



WISCONSIN FREIGHT ADVISORY COMMITTEE'S  
INTERMODAL SUBCOMMITTEE FINAL REPORT

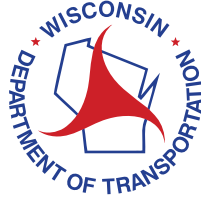
# Overview of Intermodal Freight in Wisconsin

EXECUTIVE SUMMARY | MARCH 2019



# WISCONSIN FREIGHT ADVISORY COMMITTEE

## Intermodal Subcommittee



**March 2019**

### **Dear Transportation Partner:**

We are pleased to announce that a partnership between the Wisconsin Department of Transportation (WisDOT), Wisconsin Manufacturers & Commerce (WMC), and numerous organizations in the public, private, and non-profit sectors has taken a significant step in implementing the Wisconsin State Freight Plan by completing a report that addresses intermodal shipping to and from Wisconsin.

The goal of the Freight Advisory Committee's Intermodal Subcommittee was to: *"Identify current and future opportunities and challenges to connect Wisconsin industries to world markets through the increased efficiency of containerized shipping."*

Freight movement is critical to Wisconsin's economic competitiveness at regional, national, and global scales. With consistent volume growth of 5–6 percent annually over two decades, intermodal shipping is an increasingly important part of the global movement of freight. Use of intermodal shipping can create efficiencies, reduce transportation costs, and be a key factor for sustained economic growth and development.

Completion of this report was a collaborative effort and the product of extensive coordination among members of the Intermodal Subcommittee, as well as outreach to stakeholder groups throughout the state. We want to personally thank all the individuals and organizations who provided recommendations and data for use within the report.

We are excited about the opportunities this report highlights, and hope that it contributes to fostering a thriving economy that supports business success and a high quality of life for all Wisconsin residents.

A handwritten signature in black ink, appearing to read 'David M. Simon'.

**David M. Simon**

Wisconsin Department of Transportation

A handwritten signature in black ink, appearing to read 'Corydon Fish'.

**Corydon Fish**

Wisconsin Manufacturers & Commerce



## EXECUTIVE SUMMARY

Throughout 2018, representatives from Wisconsin public sector agencies, universities, non-profit organizations, and private sector firms gathered to form the Wisconsin Freight Advisory Committee's Intermodal Subcommittee.

### PURPOSE OF THE REPORT

The goal of the Subcommittee was to:

***Identify current and future opportunities and challenges to connect Wisconsin industries to world markets through the increased efficiency of containerized shipping.***

### WHAT IS "INTERMODAL"?

The Intermodal Association of North America (IANA) defines "intermodal" as:

***"the movement of cargo in shipping containers or trailers by more than one mode of transportation."***

This definition focuses on the universal component of intermodal freight movement: the container itself. Intermodal freight is moved globally in reusable containers of standard sizes (usually 40' or 20' in length), and across North America in longer standardized containers (usually 53' in length). Global trade by container is rising between five and six percent per year, with more than half of the largest ports in Asia.

### INTRODUCTION TO CONTAINERIZED FREIGHT

North America's busiest container ports are at Los Angeles-Long Beach, New York-New Jersey, Savannah, Seattle-Tacoma, and Vancouver. North American intermodal traffic rose by almost five percent in 2017 after falling slightly in 2016; traffic has grown by 50 percent since 2009. Five of the seven Class I railroads (BNSF, Norfolk Southern [NS], Union Pacific [UP], CSX, Canadian National [CN]) each moved more than 2 million containers in 2017. Data from 2018 indicates container trade even higher than projections, nearing a seven percent growth rate. One trend for international trade is the transloading of international containers at gateway ports into domestic containers; this trend may limit access to international containers for Wisconsin's exporters. Many of the top exports for the U.S. are grown or manufactured in Wisconsin, and comprise a large portion of the state's economy.

### METRICS USED TO MEASURE INTERMODAL FREIGHT ACTIVITY

Data-driven decision-making informs freight transportation providers on opportunities to modify operational functions that can increase efficiency and lower operating costs. A number of direct measurements and indices are used to measure the performance of the intermodal freight sector. While some of these measurements are public, many others are private and/or proprietary. Efficiency can be tracked with train velocity and dwell time at terminals. Volume measurements can be by weight or by container, and can be aggregated by country or across North America.

Indices have been developed to track global container demand and availability, using spot prices as a proxy for demand. Most of these indicators have shown price increases in late 2017 and throughout 2018 for both international and domestic container moves, indicating limited container availability and/or higher demand. These transportation price increases can make delivered goods costs higher for Wisconsin's importers, and can make Wisconsin's exports less competitive on a global market.

