very few pipelines but is served by the BNSF and CP Railroads, which enable oil to be shipped through the Twin Cities to Chicago and points east via rail. Westbound shipments to the Bakken area include sand used for hydraulic fracturing of the wells, much of which originates in Wisconsin and southeastern Minnesota and thus must travel through the Twin Cities to North Dakota. New pipeline construction involves a long process of design, permitting, and construction. While completion of some pipeline capacity in the last few years has diminished the number of oil trains, the oilfields are substantial enough to support many years of significant production growth as well as decades of continued production, so this heavysome demand for rail transport of oil is expected to continue. The railroads, especially the Burlington Northern Santa Fe, have made, and will continue to make, investments in the system to resolve delays caused by this significant new-commodity movement. These investments will also be critical to maintaining passenger rail movements to and within the Twin Cities so these delays are will not impacting Amtrak and Northstar passenger rail performance, as well as maintaining efficient freight rail performance for other goods.

The safety of tThis Bakken crude-by-rail flow has also caused an associated concern for community safety in the region. Bakken crude is a highly volatile material, classified by the U.S.

Department of Transportation as a hazardous material requiring specialized testing, handling, and rail equipment regulated by the Federal Railroad Administration (FRA) and the Pipeline and Hazardous Materials Safety Administration (PHMSA).

The volume of these crude oil shipments has increased the amount of hazardous material moving by rail in the metro region 400%, and may increase further since the Twin Cities is a key gateway from North Dakota to the refineries in the East. This has heightened the need for rail safety measures and inspections, better emergency response training for local fire and police departments, and a renewed emphasis for planning sufficient spatial separation between transportation and industrial corridors and residential and employment concentrations. In 2014 the state legislature funded two additional MnDOT rail inspectors to assure tracks in the state are maintained to safely handle oil trains. MnDOT has also recently completed a study of which oil train rail/highway crossings should be given priority for safety improvements.

Rail traffic also includes container-based shipping which has substantially increased the efficiency of goods movement since containers can be moved between modes without the need to repack goods. The region's two primary rail-truckcontainer intermodal terminals, the Canadian Pacific Shoreham Yard in Minneapolis and the Burlington Northern Santa Fe Midway Hub in Saint Paul, are operating near full-capacity. The BNSF recently acquired land in Washington County which could be used for potential expansion of their Twin Cities container rail capabilities intermodal or specialized rail yard operations. Physical restrictions at these current sites have translated to growing congestion in their operations, in turn raising rates for containers destined to or originating from the Twin Cities, and driving container transloading to compete with facilities as far away as Chicago and Kansas City. This has resulted in additional truck traffic, especially on the interstate highways, in the metro area and the Upper Midwest.

While the Canadian Pacific, the Burlington Northern Santa Fe, and the Union Pacific are all considering intermodal terminal facility expansions, the status of Minneapolis/Saint Paul as a second tier destination for container traffic in the eyes of major shipping lines has delayed planning and investment. Public/private initiatives, including those of Export MSP and the Minnesota Grain Shippers Association, are working to develop a solution; these efforts are consistent with the regional outcomes expressed in the *Thrive MSP 2040* emphasis on economic competitiveness. The *Minnesota* MnDOT updated its *Comprehensive Statewide Freight and Passenger State Freight and Passenger Rail Plan* in 2015 where it in which it (2010), prepared in cooperation with the Council, has also identified a listlists the of twelve significant rail bottlenecks in the metro region as shown in Figure 8-5. including virtually all the river crossings and several yards and junctions. The

The foremost most congested bottleneck remains is at Hoffman Junction, in the between Dayton's Bluff area east of and Union Depot in downtown Saint Paul, where three class I railroads operate daily and must cross each other's mainline tracks to deliver freight to several nearby rail yards, while accommodating national freight movements through the Twin Cities. This junction handles up to 120 freight train movements daily (representing about 5% of the nation's freight rail traffic), as well as in addition to two daily Amtrak passenger rail-trains with

