IOWA | DOT

STATE FREIGHT PLAN

2026

Approved by the
Federal Highway Administration
on July 28, 2026

CONTENTS

EXECUTIVE SUMMARY

Iowa State Freight Plan

The primary purpose of the State Freight Plan is to document the immediate and long-range freight planning activities and investments in the state. More specifically, it will provide guidance on how to address issues, adapt to emerging trends, and invest strategically in the freight system to grow a stronger economy, strengthen the nation's competitive advantage, and enhance the quality of life for Iowans.

National Freight Goals

- Identify and invest in infrastructure improvements, policies, and operational innovations
- Improve the safety, security, efficiency, and resiliency of multimodal freight transportation
- Achieve, maintain, and improve the state of good repair on the National Multimodal Freight Network (NMFN)
- Use innovation and advanced technology to improve the safety, efficiency, and reliability of the NMFN
- Improve the economic efficiency and productivity of the NMFN
- Improve the reliability of freight transportation
- Improve the short- and long-distance movement of goods
- Improve the flexibility of states to support multi-state corridor planning and the creation of multi-State organizations to increase the ability of states to address multimodal freight connectivity
- Reduce the adverse environmental impacts of freight movement of the NMFN
- Pursue the goals described in this subsection in a manner that is not burdensome to state and local governments

Iowa Freight System

8 commercial airports
106 other service airports

9,624-mile Primary Highway System
115,739 total miles of roadways

Almost **50,000** miles of pipelines
Multiple pipeline operators

14 railroad companies
3,824 miles of rail lines

70 barge terminals
491 miles of navigable waterways

Introduction

System Inventory & Performance

Industries & Commodities

Planning Considerations

Action Plan

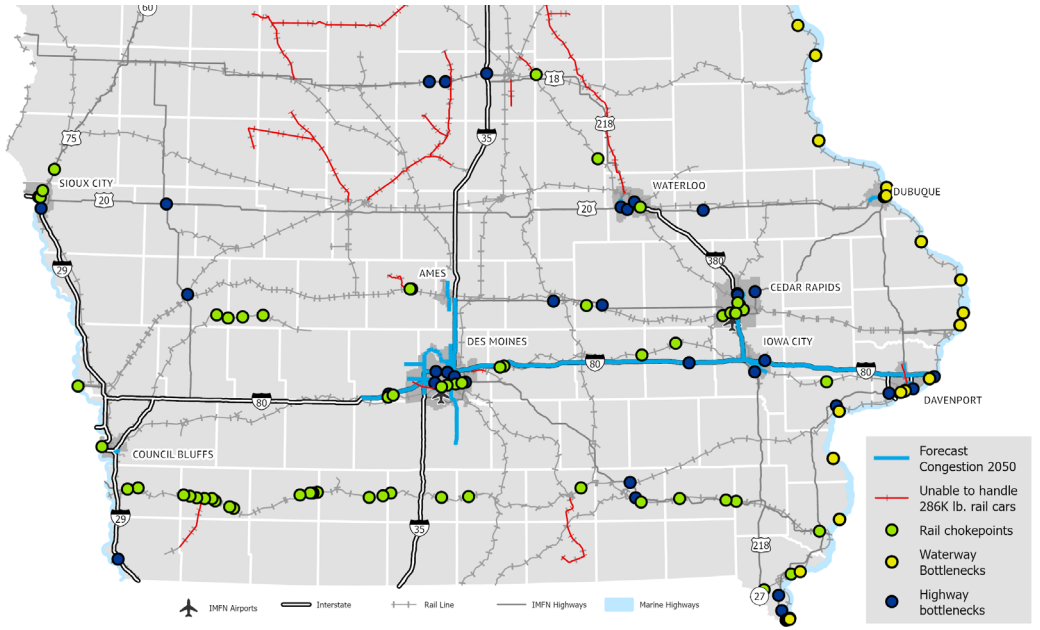
Freight Modes and Commodities

Each mode of freight transportation is inventoried with performance reported by condition, utilization, safety, and reliability. Commodity flows and primary supply chains are included along with other planning considerations identified and prioritized by the Freight Advisory Council.

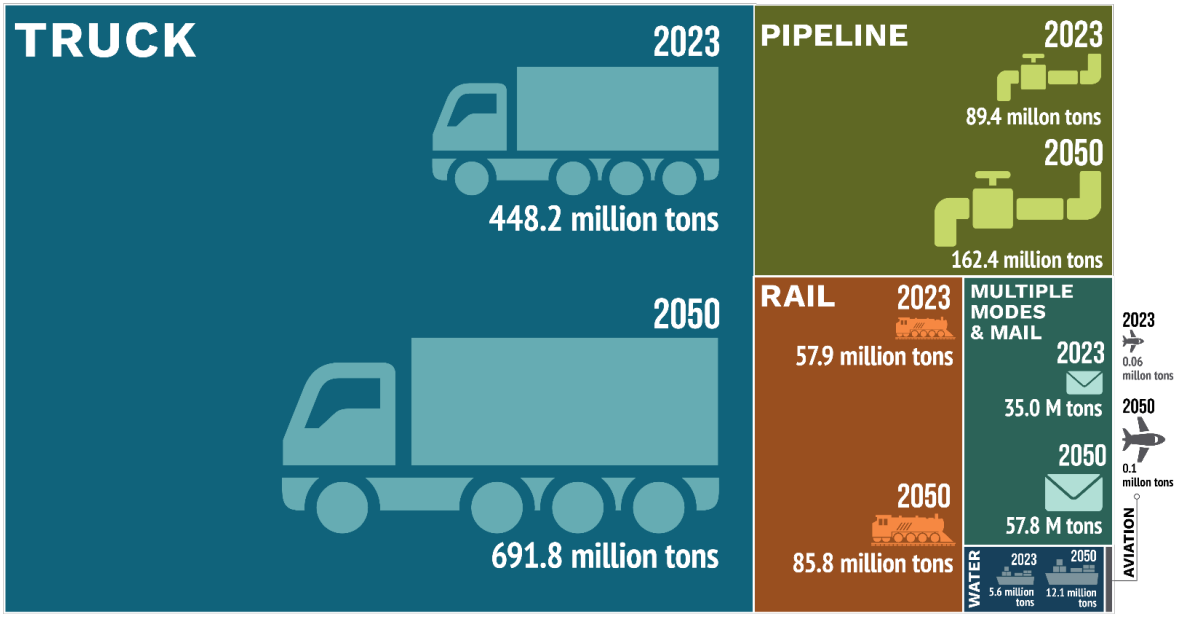
Planning Considerations

1. Safety
2. Funding
3. Regulations & trade
4. Labor and workforce
5. Bottlenecks
6. Market access & supply chains
7. Technology
8. Resiliency
9. Energy

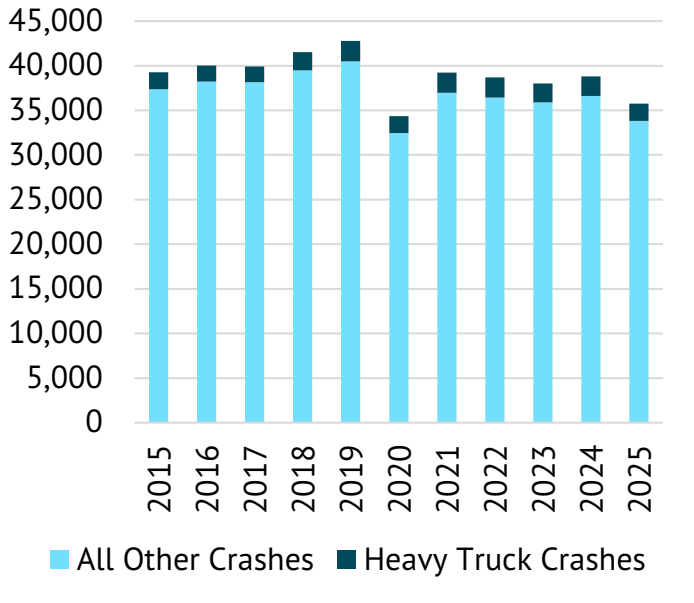
Bottlenecks and Chokepoints



Iowa Freight by Mode



Highway Safety Statistics



Action Plan

Includes implementation strategies, improvements, performance measures, and the Iowa Freight Investment Plan, all aligned with the Iowa DOT system objectives.

Improvements

Aviation	Air cargo projects at **Des Moines International** and **Eastern Iowa** Airports
Highway	33 prioritized **bottleneck locations,** prioritized **truck parking** study results, and $90,399,889 in **National Highway Freight Program** investments through 2030
Railroad	60 **short-range projects** plus others funded through state and federal programs
Waterway	Deferred/backlog maintenance projects for **Iowa locks and dams**

Implementation Strategies

1. Improve freight transportation system resiliency.
2. Explore additional sustainable funding sources to increase investment in the freight transportation system.
3. Work with local stakeholders and railroads to improve safety at railroad crossings.
4. Target investment to address mobility issues and bottlenecks that impact freight movements.
5. Collaborate with railroad operators to provide Iowa companies with increased access and capacity to accommodate additional freight shipments.
6. Partner with law enforcement and the trucking industry to combat human trafficking.
7. Advance a 21st century Farm-to-Market System that moves products seamlessly across road, rail, and water to global marketplaces.
8. Streamline and align freight-related regulations and minimize unintended consequences.
9. Explore opportunities for increasing value-added production within the state.
10. Support the development and adoption of emerging freight technologies to increase safety and efficiency.
11. Advocate for the funding and improvement of the inland waterway system and explore ways to expand Iowa's role.
12. Target investment in the Iowa Multimodal Freight Network (IMFN) at a level that reflects the importance of this system for moving freight.
13. Rightsize the highway system and apply cost-effective solutions to locations with existing and anticipated issues.
14. Study truck parking behaviors and meet the demand at DOT rest areas.
15. Support opportunities to develop new intermodal freight facilities in the state.
16. Partner with freight stakeholders to find innovative ways to address labor shortages across industry sectors.
17. Optimize the availability and use of freight shipping containers, including exploring other options for repositioning empty containers.
18. Mitigate the impacts of freight transportation on communities, wildlife, and the environment.
19. Enhance planning and asset management practices for the IMFN by utilizing designs and treatments that are compatible with significant freight movements.
20. Continually track and evaluate international trade deals, negotiations, and tariffs.
21. Enhance cybersecurity measures to protect Iowa's freight systems from digital threats, ensuring a safe, resilient, and reliable transportation network.

1. INTRODUCTION

1.1 Plan purpose | 1.2 Impact on the economy | 1.3 Federal transportation bills and national freight goals

Importance of Freight Planning

The United States currently enjoys an unrivaled comparative and competitive advantage over the rest of the world due to its production capacity and ability to transport at low costs.

Thanks to an abundance of natural resources and arable land, the U.S. can produce vast amounts of agricultural commodities, energy products, minerals, and raw materials. The U.S. also has a world-class freight transportation system with multiple transportation modes, lower costs, and greater reliability that provides American businesses the ability to move products and materials much more efficiently than elsewhere in the world.

Unfortunately, the competitive advantage is shrinking due to deteriorating infrastructure, increased congestion, and shifting supply chains. The transport of goods and services is the backbone of the economy and investments in basic transportation infrastructure strengthens economic vitality. A safe, efficient, and convenient freight transportation system is a necessity not only for Iowa, but the entire nation.

1.1 Plan Purpose

Leadership and clear direction are necessary for making strategic decisions and investments that will better support the economic competitiveness of the state and nation. The Iowa Department of Transportation (Iowa DOT) recognizes this necessity and the importance of further integrating freight considerations into the statewide transportation planning and programming process.

The primary purpose of the Iowa State Freight Plan (State Freight Plan) is to document the immediate and long-range freight planning activities and investments in the state. More specifically, it will provide guidance on how to address issues, adapt to emerging trends, and invest strategically in the freight system to grow a stronger economy, strengthen the nation's competitive advantage, and enhance the quality of life for Iowans.

The State Freight Plan serves as a platform for connecting Iowa's freight-related initiatives and a tool for supporting informed decision-making aimed at addressing the ongoing challenges of today's freight system and supply chains. This plan will:

- Address each of the five modes of the freight transportation system – aviation, highway, pipeline, railroad, and waterway;
- Support the implementation of the state transportation plan, Iowa in Motion;
- Align with the national freight goals; and
- Meet the requirements of the Infrastructure Investment and Jobs Act (IIJA).

How the Plan is Used—the State's Role

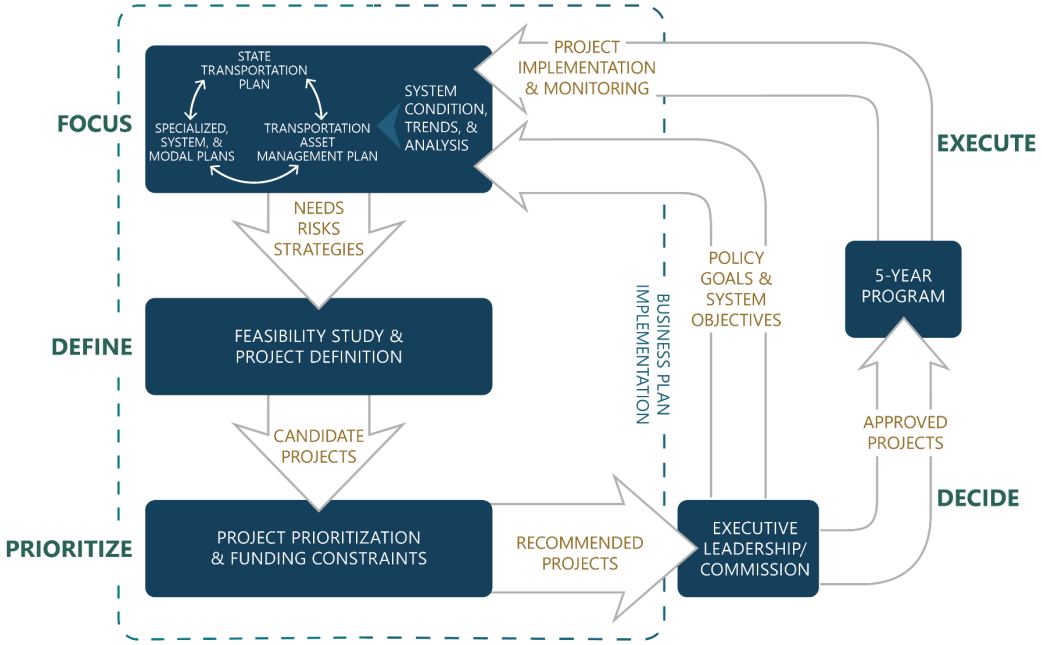
The State of Iowa has an important role in supporting Iowa's freight transportation system, and it is the responsibility of the Iowa DOT to support the safe, efficient, and convenient movement of goods by:

- Working collaboratively with industry to improve infrastructure and supply chain efficiency and resiliency through groups such as the Iowa Freight Advisory Council;
- Developing, maintaining, and utilizing data and tools to analyze the freight system and identify bottlenecks that inhibit supply chain efficiency or raise costs to shippers and consumers;
- Assisting local planning entities with further incorporating freight considerations into their planning processes; and
- Providing targeted funding and financial assistance to support freight projects that provide benefits to the economy.

In recent years, the Iowa DOT has embarked on numerous freight planning activities to help improve freight movement. The State Freight Plan is a way to connect each of these initiatives and allow them to move forward toward a common goal of optimal freight transportation in the state.

Each of Iowa's freight-related initiatives plays a role in a collaborative planning and programming process. Figure 1.1 illustrates in more detail how the State Freight Plan relates to additional plans and tools the department utilizes to ultimately inform the development of the Five-Year Program. These include the state transportation plan, more specialized plans (e.g., State Freight Plan and Transportation Asset Management Plan), system evaluation tools, and project-level evaluation and prioritization tools.

Figure 1.1: Relationship between elements of the planning and programming process



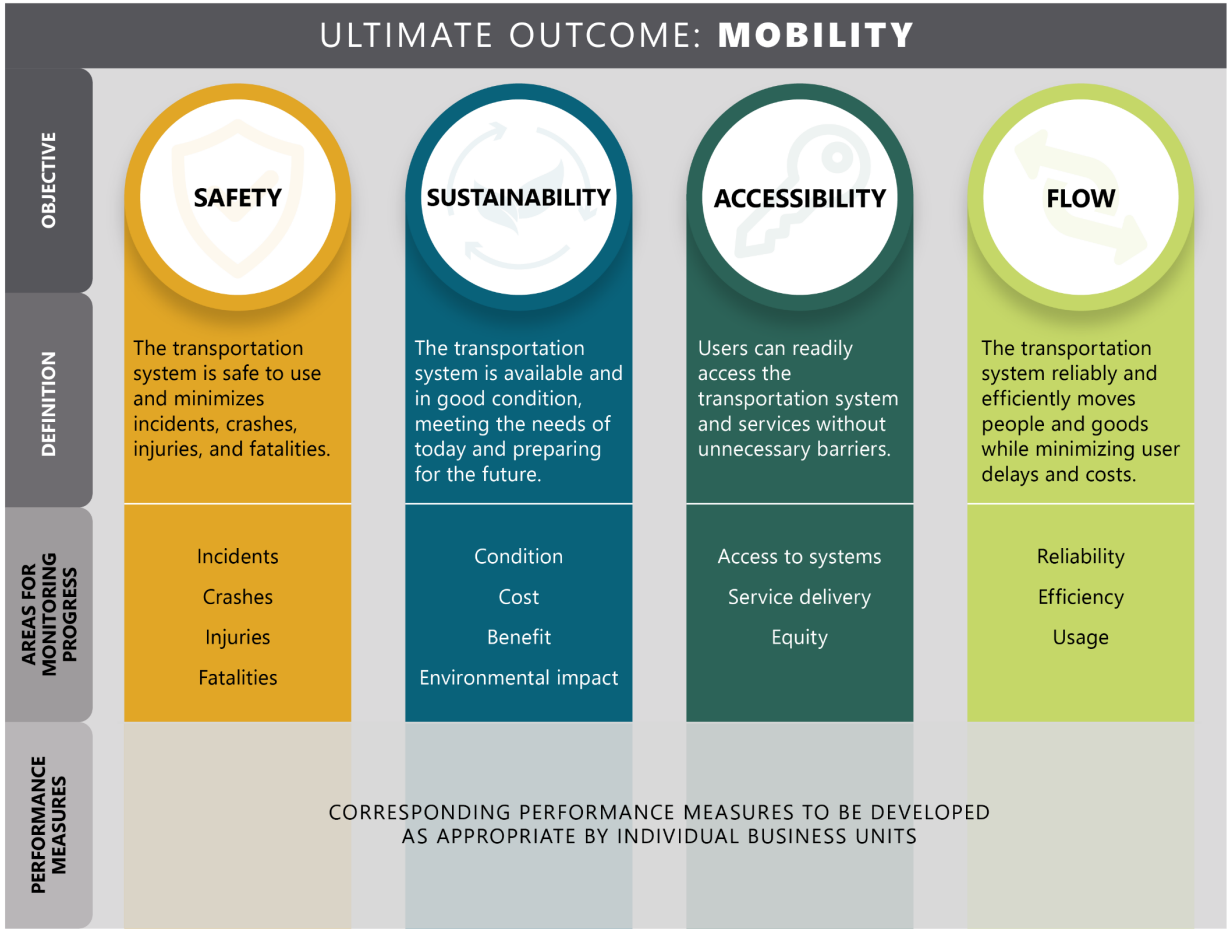
Source: Iowa DOT

The State Freight Plan is used to assist the department in making informed transportation decisions and investments by:

- Inventory Iowa's freight transportation assets, the conditions of these assets and identify the locations of multimodal bottlenecks requiring attention
- Document demographic, economic, and freight trends, evaluate their implications for Iowa's future and identify freight dependent industries and supply chains supported by Iowa's transportation system.
- Identify key trends and issues impacting freight transportation to inform forecasting and prioritization of near- and long-term planning considerations.
- Develop strategies and improvements to be implemented to help maintain and improve the freight transportation system.

This document is also developed to support the state transportation plan. More specifically, the goals, implementation strategies, improvements, and performance measures in the State Freight Plan will align with the four Iowa DOT system objectives (Figure 1.2) documented in the state transportation plan.

Figure 1.2: Iowa DOT system objectives



Source: Iowa DOT

1.2 Impact on the Economy

Efficient and reliable transportation options power the creation of wealth in the state and nation, unleashing the opportunity for economic activity. The state's economy is dependent on a robust and diverse transportation system to move products to a global marketplace. This system has long been a competitive advantage for businesses in Iowa and remains so today as the state continues to be a major player in the global economy.

The performance of the freight transportation system affects economic productivity in several ways. Changes in the cost and the quality of freight movement affect both the amount of freight transport that firms buy and the ways in which they use it. At the most basic level, a drop in the cost of goods movement means more will be sold. This will most likely take the form of an expanded area for obtaining inputs, materials, and intermediate products, as well as for shipping final products. Lower cost transport increases the market that can be served from a given facility. Figure 1.3 traces the links from an improvement in freight transport to a higher standard of living.

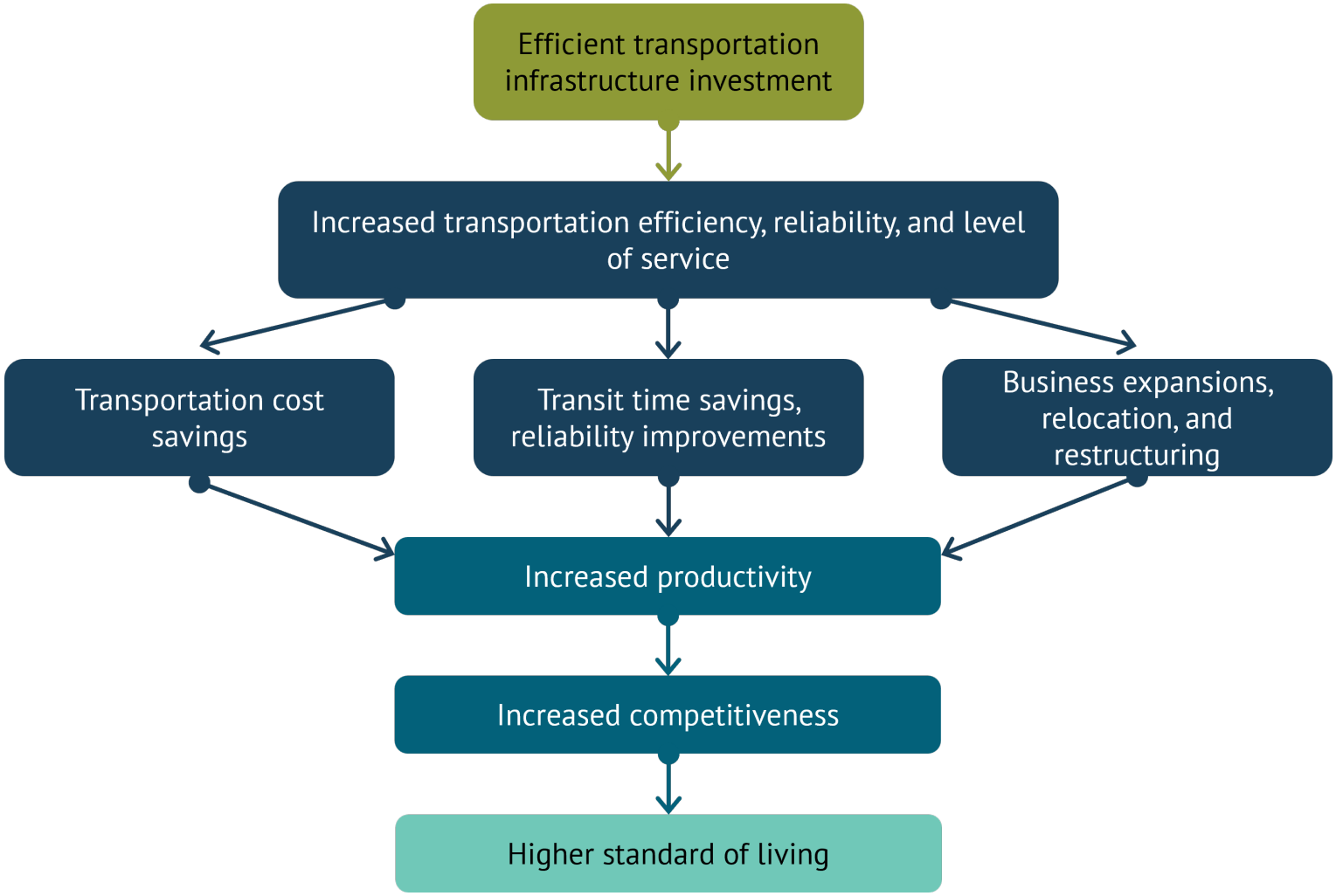
Improvements in the quality of transportation (i.e., efficiency and reliability) result in reduced transit times and greater reliability of delivery times. Both, especially the latter, impact the way in which firms design their logistics systems. These improvements also open the door for transportation cost savings, as well as potential business expansions and restructuring. Lower transit times increase the "reach" of facilities such as factories and distribution centers; if these facilities can be more widely spaced, a given market area can be served with fewer facilities. Since fewer facilities for a given flow of goods means more volume per facility, investment costs and operating costs may be reduced.

Thus, when firms consider their logistics arrangements and the design of their distribution systems, they will consider improved freight transport to develop lower-cost systems. The result can be more productivity, increased competitiveness with other businesses, and in turn, a higher standard of living for the area as more capital is invested in the region.

> By continuing to maintain and invest in the freight transportation system, public and private transportation providers can increase competitiveness for Iowa businesses, strengthen the economy, and raise the quality of life for Iowa citizens.

Iowa's freight transportation system boasts a central geographic location and an abundance of transportation options. As a producer-state, meaning one that transports more goods out-of-state than it receives into the state, and a relatively rural state, this transportation flexibility provides shippers and businesses a strong comparative advantage. This fosters the ability to efficiently and competitively serve domestic and global markets via single or multiple modes of transportation. Iowa's network of interstates, rail infrastructure, pipelines, airports, and barge routes combine to provide cost-competitive transportation choices to serve and access markets outside the state. In addition, Iowa is consistently named as one of the lowest cost domestic locations for manufacturing in the country. Combining manufacturing output with the massive volume of agricultural products creates a surprisingly large demand for cost-competitive multimodal and intermodal systems.

Figure 1.3: Transportation and the economy



Source: ICF Consulting, 2010 and Beyond: A Vision of America's Transportation Future

1.3 Federal Transportation Bills and National Freight Goals

Fixing America's Surface Transportation (FAST) Act

The FAST Act was signed on December 4, 2015. With this reauthorization, states that receive funds under 23 U.S.C. 167 National Highway Freight Program (NHFP) were required to develop state freight plans that show a comprehensive plan for immediate and long-range planning activities and investments of the state with respect to freight.

In addition, the FAST Act created a National Multimodal Freight Network (NMFN) with the intent of strengthening the contribution of this network to the economic competitiveness of the country. It also required the development of a National Freight Strategic Plan (NFSP) and encouraged states to create and utilize state freight advisory committees.

Effective two years after the date of enactment of the FAST Act, a state was not able to obligate NHFP funds unless the state had developed a freight plan in accordance with 49 U.S.C. 70202 of the FAST Act.

IIJA

IIJA was signed on November 15, 2021 and built on the freight initiatives of the FAST Act, including the extension of NHFP funding and the identification of additional requirements for state freight plans.

These plans must be updated every four years and meet 17 requirements outlined in IIJA for approval. The table in Appendix A identifies the plan section(s) where each requirement is addressed.

NHFP – A formula program where each state receives funds (in proportion to the amount of funds a state receives compared to other states under all formula-apportioned programs) to be spent on freight projects on the National Highway Freight Network (NHFN), with some flexibility to include intermodal projects.

NMFN – A network of airports, highways, railroads, and waterways identified as critical freight corridors that should be targeted for investment with the intent of strengthening the contribution of this network to the economic competitiveness of the country. See Chapter 2, System Inventory and Performance.

NHFN – The highway portion of the NMFN which consists of the Primary Highway Freight System (PHFS), Critical Rural Freight Corridors (CRFCs), Critical Urban Freight Corridors (CUFCs), and the remainder of the Interstate Highway System not already designated as part of the PHFS. See Chapter 2, System Inventory and Performance.

NFSP – Defines the U.S. Department of Transportation's vision and goals for the national multimodal freight system, assesses the condition and performance of the freight system and barriers to freight system performance, and defines strategies to achieve its vision and goals.

National Freight Goals

IIJA requires a state freight plan to include a description of how the plan will improve the ability of the state to meet the National Multimodal Freight Policy goals described in 49 U.S.C. 70101(b) and the NHFP goals described in 23 U.S.C. 167. These were summarized in a single list to be addressed throughout the State Freight Plan.

- To identify and invest in infrastructure improvements, policies, and operational innovations
- To improve the safety, security, efficiency, and resiliency of multimodal freight transportation
- To achieve, maintain, and improve the state of good repair on the NMFN
- To use innovation and advanced technology to improve the safety, efficiency, and reliability of the NMFN
- To improve the economic efficiency and productivity of the NMFN
- To improve the reliability of freight transportation
- To improve the short- and long-distance movement of goods
- To improve the flexibility of states to support multi-state corridor planning and the creation of multi-State organizations to increase the ability of states to address multimodal freight connectivity
- To reduce the adverse environmental impacts of freight movement of the NMFN
- To pursue the goals described in this subsection in a manner that is not burdensome to state and local governments

The NFSP, released in September 2020, also identified a vision and goals for the Nation's multimodal freight system and defined objectives to achieve those goals. The State Freight Plan will address each of these three sets of goals, and Table 1.1 shows alignment between the NFSP goals and the Iowa DOT system objectives.

In addition to aligning with the national freight goals, Iowa DOT will consider the potential regulatory impact of all initiatives and how these could act as hindrances to freight movement.

NFSP Goals and Strategic Objectives

Safety

Improve the safety, security, and resilience of the national freight system.

- Support the development and adoption of automation, connectivity, and other freight safety technologies
- Modernize safety oversight and security procedures
- Minimize the effects of fatigue and human error on freight safety
- Reduce conflicts between passenger and freight traffic
- Protect the freight system from natural and human-caused disasters and improve recovery speed

Infrastructure

Modernize freight infrastructure and operations to grow the economy, increase competitiveness, and improve quality of life.

- Fund targeted investments in freight capacity
- Improve consideration of freight in transportation planning
- Prioritize projects that improve freight intermodal connectivity and enhance freight flows on first– and last–mile connectors and at major trade gateways
- Advance freight system management and operation practices
- Improve job growth and economic competitiveness in rural and urban communities
- Mitigate the impacts of freight movement on communities

Innovation

Prepare for the future by supporting the development of data, technologies, and workforce capabilities that improve freight system performance.

- Support the development and adoption of automation and vehicle-to-everything technology
- Support the safe deployment of unmanned aircraft system technology
- Streamline regulations to improve governance, efficiency, and economic competitiveness
- Improve freight data, modeling, and analysis tools and resources
- Strengthen workforce professional capacity
- Invest in freight research
- Support regulatory frameworks that foster freight innovation

Table 1.1: Comparison of National Freight Strategic Plan objectives and Iowa DOT system objectives

Goal	Objective	Safety	Sustainability	Accessibility	Flow
Safety Improve safety, security & resiliency	Technologies	✓			✓
	Oversight & security procedures	✓	✓		
	Fatigue & human error	✓			
	Passenger & freight traffic conflicts	✓		✓	✓
	Resiliency	✓		✓	✓
Infrastructure Modernize infrastructure & operations	Freight capacity investments	✓		✓	✓
	Transportation Planning		✓	✓	
	Connectivity & enhancement projects			✓	✓
	System managements & operations	✓	✓	✓	✓
	Economic competitiveness		✓	✓	
	Community impact mitigation	✓	✓	✓	
Innovation Develop data, technologies & workforce	Automation	✓			✓
	Unmanned aircraft systems technology	✓	✓	✓	✓
	Streamlined regulations		✓		✓
	Data, modeling & analysis tools		✓	✓	✓
	Workforce capacity	✓	✓		
	Research investment	✓	✓	✓	✓
	Regulatory frameworks				✓

Source: U.S. Department of Transportation and Iowa DOT

2. SYSTEM INVENTORY AND PERFORMANCE

2.1 Mode comparison | 2.2 Freight networks | 2.3 Inventory and performance by mode

8 commercial airports
106 other service airports

9,624- mile Primary Highway System
115,739 total miles of roadways

Almost 50,000 miles of pipelines
Multiple pipeline operators

17 railroad companies operating in the state
3,824 miles of rail lines

70 barge terminals
491 miles of navigable waterways

Freight shippers have the convenience of multiple modal options for moving goods and material in the state of Iowa. The 160,000-mile multimodal freight transportation system is comprised of multiple air cargo facilities, a well-developed highway system, a large web of pipelines, an extensive rail network, two bordering navigable waterways, and hundreds of freight-related facilities to assist in the movement of freight.

The most critical freight infrastructure in Iowa is designated as part of multiple freight networks. However, there are additional components of the air, highway, pipeline, railroad, and waterway networks that complement these designated freight networks, acting as first-mile/last-mile connections.

The following section will provide an inventory of the infrastructure and facilities that make up this freight system and how they interact to increase the efficiency of goods movement through the state, region, nation, and world. Numerous metrics will be reviewed to summarize the performance of each. Note that an inventory of pipelines in Iowa is included, but due to the nature of the mode and availability of information, pipelines are not compared to other modes and there is limited reporting on performance.

2.1 Mode Comparison

Transportation costs play a large role in the decisions of Iowa shippers. Having various transportation options allows for cost savings and opportunities to optimize supply chains as each mode has different characteristics that may make the efficient transport of certain commodities ideal for one mode but not another.

Aviation handles the most time-sensitive and lowest weight cargo and has the highest shipping costs.

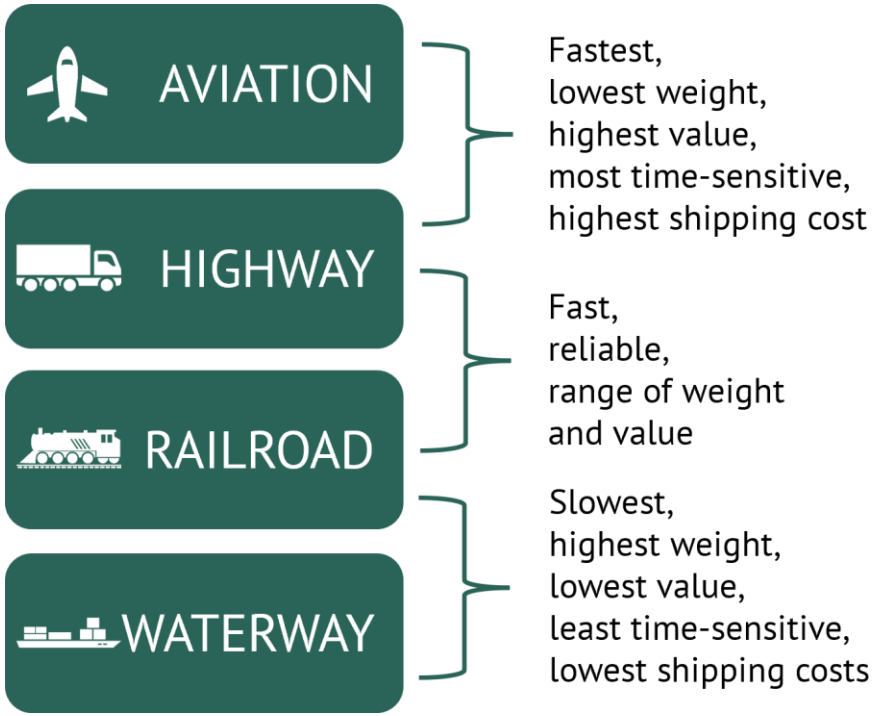
Most freight in Iowa is carried on the **Highway** system. Although trucking movements are typically more expensive than rail or water transport, it is the most flexible. Trucks generally move small amounts of a few hundred pounds all the way up to 50,000 pounds per shipment. Truckload service providers move products using equipment such as dry van, flatbed, hopper, tank, and refrigerated trailers.

Railroad movements are generally less expensive than trucking and more fuel-efficient but are more restricted by the privately-owned networks the trains move on. This mode is well suited for moving large volumes of freight between two shipping points and, like trucks, uses dry car, flatbed, hopper, and refrigerated equipment.

Transporting commodities via **Waterway** is the slowest and least flexible of the freight modes. However, it is the most fuel-efficient, cheapest, and can handle the largest volumes per trip. one barge can handle as much as 70 trucks or more than 16 rail cars.

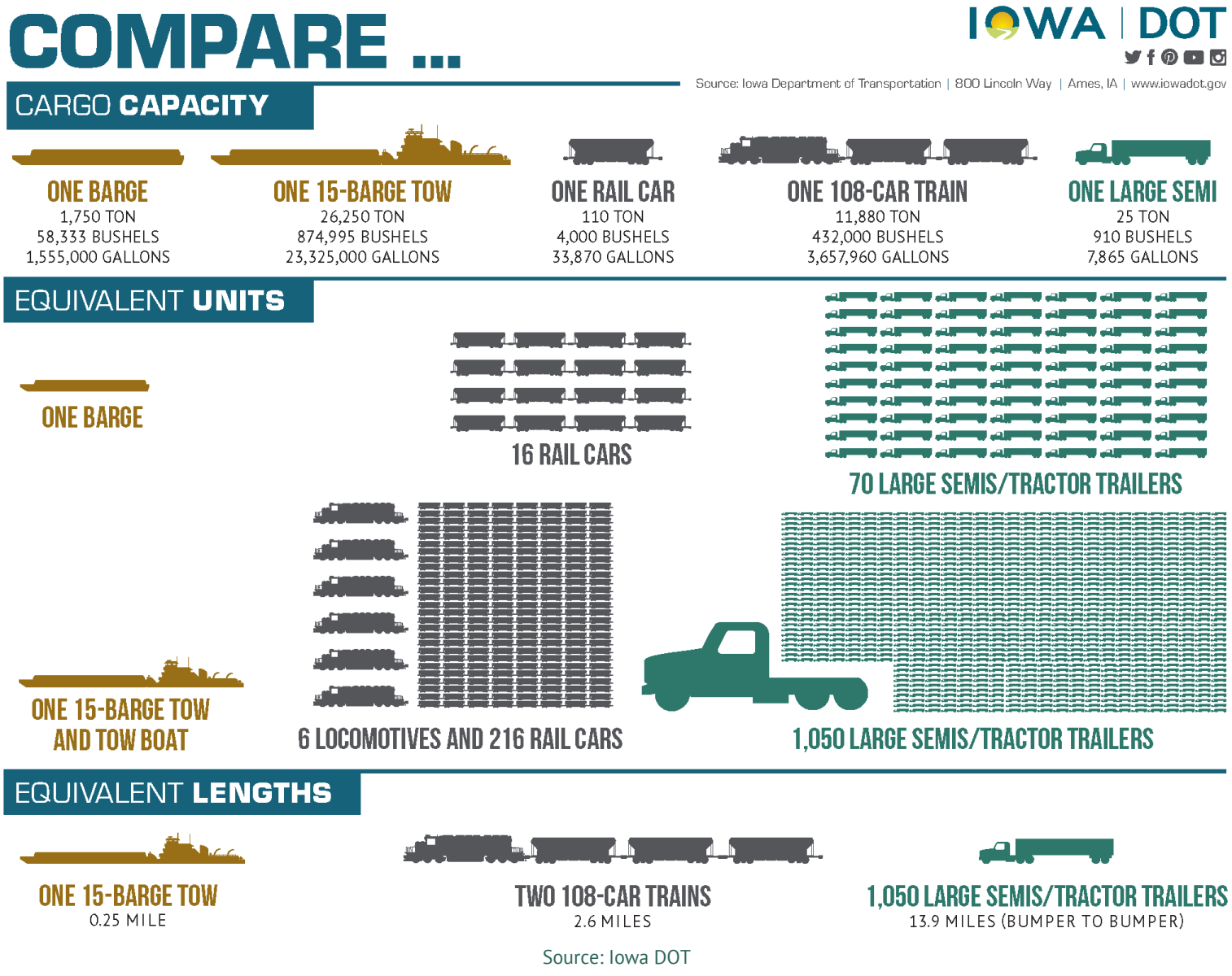
Figure 2.1 and Figure 2.2 compare the different freight modes by price and tonnage capacity, showing which modes can handle certain types of commodities most efficiently.

Figure 2.1: Freight price comparisons



Source: Iowa DOT

Figure 2.2: Freight tonnage comparisons



Source: Iowa DOT

Purpose of Designating Freight Networks

The most critical freight infrastructure in Iowa is designated as part of two freight networks – the National Multimodal Freight Network (NMFN), designated at the federal level, and the Iowa Multimodal Freight Network (IMFN), designated at the state level.

The NMFN consists primarily of infrastructure of national and international significance and the IMFN consists of infrastructure critical to state and regional commerce.

Strategic military networks, specifically the Strategic Highway Network (STRAHNET) and Strategic Rail Corridor Network (STRACNET), are also designated to prioritize infrastructure and connectivity needs for national defense. These different freight networks are used to:

- Inform freight transportation planning,
- Develop department policies for these corridors related to design and use,
- Recognize corridors to protect and enhance for improved freight movement, and
- Assist with strategically directing resources and investments to improve performance.

2.2 Freight Networks

IMFN

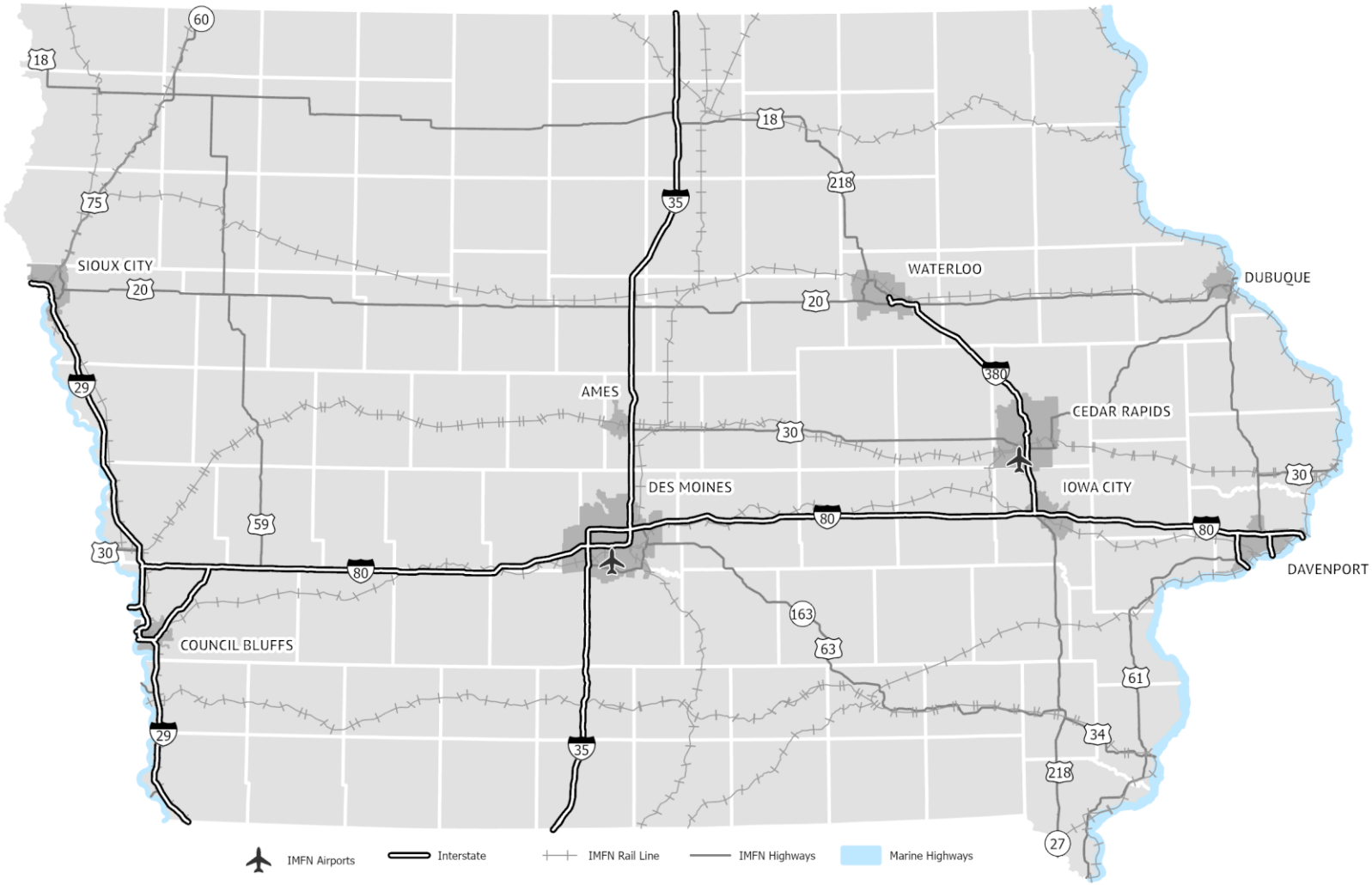
Iowa DOT designated the IMFN to compliment the NMFN by also identifying infrastructure critical to the state and region, including airports, highways, railroads, and inland waterways.

Table 2.1: Iowa Multimodal Freight Network criteria and designations

Mode	Designation requirement(s)	Iowa designation
Aviation	Top cargo airports	• Des Moines International Airport • Eastern Iowa Airport
Highway	30% truck traffic, 1,000 annual average daily truck traffic, or 1,000 oversize/overweight permitted loads annually	• 4,027 miles of Interstate, U.S., and Iowa routes
Railroad	5 million tons per mile or direct connection to intermodal container facility	• Roughly 2,400 miles of Class I and II rail lines
Waterway	Marine highways	• M-29 Marine Highway (Missouri River) • M-35 Marine Highway (Mississippi River)

Source: Iowa DOT

Figure 2.3: Iowa Multimodal Freight Network



Source: Iowa DOT

The National Highway Freight Network (NHFN) is the highway portion of the NMFN and the system eligible for National Highway Freight Program (NHFP) funds distributed to the states annually. The NHFN includes the following four subsystems of roadways.

Primary Highway Freight System (PHFS)

A network of highways designated at the federal level and identified as the most critical highway portions of the U.S. freight transportation system.