## SERVICE AREAS FOR CONTAINERIZED INTERMODAL FREIGHT

The trade lane between Asia and North America has the greatest Twenty-Foot Equivalent (TEU) volumes of any global trade lanes; large volumes of containers also move between Asia and North Europe; between Asia and the Mediterranean; and between North Europe and North America. More than 57 percent of imports to the U.S. originate in Northeast Asia; another 11 percent of imports originate in Southeast Asia, while North Europe accounts for almost ten percent of imports. Nearly 23 million TEU of containerized freight was brought into the U.S. in 2017, an increase of almost six percent from 2016. By comparison, the volume of U.S. exports shipped by container in 2017 was just over half that of imports, at 12.5 million TEU. Northeast Asia was the destination for 39 percent of those exports, with North Europe (over 11 percent), South Asia (over 10 percent), and the Caribbean (over 8 percent) as other major destinations for exports.

## INTERMODAL EQUIPMENT INVENTORY

Millions of pieces of equipment are integral to the operation of intermodal freight transportation. Globally, almost 33 million TEU of container capacity exists for international transportation, handled by almost 5,200 maritime vessels. Most of these containers are owned and managed by the liner services. The movement of maritime containers inland limits their ocean service; as such, the liner services attempt to minimize these movements. This paradigm presents a challenge for Wisconsin exporters who desire access to export containers. Across North America, more than 250,000 domestic intermodal containers, 650,000 chassis, and 135,000 rail cars comprise the rail and drayage segments of intermodal freight. After a long period of decline, a renewed interest in the use of trailer-on-flat-car (TOFC) shipping appears to be related to shortages in capacity from the trucking sector and to growth in package delivery services.

## GROUND FACILITIES

Coastal port facilities are critical exchange points between maritime and ground transportation. The largest ports have the capability of unloading the largest vessels and move the containers off-site for further activity. The largest West Coast ports (Los Angeles-Long Beach, Seattle-Tacoma, Oakland, and Vancouver) and the largest East Coast ports (New York-New Jersey, Savannah, and Norfolk) remain attractive as destinations due to the degree of infrastructure invested in their operations as well as the established operations that bring containers through these ports quickly and efficiently. The economies of scale also make these ports as attractive or more attractive than ports with shorter distances to and from overseas locations.

## KEY ENTITIES INVOLVED IN MOVEMENT OF INTERMODAL FREIGHT

Intermodal freight transportation operations are conducted and managed by numerous private, for-profit businesses. Communication and collaboration are core roles for all the entities involved in intermodal transportation, both internationally and domestically. With the exception of drayage, ownership of transportation operations is generally concentrated. More than 60 percent of the market share of international maritime container movement is performed by six companies; almost all of the domestic intermodal freight rail transportation is provided by the seven Class I railroads. Truck drayage, by contrast, has more than 7,000 companies that offer truck movement of containers. IANA establishes cooperative agreements for the sector's operations. Global trade and transport is assisted by ocean transportation intermediaries; some may have equipment, while others are focused on ensuring the proper custody, transfers, permits, and payment terms for shipping are in place. Domestically, freight

brokers help shippers to find transportation capacity for non-routine circumstances, while third-party logistics firms work to identify long-term supply chain improvements, and also provide other value-added services. Federal, state, and local governments play substantial roles with taxation, regulation, facility planning and development, and ownership.

## RECENT HISTORY OF INTERMODAL OPERATIONS IN WISCONSIN

The intermodal operations that Wisconsin Central, Ltd. (WCL) conducted in Green Bay, Neenah, and Stevens Point during the 1990's and early 2000's are still viewed by many shippers as the standard of service to customers in northeastern Wisconsin. While Green Bay had ample traffic, Stevens Point was unable to build a sustainable cargo base, and Neenah suffered from proximity to options in Green Bay, Milwaukee, and Chicago. WCL faced challenges with Class I interchange in Chicago, delaying shipments for customers and removing many incentives to use intermodal. A lack of trade balance (with more outbound loads than inbound loads) and limited access to rail cars further reduced the efficiency and potential of WCL's intermodal operations. CN's purchase of WCL in 2001 placed greater focus on the long-distance international market, and contributed to that company's decision to close all of WCL's public terminals.

The Port of Milwaukee's arrangement with Canadian Pacific (CP) benefitted shippers by providing consistent international import/export access to both coasts, with trains from Montreal and Vancouver. Corporate restructuring that emphasized use of Chicago facilities, coupled with container imbalances and a decline in traffic at Milwaukee in 2011, were factors that contributed to the closing of the Milwaukee intermodal terminal in 2012. Both Milwaukee and Green Bay remain active, vital ports for bulk and breakbulk shipping.

