
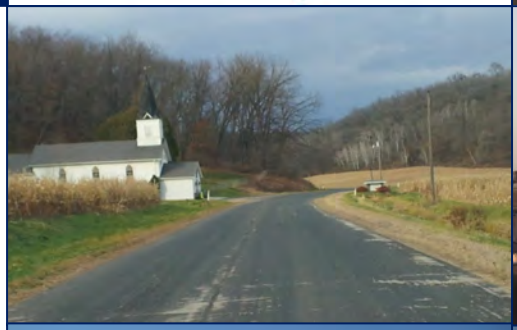


MAASTO Regional Freight Alignment: Assets for Freight Movement and Economic Development

MID-AMERICA FREIGHT COALITION

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About the Mid-America Freight Coalition (MAFC)

The industries and farms of the Mid-America region can compete in the marketplace only if their products can move reliably, safely and at reasonable cost to market.

State Departments of Transportation play an important role in providing the infrastructure that facilitates movement of the growing amount of freight. The Mid-America Freight Coalition was created to support the ten states of the Mid America Association of State Transportation Officials (MAASTO) region in their freight planning, freight research needs and in support of regional multi-state collaboration.

www.midamericafreight.org

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Abstract: This project summarizes the freight assets, freight planning processes, and multistate collaboration activities in freight planning, policy and operations areas for the ten states of the Mid America Association of State Transportation Officials. The report identifies best practices in freight planning, freight advisory committees, freight data and multimodal freight programs. The report also provides a review and focus on multistate collaboration as a means to accelerate innovation, provide a regional, harmonized freight system, and increase freight efficiencies and safety.			
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ACRONYMS

AAR	Association of American Railroads
AASHTO	American Association of State Highway and Transportation Officials
AGLPA	American Great Lakes Ports Association
ATRI	American Transportation Research Institute
BTS	Bureau of Transportation Statistics
CAV	Connected and Autonomous Vehicles
CFS	Commodity Flow Survey
DOT	U.S. Department of Transportation
FAC	Freight Advisory Committee
FAF	Freight Analysis Framework
FAHP	Federal-Aid Highway Program
FAST Act	Fixing America's Surface Transportation Act
FHWA	Federal Highway Administration
FMCSA	Federal Motor Carrier Safety Administration
GDP	Gross Domestic Product
GLNS	Great Lakes Navigation System
GLRTOC	Great Lakes Regional Transportation Operations Coalition
ICE	Infrastructure Condition Evaluation
ISTEA	Intermodal Surface Transportation Efficiency Act of 1991
ITS	Intelligent Transportation Systems
ITTS	Institute for Trade and Transportation Studies
IWS	Inland Waterways System
LATTS	Latin America Trade and Transportation Study
LMIGA	Lake Michigan Interstate Gateway Alliance
LRTP	Long Range Transportation Plan
LSC	Logistics and Supply Chain Collaboration
MAASTO	Mid America Association of State Transportation Officials
MAFC	Mid-America Freight Coalition
MAP-21	Moving Ahead for Progress in the 21st Century Act

MCC	Motor Carriers Committee
MPO	Metropolitan Planning Organizations
MRS	Mississippi River System
NCHRP	National Cooperative Highway Research Program
NFSP	National Freight Strategic Plan
NHFN	National Highway Freight Network
NHFP	National Highway Freight Program
NHS	National Highway System
NPMRDS	National Performance Management Research Data Set
OSOW	Oversize and Overweight
PHFS	Primary Highway Freight System
SAFETEA-LU	Safe, Accountable, Flexible, Efficiency Transportation Equity Act: A Legacy for Users
SCOHT	Standing Committee on Highway Transport
STB	Surface Transportation Board
STIC	Strategic Transportation Issues Committee
TEA-21	Transportation Equity Act for the 21st Century
TETC	The Eastern Transportation Coalition
TIGER	Transportation Investment Generating Economic Recovery
TPIMS	Truck Parking Information and Management System
TREDIS	Transportation Economic Development Impact System
TSMO	Transportation System Management and Operation
UMRBA	Upper Mississippi River Basin Association
USACE	U.S. Army Corps of Engineers
USCOE	U.S. Army Corporation of Engineers
VIUS	Vehicle Inventory and Use Survey

1. INTRODUCTION

As stated by Dwight D. Eisenhower when he introduced the Clay report in 1955 on the development of the national highway system, “Together, the united forces of our communication and transportation systems are dynamic elements in the very name we bear - United States. Without them, we would be a mere alliance of many separate parts”. (https://www.fhwa.dot.gov/infrastructure/originalintent.cfm)

Certainly, this observation is as true today as it was on the eve of the development of the interstate system. Challenges of a growing nation and economy required planning and innovation, at that time foreign to the U.S. system. Truly the collaboration and effort invested in planning and executing the Interstate Highway System was of a stellar, nation-changing nature. Similarly, we face a current set of challenges requiring no less of a commitment to move forward through planning, collaboration and innovation. We are at the edge of adopting new CAV and AI transportation technologies with unchartered opportunities and risks. In addition, agencies and systems are facing repeated climatic devastation to the built environments, a pandemic virus temporarily shuttered the economy, inadequate transportation funding has been compounded by decreased fuel sales revenue, and consumer preferences have driven an increase in home deliveries. Individually, each of these factors is challenging. For them to occur simultaneously presents an opportunity, a requirement, for the transportation, logistics, and industrial sectors to work together to adapt and manage the freight transportation system to support the social, economic, and environmental realities of these rapidly changing times.

Given the challenges facing freight planners and transportation agencies, the purpose of this project and resulting document are threefold:

1) Review the current status of multimodal freight planning across the MAASTO states and allow for freight planners to look “over the fence” and learn from their peers.
2) Identify and share freight planning, policy and operations best practices across the states.
3) Focus on multistate collaboration as a model that can support greater effectiveness in identifying, adopting, and implementing the appropriate new technologies, policy adaptations, planning processes, and operations practices.

MAASTO states have been progressive in the development and adoption of innovative freight planning, policy, and operations best practices. MAASTO states were among the first in the nation to adopt freight advisory committees, define multimodal freight planning roles in their agencies, act as leaders and topical experts in NCH/FRP and AASHTO research and policy activities, and include economic development as an active planning partner in freight development efforts. These are all common practices now, but over the last 10 years these progressive activities laid the foundation for today’s work in freight development.

The region’s motivation towards innovation, combined with the history of working collaboratively provides a fertile bed for identification of appropriate innovations, as well as for the collaborative development and implementation of the innovation. The region continues to be a leader in freight planning, policy and operations innovation. Yet each state is unique and claims a distinct identity and multimodal freight system. The region is bound together not by borders, but by rivers, rail, and Interstate highways. Shared natural and built transportation resources provide an opportunity to coordinate the development and management of these resources. Regional designed and managed multimodal freight systems better support freight flows and provide for corridor efficiencies unbounded by disparities in regulation, operations, and facility suitability.

This report reviews the freight planning process and practices across MAASTO states including the collaborative efforts within freight planning, policy, and operations. Where appropriate,

comparisons are made to earlier MAFC studies or to current efforts, along with best practices to demonstrate the planning and collaborative context and possibilities. The report also documents historic and current organizational and partnership approaches used within MAASTO and MAFC that have proven successful in identifying, developing, and implementing innovations in freight planning, operations, and policy. This report and effort track the gradual development of regional multimodal freight system planning, and multistate freight corridor management across MAASTO states.

The high levels of collaboration across the MAASTO states make rapid change and innovation possible. MAASTO states and leadership should be commended for developing the organizational structure, professional and technical leadership, and communications that allow for rapid innovation. While leadership, organizational goals, funding, and public demand can all change over time, the MAASTO committee structure and the role of MAFC are clear keys to the region's leadership and success in freight development.

In earlier work sponsored by AASHTO (http://onlinepubs.trb.org/onlinepubs/nchrp/docs/NCHRP08-36(55)_FR.pdf), two important conclusions in understanding collaborative freight planning and multistate collaboration are identified. First, they found that while many projects and "groups claim to be collaborative, most are not". Across the industry, advocacy groups and projects include language such as partnerships, leveraging relationships, and collaboration, but most are shorter term working agreements and fall short of true collaboration. Collaboration is an ongoing process, not a single event, it involves a high degree of trust and communication across all actors. Authoritarian approaches to managing the coalition, competition across the entities, and personal egos inhibit collaboration. Collaboration is not built or managed through hierarchical relationships. It is important to note collaboration is in fact a relationship and is clearly built on trust and longer term, or in some cases historic and institutionalized, relationships.

Second, there are a common set of factors characteristic of successful collaborative efforts related to the project or innovation, the organizational context, and personnel. Commonalities of effective collaboration identified in the previous work include experienced personnel, credibility of the deciding entity, transparency of decision-making processes, an authority with sufficient power and/or funding to encourage implementation of key initiatives, clear incentives for cooperation, complex and geographically expansive projects, and an ability to evaluate tradeoffs. The authors detailed an access management case study to demonstrate how these attributes can support challenging projects in a decentralized environment. https://downloads.hindawi.com/archive/2011/725080.pdf

Characteristics of successful collaborations, and the nature of these relationships provide benefits beyond expectations in most cases. In contrast to acting as a single state, a functioning collaborating group reduces risks, increases intelligence and potential for innovation, and provides support for implementation, testing, and refinement. Multistate collaboration can reduce financial commitment of any one entity, provide for efficiencies in multistate freight corridor construction, maintenance and operations, and identify, assess and implement innovation at a far more rapid rate.

This effort documents the MAASTO states' individual freight planning efforts, how the state representatives learn and innovate through their interactions in the MAFC context, and finally how collaborative work in freight planning, operations, and policy provides an ideal model for the identification and assessment of innovations, reduces risks, and provides for greater operations and financial efficiencies. Finally, the document addresses how true collaboration begets additional collaboration, and how the MAASTO and MAFC model can address additional complex, challenging and otherwise prohibitive projects, policies and operations. The MAASTO

states have set the standard for long running collaboration and innovation. Their organization and communication, willingness to work together, mutual respect and trust are consistently expanding the role and effectiveness of multistate, regional freight planning, policy, and operations.

In Chapter 2, the importance of freight movement to the economy and society in each of the ten MAASTO states is addressed, followed by an inventory of the freight systems and commodities important to each of the states, and the region. Additionally, an overview of current and recent freight-related coalitions (broadly defined) is provided, and the purpose, funding, and successes of these partnerships are discussed. Chapter 2 lays the groundwork to understand the significance of the freight system, and frame freight planning and development in a regional, collaborative context.

Chap 3 addresses freight planning processes and activities across the MAASTO states and provides a brief survey of the current freight legislation and polices. Much of the policy and regulatory content in this section is a reformulation of the same material published in the 2016 MAFC report on regional freight planning. The industry remains under the FAST legislation, so the planning requirements remain the same. The agencies are now anticipating a potential new transportation authorization in 2021.

Also, in Chapter 3, four distinct planning practice areas are inventoried for each state to provide for comparison of the various planning approaches across the region. The four practice areas include the status and integration of the freight plan and process, the use of FACs, freight data use and needs, and multimodal funding programs. The status and integration of the freight plan and planning process within each agency are tracked to show the organizational-level considerations in freight planning, and integration of freight planning within the organization. The use, format, and purpose of FACs are also discussed. Planners continue to express interest in advancing FACs to develop relationships with stakeholders, gain valuable stakeholder input, and gain access to industry perspectives and data that provide for informed freight planning. The availability of timely, reliable, and accurate freight data continues as a key concern for planners. Economic conditions and the impacts to freight movement can change rapidly. Data sets that are at the best, two years old, can miss recent economic changes. Examining freight programs across the states provides guidance towards additional, and regional program development and evaluation.

