2023

Wisconsin State Freight Plan

PLANNING NOW TO MOVE TOMORROW


Source: Port Milwaukee

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Dear Transportation Partner:

I am pleased to announce that the Wisconsin Department of Transportation (WisDOT) has adopted the 2023 Wisconsin State Freight Plan (SFP). Completion of the SFP marks the end of a collaborative and complex effort to develop a multimodal strategy that enhances freight mobility throughout Wisconsin.

Freight movement is critical to Wisconsin's economic competitiveness at regional, national, and global scales. A network of roadways, airports, harbors, pipelines, and railroads link Wisconsin businesses and consumers to the global economy. As stewards of federal and state funding, it is WisDOT's responsibility to ensure investment priorities yield a safe, reliable, and efficient freight system. To successfully guide investment decisions, the SFP defined the following vision for freight mobility in Wisconsin:

"WisDOT envisions a multimodal freight transportation system that enhances the state's economic productivity, competitiveness, and quality of life through the movement of goods safely, reliably, and efficiently, while minimizing impacts to the natural environment."

Completion of the SFP was a collaborative effort and the product of extensive outreach to stakeholder groups. I want to personally thank all the individuals and organizations who participated in the planning process, especially the members of Wisconsin's Freight Advisory Committee. Your input is critical when developing statewide long-range transportation plans and ensures the interests of Wisconsin residents are reflected.

We are excited about the future of freight in Wisconsin and look forward to fostering a thriving economy that supports business success and a high quality of life for all Wisconsin residents.

Sincerely,

Craig Thompson
Secretary

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Introduction

FREIGHT FOCUS:

An overview of the plan vision, goals, and strategies; links to national freight goals and policies; connection to the Wisconsin Family of Plans; and a checklist of Freight Plan requirements and where to find them in the plan

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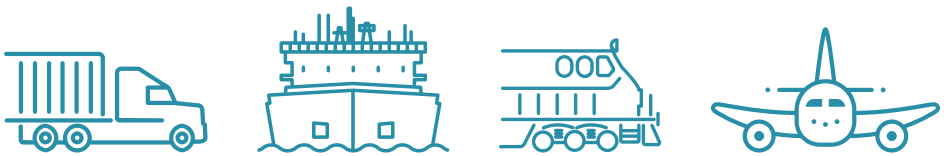
1. INTRODUCTION

Wisconsin's quality of life and economic growth both depend on a safe, efficient, and coordinated multimodal freight transportation system that provides choices for the movement of goods to, from, and within the state. The transport of goods and services is critical to the economy, and investments in highways, railroads, ports and waterways, airports, and pipelines are necessary to secure and strengthen Wisconsin's economic vitality.

Wisconsin's robust multimodal transportation system supports over 5.8 million people and 141,000 businesses in its $303 billion economy (2021).[1] As a subset of the overall multimodal transportation system, the state's multimodal freight transportation system underpins Wisconsin's economy by providing efficient transportation of goods. Wisconsin's multimodal freight transportation system includes roadways, railways, ports and waterways, airports, pipelines, and intermodal facilities (including truck-rail).

The Wisconsin State Freight Plan (SFP) is the statewide multimodal freight plan, required by the Infrastructure Investment and Jobs Act (IIJA)—hereafter referred to as the Bipartisan Infrastructure Law (BIL).[2] The purpose of the SFP is to guide improvement and investment decisions impacting all modes of freight transportation throughout Wisconsin. It represents an update to Wisconsin's first State Freight Plan, which was approved in 2018. The update is a Wisconsin Department of Transportation (WisDOT) effort that was done in partnership with public and private sector freight stakeholders throughout the state.[3]



This update describes Wisconsin's freight transportation system and its role in the state's economy, current and emerging industry trends, the performance of the freight transportation system, and current and future issues and needs. It also includes strategies that will improve the efficiency, safety, and reliability of the freight system.

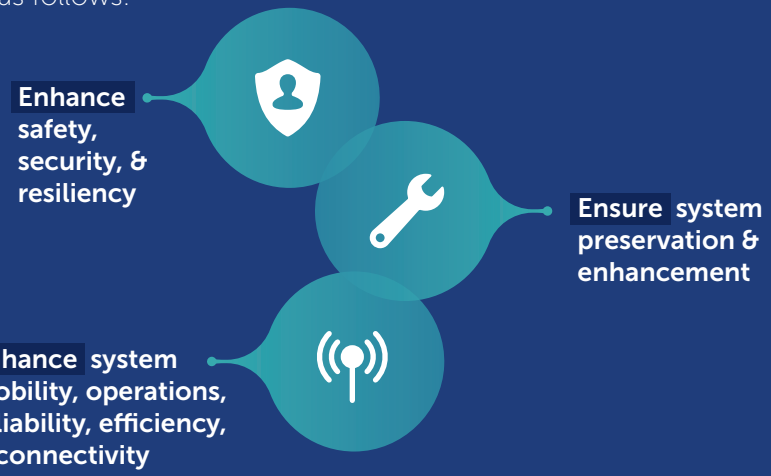
1.1 Vision, Goals, Strategies

The SFP's vision statement will serve as WisDOT's guiding vision for the freight transportation system as it is developed and maintained over time:

> *WisDOT envisions a multimodal freight transportation system that enhances the state's economic productivity, competitiveness, and quality of life through the movement of goods safely, reliably, and efficiently, while minimizing impacts to the natural environment.*

This vision statement is the overarching guide to this plan and frames the subsequent goals, objectives, and strategies. This long-range multimodal freight plan links freight transportation needs to department policy and programming, informs future transportation investment, and provides an implementation plan to advance the safe and efficient movement of freight in the state.

The foundational goals developed to support WisDOT's vision for the multimodal freight transportation system were adapted from Connect 2050, which is WisDOT's statewide, multimodal, long-range plan. These goals form the basis for policy and other strategy recommendations contained in the SFP. The SFP goals are as follows:



In support of these goals, WisDOT developed the following strategic approaches to guide policy development:

- **Position WisDOT to facilitate the safe and efficient movement of freight:** ensure avenues exist to receive and address stakeholder concerns, challenges, and emerging trends to help instruct prudent planning and programming.
- **Integrate freight data and information into WisDOT investment decisions:** integrate freight data and stakeholder input into WisDOT's planning, policies, programming, and operational decisions.
- **Promote statewide multimodal freight access and connection:** promote adequate rural and urban access to regional and national markets and promote multimodal connections to freight facilities and services.

1.2 Link to National Freight Goals

The BIL requires that this SFP include a description of how it 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.

The SFP outlines ways to address bottlenecks, reduce congestion, and increase overall resiliency to reduce recovery time after incidents. The SFP also identifies the state's critical multimodal freight facilities and helps to facilitate freight coordination between states through Wisconsin's membership in multi-state organizations such as the Mid-America Freight Coalition (MAFC). Through this identification of trends, issues, goals, and strategies, the SFP improves Wisconsin's ability to align state and national freight goals. A crosswalk table detailing how this SFP addresses and incorporates the national freight goals is included in Section 1.3.

1.2.1 National Multimodal Freight Policy Goals

The current national multimodal freight policy goals[4] are:

(1) to identify infrastructure improvements, policies, and operational innovations that—

  (A) strengthen the contribution of the National Multimodal Freight Network to the economic competitiveness of the United States;

  (B) reduce congestion and eliminate bottlenecks on the National Multimodal Freight Network; and

  (C) increase productivity, particularly for domestic industries and businesses that create high-value jobs;

(2) to improve the safety, security, efficiency, and resiliency of multimodal freight transportation;

(3) to achieve and maintain a state of good repair on the National Multimodal Freight Network;

(4) to use innovation and advanced technology to improve the safety, efficiency, and reliability of the National Multimodal Freight Network;

(5) to improve the economic efficiency and productivity of the National Multimodal Freight Network;

(6) to improve the reliability of freight transportation;

(7) to improve the short- and long-distance movement of goods that—

  (A) travel across rural areas between population centers;

  (B) travel between rural areas and population centers; and

  (C) travel from the Nation's ports, airports, and gateways to the National Multimodal Freight Network;

(8) 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;

(9) to reduce the adverse environmental impacts of freight movement on the National Multimodal Freight Network; and

(10) to pursue the goals described in this subsection in a manner that is not burdensome to State and local governments.

1.2.2 National Highway Freight Program Goals

The current national highway freight program goals[5] are:

(1) to invest in infrastructure improvements and to implement operational improvements on the highways of the United States that—

  (A) strengthen the contribution of the National Highway Freight Network to the economic competitiveness of the United States;

  (B) reduce congestion and bottlenecks on the National Highway Freight Network;

  (C) reduce the cost of freight transportation;

  (D) improve the year-round reliability of freight transportation; and

  (E) increase productivity, particularly for domestic industries and businesses that create high-value jobs;

(2) to improve the safety, security, efficiency, and resiliency of freight transportation in rural and urban areas;

(3) to improve the state of good repair of the National Highway Freight Network;

(4) to use innovation and advanced technology to improve the safety, efficiency, and reliability of the National Highway Freight Network;

(5) to improve the efficiency and productivity of the National Highway Freight Network;

(6) 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 highway freight connectivity; and

(7) to reduce the environmental impacts of freight movement on the National Highway Freight Network.

1.3 Relationship to Wisconsin Family of Plans

In addition to aligning with and supporting national freight goals, the SFP also seamlessly integrates into Wisconsin's Long Range Transportation Plan, Connect 2050, and the associated Wisconsin Family of Plans.

1.3.1 Connect 2050

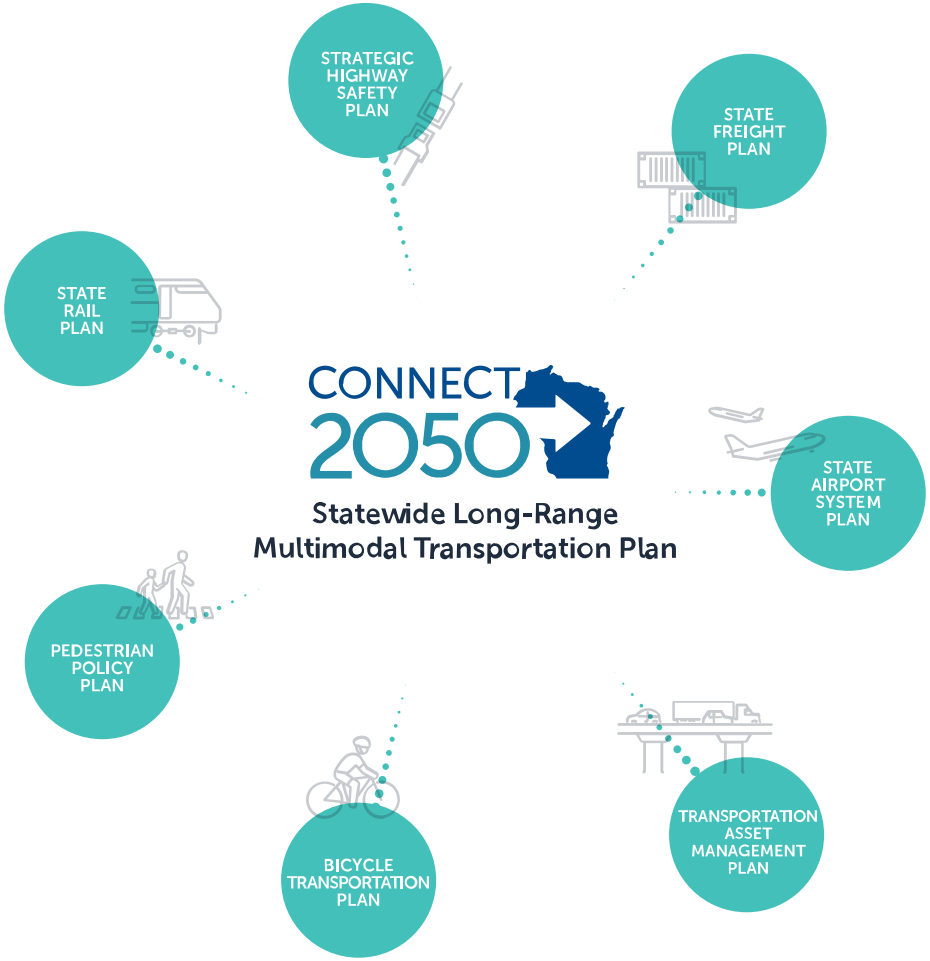
The SFP is one of seven plans that fall under Wisconsin's Connect 2050, adopted in May 2022.[6] Connect 2050 is the statewide, multimodal, long-range plan that facilitates decision-making for improvements to and investments in all types of transportation throughout Wisconsin from now to 2050 – from roads to ports to rail to sidewalks and all other transportation systems and infrastructure.

Connect 2050 is:

- **Long-range.** It looks to the future; to 2050.
- **Statewide.** It has a broad reach; its vision, goals and objectives will guide WisDOT's decision-making for all of Wisconsin and for all people.
- **Multimodal.** It sets goals and objectives that apply to all modes and means of transportation in Wisconsin, including cars, roads, transit, biking, walking, rail, aviation, and water transport.

Connect 2050 contains eight primary goals:

- **Goal 1:** Pursue sustainable long-term transportation funding
- **Goal 2:** Focus on partnerships
- **Goal 3:** Pursue continuous improvement and expand data-driven decision-making processes



- **Goal 4:** Increase options, connections, and mobility for people and goods
- **Goal 5:** Maximize technology benefits
- **Goal 6:** Maximize transportation safety
- **Goal 7:** Maximize transportation system resiliency and reliability
- **Goal 8:** Balance transportation needs with those of the natural environment, socioeconomic, historic, and cultural resources

1.3.2 State Planning Regulations

Trans 400.07(2)(b)2 of the Wisconsin Administrative Code indicates a System Plan Environmental Evaluation (SEE) may be prepared if proposals within system plans may significantly affect the quality of the human environment and represents a significant departure from, or expansion of, the department's existing responsibilities by substantially expanding or reducing total resources allocated to any existing programs. If an analysis concludes that the system plan does not contain any such proposals, the plan (or a separately identifiable and retained record) may include a clear statement of that determination.

1.3.3 BIL State Freight Plan Requirements

This SFP meets the state freight planning requirements of the BIL. The BIL is a federal funding and authorization bill that governs federal spending on transportation and requires states to develop state freight plans to be eligible for National Highway Freight Program funding. Under BIL, a number of new state freight plan requirements were added to the requirements detailed in the previous funding and authorization bill, the Fixing America's Surface Transportation (FAST) Act.

A summary of the BIL State Freight Plan Requirements and details on which sections of the SFP addresses these requirements is provided in Table 1-1.

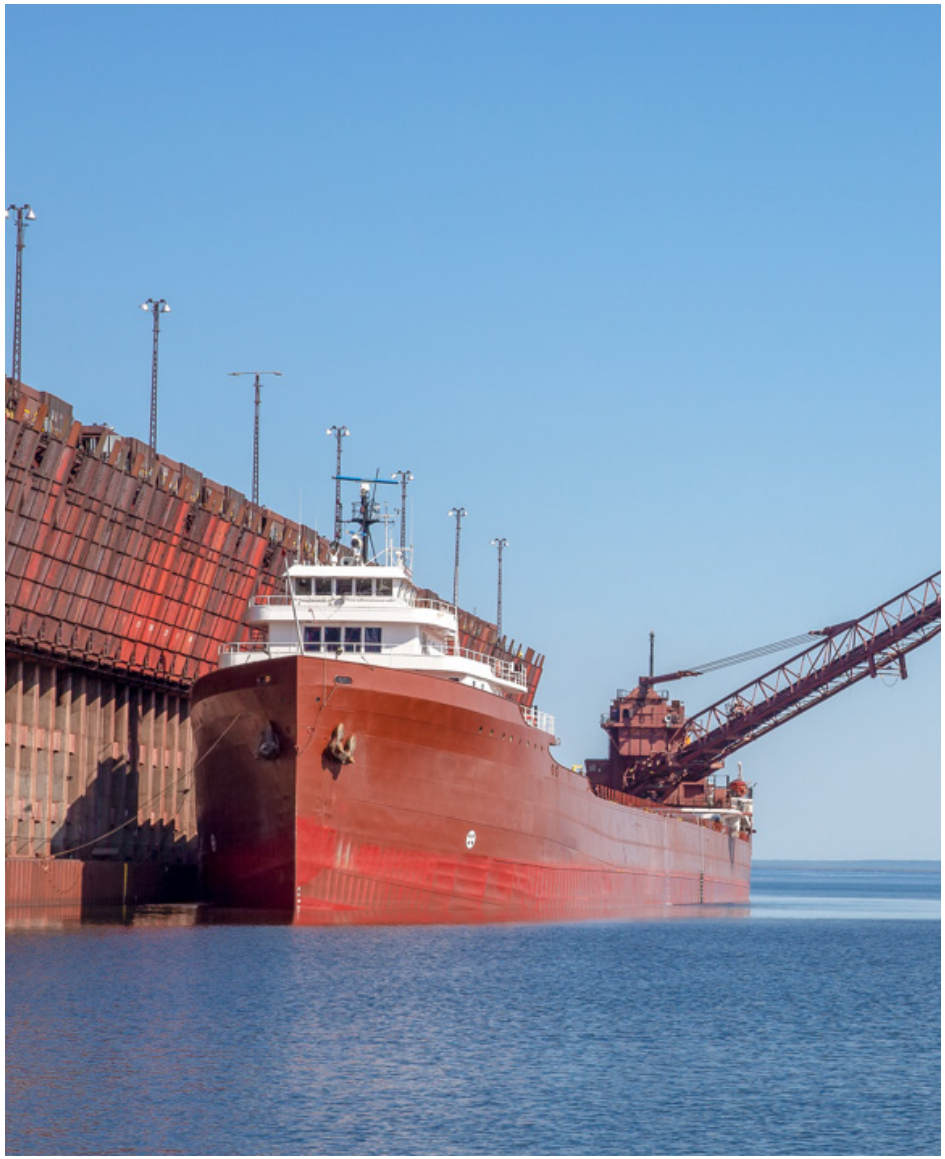


Table 1-1: BIL State Freight Plan Requirements

BIL STATE FREIGHT PLAN REQUIREMENT	LOCATION IN SFP
(1) an identification of significant freight system trends, needs, and issues with respect to the State;	**Chapter 6. Freight Trends and Challenges** reviews the key trends impacting freight transportation in Wisconsin. These include supply chain disruptions from COVID and other sources, demographic changes, the rise of e-commerce, and emerging freight technologies.
(2) a description of the freight policies, strategies, and performance measures that will guide the freight-related transportation investment decisions of the State;	**Chapter 7. Freight Policies and Strategies** provides a detailed list of WisDOT's policies and strategies. **Chapter 3. Freight System Assets, Conditions, and Performance** summarizes the key Transportation System Performance Measures that relate directly to freight transportation.
(3) when applicable, a listing of: (A) multimodal critical rural freight facilities and corridors designated within the State under section 70103 of this title; and (B) critical rural and urban freight corridors designated within the State under section 167 of title 23;	**Chapter 3. Freight System Assets, Conditions, and Performance** includes a discussion of National Freight Networks in Wisconsin, including a discussion and map of Critical Urban Freight Corridors (CUFC) and Critical Rural Freight Corridors (CRFC) road segments within the state.
(4) a description of how the plan will improve the ability of the State to meet the national multimodal freight policy goals described in section 70101(b) of this title and the national highway freight program goals described in section 167 of title 23;	**Chapter 7. Freight Policies and Strategies** includes a description of how the WisDOT policies, strategies, and performance measures support the national multimodal freight policy goals, the national highway freight program goals, and the goals of the Wisconsin Connect 2050 Long-Range Transportation Plan (LRTP).
(5) a description of how innovative technologies and operational strategies, including intelligent transportation systems, that improve the safety and efficiency of freight movement, were considered;	**Chapter 3. Freight System Assets, Conditions, and Performance** includes a summary of the WisDOT's current ITS traffic management strategies. **Chapter 6. Freight Trends and Challenges** summarizes the emerging freight technologies that may impact freight transportation in the near future.
(6) in the case of routes on which travel by heavy vehicles (including mining, agricultural, energy cargo or equipment, and timber vehicles) is projected to substantially deteriorate the condition of roadways, a description of improvements that may be required to reduce or impede the deterioration;	**Chapter 3. Freight System Assets, Conditions, and Performance** includes a discussion of Oversize/Overweight (OSOW) loads and their potential impact on roadway and pavement conditions. This chapter also discusses the development of the OSOW network designed to accommodate larger and heavier vehicles and the formation of the High Route Freight Corridors Task Force use to guide the identification of OSOW routes.
(7) an inventory of facilities with freight mobility issues, such as truck 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 3. Freight System Assets, Conditions, and Performance** includes a discussion of freight mobility issues and a table of the top 25 bottlenecks in the state. **Chapter 7. Freight Policies and Strategies** includes goals and policies designed to eliminate or minimize bottlenecks and other freight mobility issues.
(8) consideration of any significant congestion or delay caused by freight movements and any strategies to mitigate that congestion and delay;	**Chapter 3. Freight System Assets, Conditions, and Performance** includes a discussion of the freight performance measures used to identify freight congestion and delay issues, specifically travel time reliability and vehicle hours of delay. **Chapter 7. Freight Policies and Strategies** includes goals and policies designed to mitigate congestion or delay.

BIL STATE FREIGHT PLAN REQUIREMENT	LOCATION IN SFP
(9) a freight investment plan that, subject to subsection (c)(2), includes a list of priority projects and describes how funds made available to carry out section 167 of title 23 would be invested and matched;	**Chapter 9. Freight Investment Implementation Plan** describes the prioritization process for the selection of freight investments and provides an overview of the freight plan implementation steps. **Appendix A** includes a full detailed list of WisDOT's proposed freight investments.
(10) the most recent commercial motor vehicle parking facilities assessment conducted by the State under subsection (f); (A) the capability of the State, together with the private sector in the State, to provide adequate parking facilities and rest facilities for commercial motor vehicles engaged in interstate transportation; (A) the volume of commercial motor vehicle traffic in the State; (A) whether there exist any areas within the State with a shortage of adequate commercial motor vehicle parking facilities, including an analysis of the underlying causes of such a shortage;	**Chapter 3. Freight System Assets, Conditions, and Performance** includes an overview of a recently completed truck parking analysis comparing estimated truck parking demand with truck parking capacity. This analysis is included in the Highway section of the chapter.
(11) the most recent supply chain cargo flows in the State, expressed by mode of transportation;	**Chapter 3. Freight System Assets, Conditions, and Performance** includes a summary of modal freight flows and a discussion of key commodities by tonnage and value in the Ports and Waterways section. **Chapter 4. Modal Freight Forecasts** includes the projected increase in modal freight flows for years 2030 and 2050.
(12) an inventory of commercial ports in the State;	**Chapter 3. Freight System Assets, Conditions, and Performance** includes a map and table summarizing the location and characteristics of the commercial ports within Wisconsin.
(13) if applicable, consideration of the findings or recommendations made by any multi-State freight compact to which the State is a party under section 70204;	**Chapter 2. Stakeholder Engagement** discusses the importance of multi-state compacts such as MAASTO. **Chapter 3. Freight System Assets, Conditions, and Performance** includes a discussion of The Truck Parking Information Management System, a multi-state effort to support truck parking.
(14) the impacts of e-commerce on freight infrastructure in the State;	**Chapter 6. Freight Trends and Challenges** includes a section discussing e-commerce and the impacts to freight facilities and infrastructure in Wisconsin.
(15) considerations of military freight;	**Chapter 3. Freight System Assets, Conditions, and Performance** includes a section on military freight, including the locations of Strategic Highways Network (STRAHNET), Strategic Rail Corridor Network (STRACNET), and military bases and facilities within the state.
(16) 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; and	**Chapter 7. Freight Policies and Strategies** includes multiple goals aimed at decreasing these impacts. The "Environmental" policy section focuses on the interaction between freight and the natural environment. **Chapter 2. Stakeholder Engagement** includes a discussion of WisDOT's coordination and consultation with environmental resource agencies. **Chapter 6. Freight Trends and Challenges** includes a discussion of freight equipment improvements that are improving environmental sustainability and also discusses the impact of environmental issues such as floods, wildfires, and severe storms.
(17) consultation with the State freight advisory committee, if applicable.	**Chapter 2. Stakeholder Engagement** summarizes WisDOT's outreach efforts, including multiple consultations with the Wisconsin Freight Advisory Committee to review proposed Freight Plan policies and strategies. **Appendix B – Summary of Freight Plan Outreach** includes information about WisDOT's outreach to the Freight Advisory Committee during the public comment period.

CHAPTER 2

Stakeholder Engagement

FREIGHT FOCUS:

An overview of Wisconsin's Freight Stakeholders, Plan engagement activities, and ongoing freight stakeholder engagement

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2. STAKEHOLDER ENGAGEMENT

Multiple factors and resources are considered when executing initiatives and making decisions regarding how to identify freight trends and issues, and to prioritize freight improvements in Wisconsin. Engagement with Wisconsin's key stakeholders complements the raw data analysis efforts summarized in this SFP. Engagement and coordination with stakeholders are critical steps towards the identification of concerns, strategies, and improvements deemed essential to the continued efficient movement of freight in and through the state.

2.1 Wisconsin's Freight Stakeholders

Responsibility for the safety, maintenance, operation, planning, and funding of the state's multimodal freight transportation system is shared by a full range of stakeholders and institutions, including:

- Federal government
- State government
- Local governments
- Private entities

As a result, the operation of a seamless transportation system requires coordination, collaboration, communication, and cooperation.

STAKEHOLDER:
Federal Organizations

- The United States Department of Transportation (U.S. DOT)
- Federal Aviation Administration (FAA)
- Federal Highway Administration (FHWA)
- Federal Motor Carrier Safety Administration (FMCSA)
- Federal Railroad Administration (FRA)
- Pipeline and Hazardous Materials Safety Administration (PHMSA)
- Maritime Administration (MARAD)
- Surface Transportation Board (STB)
- The United States Department of Defense (USDOD)
- United States Army Corps of Engineers (USACE)
- The United States Department of Energy (DOE)
- Federal Energy Regulatory Commission (FERC)
- The United States Department of Homeland Security (DHS)
- United States Coast Guard (USCG)
- United States Customs and Border Protection (CBP)

STAKEHOLDER:
Regional and Local Partners

- Native American Indian Tribal Nations
- Rail Transit Commissions (RTCs)
- Metropolitan Planning Organizations (MPOs)
- Regional Planning Commissions (RPCs)
- Wisconsin Regional Economic Development Organizations

STAKEHOLDER:
Wisconsin State Government Organizations

- Office of the Governor
- Wisconsin Legislature
- Department of Transportation
- Department of Agriculture, Trade and Consumer Protection
- Department of Military Affairs
- Department of Natural Resources
- Public Service Commission
- Office of the Commissioner of Railroads
- Wisconsin Economic Development Corporation

STAKEHOLDER:
Local Government Partners

Wisconsin's local governments include counties, cities, villages, and towns. There are 1,923 communities that are units of general-purpose local government. Wisconsin is considered a "home rule state." Local governments in home rule states are free to pass laws and ordinances as they see fit to further their operations, within the bounds of the state and federal constitutions. WisDOT coordinates with representatives from the following on a wide array of transportation-related matters (e.g. roadway construction, oversize-overweight vehicle routing, etc.).

72	190	415	1,246
counties	cities	villages	towns

STAKEHOLDER:

Private Sector Partners

WisDOT has committed to forging strategic partnerships with the freight industry to facilitate efforts among multiple stakeholder groups. WisDOT's hosting of Governor's Freight Industry Summits is one example of the department's efforts to bring multiple stakeholder groups together to discuss complex freight transportation issues, problems, and opportunities.

WISCONSIN FREIGHT ADVISORY COMMITTEE

- More than 40-member Freight Advisory Committee (FAC)
- Committee established at Wisconsin's 2014 Governor's Freight Industry Summit to help inform WisDOT on issues that impact freight mobility and to provide a voice for the freight sector on the development of freight-related policies, processes, and projects.

EMPLOYER FIRMS *(104,760 firms in WI)*

- Businesses consisting of one or more domestic establishments that the reporting firm specified under its ownership or control.

EMPLOYER ESTABLISHMENTS *(141,326 employer establishments in WI)*

- Single physical location at which business is conducted or where services or industrial operations are performed.

TRADE ASSOCIATIONS *(Hundreds of trade associations in WI)*

- An industry trade group, business association, or sector association, is an organization founded and funded by businesses that operate in a specific industry.

STAKEHOLDER:

Public Stakeholders

Engaging public stakeholders will collect diverse perspectives on the freight system and will identify how freight-dependent industries use the system, current needs and issues, and potential opportunities.

WisDOT remains committed to engaging with community organizations, businesses, and interested citizens. A comprehensive list of all engaged public stakeholders is located in Appendix B.

STAKEHOLDER:

Multi-State Freight Compacts

The movement of freight often involves multiple transportation modes and routes that cross several states. To move freight efficiently, either regionally, nationally, or globally, freight must cross jurisdictional boundaries with as few impediments as possible. Multi-state freight organizations provide a venue to plan and invest where the benefits of coordination and communication accrue to several states and stakeholder groups. WisDOT actively participates in several multi-state freight-focused organizations that have missions aimed at improving freight safety and mobility.

- Mid-America Freight Coalition (MAFC)
- Great Lakes Regional Transportation Operations Coalition
- Lake Michigan Interstate Gateway Alliance
- Upper Mississippi River Basin Association
- American Great Lakes Ports Association
- Mid America Association of State Transportation Officials (MAASTO)

STAKEHOLDER:

Freight Advisory Committee

- The Freight Advisory Committee (FAC) was established to assist the department on issues that impact freight mobility and provide a voice to private sector representatives on the development of freight-related policies, processes, and projects.
- FAC members include representatives from freight-related sectors including industry, agriculture, logistics, warehousing, economic development, regional planning (MPO/RPC), local government, and transportation. Each FAC member serves for a period of up to two years. Non-voting members from government offices provide guidance from federal and state programmatic and regulatory perspectives.
- The FAC's role is advisory, focusing on assisting the department in understanding the current and emerging concerns from freight sector users, providers, and regulators.

2.2 Plan Engagement Process and Phases

A comprehensive public involvement process helps ensure that long-range plans and recommendations reflect interests, issues, and concerns from the state's transportation system users. Early and continuous public engagement involved gathering input from a variety of stakeholders and the general public throughout the plan development process. Wisconsin is home to a variety of freight stakeholders including private industry, transportation users, and government interests at every level.

The engagement process for the plan focused on encouraging participation and soliciting feedback from Wisconsin freight stakeholders through a variety of methods:

- **Project Website:** A project website was developed to provide a public facing portal describing the status and schedule of the SFP and as a means of communicating additional information regarding freight issues in Wisconsin. The website also provided an opportunity to sign up for additional engagement opportunities via the email list, virtual engagement, and surveys.
- **Email Updates:** Email updates were provided to users who have opted to receive emails regarding WisDOT planning updates. An email list signup was also available on the project website.
- **Virtual Engagement Materials:** A separate self-paced virtual engagement web site was developed to allow users to review plan materials and provide comments regarding the Wisconsin freight system.
- **Social Media:** In concert with the email updates, social media platforms were used to help broadcast information about upcoming events, plan status, and opportunities for comment.
- **Comment Management:** Comments received during the SFP development process were managed using WisDOT's Public Involvement Management Application (PIMA) platform.

2.2.1 Plan Development Schedule

The development of the SFP was split into four key phases (Figure 2-1), based around gathering initial feedback through a variety of engagement methods, developing a final draft of the document, and submitting the draft to FHWA for review and comment prior to officially submitting the plan.

Figure 2-1: Plan Development Phases

2.2.2 Plan Engagement Summary

A complete description of the engagement activities completed as part of the SFP review are documented in Appendix B: Summary of Freight Plan Outreach.

2.3 Ongoing Stakeholder Engagement

In addition to the engagement efforts completed during the development of the SFP, WisDOT routinely supports and takes part in various other freight stakeholder activities.

2.3.1 Stakeholder Consultation

WisDOT's consultation process is designed to inform the department's decisions and gather feedback from numerous stakeholders. Throughout the year, WisDOT meets with organizations - many of whom are listed on the preceding pages - to discuss plans, processes, and projects, the impacts they might have on different communities, and potential mitigation strategies. Additionally, discussions with local officials can help ensure alignment between the state and local road systems, and talks with private sector representatives can provide insight on freight industry trends.

CHAPTER 3

Freight System Assets, Conditions, and Performance

FREIGHT FOCUS:

An overview of Wisconsin's multimodal freight system assets, a review of their physical condition, and summary of key freight performance measures; a summary of freight flows and modal freight snapshots

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3. FREIGHT SYSTEM ASSETS, CONDITIONS, AND PERFORMANCE

Wisconsin's multimodal transportation system carries both people and goods from their origin to their destination. WisDOT, as a steward of that system, coordinates investments in the critical infrastructure needed to support and enhance the state's economy. These efforts facilitate the safe and efficient movement of goods on the state's roadways, railways, waterways, airports, pipelines, and through intermodal facilities.

This chapter provides an in-depth review of each freight transportation mode, including a summary of system assets and the relative magnitude of freight flows using each transport option. A summary of the tonnage and value transported by truck, rail, water, and air is provided to place each mode in the context of its overall use in the state.

3.1 Modal Freight Flows

The choice of mode used to ship freight is determined by a number of factors including commodity type, shipping distance, and time sensitivity. Generally, high-volume bulk commodities such as grain and gravel are less time sensitive to shipping duration and are more likely to be transported via modes such as barge (water) and rail. Low-volume, high-value goods that are more time-sensitive, such as electronic devices or pharmaceuticals, are typically transported via truck or air. Figure 3-1 displays the service and cost tradeoffs between different modes of transportation relative to freight transport. Carriers typically provide several "tiers" of service tied to price, speed, and service guarantees.

Figure 3-1: Domestic Freight Modal Selection

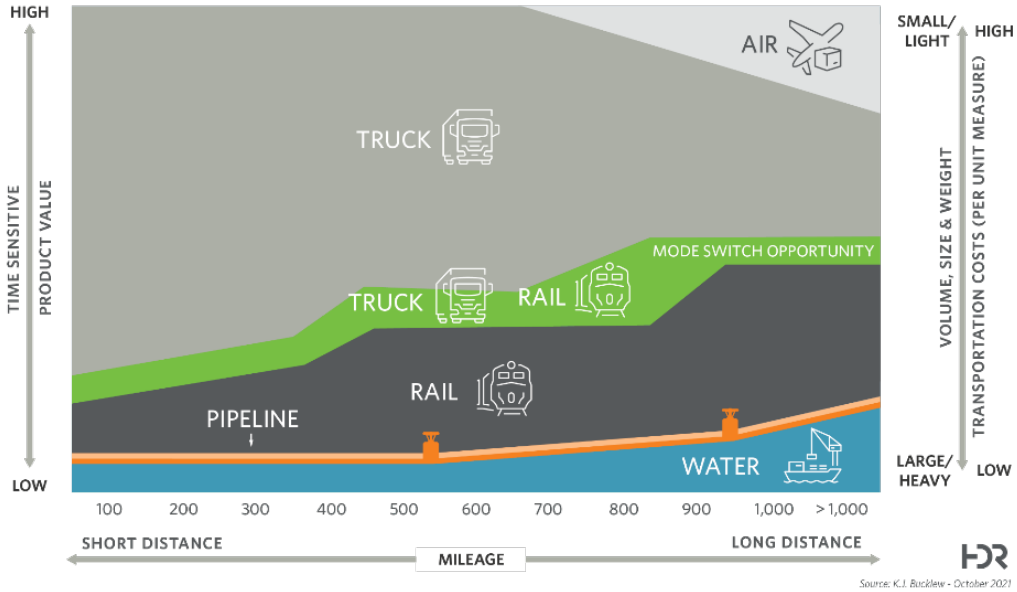


Figure 3-2: Freight Modes in Wisconsin 2022

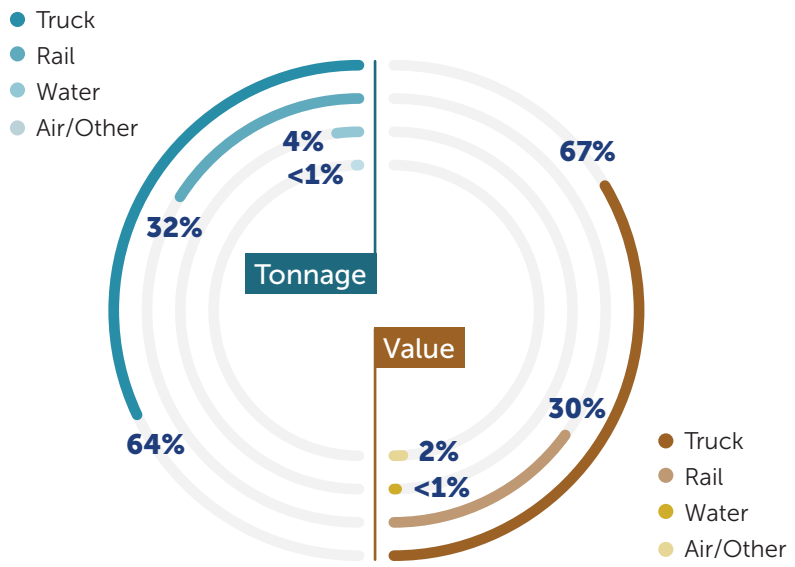
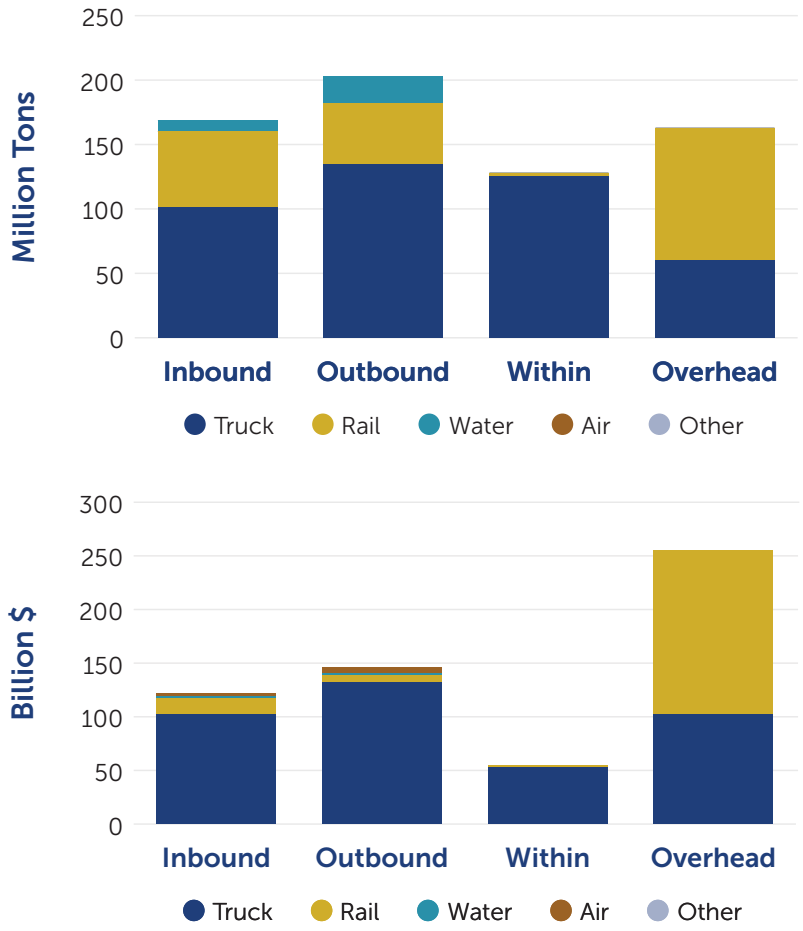


Table 3-1: Freight Flow Definitions

INBOUND	Commodities produced and originating in another state or country and destined for Wisconsin.
OUTBOUND	Commodities produced in Wisconsin and destined for another state or country.
WITHIN	Commodities that both originate and are destined for Wisconsin.
OVERHEAD	Commodities moving through Wisconsin, having neither an origin nor destination in Wisconsin. Much of this pass-through freight originates and terminates in surrounding states and cities, such as Minneapolis and Chicago.

Figure 3-3 shows that overall, 661 million tons and $581 billion of freight were estimated to move to, from, or through Wisconsin in 2022. By tonnage, trucks carry 64 percent of freight, followed by rail at 32 percent, and water at 4 percent, with the remainder attributable to air and other modes of transportation (Figure 3-2).[7] However, the freight mode used varies substantially based on the direction of flow. For example, trucking accounts for nearly all the freight moved within Wisconsin, while rail accounts for roughly three quarters of the overhead freight. By value, trucking carried 67 percent, following by rail at 30 percent, air at 2 percent, and water at less than 1 percent. Here, trucking makes up a larger share of inbound, outbound, and within flows.

Figure 3-3: Estimated 2022 Wisconsin Freight Flows



Source: IHS Transearch Database (using 2017 base year data and 2050 forecasts)

Wisconsin's most shipped commodities by tonnage include gravel or sand, grain, and broken stone or riprap. By value, Wisconsin's most shipped commodities include the generic catchall category of Freight All Kinds (FAK), and Motor Vehicles.

Figure 3-4: Top 5 Commodities by Tonnage 2022 (Tons)

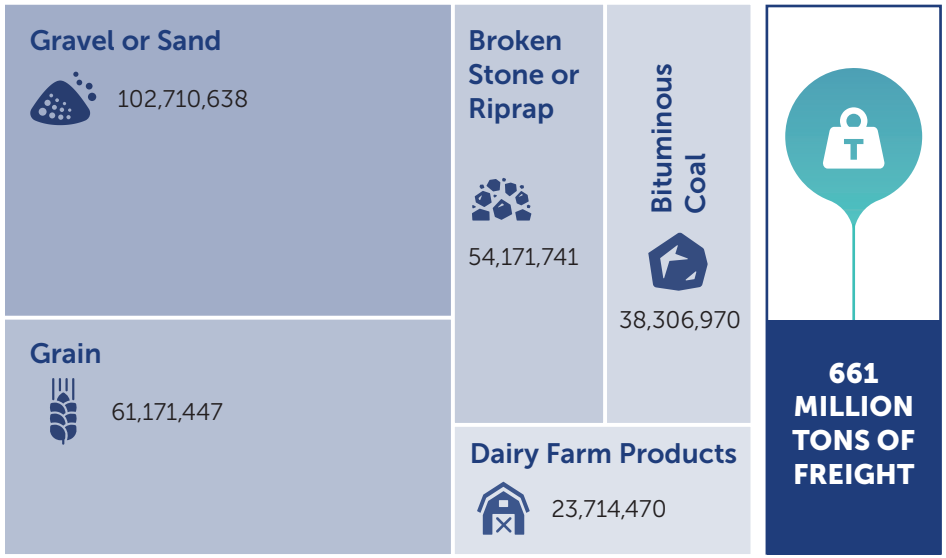
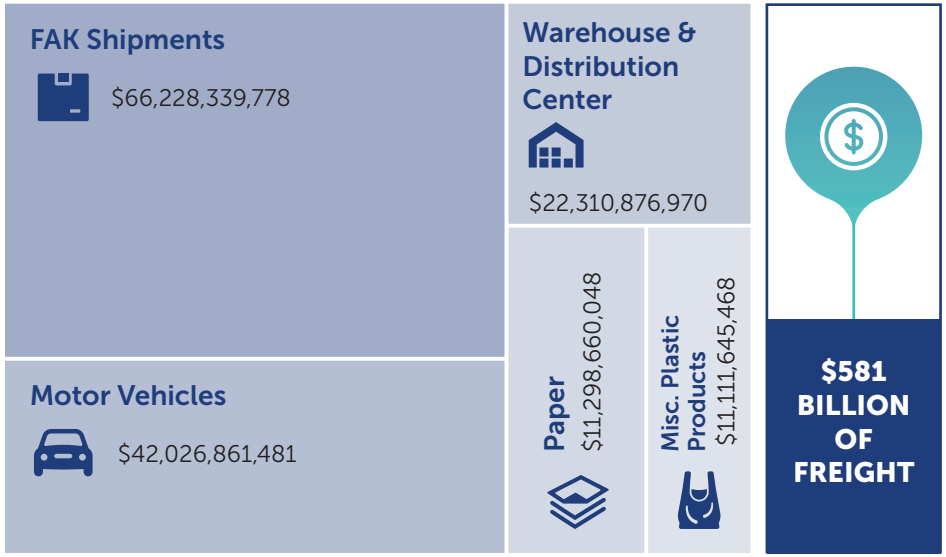


Figure 3-5: Top 5 Commodities by Value 2022 ($)



3.2 Transportation System Assets, Condition, Performance, and Safety

To support Wisconsin's freight movements, the state has multiple access points for shipping via truck, rail, water, and air. The following sections describe the methods WisDOT uses to evaluate system condition and performance for the various aspects of the freight transportation system. The subsequent section provides an overview of freight assets, conditions, and performance by mode.

3.2.1 Transportation System Condition

WisDOT uses a comprehensive asset management approach to identify and address the state's transportation system needs. This approach allows WisDOT to analyze transportation system conditions for pavement, bridges, and rail lines, and to identify preservation needs based on the physical infrastructure, safety, operation, function, and connectivity of the facility. It also allows WisDOT to consider a range of funding and construction alternatives, which results in a systematic and objective approach to cost-effective transportation system preservation.

3.2.2 Transportation System Performance Measures

Management of the transportation system requires comprehensive data, appropriate measures, and a consistent method for assessment. A key component of this assessment is the development and application of performance measures. WisDOT's transportation performance measures related to freight are focused, measurable, and drive performance improvement. Several of WisDOT's existing measures support analysis of freight-specific mobility needs by providing a comprehensive, objective, and consistent set of metrics to assess system condition, identify issues, prioritize investments, and measure the effectiveness of actions.

WisDOT is the steward of the transportation system and manages the state's transportation funding to deliver a safe and efficient transportation system. The continuous effort to use public dollars in the most efficient and cost-effective way requires accountability. Although accountability does not directly measure freight movement, it promotes overall efficiency, which positively impacts freight.

WISDOT'S PERFORMANCE IMPROVEMENT PROGRAM

- WisDOT's Mobility, Accountability, Preservation, Safety, and Service (MAPSS) performance improvement program includes measures that have met FAST Act requirements and continue to meet the BIL requirements. WisDOT's MAPSS performance improvement program[8] focuses on five core goals: Mobility, Accountability, Preservation, Safety, and Service (Table 3-2). The performance measures associated with each core goal guide WisDOT in achieving the department's mission to provide leadership in the development and operation of a safe and efficient transportation system. Public quarterly reports summarize and monitor the direction and degree to which WisDOT is meeting each goal.

Table 3-2: WisDOT MAPSS Performance Improvement Program Measures *(Freight-Related Measures in red)*

MOBILITY	ACCOUNTABILITY	PRESERVATION	SAFETY	SERVICE
Delay	**TEA Grants**	Program Effectiveness	**Traffic Fatalities**	DMV Wait Times
Reliability	Timely scheduling of contracts	**State Highway Pavement Condition (backbone and non-backbone)**	**Serious Traffic Injuries**	DMV Electronic Services
Transit Availability	**On-time Performance**	**State Bridge Condition**	**Traffic Crashes**	DMV Driver License Road Test Scheduling
Bicycling Conditions on Rural Highways	On-budget Performance	**State-Owned Rail Line Condition**	**Safety Belt Use**	DMV Phone Service
Incident Response	Surplus Property Management	**Airport Pavement Condition**		DMV Email Service
Winter Response		**State Highway Roadside Maintenance**		
		Material Recycling		

Source: Wisconsin Department of Transportation, MAPSS, 2022.

3.2.3 Transportation System Safety

Transportation system safety is a fundamental mission of WisDOT. The department emphasizes safety in all its efforts, from education and enforcement to engineering and emergency response. WisDOT hosts conferences and reviews draft state and federal legislation in order to ensure transportation safety remains a focal point. WisDOT reaffirms its commitment to a multidisciplinary philosophy that safety "is everybody's business" and continues to coordinate efforts across the entire department.

As the steward of the state's transportation system, WisDOT is responsible for addressing safety for all transportation modes and systems. The department's ability to influence safety varies depending on ownership or jurisdiction over the particular system or mode. For example, WisDOT has direct responsibility for state trunk highways. For the local system, which is owned and operated by local government entities, WisDOT provides funding, data, and technical assistance. One of WisDOT's goals is to move towards minimizing the number of deaths, injuries, and crashes on the transportation system.

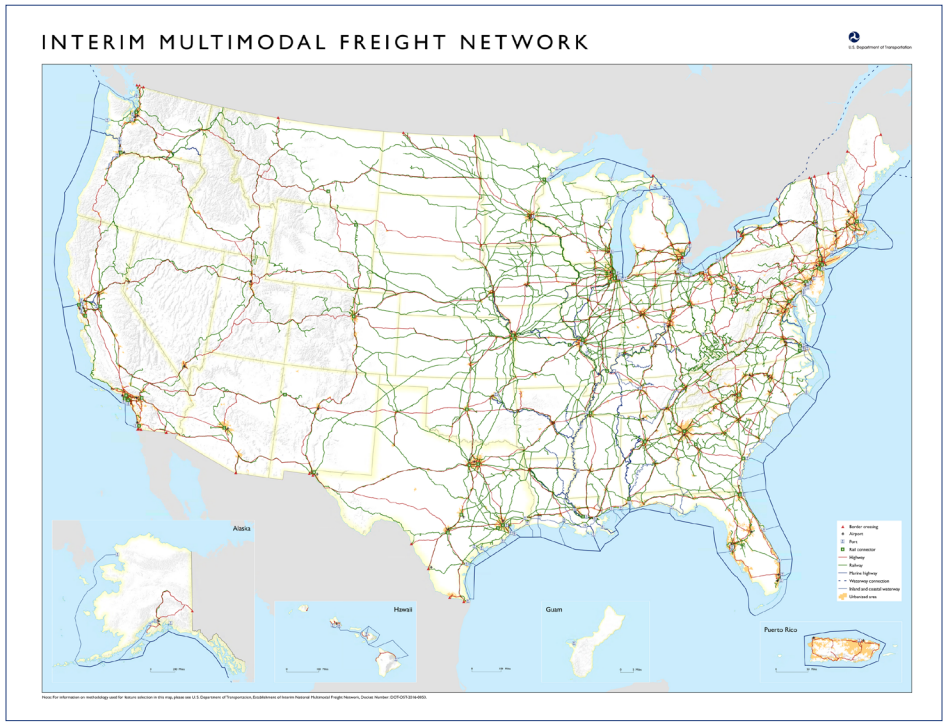
HAZARDOUS MATERIALS TRANSPORT

The Office of Wisconsin Emergency Management (WEM), which is part of Wisconsin's Department of Military Affairs, coordinates security concerns in Wisconsin, including coordinating emergency response efforts. WEM contracts and manages 21 regional HAZMAT response teams to provide a high level of response capability to the state's communities. These teams may be activated for an incident involving a HAZMAT spill, leak, explosion, injury, or the potential of immediate threat to life, property, or the environment. County-level response teams respond to lower-level HAZMAT incidents that exceed the capabilities of local fire departments. In terms of transportation security, WisDOT enhances the security of the transportation system by reducing vulnerability and improving incident response.

WisDOT continues to work with WEM, railroad companies, and other agencies to discuss rail-related security issues. WisDOT also expects rail carriers to comply with regulations related to the transportation of any HAZMAT and work with the appropriate agencies if a spill occurs.

3.3 National Freight Networks in Wisconsin

The United States transportation system is a vast, complex network of almost seven million miles of highways, local roads, railways, navigable waterways, and pipelines. The components of this system are linked to each other through thousands of seaports, airports, and intermodal facilities. This system accommodates the movement of goods, cargo, raw materials, and finished products from the entire spectrum of the agricultural, manufacturing, and wholesale and retail trade sectors of our economy.



The United States multimodal transportation system offers an advanced platform for the efficient, reliable, safe, flexible, and resilient movement of freight. The system connects Wisconsin's key gateways and corridors to the nation and plays an important role in linking Wisconsin to the global economy. The economic productivity of Wisconsin is dependent on the overall transportation performance of the United States transportation system as well as its own transportation system. Therefore, it is important to examine the connections between the two.

