

HENNEPIN COUNTY FREIGHT STUDY

2016

Study Findings and Recommendations



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Freight Study Purpose and Goals

In 2016, Hennepin County undertook a County-wide Freight Study. The purpose of this study was to understand how the County's transportation networks are being used for the handling of freight. This study is timed and designed to align with freight planning efforts that are underway at the Minnesota Department of Transportation (MnDOT) and the Metropolitan Council (MetCouncil). In 2016, MnDOT completed a Statewide Freight System Plan that, among other things, identified a statewide multimodal Principal Freight Network (PFN), developed freight performance measures, reviewed designation of intermodal connectors in the state, and developed a "Freight Action Agenda" to guide the state in freight-related planning, programming, and policy. At the MetCouncil, an ongoing truck route study is identifying the key corridors for goods movement in the Twin Cities region.

Both the MnDOT and MetCouncil study focused on the National Highway System (NHS) roadways; in addition MnDOT looked at intermodal and multimodal gateways within the state. Many needs, issues, policies, and actions from these studies directly impact Hennepin County. However, at a state or even a regional level, it is difficult to capture the full range of issues affecting freight movements within a County, such as first- and last-mile connections to major industries and consumer markets (many of which are on the County highway network). This study provides a more focused look at freight and freight-related issues within Hennepin County, providing the County with information and tools needed to understand and invest in its network, and strengthening its ability to advocate for key issues with MetCouncil, MnDOT, and other agencies.

This Freight Study had three principal goals as follows:

1. Develop an understanding of how freight moves in Hennepin County. Where are the primary origins, destinations, routes, and clusters of freight and freight-generating activity in the County?
2. Identify key trends in freight activity within the County. Who is using the system now, how is it being used, and what changes can be expected in the future?
3. How does the County's freight system perform? What actions should the County consider to facilitate freight movements?

The primary focus of this study was on the roadway system, and in particular the County highway network and heavy (Class 8) trucks. However freight movement on other highways, local roadways, and on the rail, water, and air systems were also examined. Technical analysis was complemented by stakeholder outreach conducted in late 2015 and early 2016.

This report summarizes the key findings and recommendations from the Hennepin County Freight Study. In addition to this report, three technical memoranda were produced as part of this study:

- **Task 1: Infrastructure and Network Use:** This memo inventories Hennepin County's highways and other freight-significant roadways, rail, air, and water network elements, profiles industrial regions and major freight-generating industries in the region, and documents interviews of public and private sector stakeholders that use or have a role in the County's freight network.
- **Task 2: Commodity Flow Analysis:** This memo analyzes the commodity flows of Hennepin County's highways and other freight-significant roadways, rail, air, and water system elements for a base year of 2014 and a forecast year of 2040.
- **Task 3: Truck System Performance:** This memo measures truck performance on the Hennepin County roadway network, including volumes, speed, reliability, and safety.

Summary of Key Findings

This section provides a short summary of the key findings of the Hennepin County Freight Study.

USE OF THE HENNEPIN COUNTY FREIGHT SYSTEM

The primary mode of transportation for freight to, from, within, and through Hennepin County is the roadway system. Trucks move 83 percent of goods in Hennepin County by weight and 65 percent by value (excluding through traffic), and also provide first- and last-mile connections for goods moving in and out of the County's rail and air terminals.

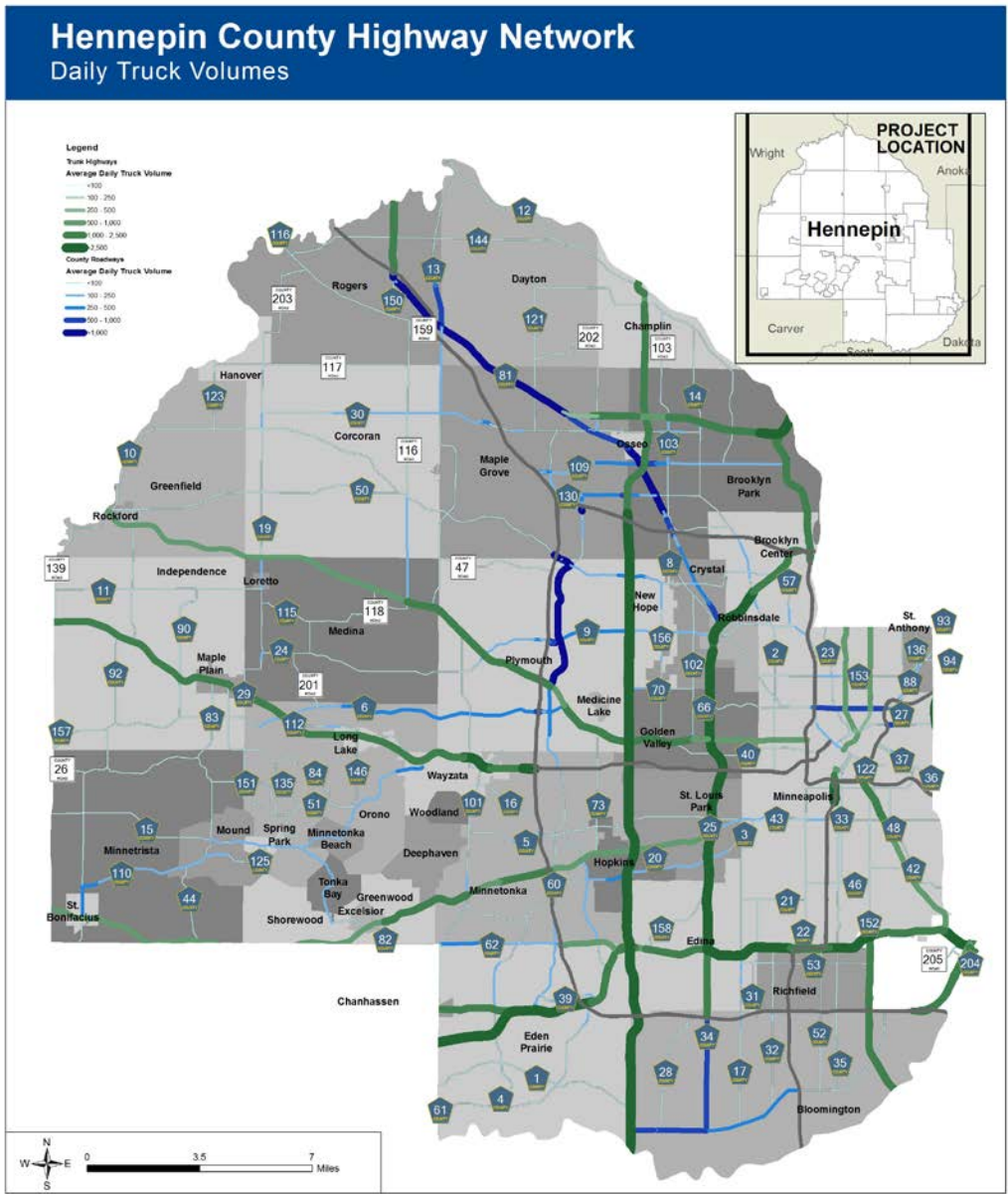
The heaviest freight traffic moves on the County's Interstate system. The most heavily used non-interstate highway corridors in Hennepin County is United States Highway (US) 169, with the former serving as the on/off ramp of I-35. US 169 is a limited access roadway through most of Hennepin County, providing for uninterrupted traffic flows and a relatively high level of service. Of the top ten truck counts on non-interstate locations, 9 of them are located on US 169. This is intuitive as US 169 is a corridor that serves multiple industrial areas that support a range of manufacturing activities (primarily in the printing, fabricated metal, machinery, computer and electronic, and miscellaneous manufacturing industries). Stakeholders identified US 169, State Highway 100 and the Interstate system as the areas of highest concern for truck congestion.

The County State Aid Highway System (CSAH) provides through or bypass routes connecting other roadways, and first- and last-mile connections to local customers and businesses. Portions of the CSAH system carry over 1,000 trucks per day. In particular, the highest volumes are found on County roadways of the following types:

- Routes that parallel key state/interstate routes, e.g. CSAH 61 and 81
- Routes near major lakes including Lake Minnetonka, e.g. CSAH 15, 19, and 110
- Routes that connect to industrial and commercial centers, e.g. CSAH 1 - Old Shakopee Road
- Routes in urban areas, e.g. CSAH 153 (Lowry) and 66 (Broadway)

. Figure 1 shows the estimated daily volumes on the County roadway system.

Figure 1: Estimated Daily Truck Volumes on the Hennepin County Roadway Network and State Trunk Highways



Hennepin County Freight Study
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Hennepin County Public Works

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Source: Cambridge Systematics 2016 analysis of ATRI Truck GPS Data (2015).

Three of North America's seven largest railroads (Class I) serve Hennepin County – BNSF Railway (BNSF), Canadian Pacific (CP) and Union Pacific (UP). BNSF and CP operate extensive mileage and major facilities, while UP's presence is limited. In addition, one short line and one switching railroad, the Twin Cities and Western (TCW) and Minnesota Commercial Railroad (MCR), operate in the County as well. The two largest rail yards in Hennepin County are Humboldt and Shoreham, both owned by Canadian Pacific. Humboldt Yard is primarily a switching and transloading yard handling forest products, plastics, and aggregates. CP's Minneapolis Intermodal Terminal is located at Shoreham Yard, one of two intermodal facilities in the Twin Cities region. BNSF's intermodal terminal is located in St. Paul, although it does include a satellite facility across the Hennepin County border in East Minneapolis. BNSF's Northtown Yard, the largest rail yard in Minnesota, is mostly located within Anoka County with a small portion extending into Hennepin County.

All in all, there are approximately 172 route miles of freight rail infrastructure in Hennepin County, of which about 90 percent (155 miles) are owned by Class I rail carriers. Inadequate rail and intermodal rail access were listed as the top concerns of stakeholders regarding multimodal transportation infrastructure. Many industries currently ship goods via truck to Chicago for further transport by rail and air to markets that are not directly accessible from the Twin Cities, which leads to increased truck traffic on the roadways. County stakeholders¹ (representatives from industries that are intensive users of the freight system) noted that they would prefer increased intermodal rail and air service in the Minneapolis region.

In terms of policy and regulation related to the freight system, stakeholders interviewed for this study were primarily concerned about national or state issues such as labor shortages, safety regulations, and truck size and weight limitations. Few local policies or regulations were mentioned as areas of concern, but some respondents expressed anxiety about the sudden implementation of tolls for freight vehicles, which has occurred recently in some states. Moreover, some identified local land use and zoning policies in Minneapolis that are leading to the de-industrialization of the urban core.