These four practice areas are of high interest to freight planners across MAASTO and the U.S. These areas reflect the innovation and effort the ten states have invested to create an efficient, equitable and multimodal freight planning process and plans. Importantly, as each state worked to address their individual planning needs and regulations, best practices were developed and shared across the region through MAFC and MAASTO affiliations. The collaborative freight planning, policy and operations efforts are working in the MAASTO region and hold great promise for increased safety, efficiencies, and innovation in freight movement.

Chapter 4 focuses on capturing the benefits of multistate collaboration in freight planning, policy and operations activities. The report draws from recent and current project examples, as well as state nominated planning, operations, and policy projects. The historic effort across MAASTO states to collaborate and innovate, the successful projects, and shared best practices provide a framework and incentive to continue work as a multistate, multimodal collaborative. The benefits of true collaboration in identifying and implementing innovation are linked to potential regional project ideas to demonstrate how the projects could advance based on the current MAASTO collaborative model.

Multistate collaboration is an effective approach, it has proven effective in reconciling longstanding truck size and weight harmonization issues and will be critical in establishing

parameters for the future with CAV and solving problems through collaborative research. The Nation's and the MAASTO states' freight systems are one and the same, and the regulations, infrastructure, and communications should provide users safe, seamless, and efficient freight movement. Coordinated efforts in freight planning, operations, and logistics create better regional decisions. In contrast, limiting coordination, or the lack of support for multistate coordination across freight planning, leaves states isolated in the policy and regulatory areas, and in their ability to adopt innovations.

2. FREIGHT AND FREIGHT MOVEMENT

2.1. Importance of Freight Transportation

Efficient and reliable freight movement is vital to the United States economy and Americans' daily lives. The increasing interconnectivity of economies across the world, continued expansion of economic activity within the United States, and population growth have led to an increase in freight transportation.[1] The Freight Analysis Framework estimates show the tonnage of goods moved in 2018 fully recovered from the 2007–2009 economic recession. Tonnage is projected to increase at about 1.4% per year between 2018 and 2045. Moreover, the value of freight moved is projected to grow faster than the weight, rising from $1,044 per ton in 2012 to $1,455 per ton in 2045.[2]

Table 2-1 illustrates the total tonnage moved by each freight transportation mode in the United States, and Table 2-2 shows the value moved by freight transportation modes. As shown, by 2045, the total weight of freight on all transportation modes is expected to reach nearly 25 billion tons, whereas the value is expected to grow to $37 trillion.

Table 2-1: Weight of Shipments by Transportation Mode - 2012, 2018, and 2045

Millions of Tons	2012				2018				2045			
	Total	Domestic	Exports	Imports	Total	Domestic	Exports	Imports	Total	Domestic	Exports	Imports
Truck	10,700	9,893	462	345	11,920	11,108	437	375	16,415	14,226	1,205	984
Rail	1,797	1,481	182	134	1,781	1,404	200	177	2,250	1,588	332	330
Water	658	502	76	80	839	542	218	79	942	609	201	132
Air	7	2	3	2	6	2	2	2	26	4	13	9
Multiple Modes and Mail	418	309	59	50	504	328	84	92	800	431	176	193
Pipeline	3,031	2,672	105	254	3,345	3,061	88	196	4,766	4,058	350	358
Other and Unknown	42	37	2	3	39	30	7	2	32	16	5	11
Total	16,953	14,895	889	1,169	18,615	16,474	1,037	1,104	25,473	20,932	2,282	2,259

Source: U.S. Department of Transportation, Bureau of Transportation Statistics and Federal Highway Administration, Freight Analysis Framework, version 4.5.1, 2019, https://www.bts.gov/faf.

Table 2-2: Value of Shipments by Transportation Mode: 2012, 2018, and 2045

Billions of Dollars	2012				2018				2045			
	Total	Domestic	Exports	Imports	Total	Domestic	Exports	Imports	Total	Domestic	Exports	Imports
Truck	12,216	10,251	884	1,081	12,975	10,784	910	1,281	24,001	16,219	3,557	4,225
Rail	722	411	137	174	782	434	143	205	1,629	646	469	514
Water	430	270	73	87	546	300	154	92	872	340	281	251
Air	673	135	284	254	593	140	219	234	3,208	324	1,505	1,379
Multiple Modes	2,121	1,746	97	278	2,265	1,794	114	357	4,970	3,393	418	1,159
and Mail												
Pipeline	1,325	1,150	53	122	1,533	1,387	44	102	1,901	1,546	205	150
Other and Unknown	40	1	17	22	97	1	74	22	324	-	76	248
Total	17,729	13,965	1,545	2,219	18,908	14,838	1,658	2,412	37,064	22,469	6,511	8,084

Source: U.S. Department of Transportation, Bureau of Transportation Statistics and Federal Highway Administration, Freight Analysis Framework, version 4.5.1, 2019, https://www.bts.gov/faf

On a national level, the freight transportation system consists of an extensive network of 958,000 miles of Federal-aid highways, 141,000 miles of railroads, 11,000 miles of inland waterways, 1.6 million miles of pipelines, 19,000 airports, and more than 5,000 coastal, Great Lakes, and inland waterway facilities.[3] Figure 2-1 illustrates freight flows in 2017 on the National Highway System, railroads, and waterways.

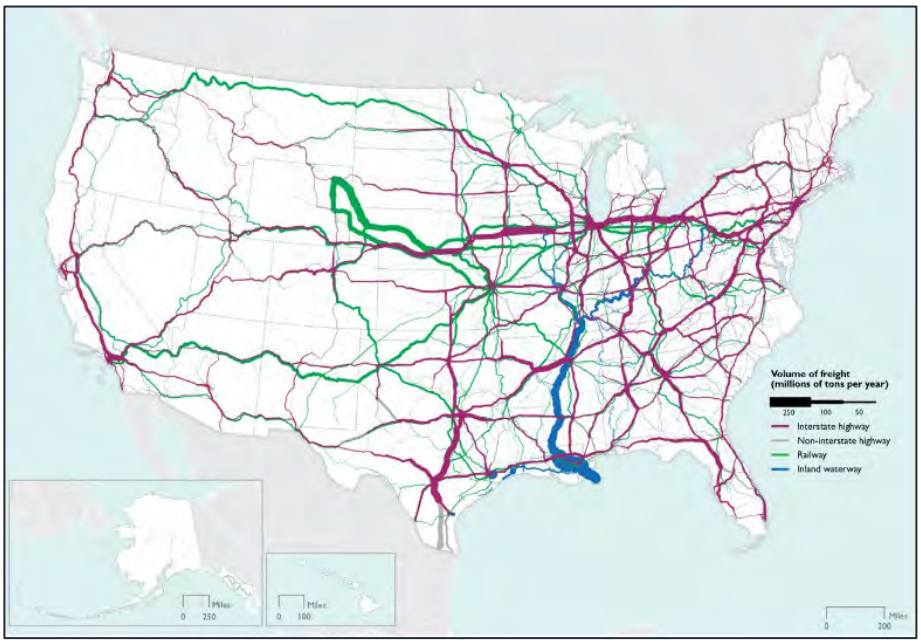

Figure 2-1: Freight Flows by Highway, Railroad, and Waterway (2017)

Sources: Highway: U.S. Department of Transportation (USDOT), Bureau of Transportation Statistics and Federal Highway Administration, Freight Analysis Framework, version 4.5, 2019. Rail: USDOT, Federal Railroad Administration, 2019. Inland Waterways: U.S. Army Corps of Engineers, Institute of Water Resources, Annual Vessel Operating Activity and Lock Performance Monitoring System data, 2018.

Freight transportation has a significant impact on the national economy. Based on The Freight Facts and Figures, developed by the Bureau of Transportation Statistics (BTS), Transportation's total estimated contribution to U.S. GDP was $1,240.8 billion in 2018. Figure 2-2 shows transportation's contribution to GDP by type and mode for-hire, in-house, or household transportation. Trucking contributed the largest amount of all freight modes, at $354.6 billion. In-house truck transportation operations (such as a grocery chain operating its own trucks) contributed $190.9 billion, while for-hire truck transportation services contributed $163.7 billion. The air mode contributed a total of $177.8 billion and is comprised of $142.0 billion of for-hire services and $35.8 billion of in-house services; rail contributed $45.2 billion, comprised of $43.4 billion of for-hire services and $0.7 billion of in-house services; and water contributed $15.7 billion, comprised of $13.2 billion of for-hire services and $2.5 billion of in-house services.[4]

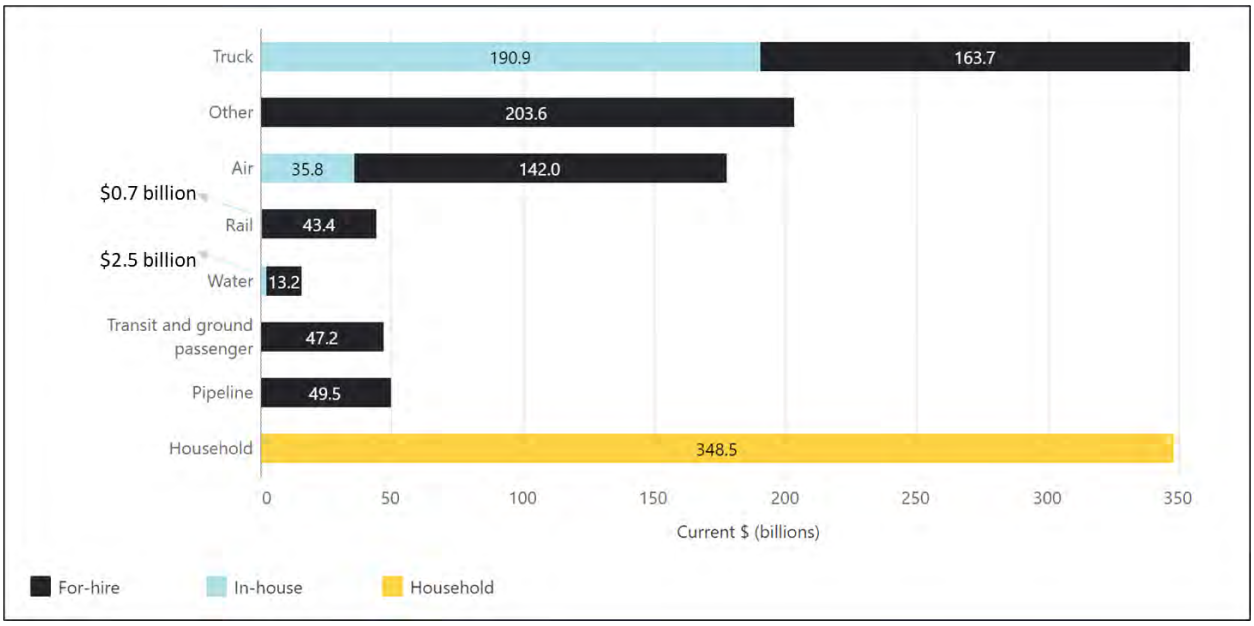

Figure 2-2: Gross Domestic Product (GDP) Attributed to Transportation Modes (Billions), 2018

Sources: U.S. Department of Commerce, Bureau of Transportation Statistics, Transportation Satellite Accounts, available at www.bts.gov.