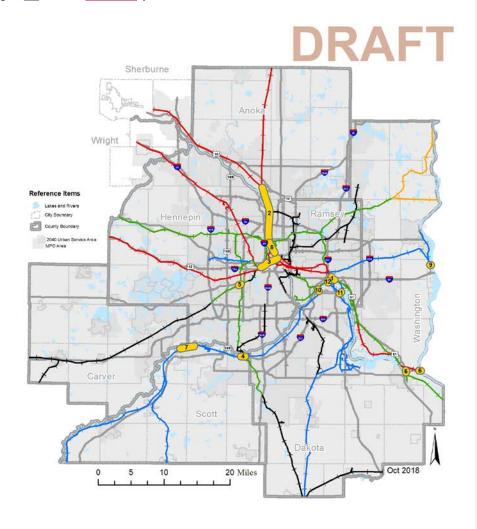
its-accessing to Saint Paul Union Depot. Six <u>Three Class Leailroads regularly operate daily in parallel through this network junction and as they handle freight at .</u> This confluence of trackjunction also directly serves the <u>Port of Saint Paul Port Authority terminals</u>. Five percent of the entire nation's rail traffic travels through this single junction on a daily basis. This <u>Rail traffic freight tonnage is through this areanationwide is forecast expected to grow by up to about 4024% through by 20302045, and this region could expect to see similar increases in rail freight transport.</u>

After completion of the 2010 State Rail Plan, In 2013, the Ramsey County Regional Railroad Authority commissioned completed the East Metro Rail Capacity Study (2012). that That study outlined a 20-year, phased framework for public and private expansion for investment in this east metro rail complex corridors over the next 20 years to handle this the projected growth in freight and passenger rail traffic. The Council cooperated in this project and supports the continued project development concepts outlined in the study, including cooperative planning with the partner railroads and supporting applications for federal and state funding for the public portions of the project work. In 2017, Ramsey County commenced a follow-up study called the East Metro Yards Improvement Project that focuses on the rail lines and yards affected by congestion near Hoffman Junction. This study, to be completed in 2018, is exploring track capacity solutions such as rail-over-rail grade separations and/or additional tracks near rail yard entrances and mainline crossing points in the area.

A <u>significant continuing recent</u> trend regarding the <u>regional region's</u> freight rail system is <u>that there is</u>, and <u>will continue to be</u>, <u>greater the increasing</u> competition between freight and passenger demands for rail service within <u>the</u> limited capacity constraints of established freight rail corridors. <u>Future rail planning</u> studies, <u>and planning</u> similar to <u>that those</u> done <u>in Hoffman Junction by Ramsey County</u>, will be needed in other <u>rail sub-areas and corridors of the region</u> before potential <u>expansions of passenger rail service</u> <u>and additions to are implemented passenger rail service</u>.

As a result of the state's <u>long term</u> vision for enhanced and expanded passenger rail service in corridors shared with freight rail operations, there is a need for long-term partnering between public agencies and <u>rail carriers the railroads</u> to plan, fund and implement rail system improvements that will achieve public sector goals for passenger rail transportation while maintaining the ability of the private railroads to safely operate existing and future freight rail service.

Figure 8-5: Railroad-Metro Rail System Bottlenecks



Legend



Considering the potential growth in freight and passenger rail, communities with rail corridors should expect continued and potentially increased-increasing railroad operations. The Metropolitan Council will work with assist its partners to preserve linear rights-of-way for transportation purposes in the event any rail line is abandoned, if appropriate to do soneeded. However, about half of the railroad mileage that existed in the Metrometro area in 1990 has since been abandoned and few excess or redundant lines remain in the system, so communities should expect few additional railroad-rail line abandonments.

Barges on Waterways

The region's river port terminals are currently concentrated in Saint Paul and Minneapolis along both banks of the Mississippi river, and in the cities of Savage and Burnsville on the Minnesota River. Some are private terminals operating on privately-owned land, while other terminals are private terminals operate on public land leased from the City of Minneapolis and the Saint Paul Port Authority. The head of navigation on the Mississippi was traditionally at St Paul, but construction of the Upper Lock at St Anthony Falls allowed development of the Minneapolis Upper Harbor in north Minneapolis in the 1960s. In in recent the years prior to 2015, traffic through the St. Anthony locks has been below a million tons each year, leading Minneapolis to close their Public Terminal, one of three users in the Upper Harbor. The Army Corps threshold for a lock closure on a tributary, or at the end of navigation, has typically been 1 million tons, which is not currently achieved by these remaining businesses, and in spring of 2014, Congressed passed the Water Resources Reform and Development Act of 2014, which requires that the Upper Lock close by spring 2015.

ThusAfter closure of the Minneapolis Upper Harbor and St Anthony locks in 2015, Saint Paul and Savage will be has the only remaining public riverports terminal areas in the regionarea, making preservation of sufficient riverfront land for barge terminals increasingly important in those areas, especially in Saint Paulto the region. Saint Paul's port is expected to continue as the single largest river barge traffic generator on the Upper Mississippi River above north of St. Louis and in 2013, for For the first time in 2013, the port handled more cargo inbound to the Twin Cities than outbound, reflecting growth and diversification in the commodities being handled by this modecarried by barge.