AREAS OF HEAVY FREIGHT ACTIVITY ON THE COUNTY ROADWAY SYSTEM

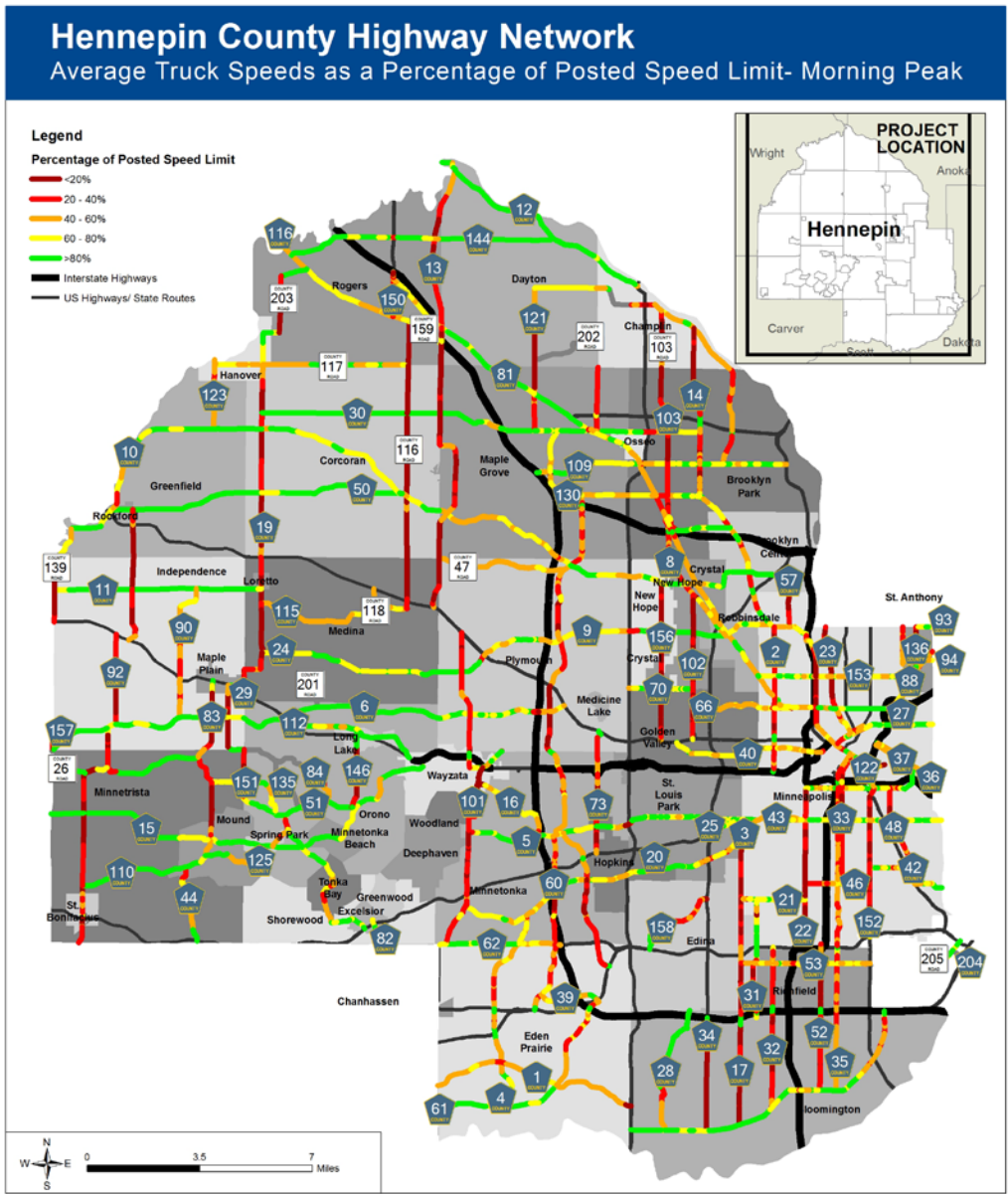
An analysis of truck speed and reliability on the Hennepin County highway network was undertaken for this study. MetCouncil and MnDOT have conducted similar studies on the NHS roadways. The analysis of County roadways finds that much of the Hennepin County system provides for adequate rates of speed given the location and functional classification of roadways. Roadways outside of the County's urban core, generally west of I-494, exhibit higher average truck speeds than those in congested areas. In addition to a lower population density, which is a contributing factor to lower

¹ Additional information on stakeholder interviews conducted for this study can be found in *Hennepin County Freight Study Task 1: Infrastructure and Network Use*.

speeds in the urban core, roadways west of I-494 generally have intersections that are spaced farther apart which allows vehicles to achieve higher speeds and adjust speed to reduce the number of stops.

Several of the County's north-south roadways tend to exhibit slower speeds. For instance, portions of CSAH 19, CSAH 83/CR 110, CSAH 90, CSAH 92, and County Road (CR) 116 all exhibit average speeds that commonly range from 12 to 24 miles per hour. The worst performing roadway was CR 116 which had average truck speeds of 6 and 7 mph during the morning (8:00 – 9:00 A.M.) and evening (5:00 – 6:00 P.M.) peak periods, respectively. Figure 2 shows the morning peak average truck speeds as a percentage of the posted speed limit.

Figure 2: Morning Peak Average Truck Speeds as a Percentage of Posted Speed Limit



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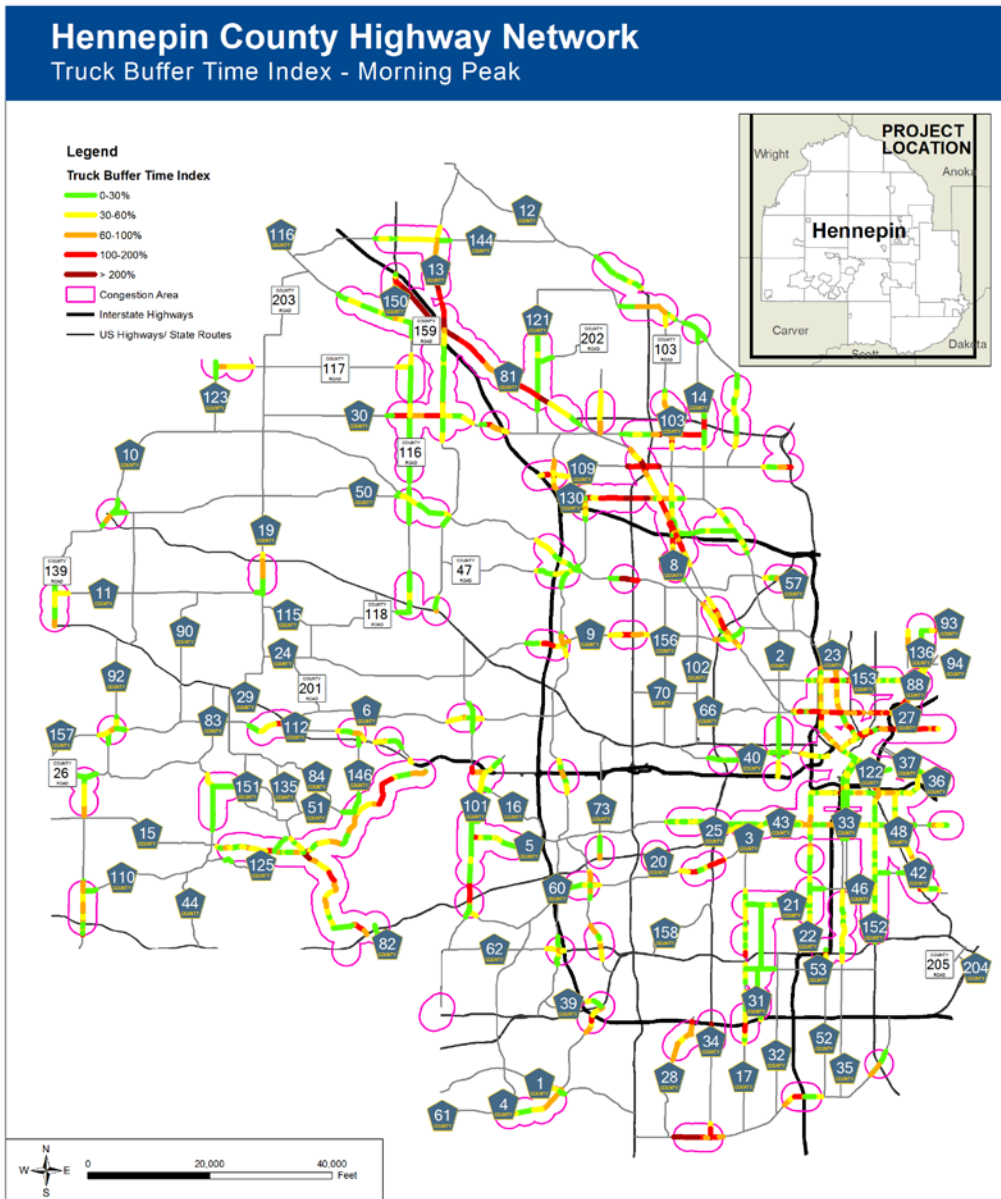
Source: Cambridge Systematics 2016 analysis of ATRI Truck GPS Data (2015).

Much of the County's roadway system provides for reliable truck travel at appropriate speeds. However, there are some roadways that exhibit relatively slow average truck speeds given their surrounding land uses and location within the County. These low speeds could be due to many factors, including roadways with single travel lanes in each direction, limiting opportunities for passing and achieving higher rates of speed. Poor reliability is also found where trucks are navigating roadways of heavy freight and passenger traffic, such as on portions of CSAH 109, 9, 61, and 1, which also have observed average annual daily traffic (AADT) levels greater than 30,000 vehicles. Several of these routes traverse busy commercial and industrial centers located within Brooklyn Park, Plymouth, and Bloomington. In addition, not surprisingly the portions of the routes with the most unreliable travel times also tend to contain major intersections. For instance, the intersection of CSAH 9 with U.S. 169, CSAH 61 and I-494; the intersection of CSAH 61 with CSAH 9 / TH 55; the stretch of CSAH 81 from I-94 to I-694 which contains several intersections; and the stretch of CSAH 81 from TH 610 to U.S. 169 which also contains several intersections. The presence of several large intersections within a relatively short distance can contribute to poor reliability due to the significant amount of control delay imposed at each signalized intersection.

The 2030 Comprehensive Plan identified portions of the Hennepin County highway system that are predicted to experience significant congestion by the year 2030. Many of these areas will require mitigation efforts to alleviate congestion for both passenger and freight traffic. For example, as shown in Figure 3, portions of CSAH 81, 15, 130, and 19 were all identified as exhibiting performance challenges in both analyses. Congestion mitigation in these areas should be considered to support both truck and passenger mobility, otherwise performance along these corridors will likely continue to worsen.

However, there are areas on the County system that provide mobility challenges for freight, beyond previously identified congestion areas. Illustrated in Figure 4, many of these areas are centered around areas with freight-intensive industries, and/or are connections to interstates. Examples include CSAH 61/Xenium Lane between TH 55 and I-394 and CSAH 6 between TH 55 and I-494, an area in Plymouth has a significant cluster of freight-intensive industries. CSAH 1/Old Shakopee Roads also exhibits truck performance issues – both in congested and non-congested areas - which directly center on a freight cluster located along the south side of the roadway. These areas not identified as congested but with truck mobility challenges are potential targets for projects related to freight mobility. Further details are included in the Recommendations section.