2.2. Importance of Freight Transportation for MAASTO region

The MAASTO region consists of ten states in the central United States: Illinois, Indiana, Iowa, Kansas, Kentucky, Michigan, Minnesota, Missouri, Ohio, and Wisconsin. In a 2018 MAFC report on the multimodal freight corridors in the region, freight movement in the MAASTO region is significant and critical to the economy in part due to the concentration of multimodal freight corridors in the region (https://midamericafreight.org/wp-content/uploads/2018/12/Report_ID-and-Charcteristics-of-Freight-Corridors_2018-12-06.pdf). Table 2-2 details the extent of the multimodal activity and Table 2-3 details the total shipments by weight and value, and the top five shipped commodities in MAASTO states. Based on FAF4, figure 2-3 also represents the mode distribution based on freight weight, which illustrates that in the MAASTO region, the truck mode has the most significant proportion of total tonnage. Similarly, figure 2-4 presents the mode distribution based on freight value. As expected, the truck mode has the largest percentage of freight value, with 71.9% of the total value.[5]

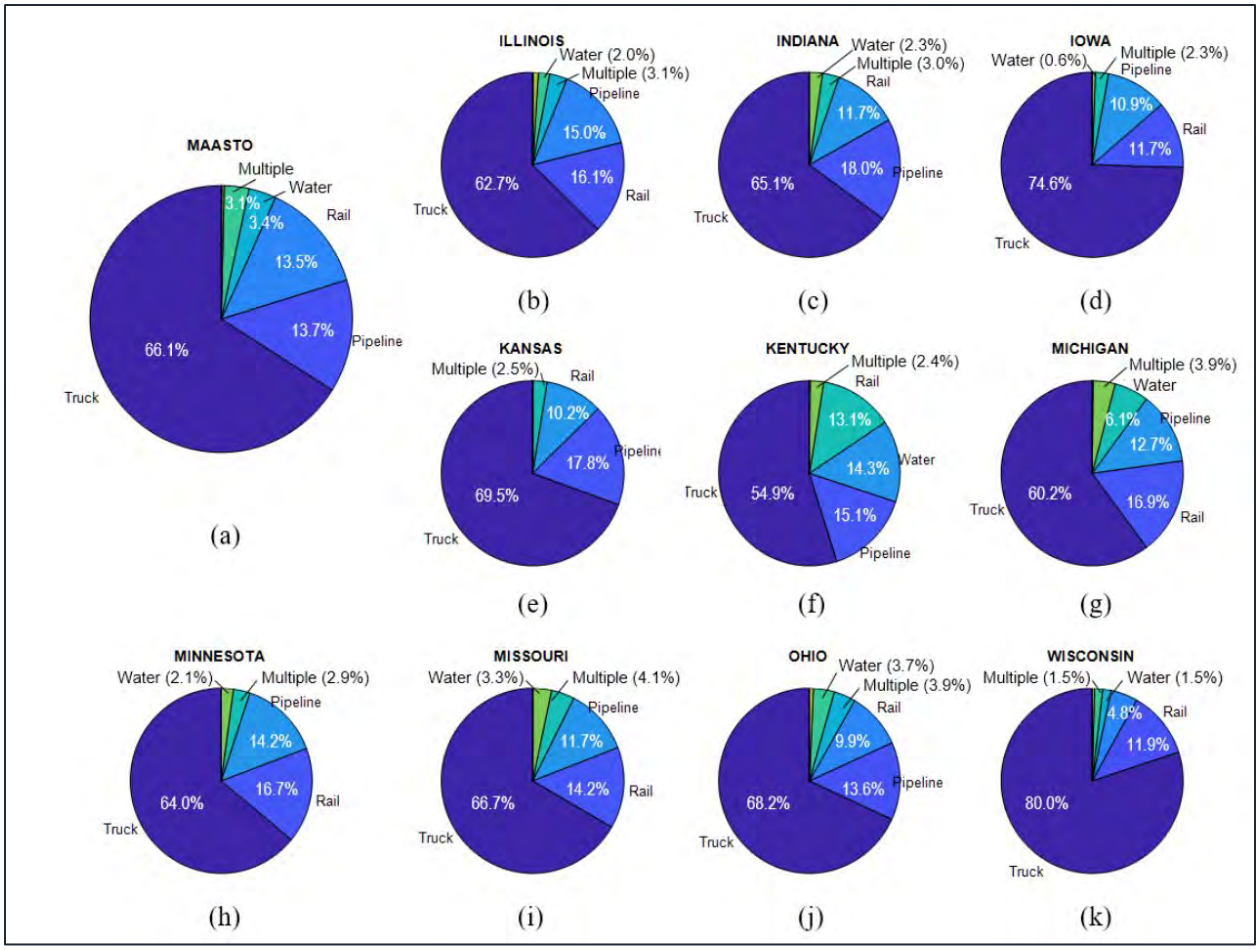

Figure 2-3: Mode Distribution by Freight Weight; (a) for MAASTO Region, (b)-(k) for Each State [6]

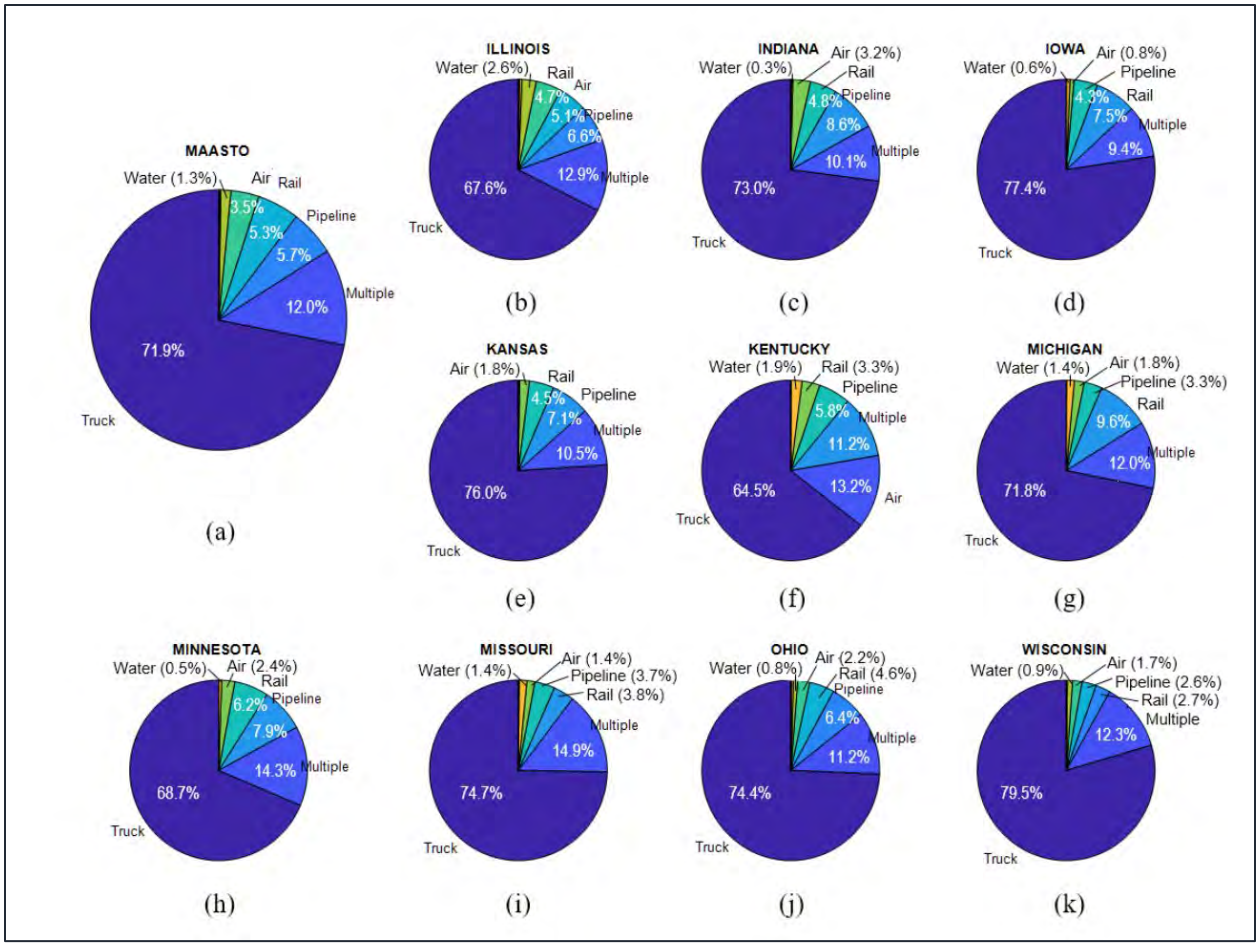

Figure 2-4: Mode Distribution by Freight Value; (a) for MAASTO Region, (b)-(k) for Each State [7]

Table 2-3: Freight Shipments by Weight and Value in MAASTO States (2017)

States	Total Shipments (by weight-thousands of tons)	Total Shipments (by Value-millions of current dollars)	Top 5 Shipped Commodities (by weight)			Top 5 Shipped Commodities (by Value)		
			Export	Import	Domestic	Export	Import	Domestic
Illinois	1,299,005	1,478,826	Coal-n.e.c. Cereal grains Gasoline Coal Other foodstuffs	Crude petroleum Coal-n.e.c. Coal Cereal grains Other foodstuffs	Cereal grains Gravel Gasoline Fuel oils Natural sands	Electronics Machinery Pharmaceuticals Motorized vehicles Mixed freight	Crude petroleum Electronics Machinery Motorized vehicles Other foodstuffs	Gasoline Electronics Fuel oils Mixed freight Pharmaceuticals
Indiana	688,190	754,208	Coal-n.e.c. Base metals Cereal grains Other foodstuffs Animal feed	Coal-n.e.c. Coal Crude petroleum Base metals Metallic ores	Gravel Cereal grains Coal Gasoline Fuel oils	Motorized vehicles Mixed freight Base metals Pharmaceuticals Machinery	Motorized vehicles Electronics Pharmaceuticals Machinery Base metals	Motorized vehicles Gasoline Fuel oils Mixed freight Electronics
Iowa	592,711	368,656	Coal-n.e.c. Cereal grains Other ag prods. Other foodstuffs Animal feed	Coal-n.e.c. Cereal grains Coal Nonmetal min. Prods. Other ag prods	Cereal grains Gravel Animal feed Other ag prods. Nonmetal min. prods	Machinery Motorized vehicles Other foodstuffs Mixed freight Meat/seafood	Coal-n.e.c. Motorized vehicles Machinery Mixed freight Electronics	Cereal grains Other ag prods. Live animals/fish Animal feed Mixed freight
Kansas	462,784	356,666	Cereal grains Coal-n.e.c. Mixed freight Animal feed Gasoline	Coal-n.e.c. Crude petroleum Coal Cereal grains Gasoline	Cereal grains Nonmetal min. Prods. Gravel Natural sands Fuel oils	Meat/seafood Cereal grains Mixed freight Coal-n.e.c. Plastics/rubber	Coal-n.e.c. Motorized vehicles Crude petroleum Machinery Mixed freight	Mixed freight Cereal grains Fuel oils Coal-n.e.c. Machinery
Kentucky	483,948	596,252	Coal Coal-n.e.c. Gravel Gasoline Motorized vehicles	Coal-n.e.c. Coal Crude petroleum Base metals Other foodstuffs	Gravel Coal Logs Cereal grains Natural sands	Motorized vehicles Electronics Machinery Base metals Textiles/leather	Electronics Motorized vehicles Machinery Pharmaceuticals Precision instrument	Motorized vehicles Machinery Pharmaceuticals Gasoline Mixed freight

