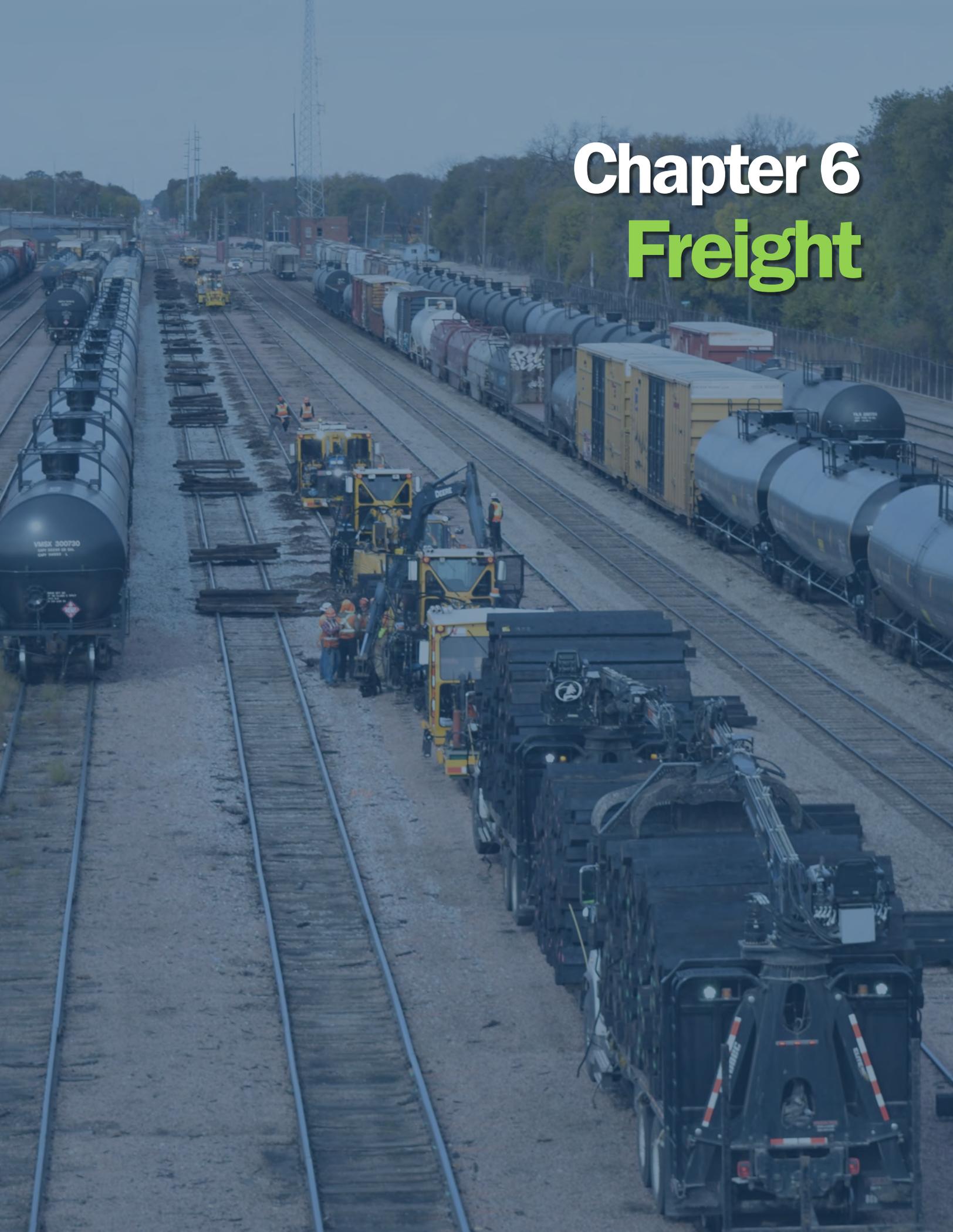


Chapter 6

Freight



METRO AREA STATS

105

Transportation and
warehousing
businesses¹

82

Miles of active
rail lines²

130

At-grade road-rail
crossings²

23

Road-rail incidents
over the past 20
years³

121

Miles of active
pipeline⁴

1. U.S. Census Bureau, 2016 County Business Patterns

2. Iowa DOT REST Services, Active Rail Lines, 2018

3. Federal Railroad Administration, Accident Data as reported by Railroads

4. U.S. DOT Pipeline and Hazardous Materials Safety Administration, National Pipeline Mapping System

Chapter 6 – Freight

Freight Background

The economic success of a region depends largely on its multimodal freight networks and connections to the rest of the world, and its ability to facilitate the movement of people and goods across and within its boundaries. There are several modes of transportation that are utilized for this purpose and are important components of this Plan. Increased competition in today's global economy often rewards those regions that actively plan for and pursue seamless transportation systems which depend on efficient connections between all modes of travel, including modes designed specifically for freight movements.

Multimodal can have several meanings with regard to transportation; it can mean specific containers designed to be transferred from one mode to another, such as truck to rail; it can mean freight or passenger trips that utilize more than one mode of transportation. The focus of this chapter is to explore freight and multimodal transportation which often overlap. The movement of freight frequently involves a number of steps and potentially multiple modes of transportation. There are four modes of freight transportation available in the metropolitan area – truck, rail, air, and pipeline. The MPO does not contain any navigable waterways.

Freight transportation planning is critical in that the amount of freight transported continues to grow, thus placing substantial demands on the transportation system. Due to increasing truck traffic, highways and county roads are showing increased deterioration and requiring repair and replacement sooner than anticipated. Rail lines may not be able to handle the size and weight of today's cargo and may be near capacity in areas. Pipelines are vital for the movement of oil and natural gas, and air cargo remains the quickest way to move a product across the country or world.

The significance of planning for multimodal networks and the importance of freight transportation has been emphasized by past federal transportation bills and continues with the FAST Act. Three of the FAST Act's metropolitan planning factors targeted towards the multimodal system and freight are:

- Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency.
- Increase the accessibility and mobility of people and for freight.
- Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight.

The overall goal of the multimodal network, and planning for such, is to ensure the efficient and safe transport of persons and goods using the mode which is most beneficial given individual circumstances. To meet this goal, the connectivity and accessibility from all available modes is a critical factor in planning for the future transportation network of the metropolitan area.

While freight planning is an important part of the transportation planning process, it should be noted that it differs significantly from planning for other modes of transportation. The main reasons for this are that most freight transportation operations fall under the purview of the private sector, and, in the case of rail and pipeline, the infrastructure is owned by private companies. This results in less publicly available data for freight movements and more challenges in bringing all freight stakeholders to the discussion table. For example, some companies may be reluctant to discuss specific freight issues due to the sensitivity of freight information.

Though multimodal and freight planning can be a challenging endeavor, it is important for the area. The movement of goods and people are vital to the region's economy. If energy prices rise again, it will become even more important to maintain quality infrastructure for all modes of transportation, and ensure that freight can be transported by the most efficient mode given the type of freight and its origin and destination.

Freight at the National Level

Freight will be discussed by weight and value. The measures vary considerably among mode. For transportation purposes, weight is often a primary consideration, as it has a direct effect on the condition of the system. Value is an important measure for economic purposes and to understand what goods and industries are having the most effect on local economies.

According to the U.S. DOT's *Freight Facts and Figures 2017*, the national transportation system moved a daily average of 49 million tons of freight valued at more than \$52.5 billion in 2015. Tonnage is projected to increase at about 1.4 percent per year between 2015 and 2045. The value of freight moved is forecasted to increase faster than the weight, rising from \$1,044 per ton in 2012 to \$1,461 per ton in 2045, when controlling for inflation. This increase is due to high-value, low-weight commodities growing at a faster rate than low-value, high-weight commodities. An important note for local planning is that 37 percent of the value and 50 percent of the weight of goods were transported less than 100 miles from their origin to their destination. Trucks carry over 80 percent of the freight tonnage that travels less than 100 miles. Figures 6.1-6-3 illustrate weight and value of shipments by transportation mode, and total freight moved by distance.

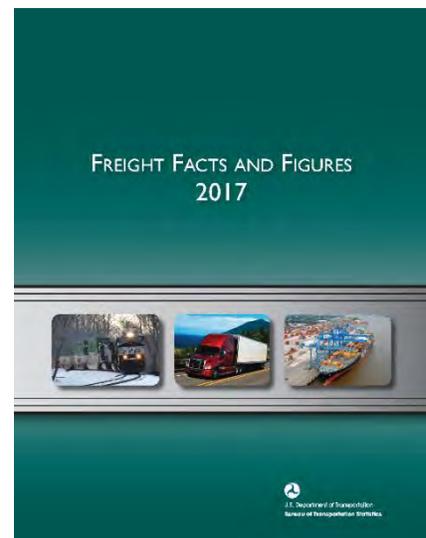
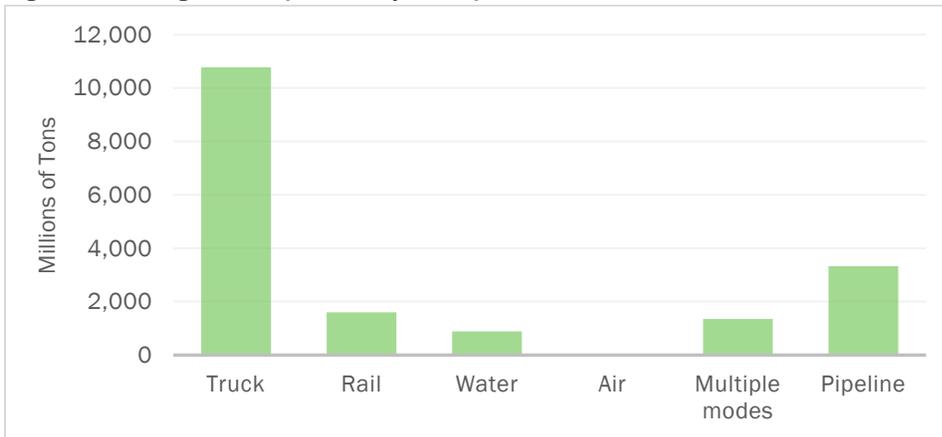
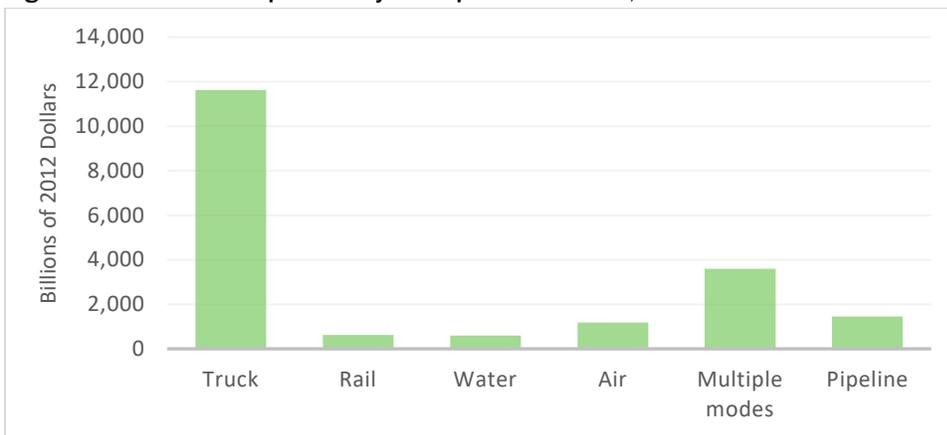