Figure 3: Overlay of 2030 Congestion Areas with Morning Peak Average Truck Travel Time Reliability



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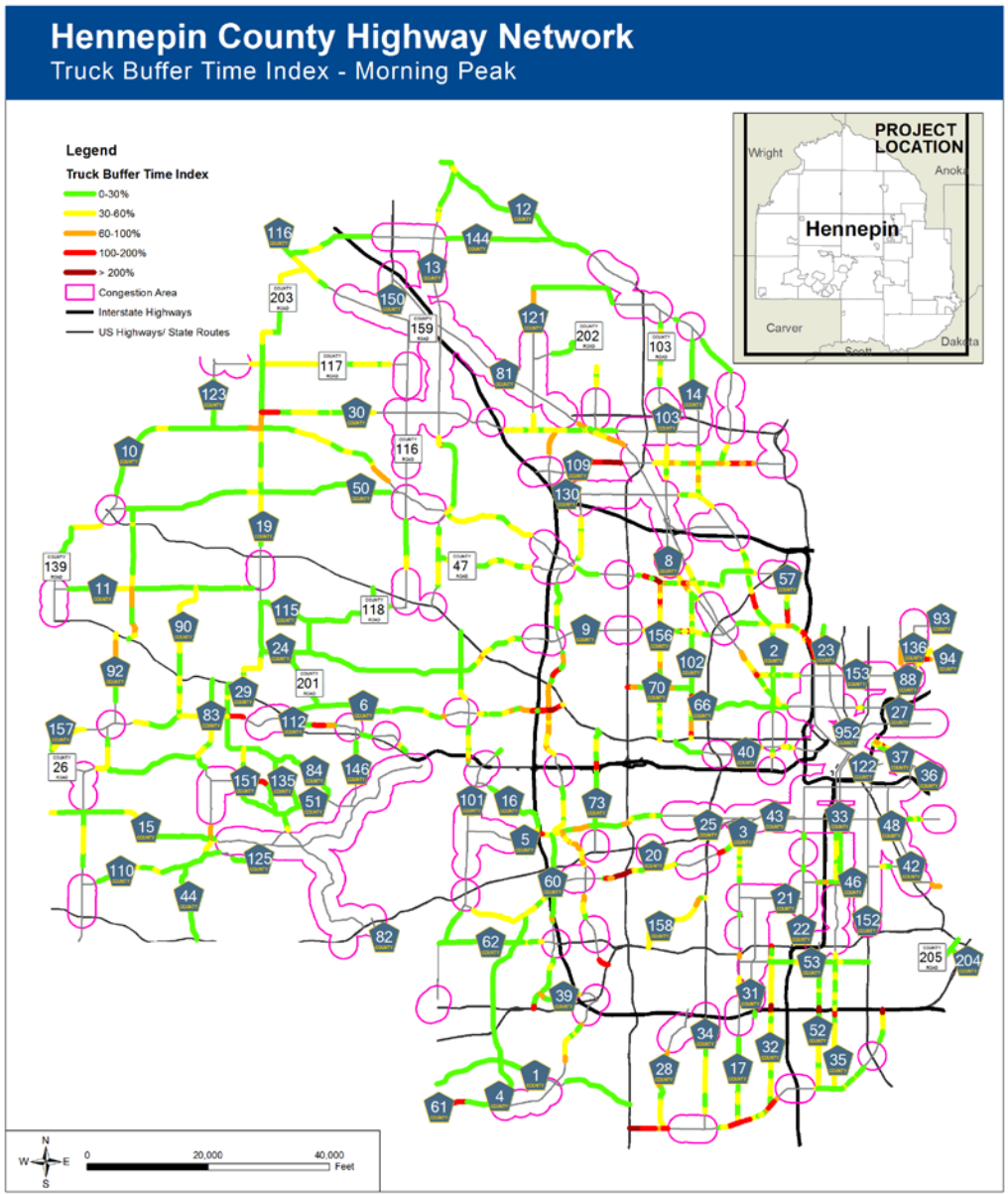
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Source: Cambridge Systematics 2016 analysis of ATRI Truck GPS Data (2015); Hennepin County 2030 Comprehensive Plan.

Figure 4: Overlay of 2030 Congestion Areas with Morning Peak Average Truck Travel Time Reliability



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Source: Cambridge Systematics 2016 analysis of ATRI Truck GPS Data (2015); Hennepin County 2030 Comprehensive Plan.

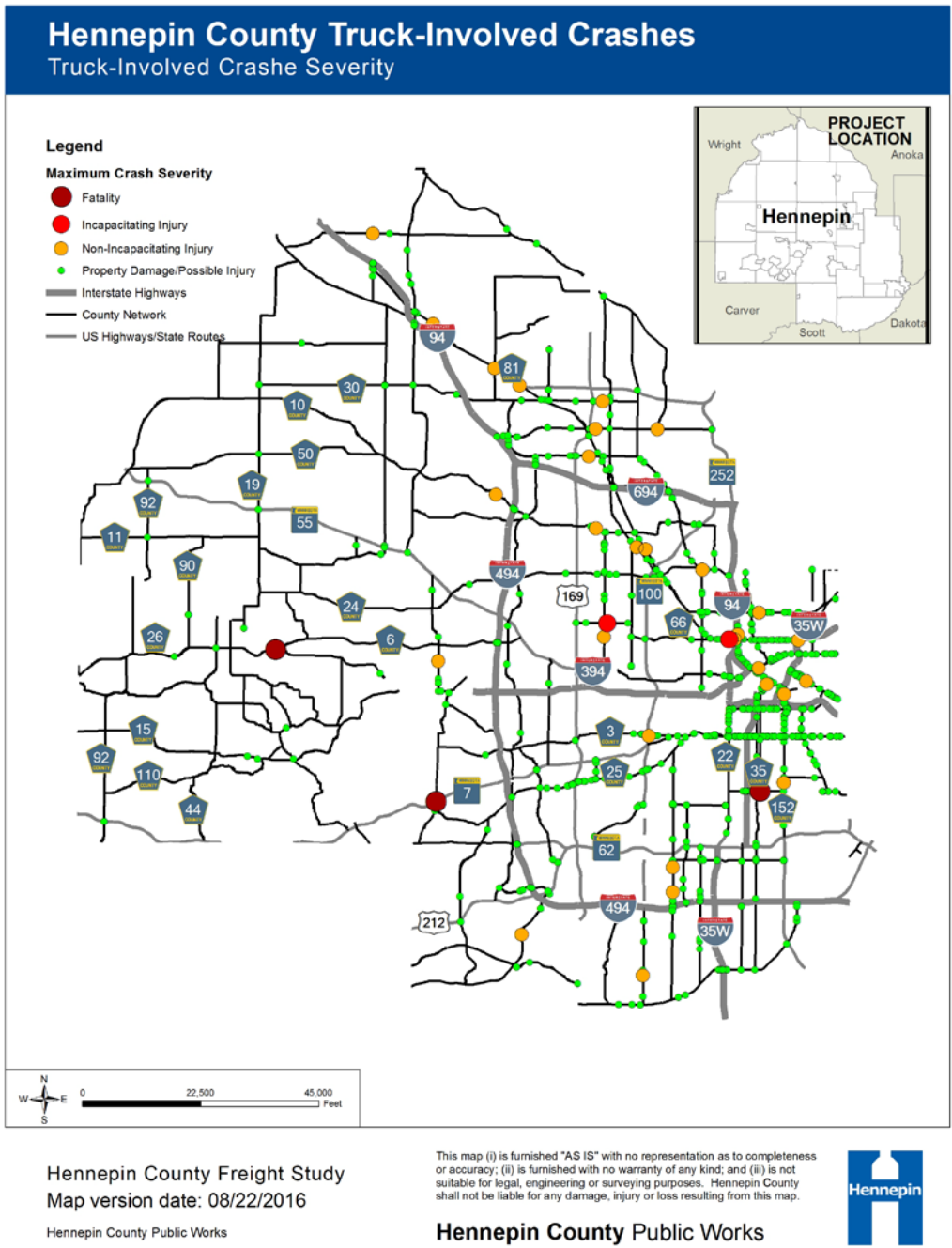
TRUCK SAFETY

Safety data from Hennepin County was analyzed to understand the locations of truck-involved crashes in Hennepin County. Over the 2010 to 2014 time period, there were 893 truck-involved crashes on the Hennepin County highway network as shown in Table 1. The vast majority of truck crashes (at least 82 percent) did not result in injuries. Based on information in the crash reports, 41 crashes (4.5 percent) over the 5-year period resulted in injuries or fatalities. In total, there were 4 fatalities and 208 persons injured as a result of truck crashes from 2010 to 2014. Crashes are clustered around certain routes; for instance, relatively large numbers of crashes occurred on CSAH 3, 81, and 152 as shown in Figure 5. However, crashes along these routes mostly resulted in property damage and no serious injuries or fatalities. Given the magnitude of truck crashes in the State’s largest municipalities, the crash data does not suggest that safety is worse on the County network compared to other areas of the State; however areas at which fatalities occurred are identified as areas of concern. These include the intersections of CSAH 6 (6th Ave.) and CSAH 112 (Wayzata Blvd.), TH 7 and CSAH 101, and CSAH 46 (East 46th Street) and CSAH 33 (Park Ave.).

Table 1: Truck Crash Severity

Crash Severity	No. of Crashes	Percent of Total
Fatality	3	0.3%
Incapacitating Injury	3	0.3%
Non-Incapacitating Injury	35	3.9%
Possible Injury	120	13.4%
Property Damage	732	82.0%
Total	893	100%

Figure 5: Truck-Involved Crashes on the Hennepin County Roadway Network



Source: Hennepin County Public Works.

INTERMODAL CONNECTORS

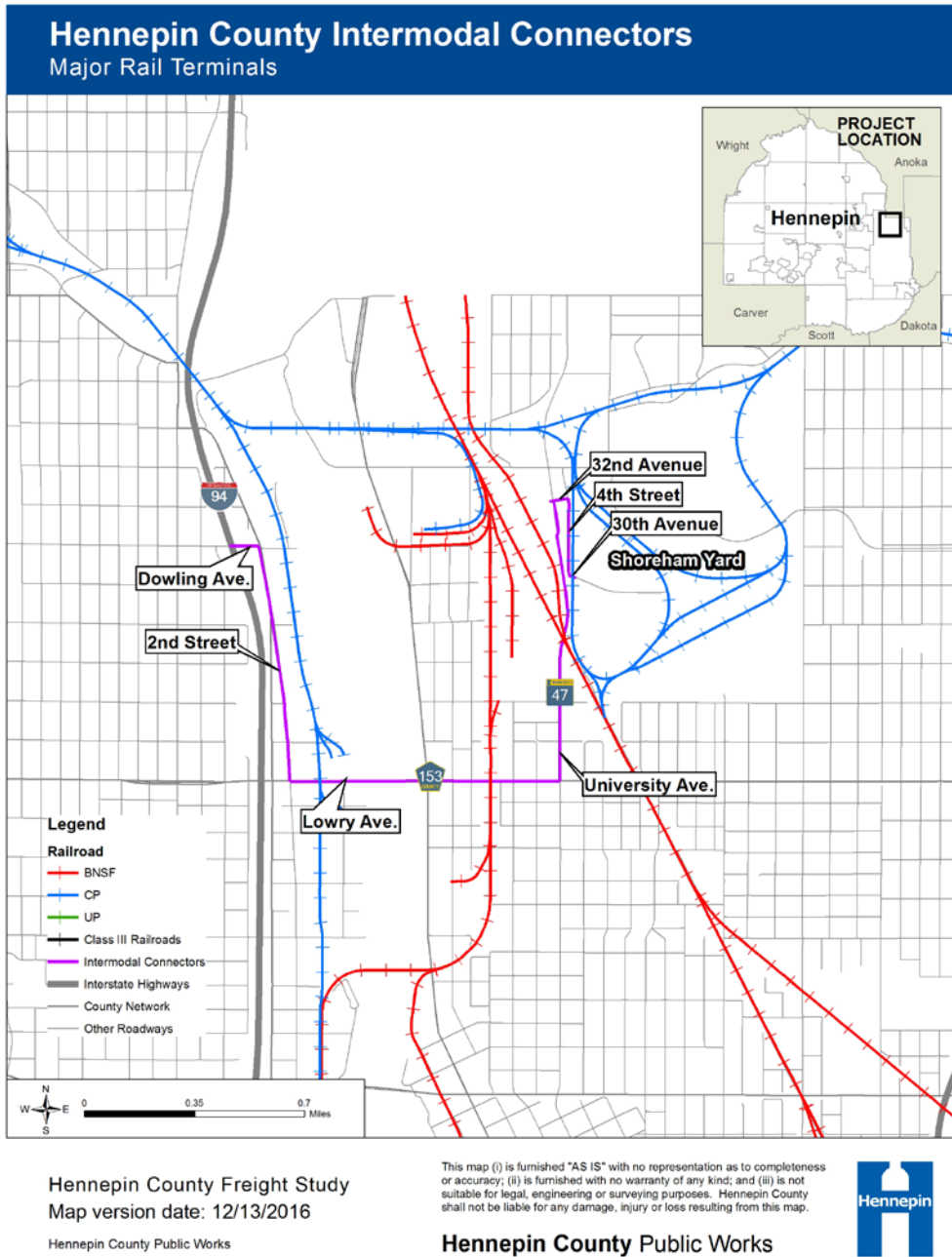
Intermodal connectors are defined by the FHWA as roadways that provide access between the National Highway System (NHS) and intermodal terminals (both passenger and freight). Because they are considered to be critical roadways for providing first- and last-mile connectivity, they are treated as official portions of the NHS in terms of eligibility for Federal funding. The only freight terminal within Hennepin County currently served by an NHS intermodal connector is Canadian Pacific's Shoreham Yard.²

Hennepin County owns and maintains one of the roadways designated as an intermodal connector for Shoreham Yard, CSAH 153/Lowry Avenue. The other roadways that form the intermodal connector are Dowling Avenue, 2nd Street, 4th Street, 30th Avenue, 32nd Avenue, and University Avenue. Shoreham Yard and its intermodal connector roadways are depicted in Figure 6.