3.3.1 National Multimodal Freight Network (NMFN)

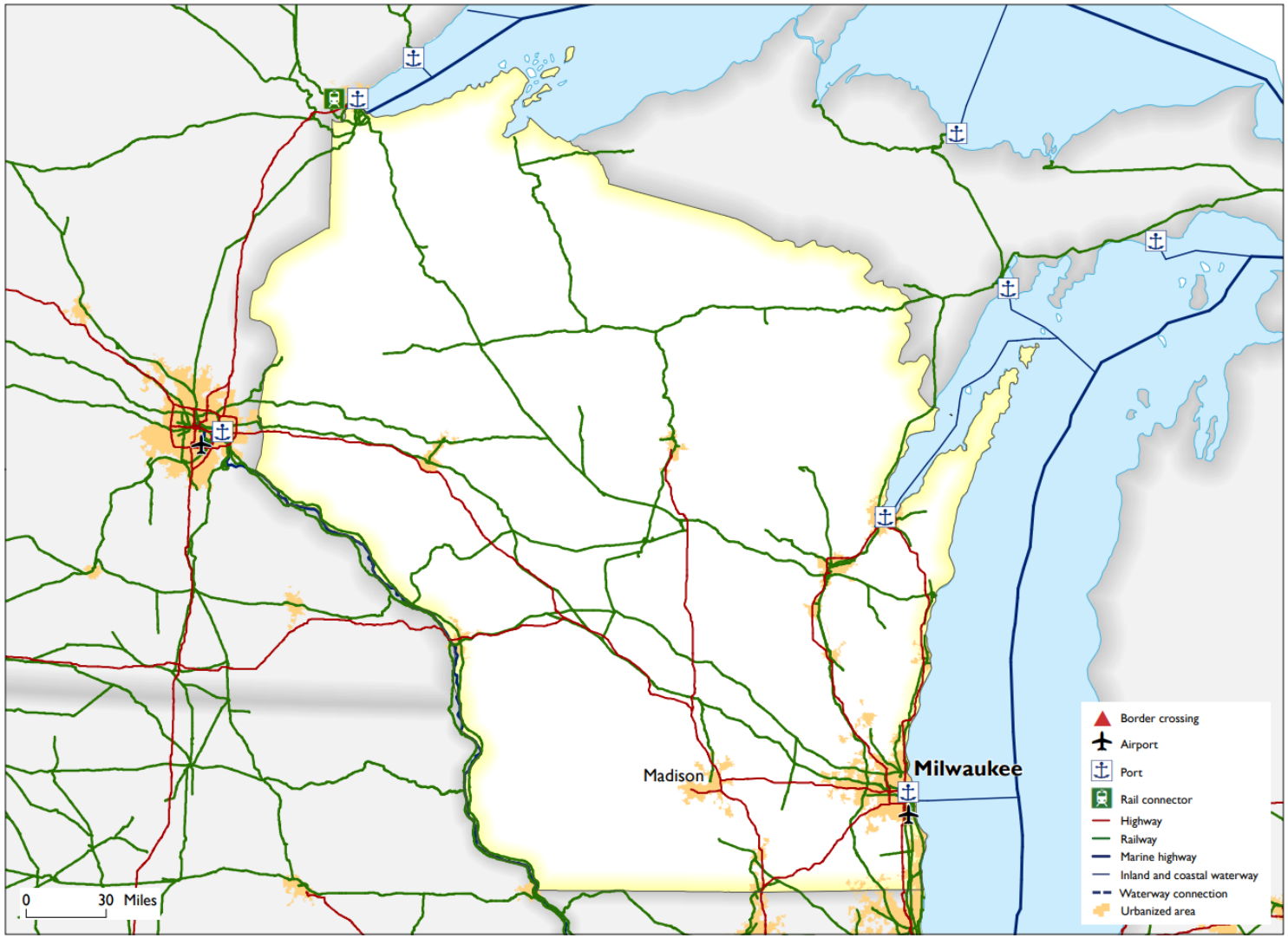
Recognizing the importance of multimodal connections, the Fixing America's Surface Transportation (FAST) Act directed the United States DOT to establish the National Multimodal Freight Network (NMFN). This interim network is comprised of the following components:

- National Highway Freight Network (NHFN)
- Class I railroads
- Large public ports
- Inland and intercoastal waterways
- Great Lakes and St. Lawrence Seaway
- The 50 largest airports
- Other strategic freight assets

The extent of the Interim NMFN in Wisconsin (pending updates and final U.S. DOT approval) are shown in Figure 3-6. Note that this map does not reflect additional designations of Critical Urban Freight Corridors (CUFC) and Critical Rural Freight Corridors (CRFC) discussed in the next section.

Figure 3-6: Wisconsin Interim Multimodal Freight Network

Source: FHWA



3.3.2 National Highway Freight Network

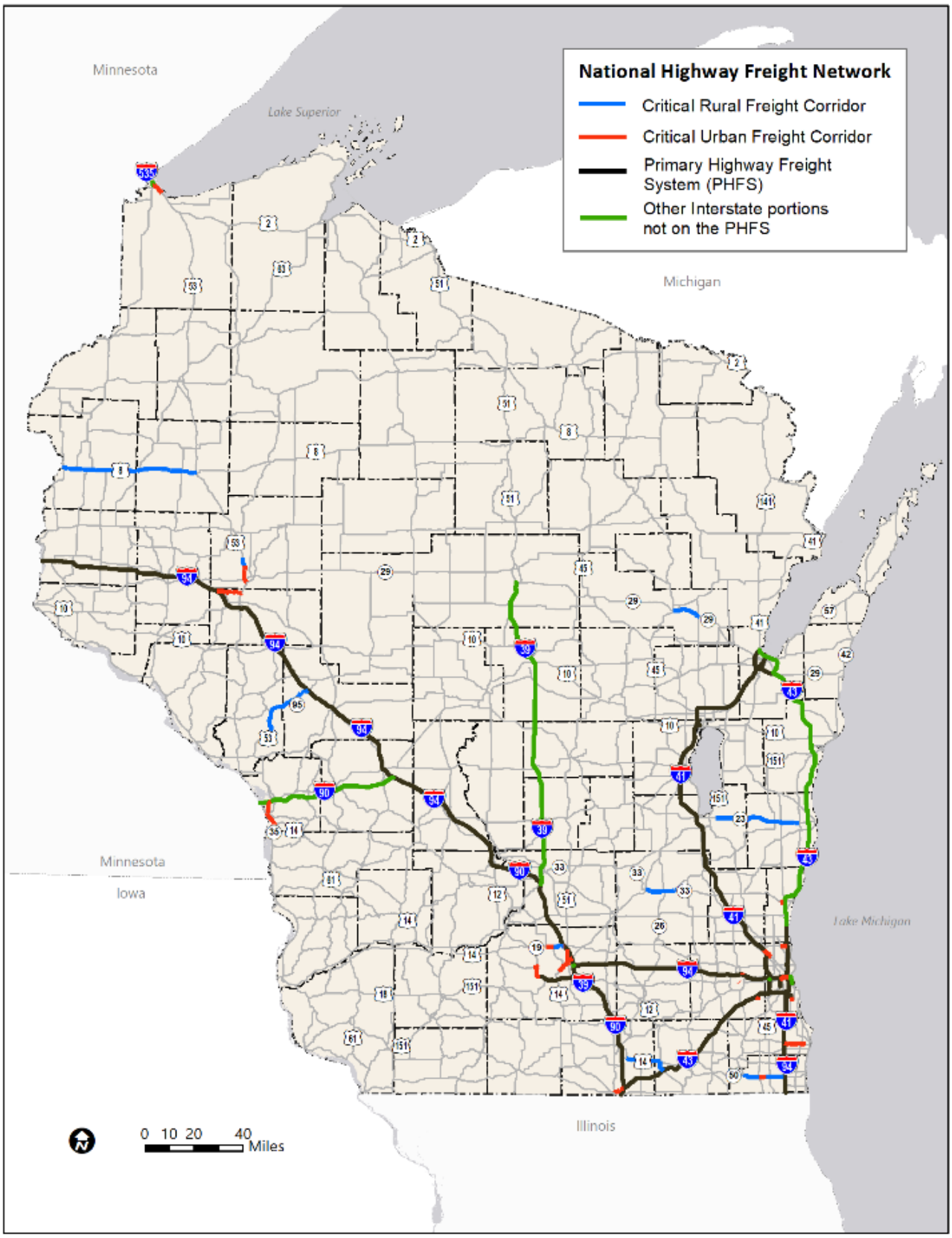
In addition to the NMFN, the FAST Act directed the FHWA Administrator to establish a National Highway Freight Network (NHFN) to aid in strategically directing federal resources and policies toward improved performance of highway portions of the United States freight transportation system. The NHFN identifies roadways to help direct resources towards improving system performance for efficient movement of freight on highways. The NHFN includes the following subsystems of roadways:

- **Primary Highway Freight System (PHFS)**: A network of highways identified as the most critical highway portions of the United States freight transportation system determined by measurable and objective national data. The network consists of 41,518 centerline miles, including 37,436 centerline miles of Interstate and 4,082 centerline miles of non-Interstate roads.
- **Other Interstate portions not designated as part of the PHFS**: Highways consisting of the remaining portion of Interstate roads not included in the PHFS. These routes provide important continuity and access to freight transportation facilities. These portions amount to an estimated 9,511 centerline miles of Interstate nationwide and will fluctuate with additions and deletions to the Interstate Highway System.
- **Critical Rural Freight Corridors (CRFCs)**: Public roads not in an urbanized area that provide access and connection to the PHFS and the Interstate with other important ports, public transportation facilities, or other intermodal freight facilities.
- **Critical Urban Freight Corridors (CUFCs)**: Public roads in urbanized areas that provide access and connection to the PHFS and the Interstate with other ports, public transportation facilities, or other intermodal transportation facilities.

In Wisconsin, over 1,100 miles are a part of the NHFN, including 652 miles of PHFS, 257 miles of non-PHFS Interstate, 143 miles of CRFCs and 73 miles of CUFCs. The FAST Act allowed for a maximum of 150 miles of CRFC and 75 miles of CUFC in Wisconsin. Southeastern Wisconsin Regional Planning Commission (SEWRPC) is the one metropolitan planning organization (MPO) in the state (population > 500K) with the ability to designate its corridors, in collaboration with WisDOT. WisDOT and MPOs (for urbanized areas over 500,000) are responsible for jointly determining how to distribute the CUFC mileage among the urbanized areas. WisDOT must consult with SEWRPC on CUFC designation, however, WisDOT facilitated CUFCs designation with all Wisconsin MPOs to determine the appropriate distribution of mileage (and subsequent funds) to all urban areas in the state. In 2019, FHWA approved WisDOT's CRFC and CUFC nominations. See WisDOT's Critical Corridor Submittal Package[9] for corridor details, mileage tables, and maps.

A map of Wisconsin's National Highway Freight Network is shown in Figure 3-7.

Figure 3-7: Wisconsin's National Highway Freight Network



3.4 Modal Snapshots

3.4.1 Highway

Freight shipments by truck make up the largest share of the state's goods movement, accounting for a 64 percent share by tonnage and 67 percent share by value. An estimated 420 million tons of freight, valued at approximately $390 billion, were transported to, from, within, or through Wisconsin by truck in 2022.

HIGHWAY ASSETS

In addition to the Interim NMFN and NHFN described previously, these additional highway assets help freight to move seamlessly between local freight generating areas and the national and global economy.

The National Highway System (NHS)

The NHS includes approximately 223,000 centerline miles of roadway important to the nation's economy, defense, and mobility. The NHS roads are designated to reflect and support interstate commerce by focusing federal investments on a selection of roadways important to the movement of goods.

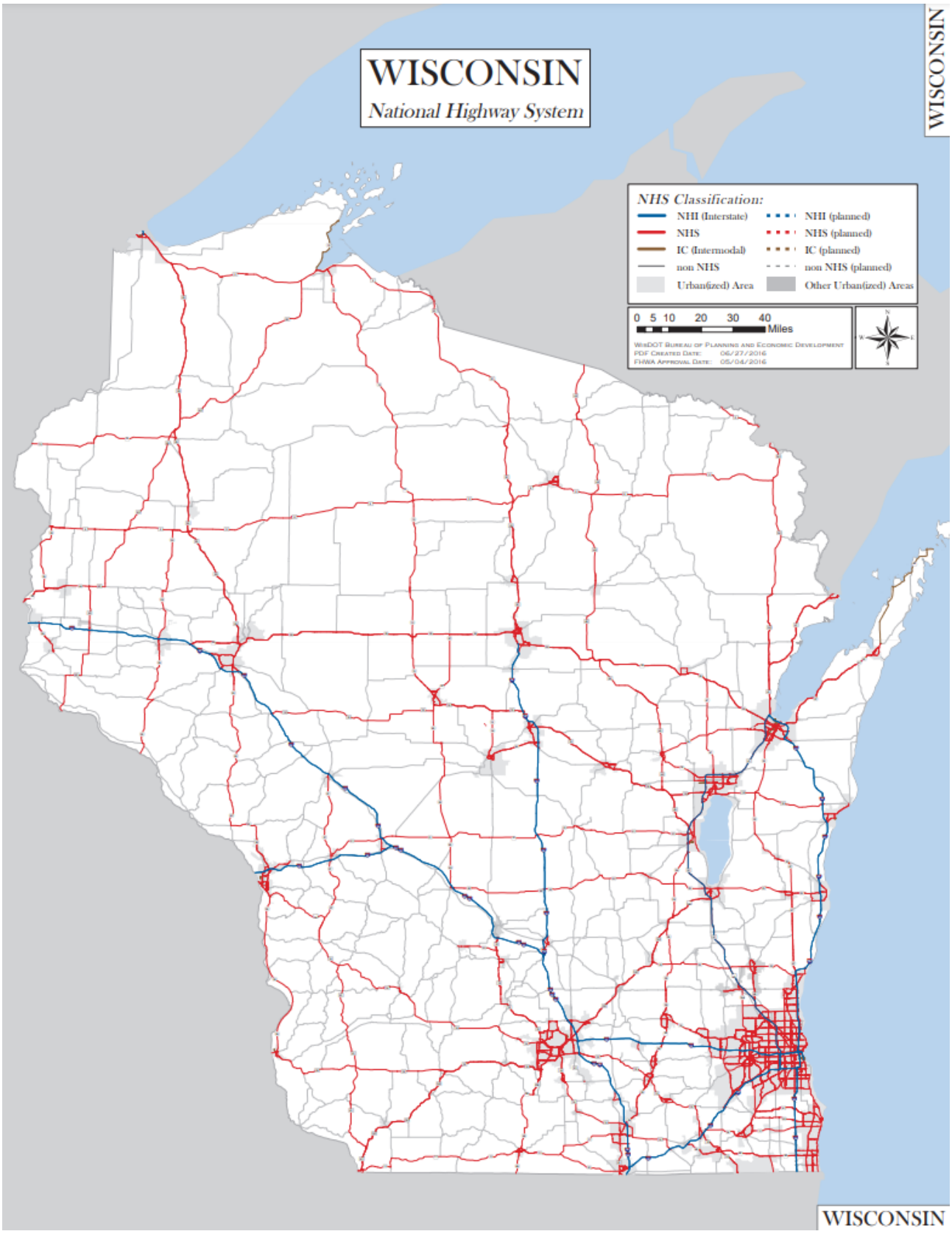
The Wisconsin National Highway System Map (Figure 3-8) shows 5,971 miles of NHS roadway as of 2022, including 878 miles of Interstate highways and 92 miles of intermodal connector roadways. The intermodal connector roadways are important freight linkages between intermodal facilities and the remainder of the NHS. FHWA evaluates and approves NHS intermodal connector designations that meet criteria based on vehicular volumes, service to intermodal facilities, and the importance of the facility to the state freight system.

As of 2022, there are 652 miles of local roads that are part of the NHS because they provide access to intermodal facilities, or they are considered principal arterial roads. In some instances, these roads have not been designed to carry higher traffic volumes or heavier vehicles and the local road network sometimes does not adequately serve oversize or overweight trucks. While these local roads are part of the NHS, in Wisconsin, local governments are currently responsible for both improvement and maintenance. WisDOT continues to work with local governments and Wisconsin's ports and intermodal facilities to identify solutions that address roadway issues for port areas and intermodal facilities.

National Network

The National Network is a federal designation requiring states to allow conventional combination trucks on the Interstate System and portions of the Federal-aid Primary System. The National Network is different than the NHS in that it supports interstate commerce through the regulation of trucks' size while the NHS supports interstate commerce by focusing federal investments.

Figure 3-8: Wisconsin's National Highway System



State Trunk Highway (STH) System

Wisconsin's STH consists of approximately 11,700 centerline miles of Interstate highways, United States highways, and state trunk highways. The STH system handled 56 percent of the Vehicle Miles Traveled (VMT) in 2021, while comprising just over 10 percent of the total roadway network. The STH system includes the state-owned National Highway System (NHS) corridors and Wisconsin's designated Corridors 2030 network.

Local Roads

Wisconsin's locally-owned and maintained road and bridge system serves as a critical link in the state's total transportation network. With over 100,000 miles of county, town, and municipal roads and nearly 9,000 bridges, the local road network accounts for approximately 90 percent of Wisconsin's public road mileage. Typically, local roads are owned and operated by local jurisdictions.

As a critical adjunct to the STH system, the local road system offers connections not only to local activity centers, but also to state and national facilities of importance such as ports and economic business centers. Local roads connect to the STH, airports, rail stations, and bus and ferry terminals. They are usually the first- and last-mile links in the state's farm-to-market commerce and offer critical links for area businesses and tourists.

In contrast to decisions made for the STH system, WisDOT does not have a direct role in the planning, construction, maintenance, or operation of the local road system. However, the department is responsible for managing and distributing local program funding. Local governments identify and prioritize infrastructure needs according to established guidelines for various state and federal funding sources.

Oversize / Overweight (OSOW) Routes

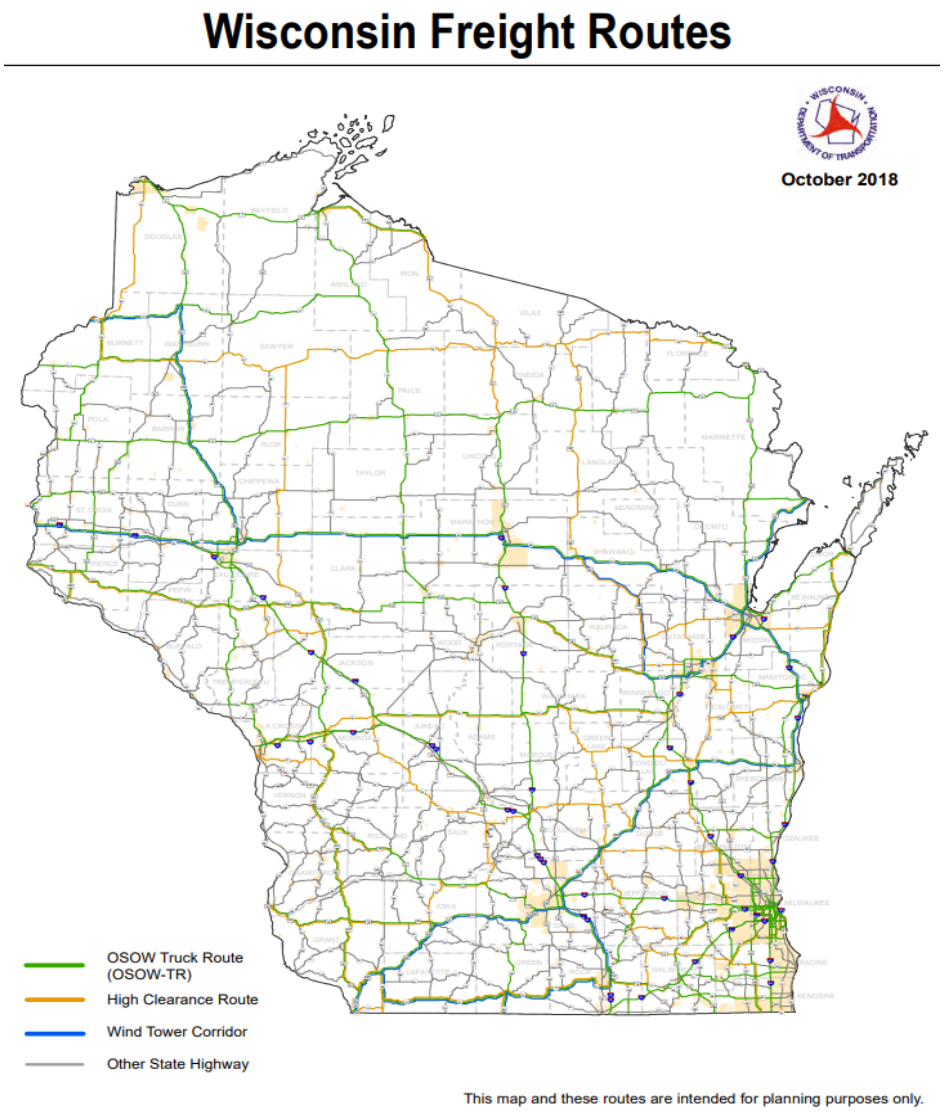
OSOW loads are trucks whose dimensions and/or weight exceed the legal limits. OSOW loads require permits to legally travel on designated roadways. OSOW loads increase the stress on bridges and pavements and generate highway operational considerations specific to OSOW movements. Wisconsin has made significant strides in developing a transportation system that accommodates OSOW loads.

Identifying the need to provide access to key OSOW corridors, WisDOT developed the OSOW Truck Routes network (Figure 3-9). Roadways on the OSOW network have been constructed to accommodate five representative OSOW vehicle types including: 5-axle expandable-deck lowboy (DST Lowboy), Wind Tower 80 M MID, Wind Tower 205', 55 Meter Wind Blade, and 165' Bridge Girder.

In 2016, WisDOT developed the **High Route Freight Corridors Task Force** aimed at addressing physical constraints leading to OSOW congestion and delay. The Task Force reviewed frequently-used high routes and selected preferred corridors based on high-volume origin-destination pairs, infrastructure, constraints, funding constraints, and connectivity to important freight nodes.

From late 2016 until early 2018, WisDOT convened the **Truck Route Evaluation and Efficiency (TREE) Task Force**. This Task Force, which conducted a data-driven study of WisDOT's OSOW truck routes, succeeded in significantly reducing the mileage of OSOW routes and number of intersections, provided guidance for updates to the Facilities Development Manual, and broadly set the stage for WisDOT to focus its investments into Wisconsin's most critical corridors.

Figure 3-9: Wisconsin's OSOW Truck Routes



OTHER OSOW CORRIDORS

In addition to the OSOW Truck Routes described above, WisDOT has designated additional corridors for specific OSOW vehicle types, also shown in Figure 3-9. These include:

- **High Clearance Routes:** These are routes with a minimum vertical clearance of 20 feet or less for bridge and sign structures.
- **Wind Tower Corridors:** These corridors are designed to accommodate the substantially longer vehicles needed to transport wind tower equipment such as turbine blades.

Finally, WisDOT has also developed the Wisconsin Long Truck Operators Map,[10] which identifies highways for the operation of vehicles and combinations of vehicles—the overall lengths of which cannot be limited. Wisconsin Administrative Code Trans 276 clarifies other statutory provisions or federal rules affecting the weight, width, and length of vehicles and vehicle combinations.

AUTOMATED OSOW PERMIT SYSTEM

WisDOT processes roughly 70,000 oversize-overweight permits every year in support of a trucking industry that's worth billions of dollars to Wisconsin's economy. The department works with shippers and carriers from a number of sectors, and issues over two dozen permit types. In November 2020, WisDOT launched its new permit system which automates the core processes of permit issuance and has created great efficiencies. This has saved time and money for both WisDOT and public and private sector partners. Based on the number of permits issued in a typical year, and an estimate of the time-cost savings per permit and carriers' average hourly load expense, the department estimates the new system has created at least $14 million in annual savings for industry. It has also created over 10,000 hours of efficiency for WisDOT annually.

Corridors 2030

First designated as Corridors 2020 in 1988 and updated as part of the state's prior long-range multimodal plan Connections 2030 in 2009, Corridors 2030 is a state designation of critical highways statewide. The most recent long-range transportation plan, Connect 2050, proposes no changes to the Corridors 2030 designations. As of 2022, these highways encompass approximately 3,916 centerline miles of federal and state highways that link all Wisconsin communities with populations greater than 5,000. These roads are considered vital to mobility and economic development in the state. The Corridors 2030 Map (Figure 3-10) illustrates two route types:

- **Backbone Routes:** include approximately 1,590 miles of Interstate and other multi-lane divided highways interconnecting all regions and major state economic centers, with links to the national system outside Wisconsin.
- **Connector Routes:** include approximately 2,320 miles of predominantly two-lane highways connecting all other significant economic centers to the Backbone system. (Wisconsin Department of Transportation, Bureau of Planning and Economic Development).

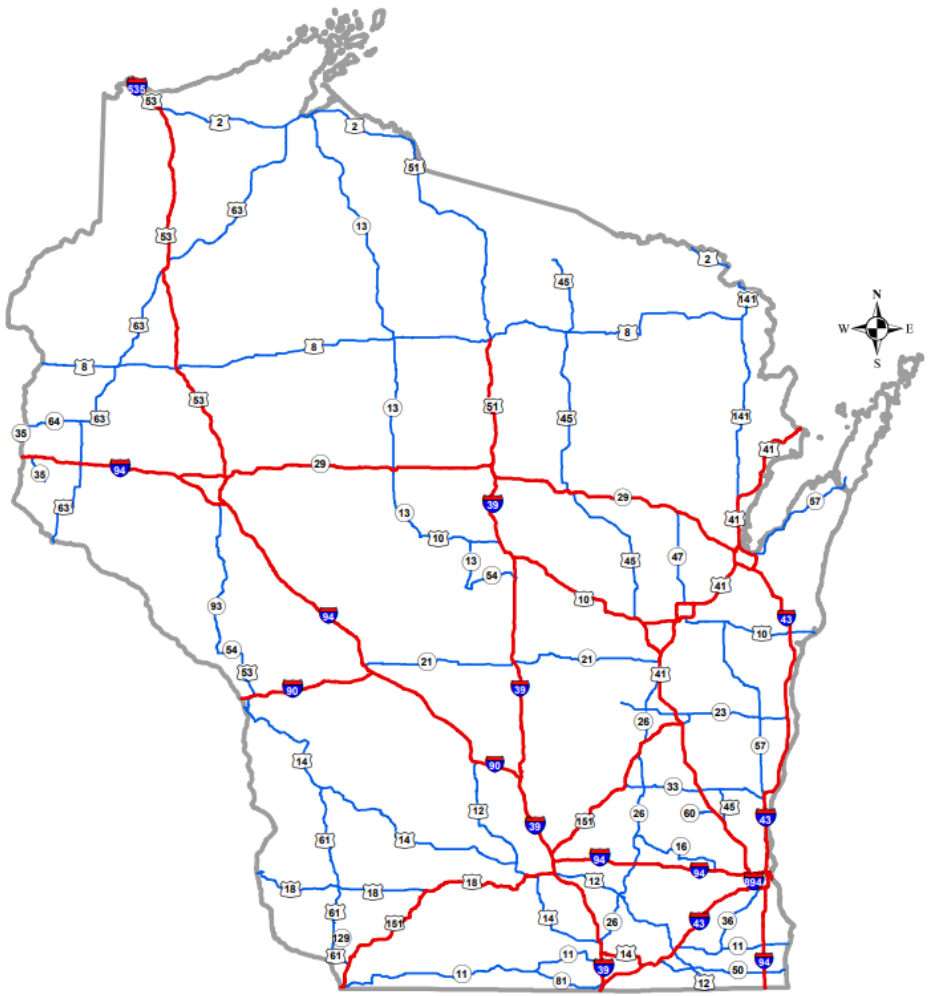
Other Supporting Roadway Infrastructure

Wisconsin's roadway network includes supporting infrastructure that facilitates the movement of freight via truck including Safety and Weight Enforcement Facilities (SWEFs), the Traffic Management Center (TMC), truck parking facilities, and Intelligent Transportation Systems (ITS).

SAFETY AND WEIGHT ENFORCEMENT FACILITIES (SWEFs)

WisDOT's State Patrol inspectors ensure that commercial carriers operate within statutory or permitted size and weight limitations while operating in Wisconsin. They inspect carriers to ensure they have proper registration, as well as insurance and authority credentials. Enforcement activities occur at SWEFs as well as through mobile enforcement using portable scales. Wisconsin has 12 SWEFs as shown in the Wisconsin State Patrol SWEF Map.[11]

Figure 3-10: Corridors 2030



Source: Connections 2030 Long-Range Multimodal Transportation Plan adopted October 2009

Date: 6/03/2014

TRAFFIC MANAGEMENT CENTER

The Traffic Management Center (TMC) is integral to safe and efficient travel throughout Wisconsin and the Great Lakes Region. The TMC plays an important role in monitoring and managing traffic-related operations along the state's highways. The TMC provides dynamic, real-time data to law enforcement, first responders and the general public—establishing the unit as the main source of information on current road conditions, traffic incidents, construction closures and alternate routes. The Milwaukee-based TMC is staffed on a 24/7 basis throughout the year. The TMC utilizes closed-circuit television (CCTV) cameras, dynamic message signs (DMS), the state's 511 website, news media partnerships, social media and other tools to help move people and freight in a reliable, predictable and safe manner. The TMC functions as a traveler-focused, performance-driven network of partnerships and technologies used to monitor, operate and maintain traffic management and traveler information systems and corresponding field devices on Wisconsin's roadways.

TRAFFIC INCIDENT MANAGEMENT ENHANCEMENT (TIME)

The Traffic Incident Management Enhancement (TIME) Program is managed by TMC staff and is a collaborative effort of public safety and transportation agencies to detect, respond to, and clear traffic incidents so that traffic flow may be restored as safely and quickly as possible. The goals of the TIME Program are to:

- Improve responder safety
- Enhance the safe, quick clearance of traffic incidents
- Support prompt, reliable, interoperable communications

TRUCK PARKING

Truck parking in Wisconsin is available at 28 public rest areas, several next-generation Safety and Weight Enforcement Facilities, and many private facilities such as gas stations or truck stops. Truck parking facilities play an important role in freight operations, safety, and security in Wisconsin by providing respite for long-haul truck drivers and a safe parking area during inclement weather conditions. They are also frequently used for staging or other logistical purposes.

The lack of available truck parking areas is a growing challenge for many commercial truck operators. Under the Federal Motor Carrier Safety Administration (FMCSA) hours of service regulations, drivers are required to rest after set intervals of driving. If no legal parking is available, drivers may resort to parking illegally on highway interchange ramps or shoulders. This poses a major safety risk, potentially causing traffic bottlenecks and pavement deterioration. In particular, parking for oversize-overweight vehicles continues to be a challenge at major border crossing points on established freight corridors, including near Hudson, La Crosse, Monroe, Beloit, and Kenosha, as well as in Grant County near Dubuque. These vehicles are not only more sensitive due to their size, but also because of restrictions on the times and weather conditions in which they may travel and the requirement for law enforcement escort.

Wisconsin, along with seven other Midwestern states, was awarded a Transportation Investment Generating Economic Recovery (TIGER) Grant to develop an interstate truck parking communications platform. The Truck Parking Information Management System (TPIMS) has been operational since 2018 in 12 Wisconsin rest areas. Truck parking availability is measured via sensors and cameras and is displayed on roadside hybrid signs, 511 WI, and is available to third parties via the TPIMS data feed. Parking availability is updated once per minute, 24 hours per day, 365 days per year. The potential for expanding TPIMS in Wisconsin is being explored.

TRUCK PARKING ASSESSMENT

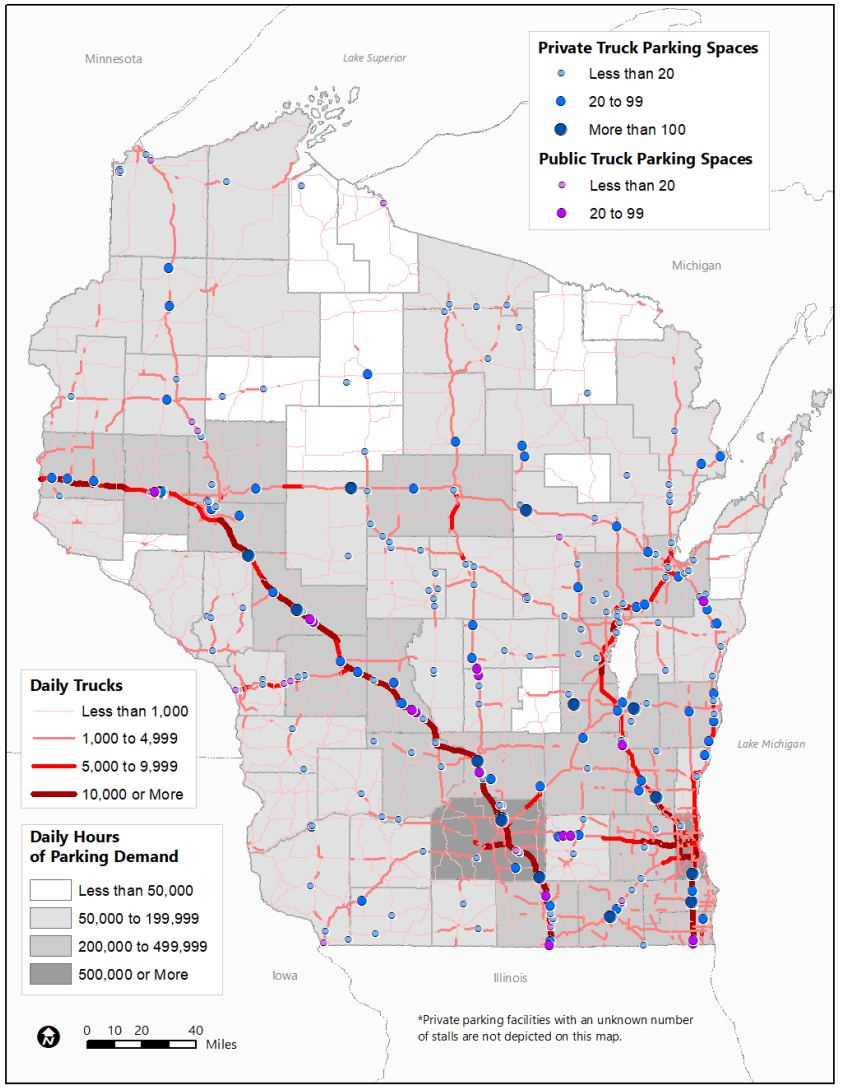
A review of truck parking capacity and demand was completed as part of the SFP development. The locations and truck parking capacity of public rest areas were based on FHWA data. The locations and truck parking capacity of private truck stops was based on a review of publicly available truck parking directories.[12]

The estimated truck parking demand was calculated using the FHWA's Truck Parking Demand Model.[13] This model uses highway segment length, highway AADT, truck percentage, and speed limit as the basis for estimating truck parking requirements along roadway segments. For this analysis, the truck parking demand and capacity estimates were grouped by county to identify areas with the greatest need of additional truck parking facilities.

Based on feedback from industry and observations of law enforcement and rest area staff throughout Wisconsin, WisDOT believes that, overall, there are inadequate parking facilities and rest facilities for commercial motor vehicles. The results of the analysis mentioned previously (Figure 3-11) show that the greatest truck parking demand is located in Milwaukee and Dane Counties.

Other areas of high demand include many of the counties adjacent to I-94 throughout the state. Division of State Patrol staff believe parking shortages are most acute on the I-94 corridor from Kenosha County to St. Croix County and the I-90 corridor from Rock County to La Crosse County. Underlying causes of limited truck parking capacity in these areas include a combination of limited availability of suitable land in urbanized areas, and an increase in the number of trucks traveling Wisconsin's highways (driven by consumer demand) which has outpaced the ability of the public and private sectors to address the emerging needs. While WisDOT has a policy of supporting an increase in the availability of truck parking and related infrastructure at state-owned facilities and raising the awareness of its availability, solving this challenge will require private sector solutions as well. In support of this policy, since 2016 WisDOT has added 89 truck parking spaces across four locations throughout the state. An additional 157 new spaces are expected to be added across five locations by 2025.

Figure 3-11: Truck Parking Demand and Capacity



Source: FHWA Freight Management and Operations-2019 Facilities and Spaces, and WisDOT analysis of internal State Trunk Highway Network data and publicly-available truck parking directories

INTELLIGENT TRANSPORTATION SYSTEMS (ITS)

WisDOT's ITS technologies include numerous tools to help manage highway system traffic flow from detection and response to data collection. Table 3-3 provides examples of traffic management technology and WisDOT's use of those technologies.

Table 3-3: Wisconsin's Traffic Management Technologies

TECHNOLOGY	STATUS	DESCRIPTION
511WI Traveler Information System	In Use	Website (511wi.gov) and automated, interactive phone system, that provides traveler information throughout Wisconsin (travel times, live traffic cameras, road closures, incidents, sign messages, weather conditions) to the public and freight carriers. API for 511 data is also available to third-party travel information providers (Example: Waze).
Dynamic Message Signs	In Use	Dynamic message signs on roadways provide direct information to travelers pertaining to road closures, travel times, truck parking availability, and special events that impact traffic.
Advanced Traffic Management System (ATMS) Software System	In Use	Provides dynamic message sign messages, travel times, flex lane status, and other traveler related information to the 511WI website.
Video Management System	In Use	Provides live video feeds and snapshot images from cameras that monitor roadways to the 511WI website.
Wisconsin Lane Closure System	In Use	System that tracks all lane closures on Wisconsin roadways. Provides road closure data to the 511WI website.
Vehicle Detection	In Use	Vehicle detectors (microwave, Bluetooth readers, and third-party probe data) provide speed and volume information used to create travel times and detect congestion/slowdowns on roadways.
Queue Warning Systems	In Use	Provide information of stopped or slowed traffic ahead.
Dynamic Late Merge System (DLMS)	In Use	Reduces queue lengths and provides information of slow or stopped traffic ahead.
Work Zone Data Exchange (WZDx) Feed	In Progress	Adoption of FHWA's WZDx specifications to provide an API to 3rd parties and other mapping companies which provides information about work zones. Example: Smart Work Zone ITS Devices to provide real-time information when lane closures are active.
Connected Vehicle Infrastructure	Testing	In the future, connected vehicle technology will provide in-vehicle traveler information.
Truck Parking Information System (TPIMS)	In Use	Convey real-time information to truck drivers about available parking, resulting in maximum utilization of existing truck parking facilities.
Flex Lane (Dynamic Part-time Shoulder Use)	In Use	Currently in use on the Madison Beltline; dynamic part-time shoulder use is the conversion of shoulders to travel lanes during some hours of the day as a congestion relief strategy.

Source: WisDOT, Bureau of Traffic Operations

HIGHWAY CONDITIONS

Highway infrastructure in good condition promotes the safe and efficient movement of people and products throughout Wisconsin.

Pavement Quality

WisDOT analyzes pavement condition data to determine where and when repairs are needed, and to determine viable alternatives. In addition, the department assesses the metropolitan planning organization (MPO) recommendations published in each organization's long-range transportation plan when assessing priority needs.

WisDOT uses the Pavement Condition Index (PCI) methodology to rate pavement condition and monitor performance. This methodology relies on visual signs of pavement distress (e.g., cracks, ruts, or potholes) to determine the underlying mechanics impacting the pavement structure and rates it accordingly. PCI is a numerical rating that ranges from 0 to 100, where 100 represents pavement in excellent condition and 55 represents a minimum rating for pavement in fair condition.

Pavement quality of the backbone and non-backbone highway systems is one of the MAPSS performance measures discussed previously. According to the MAPSS Performance Scorecard, **Wisconsin is currently meeting the goals of having 90 percent of the state highway backbone system and 80 percent of the state highway non-backbone system rated fair or above.**

Bridge Condition

WisDOT performs regular inspections on all bridges and stores the inspection data in the department's Bridge Management System. Bridge inspections are key to helping the department decide whether future bridge construction or repair is needed.

WisDOT administers an inventory of more than 14,000 bridges that are maintained by state and local governments. The department and its local government partners perform bi-annual safety inspections and condition assessments of bridges. This is the designated frequency in National Bridge Inspection Standards (NBIS). Through these inspections, condition rating data is collected and reported to WisDOT for the deck, superstructure, and substructure, and an overall rating of good, fair, or poor condition is assigned each calendar year. The final bridge rating is based on the lowest rating a bridge received for any of its components.

Bridge Component Definitions

- **Deck:** the portion of a bridge that carries traffic.
- **Superstructure:** the portion of the bridge that supports the deck and connects one substructure element to another.
- **Substructure:** the portion of the bridge that supports the superstructure and distributes all bridge loads to below-ground bridge footings.

The department's goal is to have 95 percent of Wisconsin's state-owned or maintained bridges rated fair or above. **Wisconsin exceeded the goal of 95 percent of bridges in good/fair condition over the past six years.** For calendar year 2021, 97.5 percent of Wisconsin's 5,315 bridges had a good or fair rating, while roughly 2.5 percent of state bridges had a poor condition rating.

Local Road Pavement and Bridge Structures Condition

With over 104,000 miles of county, town, and municipal roads and 8,904 bridges, the local road network accounts for approximately 90 percent of Wisconsin's public road mileage. Some of the state's local roads and bridges are not designed to carry heavier loads and overweight trucks may accelerate deterioration of highways and bridges. This can result in the need for additional infrastructure investment. Allowing oversize and overweight vehicles on Wisconsin's roadways requires a balance between increasing freight movements to meet economic development goals and minimizing impacts to local roads, highways, and bridges.

As of 2019, WisDOT's Local Road Pavement Condition Summary Statistics shows 90 percent of Wisconsin's paved local roads rated fair and above, and 83 percent of the unpaved local roads rated fair and above.

An area of concern related to structures is the number of posted bridges on secondary roads. In 2022, 504 local bridges were posted (load restricted) because of condition and/or obsolescence. In many cases, heavy vehicles (mining, agricultural, energy cargo or equipment, and some timber-related vehicles) are not designed to meet the local road and bridge size and weight requirements found in Wisconsin statutes.

However, these oversize-overweight (OSOW) vehicles may be eligible for a multi-trip or single-trip permit to traverse state roadways and bridges. Fees collected from these permits do not necessarily generate enough revenue to supplement the damage caused by heavy vehicles. Thus, it is important for the state and local municipalities to have an asset management program to mitigate, reduce, or impede the deterioration of their respective bridges and roads.

Maintenance and Preservation of Wisconsin's Transportation System

WisDOT's efforts to protect, maintain, and operate the state's transportation system include using appropriate maintenance and preservation strategies to maximize state investments. Ongoing routine maintenance refers to the daily activities that help maintain and preserve the system so that it provides a satisfactory level of service.

Highway Maintenance Activities

- Pavement and bridge spot treatments
- Shoulder repair
- Repair and replacement of signs and pavement markings
- Repair and restoration of STH facilities and structures after crashes, natural disasters, and vandalism
- Maintenance of rest areas, waysides, and some park-and-ride lots
- Roadside vegetation control

While maintenance activities help address immediate system needs, eventually they are insufficient to address underlying infrastructure deterioration. At that point, rehabilitation strategies are used to appreciably extend the infrastructure's useful life. WisDOT's rehabilitation and maintenance strategies include ongoing routine and preventive maintenance and long-term preservation to keep statewide transportation services available.

Returning roads to the condition they were in before a winter storm (reaching bare or wet pavement) restores the capacity of the system to move traffic safely to work, school, and other destinations. Clear roads also meet the needs for emergency travel and restore travel time reliability, which is important to the movement of freight. WisDOT's goal is to achieve the targets for each state road category 70 percent of the time.

State Road Maintenance Categories

State roads are grouped into two categories:

- **Roads maintained 24 hours a day:** These roads are to be cleared within four hours.
- **Roads maintained 18 hours a day:** These roads are to be cleared within six hours of the end of a storm. 18-hour roads have lower traffic counts, are concentrated in peak travel time periods, and are not serviced between 10 p.m. and 4 a.m.

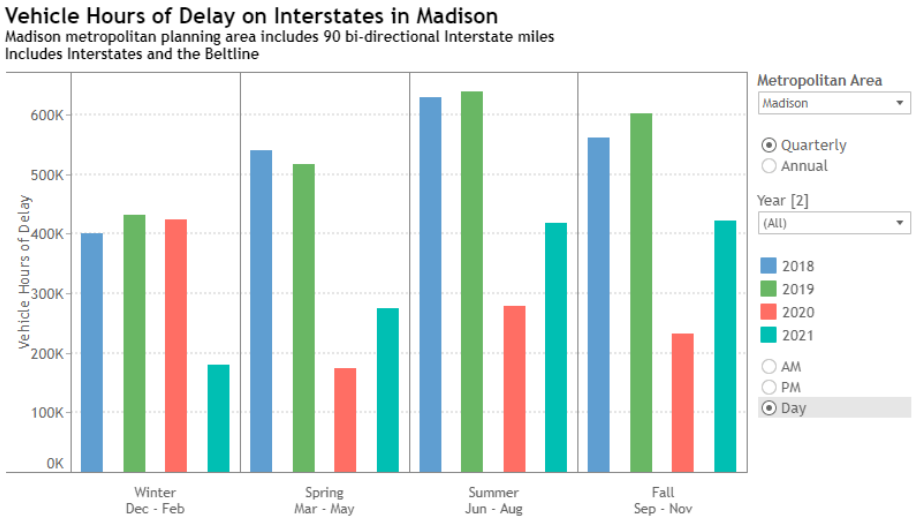
Each county provides weekly reports covering each storm event. They record when each storm event ends and when roads were restored to bare/wet pavement. For each storm event, the time to bare/wet pavement is calculated as the elapsed time between these two points. The performance measure is the average percent for all storm events that bare/wet pavement conditions are met for 18-hour roads (within six hours) and on 24-hour roads (within four hours). The 24-hour category met its performance expectation in the winter of 2021-2022, according to WisDOT's Winter Response Statistics. Both categories in this measurement showed improvement from the previous winter.

HIGHWAY PERFORMANCE

Highway Congestion

WisDOT measures congestion levels in terms of vehicle hours of delay. This measure estimates the additional time travelers need to reach their destinations when traffic is moving slower than under free flow conditions. The calculation of this measure reflects and adheres to federally established tracking formulas. WisDOT evaluates this measure for individual corridors as well as for metropolitan areas in total (Figure 3-12). WisDOT's vision for optimizing traffic movement on the state trunk highway system is to improve the system to reduce congestion, improve safety, and support economic growth in Wisconsin. To achieve this vision, WisDOT uses tools and strategies to improve capacity on existing facilities and construct new facilities to increase capacity, where appropriate and warranted.

Figure 3-12: Vehicle Hours of Delay

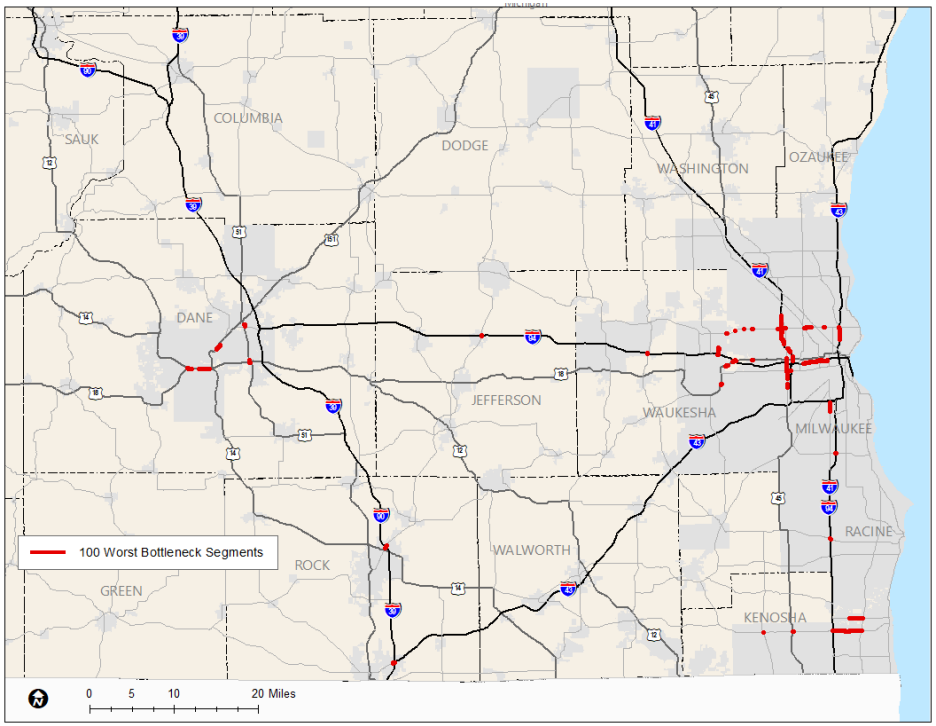


Source: WisDOT MAPSS

Roadway Freight Bottlenecks

FHWA defines a truck freight bottleneck as any highway segment identified by a State DOT to have constraints that significantly affect freight mobility and reliability. Table 3-4 includes a list of identified Interstate and non-Interstate NHS bottlenecks ranked by their average percentile score on four metrics: travel time reliability, truck volume, bottleneck frequency, and congestion duration. Figure 3-13 identifies the locations of the top freight bottlenecks in Wisconsin during 2021.

Figure 3-13: Top Freight Bottlenecks in Wisconsin



Source: 2021 National Performance Management Research Data Set (NPMRDS)

Note: NPMRDS speeds reflect field-measured speeds, which may capture impacts of construction, weather, incidents, and other non-recurring sources of delay.

Table 3-4: Top 25 Bottlenecks in Wisconsin

RANK	COUNTY	ROUTE	DIRECTION	INTERSECTION	DISTANCE (MI)	RELIABILITY (95TH/50TH)	CONGESTION DURATION (HOURS)	BOTTLENECK FREQUENCY (COUNT)	AADT
1	MILWAUKEE	I-41/US-45	NORTHBOUND	W WATERTOWN PLANK RD/EXIT 40	0.01	4.29	1082.0	497	162,865
2	MILWAUKEE	I-41/US-45	SOUTHBOUND	HAMPTON AVE/EXIT 45	0.49	3.75	972.6	401	140,494
3	MILWAUKEE	I-41/US-45	SOUTHBOUND	WI-190/CAPITOL DR/ EXIT 44	0.45	2.76	1242.8	477	143,829
4	DANE	US-51	NORTHBOUND	BROADWAY	0.08	4.17	2470.6	1269	49,637
5	MILWAUKEE	I-41/US-45	SOUTHBOUND	BURLEIGH ST/EXIT 43	0.57	2.67	1283.2	481	148,705
6	DANE	US-51	SOUTHBOUND	US-18/US-12/BELTLINE HWY	0.05	4.20	2003.3	1010	49,637
7	MILWAUKEE	I-41/US-45	SOUTHBOUND	WI-190/CAPITOL DR/ EXIT 44	0.59	2.95	1118.0	397	142,214
8	DANE	US-51	SOUTHBOUND	US-18/US-12/BELTLINE HWY	0.15	5.75	1578.3	671	49,637
9	MILWAUKEE	WI-190	WESTBOUND	N 124TH ST	0.10	4.00	2182.3	1139	51,357
10	MILWAUKEE	I-94	EASTBOUND	68TH ST/EXIT 307	0.12	3.41	826.1	467	160,881
11	MILWAUKEE	I-41/US-45	SOUTHBOUND	BURLEIGH ST/EXIT 43	0.52	2.33	1133.2	452	148,115
12	MILWAUKEE	I-94	EASTBOUND	70TH ST/EXIT 307	0.26	3.69	794.4	458	159,395
13	MILWAUKEE	I-94	EASTBOUND	68TH ST/EXIT 307	0.17	2.90	843.3	463	160,881
14	KENOSHA	WI-50	WESTBOUND	I-94/US-41	0.13	4.14	1667.8	897	31,195
15	MILWAUKEE	WI-190	WESTBOUND	N 124TH ST	0.14	4.14	1574.0	569	51,357

RANK	COUNTY	ROUTE	DIRECTION	INTERSECTION	DISTANCE (MI)	RELIABILITY (95TH/50TH)	CONGESTION DURATION (HOURS)	BOTTLENECK FREQUENCY (COUNT)	AADT
16	WAUKESHA	US-18	WESTBOUND	I-94/W BLUEMOUND RD	0.15	2.91	2028.5	934	37,659
17	WAUKESHA	WI-164	SOUTHBOUND	I-94	0.71	2.80	1580.3	791	42,143
18	MILWAUKEE	I-41/US-45	SOUTHBOUND	HAMPTON AVE/EXIT 45	0.30	2.54	813.5	377	138,849
19	MILWAUKEE	I-94	WESTBOUND	US-41/EXIT 308	0.29	2.89	939.0	605	166,333
20	MILWAUKEE	WI-59	WESTBOUND	S 108TH ST	0.48	2.86	1642.2	942	30,605
21	WAUKESHA	US-18	EASTBOUND	N BARKER RD	0.09	3.50	1584.6	814	37,187
22	WAUKESHA	WI-190	WESTBOUND	N BROOKFIELD RD	0.10	3.45	1885.8	887	39,458
23	MILWAUKEE	WI-190	EASTBOUND	US-45	0.36	2.90	1504.4	855	51,357
24	MILWAUKEE	I-94	EASTBOUND	HAWLEY RD/EXIT 307	0.17	2.48	887.8	470	160,881
25	MILWAUKEE	I-94	EASTBOUND	70TH ST/EXIT 307	0.23	3.28	685.4	412	158,547

Travel Time Reliability (Planning Time Index)

Travel time reliability measures the variability of congestion. A congested roadway may still be highly reliable if it presents predictable levels of congestion throughout the day. If a roadway is sometimes congested, and sometime free flowing, freight carriers may need to plan for additional travel time. The Planning Time Index (PTI) captures this experience and is calculated as the 95th percentile travel speed divided by the free flow travel speed. A wide variation in the recorded travel time indicates low reliability and a high planning time index. This measure is represented by direction and by weekday, non-holiday peak periods. Travel time information for this measure was acquired from an FHWA-sponsored national data set. The current goal is to improve on reliability from the previous year. According to WisDOT's Planning Time Index Reliability Statistics, the annual all-day (6 a.m. to 8 p.m.) planning time index for 2021 was 1.17 which is slightly more than the 2020 planning time index of 1.16. **The 2021 value is a still below the 1.25 value that Wisconsin realized in 2019.** In addition to the Planning Time Index, WisDOT also monitors Truck Travel Time Reliability Index (TTTRI) in compliance with the FHWA's Final Rule on National Performance Management Measures (PM3). In 2018, WisDOT established two- and four-year targets (from a base year of 2017) for the Interstate Highway TTTRI. In 2019 WisDOT met and exceeded this two-year target with a TTRI of 1.25 compared to a target of 1.4. WisDOT is also on track to meet the four-year target for 2021. However, data is not yet available to confirm this finding. Please view the State Highway Reliability Report for more information.

Delay

Measuring the amount of delay users experience on the state's highway system provides an indicator of how a highway is impacted by events such as traffic incidents, work zones, and weather.

WisDOT started reporting Vehicle Hours of Delay by metropolitan planning area (MPA) in 2019. The current goal is to reduce vehicle delay from the previous year. Statewide vehicle hours of delay, including both passenger vehicles and trucks, was measured at 9,841,770 during the daytime hours of 6 a.m. to 8 p.m. for the 2021 reporting period. This level of delay was significantly below delay numbers recorded in 2019, prior to the COVID-19 pandemic.

On-Time Performance

WisDOT's on-time performance measure indicates the department's ability to estimate and manage the amount of time it will take to complete a highway construction project. The better the department is at determining project completion time, the better WisDOT is able to schedule future projects to effectively utilize contractor and department resources. The general public and businesses are affected by construction projects. Adhering to a schedule allows everyone to better plan for potential impacts. The department's goal is to meet the project time frame specified in the construction contract 100 percent of the time. According to WisDOT's On-time Performance Statistics, the time frame was met 93.3 percent of the time in 2020.

Resilience

The requirement to address resiliency of the freight transportation system is a new requirement of BIL. Specifically, BIL requires that state freight plans include strategies and goals to decrease the severity of impacts of extreme weather and natural disasters on freight mobility. WisDOT is in the process of defining these goals as they apply to freight. After these are in place, specific performance measures needed to measure the effects of these strategies and goals will be considered for inclusion in the MAPSS performance measures list.