## CURRENT INTERMODAL OPERATIONS SUPPORTING WISCONSIN

Wisconsin's two active intermodal freight terminals perform important functions for the regions they serve, albeit with limited volumes and capacity for expansion. Chippewa Falls has allowed one major Wisconsin business, Menards, the ability to import large volumes of merchandise at lower costs, due to the yard's proximity to the company's large distribution center. The empty containers have enabled the region's bulk agriculture operations to gain access to overseas markets, providing (until recently) a stable, predictable demand and price for their products. The Arcadia terminal operates in a similar manner, with Ashley Furniture as the beneficiary of the access to containerized freight imports, and bulk agriculture leading a small set of export commodities.

From a statewide perspective, these locations have limited potential. Both facilities are in the western part of the state, more than 100 miles each way from the largest concentrations of state manufacturing activity (in the eastern portion of the state). Ashley's private ownership and management of its Arcadia location excludes other importers, and establishes rules that limits interest from exporters. Arcadia is also several miles from any Interstate Highway access. Chippewa Falls' narrow footprint, limited equipment, and constrained storage capacity also dissuades additional importers and exporters.

For the businesses in eastern Wisconsin that rely on containerized shipping, drayage to and from the Chicago and Joliet yards has become the essential supply chain link, especially since the closing of CP's terminal at the Port of Milwaukee in 2012. Several container yards in eastern Wisconsin offer limited availability of international containers. The concentration of container yards in the Chicago and Joliet

areas challenges Wisconsin's shippers to find in-state availability of containers from preferred liner services and to gain sufficient container capacity for large-volume exporters.

The proximity of Wisconsin to the Chicago and Joliet area intermodal terminals presents both opportunities and challenges to shippers in southeastern Wisconsin. Chicago is the closest location where the six largest North American Class I railroads come together. Further, an estimated 46 percent of all intermodal containers cross through the Chicago area;<sup>1</sup> this concentration of activity provides a competitive market for shipping options. However, congestion has long been a problem with rail and truck movement into, through, and out of the Chicago region. Competition for drayage drivers willing to travel to and from Wisconsin (and the costs of such drayage, especially for shippers north of Milwaukee) minimizes or negates any cost advantages of rail quotes from the Chicago yards. The rapid development of Will County into a freight nexus adds more challenges to Wisconsin businesses, with at least one additional hour of drive time each way above the transit times to and from Chicago. The supportive warehousing infrastructure surrounding the major Chicago and Will County terminals also gives advantages to operations in those regions.

Operations in Minnesota, by comparison, are developing more gradually. BNSF has addressed its immediate capacity challenges by utilizing remote yards for container and trailer storage; CP's Shoreham Yard has yet to reach capacity. The Duluth terminal's attractiveness includes the value-added services of Duluth Cargo Connect through its Lake Superior Warehousing operations. While this location has the benefit of being adjacent to the main CN corridor between the Canadian West Coast ports at Vancouver and Prince Rupert and Chicago (with additional connectivity to New Orleans, Montreal, and Halifax), it is unclear what the maximum inbound demand for this locations will be, and whether that will provide sufficient container capacity for outbound traffic.

## LINER SERVICE AND DRAYAGE PRICING

Imported goods originating in Asia and destined for the U.S. Midwest pay a premium cost, as attested to by examining inbound rates across the Chicago area terminals. This reflects the desire of the liner services that own the containers to maximize their use in maritime transportation, and a challenge to cost-effective international container service for Wisconsin-based companies. By comparison, exports from the Chicago terminals are priced at a discount to encourage the expedited return of these containers to maritime service. This pricing is a direct factor in the use of containers for grain exports, and in the proliferation of grain transloading facilities at and near the major Chicago/Joliet yards.

Import rates for China to East Coast ports are becoming competitive with West Coast ports due to the new Panama Canal vessel capacity, coupled with increased port capacity and lower labor rates at East Coast ports. Railroads have also made investments to allow double-stacked containers to be delivered into mid-America. For example, one rate quote had a 40' container priced less for delivery from China to Chicago ramps via the East Coast than via the West Coast. Importers and exporters from Wisconsin may find new competitive pricing opportunities as the East Coast ports increase volumes and efficiencies.

Drayage charges to northern Wisconsin are at present almost twice the rates for moves to southern Wisconsin. These charges reduce the competitiveness of importers and exporters from that area of the

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<sup>1</sup> <https://www.theherald-news.com/2016/08/19/regional-planners-get-up-close-look-at-will-county-trucks/a5asrjn/>

state. Daytime drayage to and from Chicago also faces higher tolling rates, which can exceed \$60 per load each way.