The condition and performance of intermodal connector roadways directly impact the terminals they serve. Poor pavement conditions can damage goods transported by trucks or even hinder their ability to access the terminal. In the case of Shoreham Yard's intermodal connectors, their performance is likely most affected by their location in a largely residential area. Trucks must contend with conflicts from passenger vehicle and pedestrians as well as navigate roadways that may not have been designed for truck traffic. Eight truck-involved crashes occurred along this intermodal connector path over the 2010-2014 time period. Two of those crashes resulted in injuries though not of the highest severity. In addition, average speeds on the connector vary from 12 to 66 percent of the posted speed limits.

² The Minneapolis-St. Paul International Airport is served by NHS intermodal connectors to the passenger terminals, but the air cargo facilities are accessed via private roadway connecting to the State system. Privately owned roadways are ineligible for Intermodal Connector designation.

Figure 6: Hennepin County Freight Intermodal Connectors



Source: Hennepin County Public Works; Bureau of Transportation Statistics National Transportation Atlas Database; FHWA Office of Planning, Environment, and Realty National Highway System.

GOODS MOVEMENT IN HENNEPIN COUNTY

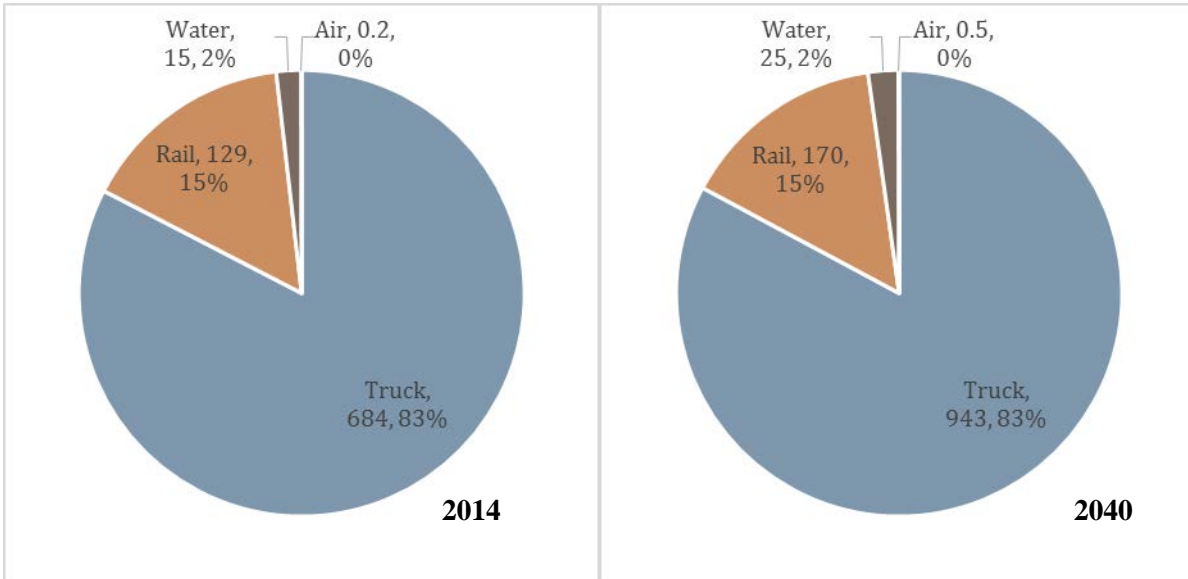
In 2014, Hennepin County handled over 828 million tons of freight via truck, rail, water, and air, as shown in Figure 7. This figure includes goods moving to, from, within, and through the County. The vast majority of commodities were transported by truck, a total of 684 million tons comprising 83 percent of total tonnage. Rail was the second-most utilized freight mode, transporting 129 million tons in 2014 (16 percent of total tonnage). Water freight comprised nearly 2 percent of tonnage, and air freight comprised less than 1 percent.

By 2040, total tonnage is expected to increase to over 1.1 billion tons of freight, a total growth of 37 percent and a compound annual growth rate (CAGR) of 1.2 percent. Tonnage transported by truck is expected to grow by 38 percent to 943 million tons, an annual growth rate of 1.2 percent. Truck traffic most likely to travel on County-owned roadways – inbound, outbound, and intra-County traffic – is anticipated to grow by 30 percent from 48 million tons to 62 million tons. Rail freight is expected to increase by 32 percent to 170 million tons, an annual growth rate of 1.1 percent. Water³ and air freight is expected to grow at higher rates, but overall tonnage will remain comparatively small at 25 million tons and half a million tons, respectively.

Due to data availability, statistics on the value of freight is only presented for traffic moving to, from, and within Hennepin County, excluding through traffic. In 2014, the 69 million tons of inbound, outbound, and intra-County freight transported in Hennepin County was worth over \$103 billion, as shown in Figure 8. By 2040, the total value of freight transported to, from, and within Hennepin County is expected to increase to over \$225 billion, a total growth of 119 percent and an annual growth rate of 3.1 percent.

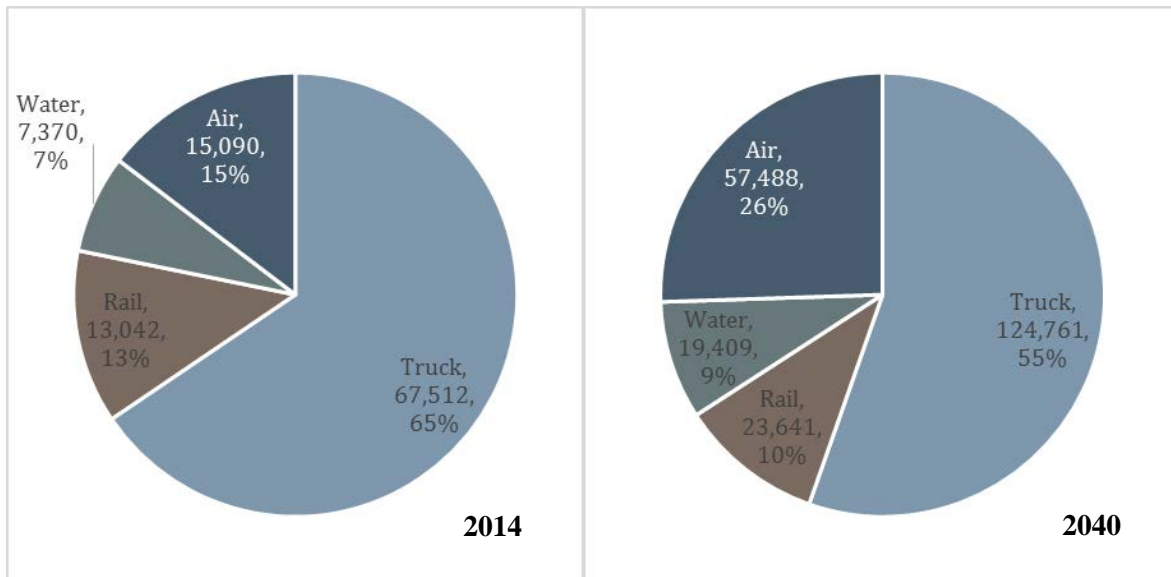
³Although the Port of Minneapolis ceased operations in 2014, there is waterborne freight moving on the Minnesota River, which forms the southern boundary of Hennepin County, and to nearby ports such as St. Paul and Savage. Available data from FAF used to calculate total volumes includes waterborne freight for the greater MSP region.

Figure 7: Hennepin County Mode Share by Tons (in millions of tons), 2014 and 2040



Source: Truck figures from IHS Global Insight Transearch Database, 2014; water figures from Freight Analysis Framework (FAF) 2012 Data; rail figures from STB Confidential Waybill Sample (2013); air figures from Passenger and Operations Reports 2015, Metropolitan Airports Commission (MAC).

Figure 8: Hennepin County Mode Share by Value (in millions of dollars), 2014 and 2040 (Excluding Through Traffic)

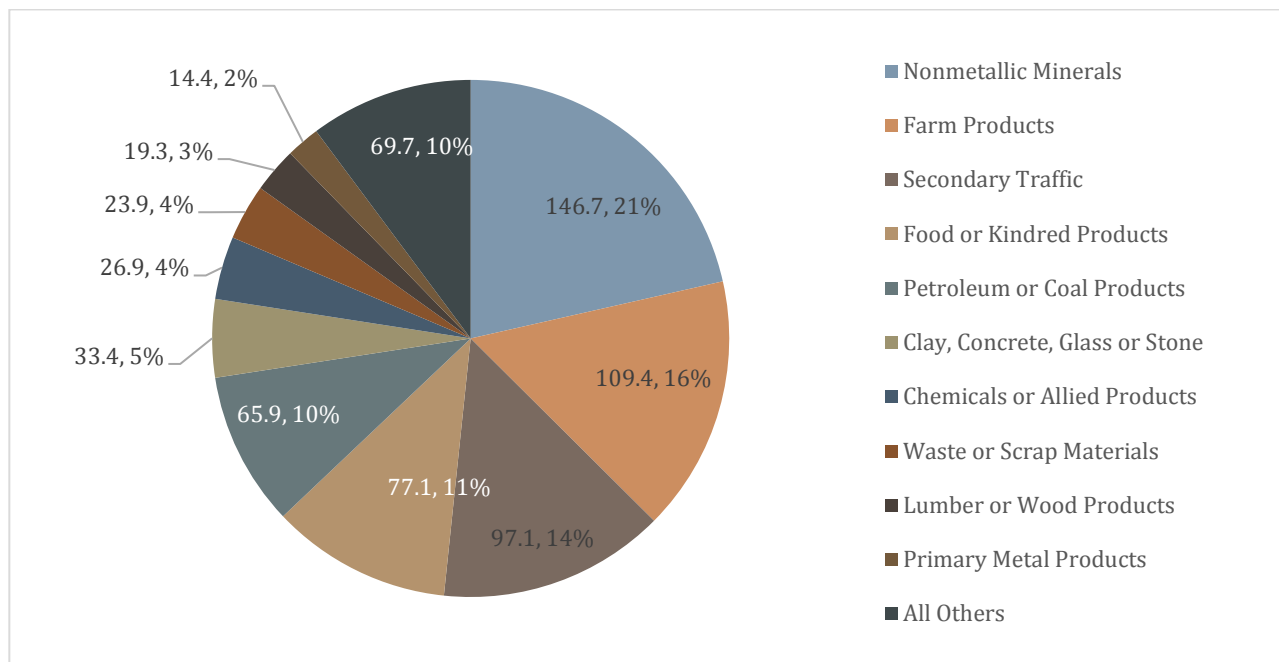


Source: Truck figures from IHS Global Insight Transearch Database, 2014; rail, water, and air modes from Freight Analysis Framework (FAF) 2012 Data.