Roadway Safety

WisDOT's performance metrics measure traffic fatalities, serious traffic injuries, traffic crashes, and safety belt use on the state's roads. The department's goal is to reduce the number of traffic fatalities by two percent from the previous five-year rolling average as well as to reduce the number of serious injuries from traffic crashes by five percent from the previous five-year rolling average. According to WisDOT's Traffic Fatalities

Statistics, Wisconsin had 595 fatalities in 2021, two more than in 2020 and 4.6 percent higher than the target. Wisconsin also had 3,473 serious injury crashes in 2021, 287 more than in 2020 and 13.8 higher than the target. It is likely that this increase in crashes has been driven in part by the increase in VMT between 2020 and 2021.

In 2021, there were approximately 260 serious injury or fatal crashes involving a commercial motor vehicle in Wisconsin compared to 205 in 2020. The Division of State Patrol (DSP) uses a high-level community mapping program designed by the University of Wisconsin Traffic Operations and Safety Laboratory to identify causal factors and to aid in crash prevention. The mapping program, called Community Maps, provides statewide maps and data for all police reported motor vehicle crashes in the state. The application uses predictive analytics to pinpoint locations for resource allocation based on specified safety events.

The agency's Commercial Vehicle Safety Plan[14], which is submitted annually to the Federal Motor Carrier Safety Administration, stresses the importance of high visibility traffic enforcement with respect to all motorists, including drivers of light vehicles who operate in an unsafe manner around commercial traffic.

Local Road Safety

As WisDOT continues its efforts to improve the safety of the state's roadway network, including Wisconsin's local roads and bridges, WisDOT coordinates with local governments to manage available safety funding and to program safety improvements. In addition, WisDOT coordinates with local governments on data sharing, providing technical assistance, and addressing safety issues.

The Three Es of Safety

The three Es of highway safety—engineering, education, and enforcement—have historically been used by transportation professionals as a framework for addressing safety issues since their inception by the National Safety Council in 1925. This framework continues to be used by many agencies, including WisDOT. A fourth E, Emergency Response, has also grown in importance in recent years. WisDOT's use of this framework is described below.

ENFORCEMENT AND EMERGENCY RESPONSE

WisDOT has expanded the use of multi-jurisdictional High Visibility Enforcement task forces around the state to address impaired driving, speed, pedestrian safety, and safety belt use. Speed and aggressive driving are targeted through increased use of aerial enforcement in partnership with agencies across the state. WisDOT's vision for security is to be able to prevent, prepare for, or coordinate response to any incident, whether caused by natural or human events.

WisDOT's role in security and incident management complements the roles of other agencies. Incidents are typically handled by the appropriate agency with local agencies typically handling smaller incidents and larger incidents potentially requiring broader state and federal oversight.

Within the Division of State Patrol, the Motor Carrier Enforcement section implemented a Security Contact Review, which thoroughly examines commercial motor carriers' security measures and has a particular focus on vehicles that transport hazardous materials (HAZMAT). In 2021, the DSP conducted over 30,000 large-truck inspections and weighed more than 3 million trucks. The 2021 Wisconsin State Patrol Annual Report includes additional enforcement information as well as a strategic plan through 2023.

Incident Response

WisDOT monitors incidents on the state trunk highway network in close coordination with state agency partners and staff at the Traffic Management Center (TMC). Regardless of incident severity, restoring the roadway to full operation as quickly as possible helps reduce secondary incidents, minimizes delay for people and freight, and decreases the associated economic impact of traffic delays.

WisDOT's goal is to clear 90 percent of all intermediate incidents in less than two hours and to clear 80 percent of all major incidents in less than four hours. **In 2021, the department continued to meet its major incident target with an 86.1 percent clearance rate and nearly met its intermediate incident target with and 89.6 percent clearance rate** per WisDOT's Incident Response Statistics.

Highway Safety Improvement Program

The Highway Safety Improvement Program (HSIP) funds highway and local road safety projects at sites that have experienced a high crash history. An emphasis is placed on low-cost options that can be implemented quickly. However, HSIP funds are often used to help fund larger and more costly projects. Projects typically include intersection safety improvements, improving site distance issues, eliminating roadside obstacles, and installing guardrails and barriers.

FHWA published HSIP and Safety Performance Management Measures rules in 2016. WisDOT complies with the federal Performance Management Measures rule by submitting annual targets for the five Safety Performance Management Measures to FHWA.[15]

EDUCATION

WisDOT provides ongoing educational outreach to high school students to promote safe driving, use of safety belts, and eliminating driving distractions. The department works to encourage drivers to stay within the speed limit, drive sober, buckle their safety belts, and eliminate driving distractions.

Zero in Wisconsin

WisDOT, working with its traffic safety partners, launched the Zero in Wisconsin campaign, demonstrating how simple changes in driving behavior and habits—changes we can all live with—will prevent motorists from injuring and killing themselves or others.

Simply put, in Wisconsin, the only acceptable number of traffic deaths is ZERO.

ENGINEERING

Highway design standards are continually researched, reviewed, and updated to ensure characteristics such as speed, lane width, shoulder width and slope, and stopping-sight distance are consistent with national standards and best practices. Design features such as guard rails, divided highways, cable barriers, clear zones, and rumble strips help to minimize the impact of driver error or fatigue, roadway characteristics, and environmental factors.

Federal and state transportation guidelines stress the importance of good design that is both safe for road users and sensitive to the surrounding environment. For example, the United States DOT adopted guidelines developed by the American Association of State Highway and Transportation Officials (AASHTO) on how to modify roadways to safely accommodate senior drivers and pedestrians as well as other users. Ideas range from larger roadway signs to roadway lighting. WisDOT integrates the AASHTO recommendations on engineering, operations, and maintenance into its activities. WisDOT also continues to increase investments in roadway engineering and operational improvements that reduce the negative influences of roadway condition or environmental factors, and minimize the impact of driver error. The challenge for today's highway designers is to find design solutions, as well as mobility options, that result in a full consideration of these sometimes-conflicting objectives.

Freight Rail

WISCONSIN FREIGHT RAIL HIGHLIGHTS

3,300 miles of railroad

700 miles of lines in Rails-to-Trails status

12 organizations with common carrier rail freight certificates

3 sites have truck-rail intermodal connection

9 ports have freight rail access

Rail service in **59** of the **72** Wisconsin counties

Primary commodities: *coal, crude and petroleum oil, natural gas, chemicals and allied products, nonmetallic minerals, and farm products*

FREIGHT RAIL ASSETS

The Surface Transportation Board (STB) classifies United States railroads into three classes based on annual operating revenues (adjusted for inflation). Additional classification definitions are provided by the Association of American Railroads based on network size and operating characteristics. Current class characteristics based upon the STB framework for U.S. railroads are:

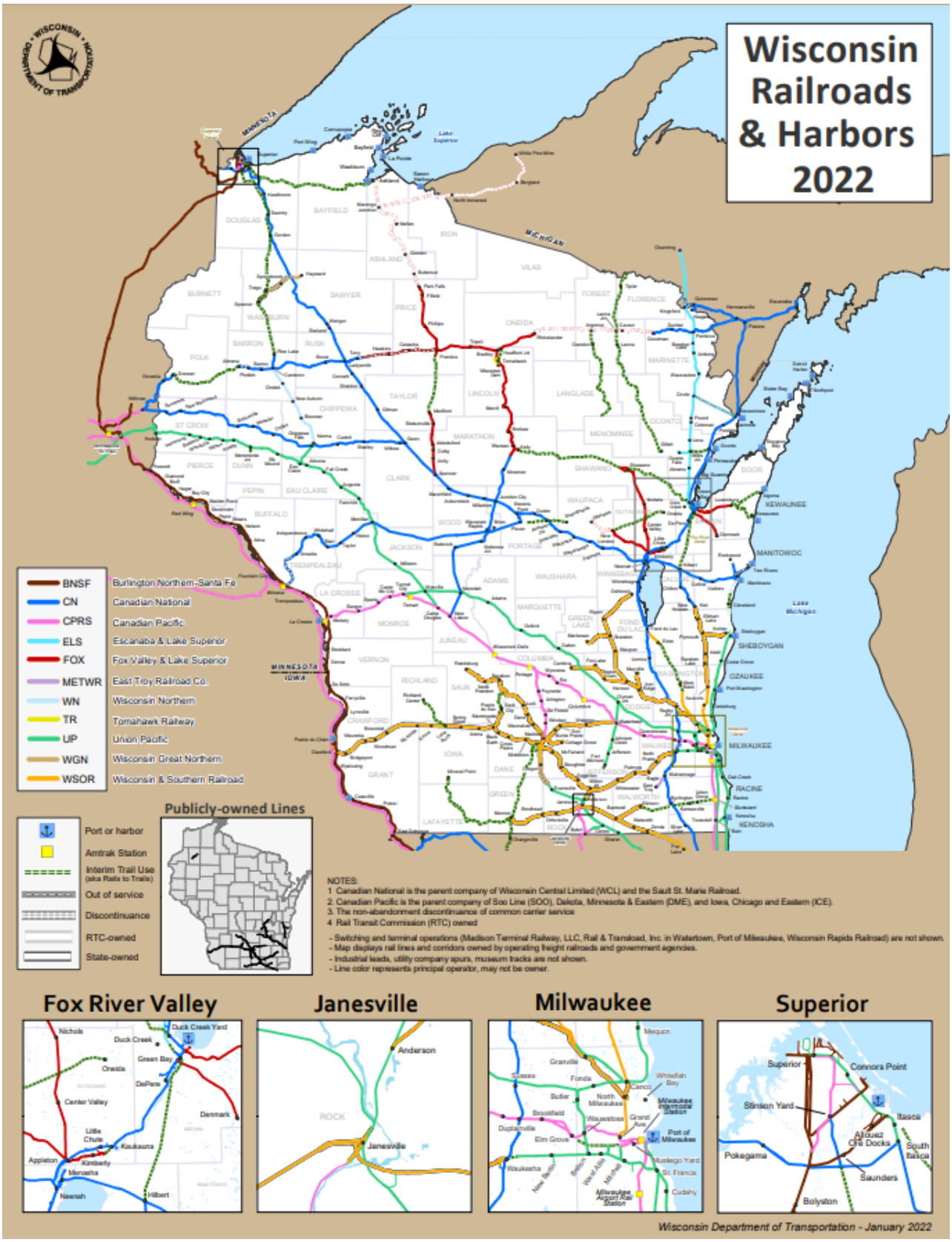
- **Class I:** National scale, line-haul railroads with operating revenue exceeding $900 million in 2022.
- **Regional (Class II):** Regional scale, line-haul railroads with operating revenue exceeding $40.4 million in 2022 and which operate at least 350 miles.
- **Short Line (Class III):** Local or Regional scale railroads that meet neither the Class I nor Class II definitions.

Table 3-5 displays each railroad company's operating mileage in Wisconsin by railroad class. These railroads are displayed in Figure 3-14.

Table 3-5: Wisconsin's Railroad Mileage by Classification

RAILROAD		PARENT COMPANY/ OWNING AGENCY	OPERATING RAILROAD MILES IN WI (2022)
Class I Railroads			
Burlington Northern Santa Fe Railway Company	BNSF	Berkshire Hathaway	245
Canadian Pacific	CP	N/A	301
Union Pacific Railroad Company	UP	N/A	595
Canadian National	CN	N/A	861
Class II and III Railroads			
Escanaba & Lake Superior Railroad Company	ELS	N/A	121
Municipality of East Troy Wisconsin	METWR	N/A	7
Wisconsin Northern Railroad	WNR	Progressive Rail, Inc.	38
Tomahawk Railway Limited Partnership	TR	Genesee & Wyoming	8
Wisconsin & Southern Railroad Company	WSOR	Watco	625
Fox Valley and Lake Superior Railroad	FVLS	Watco	459
Wisconsin Great Northern Railroad, Inc.	WGN	N/A	26
Switching and Terminal Railroads			
Madison Terminal Railway		N/A	1
Port Milwaukee		N/A	1
Rail + Transload, Inc.	RTI	N/A	1
Total Miles of Track Operated			**3,289**

Figure 3-14: Wisconsin Railroads



Rails-to-Trails and Corridor Preservation

WisDOT has historically tried to preserve freight rail service where feasible. If preservation is not feasible, the department works with the Wisconsin Department of Natural Resources (DNR) to preserve the rail corridor for future rail transportation use by using the 1983 National Trails System Act (NTSA). The NTSA gives interested parties the opportunity to negotiate voluntary agreements with railroads to use railroad corridors for trails in the interim.

Since 1987, railroads in the state have submitted over 40 applications to the STB to abandon more than 400 miles of rail lines. Over 70 percent of the miles have been preserved or are in negotiations to be preserved for future transportation use. Many of the corridors are used as trails in the interim. Lines preserved under the NTSA are not abandoned. These lines retain their character as rail corridors and may be reactivated in the future.

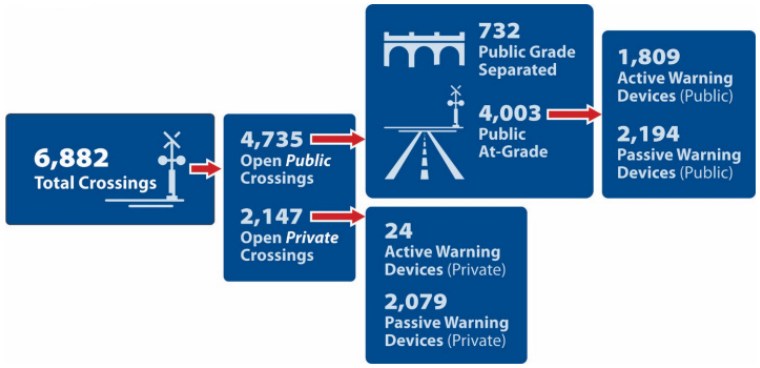
Highway-Rail Crossings

More than 6,800 open highway-rail crossings are located in Wisconsin (Figure 3-15). These crossings can be either at-grade or grade-separated and either publicly or privately owned. Public at-grade crossings make up nearly 60 percent of Wisconsin's highway-rail crossings.

At-grade crossings are equipped with warning devices to alert vehicles and pedestrians of the presence of a rail crossing. These warning devices may be either passive or active. Passive devices (i.e., signs, markings, etc.) do not change whereas active devices (i.e., lights, gates, bells, etc.) activate as a train approaches.

WisDOT's rail crossing data is maintained in the Railroad Crossing Information System (RCIS). The data is used to analyze the physical characteristics of rail crossings. WisDOT uses this database as a tool to assist decision makers in prioritizing crossing improvements. WisDOT and local governments regularly improve highway-rail grade crossings as part of roadway projects. Any project that crosses a rail line or ends near a rail line must include a review of whether any crossing improvements are needed.

Figure 3-15: Wisconsin Rail Crossing Summary



FREIGHT RAIL CONDITIONS

WisDOT works in partnership with the railroad operators on the active rail lines owned by WisDOT to review conditions, discuss capital improvement needs, and schedule projects. The state's primary focus is on monitoring system performance on state-supported rail lines. WisDOT uses speed and weight data to measure State-Owned Rail Line Condition. The department's goal is to have 95 percent of state-supported rail line miles functioning at FRA Class 2 operating speed standards. The FRA Class 2 standards include tracks capable of operating loaded 286,000-pound rail cars above 10 miles per hour. In 2021, 10.1 miles were improved to meet this standard. 77.1 percent of the supported mileage now meets the department's goal.

FREIGHT RAIL PERFORMANCE

After highways, railroads carry the second highest amount of freight tonnage in Wisconsin, highlighting the need to identify major freight rail mobility and safety issues.

Rail Freight Bottlenecks

Descriptions of known freight rail bottlenecks and mobility issues on Wisconsin's rail system are shown in Table 3-6. These were identified through coordination with the railroads.

Table 3-6: Freight Rail Bottlenecks, Publicly Supported System

RAILROAD	DESCRIPTION
WSOR/CP	WSOR not able to access Port Milwaukee without trackage rights over CP.
UP	UP does not have sufficient clearance under eleven bridges through Milwaukee for use by double-stack container cars.
WSOR/UP	WSOR must use UP-owned track segment (and await UP dispatching) in Janesville to move between the Waukesha or Madison subdivisions and the Monroe Subdivision, Fox Lake Subdivision, and Chicago.
WSOR	Merrimac Bridge (Reedsburg Subdivision) limited to 263,000-pound carloads at 10 mph. Shippers in Baraboo and Reedsburg are thus limited to 263,000-pound carloads.
WSOR	WSOR limited to ten trains per week (each way) over Metra track to interchange with other railroads at Belt Railway yard at Clearing, IL (Chicago).

Freight Rail Safety

The safe operation of rail lines is critical to Wisconsin's transportation system. Multiple stakeholders such as private railroad companies, the Office of the Commissioner of Railroads (OCR), WisDOT, and others contribute to railroad safety in the state. The OCR's role is to enforce regulations related to railway safety and to investigate the safety of highway-rail crossings. In partnership with private rail firms, local governments and citizens, OCR oversees a variety of highway-rail crossing issues including:

- Replacement or enhancement of passive and active warning devices at highway-rail grade crossings
- Repair of rough highway-rail grade crossing surfaces
- Construction of new highway-rail grade crossings
- Alteration of existing highway-rail grade crossings
- Closing or consolidating existing highway-rail crossings

WisDOT supports rail safety in the state by:

- Coordinating rail crossing investments with OCR
- Working with railroads when designing and constructing rail crossing improvements
- Investing in programs that improve railroad tracks, roadbeds, and railroad crossings on state-supported rail corridors
- Tracking the Railroad Crossing Information System (RCIS)
- Working to address safety concerns at crossings
- Working with railroads during derailment incidents

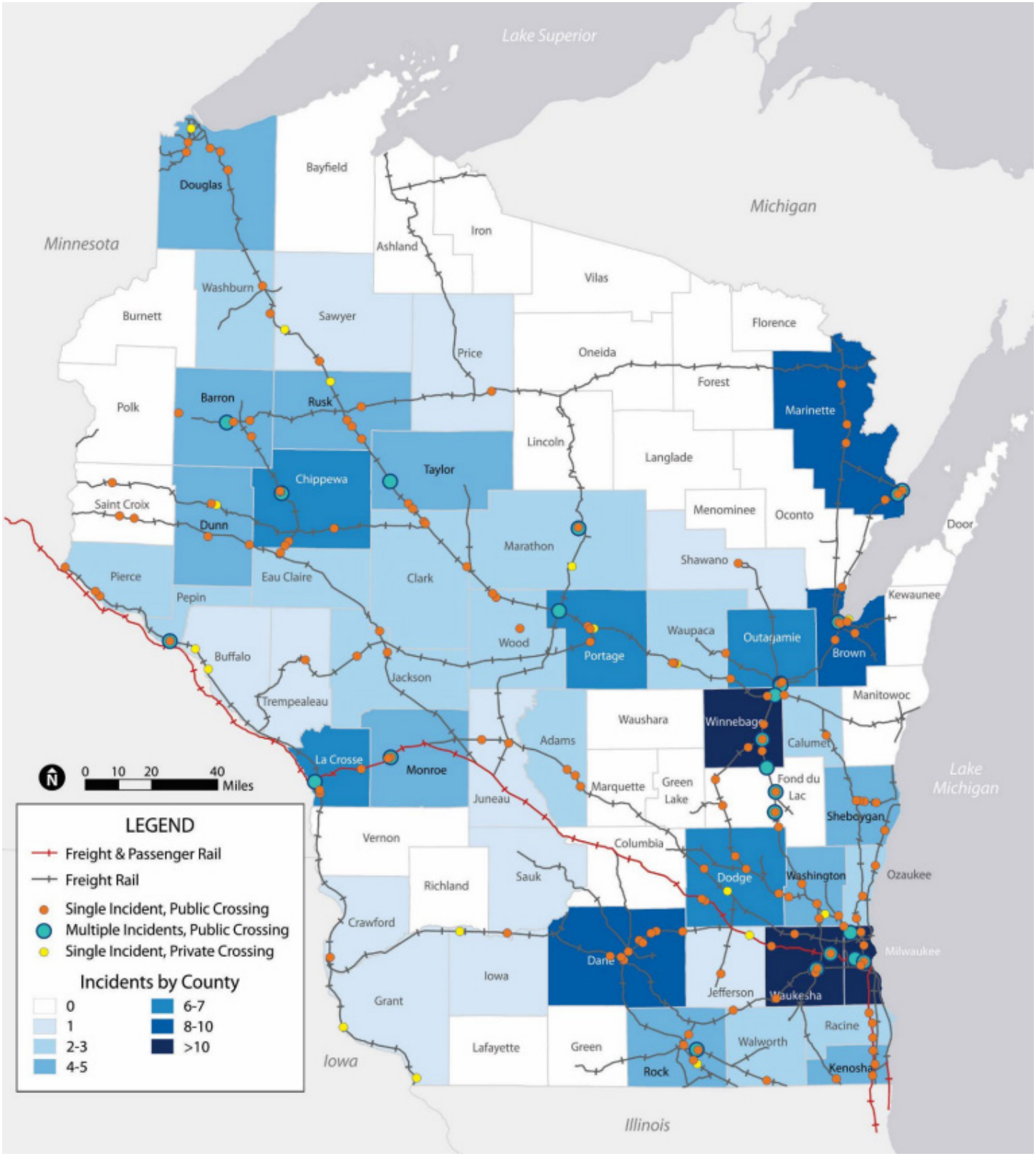
Wisconsin State Action Plan (SAP)

In 2022, WisDOT developed the Wisconsin Highway-Railway Grade Crossing State Action Plan (SAP) in accordance with Federal Railroad Administration (FRA) guidance. The SAP provided an opportunity to conduct a systematic review of highway-rail grade crossings from the perspective of safety risk identification, prioritization, identification of safety solutions, and development of strategic actions to improve highway-rail grade crossing safety.

According to FRA Highway-Railroad Incident Data, 36 collisions occurred at public crossings in 2020. Aside from slight upticks in 2013 and 2019, there has been a consistent decline between 2011 and 2020. This contrasts with the national moving average which has remained steady over the past ten years. The locations of highway-rail grade crossing incidents between 2016 and 2020 are shown in Figure 3-16.

WisDOT will continue to work with OCR and private railroad companies to identify potential rail crossing safety improvements such as signals, gates, grade separations, or closing crossings. In addition, for rail corridors with intercity passenger rail service, WisDOT will continue to work with OCR to discourage new at-grade crossings along these corridors. WisDOT will work to equip federally designated high-speed rail corridor crossings with appropriate warning devices.

Figure 3-16: Highway-Rail At-Grade Crossings Incidents by County (2016-2020)



TRESPASSING

Trespassing on railroad right-of-way (ROW) is illegal and subject to local and state laws as it presents both safety and security concerns. Even as roadway-railway crossing-related fatalities have declined, the number of trespassing-related fatalities has risen. Nationally, 94 percent of all rail-related fatalities and injuries occur at railroad crossings or due to trespassing.[16] Trespassing is the leading cause of rail-related deaths in the US with more than 400 trespass fatalities occurring each year.[17] In Wisconsin, there were 56 reported trespasser incidents reported over the five-year period between 2017 and 2021.[18]

Railroads, local jurisdictions, and state and federal agencies rely on a variety of measures to prevent and deter trespassing. Education is one measure. The FRA sponsors and carries out public education related to the dangers of trespassing on rail facilities. These efforts are supported by Wisconsin Operation Lifesaver (OLI), a non-profit safety education and awareness program. Railroad police departments play a crucial role in monitoring trespassing. These departments work closely with public enforcement agencies. Fencing, lighting, gates, and barricades can be installed to discourage trespassing. WisDOT will continue to work with the OCR and private railroad companies to discourage trespassing by installing fencing where appropriate.

3.4.2 Ports and Waterways

WISCONSIN PORT AND WATERWAY HIGHLIGHTS

29 commercial ports

13,500 miles of navigable waterways

10 Mississippi River locks and dams in Wisconsin

2 major waterway system connections

Primary commodities: *coal, metallic ores, nonmetallic minerals, clay, concrete, glass, and stone*

Water transportation is the most efficient method for moving bulk commodities. By mode, one gallon of diesel fuel can move one ton of cargo:

607 MILES Great Lakes freighter

202 MILES Freight Train

59 MILES Truck

Wisconsin is directly connected to two major waterway systems: the Great Lakes Navigation System and the Upper Mississippi River System[19], as seen in Wisconsin's Commercial Ports Map. Wisconsin's port facilities serve as multimodal distribution centers linking waterborne vessels (ships and barges) with an extensive network of highways, railroads, and airports. As centers of economic activity, Wisconsin's ports and harbors include the operations of local and municipal government agencies; federal agencies such as the Coast Guard and United States Army Corps of Engineers (USACE); and private companies that contract with these agencies. The locations of river and lake port facilities in Wisconsin are shown in Figure 3-17. An inventory and description of Wisconsin's commercial ports is provided in Table 3-7 on the following page.

Figure 3-17: Wisconsin Ports

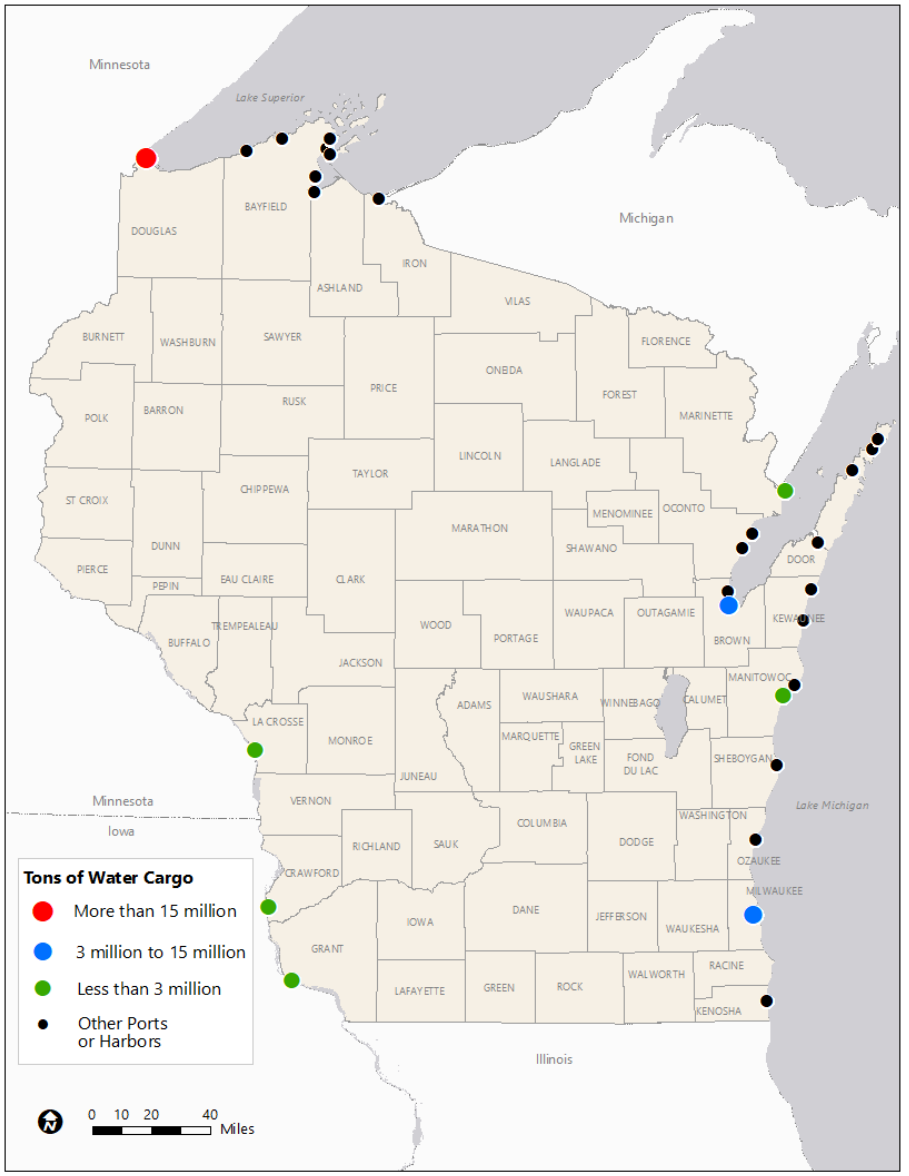


Figure 3-17 and Table 3-7 Source: 2019 IHS Transearch

Table 3-7: Commercial Ports in Wisconsin

WATERWAY	PORT	FREIGHT TONNAGE (2019)	FREIGHT VALUE (2019)	MAJOR COMMODITIES
Great Lakes	Superior	18,555,405	$1,321,841,898	Calcium chloride, cement, coal, dry bulk, general cargo/ break bulk, forest products, grain, iron ore, limestone, liquid bulk, salt, stone and aggregate, wind turbine components, and other heavy equipment for energy-related projects
Great Lakes	Milwaukee	3,548,434	$751,984,481	Asphalt, cement, fertilizer, general cargo, grain, out-of-gauge machinery, limestone, salt, scrap metal, steel, and wind energy components
Great Lakes	Green Bay	3,134,336	$479,888,231	Ash, calcium chloride-liquid bulk, carbon anodes, cement, coal, fuel oil, gypsum, heavy equipment, limestone, liquid asphalt, marble chips, miscellaneous bulk, petroleum coke, petroleum products, pig iron, project cargo, salt, sand, slag, and wood pulp/forest products
Great Lakes	Manitowoc	234,525	$35,554,843	Cement, coal, flexible pipe for oil and gas mining, newly constructed yachts, passenger and commercial vehicles, rock, stone, wind turbine towers and parts, cranes, and wood
Great Lakes	Marinette	74,818	$82,409,304	Limestone, pig iron, road salt, and high-tech vessels
Mississippi River	La Crosse	954,889	$660,534,212	Caustic soda, cement, coal, highway construction materials, cottonseed, dried distillers grain, fertilizer, finished goods, other grains, gypsum, pig iron, potash and salt
Mississippi River	Prairie du Chien	419,168	$100,709,766	Corn, soybeans, dried distillers grain, scrap metal, and wheat
Mississippi River	Cassville	142,458	$97,790,589	Grain, coal, gravel/sand
Other*		570,234	$261,982,884	
All Waterways Total		27,634,267	$3,792,696,207	

**The "Other" row reflects the cumulative totals for tonnage and value of freight moved via the Wisconsin commercial ports not specifically listed in Table 3-7.*

PORTS AND WATERWAYS ASSETS

Roadway Connections to Wisconsin's Ports

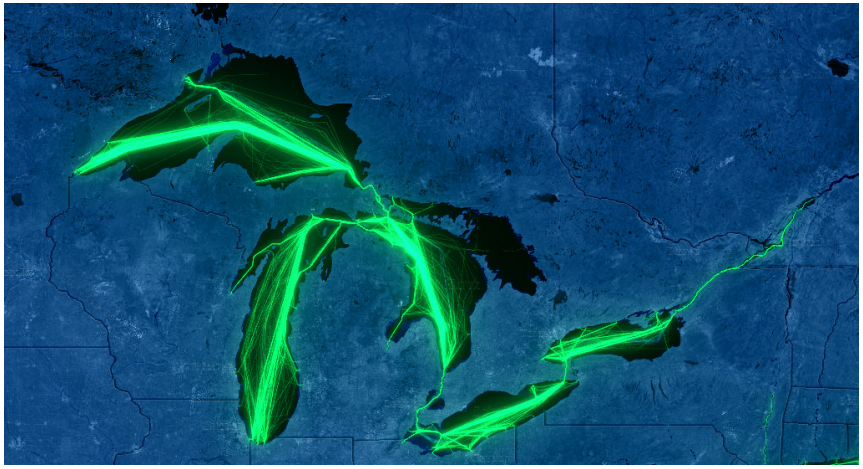
As noted previously in the description of Highway Assets, the roadways connecting to the state's ports are a critical, but sometimes overlooked, part of Wisconsin's freight system. Despite many of these connecting roadways being part of the NHS, they are typically owned and maintained by local roadway jurisdictions. These roads may not always be designed to accommodate oversize or overweight freight vehicles and maintenance needs are sometimes deferred because they do not serve high volumes of passenger traffic.

WisDOT and local governments share responsibility for maintaining these connecting roadways on the NHS system. As part of WisDOT's freight planning and local roads coordination efforts, the department works with local governments and Wisconsin's ports to identify solutions that address roadway issues for port areas.

Great Lakes-St. Lawrence Seaway System

During the 1950s, a 189-mile stretch of the St. Lawrence Seaway was constructed between Montreal and Lake Ontario. Seven locks were built to lift vessels nearly 250 feet above sea level as they travel the Seaway. Combined with the 8 locks of the Welland Canal (linking Lake Ontario to Lake Erie), the St. Lawrence Seaway allows ships to travel between Montreal and Lake Erie. When combined with the Soo Locks, ships can reach Lake Superior. See the Great Lakes St. Lawrence Seaway System website for additional information, including a map showing the location of vessel traffic.

Figure 3-18: Great Lakes and St. Lawrence Seaway Cargo Traffic



Source: livingatlas.arcgis.com/vessel-traffic

Upper Mississippi River System

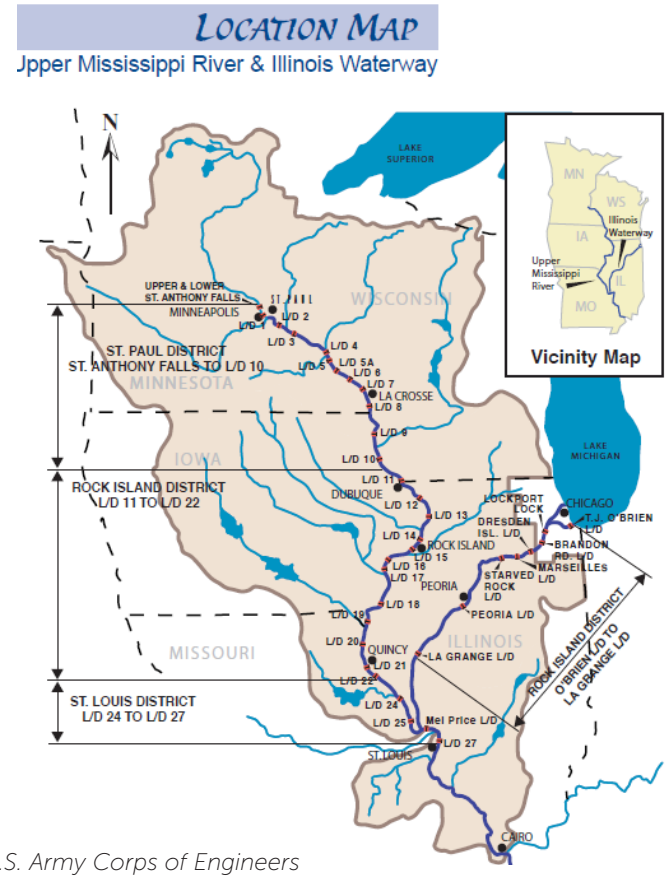
The Upper Mississippi River system is defined as the natural floodplain between the head of navigation at Minneapolis, Minnesota and the confluence with the Ohio River at Cairo, Illinois. This nationally significant commercial navigation system includes 1,200 miles of the Upper Mississippi and Illinois Rivers and the navigable portions of the Minnesota, St. Croix, Black and Kaskaskia rivers. Wisconsin has three commercial ports on the Mississippi River: Cassville, La Crosse, and Prairie du Chien.

Twenty-nine locks and dams and a nine-foot navigation channel accommodate the safe and efficient movement of barge and recreational boat traffic along the approximately 670 miles of the Upper Mississippi River between Minneapolis-St. Paul in Minnesota and St. Louis in Missouri (Figure 3-19).

In 2014, the United States DOT's Maritime Administration approved designation of the Upper Mississippi River from St. Louis, MO to St. Paul,

MN as the M-35 Marine Highway Corridor. This designation, cosponsored by WisDOT, is a necessary step toward planning for an integrated, multimodal regional transportation system. WisDOT is working with the Upper Mississippi River Basin Association, a group formed by the Governors of the five states along the Upper Mississippi – Iowa, Illinois, Minnesota, Missouri, and Wisconsin – to assess the current state of river navigation and evaluate ways to increase the efficiency and reliability of the lock and dam system and to identify opportunities to increase utilization of the Upper Mississippi River.

Figure 3-19: Upper Mississippi River Locks and Dams



Source: U.S. Army Corps of Engineers

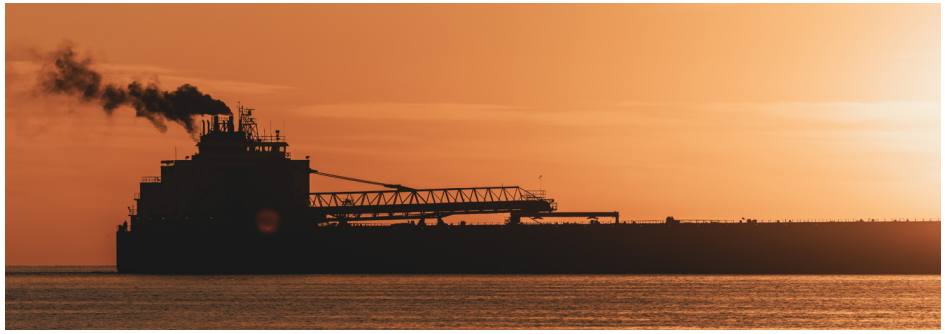
PORTS AND WATERWAYS CONDITIONS

Condition of the Great Lakes-St. Lawrence Seaway System

Federal funding to support waterways has typically been limited, with the majority coming from the United States Army Corps of Engineers (USACE). In many cases, the needs assessed by USACE exceed available funding. USACE uses a structural index for condition classification for ports and coastal structures, which assigns scores on an A through F scale, where an A grade indicates unlikely failures, B carries a low risk of failure, C is medium risk of failure, D is high risk of failure, and F is a failed structure. The USACE assessed the condition of the Great Lakes National System in 2013 and reported that 33 percent of Wisconsin's ports conditions and over 40 percent of coastal structures reported were rated C or worse.

Condition of Upper Mississippi Locks and Dams

Much of the lock and dam infrastructure along the Mississippi River was constructed nearly 100 years ago in the 1930s. Since that time, routine maintenance has kept the facilities operating, but major rehabilitations have been few and far between. Table 3-8 highlights the locks along the Mississippi River and notes both their construction date and the last date of major rehabilitation. The most recent rehabilitation occurred near Genoa, WI in 2002. In some locations, major rehabilitation has not occurred since the 1960s or, in two cases, ever.



PORTS AND WATERWAYS PERFORMANCE

In 2022, an estimated 29 million tons (four percent of Wisconsin's freight by tonnage), worth an estimated $3.3 billion (less than one percent of Wisconsin's freight by value) was transported by maritime freight. The twin ports of Duluth-Superior dominate the Great Lakes for the volume of cargo, due to the large quantities of western coal, northern Minnesota iron ore, and Upper Great Plains grain they handle. These bulk commodities are shipped through the twin ports to other destinations along the Great Lakes and overseas.

The Inland waterway system has a number of sources of delay, including lock operations, aging infrastructure, number of vessels, and lock closures. WisDOT uses USACE data on the proportion of vessels delayed and average delay on the Upper Mississippi River Locks to measure performance. Depending on the lock and dam being used, between 14 percent and 63 percent of vessels traveling through Upper Mississippi River locks and dams adjacent to Wisconsin experienced delays in 2021 (Table 3-8).

Table 3-8: Performance at Mississippi River Locks and Dams Adjacent to Wisconsin (2021)

LOCK AND DAM #	LOCK LOCATION	YEAR CONSTRUCTED	LAST MAJOR REHABILITATION	VESSELS	TONNAGE	PERCENT DELAYED VESSELS	AVERAGE DELAY (HOURS)
3	Welch, MN	1938	1991	9,505	6,979	23%	1.6
4	Alma, WI	1935	-	6,067	7,892	14%	0.8
5	Minnesota City, MN	1935	1998	4,150	7,911	33%	1.0
5A	Fountain City, WI	1936	2000	5,033	7,948	37%	0.8
6	Trempealeau, WI	1936	1999	4,496	10,111	33%	1.1
7	La Crescent, MN	1935	1989	5,491	10,084	34%	1.7
8	Genoa, WI	1937	2002	4,563	10,963	31%	1.1
9	Lynxville, WI	1937	1989	4,347	11,251	28%	0.7
10	Guttenberg, IA	1937	1969	3,197	13,042	52%	2.0
11	Dubuque, IA	1937	-	3,584	12,994	63%	1.2

Source: U.S. Army Corps of Engineers Lock Performance Monitoring System Summary, 2021

Wisconsin commercial ports on the Great Lakes are managed by municipalities, often in partnership with private operators. As such, both are responsible for responding to bottlenecks or performance issues. However, many organizations such as the USACE, United States Coast Guard, municipalities, private and public entities, and WisDOT have been working cooperatively to address issues at the commercial ports in Wisconsin.

In addition, members of the Conference of Great Lakes and St. Lawrence Governors and Premiers Regional Maritime Task Force have developed a strategic plan to improve the efficiency and competitiveness of the Great Lakes maritime transportation system. Action items have been developed to increase maritime transportation efficiency and reduce costs, build new markets, increase economic activity, and plan for the future.

Created in 1979, the Harbor Assistance Program (HAP) assists port communities along the Great Lakes and Mississippi River in maintaining and improving waterborne commerce. From 1980 to 2021, WisDOT has contributed almost $205 million in matching funds for 138 port projects.[20]

Waterways Safety

The U.S. Coast Guard (USCG) provides security and patrols along the Mississippi River and Great Lakes. The Coast Guard operates seven Great Lakes stations based in Wisconsin and one station on the Mississippi River. While the USCG has primary responsibilities and jurisdictions, the safety and security of these waterways is also supported by the Wisconsin Department of Natural Resources, Wisconsin National Guard, Wisconsin Homeland Security Council, and local law enforcement agencies. Resources and assets needed to respond to specific maritime incidents, including weather disasters, can be dispatched and coordinated by Wisconsin Emergency Management (WEM) on a case-by-case basis.

Maritime transportation on inland waterways has the lowest injury and fatality rates when compared to truck and rail transportation. At the national level, comparing fatalities between modes shows a ratio of 26 fatalities on rail and 120 truck freight fatalities on highways per fatality on the inland river system. Similarly, comparing injury rates at the national level, there is one injury on the inland river system for every 96 rail and 1,147 truck freight highway injuries. While this data is not specific to Wisconsin, it does suggest the inland waterway system is substantially safer than highway and rail.[21]

3.4.3 Air Cargo

WISCONSIN AIRPORT HIGHLIGHTS

124 public use airports (97 publicly owned)

9 airports provide air cargo services

Air freight cargo shipped via planes in 2019 equaled

115,000+ TONS

with a total combined value exceeding **$12 billion**

Air cargo is often high-value, low weight/bulk, time-sensitive or highly specialized.

Most common commodities: *small-packages, electronics, and instruments*

AIR CARGO ASSETS

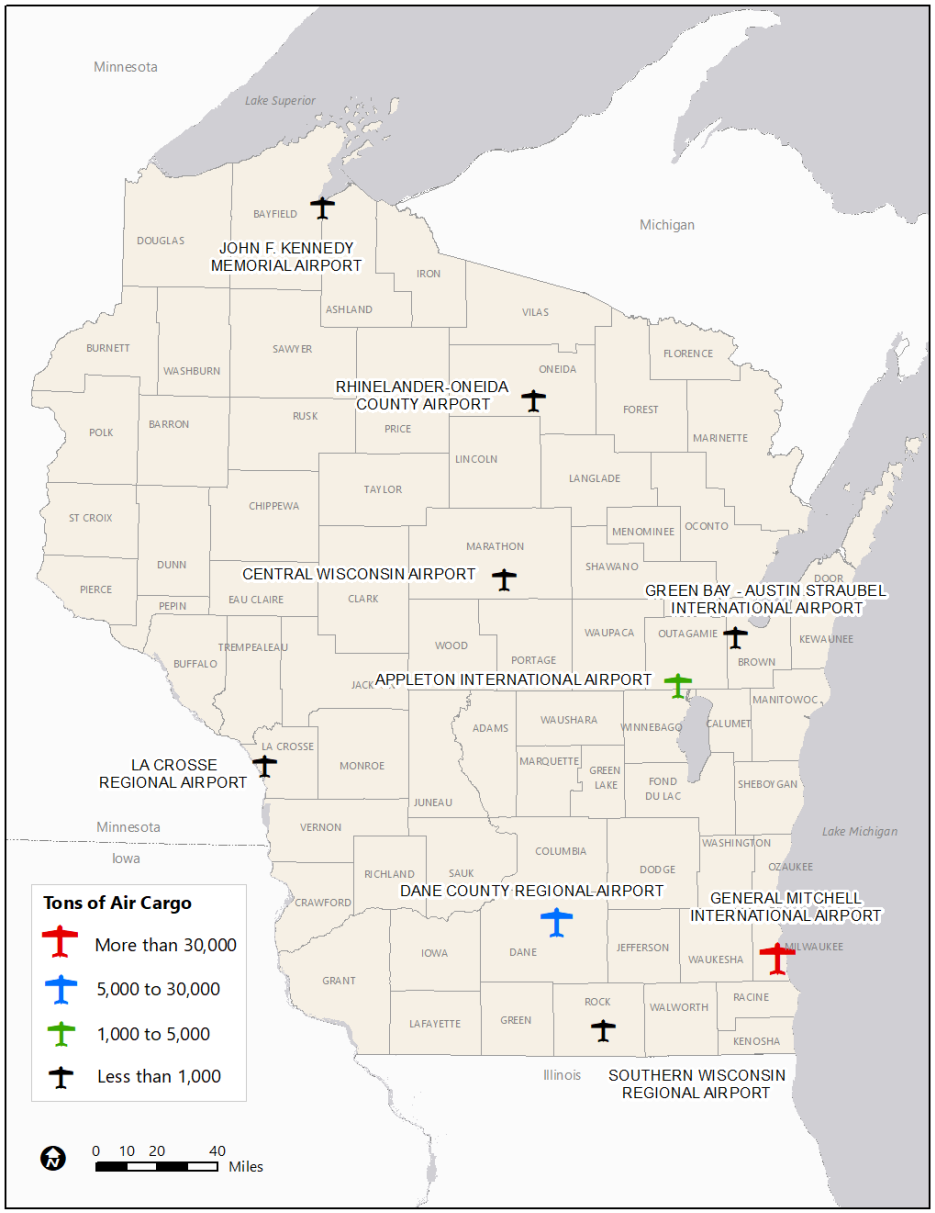
Wisconsin has 124 public use airports across the state. Of these, 97 are publicly owned and nine handled air cargo in 2019. The locations of these airports are displayed in Figure 3-20. Information on tonnage handled at each air cargo airport is provided in Table 3-9.

Table 3-9: Wisconsin Air Cargo Tonnage and Value by Airport

AIRPORT	TONNAGE HANDLED (2019)	VALUE (2019)
General Mitchell International Airport	88,020	$9,720,229,555
Dane County Regional Airport	21,284	$2,108,434,492
Appleton International Airport	4,928	$524,280,047
Rhinelander - Oneida County Airport	429	$25,993,608
Central Wisconsin Airport	335	$22,924,785
Green Bay – Austin Straubel International Airport	38	$8,045,091
Other	8	$2,009,280
Total	115,042	$12,411,916,858

Table and Figure Source: 2019 IHS Transearch

Figure 3-20: Wisconsin Air Cargo Handling Airports



AIR CARGO CONDITIONS

Airport pavement condition ratings are a primary indicator of the long-term structural health of the state's airport system. Like the condition measures for highways, airport pavement is rated using PCI. The department evaluates pavement conditions at 97 publicly owned airports in the State's Airport System Plan (SASP). This encompasses airports of all sizes, including the state's largest, Milwaukee's General Mitchell International Airport. The department's goal is to have 90 percent of airport pavement on primary runways, 85 percent of priority taxiways, and 80 percent of main terminal aprons, to be rated in fair condition or better.

- **Primary runways (90 Percent Goal):** In 2021, 90 percent of the state's primary runways were rated fair or above, an increase of one percent from 2020.
- **Taxiways (85 Percent Goal):** In 2021, 80 percent of the state's taxiways were rated fair or above, a small decline from 2020.
- **Aprons (80 Percent Goal):** In 2021, 78 percent of the state's aircraft parking aprons were rated fair or above, an increase of one percent from 2020.

AIR CARGO PERFORMANCE

General Mitchell International Airport (MKE) in Milwaukee is Wisconsin's dominant air cargo airport, handling more than 75 percent of the state's total air cargo in 2019. MKE also serves as a hub for air cargo shipments from other parts of the state. Nearly all of the remaining 25 percent of air cargo moved in the state is routed through Madison and Appleton.[22]

Express carriers also use feeder services originating at seven other public airports in Wisconsin. Rather than maintain and operate a fleet of small aircraft, the integrated express carriers contract for on-demand service with a variety of aircraft operators.

There are no specific bottlenecks identified for air freight in Wisconsin. Air freight coming into and out of Wisconsin is not limited by the capacity of any of the state's airports. Even with higher amounts of air freight being shipped within the past decade, there are no capacity issues. Wisconsin's airports have the capacity to accommodate growth in air freight.

AIR CARGO SAFETY

WisDOT supports air cargo safety by:

- Assisting the Federal Aviation Administration (FAA) and local airport owners with infrastructure improvements and equipment for improved navigation and communications.
- Supporting engineering improvements ranging from technical improvements, such as landing and navigational aids, weather monitoring equipment, and rescue and firefighting equipment, to simpler treatments, such as runway lighting, land acquisition for protection zones, and fencing to prevent wildlife incursions onto runways.

The United States Department of Homeland Security's Transportation Safety Agency (TSA) is a major influence guiding the policy of air cargo safety and security. The TSA has a strict policy on how outgoing cargo is stored at its point of origin, requiring that the cargo be sealed before it is shipped via air. This has led to commercial airports in Wisconsin using an increasing variety of technologies to screen outgoing and incoming cargo. Many larger commercial airports also have a significant law enforcement presence enforcing this security policy, including local county sheriffs, customs agents, and private security companies.

3.4.4 Pipeline

WISCONSIN PIPELINE HIGHLIGHTS

In 2017:

79,000+ miles of pipeline transported more than

40 MILLION tons of natural gas and petroleum products, valued at almost

$8 BILLION

Materials carried: *crude oil, natural gas, propane, gasoline, fuel oil, and petroleum products*

Pipeline commodities are a key economic input into Wisconsin's economy. Pipelines are the preferred method to transport large volumes of liquids and gases over longer distances, due in part to lower costs relative to rail or trucking.

Wisconsin is not a producer of natural gas or crude oil, but the state relies on natural gas and refined petroleum products to fuel economic activity. Wisconsin's privately-owned pipeline system is used primarily for the transmission and distribution of natural gas, petroleum products, and to move crude oil through the state. Table 3-10 displays the distribution of mileage in Wisconsin based on the type of commodity transported.[23]

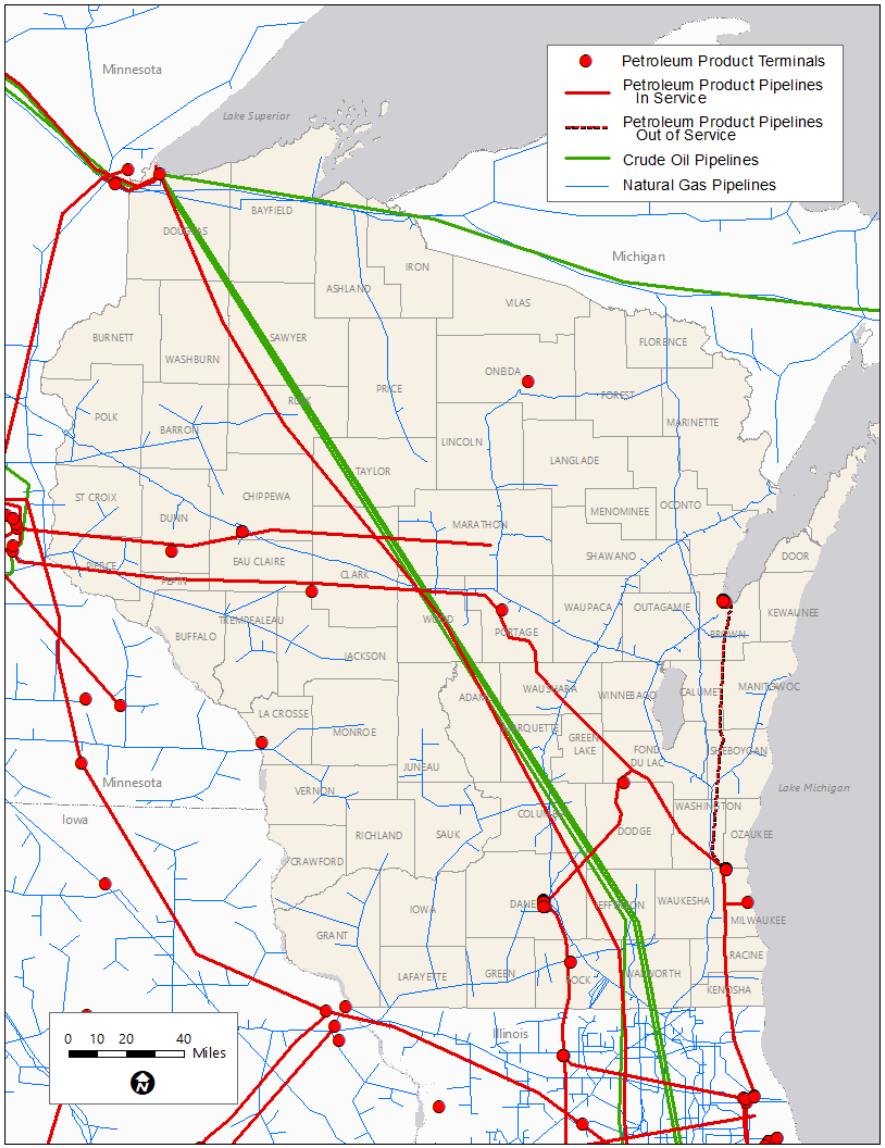
PIPELINE ASSETS

Table 3-10: Total Wisconsin's Pipeline Miles by Type

COMMODITY / PIPELINE TYPE	MILES	PERCENT OF THE TOTAL
Natural Gas Mainline Distribution Pipelines	41,634	52%
Natural Gas Transmission Pipelines	4,627	6%
National Gas Service Distribution Pipelines	30,570	39%
Natural Gas Subtotal	**76,834**	**97%**
Crude Oil Pipelines	1,181	1%
Petroleum Products (non-HVL) Pipelines	1,113	1%
Highly Volatile Liquids (HVL) Pipelines	238	0%
Petroleum Liquids Subtotal	**2,532**	**3%**
Total	**79,366**	**100%**

Source: U.S. DOT, Pipeline and Hazardous Materials Safety Administration, 2021

Figure 3-21: Wisconsin Pipelines and Pipeline Terminals



Source: U.S. Energy Information Administration and West Shore Pipe Line Company

PIPELINE CONDITIONS

While pipeline safety regulations are issued by the federal government, state agencies are responsible for the regulation, inspection, and enforcement of pipelines within state boundaries. Interstate pipelines are regulated by the Pipeline and Hazardous Materials Safety Administration (PHMSA). Pipeline inspections in Wisconsin are managed by the Pipeline Safety Program at the Public Service Commission of Wisconsin (PSC). The Wisconsin Pipeline Safety Program evaluates all natural gas pipeline system operators under Wisconsin jurisdiction to verify compliance with the requirements of the Wisconsin Administrative Code.