Other Interstates Not On PHFS

These highways consist of the remaining portion of Interstate roads not included in the PHFS. These routes provide important continuity and access to freight transportation facilities.

Critical Rural Freight Corridors (CRFC)

Public roads not in an urbanized area that provide access and connection to the PHFS and the Interstate from other important ports, public transportation facilities, and intermodal freight facilities.

Critical Urban Freight Corridors (CUFC)

Public roads in urbanized areas that provide access and connection to the PHFS and the Interstate from other ports, public transportation facilities, or intermodal freight facilities.

NMFN

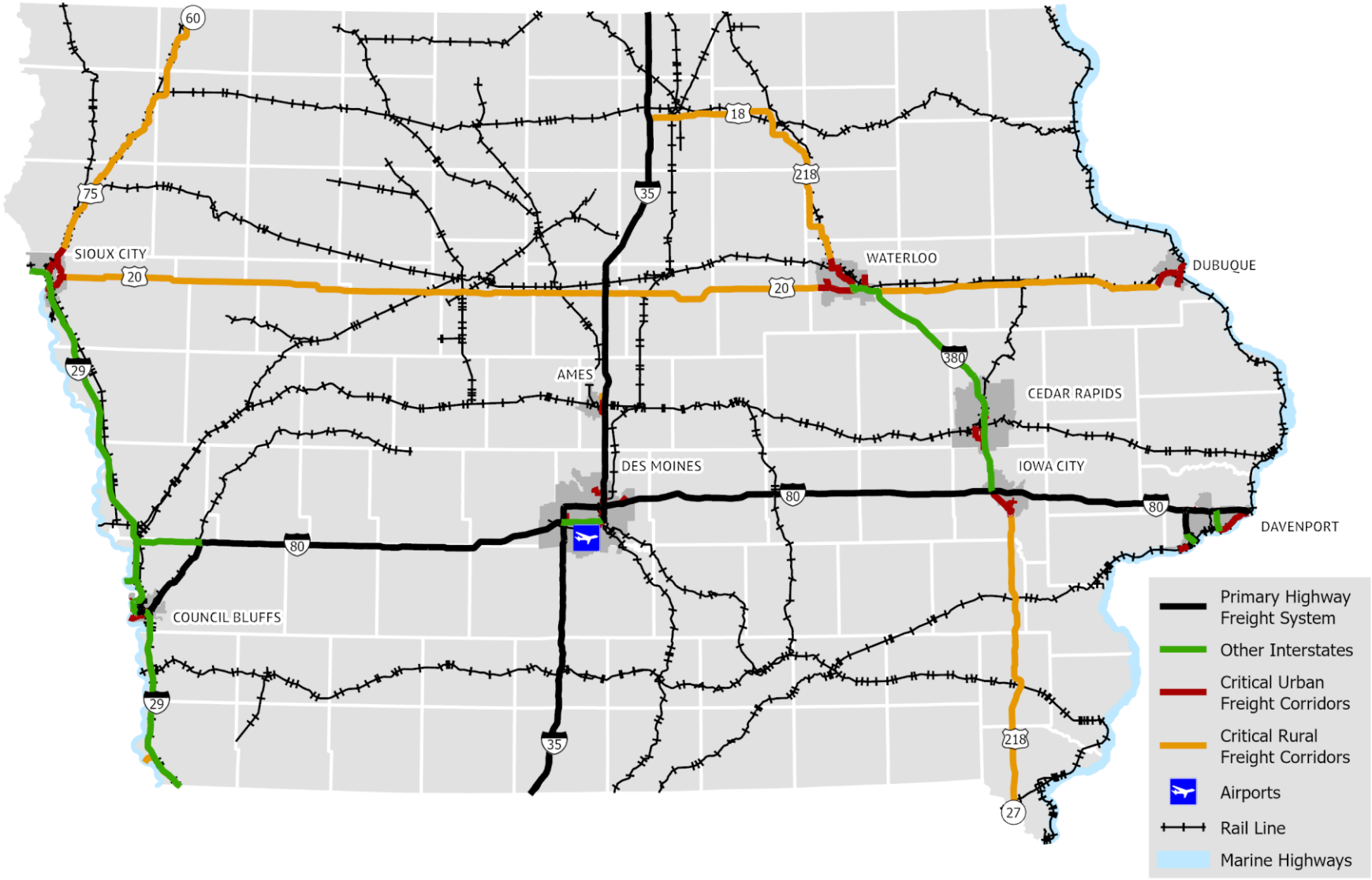
The Fixing America's Surface Transportation (FAST) Act formed the NMFN with the intent of strengthening the contribution of this network to the economic competitiveness of the country. It includes air, highway, railroad, and waterway infrastructure critical to freight movement.

Table 2.2: National Multimodal Freight Network criteria and designations

Mode	Designation requirement(s)	Iowa designations
Aviation	Top 50 cargo airports	• Des Moines International Airport
Highway	National Highway Freight Network	• 1,005 miles of the Primary Highway Freight System • Critical Rural and Critical Urban Freight Corridors and other Interstates
Railroad	Class I and other strategic Class II and III railroads	• 3,328 miles of Class I rail lines
Waterway	Major coastal ports, inland and intercoastal waterways, Great Lakes, St. Lawrence Seaway, and coast and ocean routes	• M-29 Marine Highway (Missouri River) • M-35 Marine Highway (Mississippi River)

Source: U.S. Department of Transportation

Figure 2.4: National Multimodal Freight Network



Source: U.S. Department of Transportation and Iowa DOT

Table 2.3: Primary Highway Freight System in Iowa

Route	Start Point	End Point	Miles
I-29	I-80	I-80	2.9
I-35	Missouri/Iowa Line	Iowa/Minnesota Line	218.6
I-80	Nebraska/Iowa Line	I-29	0.9
I-80	I-29	I-35	119.4
I-80	I-35	Iowa/Illinois Line	169.0
I-235	I-35	Iowa 28	3.8
I-235	Iowa 163	I-80	3.7
I-280	U.S. 61	I-81	6.5
U.S. 61	IA4R (local)	I-280	1.6
Iowa 28	IA7A (local)	I-235	2.6
Iowa 163	IA9L (local)	I-235	1.4
			Total: 530.4

Source: U.S. Department of Transportation

Table 2.4: Other Interstate routes in Iowa

Route	Start Point	End Point	Miles
I-29	Missouri/Iowa Line	I-80 (East)	48.6
I-29	I-80 (West)	Iowa/South Dakota Line	100.5
I-74	I-80	Iowa/Illinois Line	5.4
I-129	Nebraska/Iowa Line	I-29	0.3
I-235	Iowa 28	Iowa 163	6.3
I-280	U.S. 61	Iowa/Illinois Line	3.0
I-380	U.S. 218	I-80	73.3
I-480	Nebraska/Iowa Line	I-29	0.7
I-680	Nebraska/Iowa Line	I-29 (South)	16.5
I-880	I-29 (North)	I-80	3.0
			Total: 257.6

Source: U.S. Department of Transportation

The National Highway Freight Network (NHFN) is the system eligible for National Highway Freight Program (NHFP) funds distributed to the states annually. The NHFN includes the following four subsystems of roadways.

- Primary Highway Freight System (PHFS)
- Other interstates not on PHFS
- Critical Rural Freight Corridors (CRFC)
- Critical Urban Freight Corridors (CUFC)

Table 2.5: Intermodal Connectors included in the Primary Highway Freight System

ID	Facility Name	Facility Description	Miles
IA4R	Quad Cities Container Terminal (Davenport)	S. Rolff St, Rockingham Rd (Iowa 22), between the Terminal and I-280	2.7
IA5P	Harvest States Peavey (Davenport)	Iowa 22 between the Terminal and I-280	2.2
IA6L	Amoco Pipeline Distribution Center (Council Bluffs)	U.S. 275 (eastern ramp termini I-29 to South Expressway), then North to the Westbound ramp terminus of I-29/80	1.9
IA7A	Des Moines International Airport	Fleur Dr between MLK Jr Pkwy and relocated Iowa 5 and Park Ave (63rd to Fleur Dr)	8.1
IA9L	Vandalia Rd Pipeline (Des Moines)	E. 30th St/Vandalia Rd (Iowa 163 to U.S. 65)	4.3
		Total: 19.2	

Source: U.S. Department of Transportation

Table 2.6: Critical Rural Freight Corridors in Iowa

Route	Start Point	End Point	Miles
U.S. 18, U.S. 218	I-35	Waterloo urbanized area boundary (UAB)	78.5
U.S. 218	Iowa City UAB	IA/MO Border	80.6
U.S. 20	Sioux City UAB	Cedar Falls UAB	197.3
U.S. 20	Waterloo UAB	Dubuque UAB	73.8
US. 75, Iowa 60	Sioux City UAB	IA/MN Border	79.3
Iowa 2	IA/NE Border	I-29	3.1
N Dayton Ave, Riverside Drive	Ames UAB	Martin-Marrieta Mine	1.6
		Total CRFC: 514.2	

Source: Iowa DOT

Table 2.7: Critical Urban Freight Corridors in Iowa

Urban Area	Route No	Start Point	End Point	Length
Ames	U.S. 30	I-35	Dayton Ave	0.4
Ames	Dayton Ave	E 13th St	Ames UAB	1.4
Ames	Dayton Ave	Hallet Materials	E 13th St	2.5
Ames	E 13th St	I-35	Dayton Ave	0.4
Cedar Rapids	6th St SW	U.S. 30	120th St	5.7
Cedar Rapids	8th St/Diagonal Rd SW	I-380	10th St SE	1.2
Cedar Rapids	Edgewood Rd SW	U.S. 30	Wright Bros Blvd	3.1
Cedar Rapids	Wright Brothers Blvd	I-380	Cessna Pl SW	2.8
Council Bluffs	U.S. 275	NE Border	South Expressway	4.1
Council Bluffs	Iowa 92, Harry Langdon Blvd, South Ave	I-29	IAIS intermodal yard	1.2
Council Bluffs	Iowa 165 (Abbott Dr)	IA/NE Border	IA/NE Border	0.5
Council Bluffs	South Expressway	I-80/I-29	19th Ave	0.9
Council Bluffs	23rd Ave	South Expressway	29th Ave	0.5
Council Bluffs	29th Ave	23rd Ave	Bartlett Grain Elevator	0.2
Council Bluffs	29th Ave	23rd Ave	Hansen-Mueller Elevator	0.5

Urban Area	Route No	Start Point	End Point	Length
Council Bluffs	South 24th St	U.S. 275	I-80/I-29	1.0
Council Bluffs	Nebraska Ave, River Rd	I-29	Cargill AG Horizons	0.8
Davenport	U.S. 67	I-74	I-80	10.2
Davenport	Iowa 22	Utah Ave	95th Ave	2.6
Davenport	Iowa 130	I-80	Hillandale Rd	0.5
Davenport	Hillandale Rd	Iowa 130	Enterprise Way	0.6
Des Moines	U.S. 6 (Hickman Rd)	Love's Travel Stop	NW 94th St	1.7
Des Moines	U.S. 6 (Guthrie Ave)	U.S. 69 (E 14th St)	I-235	1.5
Des Moines	U.S. 65	I-80	Grant St South	2.8
Des Moines	U.S. 69	I-235	Maury St	1.1
Des Moines	Iowa 160 (Oralabor Rd)	I-35	SW State Street	2.5
Des Moines	Iowa 415	I-35	UP Railroad Crossing	0.6
Des Moines	Maury St	U.S. 69 (E 14th St)	SE 15th St	0.1
Des Moines	SE 15th St	Maury St	E MLK Jr Pkwy	0.3
Des Moines	E MLK Jr Pkwy	SE 15th St	E 18th St	0.4
Des Moines	E 18th St	E MLK Jr Pkwy	Dean Ave	0.4
Des Moines	Delaware Ave	Guthrie Ave	Corporate Woods Dr	3.7
Des Moines	Corporate Woods Dr	Delaware Ave	SE Northstar Dr	1.4
Des Moines	Meredith Dr	I-80	NW Urbandale Dr	0.6
Des Moines	SW State St	Iowa 160/Oralabor Rd	SW Ordnance Rd	1.5
Dubuque	U.S. 20	IA/IL Border	Old Dubuque UAB	8.3
Dubuque	U.S. 61	Dubuque UAB	IA/WI Border	6.7
Iowa City	U.S. 6, Iowa 1	U.S. 218	Gilbert St	2.3
Iowa City	U.S. 218	I-80/I-380 Interchange	Iowa City UAB	8.3
Iowa City	Old Highway 218	U.S. 218	Gringer Ag	2.0
Iowa City	Gilbert St	U.S. 6, Iowa 1	Court St	0.8
Iowa City	Court St	Gilbert St	Front St	0.5
Sioux City	U.S. 20	U.S. 75	Sioux City UAB	1.8
Sioux City	U.S. 20, U.S. 75	I-29	U.S. 20	4.3
Sioux City	U.S. 75	U.S. 20	Sioux City UAB	6.3

Urban Area	Route No	Start Point	End Point	Length
Sioux City	Aviation Blvd	I-29	Al Haynes Dr	0.4
Sioux City	Boulevard of Champions	Patton St	Harbor Dr	0.5
Sioux City	Al Haynes Dr	Aviation Blvd	Discovery Blvd	0.4
Sioux City	Harbor Dr	8th St	Singing Hills Blvd	2.1
Sioux City	Patton St	Boulevard of Champions	Harbor Dr	1.0
Sioux City	Discovery Blvd	Al Haynes Dr	Harbor Dr	0.2
Sioux City	Singing Hills Blvd	Harbor Dr	Lewis Blvd	0.4
Sioux City	Gordon Dr	Lewis Blvd	I-29	1.4
Sioux City	Lewis Blvd	Gordon Dr	Outer Dr	3.0
Sioux City	Outer Dr	U.S. 75	Lewis Blvd	2.2
Waterloo/Cedar Falls	U.S. 20	Waterloo UAB	I-380	9.0
Waterloo/Cedar Falls	U.S. 218	Waterloo UAB	I-380	10.3
Waterloo/Cedar Falls	Iowa 27, Iowa 58	U.S. 20	Greenhill Rd	3.0
Waterloo/Cedar Falls	Plaza Dr	I-380	Dubuque Rd	0.9
Waterloo/Cedar Falls	Dubuque Rd	Plaza Dr	S Elk Run Rd	0.8
Waterloo/Cedar Falls	S Elk Run Rd	Dubuque Rd	Newell St	2.8
			Total CUFC: 138.9	

Source: Iowa DOT and Iowa metropolitan planning organizations

STRAHNET

The Highways and National Defense (HND) program identifies highway infrastructure needed by DOT to fulfill its mission and ensures the readiness capability of this infrastructure. HND monitors the 64,200-mile STRAHNET system, which consists of public highways that provide access, continuity, and emergency transportation of personnel and equipment in times of peace and war. It includes the entire 48,482 miles of the Dwight D. Eisenhower National System of Interstate and Defense Highways and 14,000 miles of other non-Interstate public highways on the National Highway System. The STRAHNET also contains roughly 1,800 miles of connector routes, linking over 200 military installations and ports to the primary highway system.

STRACNET

The Railroads for National Defense Program (RND) ensures the readiness capability of the national railroad network to support defense deployment and peacetime needs. The RND Program established the STRACNET, an interconnected and continuous rail line network consisting of over 36,000 miles of track serving over 120 defense installations. These lines provide main line corridor throughout capability as well as access to major defense contractors, logistics sites, and military facilities critical to national defense.

Strategic Military Networks

It is important to prioritize infrastructure and connectivity needs for strategic routes and other corridors that connect to U.S. Department of Defense (DOD) facilities and handle military freight.

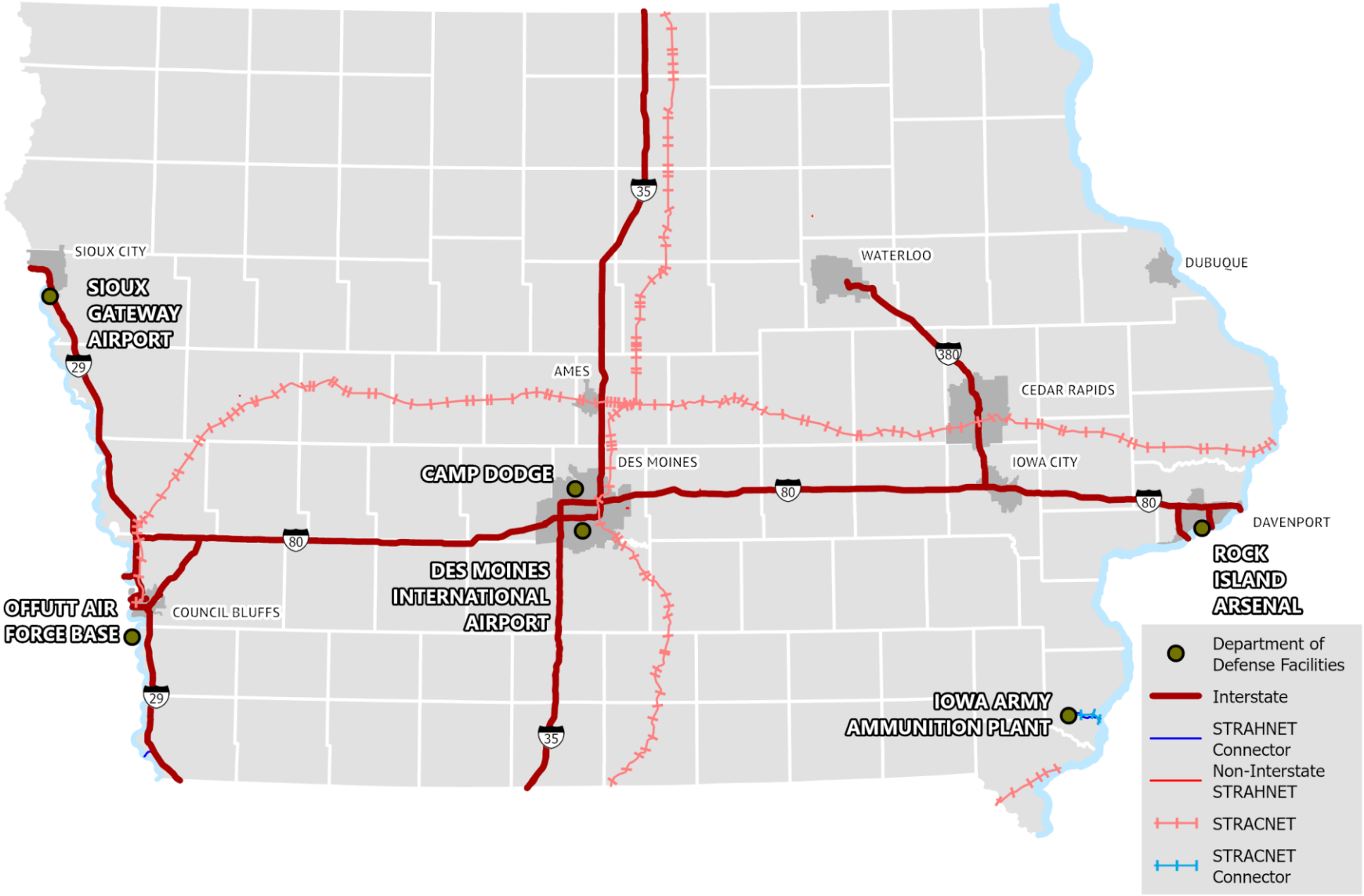
DOD facilities include military bases, ports, and depots. The road and rail networks (e.g., STRAHNET and STRACNET) that provide access and connections to these facilities are essential to national security as they support the quick logistics movement of vehicles and materials by allowing for large loads that are common to military freight.

Table 2.8: Iowa strategic military networks and installations

Component	Iowa designations
Strategic Highway Network (STRAHNET) routes	• Interstate Highway System (all routes) • Iowa 2 (NE border to I-29)
STRAHNET connectors	• U.S. 34 (Iowa Army Ammunition Plant to IL border)
Strategic Rail Corridor Network (STRACNET) routes	• Union Pacific (NE border at Council Bluffs to IL border at Clinton) • Union Pacific (MO border at Lineville to MN border at Northwood) • BNSF (MO border near Argyle to IL border at Fort Madison)
Military installations	• Iowa Army Ammunition Plant (Middletown) • Camp Dodge (Johnston) • Des Moines International Airport • Sioux Gateway Airport • Rock Island Arsenal (IL) • Offutt Air Force Base (NE)

Source: U.S. Military Surface Deployment and Distribution Command Transportation Engineering Agency

Figure 2.5: Iowa strategic military networks and installations



Source: U.S. Military Surface Deployment and Distribution Command Transportation Engineering Agency

2.3 Inventory and Performance by Mode

In this section, an inventory will be provided for freight transportation modes and freight-generating facilities. The following metrics will be used to summarize the performance of each.

- Condition
- Utilization
- Safety
- Reliability

Although the different modes making up Iowa's transportation system can be classified by multiple different national and state "networks," the IMFN will be the primary focus of the system inventory and performance reporting.

Aviation

From larger air cargo facilities at commercial airports to point deliveries by smaller aircraft at other airports throughout Iowa, air cargo service provides fast and reliable movement of time-sensitive freight. An airport's role in the aviation system depends on the type of facilities and services provided, as well as the aviation demand. Commercial airports provide regularly scheduled commercial airline service and have the services/facilities to support a full range of general aviation activity.

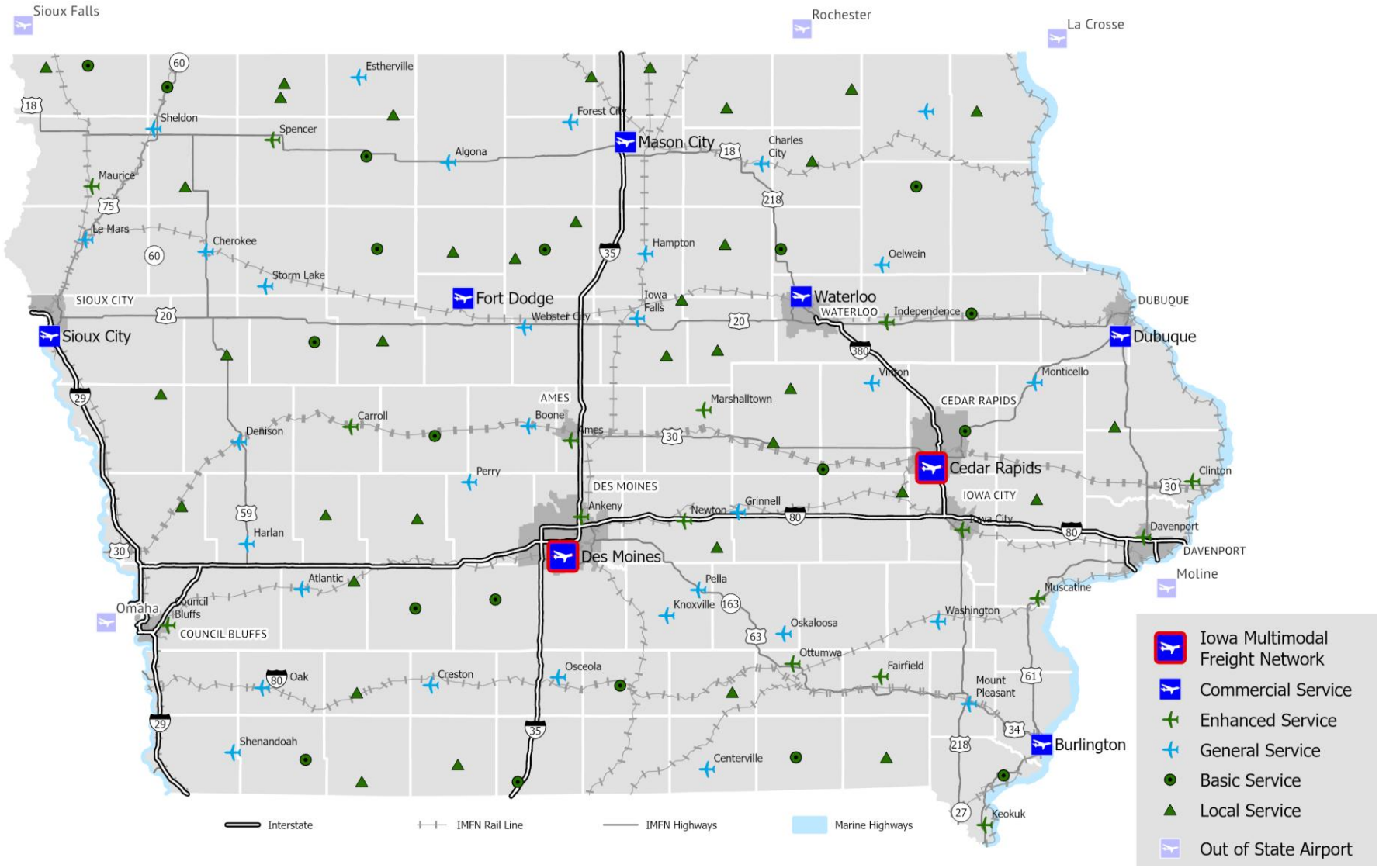
Nearly all aviation freight reported in Iowa is moved by scheduled commercial air passenger carriers and dedicated air cargo carriers (e.g., Amazon, FedEx, and UPS) at the eight commercial airports. Although most of the airports in the state handle cargo to some extent, over 99% of reported tonnage moves through the Des Moines International Airport (DSM) and the Eastern Iowa Airport (CID).

Table 2.9: Iowa commercial airports

FAA ID	City	Name
BRL	Burlington	Southeast Iowa Regional
CID	Cedar Rapids	Eastern Iowa
DSM	Des Moines	Des Moines International
DBQ	Dubuque	Dubuque Regional
FOD	Fort Dodge	Fort Dodge Regional
MCW	Mason City	Mason City Municipal
SUX	Sioux City	Sioux Gateway
ALO	Waterloo	Waterloo Regional

Source: Iowa DOT

Figure 2.6: Iowa airports



Source: Iowa DOT

Condition

One of the goals identified in the Iowa Statewide Aviation System Plan (2021) is to provide an airport system that meets existing and future user needs. More specifically, the goal highlights maintaining adequate infrastructure (e.g., runway pavement, terminal buildings, storage buildings, etc.) to allow for continued use by a variety of users. Pavement inspections tracking Pavement Condition Index (PCI) regularly take place at all paved airports.

Utilization

Over 111 million pounds of air cargo was moved through Iowa airports in 2024. Aviation freight services are used primarily for the timely transportation of cargo into and out of Iowa.

More than 99% of Iowa's air cargo travels through two commercial airports (DSM and CID). The other six commercial airports (Burlington, Dubuque, Fort Dodge, Mason City, Sioux City, and Waterloo) share the less than 1% remaining.

Express carriers such as FedEx and UPS Inc. hold the major aviation freight presence in Iowa. To a large degree, the movement of air cargo is contingent upon the business decisions of these private carriers. In recent years, increased fuel expenses and changes in business models have resulted in reduced aviation freight activity in Iowa. However, with an expanded UPS facility at CID, and a new FedEx facility and the addition of Amazon at DSM, more growth is expected.

Safety

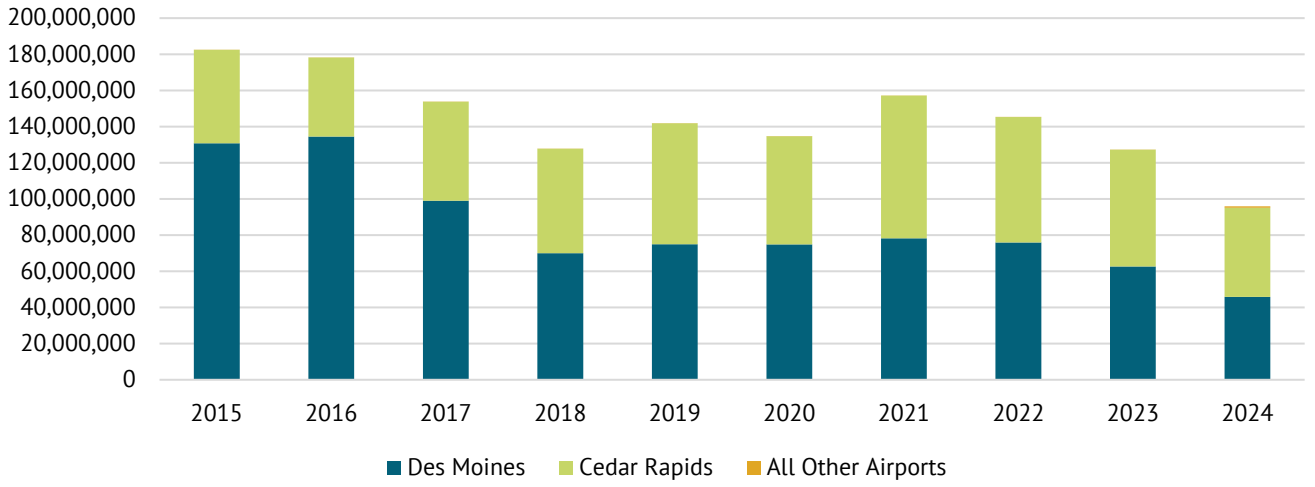
There have not been any crashes in Iowa associated with major air cargo carriers. Aviation safety measures such as crash rates or statistics are challenging to report for multiple reasons. Many of the aircraft that fly over the state and may have an emergency or incident are not based in Iowa. Also, an aircraft incident in Iowa does not necessarily reflect any infrastructure or service issues with airports in the state.

Reliability

Air cargo coming into and out of the state is not limited at any Iowa airports, and capacity exists to accommodate growth of freight in the future. Therefore, no air cargo bottlenecks were identified.

Additionally, the state's eight commercial service airports provide adequate coverage to potential air cargo shippers. When nearby out-of-state commercial airports (e.g., Omaha, Sioux Falls, Rochester, La Cross, and Moline) are considered, nearly the entire state has access to a commercial airport within a 90-minute drive.

Figure 2.7: Total air cargo (tons), 2015-2024



Source: Iowa airports

Table 2.10: Total air cargo (tons) by commercial airport, 2015-2024

Year	Burlington	Cedar Rapids	Des Moines	Dubuque	Fort Dodge	Mason City	Sioux City	Waterloo	Total
2015	0	51,609,506	130,817,962	5,373	0	0	1,188	559	**182,434,588**
2016	0	43,663,080	134,551,878	934	0	0	7,589	650	**178,224,131**
2017	0	54,768,529	99,052,046	15,010	0	0	2,557	4.627	**153,842,769**
2018	0	57,852,712	69,972,176	170	0	0	3,919	1.508	**127,830,485**
2019	0	66,863,002	74,972,162	0	0	0	6,699	348	**141,842,211**
2020	0	59,844,805	74,871,567	0	0	0	2.076	354	**134,718,802**
2021	0	78,892,206	78,278,183	319	0	0	559	13,076	**155,184,343**
2022	0	69,328,110	75,946,537	230	0	0	0	81,861	**145,356,738**
2023	0	64,583,847	62,630,081	640	0	0	0	42,721	**127,257,289**
2024	0	49,242,746	45,879,346	0	0	0	0	806,973	**111,918,894**

Source: Iowa airports

Highway

The state's public roadway system is comprised of more than 115,000 miles with approximately 25,000 bridge structures, offering an extremely accessible network that provides a high level of mobility for freight movement. Additionally, Iowa has truck parking spaces located at rest areas, weigh stations, and alternative service locations (e.g., truck stops) around the state to improve safety and efficiency of trucking industry.

While the size of the state's roadway system has not increased considerably in recent years, the infrastructure burden remains significant. Freight tonnage in Iowa is moved primarily by truck and most commodity movements by aviation, pipeline, rail, and water are intermodal in nature and usually begin and/or end with a truck movement.

Table 2.11: Iowa primary roadway system by classification

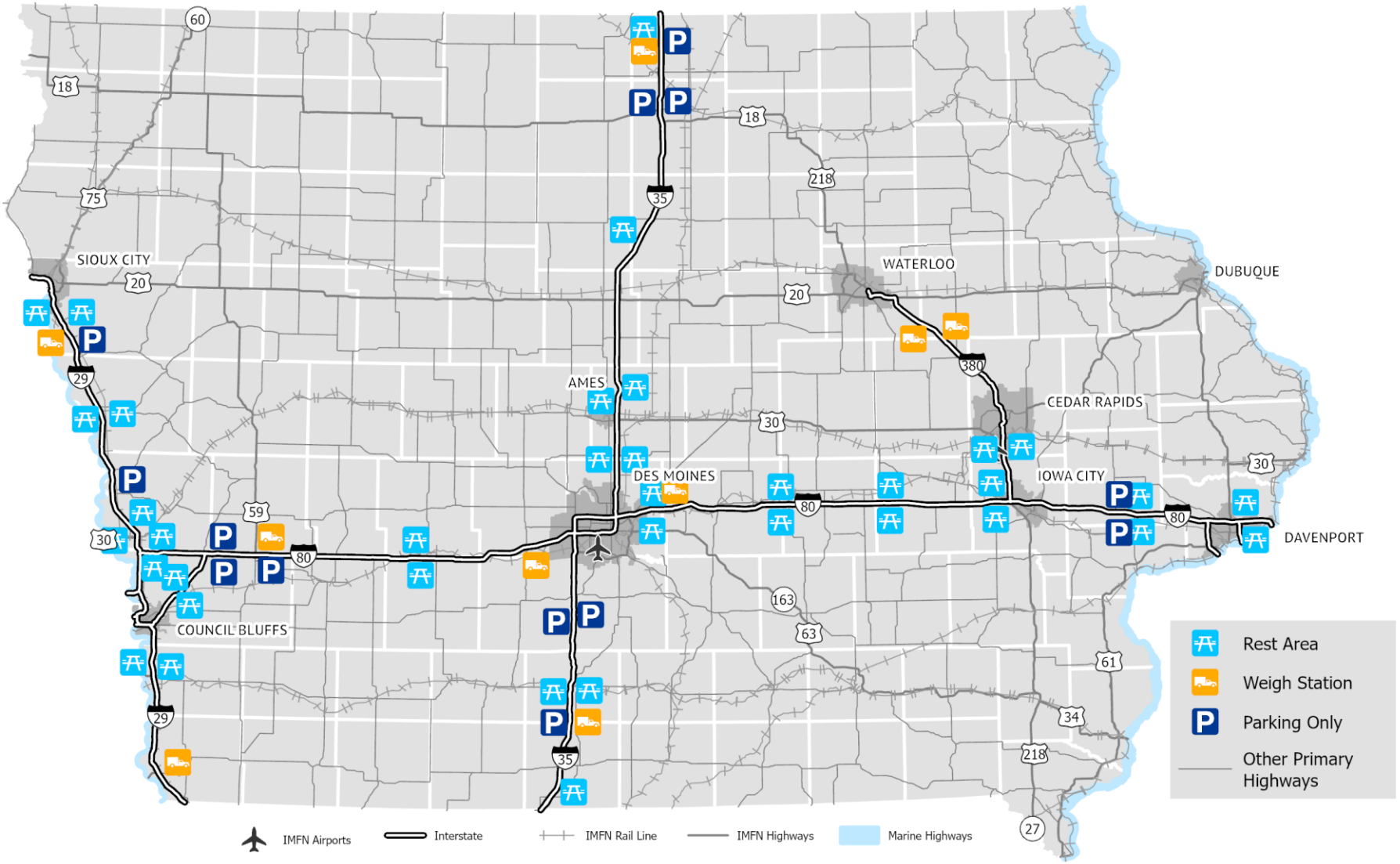
Classification	Miles	Description
Public roadways	115,739	All roadways ranging from eight-lane Interstates and four-lane divided facilities, to paved secondary roads, gravel roads, and municipal streets
Primary highways	9,624	Roads such as Interstate system, U.S. and State routes that are under the jurisdiction of Iowa DOT
Interstate System	1,163	Primary highways providing connections to the national transportation network and major metropolitan areas
Iowa Multimodal Freight Network	4,135	Primary highways critical to state and regional commerce to be protected and enhanced for efficient freight movement

Source: Iowa DOT

Iowa's highway system can be classified by multiple different highway networks such as the Primary Highway System that includes the Interstate System, as shown in Table 2.11, as well as networks not shown such as the Commercial and Industrial Network, National Highway System, Federal Highway Administration Intermodal Connectors, etc. However, the highway portion of the IMFN, which includes 4,135 miles of the Primary Highway System, will be the focus of the system inventory and performance reporting.

The condition and performance of these roadways, first mile/last mile connections, and service locations is critical to the overall efficiency of supply chains and the entire freight system.

Figure 2.8: Iowa primary highways



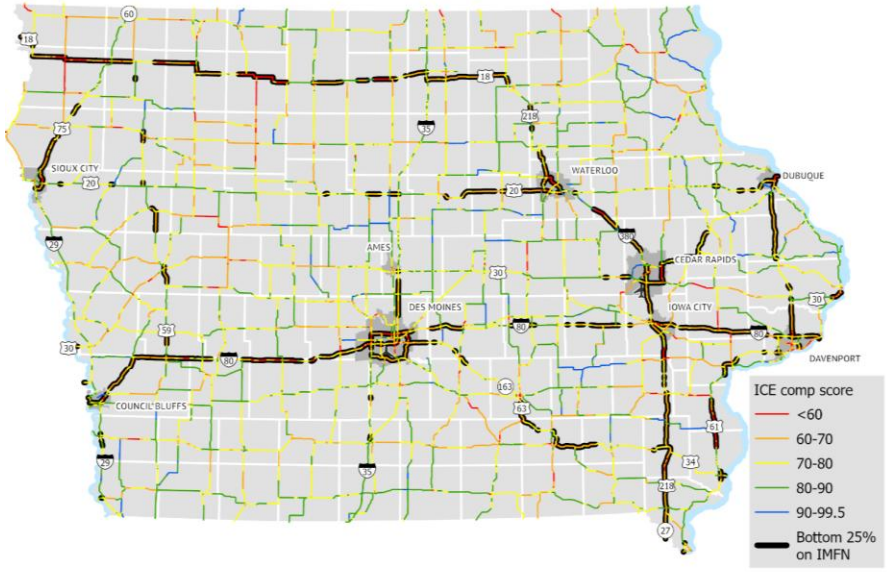
Source: Iowa DOT

Condition

The Infrastructure Condition Evaluation (ICE) tool was developed by the Iowa DOT to aid in the evaluation of the state's Primary Highway System by using a composite rating calculated from seven different criteria – passenger, single-unit truck, and combination truck annual average daily traffic; congestion index value, International Roughness Index; PCI; and Bridge Condition Index.

While each of these individual criteria indicates a different component, the collective offers the ability to evaluate the service and structural condition of roadway segments with a single composite rating. This composite rating was calculated for each road segment by applying a standardized normalization and weighting process.

Figure 2.9: Infrastructure Condition Evaluation rating



Source: Iowa DOT

Utilization

The overwhelming majority of freight tonnage in Iowa is moved by trucks on the state's highway system. Truck traffic in the state is primarily concentrated on the Interstates and IMFN, with the heaviest being on I-80 between Iowa City and Davenport, I-35/80 through the Des Moines metro area, and I-29/80 through Council Bluffs.

Iowa also issues a significant number of oversize/overweight (OSOW) permits each year. This traffic is mostly concentrated across the Interstate system as well, with the heaviest being on I-80. One of the major non-Interstate OSOW routes in the state is U.S. 59 that runs north/south in western Iowa. This is the result of height-restricting overhead structures on I-29, which forces larger loads to utilize U.S. 59, a road with few overhead structures. Most I-29 height-restricting structures have been addressed, and the final location is scheduled to be replaced, which will open up I-29 for more OSOW traffic.

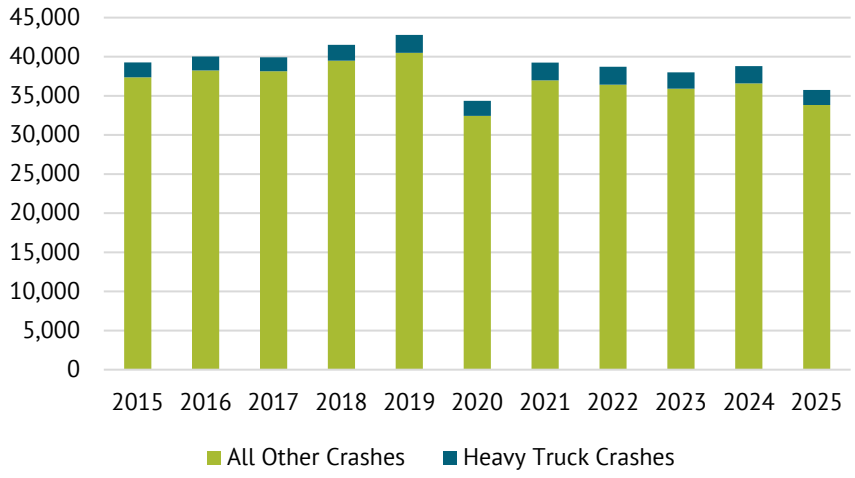
Due to their overall size and weight, traditionally sized and OSOW trucks have more of an impact on the condition and operations of the roadways than personal vehicles and these numbers must be monitored so solutions can be considered as traffic volumes increase.

Safety

Highway freight-related crashes include those that involve single-unit trucks, combination trucks, and/or trains. Freight-related crashes consistently represent around 5% of all highway crashes, but the resulting fatalities are typically 13% of total fatalities resulting from all highway crashes.

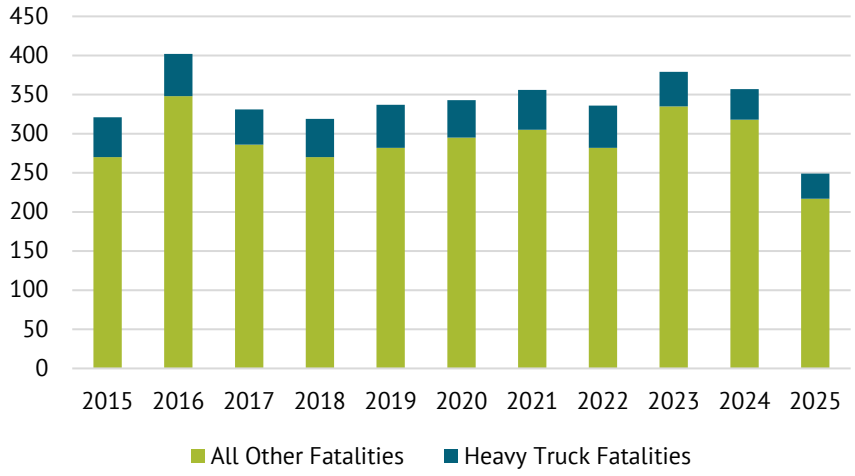
On average, freight-related crashes are evenly divided between rural and urban areas. However, 81% of fatalities resulting from freight-related crashes are in rural areas versus 19% in urban areas.

Figure 2.10: Highway crashes, 2015 -2025



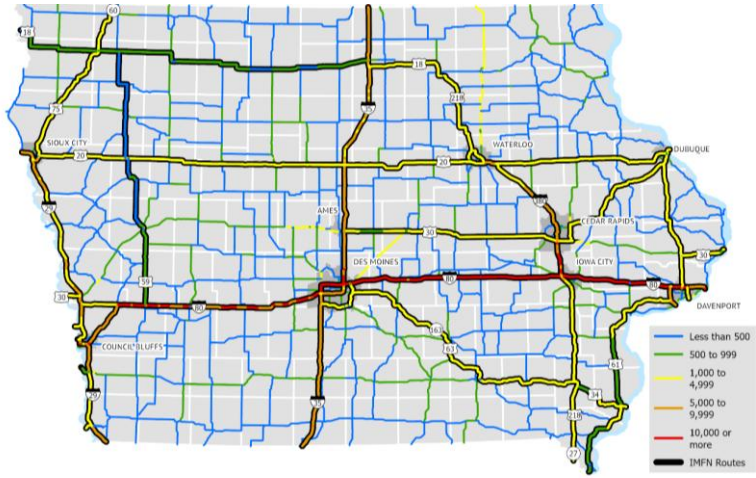
Source: Iowa DOT

Figure 2.11: Highway fatalities, 2015-2025



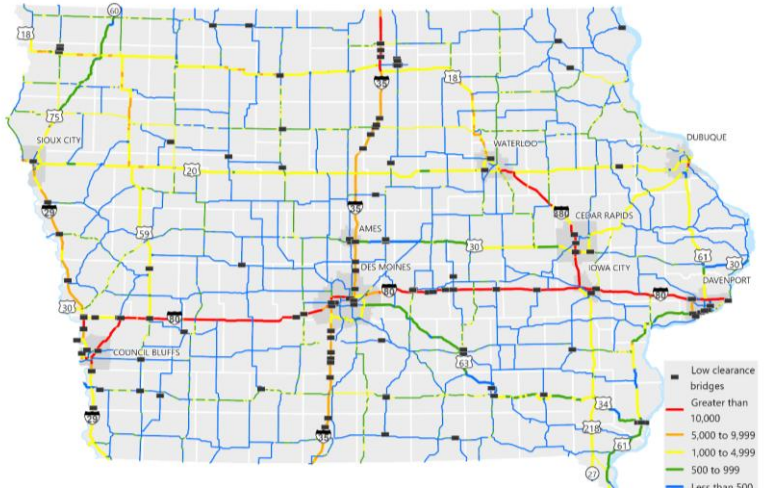
Source: Iowa DOT

Figure 2.12: Truck traffic



Source: Iowa DOT

Figure 2.13: Oversize/overweight truck traffic



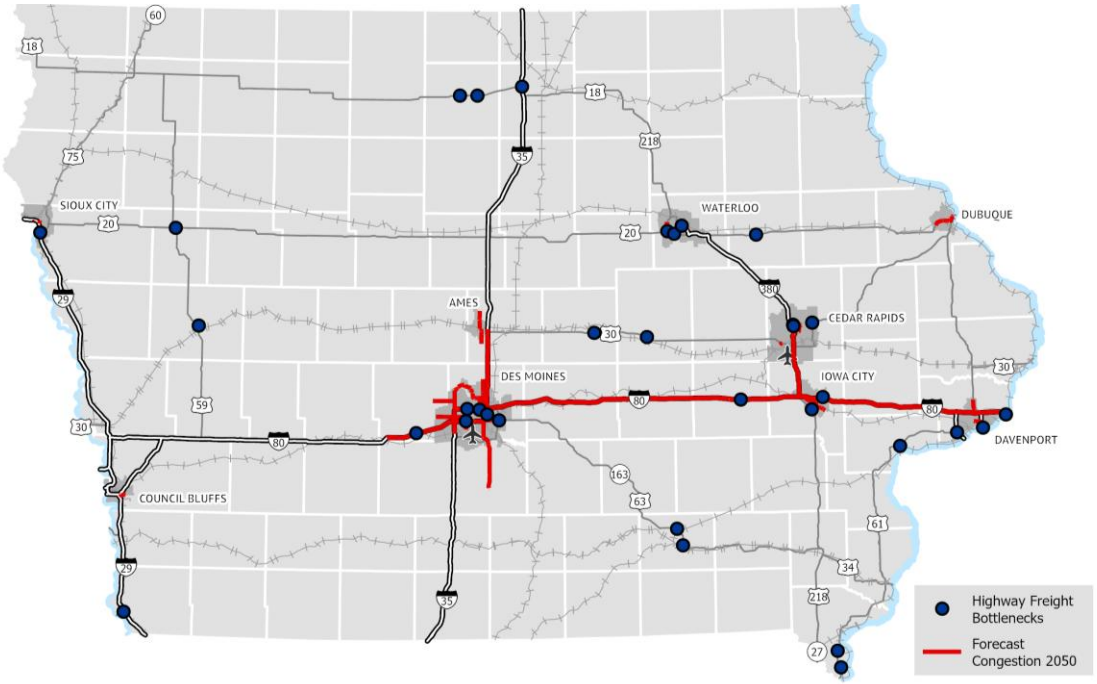
Source: Iowa DOT

Reliability

INRIX travel speed data, acquired by cellphone and global positioning systems data, was used to identify highway bottlenecks. Bottleneck conditions are determined by comparing current reported speeds to reference speeds for each segment of road. Reference speed values are provided for each segment and represent the 85th percentile observed speed for all time periods with a maximum value of 65 mph. A bottleneck occurrence is defined in this analysis as a time interval where the average traffic speed is less than or equal to 60 percent of the reference speed. The annual total bottleneck duration in minutes is calculated for each segment to represent recurring congestion, and the worst five percent of overall network is identified. Of those locations among the worst 5% (by duration in minutes), locations where the duration is one standard deviation or higher above the average were initially identified as a bottleneck. The 33 locations on the highway portion of the IMFN were identified as highway freight bottlenecks. These locations were verified by Iowa DOT District Transportation offices.