## TRADE LANES FOR INTERMODAL SERVICE TO WISCONSIN

Shippers face an ever-changing marketplace for container pricing to and from Wisconsin. The dynamics of the liner company pricing changes and surcharges are made more variable through changes in drayage rates, chassis fees, and more. By comparison, the global and continental trade lanes are more enduring, with large volumes of containerized freight passing through the Chicago region. New trade lanes have developed through North American Free Trade Agreement (NAFTA)-supported commerce, with several north-south corridors emerging, along with a Great Lakes-St. Lawrence Seaway Corridor. The expanded Panama Canal compelled East Coast ports to make improvements to their capacities; the results of those improvements are now being seen with increased import containers moving from East Coast ports to Midwestern destinations.

## WISCONSIN MANUFACTURERS & COMMERCE BUSINESS SURVEY

As a key part of the Subcommittee's efforts, Wisconsin Manufacturers & Commerce (WMC) conducted a business survey throughout August and September 2018. The intent of the survey was to get an idea of:

- the volume of containers being moved into and out of Wisconsin
- the origin/destination of containers outside Wisconsin (identified as the North American coast of entry for imports/coast of departure for exports; or one of ten North American regions for continental movements)
- the Wisconsin ZIP code inbound containers were destined for (imports), or outbound containers originated from (exports)

Businesses were asked to provide data from 2017 and to project new shipping that would occur by 2023. This report refers to these data sets as "Current", "Future", and then a sum of the two sets, "Projected".

A significant marketing effort, led by WMC and the Wisconsin Department of Transportation, took place both in the lead up to the survey and throughout the period the survey was open. Regional and local economic development groups, local government officials, and numerous business forums were informed of the survey's existence and purpose. Both the Intermodal Subcommittee and Wisconsin Freight Advisory Committee were asked to utilize their organizations' contact lists to spread awareness as well.

Over 120 companies responded to the survey. Responses allowed for heat maps to be created, reflecting the data for the "Current", "Future", and "Projected" timeframes. The responses were also analyzed to determine the balance of containers moving to/from Wisconsin from/to North American coasts or regions.

The survey responses indicated a large volumes of international containers arrive at Wisconsin destinations via the Canadian West Coast, with the greatest concentrations in Southeastern Wisconsin (more than 71,000 current TEU imports) and Southwestern Wisconsin (almost 23,000 TEU imports). Almost 7,000 TEU destined for Southeastern Wisconsin arrive via the Canadian East Coast. Based on

survey results, however, international exports on these lanes are miniscule. The reasons why containers are not reloaded in Wisconsin for matchback are unknown, but may include contracts with the container owners and/or drayage companies to return the emptied containers to the Chicago yards immediately, rather than allow them to be directly reused for Wisconsin-originating exports. Another potential reason is the existing contracts for Wisconsin's exporters favor use of U.S. rather than Canadian ports. Based on the survey results, most exports from the state originate in Northeastern Wisconsin or Southeastern Wisconsin, and are exported via the U.S. East Coast or the U.S. West Coast.

For domestic containers (53'), the survey results showed the volume of outbound shipments far outnumbered the inbound shipments in each of the four quadrants used in the survey. Outbound volumes are relatively strong for Northeastern Wisconsin shippers sending products to the U.S. Southwest and U.S. Southeast. For Southeastern Wisconsin shippers, the top destinations are the U.S. Northwest and U.S. Northeast. More than 13,000 containers outbound from Southeastern Wisconsin did not have a destination identified by the survey participants. Graphics 1 and 2 show the results of the survey for inbound and outbound international and domestic container volumes. These two graphics are located at the end of this Executive Summary.



## DEVELOPMENTS IN INTERMODAL OPERATIONS THAT COULD AFFECT WISCONSIN

The containerized shipping sector is in a constant state of evolution and change. Numerous operators and factors have influenced the sector's development, and will continue to define the intermodal marketplace. Additional factors are emerging that may also shape the future form and availability of intermodal operations in Wisconsin.

This section summarizes the potential developments, by operational area, that are most likely to shape the future form and function of intermodal freight transportation in Wisconsin.

### INTERNATIONAL MARITIME

Wisconsin's importers and exporters have multiple liner companies to choose for their needs. Alliances have helped smooth out operations by allowing allied liner companies to position containers on each other's vessels, shifting spikes to vessels with available capacity. Liner services may continue to merge and consolidate operations in ways that affect the ability of Wisconsin importers and exporters to have shipments performed in a timely and cost-effective means. After several years of low rates, shippers are facing higher rates, especially for spot shipments. Wisconsin's exporters currently benefit from reduced costs for containerized export to Asian ports, but that advantage could change with changes in trade policies and/or consumer demand.