Figure 6.1: Weight of Shipments by Transportation Mode, 2015



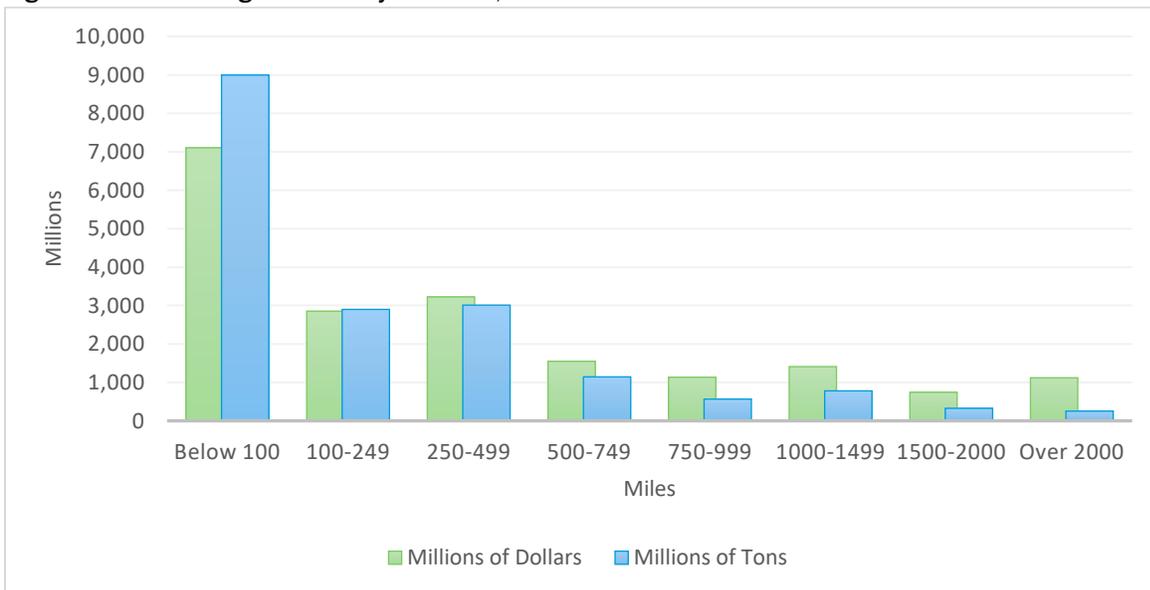
Source: U.S. DOT Freight Facts and Figures 2017

Figure 6.2: Value of Shipments by Transportation Mode, 2015



Source: U.S. DOT Freight Facts and Figures 2017

Figure 6.3: Total Freight Moved by Distance, 2015

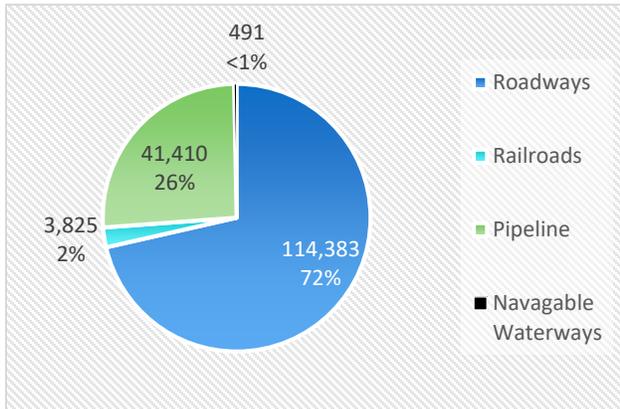


Source: U.S. DOT Freight Facts and Figures 2017

Freight in Iowa

Iowa has a large and diverse economy that demands the efficient transportation of freight. In addition to the exports Iowa creates and goods the state imports, Iowa's position in the middle of the United States makes it a crossroads for freight movement. According to the U.S. DOT *Freight Facts and Figures 2017*, the demand for freight transportation is driven primarily by the geographic distribution of population and economic activity. Both population and economic activity have grown faster in the South and West than in the Northeast and Midwest. Iowa's transportation system plays an important role in moving freight to the coasts. The state's transportation system is also important for the significant amount of freight that originates outside of Iowa and moves through the state to outside destinations.

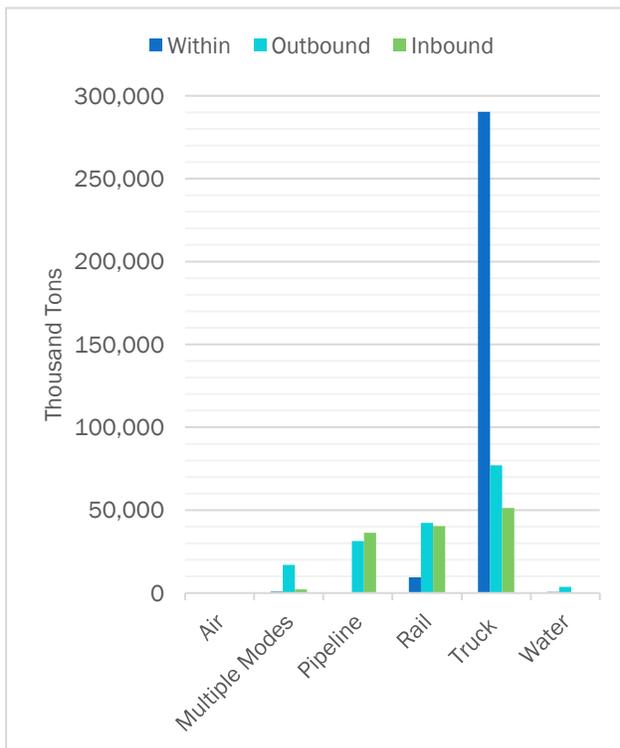
Figure 6.4: Iowa Freight Infrastructure Mileage



Source: Iowa DOT Iowa Freight Facts and Figures

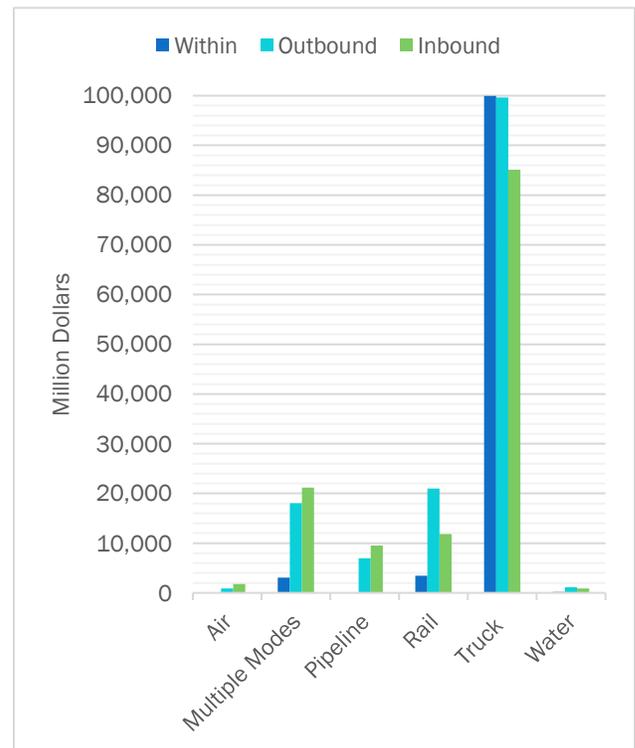
According to the Iowa DOT's *Iowa Freight Facts and Figures*, there are 160,109 miles of freight infrastructure in Iowa, 108 public owned airports, 20,000 trucking companies, 84 pipeline operators, 18 rail companies, and multiple barge operators. Key freight facilities include one intermodal container facility, 15 biodiesel plants, 44 ethanol plants, 60 barge terminals, and 811 licensed grain elevators. Figure 6.4 shows the distribution of freight infrastructure in the state, and Figures 6.5 and 6.6 show the weight and value of goods shipped within, outbound, and inbound Iowa.