States	Total Shipments (by weight-thousands of tons)	Total Shipments (by Value-millions of current dollars)	Top 5 Shipped Commodities (by weight)			Top 5 Shipped Commodities (by Value)		
			Export	Import	Domestic	Export	Import	Domestic
Michigan	637,423	1,031,015	Gravel Motorized vehicles Coal-n.e.c. Base metals Other foodstuffs	Coal-n.e.c. Coal Motorized vehicles Crude petroleum Base metals	Gravel Nonmetal min. Prods. Coal-n.e.c. Natural sands Gasoline	Motorized vehicles Machinery Plastics/rubber Base metals Electronics	Motorized vehicles Machinery Electronics Mixed freight Plastics/rubber	Motorized vehicles Mixed freight Machinery Gasoline Electronics
Minnesota	665,608	496,129	Metallic ores Coal-n.e.c. Cereal grains Nonmetal min. Prods. Other foodstuffs	Crude petroleum Coal-n.e.c. Coal Cereal grains Grave	Cereal grains Gravel Other ag prods. Nonmetal min. Prods. Other foodstuffs	Electronics Nonmetal min. Prods. Precision instruments Misc. mfg. Prods. Machinery	Crude petroleum Motorized vehicles Electronics Mixed freight Machinery	Mixed freight Cereal grains Other ag prods. Gasoline Other foodstuffs
Missouri	471,853	475,729	Coal-n.e.c. Cereal grains Gravel Chemical prods. Other foodstuffs	Coal-n.e.c. Coal Other ag prods. Cereal grains Other foodstuffs	Gravel Cereal grains Natural sands Nonmetal min. Prods. Other ag prods	Pharmaceuticals Motorized vehicles Mixed freight Misc. mfg. Prods. Chemical prods.	Motorized vehicles Mixed freight Coal-n.e.c. Electronics Machinery	Motorized vehicles Mixed freight Transport equip. Other foodstuffs Pharmaceuticals
Ohio	862,542	1,060,431	Coal-n.e.c. Base metals Cereal grains Mixed freight Other foodstuffs	Coal-n.e.c. Crude petroleum Coal Base metals Gravel	Gravel Nonmetal min. Prods. Gasoline Cereal grains Waste/scrap	Motorized vehicles Mixed freight Machinery Base metals Plastics/rubber	Motorized vehicles Pharmaceuticals Machinery Electronics Base metals	Mixed freight Gasoline Motorized vehicles Machinery Other foodstuffs

States	Total Shipments (by weight-thousands of tons)	Total Shipments (by Value-millions of current dollars)	Top 5 Shipped Commodities (by weight)			Top 5 Shipped Commodities (by Value)		
			Export	Import	Domestic	Export	Import	Domestic
Wisconsin	455,029	531,478	Gravel Coal-n.e.c. Fuel oils Other foodstuffs Cereal grains	Coal Coal-n.e.c. Metallic ores Other foodstuffs Nonmetal min. Prods.	Gravel Other foodstuffs Cereal grains Nonmetal min. Prods. Natural sands	Machinery Motorized vehicles Other foodstuffs Mixed freight Electronics	Electronics Machinery Pharmaceuticals Motorized vehicles Other foodstuffs	Other foodstuffs Mixed freight Gasoline Motorized vehicles Fuel oils

Source: U.S. Department of Transportation, Bureau of Transportation Statistics and Federal Highway Administration, Freight Analysis Framework, version 4.5, 2019, https://www.bts.gov/browse-statistical-products-and-data/state-transportation-statistics/state-transportation-numbers

2.3. MAASTO Region Freight System

2.3.1. Highway Freight System

Freight planning in state DOTs has historically focused on truck movements due to the economic importance and sheer presence of trucks. With nearly 72% of all freight by weight and 73% by value moved by trucks, the roadway system component has been referred to as the economy in motion.[8] For some major freight corridors in the MAASTO region, trucks often exceed 30% of the total traffic as seen on I70 in Missouri, I90 in Illinois, or I65 in Kentucky. Table 2-4 summarizes total shipments by truck mode along with the top five freight corridors in the MAASTO region. Illinois and Ohio have the highest weight and value of shipments by truck mode. In addition to the FAF data provided here, several states purchase customized datasets that include overhead or bypass freight traffic, freight that only passes through the state.

In addition to the commodity movement, freight corridors connect and influence the dynamics of business development and growth. Based on Table 2-5, 56.1% of businesses and 63.9% of employees in the MAASTO region are located within three miles of freight corridors. Businesses along freight corridors find advantages in transportation access, reliability, and the multistate presence of these corridors provides for business visibility and economic leverage in shipping and receiving. There is tendency for businesses and services to cluster near like businesses which compounds economic and traffic activity. Business location characteristics along freight corridors are imperative for continued economic performance and growth. More information regarding freight loads on highways is presented in Appendix A, State Freight Profiles.

Nationally, over 51 million tons of freight across all modes, worth over $ 51.8 billion dollars are moved on the average day. With approximately 20% of the nation's population in the MAASTO region, it can be estimated that approximately 10 million tons of freight across all modes, valued at approximately $10 billion dollars are moved in the region per day.

Table 2-4: Weight and Value of Freight Shipments by Truck Mode

	Miles of Roadway	Bridges	Shipments (by weight)				Shipments (by Value)				Top 5 Freight Corridors
			Domestic Only	Export	Import	Total	Domestic Only	Export	Import	Total	
Illinois	145,968	26,809.0	733,860.3	11,151.2	9,960.8	754,972.3	886,024.2	52,633.9	87,722.2	1,026,380.4	I-57, I-80, I-55, I-39, I-90
Indiana	97,553	19,280.0	426,578.2	4,318.8	3,347.5	434,244.5	531,505.7	24,464.2	31,107.5	587,077.3	I-80, I-65, I-69, I-70, I-74
Iowa	114,637	24,123.0	405,311.4	2,939.1	929.9	409,180.5	281,957.3	7,831.8	3,817.4	293,606.5	I-80, I-35, I-29, I-380, I-235
Kansas	142,054	24,906.0	281,955.5	1,694.3	413.1	284,062.8	273,085.3	4,787.3	2,206.4	280,079.1	I-70, I-35, I-135, I-335, I-435
Kentucky	80,054	14,368.0	260,592.3	2,870.1	3,065.6	266,528.0	341,547.9	18,839.8	29,637.9	390,025.5	I-65, I-75, I-71, I-64, I-24
Michigan	122,141	11,228.0	300,934.1	29,082.8	28,953.6	358,970.5	520,301.2	106,838.6	95,677.0	722,816.8	I-75, I-94, I-96, I-69, I-196
Minnesota	139,449	13,358.0	369,044.8	4,986.1	2,127.2	376,158.1	323,597.1	8,857.0	5,960.7	338,414.8	I-94, I-35, I-90, I-494, I-694
Missouri	131,900	24,512.0	294,603.0	2,689.1	1,877.0	299,169.2	330,597.2	6,904.9	7,202.7	344,704.8	I-70, I-44, I-55, I-29, I-35
Ohio	122,987	27,277.0	543,388.8	8,866.3	6,955.2	559,210.3	733,173.3	30,640.1	28,491.9	792,305.3	I-80, I-71, I-70, I-75, I-77
Wisconsin	115,609	14,275.0	338,672.6	3,683.6	2,407.0	344,763.1	397,545.9	13,416.3	11,122.7	422,085.0	I-94, I-90, I-43, I-39, I-894

Source: U.S. Department of Transportation, Bureau of Transportation Statistics and Federal Highway Administration, Freight Analysis Framework, version 4.5.1, 2019, https://www.bts.gov/faf.

Table 2-5: Businesses and Employees within 3-Mile Buffer from Freight Corridors in MAASTO Region

States	Businesses			Employees		
	All	Within 3 Miles	Within 3 Miles %	All	Within 3 Miles	Within 3 Miles %
Illinois	445,998	299,645	67.2	6,447,795	4,628,743	71.8
Indiana	129,531	46,481	35.9	1,755,974	844,548	48.1
Iowa	217,276	109,984	50.6	3,240,564	1,844,048	56.9
Kansas	115,231	59,061	51.3	1,590,880	988,909	62.2
Kentucky	146,932	72,429	49.3	1,977,054	1,143,474	57.8
Michigan	340,324	191,290	56.2	4,769,230	2,954,492	61.9
Minnesota	209,696	104,633	49.9	3,248,786	1,924,083	59.2
Missouri	221,360	122,104	55.2	3,169,805	2,045,437	64.5
Ohio	393,047	253,923	64.6	6,200,259	4,453,282	71.8
Wisconsin	223,366	111,740	50.0	3,201,051	1,923,703	60.1
MAASTO	**2,442,761**	**1,371,290**	**56.1**	**35,601,398**	**22,750,719**	**63.9**

Source: https://midamericafreight.org/wp-content/uploads/2018/12/Report_ID-and-Charcteristics-of-Freight-Corridors_2018-12-06.pdf

2.3.2. Waterway Freight System

While the maritime share of total freight movement seems minor at 4%, marine corridors move a majority of U.S. grains headed for export, aggregates for construction, fuel, and agricultural chemicals. For example, 90% of all the United States' iron ore moves through the Soo lock system. This system is critical; the GDP evaluation determined the Soo Locks are directly or indirectly tied to $46.4 billion in output for the eight-state Great Lakes region and $58.2 billion for the Nation.[9] Consequently, the maritime system is critical to the Nation's freight movement and has been adopted by DOTs as a transportation function. In many cases, management of waterways has historically fallen upon natural resources agencies with little emphasis on freight movement. Transportation agencies support marine freight through port funding programs, port access, and waterways infrastructure.

The MAASTO region has extensive access to Inland Waterways System (IWS) and deep-water international waterways. All MAFC states have access to the Mississippi River System except Michigan. Six of the ten MAFC states have commercial access to one or more of the Great Lakes, and six of the eight U.S. states with Great Lakes access are in the MAFC region.

Total maritime trade between the MAFC region and the rest of the United States is substantial. MAFC states move 41% of total domestic marine tonnage and receive 29% of the total. Table 2-6 summarizes maritime shipping by individual MAFC state, and table 2-7 shows the Mississippi River System and Great Lakes Navigation System waterways volume compared to the total volume of U.S. maritime freight.[10] Combined, maritime traffic in the Mississippi River System (MRS) and the Great Lakes accounted for more than a third of all waterborne freight traffic by weight.[11]

Table 2-6: Weight and Value of Freight Shipments by Waterway Mode

States	Miles of Waterway	Shipments (by weight)				Shipments (by Value)				Top Freight Ports
		Domestic Only	Export	Import	Total	Domestic Only	Export	Import	Total	
Illinois	1,100	29,535.8	3,367.2	4,538.6	37,441.7	10,820.7	455.3	24,015.2	35,291.1	Port of St Louis Port of Chicago Port of Kaskaskia
Indiana	350	21,889.3	363.6	118.9	22,371.9	2,797.3	23.6	705.2	3,526.1	Indiana Harbor Port of Mount Vernon Port of Gary
Iowa	490	4,491.2	10.9	157.4	4,659.5	1,502.9	27.3	917.5	2,447.8	Port of Burlington Port of Dubuque Port of Keokuk
Kansas	120	12.3	0.0	0.0	12.3	7.1	0.0	0.0	7.1	Port of Kansas City Tulsa Port of Catoosa
Kentucky	1,590	53,643.4	4.1	63.4	53,710.8	9,905.2	9.5	438.3	10,353.0	Port of Cincinnati-Northern Port of Louisville

States	Miles of Waterway	Shipments (by weight)				Shipments (by Value)				Top Freight Ports
		Domestic Only	Export	Import	Total	Domestic Only	Export	Import	Total	
										Port of Owensboro
Michigan	NA	37,397.7	4,154.4	3,802.7	45,354.8	668.6	758.3	8,405.7	9,832.6	Port of Detroit Port of Marquette Port Calcite
Minnesota	260	17,708.1	516.3	56.5	18,280.9	2,630.6	317.5	228.8	3,176.9	Port of Duluth-Superior Port of Two Harbors Port of Silver Bay
Missouri	1,030	21,317.9	10.4	23.2	21,351.6	7,536.3	13.0	99.6	7,648.8	Port of New Madrid County Port of Kansas City Southeast Missouri Port
Ohio	440	29,294.1	301.9	719.5	30,315.5	3,419.4	222.2	1,384.3	5,025.9	Port of Cleveland Port of Toledo Port of Ashtabula
Wisconsin	230	6,989.4	3,523.5	1,676.9	12,189.8	314.8	474.0	4,251.6	5,040.4	Port of Duluth-Superior Port of Milwaukee Port of Green Bay

Source: Waterborne Commerce of the United States Part 5, Table 4-2, U.S. Army Corps of Engineers, Waterborne Commerce Statistics Center, 2019, https://usace.contentdm.oclc.org/digital/collection/p16021coll2/id/6753

Table 2-7: Domestic and Foreign Maritime Freight: U.S., MRS, GLNS (2010)

United States			Mississippi River System			Great Lakes		
	Short Tons (Millions)	U.S. Total %		Short Tons (Millions)	U.S. Total %		Short Tons (Millions)	U.S. Total %
Total	2,334	100	Total	662	28	Total	130	6
Foreign	1,441	62	Foreign	187	8	Foreign	41	2
Domestic	893	38	Domestic	474	20	Domestic	89	4
–	–	–	Internal Domestic	448	19	–	–	–

Sources: Waterborne Commerce of the United States Part 5 – National Summaries Calendar Year 2010, Table 1-1; Table 3-1; Table 3-10

2.3.3. Railway Freight System

The U.S. freight rail network is considered the largest and most cost-efficient freight system in the world with almost 140,000 route miles, an $80 billion industry, and providing more than 167,000 jobs across the country.[12] America's freight railroads are almost entirely owned, operated, and maintained privately. Table 2-8 illustrates railroad shipments in the MAASTO region by weight and value. Based on FAF4.5 data, in 2018, more than 1.4 billion tons with a value of over $450,000 million have been shipped by rail in the MAASTO region.