Note: Value includes inbound, outbound, and intra-County traffic only.

A wide range of commodities is shipped via highways, and even goods shipped primarily using another modes often rely on trucks for last-mile connections to and from their origins and destinations. Figure 9 details the top commodities moved on the County’s highway system. Nonmetallic minerals, farm products, and secondary traffic lead truck volumes in terms of tonnage. The secondary traffic commodity category entails movements of consolidated consumer goods between warehouse and distribution centers.⁴

Figure 9: Hennepin County Major Highway Commodities, 2014



Source: IHS Global Insight Transearch Database, 2014

The vast majority of goods handled by rail travel through the County without stopping. In 2014, 95 percent (4.3 million units and 122 million tons) of rail freight in the County was through movements. Much of this traffic was comprised of crude oil, ores, and grain travelling from the Upper Midwest and Great Plains to Chicago and Eastern markets. About 6 million tons of rail freight (194 thousand units) originated and/or terminated in Hennepin County facilities, including CP’s Humboldt and Shoreham yards.

⁴ The commodity groupings used in this report are defined by Standard Transportation Commodity Code (STCC) and Standard Classification of Transported Goods (SCTG).

There are currently no operating water ports in Hennepin County. The Upper St. Anthony Falls Lock and Dam closed permanently in late 2014, closing access to the Mississippi River System beyond River Mile 853.9 in downtown Minneapolis. Previously, three river terminals were located in Hennepin County, processing about 600,000 tons annually. The river ports in St. Paul and the terminals along the Minnesota River in Savage processed substantially more than the Hennepin County facilities, with 5.5 million tons and 2 million tons annually, respectively.

The Minneapolis St. Paul Airport (MSP) is a hub for both freight and passenger traffic. According to the Metropolitan Airports Commission (MAC), over 219,000 tons of freight shipped by air to and from MSP airport in 2015. Expedited cargo, which refers to package service by integrated carriers such as FedEx and UPS, comprised the vast majority of tonnage at MSP in 2015 at 92 percent.

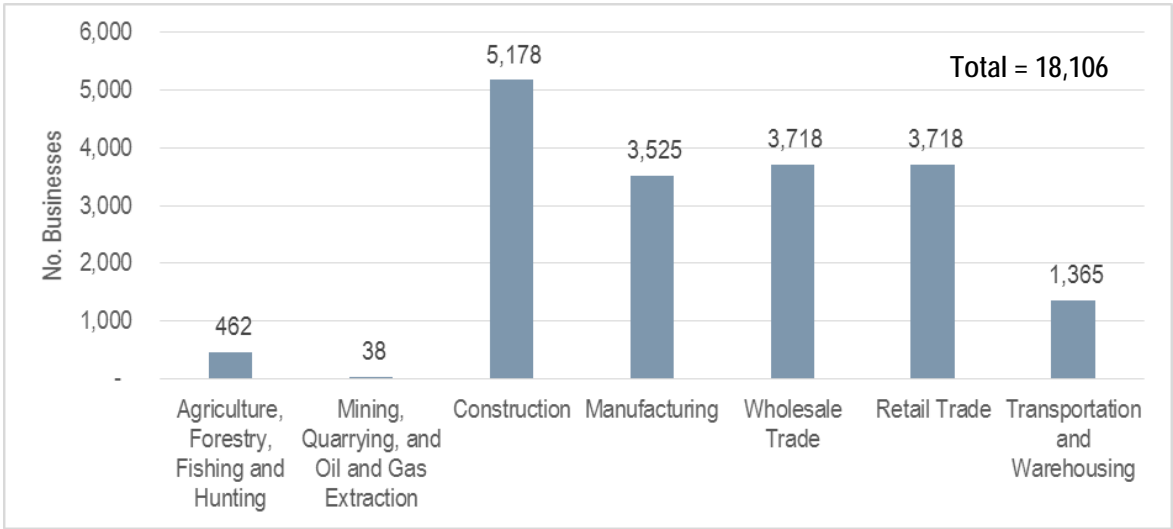
Hennepin's freight system provides connections to many domestic and international trading partners. For goods traveling via truck, the rest of Minnesota outside Hennepin County was by far the largest trading partner at 40 million tons. Other top trading partners include Iowa, Wisconsin, and the East-North Central and South Atlantic regions of the U.S. The East North Central region is also the County's largest trading partner for rail traffic. Chicago and Miami are key air trading partners, and also serve as gateways to international trade.

FREIGHT-INTENSIVE INDUSTRIES IN HENNEPIN COUNTY

Freight-intensive industries are those for whom the production, consumption, or handling of goods are central to their business. Agriculture, mining, construction, wholesale and retail trade, manufacturing, and transportation and warehousing all fit into this category. Of the nearly 78,000 businesses throughout the County, as listed by Dun and Bradstreet Hoover's Business Data (2014), twenty-three percent are comprised of freight-intensive industries. Among the freight intensive industries, the construction sector accounted for almost one-third (29 percent), followed by manufacturing, wholesale trade, and retail trade companies, each comprising between 19 and 21 percent. Figure 10 presents the distribution of businesses per sector.

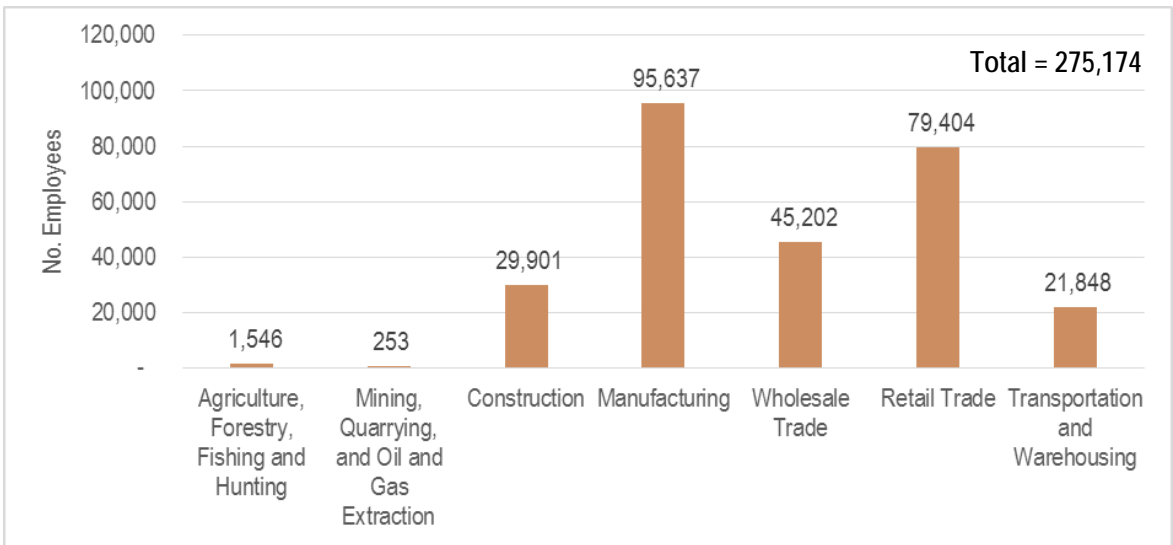
From the standpoint of employment, freight-intensive industries accounted for 33 percent of the 843,000 jobs in the County in 2014. The manufacturing sector employs the most number of people, 35 percent of those in freight-intensive industries, followed by retail trade (29 percent) and wholesale trade (16 percent). Figure 11 presents the distribution of employees per sector.

Figure 10: Number of Businesses in Hennepin County per Industry



Source: Dun and Bradstreet Hoover’s Business Data (2014)

Figure 11: Number of Employees in Hennepin County per Industry



Source: Dun and Bradstreet Hoover’s Business Data (2014)

Although there are a larger number of construction businesses relative to other industries, manufacturing firms generally are larger, thus producing more activity. As a result, manufacturers will be generating more freight overall compared to other industries.

Several freight-intensive businesses in the County employ sizeable portions of the area's population. Within the manufacturing sector, Honeywell International has eight facilities with over 9,500 employees. Graco and General Mills each have nine facilities employing 2,195 and 1,297 people, respectively. The dominant company in the wholesale trade sector is Cargill, which has seven manufacturing facilities employing over 3,400 people. In the retail trade, the grocery chain Supervalu has 13 facilities employing over 1,600 people. The company also has a strong presence in the transportation and warehousing sector, with 2,600 people employed by Supervalu Transportation. However, United Parcel Service (UPS) tops the sector with over 3,500 employees at two main facilities.

AREAS OF HEAVY FREIGHT GENERATING ACTIVITY

Hennepin County and the greater Twin Cities metro area have long served as the regional trade center and logistics hub for Minnesota and the greater Upper-Midwest. Minneapolis and its immediate suburbs has been the anchor of this activity, due to its proximity to the transportation network, workforce, and developable land. In recent years, population growth combined with changing land use in the urban core has instigated a shift in where freight intensive activity is taking place. Growing demand in urban living has increased development pressure on industrial land, raising development costs and creating potential friction with industrial uses. Peripheral cities offer more land and incentives to industrial uses that often are not attractive neighbors for other land uses. The net effect is that manufacturing, distribution, and other freight-generating industrial activity is becoming more dispersed into the suburban and rural areas of Hennepin County, as well as adjacent counties to the north and west.

Concentrations of business activity throughout the County have been identified by the Minnesota Department of Employment and Economic Development (DEED). As shown in Figure 12, these "economic clusters" are grouped into five classifications: Professional, Activity, Diversified, Industrial, and Major. Industrial and Major Clusters are key locations for freight activity. Professional clusters are those where more than half of all jobs are in the education, healthcare, or other professional fields (such as the Phillips neighborhood south of downtown Minneapolis); activity clusters represent recreational and shopping districts, such as the Hennepin Avenue corridor in Minneapolis, where more than 40 percent of jobs are in retail, hospitality, or other services; diversified clusters are job centers not dominated by a handful of employment types; industrial clusters are those where more than half of all jobs are in freight-intensive industries (i.e. industrial, transportation, etc.); and major clusters represent very large employment centers with more than 50,000 jobs (i.e. downtown Minneapolis, the

University of Minnesota, and the Minneapolis-St. Paul International Airport). Out of 59 total clusters in the County, 15 are identified as Industrial Clusters, found throughout the eastern part of the County along major Interstates.

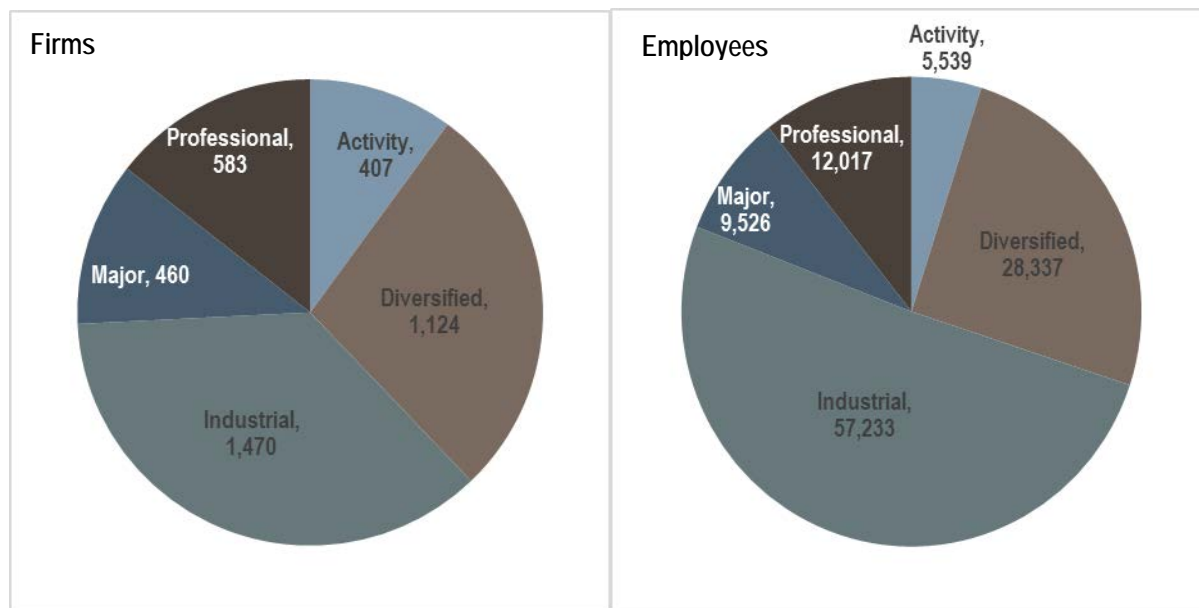
Figure 11 shows the number of firms and the number of employees by each of the five cluster categories in the County. The Industrial Cluster category is the largest by firms and employees, with 1,470 firms and 57,233 employees. This type of cluster is highly dense with employment and economic opportunity compared to the other cluster types.