The International Maritime Organization's rule to reduce sulfur emissions, which takes effect in 2020, will require vessel operators to use more expensive fuels or install pollution-capturing systems. These efforts are expected to add up to \$15 billion or more per year in operational costs to liner service companies. Many companies are already passing along these costs to shippers through surcharges.

The 2016 opening of the expanded Panama Canal has already altered trade flows to North America, as East Coast and Gulf Coast ports receive more large vessels and containers from Asia. This shift could provide Wisconsin's importers and exporters additional cost-competitive options for liner services and rail transportation. The Chinese Belt and Road Initiative also has the potential to reshape supply chains on a global scale. New product sources and trade lanes are being established as restrictions on exports of recyclables and changes to tariffs and trade agreements take effect.

Vessel security and safety at sea is becoming a greater concern, as threats from improperly-labeled cargoes increases risks.

Average and maximum vessel sizes are becoming larger, encouraged in part by the expansion of the Panama Canal. The expanded Canal opened in 2016 and now allows limited passage of vessels with capacities of more than 14,000 TEU. Liner services are ordering more capacity than they are scrapping, slowly increasing overall maritime capacity at rates that match or slightly trail the growth in demand. Maritime containers are made available by liner services or by leasing companies. Container availability is limited by the terms of use and return that the container owner establishes. For Wisconsin shippers, terms of use often require inefficient drayage of empty containers to and from the Chicago area's terminals and container yards.

### DOMESTIC MARITIME

The U.S. DOT's Maritime Administration has established the America's Marine Highway Program to encourage the development of freight services and facilities along several designated waterborne

corridors. Wisconsin sits between two of those corridors: M-35 (along the Mississippi River) and M-90 (through the Great Lakes, including the Ports of Superior, Milwaukee, and Green Bay). Short-sea shipping of containers, along the western shore of Lake Michigan and across the lake between Milwaukee and Muskegon, has been proposed and/or studied.

One current container operation exists on the Great Lakes, between Cleveland, Ohio and Antwerp, Belgium. One container service also exists on the Mississippi River, connecting Memphis, Baton Rouge, and New Orleans. At least one proposal exists for container vessel services on the Mississippi River to reach St. Louis; lock size and winter season closure may limit the potential for services further north.

## COASTAL PORTS

North American coastal ports in both Canada and the United States have witnessed investments in the billions of dollars over the past decade. The West Coast ports have made investments to address landside capacity and throughput, especially with vessel-to-rail connections. Los Angeles-Long Beach continues to move most of its containers inland through drayage, but proposals are being evaluated for direct rail container movements between the ports and the Inland Empire region. East Coast ports have seen vessel sizes and terminal volumes increase with the opening of the expanded Panama Canal. Dredging operations have been consistently implemented at these ports to allow larger vessels. The Port Authority of New York and New Jersey conducted a \$1.6 billion project to raise the Bayonne Bridge roadway by 65 feet, providing vessel clearance of 215 feet. This has increased the maximum vessel capacities at the port's terminals from 9,500 TEU to more than 14,000 TEU. To manage limited on-site storage capacity, coastal ports have implemented several strategies, including transloading of maritime containers to domestic containers and use of technology for coordinating container drayage.

## INLAND PORTS

Inland ports typically operate as "relief valves" for capacity-constrained coastal ports. Some facilities are directly tied to coastal ports, as in South Carolina and Georgia. This connection allows the coastal ports to move containers by rail to locations closer to consumer markets, thereby reducing drayage mileage and cost. Most inland ports have robust warehousing and distribution operations adjacent to the port facility, and routinely offer dedicated services to primary customers.

In Chicago and other large cities, newer warehouses are being built near intermodal yards to serve the emerging parcel delivery and same-day delivery "Amazon" model. Higher-value imports are routinely transloaded at coastal ports into domestic containers, where capacity is available.

Transloading of agricultural products into containers for export is a frequent operation for inland ports in the Midwest, but depends on the availability of sufficient maritime containers for export. Local roads are critical to first- and last-mile drayage movements at inland ports; major projects have been built to address congestion and access.

Technology that supports improved container visibility and coordination is being instituted across the intermodal sector, but large volumes of containers are returned empty to overseas destinations.

## RAILROADS

Rail system management has become an acute concern at times over the past decade, often in relation to winter weather. Federal rules have been established to monitor several operational metrics for the

Class I companies and the Chicago interchange. Wisconsin's rail service is directly affected by disruptions to Chicago's operations.