PIPELINE PERFORMANCE

The Wisconsin PSC noted that Wisconsin's natural gas pipeline system functions well and has fewer leaks compared to other states. The most frequent safety event affecting crude oil pipelines from 1986-2019 was equipment failure, but the costliest were material/weld failures, with much of the cost related to the clean-up following a rupture. [24]

The most recent significant pipeline disruption in Wisconsin affected the West Shore Pipeline in March 2016, resulting in the permanent closure of the pipeline north of Milwaukee. The closure has resulted in both truck and waterway transportation of petroleum products to Green Bay.[25]

3.4.5 Intermodal and Transload Facilities

WISCONSIN INTERMODAL AND TRANSLOAD FACILITY HIGHLIGHTS

3 INTERMODAL CONTAINER FACILITIES

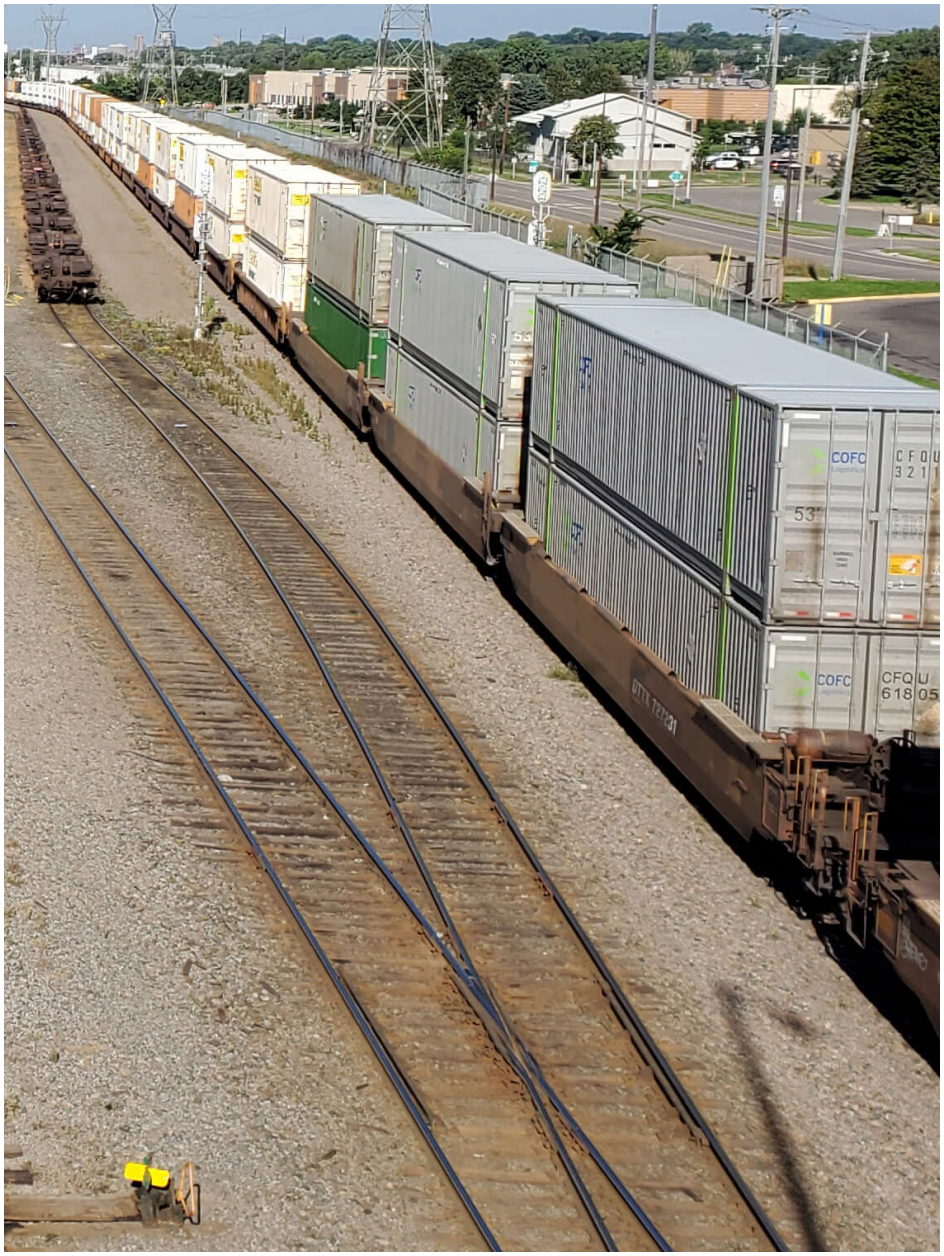
Arcadia
Chippewa Falls
New Richmond

100+ Transload Facilities

Intermodal freight is any freight load that is transferred at least once between transportation modes during shipping. This definition includes both bulk and containerized loads transported by more than one mode from origin to final destination. Of note, the freight industry frequently narrows the definition of intermodal to only encompass containerized loads.

- **Bulk Intermodal Freight (Transload):** Bulk transload freight typically includes unpackaged commodities such as iron ore, gravel, and grain. Shipments of this type can be performed in many locations, even in small spaces where bulk products can be moved between trucks and rail cars. Transloading provides flexibility for those shippers that do not have direct rail access for a variety of commodities.
- **Containerized Intermodal Freight:** This shipment method utilizes standardized shipping containers. The advantage of containerized intermodal freight is that the same container can be easily moved and transferred between multiple modes without the need to handle individual goods within the container.

Additional information on Wisconsin's intermodal services can be found in the 2019 Overview of Intermodal Freight in Wisconsin.



INTERMODAL/TRANSLOAD FACILITY ASSETS

Three intermodal facilities are in operation in Wisconsin (Figure 3-22). CN Railroad serves a facility owned by Ashley Furniture in Arcadia, and CN operates its own facilities in Chippewa Falls and New Richmond.

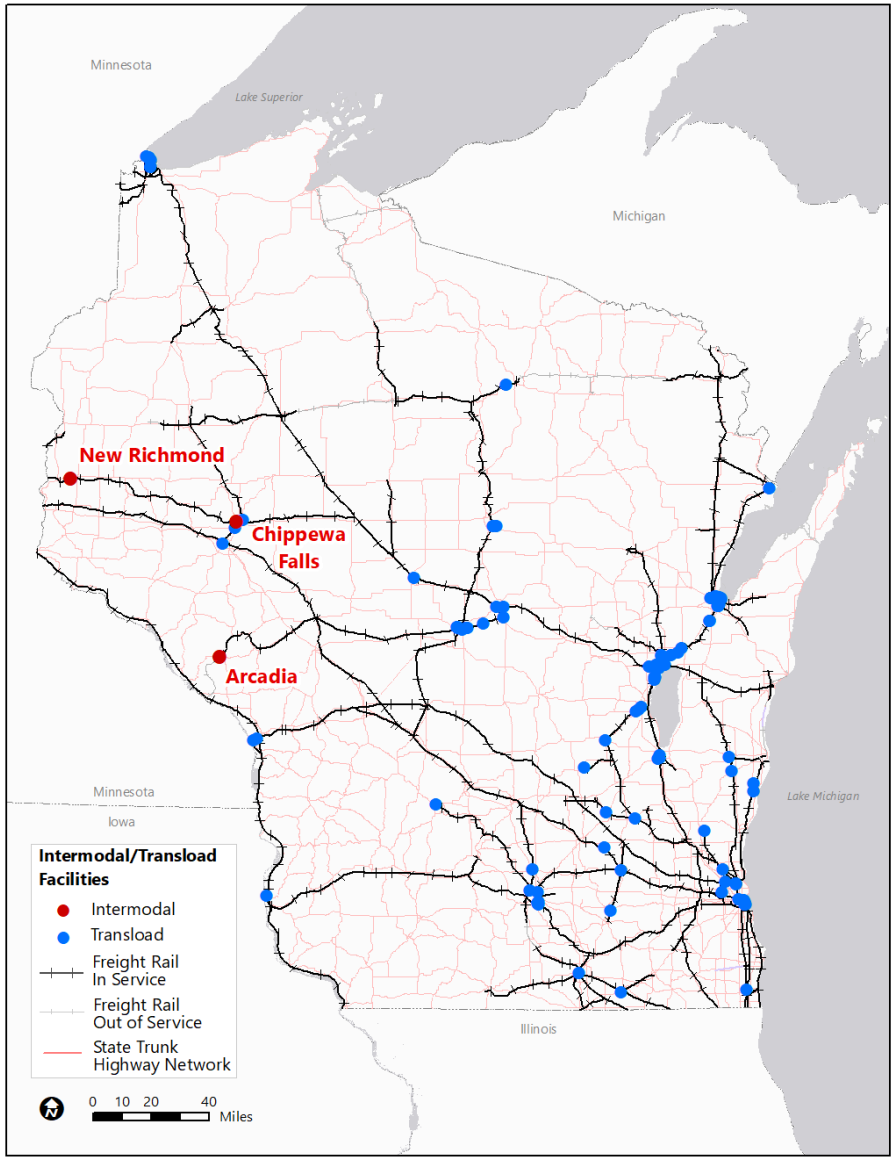
- **Arcadia:** This facility was opened in 1994. The facility is dedicated to shipments to and from Ashley Furniture's assembly plant. Inbound containerized loads are predominantly from Asian markets. Outbound loads travel to consumer markets throughout the US. In 2021, Ashley reported receiving approximately 260 40-foot containers per week.
- **Chippewa Falls:** This facility was opened in 2012. Cargo handled here is primarily inbound consumer products destined for regional Menards stores and outbound loads of grain and manufactured goods. These outgoing movements are served by an on-site grain transfer facility, facilitating 3,000 container exports annually.
- **New Richmond:** This facility was opened in 2021. The "Autoport" facility allows for the transloading of new vehicles and the use of intermodal containers.

Transload facility site usage has increased in Wisconsin over the past decade. There are currently over 100 transload facilities interspersed throughout the state. Many of these facilities are large, privately operated warehouse structures, with docks for rail cars and semi-trailers. Some are climate-controlled, offering refrigerated and/or freezer storage. Other facilities use covered or uncovered outdoor locations to hold bulk loads such as sand, stone, and salt. Still others feature specialized storage/transfer areas, such as cement and grain towers.

INTERMODAL/TRANSLOAD FACILITY CONDITIONS AND PERFORMANCE

Due to the privately-owned nature of the intermodal and transload facilities in Wisconsin, WisDOT has little to no role in oversight of the conditions and performance at these locations.

Figure 3-22: Wisconsin's Intermodal/Transload Facilities



3.4.6 Military Freight

Two networks relevant to strategic freight movements for military defense are included in the definition of the NMFN.

- **STRAHNET (Strategic Highway Network):** This network consists of roadways critical to the Department of Defense's (DOD) domestic operations. In Wisconsin, this consists of I-94, I-39, I-43, I-41, and portions of WI 21.
- **STRACNET (Strategic Rail Corridor Network):** These rail corridors have been determined to be critical to DOD domestic operations. In Wisconsin, STRACNET consists of the CP Railway line between Kenosha and La Crosse.

Two army bases (Fort McCoy, Camp Douglas) are located in Wisconsin. These locations provide facilities and support for the training and readiness of military personnel for all branches of the U.S. Armed Forces. Additionally, Army National Guard units in Wisconsin include the following locations:

- 32nd "Red Arrow" Infantry Brigade Combat Team, Camp Douglas
- 64th Troop Command and 157th Maneuver Enhancement Brigade, Milwaukee
- 426th Regiment Regional Training Institute, Fort McCoy

Wisconsin Air National Guard units operate out of the Madison and Milwaukee civilian airports, with an additional unit at Volk Field.

The conditions and performance of the military freight systems in Wisconsin are similar to the same condition summaries and performance measures described in the previous modal summaries for highway freight and freight rail in Wisconsin. There are no known military freight issues in Wisconsin at this time.

Figure 3-23: Military Freight Facilities

CHAPTER 4

Modal Freight Forecasts

FREIGHT FOCUS:

Forecasts of freight tonnage and value shipped into, out of, and through Wisconsin by freight mode

4

4. MODAL FREIGHT FORECASTS

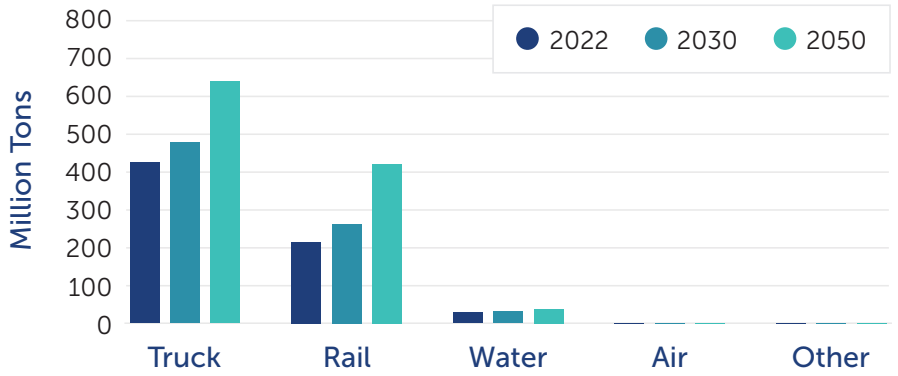
To meet the freight transportation needs of tomorrow, WisDOT needs to begin preparing today. This section outlines the estimated growth in freight tonnage and value by mode transported from, to, within, and through Wisconsin for target years 2030 and 2050.

WisDOT's primary tool for freight forecasting is the Transearch Multimodal forecasting database. The Transearch database provides freight forecasts starting with a base year of 2017 and extending as far as 2050. The Transearch database utilizes a multitude of mode-specific data sources to create a picture of the nation's freight traffic flows on a market-to-market commodity basis.

Figure 4-1 and Figure 4-2 provide estimates respectively for tonnage and value of freight shipments by mode for 2022, and forecasts for 2030 and 2050. Overall, tonnage across all modes is expected to increase from 661 million tons in 2022 to 762 million tons in 2030 and 1.1 billion tons in 2050, an increase of 15.3 percent and 64.3 percent, respectively.

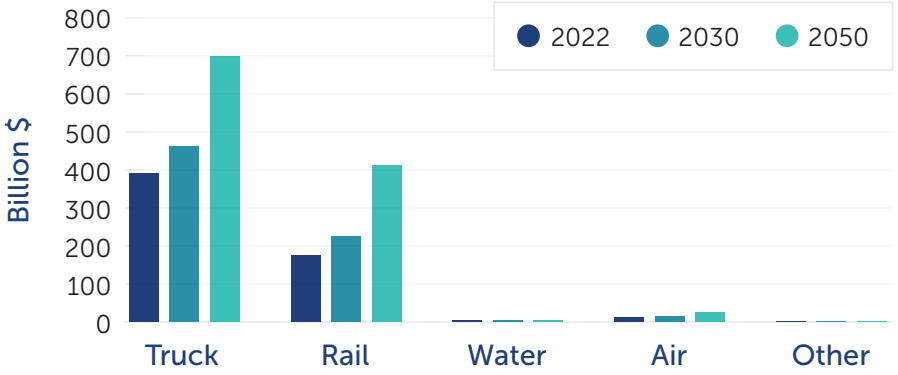
Freight shipments value across all modes are predicted to increase as well, from $581 billion in 2022 to approximately $704 billion in 2030 and $1.1 trillion in 2050, forming respective increases of 21.2 percent and 96.5 percent.

Figure 4-1: Wisconsin Modal Tonnage Forecast Estimates



Source: 2017 IHS Transearch Database

Figure 4-2: Wisconsin Modal Value Forecast Estimates



Source: 2017 IHS Transearch Database

4.1 Highway Freight Forecasts

Although freight shipments by truck form the highest tonnage and value shipments across all modes, the forecast estimates show a slower rate of growth compared to other modes, with an increase of 12.4 percent by 2030 and 50.5 percent by 2050 for tonnage, and an increase of 18.2 percent by 2030 and 79.4 percent by 2050 by value. Wisconsin highways are expected to carry almost 632 million tons of freight by 2050, valued at approximately $699 billion.

4.2 Freight Rail Forecasts

Overall railroad tonnage is predicted to increase by 96.1 percent statewide between 2022 and 2050. In addition, the value of this tonnage in 2050 is expected to more than double the value in 2022 (133.7 percent increase). Wisconsin rail lines are expected to carry 416 million tons of railroad cargo, valued at more than $411 billion, in 2050.[26]

4.3 Water Freight Forecasts

Overall water freight tonnage and value are expected to increase by 30.6 and 43.7 percent, respectively, between 2022 and 2050. These numbers represent the lowest expected growth rate of all major freight modes in Wisconsin. It is predicted that in 2050, water freight will handle 3.4 percent of freight tonnage and less than one percent of freight value in Wisconsin.

4.4 Air Cargo Forecasts

While air cargo movement represents a relatively small percentage by volume of overall trade, this relatively low-weight, time-sensitive, and high-value freight is important to Wisconsin's economy. The forecast increase in air freight movement reflects a continuing business trend toward adopting just-in-time logistics practices where production flexibility and delivery speed are essential.

The total air tonnage is forecast to increase by 83.5 percent statewide between 2022 and 2050. The value of this tonnage is expected to increase by 123.9 percent. Airports are forecast to ship or receive more than 209 thousand tons of air freight, valued at more than $26 billion, in 2050.[27]

4.5 Pipeline Forecasts

Pipeline infrastructure and data are owned and maintained by private entities. Further, today's heightened security environment has resulted in pipeline-related data being highly inaccessible to the public. The Freight Analysis Framework does attempt to estimate flows by pipeline, using a synthetic process. These estimates are very rudimentary, and while perhaps acceptable for estimating petroleum pipeline movements between large regions, they are not suitable for determining county-to-county flows of the type that are reported in Transearch.

CHAPTER 5

Economic Context of Freight

FREIGHT FOCUS:

A summary of the economic conditions and factors that drive the need for efficient freight infrastructure

5

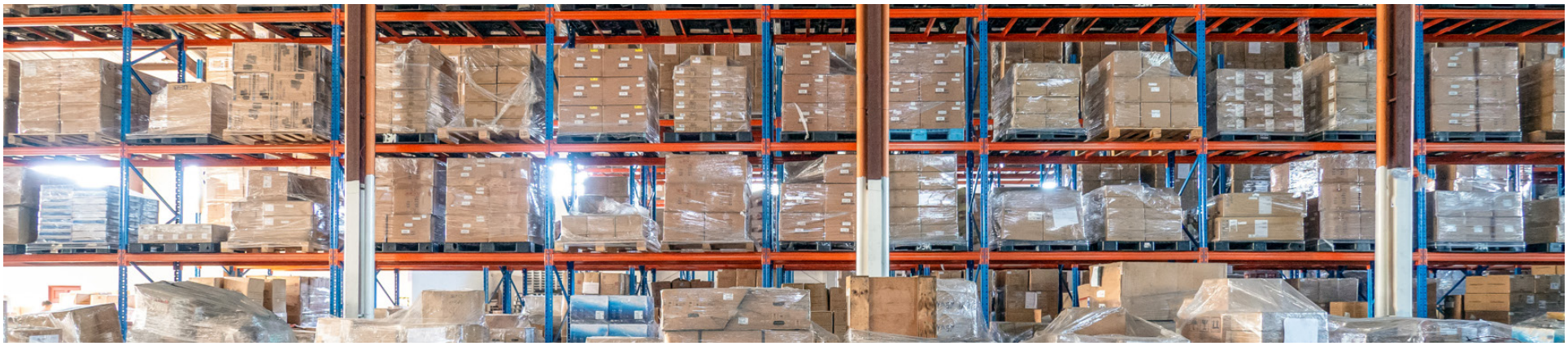
5. ECONOMIC CONTEXT OF FREIGHT

Businesses throughout Wisconsin use the transportation system to obtain the inputs needed to produce their goods and transport them to market. A safe and efficient transportation system supports the economy by providing access to inputs and markets at a low cost, reducing the overall cost of doing business and increasing competitiveness. Predictable and reliable travel times are important for manufacturing and other industries using modern just-in-time delivery methods. A safe, integrated, and seamless network of roadways, airports, harbors, pipelines, and railroads link Wisconsin businesses and consumers to the global economy. Without investment in the transportation system, the link to the global economy could degrade, resulting in lost productivity and competitiveness.

To provide a transportation system that meets the needs of the state economy, an understanding of the current and future needs of the state's freight-dependent industries is critical. In addition, understanding the driving forces that could significantly affect those industries over the next 20 years allows decision makers to anticipate and invest in improvements that enable economic growth in Wisconsin.

This chapter:

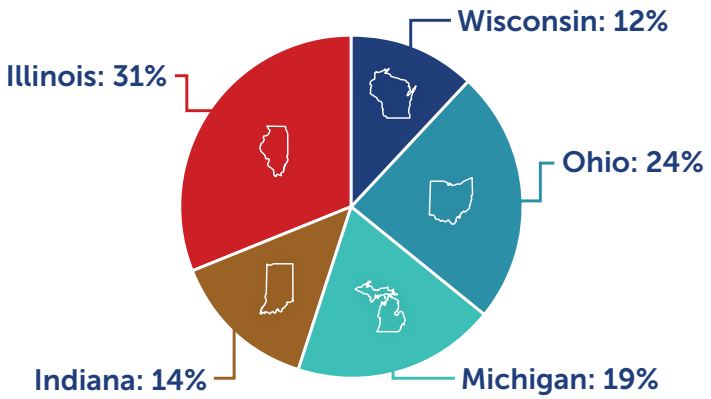
- Describes the link between Wisconsin's transportation system and the state's economy.
- Explores how freight movement in Wisconsin creates jobs and supports economic development.
- Reviews freight-dependent industry sectors in Wisconsin.
- Identifies Wisconsin's relationship to the Midwest, connections to the global economy, and the required transportation assets needed to support regional and global trade.



5.1 Wisconsin's Economy

According to the United States Bureau of Economic Analysis (BEA), Wisconsin's Gross Domestic Product (GDP) was $365.9 billion in 2021, ranking it 21st by state, at about 1.6 percent of the nation's total GDP. Figure 5-1 displays the GDP of the Great Lakes BEA Region (Wisconsin, Illinois, Indiana, Michigan, and Ohio). Wisconsin has the smallest economy in this region, making up approximately 12.1 percent of the region's GDP.[28]

Figure 5-1: Great Lakes Region GDP by State



Source: Bureau of Economic Analysis, Annual GDP by State, 2021.

5.2 Freight-Related Industries and Employment

Wisconsin's diverse economy is supported by many prominent freight-related sectors, including manufacturing, wholesale and retail trade, transportation services, energy, construction, agriculture and forestry, and mining. Wisconsin's economic production and manufacturing base are geographically diverse, occupying both urban and rural areas. Wisconsin's diversity of industry and geography helps make the economy strong and resilient, but it also places high demands on the state's transportation infrastructure. To grow the economy, these sectors rely on a dependable, safe, and efficient multimodal transportation system.

While Wisconsin's economy is forecast to grow, not all sectors are expected to have the same rate of growth. Additionally, the freight transportation needs of Wisconsin's sectors vary depending on the resources and the production processes used to create the final product, the location of the firm relative to suppliers, and the distance from production facilities to the end consumer of the products, among other factors. The plan defines the sectors of Wisconsin's economy that are freight-dependent (those that produce and sell goods) as:

- Manufacturing
- Wholesale and Retail Trade
- Transportation, Information, and Utilities/Energy
- Construction
- Mining
- Agriculture and Forestry, Fishing and Hunting

As of 2021, the six freight-dependent sectors and their composite industries shown in Table 5-1 comprised almost 43 percent of Wisconsin's employment (compared to 42 percent nationally) and 45 percent of the state's GDP (compared to 30 percent nationally). Note that the Mining Industry has been grouped with Agriculture and Forestry, Fishing and Hunting for this table. Wisconsin's service sectors or non-freight-dependent sectors, which include finance, government, education, healthcare, social assistance, and food service, comprise 57 percent of Wisconsin's employment and 55 percent of Wisconsin's GDP. Employment estimates were taken from the Bureau of Labor Statistics' Quarterly Census of Employment and Wages (QCEW). This is a quarterly count of employment and wages reported by employers primarily sourced from state unemployment insurance programs. As QCEW may not capture all those who work in some Wisconsin industries, such as sole-proprietors in the Agriculture industry, these estimates are conservative. GDP by industry values were obtained from the Bureau of Economic Analysis.

Table 5-1: Wisconsin Freight-Dependent Industry Employment

FREIGHT-DEPENDENT SECTOR	AVERAGE MONTHLY EMPLOYMENT	% OF TOTAL WI EMPLOYMENT	GDP (CURRENT BILLION USD)	% OF TOTAL WI GDP
Manufacturing	465,959	16.7%	$69.34	18.95%
Wholesale and Retail Trade	415,672	14.9%	$44.44	12.14%
Transportation, Information, & Utilities/Energy	161,385	5.8%	$33.65	9.20%
Construction	126,481	4.5%	$15.19	4.15%
Agriculture and Forestry, Fishing and Hunting, and Mining	30,922	1.10%	$6.23	1.70%
Total Freight-Dependent Sectors	1,228,520	42.9%	$165.54	45.2%
All Sectors	**2,798,816**	**100%**	**$365.93**	**100%**

Source: Bureau of Economic Analysis, Bureau of Labor Statistics – Quarterly Census of Employment and Wages . Average monthly data from 2021. Data collected in June 2022.

5.3 Connection to the Global Economy

Wisconsin businesses conduct international trade with companies around the world, both importing and exporting goods. The scale and scope of globalization has created an environment where the transportation sector must adapt. This is particularly the case for North America because of the scale and scope of production, distribution and consumption taking place, and the large distances involved. Global trade routes for several major industries flow through Wisconsin on roadways, railways, and waterways. For example, wholesale goods and raw materials flow from Asia to the Port of Prince Rupert in western Canada, then on railroads, often through Wisconsin, to major United States markets in Chicago and the Northeast. Agricultural products travel down the Mississippi River, and goods bound for Europe travel from Wisconsin's Great Lakes ports to the Atlantic Ocean via the St. Lawrence Seaway. Wisconsin's highways connect the state to major truck, air, and rail transportation hubs in Chicago and Minneapolis-St. Paul.

5.3.1 Global Exports

Exports represent an outflow of goods from Wisconsin to places external to the state, and an inflow of funds to the state since they are payments made by external entities (importers) to local companies (exporters). Exports are a vital component of the economy, allowing state economies to enhance their ability to generate capital by selling their specialized goods outside of the state.

In 2019 over 7,000 Wisconsin companies were exporting products abroad. Of those, 86 percent were small and medium-sized firms with fewer than 500 employees. Small and medium-sized firms generated $5 billion of exports in 2019.[29]

In 2021, Wisconsin exported freight valued at more than $24 billion. Table 5-2 displays the main destinations and the percentage of total Wisconsin exports in 2021 as measured by value. Wisconsin's top export trading partners are Canada, Mexico, and China. By value, approximately 43 percent of Wisconsin's total exports are exported to Canada (30 percent) and Mexico (13 percent). By tonnage, Canada was by far the largest trading partner.[30]

By value, the state's top commodities exported in 2021 (Table 5-3) were Machinery, Except Electrical ($5.0 billion), Chemicals ($4.3 billion), Computer & Electronic Products ($2.6 billion), Food & Kindred Products ($2.3 billion), Transportation Equipment ($2.2 billion), and Electrical Equipment, Appliances & Components ($1.6 billion).

Table 5-2: Wisconsin's Top Export Destinations (2021)

COUNTRY	EXPORT VALUE (MILLIONS)	% WI EXPORTS VALUE	EST. EXPORT TONNAGE (THOUSANDS)	% WI EXPORTS TONNAGE
Canada	7,538	30.4%	3,944.66	63.7%
Mexico	3,103	12.5%	280.69	4.5%
China	1,798	7.2%	464.99	7.5%
Germany	875	3.5%	50.15	0.8%
Brazil	792	3.2%	35.99	0.6%
United Kingdom	723	2.9%	53.18	0.9%
Japan	687	2.8%	84.12	1.4%
Belgium	623	2.5%	53.49	0.9%
Australia	598	2.4%	62.77	1.0%
South Korea	570	2.3%	86.21	1.4%
All Other Countries	7,502	30.2%	1,079.19	17.4%
Total All Countries	**24,811**	**100%**	**6,195.46**	**100%**

Source: U.S. Census Bureau, "USA Trade Online"

Table 5-3: Wisconsin's Top Export Commodities (2021)

PRODUCT	EXPORT VALUE (MILLIONS)	% WI EXPORTS VALUE	EST. EXPORT TONNAGE (THOUSANDS)	% WI EXPORTS TONNAGE
Machinery, Except Electrical	$5,041	20.3%	250.83	4.0%
Chemicals	$4,298	17.3%	165.25	2.7%
Computer & Electronic Products	$2,571	10.4%	17.39	0.3%
Food & Kindred Products	$2,266	9.1%	951.21	15.4%
Transportation Equipment	$2,219	8.9%	91.39	1.5%
Electrical Equipment, Appliances & Components	$1,555	6.3%	65.80	1.1%
Plastics & Rubber Products	$1,204	4.9%	121.54	2.0%
Fabricated Metal Products	$1,192	4.8%	55.26	0.9%
Paper	$924	3.7%	320.68	5.2%
Miscellaneous Manufactured Commodities	$694	2.8%	15.06	0.2%
All Other Products	$2,847	11.5%	4,141.06	66.8%
Total All Products	**$24,811**	**100%**	**6,195.46**	**100%**

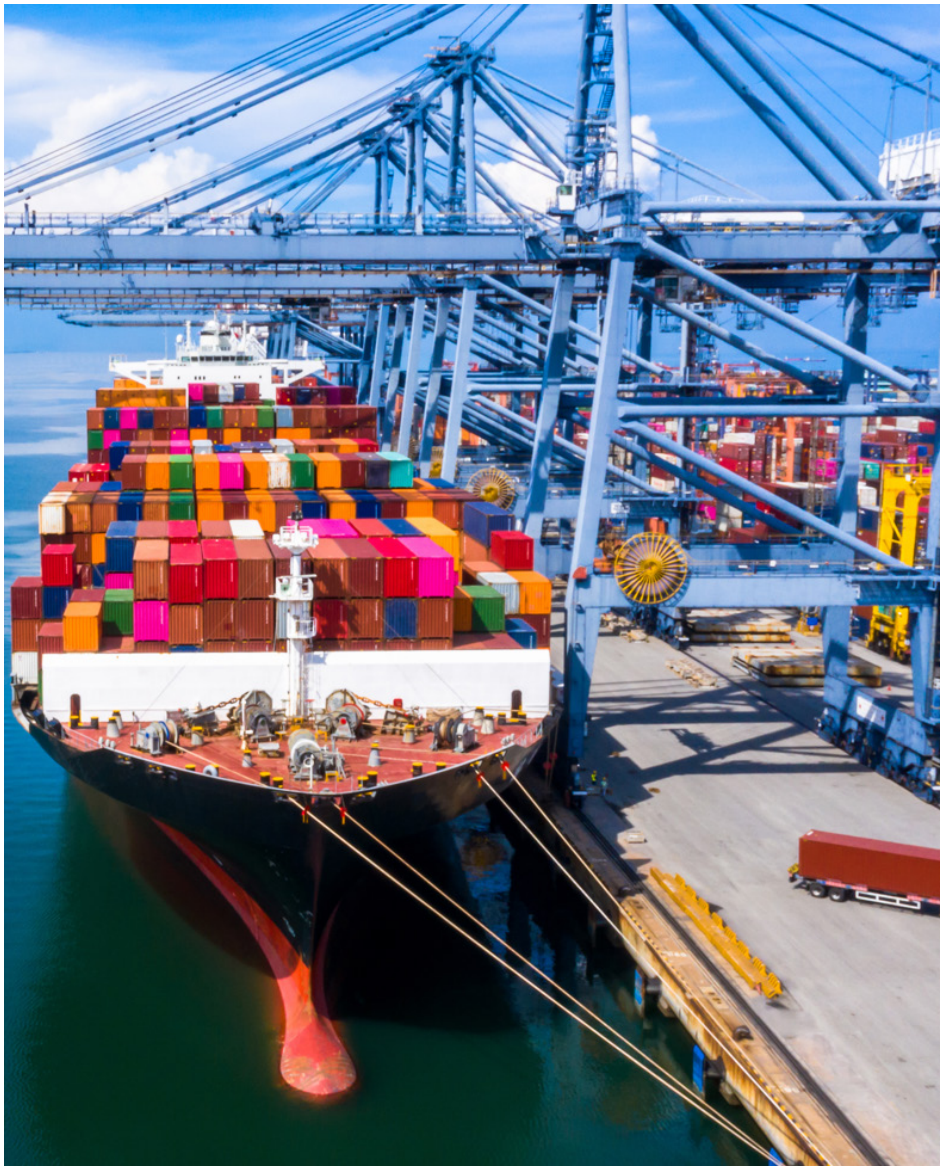
Source: U.S. Census Bureau, "USA Trade Online"

5.3.2 Global Imports

Imports represent an inflow of goods from places external to the state, and an outflow of funds from the state since they are payments made by local companies (importers) to overseas entities (exporters). Imports are also a vital component of the economy, allowing state economies to specialize in the production of goods.

Over the last decade, trade with Asian and South American countries has impacted the Wisconsin transportation system by increasing traffic to the state. Specifically, many of the imports from China are transported to the air cargo hubs in either Chicago or Minneapolis-Saint Paul and to major seaports located along the western United States and Canada. Once in the United States or Canada, imports from China are usually transferred to rail or truck and then transported to Wisconsin.

In 2021, Wisconsin imported freight valued at approximately $36 billion. Table 5-4 displays the main origins of Wisconsin imports in 2021. China, Canada, and Germany were the top origins of Wisconsin's imports, followed by Mexico and Ireland.



Wisconsin's top trading partners for imports in 2021 (Table 5-4) were China in terms of value and Canada in terms of tonnage. By value, the state's top commodities imported in 2021 (Table 5-5) were Livestock & Livestock Products ($7.5 billion), Petroleum & Coal Products ($6.8 billion), Printed Matter & Related Products ($3.6 billion), Textiles & Fabrics ($3.2 billion), Oil & Gas ($2.0 billion), and Furniture & Fixtures ($1.7 billion).

Table 5-4: Top Origins of Wisconsin's Imports (2021)

COUNTRY	IMPORT VALUE (MILLIONS)	% WI IMPORTS VALUE	EST. IMPORT TONNAGE (THOUSANDS)	% WI IMPORTS TONNAGE
China	$7,434	20.4%	1,267.58	16.6%
Canada	$5,532	15.2%	4,322.98	56.6%
Germany	$3,446	9.5%	151.23	2.0%
Mexico	$3,157	8.7%	273.07	3.6%
Ireland	$2,866	7.9%	12.69	0.2%
Vietnam	$1,994	5.5%	253.46	3.3%
Taiwan	$1,336	3.7%	158.91	2.1%
Italy	$1,039	2.8%	123.01	1.6%
India	$933	2.6%	147.57	1.9%
Belgium	$785	2.2%	44.53	0.6%
All Other Countries	$7,927	21.7%	885.11	11.6%
Total All Countries	**$36,450**	**100%**	**7,640.14**	**100%**

Source: U.S. Census Bureau, "USA Trade Online"

Table 5-5: Wisconsin's Top Import Commodities (2021)

PRODUCT	IMPORT VALUE (MILLIONS)	% WI IMPORTS VALUE	EST. IMPORT TONNAGE (THOUSANDS)	% WI IMPORTS TONNAGE
Livestock & Livestock Products	$7,521	20.6%	691.50	9.1%
Petroleum & Coal Products	$6,829	18.7%	156.14	2.0%
Printed Matter & Related Products	$3,605	9.9%	56.97	0.7%
Textiles & Fabrics	$3,208	8.8%	358.03	4.7%
Oil & Gas	$1,981	5.4%	293.92	3.8%
Furniture & Fixtures	$1,673	4.6%	116.96	1.5%
Minerals & Ores	$1,414	3.9%	165.75	2.2%
Leather & Allied Products	$1,354	3.7%	375.80	4.9%
Other Special Classification Provisions	$1,292	3.5%	116.25	1.5%
Plastics & Rubber Products	$962.43	2.6%	326.53	4.3%
All Other Products	$6,611	18.1%	4,982.29	65.2%
Total All Products	**$36,450**	**100%**	**7,640.14**	**100%**

Source: U.S. Census Bureau, "USA Trade Online"

CHAPTER 6

Freight Trends and Challenges

FREIGHT FOCUS:

An overview of the trends and challenges at the local, regional, national, and global levels that impact freight production and transportation in Wisconsin

6

6. FREIGHT TRENDS AND CHALLENGES

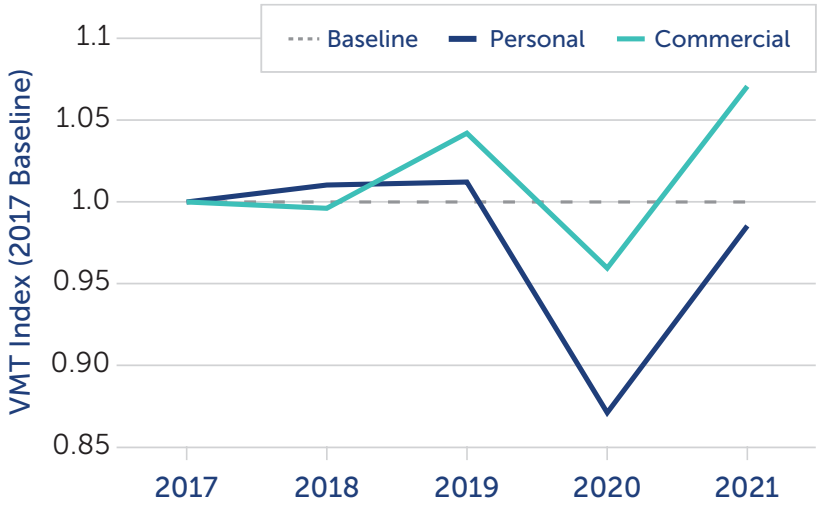
Numerous major trends and challenges impact freight flow volume, routing, and the economic value of the commodities shipped in Wisconsin over the near- and long-term. This chapter provides an overview of global, national, and state freight trends and emerging challenges that shaped the development of freight-related policies in this SFP. Freight trends are discussed through the lenses of global, national, and state level impacts.

6.1 COVID-19 Supply Chain Disruptions

The impact of COVID-19 pandemic on Wisconsin's economy, especially freight movement and supply chain challenges, will take years to determine. As a result, forecasting commodity flows may lack the preferred level of certainty. However, general trends can provide indicators of Wisconsin's future.

The pandemic appears to have accelerated ongoing trends toward more-flexible travel patterns, increased e-commerce, and changes in the supply chain. Both passenger and commercial vehicles saw a reduction in vehicle miles traveled (VMT) between 2019 and 2020. However, while VMT for passenger vehicles had not quite rebounded to pre-pandemic levels in 2021, the VMT for commercial vehicles in 2021 exceeded pre-pandemic levels (Figure 6-1).

Figure 6-1: Wisconsin Vehicle-Miles Traveled Index (2017-2021)



Source: WisDOT, Forecasting

The COVID-19 pandemic also shed light on risks to multiple aspects of the supply chain. The supply chain and logistics sectors were not prepared for the unprecedented shifts in consumer demand, the accelerated rise of e-commerce, and the challenges in workforce availability. Manufacturers and shippers have been forced to place more emphasis on supply chain resiliency including diversified supply sources, larger inventories, and flexible scheduling.

The following impacts—while not exhaustive—summarize the key challenges imposed on the global, national, and state supply chains since the onset of the pandemic.

- **Workforce Staffing:** From assembly line workers to truck drivers to dock and warehouse workers, workforce absences due to COVID-19 have challenged businesses to meet production and delivery schedules in nearly every sector of the economy.
- **Slower Freight Velocity:** The rapid shifts in supply and demand led to supply chain bottlenecks and an overall slowdown of shipping times.
- **Increased Consumer Demand:** After an initial drop in personal consumption in Q2 of 2020, the average consumption has increased by nearly 20 percent for all quarters in 2021 and 2022.[31]
- **Equipment Availability and Capacity:** The shifts in supply and demand have also strained the capacity of existing freight facilities including ports, inland terminals, and warehouses and caused shortages of key equipment such as truck chassis, containers, and rail cars.
- **Production Interruptions:** The severity of the pandemic led to complete shutdowns of some factories, particularly in China and other foreign markets. The North American automotive manufacturing sector also experienced a brief shutdown in April 2020, and as of December 2021 had not fully recovered to pre-pandemic production volumes.[32] These closures had ripple effects on multiple downstream manufacturing processes.
- **Shipping Costs:** As a result of these impacts, shipping costs have risen since the start of the pandemic, both for long-term contract rates and spot rates. Additionally, shippers are concerned about additional fees for delayed cargo being stored at inland terminals.

As integral pieces of the global supply chain, Wisconsin businesses and consumers have been impacted by all of these issues, primarily through increased shipping costs and delayed shipping times. It remains to be seen whether these changes represent a "new normal" for the Wisconsin and global freight systems or whether the supply chain will see a shift back to the baseline conditions prior to the pandemic.

6.2 Other Supply Chain Disruptions

In addition to COVID-19, the global supply chain suffered disruptions from multiple other sources related to both weather-related events and operational impacts. Given the intricate linkages in the global supply chain, impacts from incidents tend to ripple through to the supply chain as a whole, impacting both shipping costs and times:

- **Suez Canal Blockage:** In March 2021, the Ever Given, a large container ship, ran aground within the canal, blocking all transport through the facility for more than six days. The impacts of this blockage lasted for months following the incident.
- **British Columbia Wildfires:** In 2021 multiple wildfires in this Canadian province led to widespread evacuations and halted the movement of freight in the region, specifically rail car movement along the CP Rail line. The increasing frequency of wildfires in portions of the western US and Canada are likely to continue to impact freight movements in the future.
- **Floods:** Multiple historic flooding events in Canada and the US have delayed rail and highway freight movements, particularly in Western and Central areas of the US and Canada. Since the 1990's, several floods on the Mississippi River have also disrupted commerce and damaged infrastructure.
- **Winter Storms:** Historic winter storm events in the past decade have also led to seasonal delays in freight movement.

These supply chain disruptions highlight the need at global, national, and state levels to focus on building resiliency into the freight system to lessen the impacts of these disruptions in the future.

6.3 Changing Freight Infrastructure and Operations

Over the past decades, the global supply chain has trended towards a consolidation of freight transportation providers (such as maritime container liner services and North American freight railroads) and the construction of larger facilities and equipment to gain economies of scale. The development of new facility types such as inland ports has also impacted freight movements.

- **Vessel Size Increases:** Container ships have increased their maximum size dramatically since the 1990's. While these size increases can reduce the per unit cost of shipping, the larger ships also require suitably sized infrastructure: deeper dredging, larger cranes, and larger or multiple berths.
- **Panama Canal Expansion:** Related to the previous bullet, the 2016 Panama Canal expansion project doubled the capacity of the canal and allowed for the use of large, neo-Panamax sized vessels. For Wisconsin, passage through the Panama Canal means that the state's agricultural goods could have a dramatically shorter trip from the Gulf Coast to ports in eastern Asia. This could also increase demand for shipping by railroads and barges that move cargo from the Midwest south toward the Gulf.

- **North American Port Expansions:** Ports on both US coasts have been upgraded in recent years with expansions, deeper drafts, larger cranes, and additional off-port holding areas for containers. Notable expansions of container capacity have occurred or are underway at Vancouver and Prince Rupert, B.C.; Savannah, GA; Charleston, SC; Norfolk, VA; and the Port Authority of New York and New Jersey.
- **Longer Trains:** Since 2008, average train lengths for some Class I railroads have increased approximately 25 percent, with some train lengths reaching up to three miles on some routes.[33] This trend has led to increased reports of blocked rail crossings throughout the US and in Wisconsin. Crossings blocked for excessive periods of time have the potential to delay emergency services access.
- **Inland/Dry Ports:** As maritime ports become more congested, one strategy has been to immediately load containers on rail cars and ship them inland (100-300 miles) to be processed for further movement. Examples include Greer and Dillon, SC; Front Royal, VA; and the Appalachian Regional Port in northwestern Georgia. The largest inland port in the US is the CenterPoint Intermodal Facility located outside of Chicago, IL.

6.4 International Trade and Tariffs

Regulations on goods traded internationally directly impact the cost-effectiveness of freight shipments. The most important agreement impacting Wisconsin freight shipments is the United States-Mexico-Canada Agreement (USMCA), which went into effect on July 1, 2020.

The USMCA replaced the North American Free Trade Agreement (NAFTA) to support North American workers and businesses. In 2021, 30.4 percent of Wisconsin's exports went to Canada and 12.5 percent went to Mexico, the two largest value export destinations. From 2011-2021, Wisconsin's value of exports to Canada increased by 5.5 percent and those to Mexico increased by 56.1 percent.[34]

6.4.1 China

Beginning in 2018, a trade war between China and the United States resulted in increased tariffs on goods traded between the two countries. Upon the implementation of a Phase One agreement in February 2020, the average US tariffs on Chinese exports were 19.3 percent (compared to an average of 3.0 percent for the rest of the world) while average Chinese tariffs on US exports were 21.3 percent (compared to an average of 6.5 percent for the rest of the world).[35] As of June 2022, 66.4 percent of Chinese exports ($335 billion in 2017 trade) are subject to U.S. tariffs; 58.3 percent of U.S. exports ($90 billion in 2017 trade) are subject to Chinese tariffs.[36] China is the third-largest export market for Wisconsin products, with a value of $1.8 billion, 7.2 percent of the state's total exports.[37] As of mid-2022, Reuters reported that further potential tariff rollbacks were uncertain due to geopolitical issues over Taiwan and China's shortfalls in meeting previous trade deal commitments. This will likely continue to elevate costs for Wisconsin consumers.[38]

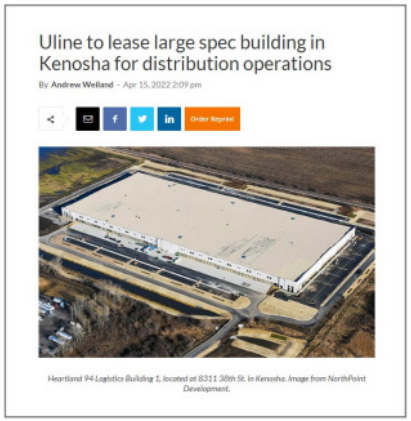
RESHORING / NEARSHORING

For the past few decades, the offshoring of goods production to overseas markets such as China has been a common trend. However, recently, some of these operations have seen a reverse—or modification—of this trend. Nearshoring refers to the relocation of production to markets closer to the final point of use, for example, shifting production from China to Mexico. Reshoring refers to the relocation of production back to the home country. In addition to these trends, some offshore production is also relocating in other areas of southeast Asia including Vietnam, Malaysia, and Indonesia.

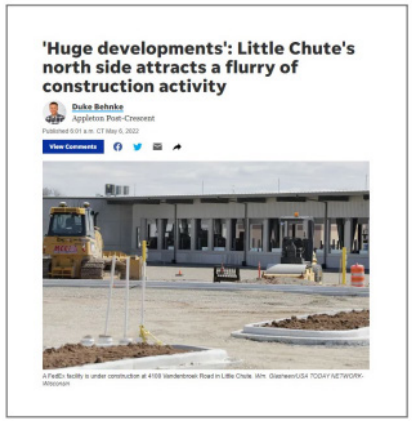
6.5 E-Commerce

E-commerce continues to grow more rapidly across the country than overall retail growth. As of Q1 2022, e-commerce accounts for approximately 15 percent of all retail sales in the US.[39] Freight distribution is shifting towards more point-to-point shipments from warehouses to homes, creating more short trips in urban areas via parcel trucks. To accommodate increasing consumer demands for quicker product delivery, large regional distribution centers are supplying smaller "fulfillment centers" that are located within major metropolitan areas. This has been reflected in Wisconsin through the recent construction of multiple distribution centers.

There will continue to be significant pressure on shippers and goods receivers to reduce inventory costs. Retailers and manufacturers will continue to streamline their processes, dropping smaller amounts at more frequent intervals at stores and factories. This will drive ever-increasing demand for on-time truck deliveries in very short appointment windows (to the minute). This level of service will depend on reliable highway freight corridors in congested urban areas.


Uline to lease large spec building in Kenosha for distribution operations

By Andrew Welland - Apr 15, 2022 2:09 pm


'Huge developments': Little Chute's north side attracts a flurry of construction activity

Duke Behnke
Appleton Post-Crescent


Amazon Plans to Build Distribution Center in Dane County

Online retailer Amazon plans to build a $200 million distribution center in Dane County.

By Associated Press | Feb. 6, 2022, at 10:56 a.m.

6.6 Demographic Trends

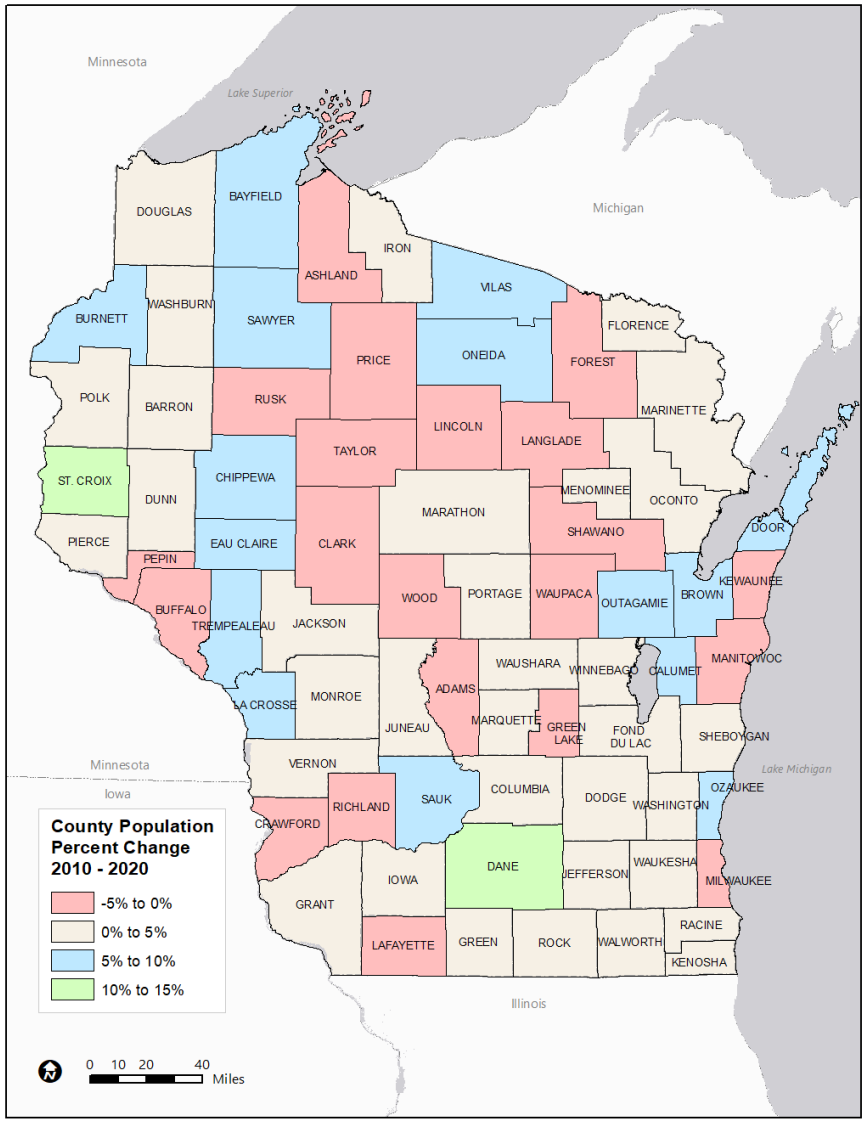
Wisconsin's population increased by 3.6 percent between 2010 and 2020, from approximately 5.7 million to 5.9 million, per the Connect 2050 plan. Population is expected to grow an additional 10 percent by 2040. Freight demand and freight movement are directly impacted as population grows and more trips and services are required.

In general, Wisconsin cities and suburban areas are growing and the population in rural areas, particularly in northern Wisconsin, is declining. Urban regions have become more desirable to many Wisconsinites, and the rate of population growth is generally strongest in locations with affordable housing and access to good jobs and schools.

With both population and employment moving to suburban areas of the state, commuting is not simply about moving people from suburban homes to jobs in cities. Population and job growth in Wisconsin's suburban areas has serious implications for the state's transportation policy. Congestion may worsen as more Wisconsinites might have to drive further to get to jobs. Figure 6-2 shows the percent change in population by county between 2010 and 2020. Dane and St. Croix Counties have experienced the highest levels of growth with 15.0 and 10.9 percent growth, respectively. Some recreational areas (Vilas, Door, and Bayfield Counties) have also seen an increase in year-round populations, likely from retirees.

Richland, Rusk, Taylor, and Crawford Counties have exhibited the greatest reduction in population, with each of these counties declining in population by more than 3.0 percent. Counties with shrinking populations face challenges maintaining existing infrastructure and preserving access to economic opportunities and social services.

Figure 6-2: Change in County Population (2010-2020)



Source: U.S. Census Bureau

6.7 Emerging Technologies

Multiple innovative freight technologies are emerging and are expected to have an impact on the transportation of goods. This section describes recent trends in communications technology, connected and autonomous vehicles, and other emerging technological trends. For an overview of how WisDOT is currently implementing multiple intelligent transportation system management technologies, see Table 3-3 in Section 3.4.1.