Capacity needs at the statewide level were also evaluated based on current conditions and anticipated future traffic. For both time frames, a volume-to-capacity (V/C) ratio was used, which estimates how much capacity remains on a roadway based on how much traffic it carries and how much traffic it could carry. A roadway's capacity varies based on factors such as the number of lanes, classification of the roadway, number and frequency of access, and surrounding land use. The V/C ratio is an indicator of highway capacity sufficiency.

Figure 2.14: Highway freight bottlenecks



Source: INRIX traffic data and Iowa DOT traffic counts

Table 2.12: Highway freight bottlenecks

City/County	Location	Segment length (miles)	Bottleneck minutes
Sioux City	I-29 & Singing Hills Blvd	0.387	587,400
Fremont County	I-29 & Iowa 2	1.809	437,305
Holstein	U.S. 59 & U.S. 20	0.181	775,840
Denison	U.S. 59 & Iowa 39	1.214	513,035
De Soto	U.S. 169 & I-80	0.424	307,205
Hancock County	U.S. 18 & Lake Ave	1.239	164,090
Urbandale	I-35 & Iowa 28	1.095	352,775
Des Moines	I-235 & Iowa 28	0.767	187,025
Hancock County	U.S. 69 & U.S. 18	0.074	119,465
Des Moines	I-35 & Iowa 415	0.700	618,590
Des Moines	I-235 & U.S. 6	0.133	159,395
Pleasant Hill	U.S. 65 & Iowa 163	0.733	119,420
Clear Lake	I-35 & U.S. 18	0.519	148,020
Marshalltown	U.S. 30 & Iowa 14	0.691	109,975
Toledo	U.S. 30 & U.S. 63	0.307	536,700
Cedar Falls	U.S. 20 & Iowa 27	1.213	337,025
Waterloo	U.S. 20 & U.S. 63	0.495	412,740
Waterloo	U.S. 63 & U.S. 218 West Intersection	0.209	559,400
Wapello County	U.S. 63 & Iowa 149	0.014	107,900
Ottumwa	U.S. 34 & U.S. 63	0.067	220,255
Williamsburg	I-80 & Iowa 149	1.019	439,500
Buchanan County	U.S. 20 & Iowa 150	0.008	104,600
Cedar Rapids	I-380 & Iowa 100	0.713	394,265
Cedar Rapids	I-380 S Bound off ramp & 42nd St NE	0.025	122,525
Marion	U.S. 151 & Iowa 13	0.413	393,975
Iowa City	U.S. 218 & Iowa 1	0.794	465,535
Iowa City	I-80 & Iowa 1	0.644	186,025
Lee County	North intersection: U.S. 61 & U.S. 218	0.045	293,800
Keokuk	South intersection: U.S. 61 & U.S. 218	0.102	208,500
Muscatine	U.S. 61 & Iowa 38	1.872	826,605
Davenport	I-280 & U.S. 61	0.009	92,985
Bettendorf	I-74 & U.S. 67	0.671	846,995
Le Claire	I-80 & U.S. 67	0.467	521,635

Source: Iowa DOT

Pipeline

Pipelines are the dominant mode of transportation for liquid and gaseous energy commodities, typically transporting raw materials from areas of production to refineries and plants or moving finished products to terminals, power plants, and other end users.

There are approximately 43,613 miles of gas (distribution and transmission) and 4,459 miles of liquid pipelines in Iowa. This network supplies commodities such as anhydrous ammonia, crude oil, liquefied petroleum gas, and natural gas for residential and industrial consumption. Nearly all-natural gas is delivered by pipeline directly to consumers. Liquefied petroleum/gas and anhydrous ammonia are usually delivered to above ground terminals where the product is shipped by truck to the final point of consumption.

Pipelines comprising the network include large diameter lines carrying energy products to population centers, as well as small diameter lines that deliver natural gas to businesses and households. The energy products carried in pipelines fuel everyday life in the state and nation. They heat homes, power the industrial base, dry crops, and enable our daily commutes. Pipelines are typically labeled as one of the safest modes for transporting energy products because they are usually underground and away from the public.

Iowa ranks fourth in the nation in consumption of liquefied gas in the form of propane, due primarily to the use in drying corn after harvest and heating one in eight households. Iowa is also the only non-crude oil-producing state among the top five energy-consuming states on a per capita basis, mainly due to the state's relatively small population and its energy-intensive industrial sector (U.S. Energy Information Administration).

Condition

Specific information was not available. However, pipelines are regularly inspected, and all leaks or incidents are investigated.

Utilization

Utilization numbers were not available.

Safety

From 2014 to 2024, there were a total of 69 pipeline incidents in Iowa, resulting in 1 injury and $15,534,606 in repair fees.

Reliability

Despite the construction of new pipeline capacity in some parts of the country, energy infrastructure bottlenecks still exist. Limitations in Iowa are typically related to propane terminals and storage areas during high-demand seasons. Specific pipeline bottlenecks were not identified.

Table 2.13: Iowa pipeline mileage by commodity

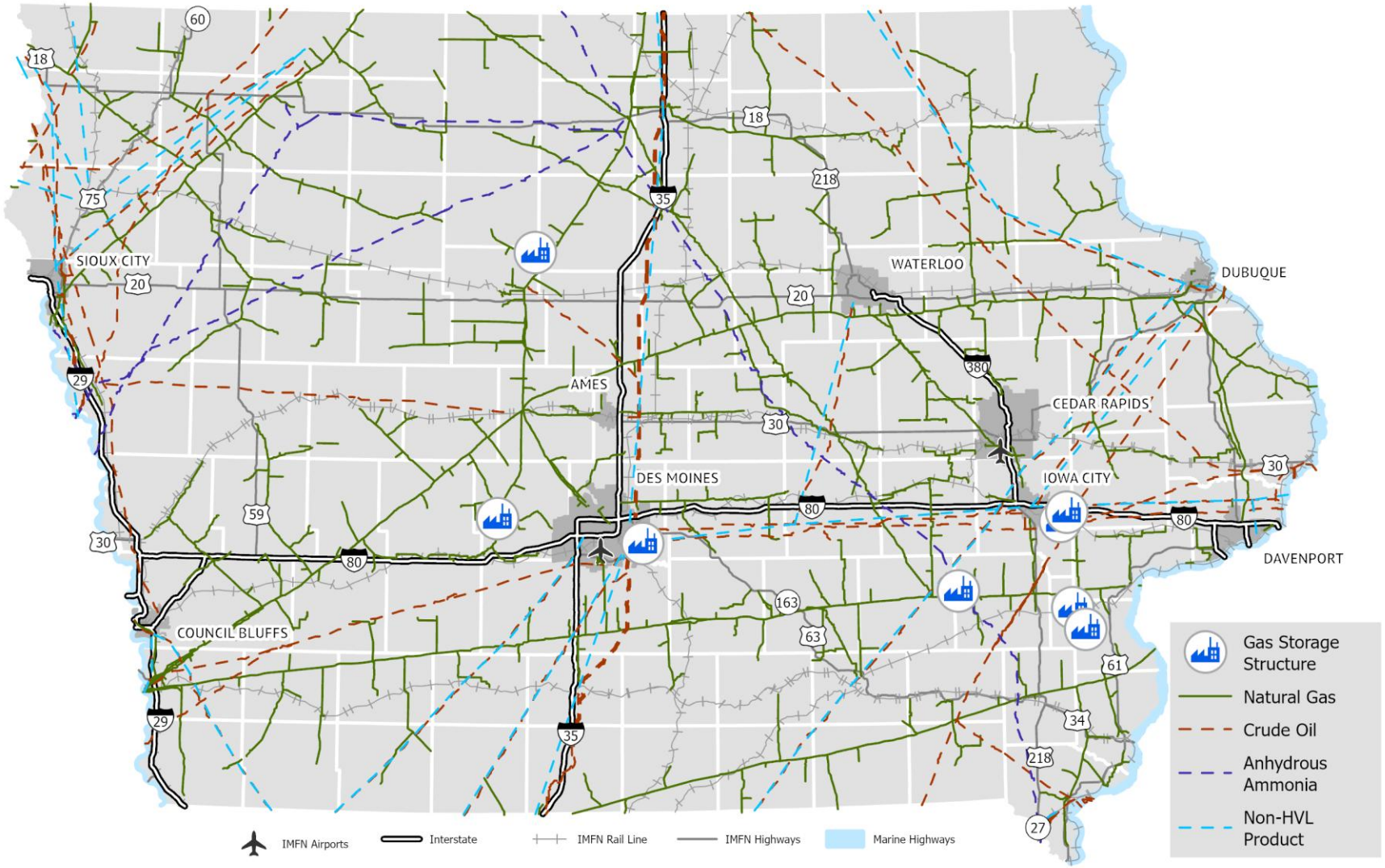
System	Commodity	Main Miles	Service Miles
Gas Distribution	Natural gas	19,713	15,860
	Propane	4	1
	Subtotal	**19,717**	**15,861**
Gas Transmission	Natural gas	8,035	-
	Subtotal	**8,035**	**-**
Liquid	Crude oil	594	-
	Highly Volatile Liquids*	1,887	-
	Refined petroleum products**	1,978	
	Subtotal	**4,459**	**-**
All Systems	**Total**	**32,211**	**15,861**

**Highly Volatile Liquids includes flammable and toxic liquids.*

***Refined petroleum products are obtained by distilling and processing crude oil*

Source: Pipeline and Hazardous Materials Safety Administration

Figure 2.15: Iowa pipelines



Source: Pipeline and Hazardous Materials Safety Administration

Railroad

Iowa has an extensive rail transportation system with the ability to haul large volumes of freight in a safe, energy-efficient, and environmentally sound manner. Rail service in Iowa is dominated by five Class I carriers that operate most tracks and accrue most of the freight revenues in the state. Of the five Class I's, Union Pacific Railroad and BNSF Railway carry the largest volume of traffic in the state, operating on approximately 2,000 miles of track combined, including double tracks running east to west across the state.

Class II and III railroads often provide feeder service to the Class I carriers. The only Class II railway in the state, Iowa Interstate Railroad, maintains over 300 miles of track serving as another major east-to-west corridor from Omaha-Council Bluffs to the Chicago area. Class III railroads consist of two separate operating categories – line haul and switching. Switching railroads operate in urban areas and facilitate the interchange of rail shipments. These switch operators typically associated with Class I railroads and are common practices within Class III operations.

Table 2.14: Iowa railroad mileage by company

Class	Railroad	Owned/ Leased	Trackage Rights	Total Operated
I	BNSF Railway (BNSF)	624	35	659
	Canadian National Railway (CN)[1]	771	60	831
	Canadian Pacific Kansas City (CPKC)[2]	650	23	673
	Norfolk Southern Railway (NS)	5	37	42
	Union Pacific Railroad (UP)	1,278	275	1,553
II	Iowa Interstate Railroad (IAIS)	327	27	354
III	Boone & Scenic Valley Railroad (BSV)	1.66	0	1.66
	Burlington Junction Railway (BJRY)	6	3	9
	CBEC Railway (CBRX)[3]	5	0	5
	Cedar Rapids & Iowa City Railway (CIC)	60	23	83
	D&I Railroad (DAIR)	0	42	42
	Iowa River Railroad (IARR)	11	0	11
	Iowa Southern Railway (ISRY)	35	0	35
	Iowa Traction Railroad (IATR)	10	0	10
	Keokuk Junction Railway (KJRY)	1	0	1
	State of South Dakota (SD)[4]	39	0	30
All	**Total**	**3,824**	**525**	**4,340**

[1] CN operates via subsidiaries Chicago Central & Pacific (CCP), Cedar River Railroad (CEDR), and Iowa Northern Railway (IANR).

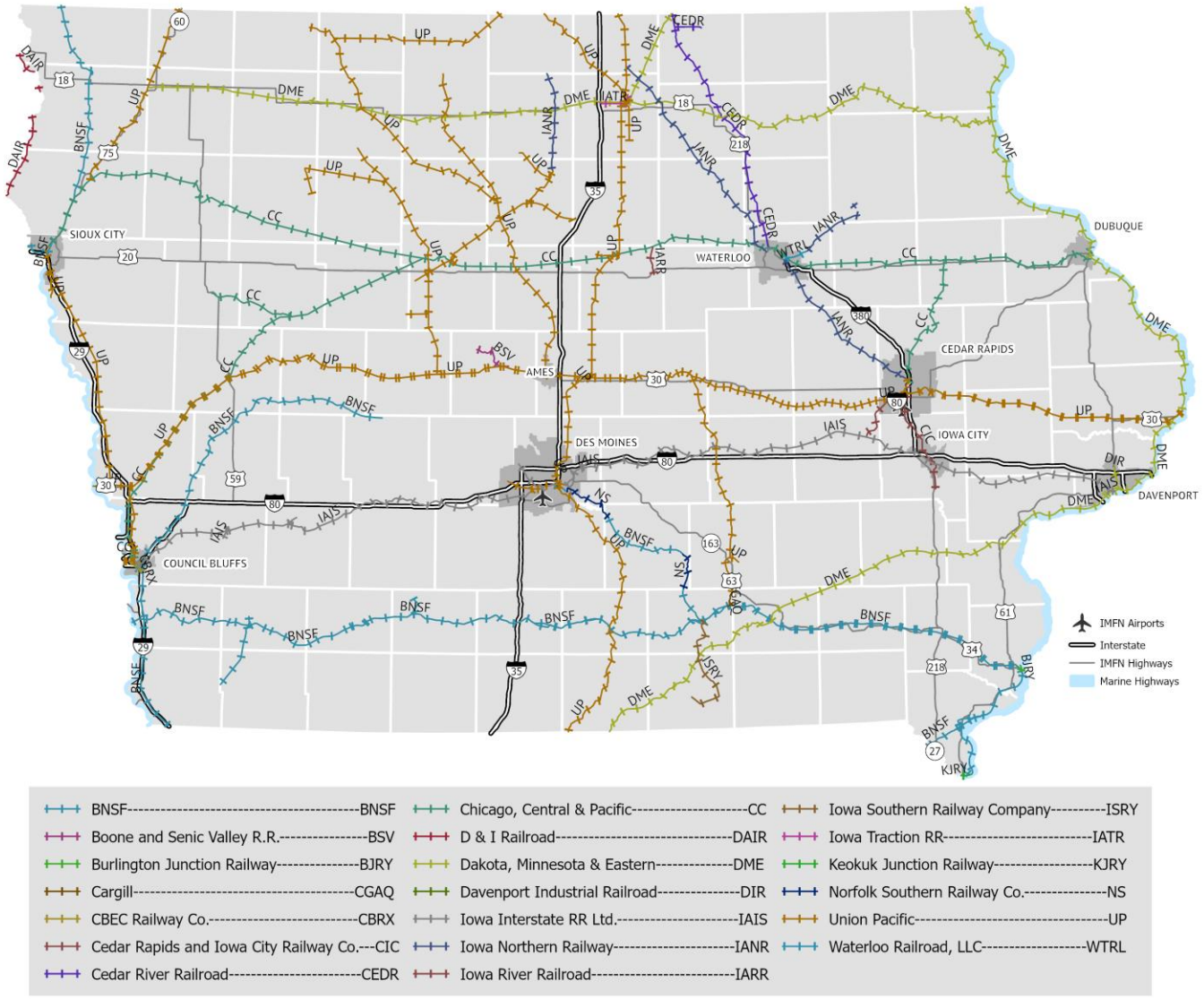
[2] CPKC operates via subsidiary Dakota, Minnesota & Eastern (DME).

[3] CBEC trackage is operated by IAIS.

[4] SD-owned trackage in Iowa is operated by DAIR.

Source: Railroad companies

Figure 2.16: Iowa railroads



Source: Railroad companies

Condition

Operating revenues and overall net ton-miles of the railroads are indicators of the condition and performance of the rail system, both of which have steadily increased over the last 35 years.

Railroads in Iowa have been steadily increasing the amount of funds spent on maintenance and improvements of rail infrastructure in the state. This includes $187.1 million in 2024 and nearly $1 billion in the last five years. Infrastructure maintenance and improvements are estimated to make up over 10% of total operating expenses.

Utilization

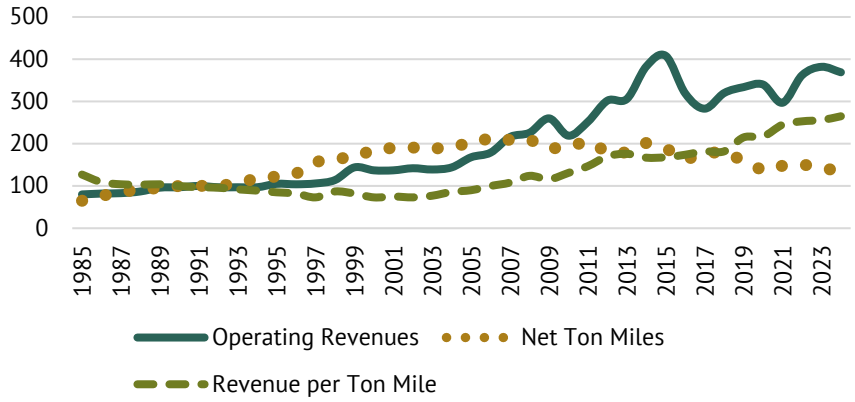
The activity on individual rail lines is measured in terms of density or gross ton-miles per mile. Gross ton-miles are defined as the total weight of all freight traveling on the rail line including the weight of the freight-train cars and locomotives. While Iowa's rail miles have decreased slightly, the amount of gross tonnage moving over the network has been steadily increasing.

Class I carriers operate most of the rail mileage in the state and generate the most ton-miles. Iowa's two busiest rail lines are Union Pacific Railroad's Overland Route, and east-west double-track route passing through the center of Iowa (Clinton to Council Bluffs), and the BNSF Railway's line in southern Iowa, an east-west route that is partially double tracked (Burlington to west of Pacific Junction). The Class II and III railroads often provide feeder service to the Class I carriers, which results in smaller allocations of mileage and ton-miles.

Safety

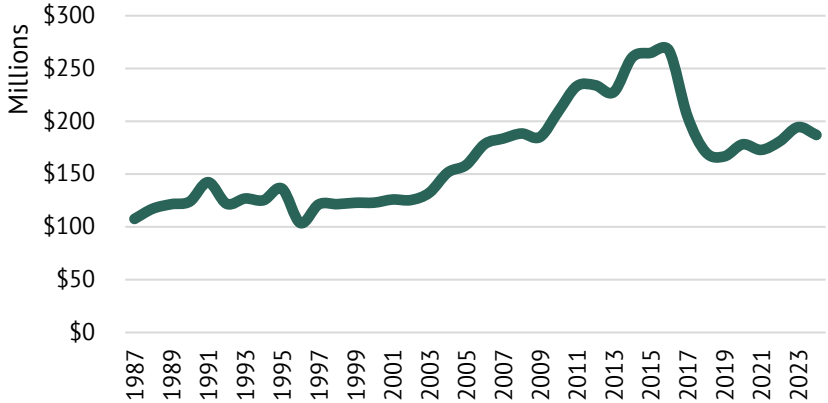
Over the last ten years, there were 387 crashes between highway and railroad traffic and 309 train derailments, with a relatively consistent number occurring each year. A total of 137 injuries and 36 fatalities resulting from those crashes and derailments, both with inconsistent trends by year.

Figure 2.17: Performance of Iowa rail operations, 1985-2024



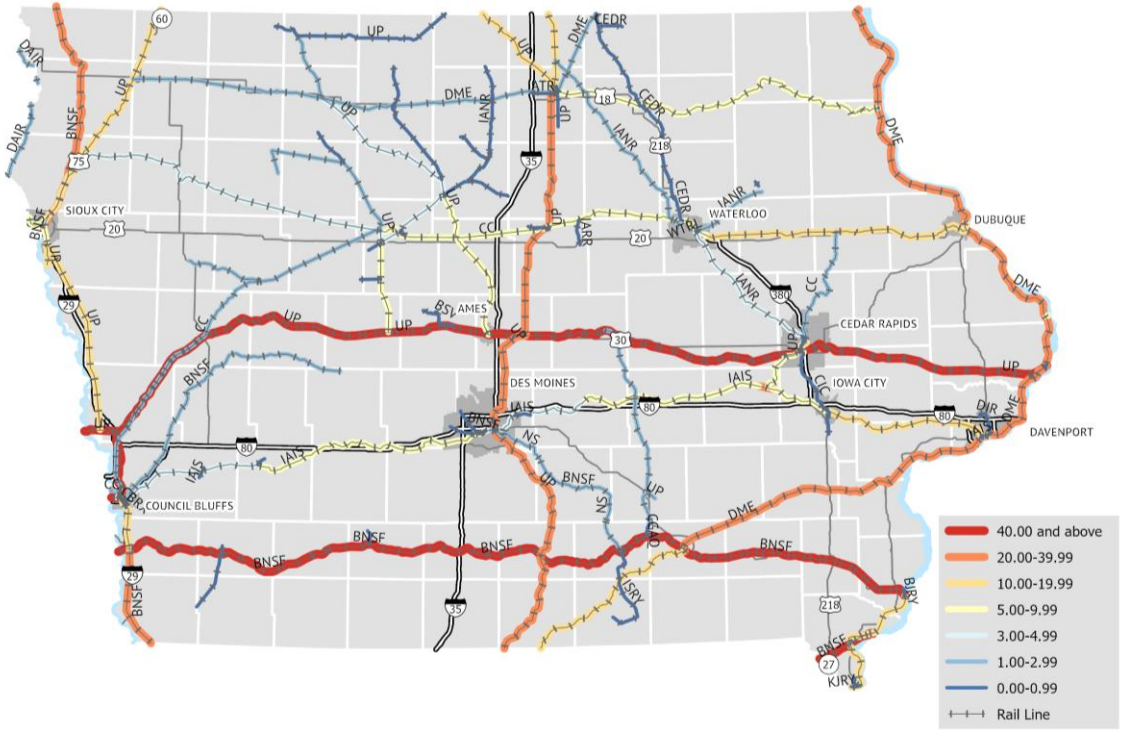
Source: Railroad companies

Figure 2.18: Iowa railroad maintenance investments, 1987-2024



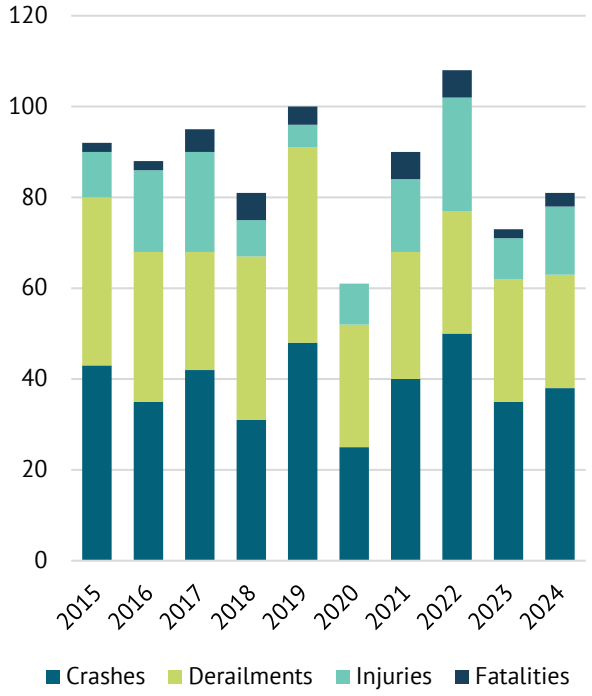
Source: Railroad companies

Figure 2.19: Freight railroad traffic density, 2024 (gross tons per mile)



Source: Railroad companies

Figure 2.20: Freight railroad-related safety statistics, 2015-2024



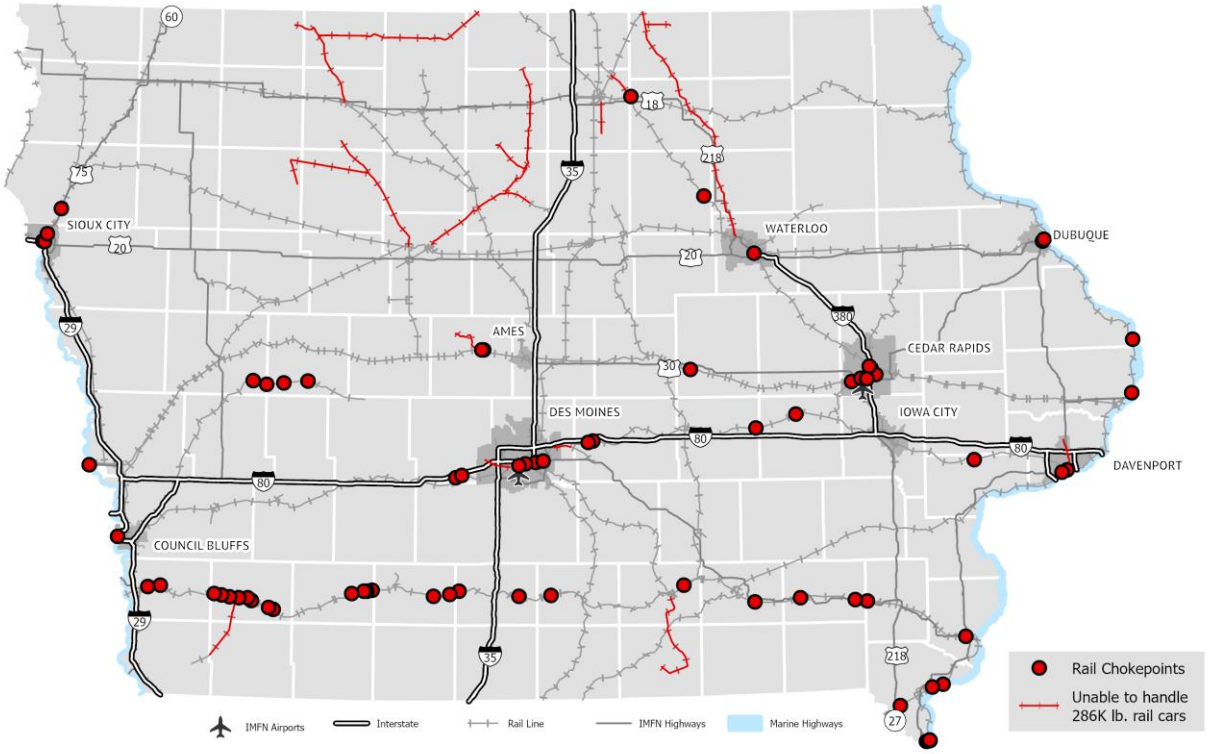
Source: Federal Railroad Administration

Reliability

Railroad bottleneck locations are usually referred to as “choke points” to avoid confusion with the more conventional railroad sector use of “bottleneck” to describe locations served by only one rail carrier (i.e., the “bottleneck carrier”). These choke points were identified by surveying each of the rail companies operating trackage in the state. Locations submitted primarily include structural choke points (e.g., low clearance areas and bridges with size restrictions), congested choke points (e.g., locations with operational issues or shared-use corridors), and low-lying areas at risk of flooding during heavy rains or high-water levels.

Additionally, railroads continue to focus their attention on heavier axle-load freight equipment and longer, heavier trains to lower costs. Using larger rail cars in 100-plus car unit trains allows the greatest savings and economic benefits, as well as keeping would-be truck traffic off the highways. The industry standard for rail car weight, which includes the weight of commodities, and the rail car combined, is 286,000 pounds. Iowa has rail lines that are unable to carry the sizes and weights of railroad equipment that meet this threshold.

Figure 2.21: Railroad freight chokepoints



Source: Railroad companies

Table 2.15: Railroad freight chokepoints

Railroad(s)	Location	Freight Mobility Issue
CN and UP	Mainline between Sioux City and Le Mars	**Track congestion** exists from multiple rail companies operating over the same line.
BNSF	31st Street Rail Crossing at Sioux City	This highway-railroad crossing is located on the edge of a railyard resulting in the **roadway being regularly blocked by trains** which disrupts commercial and residential traffic. There is a need for a coordinated crossings analysis and mitigation plan.
BNSF, CN, DAIR, and UP	Terminal and Interchange Area at Sioux City	**Operational issues** exist where four railroads intersect at a major at-grade crossing of rail lines with trains operating at slow speeds in a terminal environment. Carload interchange between carriers is challenging as there are presently no designated interchange locations, and many of the carriers must operate in each other's yards to interchange cars.
BNSF	Gordon Drive viaduct at Sioux City	The Gordon Drive viaduct has a vertical clearance of 17' 6" above top of rail **that does not allow for the passage of double stack container trains.**
UP	West of Missouri Valley	**Flood prone area** is at risk of closure due to Missouri River flooding (e.g., 2011).
CN	UP rail bridge at Council Bluffs	CN uses a UP bridge over Missouri River at Council Bluffs to reach a customer in Omaha, NE **causing delays** for some UP trains.
BSV and UP	Interchange at Boone	Interchange regularly serves more cars than originally designed causing significantly **increased time for sorting and coordination** between railroads to accommodate.
BSV	Industrial Park at Boone	**Need to improve infrastructure** with additional siding, storage, and sorting capacity.
IAIS	Bridge 380.5 near DeSoto	This **bridge restricts the movement of high-wide loads** (e.g., wind tower components) due to the truss construction.
IAIS	Bridge 378.1 near Van Meter	This **bridge restricts the movement of high-wide loads** (e.g., wind tower components) due to the truss construction.
IAIS	Bridge 278.1 near Victor	This **bridge restricts the movement of high-wide loads** (e.g., wind tower components) due to the truss construction.
IAIS	Des Moines	**Flood prone area** from MP359.04 to MP362.25 near Edwards Avenue is at risk of closure due to Raccoon River flooding anytime the Fleur Drive flood gates close.
IAIS	Track conditions at Des Moines	The **density of crossings** in downtown Des Moines limits speeds to 10 mph for westward bound trains. To alleviate, crossing consolidations or track upgrades need to be considered.
IAIS and UP	UP Short Line Yard at Des Moines	There is currently **no dedicated through route** for IAIS along the UP-owned trackage and yard. Need a dedicated separate track to allow IAIS through movements to pass without restriction.
IAIS	Pleasant Hill	**Flood prone area** from MP352.25 to MP353 near Fairview Drive is at risk of closure due to Four Mile Creek flooding.

Railroad(s)	Location	Freight Mobility Issue
IAIS	Bridge 329.5 near Colfax	This **bridge restricts the ability to carry high-wide loads** (e.g., wind tower components). Need to replace structure with through plate girder bridge.
IAIS	Colfax	**Flood prone area** from MP334.25 to MP336 near Walnut Street is at risk of closure due to Skunk River flooding.
CPKC and IANR	Interchange at Nora Springs	Increased traffic volumes at the interchange results in **insufficient track capacity.**
IANR	Butler Yard at Shell Rock	Traffic growth due to facility development has resulted in **operational challenges.**
IANR	Bryant Yard at Waterloo	Convergence of traffic from three subdivisions results in **insufficient classification space.**
UP	Montour	**Flood prone area** is at risk of closure due to large rain events (e.g., 2014).
IAIS	Bridge 268.2 near Marengo	**This bridge restricts the movement of high-wide loads** (e.g., wind tower components) due to the truss construction.
CIC and UP	Fairfax 3 at Fairfax	UP can only efficiently deliver one unit train at a time at this location due to **insufficient interchange track.**
UP	Cedar Rapids	**Flood prone area** where main line and UP Beverly Yard are at risk of closure due to Prairie Creek and area drainage ditches flooding (e.g., 2014).
CIC	Cedar Rapids bypass at SW Cedar Rapids	**Rail traffic currently moves through the ADM plant** greatly affecting services. A new single line that bypasses ADM would allow trains to travel around the plant more efficiently and minimize potential operating conflicts between trains.
CIC	900/950 Yard SW Cedar Rapids	**Insufficient capacity to accommodate interchanges** from multiple carriers while facilitating other yard switching activities.
CIC	Eighth Avenue SE curve Cedar Rapids	The **current 13-degree 55 ft. curve limits train size, specialized cars, and motive power options for train operations,** increasing the number of trains and causing vehicular congestion downtown.
CIC	ADM Plant North Leg	**Limits motive power** options and possibly specialized type cars with 14.5 degrees at the tightest point in the curve.
CIC	Cedar Rapids ADM Wet Mill bypass to connect directly to ADM's Dry Grind Plant	Rail traffic currently moves through a main thoroughfare near ADM's wet mill, up a 1.5-2% grade for 1.5 miles. All cars are shoved into ADM Dry Grind. **Loads/empties are pulled and shoved downgrade through multiple road crossings.**
UP	Cedar Rapids	**Flood prone area** where the entire industrial lead is at risk of closure due to Cedar River flooding (e.g., 2008).
IAIS	Moscow	Flood prone area from MP211.75 to MP 212.75 near Noble Avenue at risk of closure due to Cedar River flooding.

Railroad(s)	Location	Freight Mobility Issue
CN	CN rail bridge at Dubuque	**Swing-span bridge over Mississippi River closes to rail traffic to accommodate barge passage on the river during navigation season.** The time required to stop trains, open the bridge for river traffic, return the bridge to its original position, and restore normal railroad operations causes delays.
CN and CPKC	South Port at Dubuque	**Lack of rail yard capacity.** Busy line due to multiple rail lines intersection.
CPKC	CP rail bridge at Sabula	**Swing-span bridge over Mississippi River closes to rail traffic to accommodate barge passage on the river during navigation season.** The time required to stop trains, open the bridge for river traffic, return the bridge to its original position**, and restore normal railroad operations causes delays.**
UP	UP rail bridge at Clinton	**Swing-span bridge over Mississippi River closes to rail traffic to accommodate barge passage on the river during navigation season.** The time required to stop trains, open the bridge for river traffic, return the bridge to its original position, and restore normal railroad operations causes delays.
BNSF and CPKC	Crescent Bridge at Davenport	**Swing-span bridge over Mississippi River closes to rail traffic to accommodate barge passage on the river during navigation season,** and the bridge is functionally obsolete. The time required to stop trains, open the bridge for river traffic, return the bridge to its original position, and restore normal railroad operations causes delays.
BNSF, CPKC, and IAIS	Government Bridge at Davenport	**Swing-span bridge over Mississippi River closes to rail traffic to accommodate barge passage on the river during navigation season,** and capacity is marginal for rail cars with a maximum allowable gross weight of 286,000 lb. The time required to stop trains, open the bridge for river traffic, return the bridge to its original position, and restore normal railroad operations causes delays.
BNSF	BNSF rail bridge at Fort Madison	**Swing-span bridge over Mississippi River closes to rail traffic to accommodate barge passage on the river during navigation season.** The time required to stop trains, open the bridge for river traffic, return the bridge to its original position, and restore normal railroad operations causes delays to rail and highway traffic that share the bridge.
KJRY	Twin Rivers Yard at Keokuk	**Insufficient storage and switching capacity,** as well as the inability to block rail traffic properly exists at this location. To alleviate the bottleneck, an increase in yard capacity is necessary.
KJRY	Keokuk	**Flood prone area** is at risk of closure due to Mississippi River flooding (e.g. 2008).
KJRY	KJRY rail bridge at Keokuk	**Swing-span bridge over Mississippi River closes to rail traffic to accommodate barge passage on the river during navigation season.** The time required to stop trains, open the bridge for river traffic, return the bridge to its original position, and restore normal railroad operations cause delays.

Railroad(s)	Location	Freight Mobility Issue
BNSF	33 locations	**Timber Bridge with short spans, narrow portals, and a limited vertical clearance** which limits the ability to raise the track, creating low points and consistent slow orders due to mud and water. • Burlington – MP 209.7 • Rome – MP 241.75 • Lockridge – MP 245.35 • Batavia – MP 261.71 • Ottumwa – MP 275.19 • Avery – MP 299.25 • Lucas – MP 343.84 • Woodburn – MP 353.77 • Murray – MP 372.95 • Thayer – MP 375.92 • Afton – MP 380.78 • Cromwell/Creston – MP 399.51 • Cromwell/Creston – MP 401.02 • Cromwell/Creston – MP 401.7 • Cromwell/Creston – MP 402.03 • Prescott – MP 405.76 • Villisca – MP 431.51 • Villisca – MP 432.78 • Stanton – MP 432.78 • Stanton – MP 438.25 • Red Oak – MP 442.38 • Red Oak – MP 445.17 • Red Oak – MP 447.6 • Emerson – MP 449.9 • Malvern – MP 467.17 • Glenwood – MP 471.21 • Keokuk – MP 177.99 • Dedham – MP 401.7 • Templeton – MP 408.87 • Manning – MP 413.96 • Aspinwall – MP 418.2 • Fort Madison – MP 235.5 • Argyle – MP 246.3

Source: Railroad companies

Waterway

Iowa is bordered by two navigable rivers that provide an economical option for moving bulk products to and from the state. The Missouri River (M-29 Marine Highway) on the west and the Mississippi River (M-35 Marine Highway) on the east connect to an extensive national inland waterway system and international deep-sea ocean port facilities at the Gulf Coast. Both rivers are part of America's Marine Highway Program that is dedicated to expanding the use of the nation's navigable waterways to relieve landside congestion, reduce air emissions, and generate other public benefits by increasing the efficiency of the surface transportation system. The M-29 Marine Highway runs from Sioux City, Iowa, to Kansas City, Missouri. The M-35 Marine Highway runs from St. Paul, Minnesota, to Grafton, Illinois.

Located along these rivers are 70 barge terminals (65 on the Mississippi, five on the Missouri) in Iowa, owned and operated by private companies (see Appendix 1). These terminal transfer commodities between barge, rail, and truck. Freight moving via waterway in Iowa is primarily moving through facilities on the Mississippi River, within the boundaries of either the Upper Mississippi River Ports or Mid America Port Commission port statistical areas, or PSAs (see description on page 56).

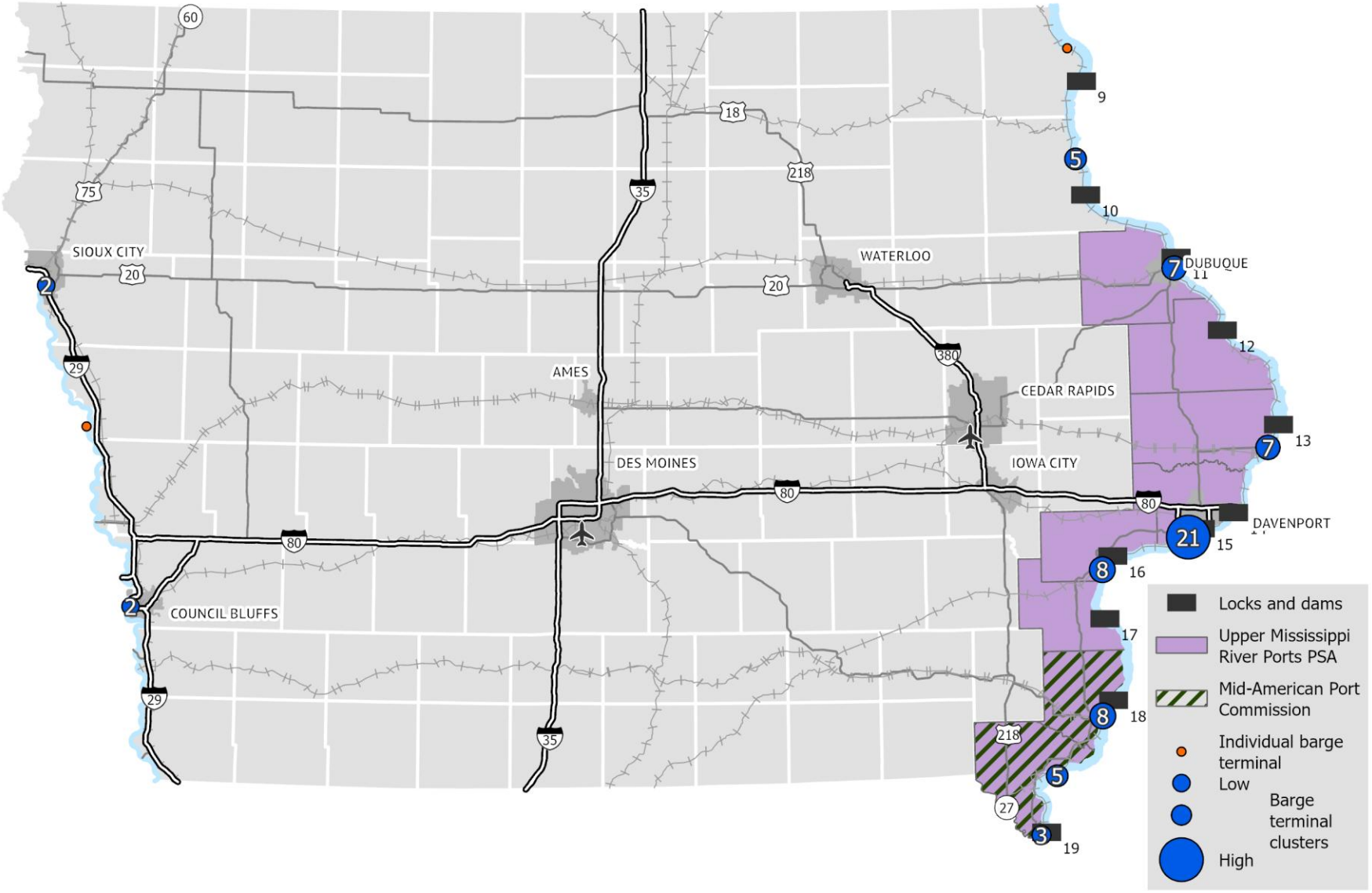
A system of locks and dams (Table 2.16) on the upper Mississippi River, operated by the U.S. Army Corps of Engineers, helps to maintain adequate water levels for barge operations. The construction of these locks and dams was authorized in 1930 to achieve a 9-foot navigation channel in the upper Mississippi River. Dams are built on rivers to hold back water and form deeper navigation pools, allowing river vessels to use a series of locks to "step" up or down the river from one water level to another.

Table 2.16: Iowa Mississippi River locks summary

Lock	Location	Chamber type	River mile	Year open	Length (feet)	Width (feet)
9	Harpers Ferry	Main	647.9	1938	600ft	110ft
10	Guttenberg	Main	615.1	1936	600ft	110ft
11	Dubuque	Main	583	1937	600ft	110ft
12	Bellevue	Main	556.7	1939	600ft	110ft
13	Clinton	Main	522.5	1938	600ft	110ft
14	Le Claire	Main	493	1922	600ft	110ft
14	Le Claire	Auxiliary	493	1939	320ft	80ft
15	Rock Island (IL)	Auxiliary	482.9	1934	360ft	110ft
15	Rock Island (IL)	Main	482.9	1934	600ft	110ft
16	Muscatine	Main	457.2	1937	600ft	110ft
17	New Boston (IL)	Main	437.1	1939	600ft	110ft
18	Gladstone (IL)	Main	410.5	1937	600ft	110ft
19	Keokuk	Main	364.3	1937	1,200ft	110ft

Source: U.S. Army Corps of Engineers

Figure 2.22: Iowa navigable waterways



Source: U.S. Army Corps of Engineers

Condition

The American Society of Engineers Report Card for America's Infrastructure graded the inland waterway system as a D+, reflecting the age, condition, and reliability of the infrastructure. The system relies primarily on public investment and has suffered from chronic underfunding and many of the country's locks and dams have reached or even far exceeded design life, resulting in infrastructure deteriorating faster than it's being replaced.

The locks and dams bordering Iowa are undersized for modern Upper Mississippi tow lengths and are hindered by unscheduled repairs. The average age of these 11 locks and dams is over 80 years, 30 years past their design life. Only one lock bordering Iowa is long enough to accommodate a modern 1,200-foot barge tow. The remaining 10 are 600 feet long, which means barge operators must split the tow in half, lock through multiple times, and resecure the barges together before continuing. This creates major delays and congestion at each lock and dam, generating a ripple effect and longer delays throughout the rest of the system.

Also contributing to delay times is lock unavailability, both scheduled and unscheduled. Due to the age and condition of the infrastructure, locks and dams often must be closed for maintenance and repairs. On average, unscheduled repairs account for more than 50% of lock closures.