Table 2-8: Weight and Value of Freight Shipments by Railway Mode

States	Miles of Freight Railroad	Shipments (by weight)				Shipments (by Value)			
		Domestic Only	Export	Import	Total	Domestic Only	Export	Import	Total
Illinois	7,151	200,418.6	10,000.7	15,914.8	226,334.1	57,704.5	8,119.3	18,523.6	84,347.3
Indiana	3,786	79,047.9	2,350.4	6,711.4	88,109.7	28,462.5	5,817.5	8,294.2	42,574.2
Iowa	3,805	77,645.6	10,685.3	3,094.1	91,425.0	28,900.6	5,120.4	1,641.0	35,662.0
Kansas	4,675	56,334.1	5,547.2	2,477.9	64,359.1	19,081.2	3,171.1	1,404.3	23,656.6
Kentucky	2,624	54,350.5	1,252.9	2,250.4	57,853.7	13,145.6	3,041.3	4,107.5	20,294.4
Michigan	2,417	69,965.9	15,955.2	25,931.2	111,852.3	13,794.0	26,100.3	66,565.6	106,459.9
Minnesota	4,258	100,168.8	11,755.6	27,342.9	139,267.3	22,385.4	5,301.1	13,446.3	41,132.7
Missouri	3,862	61,228.4	3,081.1	2,298.3	66,607.8	16,600.1	4,080.3	2,662.3	23,342.7
Ohio	5,132	543,388.8	10,667.9	7,061.3	561,118.0	39,256.5	9,311.9	9,351.3	57,919.8
Wisconsin	3,253	61,925.6	4,914.3	5,197.4	72,037.3	13,184.6	2,217.0	2,530.0	17,931.6

Source: U.S. Department of Transportation, Bureau of Transportation Statistics and Federal Highway Administration, Freight Analysis Framework, version 4.5.1, 2019, https://www.bts.gov/faf.

2.3.4. Aviation Freight System

The aviation system plays an important role in the transportation of high-value products such as medical equipment, electronics, perishables, and precision instruments. Nationwide in 2018, 5.8 million tons of freight with a value around $590 billion were carried through commercial airlines. Table 2-9 shows the weight and value of 2018 aviation freight shipments in the MAASTO region and the top freight airports in each state. The region’s air shipments comprise 2.7 million tons of the nation’s total. Besides, Illinois, Kentucky, and Ohio move one-third of the total weight and value of air mode shipments in the MAASTO region.

Table 2-9: Weight and Value of Freight Shipments by Air Mode

States	Number of Major Airports	Shipments (by weight)				Shipments (by Value)				Top Freight Airports
		Domestic Only	Export	Import	Total	Domestic Only	Export	Import	Total	
Illinois	17	157.9	334.6	370.4	862.9	10,575.9	29,031.0	48,585.8	88,192.7	Chicago O'Hare International Airport Chicago/Rockford International General Downing - Peoria International
Indiana	11	52.8	24.4	12.2	89.3	4,871.2	2,817.1	1,893.6	9,581.9	Indianapolis International Fort Wayne International South Bend International
Iowa	7	51.0	9.8	6.7	67.5	1,637.3	949.2	460.7	3,047.2	The Eastern Iowa Des Moines International
Kansas	9	47.9	20.2	24.8	93.0	3,408.9	2,835.0	2,258.8	8,502.8	Wichita Dwight D Eisenhower National Garden City Regional
Kentucky	6	64.4	342.5	290.8	697.7	4,734.7	41,783.1	45,856.2	92,374.1	Louisville Muhammad Ali International Cincinnati/Northern Kentucky International
Michigan	8	149.2	106.8	72.1	328.1	4,066.2	6,397.3	5,301.3	15,764.9	Detroit Willow Run
Minnesota	8	56.7	82.9	37.1	176.7	4,601.5	8,503.8	3,913.2	17,018.5	Minneapolis-St Paul International/Wold-Chamberlain Thief River Falls Regional
Missouri	11	44.5	20.6	12.3	77.4	3,218.5	1,527.9	1,115.5	5,861.9	Kansas City International St Louis Lambert International Springfield-Branson National
Ohio	12	83.6	123.1	69.1	275.9	7,826.9	8,804.3	5,782.8	22,414.0	Rickenbacker International Cleveland-Hopkins International Toledo Express

States	Number of Major Airports	Shipments (by weight)				Shipments (by Value)				Top Freight Airports
		Domestic Only	Export	Import	Total	Domestic Only	Export	Import	Total	
Wisconsin	9	56.3	32.3	15.7	104.3	2,899.6	2,082.8	1,853.8	6,836.2	General Mitchell International Dane County Regional-Truax Field Appleton International

Source: U.S. Department of Transportation, Bureau of Transportation Statistics and Federal Highway Administration, Freight Analysis Framework, version 4.5.1, 2019, https://www.bts.gov/faf. & Federal Aviation Administration, CY 2019 All-Cargo Airports by Landed Weight, https://www.faa.gov/airports/planning_capacity/passenger_allcargo_stats/passenger/

Mid-America states are a freight powerhouse and include a substantial portion of the nation's freight aviation system, waterway systems, rail, and highway freight network. Multistate projects in this region can significantly expand the freight-derived economic benefits that states can capture, support safe operations, and provide management as well as user efficiencies.

2.4. Importance of Multistate Collaboration

MAFC member states, like all states, have different transportation systems, economies, and transportation policy and investment priorities. However, the safe, efficient, and optimized operation of the nation's transportation systems rely on collaboration and coordination across jurisdictional and organizational boundaries. Identifying and aligning similar goals and priorities across the region will help MAFC members understand each other's transportation visions and the areas ready for collaborative action. Understanding common goals will have benefits. Greater collaboration on regional and nationally significant projects can provide access to grant funding, and the institutional momentum necessary to complete multistate projects. Ultimately, greater regional cooperation will improve regional freight operations and productivity, mobility, and safety. In this project, a range of multistate collaboration projects, policies, and operations are identified and explored to provide an understanding of the collaboration techniques, relationship approaches, funding strategies, and project and process characteristics. In working with MAFC states and in project interviews, the following benefits of collaborative activities were identified:

- Potential federal funding for collaborative projects.
- More effective coordination and communication.
- Development of common procedures, protocols, and plans based on best practices.
- Providing professional development and institutional memory as practices are ingrained across all states.
- Leverage investments of multiple states.
- Local, regional, and national economic, safety and efficiency benefits.
- More efficient, coordinated freight corridor management and investments.

The federal government increasingly looks to regional collaboration on transportation projects to secure national benefits. For example, the FASTLANE grant program or the recent TIGER grant both imply a benefit from local, multistate, and industry collaboration on projects. The TIGER grant that was awarded to eight MAFC states for the Truck Parking Information and Management System (TPIMS) reflects a collaborative partnership. Identifying areas for cooperation can put MAFC members at an advantage in advancing efficient freight systems and regional institutional efficiency.

2.5. Multistate Collaborative Efforts

Efficient freight movement often involves multiple transportation modes and routes across multiple states and even international borders. Institutional, jurisdictional and regulatory variation across borders and modes present barriers to efficient freight movement. Multi-state freight organizations provide a venue to plan and coordinate development and management of regional freight systems. In addition, benefits of coordination and communication accrue across the entire region and apply to multiple freight stakeholder groups.

The purpose or origin of freight coalitions varies greatly, as does their membership, funding, leadership, and longevity. Examples of active and recently active transportation coalitions are highlighted and described below. The list and descriptions below represent the latest compilation of coalitions as tracked by FHWA, along with a more recent working list developed for this project. The list of coalitions is constantly changing as project interest, funding, project urgency, and institutional context changes. The current lists developed for this project are presented in Table 2-10.

Importantly, the list demonstrates broad interest in coalitions as tools to expand the work and impact of state DOTs and transportation advocates. Past efforts illustrate the range of partners, projects and issues addressed in a collaborative framework. The examples also provide lessons regarding critical organizational factors, characteristics of successful projects, and the processes and relationships that support effective collaborative activity.

2.6. Corridor Coalitions and Collaborative Efforts

2.6.1. The Eastern Transportation Coalition (I-95 Corridor Coalition)

https://tetcoalition.org/

The Eastern Transportation Coalition (TETC), formerly known as the I-95 Corridor Coalition, is one of the longer standing multistate relationships. Currently, transportation system management and operations (TSMO), freight movement, and technology/innovation are the three main TETC focus areas. TSMO focuses on operational improvement across the I-95 corridor to increase the safety and mobility. Similarly, the freight program focuses on freight mobility and safety on the I-95 corridor. The group has also historically provided freight professional development training. The innovation program supports emerging technologies, policies, and partnerships. Each year more than 4 billion tons of freight valued at almost $3 trillion move within the eastern states. As a result, this coalition emphasizes multistate collaboration and shared research, data, and analysis among 17 states to advance seamless freight mobility, safety, and economic development.

The TETC has provided the following support to the coalition members:[13]

- Facilitating coordination and collaboration among agencies on freight planning and investments.
- Promoting innovative activities for collecting, using, and sharing freight data.
- Sharing best practices in statewide freight plan development and implementation.
- Networking between different agencies and organizations.
- Sharing innovative uses of emerging technologies such as connected and automated trucks.
- Advancing innovative approaches to truck parking project.

2.6.2. I-10 Corridor Coalition

https://i10connects.com/

The I-10 Corridor Coalition was established in 2016 and includes Arizona, California, New Mexico, and Texas. Safe, reliable, and efficient commercial and personal travel along this corridor is the coalition's main goal. This coalition formed with the following common objectives:[14]

- The implementation of intelligent transportation systems and new technologies on the nation's highway.
- Develop a model for regional cooperation in the Western region and North America.
- Resource-sharing and interagency financial contributions among coalition members.
- Cost-saving through a multi-state approach.
- Sharing best practices and discoveries with other members to foster positive outcomes.

As one of the major freight corridors in the southwest, the I-10 Coalition is an example of a coalition with corridor specific focus. This is in contrast to coalitions such as MAFC with an overall regional and multimodal freight system development approach that includes professional development, research to support freight planning and operations best practices, and collaborative projects.