In addition to analyzing clusters identified by DEED, this study conducted a brief review of four clusters of heavy freight activity. These are:

- Brooklyn Park: US 169 and CSAH 109
- Maple Grove: CSAH 81 and CSAH 109
- Plymouth: I-494 and TH 55
- Rogers: I-94 and TH 101

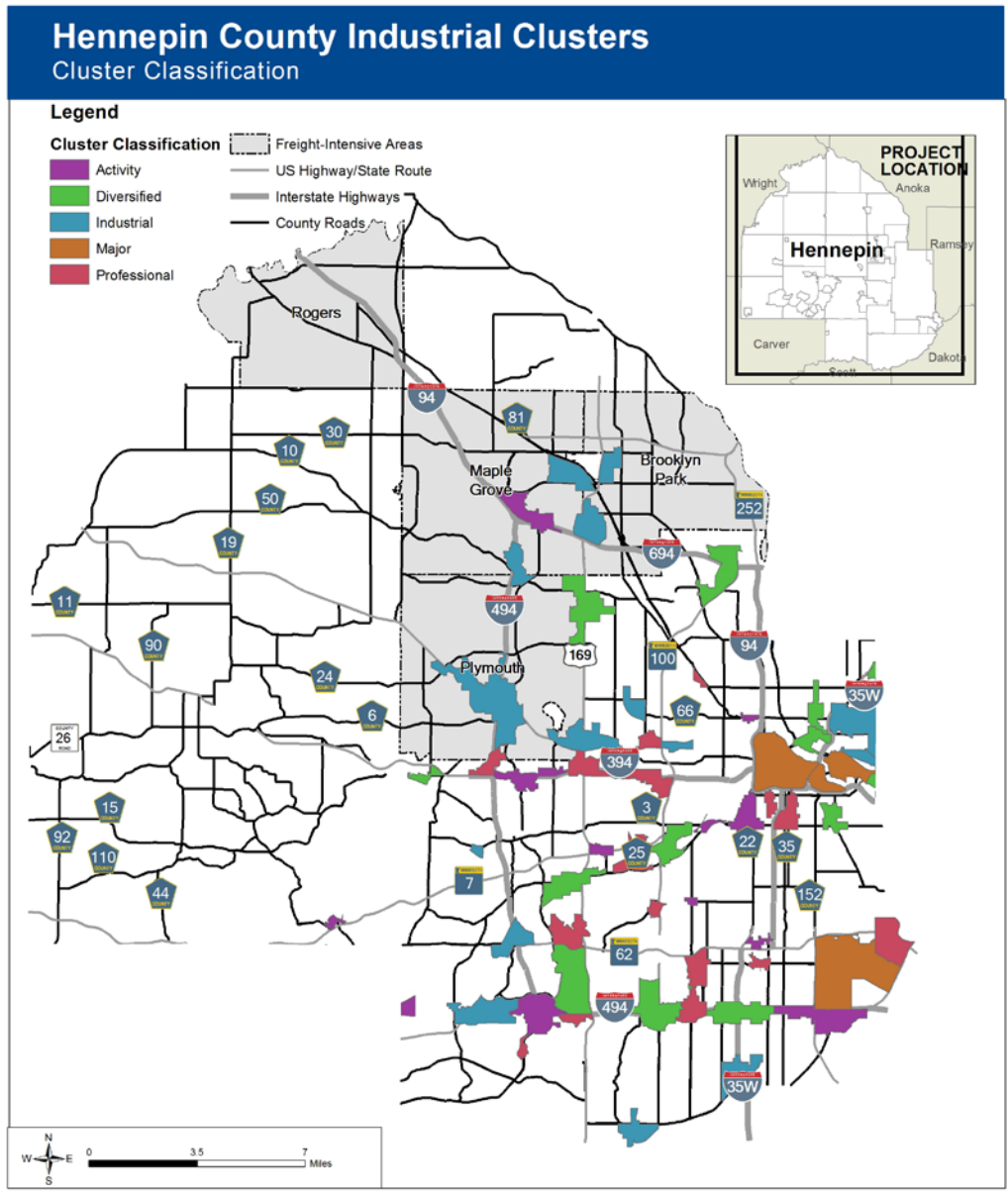
Additional information on these clusters is detailed in the *Hennepin County Freight Study Task 1: Infrastructure and Network Use* document.

Figure 31: Number of Firms and Employees, by Cluster in Hennepin County



Source: Dun and Bradstreet Hoover’s Business Data (2014), Minnesota Department of Employment and Economic Development (DEED)

Figure 12: Economic Clusters in Hennepin County



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Source: Minnesota Department of Employment and Economic Development (DEED)

FREIGHT PERFORMANCE MEASURES

Performance measures enable transportation agencies to gauge system condition and use, identify and evaluate the magnitude of challenges, evaluate programs and projects, and help decision makers allocate limited resources effectively. For planning purposes, “performance measures” is a broad term used to describe different individual types of measurement, such as output measures, outcome measures, indicators, or indices. Performance measures are typically developed and applied by transportation agencies for the following general purposes:

- **Linking Actions to Goals.** Performance measures can help link plans and actions to Hennepin County’s goals and objectives;
- **Prioritizing Projects.** Performance measures can provide information needed to invest in projects and programs that provide the greatest benefits to the County;
- **Managing Performance.** Performance measures can be used to improve the management and delivery of programs, projects, and services; can highlight critical needs and issues; and track progress over time;
- **Communicating Results.** Performance measures can help communicate the value of public investments in transportation. They provide a concrete way for stakeholders to see the value of Hennepin County’s investments in the transportation system;
- **Strengthening Accountability.** Performance measures can promote accountability with respect to the use of taxpayer resources. They reveal whether transportation investments are providing the expected performance or demonstrate need for improvement.

This study represents the first steps in development and implementing freight-related transportation performance measures for Hennepin County. Data and information on freight mobility, system performance, safety, and economic indicators in the County has been developed as part of this study; these data can be used to develop an ongoing performance management system for the County. However the County should not undertake this effort alone; rather, the County can leverage and build upon the work being done by other agencies undertaking performance measurement, specifically MnDOT and MetCouncil. These agencies are tracking performance in many areas of the County, such as system performance on State roadways, or volumes shipped through MSP airport. The County should thus focus its freight performance measures on those that serve the needs of the County and either complement or be consistent with those measures captured at the state and federal levels. Furthermore, when possible, the County should partner with these agencies to track freight system performance in the County.

Performance Measure Overview

The Moving Ahead for Progress in the 21st Century Act (MAP-21) was signed into law on July 6, 2012.⁵ Among other accomplishments, MAP-21 established national performance goals for the Federal aid highway program as shown in Table 2.⁶ Based on these performance goals, MAP-21 instructed the U.S. DOT and State DOTs to establish performance measures in the following areas:

- Pavement conditions on the NHS;
- Performance of the NHS;
- Bridge conditions on the NHS;
- Number and rate of fatalities and serious injuries;
- Traffic congestion;
- On-road mobile source emissions; and,
- Freight movement on the Interstate System.

Table 2: MAP-21 Performance Goals

Goal Area	National Goal
Safety	Achieve a significant reduction in traffic fatalities and serious injuries
Infrastructure condition	Maintain the highway infrastructure asset system in a state of good repair
Congestion reduction	Achieve a significant reduction in congestion on the National Highway System
System reliability	Improve the efficiency of the surface transportation system
Freight movement and economic vitality	Improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development
Environmental sustainability	Enhance the performance of the transportation system while protecting and enhancing the natural environment
Reduced project delivery delays	Reduce project costs, promote jobs and the economy, and expedite the movement of people and goods by accelerating project completion through eliminating delays in the project development and delivery process

⁵ Federal Highway Administration. Moving Ahead for Progress in the 21st Century (MAP-21): A Summary of Highway Provisions. <https://www.fhwa.dot.gov/map21/summaryinfo.cfm>, Accessed December 27, 2016.

⁶ Federal Highway Administration. Moving Ahead for Progress in the 21st Century (MAP-21): Performance Measurement Fact Sheet. <https://www.fhwa.dot.gov/map21/factsheets/pm.cfm>, Accessed December 27, 2016.

In working to establish the goals mandated by MAP-21, on April 22, 2016, FHWA published a Notice of Proposed Rulemaking in the Federal Register that, among other items, established potential performance measures for interstate freight movements.⁷ The two proposed measures to assess freight movements were (1) Percent of the Interstate System Mileage providing for Reliable Truck Travel Time and (2) Percent of the Interstate System Mileage Uncongested. While these measures are not final, they are consistent with previous federal freight performance measurement efforts, namely those developed as part of the Freight Performance Measures initiative which examined truck travel times in freight-significant corridors.⁸ A final rule is expected by early 2017. In Minnesota, MnDOT will be responsible for implementing these measures.

MnDOT’s Office of Transportation System Management tracks and reports performance measures on an annual basis in the Annual Minnesota Transportation Performance Report, including indicators of freight mode share, bridge condition, and other measures related to freight.⁹ As part of the 2016 Statewide Freight System Plan¹⁰, MnDOT identified 18 proposed freight performance measures for highway, port, and rail based goods movements. As shown in Table 3, the performance measures are organized around the overall freight system goals: safety, environment/community, asset management, infrastructure/condition, and demand/economy. Importantly, these goals are consistent with those outlined in MAP-21. A recommendation of the MnDOT plan is to implement the proposed freight performance measures to monitor and report condition of the freight system and identify investment needs.

Table 3: MnDOT Statewide Freight Plan Proposed Performance Measures

Objective	Performance Measure or Indicator	MnDOT Statewide Freight Plan Goal Area
Safety	Number of Fatalities	Safety, Environment/Community
Safety	Fatality Rate	Safety, Environment/Community
Safety	Number of Serious Injuries	Safety, Environment/Community
Safety	Serious Injury Rate	Safety, Environment/Community
Safety	Severe Crashes Involving Trucks	Safety, Environment/Community

⁷ Federal Register, Vol. 81, No. 78, April 22, 2016. Docket No. FHWA-2013-0054. <https://www.gpo.gov/fdsys/pkg/FR-2016-04-22/pdf/2016-08014.pdf>, Accessed December 23, 2016.

⁸ Federal Highway Administration. Travel Time in Freight Significant Corridors. http://ops.fhwa.dot.gov/Freight/freight_analysis/travel_time.htm, Accessed December 27, 2016.

⁹ <http://www.dot.state.mn.us/measures/>

¹⁰ Minnesota Department of Transportation. 2016 Minnesota Statewide Freight System Plan. <http://www.dot.state.mn.us/planning/freightplan/>.