Intermodal freight volumes have grown due to mode shifts from trucks and marketplace demand. At points in 2018, railroads lacked the capacity to accept additional intermodal container loads. Mega-projects such as the Chicago Region Environmental and Transportation Efficiency (CREATE) program are addressing capacity constraints and inefficiencies while improving safety and allowing for volumes to grow in the future.

Corporate restructuring will continue to impact intermodal operations, including the availability of service, the location of open terminals, and the speed and cost of deliveries. The closing of the intermodal terminal at the Port of Milwaukee in 2012 followed a corporate restructuring by Canadian Pacific.

Class I railroads routinely collaborate with each other on operational strategies of mutual benefit. The Class Is also have partnered with some short lines to extend intermodal service to several locations in the Midwest. There may be opportunities to apply some of the successful strategies from these operations to opportunities in Wisconsin. Elsewhere in surrounding states, potential new intermodal terminals have been proposed, but face financial and customer demand challenges.

Temperature-controlled intermodal container service is a growing sector in North America, with promise for Wisconsin's food industry exporters.

## TRUCKING AND DRAYAGE

The trucking sector is challenged by growing freight demand and shortages of qualified drivers. Delays at intermodal terminals for drayage drivers are often tied to chassis availability challenges. Chassis ownership and management remains a problem, as in cases where the liner services dictate the equipment to use for drayage.

Electronic logging devices (ELDs) have led to some productivity losses; one-day drives have been reduced to less than 450 miles. For Wisconsin, this places many parts of the state outside of a one-day round-trip to the Chicago and Joliet yards, especially when delays are factored into hours-of-service. Compliance with the hours-of-service rules have improved between 2017 and 2018.

The Federal Highway Administration (FHWA) has established guidance for bridge projects over roads to provide sufficient vertical clearance for double-stack intermodal trains; this guidance is echoed in WisDOT's Facilities Development Manual. The federal government has also designated several corridors as Intermodal Connectors, and has encouraged states to establish critical urban and rural freight corridors.

## GLOBAL, REGIONAL, AND LOCAL FACTORS

Global demand drives trade, and recent changes in trade policies have disrupted supply chains. China discontinued accepting scrap imports in 2018; paper and plastics for recycling have been diverted to other Southeast Asian nations. Some of those countries have now put in place their own limitations. Additional container repositioning is required by these changes.

With the exception of a setback during the Great Recession, global trade grew steadily since the 1980's, facilitated by favorable trade agreements. Wisconsin's primary trading partners are Canada and Mexico.

There is limited movement of containerized freight for Wisconsin exports to these countries, at least as is currently measured. About 29 percent of exports to China are containerized.

Of all Wisconsin's exported goods, about 17.4 percent by value are containerized. Machinery/electrical, foodstuffs, wood and lumber, animals and animal products, plastic and rubber, and metals are among the most traded containerized exports by value.

Trade disputes with China and subsequent tariffs have reduced the total U.S. soybean exports to China by 45 percent in 2018. The Chinese market accounted for \$12 billion in sales in 2017.

## TECHNOLOGY

E-tailing and consumer demand have intertwined to remake the consumer market. Technology is also being applied to tracking and monitoring containers, both in-transit and within intermodal terminals. Other services integrate the entire intermodal freight operation, including drayage, permits, and financial responsibility.

Freight matching services are still in their infancy, but have promise to improve efficiency through better load-matching for containers. Although pilot operations have been conducted, a timeline for autonomous freight operations is still speculative.

Safety and security are intermodal transportation concerns, as witnessed by crippling cyberattacks of liner services Maersk and COSCO. Technology has improved efficiency for cross-border inspections and approvals of containerized freight at Canadian-U.S. gateway rail crossings.

## POTENTIAL OPTIONS FOR IMPROVING INTERMODAL DEVELOPMENT IN WISCONSIN

The Intermodal Subcommittee discussed numerous ways that Wisconsin could be made more attractive for intermodal facility development and operations. Those concepts included the leadership roles for government (both state and local) and for the private sector. Many suggestions emphasized the need for collaboration between all entities to identify opportunities and create solutions to the current challenges for the state's intermodal users.