Figure 6.5: Shipments Within, Outbound, and Inbound Iowa, by Weight and Transportation Mode, 2016



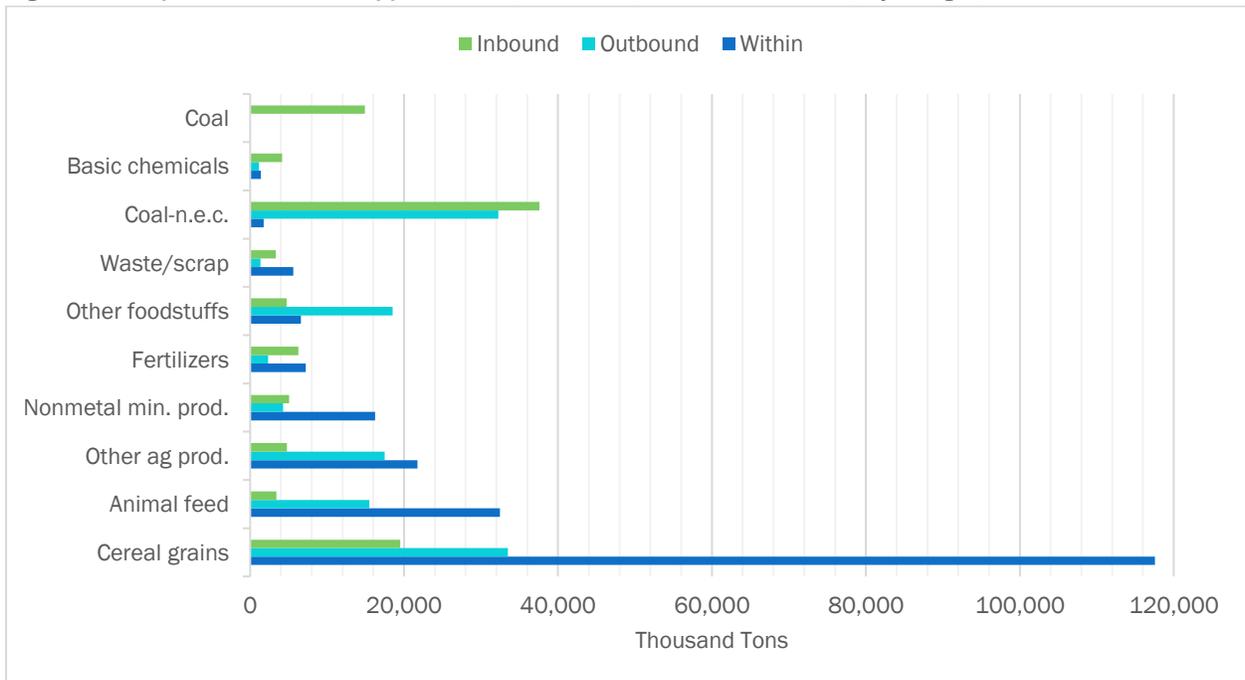
Source: U.S. DOT Freight Analysis Framework

Figure 6.6: Shipments Within, Outbound, and Inbound Iowa, by Value and Transportation Mode, 2016



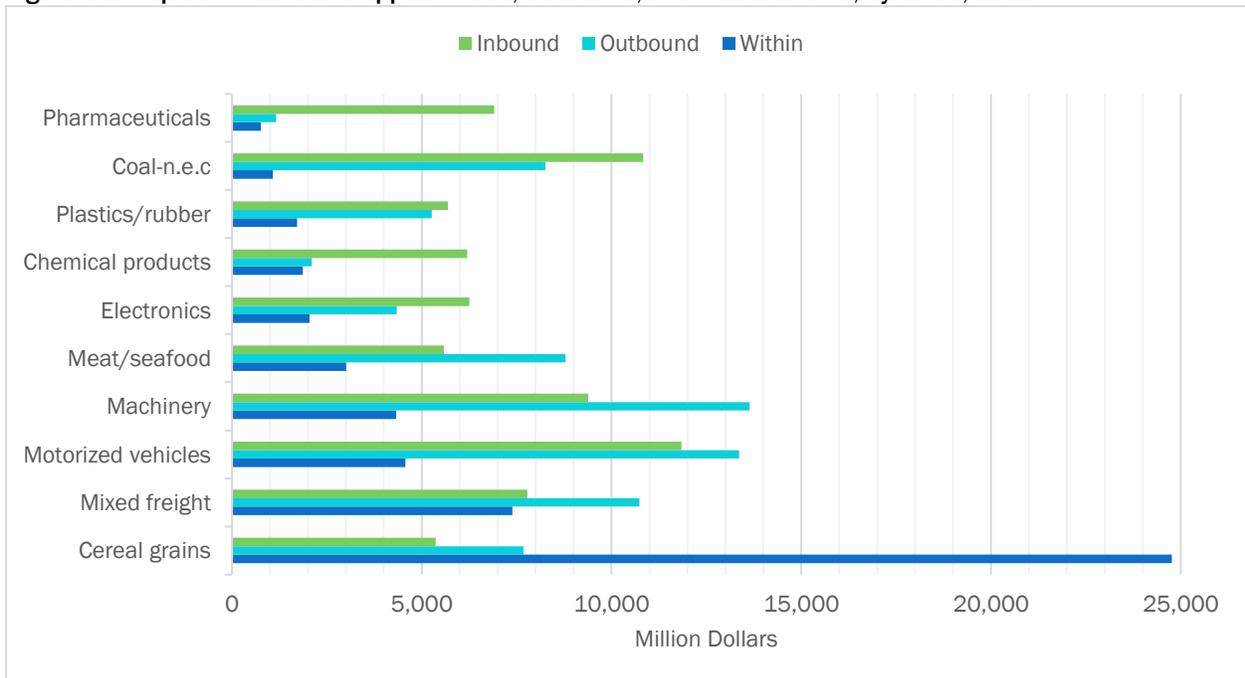
Figures 6.7 and 6.8 illustrate the top ten commodities shipped within, outbound, and inbound Iowa by weight and value. The role of agriculture in Iowa is clearly visible, with cereal grains, other foodstuffs, other agricultural products, and animal feed ranking in the top five commodities shipped outbound by weight, and machinery and meat/seafood in the top five commodities shipped outbound by value. Figures 6.9 and 6.10 show the top domestic trading partners with Iowa by weight.

Figure 6.7: Top Commodities Shipped Within, Outbound, and Inbound Iowa, by Weight, 2016



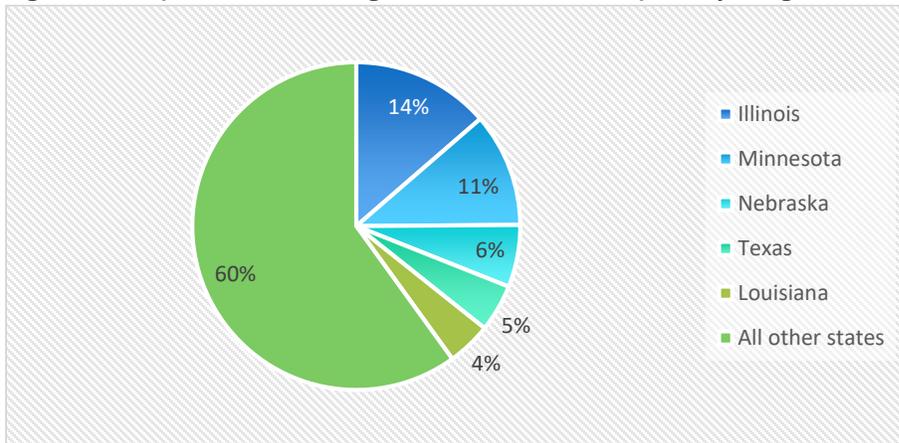
Source: U.S. DOT Freight Analysis Framework

Figure 6.8: Top Commodities Shipped Within, Outbound, and Inbound Iowa, by Value, 2016



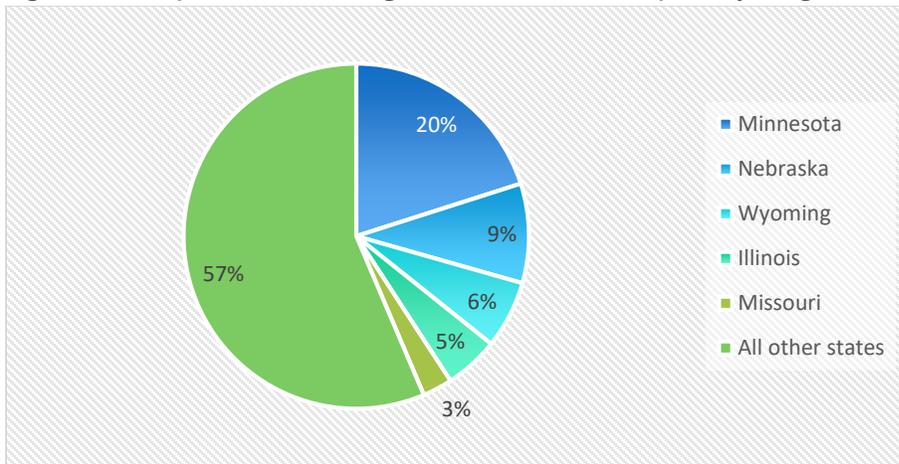
Source: U.S. DOT Freight Analysis Framework

Figure 6.9: Top Domestic Trading Partners with Iowa, Exports by Weight, 2016



Source: U.S. DOT Freight Analysis Framework

Figure 6.10: Top Domestic Trading Partners with Iowa, Imports by Weight, 2016



Source: U.S. DOT Freight Analysis Framework

State Freight Plans

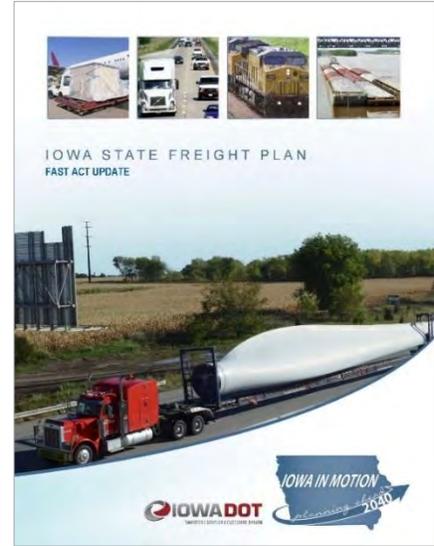
Planning for freight has become an emphasis area for the Iowa DOT. A Freight Advisory Council was established to assist the Iowa DOT in understanding the complexities associated with freight movements in hopes to more effectively guide public investment in transportation infrastructure. The mission of the Freight Advisory Council is “to guide the Iowa DOT in fostering a safe, efficient, and convenient multimodal freight transportation system to enhance the competitiveness of Iowa’s business and industry.” The Freight Advisory Council consists of stakeholders from a range of industries and groups associated with freight transportation. The Council has been involved in the development of several planning documents and projects including the Iowa State Freight Plan, Iowa’s Rail Plan, Iowa in Motion 2045 State Transportation Plan, and the Iowa Statewide Freight Transportation Network Optimization Strategy.