2.6.3. Great Lakes Regional Transportation Operations Coalition

https://files.topslab.wisc.edu/content/GLRTOC/

The Great Lakes Regional Transportation Operations Coalition (GLRTOC) is no longer active but is an example of an operations coalition. The group previously collaborated to improve regional transportation operations to support economic competitiveness and improve quality of life. At the time it was considered an operations approach to manage corridors in a megaregion. The coalition members included ten states (Illinois, Indiana, Iowa, Kansas, Kentucky, Michigan, Minnesota, Missouri, Ohio, and Wisconsin) and one Canadian province (Ontario) and worked to share data and real time traffic information across the region.

The goals of this collaboration were:[15]

- Leverage joint funding to sustain the group.
- Compete more effectively for national resources and funding.
- Share and expand best practices to improve travel time and economic competitiveness of the region, benchmark efficient operating models.
- Improve transportation operations for freight movement and travelers throughout the Great Lakes region.

2.6.4. Lake Michigan Interstate Gateway Alliance

https://www.itsmidwest.org/lmiga/

The Lake Michigan Interstate Gateway Alliance is an example of a corridor specific coalition with a technology focus. With its initiation in 1993 as ITS Midwest, the coalition consists of Illinois, Indiana, and Wisconsin transportation agencies. The original focus of the group was on

the Gary-Chicago-Milwaukee Corridor (GCM) as an ITS Priority Corridor. In 2006, the GCM singular corridor focus was changed to interstate operations, and its name had been changed to reflect the new focus. The new Lake Michigan Interstate Gateway Alliance (LMIGA) focuses on operations along major corridors to ensure that traffic moves safely and efficiently. The program works in the areas of interagency communication and coordination, improvement projects, training efforts, and region-wide planning. The LMIGA Intelligent Transportation System (ITS) Priority Corridor Program operates through a structure of working groups and subcommittees.[16]

2.6.5. Upper Mississippi River Basin Association

http://www.umrba.org/

As described on the website, the Upper Mississippi River Basin Association (UMRBA) is a regional organization founded by the governors of Illinois, Iowa, Minnesota, Missouri, and Wisconsin in 1981 to coordinate river-related programs and policies. The U.S. Army Corps of Engineers, Department of Agriculture (Natural Resources Conservation Service), Department of Homeland Security (Coast Guard and Federal Emergency Management Agency), Department of the Interior (Fish and Wildlife Service and Geological Survey), Department of Transportation (Maritime Administration), and the Environmental Protection Agency participate in the UMRBA as advisory members.

Goals of the Upper Mississippi River Basin Association include:[17]

- Discuss and evaluate river-related issues of common concern to the Upper Mississippi River Basin States in a regional interstate forum.
- Facilitate and promote cooperative planning and coordinated management of water and related land resources.
- Create opportunities to exchange information among state and federal agencies responsible for water resources management of the Upper Mississippi River Basin.
- Develop regional programs on river resource issues and support the basin states' shared interests before Congress and federal agencies.

UMRBA has addressed issues such as nonpoint water pollution, water quality planning and management, inter-basin diversions, cost-sharing strategies, water project financing, and drought planning. Four active MAASTO States participate and drive much of the discussion to ensure marine commerce on the upper Mississippi River is included in the effort to improve the river for all users.

2.6.6. American Great Lakes Ports Association

http://www.greatlakesports.org/

The interests of commercial ports and port users on the United States side of the Great Lakes led to establishment of The American Great Lakes Ports Association (AGLPA) in 1977. While more of a true association, AGLPA formed to foster maritime commerce and related employment in the Great Lakes region, and inform policymakers, media, and the general public regarding the critical regional economic role of Great Lakes and St. Lawrence Seaway shipping. To support their goals, the association provides a range of research and information sources, including port-by-port economic analysis available at: https://www.greatlakesports.org/resource-types/economic-impacts/ .[18] The association plays a critical role in advocating for port funding, increased investments in lock and dam systems, and generally ensuring the logistics community considers the Great Lakes option.

2.6.7. Institute for Trade and Transportation Studies

http://www.ittsresearch.org/

The Southeastern Transportation Alliance was established in 1996 to examine trade opportunities with Latin America and the Southeastern U.S. The Latin American Trade and Transportation Study (LATTS) included the states/territories of Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, Missouri, North Carolina, Oklahoma, South Carolina, Puerto Rico, Tennessee, Texas, Virginia, and West Virginia. The FHWA also participated in the group. The main goals of LATTS included identifying trade opportunities with Latin America, evaluating infrastructure assets needed in international trade, and developing strategies to guide and improve infrastructure investments. In the second phase of this study, a more comprehensive analysis was completed to address the critical transportation needs identified in the first phase. To continue the original study, the Institute for Trade and Transportation Studies (ITTS) was formed as an independent entity to solve international trade constraints and increase freight trade across the region. ITTS provides recommendations about commercial freight movements effects on its members' domestic and international activities regarding their infrastructure, transportation needs and safety implications.

The ITTS governing structure consists of the following:[19]

- A Board of Directors consists of member states transportation department CEOs.
- An Advisory Council comprised of staff from member departments and Federal Highway Administration (FHWA).

ITTS has operated as a transportation pooled fund with a single steward. Recently, the model was changed to a contract model with transportation consulting firms to manage the program.

2.6.8. Great Lakes and St. Lawrence Governors and Premiers

https://www.gsgp.org/

The Great Lakes and St. Lawrence Governors and Premiers was established in 1983 to protect the world's largest surface water system with a $6 trillion economic value. In 1985, the Governors and Premiers created the first regional water management agreement among the Great Lakes. Importantly the charter included the Great Lakes States, Ontario, and Quebec. This is an example of international collaboration.

Their most recent efforts included the launch of a maritime initiative to improve the region's maritime transportation system. Under this regional maritime strategy, more than $70 million has been allocated to constructing new maritime infrastructure, which benefits users and the Nation's economy. Establishing the regional Smart Ship Coalition is another project initiated by Governors and Premiers intended to develop an action plan for smart ship technologies.[20]

2.6.9. MAASTO Mid-America Freight Coalition

http://midamericafreight.org/

The Mid-America Freight Coalition, formerly known as the Mississippi Valley Freight Coalition, is a regional organization operating since 2008 that supports the freight planning, operations, and research needs of the MAASTO States. MAFC includes the ten MAASTO States (Illinois, Indiana, Iowa, Kansas, Kentucky, Michigan, Minnesota, Missouri, Ohio, and Wisconsin) that share key interstate corridors, inland waterways, and the Great Lakes. MAFC provides support in four broad areas: MAFC manages a state-driven multimodal freight research agenda,

provides an annual meeting for freight planning policy and operations personnel, provides collaboration and facilitation support for regional projects, and supports peer to peer networking and freight professional development.

Examples of successful collaborative support through MAFC can be seen in the state-defined freight research agenda, support, and data management for the multistate Truck Parking Information Management System (TPIMS), coordinated evaluation and review of freight planning practices across the region, freight professional development, and peer networking and best practices sharing. A number of these successful efforts will be elaborated on as case studies in the following section:[21]

2.6.10. MAASTO Standing Committee on Highway Transport (SCOHT) and the Motor Carriers Committee (MCC)

The SCOHT and MCC are two examples of exemplary multistate collaboration that are institutionalized within AASHTO (SCOHT) and MAASTO (MCC). Both are focused on the efficient flow of multistate truck movements via harmonized regulations and consistent and communicated services. The following project-related collaborations began within the MAASTO committee structure and are now effectively operating as multistate collaboratives.

2.6.11. OSOW and Permit Harmonization Efforts[22]

http://www.maasto.net/documents

The MAASTO SCOHT and MCC work together and with the trucking industry to identify and adopt policies to support truck operations and oversize and overweight permit harmonization. AASHTO, MAASTO, MCC, and SCOHT seek to improve interstate commerce and maintain highway safety by using data to assess legislative, regulatory, or policy changes that could remove barriers to interstate commerce. Understanding the variability in regulations and their impacts across states allows the region to move forward towards a common regulatory framework. This approach is intended to promote uniform motor carrier and permitting regulations, policy, and operations across the states.

The focus on permit and operations harmonization is one of the longest-standing efforts in AASHTO. As noted in the later section on additional work areas, the motor carrier and permitting area, especially in the MAASTO region, has been recognized as one of the most successful collaborative multistate efforts. The professionals on these committees work in either permitting and/or operations functions at the states and have developed a family-like peer group. They work together and with the industry as a regional unit.

As part of an AASHTO effort towards harmonizing regulations across the U.S., a three-phase plan was developed to work towards truck operations harmonization. In phase I, SCOHT members identified the following categories of focus for harmonization:

- Escort requirements.
- Warning flags.
- Warning lights.
- Warning signs.
- Days and hours of operation.

Additional permit and operational areas were then selected as a phase II approach. Items selected include:

- Number of valid days allowed on single trip permits.

- Permit amendments.
- Holiday restrictions.
- Type and size of escort vehicles.
- Escort requirements for over height loads and over height loads with other dimensions.

AASHTO SCOHT members and industry representatives identified the following additional issues and practices for phase III harmonization efforts, which could be addressed through collaboration among all states.

- Raise awareness of the MAASTO SCOHT's harmonization efforts.
- Develop best practices for state OSOW/Motor Carrier rules and regulations reviews.
- Legislative reviews in cases where there are conflicts between two states.
- Develop uniform signing to alert drivers.
- Provide support for the regional TPIMS project.
- Establish other potential grant opportunities for the truck parking project.

AASHTO SCOHT and MAASTO MCC operate efficiently and effectively. Yet, the variability in regulations and regulators constrains the professional staff and inhibits rapid harmonization of regulations across the states. Steadily, the two groups are making necessary changes to policy and regulations while continuing to develop rationale for greater uniformity across the states.

2.6.12. MAASTO Regional Truck Parking Information and Management System (TPIMS)[23]

http://www.maasto.net/TPIMS.html

The MAASTO TPIMS represents a successful collaborative effort across the MAASTO region to design and implement advanced information systems about truck parking availability. The TPIMS project addresses the lack of truck parking on major freight corridors across 8 states in the MAASTO region. This is a critical issue that impacts safety and efficiency of the national freight network.

Funded by a $31 million TIGER grant, the project was designed to reduce time, cost, and frustration of truck operators searching for parking and provide safe parking alternatives by broadcasting real-time parking availability to drivers through dynamic signs, smartphone applications, and traveler information websites. This innovative solution, initiated by MAASTO, enhances the region's economic efficiency, and improves the region’s global competitiveness. The parking application is a success in contributing to safe movement of freight. The collaboration and joint investments made by these states reflect cutting-edge collaborative work.

2.6.13. Bottlenecks Identification Across Multistate Freight Corridors[24]

http://midamericafreight.org/wp-content/uploads/2019/05/MAASTO-Bottleneck-Study_Final.pdf

In a case of past research supporting innovative development, MAFC has created major freight corridor assessments that can now drive regional corridor management. As an example, highway bottlenecks are a major safety hazard and cause significant delay, lost revenue for drivers, and overall economic inefficiencies. In 2016, 1.2 billion hours of truck delay on the National Highway System (NHS) were lost due to bottleneck congestion which generated $74.5

billion in additional operational costs to the trucking industry. Freight bottlenecks on major freight networks are among the most significant challenges for freight transportation systems.