6.7.1 Electrification and Alternative Fuels

Commercial vehicles have used a wide variety of alternative fuels to diesel, including biodiesel, renewable diesel (derived from algae), liquefied natural gas (LNG), compressed natural gas (CNG), and hydrogen. Alternative fuels have been tested and adopted in part by fleet operators such as UPS and Waste Management[40], with incentives offered through the U.S. Department of Energy.[41]

Industry analysts are predicting electrification will make strong inroads into the commercial vehicle center. A report in March 2022 forecast medium- and heavy-duty commercial vehicles would see 24 percent market demand for all-electric vehicles by 2030, and 53 percent by 2035.[42]

Other modes are also experimenting with alternative fuels. Freight railroads across North America have tested hydrogen, natural gas, and battery power.[43] Maritime operations are being compelled to reduce carbon emissions through 2050 under an agreed set of targets, including a 40 percent reduction from 2008 levels by 2030. Current maritime options include LNG, liquefied petroleum gas (LPG), methanol, and biofuels. Other fuels being tested for maritime include ammonia and hydrogen.[44] Battery systems, fuel cells, and wind-assisted propulsion may also be applied in the future.[45]

Within BIL is the creation of a new program called the National Electric Vehicle Infrastructure Program (NEVI). In order to qualify for the funding, states were required to submit an EV Infrastructure Deployment Plan in 2022 to the Federal Highway Administration (FHWA). The Wisconsin Electric Vehicle Infrastructure Plan is available on the WisDOT transportation electrification webpage. Program funds will support the construction of EV charging stations that serve critical interstates and highways. Wisconsin anticipates receiving $78.65 million over the five-year life of the program.

WisDOT has joined other state and federal agencies in promoting access to both alternative fuels and electrification, including direct participation in designating alternative fuel corridors and participation in regional incentives. More information on these initiatives can be found on the WisDOT Alternative Fuel Corridors webpage.

6.7.2 Communications Technology

Communication technology continues to evolve and be applied to all aspects of truck freight movement, from the cab to the trailer. Technological advances in communication enable the trucking industry to communicate more effectively.

- **Point-of-purchase information** will have a greater role in driving warehouse orders and just-in-time delivery demands.
- **Radio Frequency Identification (RFID) tagging** will increasingly be adopted to improve shipment tracking.
- **Warehouse management systems** will allow real-time awareness of inventory location, including items in transit.
- **Electronic Data Interchange (EDI) systems** will become more and more sophisticated and integrated across larger supply chains.

6.7.3 Connected and Automated Vehicles (CAV)

Recent investments in commercial and consumer applications of Connected and Automated Vehicles (CAV) projects highlight the interest from the private sector in this emerging technology. Implementation of this technology could take a variety of forms, one of which is "cooperative trucks" that use vehicle-to-vehicle (V2V) and/or vehicle-to-infrastructure (V2I) communications.

Wisconsin has taken multiple steps to foster the development—and prepare for the impacts—of these technologies. Through WisDOT's Advanced Traffic Management System (ATMS), the department would be able to integrate connected vehicle data from roadside ITS devices and vehicles communicating via V2I and V2V. By integrating this data along with systems already in place, WisDOT will have additional information about the real-time conditions experienced on its highways. In 2017, Wisconsin Act 294 created the conditions for legal truck platooning in Wisconsin by redefining "platoon" and modifying how the law governing the distance between vehicles is applied to platoon drivers.

Other vehicular technology advances, such as intelligent adaptive cruise control and automatic emergency braking, also have the potential to reduce congestion and incidents, thereby reducing non-recurring congestion and improving system reliability and safety.

CAV technologies are expected to have a wide-ranging impact on transportation in Wisconsin. As such, the Wisconsin Department of Transportation has formed the Wisconsin Automated Vehicle External (WAVE) Advisory Committee to gather stakeholder input on CAV-related planning priorities, implementation policies, and impacts on the state's transportation system.

The WisDOT CAV Strategic Work Plan 2021-2023 identifies eight key CAV-related objective areas to investigate:

- Statute, Policy, and Regulation
- Communications and Outreach
- Partnerships
- Organizational Alignment, Coordination and Readiness
- Develop Transportation System Infrastructure and Operations Readiness
- Research, Testing, and Pilot Projects
- Data Governance and Security
- Law Enforcement and First Responder Services

6.7.4 Unmanned Aerial Systems (UAS)

A new industry is emerging in unmanned aircraft systems (UAS) and a continued increase in commercial UAS applications is expected to be significant in the coming years. At the same time, pilot flight training and recreational flying have decreased. Increases in business aviation and growth in the UAS sector could influence the facilities and services needed at airports in the future.

WisDOT is monitoring the state and national statutory and regulatory environments for any changes that would affect UAS use as freight delivery vehicles.

6.8 Modal Trends and Challenges

The following section provides a high-level summary of the emerging and ongoing trends and challenges likely to impact each freight mode.

6.8.1 Highway

TRUCK PARKING CAPACITY

As discussed in the Truck Parking Assessment in Section 3.4.1, a major challenge for commercial truck operators is a shortage of legal parking stalls to safely park their vehicles and rest. When legal parking is not available, some commercial truck drivers park illegally on highway shoulders or interchange ramps, posing safety issues. Federal legislation has been introduced to address driver needs, including H.R. 2187, the Truck Parking Safety Improvement Act which would authorize $755 million for construction, expansion, and/or improvements of truck parking facilities.[46]

HOURS OF SERVICE AND ELECTRONIC LOGGING DEVICES

Two factors driving the truck parking issues include the truck driver hours of service (HOS) regulations and the electronic logging device (ELD) mandate. Truck driver HOS are regulated by 49 CFR 395 and are designed to prevent truck/commercial vehicle-related crashes and fatalities by prescribing on-duty and rest periods for truck drivers. Key HOS information is available on FMCSA's website. The ELD mandate requires most carriers to use electronic equipment that automatically records HOS information. The intent of the mandate was to improve compliance with the HOS regulations.

EQUIPMENT CHANGES

Changes to improve the operational efficiency of trucks include soft-sided trailers to reduce weight, aerodynamic design to reduce drag, low-rolling-resistance tires, and computer-controlled automatic transmissions that optimize for fuel efficiency. Both private fleets and for-hire trucking companies are using the latest technology to deliver goods in a more environmentally sustainable way. Freight carriers are also adopting more sophisticated routing optimization software to maximize efficiency.

INCREASED VEHICLE WEIGHT AND CONFIGURATIONS

Many shippers and carriers have advocated for higher vehicle weights, and/or longer tandem trailers, which would allow more freight to be shipped per driver/cab unit. While states have authority to make changes in the State Highway System, the Interstate Highways remain under federal authority and weight changes on that system would need to be federally designated. Midwestern states have taken steps towards harmonization of permits for additional weights, including a nine-state agreement to allow 88,000-pound weights for divisible loads during emergencies.[47]

TRUCK DRIVER SHORTAGE

In 2021, the American Trucking Association estimated a national truck driver shortage of over 80,000. First documented in 2005, the driver shortage is an issue that has grown consistently year over year, leading to potential for shipping delays and increased prices. Others have pushed back against this estimate, noting hundreds of thousands of new commercial driver licenses are issued each year. Several factors have been identified as affecting driver availability, including work conditions, lower pay than anticipated[48], low retention/high turnover rates, and unpaid time waiting for trucks to be loaded or unloaded.[49]

6.8.2 Freight Rail

FREIGHT RAIL CAPITAL INVESTMENTS

Wisconsin's current rail network comprises less than half of the track mileage that existed 100 years ago. Rail company consolidation and investor-driven business models have led Class I railroads to focus capital investments on long-distance, high-traffic corridors. Light-density branch lines, by comparison, have seen deferred investments on infrastructure. The standard mainline carload weight limits have increased to 286,000 pounds, challenging service opportunities to businesses along branch lines that have not received infrastructure improvements that safely allow transport of heavier-weight equipment.

REGIONAL FREIGHT RAIL SHIPPING PATTERNS

Metropolitan Chicago's rail network plays a key role in moving goods and people throughout the region and nation. Approximately one-quarter of all freight trains and one-half of all intermodal trains in the nation pass through Chicago, which serves as the continent's main interchange point between western and eastern railroads. The Chicago region contains an estimated 3,865 track-miles of rail—greater mileage than nearly 40 other states—as well as passenger, commuter, and freight rail facilities. Wisconsin's proximity to the Chicago means that nearly all aspects of freight rail planning efforts will need to account for these rail movement dynamics.

The primary effort to improve fluidity of rail operations through Chicago is the Chicago Region Environmental and Transportation Efficiency Program (CREATE). It is a public-private partnership that since 2003 has identified and addressed 70 projects through $4.6 billion in investments. These projects have increased capacity and efficiency, reduced travel times, reduced train idling and emissions, and eliminated or reduced rail crossing delays for motorists.[50]

PRECISION SCHEDULED RAILROADING AND LIMITED FREIGHT RAIL ACCESS

Related to rail capital investments, the precision scheduled railroading (PSR) model has been adopted by Class I companies. This operational practice increases efficiency through greater velocity, with longer trains making fewer stops. This practice contributes to concerns raised by freight shippers in Wisconsin that Class I railroads are no longer able or willing to provide desired levels of rail service. Smaller- and medium-sized businesses and communities may be more vulnerable to this business model.

In addition, consolidation of rail companies and discontinuance of service on less profitable rail lines have left little capacity available when "surge" markets (such as crude-by-rail) or seasonal markets (grain harvests in fall) occur. Rail company labor shortages and other capacity constraints have led to insufficient rail service in some areas, compelling businesses to use other shipping options that are typically more costly.

Further, some communities have also expressed concern that when long trains are stopped for signals, blocked at-grade crossings cut off community resources such as emergency services and schools.

6.8.3 Ports and Waterways

ENERGY TRANSPORT VIA WATERWAY

Wisconsin's ports and waterways are a key component of the shipment of petroleum products not suited to pipeline transportation such as asphalt, tar, pitch, and petroleum coke. Waterway facilities capable of handling petroleum also provide redundancy in the case of pipeline closures or shutdowns such as the West Shore Pipeline closure.

OSOW FREIGHT

Opportunities

OSOW loads, such as wind turbine towers and blades, are major opportunities for Wisconsin's commercial freight ports. The integration of the marine transportation system with the road transportation system when moving OSOW shipments can improve safety and fuel efficiency and decrease congestion and pollution. Impediments such as low-clearance bridges and tight turning radiuses on the transportation system can hinder inland OSOW movements from the port. Wisconsin should work to ensure that intermodal connections and the state's "last mile, first mile" connections can accommodate these OSOW loads. An example of this is the establishment of the Milwaukee High Clearance Route connecting the Port of Milwaukee to the freight system.

In November 2017, Act 114 was signed into law, designating a High-Wide Route for freight in Milwaukee County. The Act preserves access from a manufacturer of large equipment in West Allis to Port Milwaukee. As far back as the 1970's, a more direct route between the manufacturer had existed, operating on an informal basis. Over time, infrastructure projects encroached on the ability of large items to be moved over this route. WisDOT convened a series of meetings that brought together the manufacturer with state, local government, and utility company engineers and planners to identify and configure a corridor of operations that allows passage of vehicles up to 23 feet tall.

This designation supports the regional and state economies through the continued operation of this major manufacturer and can serve as a template for future corridor preservation agreements.

Inland Rivers and Great Lakes Intermodal

Efforts are underway to use waterways to bring overseas containers to inland locations in North America. In July 2022, American Patriot Holdings (APH) announced its intent to begin construction of a container vessel that could transport overseas containers upriver on the Mississippi from the Gulf Coast to Memphis. A second phase would add vessels to extend service upriver, to additional Midwest ports.[51] In December 2021, a consortium announced development of a container-on-vessel port at Herculaneum, MO (just south of St. Louis). The announced goal was for operations to begin by late 2024. The larger vessels used will have a capacity of 2,375 TEUs, while the smaller vessels for upriver shipping (including up the Illinois River to Joliet) will have 1,800 TEU capacity and will be able to fit within existing locks and under bridge clearances.[52]

Source: waterwaysjournal.net

In October 2021, the Duluth Seaway Port Authority announced it had expanded its capacity for maritime containers and transfers to and from vessels.[53] This allowed Duluth-Superior to join Cleveland as the only U.S. ports on the Great Lakes to handle maritime intermodal containers. In May 2022, the first containers in decades left the port by water, destined for Europe.[54]

LOAD LINE EXEMPTIONS AND SAFE HARBOR DISTANCE

Barges are currently being used to ship products from Milwaukee to the Illinois River. However, the use of river barges on the Great Lakes is restricted by the United States Coast Guard to ensure safe harbor access. Shippers may apply to the United States Coast Guard for a load-line exemption to use river barges on the Great Lakes.

In 2015, the United States Coast Guard denied a request from the Michigan Agri-Business Association for a load-line exemption to allow river barges along eastern Lake Michigan as far north as Muskegon to move products on river barges to and from the Mississippi-Illinois River system. Without a load-line exemption, the carrier would need to apply and receive permission from American Bureau of Shipping or use a different vessel type.

SOO LOCK SYSTEM EXPANSION

Located along the St. Mary's River in Sault Ste. Marie, Michigan, the Soo Lock System provides the only water connection between Lake Superior and the rest of the Great Lakes system. About 80 million tons of commercial commodities like iron ore and coal pass through the lock system each year. In July 2022, the USACE awarded a contract in excess of $1 billion to begin work on the addition of a second 1,200-foot lock parallel to the existing Poe Lock. This project will improve resiliency to the Great Lakes System, allowing 1,000-foot freighter ships continued access through the system should the Poe be closed for any extended period.[55]

6.8.4 Air Cargo

SHIFTING DEMAND

A number of trends have shifted demand in the United States away from air transport to ground transport for packages. Due to improvements in delivery systems, many packages that were once shipped predominantly by air can now be transported by truck at a much lower cost and within similar time limits. Parcel carriers including the USPS, UPS, and FedEx increased ground capacity to respond to shifts in air cargo demand. Additionally changing supply chain patterns mean that some Wisconsin cargo previously shipped by air is now trucked to Minneapolis-Saint Paul, Rockford, or Chicago for consolidation and further transport.

CHANGING AIR CARGO COMPONENTS

The past two decades have seen a substantial decline in mail volumes due to the rise of e-commerce, electronic billing and payment transactions, and online communications. The surviving components of air mail include express, priority, and international mail.

LIMITED AIR CARGO GROWTH IN WISCONSIN

The handling of air cargo in Wisconsin has shifted from a competitive multi-provider environment to a highly concentrated market. Integrated carriers (UPS, FedEx, DHL, etc.) serve all the commercial service airports except Eau Claire and La Crosse. Air cargo out of La Crosse and Eau Claire is carried by the passenger airlines or otherwise trucked elsewhere. The lack of growth in Wisconsin's air cargo market can be attributed to several factors, including excellent modal alternatives, large cargo airports in neighboring states, higher air cargo costs, and limited carrier capacity. One of those airports, Rockford, is the second-largest UPS hub in North America as of 2022 and the 14th-largest cargo airport in the United States. By weight, Rockford's volume grew 25 percent between 2020 and 2021, to 3.4 billion pounds.[56]

AIR CARGO REGULATION

The Federal Aviation Administration's (FAA's) Next Generation Air Transportation System (NextGen) is an ongoing federal initiative to move the nation's air traffic control system from ground-based radar to a modern satellite-based system for more efficient and precise air traffic control. Airport owners are responsible for making their airports compatible with NextGen. Wisconsin's Air Carrier airports (those with regularly scheduled passenger service) have most of the needed infrastructure in place, but many General Aviation airports do not. Some airports need to acquire land in their runway approaches. Other requirements will surface as the system is further developed.

6.8.5 Pipeline

PIPELINE MAINTENANCE, REPLACEMENT, AND DECOMMISSIONING

As of 2022, Enbridge has proposed rerouting a 40-mile portion of its Line 5 through northern Wisconsin, in response to a suit filed by the Bad River Band of Lake Superior Chippewa. The 645-mile line, completed in 1953, currently traverses the tribe's reservation. The existing pipeline carries up to 23 million gallons of oil and natural gas liquids each day. Projected impacts include blasting and drilling at 139 wetlands and waterways sites, and potential impacts to federal and state endangered species and wetlands that comprise the largest wild rice bed on the Great Lakes.[57]

In 2012, the West Shore pipeline segment from Milwaukee to Green Bay spilled over 50,000 gallons of gasoline from leaks due to corrosion. Since the middle of last decade, fuel supplies to Green Bay have been brought in by barge or truck. At least one state legislator is advocating for the corroded pipe to be replaced and re-opened for service.[58]

IMPACTS TO OTHER FREIGHT MODES

With a limited role in the oversight of pipeline operations, WisDOT's interest in pipelines has been focused on the impacts they have on other modes. Alternative freight modes for products such as crude oil, natural gas, and petroleum products include rail, truck, and water. However, if these modes are used instead of pipelines, they have the potential to increase congestion and wear and tear on those freight infrastructure systems.

PETROLEUM MARKET VOLATILITY

Between 2006 and the mid-2010s, the development of crude oil production in Western Canada and North Dakota dramatically increased the amount of crude oil being shipped via both pipeline and rail through states such as Wisconsin. That oil boom has largely subsided, but the potential for increased oil production and transport as gasoline prices rise could have future impacts on Wisconsin's freight system.

6.8.6 Intermodal

TRANSLOAD OF OCEAN CONTAINERS

Ocean carriers are increasingly managing their overseas containers to ban or make cost-prohibitive the movement of loaded inbound containers from coastal ports to inland locations. The intent is for these containers to be quickly transloaded to semi-trailers or 53' domestic intermodal containers, freeing up the empty container to return overseas. Constraints on chassis, drayage drivers, and warehouse capacity have delayed inland deliveries, compelling further throttling of container movement inland by the ocean carriers.[59]

TEMPERATURE-CONTROLLED INTERMODAL SERVICE

Refrigerated containers are part of a growing global trade network. Telematics allow cargo owners to track the temperature throughout the delivery cycle.[60] Overall, the global cold chain packaging market is projected to grow from $22.97 billion in 2022 to $47.46 billion by 2029, at a compound annual growth rate of 10.9 percent in forecast period.[61] Fresh foods (including meats, fruits, and vegetables) are likely to continue to grow in volume. Containerized U.S. food imports rose 3.5 percent to nearly 1.8 million twenty foot-equivalent units (TEU) from 2020 to 2021; this was less than half the 7.1 percent compound annual growth seen from 2016 through 2021.[62] The pharmaceutical sector is likely to be one of the other drivers of growth in logistics for temperature-controlled shipping.[63]

CHAPTER 7

Freight Policies and Strategies

Source: Port Milwaukee

FREIGHT FOCUS:

A detailed summary of the freight policies, strategies, and performance measures developed by WisDOT to improve the freight transportation system in the state

7

7. FREIGHT POLICIES AND STRATEGIES

The policies presented in this chapter were developed to align with the Connect 2050 Long-Range Transportation Plan. They incorporate stakeholder feedback and input from the Wisconsin Freight Advisory Committee (FAC) and in many cases are based on data analysis by Wisconsin Department of Transportation (WisDOT) staff. The Freight Plan defines policies for all modes and develops a data-driven approach to define critical infrastructure for each mode. The policies and strategies address highways, local roads, railroads, ports and waterways, air, and pipelines.

WisDOT's FAC advises and is responsible for assisting the department in the development of, and subsequent updating of, the SFP. As WisDOT identifies and modifies its freight recommendations and policies, the department will continue to convene the FAC as a forum for developing consensus on policies and projects, and to identify future projects and policies for consideration. The information and feedback provided by WisDOT's FAC has provided valuable insight into the full range of issues and interests of the freight industry.

WisDOT continues to use various data, tools, and methods that will continue to be refined and shared with WisDOT's partners to aid in identifying freight mobility needs and support data-driven investment decisions. WisDOT leveraged transportation data to define Wisconsin's critical corridors and facilities and develop a freight-oriented system where the infrastructure promotes the safe, efficient, and reliable movement of goods through the entire supply chain.

The Bipartisan Infrastructure Law (BIL) requires state freight plans to include a description of the freight policies, strategies, and performance measures that will guide the freight-related transportation investment decision of each state. This chapter provides a summary of the specific policies and strategies that WisDOT will use to guide investment in the state's freight system. An overview of the performance measures used by WisDOT is provided in Chapter 3: Freight System Assets, Conditions, and Performance. Additionally, BIL requires states to provide a description of how the SFP will improve the ability of the state to meet the national multimodal freight policy goals and the national highway freight program goals cited in Section 1.2 Link to National Freight Goals. A description of how the contents of this SFP align with national freight goals is provided in that section.

7.1 Freight Policies

All Modes

1. Enhance security of the transportation system by reducing vulnerability

Strategy/Background: The Office of Wisconsin Emergency Management (WEM) coordinates security concerns in Wisconsin, including coordinating emergency response efforts. WEM contracts and manages twenty-one Regional HAZMAT Response Teams to provide a high level of response capability to the state's communities. These teams may be activated for an incident involving a HAZMAT spill, leak, explosion, injury, or the potential of immediate threat to life, property, or the environment. County-level response teams respond to lower-level HAZMAT incidents that exceed the capabilities of standard fire departments. In terms of transportation security, WisDOT's role is limited. If an incident occurs and agencies such as and including the National Transportation Safety Board are involved, WisDOT cooperates with the team investigating incidents. WisDOT enhances the security of the transportation system by reducing vulnerability and improving incident response.

2. Partner with Wisconsin Department of Natural Resources, environmental agencies, consumers and businesses to increase transportation sustainability

Strategy/Background: This policy reflects WisDOT's long-standing practices and strategies, originally outlined in Connections 2030. Based on the assessment that prices of fuel- and oil-related products will trend higher in the medium term, WisDOT will:

- Track changes and analyze responses to the state's transportation energy use and costs
- Promote more efficient use of petroleum-based fuels and viable alternatives
- Encourage local governments to improve vehicle efficiencies
- Seek to adjust WisDOT's transportation revenue stream to respond to changing fuel use

3. Continue to support Metropolitan Planning Organizations, Regional Planning Commissions, and local partners in the implementation and execution of their freight policies, including the following themes:

- **Local Connectivity**
- **Safety and Security**
- **Modal Improvements**
- **System Operations and Management**
- **Economic Development**
- **Partnerships and Performance Measures**

Strategy/Background: In addition to the statewide long-range plan, Wisconsin's fourteen MPOs and nine RPCs develop long-range plans which address/discuss freight transportation needs for urban and rural areas in Wisconsin. In order to have a comprehensive transportation system that enables the movement of freight, it is imperative that state, rural and urban plans align and support each other. Many of the policies in these plans share common themes, concerns, and recommendations. Specifically, WisDOT will coordinate with MPOs, RPCs and local partners in the implementation and execution of their freight policies.

4. Leverage the data, tools, and methods developed through the freight plan to help deliver SFP policies and strategies and inform project prioritization and investment decisions, as well as provide the data and tools to DOT partners

Strategy/Background: During development of Wisconsin's first SFP, WisDOT began advancing various data, tools, and methods that will continue to be used, refined, and shared with WisDOT's partners to aid in identifying freight mobility needs and support data-driven investment decisions.

WisDOT will continue to leverage transportation data to define Wisconsin's critical corridors and facilities and develop a freight-orientated system where the infrastructure promotes the safe, efficient, and reliable movement of goods.

Highways & Local Roads

1. Improve standards for infrastructure

Strategy/Background: Highway design standards are researched, reviewed, and updated on a continual basis to ensure characteristics such as speed, lane width, shoulder width and slope, and stopping-sight distance are consistent with national standards and best practices. Roadway engineering improvements during the past several decades have changed the mix of contributing factors and injury outcomes for traffic crashes. Design tools such as guard rails, divided highways, cable barriers, clear zones, and rumble strips have been proven to reduce the number and severity of traffic crashes; these tools can also reduce negative impacts from interactions between roadway condition, environmental factors, and driver error.

These tools help keep vehicles on the road and minimize the consequences of leaving the road – two key department safety goals. Roadway engineers apply both proactive and reactive approaches to designing facilities to modify driver speed behaviors. This requires engineers to anticipate potential problems and determine how drivers could avoid them, while at the same time identifying existing problems and designing the facilities to eliminate or reduce their impacts. WisDOT will continue to improve safety standards for infrastructure.

2. Continue to work with other states and local communities to identify oversize-overweight harmonization opportunities

Strategy/Background: While it is critical for OSOW loads to have efficient routing within Wisconsin, it is also crucial these movements have sufficient routes to exit and enter the state, as needed. The FAC recommended WisDOT take steps to harmonize permitting rules and availability across state lines, including with Minnesota, Iowa, Illinois, and Michigan. WisDOT also must continue to partner and cooperate with local governments as jurisdictional challenges between roadway types exist and as local zoning impacts freight opportunities. While this has been ongoing, WisDOT will continue to work with other states and local communities to identify oversize-overweight harmonization opportunities.

3. Investigate ways to simplify, streamline, and provide more permitting options

Strategy/Background: In Wisconsin, a permit is issued to a carrier to allow operation of a vehicle or load that exceeds the statutory limits on STHs. Permits are generally issued for non-divisible loads, with some exceptions. Wisconsin also places restrictions on certain routes for vehicles traveling on permits. Shippers and carriers indicate they would like WisDOT to investigate ways to simplify, streamline, and provide more permitting options. Local governments indicate they would like cooperation and coordination as permits are issued such that they can plan for large freight loads on their community roads and streets. WisDOT can also explore permit options needed for intermodal (i.e., 5/6 axle permit options) movements.

4. Implement cost-effective maintenance activities on Wisconsin's state trunk highway infrastructure

Strategy/Background: Pavement that is in good condition promotes the safe and efficient movement of people and products throughout Wisconsin. Comprehensive pavement condition data is necessary to determine cost-effective maintenance and improvement strategies that extend the life and serviceability of the state trunk highway system.

WisDOT analyzes pavement condition data to determine where and when repairs are needed, and to determine viable alternatives. In addition, the department assesses the metropolitan planning organization recommendations published in each organization's long-range transportation plan when assessing priority needs.

5. Preserve Wisconsin's state trunk highway system infrastructure

Strategy/Background: Much of Wisconsin's Interstate highway system was constructed in the 1950s and 1960s, and bridges on the state trunk highway system (which includes the Interstate highway system) can date back to the 1930s and 1940s. Since then, user demands have increased, and in some cases, designs that were applied to address anticipated travel demands are now outdated. In response, WisDOT's efforts continue to focus on maintaining and preserving the system, along with addressing safety deficiencies, traffic flow concerns, and critical design features. If pavement replacement continues over the typical lifespan of the infrastructure, roads can last up to 60 years (prior to complete reconstruction), and bridges can last up to 75 years. However, keeping pace with both emerging and existing needs remains a challenge.

Highways & Local Roads

Continued

6. Preserve the local road and bridge system

Strategy/Background: Preserving the local road and bridge system is critical to the continued growth of Wisconsin's economy. To support Wisconsin's local road and bridge system, WisDOT will:

- Assist in providing asset management strategies and tools for local governments to ensure that selected system preservation improvements provide cost-effective service life extension
- Work with local entities to identify and address key safety issues on the local system
- Partner with local governments to manage and invest in the local road and bridge network

7. Complete currently enumerated Major Highway Development projects

Strategy/Background: Major Highway Development Projects (Majors) are generally the most complex, costly, and potentially controversial projects initiated by WisDOT. They are long-term solutions to the most serious deficiencies on highly traveled segments of the highway system. Freight movement is, and will continue to be, an important consideration in the selection of major highway development projects.

Wisconsin state statutes define a Major project candidate. Majors generally include capacity expansion, new highways, or bypasses. Majors can also be a project with a total cost exceeding that defined in ss 84.013(1)(a)2m. The Majors program does not just focus on capacity issues, but also safety needs and enhancement of economic development opportunities. WisDOT provides an analysis and recommendation of Major project candidates for study or construction to the Transportation Projects Commission (TPC). This analysis includes factors such as safety and congestion.

The TPC, using WisDOT's analysis, recommends to the Governor and Legislature a list of major highway projects and an appropriate annual funding level to support the ongoing Major program. Major projects also help maintain a state of good repair on key corridors, as at least 50% of project costs offset rehabilitation costs that would need to occur in the absence of the Major project. The Legislature may add or delete projects and may change the recommended funding level from the TPC's recommendation.

The TPC also reviews and approves "high cost" Major projects. The TPC has authority to approve such projects for construction as Major projects; enumeration in the Biennial Budget is not required. WisDOT may request TPC review and approval of these projects any time after completing a draft environmental document.

WisDOT will complete the projects enumerated or approved for construction, as well as complete environmental studies of the approved corridors for study, unless the State Legislature de-enumerates a project.

8. Complete currently enumerated Southeast Wisconsin Freeway Megaprojects Program

Strategy/Background: Southeast Wisconsin has some of the busiest highways in the state and also some of the most complex highway infrastructure. Consequently, its highway infrastructure is among the most expensive to replace. Southeast Wisconsin megaprojects are defined as freeway projects in the seven-county southeast region with estimated costs (inflation adjusted) of over $700 million. Southeast megaprojects must be enumerated in the Wisconsin State Statutes prior to construction.

9. Complete corridor studies approved by the Transportation Projects Commission

Strategy/Background: Before projects are considered for enumeration, WisDOT conducts environmental and engineering studies so all projects brought before the TPC will have undergone an approved Environmental Impact Statement or Environmental Assessment. This ensures that only projects likely to be future Major project candidates are considered for enumeration. The TPC must approve projects for environmental study.

Highways & Local Roads

Continued

10. Improve the reliability and efficiency of state trunk highway operations

Strategy/Background: Effective, coordinated, and economical operations are part of an efficient transportation system that helps maximize traffic flow. This can reduce travel delays for freight and people and improve safety.

The primary goal is to maximize the reliability of the highway system. Highway operations activities focus on traffic flow on the roadway. WisDOT's efforts to improve daily highway operations include implementing and integrating traffic control devices and other applicable technology, as well as facilitating real-time traveler warnings and information. Additionally, the department is incorporating a comprehensive risk-based resiliency component to our asset management decision-making process.

11. Optimize traffic movement on the state trunk highway system by utilizing tools to improve existing capacity and, where necessary, adding capacity

Strategy/Background: WisDOT's vision for optimizing traffic movement on the state trunk highway system is to improve the system to reduce congestion, improve safety, and support economic growth in Wisconsin. To achieve this vision, WisDOT uses tools and strategies to improve capacity on existing facilities and construct new facilities to increase capacity, where appropriate and warranted.

The efficiency and reliability of Wisconsin's STH is impacted by several factors such as traffic volume, roadway design, bad weather, and incidents such as crashes, stalled vehicles, and construction. These factors can result in increased congestion. A safe, efficient, and reliable highway system requires routine monitoring, maintenance, and preservation to meet established performance thresholds and to identify and reduce highway bottlenecks. Use of WisDOT's delay and travel reliability performance measures help to inform where to enhance mobility and reliability on the state's highway system.

12. Manage access on Wisconsin's state trunk highway system

Strategy/Background: Balancing transportation and land use continues to be a challenge. By protecting the safety, capacity and traffic flow on state trunk highways, public investment can also be preserved. Through sound access management techniques, the public and local governments can work with WisDOT to preserve the state's roadway investments and promote investment in the local economy through safe access points.

Access management policies and farmland preservation strategies are further discussed in WisDOT's Facilities Development Manual (FDM) for project-level guidance.

13. Plan and prepare for WisDOT's prompt and consistent response to incidents

Strategy/Background: WisDOT's Traffic Management Center (TMC) monitors highways in Milwaukee, Madison, Green Bay, and Wausau using video technology and coordinated communication efforts. The center also coordinates statewide emergency responses through a tollfree telephone number available to law enforcement agencies.

In urban areas, WisDOT will continue to use Intelligent Transportation Systems (ITS) technology for faster detection and response to incidents. Statewide, WisDOT will continue to invest in communication system redundancy and integration throughout the plan period. This includes interoperability systems and standards that allow several agencies and responders to exchange communications across a single channel.

While secondary to safety considerations, enhancements to incident response systems and procedures will also help to mitigate unexpected or non-recurring congestion. Rapid detection and response to crashes will also reduce the number of secondary crashes that occur in congested situations. The TMC has also developed best practices for incident management. WisDOT supports the adoption of such practices, and will support a regular review process to update these practices.

Highways & Local Roads

Continued

14. Continue using a performance-based approach to identify state trunk highway system preservation needs, including development of a bridge asset management system

Strategy/Background: WisDOT will continue to use a comprehensive asset management approach to identify and address state trunk highway system needs. This allows WisDOT staff to analyze preservation needs using data based on physical condition, safety, operation, function, and connectivity. It also allows WisDOT staff to consider a range of funding and road construction alternatives, which results in a systematic and objective approach to cost-effective state trunk highway system preservation.

This policy divides state trunk highway system preservation activities into three categories: structures and bridges, pavements, and interchanges.

15. Refine and expand a state-of-the-art process for prioritizing needs and identifying cost-effective state trunk highway system preservation needs

Strategy/Background: WisDOT will continue to use pavement condition data and performance thresholds to identify highway segments that need reconditioning, rehabilitation, or reconstruction.

WisDOT continues to enhance its prioritization methods using asset management tools such as the department's Meta-Manager Management System Database. This prioritization process will include using thresholds for pavement, bridges, and safety.

The department's maintenance and preservation efforts address the system needs and help extend the system's life. Wisconsin's highest preservation priority continues to be the structural preservation of bridges. For this reason, structural bridge needs will continue to receive priority funding. For the remaining STH system, WisDOT will prioritize preservation needs using state-of-the-art methods. The process applied will include a dual-priority approach that selects projects based on both the cost-effectiveness of the preservation strategy and the importance of the roadway to the overall system function. Establishing a functional priority will enable WisDOT to better prioritize needs.

The department will also continue to emphasize proactive pavement preservation actions to extend service life and minimize the life-cycle cost of other system needs.

16. As needed, revise the Facilities Development Manual (FDM) to more clearly include freight considerations in its project development guidance

Strategy/Background: WisDOT's professional engineers adhere to the department's Facilities Development Manual (FDM). The FDM provides policy, procedures, design standards, and general guidance on the facilities development process required by WisDOT. It is applicable to all types of highway improvements on the STH system, other street/highway systems for which federal-aid highway funds may be utilized, state facilities funded with state funds administered by the department, and other highways and roads for which the department may act as an administrative agent.

WisDOT will continue to review and revise the FDM to better reflect freight considerations in its guidance, as needed. The intent is to update and close gaps in the FDM so projects can be advanced that reflect the needs, and do not negatively impact the freight community.

17. Preserve a sub-system of Wisconsin's State Highways that accommodate over-height loads (up to 20 feet), over-weight and over-size loads

Strategy/Background: Wisconsin's transportation system has experienced considerable growth in OSOW freight demand over the past few decades, and this trend is expected to continue. The size and frequency of OSOW vehicles and loads increases stress on bridges and pavements and produces highway operational considerations specific to OSOW movements. These concerns extend from state and federal highways to many local roads and bridges with weight and size restrictions that are posted below legal limits. Wisconsin, along with many other states (including neighboring states), has made significant strides in developing a transportation system that accommodates OSOW loads. However, additional efforts are required to improve safe and efficient movement of these loads – both within the state and across state lines.

Updates to the department's Facilities Development Manual will provide direction and recommendations on appropriate design considerations, and preservation of facility attributes to maximize the department's investments and ensure that freight loads can be accommodated safely and appropriately.

Highways & Local Roads

Continued

18. Monitor state trunk highway conditions in support of a formal, ongoing preventive maintenance process

Strategy/Background: Preventive maintenance is the periodic application of relatively inexpensive roadway treatments (for example, filling the pavement cracks on roadways) that help extend the life of the system by delaying deterioration. Postponing preventive maintenance ultimately results in larger repair projects that take longer to complete and, as a result, can cause such consequences as greater disruption to traffic flow. An effective preventive maintenance process includes:

- Monitoring existing state trunk highway conditions, identifying deficiencies, and setting priorities
- Developing a plan to carry out maintenance activities and address deficiencies

19. Implement proven maintenance management practices

Strategy/Background: To monitor system performance and address deficiencies throughout the year, WisDOT uses a Maintenance and Operations Decision Support System. This decision support system is a computerized information system that supports organizational decision-making activities and is intended to help decision makers compile useful information from raw data, documents, personal knowledge, and/or business models to identify and solve problems and make decisions. This system helps highway maintenance staff identify and recommend specific treatments and timing strategies to complete necessary maintenance work. Moreover, WisDOT's regional maintenance field staff monitors county performance, specifically in the areas of establishing work plans, setting priorities and assuring compliance with maintenance standards. In terms of maintenance, WisDOT works to:

- Improve the department's existing maintenance management tools
- Research and evaluate new, cost-effective highway maintenance technologies
- Implement work zone and lane-closure management strategies and tools to maintain safety and minimize impacts on travelers
- Emphasize cost-effective strategies in county maintenance contracts

20. Improve the department's existing maintenance management tools

Strategy/Background: WisDOT continues to expand and refine its existing management system tools, including the Compass program. Compass is a decision-making tool that helps establish work priorities and allocate resources. A critical input for this program is an annual condition assessment of the state trunk highway system. The assessment provides condition information about shoulders, drainage, roadsides, traffic devices, bridges and winter operations. Over the long term, WisDOT works toward developing and implementing a comprehensive maintenance management system for all highway assets.

21. Implement work zone and lane-closure management strategies and tools to maintain safety and minimize impacts on travelers

Strategy/Background: Conducting highway maintenance activities can sometimes disrupt traffic flow. Work zone management strategies help minimize disruption and maintain state trunk highway system reliability. Oftentimes, work zone management requires creativity and flexibility. In response, WisDOT performs more and more of its maintenance work during non-peak traffic hours, including nighttime hours when traffic volumes are typically lower. WisDOT also uses mainstream ITS as a tool for other types of routine highway operations activities, including winter weather activities and work zone management.

22. Continually monitor the state trunk highway network and respond to operational needs

Strategy/Background: The department's efforts to monitor daily traffic flow on state highways are conducted primarily through close coordination of law enforcement, first responders, other agencies, the media, and staff at WisDOT's Traffic Management Center (TMC).

With the aid of cameras, road sensors, and area responders throughout the state, TMC staff work with others to identify and track incidents and initiate appropriate responses. Currently, the TMC has direct responsibility to monitor and coordinate responses to incidents in Southeast Wisconsin, Madison, Green Bay, and Wausau. To serve statewide needs, the TMC coordinates incident responses with local emergency providers through a toll-free telephone number. The TMC provides information to the public using direct communication, the 511WI.gov website, and dynamic message signs. With the traffic control and monitoring systems operated by the TMC, trucks and other commercial vehicles are able to reduce the amount of delay they encounter while traveling in Wisconsin, which helps freight carriers lower shipping costs.

Highways & Local Roads

Continued

23. Improve motor carrier efficiency

Strategy/Background: WisDOT issues permits for OSOW vehicles and loads to provide for their safe and efficient movement. In November 2020 WisDOT launched its new internet-based OSOW automated permit issuance system to wide acclaim from the private sector. WisDOT will continue to maintain its internet-based OSOW automated permit issuance system for customers to apply for and self-issue new permits and to renew existing permits.

24. Explore approaches to improve motor carrier enforcement

Strategy/Background: WisDOT will continue to apply Weigh-In-Motion, Virtual Scales, PrePass, and other technologies for motor carrier enforcement operations. WisDOT will integrate roadside data captured by these systems with the commercial motor vehicle data networks maintained by the department through CVISN. Integration will provide seamless monitoring for compliance and allow better data analysis of commercial motor vehicle carrier operations.

Additionally, WisDOT will explore emerging technologies related to the movement of goods, including real-time tracking of hazardous materials, radio frequency identification to track shipments, and use of Global Positioning System (GPS) to notify commercial drivers of real-time conditions.

25. Support communications along state highway corridors of freight significance to ensure drivers can remain informed of changing conditions

Strategy/Background: While cellular phone, text, and data sharing has created great efficiencies in freight operations, the coverage of those networks is not complete in the state. This places operators along portions of our STH Backbone System at a disadvantage for remaining in coverage with their offices and with Wisconsin's traffic operations system. As new generations of cellular technology are introduced, basic coverage along key corridors should not be neglected.

26. Support greater use of technologies to improve the safety and efficiency of operations along corridors with high freight movement frequencies

Strategy/Background: WisDOT has a strong history of using technology to maintain and improve the transportation system. Beyond cellular systems, many other communications, detection, and safety technologies are being developed and implemented for freight applications. Broadening the use of remote screening technologies such as Weigh-In-Motion and PrePass technologies for motor carriers and setting the framework for monitoring, researching, developing, and supporting technologies applicable to the STH system and other transportation modes are both great examples of how use of appropriate technologies can be of benefit to transportation system users.

27. Support an increase in the availability of truck parking and related infrastructure at state-owned facilities and raise the awareness of its availability

Strategy/Background: Although access to safe and convenient parking areas for trucks is essential for a robust freight transportation network, truck drivers consistently have difficulty finding areas to safely rest. In 2013, a MAP-21 survey revealed that 83 percent of drivers routinely took longer than 30 minutes to find parking. This presents two potential problems. First, this loss of productivity while searching for parking adds six percent or more to labor costs associated with moving goods through the national freight network. Second, drivers who have not located parking before reaching their hours-of-service limits may park illegally or unsafely, often on the shoulders of highways, along off-ramps, or at abandoned facilities.

In response to these concerns, a Mid-American Association of State and Transportation Officials (MAASTO) partnership of Kansas, Indiana, Iowa, Kentucky, Michigan, Minnesota, Ohio, and Wisconsin is operating a multistate Regional Truck Parking Information and Management System (TPIMS). The project was funded through a $25 million Transportation Investment Generating Economic Recovery (TIGER) grant and state funds. This mature system is now entering the fourth year of operations. The I-10 Corridor Coalition modeled their Truck Parking Availability System (TPAS) after TPIMS, and will be operational in 2023.

Highways & Local Roads

Continued

28. Identify freight-specific safety concerns and develop strategies for solutions

Strategy/Background: WisDOT will examine motor carrier inspection and crash records (for highway modes), federal safety reports (for highway and non-highway modes) and other available sources to develop and prioritize a list of the safety concerns that are specific to freight equipment and operations. By understanding the types of problems and the scale of their impacts to safety, WisDOT can better target efforts to improve safety in the freight transportation sector, as well as the traveling public as a whole. This process will be integrated with the Department's Strategic Highway Safety Plan.

29. Assist in providing asset management strategies and tools for local governments to ensure that selected system preservation improvements provide cost-effective service life extension

Strategy/Background: WisDOT will work with local governments to develop and adopt asset management strategies to extend the life of existing investments at the lowest cost. Developing and adopting asset management strategies enables decision-makers to analyze preservation needs using data based on physical condition, safety, operation, function, and connectivity. While WisDOT has initiated efforts with the development and use of Wisconsin Information System for Local Roads (WISLR), gaps remain in data necessary to fully adopt and implement a local road network asset management approach. To assist, WisDOT will focus on the following efforts:

- Continue to support WISLR as a data and pavement asset management tool
- Work with local entities to enhance their ability to quantify local road infrastructure needs

30. Work with local entities to identify and address key safety issues on the local system

Strategy/Background: WisDOT will continue its efforts to improve the safety of the state's roadway network, including Wisconsin's local roads and bridges. Addressing safety needs is critical regardless of where they occur. Depending on the location, the department's role and responsibility varies.

For the local road system, the department will work with local governments to manage available safety funding and program safety improvements, provide data, enhance analytical tools, and provide technical assistance to address safety issues.

31. Partner with local governments to manage and invest in the local road and bridge network

Strategy/Background: Decisions regarding transportation at the state and local levels will continue to emphasize cooperation and coordinated decision-making. All levels of government are responsible for transportation system management and efforts should be made to ensure that decisions are coordinated. WisDOT will continue to work with local governments when managing corridors to ensure that decisions regarding operations, access management, project planning design, or construction consider concerns and issues at the local level.

In addition, WisDOT will work with its stakeholders and local governments to evaluate issues and proposed actions regarding the transport of OSOW loads on Wisconsin's roads. Overweight trucks may accelerate deterioration of highways and bridges, and can result in the need for additional infrastructure investment. Allowing OSOW vehicles on Wisconsin's roadways requires a balance between increasing freight movements to meet economic development goals and minimizing impacts to local roads, highways, and bridges.

Rail

1. Continue to support the existence of locally-organized, locally-staffed Rail Transit Commissions

Strategy/Background: Rail Transit Commissions (RTCs) were created under Wisconsin Statutes 59.968 and 66.30 to help preserve rail service or the potential for rail service, and to influence policies on the future use of rail corridors if existing rail service is proposed to be discontinued. RTCs originally emerged as a mechanism to provide state funding in support of railroad improvements when the state was constitutionally prohibited from directly funding rail improvements through railroad operators. Even though the 1992 passage of an amendment to the constitution allows state funds to be used for railroad improvement purposes, the mechanism of public ownership with the RTCs remains. Grant agreements between WisDOT and RTCs determine how the lines can be used.

The commissions are staffed by their member municipalities and, in some cases, by regional planning commission staff. The level of activity and scope of efforts varies between Wisconsin's RTCs. The commissions continue to be an important partner with WisDOT in preserving rail service. In this partnership arrangement, WisDOT provides resources, information, staff support, general oversight, and funding. The commissions provide matching funds and coordinate with shippers, freight rail operators, and local governments.

While WisDOT has the ability to purchase rail lines, RTCs have the ability to enter into partnership arrangements with railroads and WisDOT to manage the rail service. RTCs provide matching funds for the purchase and rehabilitation of rail corridors. They also contract with a private operator to provide the freight rail service. Wisconsin's publicly-supported rail lines are jointly owned by the state and a combination of RTCs, consortia, and/or transit authorities (collectively Rail Transit Commissions).

2. Continue state assistance programs for rail improvements

Strategy/Background: The state's goal is to rehabilitate publicly-owned rail lines to meet FRA Class 2 Track Safety Standards and operate at speeds up to 25 miles per hour and carry rail cars with a gross weight of 286,000 pounds.

3. Investigate new policies and new financing strategies for projects that improve freight service

Strategy/Background: This policy reflects WisDOT's long-standing practices and strategies. WisDOT reaffirms continuation of this policy.

4. Work with railroads to ensure that appropriate rail service will be provided to all shippers statewide

Strategy/Background: Recognizing the value of the state-owned railroad lines and their role in the state's transportation network, it is in the state's interest to ensure that the system is capable of providing the intended service.

5. Continue to monitor changes in international trade flows and work with communities that are impacted by dramatic changes in train frequencies

Strategy/Background: Even with an improved Panama Canal, Wisconsin may see continued growth in transcontinental traffic to and from West Coast ports, simply because this will be the preferred routing for higher value traffic demanding faster transit times. Most of this traffic will go to and from Chicago, which has the potential to remain a bottleneck because of its role in U.S. rail transportation.

Rail

Continued

6. Address rail crossing safety for vehicles, pedestrians, and bicyclists

Strategy/Background: Rail crossing safety is a focus for WisDOT. Activities to implement this policy include:

- Funding and completing multi-modal crossing safety pilot projects throughout the state to inform WisDOT's engineering standards and priorities
- Working with the Office of the Commissioner of Railroads, local officials, and private railroad companies to identify potential rail crossing safety improvement such as signals, gates, grade separations, or closing crossings
- Working with the Office of the Commissioner of Railroads and private railroad companies to discourage trespassing by installing fencing
- Evaluating the findings of the state rail crossing safety action plan for implementation
- Promotion of rail safety and security through its Internet site and educational programs such as Operation Lifesaver

7. Work with partners and stakeholders to ensure the safety and security of the rail transportation system

Strategy/Background: The safety and security of the rail system will be addressed through a number of efforts, including:

- Enhancing the security of the transportation system by reducing vulnerability
- Working with partners to improve emergency response
- Working with Wisconsin Emergency Management, railroad companies and other agencies to discuss rail-related security issues

8. WisDOT will continue to work with different stakeholders following the conclusion of the FAC's Intermodal Subcommittee

Strategy/Background: WisDOT worked with stakeholders to develop an intermodal freight strategy for Wisconsin as part of implementing the first Wisconsin State Freight Plan. The following policies were adopted at the conclusion of that strategy development:

- WisDOT will continue its mission of providing leadership in the development and operation of a safe and efficient transportation system by implementing specific policies and providing assistance to help develop intermodal freight terminals
- WisDOT will assist with applications for federal programs
- WisDOT will provide technical assistance and guidance to all eligible organizations which seek to host an intermodal terminal
- WisDOT will consider grant/loan applications for infrastructure funding related to development of intermodal freight terminals as reflected in specific WisDOT programs' guidelines
- WisDOT will utilize its network of organizational contacts to open lines of dialogue between local/regional governments and private sector actors
- WisDOT will facilitate responses from state agencies to local interested parties as pertains to intermodal-related data, regulations, and funding options as requested
- WisDOT encourages all private sector firms to participate in shipping data aggregation efforts
- WisDOT encourages discussions between private sector firms that may lead to a collective "breakthrough" in development of new intermodal freight terminals
- WisDOT will lead coordination efforts between state agencies (including DATCP and WEDC) to ensure a common message about state government's role in intermodal shipping
- WisDOT will play a lead role in facilitating communications from state agencies to local interested parties, including local/regional governments and economic development organizations

Rail

Continued

9. Continue to support shipper access to the rail service network

Strategy/Background: Mechanisms to support shipper access include:

- Supporting freight rail shippers and short-line carriers in preserving service to light-density rail lines
- Supporting freight shipper investments that permit new or continued local service in high-traffic areas
- Providing planning support to metropolitan planning organizations and regional planning commissions in considering transportation needs that support developing rail-friendly industrial development sites
- Supporting efforts to improve connections between Wisconsin's short-line railroads and other carriers

10. Continue to monitor Chicago's effect on Wisconsin's freight service

Strategy/Background: WisDOT will monitor the CREATE Program's progress and partner with Illinois in supporting new federal funding to move the improvements forward. Additionally, WisDOT will explore opportunities to increase freight rail penetration of Chicago-directed traffic flows through intermodal offerings and expanded direct carload service to Chicago interchanges by Wisconsin's short-line partners.

11. Monitor for the potential changes widely-adopted CAV truck platooning could have on the economics of certain types of freight movements in the state and nationally

Strategy/Background: WisDOT will continue to monitor developments as they could potentially impact existing policies and programs. Reductions in the trucking industry's labor costs could reduce railroads' historical "cost per ton-mile" advantage over some distances.

12. Preserve rail corridors, including rights-of-way, for transportation use through public ownership where appropriate

Strategy/Background: Preservation activities include:

- Maintenance of state-owned rail lines to allow service levels to continue uninterrupted and without additional restrictions
- Acquisition of rail lines into public ownership, when appropriate, to preserve essential railroad service
- The upgrading and rehabilitation of Wisconsin's publicly-owned rail lines, tracks, and bridges
- Working with railroads to ensure that appropriate rail service will be provided to all shippers statewide
- Conduct studies of publicly-owned rail line infrastructure needs
- Development of an analytical policy framework to provide a context for further decision making on the long-term sustainability of publicly owned track and corridors
- Working with the Department of Natural Resources and Surface Transportation Board to support the Rails to Trails program to preserve rail corridors for potential reactivation of rail service

13. Preserve Wisconsin's branch and short line network

Strategy/Background: WisDOT will continue efforts to preserve rail freight service when the service is judged to be essential, cost-effective, and financially viable, based on transportation efficiency cost-benefit analysis. WisDOT will also develop outreach to, and foster relationships with, all Wisconsin railroad operators to keep abreast of market demands and railroad interests.

Additionally, WisDOT will facilitate relationships to reduce the number of abandonments and strengthen the market for rail. The department will monitor railroad activity and create partnerships among businesses and railroads to increase the use of rail, and work with other state agencies to explore possible state policies to encourage business development within a supporting transportation policy framework.

Maritime

1. Continue state assistance programs for harbor and waterway improvements which are all critical to Wisconsin's transportation system

Strategy/Background: Ports and waterways provide key modal options for low-cost, high-volume goods. WisDOT's state assistance program funding in the Harbor Assistance Program can be used to maintain and improve the ports and waterways system. WisDOT also supports project applications for other types of assistance (federal). WisDOT facilitates bulk and containerized commodity shipments.

2. Advocate for federal funding for navigation and environmental improvements for the Upper Mississippi River-Illinois River Waterway and improvements to the Great Lakes-St. Lawrence Seaway System

Strategy/Background: Wisconsin relies on access to the Mississippi River system for transportation, recreation, and fishing. The system of locks and dams on the Mississippi and Illinois Rivers allow barge transportation along Wisconsin's western boundary, as well as from Milwaukee to the Gulf of Mexico. Key state industries such as agriculture, forestry, and mining rely on the efficient movement of freight via the waterway to drive competitiveness. Freight shipments along these water routes face several challenges including seasonal water limitations, winter lock closures, antiquated lock systems, lack of dredging, and fluctuating water levels.

The St. Lawrence Seaway is a system of locks, canals, and channels in Canada and the United States that permit ocean-going vessels to travel from the Atlantic Ocean to the Great Lakes, as far inland as the western end of Lake Superior. International changes have affected shipping through the Seaway; United States export shipments are now going to South America, Asia, and Africa. These destinations make Gulf and West Coast ports more critical to 21st-century Wisconsin grain exports.

3. Encourage comprehensive harbor and waterfront land use planning

Strategy/Background: Wisconsin port communities are faced with competing land uses for existing waterfront properties. With increasing demand for waterfront property, local officials must address the challenges of zoning conflicts between competing interests at the ports, such as recreation/tourism, housing developments, and commercial and industrial needs. Some of these competing interests could impact future freight activities at Wisconsin's ports. RPCs, MPOs, and local governments typically handle local shoreline planning and development issues. WisDOT will provide technical assistance to community planning efforts.

4. Examine and address roadway issues at ports

Strategy/Background: Roads that connect to the state's ports are a critical part of Wisconsin's transportation system. Typically, these are local roads owned and operated by local jurisdictions. Even though they are local roads, many are part of the National Highway System because they provide access to intermodal facilities. In some instances, these roads may be a low priority for improvement because they typically do not serve high volumes of passenger traffic. In addition, these roads sometimes do not adequately serve OSOW trucks traveling to and from the ports. This can result in trucks traveling farther distances to avoid bridges with weight limits, areas with reduced clearances, or roadways with insufficient turning radii.

Since many of these local roads are part of the National Highway System, the state and local governments typically share responsibility for maintaining them. As part of WisDOT's freight planning and local roads coordination efforts, the department will work with local governments and Wisconsin's ports to identify solutions that address roadway issues near ports.