Iowa State Freight Plan

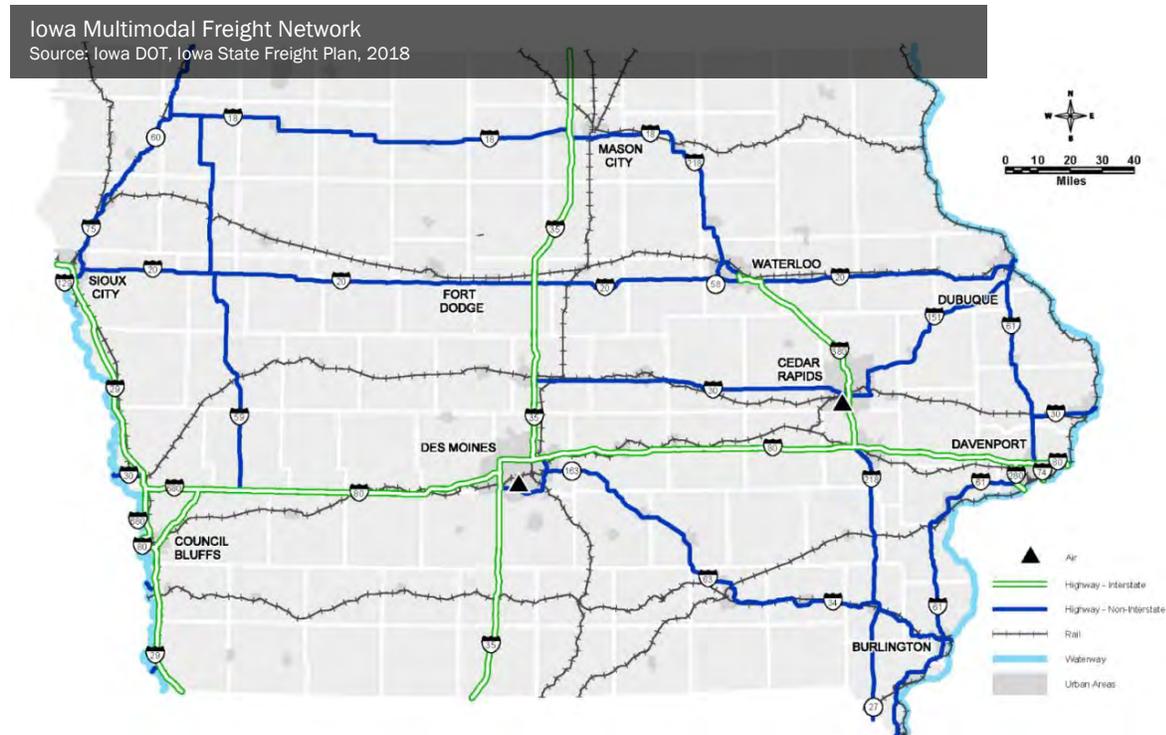
The Iowa DOT has developed a multimodal freight plan to address all modes of the freight transportation system and to incorporate freight considerations into the statewide transportation planning and programming process. The State Freight Plan serves as a platform for safe, efficient, and convenient freight transportation in the state. In recent years, the Iowa DOT has embarked on numerous freight planning activities to help achieve this objective. The State Freight Plan is a way to connect all of these initiatives and allow them to move forward toward a common goal of optimal freight transportation in the state. In addition, the Plan guides Iowa DOT's investment decisions to maintain and improve the freight transportation system. This plan also:

- Aligns with the state transportation plan: Iowa in Motion 2045.
- Meets the requirements of the FAST Act.
- Supports national freight goals.



Each of Iowa's freight-related initiatives plays a role in a collaborative planning and programming process. The tools and studies are utilized to develop system and modal plans, such as the State Freight Plan, which are consistent with the state transportation plan. Projects are then identified, studied, and programmed based on the findings and recommendations provided from each of these initiatives.

As part of the State Freight Plan development process, the Iowa DOT identified and established a new Multimodal Freight Network in the state. This network will be the target of several freight strategies and improvements for the Iowa DOT which are identified in the State Freight Plan.

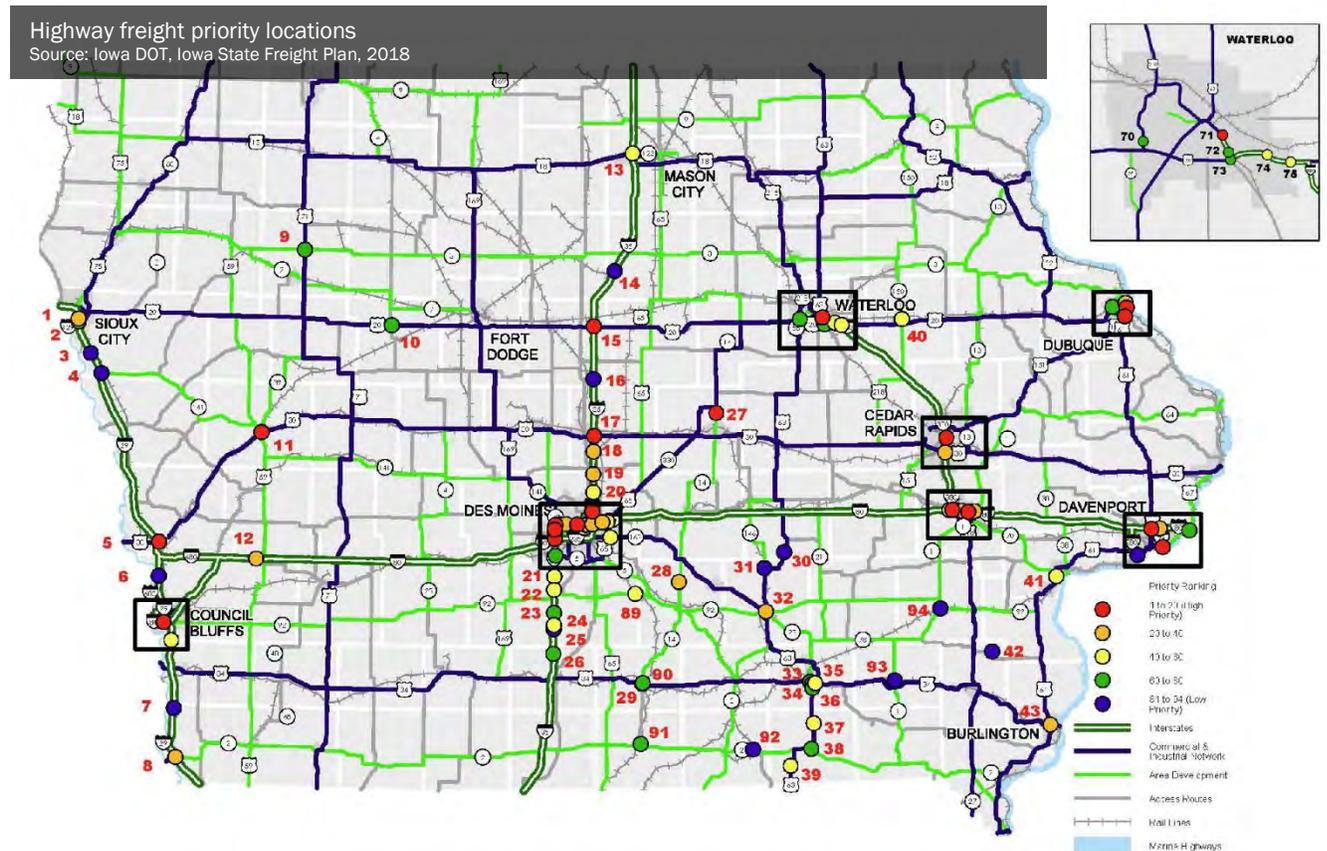


In order to identify and prioritize candidates for freight improvements, the Iowa DOT has utilized a Value, Condition, and Performance (VCAP) matrix. This approach takes advantage of multiple tools available to the Iowa DOT including a Freight Mobility Issues Survey, Iowa Travel Analysis Model (iTRAM), Infrastructure Condition Evaluation (ICE), INRIX bottleneck ranking tool, and Iowa's annual traffic counts.

The Iowa DOT initially developed a draft list of highway locations with freight mobility issues. This was completed by analyzing INRIX traffic data to identify bottleneck locations in the state and the number of times each occurs throughout the year. This data was retrieved for 2014 and overlaid with the Iowa DOT's truck traffic count data. This draft list of bottleneck locations was sent to the Freight Advisory Council, Iowa DOT districts, metropolitan planning organizations, and regional planning affiliations for input.

The statewide travel demand model (iTRAM) was used to assess the value of each candidate location to the overall freight transportation network. ICE was used to evaluate the current condition of each location, and the INRIX bottleneck ranking tool was used to determine the performance of each candidate location.

After each candidate location was assigned a Value, Condition, and Performance rating, each was ranked using those values for each of the three categories. The average of these three rankings was calculated and the candidate locations were assigned an overall priority rank. Six locations, including one high priority, were identified in the Black Hawk County metropolitan area. Infrastructure recommendations identified as part of the Northeast Industrial Access Planning Study (discussed later in this chapter) would increase efficiency for truck freight movements in the metropolitan area and may alleviate the majority of freight bottlenecks identified.



www.iowadot.gov/iowainmotion/files/Iowa-State-Freight-Plan-Update-2018.pdf

Iowa State Rail Plan 2017

This document is intended to guide the Iowa DOT in its activities of promoting access to rail transportation, helping to improve the freight railroad transportation system, expanding passenger rail service, and promoting improved safety both on the rail system and where the rail system interacts with people and other transportation modes. The State Rail Plan describes the state's existing rail network and rail-related economic and socioeconomic impacts. The Plan also describes the State Rail Plan process, Iowa's rail vision and supporting goals, proposed short- and long-range capital improvements, studies, and recommended next steps to address the issues identified.