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Objective	Performance Measure or Indicator	MnDOT Statewide Freight Plan Goal Area
Safety	Incidents at Highway/Railroad Crossings	Safety, Environment/Community
Asset Management	Interstate Pavement in Good and Poor Condition based on MnDOT's Ride Quality Index (RQI)	Infrastructure Condition
Asset Management	Non-Interstate National Highway System (NHS) Pavement in Good and Poor Condition based on MnDOT's Ride Quality Index (RQI)	Infrastructure Condition
Asset Management	Percent of Deck Area on Structurally Deficient Bridges	Infrastructure Condition
Asset Management	NHS Bridges in Good, Fair and Poor Condition based on Deck Area	Infrastructure Condition
Freight Indicators	Total domestic shipments to, from or between Minnesota locations	Demand, Economy
Freight Indicators	Freight by Mode Minnesota (tons)	Demand, Economy
Freight Indicators	Freight by Mode Minnesota (value)	Demand, Economy
Freight Indicators	Freight by Mode Minnesota (ton-miles)	Demand, Economy
Freight Indicators	Heavy Commercial Vehicle Miles Traveled	Demand, Economy
Freight Indicators	Heavy Commercial Average Annual Daily Traffic	Demand, Economy
Freight Indicators	Annual Rail Shipments in Minnesota (tons)	Demand, Economy
Freight Indicators	Annual Container Lifts in Twin Cities (number)	Demand, Economy
Freight Indicators	Annual Port Shipment Tonnage (tons)	Demand, Economy

Hennepin County Performance Measures

Freight performance measures and indicators developed and implemented by Hennepin County should align with those adopted at the state, national, and regional levels. The measures and indicators chosen by the County should also provide useful information to support local decision-making and reflect the safety, mobility, and performance of the Hennepin County freight network. Given that the collection of the freight data necessary to support performance measures can be costly and time consuming, in developing performance measures Hennepin County should leverage data already acquired at the state and national levels to the fullest extent possible and develop a plan to strategically assess the County system performance. For example, information on truck volumes and infrastructure condition should be collected on a regular basis on the key county roadways connecting to the State system and areas identified as heavy freight generators as part of this study. Potential performance measures for Hennepin County are outlined in Table 4.

Table 4: Potential Hennepin County Freight Performance Measures

Objective	Performance Measures
Safety	Truck-involved Crashes, Fatalities and Injuries
Safety	Incidents at Highway/Railroad Crossings
Mobility	Average Truck Speeds
Mobility	Truck Travel Time Reliability (Buffer Time Index, RI80 Index)
Mobility	Peak Hour Volume-to-Capacity Ratios
Condition and Performance	County Roadway Pavement in Good and Poor Condition based on MnDOT's Ride Quality Index (RQI) or International Roughness Index (IRI)
Condition and Performance	Bridges Eligible for Rehabilitation or Replacement based on Sufficiency Ratings
Freight Demand and Economic Indicators	Freight by Mode Hennepin County (tons)
Freight Demand and Economic Indicators	Freight by Mode Hennepin County (value)
Freight Demand and Economic Indicators	Truck Vehicle Miles Traveled
Freight Demand and Economic Indicators	Average Annual Daily Truck Traffic

Regarding safety, Hennepin County should continue to collect crash data on County roadways. Special efforts should be made to distinguish between those crashes that involve heavy trucks versus all other

vehicles. From this data, Hennepin County can derive measures of total crashes, rates of fatalities, and rates of serious injuries on the County freight network. These measures would also be consistent with those developed at the State level.

Hennepin County should partner with MetCouncil and MnDOT to measure mobility on roadways within Hennepin County. Freight mobility is most accurately reflected by measures of congestion and travel time reliability. These include average truck speeds, truck travel time reliability (as captured by a buffer time or the RI80 index), delay, and peak hour volume-to-capacity ratios. However, in order to produce these measures periodically they require that data on vehicle volumes (classified by vehicle type), truck travel times, and roadway capacity be collected on a regular basis at the County network level. Data at this level of detail is not currently collected on the County network with regularity. Both MnDOT and MetCouncil collect data in these areas but their efforts do not cover the full extent of the County network. Through coordinated efforts with MetCouncil and MnDOT, Hennepin County can begin to “fill the gaps” on the County network left by regional and statewide initiatives so that a comprehensive picture of performance at the county level may be developed.

Performance on the Hennepin County network should also be reflective of the condition of freight assets. Hennepin County should track the condition of its pavements using measures of smoothness such as the International Roughness Index (IRI)¹¹ or the Ride Quality Index (RQI). These are consistent with performance measures tracked at the national and State levels, respectively. In addition, the sufficiency of any County-owned bridges should be tracked. Often, bridges serve as chokepoints in the freight system due to weight restrictions and/or insufficient vertical clearances.

Hennepin County should partner with MnDOT and MetCouncil to capture freight-related economic indicators in the County. Commodity flow data, such as the data created in Task 2, identify those commodities that are most prevalent and most valuable on the Hennepin County freight network. This type of data can also identify the County’s largest trading partners in terms of total tonnage and value. These types of measures are important indicators for the overall health of the County’s freight-intensive industries.

Truck VMT and AADT, similar to the mobility measures described above, are difficult to capture on the County system due to inadequate data available at the local level. By implementing data collection at strategic points on the system, the County can “fill the gaps” and supplement data collected at the Statewide and regional level to increase the applicability of these measures to local tracking and decision making.

¹¹ Minnesota Department of Transportation. Bituminous Smoothness Training Workshop, April 11, 2007. <http://www.dot.state.mn.us/materials/smoothnessdocs/IRIIntroduction.pdf>, Accessed December 27, 2016.

Freight Study Recommendations

This results of this Freight Study are a number of recommendations for Hennepin County. While the recommendations developed are specific to freight, each is designed to build upon existing County resources, policies, and actions. In many cases, this involves using a “freight lens” to look at the existing system or activities. In other cases, it involves supplementing existing activities, such as traffic counts, with information specific to freight traffic. Overall, these recommendations are designed to help the County increase its understanding of and ability to invest in the freight system, and support a number of freight-related goals:

- **Ensure safety** of both freight and passenger transportation within and through the County through targeted policies and investments;
- **Integrate freight** into County planning and project development, creating a culture that promotes efficient, effective, and safe movement of goods;
- **Monitor performance** of the freight transportation system in a way that supports performance-based planning and effective investments;
- **Cultivate partnerships** with public-sector agencies on freight transportation related issues, creating a vehicle to advocate for Hennepin County’s needs and contribute to projects benefiting Minnesotans in and out of the County; and
- **Support economic growth** in Hennepin County through continued outreach, partnership, and support to businesses.

Table 5 summarizes each recommendation and provides a crosswalk between individual recommendations and these goals. A description of each recommendation follows.

HENNEPIN COUNTY FREIGHT STUDY FINDINGS AND RECOMMENDATIONS

Table 5: Hennepin County Freight Study Recommendations

Recommendation	Key Agencies	County Role	Timeframe	Ensure Safety	Integrate Freight	Monitor Performance	Cultivate Partnerships	Economic Growth
Identify and Prioritize Freight Projects	Hennepin County	HC leads county projects; advocates for state/regional projects that provide benefit to the county	Short-term; ongoing	X	X	X		X
Track Freight Performance Measures	Hennepin County; MetCouncil; MnDOT	Identify and implement measures that “fill the gaps” on the County freight system; coordinate with ongoing state and regional efforts	Short-term identification; long-term implementation and tracking	X	X	X	X	
Collect Freight Data	Hennepin County;	Collect data to use in project identification and performance management;	Ongoing data maintenance and collection efforts		X	X	X	
Design for Safe Freight Movement	Hennepin County; MnDOT	Identify obstacles (weight limits, clearances, deficient bridges) and improve (both on County and State system)	Long-term	X	X	X	X	X
Develop County Growth Strategy	GreaterMSP/City of Minneapolis	Support local/regional efforts, establish policy goals and work with County businesses/ ED agencies	Long-term		X		X	X

HENNEPIN COUNTY FREIGHT STUDY FINDINGS AND RECOMMENDATIONS

Recommendation	Key Agencies	County Role	Timeframe	Ensure Safety	Integrate Freight	Monitor Performance	Cultivate Partnerships	Economic Growth
Upgrade Road/Rail Crossings	MnDOT / Hennepin County	Identify most critical crossings in the County and implement appropriate mitigation or separation measures	Long-term	X	X	X	X	
Continue Engaging Freight Stakeholders	Hennepin County/ Greater MSP	Continue engaging stakeholders through interviews and/or forums	Short-term; ongoing		X	X	X	X
Identify Areas for Future Study	Hennepin County	Identify key areas of study for next 1-5 years	Short-term	X	X	X	X	X

Identify and Prioritize Projects with a Freight Component. Freight and passenger traffic coexist on a single transportation system; however each has unique needs. It is vital both to plan specifically for freight as well as consider freight in all transportation project planning. Projects that support efficient goods movement through Hennepin County should be identified as “freight projects.” This can involve projects on heavily-used freight corridors or interchanges, connections to areas of heavy industrial activity or intermodal facilities, geometric enhancements supporting truck traffic, or congestion relief in areas critical to freight traffic. As part of this study, a review of the 2016-2020 Hennepin CIP was undertaken to provide an initial cut of projects with a freight component. A spatial analysis was undertaken to identify projects that are either located within one mile of an industrial cluster or and have a truck AADT >500. Eighteen upcoming and four completed projects were classified as “freight projects” (Table 6).

New transportation projects identified and undertaken by the County on corridors with heavy freight volumes or freight-related congestion should incorporate design features to promote freight safety and efficiency. This includes first- and last-mile connections to industrial areas, intermodal facilities, or other areas with heavy freight traffic. As appropriate, the County should support designation and maintenance of Intermodal Connectors on the NHS system in the County. Finally, the County should work with MnDOT and MetCouncil to identify and advocate for freight projects on the State and Interstate systems within Hennepin County.

Freight Performance Measures. Understanding the performance of the freight system is critical gauging system condition and use, identifying challenges, evaluating programs and projects, and allocating limited resources effectively. Hennepin County should develop and use freight system performance measures and indicators to monitor and report system condition and identify investment needs for transportation infrastructure on the County system. The County should also consider including freight performance measures in the upcoming 2040 Comprehensive Plan.

Both MnDOT and MetCouncil are currently developing and implementing freight related performance measures. Some of these measures such as travel time reliability, and truck-involved crashes may also be appropriate for tracking performance of the County freight system. Hennepin County should partner with these agencies to track performance of the freight system within and surrounding Hennepin County. Further details and proposed County performance measures are included earlier in this document in the “Freight Performance Measures” section.

Freight Data. Collecting freight data, such as truck volumes and vehicle classifications, truck speeds, infrastructure and clearance issues, and truck-involved crashes is critical to monitoring freight performance and implementing freight-related improvements. Data on issues such as truck volumes and speeds is collected on the National Highway System; yet currently, little data related to freight is collected at the County level. Hennepin County should expand its data collection efforts to include

issues related to freight transportation on the County roadway system. For example, future installation of traffic counters should be able to distinguish vehicle classification and identify heavy trucks.

Additionally, this freight study collected, compiled, and validated a significant amount of freight system spatial data. This data should be maintained in a manner that makes it readily available for future use, including freight-related studies and analyses, as well as general improvement projects.

Design for Safe Freight Movement. Issues such as low bridge clearances, weight-restricted bridges, at-grade rail crossings, and inadequate intersection design are challenges to safe and efficient freight movement. The County should support safe truck movements by implementing, where appropriate, features that improve truck safety such as rumble strips/stripes, center rumble strips, guardrails, wider shoulders, turn lanes, and barrier walls.