5. Continue to coordinate with state, regional, and international partners, as well as explore the development of a maritime strategy for Wisconsin, to support maritime transportation as part of a safe, efficient, and seamless freight transportation system

Strategy/Background: To build on existing statewide and regional maritime transportation planning efforts, WisDOT will develop a freestanding maritime transportation strategy. A Wisconsin maritime transportation strategy will allow WisDOT to implement strategies to improve effectiveness and efficiency of Wisconsin ports as components of the state's multimodal transportation system.

Air

1. Preserve Wisconsin's airport system infrastructure to aid economic growth

Strategy/Background: Airports and aviation are integral parts of local, state, and regional economic development. An airport's ability to accommodate the needs of existing and prospective businesses is vital. To help improve the environment for business growth and retention, WisDOT will improve airport facilities and infrastructure to help increase the number of airports able to handle business airplanes. To accomplish this policy, WisDOT will:

- Use the Airport Improvement Program to help Wisconsin airports accommodate business planes. Cargo that moves by air tends to be items that are high-value, low weight/bulk, time-sensitive, or highly specialized. Common commodity types include small packaged freight, electrical equipment, instruments, and optical equipment.
- Support the needed airport system infrastructure, including inclement weather capability, to enable and sustain jet aircraft and related activity. In addition to helping airports improve runways, the Airport Improvement Program also funds other improvements typically needed by jet airports, including:
  - Instrument approach systems
  - Runway lighting
  - Visual landing aids
  - Expansion of taxiways and aprons
  - Fuel storage
  - Hanger space
  - On-site weather information
  - Terminal buildings
  - Waiting areas
  - Ground transportation
  - Security

2. Address airport system needs through the Airport Improvement Program, coordination with owners and operators, and State Airport System Plan update efforts

Strategy/Background: WisDOT will continue to use the Airport Improvement Program to assist with infrastructure improvements at Wisconsin airports. The Airport Improvement Program uses a combination of federal, state, and local funds. Airport infrastructure improvement projects that clearly support an immediate need by an existing business user, or that can be directly linked to job retention, job increases, income, and retaining a company located in the community, are given priority over projects intended solely to attract new business.

Pipeline

1. Apply the Utility Accommodation Policy to all types of pipelines In Wisconsin

Strategy/Background: WisDOT has identified general pipeline strategies that are not dependent on a particular type of pipeline. The primary way in which WisDOT is currently involved with pipelines is through its Utility Accommodation Policy (UAP). WisDOT allows pipelines on STH ROW if the use will not negatively impact the function of the roadway, the use is legal at a local, state, and federal level, and the use will not make future construction more difficult or costly.

WisDOT identifies potential intersections between the locations of pipelines relative to construction projects to ensure construction personnel are aware of their locations. Additionally, WisDOT ensures that the project has access to the equipment needed to respond to a pipeline incident, should it occur during construction.

2. Monitor trends in crude oil movements and their impact on other transportation users

Strategy/Background: Translating this approach to actions is limited by the minimal authority that WisDOT can exercise with respect to pipelines. As such, the actions focus on the impact of pipelines on other modes and the impacts on other businesses within the state.

WisDOT will monitor crude by rail frequency in the context of its multimodal planning strategy. In addition, to build partnerships with pipeline companies, WisDOT added a representative of the energy sector to its FAC and works to encourage pipeline companies to participate in freight-related events.

Pipeline

Continued

3. Coordinate with natural gas pipeline construction and participate in emergency response

Strategy/Background: Actions focus on providing emergency support as required and identifying the issues faced in exercising the UAP. WisDOT is engaged in a support capacity in the event of an energy emergency. This role is primarily focused on coordinating and supporting the movement of needed energy inputs. WisDOT has a role in ensuring vehicles with weight or hours of service waivers are able to travel throughout the state. WisDOT, in coordination with the Public Service Commission (PSC), is exploring the implementation of the UAP to ensure it is enabling natural gas pipeline development without compromising the underlying need for the policy. Additionally, WisDOT will support the state's Energy Assurance Plan. WisDOT may identify additional justification for projects that are both needed and would positively benefit the ability of the state to respond to an energy emergency.

4. Enable modal connections, diversity and provide system resiliency for petroleum product pipelines

Strategy/Background: Much of WisDOT's approach to petroleum products is the same as natural gas, with the addition that product terminals should be included in freight planning activities. The petroleum pipeline network is much less dense and integrated than the natural gas pipeline network, increasing the likelihood that a pipeline disruption affects a large portion of the state. WisDOT considers its role for emergency response with petroleum product pipelines to include coordinating and supporting the movement of needed energy inputs. WisDOT also aids in ensuring vehicles with weight or hours to service waivers are able to travel throughout the state.

Generally, WisDOT's role in petroleum product pipelines is directly related to the PSC for pipeline siting and WEM as the lead coordinating agency in case of an energy emergency. As with natural gas pipelines, WisDOT in coordination with the PSC is exploring the implementation of the UAP.

Within the context of the SFP, Wisconsin is ensuring it includes petroleum terminals as part of their freight generators and freight modeling approaches. Inclusion of these assets not only reflects key locations of the freight transportation system, but also raises their visibility when planning future investments.

Other

1. Retain a freight focus within WisDOT to understand freight needs across the state and to integrate freight transportation policies into department planning and investment decision-making processes

Strategy/Background: Originally established as a policy in Connections 2030, retention of a freight focus within the department will support the state's effort to maintain and enhance its competitive role within regional, national and global markets, and strategically place the state at a competitive advantage to apply for federal funding for freight projects that address congestion. To qualify for federal funds, projects must be innovative. States must possess significant knowledge of commodity flows, have committed private sector participation, track freight performance measures, and produce cost-benefit analyses. States with advanced freight planning efforts will be positioned to compete for this funding.

2. Retain the role of facilitator and advocate for freight between public and private interests

Strategy/Background: Originally established as a policy in Connections 2030, WisDOT will continue to engage in freight advocacy by facilitating a dialogue to resolve issues between stakeholders when industry decisions impact a community's economic viability.

3. Collect and analyze data to support freight planning

Strategy/Background: Originally established as a policy in Connections 2030, the department will continue to collect and analyze data necessary to support freight planning efforts.

Other

Continued

4. Support Wisconsin communities and businesses by providing transportation-related grant and loan assistance

Strategy/Background: Originally established as a policy in Connections 2030, WisDOT will continue to administer grant and loan programs aimed at enhancing transportation infrastructure for highways, railroads, harbors, and airports. Currently these programs include:

- Transportation Economic Assistance program
- Freight Rail Infrastructure Improvement Program
- Freight Rail Preservation Program
- Harbor Assistance Program
- Airport Improvement Program

WisDOT's grant and loan programs help preserve or increase a community's tax base and provide funding to build projects that could not have been financed in their entirety by the private sector. All applications for assistance undergo a benefit/cost analysis to demonstrate the public benefit of each project. WisDOT will periodically review the assistance programs to ensure that they reflect market needs.

5. Continue convening WisDOT's Freight Advisory Committee and seeking stakeholder involvement

Strategy/Background: As WisDOT identifies and modifies its freight recommendations and policies, the department will continue to convene the FAC as a forum for developing consensus on policies and projects, to identify future projects and policies for consideration, and to ensure that freight movements are safe, reliable, and provide positive environmental and community impacts. The information and feedback provided by WisDOT's FAC has yielded valuable insight into the full range of issues and interests of the freight industry.

6. Use Performance Measures to Monitor the Freight System

Strategy/Background: The long-range, system-level plan reflects a number of policies and strategies developed to be meaningful, reasonable, and practical. Monitoring the state's transportation system performance will help validate and verify the plan's proposed policy direction over time.

7. Coordinate with Public and Private Sector Freight Stakeholders

Strategy/Background: Freight transportation decisions involve multiple stakeholders, such as WisDOT, the federal government, local governments – including Regional Planning Commissions and Metropolitan Planning Organizations – Tribes, the private sector, operators, and other stakeholders. Since no single entity has authority over the entire transportation system, implementing the Wisconsin State Freight Plan will take coordination and cooperation among many interests and business areas.

As a result, the responsibility for the safety, maintenance, operation, planning, and funding of the state's multimodal transportation system is shared by a full range of stakeholders and institutions, including the federal government, state government, local governments, and private entities. Therefore, the operation of a seamless transportation system requires coordination, collaboration, communication and cooperation.

8. Serve as a resource for freight information

Strategy/Background: Updating the State Freight Plan required WisDOT to collect new data and information, develop analytic tools, consult a myriad of public and private sector freight system stakeholders, and continue to define the future roles and responsibilities of the state in advocating, facilitating, planning, and investing in the freight transportation system. While this document will serve as a resource to WisDOT and the stakeholders that helped to develop it, WisDOT's exploration of the state's freight transportation system, its needs, issues, and opportunities will continue. As such, WisDOT will continue to provide tools and other materials that communicate and educate industry and the general public on pertinent freight topics and issues.

Environmental

1. Monitor national best practices and other initiatives related to reducing freight's impact on the environment

Strategy/Background: Central to both the vision for the plan and goal of the National Highway Freight Program is the need to reduce the environmental impacts of freight movement on the National Highway Freight Network. Additionally, grant programs available to freight projects have required that applicants consider how enhancements to critical infrastructure help protect the environment.

In developing transportation plans, WisDOT already considers the range of federally-required planning factors, including protecting the environment and promoting energy efficiency and connectivity between different transportation modes. For many highway projects, the design stage includes environmental studies and proposed mitigation.

2. Incorporate environmental justice in all planning, programming, and project decisions and activities

Strategy/Background: Pursuant to Title VI of the Civil Rights Act of 1964, which prohibits discrimination on the basis of race, color, or national origin (including Limited English proficiency), and Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, WisDOT will continue to incorporate analysis of disproportionate impacts on low-income populations and minority populations in all planning, programming, and project activities. To achieve this, WisDOT will:

- Conduct environmental justice analyses/equity analyses on all transportation planning and project activities
- Seek input from a wide variety of stakeholders
- Assist Metropolitan Planning Organizations and Regional Planning Commissions in addressing environmental justice in transportation planning activities

In addition to the commitments outlined in this policy, the department will continue to demonstrate its leadership and commitment to the Civil Rights Act by promoting fairness and equity in the delivery of its transportation services, as well as providing business and employment opportunities in Wisconsin's transportation projects.

3. Comply with federal and state environmental laws, regulations, and executive orders relevant to transportation and support future standards and programs

Strategy/Background: This policy reaffirms WisDOT's efforts to integrate environmental considerations into transportation decision-making.

4. Support and fulfill the cooperative agreement between the Wisconsin Department of Natural Resources (DNR) and WisDOT, and other current and future interagency agreements

Strategy/Background: The purpose of the DNR-WisDOT cooperative agreement is to establish the overarching interdepartmental liaison procedures that the two departments utilize to balance responsible environmental stewardship with transportation infrastructure needs. The cooperative agreement results in broader benefits such as coordinated planning efforts, synchronized reviews, and overall gains in government process efficiencies.

5. Monitor state and national efforts and be prepared to address potential future greenhouse gas regulations, pursuant to changes in regulation

Strategy/Background: The burning of fossil fuels results in greenhouse gas (carbon dioxide, methane, and nitrous oxide) emissions, which trap heat in the earth's atmosphere. Fossil fuels are the largest contributors to the climate crisis, and transportation sources remain a large contributor. Impacts resulting from continued increases in greenhouse gas emissions include more extreme weather events, changing landscapes, weather related illnesses, disease, and economic losses.

Environmental

Continued

6. WisDOT will balance transportation needs with the department's environmental responsibilities by avoiding or mitigating impacts to the natural and human environment to support and enhance state and national environmental stewardship goals

Strategy/Background: WisDOT shares the national goals for environmental stewardship found in 49 U.S.C. 70202(b)(16) and will support and enhance these goals through development of policies and procedures, consistent policy application, continued cross-agency collaboration, and the creation of metrics to assess overall efforts. In general, WisDOT incorporates environmental goals into project planning and programming by:

- Prioritizing projects that help reduce emissions or use alternative fuels to improve air quality
- Reducing waste and recycling materials during transportation projects
- Collaborating with other state and federal agencies, Tribes, local governments, and non-governmental organizations to effectively manage and mitigate impacts to the natural and human environments

To cultivate data-driven project prioritization, WisDOT is developing a risk assessment application to incorporate flood resiliency in the planning process, as well as to support the Facilities Repeatedly Requiring Repair and Reconstruction program. The overarching risk categories that will be applied are exposure, sensitivity, and consequence, which each include several metrics. WisDOT metrics for evaluating truck freight corridors will also be applied, which WisDOT anticipates will help meet two IIJA freight goals: reduce severity of impacts of extreme weather and natural disasters, and reduce flooding and stormwater runoff. The drainage design consideration in identified areas will incorporate data from the National Oceanic and Atmospheric Administration (NOAA) Atlas 14, using the 90th percentile confidence interval limit for the 24-hour, 100-year flood rainfall depth for design. This flood risk assessment approach will help prioritize areas of previous concern, as well as proactively include design considerations for areas at the greatest risk of flood impacts to ultimately yield a more resilient roadway system. Once complete, the Facilities Development Manual (FDM), which provides policy guidance for all types of highway improvements, will be modified to include the resiliency design considerations in accordance with the risk assessment application. The FDM also currently contains policies and procedures within the Erosion Control and Storm Water Quality, Drainage, and Land and Water Resources Impacts sections to give WisDOT project managers and designers tools and guidance to reduce pollutants generated by WisDOT facilities and to adequately design for flooding events.

WisDOT is committed to researching emerging technologies to reduce the negative impacts of freight movement on air pollution and wildlife habitat loss, including emissions, noise pollution, congestion, and spread of invasive species (land and water). WisDOT's Air Quality chapter of the FDM provides policy, procedural requirements, and guidance to help lessen the impact of freight movement on local air pollution, with specific guidance for any significant modification to major intermodal freight facilities due to the potential high concentration of diesel particulate matter in a single location. Further, with the identification of the top 25 freight bottlenecks in Table 3-4, this information will be used to better prioritize projects and eliminate known bottlenecks to increase the efficiency of freight movement.

In addition to the approved Wisconsin Electric Vehicle Infrastructure Plan, the Mid-America Freight Coalition pooled fund is currently researching emerging electric vehicle (EV) technologies to help states understand the strategies and metrics needed to successfully incorporate EV infrastructure into highway facilities. WisDOT is also currently exploring the potential benefits of planting vegetation barriers on the ROW to mitigate wind tunnel effects, which would reduce the spread of invasive species that could negatively impact wildlife habitats and minimize disbursement of contaminants from emissions. Guidance on other current mitigation practices can be found in the Wildlife, Threatened and Endangered Species, and Wildlife Crossings and Barriers sections of the FDM.

The collective efforts of using data-driven approaches, ongoing research, and active stakeholder partnerships will help WisDOT more effectively understand and implement solutions to mitigate the negative impacts of freight movement to the natural and human environments, in furtherance of not only environmental stewardship goals, but also all long-range Connect 2050 multimodal freight transportation system goals.

The BIL requires that each state's freight plan include a description of how the policies, strategies, and performance measures support both the national multimodal freight policy goals and the National Highway Freight Program goals. Table 7-1 provides a crosswalk between these national goals and the Wisconsin policies and strategies described above. This table also describes how the SFP policies and goals support the Wisconsin Connect 2050 LRTP.

Table 7-1: WisDOT Policies Supporting National Goals

Note: In Table 7-1, the column labeled "All Modes 1" refers to the All Modes policy #1, i.e. "Enhance security of the transportation system by reducing vulnerability". This labeling convention carries across all columns.

	All Modes				Highways and Local Roads																														
	1	2	3	4	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
National Multimodal Freight Policy Goals																																			
(1) to identify infrastructure improvements, policies, and operational innovations that—																																			
(A) strengthen the contribution of the National Multimodal Freight Network to the economic competitiveness of the United States;						✔									✔						✔						✔								✔
(B) reduce congestion and eliminate bottlenecks on the National Multimodal Freight Network; and					✔						✔	✔		✔	✔		✔				✔				✔	✔									
(C) increase productivity, particularly for domestic industries and businesses that create high-value jobs;																					✔														
(2) to improve the safety, security, efficiency, and resiliency of multimodal freight transportation;	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔		✔	✔	✔	✔	✔	✔	✔	✔				✔	✔	✔		✔	✔	✔	✔		✔	✔
(3) to achieve and maintain a state of good repair on the National Multimodal Freight Network;				✔	✔			✔	✔									✔	✔	✔		✔	✔	✔											
(4) to use innovation and advanced technology to improve the safety, efficiency, and reliability of the National Multimodal Freight Network;	✔			✔										✔			✔											✔	✔	✔	✔				
(5) to improve the economic efficiency and productivity of the National Multimodal Freight Network;				✔		✔		✔	✔		✔	✔		✔	✔						✔						✔		✔						
(6) to improve the reliability of freight transportation;	✔			✔	✔									✔	✔										✔										
(7) to improve the short- and long-distance movement of goods that—																																			
(A) travel across rural areas between population centers;			✔			✔		✔	✔	✔				✔	✔						✔				✔				✔	✔	✔				✔
(B) travel between rural areas and population centers; and			✔					✔	✔	✔				✔	✔						✔				✔				✔	✔	✔				✔
(C) travel from the Nation's ports, airports, and gateways to the National Multimodal Freight Network;			✔			✔		✔	✔	✔				✔	✔						✔								✔	✔					✔
(8) 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;				✔		✔															✔										✔				
(9) to reduce the adverse environmental impacts of freight movement on the National Multimodal Freight Network; and	✔	✔									✔	✔	✔	✔	✔																				
(10) to pursue the goals described in this subsection in a manner that is not burdensome to State and local governments.		✔	✔			✔	✔			✔																							✔	✔	✔

	Rail													Maritime					Air		Pipeline				Other								Environmental					
	1	2	3	4	5	6	7	8	9	10	11	12	13	1	2	3	4	5	1	2	1	2	3	4	1	2	3	4	5	6	7	8	1	2	3	4	5	6
National Multimodal Freight Policy Goals																																						
(1) to identify infrastructure improvements, policies, and operational innovations that—																																						
(A) strengthen the contribution of the National Multimodal Freight Network to the economic competitiveness of the United States;	✔	✔	✔					✔		✔				✔	✔				✔						✔	✔												
(B) reduce congestion and eliminate bottlenecks on the National Multimodal Freight Network; and	✔	✔	✔							✔															✔					✔								
(C) increase productivity, particularly for domestic industries and businesses that create high-value jobs;													✔												✔	✔		✔	✔		✔							
(2) to improve the safety, security, efficiency, and resiliency of multimodal freight transportation;	✔	✔	✔			✔	✔	✔		✔				✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔						✔	✔							
(3) to achieve and maintain a state of good repair on the National Multimodal Freight Network;	✔	✔				✔								✔	✔				✔	✔										✔								
(4) to use innovation and advanced technology to improve the safety, efficiency, and reliability of the National Multimodal Freight Network;																					✔		✔							✔								
(5) to improve the economic efficiency and productivity of the National Multimodal Freight Network;	✔	✔	✔					✔		✔				✔	✔			✔				✔	✔							✔								
(6) to improve the reliability of freight transportation;	✔	✔	✔							✔							✔			✔		✔		✔														
(7) to improve the short- and long-distance movement of goods that—																																						
(A) travel across rural areas between population centers;		✔	✔	✔				✔	✔			✔	✔								✔	✔	✔	✔	✔	✔		✔										
(B) travel between rural areas and population centers; and		✔	✔	✔				✔	✔			✔	✔								✔	✔	✔	✔	✔	✔		✔										
(C) travel from the Nation's ports, airports, and gateways to the National Multimodal Freight Network;		✔	✔	✔				✔	✔			✔	✔	✔	✔	✔	✔	✔	✔	✔				✔	✔	✔		✔										
(8) 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;																					✔				✔				✔		✔	✔						
(9) to reduce the adverse environmental impacts of freight movement on the National Multimodal Freight Network; and					✔									✔	✔						✔	✔											✔	✔	✔	✔	✔	✔
(10) to pursue the goals described in this subsection in a manner that is not burdensome to State and local governments.	✔															✔	✔									✔			✔		✔	✔	✔	✔	✔	✔	✔	✔

	All Modes				Highways and Local Roads																														
	1	2	3	4	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
National Highway Freight Program Goals																																			
(1) to invest in infrastructure improvements and to implement operational improvements on the highways of the United States that—																																			
(A) strengthen the contribution of the National Highway Freight Network to the economic competitiveness of the United States;						✓									✓						✓						✓								✓
(B) reduce congestion and bottlenecks on the National Highway Freight Network;					✓						✓	✓		✓	✓		✓				✓				✓	✓									
(C) reduce the cost of freight transportation;							✓	✓											✓				✓			✓					✓		✓		
(D) improve the year-round reliability of freight transportation; and	✓				✓									✓	✓										✓										
(E) increase productivity, particularly for domestic industries and businesses that create high-value jobs;																					✓														
(2) to improve the safety, security, efficiency, and resiliency of freight transportation in rural and urban areas;	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓				✓	✓	✓		✓	✓	✓	✓		✓	✓
(3) to improve the state of good repair of the National Highway Freight Network;					✓			✓	✓									✓	✓	✓		✓	✓	✓											
(4) to use innovation and advanced technology to improve the safety, efficiency, and reliability of the National Highway Freight Network;	✓			✓										✓			✓											✓	✓	✓	✓				
(5) to improve the efficiency and productivity of the National Highway Freight Network;				✓		✓		✓	✓		✓	✓		✓	✓						✓						✓		✓						
(6) 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 highway freight connectivity; and						✓															✓										✓				
(7) to reduce the environmental impacts of freight movement on the National Highway Freight Network.	✓	✓									✓	✓	✓	✓	✓																				
Connect 2050 Goals																																			
Goal 1: Pursue sustainable long-term transportation funding		✓																																	
Goal 2: Focus on partnerships	✓	✓	✓			✓				✓							✓														✓		✓	✓	✓
Goal 3: Pursue continuous improvement and expand data-driven decision-making processes		✓		✓	✓													✓	✓	✓			✓		✓			✓				✓	✓		
Goal 4: Increase options, connections and mobility for people and goods.			✓	✓							✓	✓		✓	✓																				
Goal 5: Maximize technology benefits														✓			✓											✓	✓	✓	✓				
Goal 6: Maximize transportation safety	✓		✓		✓					✓	✓	✓		✓	✓	✓	✓	✓	✓		✓		✓		✓	✓			✓	✓	✓	✓	✓	✓	✓
Goal 7: Maximize transportation system resiliency and reliability	✓	✓	✓		✓			✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓				✓		✓	✓			✓	✓		✓		✓	✓
Goal 8: Balance transportation needs with those of the natural environment, socioeconomic, historic, and cultural resources		✓									✓	✓	✓	✓	✓																				

	Rail													Maritime					Air	
	1	2	3	4	5	6	7	8	9	10	11	12	13	1	2	3	4	5	1	2
National Highway Freight Program Goals																				
(1) to invest in infrastructure improvements and to implement operational improvements on the highways of the United States that—																				
(A) strengthen the contribution of the National Highway Freight Network to the economic competitiveness of the United States;													✓		✓		✓			
(B) reduce congestion and bottlenecks on the National Highway Freight Network;																				
(C) reduce the cost of freight transportation;													✓	✓						
(D) improve the year-round reliability of freight transportation; and																				
(E) increase productivity, particularly for domestic industries and businesses that create high-value jobs;													✓							
(2) to improve the safety, security, efficiency, and resiliency of freight transportation in rural and urban areas;						✓	✓													
(3) to improve the state of good repair of the National Highway Freight Network;																	✓			
(4) to use innovation and advanced technology to improve the safety, efficiency, and reliability of the National Highway Freight Network;																				
(5) to improve the efficiency and productivity of the National Highway Freight Network;																	✓			
(6) 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 highway freight connectivity; and																				
(7) to reduce the environmental impacts of freight movement on the National Highway Freight Network.														✓	✓		✓			
Connect 2050 Goals																				
Goal 1: Pursue sustainable long-term transportation funding														✓						
Goal 2: Focus on partnerships					✓		✓	✓								✓		✓		✓
Goal 3: Pursue continuous improvement and expand data-driven decision-making processes																				
Goal 4: Increase options, connections and mobility for people and goods.	✓								✓					✓						
Goal 5: Maximize technology benefits																				
Goal 6: Maximize transportation safety						✓	✓												✓	
Goal 7: Maximize transportation system resiliency and reliability						✓	✓													
Goal 8: Balance transportation needs with those of the natural environment, socioeconomic, historic, and cultural resources														✓	✓		✓			

	Pipeline				Other								Environmental					
	1	2	3	4	1	2	3	4	5	6	7	8	1	2	3	4	5	6
National Highway Freight Program Goals																		
(1) to invest in infrastructure improvements and to implement operational improvements on the highways of the United States that—																		
(A) strengthen the contribution of the National Highway Freight Network to the economic competitiveness of the United States;					✓			✓			✓							
(B) reduce congestion and bottlenecks on the National Highway Freight Network;					✓					✓								
(C) reduce the cost of freight transportation;								✓										
(D) improve the year-round reliability of freight transportation; and								✓										
(E) increase productivity, particularly for domestic industries and businesses that create high-value jobs;					✓	✓		✓	✓	✓	✓							
(2) to improve the safety, security, efficiency, and resiliency of freight transportation in rural and urban areas;	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓						
(3) to improve the state of good repair of the National Highway Freight Network;										✓								
(4) to use innovation and advanced technology to improve the safety, efficiency, and reliability of the National Highway Freight Network;	✓						✓			✓								
(5) to improve the efficiency and productivity of the National Highway Freight Network;	✓	✓			✓													
(6) 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 highway freight connectivity; and										✓	✓							
(7) to reduce the environmental impacts of freight movement on the National Highway Freight Network.	✓	✓							✓		✓		✓	✓	✓	✓	✓	✓
Connect 2050 Goals																		
Goal 1: Pursue sustainable long-term transportation funding					✓			✓			✓							
Goal 2: Focus on partnerships	✓	✓	✓	✓	✓	✓		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓
Goal 3: Pursue continuous improvement and expand data-driven decision-making processes					✓		✓			✓	✓	✓					✓	✓
Goal 4: Increase options, connections and mobility for people and goods.	✓	✓	✓					✓			✓							
Goal 5: Maximize technology benefits																		
Goal 6: Maximize transportation safety		✓	✓	✓						✓	✓							
Goal 7: Maximize transportation system resiliency and reliability		✓	✓	✓						✓								
Goal 8: Balance transportation needs with those of the natural environment, socioeconomic, historic, and cultural resources	✓					✓		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓

CHAPTER 8

Freight System Needs

FREIGHT FOCUS:

A summary of the key freight system needs specific to each mode of freight transport to guide freight transportation system investment

8

8. FREIGHT SYSTEM NEEDS

This chapter summarizes the modal needs for the State's freight system so that investment strategies are targeted and well informed and those needs that will advance the state of freight movement are addressed.

To help Wisconsin develop a transportation system prepared for the future, it is important to assess needs for freight movement based on current and future freight demands by:

- Identifying the strengths and challenges of the existing system.
- Focusing on freight system goals and objectives.
- Addressing future freight transportation demands for highways, rail lines, ports, airports, and pipelines.
- Considering emerging trends and technological advancements outside traditional forecasting methods, but which could impact the future of freight in the state.

8.1 Highway

As shown, freight shippers and receivers rely primarily on trucks using the state's highway system. WisDOT has spent the past 10 years improving roadway conditions for passengers and freight alike by improving bridge structures, pavement conditions, operations, and capacity.

8.1.1 Truck Bottlenecks

The top 25 truck bottlenecks in Wisconsin have been identified with the majority (17) being in Milwaukee County, primarily on I-41 and I-94. Other counties with top 25 state truck bottlenecks include:

- Waukesha County (4)
- Dane County (3)
- Kenosha (1)

These bottlenecks are along major freight routes. Due to the freight movement inefficiencies posed by bottlenecks and the associated costs of delay to the economy as a whole, the need to improve truck bottlenecks has impacts on statewide prosperity and the environment. Resolving these chokepoints is a priority and will require a combination of capacity, operational, and maintenance improvements.

8.1.2 Reliability/Redundancy

As more freight is moved along Wisconsin's highways, improving the efficiency and reliability of the highway system will have growing importance. Improving the reliability of the freight system is an explicit goal within Connect 2050 and the federal freight goals. Ongoing preservation of the current highway system will maintain service levels

under current conditions, but should freight volumes increase as expected, the reliability of the system has the potential to suffer. There is a current and on-going need for capacity and maintenance improvements to maintain the reliability of the network and reduce truck delay and ensure timeliness of product deliveries.

8.1.3 Safety

Wisconsin's Strategic Highway Safety Plan acknowledges the need for improved safety for large trucks and provides an overview of activities to support this goal. The overarching freight safety needs identified through the analysis within this plan include:

- Improve truck safety through inspections and enforcement
- Increase the availability of truck parking
- Reduce the number of weight restricted bridges particularly on secondary roads
- Increase safety at railway-highway grade crossings
- Improve incident management through better coordination and decision-making

8.1.4 New and Emerging Truck/Roadway Technologies

New and emerging technologies could significantly improve the safety, efficiency, and reliability of the highway freight network. There are several technologies that show promise in addressing these needs. The level of acceptance and adoption of these new and developing freight modes, technologies, and movement/delivery techniques is currently unknown, however these advances must be understood and tracked to assess the appropriate role WisDOT may need to play in the near- and long-term.

Many new freight technologies have been, or are being, developed with the goal to improve the efficiency of freight movement and significantly influence key factors important to WisDOT's goals, such as system performance, resiliency, and cost reduction. WisDOT must develop new strategies to define its role in this new freight landscape as they relate to:

- Autonomous trucks and truck platooning
- Truck electrification
- E-Commerce deliveries
- Environmental regulations/concerns
- Connectivity/broadband
- Economic and financial implications

8.2 Rail

As mentioned in Chapter 6, freight rail service in Wisconsin has changed in recent years due to modified operational practices and reduced demand for commodities such as coal and frac sand. The precision scheduled railroading model for the larger Class I lines relies on longer trains traveling longer distances with fewer intermediate stops to achieve lower operating ratios for railroad companies.

As a result of these trends, Wisconsin's rail freight needs have also changed. Access to rail service by smaller shippers has become increasingly difficult, even for those along the most active rail corridors. Smaller shippers face logistics and cost challenges as they need to truck goods out of state to larger rail terminals, or to use trucks for the entire movement from shipper to receiver. In communities along the active corridors, longer trains extend delays at highway-rail crossings, while rail bottlenecks develop on corridors without adequate passing sidings or near switching yards. The needs associated with Wisconsin's rail system include:

- Ensuring local business access, especially in smaller communities
- Improving at-grade crossing safety
- Increasing vertical and horizontal clearances, where warranted
- Addressing rail line and bridge weight restrictions
- Resolving bottlenecks

8.3 Ports and Waterways

The Great Lakes and St. Lawrence Seaway, the Marine Highway Corridor System, and state ports all provide important resources for Wisconsin's integrated, multimodal transportation system. To ensure they remain vital parts of this system, locks, dams, and ports must be maintained and prepared for future growth. As highway, rail, and air modes adopt capacity, operational, and technology improvements, so should maritime shipping. The needs of the maritime shipping industry include:

- Ongoing maintenance of existing locks and dams
- Increased lock capacities at chokepoints
- Decreased environmental footprint of marine shipping
- Increased adoption of technology for more transparent tracking of shipments
- Improved landside access to maritime port terminals
- Carrier/terminal operator assistance in transitioning from coal shipping to other commodities

8.4 Air Cargo

Aircraft generally move high-value, low-weight cargo. These time-sensitive shipments have no practical alternative mode so their operational sustainability is key to those that rely on them and pose as a barrier for those communities with limited air cargo access. Recently emerging technologies for regional and local deliveries by air have shown promise for urban package deliveries, and electric aircraft are undergoing testing for regional air package networks by companies such as UPS. These trends present unique opportunities and needs for the state. Wisconsin's air cargo needs include:

- Improving short- and long-distance connections between urban and rural areas and air cargo facilities
- Assessing air cargo facilities capabilities to accommodate changes in technology, security, and handling of larger cargo
- Reviewing state regulations and aligning strategies for UAS cargo delivery deployment

CHAPTER 9

Freight Investment Implementation Plan

FREIGHT FOCUS:

An outline of freight project funding sources, prioritization of freight projects and strategies, and steps for Freight Plan implementation

9

9. FREIGHT INVESTMENT IMPLEMENTATION PLAN

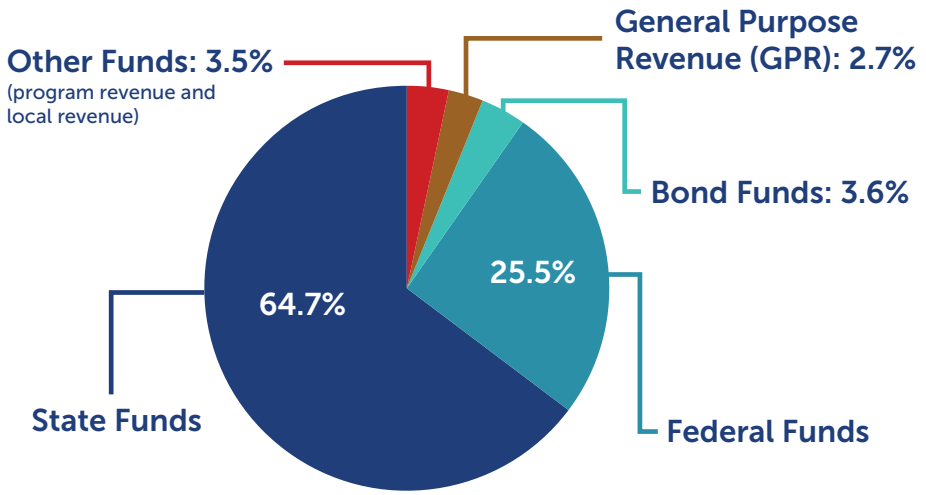
This chapter provides recommended investment and implementation strategies to facilitate WisDOT's continued focus on providing a quality transportation system using available funds, implementing regulations, and integrating stakeholder feedback where appropriate. The recommended implementation strategies carry out the vision and goals identified in Chapter 1.

The Wisconsin Department of Transportation's annual budget is set biennially through the State of Wisconsin's budget process. 2021's Wisconsin Act 58 authorized the 2021-2023 Biennial Budget. STIP funding beyond the current biennial budget is held constant (adjusted for inflation) to account for future project expenditures through the STIP cycle, except where legislative budget action impacts revenue or programming and is accounted for in Amendments to the STIP.

9.1 Freight Project Funding

Funding for Wisconsin's transportation system comes from several sources, as seen in Figure 9-1.

Figure 9-1: 2021-23 Transportation Funding Sources



Source: Wisconsin Department of Transportation Division of Budget and Strategic Initiatives Bureau of Budget, "2021-23 Biennial Budget Highlights 2021 Wisconsin Act 58"

9.1.1 Federal Transportation Funding

Federal funds make up over a quarter (25.5 percent) or over $1.82 billion of the state's overall transportation dollars. These funds are governed by federal reauthorization legislation. The previous federal reauthorization legislation was the FAST Act passed in 2015, which emphasized addressing freight mobility issues and provided funding in support of these directives.

The current Bipartisan Infrastructure Law (BIL) was signed into law in November 2021. This legislation contains significant new funding for roadways, bridges, and other major projects funded through the U.S. Department of Transportation. The law includes a five-year reauthorization

of $273.2 billion in federal-aid highway formula funding for states. The table below shows Wisconsin's Federal Fiscal Year 2022 (FFY22) Federal Aid Highway Program apportionment under the BIL.

The law also includes a total of $40 billion in dedicated funding for bridges including $12.5 billion within the Bridge Investment Program (BIP): a competitive program to replace, rehabilitate, preserve, or protect some of the nation's most important and economically significant bridges. The remainder of the funds fall under the Bridge Formula Program, which includes a 15 percent ($4 billion) set aside for off-system bridges. Under this program, Wisconsin will receive $225M in BIP formula funds over five years (2022-2026).

Federal Grants Support Freight Movement in Wisconsin

Four recent examples show how Wisconsin competes for federal discretionary funds.

- In 2018 Wisconsin received a $160 million INFRA grant that helped support a major improvement of I-94 stretching through Milwaukee, Racine, and Kenosha counties. The corridor, which is one of the busiest freight corridors in the country, was completed on schedule and under budget in 2020.
- In 2020 Wisconsin received a $6.8 million INFRA grant to support an upgrade to a rail bridge over the Wisconsin River, connecting Sauk County to the national freight rail system. The improvement will increase the bridge's carload weight capacity and extend the bridge's lifespan by decades.
- In 2021 Wisconsin received a $6.8 million RAISE grant to support increasing the lifespan and capacity of five railroad bridges in Rock County. The improvement will support movement of agricultural and other products in southern Wisconsin.
- In 2022 Wisconsin received an $80 million INFRA grant to help replace bridges over the Wisconsin River and on adjacent county highways in Columbia County. The investment will rebuild a critical link for freight movement on the heavily-traveled I-39/90/94 corridor.

Table 9-1: Wisconsin's Federal Fiscal Year 2022 (FFY22) Federal Aid Highway Program Apportionment

PROGRAM	WISCONSIN APPORTIONMENT
National Highway Performance Program	$552,315,450
Surface Transportation Block Grant Program	$268,694,003
Highway Safety Improvement Program	$56,332,047
Railway-Highway Crossing Program	$6,295,247
Congestion Mitigation & Air Quality Improvement	$29,851,972
Metropolitan Planning	$6,031,338
National Highway Freight Program	$26,094,521
Carbon Reduction Program	$23,958,549
PROTECT Formula Program	$27,242,586
Wisconsin Total FFY22	**$996,815,713**

Source: FHWA Notice 4510.858, December 14, 2021.

Other, discretionary grant funding relevant to freight is also available through BIL. Major programs include:

- Infrastructure for Rebuilding America (INFRA) Program: Includes $8 billion to support freight and highway projects of regional and national significance.
- Rebuilding American Infrastructure Sustainably and Equitably (RAISE) Grants: $7.5 billion for road, rail, transit, and other surface transportation of local and/or regional significance.
- National Infrastructure Project Assistance or "Megaprojects": $5 billion to support large multijurisdictional or regional projects of significance that may not otherwise be unachievable without assistance.
- Rural Surface Transportation Grant Program: $300 million per year to support projects that improve and expand the surface transportation infrastructure in rural areas to increase connectivity, improve the safety

and reliability of the movement of people and freight, and generate regional economic growth and improve quality of life.

- Railroad Crossing Elimination Program: $600 million funding annually for highway-rail or pathway-rail grade crossing improvement projects focused on improving the safety and mobility of people and goods.
- Reconnecting Communities Pilot Program: $195 million annually to restore community connectivity by removing, retrofitting, or mitigating highways or other transportation facilities that create barriers to community connectivity, including to mobility, access, or economic development.
- Strengthening Mobility and Revolutionizing Transportation (SMART) Grants: Provides a yet to be determined amount of supplemental funding grants to rural, midsized, and large communities to conduct demonstration projects focused on advanced smart city or community technologies and systems in a variety of communities to improve transportation efficiency and safety.
- Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation (PROTECT) – Discretionary: Provides funding for planning, resilience improvements, community resilience and evacuation routes, and at-risk coastal infrastructure.
- Congestion Relief Program: Advances innovative, integrated, and multimodal solutions to reduce congestion and the related economic and environmental costs in the most congested metropolitan areas with an urbanized area population of more than 1 million.
- Airport Improvement Program: The Airport Improvement Program (AIP) provides grants to public agencies — and, in some cases, to private owners and entities — for the planning and development of public-use airports that are included in the National Plan of Integrated Airport Systems (NPIAS).

When investing in Wisconsin's freight system, WisDOT will evaluate projects and their eligibility and merit to make decisions on whether to pursue grant funding and from which program.

9.1.2 State Transportation Funding

State transportation revenues largely consist of motor fuel taxes, vehicle registration/title fees, and driver license fees. Federal funding is based on formula and discretionary funding programs and 'other funds' like program and local revenue.

Similar to the structure of the federal highway trust fund (HTF), state funding for transportation projects in Wisconsin originates from the state's Transportation Trust Fund. The transportation fund provides funding for state highways and bridges, local roads and bridges, operation and maintenance of the state and local highway system, airport and harbor improvements, and freight rail facilities. In addition, the fund supports the safety and enforcement duties of the Division State Patrol, the Division of Motor Vehicles, and the administrative operation of WisDOT. The fund's use is restricted under a state constitutional amendment, and is dedicated exclusively for transportation purposes.

BONDING

In addition to revenue within the state transportation fund, Wisconsin uses two types of bonds to fund transportation projects:

- General obligation bonds
- Transportation revenue bonds

General obligation bonds help finance highway construction, harbor and railroad projects, and other highway rehabilitation projects. These bonds are repaid from the transportation fund or the state's general fund.

Transportation revenue bonds are those that are repaid from specific, pledged transportation fund revenue sources and are typically used to pay for a portion of Major Highway Projects and Southeast Wisconsin megaprojects. All vehicle-related registration and titling fees have been pledged for transportation bond revenue debt service since 2004. The state's biennial budget established by the state legislature and governor puts a limit on the amount of transportation revenue bond proceeds used to finance transportation projects through 2023.

FINANCING AND FUNDING MECHANISMS FOR FREIGHT-RELATED PROJECTS

WisDOT administers several programs that not only address transportation system needs, but also act directly as a catalyst for economic development in Wisconsin. These programs fund transportation projects at the state and local levels in the form of direct funding, grants, and loans to businesses and local communities for their transportation-related needs. Currently these programs include:

- State Highway Rehabilitation (SHR) Program
- Major Highway Development Program
- Local Roads Improvement Program
- General Transportation Aids
- Local Bridge Improvement Assistance (Local Bridge Program)
- Transportation Facilities Economic Assistance and Development (TEA) Program
- Surface Transportation Program – Rural
- Surface Transportation Program – Urban
- Freight Rail Infrastructure Improvement Program
- Freight Rail Preservation Program
- Harbor Assistance Program
- Airport Improvement Program

9.2 Prioritization of Freight Strategies and Projects

WisDOT's prioritization process provides decision-makers with the necessary information to strategically select projects for funding that meet the goals defined in Chapter 1 and help enhance freight mobility throughout Wisconsin. The prioritization process provides a methodology for WisDOT to evaluate projects with varying needs and thereby identify projects that provide the greatest benefit for freight mobility.

Needs and issues are identified through a multitude of sources, including Connect 2050, the State Rail Plan, the Transportation Asset Management Plan (TAMP), stakeholder and user inputs collected during recurring statewide planning efforts, bridge and roadway management processes, analysis of data, trends and forecasts, performance measures, metropolitan planning organization (MPO) and other local agency plans, and consultation with area economic development agencies. From these needs and issues, initial candidate projects are identified. Candidate projects are screened and filtered based on their alignment with state and regional goals and influence on the state freight system. This includes an assessment of freight-specific projects using the prioritization strategy identified in Figure 9-2. The result is a refined project list.

Figure 9-2: Prioritization

Prioritize freight-related projects to maintain reliability, safety, mobility, and capacity.

Prioritize freight-related projects that will provide a high return-on-investment.

Support opportunities on a local level for freight mobility improvements including mode choice, truck bypasses, routes used for delivery, etc.

Support potential new intermodal connections. Support planning level intermodal studies.

Assess and potentially evaluate gaps (first and last miles) between manufacturing and shipping facilities and near multimodal centers.

9.2.1 Screening Strategies for Freight Specific Projects

Projects on the refined project list are reviewed routinely, projects are recommended, resources are allocated, and projects are prioritized according to WisDOT's short-term and long-term goals. Those projects that are selected to be funded in a given cycle are added to the Statewide Transportation Improvement Program, and those not selected for development are retained for consideration in subsequent years.

9.3 Freight Plan Implementation Steps

Freight plan implementation will be focused on several key areas:

- Support WisDOT's overarching freight priorities for the transportation system through 2050
- Implement mode-specific freight policies and strategies
- Use performance measures to track progress and identify issues early
- Use data and tools to deliver plan policies and strategies
- Identify and prioritize Wisconsin-specific freight projects
- Coordinate with public and private sector freight stakeholders
- Serve as a resource for freight information

WisDOT anticipates updating the plan on a four-year cycle, in accordance with federal requirements, including an update to the fiscally-constrained project list and supporting documentation.

9.3.1 Support WisDOT's Overarching Freight Priorities for the Transportation System Through 2040

WisDOT will continue to work to deliver a safe and efficient transportation system. Ongoing freight transportation efforts include, but are not limited to, managing and delivering the state's multimodal transportation system, addressing safety concerns, and integrating proven best practices to improve department processes. Implementation will focus on priorities and initiatives that:

- Enhance safety, security, and resiliency
- Ensure system preservation and enhancement
- Enhance system mobility, operations, reliability, efficiency, and connectivity

9.3.2 Implement Mode-Specific Freight Policies and Strategies

Policies and strategies presented in this plan have been developed to complement existing planning documents, consider FAC and stakeholder input, comply with fiscal constraints, and rely on data analysis by WisDOT staff. Implementing these policies and strategies will ensure this plan meets its goals of providing a safe, efficient, and sustainable freight system for future generations within Wisconsin.

Freight projects are identified in the Statewide Transportation Improvement Program (STIP) and are consistent with state and local long-range plans. The identified projects contribute to the efficient movement of freight on the National Highway Freight Network.

Each of the policies and strategies are mode-specific and will be the responsibility of the specific divisions and bureaus to implement and track them.

9.3.3 Use Performance Measures to Monitor the Freight System

The long-range, system-level plan reflects several policies and strategies developed to be meaningful, reasonable, and practical. Monitoring the state's freight transportation system performance will help validate and verify the plan's proposed policy direction over time.

The plan's performance monitoring has two objectives: support existing performance measures and implement federally-required performance measures. Performance monitoring will be an ongoing process to track the Wisconsin freight system.

9.3.4 Use Data and Tools to Deliver Plan Policies and Strategies

The department's freight data analysis framework was used to identify Wisconsin's freight dependent critical corridors and facilities through its Multimodal Freight Network (MFN) Data Tool. Initially, this statewide identification of corridors and facilities will assist the department and freight stakeholders in:

- Building consensus on the most critical freight assets in Wisconsin
- Establishing and updating Critical Urban Freight Corridors and Critical Rural Freight Corridors
- Identifying "first and last mile" connections between facilities and corridors
- Identifying freight infrastructure needs
- Managing the transportation system to meet current freight demand

The department has developed a comprehensive system to prioritize freight assets by analyzing past performance, which serves as a valuable tool for prioritizing future freight related projects. The prioritization system is called Freight Factor Scoring, which examines the following freight assets:

- State Trunk Highway Network (STN)
- Railroads
- Ports
- Airports

WisDOT developed a unique scoring metric for each facility based on factors related to usage and proximity to other freight facilities which is designed to emphasize multimodal connectivity. Each facility receives a score of 1 to 99, with the highest numbers indicating the greatest amount of importance to freight-related movements.

HIGHWAYS

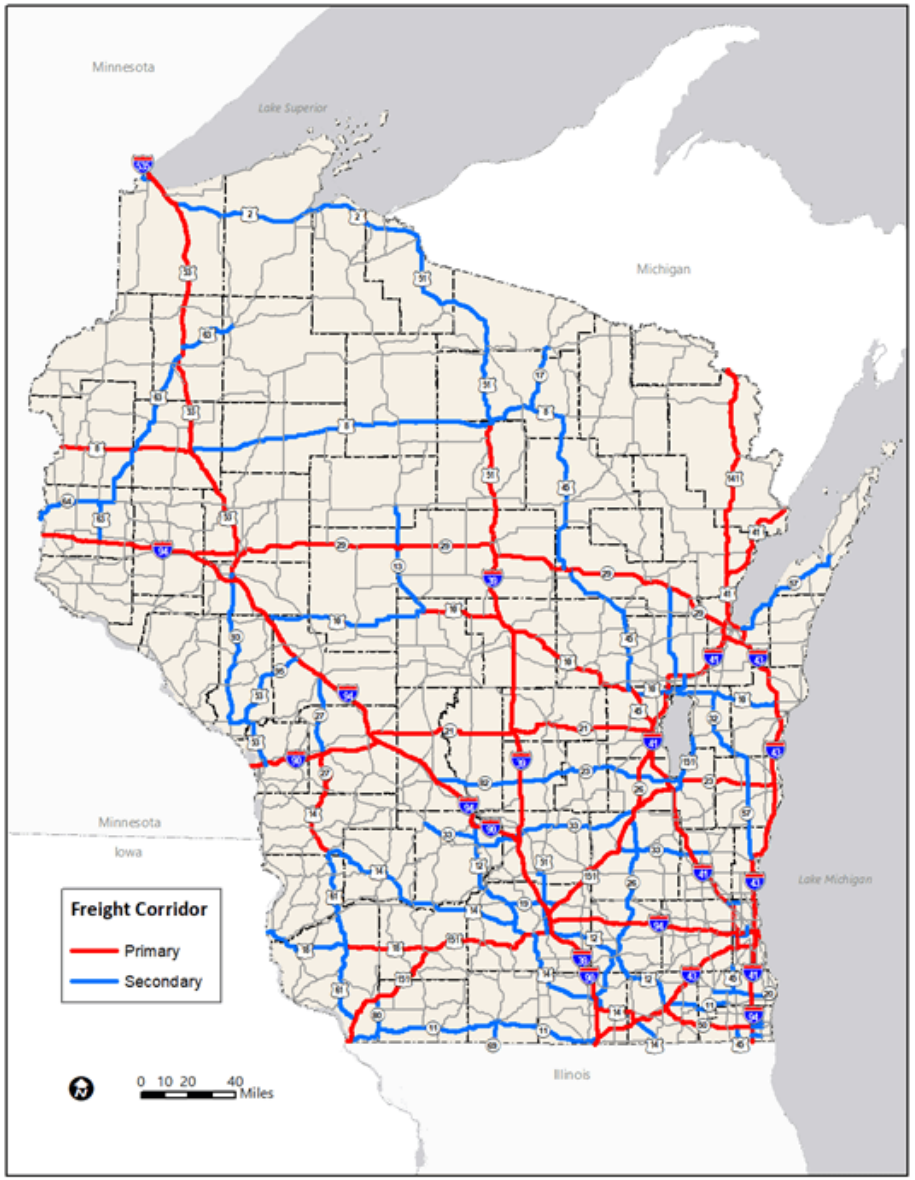
All segments of the nearly 11,800-mile State Trunk Highway Network were evaluated to identify the corridors that are most important to the movement of freight. Only data related to freight and its movements were considered, which is why data related to other key characteristics such as safety and total traffic were not weighted.

For highways, Freight Factor Scoring considers the following criteria:

- Trucks per Lane
- Truck Percentage
- OSOW Permit Frequency
- Freight Commodity Value
- Freight Commodity Tonnage
- NHS Intermodal Connector Status

Through analysis of these criteria, Freight Factor Scores were generated, and freight corridors were identified based on these scores. Figure 9-3 shows the state's Primary and Secondary Freight Highway Corridors.

Figure 9-3: Primary and Secondary Freight Corridors



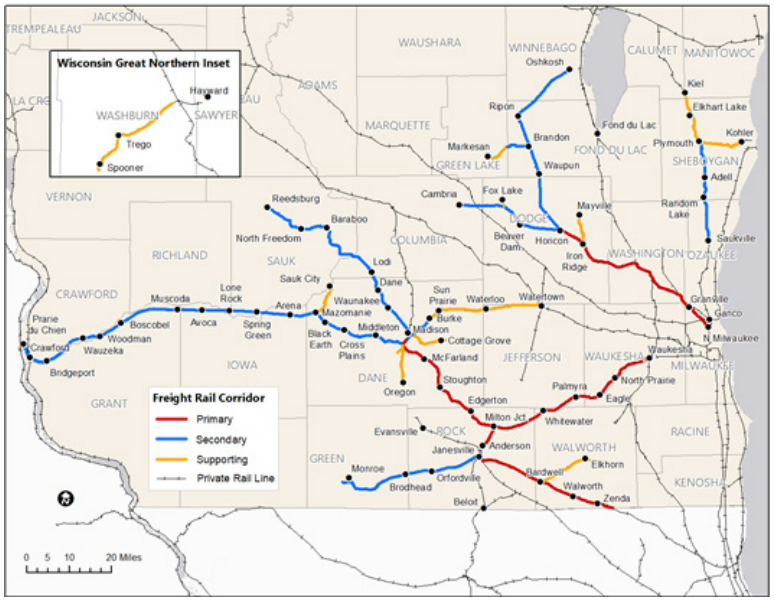
RAIL FREIGHT

Railroads are an important part of Wisconsin's intermodal freight system and provide important long-distance linkages for inter-state and intra-state transportation. Railroads are also important for moving high-weight commodities throughout the state, including coal and sand. Railroad segments were evaluated for a Freight Factor Score using the following criteria:

- Commodity Tonnage and Value
- Connection to a Port or Intermodal Container Facility
- Proximity to a Rail Yard
- Proximity to a Transload Facility

Freight Factor Scores were generated based on these criteria and Primary and Secondary corridors were identified on the state-owned rail lines. Figure 9-4 shows these corridors.