Utilization

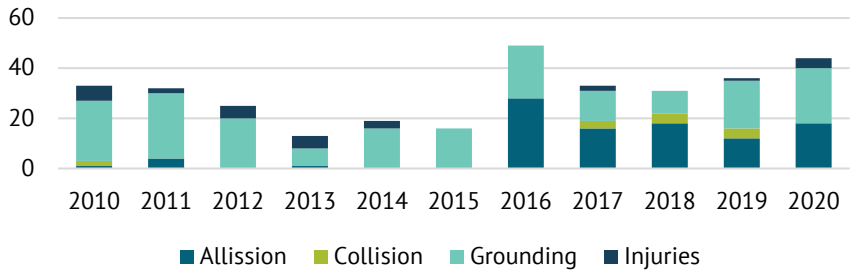
Barge traffic through Upper Midwest locks increases as the river flows from north to south. Iowa's navigable waterways are primarily utilized for moving bulk products such as grain, fertilizer, and coal, with most of the movements being agricultural exports out of the state and down the Mississippi River. These exports are shipped from Iowa barge terminals to the Gulf of Mexico where they are transloaded onto ocean vessels and shipped around the world.

In the past, the Missouri River experienced a continual drop in freight tonnages, partly due to inconsistent water releases from upriver dams and controversy over water usage for all Upper Missouri River basin states. However, barge traffic is increasing on the Lower Missouri River and regular traffic is expected as far north as Blencoe, Iowa due to the opening of a new barge terminal in 2021 (see description on page 56).

Safety

There was a total of 276 freight-related allisions, collisions, and groundings on the Mississippi (270) and Missouri (6) rivers along Iowa's borders between 2011 and 2020. There were no fatalities or missing crew members aboard towing vessels or barges along Iowa's border over that same period. However, there were 22 crew members injured – 21 on the Mississippi River and one on the Missouri River.

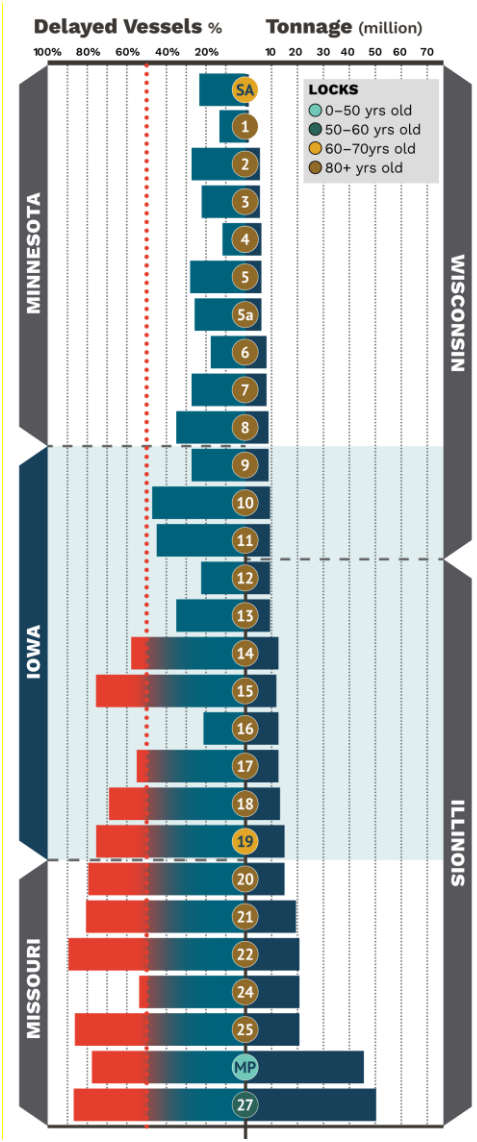
Figure 2.23: Freight waterway-related safety statistics, 2011-2020



Source: U.S. Coast Guard

An allision is an event where a breakaway barge or navigating vessel contacts a stationary object (e.g., bridge, pier, dock, buoy, or moored vessel). A collision is an event where two objects underway or navigating vessels make contact. A grounding is an unintentional contact with the shore or bottom of the river.

Figure 2.24: Upper Mississippi River lock performance, 2024



Source: U.S. Army Corps of Engineers

Port Statistical Areas in Iowa

The Mississippi River Ports of Eastern Iowa and Western Illinois, doing business as Upper Mississippi River Ports PSA, consists of the existing ports and terminals in Dubuque, Jackson, Clinton, Scott, Muscatine, and Louisa counties, as well as others in Illinois. The Mid America Port Commission PSA consists of the existing ports and terminal in Des Moines and Lee Counties, as well as others in Illinois and Missouri.

The terminals in the region have been functioning for over 150 years but were federally recognized as PSAs in 2020. These port statistical areas will leverage industry partnerships to promote economic opportunities, raise national awareness of their strategic importance for shipping commodities, and recognize the production and movement of freight as a vital economic driver for the region.

Port of Blencoe

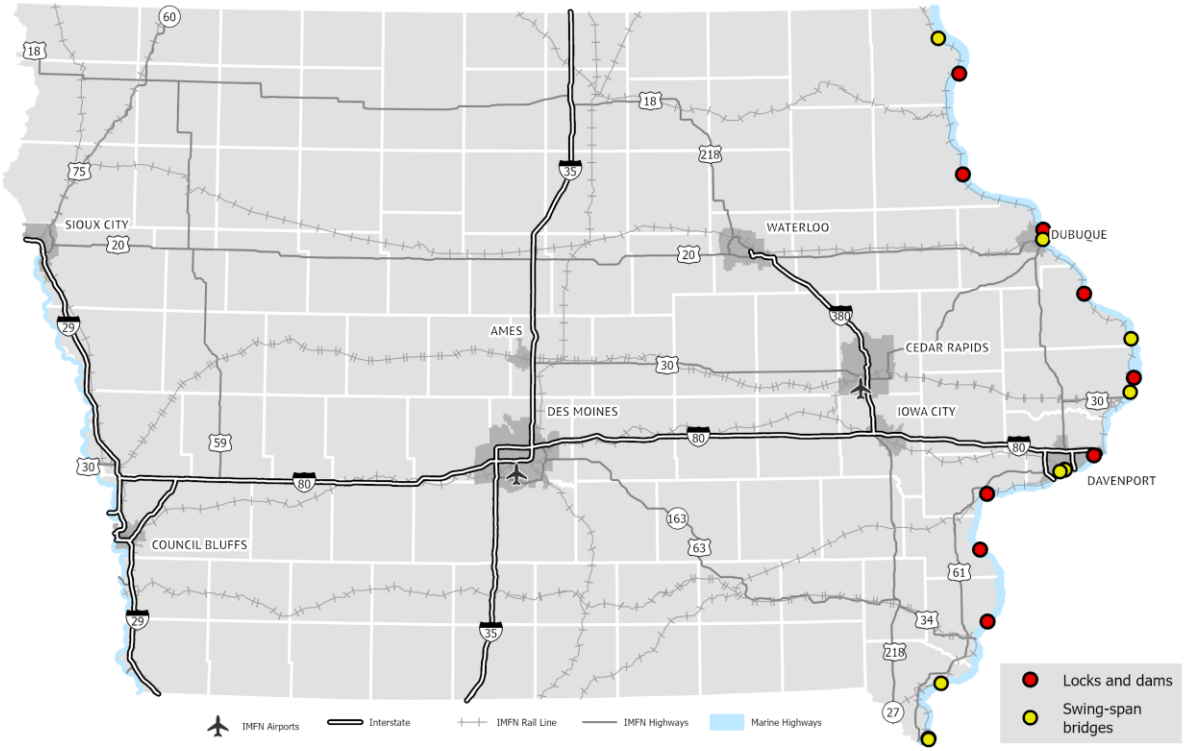
Located halfway between Council Bluffs and Sioux City, the NEW Cooperative Port of Blencoe serves as the northernmost gateway to the world market from the Missouri River. NEW Cooperative originally initiated the development of this terminal as a solution to growing transportation needs and a way to increase soybean basis for area farmers. The company was moving 36,000 tons of fertilizer via truck from the Mississippi River at Dubuque each year. Utilizing the Port of Blencoe now saves an estimated 248,000 truck miles and 58,000 gallons of fuel annually, significantly reducing carbon emissions.

The facility, which started moving traffic in early 2021, now handles corn, soybeans, dry fertilizers, soybean meal, dried distillers' grains, and rock. There are multiple expansion projects planned (as of December 2021) to improve the performance and efficiency of the terminal, as well as a number of inquiries to move additional commodities such as wind turbine blades.

Reliability

Given the condition, size, and average delay of the 11 locks bordering Iowa, all are considered freight bottlenecks. A lack of repairs, maintenance, and modernization will continue to have a negative impact on the efficiency and condition of the infrastructure. Failure or closure of a lock could be catastrophic for the region as there aren't any alternative routes. Seven swing-span bridges over the Mississippi River in Iowa are also considered bottlenecks. These bridges must "swing" open to allow for barge traffic to pass on the river before returning to the original placement for trains and vehicular traffic to cross. Although rail and highway traffic may not create an obstruction to marine traffic, delays can still occur due to rail operations.

Figure 2.25: Waterway freight bottlenecks



Source: U.S. Army Corps of Engineers

Table 2.17: Waterway freight bottlenecks

Description	Location	Freight mobility issue
Lock and Dam 9	Harpers Ferry	Age (1938), chamber size (600 ft.), delay (1.3 hours), annual closures (9)
Lock and Dam 10	Guttenberg	Age (1936), chamber size (600 ft.), delay (2.5 hours), annual closures (7)
Lock and Dam 11	Dubuque	Age (1937), chamber size (600 ft.), delay (2.5 hours), annual closures (19)
CN rail bridge*	Dubuque	Swing-span rail bridge must be opened to accommodate barge traffic.
Lock and Dam 12	Bellevue	Age (1939), chamber size (600 ft.), delay (2.1 hours), annual closures (3)
CP rail bridge*	Sabula	Swing-span rail bridge must be opened to accommodate barge traffic
Lock and Dam 13	Clinton	Age (1938), chamber size (600 ft.), delay (1 hour), annual closures (11)
UP rail bridge*	Clinton	Swing-span rail bridge must be opened to accommodate barge traffic.
Lock and Dam 14	Le Claire	Age (1922), chamber size (600 ft.), delay (1.7 hours), annual closures (15)
Government Bridge*	Davenport	Swing-span rail bridge must be opened to accommodate barge traffic.
Lock and Dam 15	Rock Island (IL)	Age (1934), chamber size (600 ft.), delay (2 hours), annual closures (29)
Crescent Bridge*	Davenport	Swing-span rail bridge must be opened to accommodate barge traffic.
Lock and Dam 16	Muscatine	Age (1937), chamber size (600 ft.), delay (2.6 hours), annual closures (11)
Lock and Dam 17	New Boston (IL)	Age (1939), chamber size (600 ft.), delay (1.8 hours), annual closures (17)
Lock and Dam 18	Gladstone (IL)	Age (1937), chamber size (600 ft.), delay (1.3 hours), annual closures (8)
BNSF rail bridge*	Fort Madison	Swing-span rail bridge must be opened to accommodate barge traffic.
Lock and Dam	Keokuk	Age (1957), delay (1.4 hours), annual closures (17)
KJRY rail bridge	Keokuk	Swing-span rail bridge must be opened to accommodate barge traffic.

**Location also listed as a railroad bottleneck*

Source: U.S. Army Corps of Engineers

Freight Generating Facilities

Iowa's freight system includes many facilities that enable the smooth transfer of goods from one mode to another. These allow shippers to take advantage of the cost, speed, and capabilities of multiple modes.

The terms "intermodal" and "multimodal" are often used interchangeably, yet they can have entirely different meanings. Multimodal focuses on the different modal options that could be utilized to move goods from one place to another. Intermodal focuses on how two or more of these modes can connect at what typically amounts to a transfer point, such as an intermodal container facility or transload location. To put it another way, multimodal options provide the links in the transportation system, while intermodal connections are the nodes.

These intermodal transfer facilities are identified in the planning process as vital parts to the state's rail and water freight networks because they rely on trucking for pickup and delivery, which can produce significant freight traffic flowing to and from these locations.

Intermodal Container Facility

An intermodal container facility refers to the transfer of freight using an intermodal container or trailer though multiple modes of transportation (rail, barge, and/or truck) without the handling of the freight itself when changing modes. This method improves security and transportation speed while reducing the damage and loss of goods.

- **Container transfer facilities** handle rail-to-truck and truck-to-rail transfers in sealed units such as trailer-on-flatcar (TOFC) or container-on-flatcar (COFC).

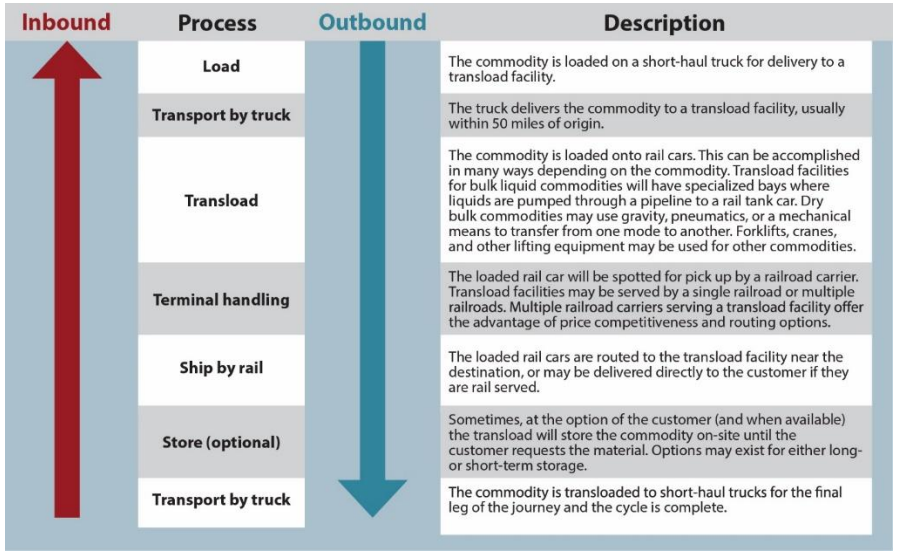
Transload Facility

A transload facility refers to the transfer of freight shipments, typically bulk, from the vehicle/container of one mode to that of another at a terminal interchange point. Transloading works for a variety of commodities, including finished and unfinished goods, fresh food, lumber, bulk goods, etc.

- A **team track** is the most basic and common type of transload facility in Iowa. It is a simple siding or spur track where rail cars are placed and available for use to load and unload freight. Once the cars are loaded, the railroad is notified to pick them up. Team tracks can be owned by a railroad, or a business served by the railroad.
- At a **cross-dock transload facility**, cargo is unloaded from an incoming truck or rail car and is reloaded directly into outbound trucks, trailers, containers, or rail cars. A cross-dock typically allows level loading between modes. This process improves the efficiency of commodity movement by utilizing as much of a container/vehicle as possible.
- **Barge terminals** are located where commodities are transferred from barges to trucks and/or rail cars (or vice versa). These terminals are a staple of industries moving bulk products by river or inland waterway. Barges can be loaded and unloaded much more rapidly than packaging a bulk product and putting it in a truck and can handle a larger amount of freight and heavier freight than both truck and rail.

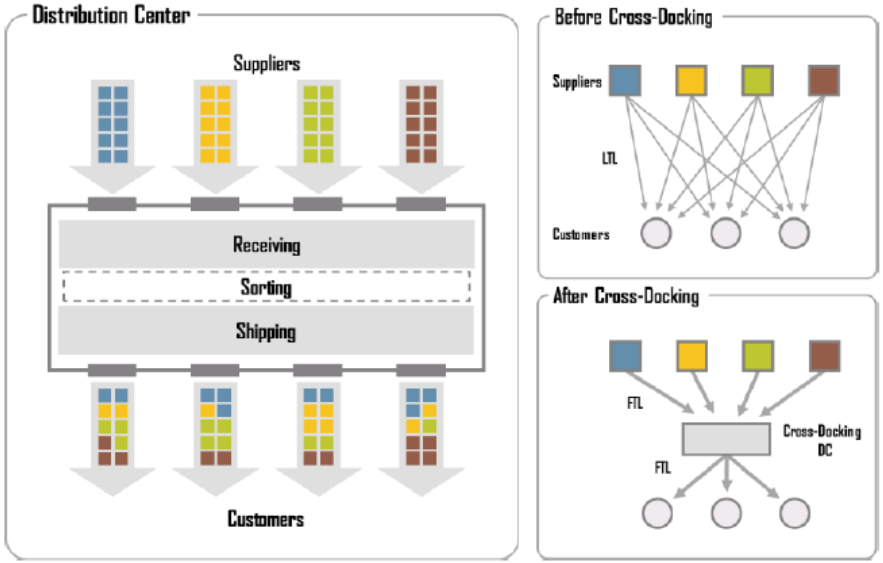
- **Biodiesel and ethanol plants** are production facilities for renewable fuels made with corn and the biproducts of corn production. These locations typically receive raw materials by truck and ship finished biodiesel/ethanol by truck and/or rail. The opportunity to shift from one mode to another qualifies these locations as transloads.
- **Grain elevators** are facilities that collect grain from farmers by tractor and trailer or truck. The grain is then stored and shipped to market via truck and/or rail. Iowa has a vast network of grain elevators to handle the large production of corn and soybeans each year before being transported elsewhere. As is the case with biodiesel and ethanol plants, the multiple transportation options qualify these locations as transloads.

Figure 2.26: Transload process example



Source: Iowa DOT

Figure 2.27: Cross-docking process example



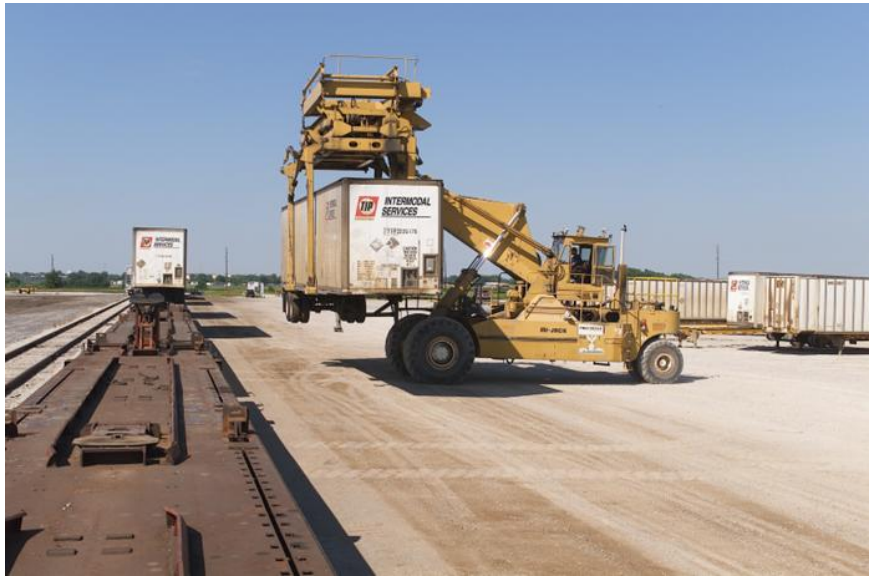
Source: Iowa DOT

Other Freight-Generating Facilities

The multimodal options within Iowa include a number of warehouses and distribution centers that collect and distribute freight. These locations can generate many truck trips from the shipping and receiving of products and commodities, which makes these facilities an important part of the planning process.

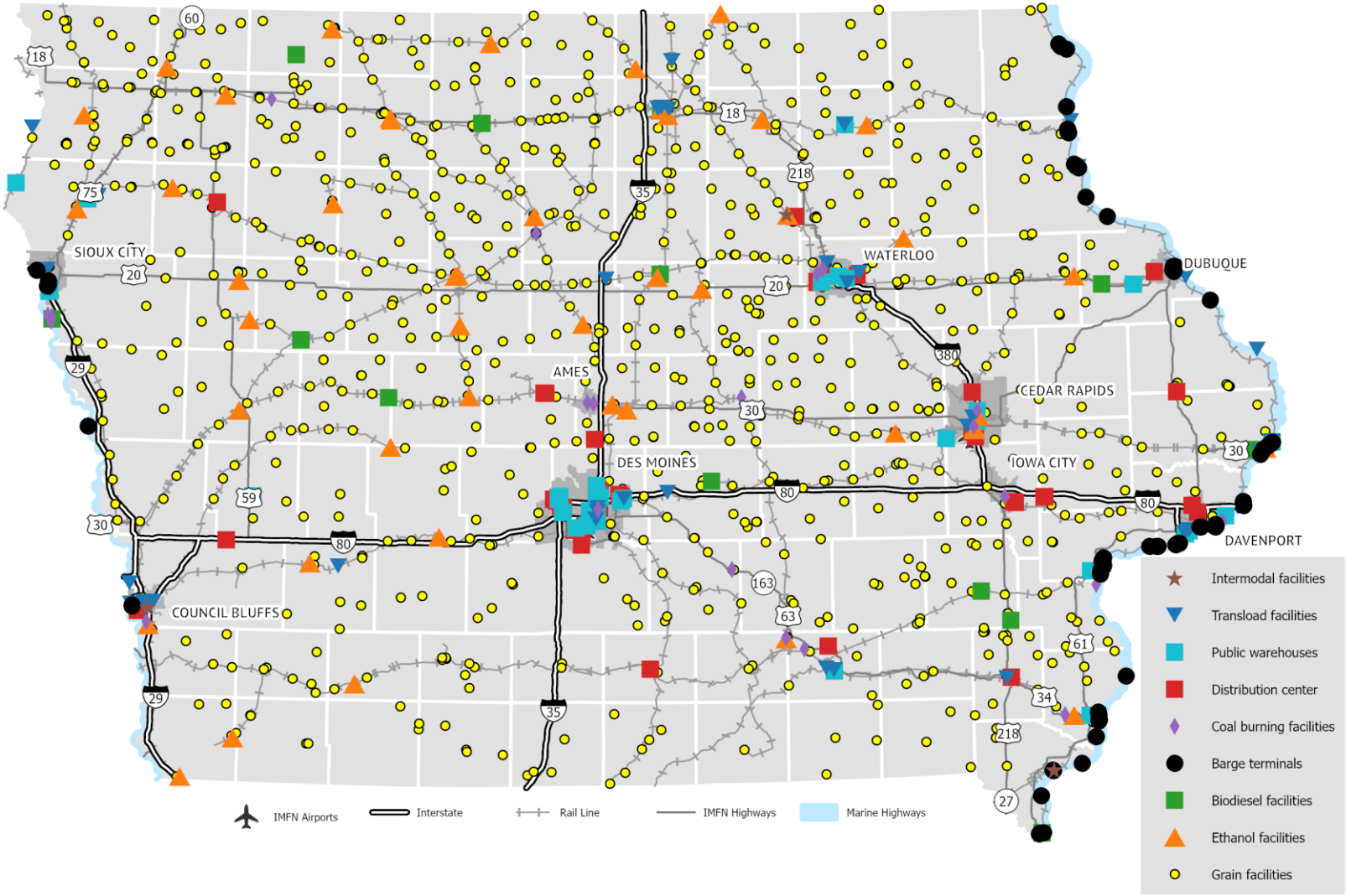
- **Warehouse** refers to a commercial building for storage of goods, which can include any raw materials, packing materials, spare parts, components, or finished goods associated with agriculture, manufacturing, and production. Warehouses are used by manufacturers, importers, exporters, wholesalers, transport businesses, etc., and some warehouses include transloading capabilities to offer short – and long-term storage and handling of goods.
- A **distribution center** is a warehouse or other specialized building often with refrigeration or air conditioning that is stocked with products to be redistributed to retailers, wholesalers, or directly to consumers. A distribution center can also be called a warehouse and serve as the foundation of a supply network as it equips a single location with a large variety of goods.

Appendix B includes an inventory of Iowa freight-generating facilities. These lists of freight-generating facilities included are not exhaustive. Some existing facilities may not be operational and new facilities may not be represented.



Intermodal container transfer facility in Iowa. (Source: Iowa DOT)

Figure 2.28: Iowa freight-generating facilities



This map is not a comprehensive representation of all of Iowa's freight-generating facilities. Some existing facilities may not be operational, and new facilities may not be represented.

Source: Iowa DOT, Leonard's Guide, Rail companies, U.S. Army Corps of Engineers

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3. INDUSTRIES & COMMODITIES

3. 1 Freight dependent industries | 3.2 Commodity movement | 3.3 Primary supply chains

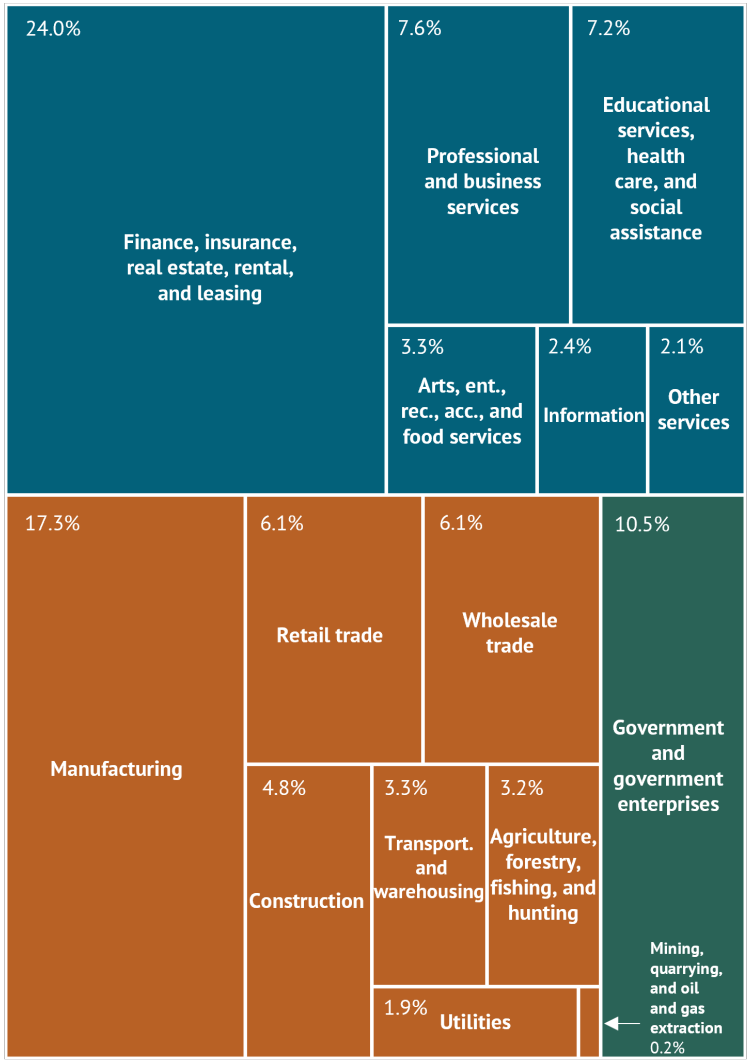
3.1 Freight-dependent Industries

Freight-dependent (or goods-dependent) industries are those that rely on transportation to receive raw materials or manufactured goods and then transport the finished products or goods to their intended market and eventual end users. Much of Iowa's economy depends on reliable freight transportation networks to reach the consumer in a timely and cost-effective manner. While not as dependent as goods-producing sectors, service industries depend on the movement of freight to receive the basic materials they need for their industry, such as office products and electronics.

Iowa's economy and transportation system are heavily influenced by freight-dependent industries. Grain production and its associated food and agricultural products and byproducts make up the bulk of these industries. The state continues to have a robust agricultural industry adding to the transportation demands of a greatly expanded value-added agricultural products sector. Combined with a geographically dispersed industrial base that includes large industrial sectors of manufacturing, trade, consumption, transportation, and warehousing, Iowa will continue to have significant transportation infrastructure needs and challenges.

Gross domestic product (GDP) is the total market value of all goods and services produced in the economy. In 2000, Iowa's GDP was $93 billion; by 2024, Iowa's current-dollar GDP had grown by 176% to $257 billion. Figure 3.1 details the proportion of GDP by each industry.

Figure 3.1: Iowa gross domestic product by industry, 2024



Source: U.S. Bureau of Economic Analysis

3.2 Commodity Movement

According to the Federal Highway Administration's Freight Analysis Framework (FAF) tool, freight tonnage moving in the U.S. will double in the next 20 years, which would prove to be a sizable challenge for the overall freight transportation system. This growth will be reflected in Iowa and likely won't be uniform across all modes.

FAF integrates data from a variety of sources (including the Commodity Flow Survey) to create a comprehensive picture of freight movement among states and major metropolitan areas. The tool estimates tonnage, value, and domestic ton-miles by region of origin and destination, commodity type, and mode for current and forecasted years. Understanding the flow of freight by weight provides insights into the infrastructure needs in Iowa; while understanding the flow of freight by value provides insights into the economic impact it has on the area.

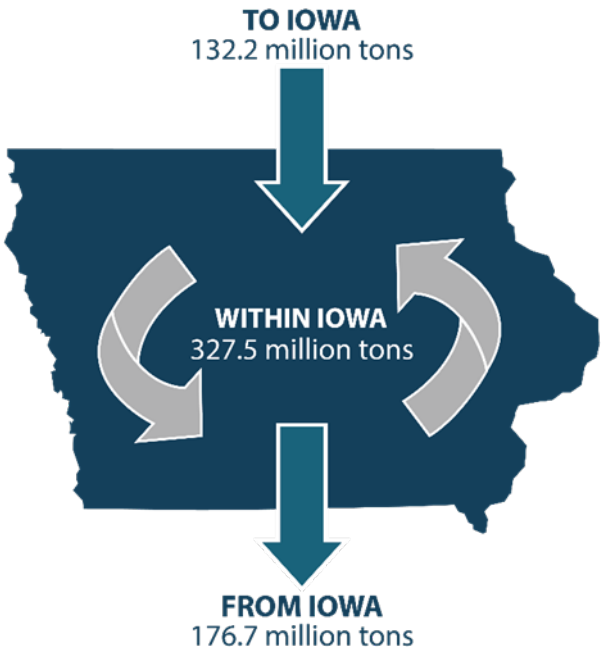
Iowa's transportation system facilitated the movement of over 636.3 million tons of freight with an estimated value of $509 billion in 2023 (Figure 3.2). Despite a slight decrease in total tonnage between 2017 and 2023, the total weight of goods imported into and exported out of the state is expected to grow (Figure 3.3).

Since the turn of the century, Iowa has remained an exporting state, meaning the state produces and exports more goods than it imports. This is true both in terms of tonnage and value. The gap between Iowa's imports and exports is projected to grow wider, from 45 million tons in 2023 to 121 million tons in 2050.

Figure 3.4 shows Iowa's freight tonnage and value by mode in 2023, and the projections for 2050. Truck, rail, and pipeline are the top three freight modes in Iowa, collectively transporting 93.6% of the total tonnage moved to, from, and within the state. These modes are expected to maintain their dominance through 2050. By then, truck's share of freight is projected to decrease slightly by 2%. Similarly, rail is expected to decline by less than 1%, while pipeline freight is projected to increase by 2% percent, as shown in Table 3.1.

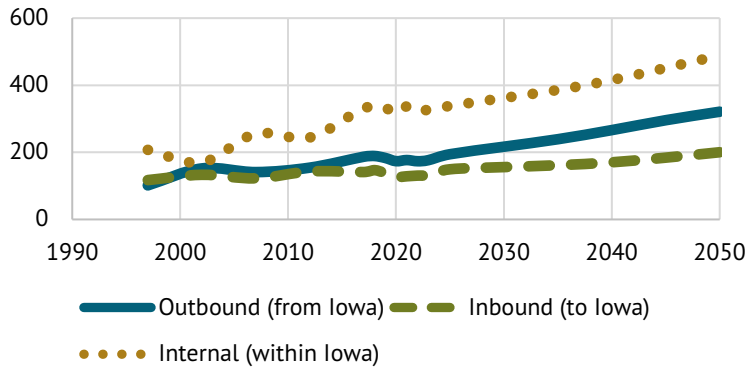
The continued prominence of trucks, alongside a projected 54% increase in road-transported tonnage by 2050, will place additional pressure on the state's highway system. This growth is expected to result in increased congestion and a faster rate of deterioration for pavement and highway structures.

Figure 3.2: Iowa freight movement, 2024



Source: Freight Analysis Framework

Figure 3.3: Projected Iowa freight movement by ton, 1997-2050



Source: Freight Analysis Framework

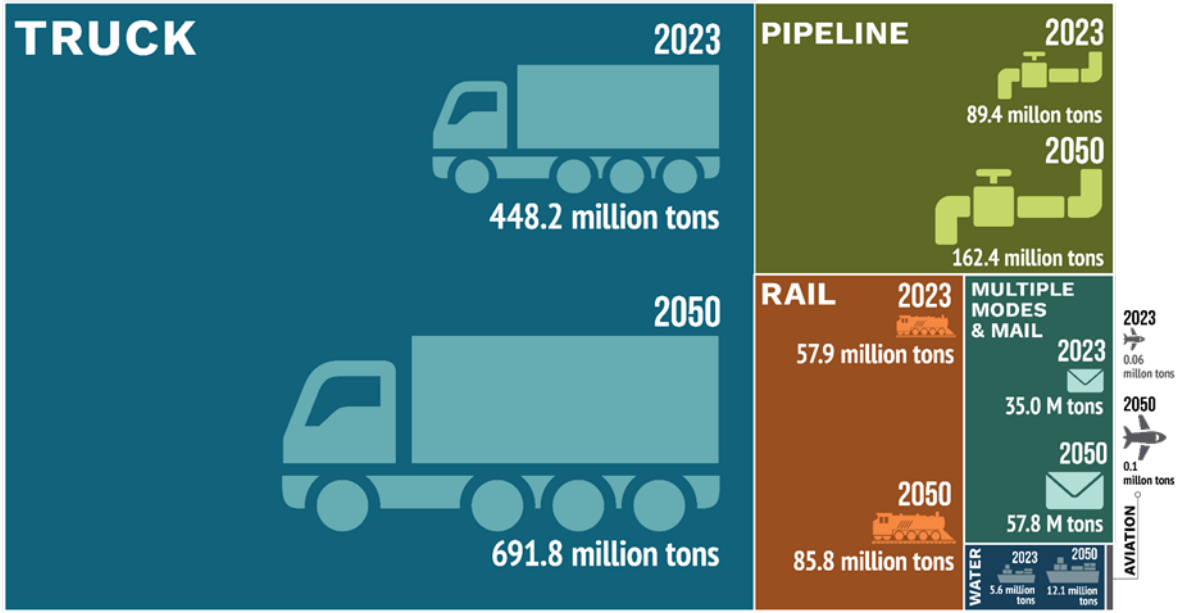
Table 3.1: Projected growth in share of tonnage of Iowa freight by mode, 2023-2050

Mode	Percent of total tonnage (2023)	Percent of total tonnage (2050)
Truck	70.4%	68.5%
Pipeline	14.1%	16.1%
Rail	9.1%	8.5%
Multiple modes & mail	5.5%	5.7%
Water	0.9%	1.2%

Aviation and Other Modes were excluded as they account for less than 1% of total tonnage.

Source: Freight Analysis Framework

Figure 3.4: Projected growth in tonnage and value of Iowa freight by mode, 2023-2050



Source: Freight Analysis Framework

Commodity Flow by Tonnage

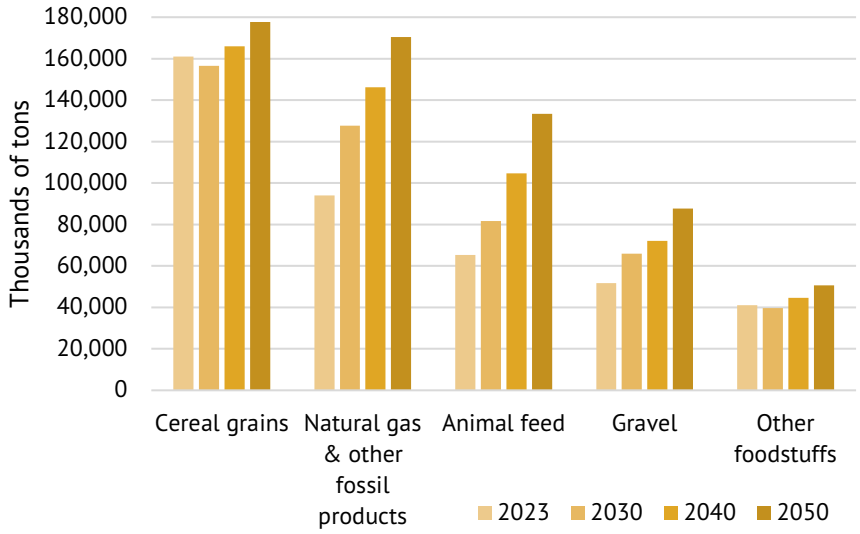
According to FAF, the total weight of Iowa freight (including freight moved within, exported from, and imported to the state) is expected to grow from roughly 636 million tons in 2023 to just over a billion tons in 2050.

In 2050, agricultural products are projected to remain the top freight commodities in Iowa, both as imports and exports. In 2023, natural gas and other fossil products were the highest-weight commodities entering and leaving the state, and they are expected to maintain this position through 2050. Cereal grains and animal feed ranked as the second and fourth-largest outbound commodities in both 2023 and 2050, with their positions reversed for inbound movements.

However, when considering all freight movement—including inbound, outbound, and within Iowa—cereal grains were the top commodity by tonnage in 2023 and are projected to remain the top commodity overall in 2050, as shown in Figure 3.5. Animal feed is projected to drop to third place, and other foodstuffs fall to fifth. These commodities are typically high-weight, low-value bulk shipments.

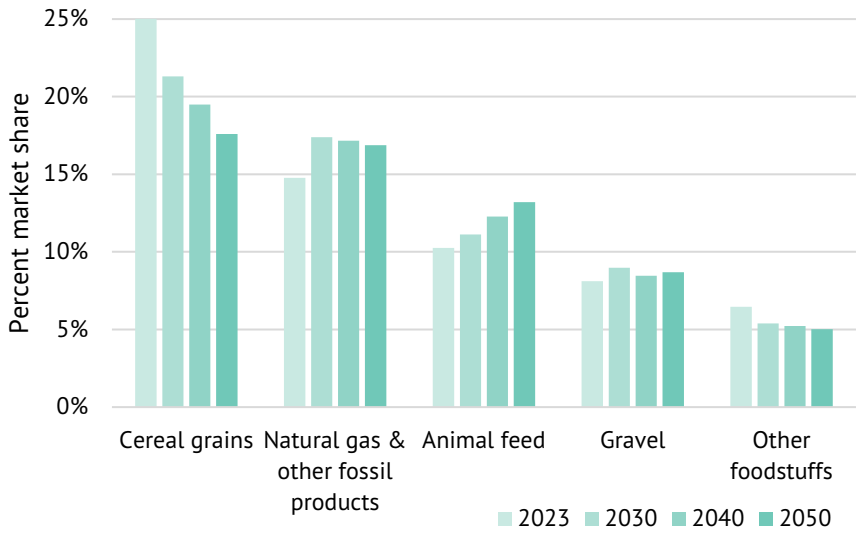
However, as shown in Figure 3.6, cereal grains are projected to become less prominent in part due to growth in other commodities such as animal feed, gravel, and natural gas/fossil products.

Figure 3.5: Iowa domestic freight by tonnage, 2023-2050



Source: Freight Analysis Framework

Figure 3.6: Iowa domestic freight tonnage by market share, 2023-2050



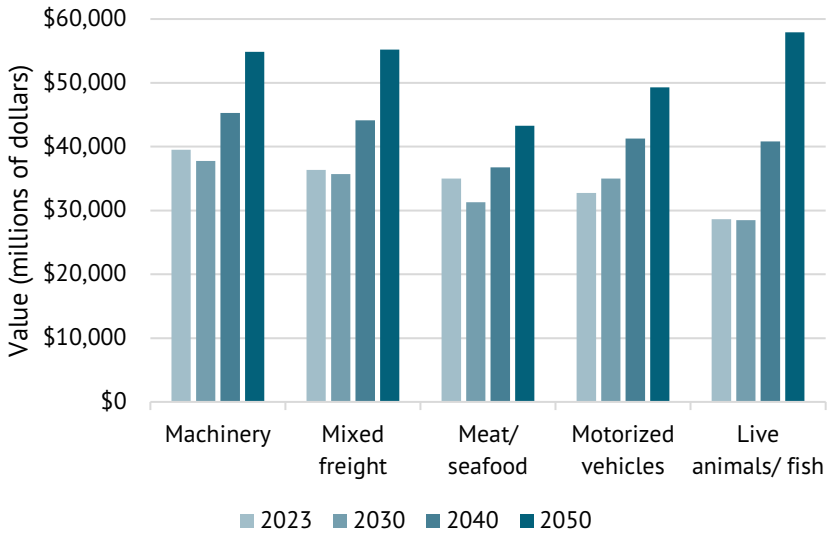
Source: Freight Analysis Framework

Commodity Flow by Value

The total value of Iowa freight (including freight moved within, exported from, and imported to the state) is expected to grow from $509 billion in 2023 to $745.7 billion in 2050.

In 2050, live animals (such as pork) mixed freight (including items for grocery stores, restaurants, and hardware stores), and machinery (including turbines, boilers, internal combustion engines, and other non-electric motors and engines) will be the top commodities by value, as shown in Figure 3.7. According to FAF, the total value of live animals/fish freight is expected to increase by 102% by 2050 from 2023.

Figure 3.7: Iowa domestic freight by value (millions of dollars), 2023-2050

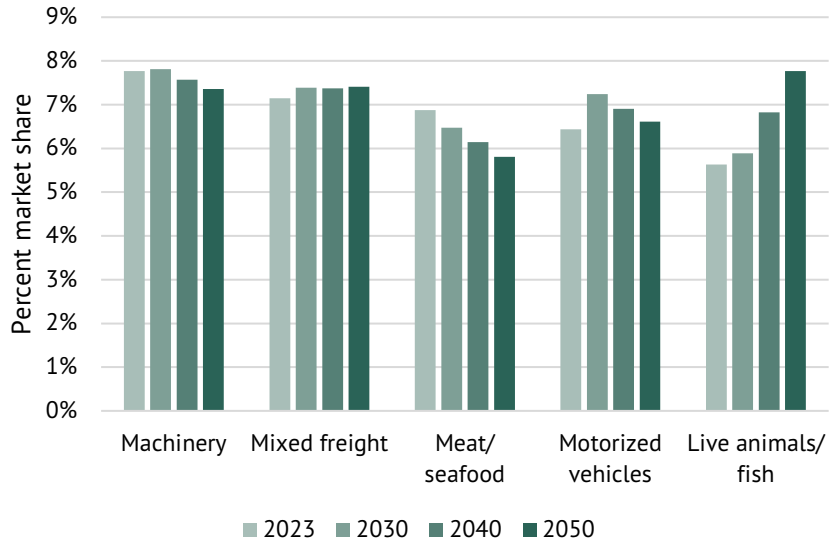


Source: Freight Analysis Framework

It is notable that in the 2022 State Freight Plan, cereal grains were the top commodity by value, but as of 2023 cereal grains has dropped to fifth place by value and will drop further to 14th by value in 2050. Machinery is ranked first in 2023 and will remain first until 2050, when it will be surpassed by live animals/fish and mixed freight, placing machinery as the third top commodity by value by 2050.

Live animals/fish will continue to increase its share of the state's freight by value consistently from 2023 to 2050, as shown in Figure 3.8. Motorized vehicles are projected to slightly increase its market share by 0.8% in 2030, followed by a decrease of 0.6% by 2050. Similarly, machinery is expected to slightly increase by 0.1% percent by 2030, before declining 0.5% percent by 2050.

Figure 3.8: Iowa domestic freight value (millions of dollars) by market share, 2023-2050



Source: Freight Analysis Framework

Trading Partners

Illinois stands as Iowa's top domestic trading partner in 2023 by value, shown in Table 3.2. Minnesota was Iowa's top trading partner by tonnage at 82 million tons traded between states.

Iowa receives most domestic imports from the Great Plains and Midwest regions, as shown in Figure 3.9. Texas is Iowa's largest domestic trading partner outside of the Midwest, boasting the fourth top trading partner position in both value and tonnage. A total of 17.3 million tons moves between the two states with a total value of $22.9 billion.

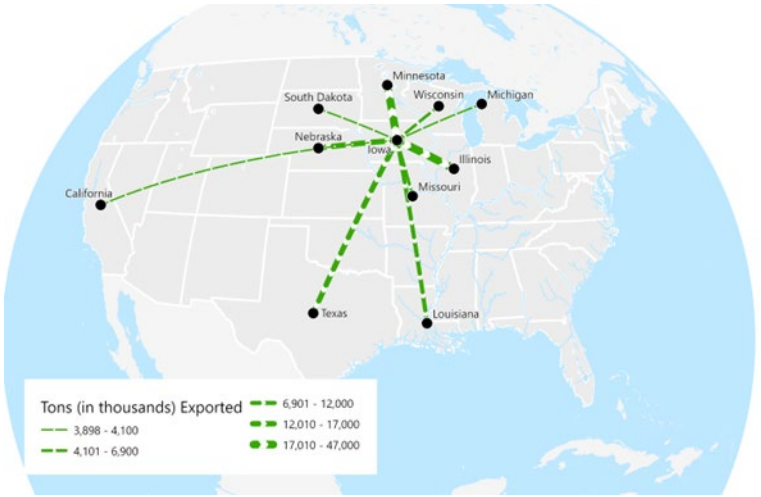
The Iowa DOT believes that with a large majority of Iowa's inbound and outbound freight involving states in the immediate vicinity, the coordination of network identification, regulation, infrastructure projects, and freight-related initiatives is crucial to economic growth and prosperity in the region.