This study identified potential hotspots of heavy truck activity and congestion; Hennepin County should expand upon this analysis to identify the areas where infrastructure improvements are most needed to promote safe truck travel, and conduct an assessment of engineering features of those locations. Additionally, Hennepin County should conduct a bridge and viaduct inventory to identify bridge and viaduct heights or restrictions on routes important to freight traffic.

Advocate for Freight Projects. Hennepin County should continue engaging with MetCouncil, MnDOT, and local communities to align the County's priorities and actions regarding freight with similar programs or undertakings by these agencies. The County should also identify and advocate for high-priority County freight projects to be included in the upcoming MnDOT freight system investment plan. Other potential actions include monitoring and supporting local actions like complete streets/truck route planning/urban delivery that affect goods movement to/from the County system and businesses, and reviewing designated NHS intermodal connectors and connections to facilities that should be designated in the future. Partnerships with state and local agencies are critical to identifying and positioning for County projects eligible for FAST freight formula funds and grant programs and for effective use of investment resources. As appropriate, partnerships should also be explored with private sector businesses, including railroads and GreaterMSP.

Additionally, analysis by MnDOT as part of the 2016 Statewide Freight System Plan found that the Top 10 freight bottlenecks in the state were on the interstate system in the Twin Cities region. Congestion negatively affects both passenger and freight traffic, and in particular limits the ability of shippers to ship and deliver time-sensitive goods such as components for medical device manufacture or perishable products. Rush hour traffic, accidents, work zones, and other factors can cause particularly heavy delays in urban areas. Hennepin County should work with MnDOT and local governments to identify and facilitate projects and programs focused on mitigating congestion, including those already being implemented such as MnPass lanes, traveler information and other ITS technologies.

Develop a County Growth Strategy. Freight intensive uses are moving out of the urban core to peripheral regions. This can cause unintended consequences for the transportation system, such as increased congestion, truck and passenger VMT, and a disconnect between workers and jobs. Difficult policy or investment decisions can be a result of the trend towards developing industrial and distribution areas far away from the urban core. GreaterMSP has indicated the need for a regional development strategy to strategically address these issues; however the County has not been a strong participant in these activities in the past. The County should actively work to understand the impacts of current development trends and determine its position on land-use policies, such as those that sustain/redevelop the urban core. If appropriate, the County should develop or partner with agencies developing a comprehensive growth strategy. While the County cannot directly control private sector investment, it can influence how/where investments are made (in conjunction with municipalities) through policies to direct development, for both industrial and intermodal facilities.

Upgrade Road/Rail Crossings – Rail-highway crossing safety is a concern throughout Minnesota due to a history of accidents with crossing vehicles, trucks, bicyclists and pedestrians. This study identified the busiest crossings in Hennepin County. Nine of the top 13 grade-level crossings by total train volumes occur on the Canadian Pacific network while the remaining four occur on the BNSF network.

MnDOT recently conducted an analysis of grade crossing active warning devices to determine the prevalence of and the need to upgrade aging infrastructure. This effort estimated that approximately 270 signals statewide are 20 years old or older (as of 2006), while the normal lifespan for an active warning device is 25 years. Hennepin County should work with MnDOT to prioritize upgrading or separating crossings with safety/congestion implications for the County

Continue Engaging Freight Intensive Businesses Active in Hennepin County. As part of this study, the County solicited input from a number of private sector firms in manufacturing, transportation, and other industries that were active in the County. Input from local businesses is most effective as part of a long-term engagement strategy by the County. Understanding changes in stakeholder priorities, concerns, and assessment of freight movements within Hennepin County over the long term will help the County ensure that it is on the right path to supporting local business. Hennepin County should work closely with GreaterMSP and other stakeholders identified through this study to track long-term trends and implications of freight-related investments and performance measures. Business owners can also be engaged at the project planning and development stage to ensure that projects do not cause detrimental effects to freight movement.

Identify Areas for Future Study. This study provides a baseline for Hennepin County to understand, plan for, and prioritize freight-related investments in the County, as well as to incorporate freight-related planning into its activities. This freight study should be updated on a regular basis to ensure that the most up to date data and trends are available for the County's use (current federal guidance for State freight plans is a 5 year update cycle).

Furthermore, many areas of potential future study have been identified as part of this effort, including corridor-level assessments (CSAH 61, CSAH 116, US 169), bridge inventory, sign inventory, potential effects of industrial zoning changes in the urban core, and potential for increased intermodal service. Additionally, the County should continue to engage with its partners and the freight community to understand and study impacts of broader freight-related trends such as technology development (including 3D printing), continued increasing use of e-commerce, increased local distribution, urban development/redevelopment, truck parking, and other issues. Hennepin County should undertake an effort to understand and articulate its position on freight-related issues, and implement policies that align with the County's broader and freight-related needs and priorities.



HENNEPIN COUNTY FREIGHT STUDY FINDINGS AND RECOMMENDATIONS

Table 6: Projects Identified in the Hennepin County Capital Improvement Plan with a Freight Component

Status	CIP_Proj	Near Ind. Cluster	Near >500 AADTT Roadway	Project Description
Provisional 2019	150/0210	N	Y	CSAH 150 - Construct Fletcher bypass connection to CSAH 81. Intersects roadway with >500 AADT, CSAH 81, which has 1,400 trucks per day on intersecting segment. Provisional CIP project expected 2019.
Complete	005/0705	Y	N	CSAH 5 - Roadway under construction, beginning in 2014. Within 1 mile of Industrial Cluster "Hwy 280 and Kasota Avenue", which has 61 work sites and nearly 2,900 jobs.
Provisional 2018	156/0018	Y	N	CSAH 156 - Safety Improve & Streetscape from TH 55 to 10th Ave. Adjacent to "Hwy 55 and Hwy 169" Industrial Cluster, which has 419 worksites and over 12,000 jobs. Provisional CIP project expected 2018.
Provisional 2019	066/9844	Y	N	CSAH 66 - Reconstruct Broadway St from Washington to Jackson St. Runs within 1 mile of Mid-City Industrial Cluster in Minneapolis, a job center with 408 worksites and nearly 17,000 jobs. Provisional CIP project expected 2019.
Provisional 2020	057/0023	Y	N	CSAH 57 - Reconstruct Road from 53rd Ave to 57th Ave. Runs within 1 mile of East River Industrial Cluster, which has 82 worksites and over 3000 jobs. Provisional CIP project expected 2020.
Provisional 2019	130/9862	Y	Y	CSAH 130 - Improve interchange at TH 169 & CSAH 130. Located within the I-94 and Boone Avenue Industrial Cluster, which has 193 worksites and nearly 5900 jobs. Also includes roadway with >500 AADT, CSAH 130 (Elm Creek Blvd N), an urban commuter road with ~670 trucks per day on segment. Provisional CIP project expected 2019.
Completed	061/1125	Y	N	CSAH 61 - Reconstruct road project begun in 2014. Roadway located within 1 mile of I-494 and Hwy 62 Industrial Cluster, which has 186 worksites and over 5500 jobs.
Planned 2018	103/9239	Y	N	CSAH 103 - Reconstruct W Broadway Ave from 85th Ave N to 93rd Ave N. Runs through Hwy 169 and CSAH 109 Industrial Cluster, which has 113 worksites and over 3700 jobs. CIP Project planned for 2018. Note project is in coordination with Bottineau Light Rail project

HENNEPIN COUNTY FREIGHT STUDY FINDINGS AND RECOMMENDATIONS

Status	CIP_Proj	Near Ind. Cluster	Near >500 AADTT Roadway	Project Description
Planned 2018	103/0514	Y	N	CSAH 103 - Reconstruct W Broadway Ave from Candlewood Dr to CSAH 109. Two segments of roadway located within 1 mile of 3 Industrial Clusters: Hwy 169 and CSAH 109, CSAH 81 and CSAH 109, and I-94 and Boone Avenue. CIP Project planned for 2018. Note project is in coordination with Bottineau Light Rail project
Planned 2018	094/1417	Y	N	CSAH 94 - Reconstruct roadway. Small segment located within 1 mile of Mid-City Industrial Cluster in Minneapolis, a job center with 408 worksites and nearly 17,000 jobs. CIP Project 2018.
Planned 2018	030/1411	Y	N	CSAH 30 - Reconstruct 93rd Ave N from Xylon Ave to East of Winnetka. Runs through northern portion of Hwy 169 and CSAH 109 Industrial Cluster, which has 113 worksites and over 3700 jobs. CIP Project 2018.
Planned 2017	102/1007	Y	N	CSAH 102 - Reconstruct roadway. 1.56 mile segment that runs on the eastern side of Douglas Drive and Sandburg Road Industrial Cluster, which has 92 worksites and 3120 jobs. CIP Project for 2017.
Completed	034/9748	N	Y	CSAH 34 - Reconstruct Roadway. Includes several roadway segments with >500 AADT, each with approximately 900 trucks per day. CIP Project 2016.
Completed	024/9617	Y	N	CSAH 24 - Reconstruct roadway. Roadway segment located within 1 mile of I-494 and Hwy 55 Industrial Cluster in Plymouth, which has 997 worksites and nearly 25,000 jobs. CIP Project 2016.
Planned 2020	015/1510	N	Y	Intersection of CSAH 19 and CSAH 15. Roadway segments each have >500 AADT. CSAH 15 has over 1,700 trucks per day, while CSAH has over 1,570 trucks per day. CIP Project 2020.
Planned 2020	081/0922	Y	Y	CSAH 81 - Roadway reconstruction. Major road that has segments with >500 AADT, with each segment handling between 1,000 and 1,500 trucks per day. This roadway is also located within 1 mile of 3 industrial clusters: Hwy 169 and CSAH 109, CSAH 81 and CSAH 109, and I-94 and Boone Avenue. CIP Project for 2020.
Planned 2017	081/0203	Y	Y	CSAH 81 - Roadway reconstruction adjacent to previous CSAH 81 project. Major road that has segments with >500 AADT, with each segment handling between 500 and 800 trucks per day. This roadway is also located within 1 mile of I-94 and Boone Avenue industrial cluster, with has 193 worksites and nearly 5900 jobs. CIP project for 2017.

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Status	CIP_Proj	Near Ind. Cluster	Near >500 AADTT Roadway	Project Description
Planned 2018	030/9324	Y	N	CSAH 30 - Reconstruct road from E of CR 202 to W of TH 169. Roadway segment runs between two industrial clusters (within 1 mile of each) without intersecting them: Hwy 179 and CSAH 109, and CSAH 81 and CSAH 109. Provisional CIP Project for 2018.
Provisional 2018	008/1108	Y	N	CSAH 8 - Reconstruct road from N of CSAH 10 to CSAH 81. This roadway branches off major road CSAH 81. Segment is located within 1 mile of I-94 and Boone Avenue Industrial Cluster, which has 193 worksites and nearly 5900 jobs. Provisional CIP for 2018.
Provisional 2020	009/0519	Y	N	CSAH 9 - I-494 Part. in MnDOT Reconstruction of 494 from I-394 to CSAH 30. Located just north of the I-494 and Hwy 55 Industrial Cluster in Plymouth, which has 997 worksites and nearly 25,000 jobs. Provisional CIP for 2020.
Planned 2016	252/1556	Y	N	State Hwy 252 - Road reconstruction. Approx. 7 mile segment that ends at I-694. Southern portion of segment runs within 1 mile of East River Industrial Cluster (on the other side of the Mississippi River), which has 82 worksites and nearly 3100 jobs. CIP Project for 2016.
Provisional 2019	088/9843	Y	N	CSAH 88 - Reconstruct New Brighton Blvd from Broadway to Stinson. Runs through Mid-City Industrial Cluster in Minneapolis, a job center with 408 worksites and nearly 17,000 jobs. Runs underneath I-35. Provisional CIP Project expected 2019.