Maintenance of the entire Mississipi River Waterway system, including dredging of channels and repairing and upgrading of the locks and dams, are dependent on federal funding appropriations to the US Army Corps of Engineers, that are outside of the state's and region's control.

Air Freight

The freight terminal area of Minneapolis-Saint Paul International Airport was relocated and rebuilt during the last decade when construction of the new north-south runway displaced the previous freight area. The new area is conveniently accessed off of State Highway 77 at 66th street, and can also be reached via secured access onto the airport property near 34th Avenue and Post Road. The interchange at I-494 and 34th Avenue was rebuilt in 2013. Due to these

<u>relatively</u> recent upgrades, there are currently no plans for future major investment in air freight facilities during the next 20 years, although there may be minor improvements for freight resulting from ongoing upgrades to the airfield and passenger facilities.

Pipelines

Maintenance and expansion of pipelines are the responsibility of the private oil and natural gas industries. The US Departments of Transportation and Energy have federal management and regulatory authority over interstate pipelines through the Pipeline and Hazardous Materials Safety Administration and the Federal Energy Regulatory Commission, respectively.

Other Freight Planning Activities

In 2017 MnDOT updated its *Minnesota Statewide Freight System Plan*(http://www.dot.state.mn.us/planning/freightplan/pdf/mn-statewide-freight-system-plan.pdf)
that incorporates the National Highway Freight Network (NHFN) designated in the FAST Act
with other Interstate highways within the state which are important to freight movement. The
plan describes Minnesota's freight transportation system and its role in the state's economy,
current and emerging industry trends, the performance of the freight transportation system,
and current and future issues and needs. The plan also provides a policy framework and
strategies to guide future investments in Minnesota's freight system through a Freight Action
Agenda for MnDOT and its partners. This "agenda" identifies key steps to advance strategies
that will improve the efficiency, safety and reliability of the freight system that includes the
newly designated Minnesota Freight Network. The statewide plan works in coordination with
the Transportation Policy Plan by providing broad guidance, while allowing for informed
decision making at the regional level.

Several <u>previous other</u> plans <u>have</u> influenced the development of this <u>regional TPP</u> freight <u>section chapter</u> and provide more detail on the <u>expected</u>-future of freight in the region. <u>These include:</u>

The Minnesota State Freight Investment Plan (MnDOT, November 2017), can be viewed via this link:

https://www.dot.state.mn.us/planning/freightplan/pdf/freightinvestmentplan.pdf
The plan identifies freight investments within Minnesota resulting from new, freightspecific federal funding provided under the Fixing America's Surface Transportation Act
of 2015. It was published as an amendment to the Statewide Freight System Plan
adopted in 2015. The investment plan's purpose is to coordinate federal, state and local
investments on the freight network for the 2018-2027 ten year plan horizon. The plan
lists freight projects funded through the Minnesota Highways Freight Program for state
fiscal years 2016 through 2022.

The <u>draft final-2015 State Rail Plan (MnDOT)</u>, can be found here: <u>http://www.dot.state.mn.us/planning/railplan/index.html</u>

<u>is</u> This rail plan was an update of the 2010 Minnesota Comprehensive Statewide Freight and Passenger Rail Plan (2010) and provides provided additional guidance for rail initiatives and investments, including a vision for effective utilization of the rail network and its future development. It identified rail issues and bottlenecks in the region.

MnDOT also began updating this plan late in 2014, and any information pertinent to the metro region will be incorporated into future updates of the TPP. The Statewide Multimodal Transportation Plan, adopted was updated by MnDOT in 20122016, and encourages greater accessibility and more efficient movement of goods throughout the Twin Cities metropolitan area and Minnesota. The plan can be viewed here: http://www.dot.state.mn.us/minnesotago/SMTP.html

It aimed to improve freight operations and connections for better access to the transportation system and to define priority networks for all modes based on connectivity and accessibility.

In 2013, MnDOT completed the first-ever Minnesota *Statewide Ports and Waterways Plan* (http://www.dot.state.mn.us/ofrw/waterways/pwp.html). The plan includes an overview and history of Minnesota's waterways, industry shipper profiles, and an inventory of facility conditions for metro region ports and locks, as well as for facilities throughout the state's Mississippi River navigable waterway.

In addition to these plans, The Twin Cities Metropolitan Region Freight Study-Initiative (http://www.dot.state.mn.us/ofrw/freight/metrofreightstudy.html) was completed jointly by MnDOT and the Council in 20132012 and provides more details about freight planning in the region.