As a step towards regional freight corridor management, MAFC proposes combining information from a regional freight bottleneck study with information on the value of freight carried by the region's major freight corridors, to develop an index to rank major corridors based on freight value and bottleneck delay. Based on the index, the MAASTO BOD could select a priority corridor to develop a unified bottleneck reduction strategy across the states. By collectively concentrating on the most valuable corridors with the longest and most costly delays, each state's improvements aggregate to increased overall freight corridor safety and efficiency. This collaborative action provides for individual state and regional benefits and is discussed further as potential collaborative projects

2.6.14. Truck Platooning[25]

http://midamericafreight.org/wp-content/uploads/2018/08/MAFC-Truck-Platooning-2018-08-13.pdf

The MAASTO truck platooning and CAV efforts are another example of MAASTO internal teams collaborating to advance and prepare for the adoption of new technologies. Truck platooning can improve efficiency by increasing freight volumes, increase system safety and decrease trucking related environmental impacts. However, state-by-state differences in platooning regulations across the region decrease the potential efficiency and implementation of truck platooning, thus reducing the chance of successful adoption of this system of technologies. In coordination with the STIC committee, MAFC completed an analysis of regulatory constraints to implementation of truck platooning and identified 9 constraining regulatory and process areas. This study's ultimate objective was to take steps towards developing a Midwest Truck Platooning Regulatory Model that harmonizes truck platooning regulations across the MAASTO region. Moreover, as a practical component of this project, potential corridors for truck platooning in the Midwest were identified. Work continues in this area with a larger focus on CAV, and the supporting technologies.

Finally, given the importance of multistate collaboration in implementing regional transportation systems, identifying, and implementing innovations, and the potential cost efficiencies in system management, the Federal Highway Administration recognized the following coalitions in their Freight Management and Operations area.[26]

Domestic

- Alameda Corridor Transportation Authority
- Central Corridors Freight Committee
- Continental One Trade Corridor
- Eastern Transportation Coalition
- I-5 Golden State Gateway Coalition
- I-10 Freight Corridor Study
- I-69 Mid-Continent Highway Coalition
- I-70 Coalition
- I-81 Corridor Coalition
- Lake Michigan Interstate Gateway Alliance
- Mid-America Freight Coalition (MAFC)

- Ports to Plains Alliance

International

- Border Trade Alliance
- Can/Am Border Trade Alliance
- North America Strategy for Competitiveness

The FHWA list is not a comprehensive list of all corridor coalitions. Coalition's sunset, new ones are formed, renamed, and restructured. To address these changes, additional coalitions were added or deleted from this list based on coalition website reviews as well as awareness based on professional affiliations.

In summary, Table 2-10 lists the collaborations discussed above and describes their purpose, starting date, activity, and website. These organizations represent more current collaboratives and are assembled based on active coalition websites and observations while working with the MAFC. The list is not comprehensive but does focus on freight-related coalitions that are active or recently active and focus on long-term, system-level relationships to move multiple states forward in freight safety, efficiency, and economics. The number, and in some cases, the longevity of these coalitions speaks to the need to collaborate on freight issues that transcend geopolitical boundaries.

Table 2-10 Recent and Current Multistate Transportation Coalitions

Coalition Name	Coalition's Website	States Included	Start Date	Status (Active or Not)	Coalition Type				Goal Area(s)
					Trade	Multi modal	International	Other	
The Eastern Transportation Coalition (I-95 Coalition)	https://tetcoalition.org/	FL, GA, SC, NC, VA, DC, MD, DE, PA, NJ, NY, CT, RI, MA, NH, ME, Washington D.C	~1995	Yes	x	x		x	•Transportation Systems •Management & Operations Freight •Innovation in Transportation
I-5 West Coast Corridor Coalition (WCCC)	http://www.westcoastcorridors.org/	AK, CA, OR, WA	2001	Yes	x	x		x	•Sustainable transportation infrastructure •Reduce dependence on oil •Reduce greenhouse gas emissions •Intelligent Transportation Systems (ITS) •Secured mobility
North/West Passage Corridor	https://www.nwpassage.info/	WA, ID, MT, WY, ND, SD, MN, WI	2003	Yes		x		x	•Sharing, coordinating, and integrating traveler information & operational activities •Maintenance and Operations •Planning and Program Management
Great Lakes Regional Transportation Operations Coalition (GLRTOC)	https://gsgp.org/	IL, IN, MI, MN, WI, OH, KY, KS, IA, MO, Ontario	2009	No		x	x	x	•Traffic Congestion •Improve cross-regional transportation operations •Repair aging infrastructure on a large-scale

Coalition Name	Coalition's Website	States Included	Start Date	Status (Active or Not)	Coalition Type				Goal Area(s)
					Trade	Multi modal	International	Other	
I-15 Mobility Alliance	https://i15alliance.org/	CA, NV, AZ, UT	2009	Yes		x		x	•Reduce or eliminate congestion •Improve interregional travel time •Improve safety •Advancing innovation •Efficient construction of the I-15 corridor
I-80 Winter Operations Coalition	https://extsites.kimley-horn.com/projects/I-80Coalition//index.html	CA, NV, UT, WY, NE	2010	Yes		x		x	•Aggregate weather conditions information •Identify traffic data collection capabilities and share information •Research innovative practices •Establish existing capabilities and near-term enhancements
I-10 Freight Corridor Coalition	https://i10connects.com/	CA, AZ, NM, TX	2016	Yes	x	x		x	•Improve safety •Develop a model for regional cooperation and interoperability •Develop technology, standards of practice and protocols •Resource-sharing and interagency financial contributions

Coalition Name	Coalition's Website	States Included	Start Date	Status (Active or Not)	Coalition Type				Goal Area(s)
					Trade	Multi modal	International	Other	
Mid-America Freight Coalition (MAFC)	https://midamericafreight.org/	IA, IL, IN, MI, MO, MN, KY, KS, WI, OH	2002	Yes	x	x		x	•Planning •Preservation, and improvement of transportation infrastructure •Strengthen the connections between transportation policy and institutions, and freight transportation systems
Appalachian Development Highway System (ADHS)	https://www.arc.gov/	AL, GA, KY, MD, MS, NY, NC, OH, PA, SC, TN, VA, WV	1965	Yes	x	x		x	•Promote economic development and job growth •Support Pursuit of Innovative Funding Sources •Improve accessibility throughout the Appalachian Regions
CANAMEX Coalition	No Active Website	MT, ID, UT, NV, AZ	1995	No	NA	NA	NA	NA	NA
US 169 Corridor Coalition	https://www.us169corridorcoalition.com/	TX, LA, AR, TN, KY, IN, MI	2009	Yes	x	x		x	•Enhance safety •Reduce congestion and •Maximize economic development along the U.S. Highway 169 interregional corridor

Coalition Name	Coalition's Website	States Included	Start Date	Status (Active or Not)	Coalition Type				Goal Area(s)
					Trade	Multi modal	International	Other	
Institute for Trade and Transportation Studies (Latin America Trade and Transportation Study) (LATTS)	https://www.ittsresearch.org/	AL, AR, FL, GA, KY, LA, MS, MO, NC, OK, SC, PR, TN, TX, VA, WV	1996	Yes	**x**	**x**		**x**	•Provide a platform for regional collaboration •Facilitate the development of a transportation freight network •Develop effective freight planning tools and procedures •Assist member state DOTs to integrate freight planning into their core business procedures •Partner with other organizations to advance freight planning through research and collaboration
I-81 Corridor Coalition	https://www.i-81coalition.org/	NY, PA, WV, MD, VA, TN	NA	Yes	**x**	**x**		**x**	•Improve the safety and efficiency of freight and passenger movement •Sharing of information and coordinated decision making, management, and operations

Coalition Name	Coalition's Website	States Included	Start Date	Status (Active or Not)	Coalition Type				Goal Area(s)
					Trade	Multi modal	International	Other	
Ports-to-Plains Alliance (aka Ports-to-Plains Trade Corridor Coalition)	https://www.portstoplains.com/	TX, NM, OK, CO, NE, WY, SD, ND, MT	1995	Yes	x	x	x	x	•Improve transportation infrastructure and business networks opportunities •Promote economic security and prosperity throughout North America's energy and agricultural heartland including Mexico to Canada
ITS Heartland Corridor Coalition	https://itsheartland.org/	IA, KS, MO, NE, OK	NA	Yes		x		x	•Facilitate information sharing for ITS projects and activities •Advance transportation technologies and communications
Upper Mississippi River Basin Association (UMRBA)	http://www.umrba.org/	IL, IA, MN, MO, WI	1981	Yes	x	x		x	•Regional interstate forum for the discussion, study, and evaluation of river-related issues of common concern to the states •Facilitate and foster cooperative planning and coordinated management •Create opportunities and means for the states and federal agencies

Coalition Name	Coalition's Website	States Included	Start Date	Status (Active or Not)	Coalition Type				Goal Area(s)
					Trade	Multi modal	International	Other	
American Great Lakes Ports Association (AGLPA)	https://www.greatlakesports.org/	WI, IN, MI, OH, MN, PA, NY	1977	Yes	x			x	•Fostering maritime commerce and related employment in the Great Lakes region
Lake Michigan Interstate Gateway Alliance (former GCM Corridor)	https://www.travelmidwest.com/lmiga/history.jsp	WI, IL, IN, MI	1993	Yes	x			x	•Interagency communication and coordination, •Improvement projects, training efforts, and regionwide planning
Great Lakes St. Lawrence Governors & Premiers	https://www.gsgp.org/	WI, OH, NY, IA, IL, MN, MI, PA, Ontario, Quebec	1993	Yes	x		x	x	•Encourage environmentally sustainable economic growth •Contribute to the vitality of the region's waters and generate competitive, market based financial returns •Expand trade •Shrink the environmental impact of our transportation network

Coalition Name	Coalition's Website	States Included	Start Date	Status (Active or Not)	Coalition Type				Goal Area(s)
					Trade	Multi modal	International	Other	
Niagara International Transportation Technology Coalition	https://www.nittec.org/	NY, Ontario	1995	Yes			x	x	•Information sharing and coordinated management of operations advanced traveler information services •Improve mobility, reliability, and safety •Maintain Corporate Culture as a Service Organization •Build and Maintain Leadership Role for Implementing Technology in the Evolving Transportation Operations and Intelligent Transportation Systems (ITS) Environment

Note: Coalitions were identified through internet search, transportation stakeholders and researchers, and FHWA.

This table demonstrates the proliferation of transportation coalitions in one form or another. An internet search of "corridor coalitions" or "freight coalitions" and "transportation coalitions" sums up a tremendous range and number of groups. The coalitions focus on a range of issues including safety, connectivity, economic development, freight suitability, and access. Some of the groups reflect shorter-term goals related to specific road improvements, such as Missouri's Highway 36/Interstate 72 coalition or Minnesota's Highway 55 Coalition (https://www.highway55.org/). Others focus on regional corridor management, such as the Eastern Transportation Coalition (formally I-95 Coalition), or long-term sustainable relationships designed to leverage regional economies and transportation systems, such as MAFC.

MAASTO States have effectively shared their independent planning efforts across the region; they have recognized freight is without geopolitical boundaries and formed MAFC to support regional coordination in freight policy, planning, and operations. And as demonstrated by the lists of coalitions, these affiliations play an important role in system-wide freight planning and innovation.

Over the past three years, MAFC has been requested to discuss or present its organization, purpose, and processes to four different groups of states considering coalition development. These groups established project corridor coalitions, longer-term coalitions, and examined the best practices and effective organizational model of MAFC to support their efforts.

The following chapter reviews the freight planning efforts by MAFC member states to identify critical freight planning elements, best practices of freight planning tasks, and opportunities to share and collaborate.

3. FREIGHT PLANNING IN MAASTO REGION

3.1. Introduction

According to the U.S. Department of Transportation (USDOT), freight shipments across all modes are expected to grow 22.4% over the next 20 years.[27] . With this expected growth level, developing innovative, data-driven, multimodal freight plans and adequately funded programs are crucial. The multimodal freight system will be expected to support the projected population increases and drive economic growth. Identification and documentation of freight planning processes, collaboration opportunities, and constraints to innovation allows MAASTO states to see and understand their peers' freight planning efforts, share successful practices across the states, and work towards greater collaboration on a region-wide, multimodal freight system. As part of this project, telephone interviews were conducted with the lead freight planning staff in each of the 10 MAASTO states to assess their freight planning activities and status. More specifically, the objective of the interviews was to gather information regarding states' planning framework and status, policies, innovation, institutional efforts, and actions. Additionally, during this assessment, the project is designed to identify the freight planning, policy, and operational areas appropriate for collaboration among MAASTO states.