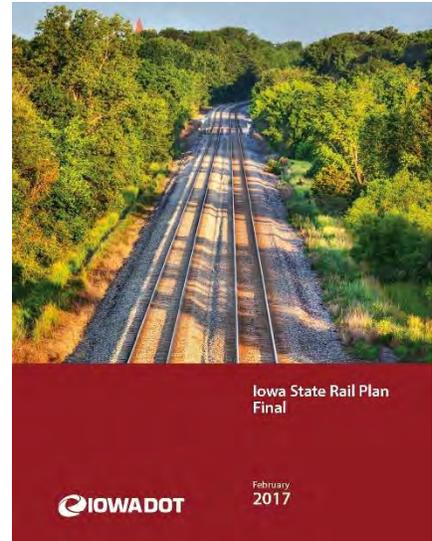
During stakeholder input, various themes arose regarding existing rail issues at the local, regional, or state levels and the direction or actions that should be taken in the future. The themes described included:

- General rail benefits, opportunities, and threats
- Rail freight
- Intercity passenger rail service
- Commuter rail service
- Rail safety and security
- Rail-related economic development
- Environmental issues
- Rail financing
- Role of public agencies regarding rail

Based on suggestions obtained through outreach efforts, the Iowa DOT developed Iowa's rail vision of *"a safe, secure, and efficient Iowa rail system that ensures Iowa's economic competitiveness and development by maintaining the rail infrastructure and providing rail access and connectivity for people and goods in an environmentally sustainable manner."*

Rail service goals aligned with the vision were developed based on the rail-related benefits, issues, and challenges that were identified. These goals are as follows:

- Enhance safety and security of the rail system
- Maintain the rail infrastructure
- Provide access and connectivity
- Improve efficiency
- Ensure economic competitiveness and development
- Sustain the environment



Intermodal Transfer Facilities

Iowa's freight system includes a number of facilities that enable the smooth transfer of goods from one mode to another. These facilities allow shippers to take advantage of the cost, speed, and capabilities of more than one mode. Intermodal transfer facilities are critical to provide the most efficient goods movements for various commodities. Types of transfer facilities include the following:

- Intermodal transfer facility – Transfer of freight using an intermodal container or trailer through multiple modes of transportation without the handling of the freight itself when changing modes.
- Transload facility – Transfer of freight shipments, typically bulk, from the vehicle/container of one mode to that of another at a terminal interchange point.

Currently, there are no intermodal transfer facilities located within the MPO. The metro area does have three transload facilities, two distribution centers, and multiple public warehouses that collect and distribute freight. These locations generate many truck trips from the shipping and receiving of commodities which should be considered during the transportation planning process.

Iowa's freight intermodal facilities
Source: Iowa DOT, Iowa State Freight Plan, 2018



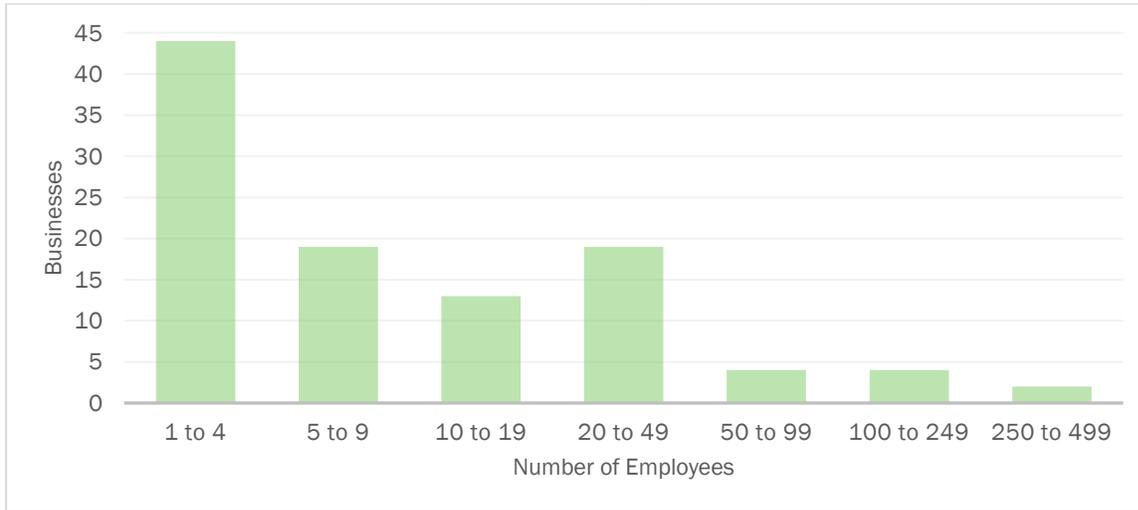
Source: Iowa DOT

Freight in the Metropolitan Area

The metro area offers four modes of transportation for freight: truck, rail, air, and pipelines. These modes are all utilized for the movement of goods within, to, and from the metropolitan area. Map 6.1 shows the multimodal freight elements in the area.

The MPO is home to many manufacturing companies and industries that facilitate or rely on freight movements. There are also a variety of transportation-related companies and motor carriers homebased in the metropolitan area. Figure 6.10 shows the number of transportation and warehousing establishments by number of employees. According to the U.S. Census Bureau's *2016 County Business Patterns*, the metropolitan area has 105 transportation and warehousing establishments with a total of 2,685 employees and annual payroll of \$113 million.

Figure 6.10: Number of Transportation and Warehousing Businesses by Number of Employees



Source: U.S. Census Bureau 2016 County Business Patterns

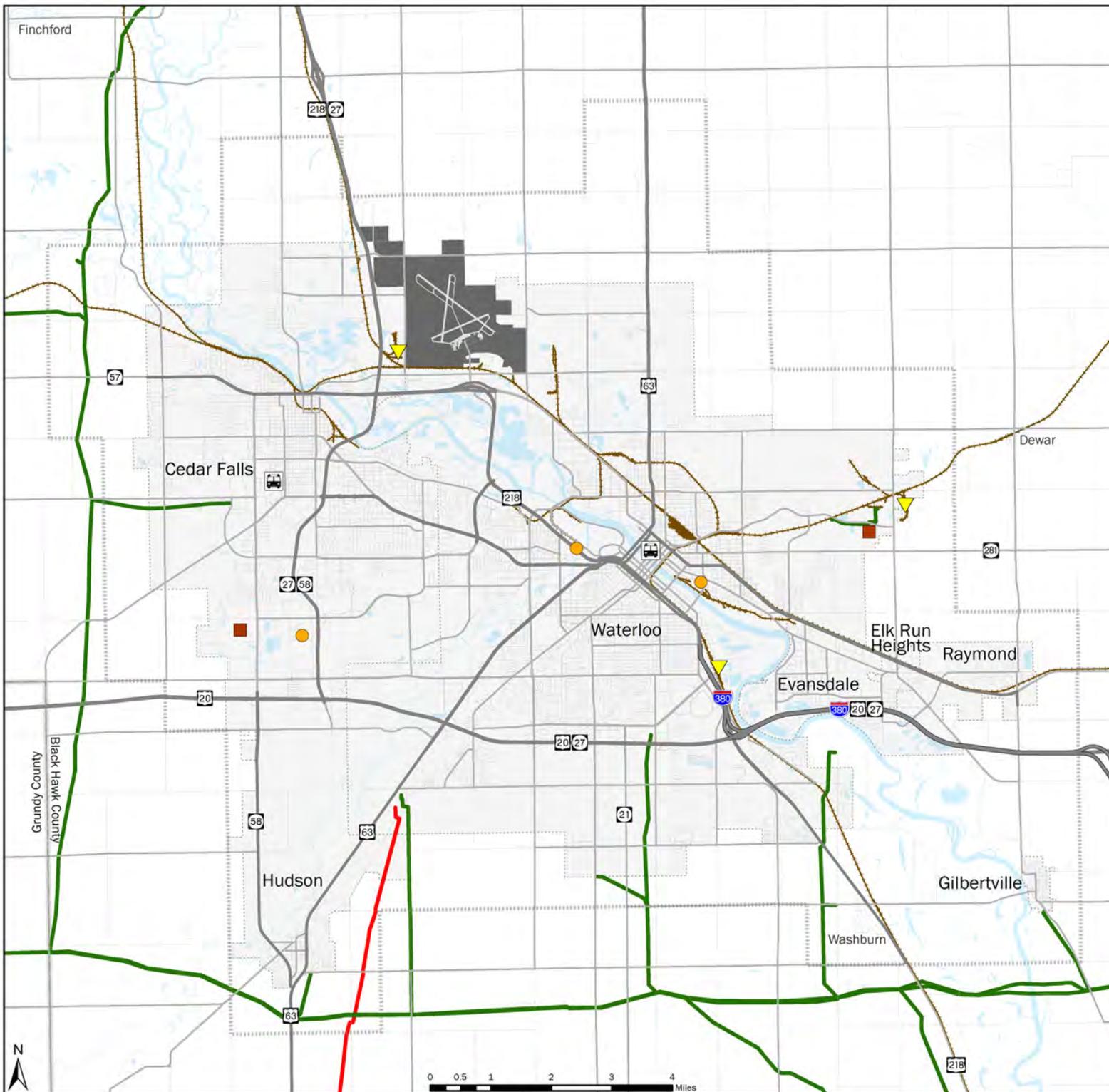
In addition to industries that provide or support transportation, there are a variety of businesses in the MPO that rely on freight transportation. Businesses in the manufacturing, retail, and wholesale sectors require efficient transport of their products inbound and outbound. Table 6.1 lists the ten major employers in Black Hawk County. Two of the top five employers are manufacturing and foods industries that rely heavily on freight shipments.