Table 3.2: Iowa's top five domestic trading partners by value (millions of dollars), 2023

State	Imported from Iowa	Exported to Iowa	Total
Illinois	$23,284.95	$28,731.59	$52,016.54
Minnesota	$21,125.58	$22,532.13	$43,657.70
Nebraska	$13,034.45	$14,254.14	$27,288.59
Texas	$7,810.72	$15,085.71	$22,896.43
Missouri	$9,262.15	$10,056.03	$19,318.19

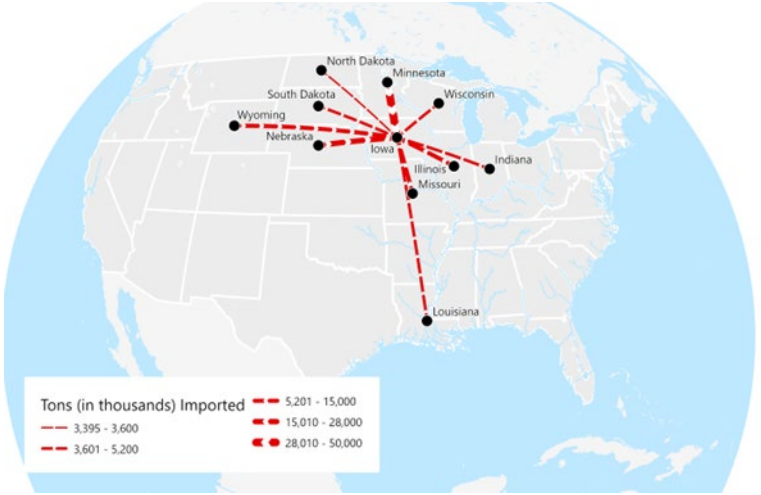
Source: Freight Analysis Framework

Figure 3.9: Top 5 domestic exporters to Iowa by tonnage, 2023



Source: Freight Analysis Framework

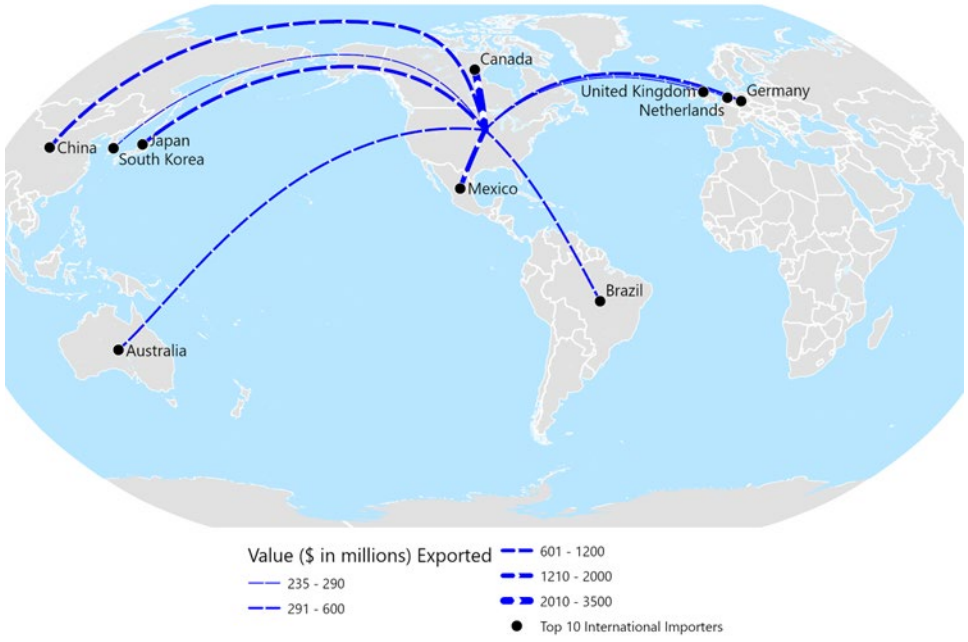
Figure 3.10: Top 5 domestic importers to Iowa by tonnage, 2023



Source: Freight Analysis Framework

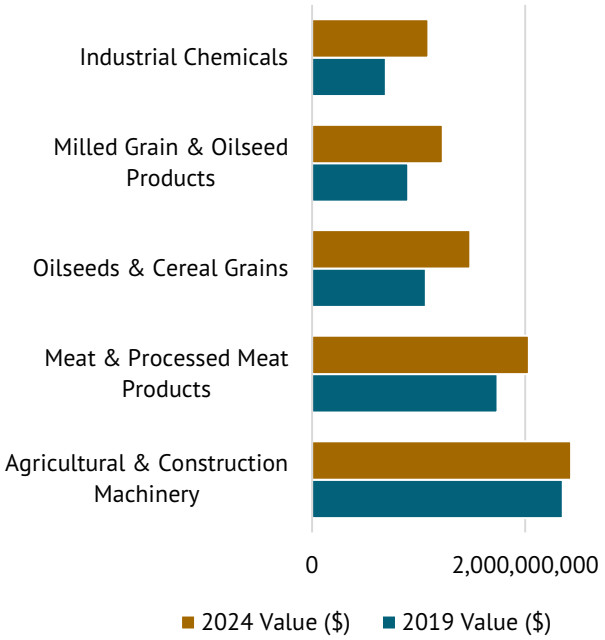
According to data from the U.S. Census Bureau and U.S. Trade Online, Iowa's top international trading partner was Canada at $5 billion of goods in 2024, followed by Mexico at almost $3.2 billion, and Japan at $971 million. Figure 3.11 shows the locations of Iowa's top ten international trading partners, and the value of goods exported. The state of Iowa exported roughly $17.1 billion goods in 2024. The top commodity in 2024 was agricultural machinery, followed by meat products, and oilseeds and grains. Figure 3.12 shows the top five commodities exported internationally. Since international trade is an important factor affecting freight transportation in Iowa, the Iowa DOT pays special attention to international trading lanes (such as the Panama Canal) and trading regulations. Due to evolving tariff policies, the export data presented in this report could change significantly if international demands shift.

Figure 3.11: Iowa's top 10 international trading partners (exports only) by value, 2024



Source: U.S. Census Bureau and U.S. Trade Online

Figure 3.12: Iowa's top 5 exported commodities by value, 2024



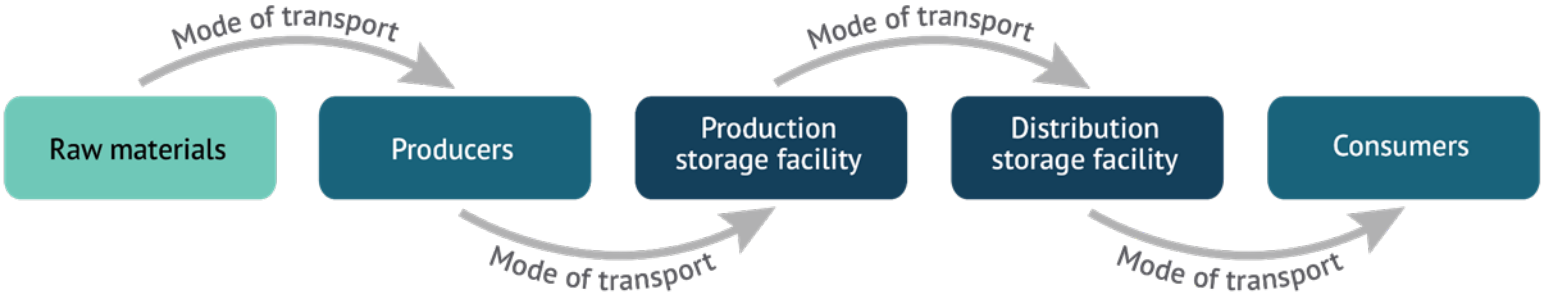
Source: U.S. Census Bureau and U.S. Trade Online

3.3 Primary Supply Chains

Although Iowa has a diverse economy made up of many service and freight-dependent industries, agriculture-related products dominate the state's imports and exports. Whether it is corn, products made from corn, farm machinery, meat, animal health products, or agricultural chemicals, many products moving on the freight transportation system are closely tied to the agricultural industry.

The movement of these commodities from origin to destination is reliant on efficient and profitable supply chains. Supply chains encompass the myriads of transportation legs and logistics functions associated with the complete process of bringing commodities from production to market. They incorporate a network of individuals, processes, and physical entities involved in producing, handling, and/or distributing a specific commodity, all of which are linked together by information and transportation infrastructure. Figure 3.13 shows a basic example of a supply chain that goes from the production of a commodity through various stops and using multiple modes of transportation before reaching the market and ultimately, consumers.

Figure 3.13: Basic supply chain diagram



Source: Iowa DOT

Iowa is fortunate to have transportation infrastructure that has long provided Iowa producers and businesses with a strong comparative advantage, fostering the ability to efficiently and competitively serve domestic and global markets. As a producer-state, it is extremely valuable to have transportation flexibility that includes an advanced highway network, well-developed rail system, two navigable rivers, extensive pipeline grid, and several commercial airports that open the door to multiple options for producers and businesses to optimize their supply chains.

This section will provide an overview for a few of the major supply chains in Iowa. These commodities are not an exhaustive list of important commodities in the state but are major imports and exports by weight and value (see Section 3.2, Commodity Movement) and have a large impact on the freight transportation system.

Corn

According to the U.S. Department of Agriculture (USDA), Iowa corn farmers produced 2.5 billion bushels of corn on 12.6 million acres of land in 2022, accounting for around 18% of total U.S. corn production. This is a consistent trend as the state has produced the largest corn crop of any state each year for two decades. Figure 3.14 shows the number of acres of corn harvested in each U.S. County in 2022 with the darkest green, representing the most acres, being concentrated in and around Iowa.

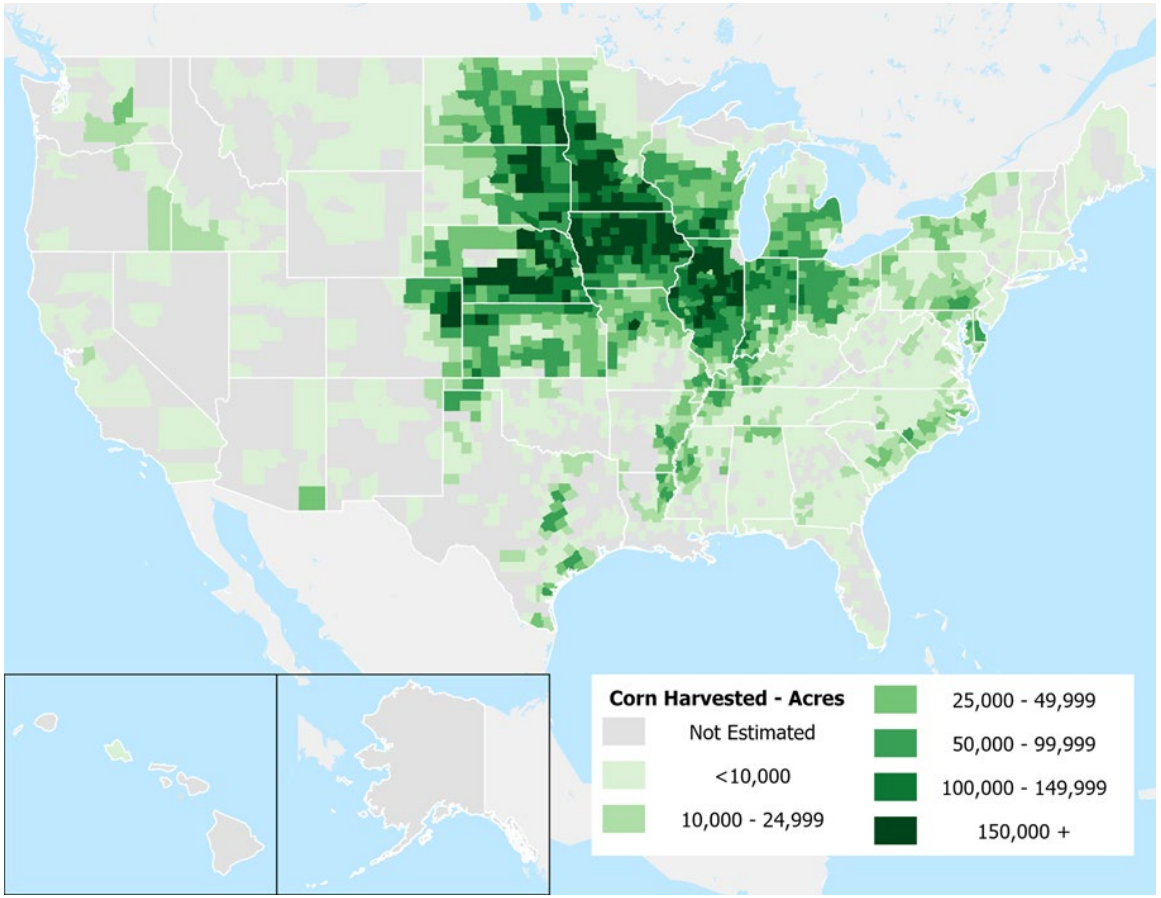
With constant innovation, Iowa corn and corn byproducts are used to produce countless products in the state and worldwide, including food, fuel, pharmaceuticals, oils, sweeteners, starches, and plastics, with most dedicated to food and fuel. Iowa is a national leader in ethanol, dried distilled grains (DDGs), and other livestock feed production. One-third of the corn used to produce ethanol becomes DDGs—a high-value livestock feed byproduct. Millions of bushels of corn or corn byproducts are consumed annually by Iowa livestock, primarily hogs, cattle, and poultry. This readily available feed has helped Iowa consistently lead national egg, pork, and beef production, all major Iowa and U.S. exports to markets such as Japan, Mexico, and China. Another byproduct of corn production is corn stover, the above-ground portion of the plant remaining after harvest, used for ethanol production, cattle feed, livestock bedding, and building materials.

One bushel of corn produces:

2.8 gallons of **ethanol** | 21.6 pounds of **chicken**
15.6 pounds of **pork** | 8 pounds of **beef** | 17 pounds of **DDGs**

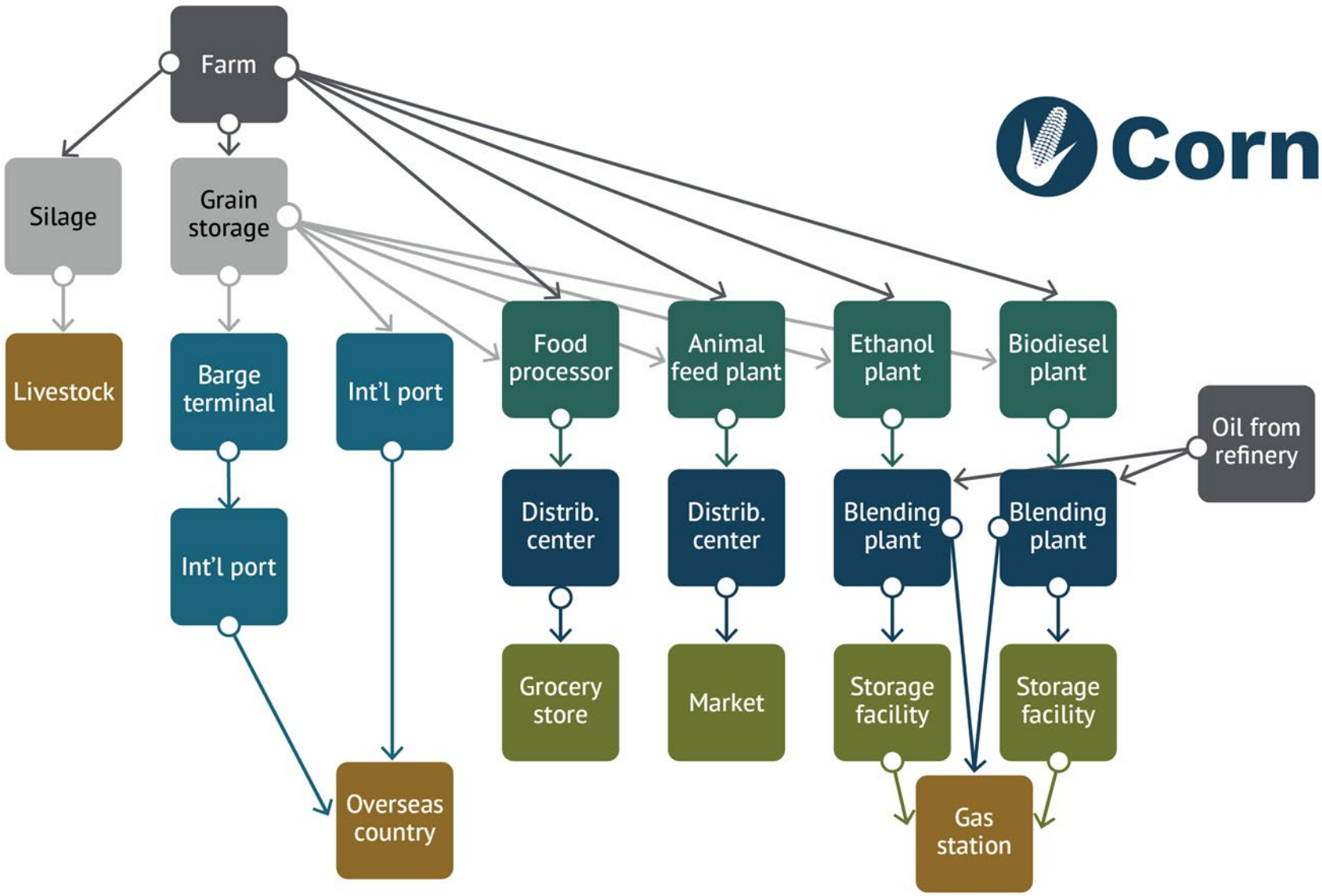
Source: Iowa Corn Growers Association

Figure 3.14: Corn for grain acres harvested, 2022



Source: U.S. Department of Agriculture via BRAG.Utah.Gov

Figure 3.15: Corn supply chain



Source: Iowa DOT

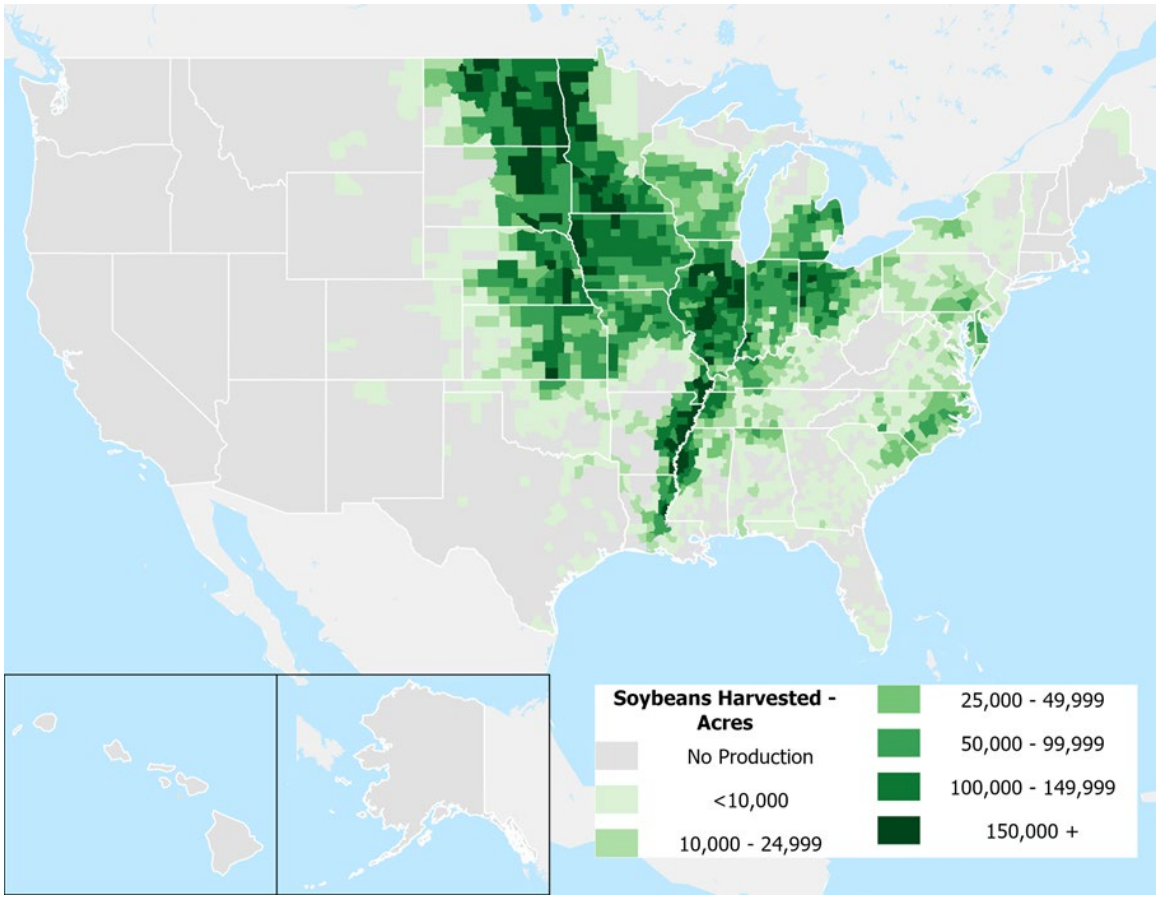
Soybeans

Iowa is a leader in the production of soybeans, consistently ranking in the top three states in the nation each year. Iowa farmers produced 542 million bushels on 9.5 million acres in 2022. This translates to 13% of the nation's soybean production. Figure 3.16 shows the number of acres of soybeans harvested in each U.S. County in 2022 with the darkest green, representing the most acres, being concentrated in and around Iowa.

Soybeans are processed into numerous forms such as soy meal and soybean oil used to make valuable products consumed domestically and internationally. Soy meal is a major ingredient in animal feed for pork and poultry and makes up most of the soybean production. Soybean oil, the second most consumed oil in the world, is used to produce food products such as margarine, salad dressings, and cooking oils, as well as industrial products like plastics and biodiesel fuel.

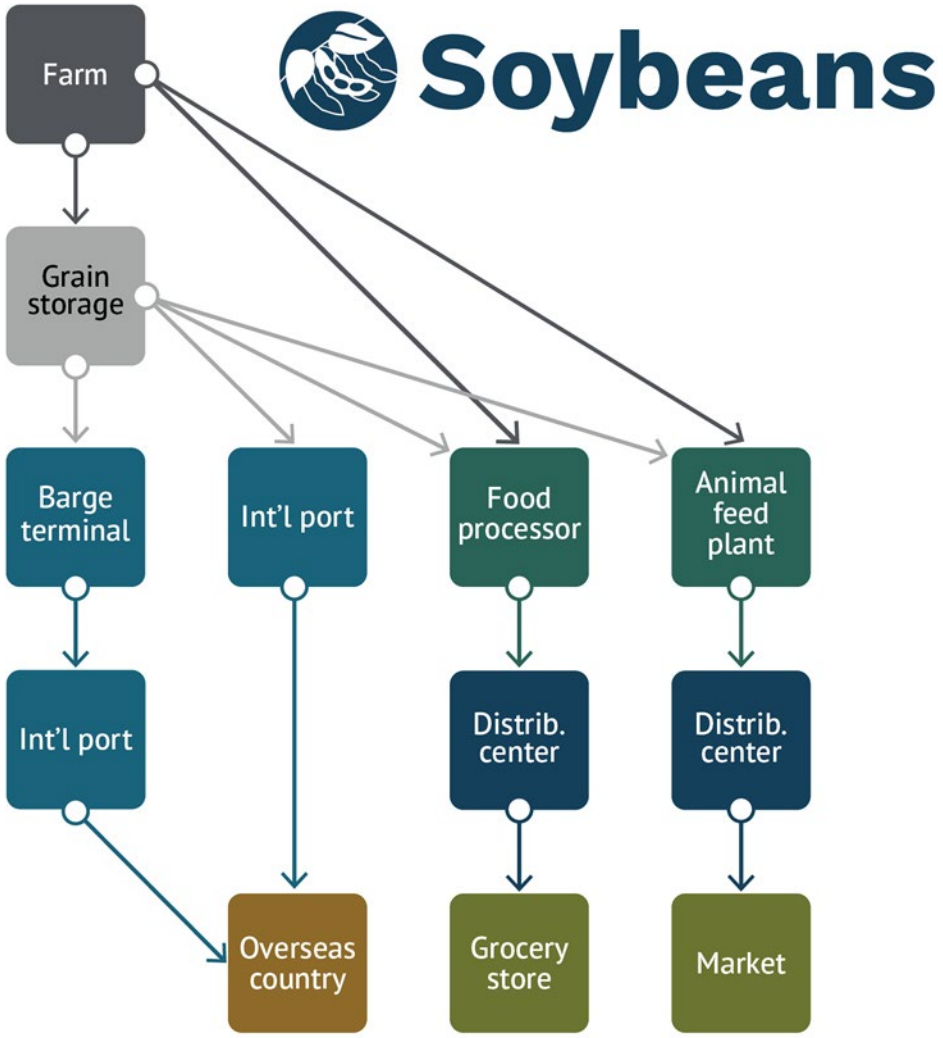
Like corn, soybeans are a major Iowa and U.S. export to countries around the world. Top buyers of soybeans include China, Mexico, and Japan; top markets of soy meal are Mexico, Philippines, and Canada; and the top destinations for soybean oil are China, Mexico, and India.

Figure 3.16: Soybean acres harvested, 2022



Source: U.S. Department of Agriculture via BRAG.Utah.Gov

Figure 3.17: Soybean supply chain



Source: Iowa DOT

Pork

Iowa is the nation's leading pork producing state in numerous USDA categories, including all hogs and pigs inventory, all hogs and pigs value, pig crop, and pork export value. The state raises nearly one-third of the nation's hogs with over 5,200 operations and a total inventory of 23.8 million animals as of the USDA 2022 Agriculture census. Figure 3.18 shows the total inventory of hogs and pigs by U.S. County in 2022.

With a concentration of corn, soybeans, and packing plant capacity, Iowa is an ideal location for pork production. The abundance of materials and capacity within the state lowers the cost of transportation and feed for Iowa farmers.

Many hog byproducts are used in pharmaceuticals and medical products such as insulin, hormones, and heart valves for transplants, as well as chemicals used in manufacturing to make glue, upholstery, pet food, lubricants, and cement. Additionally, a major byproduct from hogs is a necessity for Iowa's corn and soybean farmers: manure to be used as fertilizer for cropland. According to the Iowa Pork Producers Association, ten pigs from weaning to market provide the nutrient needs of an acre of cropland on a semiannual basis. This helps to enrich the soil for strong corn and soybean yields.

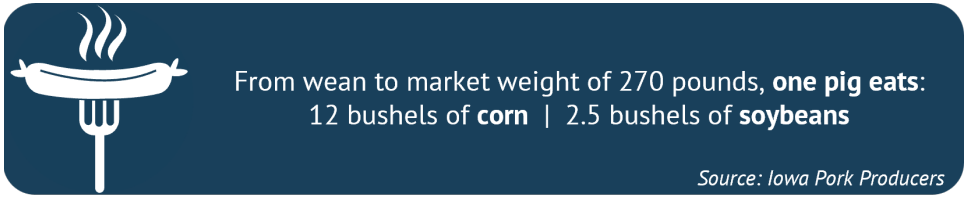
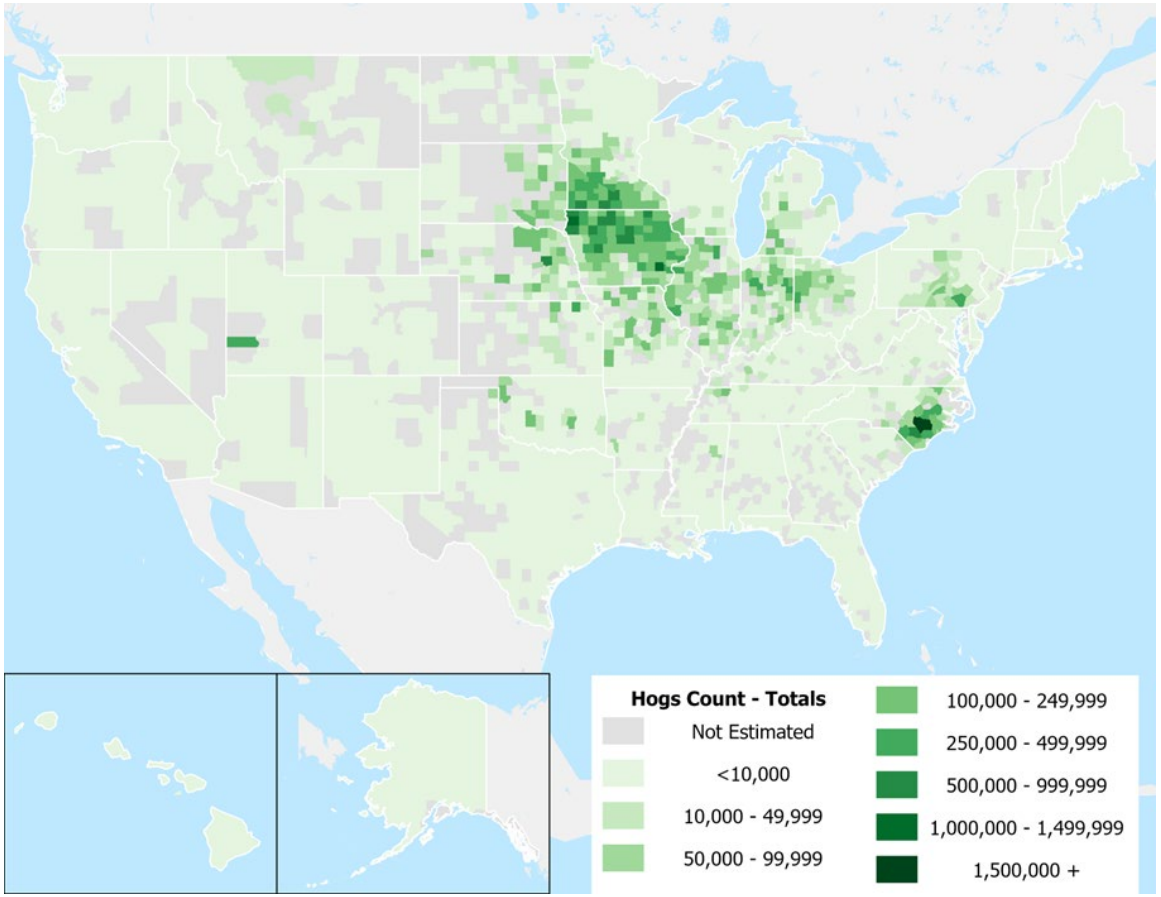
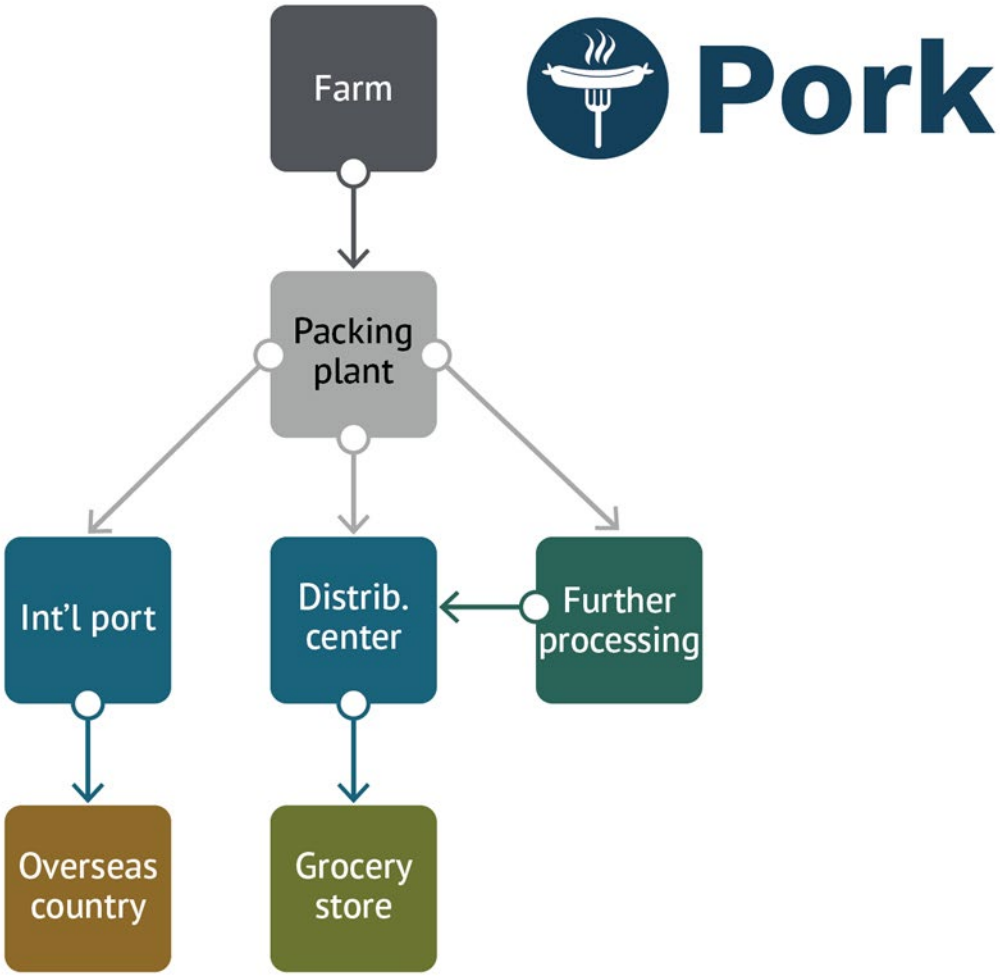


Figure 3.18: Inventory of hogs and pigs per county, 2022



Source: U.S. Department of Agriculture via BRAG.Utah.Gov

Figure 3.19: Pork supply chain



Source: Iowa DOT

Eggs

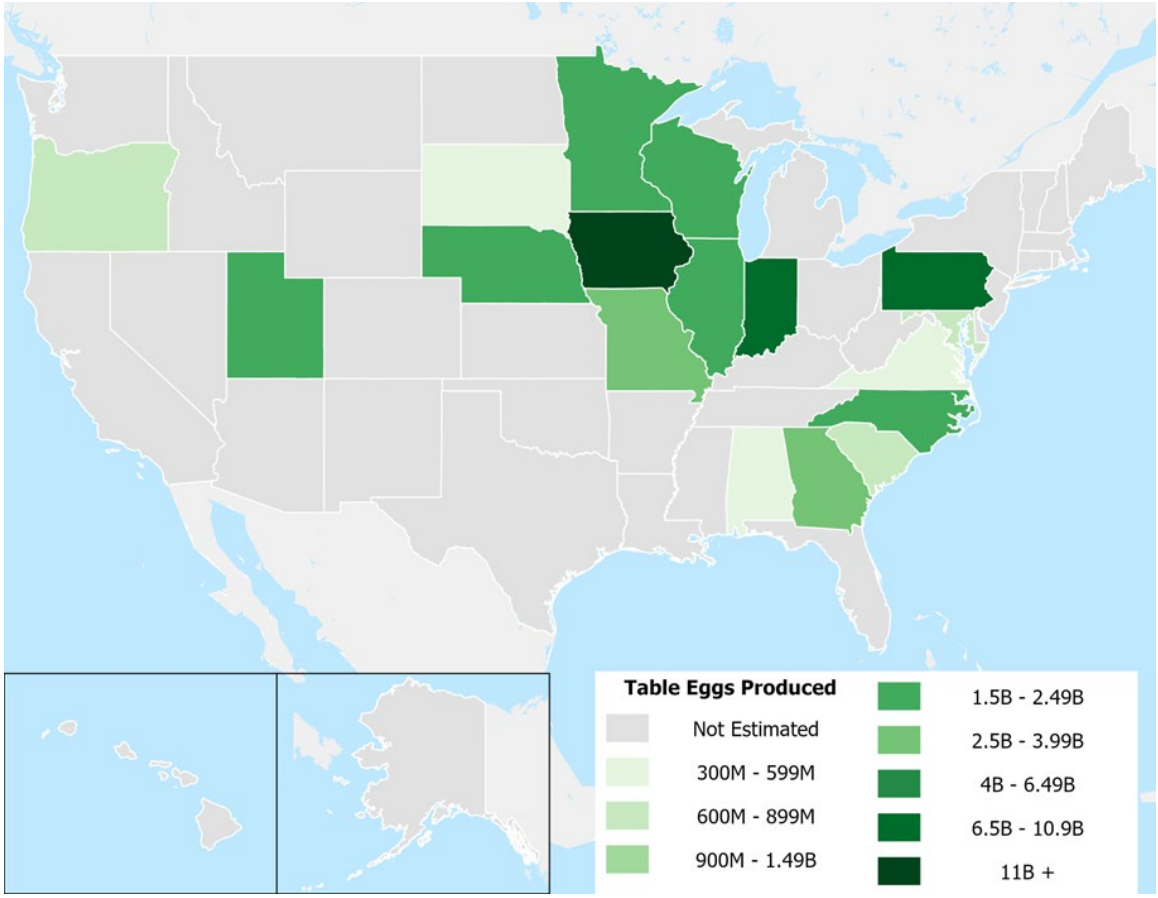
Iowa led the nation in egg production in 2022, continuing a trend that has lasted over a decade. The state increased egg output significantly between 1997 and 2006, taking advantage of a growing population and rising egg product consumption in the country. Production in Iowa has steadied since then, resulting in just over 13 billion table eggs being produced in 2022. Figure 3.20 shows U.S. egg production by state.

A significant reason for Iowa leading the nation in egg production is the competitive advantage the state has with affordable and abundant feed, which makes up a substantial percent of egg production costs. Laying hens alone consume more than 50 million bushels of corn and more than 450,000 tons of soybean meal each year. Iowa egg producers do not have the large additional cost of transporting feed like many other states. Iowa also has a feed price advantage due to its extensive feed-grain production and will likely maintain that advantage for the foreseeable future.

Iowa is home to around **45 million laying hens** producing close to **15 billion eggs per year**

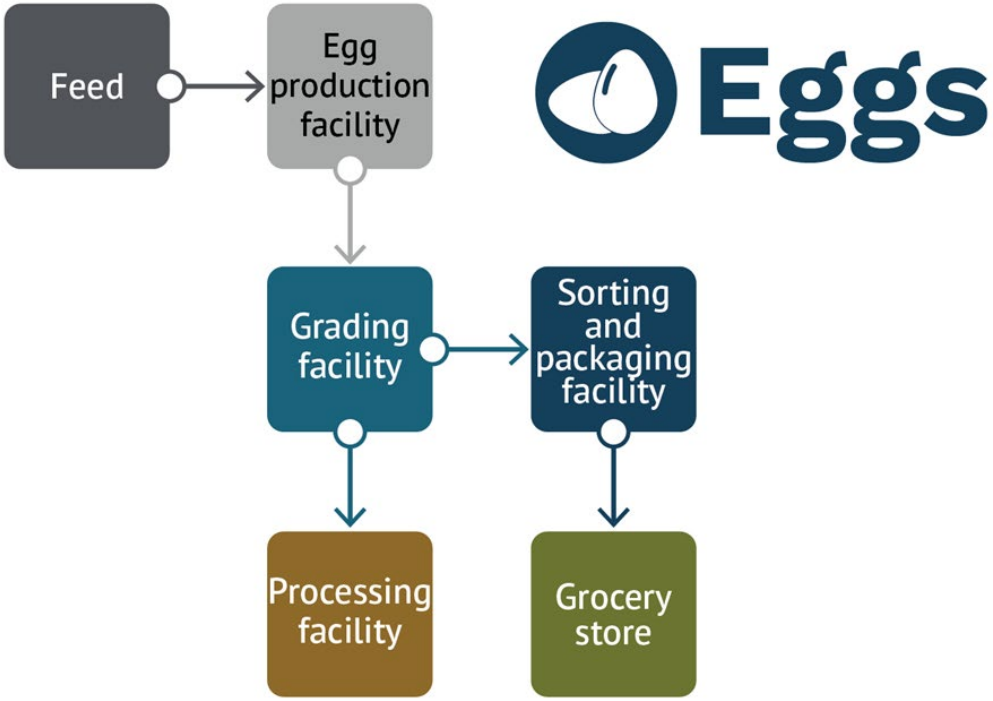
Source: Iowa Egg Council

Figure 3.20: Table egg production by State, 2022



Source: U.S. Department of Agriculture

Figure 3.21: Egg supply chain



Source: Iowa DOT

Tractors and Machinery Manufacturing

To produce record numbers of corn and soybeans, Iowa farmers need the appropriate equipment. The manufacturing of tractors, agricultural, and construction machinery is a natural fit for a major agricultural production area like Iowa.

The state is a major manufacturing center for agricultural machinery giants John Deere, Caterpillar Inc., Kinze Manufacturing, Vermeer, Danfoss, CNH Industrial (CASE, New Holland), Bridgestone/Firestone Agricultural Tire, and Hagie Manufacturing. There are approximately 6,300 manufacturers in and around Iowa. Iowa alone employs around 23,000 in agriculture and construction equipment manufacturing with sales near $15 billion per year. Figure 3.22 shows regional tractor and machinery manufacturing locations.

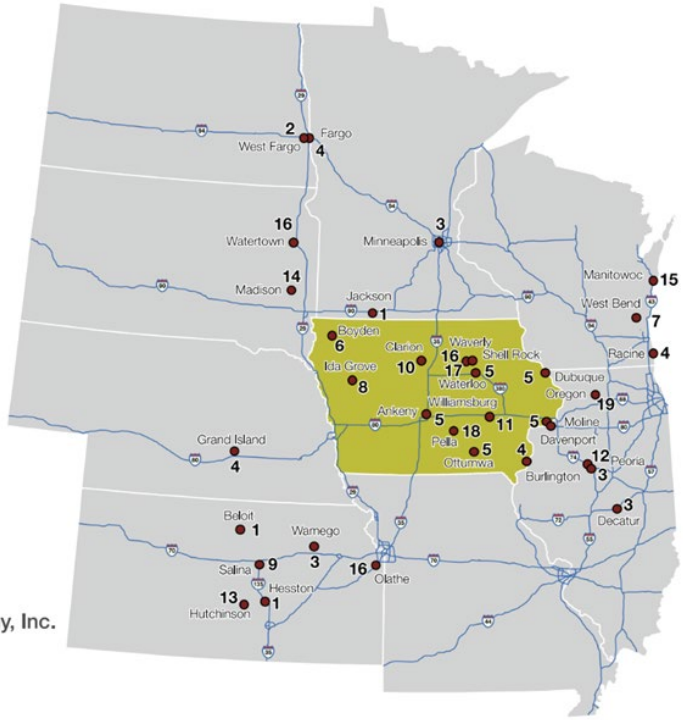
Agricultural and construction equipment manufacturing has continually developed over the years. These products are now the state's leading manufactured commodities in terms of value with tractors being Iowa's top manufactured export.

Iowa has the **3rd-highest concentration of manufacturing employees** in the United States

Source: Bureau of Labor Statistics, 2022

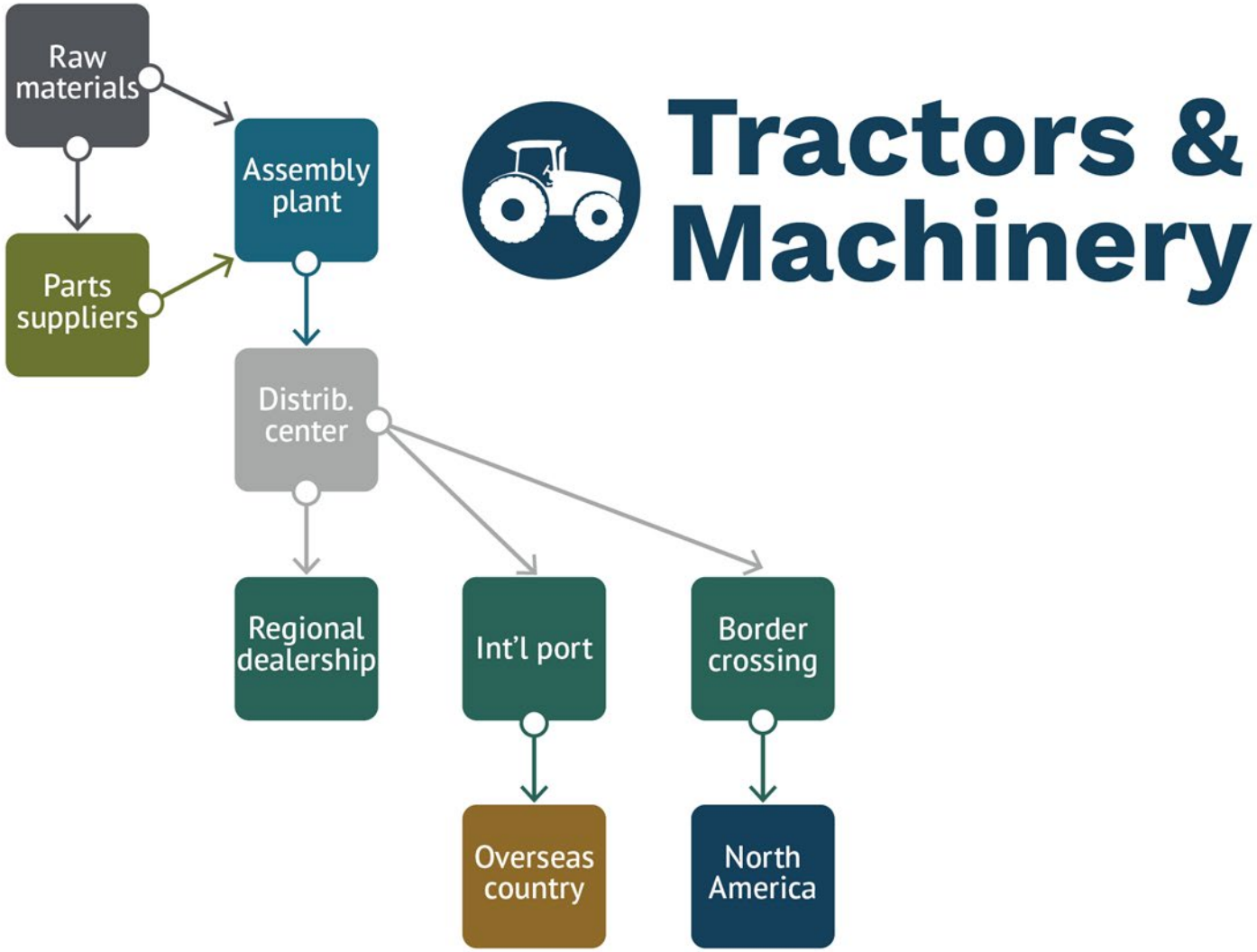
Figure 3.22: Regional agricultural and construction equipment manufacturers

1 AGCO Corporation
2 Bobcat Company
3 Caterpillar, Inc.
4 CNH Industrial
5 Deere & Company
6 DEMCO
7 Gehl Company
8 GOMACO Corporation
9 Great Plains Manufacturing, Inc.
10 Hagie Manufacturing Company
11 Kinze Manufacturing, Inc.
12 Komatsu America Corporation
13 Krause Corporation
14 Manitou Americas, Inc.
15 Manitowoc Company, Inc.
16 Terex Corporation
17 Unverferth Manufacturing Company, Inc.
18 Vermeer Manufacturing Company
19 Woods Equipment Company



Source: Iowa Economic Development Authority

Figure 3.23: Tractors and machinery supply chain



Source: Iowa DOT

4. PLANNING CONSIDERATIONS

4.1 Safety | 4.2 Funding | 4.3 Regulations and trade | 4.4 Labor and workforce
4.5 Bottlenecks | 4.6 Market access and supply chains | 4.7 Technology | 4.8 Resiliency | 4.9 Energy

Proactively identifying and understanding key trends and issues impacting the freight transportation system is critical to implementing the most appropriate strategies and investments.