Figure 9-4: Primary, Secondary, and Supporting Rail Lines



PORT AND WATERWAY

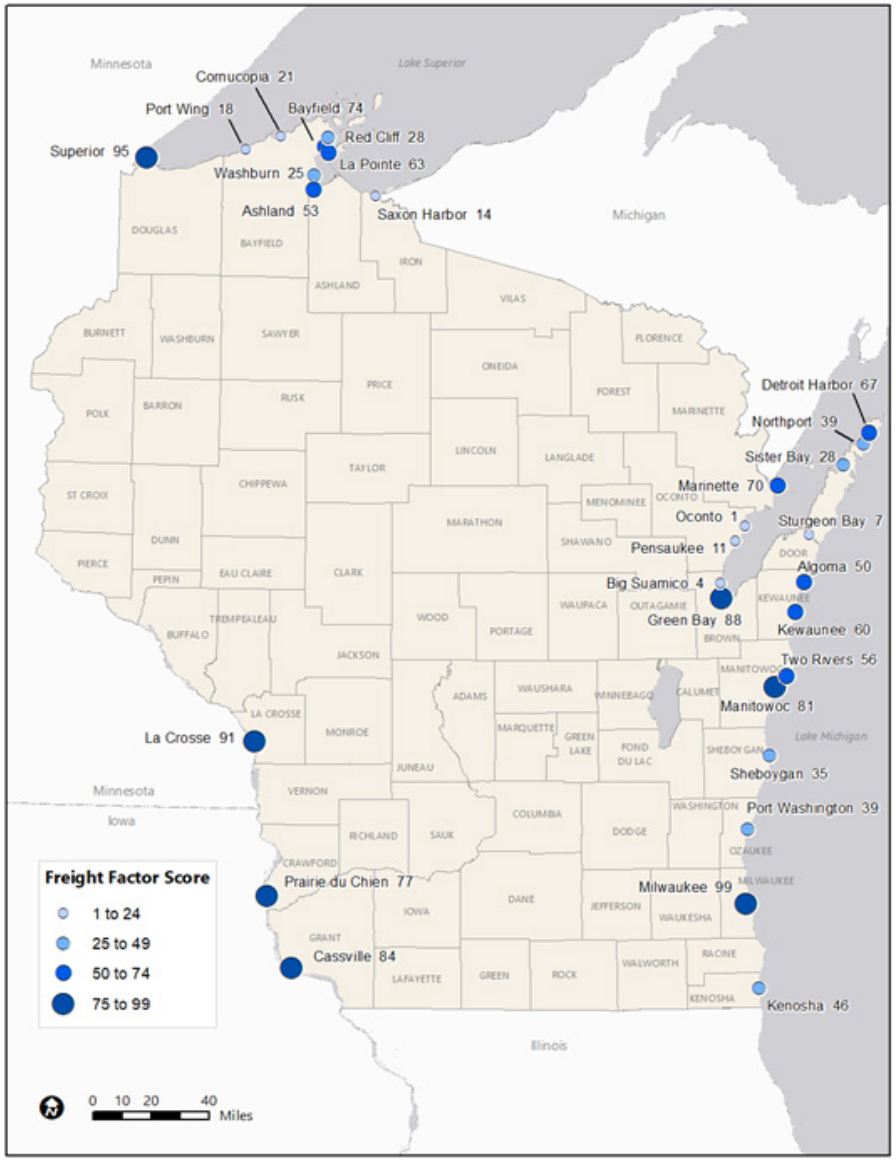
Understanding the volume and connectivity of ports and harbors in the state allows for analysis of supporting infrastructure, such as rail lines and roads, to identify critical needs on the transportation system. Ensuring that supporting infrastructure can facilitate the movement of goods entering or leaving ports and harbors is critical for overall efficiency, resiliency, and predictability.

Although tonnage and value were the largest factors for scoring port and harbor facilities, intermodal connectivity also plays a significant role. Freight Factor Scores for ports were developed based on the following criteria:

- Commodity Tonnage
- Commodity Value
- Connection to railroad, or potential connection to railroad
- Ferry Service
- Proximity to a State Highway

Figure 9-5 shows the scores for Wisconsin' ports.

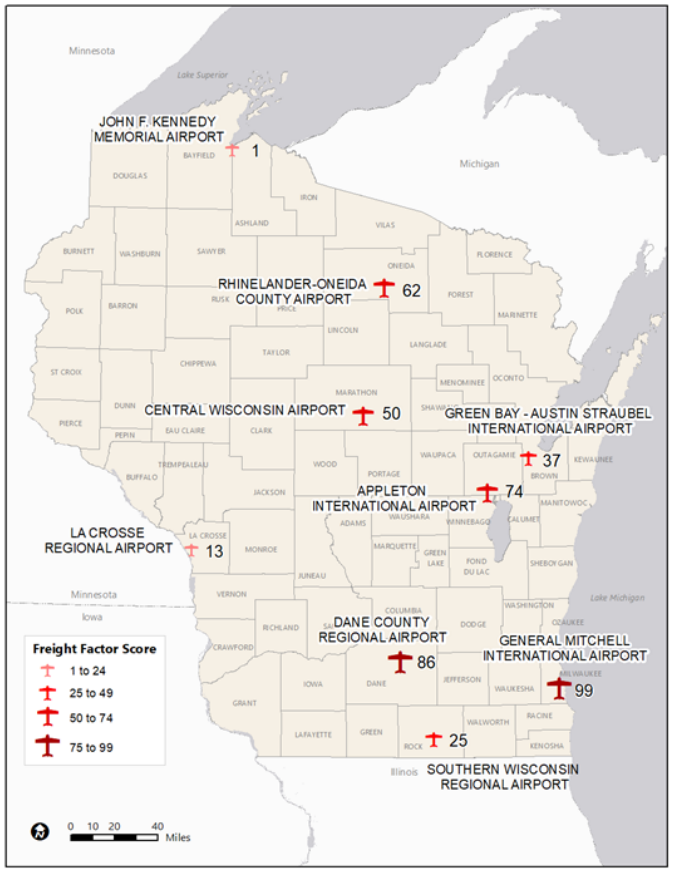
Figure 9-5: Ports Freight Factor Scores



AIR CARGO

The value and tonnage of commodities moving to or from Wisconsin airports were the two factors used to create the airport Freight Factor Score. Tonnage and value were weighed equally for the other modes, but for air travel, commodity value was considered to be a more important attribute than weight. Air freight generally is used for high-value or highly perishable goods. Figure 9-6 shows the Freight Factor Score for Wisconsin airports that ship or receive freight.

Figure 9-6: Air Cargo Freight Factor Scores



9.3.5 Identification of Wisconsin-Freight Projects

Wisconsin's long-range plans and corridor plans typically are implemented through programming decisions (scheduling and financing of projects in the next four to six years), which align infrastructure needs with available funding and staff resources. WisDOT administers a variety of programs involving federal, state, and local funds that support all modes of transportation. These funds are allocated across various transportation modes based upon analysis of needs.

This analysis uses a range of data sources, known priorities, and funding availability, as well as statutory and regulatory requirements. In general, each program and funding decision is mode-specific.

The BIL requires state freight plans to include a "Freight Investment Plan", which contains a list of priority projects and shows how National Highway Freight Program (NHFP) funds will be utilized. Appendix A constitutes WisDOT's "Freight Investment Plan" for this State Freight Plan.

- As noted, as of April 2023 WisDOT plans to utilize NHFP funds on projects in Appendix A. In accordance with 23 USC 167 and 49 USC 70202, it is possible those funds may be obligated to other projects at a later date; should this occur, Appendix A will be updated in coordination with FHWA.
- The projects listed in Appendix A will be funded with federal, state, and local funds. WisDOT will ensure Appendix A meets federal requirements and is in alignment with the state budgetary cycle following the signing of each biennial budget.
- The projected available NHFP funding for each federal fiscal year is at the top of each column.
- The projected NHFP funding amount and a cost range for other funding sources is listed for each project.
- The current engineer's estimate for projects cannot be listed and must remain confidential, as WisDOT is governed by competitive bidding requirements in state statutes.
- All projects utilizing NHFP funds will be included in the STIP before requesting federal funding.

A state may use up to 30 percent of its NHFP funds for freight intermodal or freight rail projects. As of fall 2022, WisDOT has not planned to utilize NHFP funds for such a project, though the department does plan to utilize NHFP funds on an intermodal connector near Port Milwaukee that is part of the National Highway Freight Network.

9.3.6 Coordination with Freight Stakeholders

Many freight transportation decisions involve multiple stakeholders such as WisDOT, the federal government, local governments—including Regional Planning Commissions and Metropolitan Planning Organizations—Tribes, the private sector, operators, and other stakeholders. Since no single entity has authority over the entire transportation system, implementing the Wisconsin State Freight Plan will take coordination and cooperation among many interests and business areas.

As a result, the responsibility for the safety, maintenance, operation, planning, and funding of the state's multimodal transportation system is shared by a full range of stakeholders and institutions, including the federal government, state government, local governments, and private entities. Therefore, the operation of a seamless transportation system requires coordination, collaboration, communication, and cooperation.

WISDOT

The department's three executive offices and five divisions are organized according to function, with most staff operating from a central office located in Madison, and the remainder operating from regional offices throughout the state. This structure helps to preserve the customer-focused approach to transportation development and better serve stakeholder needs.

Implementing the State Freight Plan requires that staff continue to work together to communicate plan policies, engage stakeholders in transportation discussions, and integrate plan recommendations into project-level activities. Implementation responsibilities will vary depending on the item, issue, or activity.

GOVERNMENT ENTITIES, SUCH AS LOCAL UNITS OF GOVERNMENT AND TRIBES

Implementation of the State Freight Plan requires coordination with government units such as local governments and Tribes that own and operate their own transportation services. Over the planning period, WisDOT will continue to work with its partners to address system priorities and continue to coordinate resources and activities through existing partnerships and agreements.

PRIVATE SECTOR, OPERATORS, AND OTHERS

WisDOT is responsible for decisions regarding the state trunk highway system. For all other modes of transportation, the infrastructure or service is owned or operated by someone else – the local government, Tribe, or private sector. If there is any federal or state funding assistance, WisDOT may be one of a few agencies that administers the funding and provides technical assistance.

Sometimes decisions on policy or project funding are shared and WisDOT can act as a catalyst for local or private transportation investment. In this way, stakeholders and WisDOT will collaborate to meet the State Freight Plan vision.

A critical forum for discussion of freight plan implementation strategies is the state's FAC. WisDOT will continue to support and convene the FAC into the future. The FAC has performed a valuable role in advising and prioritizing the concerns of various freight-related industries, and in offering detailed information on policies and operations. As WisDOT identifies and modifies its freight policies and prioritizes its list of freight-related projects, the department will continue to convene the FAC as a forum for developing consensus on those policies and projects, and to identify future projects and policies for consideration.

9.3.7 Serve as a Resource for Freight Information

Drafting the State Freight Plan required WisDOT to collect new data and information, develop analytic tools, consult a myriad of public and private sector freight system stakeholders, and look inward to define the future roles and responsibilities of the state in advocating, facilitating, planning, and investing in the freight transportation system. While this document will serve as a resource to WisDOT and contributing stakeholders, WisDOT's exploration of the state's freight transportation system, its needs, issues, and opportunities will continue. As such, WisDOT will continue to provide tools and other materials that communicate and educate industry and the general public on pertinent freight topics and issues.

During outreach, stakeholders suggested WisDOT could serve in an ongoing educational role and be a conduit for providing critical information to freight stakeholders and the general public, such as: how to use the freight system, when updates to freight analysis or modal-components are made, and notification of future freight-related meetings. WisDOT will continue to explore other ways in which the DOT can serve as a resource, as well.

APPENDIX A

Freight Investments

A

APPENDIX A - FREIGHT INVESTMENTS

The projects below reflect the projects WisDOT plans to utilize National Highway Freight Program funds on, as of April 2023. In accordance with 23 USC 167 and 49 USC 70202, it is possible those funds may be obligated to other projects at a later date; should this occur, Appendix A will be updated in coordination with FHWA. For additional information see Chapter 9.3.5.

- Bottleneck
- Backbone
- Majors
- PHFS Intermodal Connector

FFY23

Available NHFP Funds (Projected): $26,616,411

PROJECT TITLE:
I-94 Eau Claire - Osseo - USH 53 to Mallard Road (EB & WB) - Construction/Pavement Replacement

PROJECT ID: 1022-09-78
LET DATE (PROJECTED): September 2023

NHFP Funds	$26,616,411
Other Fed. Funds	$20,000,000 to $25,000,000
State Funds	$5,000,000 to $10,000,000
Local Funds	$0
Total Funds	$50,000,000 to $60,000,000

PROJECT TITLE:
I-39 Madison - Portage - Wisconsin River Bridges Construction/Bridge Replacement/Expansion

PROJECT ID: 1010-10-82
LET DATE (PROJECTED): February 2024

NHFP Funds	$14,148,739
Other Fed. Funds	$90,000,000 to $100,000,000
State Funds	$25,000,000 to $30,000,000
Local Funds	$0
Total Funds	$100 million or greater

FFY24

Available NHFP Funds (Projected): $27,148,739

PROJECT TITLE:
I-794 East West Freeway - Milwaukee - Marquette IC to Lake IC - Const/Bridge Overlay

PROJECT ID: 1060-48-70
LET DATE (PROJECTED): September 2024

NHFP Funds	$7,000,000
Other Fed. Funds	$0 to $5,000,000
State Funds	$0 to $5,000,000
Local Funds	$0
Total Funds	$10,000,000 to $15,000,000

PROJECT TITLE:
I-90 Tomah - Camp Douglas, EB - USH 12 to CTH C - Const/Mill & Overlay EB RDWY/RSRF

PROJECT ID: 1017-01-73
LET DATE (PROJECTED): November 2023

NHFP Funds	$6,000,000
Other Fed. Funds	$5,000,000 to $10,000,000
State Funds	$0 to $5,000,000
Local Funds	$0
Total Funds	$10,000,000 to $15,000,000

PROJECT TITLE:
S. Lincoln Memorial Drive Jones St. - I-794 Reconstruction

PROJECT ID: To Be Determined
LET DATE (PROJECTED): To Be Determined

NHFP Funds	$2,341,158
Other Fed. Funds	$0
State Funds	$0
Local Funds	$0 to $1,000,000
Total Funds	$2,000,000 to $3,000,000

FFY25

Available NHFP Funds (Projected): $27,691,714

PROJECT TITLE:
I-41 Zoo Freeway - Capitol Dr. - Silver Spring Dr. Construction/ Resurfacing Phase II

PROJECT ID: 1100-20-71
LET DATE (PROJECTED): October 2024

NHFP Funds	$13,000,000
Other Fed. Funds	$5,000,000 to $10,000,000
State Funds	$0 to $5,000,000
Local Funds	$0
Total Funds	$20,000,000 to $25,000,000

PROJECT TITLE:
I-41 Appleton - De Pere - Ballard Rd. (CTH E) Interchange Construction/Reconstruction with Expansion

PROJECT ID: 1130-65-76
LET DATE (PROJECTED): February 2025

NHFP Funds	$12,350,556
Other Fed. Funds	$5,000,000 to $10,000,000
State Funds	$5,000,000 to $10,000,000
Local Funds	$0
Total Funds	$25,000,000 to $30,000,000

FFY26

Available NHFP Funds (Projected): $28,245,548

PROJECT TITLE:
I-39 Portage - Coloma - Columbia Co Line to Fawn Court, SB - Const/Resurface

PROJECT ID: 1166-04-84
LET DATE (PROJECTED): November 2025

NHFP Funds	$8,000,000
Other Fed. Funds	$0 to $5,000,000
State Funds	$0 to $5,000,000
Local Funds	$0
Total Funds	$10,000,000 to $15,000,000

PROJECT TITLE:
I-39 Portage - Coloma - Fawn Court to Waushara Co Line, SB - Const/Resurface

PROJECT ID: 1166-04-85
LET DATE (PROJECTED): November 2025

NHFP Funds	$8,000,000
Other Fed. Funds	$0 to $5,000,000
State Funds	$0 to $5,000,000
Local Funds	$0
Total Funds	$10,000,000 to $15,000,000

PROJECT TITLE:
I-41 Appleton - De Pere - Holland Road - CTH J Construction/Reconstruction with Expansion of Mainline

PROJECT ID: 1130-66-71
LET DATE (PROJECTED): July 2026

NHFP Funds	$6,000,000
Other Fed. Funds	$25,000,000 to $30,000,000
State Funds	$5,000,000 to $10,000,000
Local Funds	$0
Total Funds	$40,000,000 to $50,000,000

PROJECT TITLE:
I-41 Appleton - De Pere - CTH J - Miners Way Construction/Reconstruction with Expansion of Mainline

PROJECT ID: 1130-67-71
LET DATE (PROJECTED): July 2026

NHFP Funds	$6,245,548
Other Fed. Funds	$35,000,000 to $40,000,000
State Funds	$10,000,000 to $15,000,000
Local Funds	$0
Total Funds	$50,000,000 to $60,000,000

FFY27

Available NHFP Funds (Projected): $28,810,459

PROJECT TITLE:
I-94 East West Freeway - CTH F Bridge (67-0140/0014) Construction/Bridge Rehab.

PROJECT ID: 1060-55-70
LET DATE (PROJECTED): November 2026

NHFP Funds	$2,880,000
Other Fed. Funds	$0 to $5,000,000
State Funds	$0 to $5,000,000
Local Funds	$0
Total Funds	$3,000,000 to $4,000,000

PROJECT TITLE:
I-90 La Crosse - West Salem - Theater Road to CTH C/B32-23, 24, 27 - Const/Repair/Resurf both Roadways

PROJECT ID: 1071-01-82
LET DATE (PROJECTED): November 2026

NHFP Funds	$9,400,000
Other Fed. Funds	$0 to $5,000,000
State Funds	$0 to $5,000,000
Local Funds	$0
Total Funds	$10,000,000 to $15,000,000

PROJECT TITLE:
I-41 Appleton - De Pere - Meade St. - Holland Road Construction/Reconstruction with Expansion of Mainline

PROJECT ID: 1130-65-72
LET DATE (PROJECTED): February 2027

NHFP Funds	$16,530,459
Other Fed. Funds	$0 to $5,000,000
State Funds	$0 to $5,000,000
Local Funds	$0
Total Funds	$20,000,000 to $25,000,000

FFY28

Available NHFP Funds (Projected): $29,386,668

PROJECT TITLE:
I-94 Black River Falls - Tomah - R_IH90E-IH94W B41-291; IH90W B41-292 - Const/BRRPL

PROJECT ID: 1023-02-81
LET DATE (PROJECTED): November 2027

NHFP Funds	$7,650,000
Other Fed. Funds	$0 to $5,000,000
State Funds	$0 to $5,000,000
Local Funds	$0
Total Funds	$5,000,000 to $10,000,000

PROJECT TITLE:
I-94 Menomonie - Eau Claire - Chippewa River B-18-23, 24, 44, 45 - Construction/BRRHB

PROJECT ID: 1022-00-74
LET DATE (PROJECTED): December 2027

NHFP Funds	$3,787,200
Other Fed. Funds	$0 to $5,000,000
State Funds	$0 to $5,000,000
Local Funds	$0
Total Funds	$4,000,000 to $5,000,000

PROJECT TITLE:
I-94 Black River Falls - Tomah - Perry Creek to CTH O (EB & WB) - Construction/Resurface

PROJECT ID: 1023-00-71
LET DATE (PROJECTED): September 2028

NHFP Funds	$9,700,000
Other Fed. Funds	$0 to $5,000,000
State Funds	$0 to $5,000,000
Local Funds	$0
Total Funds	$10,000,000 to $15,000,000

PROJECT TITLE:
I-94 Menomonie - Eau Claire - Red Cedar River to USH 12 (EB & WB) - Construction/Resurface

PROJECT ID: 1022-05-70
LET DATE (PROJECTED): November 2027

NHFP Funds	$8,249,468
Other Fed. Funds	$5,000,000 to $10,000,000
State Funds	$0 to $5,000,000
Local Funds	$0
Total Funds	$15,000,000 to $20,000,000

FFY29

Available NHFP Funds (Projected): $29,974,402

PROJECT TITLE:
TO BE DETERMINED

PROJECT TITLE:
TO BE DETERMINED

PROJECT TITLE:
TO BE DETERMINED

PROJECT TITLE:
TO BE DETERMINED

FFY30

Available NHFP Funds (Projected): $30,573,890

PROJECT TITLE:
TO BE DETERMINED

PROJECT TITLE:
TO BE DETERMINED

PROJECT TITLE:
TO BE DETERMINED

PROJECT TITLE:
TO BE DETERMINED

APPENDIX B

Summary of Freight Plan Outreach

B

APPENDIX B - SUMMARY OF FREIGHT PLAN OUTREACH

WisDOT conducted extensive outreach to diverse constituencies prior to the release of the Draft Plan, as well as during the public comment period. As the Draft Plan was under development, a webpage—www.wisdotplans.gov/plan/state-freight-plan—was established to inform stakeholders and the general public about the goals of the plan, the timeline for plan development, the expected content, and key facts about the freight transportation system in Wisconsin. This page also discussed the engagement plan, which included the Freight Advisory Committee, sector-specific stakeholders, and general public input. Multiple contact opportunities were offered, including direct email and mailing addresses and a plan-specific comment mailbox.

How We Spread Awareness

Emails to Stakeholders

A pre-existing email contact list was updated and expanded to ensure broad awareness of the Draft Plan. The website for the Draft Plan also included a self-registration option to allow interested parties to receive email updates on the plan development process and on opportunities to learn additional details as they became available. Upon release of the Draft Plan, three email notifications were sent to recipients on the email contact list. Email was received at almost 700 separate addresses during the final two notifications; of these, at least 370 recipients opened one message. In addition to these recipients, community leaders representing 28 economic development, equity, and transportation organizations were contacted separately with offers to engage with WisDOT in a parallel presentation/questions and comment session. These organizations included:

ECONOMIC DEVELOPMENT

- African American Chamber of Commerce – Wisconsin
- American Indian Chamber of Commerce – Wisconsin
- Centergy
- Grow North
- Hispanic Chamber of Commerce – Wisconsin
- Hmong Chamber of Commerce – Wisconsin
- Madison Black Chamber of Commerce
- Madison Region Economic Partnership
- Milwaukee 7
- Momentum West
- New North
- Prosperity Southwest
- 7 Rivers Alliance
- Visions Northwest
- Wisconsin Black Chamber of Commerce
- Wisconsin Chinese Chamber of Commerce
- Wisconsin Farm Bureau Federation
- Wisconsin Latino Chamber of Commerce
- Wisconsin LGBT Chamber of Commerce

EQUITY

- NAACP – Dane County
- NAACP – Milwaukee
- NAACP – Ozaukee County
- NAACP – Waukesha County

TRANSPORTATION

- American Automobile Association
- National Association of Minority Contractors – Wisconsin Chapter
- Wisconsin Airport Management Association
- Wisconsin County Highway Association
- Wisconsin Transportation Builders Association

Social Media

The WisDOT Office of Public Affairs (OPA) ran a social media campaign for the State Freight Plan between December 5, 2022 and January 5, 2023 across three major social media platforms. Through a mix of organic posts and paid advertisements, OPA published 13 unique posts, which were viewed 51,992 times, with 534 unique people clicking on the State Freight Plan link within one of the posts.

What We Did

Stakeholder Meetings

Upon release of the Draft Plan, Freight Advisory Committee members were offered two direct virtual meetings to hear a presentation and directly engage WisDOT with questions and comments on the plan. One meeting was scheduled during evening hours for additional flexibility. WisDOT also offered Freight Advisory Committee members the opportunity to receive targeted presentations for their constituencies.

Additionally, as noted previously, community leaders representing economic development, equity, and transportation organizations were also directly contacted with offers to engage with WisDOT.

Table B-1 reflects the list of presentations WisDOT conducted in support of the State Freight Plan development process.

Table B-1: State Freight Plan Presentations

ORGANIZATION	DATE OF PRESENTATION
Wisconsin Agricultural Export Advisory Council	July 20, 2022
Duluth-Superior Metropolitan Interstate Commission – Harbor Technical Advisory Committee	September 7, 2022
Wisconsin MPO/RPC Transportation Planning Conference	October 12, 2022
Mississippi River Regional Planning Commission Freight Strategy Workshop	October 18, 2022
WisDOT Motor Carrier Advisory Committee	October 19, 2022
Wisconsin Tribal Transportation Conference	October 26, 2022
WisDOT Freight Railroad Conference	November 15, 2022
WisDOT Freight Advisory Committee	December 14, 2022
WisDOT Freight Advisory Committee	December 15, 2022 (evening)
Wisconsin Manufacturers & Commerce	December 20, 2022
Wisconsin Department of Agriculture, Trade, and Consumer Protection – Industry Stakeholder Group	December 21, 2022

Self-paced Virtual Engagement and Survey

Available from December 5, 2022 through January 6, 2023

Upon release of the Draft Plan, a 15-page "virtual engagement" forum was set up, expanding on the initial webpage with a chapter-by-chapter summary of the Draft Plan, and links to the full Draft Plan.

- **Total Unique Visitors:** 778
- **Total Visits:** 785 (total number of visits to the site)
- **Average Visit Length:** 1:38
- **Acquisition (how people accessed the link):**
  - ~70% of all visitors went directly to the self-paced "virtual engagement" either from email, or the State Freight Plan webpage, or typed it themselves
  - ~28% of visitors clicked the link on a different webpage or were redirected from social media
  - ~2% found the site using a search engine
- **Devices (how people viewed the link):**
  - Desktop: 83%
  - Mobile: 15%
  - Tablet: 2%

Interactive Survey

Visitors to both the webpage and "virtual engagement" forum were encouraged to participate in a survey that allowed respondents to express their level of concern about specific freight transportation networks.

- **Total Respondents:** 43
- **Total Unique Responses:** 175

General Summary of Comments Received

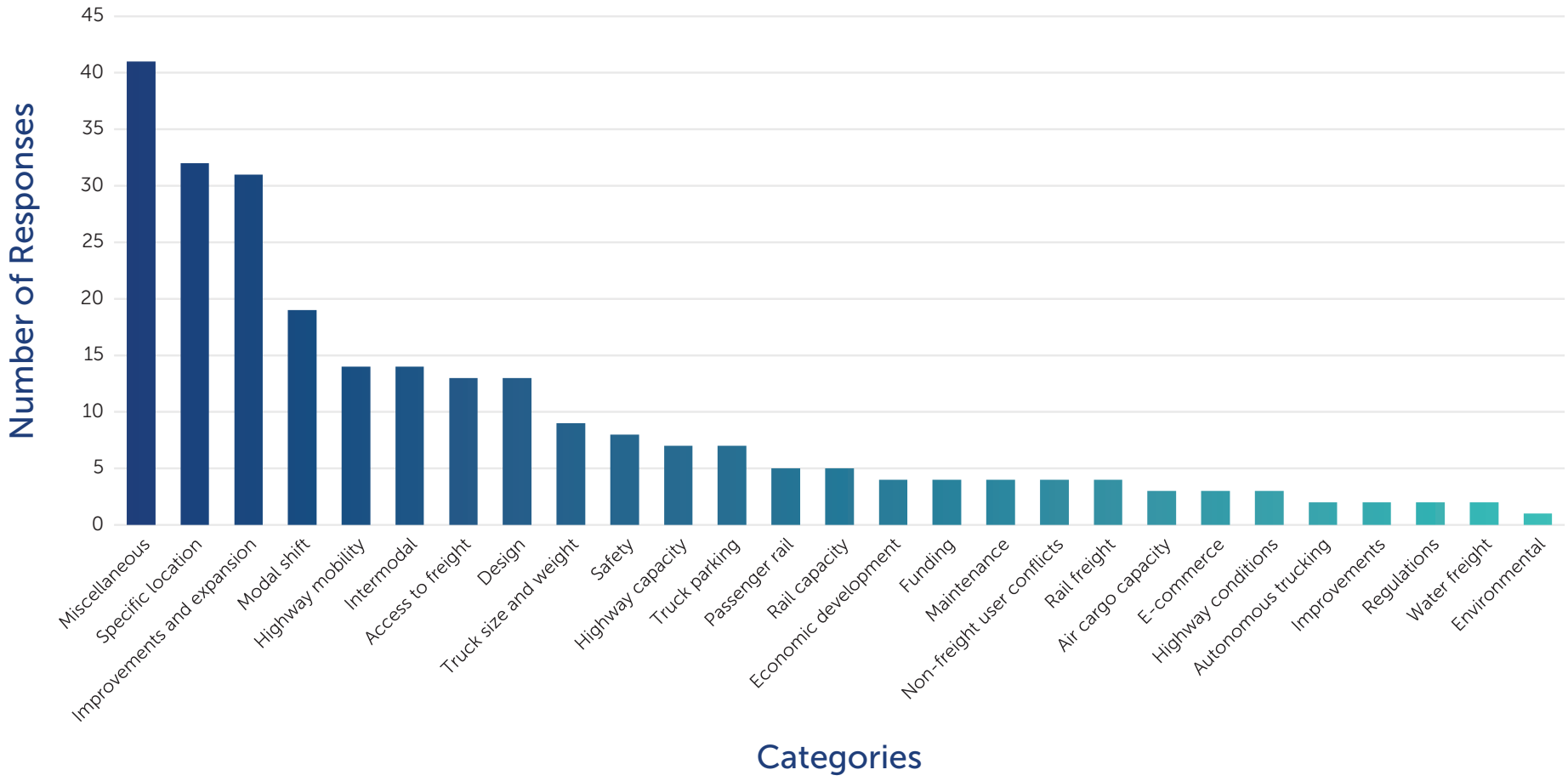
In total, WisDOT received 175 unique open-ended responses to the State Freight Plan survey. To simplify the quantification of these responses, each response was reviewed and categorized. In total, there were 27 distinct categories, with some responses placed into more than one category. Figure B-1 illustrates all the categories. Examples include:

- 41 comments categorized as "Miscellaneous." These comments covered a broad range of issues and could not easily be categorized into any of the other categories. Also included were comments unrelated to Wisconsin's freight system or responses unrelated to the survey's questions.
- 32 comments included a specific location or region as part of the response. These comments reference roadways such as I-39/90, I-41, I-43, or specific facilities such as the Milwaukee Airport. Other responses included reference to specific cities or in some cases reference to general regions of Wisconsin (e.g., Northeast, Southeast).
- 31 responses included reference to general improvements and expansion of existing freight systems. These responses included references to additional highway lanes, double-tracking rail corridors, and improvements to ports, locks, and dams.
- 19 responses referenced the benefits of modal shifts; primarily, the shifting of truck freight trips to other modes such as rail, water, and air. On a related note, 14 comments referenced intermodal freight operations as part of their response. A common response was the desire for more local intermodal facilities to reduce the need to transport containers to the Chicago area.
- 13 comments referenced access to freight as a concern. Often this was related to a lack of rail service due to consolidation of the rail system over time, but issues with trucks not being permitted to travel on some local roads was cited as a limiting factor for freight operations. However, 4 comments referenced conflicts between freight and non-freight roadway users as a concern, specifically the issue of large trucks travelling on local roadways.
- 13 comments reference roadway design as a major issue. Specifically, bridges with weight restrictions or low vertical clearance were noted as obstacles that require substantial rerouting for some trucks to avoid, increasing the overall freight ton-miles on the roadway system and reducing overall freight system efficiency.

Other example responses included references to passenger rail (5), rail capacity (5), economic development (4), maintenance (4), highway conditions (3), and environmental (1).

The survey asked respondents to assess the conditions of Wisconsin's freight infrastructure by mode. Across the surveyed modes, intermodal and freight rail were noted as the two areas where respondents felt the need for improvements were the greatest. These results correspond with long-standing concerns issued by different stakeholders, including those of the Freight Advisory Committee, independent of this State Freight Plan development effort.

Figure B-1: Survey Responses Categories



Impact to Plan

Based on a review of responses received, WisDOT made minor edits but did not substantially modify the Draft Plan distributed for public comment. Feedback did not conflict with existing proposed policies, and in many cases the responses reinforced WisDOT's intentions. Example responses (in italics) include:

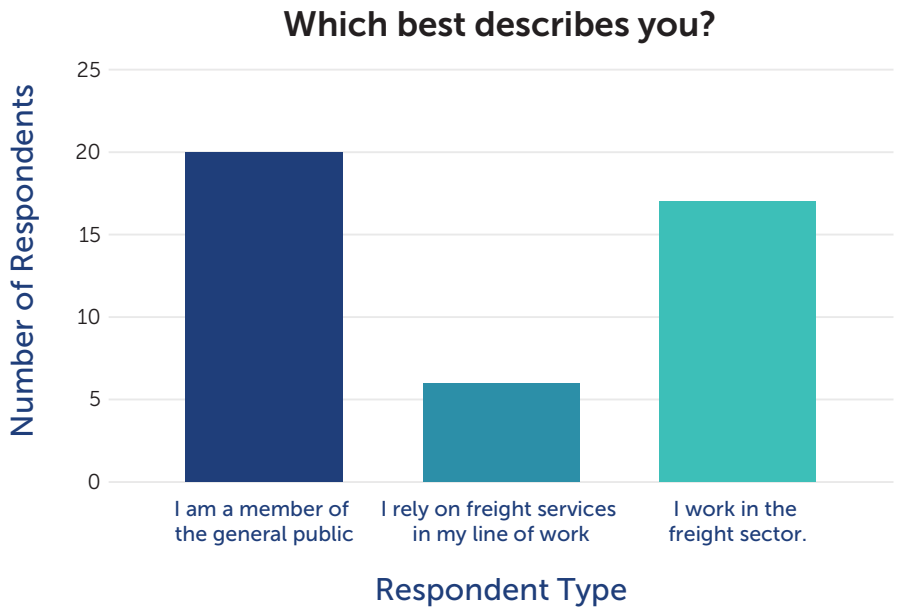
- **All Modes Policy 1:** Enhance security of the transportation system by reducing vulnerability
- Comments:
  - *"Defense against cyber attacks, physical attacks, and more."*
- **All Modes Policy 3:** Continue to support Metropolitan Planning Organizations, Regional Planning Commissions, and local partners in the implementation and execution of their freight policies, including the following themes: Local Connectivity, Safety and Security, Modal Improvements, System Operations and Management, Economic Development, Partnerships and Performance Measures
- Comments:
  - *"Accessibility to rural areas is as important as getting to larger cities."*
  - *"Providing improved local access to quality roads will allow better distribution of economic opportunity in rural areas of the state."*
  - *On benefits of an improved State Highway System: "The statewide freight system would have more access to Village and Cities in rural areas."*
- **Highways & Local Roads Policy 1:** Improve standards for infrastructure
- Comments:
  - *"I would like to see provisions added that allow increased capacity. Whether it is extra wide shoulders that could turn into lanes."*
  - *"...increasing minimum clearances and increased permit vehicles load would open more routes for oversize freight."*
- **Highways & Local Roads Policy 6:** Preserve the local road and bridge system
- Comments:
  - *"A road might not have a weight limit, but the road might have a bridge with a weight limit causing the trucks to take a longer route."*
  - *"...the state should continue to focus on rural (and some legacy urban) road bridge and culvert structures in order to maintain access to the system throughout the state."*
- **Highways & Local Roads Policy 27:** Support an increase in the availability of truck parking and related infrastructure at state-owned facilities and raise the awareness of its availability
- Comments:
  - *"Concerns in Wisconsin are not enough parking near shippers/receivers..."*
  - *"There is very limited parking available for drivers that is safe places."*
  - *"OSOW accommodation especially creating OSOW parking adjacent to primary borders on the backbone as well as OSOW corridors."*
- **Rail Policy 2:** Continue state assistance programs for rail improvements
- Comments:
  - *"Providing safe and reliable railroad bridges is and always has been my priority."*
- **Rail Policy 8:** WisDOT will continue to work with different stakeholders following the conclusion of the FAC's Intermodal Subcommittee
- Comments:
  - *"Shifting freight away from trucks to rail and inland waterways should be the top priority."*
  - *"The intermodal system is the closest thing most communities have to rail service. Improved availability of yards for these transfers would increase the serviceability of communities to get access to this as shipping options."*

- **Maritime Policy 2:** Advocate for federal funding for navigation and environmental improvements for the Upper Mississippi River-Illinois River Waterway and improvements to the Great Lakes-St. Lawrence Seaway System
- Comments:
  - » *"We need to update the locks on the Miss. River to allow for more efficient use."*
- **Maritime Policy 5:** Continue to coordinate with state, regional, and international partners, as well as explore the development of a maritime strategy for Wisconsin, to support maritime transportation as part of a safe, efficient, and seamless freight transportation system
- Comments:
  - » *"...we have some decent ports along Lake Michigan that I believe are being underutilized. Shipping by lake Michigan would alleviate some of the highway congestion."*
  - » *"...there is potential to move a lot more than coal, cement, and salt through our ports..."*
  - » *"Increasing tonnage of commodities transferred by waterways will reduce volume of truck traffic on interstate trucking systems. Increased facilities for access to waterways for loading/unloading would increase use."*

Who We Heard From

We received responses from a wide range of stakeholders. Figure B-2 broadly defines the backgrounds of respondents and is followed by a list of the types of organization respondents work for.

Figure B-2: Survey Respondents - General Public or Freight-Related



- Local government
- Trucking firms
- Rail transit commissions
- Logistics service providers
- Organized labor
- Forest ownership
- Citizen interest groups
- Engineering consultants
- Metropolitan Planning Organizations
- Economic development groups
- Rail safety
- Railroads

Figure B-3 reflects the demographic makeup of respondents based on self-identification. Of the 43 survey respondents, 40 self-identified.

Figure B-3: Survey Respondents - Demographics

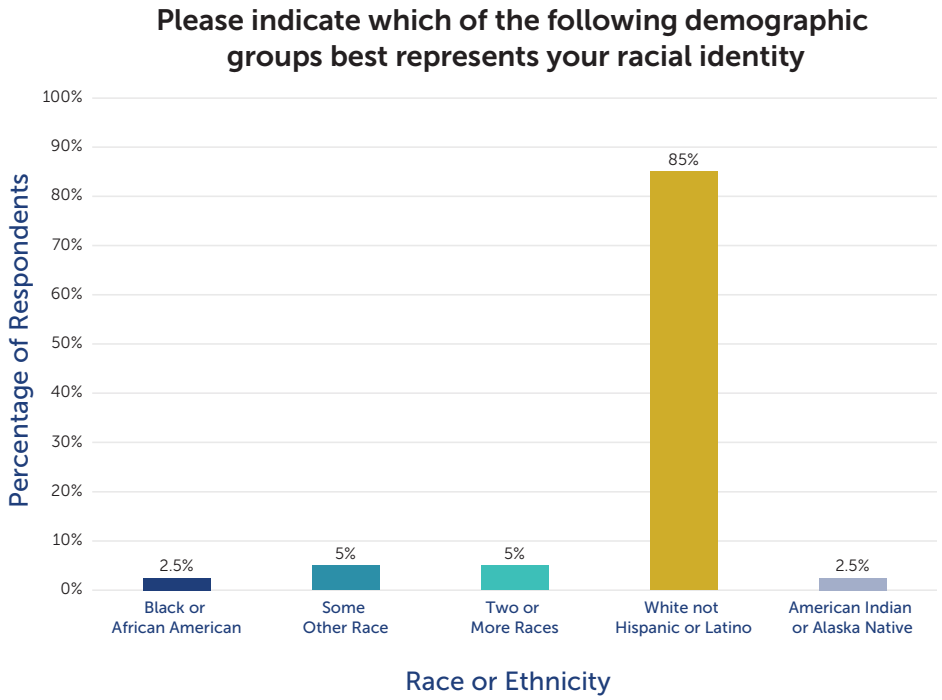
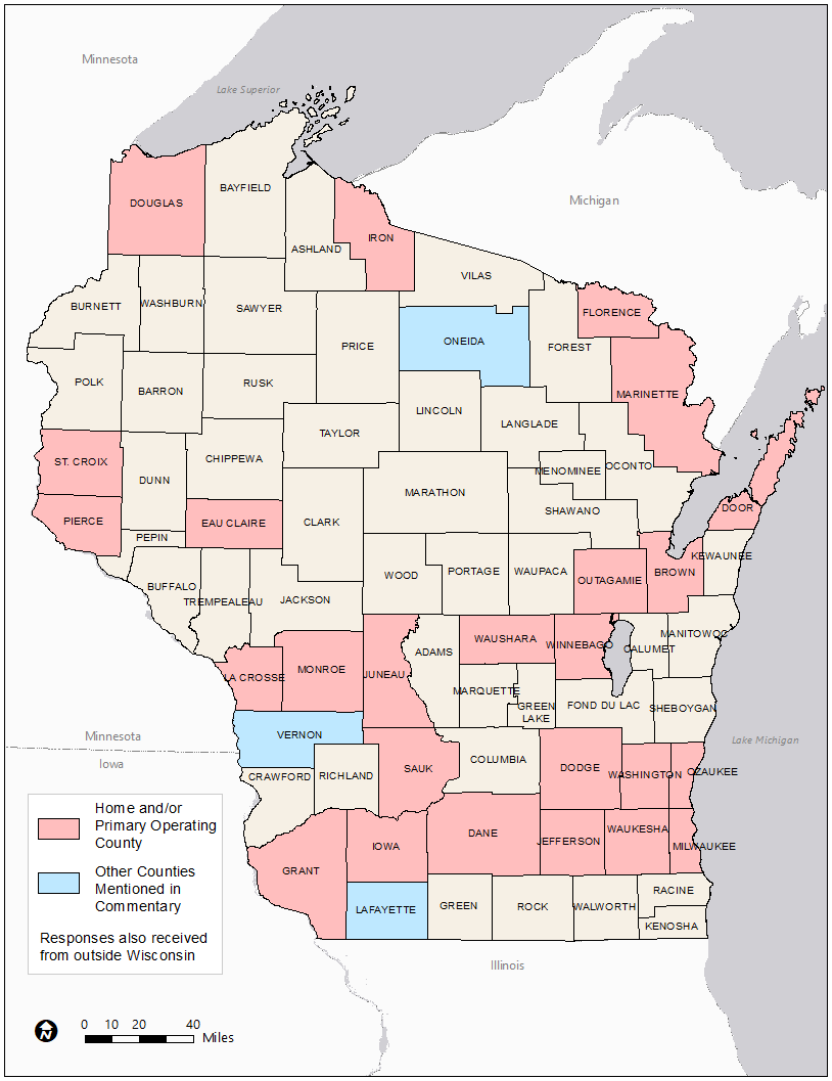


Figure B-4 reflects the home and/or primary operating counties of respondents, as well as other counties that were mentioned in respondents' commentary.

Figure B-4: Geographic Distribution of Respondents



APPENDIX C

Equity Analysis

C

APPENDIX C - EQUITY ANALYSIS

Across all modes, freight transportation serves necessary functions for society—bringing products from across the globe to Wisconsin while also sending items produced in Wisconsin to customers across the planet. These essential operations have varying types and degrees of impacts on their surroundings. On one hand, those living in proximity to facilities may face burdens that include noise, vibration, reduced air quality, water pollution from roadway runoff, safety concerns, and barriers to community cohesion and connectivity. On the other hand, freight facilities and corridors can offer benefits, such as economic development as businesses gain greater access and/or reduced costs for receiving and shipping products.

This may enhance the employment opportunities at these locations. In assessing these impacts, it is incumbent on transportation agencies to ensure that both benefits and burdens do not disproportionally fall on any community or demographic group.

Environmental Justice Overview

The primary means of addressing environmental justice issues was established in 1994 under Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations." Its purpose is to focus attention on the environmental and human health effects of federal actions on minority and low-income populations with the goal of achieving environmental protection for all communities.

The directive to federal agencies includes:

- Identify and address the disproportionately high and adverse human health or environmental effects of their actions on minority and low-income populations, to the greatest extent practicable and permitted by law.
- Develop a strategy for implementing environmental justice.
- Promote nondiscrimination in federal programs that affect human health and the environment, as well as provide minority and low-income communities access to public information and public participation.[64]

Going Beyond Environmental Justice Through Equity

While Executive Order 12898 compels states (as recipients of federal funds) to follow guidance on environmental justice, Wisconsin extends those considerations to a broader set of populations through application of equity principles. This process seeks to understand how decision-making and actions taken affect mobility, access to transportation options, social and economic opportunities, and the distribution of environmental impacts for all community members.

Equity in transportation considers the needs of all populations being served by the transportation system, particularly populations that are historically underserved. Among the additional federal laws, regulations, and policies that help to define populations to consider in various equity analyses is Title VI of the Civil Rights Act of 1964, which prohibits discrimination based on race, color, and national origin in programs and activities receiving federal financial assistance.

This equity assessment in the Wisconsin State Freight Plan includes several elements. These include:

- A statewide overview of major transportation corridors and facilities where potential impacts may be concentrated.
- Mapping by census block group of locations across the state where equity demographic groups live.
- A table displaying the results of a proximity analysis showing how many members of equity demographic groups face the greatest exposure to burdens from freight transportation.
- General discussion of methods to reduce, minimize, and/or mitigate potential burdens from freight transportation operations.
- A discussion of WisDOT's outreach to equity demographic groups, including incorporation of comments received from those outreach efforts.

Long-Range Assessment Versus Project-Level Analysis

The Wisconsin State Freight Plan is, by definition, a long-range assessment of freight transportation conditions and needs. Therefore, assessments of impacts can only be made in general terms. The purpose of an equity-focused discussion of demographic groups living near freight infrastructure is to inform later discussions during corridor study, project, and program-levels. This system-wide discussion considers a cumulative, "big picture" view that does not serve the same purpose of analyses at the project, corridor, and program-levels. It stresses a qualitative description and discussion of existing conditions, rather than a quantitative analysis that will be conducted during project and corridor level studies.

Project-level efforts extend equity to be an everyday part of WisDOT. Project-level analyses are primarily driven by federal and state laws. The project-level reviews include a detailed analysis of the project scope, limits, and potential impacts to the physical and human environment. Project- and corridor-level equity analyses typically include quantitative analyses using percentages and numbers within various measured distances.

The *WisDOT Facilities Development Manual (FDM)* provides guidance on how to address public involvement in project-level planning, including specific contact methods with Tribes and outreach to non-English speaking populations. Further guidance on outreach covers provisions under the 1990 Americans with Disabilities Act (ADA), including accommodations for individuals with sight, hearing, or mobility limitations and adequate access to services such as sign language, listening assistance, and telecommunication for the deaf and hard of hearing (TDD). [65]

Equity Demographic Groups

The range of demographic groups considered in this equity-focused discussion is tailored to the scope and scale of Wisconsin, and the range of demographic groups considered may be modified during project-level analyses and other WisDOT initiatives. This chapter considers:

- Minority populations, including:
  - Hispanic or Latino
  - Black
  - American Indian or Alaska Native
  - Asian
  - Native Hawaiian or Other Pacific Island
  - Some Other Race
  - Two or More Races
- Low-income populations
- People with disabilities
- Seniors (age 65 and older)
- Youth (age 9 and under)
- Zero-vehicle households

Together these groups will be referred to as equity demographic groups.

Wisconsin's Multimodal Freight System

Any transportation corridor or facility will have some degree of impact on its surroundings—whether as a barrier for wildlife or pedestrian movement, or as a means for farm products to get to processing facilities in a timely manner. The degree of impact is influenced by, among other things, the size of the facility, the volume and duration of traffic through the facility, and the type of activities performed at the facility.

Below are the facilities—public and private—that were used for the equity analysis. They have the potential to generate burdens for those who live or frequent locations near these facilities.

Trucking

- National Highway System (Interstate, U.S. and State Highways)
- National Highway Freight Network
  - » Primary Highway Freight System (PHFS)
  - » Other Interstates not on the PHFS
  - » Critical Rural Freight Corridors (CRFCs)
  - » Critical Urban Freight Corridors (CUFCs)

Freight Rail

- Railroad main lines
  - » Railroad lines that are Out of Service or in Discontinuance were included for analysis as they could go back in service at any time.
  - » Railroad lines in Interim Trail Use status were not included.

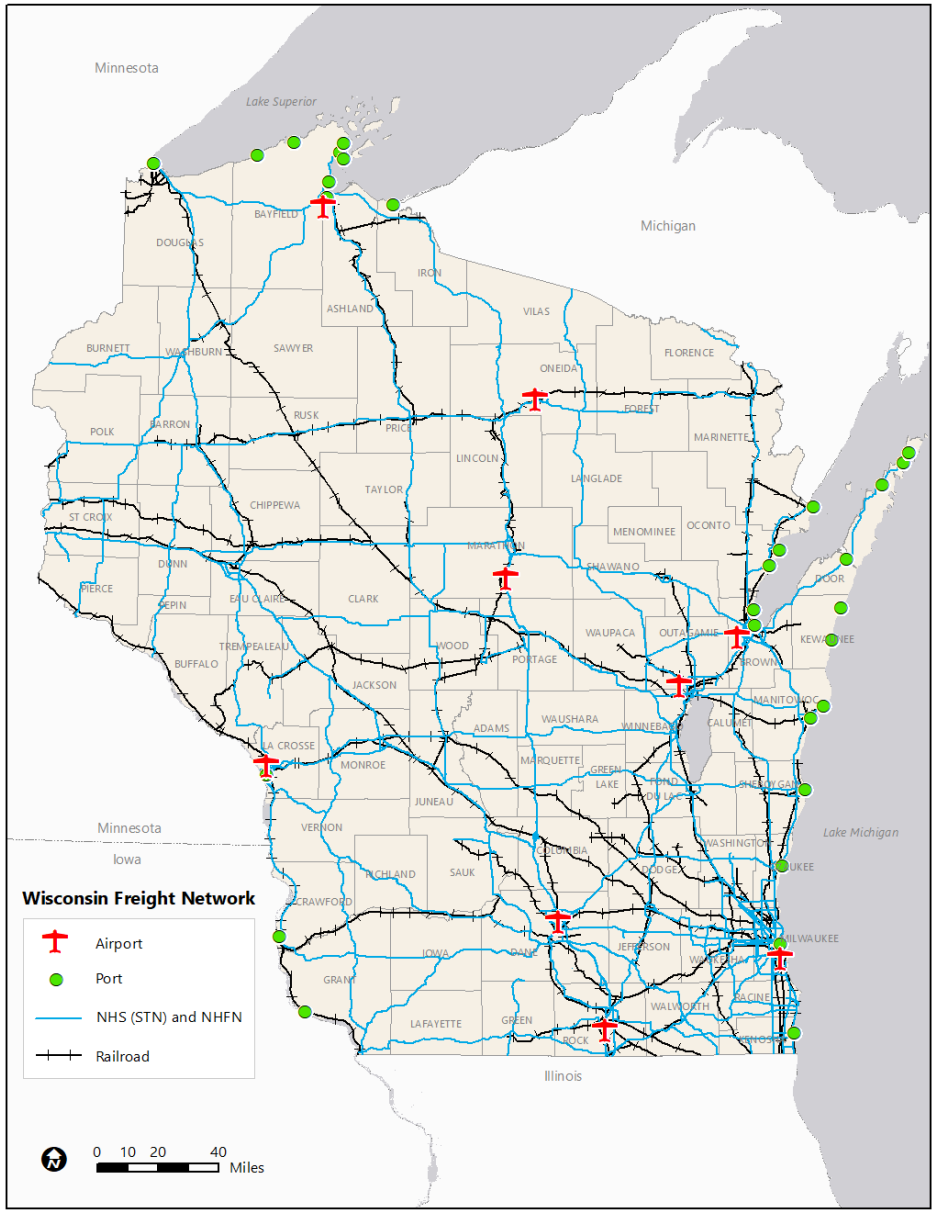
Maritime

- Ports or Harbors with freight activity

Aeronautics

- Airports with freight activity

Figure C-1: Wisconsin Multimodal Freight System



Census Data and Equity Demographic Groups

This section identifies the geographic distribution of the designated equity demographic groups, as previously mentioned. Within the population demographics, analysis was conducted with each of these census population categories:

- Hispanic or Latino
- White
- Black
- American Indian or Alaska Native
- Asian
- Native Hawaiian or Other Pacific Island
- Some Other Race
- Two or More Races
- Low-income populations
- People with disabilities
- Seniors (age 65 and older)
- Youth (age 9 and under)
- Zero-vehicle households

Data Sources

The **2020 Decennial United States Census** counts every person living in the 50 states, District of Columbia, and the five U.S. territories. The topics of Decennial Census questions are age, sex, race, Hispanic origin, and owner/renter status. The Decennial Census is the official count of the population, which determines congressional representation.

The **American Community Survey (ACS)** is conducted every month of every year and samples about 3.5 million addresses in the 50 states, District of Columbia, and Puerto Rico. The ACS asks about topics not on the Decennial Census, such as education, employment, internet access, and transportation. The 2022 Wisconsin State Freight Plan makes use of ACS 5-year estimates based on 60 months of data collected between January 1, 2015 and December 31, 2019. These 5-year estimates are the most reliable collection of ACS data, however, these estimates may not be the most current on the whole. The smallest geographic area of data points available are at the census block group level, except for disability measures, which are at the census tract level.

For continuity with ACS measures, 2020 Decennial data for the Wisconsin State Freight Plan is analyzed at the census block group level. The following tables (Table C-1 to C-5) show the state populations for each of the demographic categories. More than four of every five Wisconsin residents (80.4 percent) identified as white in the 2020 Decennial Census.

Table C-1: 2020 WI Population Percentages by Race and Ethnicity

POPULATION CATEGORY	STATEWIDE POPULATION	PERCENT
Total Population	5,893,718	
Hispanic or Latino	447,290	7.6%
White	4,737,545	80.4%
Black	376,256	6.4%
American Indian or Alaska Native	60,428	1.0%
Asian	175,702	3.0%
Native Hawaiian or Other Pacific Island	2,199	0.0%
Some Other Race	182,054	3.1%
Two or More Races	359,534	6.1%

Table C-2: 2020 WI Population in Poverty

POPULATION CATEGORY	STATEWIDE POPULATION	PERCENT
Total Population Surveyed	5,659,485	
Population in Poverty	620,947	11.0%

Table C-3: 2020 WI Population with a Disabililty

POPULATION CATEGORY	STATEWIDE POPULATION	PERCENT
Total Population Surveyed	5,735,703	
Population with a Disability	676,631	11.8%

Table C-4: 2020 WI Senior and Youth Populations

POPULATION CATEGORY	STATEWIDE POPULATION	PERCENT
Total Population Surveyed	5,806,975	
Population 65 Years and Older	982,799	16.9%
Population Nine Years and Younger	681,793	11.7%

Table C-5: 2020 WI Zero-Vehicle Households

POPULATION CATEGORY	STATEWIDE POPULATION	PERCENT
Total Households Surveyed	2,377,935	
Households with Zero Vehicles	156,744	6.6%

Equity Demographic Groups – Proximity Analysis

Table C-6 shows the percentage of each category that resides in census block groups within a quarter-mile of the Wisconsin Multimodal Freight System. Disability data is analyzed by census tracts.

The table includes a column to show a comparison index. This index is equivalent to the proportion of the individual population groups divided by the proportion of the total population.

- A comparison index of 1.0 indicates that the target population is represented in the quarter-mile study area at a rate equal to that of the population as a whole. There are no disproportionate impacts for this group.
- A comparison index value greater than 1.0 indicates that the target population is represented in the quarter-mile study area at a rate higher than the population as a whole. Adverse effects in the study area have the potential to disproportionately affect the target population.
- A comparison index value less than 1.0 indicates that the target population is represented in the quarter-mile study area at a rate lower than the population as a whole. Adverse effects in the study area are less likely to have the potential to disproportionately affect the target population.