Table 6.1: Ten Major Employers

| Company Name | Industry | Approximate Employees |
|-------------------------------|-----------------|-----------------------|
| John Deere | Manufacturing | 5,000 |
| Tyson Fresh Meats | Food Processing | 2,889 |
| Wheaton Franciscan Healthcare | Health Care | 2,883 |
| UnityPoint Health | Health Care | 2,520 |
| University of Northern Iowa | Education | 1,816 |
| Hy-Vee Foods Store (6) | Grocery | 1,773 |
| Waterloo Community Schools | Education | 1,604 |
| Omega Cabinets | Manufacturing | 854 |
| VGM Group | Diversified | 843 |
| Target Regional Distribution | Distribution | 840 |

Source: Greater Cedar Valley Alliance & Chamber 2016/2017 Community Guide

Map 6.1 Multimodal Freight Elements



Legend

- City Boundary
- MPO Study Area
- Airport
- Bus Transit Facility
- Distribution Centers
- Transload Facilities
- Warehouse Facilities
- Railroad
- Pipeline Type**
- Natural Gas Pipeline
- Hazardous Liquid Pipeline

Data Source: INRCOG, Iowa DOT and National Pipeline Mapping System (<https://www.npms.phmsa.dot.gov/>)

INRCOG Iowa Northland Regional Council of Governments
Disclaimer: This map is for reference only. No liability is assumed for the accuracy of the data delineated herein, either expressed or implied by INRCOG.

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Truck Transportation

The MPO has a high-quality network of highways for the transportation of goods entering, leaving, or traveling through the MPO. Commodity movement by truck in Iowa is heavily concentrated on the Interstate Highway System and Commercial and Industrial Network, and Black Hawk County is served by segments of both. These highways travel far beyond the local area and provide state and national connectivity.

Transportation by truck is the primary modal choice for shippers in Iowa and the Black Hawk County metropolitan area. This is in part due to the relatively low cost of shipping coupled with the flexibility provided by truck transport. It is essential that the availability and transport of goods be efficient and able to respond in a short time to meet just-in-time manufacturing needs. The metropolitan area is fortunate to have a high-quality street and highway network to meet this need.

Highway Network

Waterloo and Cedar Falls have a substantial inventory of major arterials that connect the region to the rest of the Midwest and nation. Table 6.2 provides traffic figures for some of these highways. Over the years, traffic and truck traffic has increased on many of these routes. As shown, the highways that serve as through routes – Interstate 380, U.S. Hwy 20 – have a significant percentage of truck traffic.

Table 6.2: Traffic Comparison for Highways, 2012 vs 2015

| Location | AADT 2012 | AADT 2015 | Percent Trucks 2012 | Percent Trucks 2015 |
|---|--------------|--------------|------------------------|------------------------|
| I-380 at D38 (Poyner Rd) interchange | 15,200 | 15,600 | 21.5 | 24.7 |
| I-380 at Cedar River Bridge | 40,600 | 42,100 | 9.6 | 15.2 |
| I-380 at Mitchell Avenue | 22,100 | 26,500 | 8.2 | 10.3 |
| U.S. Hwy 20 at IA Hwy 58 interchange | 15,900 | 14,500 | 10.6 | 22.7 |
| U.S. Hwy 20 at I-380/U.S. Hwy 218 W interchange | 25,500 | 31,400 | 10.0 | 16.3 |
| U.S. Hwy 218 at IA Hwy 27/57 interchange | 23,300 | 29,100 | 8.3 | 9.2 |
| U.S. Hwy 218 at W 11 th St | 27,100 | 31,100 | 8.0 | 9.3 |
| U.S. Hwy 63 at Ansborough Ave | 6,000 | 6,800 | 7.9 | 9.0 |
| U.S. Hwy 63 at Donald St | 14,300 | 11,000 | 5.6 | 4.6 |
| IA Hwy 58 at Greenhill Rd | 23,600 | 23,100 | 5.3 | 4.8 |

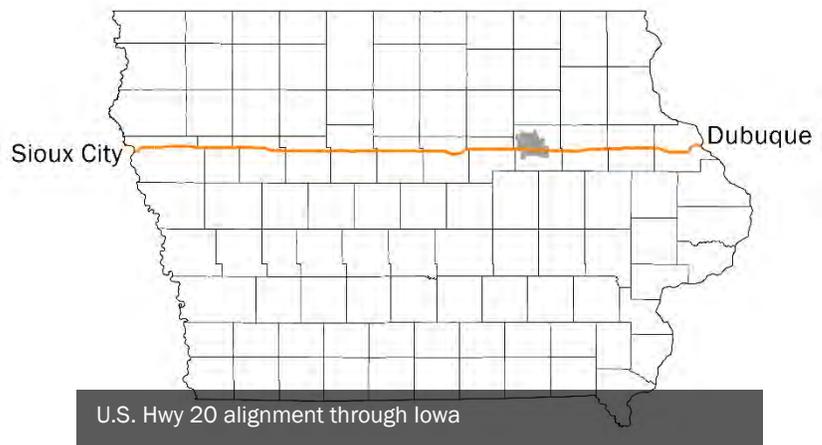
Source: Iowa DOT Traffic Books

Truck Transportation Planning Issues

Planned initiatives that would impact truck transportation are addressed in Chapter 3. These projects primarily focus on the preservation of the major corridors in the metropolitan area. A specific freight-related project is the Northeast Industrial Access Planning Study which is scheduled for completion in December 2018. The goal of this study is to identify an alternative route that will function as a freight corridor to serve the growing northeast industrial area in Waterloo. The study generated infrastructure recommendations to increase efficiency for truck freight transport. Improvements identified for Plaza Dr/Elk Run Rd and North Elk Run Rd are shown in the fiscally constrained table of projects in Chapter 3; three large-scale projects are identified outside the financial constraint of this Plan.



Recent construction projects have improved the metropolitan area's connectivity to the nation. One of those projects is the completion of the four-lane U.S. Hwy 20 across the state. This project involved adding two additional lanes to the highway between Early and Moville. This final 40 miles of U.S. Hwy 20 expansion was completed in 2018. This upgraded facility makes U.S. Hwy 20 a comparable option to other east-west routes, such as Interstate 80 in central Iowa, and could result in a significant increase in freight traffic in the metro area.



Iowa continues to be a leader in the production of renewable energy, in particular biofuels and wind energy. According to Iowa Corn, Iowa leads the nation in ethanol production, creating nearly 30 percent of all U.S. ethanol. Iowa's ethanol industry can produce more than 4.1 billion gallons annually, using more than 1.3 billion bushels of corn. Ethanol plants have created new more localized demand for corn, thus changing the transportation needs of the agriculture industry. For many plants, corn is frequently delivered by truck from farms or grain storage locations. Outbound shipments of ethanol and distiller grains are often transported by truck. In addition, large turbine components and machinery used to construct farms must also be transported along highways and bridges. According to the Iowa DOT, it takes up to 12 truckloads per wind turbine tower. Each turbine also requires cranes, concrete, gravel, and construction equipment. The added truck traffic can accelerate the rate of deterioration on roads and bridges.

While not all projects programmed in the region are focused on freight, all roadway projects on federally classified roads should be planned with freight considerations in mind. The design of roads is critical to freight movement, and issues such as inadequate shoulders, turning radii, or travel way width can be a hinderance to the efficient movement of freight.

Rail Transportation

Rail is typically second to trucks in terms of freight movement across the U.S., Iowa, and in the MPO. While railroad mileage in the state is less than half of what it was early in the 20th Century, the volume of rail traffic continues to increase. According to the Iowa DOT *2017 Iowa State Rail Plan*, Iowa ranks in the top 15 among states in total miles of rail, rail tons originated, rail carloads originated, rail tons carried, and rail carloads carried. There are currently several rail lines being operated in the metropolitan area including:

- Canadian National rail line running east-west through the metropolitan area, whose primary operators are the Chicago Central and Pacific Railroad and Cedar River Railroad Company.
- Canadian National rail line that comes from the north paralleling U.S. Hwy 218 before merging with the east-west route. The primary operator is the Cedar River Railroad Company.
- Iowa Northern Railway Company line running northwest-southeast through the metro area, with haulage agreement with Union Pacific.
- Union Pacific rail line running from downtown Waterloo to Dewar. The line continues northeast to Oelwein under the D&W Railroad Company. Iowa Northern Railway Company is the primary operator.

Rail carriers are classified based on their historical annual operating revenues (Table 6.3).

Table 6.3: Railroads Operating in the MPO by Class

| Class | Annual Operating Revenue | Railroad Company in MPO | Miles Owned in Iowa | Percent of Total Iowa Rail Network |
|------------------------|-------------------------------|-------------------------------|---------------------|------------------------------------|
| Class I | \$250 million or more | Union Pacific | 1,291 | 33.5 |
| | | Canadian National Railway | 605 | 15.7 |
| Class II “regional” | \$20 million to \$250 million | D&W Railroad | 22 | 0.6 |
| | | Iowa Northern Railway Company | 117 | 3.0 |
| Class III “short line” | Less than \$20 million | | | |

Source: Iowa DOT, Iowa State Rail Plan, 2017

The above carriers depend on the transportation of bulk commodities such as grain, coal, and chemicals as their primary freight. These carriers also transport intermediate and finished manufactured products outbound from the metro area. There are multiple businesses in the MPO that rely on rail to provide portions or all of their freight transportation needs.

Passenger Rail

Currently there are no passenger rail services in the metropolitan area. The only Amtrak routes that cross Iowa are the California Zephyr with stations in Burlington, Mt. Pleasant, Ottumwa, Osceola, and Creston, and the Southwest Chief with a station in Fort Madison. Planned intercity services include new passenger trains between Chicago and Iowa City, and between Chicago and Dubuque. The Iowa DOT is studying the extension of the Chicago-Iowa City service west to Des Moines and Council Bluffs/Omaha. Other routes that may be studied include the extension of a Chicago-Dubuque service west to Waterloo/Cedar Falls.