While none of the concepts should be regarded as commitments by a specific government or private sector entity, some of the suggested ideas included:

- State government could provide assistance on federal grant applications
- State government could serve as a repository for data, and promote data-sharing
- State government could partner with local governments and the private sector on marketing and coordination
- Local governments could target improvements to first-/last-mile road connections at potential intermodal facility locations
- Local governments could designate Tax Increment Financing districts to incentivize development
- Local governments could coordinate regionally, especially for grant applications
- The private sector could provide due diligence of intermodal business demand and coordinate findings with the public sector
- The private sector could clarify and confirm site selection needs for an intermodal facility

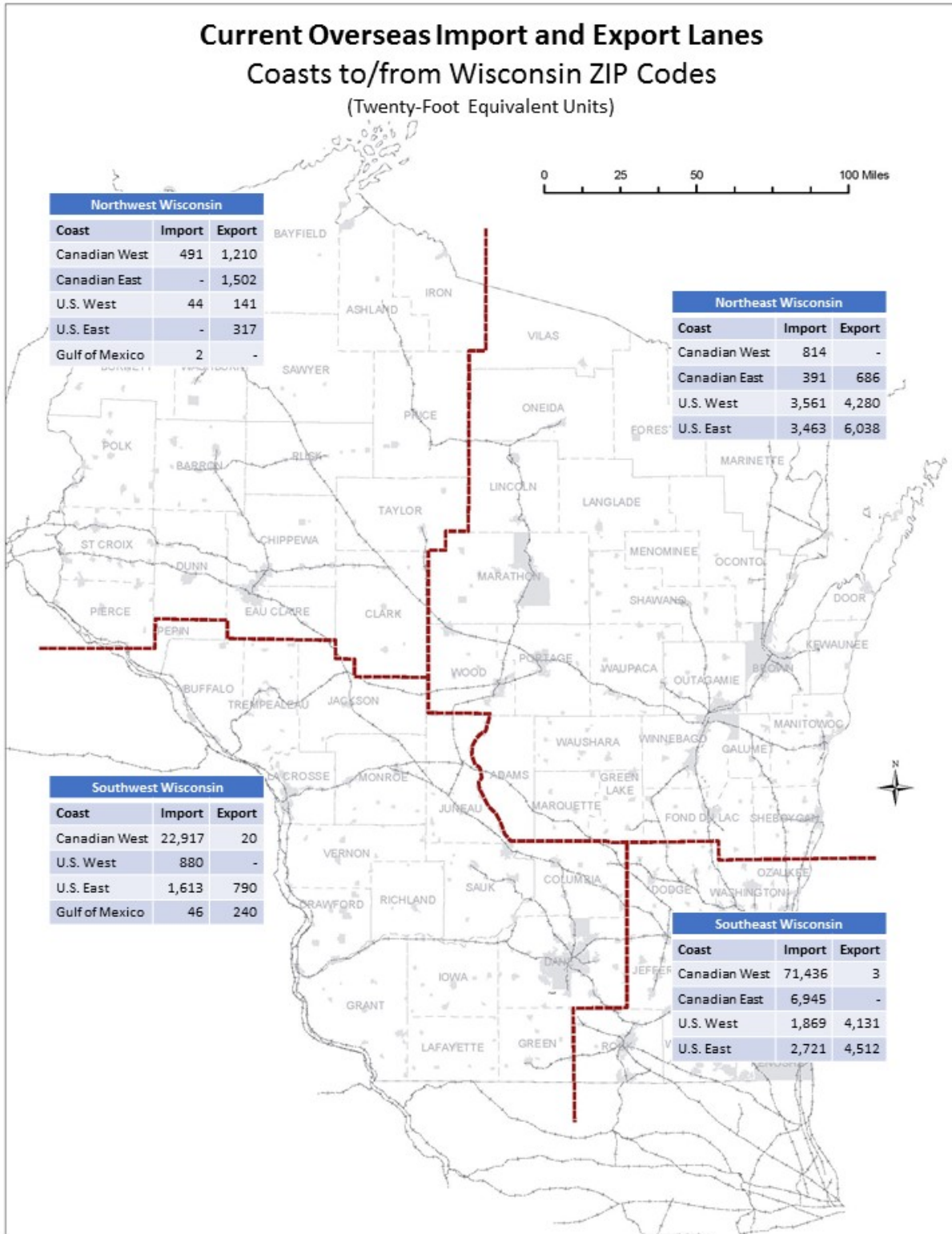


- The private sector could continue quantifying business demand from private sector importers and exporters