All trends and issues are subject to varying degrees of change and uncertainty. There are a number of things that have the potential to significantly disrupt current supply chains and freight corridors, including:

- Funding availability,
- Shifting reliance on global supply chains,
- Continuous growth of e-commerce,
- Acceleration of automation and emerging technologies,
- Increasing frequency and intensity of severe weather events,
- Global pandemics, and
- Sustained focus on infrastructure and supply chain resiliency.

Although uncertainty exists, it is necessary to attempt to forecast what should be considered and possibly addressed in the near- and long-term. Iowa Freight Advisory Council (FAC) members were asked to identify and prioritize trends and issues impacting the freight industry that should be considered when making planning and programming decisions. These items are listed in the priority order identified by the FAC below. The chapter mirrors this ranking, with its nine sections arranged accordingly. Section 4.1 examines the top-ranked issue, and each following section addresses the next topic in descending order.

1. Safety
2. Funding
3. Regulations and Trade
4. Labor and Workforce
5. Bottlenecks
6. Market Access and Supply Chains
7. Technology
8. Resiliency
9. Energy

4.1 Safety

Safety is always a top priority for the Iowa DOT and freight movers of all modes. With increased freight movement comes increased risks. Over time accidents on interstates and highways have increased and accidents between freight trucks and passenger vehicles have also gone up, making safety the number one planning priority in the 2026 State Freight Plan.

As **truck traffic** grows, the Iowa DOT's focus on highway safety is critically important. There are many places along the road network where freight traffic and passenger traffic can interact dangerously, and it is important for the DOT to identify and implement solutions for these problem areas. One such area is **traffic operations** focusing on maintaining safe and efficient travel conditions.

Another area is insufficient **truck parking**. Across much of the Interstate system, trucks are often forced to park at locations that are unsafe to both the driver and the traveling public. This is in part due to new hours of service (HOS) regulations being implemented to help mitigate **driver fatigue**. These new regulations require drivers to stop more often for rest times and can lead drivers to park illegally or at dangerous locations (e.g., on/off ramps, shoulders, etc.) to meet these requirements.

Expanding truck parking across the state will help to mitigate these safety concerns by allowing drivers to park either for their 15-minute break or for their off time, greatly reducing fatigue, improving rest time quality, and reducing unsafe parking on ramp shoulders and other dangerous locations. By allowing greater access to the amenities provided at rest areas and private truck stops, more drivers can have a comfortable and complete rest time.

Traffic Operations

Traffic operations include several areas focused on maintaining safe and efficient travel conditions on Iowa's road network. These coordinated tools, technologies, and personnel ensure roadway capacity is used effectively and disruptions to traffic flow are minimized. Key components include:

Emergency Management uses pre-developed response plans for severe weather, flooding, hazardous materials incidents, and cybersecurity threats. These coordinated responses protect public safety and restore normal travel as quickly as possible, improving system resilience during major disruptions.

Traffic Incident Management addresses everyday crashes and vehicle breakdowns by promoting safe and rapid clearance. These efforts reduce secondary crashes, limit delays, and help keep people and freight moving reliably throughout the state.

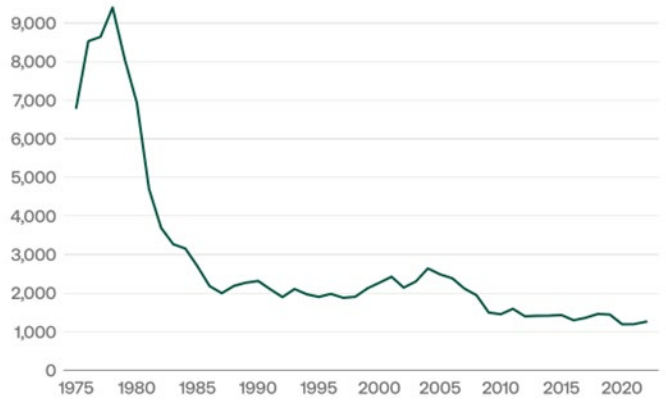
Work Zone Management minimizes the impact of maintenance and construction through advanced planning, temporary traffic control, and traveler communication. Effective coordination prevents unnecessary congestion and maintains freight mobility during roadwork.

Together, traffic operations strategies reduce bottlenecks, maintain system performance, and support the efficient movement of freight which is essential to Iowa's economic competitiveness.

Another significant safety issue related to the freight industry is **human trafficking**. Traffickers typically target professions deemed "transient in nature" as consumers, and regularly travel across multiple states to places such as oil and gas fields, truck stops, hotels along highways, etc. The trucking industry is critical in helping to spot these types of activities. Law enforcement continues to reach out to the freight industry and others for partnering opportunities in the fight against human trafficking.

Rail safety is another primary concern. In 2024 there were a reported 742 derailments in the United States. This number is significantly lower than the peak of 9,400 derailments in 1978, as shown in Figure 4.1. However, the number of derailments and potential impacts are clear indications of how improvements still need to be made. One of the most noteworthy recent derailments was the 2023 East Palestine derailment in Ohio. The accident burned thousands of gallons of hazardous materials and brought focus to an ageing rail system and out of date safety mechanisms for rail and hazardous materials transportation.

Figure 4.1: Train derailments, 1975-2022



Source: US Department of Transportation

Rail crossing safety at grade crossings is also a major focus. Collisions at highway-railroad grade crossings have decreased but fatalities have been relatively flat over the past 10 years, making this a priority in states like Iowa. The Iowa DOT regularly updates the Highway-Railroad Grade Crossing Safety Action Plan, which focuses on crossings with multiple crashes or those that are "at risk" and identifies specific solutions, including closure and consolidation of at-grade crossings. It also focuses attention on trespasser hotspots.

The Iowa DOT is committed to seeking out and improving safety around all modes of freight and continuously monitoring freight related fatalities. The DOT's goal is to seek out solutions and reduce the number of accidents and lives lost due to freight transportation.

See Chapter 2, System Inventory and Performance (Section 2.3, Inventory and Performance by Mode) for Iowa freight-related safety statistics.

4.2 Funding

The state of Iowa is fortunate to have a strong multimodal freight transportation system that facilitates safe and efficient movement of goods. This system provides industries in Iowa, and across the United States, with a competitive advantage in the global economy. However, this advantage is at risk of deteriorating due to an aging transportation network, rising maintenance costs, and the declining buying power of existing funding sources.

A well-maintained freight system reduces transportation costs and ensures reliable, consistent service—factors critical to how companies decide where to expand and how they move goods. Without sustained investment, Iowa's freight infrastructure will weaken, diminishing the competitiveness of both the state and nation.

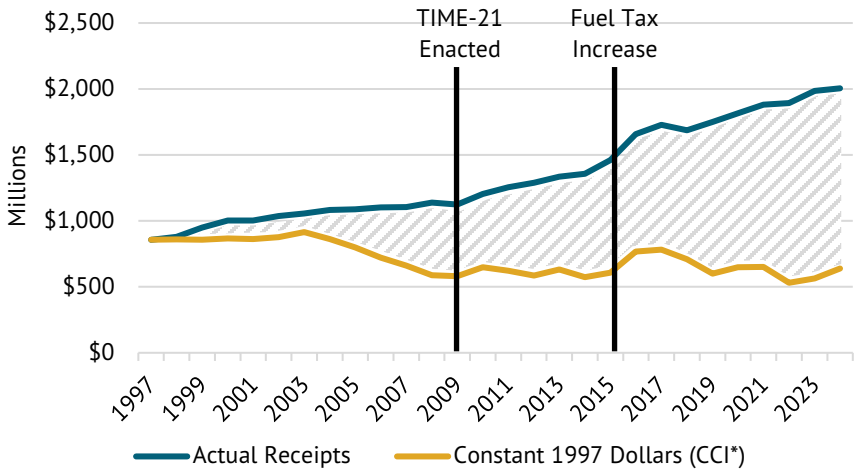
Infrastructure funding challenges continue to grow across the United States as costs for maintaining roadways and bridges rise while key revenue sources remain stagnant. Iowa's **Road Use Tax Fund (RUTF)**—the primary state funding source for roads and bridges—faces long-term pressure as its ability to keep pace with construction and maintenance costs continues to erode, primarily due to **inflation**. Annual inflation measured by the National Highway Cost Construction Index (NHCCI) showed that inflation for construction cost was at 17.3% in 2021, 27.6% in 2022, and 11.9% in 2023. Addressing these challenges requires exploring all potential funding sources and maximizing the efficiency of existing programs.

To ensure **sustainable investment** in the freight system, Iowa must consider new or alternative funding mechanisms. Difficult decisions will be necessary to address the state's funding shortfall. Prioritizing projects, emphasizing stewardship, and achieving the right blend of investment strategies in the multimodal system will be critical to ensure limited dollars are spent in the most beneficial way. Asset management and rightsizing practices will be necessary to help the system operate as efficiently as possible and maximize the benefits of each dollar spent. Targeting improvements at specific high priority areas such as freight bottleneck locations and focusing investments on the Iowa Multimodal Freight Network will help safeguard and strengthen Iowa's economic output, positioning the state for future growth and funding stability.

In 2009, the TIME-21 legislation was passed and in 2015 the **fuel tax** was increased. Both helped to increase revenues raised for the state, but as shown in figure 4.2, these increases have not been enough to keep up with the increased cost of construction, and thus, the state's buying power continues to diminish.

In addition to diminishing buying power, the long-term viability of the RUTF is challenged by advances in fuel efficiency and the rise of alternative fuel vehicles. Growth in electric vehicles and improvements in fuel efficiency mean less traditional fuel is purchased per mile traveled. As alternative fuel vehicles become more common, this imbalance is expected to widen further.

Figure 4.2: Historic trend in RUTF revenue buying power



** Iowa Construction Cost Index, which reflects the inflation of roadway costs in Iowa and corresponding loss in buying power*

Source: Iowa DOT

To address this growing mismatch between roadway use and revenue, many states have begun exploring or implementing a mileage-based user fee (MBUF) system. An MBUF charges drivers based on the number of miles traveled—and in some models also accounts for vehicle weight and axle configuration—more directly aligning revenue with actual roadway impacts and future maintenance costs.

4.3 Regulation and Trade

Regulatory alignment is critical, as the regulations intended to keep freight safe and reliable can become difficult to navigate when they vary across federal, state, and local levels. These regulations have firsthand effects on those doing business in Iowa. To provide as much ease in conducting business as possible, the state must have a complete understanding of regulatory requirements at every level of government. This understanding supports more consistent regulatory application and smoother freight operations.

Improved coordination, education, and streamlining of freight-related regulations is also needed. Although regulations (e.g., safety, environmental, economic, etc.) are developed with good intentions, some can become impediments to efficient freight movement. Barriers commonly cited by the industry include truck size and weight limitations, routing restrictions, HOS rules, fuel and emissions standards, and customs and border security rules.

One of the primary obstacles within the regulatory environment is the fragmented nature of federal and state authorities. Regulations and policies are developed across modes, sectors, and jurisdictions, often leading to misalignment. Insufficient coordination between these authorities contributes to inefficiencies and bottlenecks. Greater alignment and streamlining of freight-related regulations can help reduce conflicts, improve compliance, and minimize unintended impacts on shippers and industries.

Shippers in Iowa continue to encounter regulatory obstacles that hinder the movement of freight across all modes of transportation. If not addressed, these issues may lead to delayed shipping, increased congestion, reduced safety, and a broader drag on economic performance.

Truck size and weight standards are a blend of federal and state regulations controlling the maximum gross vehicle weights and axle loads on the highway system. Federal law controls loads on the Interstate Highway System and state law controls loads on non-Interstate highways, leading to inconsistent regulations from state to state.

HOS requirements refer to the maximum amount of time commercial drivers are permitted to be on duty, including driving time, and specifies number and length of rest periods to help ensure that drivers stay awake and alert.

An **Electronic logging device (ELD)** is technology that automatically records a driver's driving time, rest time, and other HOS data. The Federal Motor Carrier Safety Administration (FMCSA) requires most motor carriers and drivers required to keep records of duty status to use ELDs.

Positive Train Control (PTC) is a technology that uses global positioning systems and radio communication to prevent collisions or derailments caused by human error. Congress mandated in 2008 that PTC be adopted and implemented on Class I railroad main lines over which certain hazardous materials are transported and on lines with regularly scheduled passenger rail.

The **Jones Act** is a federal law that regulates maritime commerce, requiring that goods shipped between U.S. ports must be transported on ships that are built, owned, and operated by Americans or permanent residents.

Trade is central to Iowa's major economic industries, agriculture and manufacturing, which rely heavily on exporting goods out of the state, even as a growing share of products remain in Iowa for additional value-added processing. Currently, Iowa's industries are forecasted to continue increasing their exports, both domestically and internationally, making any future trade negotiations imperative to reduce trade limitations and improve Iowa's overall economic competitiveness.

Imports and exports are forecasted to make up a greater share of freight movement in the United States as international trade continues to grow and supply chains become increasingly global. This trend will result in increased freight activity and higher demand for containerized intermodal cargo. Monitoring international trade agreements and negotiations will be important for understanding potential implications for freight transportation in Iowa. For example, the United States-Mexico-Canada Agreement (USMCA), signed in 2019 as a modernized version of the North American Free Trade Agreement, is expected to support mutually beneficial trade, leading to increased efficiencies and robust economic growth for the U.S. and its two largest trading partners.

Potential challenges to growing international trade include existing bottlenecks on the freight system, growing congestion at U.S. trade gateways and border crossings, and infrastructure limitations at ocean ports. Multimodal bottlenecks are present throughout the transportation system and are exacerbated by increased freight movement, while consistent congestion at trade gateways resulting from inspections and security requirements. Additionally, some U.S. ports lack the capacity to dock, unload, and load larger megaships that can now transit the Panama Canal to access Gulf and East Coast ports. Ports that can handle these larger vessels have experienced significant growth, but the surge of cargo from megaships can strain connecting landside infrastructure and operations.

Iowa must be prepared for changes in both national and international trade. By closely monitoring trends such as rising demand for containerized freight, bottlenecks at major ports, and capacity challenges across the United States, the state can develop proactive plans and policies that help mitigate disruptions and prevent delays that could slow Iowa's economic activity.

U.S. industries may explore bringing manufacturing or production sites back to the U.S. **(reshoring)** or moving to nearby countries **(nearshoring)** to avoid longer transportation routes and congested ocean ports. Benefits of reshoring and nearshoring are:

- Shorter lead times,
- Increased production control,
- Improved time to consumers,
- Streamlined distribution of products, and
- Avoidance of taxes and tariffs

Tariffs are a current challenge in the economic sphere as they impact the cost of trade goods in the United States. These tariffs have been implemented to encourage domestic manufacturing and strengthen local economies, including Iowa's, which has a large manufacturing base. However, many Iowa manufacturers depend on imported materials and components to produce their goods. As a result, the implementation of tariffs has placed additional strain on freight transportation, as shippers face uncertainty about future demand and the flow of goods from foreign markets.

Many manufacturers have been forced to adjust what and how they produce goods in the United States, temporarily halting production and slowing economic activity. Although the long-term benefits of tariffs on the U.S. economy remain unclear, it is important to plan and prepare for disruptions like these, which can affect both the movement and production of goods.

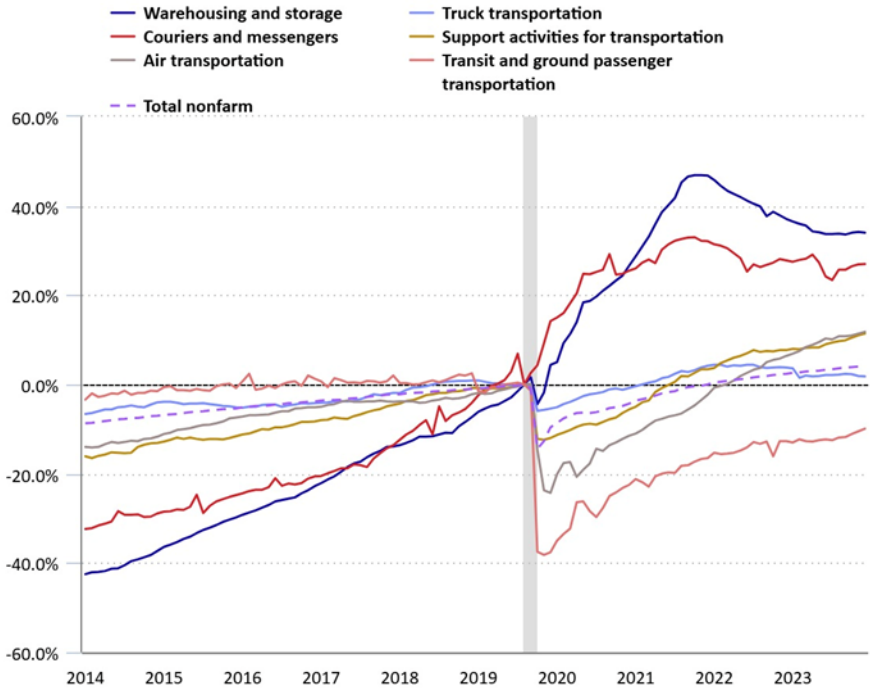
Another consideration related to tariffs is the potential for retaliatory tariffs from other countries. These tariffs have already impacted local manufacturing and agriculture in Iowa, leading to the loss of advantage at certain foreign markets and forcing shippers to seek new customers until global trade conditions stabilize. These disruptions further contribute to uncertainty in freight transportation and limit the ability of shippers to plan beyond the short term. Sustained disruptions may lead to a long term, or even permanent, shift in trade practices, which could hurt Iowa shippers and farmers.

See Chapter 3, Industries and Commodities (Section 3.2, Commodity Movement), for Iowa domestic and international trade trends.

4.4 Labor and Workforce

Labor shortages in freight reached a critical point during and after the Covid-19 pandemic, exposing cracks in both global and national transportation infrastructure. These shortages have persisted, and retaining and recruiting qualified workers—particularly commercial drivers—remains a challenge. Even before the pandemic, labor shortages were already a concern. As shown in Figure 4.4, since February 2020, employment rates in truck transportation have only increased by 1.8%.

Figure 4.3: Percent change in employment relative to February 2020, selected transportation and warehousing industries, seasonally adjusted



Source: U.S. Bureau of Labor Statistics

Currently, about 25% of trucking firms cite workforce shortages as their biggest problem. The rise of e-commerce in the United States has further increased demand for freight transportation, straining supply chains and exacerbating the labor shortage. As recently as 2022, the industry projected a shortage of 80,000 drivers, with that number expected to grow to 160,000 by 2031.

Industry organizations offer differing perspectives on the root causes of these shortages. The American Trucking Association (ATA) attributes the problem to an aging workforce and a lack of younger generations entering the industry. In contrast, the Owner Operator Independent Driver Association (OOIDA) points to low wages, poor working conditions, and inadequate benefits as key contributors. Additional challenges include rapidly evolving technologies that reshape job expectations and a shift in workforce preferences toward being home nightly rather than on long-distance hauls.

These contrasting views also lead to divergent solutions. The ATA advocates for regulatory changes, including lowering the **commercial driver's license (CDL)** age requirement from 21 to 18. Meanwhile, OOIDA emphasizes the need for improved wages and better working conditions to attract and retain drivers.

Addressing the truck driver shortage requires looking at both sides of the debate for solutions. Regulatory changes such as lowering the CDL age requirement may increase the employment pool, but without addressing other underlying issues such as working conditions and pay, recruitment gains are unlikely to resolve the issue in the long term. If these issues are not addressed, labor shortages are likely to persist and intensify, and in turn could increase the strain on supply chains, freight costs, and ultimately impact the nation's economy.

4.5 Bottlenecks

A **freight bottleneck** is a location that experiences a repeatable, measurable disruption in the flow of freight. This could be caused by a physical barrier or limitation, a regulatory hurdle, or disruptions from excessive traffic. The Iowa DOT has identified lists of bottleneck locations for each mode of freight transportation. Highway bottlenecks include locations where operating speeds fall to at or below 60% of the roadway's reference speed. Railroad chokepoints include locations with structural constraints that restrict the size of cargo that can be carried, such as low clearance bridges; congested locations where a rail line is shared by more than one railroad; and low-lying areas that are at risk of flooding. Waterway bottlenecks include all lock and dam and swing span bridge locations on the Mississippi River.

These locations were collected through a mixture of stakeholder feedback and data analysis. Addressing and resolving these bottlenecks will help improve the flow of freight in the state. Targeted investment in operational and physical improvements at these bottleneck locations should be prioritized.

Monitoring how cargo is transported into and out of the state is important and can help guide where remediation efforts should be prioritized. **Rail cargo** has declined by approximately 3.4 million tons between 2017 and 2023. **Air cargo** also saw a slight decrease with about 10,000 fewer tons moved. **Waterways cargo** declined by approximately 3 million tons over the same period. It is unclear whether these decreases reflect a reduction in economic output, changes in data collection methods, or both.

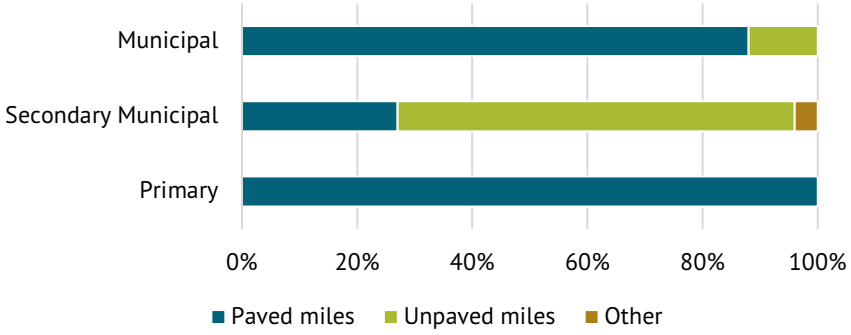
See Chapter 2, System Inventory and Performance (Section 2.3, Inventory and Performance by Mode) for Iowa freight-related safety statistics.

First mile/last mile connections from the highway network, including the Iowa Multimodal Freight Network (IMFN), to freight generating facilities and final customers are important for the overall freight system. Distribution centers and other intermodal/multimodal facilities are even more important with the continuous growth of e-commerce, manufacturing, and agricultural production. These connections can be bottlenecks due to congestion, interactions with passenger vehicles and pedestrians, and design limitations on local roadways.

Rural infrastructure serves as the first mile/last mile connections for the agricultural industry. Rural highways and bridges are in poor condition, and these routes are critical for getting inputs to the field and outputs to market. Farmers are now using larger, heavier field equipment and shipping more commodities via truck directly to processors or export terminals, which increases the importance of rural routes. As changing urban-rural dynamics continue, more population and resources are in urban areas while more production areas and key freight corridors are in rural areas, further exacerbating rural infrastructure funding issues.

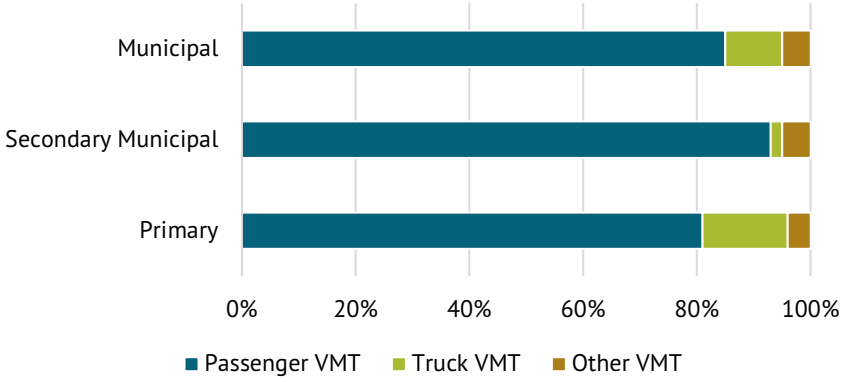
Figures 4.4 and 4.5 show Iowa mileage by roadway type and vehicle miles traveled (VMT) by vehicle type.

Figure 4.4: Paved miles by road system, 2024



Source: Iowa DOT

Figure 4.5: Vehicle miles traveled (VMT) by road system, 2024



Source: Iowa DOT

Developing freight-specific **highway design** considerations will help protect and enhance the IMFN and related first mile/last mile connections. Investments targeted for facilities that handle significant freight traffic, including **oversize/overweight (OSOW)** vehicles, should incorporate designs compatible with these types of freight movements, and avoid improvements that unintentionally create new obstructions to freight movement in urban and rural areas.

See Chapter 5, Action Plan (Section 5.1, Implementation strategies), for Iowa DOT freight design considerations.

4.6 Supply Chains and Market Access

Supply chains rely on Iowa's freight system as a critical tool for maintaining connectivity and keeping the economy flowing—from producers of raw materials to manufacturers processing those materials into goods, and ultimately to the end consumer. Without an efficient and well-maintained transportation system, Iowa's economic supply chains would bottleneck and could lead to loss of revenue and increased pricing for consumers. That is why it is not only important to pay attention to how or where our goods are produced but also important to pay attention to how materials are transported to production sites.

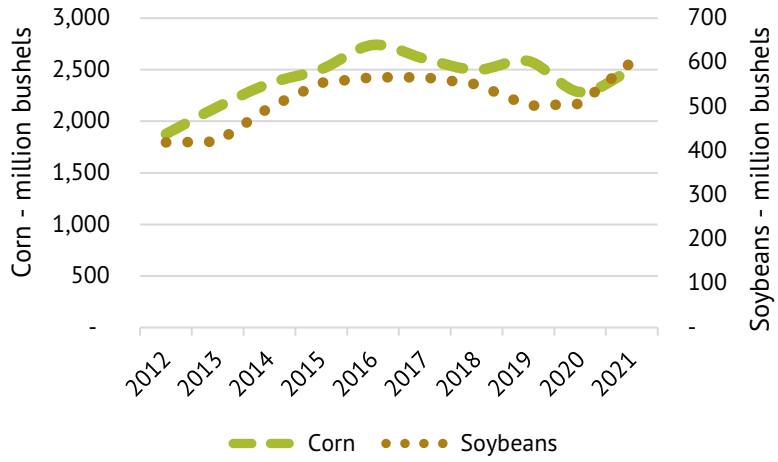
Although Iowa's economy is dominated by agriculture, the state does boast a diverse manufacturing industry. Manufacturing locations are scattered across the state in both urban and rural areas and range from food processing to agricultural equipment production. These manufactures rely on a combination of local and imported inputs in there manufacturing process to make their products. Monitoring how these inputs are transported into the state is essential to ensure the most efficient and cost-reducing freight movements. This will, in turn, help to keep Iowa's industries competitive in both national and global market.

See Chapter 3, Industries & Commodities (Section 3.3, Primary Supply Chains) for more information.

Maintaining and improving strong **market access** for shippers is essential for Iowa's economy to compete nationally and globally. An efficient and resilient transportation system allows Iowa's producers to export goods effectively within and beyond the state for both consumption and production. With **agriculture products** remaining Iowa's dominant export, maintaining a strong rural transportation system and reliable multimodal facilities is vital to efficiently transfer goods between modes and connect products to outside markets.

In recent years, Iowa's agricultural economy has shifted from small farms to larger, more corporate operations that increasingly focus on exporting their products outside the state. Combined with higher yields per acre, noted in figure 4.6, this growth places new demands on the state's transportation system, emphasizing the need for multiple reliable modes for producers to choose from in getting their products to market.

Figure 4.6: Iowa agricultural production, 2012-2021



Source: U.S. Department of Agriculture

Iowa is fortunate to have a highly connected multimodal transportation network that facilitates the movement of goods within and beyond the state. Des Moines, for example, is served by I-35 and I-80, three Class I railroads, and the Des Moines International Airport, which also features a Foreign Trade Zone. This allows for the import and assembly of goods without immediate customs fees or inspections, strengthening the city's role as a logistics hub.

For agricultural exports, producers have long relied on the highway system to move goods to elevators and barge terminals, inland waterways to reach Gulf Coast ports via barge, and railroads to ship to West Coast ports via unit trains. However, this trend is shifting. Producers—whether individual farmers or larger farming corporations—are increasingly achieving **economies of scale** by transporting products directly via truck, reducing reliance on local consolidation points and rail terminals.

As producers and shippers continue to adjust shipping practices, it may become necessary to reevaluate Iowa's freight transportation network, particularly the **Farm-to-Market System** and other rural infrastructure that serve as critical first-mile and last-mile connections. Optimizing the freight network in this way could improve infrastructure conditions and reduce costs and travel time while improving overall supply chain efficiency.

New connections will be essential to maintaining and improving Iowa's market access, requiring ongoing expansion and enhancement of multimodal transportation systems such as the one serving the Des Moines area. These efforts are key to supporting Iowa's growing agricultural production and preventing future bottlenecks. One example happened in 2025 when the Iowa Interstate Railroad completed development of a new 367-acre rail yard in Jasper County, creating jobs and strengthening Iowa's economic and freight transportation capacity. As Iowa looks to invest in new freight facilities and improve its transportation connectivity, these investments will have impacts on land use considerations around the state.

The need for continued investment in multimodal transportation will only increase as Iowa's **biofuel industry** expands. With abundant corn harvests, much of the crop now remains in-state to be processed into ethanol and other biofuel products. Strengthening the farm-to-market system and improving links between biofuel facilities and external markets will enhance Iowa's economies of scale and further establish the state as a leader in energy production.

Intermodal Connections

Intermodal is not the same as multimodal. While multimodal refers to the availability of different modes of transportation, intermodal focuses on specific locations where multiple modes converge. Investing in intermodal connections—such as transload facilities with direct access to the highway system, where goods can easily transfer from rail to truck—will help improve producers' access to multimodal transportation options, enhance the flow of goods, and reduce bottleneck issues across Iowa's freight network.

Container Availability

Iowa produces more products shipped via container than it receives, creating a significant imbalance of containers. To meet demand, empty containers must be transported into the state, adding extra transportation costs that ultimately increase prices for consumers. However, the issue is more complex than simply not having enough containers. Labor shortages, rapid changes in trading patterns, and shifts in global trading partners make it difficult to maintain a predictable container flow. As sellers wait for new buyers, containers often sit idle at ports or other facilities, further contributing to inefficiencies in the global trading system and driving up freight costs.

To support these efforts, Iowa utilizes a range of financing programs designed to invest in transportation infrastructure and foster new economic connections. The **Railroad Revolving Loan and Grant (RRLG) Program** provides funding to private businesses for constructing new rail yards and track improvements that create and sustain Iowa jobs. The **Revitalize Iowa's Sound Economy (RISE)** Fund promotes economic development through road and street construction and improvement projects focused on enhancing economic activity. These and other programs demonstrate Iowa's commitment to maintaining a robust, connected, and forward-looking freight network.

4.7 Technology

Artificial intelligence is technology that allows for machines or programs to learn from experience, adjust to new inputs, and perform tasks. Firms are looking to apply advances in artificial intelligence and machine learning to improve the performance of freight movement and delivery networks.

3D printing, also known as additive manufacturing, uses Computer Aided Drafting to create 3D models that are ultimately sent to a 3D printer to be created. Material categories include plastics, metal (powder bed, powder feed, or wire extrusion), ceramics, food, stem cells, and others. Industrial-scale 3D printing could alter supply chains as businesses wouldn't need to ship inventory but rather the raw materials to be used to print inventory.

Aviation trends are emerging that may influence freight movement, security, and economic activity. Most notable is the emergence of **unmanned aircraft systems**, or drones, which are being explored for freight related applications such as time sensitive deliveries, logistics support, and infrastructure inspection.

Teleoperation, also known as remote operation, uses computer and telecommunication systems to allow for the operation of freight modes. For trucking, this could support automation activities for primary operation or a fallback measure without a person in the vehicle.

Automated trucking concepts continue to be developed and tested, including truck platooning or automated following platooning (where the lead truck operates normally with driver assistance technology and the second truck operates at a higher level of automation). These emerging technologies have the potential to increase safety and efficiencies as well as hours of service (e.g., labor) and parking challenges by allowing drivers to rest in the truck while it's in operation and be on roadways for longer operations.

Commercial vehicle electrification offers many advantages over their petroleum powered counterparts. Electric trucks (like the one shown in Figure 4.7) emit zero tailpipe emissions and have a lower total cost of operation. Additionally, electricity prices have historically been lower and more stable than diesel and gasoline prices. However, transitioning to electric vehicles will require new charging facilities dispersed throughout the country, and the power generation to meet the new demand. Another challenge is the added weight of the batteries themselves. The batteries to power electric trucks can weigh several tons, creating a trade-off between travel distance and cargo capacity.

Figure 4.7: Tesla electric semi-truck

Source: Bloomberg

4.8 Resiliency

Infrastructure and supply chain **resiliency** are critical topics for both public and private stakeholders. The Iowa DOT defines resiliency as the ability to anticipate, prepare for, and adapt to changing conditions and withstand, respond to, and quickly recover from disruptions. A resilient freight transportation system is responsive and able to provide reliable services when it encounters small disruptions and returns to service quickly after large disruptions.

Increasing freight traffic is having a large impact on already aging infrastructure with limited capacity, reducing the overall resiliency of those corridors. Aging and deteriorating infrastructure is being further stressed by increases in **extreme weather events** such as flooding. Major events, such as the Missouri River floods of 2011 and 2019 in western Iowa, can disrupt or shut down critical infrastructure for days, weeks, or even months costing billions of dollars.

Infrastructure and supply chains must be resilient to smaller disruptions such as **traffic crashes** and larger events such as **cyberattacks** and **global pandemics**. The COVID-19 pandemic exposed vulnerable links in global supply chains that perhaps haven't been considered before, such as the implications of rapidly changing supply and demand situations in global supply chains and the importance of maintaining the health and safety of the freight labor force.

It is critical for infrastructure owners and operators to employ strategies and make necessary improvements to reduce the vulnerability of the infrastructure to extreme weather and other major disruptions. Without improvements, shippers will reassess their reliance on vulnerable freight gateways and corridors.

Consideration of resiliency in traffic operations and the overall project planning and programming process is critical for states to be prepared to address major disruptions and mitigate the impacts to freight industries. A resilient and reliable freight transportation system could ultimately lead to additional industries locating in the area.

Over the last couple of decades, Iowa has been increasingly impacted by natural disasters, including historic flooding, snowstorms, and tornadoes. This trend is likely to increase as climate data shows strong trends towards increasing temperatures, precipitation, stream flows, and flooding. Awareness of human-induced disruptions has also been amplified as vigilance of potential terrorism and cyberattacks has increased.

To address this, the Department has developed a **Resilience Improvement Plan (RIP)**. The RIP is the Iowa DOT's primary document to support integration of resiliency into the transportation system and the planning, programming, and project development processes. By focusing on resiliency, the Iowa DOT is supporting the ultimate purpose of the transportation system – getting people and goods where they need to go. The development of the RIP and resulting information produced to support the effort may help identify vulnerabilities, develop proposed resilience solutions, and schedule and prioritize resilience improvements to meet the needs of travelers.

The Iowa DOT's **Resiliency and Sustainability Committee** has also conducted a statewide network screening to identify locations vulnerable to a 100-year flood event by analyzing highway segments by robustness, redundancy, and criticality. Road closures due to flooding affect all highway traffic, from commuters to freight transportation to emergency services.

4.9 Energy

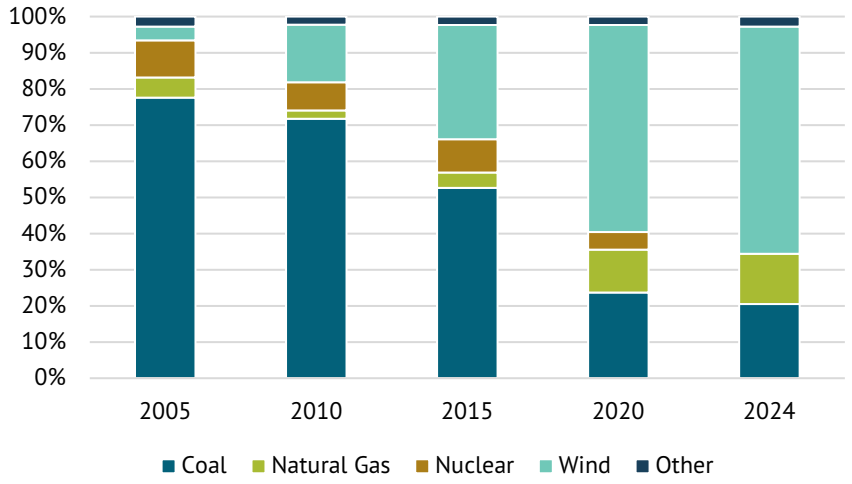
Energy production in the United States has grown significantly with one of the largest growing sectors being hydraulic fracturing of rock or "fracking." This process allows for the recovery of deep sources of gas and petroleum products and has resulted in large amounts of gas and oil being extracted and transported elsewhere in the U.S. and abroad. The development of wind farms has also changed energy production and consumption in the U.S. Most of Iowa's electricity is now generated by wind power, and the construction and maintenance of the wind farms means wind turbine components are regularly being moved on the freight network.

The **biorenewable** chemical industry is undergoing rapid transformation and growth. Due to Iowa's abundance of feedstock, technical workforce, and biorenewable and plant genetic research, the state has an opportunity to be a major player in this growing industry.

Alternative transportation fuels are widely utilized in Iowa, specifically ethanol and biodiesel. Natural gas comes in the form of either compressed natural gas (CNG) or liquefied natural gas (LNG), both of which are being explored and adopted by transportation industries. Other fuel sources such as propane and renewable diesel are also being explored. Each of these alternative fuel sources produce lower emissions than gas/diesel traditionally used by freight vehicles. Adopting these would contribute to reduced air pollution.

As shown in Figure 4.8, **coal** use for energy production is declining significantly with the increased use of renewable energy (e.g., wind). This has impacted rail and barge tonnages as coal once represented a significant portion of tonnages being moved by each mode. Figure 4.9 shows energy production across the state.

Figure 4.8: Iowa utility generation by source, 2000-2024



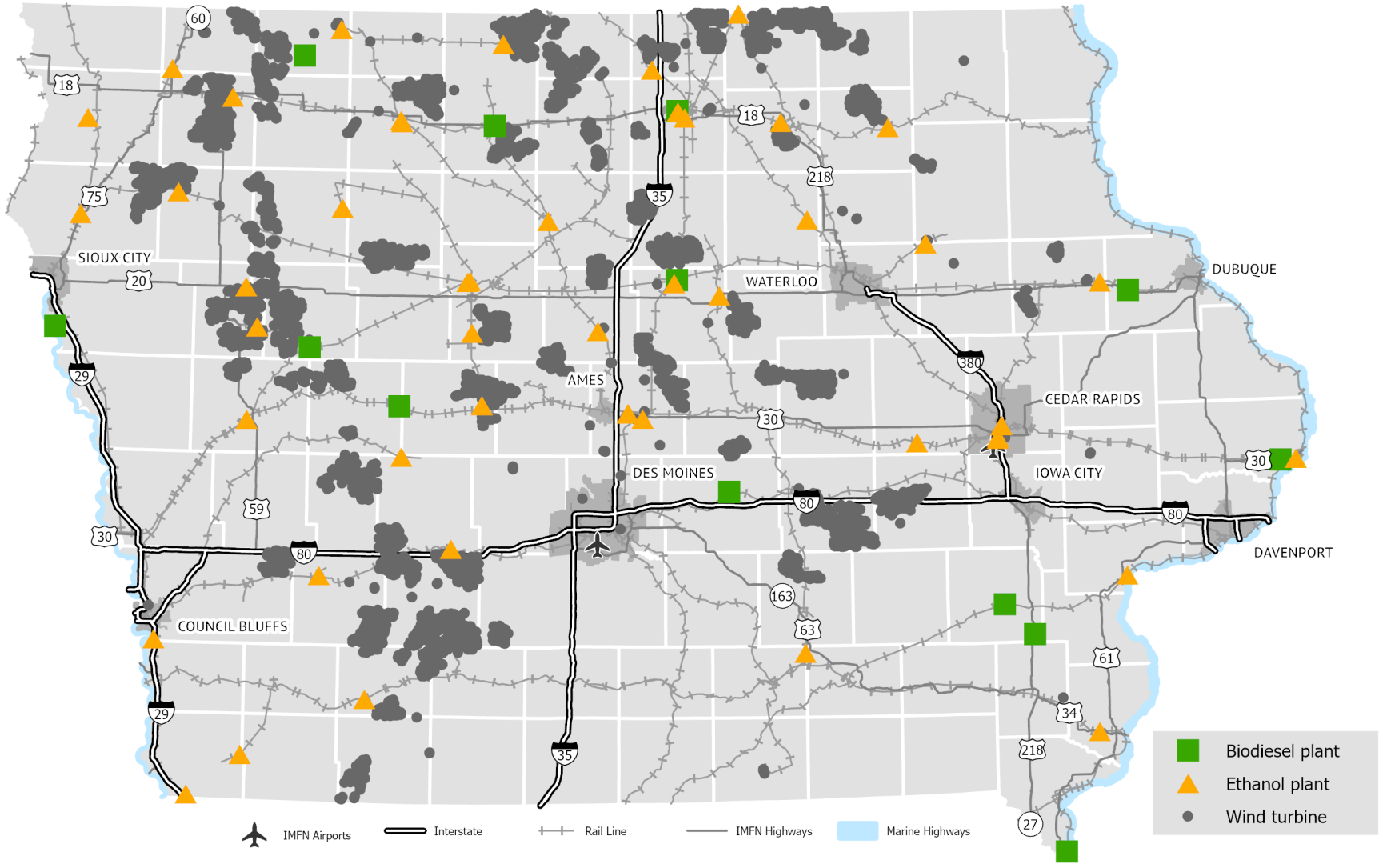
Source: U.S. Energy Information Administration

Emissions

Since the Clean Air Act of 1970, vehicle emissions have faced growing scrutiny as regulations continue to tighten.

Iowa has the potential to be a leader in alternative renewable fuels that help reduce air pollution and smog. Biogasoline and biodiesel produce significantly lower emissions than traditional fuels, and expanding their production can strengthen Iowa's agricultural economy, improve statewide air quality, and help freight shippers comply with federal standards.

Figure 4.9: Iowa Energy Production



Source: Iowa Renewable Fuels Association and U.S. Wind Turbine Database

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5. ACTION PLAN

5.1 Implementation strategies | 5.2 Improvements | 5.3 Performances measures
5.4 Stakeholders and partners | 5.5 Funding mechanisms | 5.6 Freight investment plan

5.1 Implementation Strategies

Iowa's overall freight improvement strategy includes a listing of prioritized implementation strategies that were developed in consultation with freight stakeholders.

Chapter 4, Planning considerations, introduced critical issues that were identified through a series of discussions and exercises between the Iowa Department of Transportation and the Iowa Freight Advisory Council (FAC) over the last decade.

Building from the FAC-identified priorities and the original strategies from the 2022 State Freight Plan, the following strategies represent the primary elements of Iowa DOT's overall freight improvement strategy going forward. Some of the activities associated with these strategies are already underway, while others will be initiated in the near future as new tools and technologies are implemented.

Each element of the department's strategy aims to address freight specific needs and aligns with both the priorities of the FAC and the national freight goals.

Additionally, these strategies relate to the Iowa DOT system objectives of safety, sustainability, accessibility, and flow (Figure 5.1). These are described in Chapter 1, Introduction (Section 1.1, Plan purpose). The icon preceding each strategy shows which of the four objectives it supports.

Figure 5.1: Iowa DOT system objectives

Source: Iowa DOT

Prioritized Implementation Strategies

1. **Improve freight transportation system resiliency.** A resilient freight transportation system is responsive. It is able to provide reliable service when small disruptions occur and return to service quickly after large disruptions. Reducing the vulnerability of highway infrastructure by investing in improvements such as roadway grade raises and foreslope erosion countermeasures and working with partners to do the same for other modes and supply chains should be a priority. Operational improvements to address small disruptions can also be made by leveraging real-time information from users of the system to support advanced decision-making, incidence avoidance, and faster response times, as well as by providing real-time information on system conditions to support the movement of freight.

2. **Explore additional sustainable funding sources to increase investment in the freight transportation system.** Growing demands, deteriorating conditions, and diminishing buying power are impacting the efficiency and reliability of freight movement. Increasing revenue from existing funding mechanisms, or even exploring and creating new ones, would be advantageous to the state of Iowa. Options include, but are not limited to, strategically targeting funding to freight projects, using public-private partnerships to expedite investment, or allowing more flexibility in current funding mechanisms to make multimodal freight improvements.

3. **Work with local stakeholders and railroads to improve safety at railroad crossings.** A highway-railroad grade crossing is an intersection where a roadway crosses railroad tracks at the same level. Because a grade crossing is a point at which more than one mode of transportation meets several public and private stakeholders, both stakeholders have jurisdiction over various aspects of the intersection. There are 6,467 total at-grade crossings in Iowa. On average, 4.2 million vehicles cross public at-grade railroad crossings each day. Railroad companies own and maintain the tracks. These crossings can become points of conflict between highway and rail transportation, so addressing these conflicts is critical for improving safety.

4. **Target investment to address mobility issues and bottlenecks that impact freight movements.** Investments that target the elimination or reduction of freight mobility issues are a key element to Iowa's freight improvement strategy. This includes addressing operational and capacity needs, as well as increasing connectivity of modes through intermodal facilities. These improvements will increase efficiency and reduce bottlenecking on the freight network, while also helping to reduce freight emissions and associated air pollution. Additionally, congestion in surrounding areas outside of the state's borders may have an impact on Iowa freight movement. Collaboration with other states and exploration of regional solutions is needed to maximize the effectiveness of investments made within the state.

5. **Collaborate with railroad operators to provide Iowa companies with increased access and capacity to accommodate additional Iowa freight shipments.** Iowa's railroad network provides significant opportunities for reducing transportation costs for shippers. Implementation of strategies and initiatives from the State Freight Plan and the Iowa State Rail Plan (ISRP) will help to further enhance railroad capacity and access points, which are essential for Iowa shippers to leverage rail freight movements.