Table C-6: Populations Within a Quarter-Mile of Wisconsin Multimodal Freight System

POPULATION CATEGORY	STATEWIDE POPULATION	TOTAL	PERCENT	INDEX
Total Population	5,893,718	4,857,674	82.4%	-
Hispanic or Latino	447,290	368,020	82.3%	0.998
White	4,737,545	3,892,276	82.2%	0.997
Black	376,256	320,935	85.3%	1.035
American Indian or Alaska Native	60,428	46,145	76.4%	0.927
Asian	175,702	149,413	85.0%	1.032
Native Hawaiian or Other Pacific Island	2,199	1,890	85.9%	1.043
Some Other Race	182,054	149,763	82.3%	0.998
Two or More Races	359,534	297,252	82.7%	1.003
Population in Poverty	620,947	509,939	82.1%	0.996
Population with a Disability	676,631	631,555	93.3%	1.132
Population 65 Years and Older	982,799	802,215	81.6%	0.990
Population Nine Years and Younger	681,793	560,194	82.2%	0.997
Households with Zero Vehicles	156,744	131,306	83.8%	1.016

As documented by this proximity analysis, more than four of every five Wisconsin residents (82.4 percent) live in proximity to the Wisconsin Multimodal Freight System. These results are to be expected, as freight facilities serve areas of population concentration.

There are two population groups with significant differences from the whole. One is the American Indian / Alaska Native group. Just over three in four (76.4 percent) reside in proximity to the System. This difference is likely due to several tribal nations being located in rural parts of northern Wisconsin, far from many large population centers. The other group is Populations with a Disability. More than nine of every ten residents who identify as being in that category (93.3 percent) are proximate to the Wisconsin Multimodal Freight System. This is likely due to such residents seeking to live in locations where services are more easily available, in cities and suburbs. These are also locations where freight corridors and facilities are most prevalent.

The maps on the following pages display the percent of each population category compared with the total population of the census block or census tract.

Figure C-2: Hispanic or Latino Population

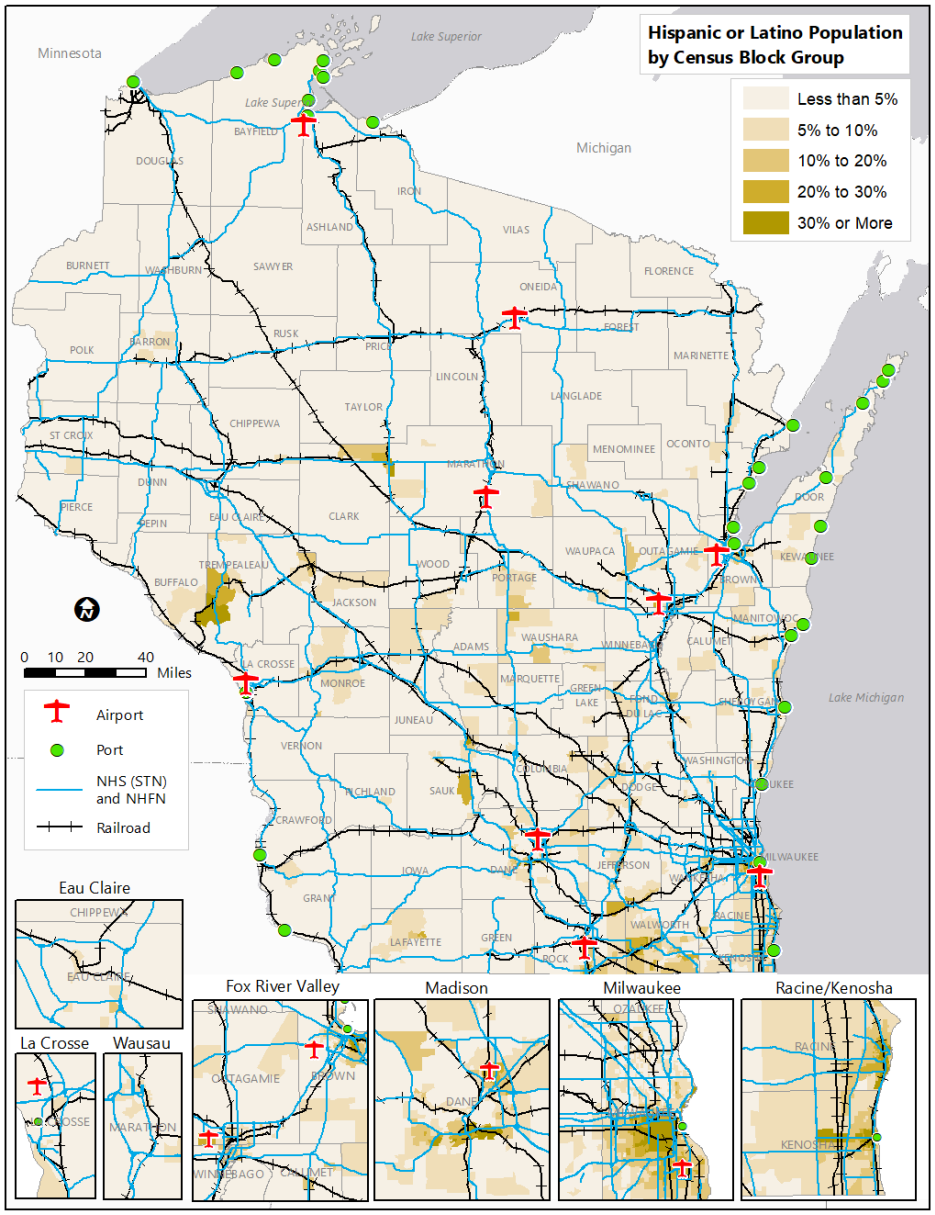


Figure C-3: Black Population

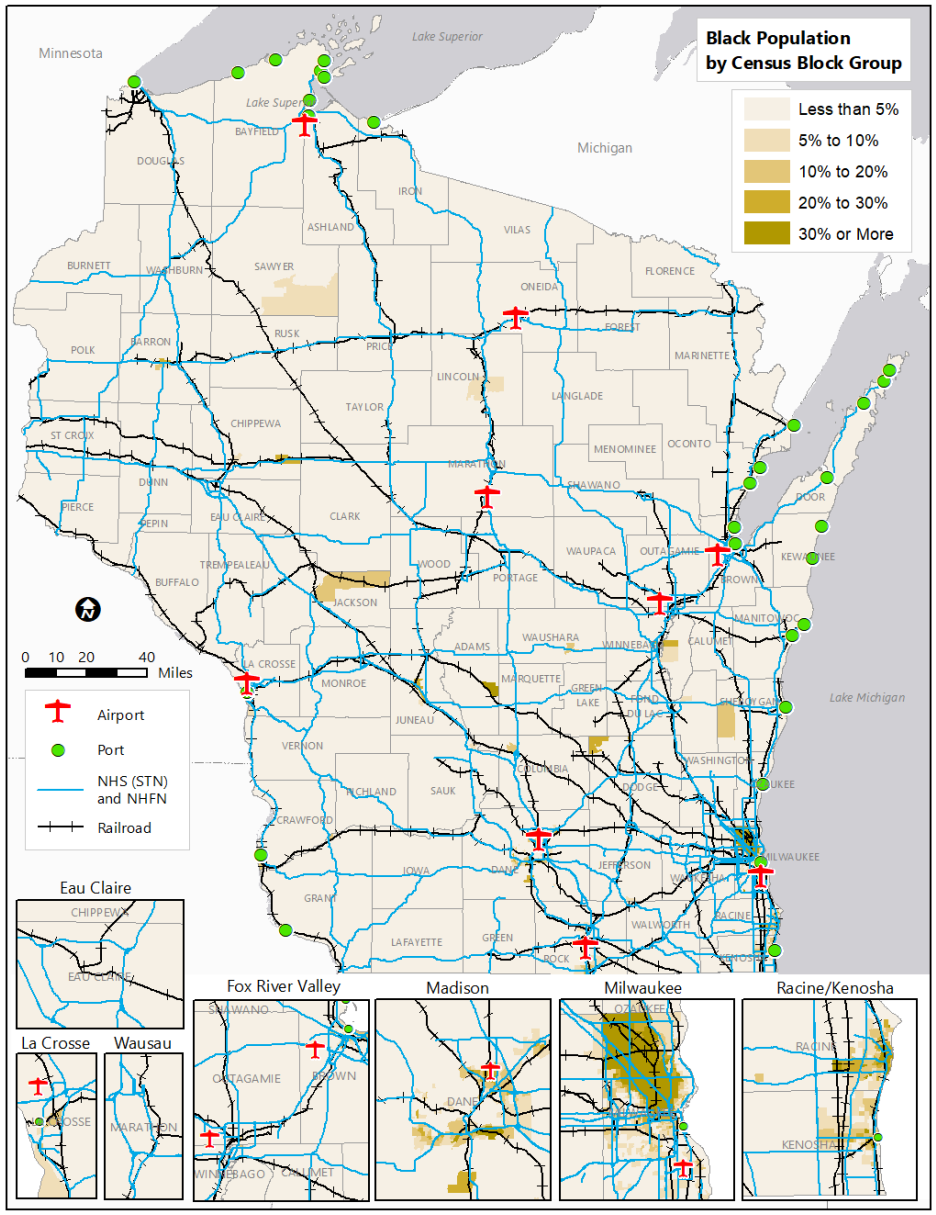


Figure C-4: American Indian or Alaska Native Population

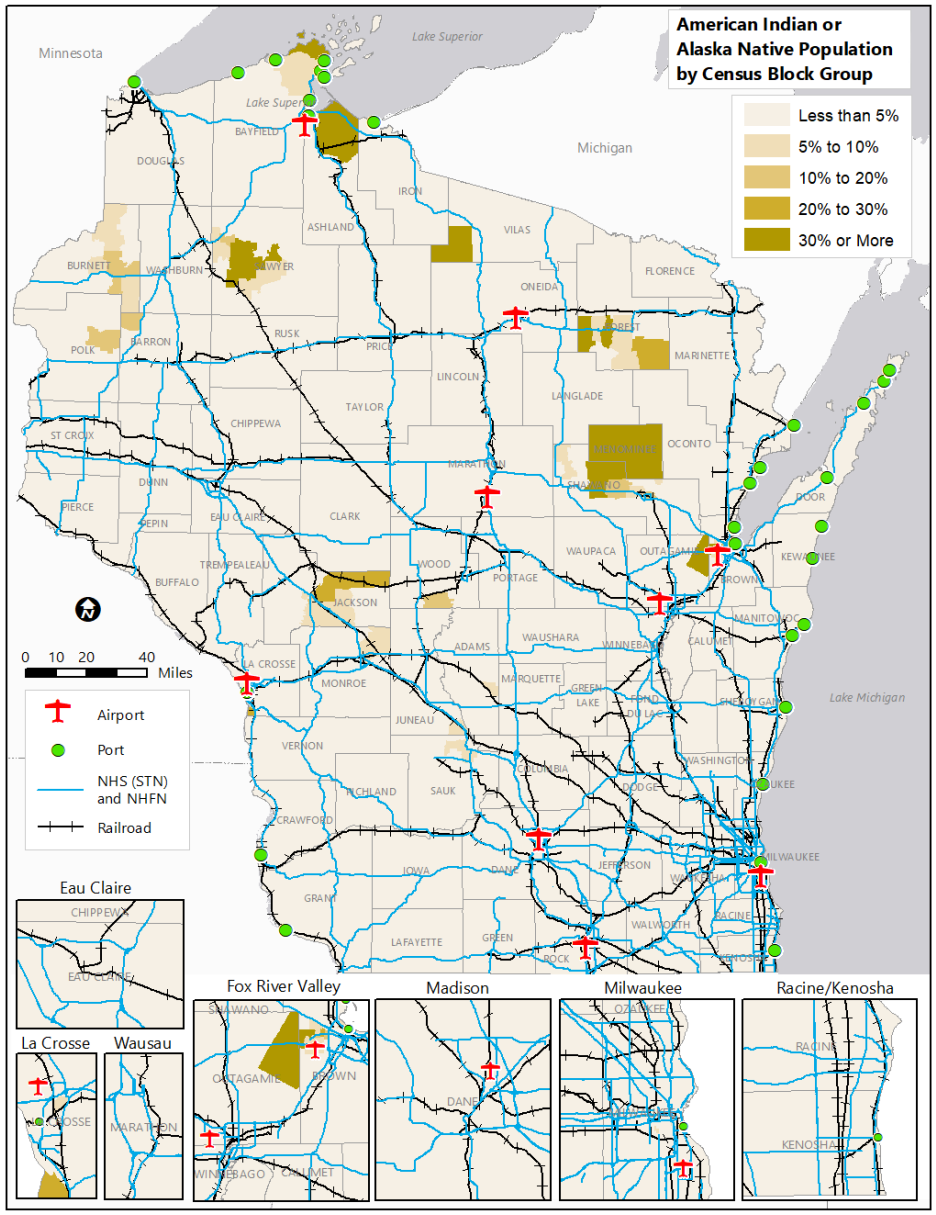


Figure C-5: Asian Population

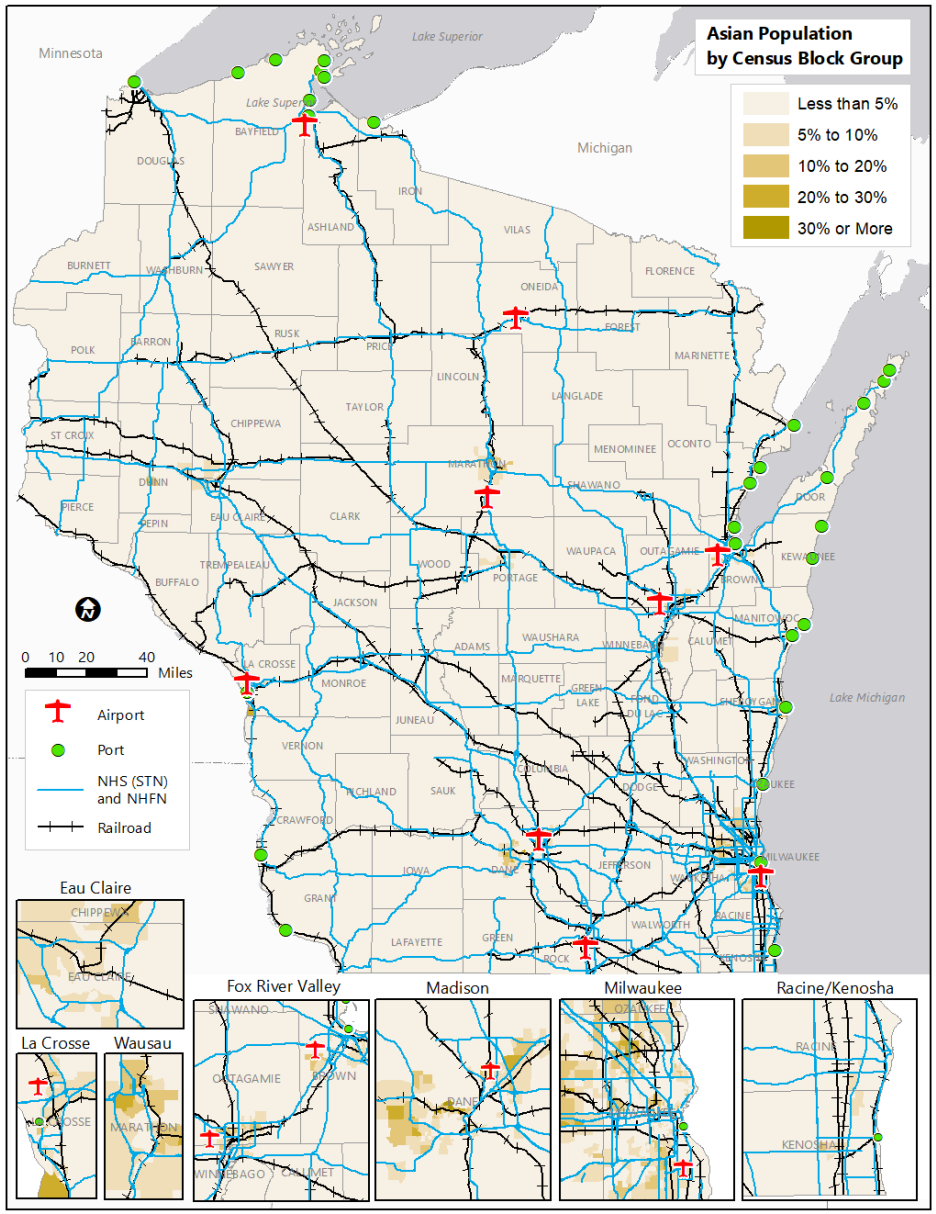


Figure C-6: Native Hawaiian or Other Pacific Island Population

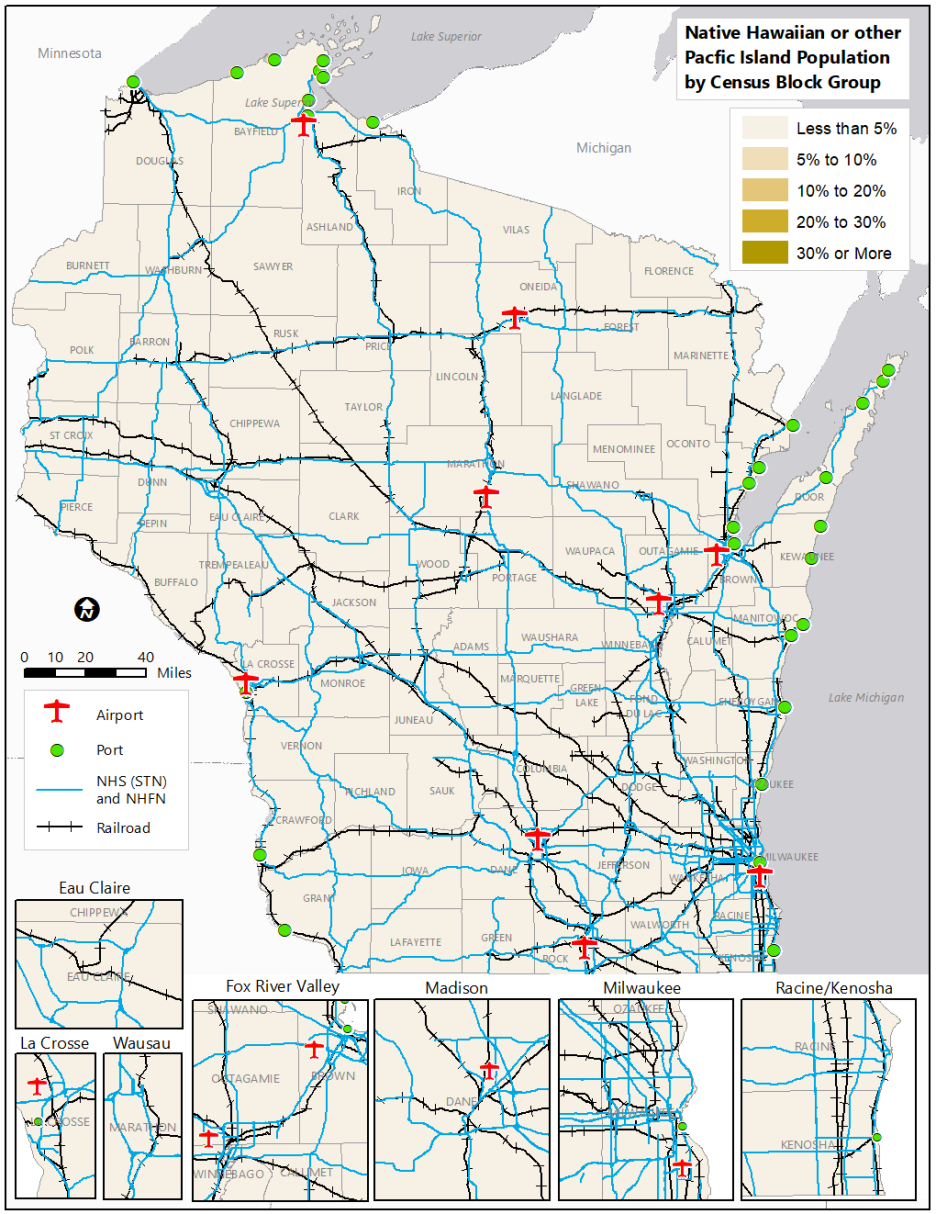


Figure C-7: Other Race Population

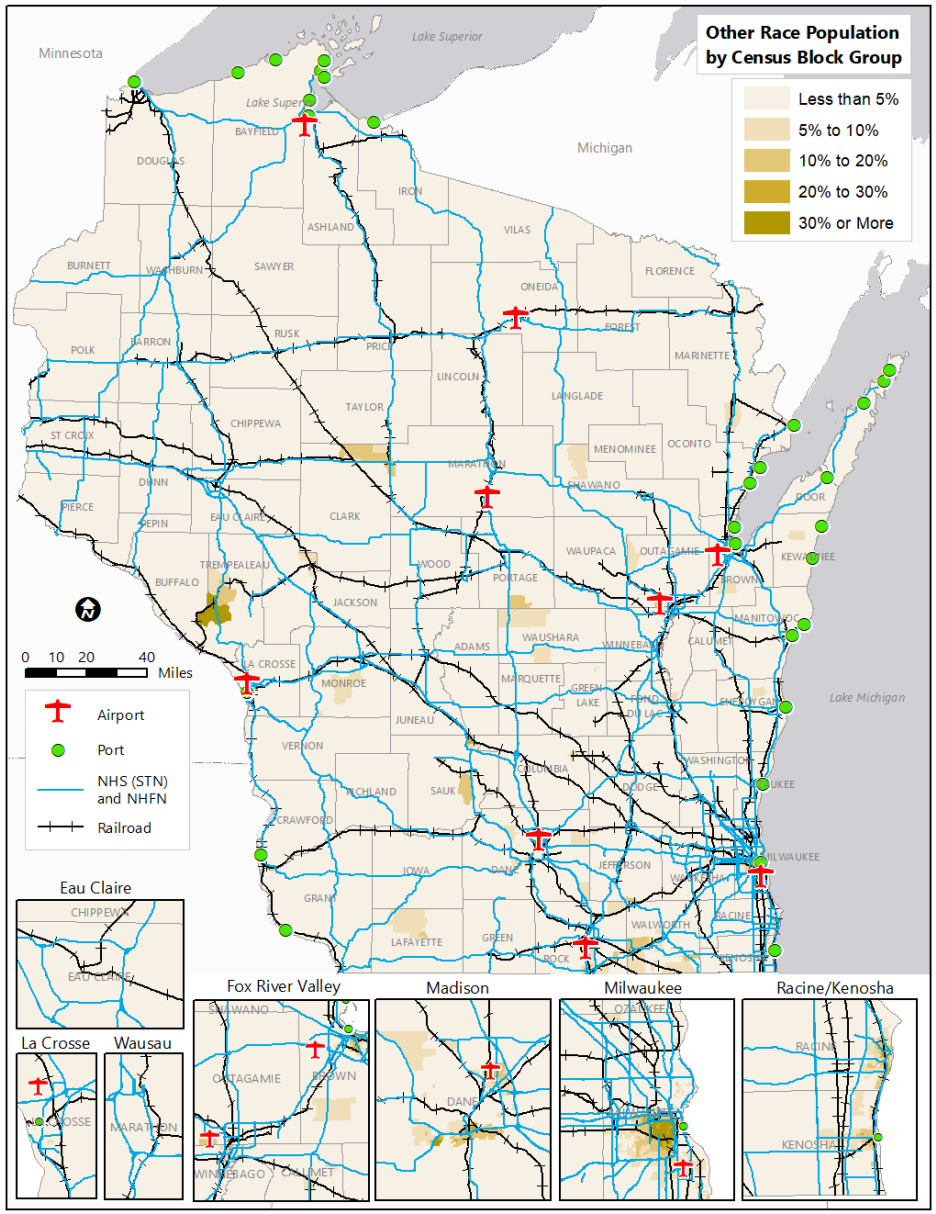


Figure C-8: Two or More Races Population

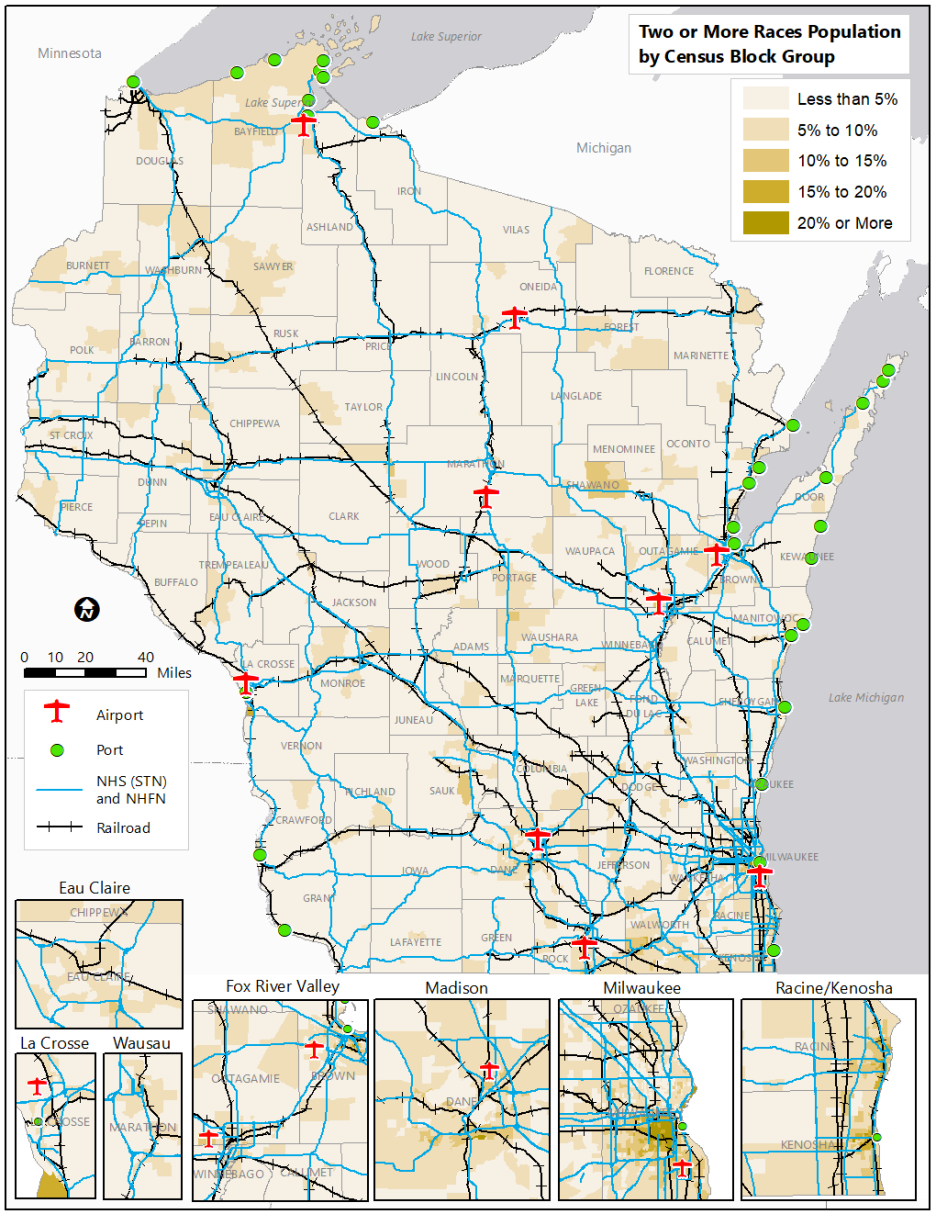


Figure C-9: Population in Poverty

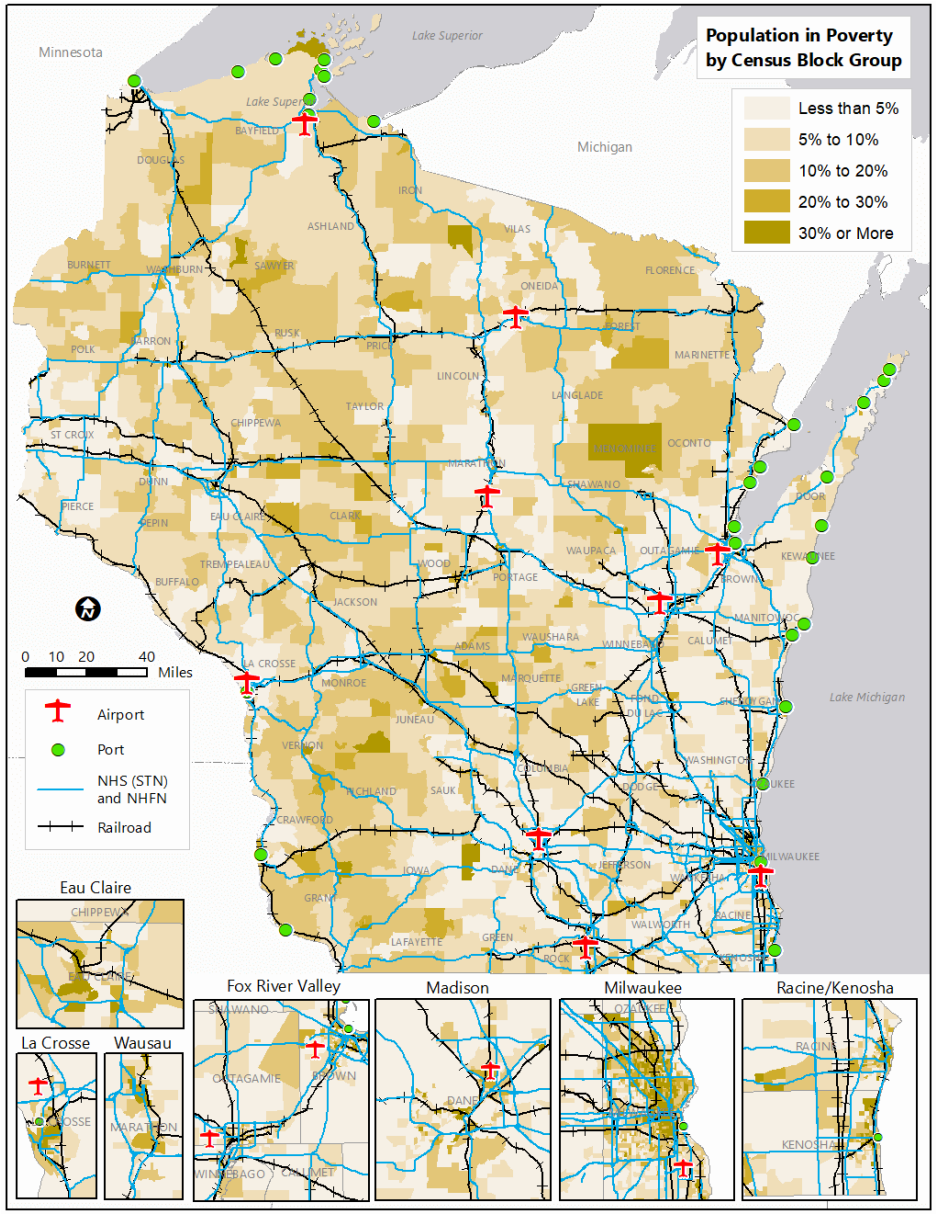


Figure C-10: Disabled Population

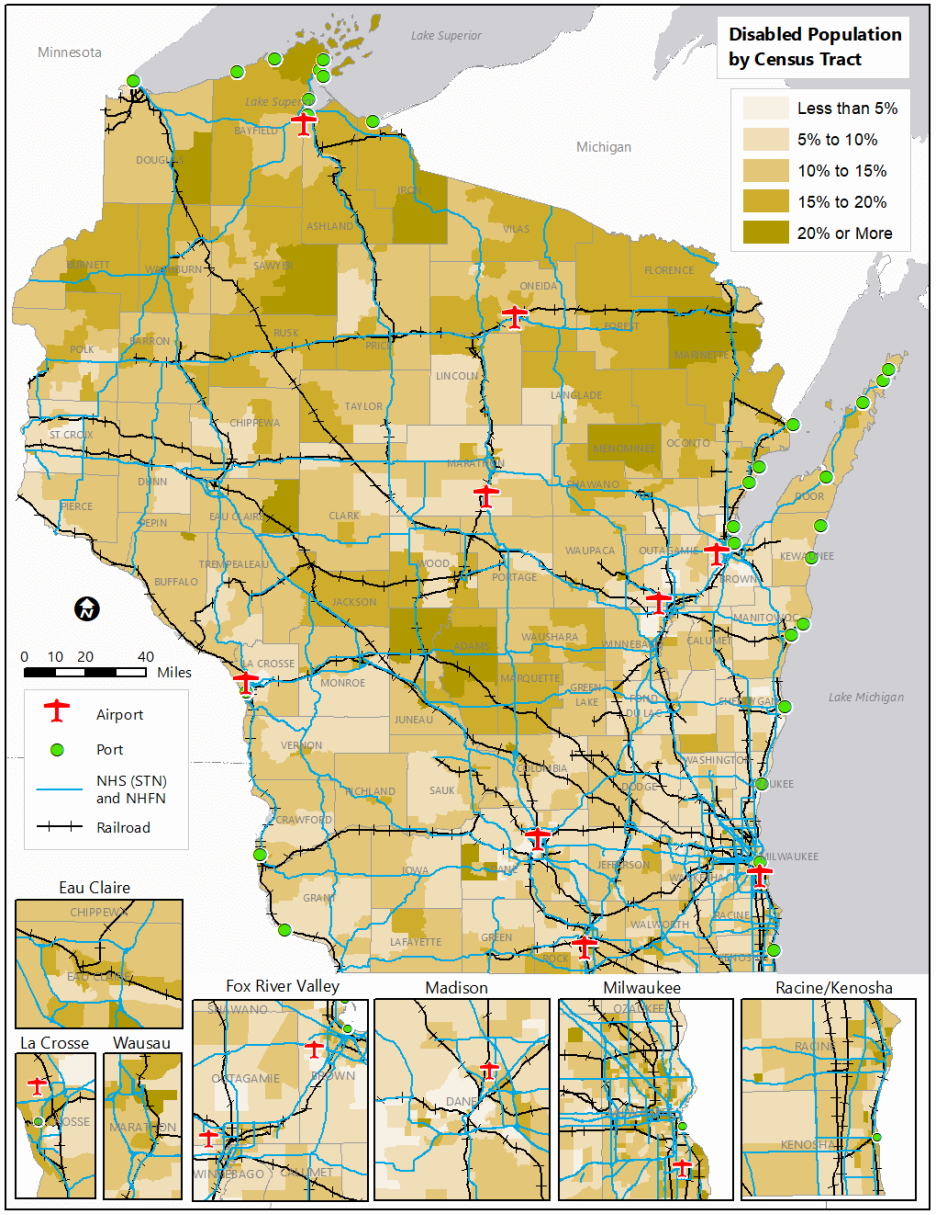


Figure C-11: Senior Population

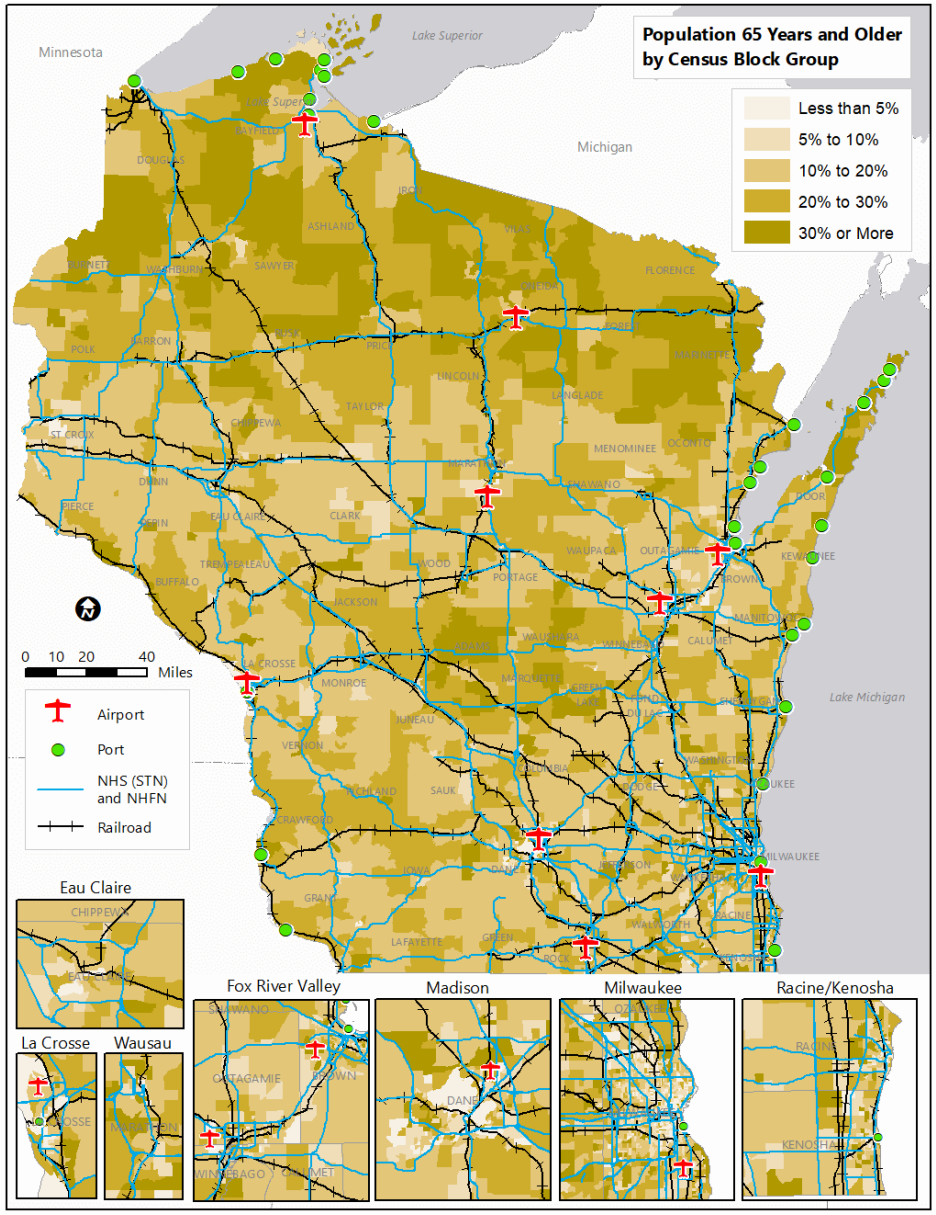


Figure C-12: Youth Population

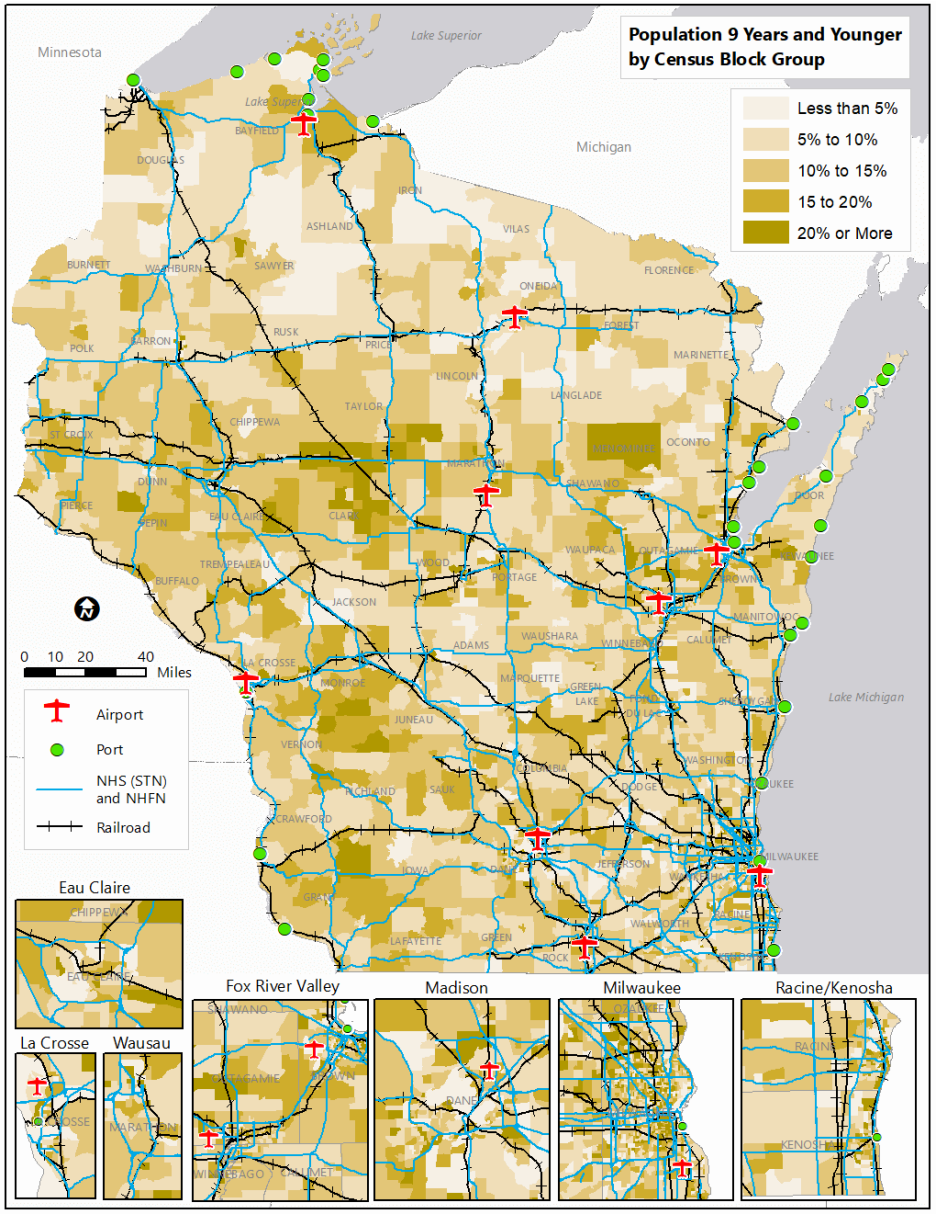
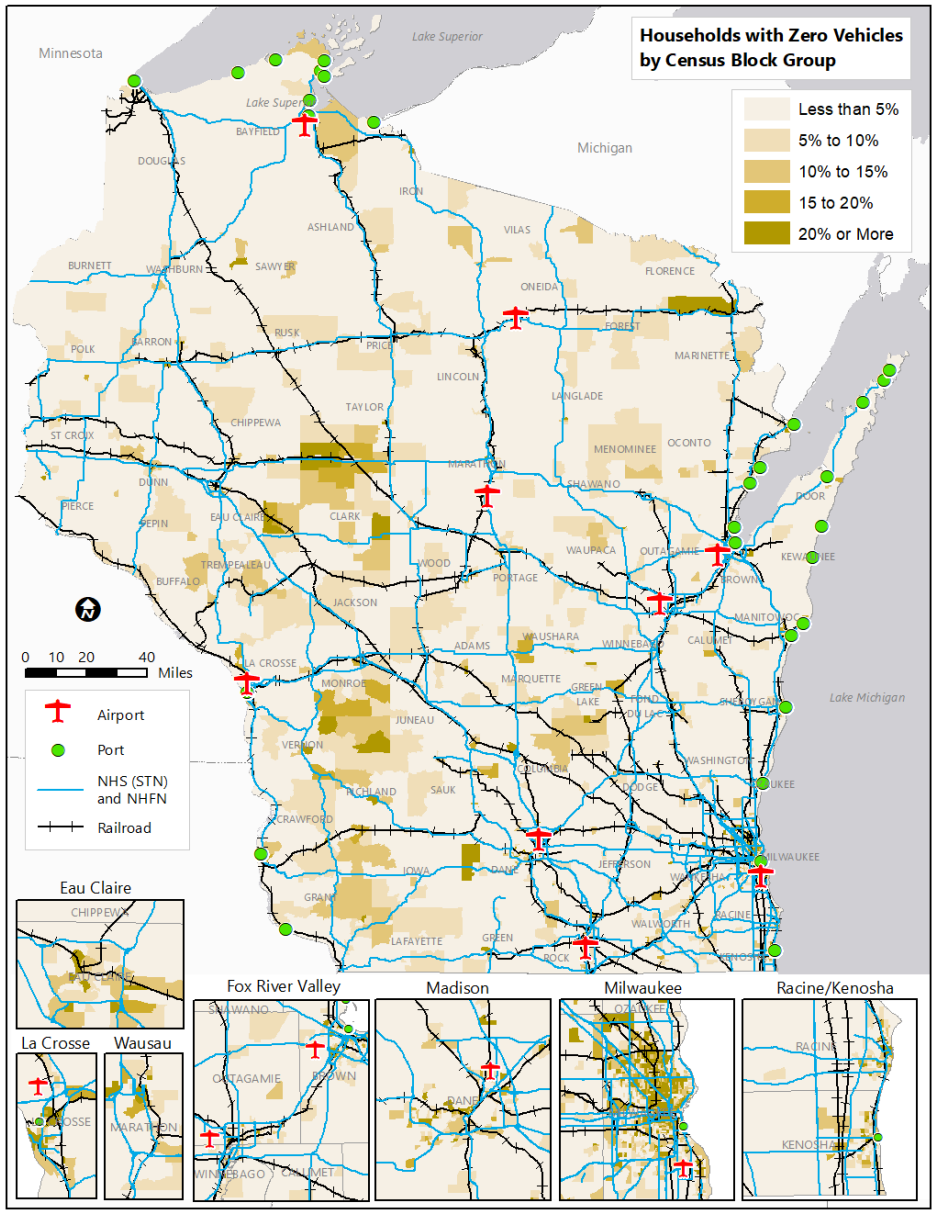


Figure C-13: Zero-Vehicle Households



Potential Mitigation Measures

While state-led mitigation efforts are conducted at the project level, rather than the long-range plan level, it should be noted that many mitigation measures are already being deployed by public and private sector operators. Such efforts will continue under the State Freight Plan. Some examples include:

- Noise walls or berms along major highways
- Rights-of-way that separate highways from surrounding land uses and residents
- Prohibitions on truck "engine braking" in residential areas
- Improved rail-highway grade crossing safety treatments that allow consideration of quiet zones in urbanized areas
- Newer diesel locomotives with reduced emissions
- Testing of battery-powered locomotives for yard switching operations
- Zoning that keeps commercial port activity separate from recreational and residential users
- Use of quieter jet engines for aviation
- Use of runway approaches away from population centers, especially for night operations
- Detectors to notify of liquid or gas leakage from pipelines
- Regular communication with local and private sector partners to discuss best practices and new regulations

Stakeholder Engagement

As discussed within Appendix B, WisDOT's engagement with the freight community and broader stakeholder groups has been regular and ongoing. WisDOT's Freight Advisory Committee (FAC) first met in 2015, with a broad membership from private sector organizations representing industry, agriculture, logistics, warehousing, economic development, and transportation. Non-voting members from other government agencies provide guidance from federal and state programmatic and regulatory perspectives. The FAC averages two meetings per year. A separate subcommittee of the FAC helped provide guidance on intermodal freight issues and opportunities, shaping the development of an intermodal policy.

As noted earlier, WisDOT follows or exceeds the requirements established for engagement with communities of special concern, including Tribes, people with disabilities, and racial minorities. WisDOT contacted representatives of these communities during the public comment period to ensure awareness of the Draft State Freight Plan. The department also has established, long-term engagement with women- and minority-owned businesses through its Disadvantaged Business Enterprise (DBE) program.

The information received from ongoing outreach will be used to inform projects as they arise from the State Freight Plan. The information may also be used to support amendments to the Freight Plan's prioritized projects, and will also help form a baseline of concerns in the scoping and preparation of the next iteration of the State Freight Plan.

ENDNOTES

1 Sources: US Census Bureau, 2020 Census, US Bureau of Economic Analysis

2 DeFazio, P. A. (2021, October 1). Text - H.R.3684 - 117th Congress (2021-2022): Infrastructure Investment and Jobs Act.

3 2018 Wisconsin State Freight Plan: Wisconsin Department of Transportation Wisconsin State Freight Plan. (n.d.). Wisconsindot.gov. Retrieved August 24, 2022

4 49 U.S. Code § 70101 - National multimodal freight policy. (n.d.). LII / Legal Information Institute.

5 23 U.S. Code § 167 - National highway freight program. (n.d.). LII / Legal Information Institute.

6 Connect 2050: Let's Connect Wisconsin. (n.d.).

7 2017 IHS Transearch Database.

8 MAPSS Performance Scorecard: Wisconsin Department of Transportation Forms. (n.d.).

9 WisDOT's Critical Corridor Submittal Package: Wisconsin Department of Transportation Forms. (n.d.).

10 WisDOT Long Truck Operators Map: Wisconsin Department of Transportation Forms. (n.d.).

11 Wisconsin State Patrol SWEF Map: Wisconsin Department of Transportation Forms. (n.d.).

12 FHWA Freight Management and Operations-2019 Facilities and Spaces, and WisDOT analysis of publicly-available truck parking directories (n.d.).

13 FHWA Truck Parking Demand Model: 3.0 Estimating Truck Parking Demand - Model Development For National Assessment of Commercial Vehicle Parking, March 2002 - FHWA-RD-01-159. (n.d.).

14 Wisconsin FY20 MCSAP Commercial Motor Vehicle Safety Plan: Wisconsin FY20 MCSAP Commercial Motor Vehicle Safety Plan (CVSP) | FMCSA. (n.d.).

15 Wisconsin Department of Transportation, Bureau of State Highway Programs.

16 Federal Railroad Administration, Highway-Rail Grade Crossing Safety and Trespass Prevention.

17 Ibid

18 WisDOT, Wisconsin Highway-Railway Grade Crossing Safety Action Plan, 2022.

19 U.S. Army Corps of Engineers, "Great Lakes Navigation System: Economic Strength." (2009)

20 Wisconsin Department of Transportation, Bureau of Transit, Local Roads, Railroads and Harbors.

21 Center for Ports and Waterways, A Modal Comparison of Domestic Freight Transportation Effects on the General Public: 2001-2019.

22 2017 IHS Transearch Database (WisDOT, Bureau of Aeronautics).

23 USDOT, Pipeline and Hazardous Materials Safety Administration

24 U.S. Department of Energy, Cybersecurity and Emergency Response, State of Wisconsin Energy Sector Risk Profile (March 2021).

25 Milwaukee Journal Sentinel, "Company won't replace only fuel pipeline to Green Bay." (April 21, 2017).

26 2017 IHS Transearch Database.

27 2017 IHS Transearch Database. (Air forecasts do not include possible new types of delivery, including the use of drones or automated delivery.)

28 US Bureau of Economic Analysis, "Annual GDP By State"

29 US Department of Commerce, International Trade Administration, "Wisconsin Exports, Jobs, and Foreign Investment.")

30 U.S. Census Bureau, "USA Trade Online"

31 Bureau of Economic Analysis: Real Personal Consumption Expenditures

32 DRCprod. (2020, September 29). North American Car and Truck Production. Detroit Regional Chamber.

33 Government Accountability Office: Freight Trains are Getting Longer, and Additional Information is Needed to Assess Their Impact

34 US Census Bureau: USA Trade Online.

35 Peterson Institute for International Economics: US-China Trade War Tariffs: An Up-to-date Chart

36 Bown, C. (2019, August 29). US-China Trade War Tariffs: An Up-to-Date Chart. PIIE.

37 Wisconsin Export Data | Export Data | What Does Wisconsin Export. (n.d.). WEDC.

38 Mason, J., & Lawder, D. (2022, August 11). Exclusive: U.S. rethinks steps on China tariffs in wake of Taiwan response. Reuters.

39 U.S. Census Bureau, (2022), "Quarterly Retail E-Commerce Sales: 1st Quarter 2022"

40 Alternative Fuel Fleet Vehicle Evaluations. (n.d.).

41 Alternative Fuels Data Center: Alternative Fuel Commercial Vehicle and Fueling Infrastructure Tax Credit. (n.d.).

42 Electrification Making Inroads in Commercial-Vehicle Sector. (2022, March 7). WardsAuto.

43 Press, A. (n.d.). Freight railroads are experimenting with alternative fuels to reduce greenhouse-gas emissions. MarketWatch.

44 Client corner: Alternative fuels roundup 2020. (n.d.). Marine & Offshore.

45 Alternative fuels: the options - DNV. (2018). DNV GL.

46 Ashley. (2022, July 20). Bill providing $755 million for safe truck parking advances in House. CDLLife.

47 Fisher, T. (2022, February 3). Nine Midwest states agree on uniform truck weight limits during disasters. Land Line.

48 The Great American Trucker Shortage Isn't Real. (n.d.). Time.

49 Is There Really A Truck Driver Shortage? (n.d.).

50 About CREATE - CREATE Program. (n.d.).

51 APH Cancels Agreement With Plaquemines Port, Begins Negotiating With "Existing Terminal." (2022, July 27). The Waterways Journal.

52 St. Louis Container on Barge Project Moves Forward. (2021, December 17). Maritime Logistics Professional.

53 Expanded maritime container capability now available at Duluth's Clure Public Marine Terminal. (n.d.). Port Authority.

54 Expanded maritime container capability now available at Duluth's Clure Public Marine Terminal. (n.d.). Port Authority.

55 S. M. |. (2022, July 5). $1B contract awarded to build new Soo Locks chamber over next 7 years. Mlive.

56 Anderson, K. (n.d.). Rockford International Airport outranks bigger hubs in cargo operations. WREX.

57 Kaeding, D. (2022, February 2). Hundreds participate in a hearing on Enbridge's proposed oil and gas pipeline project. Wisconsin Public Radio.

58 Wisconsin lawmaker to contact stakeholders in effort to replace closed Green Bay gas pipeline. (2022, March 16). WGBA.

59 Ocean carriers keeping containers close to port stymies on-dock rail. (n.d.).

60 How Technology Will Assist the Fragile Cold Chain Transportation Network. (2022, April 5). Food Logistics.

61 Cold Chain Packaging Market Size, Growth | Report, 2022-2029. (n.d.).

62 Top US Shippers: Southeast, Gulf ports add cold chain capacity. (n.d.).

63 Global Biopharmaceutical Third Party Logistics Market Report 2021: 3PL Played a Vital Role in the Fight against COVID-19 - Forecast to 2028. GlobeNewswire News Room. Research and Markets.

64 Environmental Protection Agency. (n.d.).

65 Facilities Development Manual - Wisconsin Department of Transportation. (n.d.).