Rail Transportation Planning Issues

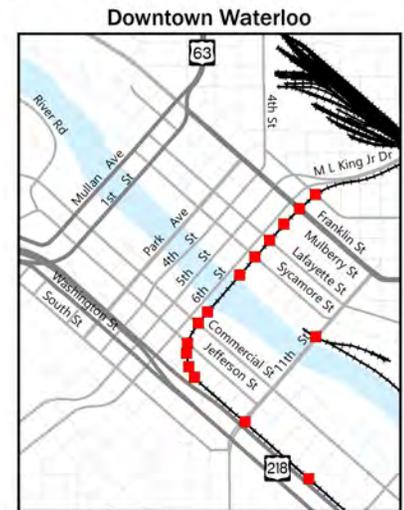
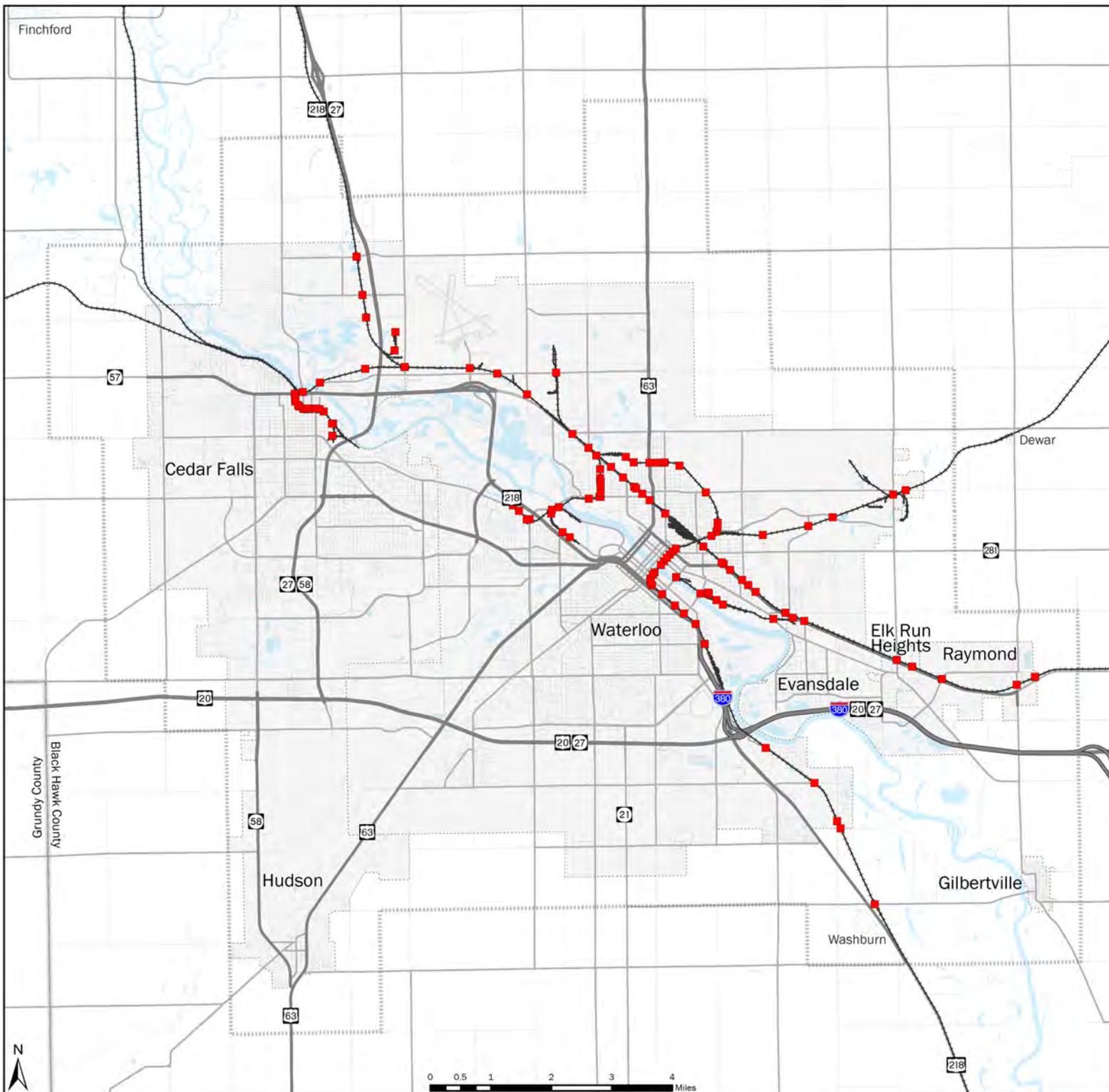
One of the most visible rail transportation planning issues are safety and delays at road crossings. In Black Hawk County, there are 130 at-grade road-rail crossings (Map 6.2). Railroad crossings remain a safety concern despite widespread use of active warning systems to clear the tracks for oncoming trains. From 1998-2017, there were 23 highway-rail incidents at public and private crossings in Black Hawk County which resulted in two fatalities and four amputations. Public frustration with frequent delays can lead to choices such as crossing a stopped train or driving around lowered rail crossing gates, both of which are illegal and incredibly dangerous.

Iowa Code 327G.32 prohibits a railroad from blocking a crossing for longer than ten minutes with four exceptions: when necessary to comply with signals affecting the safety of the movement of the trains; when necessary to avoid striking an object or person on the track; when the train is disabled; or when necessary to comply with governmental safety regulations, including speed ordinances and speed regulations. Citations for non-compliance may be issued by local law enforcement authorities, but this is seldom effective. Communities are encouraged to work with the railroads to come to some kind of accommodation. The Iowa DOT Office of Rail Transportation can provide community representatives with information and appropriate railroad contacts. The department is also available to help coordinate and foster community/railroad relationships to resolve these problems. Federal and state monies – STBG, Iowa’s TAP, Highway/Rail Crossing Safety Program – are available to fund rail crossing studies, safety improvements, and pedestrian crossing infrastructure.



Railroad crossing pedestrian bridge in Portland, OR
Bikeportland.org

Map 6.2 At-Grade Railroad Crossings



Legend

- City Boundary
- MPO Study Area
- Railroad
- At-Grade Railroad Crossings

Data Source: INRCOG and Iowa DOT
<http://data.iowadot.gov/datasets/public-roadway-rail-crossings>



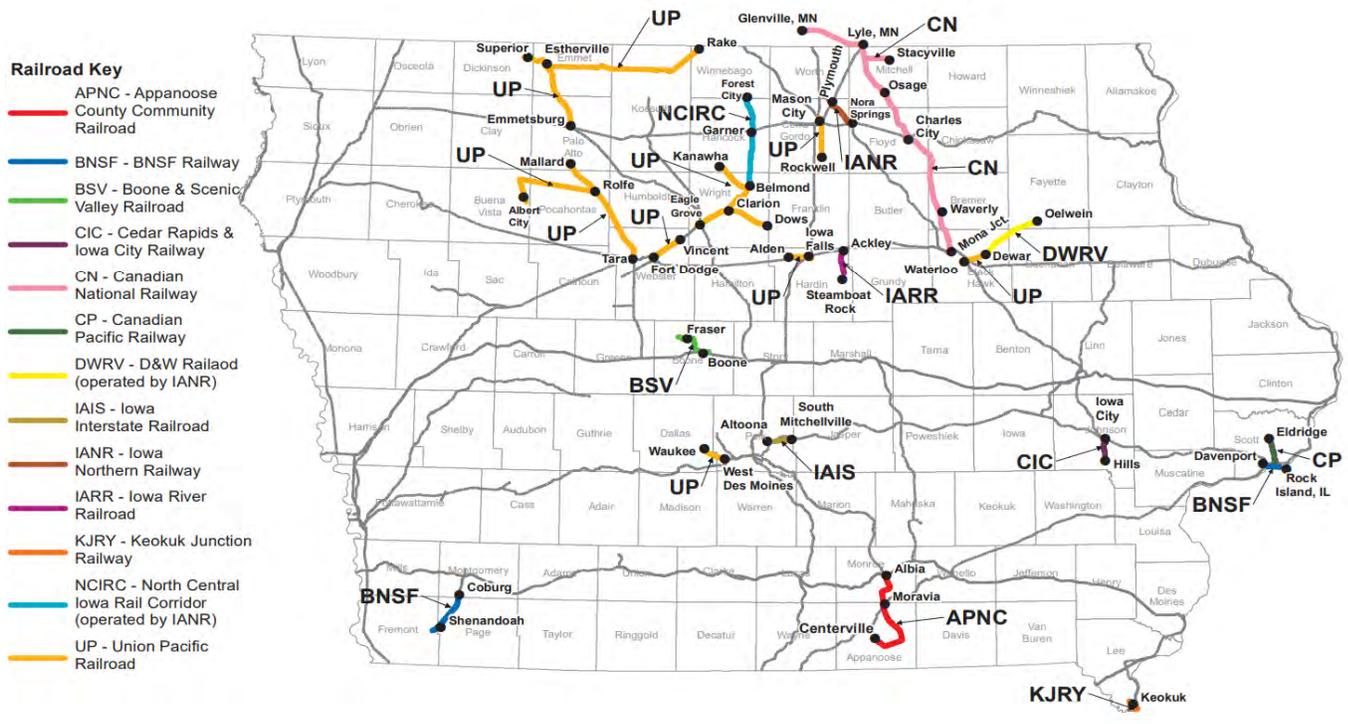
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Total rail traffic is anticipated to increase substantially over the life of this Plan. According to the Iowa DOT's 2017 Iowa State Rail Plan, the total rail traffic inbound, outbound, and within the state is anticipated to grow 35 percent, 44 percent, and 80 percent per year respectively from 2013-2040. Total tonnage for freight rail traffic for all directional categories in the same time period is anticipated to increase by 52 percent. With this projected growth, portions of the rail lines in the metropolitan area may be near or over capacity. Increase in ethanol production in the surrounding region could have a significant local impact on rail companies due to the large amounts of corn and gasoline as inputs and the shipment of ethanol and distiller grains as outputs. Other driving factors for projected increases in rail traffic include the expansion of the Panama Canal and increases in domestic intermodal transportation.