6. **Partner with law enforcement and the trucking industry to combat human trafficking.** Human trafficking has been reported in all 50 states, and the number of victims in the United States is estimated to be in the hundreds of thousands. Traffickers typically target professions deemed "transient in nature" as consumers and they regularly travel across multiple states to places such as oil and gas fields, truck stops, hotels along highways, etc. The trucking industry is critical in helping to spot these types of activities. Law enforcement, government agencies, and the trucking industry should continue to work together to facilitate the investigation of human trafficking and combat this crime.

7. **Advance a 21st century Farm-to-Market System that moves products seamlessly across road, rail, and water to global marketplaces.** Per Iowa Code, the "Farm-to-Market System" means intra- and intercounty roadways under county jurisdiction that serve principal traffic generating areas and connect them to other farm-to-market routes, city streets, and primary roads. Given the rapidly changing agricultural landscape and the diminishing buying power of existing transportation resources, the size and operation of the Farm-to-Market System should be re-examined. All potential alternatives to improve efficiency should be examined with stakeholders, including road abandonments, vacations, service conversions, and links to other transportation modes.

8. **Streamline and align freight-related regulations and minimize unintended consequences.** The regulatory environment can encourage or deter business in a state, and not all state and federal regulations have a positive impact on freight mobility. State departments should partner to analyze negative impacts, coordinate with stakeholders, and attempt to minimize any unintended consequences of regulations that may hinder freight movement and/or discourage businesses from investing in the state. Additionally, since freight movements are often multistate in nature, there is a need for improved reciprocity between states regarding issues not standardized at the federal level.

9. **Explore opportunities for increasing value-added production within the state.** Iowa is a major producer of agricultural commodities. Efforts should be made to identify economic development opportunities related to value-added production goods utilizing agricultural products. One of the major value-added productions currently within the state is bio renewable fuel from corn. Improving rural transportation infrastructure would provide an opportunity for the state to consider investments that would allow for more value-added processes to occur in-state, prior to these products being exported.

10. **Support the development and adoption of emerging freight technologies to increase safety and efficiency.** Emerging technologies such as automation, autonomous vehicles, unmanned aircraft systems (e.g., drones), AI, and others have the potential to be transformative for freight industries by increasing safety and efficiencies, enhancing supply chains, and disrupting business models. These types of opportunities should be explored and supported so industries can address various challenges such as consumer acceptance and expectations, increased competition, rising labor costs, and labor availability. As opportunities arise, work to align and coordinate the activities of the Iowa Advisory Council on Automated Transportation and the FAC.

11. **Advocate for the funding and improvement of the inland waterway system and explore ways to expand Iowa's role.** The M-35 (Mississippi River) and M-29 (Missouri River) marine highways support the economic competitiveness of the nation, relieve landside congestion on highways and railroads, reduce air emissions, and increase the efficiency of other transportation modes. The state of Iowa continues to work with other regional states to promote the value of these rivers, advocate for infrastructure investments, facilitate regional dialogue, market current services, and seek out new tools. Opportunities to invest in and improve the system should continue to be explored, such as discussions between the Iowa DOT and the U.S. Army Corps of Engineers (USACE) to build a mooring cell on the Upper Mississippi River, the construction of the Port of Blencoe on the Missouri River, and the establishment of the Mississippi River Ports of Eastern Iowa and Western Illinois (doing business as Upper Mississippi River Ports).

12. **Target investment in the Iowa Multimodal Freight Network (IMFN) at a level that reflects the importance of this system for moving freight.** The IMFN consists of priority airports, highways (including Interstate, U.S., and Iowa routes), railroads, and waterways representing the most critical freight corridors in the state. Operational and physical improvements that increase the safety, efficiency, reliability, and resilience of this network, as well as associated first/last mile connections, should be prioritized.

13. **Rightsize the highway system and apply cost-effective solutions to locations with existing and anticipated issues.** Rightsizing of the system is the application of cost-effective solutions (e.g., Super-2 improvements) to address existing and anticipated issues. This will require significant investment in stewardship, some focused capacity expansion as resources allow, and perhaps even some contraction of the highway system. Applied correctly, such solutions will balance mobility needs with revenue limitations and the need to rightsize the system, while also having more favorable long-term asset management outcomes, and limit the amount of agricultural land and wildlife habitat that is converted to highway right-of-way.

14. **Study truck parking behaviors and meet the demand at DOT rest areas.** Continued implementation of initiatives to address truck parking needs to remain an emphasis, including for oversize/overweight trucks. These initiatives include the Iowa Rest Area Management Plan, which provides a strategy to reallocate existing truck parking spaces and strategically add new spaces along high-demand corridors. See page 9 for the most recent commercial motor vehicle parking facilities assessment conducted by Iowa DOT.

15. **Support opportunities to develop new intermodal freight facilities in the state.** Intermodal facilities are critical connections between freight modes that allow shippers to take advantage of the cost, speed, and capabilities of more than one mode. Development of these facilities, including air cargo facilities, truck cross-docking operations, rail intermodal facilities, transload facilities, barge terminals, and logistics parks, will improve the efficiency of the overall freight transportation system.

16. **Partner with freight stakeholders to find innovative ways to address labor shortages across industry sectors.** Commercial vehicle driver shortages and labor shortages across supply chains continue to plague freight and transportation industries for a variety of reasons. Public and private stakeholders should partner to find innovative solutions designed to aid in reducing shortages and improve recruiting, training, and retention.

17. **Optimize the availability and use of freight shipping containers, including exploring other options for repositioning empty containers.** A significant imbalance exists in the use of in- and outbound shipping containers. This is a problem that is inherent to many intermodal facilities in major metropolitan areas. Cost effective opportunities may exist to utilize different transportation modes to relocate some of these empty containers to locations in Iowa for reloading. With significant volumes of production, Iowa is well-positioned to provide potential loads for outbound movements of these containers, which could prevent them from being shipped back to international markets such as Asia without back-loads.

18. **Mitigate the impacts of freight transportation on communities, wildlife, and the environment.** Potential negative impacts of freight transportation include emissions, noise pollution, congestion, and accelerated deterioration of local infrastructure. State and local partnerships should continue to work to mitigate negative impacts to citizens, wildlife (including habitat), and the natural environment as freight volumes increase.

19. **Enhance planning and asset management practices for the IMFN by utilizing designs and treatments that are compatible with significant freight movements.** Investments targeted for facilities that handle significant freight traffic, including oversize/overweight vehicles, should incorporate designs compatible with these types of freight movements, and avoid improvements that unintentionally create new obstructions to freight movement such as restrictive roundabouts, overhead structures, and turn radii. Particular emphasis should be placed on the highway portion of the IMFN. In addition, future routing and access control decisions and processes should consider those facilities that are most compatible with freight movement. See Page 110 for freight design considerations.

20. **Continually track and evaluate international trade deals, negotiations and tariffs.** New and ongoing trade negotiations will have impacts on Iowa's commodity markets and associated supply chains. These should be monitored to better understand the implications to all modes of freight transportation in Iowa, and strategies should be developed to mitigate negative consequences and take advantage of economic opportunities. International tariff discussions have become more prominent in recent years, and it is important to monitor and track all tariffs implemented by the US and any retaliatory tariffs.

21. **Enhance cybersecurity measures to protect Iowa's freight systems from digital threats, ensuring a safe, resilient, and reliable transportation network.** Managing schedules, deliveries, timelines, and coordinating with partners all require modern technology. Cybersecurity is the tool to prevent threats from hacking and disrupting the already delicate and complicated freight network. By being proactive with cybersecurity, we can prevent unnecessary delays and loss of economic value.

Freight Design Considerations

Critical infrastructure (e.g., IMFN) should be protected and enhanced for improved freight mobility. This can be done by implementing department policies for these corridors relating to design and use while also considering adjacent communities and land uses.

Although the following recommendations are focused on freight traffic, other modes such as bicycles, pedestrians, and public transit should be considered by investigating things like visibility, sight distance for truck drivers, and traffic speeds. These recommendations were informed by the Iowa DOT Road Design Manual (Chapter 1C-1), Kentuckiana Regional Planning & Development Agency Freight Design Guide, and NCHRP 943: Design and Access Management Guidelines for Truck Routes: Planning and Design Guide (2020).

Corridors

Considerations for roadway segments depend on the type, location, operating conditions, and adjacent land uses (urban or rural). Table 5.1 includes physical recommendations for roadways that allow for improved truck accessibility and maneuverability.

Table 5.1: Roadway corridor design recommendations

Item	Recommendation
Lane width	12 ft. (urban and rural)
	11 ft. minimum (urban)
Shoulder width	10 ft. effective width
	6 ft. paved width
Vertical clearance	16.5 ft. (secondary over primary and interchanges)
	15 ft. (primary over secondary)
Horizontal clearance	3 ft. from curb face (two lane)
	2 ft. from curb face (multilane)

Refer to the Iowa DOT Road Design Manual for the latest on design guidance.

Source: Iowa DOT

Intersections and Interchanges

Without proper designs and considerations, urban and rural intersections and interchanges can be a challenge for trucks to navigate. Things like turning radii, lane widths, interactions with other traffic, access management, lane striping, and signage need to be considered.

The volume and size of the trucks that are estimated to use a facility under design development shall be considered to appropriately accommodate the needed **turning paths** of these larger vehicles. The design should typically eliminate off-tracking of the rear trailer axles onto unpaved shoulders and eliminate off-tracking onto **pedestrian facilities**. Low raise curbs, lane encroachment and shoulder encroachment can be considered as part of the design to facilitate truck movements when appropriate.

Left turn lanes with appropriate length lane tapers or storage bays should be considered to decrease delays for through vehicles. Long tapers accommodate multiple trucks, while signal phasing, when appropriate, allows drivers to turn without yielding to pedestrians. In non-urban areas, exclusive **right-turn lanes** for accommodating trucks should be considered.

Additionally, adjacent intersections and interchanges should be spaced appropriately from ramps to avoid long queues of trucks blocking other traffic movements.

Innovative Design Considerations

Innovative intersection and interchange designs are implemented to improve the safety and capacity of high traffic areas but require special considerations to sufficiently accommodate trucks.

Roundabouts are utilized throughout Iowa, on and off the primary system. Truck traffic needs should be considered prior to the construction of a roundabout on the IMFN and the remainder of the Primary Highway System.

If roundabouts are constructed on the IMFN, full size truck turning radii and mountable aprons should be included for increased maneuverability. Multi-lane roundabouts should consider signage, lane markings, and sight distance for truck drivers when being designed. If oversize/overweight (OSOW) trucks are expected, additional clearances should be implemented.

Diverging Diamond Interchanges shift traffic to the left side of the road through the middle of the interchange to reduce left turn conflicts and improve traffic flow. These interchanges are being utilized in certain parts of Iowa. The design of lane widths, lane markings, and signage should consider truck needs.

Other types of innovative designs such as intersections utilizing U-turns (e.g., restricted crossing U-turn and median U-turn intersections) are generally challenging for trucks and should be avoided on major truck routes. If these designs are constructed, considerations should include similar things like turning radii, median width, and number of lanes.

Truck Parking and Loading/Unloading Zones

Access to adequate truck parking for single unit, combination, and OSOW trucks is a top industry need. This includes not only parking along major highway corridors but also in urban areas to serve as short-term loading/unloading zones.

Efforts to reallocate existing truck parking spaces and strategically add new spaces along high-demand corridors are underway at Iowa DOT. Considerations of accommodating typical OSOW loads (e.g., wind turbine blades) should be included when designing additional truck parking areas.

In urban areas, the creation or designation of loading/unloading zones should be considered. Options include reserving designated spaces for delivery drivers and/or assigning spaces with time restrictions during peak periods.

Figure5.2: Diverging diamond interchange at I-35 and 1st Avenue in Ankeny.

Source: Iowa DOT

Commercial Motor Vehicle Parking Facilities Assessment

From 2012 to 2020, the Iowa DOT undertook an in-depth, multi-phase analysis of the rest area system throughout the state to assess current conditions of rest area facilities, user needs, freight truck parking, and overall public sentiment towards the Department's plan for future investment of state funds. As part of this analysis, the Iowa DOT examined the parking needs for commercial vehicles (truck parking). 5.3 shows the state's current rest area system.

During the study, observers recorded the usage of commercial vehicle parking spaces to help estimate parking demand across the system. The study found that many of Iowa's rest areas lack commercial vehicle parking spaces and drivers must park along rest area entry ramps, in car parking spaces, and in other unauthorized parking areas.

The results of the study called for the addition of truck parking spaces at twenty rest areas and the closure or reduction in parking spaces at eighteen locations. **In totality, the state would add 247 spaces.** After the department received feedback from the trucking industry, it decided to delay the closure of several locations until additional capacity was added.

Additional Recommendations

To further address truck parking issues and needs in Iowa, strategies were developed and refined to include the following recommendations:

- Invest in vehicle-to-infrastructure technology to provide real-time parking information.
- Add a truck parking reservation system, particularly for oversize trucks.
- Explore partnerships with public agencies and private companies to supplement truck parking, optimize the locations of truck parking capacity, and maximize the benefits of Iowa DOT investment.
- Update design standards and templates to increase the number of required truck parking spaces and incorporate oversize truck parking.

Figure 5.3: Iowa rest area system, 2025

Source: Iowa DOT

2026 Truck Parking Study

To compliment the 2012-2020 study as well as the 2026 State Freight Plan, Iowa DOT recently conducted an additional study of truck parking in the state that will support the prioritization of truck parking improvements at existing locations. The study incorporates data from the American Trucking Research Institute (ATRI) to estimate the likelihood that a location is at or over capacity at any given moment. This probability, as well as the number of total minutes that a truck was observed at a parking location, were used to create a prioritization ranking. The top 20 highest priority locations are shown below are shown in Table 5.2. Other factors, such as pavement and facility needs, will also be considered when determining the timing and locations of truck parking improvements.

Table 5.2: Truck Parking Study Results (2026)

Priority	Corridor	Location	Detections	Probability	Current Capacity
1	I-80 EB	Wilton – Parking Only	7,232	100%	8
2	I-80 WB	Grinnell – Full Service	8,646	79%	10
3	I-80 WB	Minden – Parking Only	6,761	98%	5
4	I-80 EB	Minden – Parking Only	6,635	99%	5
5	I-80 WB	Wilton – Parking Only	6,557	100%	8
6	I-80 EB	Wilton – Full Service	7,807	79%	12
7	I-80 WB	Wilton – Full Service	8,292	74%	15
8	I-380 NB	Cedar Rapids – Full Service	7,994	75%	16
9	I-380 SB	Cedar Rapids – Full Service	9,584	74%	16
10	I-80 EB	Avoca – Parking Only	8,230	88%	8
11	I-80 EB	Adair – Full Service	8,247	78%	12
12	I-80 EB	Underwood – Full Service	8,848	59%	19
13	I-80 EB	Victor – Full Service	8,016	65%	22
14	I-80 EB	Tifflin – Full Service	7,517	63%	23
15	I-80 WB	Davenport – Full Service	5,578	57%	20
16	I-80 WB	Tifflin – Full Service	8,887	62%	23
17	I-35 NB	Elkhart – Full Service	9,633	65%	22
18	I-80 WB	Avoca – Weigh Station	6,962	87%	8
19	I-80 WB	Underwood – Full Service	6,750	55%	20
20	I-80 EB	Grinnell – Full Service	4,631	50%	25

Source: Iowa DOT

5.2 Improvements

Specific improvements are necessary to address the freight mobility issues experienced in Iowa. These will support the state's freight implementation strategies, the national freight goals, and the Iowa DOT system objectives.

Aviation

Most commercial airports in Iowa have the capacity, acreage, and necessary services to accommodate freight movement. However, the Des Moines International Airport (DSM) and Eastern Iowa Airport (CID) in Cedar Rapids handle more than 99 percent of reported air freight; therefore, current and future improvements at both locations are highlighted here. No air cargo bottlenecks were identified in Iowa as there is capacity to accommodate freight growth in the future. However, the existing air cargo facilities at DSM and CID are getting closer to full utilization.

DSM

The airport handled roughly 55 percent of Iowa's air cargo in 2020 and has about 50 acres reserved for cargo operations between two quadrants.

The south cargo area has approximately 43 acres that includes facilities for all-cargo carriers Amazon Air, FedEx, and UPS Inc. This area handles most air cargo operations and was recently renovated, including roadways, new pavement, and a new FedEx facility. The east cargo area has approximately eight acres that includes some cargo facilities for United Airlines and the Federal Inspection facility (primary function is to perform inspections on cargo merchandise).

The current facilities are not fully utilized. However, DSM has a development plan that includes areas that may be developed into cargo operations as demand increases. With the addition of Amazon Air service in 2021, continued air cargo growth is expected.

CID

The airport handled roughly 44 percent of Iowa's air cargo in 2020. The majority moves through the airport via the integrated express carriers FedEx, UPS Inc., and DHL Express, with FedEx being the market leader.

There are four cargo-handling buildings and three cargo ramps currently at 90 percent utilization. Cargo carriers do not have exclusive use of these facilities, so coordination is necessary at times depending on cargo carrier schedules. CID has planned the following expansion projects:

- Construct cargo apron phase 2 - $7.5 million
- Construct west joint-use cargo building - $11 million
- Construct Beech Way extension - $6.3 million

Highway

There were 32 locations identified as highway freight bottlenecks in Iowa. Highway segments with capacity needs that impact freight mobility were also identified. See Chapter 2, System inventory and performance (Section 2.3, Inventory and performance by mode) for information on the identification process for bottlenecks and capacity needs.

Since this bottleneck analysis is a very granular segment-level analysis, most bottlenecks occur at intersections, which is to be expected. However, to diagnose the specific issue and most effective treatment, a broader look at the surrounding network will likely be needed. Bottlenecks may have solutions as simple as retiming stoplights or as complex as access changes or new construction.

It should also be noted that identifying capacity needs at a corridor level involves professional judgment, as the existing or forecasted volume-to-capacity ratio throughout a corridor may vary substantially. Being identified as a capacity need does not necessarily mean additional lanes will need to be constructed. There are many other strategies and project types that may be appropriate for corridors other than capacity expansion, such as operational strategies, demand management, and intersection/interchange improvements.

The bottleneck locations were prioritized using the Value, Condition, and Performance (VCAP) matrix. After each candidate location was assigned a Value, Condition, and Performance value, each was ranked for the three categories. The average of these three rankings was calculated, and the locations were assigned an overall priority rank. If multiple locations had the same average ranking, total truck traffic at the location was used as a tiebreaker.

Figure 5.4 and Table 5.3 show Iowa's freight highway priority locations.

VCAP matrix

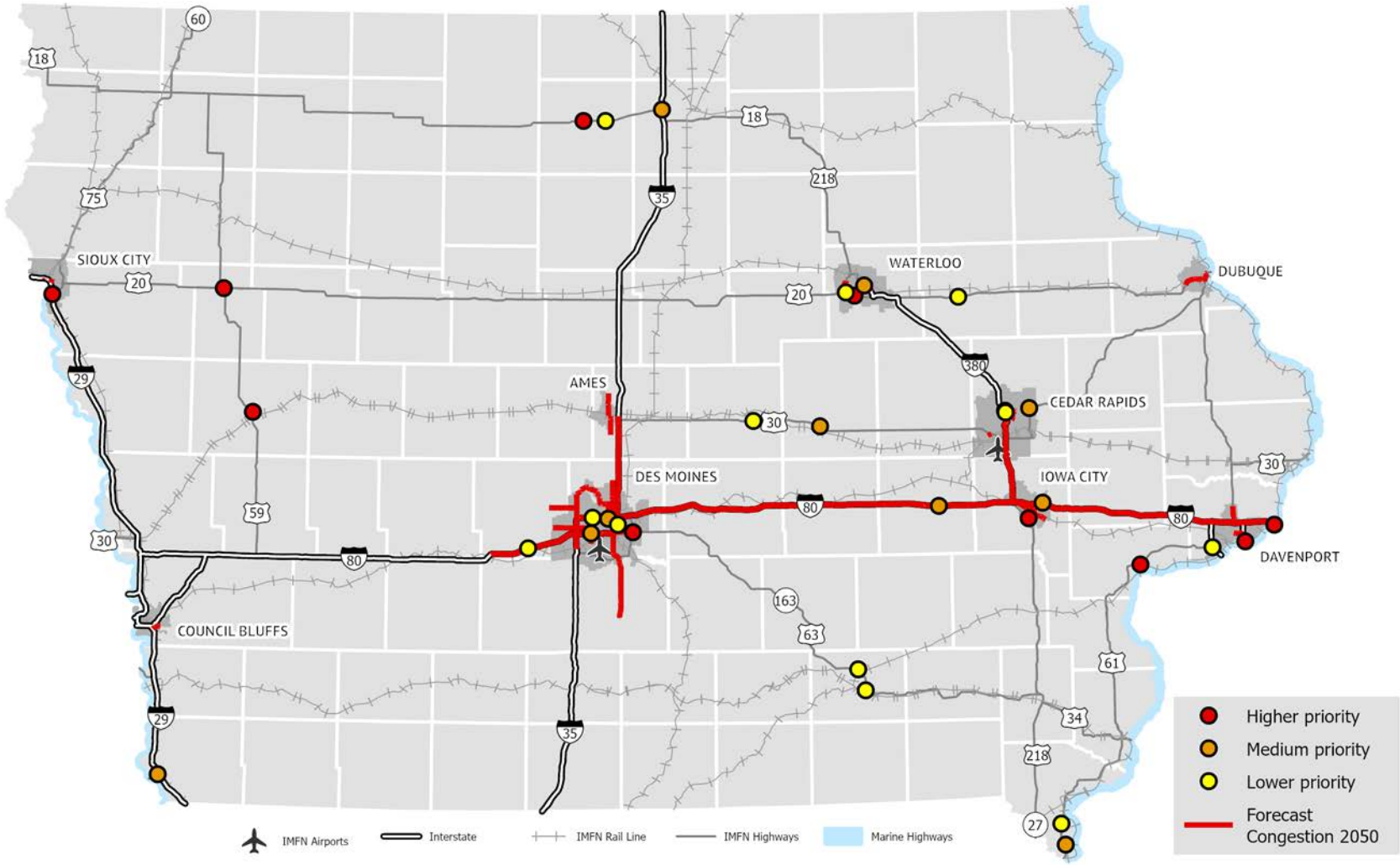
To identify and prioritize candidates for highway freight improvements, the Iowa DOT utilized the VCAP matrix. This approach takes advantage of multiple tools available at the Iowa DOT, including the Iowa Travel Analysis Model (iTRAM), Infrastructure Condition Evaluation (ICE), INRIX travel speed data, and Iowa's annual traffic counts.

Value: iTRAM was used to assess the value of each candidate location to the overall freight transportation network. The model is first run to show a base case scenario. Subsequent runs were then completed that excluded each one of the candidate locations individually. Next, the truck vehicle-hours traveled (VHT) was compared from the before-and-after scenarios for each candidate location and the difference was assigned as the value of the location. Higher priority was assigned to locations with larger VHT increases when excluded from the network. In other words, higher priority was assigned to locations that make the truck network more efficient from a VHT perspective.

Condition: ICE is a tool used for evaluating the primary highway system based on seven criteria: Pavement Condition Index (PCI), International Roughness Index, Bridge Condition Index, passenger traffic, single-unit truck traffic, combination truck traffic, and congestion. A normalization and weighting process is applied to each criterion and used to analyze highway segments before ultimately ranking them against each other based upon a final composite rating.

Performance: The total bottleneck minutes for each location was determined during the bottleneck identification process using INRIX travel speed data. Those values were assigned to each location as the overall performance rating.

Figure 5.4: Highway freight priority locations and capacity needs



Source: Iowa Travel Analysis Model, Infrastructure Condition Evaluation, and INRIX

Table 5.3: Highway freight priority locations

Rank	City/County	Location	Length	Value[1]		Condition[2]		Performance[3]		Average
1	Bettendorf	I-74 & US-67	0.67	12	13	66	4	846,995	1	6.0
2	Muscatine	US-61 & IA-38	1.87	14	10	69	8	826,605	2	6.7
3	Hancock County	US-18 & Lake Ave	1.24	112	2	57	1	164,090	24	9.0
4	Denison	US-59 & IA-39	1.21	134	1	80	20	513,035	9	10.0
5	Le Claire	I-80 & US-67	0.47	20	6	79	19	521,635	8	11.0
6	Sioux City	I-29 & Singing Hills Blvd	0.39	1	28	67	6	587,400	5	13.0
7	Holstein	US-59 & US-20	0.18	50	4	90	32	775,840	3	13.0
8	Pleasant Hill	US-65 & IA-163	0.73	52	3	71	9	119,420	29	13.7
9	Iowa City	US-218 & IA-1	0.79	28	5	82	26	465,535	10	13.7
10	Waterloo	US-20 & US-63	0.50	6	17	75	13	412,740	13	14.3
11	Waterloo	W jct US-63 & US-218	0.21	9	16	80	21	559,400	6	14.3
12	Des Moines	I-35 & IA-415	0.70	6	18	81	22	618,590	4	14.7
13	Fremont County	I-29 & IA-2	1.81	3	20	73	12	437,305	12	14.7
14	Toledo	US-30 & US-63	0.31	20	7	88	31	536,700	7	15.0
15	Iowa City	I-80 & IA-1	0.64	17	9	76	14	186,025	23	15.3
16	Williamsburg	I-80 & IA-149	1.02	14	11	81	24	439,500	11	15.3
17	Des Moines	I-235 & IA-28	0.77	2	23	64	2	187,025	22	15.7
18	Clear Lake	I-35 & US-18	0.52	11	14	73	10	148,020	26	16.7
19	Marion	US-151 & IA-13	0.41	18	8	83	27	393,975	15	16.7
20	Keokuk	S jct US-61 & US-218	0.10	3	19	73	11	208,500	21	17.0
21	Urbandale	I-35 & IA-28	1.10	(1)	33	67	7	352,775	16	18.7
22	Marshalltown	US-30 & IA-14	0.69	12	12	77	15	109,975	30	19.0
23	Lee County	N jct US-61 & US-218	0.05	1	25	77	16	293,800	19	20.0
24	Cedar Rapids	I-380 SB off ramp & 42nd St NE	0.03	-	29	66	5	122,525	27	20.3
25	Davenport	I-280 & US-61	0.01	1	27	66	3	92,985	33	21.0
26	De Soto	US-169 & I-80	0.42	10	15	87	30	307,205	18	21.0
27	Cedar Falls	US-20 & IA-27	1.21	2	24	81	23	337,025	17	21.3
28	Cedar Rapids	I-380 & IA-100	0.71	-	32	79	18	394,265	14	21.3
29	Des Moines	I-235 & US-6	0.13	1	26	78	17	159,395	25	22.7
30	Ottumwa	US-34 & US-63	0.07	3	21	84	29	220,255	20	23.3
31	Hancock County	US-69 & US-18	0.07	2	22	83	27	119,465	28	25.7
32	Buchanan County	US-20 & IA-150	0.01	-	30	81	25	104,600	32	29.0
33	Wapello County	US-63 & IA-149	0.01	-	31	94	33	107,900	31	31.7

[1]Value score is determined by the change in truck vehicle hours traveled when each location is unavailable as part of the transportation system.

[2]Condition is determined by the composite Infrastructure Condition Evaluation score for the segments at each location.

[3]Performance is determined by calculating the total bottleneck minutes per mile for each location.

Source: Iowa Travel Analysis Model, Infrastructure Condition Evaluation, and INRIX

Addressing Highly Ranked Locations

Projects or initial studies are planned to address the top ten highway freight priority locations as described below.

- #1: Monitor (recently reconstructed)
- #2: Potential future study
- #3: Targeted Super-2 corridor (not programmed)
- #4: Roundabouts planned
- #5: Partial rebuild planned
- #6: Potential future study
- #7: Reduced Conflict Intersections planned
- #8: Potential future study
- #9: Consider signalization
- #10: Potential future study

Railroad

The ISRP outlines potential projects and initiatives Iowa might consider proposing to improve existing services in the state. This includes possible future railroad improvements and investments that could address passenger rail, freight rail, and rail safety needs of Iowa, as identified through railroad company and stakeholder outreach and internal Iowa DOT coordination during development of the ISRP.

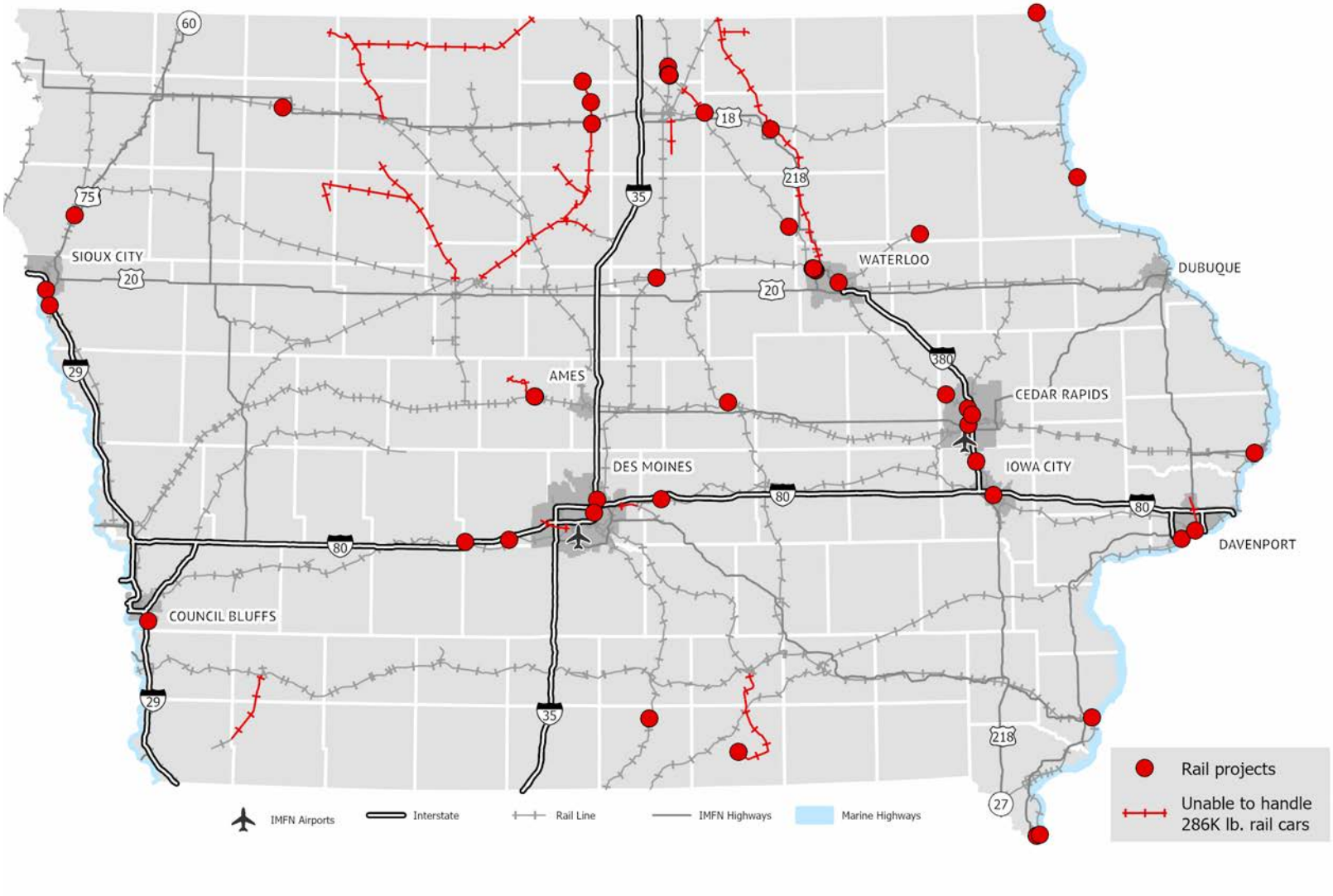
The full list of short-range (1-4 years) and long-range (5 or more years) projects is available in the ISRP. The railroad improvement list included in Figure 5.5 and Table 5.4 includes only the short-range freight rail projects on the railroad portion of the IMFN. The list is not prioritized but is listed from West to East through the state. Types of freight rail projects identified include the following.

- Enhancement of existing or construction of new transload or intermodal facilities
- Enhancement of existing rail access or development of new rail access for shippers/receivers
- Improvements to track infrastructure
- Enhancements to the capacity of the state's rail network
- Improvements to bridge infrastructure
- Address operating bottlenecks
- Mitigation measures in flood prone areas
- Grade separation of highway/rail grade crossings

In addition to these specific projects, there are multiple projects that utilize funds from the following programs annually.

- **Federal Highway-Railroad Crossing Safety Program:** Statewide grade crossing improvement and upgrade projects, including upgrading crossings with passive warning devices including crossbucks to active warning devices including flashing light signals and gate arms; upgrading existing signals; improving crossing surfaces; and to provide low-cost improvements such as increased sight distance, medians, widened crossings, or to close crossings.
- **State Highway-Railroad Surface Repair Program:** Includes statewide grade crossing improvement and upgrade projects to promote safety through surface replacement programs at public highway-railroad grade crossings.
- **Statewide Grade Crossing Safety Fund:** Includes funding for a portion of the maintenance costs for traffic control devices activated by the approach or presence of a train installed under the Highway-Railroad Crossing Safety Program.

Figure 5.5: Short-range freight rail projects



Source: Iowa railroad companies

Table 5.4: Short-range freight rail projects

Railroad(s)	Project	Description
IANR	City of Cedar Falls Railroad Crossing Elimination/Rail Asset Relocation	Remove IANR's Cedar Falls Spur, Railroad Crossing Elimination of 22 rail crossings & relocation of rail assets.
IANR	City of Waterloo – Railroad Crossing Elimination Study	Conduct Safety Study for crossing improvements between IANR's Linden and Bryant Yards.
IANR	Butler County/Shell Rock Railroad Crossing Elimination and Road Realignment	Railroad Crossing Elimination and County Road realignment.
CPKC	Clay County Railroad Crossing Elimination at County Road B24 in Clay County	The project will realign approximately ½ mile of County Road B24 to County Road M50 at a location North of the Railroad crossing on M50. The B24 RR crossing will be eliminated along with the reduced speed s-curves on B24.
UP	SE Corporate Woods Drive Over pass in Ankeny, Iowa	Project will comprise replacing the existing at grade rail-roadway crossing with an overpass bridge over the Union Pacific Railroad. The SE Corporate Woods Drive roadway replacement required for constructing the overpass will extend from SE Convenience Boulevard to SE 72nd Street. The overpass bridge will accommodate four travel lanes, a recreational trail, and a sidewalk.
CPKC	Eliminate two crossings and construct a new bridge and access road over the railroad	Improve safety by eliminating crossings and building a bridge and access road over the railroad east of Nahant Rail Yard. The bridge and access road will allow safe access to the Davenport Regional Water Pollution Control Plant, Compost Facility, and Nahant Rail Yard. The bridge will be above 500-yr flood levels and allow freight to be moved along the rails with no interruptions from vehicular traffic.
IANR and CPKC	Add Interchange Track Capacity at Nora Springs Junction	Increase track capacity at the IANR/CP Nora Springs Interchange to enhance increasing traffic growth from Northeast Iowa Customers to CPKC origins and destinations.
BNSF	Grade separation Conceptual Design at Merrill	Conduct a feasibility study of highway-rail grade crossing safety upgrades and a potential high-way-rail grade separation at the intersection of U.S. Highway 75 in Merrill, along with two other adjacent highway-rail grade crossings.
UP	Big Soo Terminal Rail Expansion at Sioux City	Construct a new industrial spur to supplement the existing rail capacity at the Big Soo Terminal Facility in Sioux City.
UP	Add Yard/Working Tracks support at Boone	Support switching operations at location to handle increased local business.
UP	Add Yard/Working Tracks Support at Marshalltown	Support switching operations at location to handle increased local business.

Railroad(s)	Project	Description
IANR	Expanded Facility Capacity at Manly Logistics Park	Expand track capacity, develop land, and build access road entrance and exit to the Manly Logistics Park.
IANR	Intermodal Facility Construction at Manly	Develop a new intermodal facility on the IANR Manly Subdivision at Manly.
IANR	Bridge Infrastructure Improvements on Manly Subdivision	Improve bridge infrastructure to allow for the handling of 286k Railcars at 40 MPH track speeds at IANR Bridge 177.3, Bridge 178.2, Bridge 202.6, and Bridge 208.7.
IANR	Bridge Infrastructure Improvements on Garner Subdivision	Improve bridge infrastructure to allow for the handling of 286k Railcars between Garner and Forest City by replacing IANR Bridge 73.89 and Bridge 74.11.
BNSF	Siding Track for Transload Facilities at Pottawattamie and Mills Counties in Council Bluffs Area	Develop and construct a siding track for use in serving a transload facility under development near Council Bluffs on the BNSF Council Bluffs Subdivision.
CN and UP	Iowa Falls/Hardin County Dual Rail Connection and Transload Facility at Iowa Falls	Construct a dual-rail connection track to the CN Waterloo Subdivision and the UP Mason City Subdivision, four yard tracks, and a siding each near CN and UP interchanges, and a transload/terminal facility.
IANR	Wayside Detector Equipment for Cedar Rapids and Manly Subdivisions	Install Hot Box and Dragging Equipment detectors every 20 miles on the IANR. Install a site with a Wheel Impact Load Detector, Acoustic Bearing Monitor, Truck Hunting, and Weigh-in-Motion Scale in the vicinity of Shell Rock.
IANR	Advanced Switch Point Protection on Cedar Rapids and Manly Subdivisions	Install advanced switch point protection on the IANR Cedar Rapids and Manly Subdivisions to provide increased safety utilizing locomotive PTC equipment.
IANR	Bridge Infrastructure Improvements on Cedar Rapids Subdivision	Improve bridge infrastructure to allow for the handling of 286K Railcars at 40 MPH track speeds at IANR Bridge 103.1, Bridge 124.9, Bridge 142.7, and Bridge 143.9.
IANR	Flood Mitigation Measures at Cedar Rapids	Address flood prone area along the Cedar River by performing bank stabilization measures on the Cedar Rapids Subdivision from MP 101.2 to MP 200.9 at Linn Junction near Cedar Rapids.
IAIS	Bridge Modifications at Colfax	Complete modifications to bridges that restrict the movement of high-wide loads due to the truss construction at Colfax (Newton Subdivision MP 329.1).
IAIS	Bridge Modifications at De Soto	Complete modifications to bridges that restrict the movement of high-wide loads due to the truss construction at De Soto (Council Bluffs Subdivision MP 380.4).
CIC	Rail Corridor Rehabilitation	Replacement of railroad ties along 56 miles of main line track from Cedar Rapids to Hills, Iowa
CIC	Rail Corridor Rehabilitation	Replacement of railroad ties along 56 miles of main line track from Cedar Rapids to Hills, Iowa

Railroad(s)	Project	Description
CPKC	Fauser Rail Terminal Rail Access at New Albin	Construct a rail spur to serve Kermin Industries located on the CPKC Marquette Subdivision at New Albin.
CPKC	Pattison Sand Unit Train Capacity Expansion at Garnavillo	A six-phase project to expand the unit train capacity for Pattison Sand on the CPKC Marquette Subdivision near Garnavillo.
KJRY	Yard and Main Track Enhancements at Keokuk	The project would expand the Twin Rivers Yard by adding new yard tracks and undertaking other major yard rehabilitation, including replacing damaged infrastructure from derailments and flooding. Improvements will also be made to the main track between US 136 Overpass to the Mississippi River Bridge.
IANR	Iowa Northern Education and Training Program	Development and delivery of virtual, and in-person education and training courses, development of a customized learning platform to deliver those courses, as well as remote and in-person locomotive simulator education and training.
CIC	Construct Bypass Track at Cedar Rapids	Rail traffic currently moves through ADM Plant in Cedar Rapids, affecting the efficiency of operations. Project would construct a track that bypasses ADM that would allow CIC trains to travel around the plant, thus promoting efficiency and minimizing potential operating conflicts for CIC trains.
KJRY	Rail Upgrade Project	Replace ties, resurface, and upgrade rail over 100 miles on the KJRY improving the track excepted and Class 1 FRA track safety standard to Class 2
CIC	Iowa River Bridge Project	Replacement of a 118-year -old Iowa River Bridge at MP 18.15 on the CIC's Amana Subdivision, spanning the Iowa River near Middle Amana, Iowa. The project will raise the new bridge 30 inches to clear the 100-year flood height, lengthen and widen the through truss span of the bridge, and increase the load capacity to accommodate 286K rail cars.
IANR	Industrial Park Development at Forest City	Construct a rail served industrial park on North Central Iowa Rail Corridor in Forest City.
IANR	Industrial Park Development at Garner	Construct a rail served industrial park on North Central Iowa Rail Corridor in Garner.
IANR	Industrial Park Development at Oelwein	Construct a rail served industrial park on the IANR Oelwein Subdivision in Oelwein.
IANR	Industrial Park Development at Palo	Construct a rail served industrial park on the IANR Cedar Rapids Subdivision in Palo.
IANR	Advanced Switch Point Protection	Install advanced switch point protection on IANR Manly and Cedar Rapids Subdivisions to provide increased safety utilizing Locomotive PTC equipment.
IANR	Remote Control Switches	Install Remote Control Switch Machines in Waterloo, Nora Springs Jct. and Plymouth Jct. on IANR
BJRY	Le Mars Transload Expansion	Construct improvements that expand the capacity of a transload operated by the BJRY in the Le Mars Industrial Park and allow it to handle additional commodities.

Railroad(s)	Project	Description
BJRY	Transload/Intermodal Investments	Investments in new transloading and intermodal capabilities, terminals, and operations across network.
CPKC	CTC on Kansas City Subdivision	Add CTC to 102 miles of the Kansas City Subdivision. Anticipated to be complete in 2025.
CPKC	Davenport Riverfront Rail Crossing Safety Improvements Project	Project includes various safety improvements (e.g., signals, gates, crossing signage, etc.) at multiple highway-rail grade crossings, as well as trespassing prevention measures (e.g., barriers and/or fencing in Davenport. With the proximity of the CPKC rail line to the city's commercial riverfront district and multi-purpose trails, there are many conflict points along the rail line, creating safety challenges that require the trains to frequently sound the horn for an estimated nine-mile distance
CPKC	South Concord Street Grade Separation	Project would eliminate two highway-rail grade crossings (elimination of one crossing and creation of a grade separation at another) to provide better access to critical infrastructure, including the regional wastewater treatment plant
BSV	New Interchange and Access at Boone	One of BSV's customers has an expansion planned in 3-4 years, which would significantly increase the railcar traffic. BSV is working on designs for a new interchange with UP, along with additional areas for rail served customers, are being developed to accommodate customer expansion planned in 3-4 years.
UP	Network Renewal Projects	Rail, tie, and signal renewals throughout the state.
UP	Network Renewal Projects	Rail, tie, and signal renewals throughout the state.
CIC	Bridge Replacement at Iowa River	Construction of new Iowa River Bridge (Bridge I-142) that will replace the 2 existing steel truss spans and 2 existing through girder spans.
CIC	Bridge Replacement at Cedar Rapids	UP Overhead Bridge replacement will replace the 106' 5 span bridge and timber trestles with 182'5" span and steel trusses with concrete piers.
CIC	Streamline Rail Operations and Improve Yard Safety in Cedar Rapids	Includes various improvements (e.g., new tracks, station building, and equipment) to expand the CIC Smith-Dows Rail Yard. The Project will remove capacity and facility constraints, make interchanging and switching operations safer, ensure fewer locomotive and crew truck traffic emissions, and create a dependable reporting location and storm shelter for CIC operation staff.
BNSF	Transload Facility and Rail Industrial Park in Mills County	Develop transload facility and rail industrial park in Mills County. This is in preliminary design.
CN and CPKC	Charles City Transload	The proposed project will re-purpose the former Oliver/White Tractor Manufacturing plant site as a railcar-truck transload center for transshipment of propane, bio-renewables, and specialized fuels through connections with both CP and CN railroads. Project is expected to create 20-25 new jobs.

Railroad(s)	Project	Description
UP	Cold Links Logistics	Project is adding a switch and 2,500-foot rail spur to the planned industrial facility connecting it to the railroad network. The project is expected to create 60 new jobs (plus additional contractor jobs to support daily operations of the finished manufacturing facility).
UP	Ten D/Merchants Distribution Service	Project will add 1 mile of new rail and replace/upgrade/make accessible 1.5 mile of existing rail. Also will add additional transloading service capacities and capabilities.
UP	New Horizons Switching Track and Additions	Atlas Roofing Corporation, Clinton, Co is building a new roofing materials plant that will produce asphalt shingles. The $218M plan includes rail infrastructure that will also benefit future rail access in the industrial park.
CN	A-line EDS	A-line E.D.S. recycles electrical transformers from utilities companies. This new rail spur would allow mineral oil and scrap metal to be shipped out by rail using Canadian National (CN) and the potential for larger transformers to be processed at this facility.
BJRY	BJRY Rail Yard and Transload Expansion	This project will demolish a 19,000 SF building and construct a spur into a 16,000 SF building to the North for use as a transload facility.
BNSF and CPKC	Appanoose County Rail Extension	This project would add a new rail spur and up to 6-miles of new track connecting Iowa Southern Railway (IASR) to proposed industrial sites East of Centerville, with connection to Canadian Pacific Kansas City (CPKC) . Two large agricultural produces are nearing the commitment stage in the development of these sites.
UP	Heartland Co-op Greenfield Rail Loading Elevator	This project will construct a loading facility and unit train capable loop track with a connection to Union Pacific (UPRR), Northeast of Millerton.
IAIS	Reid Line LLC Dexter Rail Yard Improvements	This project will make improvements to an existing spur and add additional rail car storage, an under track unloading pit and support a potential rail accessible warehouse. The area rail service provider is Iowa Interstate RR Ltd (IAIS).
MULTIPLE	Railroad Revolving Loan and Grant Program	This program administered by Iowa DOT provides financial assistance to improve rail facilities that will create jobs, spur economic activity and improve the rail transportation system in Iowa.
MULTIPLE	Statewide Grade Crossing Improvement and Upgrade Projects (Federal Highway-Railroad Crossing Safety Program)	Includes anticipated annual funding from the Federal Highway- Railroad Crossing Safety Program (approximately $5.31 Million per year) to upgrade crossings with passive warning devices including crossbucks to active warning devices including flashing light signals and gate arms; upgrading existing signals; improve crossing surfaces; and to provide low-cost improvements such as increased sight distance, medians, widened crossings, or to close crossings.