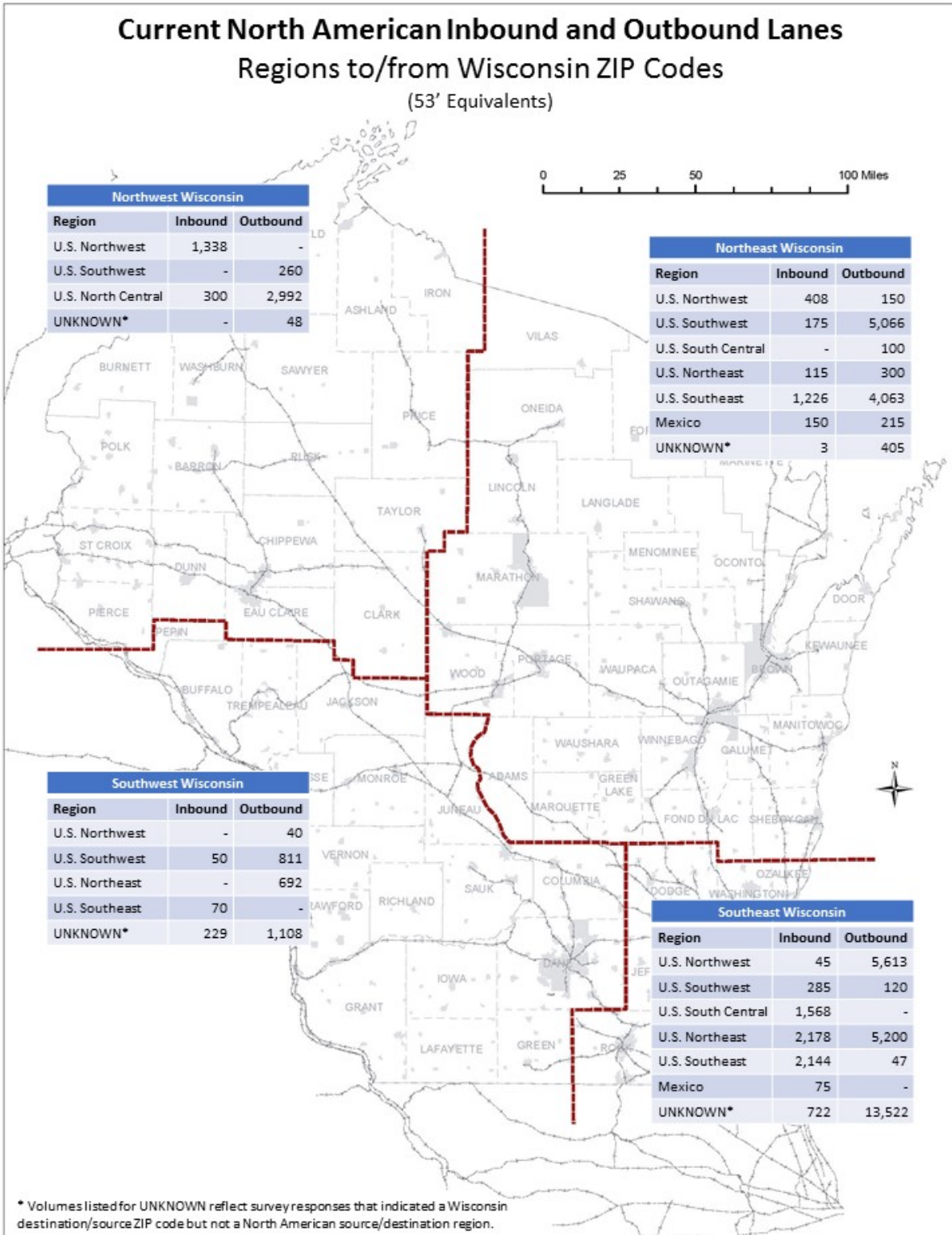
## CONCLUSION

This report presents a realistic appraisal of the current status of intermodal shipping in Wisconsin, and of future opportunities and challenges for Wisconsin-based shippers. The volume of containerized shipments to and from Wisconsin indicates a strong and sustained demand by the state's businesses for use of intermodal freight. Many businesses seek enhanced opportunities to access the efficiencies inherent in containerized freight shipping, including decreased shipping costs, greater predictability of delivery times, and reduced roadway congestion. Looking forward, Wisconsin's public and private sector partners will need to overcome existing geographic and market factors before containerized freight services will be improved, especially in the eastern part of the state. Among the critical factors that intermodal service providers will need to expand options are growth in business demand for containerized freight service, coupled with long-term commitments by shippers. Railroads, regional and state economic development agencies, the business community, local governments, maritime liner services, trucking companies, real estate development companies, and others will need to collaborate to optimize the potential for any new facility development.

Graphic 1: Import/Export Lanes for Overseas International Containers, in TEU by Quadrant (Source: WMC Survey).



**Graphic 2: Inbound/Outbound Lanes for Domestic/North American Containers, in 53' Equivalents by Quadrant**  
 (Source: WMC Survey).



# Member Organizations