Capacity is also an industry-wide issue as in the past many railroad lines were closed and smaller branch lines were sold. Now, as the railroad industry is seeing growth, capacity is becoming more of a concern. Increased use of existing rail lines is likely to occur, and the likelihood of new rail lines being constructed is uncertain. Rail capacity will continue to be an issue for the metropolitan area as the volume of rail traffic moving across existing lines increases.

Iowa's railroads have made considerable progress in the last two decades to upgrade track and bridges to accommodate heavier railcars with maximum allowable gross weights of 286,000 pounds. These railcars are becoming an industry standard for railroad transportation. At present, there are three lines in Black Hawk County that are incapable of handling 286,000-pound railcar weights. As a result, additional rail traffic may be diverted onto local roads, thus increasing highway maintenance and rehabilitation costs.



Iowa rail line segments incapable of handling 286,000 lb. railcar weights
 Source: Iowa DOT, Iowa State Rail Plan, 2017

Pipeline Transportation

Pipelines are a crucial part of the transportation infrastructure, delivering oil, natural gas, and other products. According to the U.S. DOT Pipeline and Hazardous Materials Safety Administration, there are 12,741 miles of active pipeline in Iowa. In Black Hawk County, there are approximately 110 miles of gas transmission pipeline, and 11 miles of hazardous liquid pipeline. General locations of pipelines passing through or serving the metropolitan area are shown in Map 6.1.

Pipelines are typically privately owned, and any deficiencies or infrastructure improvements would be completed by the owner. Planning issues to be considered include awareness of their locations and product type, and preparedness to deal with any type of pipeline incident. A serious incident could require evacuation efforts around that location which could have major transportation implications.

Air Transportation

The metro area is served by the Waterloo Regional Airport (ALO) located on Airport Blvd in the northwest corner of Waterloo. The airport is accessible from U.S. Hwy 218 but is not currently served by the transit system. The airport is owned and operated by the City of Waterloo and is overseen by a seven-member Airport Commission appointed by the mayor. The airport is classified as a non-hub primary commercial service airport, offering general aviation and commercial service. The airport is also a major base for the Iowa Army National Guard. While the airport does facilitate some air cargo, the majority of its operations are commercial, general aviation, and military.



The Waterloo Regional Airport features three runways and a variety of facilities to serve air transportation. The primary runway is 12/30, oriented northwest/southeast. The runway is 8,400 feet long, 150 feet wide, and comprised of grooved asphalt. The second runway, 18/36, is oriented north/south; the runway is 6,000 feet long, 150 feet wide, and comprised of grooved asphalt. This runway services the needs of all aircraft when winds are not favorable for the primary runway. The third runway, 06/24, is oriented northeast/southwest and meets crosswind situations for light aircraft. It is 5,400 feet long and 130 feet wide with an asphalt surface. All three runways are lighted with runway 12/30 having high intensity runway lights, and runways 18/36 and 06/24 having medium intensity runway lights.

The airport has a series of connecting and parallel asphalt taxiways. They range from 50 to 75 feet in width and are lit with blue taxiway edge lights. The airport's terminal building opened in 1948 and has experienced a series of renovations and additions over the past decades. The main floor provides airline ticketing, airline boarding, baggage claim, car rental, and lounge. Airport administration and two national weather service offices are located on the second floor. Short- and long-term parking is provided for travelers.

Hangar facilities are located directly west and east of the existing terminal building. The airport currently has 115,700 square feet of hangar space including 30 individual T-hangars to accommodate based aircraft. There are also 54,000 square yards of apron for general aviation aircraft, 1,700 square feet of general aviation terminal facilities, and 41 parking spaces to support the general aviation facilities. The airport shares the use of the airfield with the Iowa Army National Guard – 194th Air Cavalry. The Guard facilities are not on airport property but are located just east of the airport with access to the runway and taxiway system. The unit operates several helicopters from these facilities.

The Federal Aviation Administration (FAA) owns and operates an air traffic control tower located on the southeast part of the airport. The tower has radar and non-radar capabilities and is designated as a Level 5 Terminal Radar Approach Control. Aviation fuel is stored in a consolidated fuel farm southwest of the passenger terminal building. The existing aviation fuel farm consists of two above ground 20,000-gallon tanks dedicated to jet fuel storage, two above-ground 12,000-gallon tanks for avgas storage, and 1,000 gallons of storage for MOGAS.

The airport is home to Livingston Aviation, a full-service fixed base operator (FBO) providing aeronautical services to the general aviation public. There are two limited FBO's providing certain types of service to the general aviation public. The FBO has its own terminal facilities.

Recent and Planned Improvements

Facility improvements are funded through a variety of federal, state, and local programs. At the federal level, the FAA sponsors an Airport Improvement Program (AIP) which allocates a trust fund both on an entitlement and discretionary basis. The entitlement provision in the AIP supplies local airports with funds based on average annual passenger boardings. Discretionary funds are based on highest priority and selected from each airport's five-year Capital Improvement Program (CIP) through an 18-month grant process. Funds from this source require a ten percent local match and can be used to improve runways and purchase equipment, signs, lighting, and other non-operating expenses.

The Iowa DOT also sponsors an AIP and has developed a grant process in which state aviation fuel taxes are redistributed to airports. Like the FAA's discretionary AIP funds, capital improvement projects are selected from a five-year CIP and must be used to modernize and improve the facilities at Iowa airports. Projects that have been funded by these grant programs in the past five year are summarized in Table 6.4.

Table 6.4: Airport Improvement Program Grants for Waterloo Regional Airport, FY 2013-2017

| Fiscal Year | Projects | AIP Federal Dollars |
|-------------|---|---------------------|
| 2018 | Reconstruct apron | 510,480 |
| 2017 | Reconstruct taxiway, rehabilitate Runway 12/30, Rehabilitate Runway 18/36 | 2,655,686 |
| 2015 | Rehabilitate taxiway | 958,739 |
| 2014 | Acquire snow removal equipment | 872,643 |

Source: Federal Aviation Administration, Grant History Look Up

Rehabilitation and improvement of airport facilities are necessary to ensure the airport's viability as a passenger and freight transportation option. Recent reconstruction and repair projects include reconstruction to Taxiway Charlie, joint repair on Primary Runway 12/30, repainting of all FAA-approved airfield pavement markings, parking lot improvements, general aviation apron pavement reconstruction, and upgrades to Hangar Four. The Waterloo Regional Airport's CIP outlines anticipated projects in the next five fiscal years (Table 6.5).



Table 6.5: Waterloo Regional Airport Five-Year Capital Improvement Program

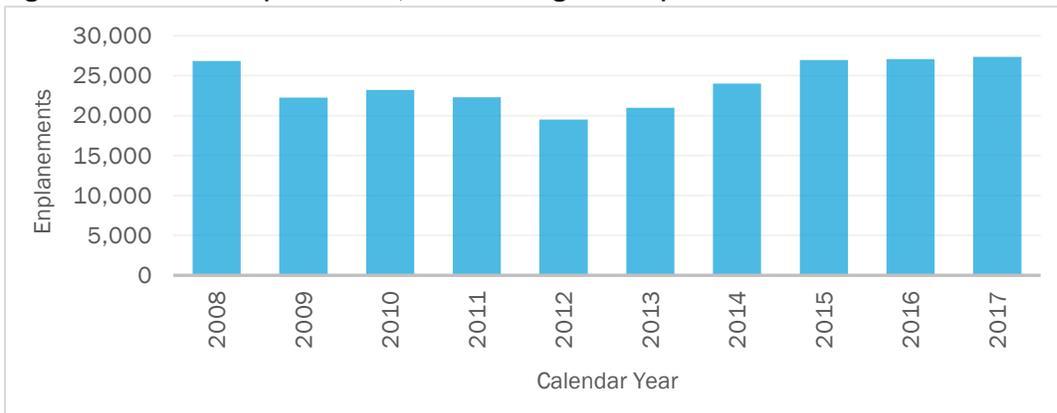
| Fiscal Year | Project | Cost Estimate |
|-------------|---|---------------|
| 2020 | Reconstruction of Taxiway B | 2,427,444 |
| 2021 | Pavement Maintenance – Runway 12/30 | 651,174 |
| 2022 | Taxiway A West – Reconstruction | 1,235,300 |
| 2023 | Airfield Pavement Marking Runway 18/38 and Taxiways | 192,960 |
| 2023 | Airfield Pavement Sweeper | 325,000 |

Source: Waterloo Regional Airport, AECOM, Five-Year Airport Capital Improvement Program, FY 2019-2023

Commercial Service

Waterloo Regional Airport is currently served by American Airlines with two daily flights to and from Chicago. In 2018, American Airlines signed a two-year contract extension to continue providing twice daily flights through the federal Essential Air Service program. American Airlines, which has been Waterloo’s sole carrier since 2012, provides flights on 50-seat regional jets operated through the regional brand American Eagle. Figure 6.11 shows annual commercial enplanements at the Waterloo Regional Airport over the past 10 years.

Figure 6.11: Annual Enplanements, Waterloo Regional Airport



Source: Federal Aviation Administration, Passenger Boarding for U.S. Airports

Air Cargo

Air freight has made up a small percentage of overall activity at the Waterloo Regional Airport. Unlike the airports in Cedar Rapids and Des Moines, Waterloo does not have a dedicated air cargo operator. The bulk of freight activity involves the unloading of cargo at the airport. Air mail has also declined dramatically in recent years.

Air Transportation Planning Issues

Issues that have impacted the region in recent years have been the limited jet service at the Waterloo Regional Airport, and the lack of service to multiple destinations. Currently, there are two regional jet flights per day, both to and from Chicago. The airport is pursuing a true market study and leakage analysis to determine the size and characteristics of the airport’s catchment area true market. The Waterloo Regional Airport is also pursuing updating their website and adding a cost of travel calculator.

In the past decade, the aviation industry has experienced a steady increase in air traffic, and this increase is projected to hold. According to the FAA *Aerospace Forecast 2018-2038*, system enplanements are forecast to grow at an average annual rate of 1.9 percent a year. Aviation demand is driven by economic activity, and a growing U.S. and world economy provides the basis for aviation to grow over the long run.