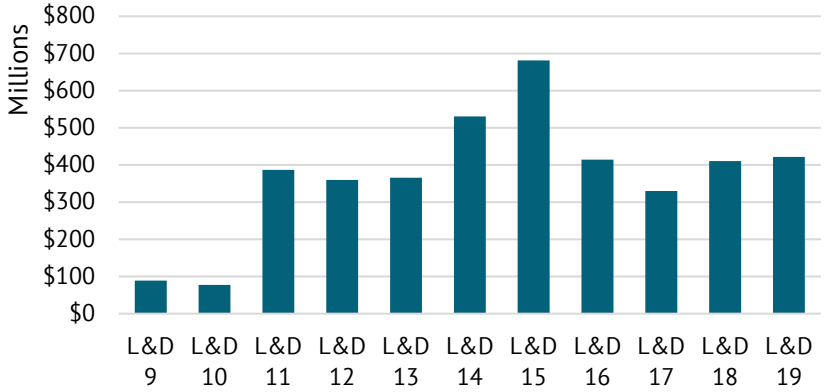
Railroad(s)	Project	Description
MULTIPLE	Statewide Track and Bridge Infrastructure Upgrades to Accommodate 286K Rail Cars	Upgrade segments, including track and bridges, of the rail network that were identified as being incapable of handling 286K rail cars.
MULTIPLE	Statewide Grade Crossing Improvement and Upgrade Projects (State Highway-Railroad Surface Repair Program)	Includes anticipated annual funding from the State Highway-Railroad Crossing Surface Repair Program (approximately $900,000 per year) to promote safety through surface replacement programs at public highway-railroad grade crossings.
MULTIPLE	Statewide Grade Crossing Safety Fund	Includes funding for a portion of the maintenance costs for traffic control devices activated by the approach or presence of a train installed under the Highway-Railroad Crossing Safety Program.

Source: Iowa railroad companies

Waterway

With growing barge traffic on the Missouri River, it will be important for USACE to continue focusing on the Bank Stabilization and Navigation Project with the authorized purpose of providing a reliable, self-scouring navigation channel from St. Louis, Missouri to Sioux City, Iowa that is 9 feet deep and not less than 300 feet wide. However, most water-related needs for Iowa are associated with the infrastructure in and along the Mississippi River. Given the condition, size, and average delay of the 11 locks bordering Iowa, all are considered freight bottlenecks. It is clear that a lack of repairs, maintenance, and modernization will continue to have a negative impact on the efficiency and condition of the infrastructure. Failure or closure of a lock could be catastrophic for the region. The USACE has identified over $4.1 billion in deferred/backlog maintenance and major rehabilitation and repair costs for the 11 locks and dams bordering Iowa, shown in Figure 5.6 and Table 5.5. Addressing these needs is essential to ensure continued viability of the Mississippi River for transporting freight to and from Iowa.

Figure 5.6: Deferred/backlog maintenance and major rehabilitation and repair costs for Iowa locks and dams (2025)



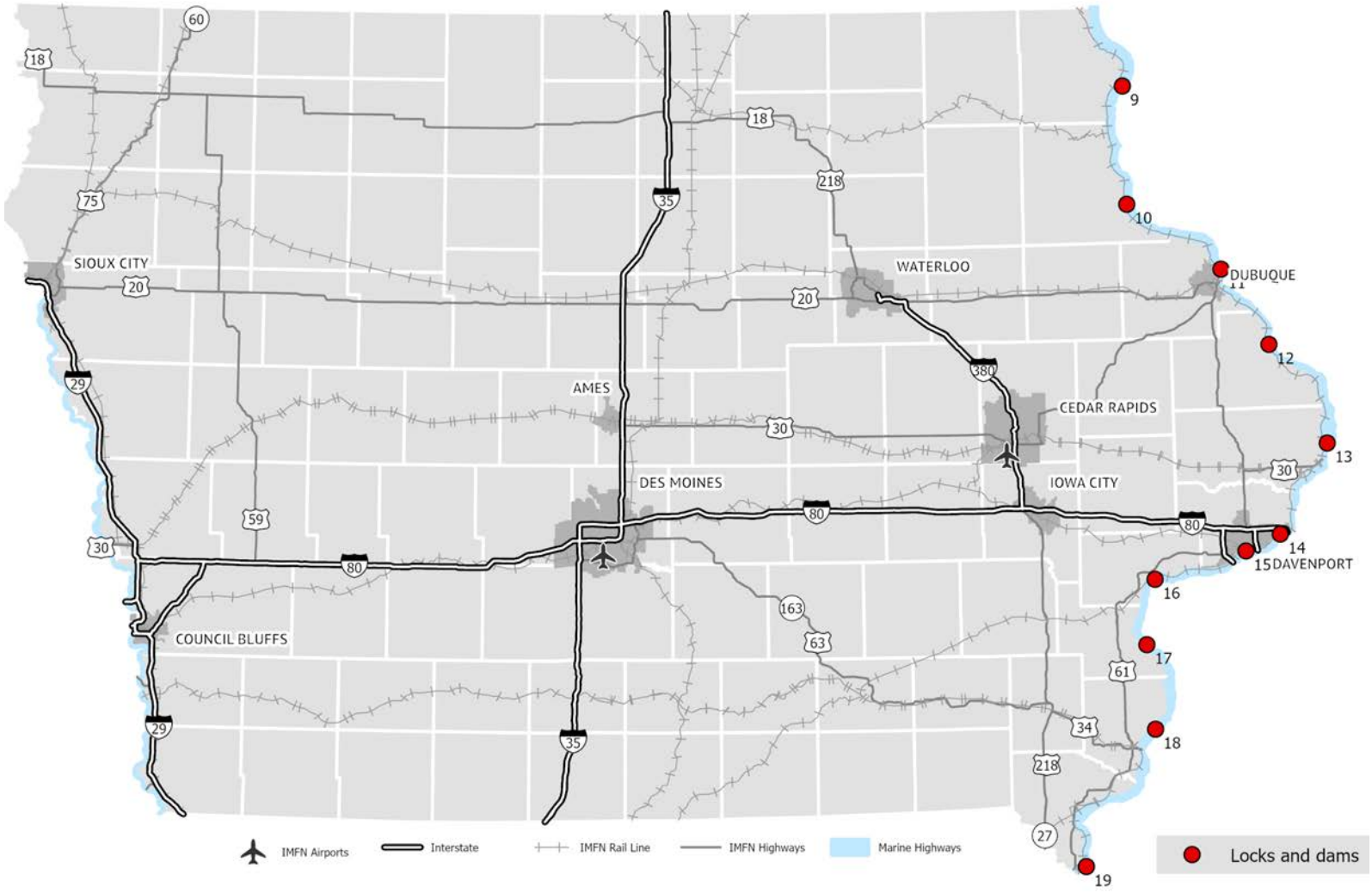
Source: U.S. Army Corps of Engineers

Table 5.5: Deferred/backlog maintenance projects for Iowa locks and dams

Lock	Project
9	Installation of auxiliary chamber sheet pile closure; facility infrastructure refurbishment; miter gate installation, painting of dam gates, service bridges, and bulkheads; replace lower guide wall monolith with end cell; replacement of miter gates and anchorages; replacement of miter gates
10	Dam gate seals; facility infrastructure refurbishment; machinery electrical repair; painting of dam gates and service bridge; replace tow haulage system; replace upper guide wall monolith with end cell; installation of miter gates; painting of dam roller gates
11	Kevel rail replacement; crane and bulkhead lifter replacement; upper mooring cell system; tainter gate spare parts; infrastructure repairs
12	Kevel rail replacement; downstream guide wall repair; bulkhead lifter replacement; infrastructure repairs;
13	Kevel rail replacement; pressure relief wells; bulkhead lifter replacement; infrastructure repairs
14	Kevel rail replacement; auxiliary lock dewatering; bulkhead lifter replacement; infrastructure repairs
15	Kevel rail replacement; lower mooring cell system; bulkhead lifter replacement; infrastructure repairs
16	Filling, emptying system; gate and service bridge repairs; kevel rail replacement; bulkhead lifter replacement; infrastructure repairs
17	Dam crane and bulkhead lifter replacement; infrastructure repairs
18	Bulkhead lifter replacement; access road repairs; infrastructure repairs
19	Building repairs; dewatering; nose pier replacement; infrastructure repairs

Source: U.S. Army Corps of Engineers

Figure 5.7: Waterway freight priority locations



Source: U.S. Army Corps of Engineers

5.3 Performance Measures

Performance monitoring allows for the demonstration of how well the freight transportation system is performing relative to defined system objectives.

Iowa's freight performance measures reflect the most critical metrics for tracking the condition, utilization, safety, reliability, and sustainability of the overall freight system. These performance measures will be used to assess how the freight transportation system is currently performing and whether it is meeting the initiatives of the national freight goals. Reviewing performance of the network is an important piece of implementation. As the gap between transportation maintenance needs and available funding continues to grow, it is increasingly important to spend resources in the most strategic and effective way possible.

Most of these freight performance measures are being tracked regularly, as shown in Chapter 2, System inventory and performance (Section 2.3, Inventory and performance by mode) and Chapter 3, Industries and commodities (Section 3.2, Commodity movement). The emissions-related measures for each mode are to be developed.

All measures are categorized by mode and the relationship of each to the Iowa DOT system objectives (safety, sustainability, accessibility, and flow), as defined in Chapter 1, Introduction. These measures will be revisited and reevaluated during each future update of the State Freight Plan.

Aviation

- Number of freight-related aviation accidents
- Number of freight-related aviation fatalities

- State investments in IMFN airports
- Total estimated aviation emissions

- Total tons of air cargo at commercial airports
- Total value of air cargo at commercial airports

- Percent of IMFN airports with excess cargo-handling capacity

Highway

- Number of freight-related highway crashes
- Number of freight-related highway fatalities

- State investments in IMFN highways
- Infrastructure Condition Evaluation rating of the IMFN
- Total estimated truck emissions

- Change in public truck parking spaces

- Total truck vehicle miles traveled on the IMFN
- Total tons of truck cargo on the highway system
- Total value of truck cargo on the highway system
- Bottleneck minutes per mile on the IMFN
- Truck Travel Time Reliability Index for the IMFN

- Improvements made at highway bottleneck locations

- Total oversize/overweight loads permitted on the IMFN
- Percentage of the IMFN without capacity needs

Pipeline

- Number of freight-related pipeline fatalities

- State investments in pipelines

- Total tons of commodities on the pipeline system
- Total value of commodities on the pipeline system

- Number of freight-related pipeline incidents (including leaks)

Railroad

- Number of freight-related railroad crashes and/or derailments
- Number of freight-related railroad fatalities

- State investments in IMFN railroads
- Private maintenance and improvement spending on the railroad system
- Total estimated locomotive emissions

- Total gross ton-miles per mile on the railroad system
- Total tons of cargo on the railroad system
- Total value of cargo on the railroad system
- Number of choke points identified on the railroad system

- Improvements made at rail chokepoints

- Percentage of track-miles able to handle 286,000-pound cars

Waterway

- Number of freight-related inland waterway allisions, collisions, and/or groundings
- Number of freight-related inland waterway fatalities

- State investments in IMFN inland waterways
- Age of Mississippi River locks
- Total estimated vessel emissions

- Length of navigation season on the Mississippi and Missouri Rivers

- Total tons of cargo on the waterway system
- Total value of cargo on the waterway system
- Total delay at Mississippi River locks

- Improvements made at inland waterway bottlenecks

- Total unscheduled closures at Mississippi River locks
- Percentage of Mississippi River locks bordering Iowa that are 1,200 ft. long

5.4 Stakeholders and Partners

Utilizing input from freight stakeholders is crucial for the development of strong plans and implementation of successful strategies. The Iowa DOT engaged a number of state, regional, and national public and private sector stakeholders throughout the process to gather input on plan development and will continue to consider any findings or recommendations from these groups when carrying out freight activities.

Coordinating freight planning activities with stakeholders provides benefits and opportunities that include identifying and prioritizing investment opportunities, sharing design standards, and harmonizing regulations on specific corridors. It also assists in the sharing of resources and minimizing the duplication of efforts by multiple agencies. Although not an exhaustive list, this section provides an overview of the freight-related groups with which the Iowa DOT is most actively involved.

FAC

The FAC is a group of Iowa-based public and private stakeholders serving as an advisory body to the Iowa DOT on freight mobility policies, programs, and investments. This group was created in 2012 as a forum to assist with understanding the complexities associated with freight movements through education, discussion, and review.

Members representing the agriculture, energy, distribution, logistics, and multimodal transportation industries, as well as local and state government agencies (see FAC webpage for the most up-to-date membership list), meet on a quarterly basis to address critical topics cooperatively identified by the FAC Chair and Iowa DOT staff. This guidance allows the Iowa DOT to more effectively guide public investment in the freight transportation system with the goal of enhancing the competitiveness of Iowa's business and industry.

The FAC was engaged and consulted regularly throughout the development of the State Freight Plan. The group provided input on goals, trends, issues, implementation strategies, improvements/projects, and performance measures.

Rail Advisory Committee

The mission of the RAC is to guide the Iowa DOT in fostering a safe and efficient rail transportation system. Through education, discussion, and sharing of concerns and opportunities, the RAC assists and advises the Iowa DOT on rail policies, programs, and investments. Responsibilities may include but are not limited to:

- Serving as an advisory body to Iowa DOT staff,
- Assisting in the development of the Iowa State Rail Plan,
- Reviewing proposals for policies, programs, and investments,
- Proactively identifying emerging trends that may impact the rail transportation system, and
- Advising on legislative issues impacting rail transportation.

The group, which includes representatives from each of the railroads operating in Iowa, meets a minimum of twice per year or as issues require. The Iowa DOT also communicates and consults with the RAC, as needed, outside of regular biannual meetings. The RAC was consulted on rail-specific portions of the State Freight Plan, including rail choke points and improvements.

MAASTO

MAASTO is one of four geographical regions of the American Association of State Highway Transportation Officials, which is an association representing highway and transportation departments in the 50 states. MAASTO consists of 10 states primarily in the Midwest, including Illinois, Indiana, Iowa, Kansas, Kentucky, Michigan, Minnesota, Missouri, Ohio, and Wisconsin. The goal of MAASTO is to foster the development, operation, and maintenance of an integrated and balanced transportation system that adequately serves the transportation needs of the states.

Mid-America Freight Coalition (MAFC)

Serving as the freight planning and research arm of MAASTO, the MAFC is a regional organization that cooperates in the planning, research, operation, preservation, and improvement of transportation infrastructure in the ten member states. These states meet regularly to collaborate on freight trends and initiatives.

Upper Mississippi River Basin Association (UMRBA)

UMRBA is a regional interstate organization coordinating Illinois, Iowa, Minnesota, Missouri, and Wisconsin river-related programs and policies, as well as work with federal agencies. UMRBA is involved primarily with programs related to commercial navigation, ecosystem restoration, water quality, aquatic nuisance species, hazardous spills, flood risk management, and water supply. The UMRBA Navigation Group, consisting of the five state transportation departments, has primary responsibility for implementing activities under the M-35 Marine Highway Corridor.

North American Strategy for Competitiveness (NASCO)

The goal of NASCO is to increase economic development activity while supporting multimodal infrastructure improvements, technology and security innovations, and environmental initiatives along the NASCO Corridor. This includes cities, counties, states, provinces, and private sector representatives along the corridor in Canada, Mexico, and the United States. The corridor also shadows U.S. interstates 29, 35, and 94, and the connecting transportation system in Canada and Mexico critical to national and international trade.

Intelligent Transportation Systems (ITS) Heartland Corridor Coalition

The ITS Heartland Chapter of ITS America is intended to facilitate information sharing for ITS projects and activities and to showcase ITS applications in five heartland states: Missouri, Iowa, Kansas, Nebraska, and Oklahoma. To date, all five state transportation departments, along with major universities in each state and the FHWA, have been involved in developing the organization.

5.5 Funding Mechanisms

Most highway projects in Iowa are paid for using revenue from the Road Use Tax Fund (RUTF). However, the State of Iowa also has several different grant and loan programs that aid freight-related projects. Each has specific eligibility requirements, but all support projects intending to improve the movement of goods.

This section provides a brief overview of the following funding programs. For a more detailed guide on the grant and loan programs, see the Iowa DOT's website.

- RUTF
- Linking Iowa's Freight Transportation System (LIFTS) Program
- State Airport Improvement Program
- Revitalize Iowa's Sound Economy (RISE)
- Railroad Revolving Loan and Grant (RRLG) Program
- Highway-Railroad Crossing Surface Repair Program
- Iowa Clean Air Attainment Program (ICAAP)
- County and City Bridge Construction Fund
- County-State Traffic Engineering Program (C-STEP)
- Iowa Traffic Engineering Assistance Program (TEAP)
- Traffic Safety Improvement Program
- Urban-State Traffic Engineering Program (U-STEP)

Federal funding programs not specific to Iowa are not included. A summary of the National Highway Freight Program (NHFP) funds allocated to Iowa is included in Section 5.6, Freight Investment Plan.

RUTF

Dedicated highway use revenue, collected through vehicle registration fees and a state excise tax on fuels, is deposited into the RUTF. No state General Fund (i.e., general tax) revenue is used for highway projects in Iowa. Established in 1949, the RUTF has provided a stable and reliable source for investing in the state's primary, secondary, and municipal roadway systems. After some off-the-top diversions, receipts into the RUTF are distributed according to a formula of 47.5 percent for the primary road system, 24.5 percent for secondary county roads, 8 percent for farm-to-market county roads, and 20 percent for city streets.

LIFTS Program

The LIFTS program was created in fall 2015 as a one-time, flexible funding source of $2.6 million for multimodal freight-related projects utilizing State Infrastructure Bank funds. This was used for an initial round of project solicitation and awards that helped demonstrate the demand and value of a freight funding program.

In 2016, the Iowa Transportation Commission and Iowa DOT expanded LIFTS into a competitive grant program and allowed stakeholders outside of the Iowa DOT to apply for the flexible funding for use on freight projects. After 8 years the DOT was only able to successfully award one project. Due to the challenges related to federal funding requirements, Iowa DOT discontinued the program in 2024. However, LIFTS will remain in the Freight Investment Plan on page 135 until the final project is completed.

RISE

The RISE program was established to promote economic development in Iowa through construction or improvement of roads and streets. Iowa cities and counties are eligible for these funds, which may be in the form of a grant, loan, or a combination thereof. Projects must involve construction or improvement of a public roadway.

State Airport Improvement Program

This program provides funding for airport improvements, navigational aids, communications equipment, marketing, safety, security, outreach, education, and planning. Airport Development and Immediate Safety Enhancement are specific funding programs under the Airport Improvement Program. Publicly owned airports in Iowa are eligible.

RRLG Program

RRLG is a state loan and grant program established to build or improve rail infrastructure or facilities that will spur economic development and job growth and provide assistance to railroads for the preservation and improvement of the rail transportation system. Those eligible include businesses, industries, railroads, local governments, and economic development agencies. Justification for projects focuses on improving the rail network, job creation, wage quality, and project investment.

Highway-Railroad Crossing Surface Repair Program

This program assists railroad companies and public road jurisdictions with rebuilding public highway-railroad grade crossing surfaces in Iowa. Those eligible include railroad companies, private entities that own a railroad track, and public road jurisdictions.

ICAAP

ICAAP funds highway/street, transit, bicycle/pedestrian, and freight projects, as well as programs that help maintain Iowa's clean air quality by reducing transportation-related emissions. Eligible highway/street projects must be on the federal-aid system, which includes all federal functional class routes except rural minor collectors. The state, a county, or a city may sponsor an application or may co-sponsor for private, nonprofit organizations or individuals. Eligible projects reduce emissions via traffic flow improvements, reduce vehicle-miles of travel, reduce single-occupant vehicle trips, or other transportation improvement projects that improve air quality or reduce congestion.

County and City Bridge Construction Fund

This program provides funding for construction or replacement of public roadway bridges. Iowa counties and cities are eligible. Candidate bridges must be classified as structurally deficient or functionally obsolete according to federal guidelines.

C-STEP

The intent of C-STEP is to solve traffic operations and safety problems on primary roads outside incorporated cities. Any Iowa county is eligible to use these funds on spot and/or linear improvements.

U-STEP

The intent of U-STEP is to solve traffic operation and safety problems on primary roads in Iowa cities. Spot and/or linear improvements must involve a municipal extension of a primary road.

TEAP

TEAP provides traffic engineering expertise to local units of government. The purpose is to identify effective traffic safety and operational improvements, as well as potential funding sources to implement the recommendations. Typical studies address high-crash locations, unique lane configurations, obsolete traffic control devices, school pedestrian traffic, truck routes, parking issues, etc.

Traffic Safety Improvement Program

This program provides funding for traffic safety improvements or studies on any public road under county, city, or state jurisdiction. Eligible projects will fall into one of three categories: construction or improvement of traffic safety and operations at a specific site with crash history; purchase of materials for installation of new traffic control devices; or transportation safety research, studies, or public information initiatives.

5.6. Freight Investment Plan

The NHFP was developed to improve the condition and performance of the National Highway Freight Network (NHFN). The NHFP includes a formula program providing funding to be used for freight-related projects on the NHFN across the country. Each state receives funds in proportion to the amount of funds a state receives compared to other states under all formula-apportioned programs (see Table 5.6).

A state may not obligate these funds unless the state has developed an approved freight plan which includes a freight investment plan listing of priority projects and describes how NHFP funds made available would be invested and matched. Table 5.7 shows Iowa's Freight Investment Plan for FY2026-2030, documenting the planned use of NHFP funds, National Highway Performance Program (NHPP) funds, and Primary Road Fund (PRF) match. Table 5.8 summarizes NHFP funding available and allocated by year.

Each federal fiscal year (FY), a state may obligate up to 30 percent of the total apportionment to the state for freight intermodal or freight rail projects. The Iowa Transportation Commission allocated NHFP flexible funds to the LIFTS competitive grant program for use on freight projects.

NHFP funds from FY 2016 to FY 2025 were awarded and/or authorized to the following projects:

- Council Bluffs I-29/I-80 capacity and interchange improvements (Priority #1 in 2017 SFP)
- Davenport I-74 bridge replacement (Priority #3 in 2017 SFP)
- Iowa City I-80/I-380 interchange (Priority #7 in 2017 SFP)
- Johnson County I-80 capacity (Need identified in 2022 SFP)
- Cedar County I-80 capacity (Need identified in 2022 SFP)
- Polk County I-80 capacity and interchange improvements (Need identified 2022 SFP)
- Council Bluffs TSL Company container terminal (LIFTS program)

Table 5.6: Iowa NHFP apportionment, 2016-2030

Year	Apportionment	98% Apportionment*
FY 2016	$14,085,949	$13,804,230
FY 2017	$13,386,574	$13,118,843
FY 2018	$14,627,929	$14,335,370
FY 2019	$16,511,333	$16,181,106
FY 2020	$18,276,135	$17,910,612
FY 2021	$18,161,883	$17,798,645
FY 2022	$17,043,984	$16,703,104
FY 2023	$17,384,864	$17,037,167
FY 2024	$17,732,561	$17,377,910
FY 2025	$18,087,213	$17,725,469
FY 2026	$18,448,957	$18,079,978
FY 2027**	$18,448,957	$18,079,978
FY 2028**	$18,448,957	$18,079,978
FY 2029**	$18,448,957	$18,079,978
FY 2030**	$18,448,957	$18,079,978
Total	**$257,543,210**	**$252,392,346**

** Includes a 2% subtraction from full apportionment to account for State Planning and Research funds*

*** All NHFP funding apportionments for FY2027-FY2030 are estimates based on FY2026 funding levels*

Source: Iowa DOT and Federal Highway Administration

Table 5.6: Iowa Freight Investment Plan, 2026-2030

Category	Project	Funding Source	FY2026	FY2027	FY2028	FY2029	FY2030	Total
Freight Projects	**I-80 in Polk County capacity** *University Ave to N of Douglas Ave*	NHPP	$7,099,222					$7,099,222
		NHFP	$18,079,978					$18,079,978
		PRF match	$6,294,800					$6,294,800
		Total project cost	$31,474,000					$31,474,000
	I-80 in Polk County interchange improvements *Southwest MixMaster*	NHPP		$2,955,272				$2,955,272
		NHFP		$18,079,978				$18,079,978
		Mega Grant Program		$68,014,000				$68,014,000
		PRF match		$19,790,750				$19,790,750
		Total project cost		$108,840,000				$108,840,000
	I-80 in Scott County major bridge replacement *Mississippi River Bridge*	NHPP			$54,820,022	$53,820,022	$53,820,022	$162,460,066
		NHFP			$18,079,978	$18,079,978	$18,079,978	$54,239,934
		PRF match			$8,100,000	$8,100,000	$8,100,000	$24,300,000
		Total project cost			$81,000,000	$80,000,000	$80,000,000	$241,000,000
Flexible Funding Projects	*(No projects identified)*	NHFP						$0
		Match						$0
		Total Project Cost						$0

Source: Iowa DOT

Table 5.7: Summary of Iowa NHFP Funds

	FY2026	FY2027**	FY2028**	FY2029**	FY2030**	Total
Total apportionment (98%)*	$18,079,978	$18,079,978	$18,079,978	$18,079,978	$18,079,978	$90,399,889
Freight projects subtotal	$18,079,978	$18,079,978	$18,079,978	$18,079,978	$18,079,978	$90,399,889
Flexible funding projects subtotal	$0	$0	$0	$0	$0	$0
Total funds spent	$18,079,978	$18,079,978	$18,079,978	$18,079,978	$18,079,978	$90,399,889
Total funds remaining	$0	$0	$0	$0	$0	$0

** Includes a 2% subtraction from full apportionment to account for State Planning and Research funds*

*** All NHFP funding apportionments for FY2027-FY2030 are estimates based on FY2026 funding levels*

Source: Iowa DOT

APPENDICES

Appendix A: Compliance with Infrastructure Investments and Jobs Act | Appendix B: Freight-generating facilities

Appendix A: Compliance with Infrastructure Investments and Jobs Act and Section 70202 of title 49, United States Code

Requirement	Plan Location
An identification of significant freight system trends, needs, and issues with respect to the state.	Chapter 3, Industries and Commodities Chapter 4, Planning Considerations
A description of the freight policies, strategies, and performance measures that will guide the freight-related transportation investment decisions of the state.	Chapter 5, Action Plan
When applicable, a listing of – (A) multimodal critical rural freight facilities and corridors designated within the state under section 70103 of title 49 (National Multimodal Freight Network); and (B) CRFCs and CUFCs designated within the state under 23 U.S.C. 70101(b) and the national highway freight program goals described in 23 U.S.C. 167 (National Highway Freight Program).	Chapter 2, System Inventory and Performance
A description of how the plan will improve the ability of the state to meet the national multimodal freight policy goals described in 49 U.S.C 70101(b) and the national highway freight program goals described in 23 U.S.C. 167.	Chapter 1, Introduction Chapter 5, Action Plan
A description of how innovative technologies and operational strategies, including freight intelligent transportation systems, that improve the safety and efficiency of the freight movement, were considered.	Chapter 4, Planning Considerations Chapter 5, Action Plan
In the case of roadways on which travel by heavy vehicles, including mining, agricultural, energy cargo or equipment, and timber vehicles, is projected to substantially deteriorate the condition of the roadways, a description of improvements that may be required to reduce or impede the deterioration.	Chapter 2, System Inventory and Performance Chapter 5, Action Plan
An inventory of facilities with freight mobility issues, such as bottlenecks, within the state, and for those facilities that are state owned or operated, a description of the strategies the state is employing to address those freight mobility issues.	Chapter 2, System Inventory and Performance Chapter 5, Action Plan

Requirement	Plan Location
Consideration of any significant congestion or delay caused by freight movements and any strategies to mitigate that congestion or delay.	Chapter 2, System Inventory and Performance Chapter 5, Action Plan
A freight investment plan that, subject to 49 U.S.C. 70202(c), includes a list of priority projects and describes how funds made available to carry our 23 U.S.C. 167 would be invested and matched.	Chapter 5, Action Plan
The most recent commercial motor vehicle parking facilities assessment conducted by the State under subsection (f).	Chapter 5, Action Plan
The most recent supply chain cargo flows in the State, expressed by mode of transportation.	Chapter 3, Industries and Commodities
An inventory of commercial ports in the State.	Chapter 2, System Inventory and Performance Appendix B, Freight-generating Facilities
If applicable, consideration of the findings or recommendations made by any multi-State freight compact to which the State is party under section 70401.	Chapter 5, Action Plan
The impacts of e-commerce on freight infrastructure in the State.	Chapter 4, Planning Considerations
Considerations of military freight.	Chapter 2, System Inventory and Performance
Strategies and goals to decrease – (A) the severity of impacts of extreme weather and natural disasters on freight mobility, (B) the impacts of freight movement on local air pollution, (C) the impacts of freight movement on flooding and stormwater runoff, and (D) the impacts of freight movement on wildlife habitat loss.	Chapter 1, Introduction Chapter 5, Action Plan
Consultation with the State Freight Advisory Committee, if applicable	Chapter 5, Action Plan

Appendix B: Freight-generating Facilities

Appendix B includes an inventory of Iowa freight-generating facilities. These lists are not exhaustive. Some facilities listed may no longer be operational and new facilities may not be represented. Descriptions of freight-generating facility types are included in Chapter 2, System inventory and performance (Section 2.3, Inventory and performance by mode). Intermodal facilities, transload facilities, barge terminals, distribution centers, public/contract warehouses, ethanol plants, and biodiesel plants are listed. Due to the large number of facilities and locations throughout the state, grain elevators are not listed.

Table B.1: Intermodal and transload facilities

City	Facility	Intermodal	Transload	Cross-dock	Team track	Warehouse	Truck/ Rail	Truck/ Barge	Rail/ Barge
Altoona	Merchants Distribution Service		✓	✓		✓	✓		
Altoona	Lineage Logistics LLC			✓			✓		
Atlantic	Iowa Interstate Railroad LLC				✓		✓		
Atlantic	Pattison Sand Company		✓				✓		
Boone	PDM Transload					✓	✓		
Burlington	Burlington Junction Railroad in Burlington IA		✓	✓	✓	✓	✓		✓
Camanche	ADM Terminal Services -- Camanche Terminal		✓	✓		✓	✓	✓	✓
Camanche	UP Distribution Services								
Cedar Falls	Standard Distribution Rail Facility		✓	✓		✓	✓		
Cedar Rapids	CRANDIC RR - Wilson Ave Team Track		✓	✓	✓		✓		
Cedar Rapids	Logistics Park Cedar Rapids		✓	✓	✓	✓	✓	✓	
Cherokee	Cloverleaf Cold Storage					✓	✓		
Clayton	Consolidated Grain and Barge		✓				✓		✓
Clinton	Clausen Companies Warehousing		✓	✓		✓	✓		

City	Facility	Intermodal	Transload	Cross-dock	Team track	Warehouse	Truck/ Rail	Truck/ Barge	Rail/ Barge
Clinton	ADM Terminal Services -- Clinton Terminal		✓			✓	✓	✓	✓
Council Bluffs	Union Pacific Distribution Services			✓	✓				
Council Bluffs	Council Bluffs Railport	✓					✓		
Council Bluffs	Iowa Interstate Railroad Intermodal Facility	✓					✓		
Council Bluffs	BAT Logistics		✓				✓		
Council Bluffs	Cox Contracting Company Inc.		✓				✓		
Council Bluffs	Heritage-Crystal Clean LLC		✓				✓		
Council Bluffs	Pattison Sand Company		✓				✓		
Council Bluffs	Viterra USA Ingredients LLC		✓				✓		
Council Bluffs	Watco Transloading LLC		✓				✓		
Council Bluffs	Martin Marietta Materials		✓				✓		
Davenport	Catch-Up Logistics		✓	✓		✓	✓		
Davenport	Murrays Warehousing		✓	✓		✓			
De Soto	Sioux City Brick and Tile Co.			✓			✓		
Des Moines	Des Moines Industrial LLC		✓		✓	✓	✓		
Des Moines	Luckey Logistics		✓				✓		
Des Moines	Des Moines Cold Storage								

City	Facility	Intermodal	Transload	Cross-dock	Team track	Warehouse	Truck/ Rail	Truck/ Barge	Rail/ Barge
Des Moines	Merchants Distribution Service		✓	✓		✓	✓		
Dexter	Reid line LLC		✓				✓		
Dubuque	IEI Barge Services		✓		✓	✓	✓	✓	✓
Dubuque	Gavilon		✓			✓	✓	✓	✓
Fort Madison	Hall Towing and Steel Transload	✓	✓			✓		✓	
Garnavillo	Pattison Sand Company								
Hawarden	GCC Dakotah Cement/L.G. Everist		✓				✓		
Iowa City	Iowa Interstate Railroad LLC				✓		✓		
Iowa City	Lineage Logistics LLC					✓			
Iowa Falls	Iowa Falls/Hardin co Transload Terminal Facility								
Le Mars	Le mars Public Storage, Inc.			✓		✓	✓		
Le Mars	Burlington Junction Railroad in Le Mars IA		✓	✓	✓		✓		
Manly	Manly Terminal		✓				✓		
Manly	Manly Yard		✓			✓	✓		
Manly	Manly Logistics Park								
Mason City	BSSI MW Warehouse								
Mason City	Buesing Bulk Transport Inc.								
Mason City	Cartersville Elevator Inc.		✓				✓		
Mason City	Iowa Dry Warehouse		✓	✓	✓	✓	✓		
Mason City	Iowa Traction Railroad/Progressive Rail		✓	✓	✓		✓		

City	Facility	Intermodal	Transload	Cross-dock	Team track	Warehouse	Truck/ Rail	Truck/ Barge	Rail/ Barge
Mount Pleasant	BJRY		✓				✓		
Muscatine	CAM II Warehouse					✓	✓		
Muscatine	Kinder Morgan/Muscatine		✓			✓	✓		
New Hampton	New Hampton Transfer & Storage		✓	✓		✓	✓		
Newton	Iowa Interstate Railroad				✓		✓		
Newton	Luckey Logistics		✓				✓		
Ottumwa	Burlington Junction Railroad in Ottumwa		✓	✓	✓		✓		
Ottumwa	Quest Liner/Foodliner		✓				✓		
Shell Rock	Butler Intermodal Terminal	✓	✓			✓	✓		
Sioux City	Big Soo Terminal		✓				✓	✓	✓
Sioux City	L.G. Everist		✓				✓		
Victor	Iowa Interstate Railroad LLC				✓		✓		
Waterloo	Hydrite Creative Solutions								
Waterloo	Kinder Morgan/Black Hawk Terminal		✓			✓	✓		
Waterloo	Bryant Yard		✓	✓		✓	✓		
West Liberty	ABC-Cascade Holdings LLC		✓				✓		
Williams	Williams Bulk Transfer		✓	✓	✓	✓	✓		
Wilton	Olson Road Solutions LLC		✓				✓		
Wiota	Pattison Sand Company		✓				✓		

Table B.2: Barge terminals

City	Facility	River
Bettendorf	Phillips Pipe Line Co., Bettendorf Term Barge Dock	Mississippi
Bettendorf	U.S. Oil, Bettendorf Terminal Barge Dock	Mississippi
Bettendorf	Bettendorf Terminal Co. Wharf	Mississippi
Bettendorf	Continental Cement Co., Bettendorf Terminal Dock	Mississippi
Blencoe	Blencoe Barge Terminal	Missouri
Buffalo	AGRI Grain Marketing, Buffalo Grain Elevator Dock	Mississippi
Buffalo	Cargill Buffalo Terminal Dock	Mississippi
Buffalo	Blackhawk Fleet, Buffalo Terminal Dock	Mississippi
Buffalo	LaFarge North America, Davenport Plant Wharf	Mississippi
Buffalo	BP Products North America, Davenport Asphalt Terminal Dock	Mississippi
Buffalo	Texpar Energy, Davenport Terminal	Mississippi
Burlington	Carpenter Stations Dock	Mississippi
Burlington	Burlington River Terminal, South Dock	Mississippi
Burlington	Burlington River Terminal, North Dock	Mississippi
Burlington	AGRI Grain Marketing, Meekers Landing Dock	Mississippi
Burlington	Alliant Energy, Burlington Generating Station Wharf	Mississippi
Burlington	ADM/Growmark, Burlington South Elevator Dock	Mississippi
Burlington	ADM/Growmark, Burlington North Elevator Dock	Mississippi
Burlington	L.W. Matteson, Burlington Dock	Mississippi
Camanche	American River Transportation Co., Camanche Dock	Mississippi
Camanche	Vertex Chemical Corp., Camanche Plant, Dock	Mississippi
Clayton	Pattison Brothers, Dock No. 3 and Fleeting Area	Mississippi
Clayton	Pattison Brothers, Dock No. 2	Mississippi
Clayton	Pattison Brothers, Mississippi River Terminal, North Dock	Mississippi
Clinton	Interstate Power & Light Co., M.L. Kapp Plant Wharf	Mississippi

City	Facility	River
Clinton	ADM Corn Processing, Clinton Plant, Liquid-Handling Dock	Mississippi
Clinton	ADM/Growmark, Clinton River Terminal Dock	Mississippi
Clinton	Clinton Municipal Loading Dock	Mississippi
Clinton	ADM Corn Processing, Clinton Plant, Corn-Pellet Loading Dock	Mississippi
Council Bluffs	Agriliance Co Council Bluffs Terminal Dock	Missouri
Council Bluffs	AGRI Grain Marketing Council Bluffs Terminal Dock	Missouri
Davenport	Harvest States Cooperatives, Davenport East Grain Elevator Dock	Mississippi
Davenport	Harvest States Cooperatives, Davenport West Grain Elevator Dock	Mississippi
Davenport	Linwood Mining & Minerals Corp. Dock	Mississippi
Davenport	Koch Materials Co., Davenport Dock	Mississippi
Davenport	Blackhawk Fleet Terminal Wharf	Mississippi
Davenport	Alter Logistics Davenport	Mississippi
Davenport	Builders Sand and Cement Co. Wharf	Mississippi
Davenport	W. G. Block Co., Davenport Dock	Mississippi
Davenport	River/Gulf Grain Co., Davenport Dock	Mississippi
Dubuque	Peavey, Dubuque, Fertilizer Dock	Mississippi
Dubuque	Dubuque Terminals, Dock A	Mississippi
Dubuque	Dubuque Terminals, Dock B	Mississippi
Dubuque	Interstate Power & Light Co., Dubuque Plant Coal Dock	Mississippi
Dubuque	Peavey, Dubuque Bulk Materials, Wharf	Mississippi
Dubuque	Koch materials Co., Dubuque Terminal, Dock	Mississippi
Dubuque	Cargill, Inc.	Mississippi
Fort Madison	Hall Towing, Inc.	Mississippi
Fort Madison	Hall Towing, Barge Terminal Upper Wharf	Mississippi
Fort Madison	Hall Towing Slip	Mississippi

City	Facility	River
Garnavillo	Consolidated Terminals and Logistics Co. (CTLC) Clayton Terminal	Mississippi
Keokuk	Orba-Johnson Transshipment Co. Dock	Mississippi
Keokuk	Roquette America, River Terminal Dock	Mississippi
Keokuk	Iowa Gateway Terminal Dock	Mississippi
Keokuk	City of Keokuk, Hubinger Landing Dock	Mississippi
Lansing	Interstate Power & Light Co., Lansing Plant Coal Dock	Mississippi
Le Claire	Riverstone Group, Le Claire Quarry, Barge Dock	Mississippi
McGregor	AGRI Grain Marketing, McGregor River Terminal Dock	Mississippi
Montpelier	Central Iowa Power Cooperative, Fair Station Wharf	Mississippi
Muscatine	Grain Processing Corp.,	Mississippi
Muscatine	Agriliance, Muscatine Dock	Mississippi
Muscatine	K. A. Steel Chemicals Dock	Mississippi
Muscatine	ACME Fuel and Material Co. Dock	Mississippi
Muscatine	River Term Corp./CK Processing Co. Wharf	Mississippi
Muscatine	Muscatine Power and Water, Coal Dock	Mississippi
Muscatine	AGRI Grain Marketing, Muscatine Grain Elevator Dock	Mississippi
Muscatine	River Trading Co., Muscatine Dock	Mississippi
Sioux City	Big Soo Terminal Dock	Missouri
Sioux City	Jebro Dock	Missouri
Wever	COLUSA Elevator Co., Green Bay Landing Dock	Mississippi

Table B.3: Distribution centers

City	Facility
Ankeny	Casey's General Store
Ankeny	Perishable Distributors of Iowa
Ankeny	Florist Distributing Inc.
Ankeny	Sysco Iowa
Ankeny	The TORO Company
Bondurant	Amazon
Boone	Fareway Stores
Boone	PDM
Cedar Falls	Target Food Distribution Center
Cedar Falls	Target
Cedar Rapids	Nordstrom Direct Contact and Fulfillment Center
Cedar Rapids	Fedex
Chariton	Hy-Vee
Cherokee	Hy-Vee
Council Bluffs	Amazon
Davenport	Amazon
Davenport	Loffredo Fresh Produce Co., Inc.
Davenport	Florist Distributing Inc.
Des Moines	Lomar Distributing Inc.
Des Moines	Florist Distributing Inc.
Des Moines	NAPA Distribution Center
Des Moines	Amazon
Des Moines	Loffredo Fresh Produce Co., Inc.

City	Facility
Des Moines	U.S. AutoForce
Des Moines	O Reilly Auto Parts
Des Moines	Bridgestone Distribution Center
Dubuque	Nordstrom
Grimes	Ferguson Enterprises
Grimes	Daimler Trucks North America
Grimes	Fedex
Hiawatha	the Home Depot Distribution Center
Huxley	Interstate Batteries
Iowa City	HNI
Iowa City	UNFI
Maquoketa	Family Dollar
Mount Pleasant	Walmart
Norwalk	Capital City Fruit
Ottumwa	Fedex
Shelby	Menards
Shell Rock	Menards
Urbandale	United State Postal Service Des Moines NDC
Urbandale	Homemakers
Waterloo	Ferguson Enterprises
West Branch	Proctor & Gamble
West Branch	U.S. AutoForce

Table B.4: Public/contract warehouses

City	Facility
Akron	Heyl Truck Lines
Altoona	Iowa Cold Storage, LLC
Altoona	Merchants Distribution Service
Ankeny	Ankeny Cold Storage
Ankeny	Power Distributors
Ankeny	Brown Warehouse Corp.
Bettendorf	AmeriCold Logistics
Burlington	Diversified Distribution Service Center
Camanche	Economy Coating Systems, Inc.
Cedar Falls	Standard Distribution Co.
Cedar Rapids	Worley Warehousing, Inc
Cedar Rapids	Midwestern Third Party Logistics
Clinton	Clausen Warehousing & Trucking
Davenport	Catch-Up Logistics Warehousing and Distribution
Davenport	Murray's Warehousing, Inc.
Des Moines	Christian Edwards Fulfillment Center
Des Moines	Merchants Distribution Service
Des Moines	Action Warehouse Co., Ltd.
Des Moines	Des Moines Cold Storage Co., Inc.
Des Moines	Jacobson Companies
Des Moines	Kitt's Transfer & Storage
Des Moines	Diverse Solutions MBE
Des Moines	Centennial Warehouse Corp.
Des Moines	Jacobson Warehouse Company, Inc
Grimes	Brown Warehouse Corp.
Grimes	Owens and Minors
Harlan	Variety Distributors, Inc.
Le Mars	Jacobson Companies
Le Mars	Nor-Am Cold Storage
Muscatine	C A M II Warehouse
New Hampton	New Hampton Transfer & Storage, Inc.
Ottumwa	Hardsocg Pneumatic Tool Co./HPT Stores-All
Peosta	Peosta Warehousing
Sioux City	Big Soo Warehouse
Sioux City	Jacobson Companies
Walford	GSTC Logistics, Inc.
Waterloo	Crystal Distribution Services, Inc.
Waterloo	Waterloo Warehousing and Service Co., Inc

Table B.5: Ethanol plants

City	Facility
Albert City	Valero Renewables
Arthur	POET - Arthur
Ashton	POET - Ashton
Atlantic	Elite Octane
Cedar Rapids	Archer Daniels Midland
Charles City	Valero Renewables
Clinton	Archer Daniels Midland
Coon Rapids	POET - Coon Rapids
Corning	POET - Corning
Council Bluffs	Southwest Iowa Renewable Energy
Denison	The Andersons Denison Ethanol, LLC
Dyersville	Big River United Energy, LLC
Eddyville	Cargill, Inc
Emmetsburg	POET - Emmetsburg
Emmetsburg	POET - DSM Advanced Biofuel, LLC
Fairbank	POET - Fairbank
Fort Dodge	Cargill, Inc
Fort Dodge	Valero Renewables
Galva	Quad County Corn Processors
Goldfield	Corn, LP
Gowrie	POET - Gowrie
Grand Junction	Louis Dreyfus Commodities, LLC
Hanlontown	POET - Hanlontown
Hartley	Valero Renewables
Iowa Falls	POET - Iowa Falls
Jewell	POET - Jewell
Lakota	Valero Renewables
Lawler	Homeland Energy Solutions
Marcus	Little Sioux Corn Processors
Mason City	Golden Grain Energy
Mason City	New EnergyBlue LLC
Menlo	POET - Menlo
Merrill	Lakeview Plymouth Energy
Muscatine	Grain Processing Corporation
Nevada	Lincolnway Energy
Nevada	Verbio Nevada
Saint Ansgar	Absolute Energy (MN)
Shell Rock	POET - Shell Rock
Shenandoah	Green Plains, Inc.
Sioux Center	Siouxland Energy Cooperative
Steamboat Rock	Pine Lake Corn Processors, LLC
Superior	Green Plains, Inc.
West Burlington	Big River Resources

Table B.6: Biodiesel plants

City	Facility
Algona	Ag Processing Inc (AGP)
Clinton	HERO BX - Clinton
Crawfordsville	W2 Fuel
Farley	Western Dubuque Biodiesel
Iowa Falls	Cargill
Mason City	Renewable Energy Group (REG)
Mason City	New EnergyBlue LLC
Newton	Renewable Energy Group (REG)
Ralston	Renewable Energy Group (REG)
Sergeant Bluff	Ag Processing Inc (AGP)
Wall Lake	Western Iowa Energy
Washington	Iowa Renewable Energy

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