During the interviews, the following topics were discussed and cataloged for each state:

- Status of the current and future state freight plans.
- Status of the state freight advisory committee.
- Use of and need for freight data sources.
- Multimodal freight programs.
- Multistate collaboration activities.

The planning process information collected during these interviews is summarized and discussed in the following sections. A discussion addressing collaboration, case studies, and effective project conditions, best practices, and methods of successful collaboration follows.

3.2. The Policy Overview: Review of the Federal-Aid Highway Programs

From a historic perspective, authorizing legislation for highways began with the Federal Aid Road Act of 1916, which was the first time the federal government provided aid to state highway programs. This legislation's key requirement was that the states must have a highway department to design, construct, and maintain roads. The Federal Highway Act of 1921, along with the Post Office Act of 1922, provided a multi-year plan of federal funding for the program. This federal-state partnership is a foundation for the Federal-Aid Highway Program (FAHP) that remains active today.[28]

The period from 1955 to 2018 is considered the interstate era and saw the development of a national interstate and highway system spanning the country.[29] Transportation policy and legislation during this period focused on the buildout of the interstate system. As the system was completed, a range of additional issues appeared. Community impacts, social justice, safety issues, increasing numbers of trucks and mixed traffic, and continued traffic growth were among these issues.

While a freight focus is inherent in this historic policy approach, it was not until MAP21 and FAST that multimodal freight, and the industrial sectors and logistics sectors were explicitly provided for in national legislation. As we are on the cusp of a new transportation authorization

under a new administration, much of the following policy analysis is drawn from earlier freight planning research for the MAASTO states.

There has always been implicit support for freight via transportation legislation and its focus on a National Interstate System. More recently and relevant to state freight planning, the legislation and policy began to explicitly link transportation, economic development, and community well-being during the early 1990s. The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA)[30] and the Transportation Equity Act for the 21st Century (TEA-21)[31] shaped the highway program to meet the Nation's changing transportation needs. ISTEA envisioned developing a national intermodal transportation system containing public transportation and improved access to ports and airports[32]. In comparison, TEA-21 boosted highway construction investment and created a new budget for highway and transit programs. In 2005, congress passed the Safe, Accountable, Flexible, Efficiency Transportation Equity Act: A Legacy for Users (SAFETEA-LU),[33] which emphasized expanding freight capacity through planning at the state and national levels. SAFETEA-LU created several small freight funding opportunities by opening the door for more tolling and private sector financing of infrastructure projects. It was one of the largest surface transportation investments in the Nation's history, with guaranteed funding for highways, highway safety, and public transportation totaling $244.1 billion.

In SAFETEA-LU, the joint metropolitan and statewide transportation planning processes were continued with increased consultation requirements for states and MPOs. These changes included advancing the linkages of consistency between transportation improvements, state and local planned growth and economic development. SAFETEA-LU also established the National Cooperative Freight Research, Planning and Capacity Building Program[34] and authorized $25 million over five years to improve truck parking on the National Highway System.

Following SAFETEA-LU, Moving Ahead for Progress in the 21st Century Act (MAP-21)[35] passed in 2012, and established the first real funding incentive for states to undertake freight-specific planning. MAP-21 created a performance-based, multimodal program to address the challenges facing the U.S. transportation system and enhance freight movement in support of the National Freight Network. It authorized $400 million per year for the following six programs: Highway Research and Development, Technology and Innovation Deployment, Training and Education, Intelligent Transportation Systems, University Transportation Research, and the Bureau of Transportation Statistics. Under MAP-21, the USDOT would be responsible for developing a national freight strategic plan in consultation with partners and stakeholders. The National Strategic Freight Plan was released in September of 2020.[36] The focus and implications of the national plan for state freight planning are outlined later in this report.

These changes in the legislation's focus increasingly included a linkage between economic development and transportation, especially freight transportation. To support this linkage and ensure the right stakeholders were involved in freight planning, states were encouraged to develop individual state freight plans and establish freight advisory committees (FACs).

The state FACs were intended to reflect the tenor of the public and private sector stakeholders from ports, shippers, carriers, associations, and state and local transportation agencies. The states were to use these groups as a forum for freight-related discussions, communicate and coordinate regional priorities with other organizations, promote the sharing of freight information between the private and public sectors, and participate in the development of the state freight plans. From a participant observation perspective, the FACs have proven their value in real-world input from the freight system users. The public relations benefits are also enormous, and the relationship that forms between the members lasts far beyond the meeting room.

The most recent legislation, Fixing America's Surface Transportation Act (FAST Act)[37] included the first-ever dedicated freight funding program at the federal level and was signed in 2015. The

FAST Act funds Federal-aid highways at over $305 billion for fiscal years (FY) 2016 through 2020.[38] The FAST Act is the first long-term surface transportation authorization that provides long-term funding for freight surface transportation. The FAST Act contained two major freight programs:

- The National Highway Freight Program.

The FAST Act includes an estimated average of $1.2 billion per year for a new National Highway Freight Program dedicated to improving freight's efficient movement on the National Highway Freight Network (NHFN). Even though the program is highway-focused, each State may use up to 10% of the funds on multimodal projects.

- A discretionary grant program (called FASTLANE Grants initially, recently renamed INFRA Grants).

The FAST Act also establishes a flexible, competitive grant program of $4.5 billion over five years, like the popular Transportation Investment Generating Economic Recovery (TIGER) grant program. The discretionary grants under the FAST Act are available to states, large MPOs, tribes, localities, federal land management agencies, special purpose districts, and public authorities.

The FAST Act requires states to update their freight and investment plans at least once every five years. Compliant freight plans must meet the six criteria established in MAP-21 and four additional criteria identified in the FAST Act. Figure 3-1 summarizes ten primary elements that the FAST Act required states to incorporate in their freight plan.

1. Identifying significant freight system trends, needs, and issues within the State.
2. Describing freight policies, strategies, and performance measures to guide investment decisions.
3. Providing a list of designated multimodal critical rural freight facilitates and corridors and critical rural and urban freight corridors within the State.
4. Describing how the Plan will improve the State's ability to meet National Multimodal Freight Policy and National Highway Freight Program goals.
5. Describing how innovative technologies and operational strategies, including ITS, were considered.
6. Describing improvements that may be required to reduce or impede the future deterioration of roadways on which heavy freight vehicles are projected to travel.
7. Providing an inventory of facilities with freight mobility issues, such as bottlenecks, within the State and a description of strategies being employed to address them.
8. Considering any significant congestion or delay caused by freight movements and any strategies to mitigate that congestion or delay.
9. Providing a freight investment plan that includes a list of priority projects and describes how funds made available to carry out would be invested and matched.
10. In addition, the plans must be developed in consultation with the State Freight Advisory Committee, if applicable.

Figure 3-1: FAST Act Requirements[39]

3.3. Review of National Freight Strategic Plan (NFSP)

As mentioned earlier, the U.S. Department of Transportation has recently published the National Freight Strategic Plan (NFSP), which can be instructive for states in updating their freight plans and identifying freight data and research needs. One of the plan's highlights is the importance of providing a framework for increased cross-sector, multijurisdictional, and multimodal collaboration. This plan also identifies safety, infrastructure, and innovation as three main strategic goals of U.S. DOT's National Freight Policy. Figure 3-2 summarizes these goals and strategic objectives defined in this plan to guide freight policies, programs, and investment over the next five years.

GOAL	STRATEGIC OBJECTIVES
Safety *Improve the safety, security, and resilience of the national freight system.*	• Support the development and adoption of automation, connectivity, and other freight safety technologies • Modernize safety oversight and security procedures • Minimize the effects of fatigue and human error on freight safety • Reduce conflicts between passenger and freight traffic • Protect the freight system from natural and human-caused disasters and improve system resilience and recovery speed
Infrastructure *Modernize freight infrastructure and operations to grow the economy, increase competitiveness, and improve quality of life.*	• Fund targeted investments in freight capacity and national goals • Improve consideration of freight in transportation planning • Prioritize projects that improve freight intermodal connectivity, and enhance freight flows on first- and last-mile connectors and at major trade gateways • Develop a methodology for identifying freight bottlenecks across modes • Advance freight system management and operation practices • Stimulate job growth and economic competitiveness in rural and urban communities • Mitigate the impacts of freight movement on communities
Innovation *Prepare for the future by supporting the development of data, technologies, and workforce capabilities that improve freight system performance.*	• Support the development and adoption of automation and connectivity, including V2X technologies • Support the safe deployment of unmanned aircraft systems (UAS) technology • Streamline or eliminate regulations to improve governance, efficiency, and economic competitiveness • Improve freight data, modeling, and analytical tools and resources • Strengthen workforce professional capacity • Invest in freight research • Support regulatory frameworks that foster freight innovation

Figure 3-2: Strategic Goals and Objectives of the National Freight Policy[40]

3.4. Freight Planning

The transportation planning field has historically focused on moving people and creating viable, healthy, and economically solid communities. Similarly, freight planners are investigating and advocating for transportation in supporting the economy, especially through freight. With recent legislative and practical advances such as FACs, the economic actors are directly participating in the planning process to bolster the support for a complete multimodal freight system.

A focus on economic linkages helps define the system extent and context. The United States Department of Transportation (USDOT) estimates that the transportation system moves over 54 million tons of goods worth nearly $48 billion each day, or almost 63 tons of freight per person per year. In addition, freight tonnage is estimated to increase by 45% by 2040.[41] Thus, state freight planning plays a vital role in balancing increasing freight tonnages with passenger movement, safety issues, social justice, and innovations such as automated vehicles.

Freight plans are formalized planning documents and, at the simplest level, include an inventory and assessment of freight stakeholders, commodities and industries, trip metrics, geographic scope of operations, and multimodal systems. Freight plans provide an understanding of the movement of goods throughout the state or region within the economic and transportation framework. Understanding the system and trends supports the decision-making process for public infrastructure, can increase the productivity of freight systems, and will provide for safe and efficient freight and passenger vehicle movement.

The literature highlights three significant elements that are critical for effective freight planning efforts and promoting efficient engagement with the freight community:[42]

1) **Freight Self-Assessment:** States are required to identify the assets and needs, develop freight policy objectives, evaluate commodity flows and industry logistics patterns, assess freight service quality, and identify bottlenecks, and physical and operational deficiencies and impediments.
2) **Stakeholder Outreach:** Both public and private freight stakeholder groups are involved in the freight planning process. In this step, states recognize freight stakeholder needs through existing practices and freight advisory committees or councils and include them in the planning process.
3) **Data Analysis:** The appropriate data sources to understand freight issues and movements are critical for the freight planning process. These data could also be valuable in measuring freight networks' existing performance and tracking economic growth associated with freight projects.

MAASTO states' current plans and processes meet MAP-21 and the FAST Act requirements, as shown in Table 3-1. The table is updated from the 2016 MAFC report and the newly implemented measures are listed in red. Some of these requirements, such as the FACs, have generated much discussion and success and are addressed specifically later in this chapter.

With the freight policy, planning determinates, and economic focus identified, the following section addresses the state of freight planning across the MAASTO states. This section catalogs the freight planning process for each state. It allows each state to look at how their peer states addresses the planning requirements. The process also allows for identifying best practices that can then be shared across the states.

Table 3-1: MAFC State Freight Plan Compliance with FAST ACT and MAP-21 Requirements

FAST Act	Significant system trends, needs, and issues	Policies, strategies, and performance measures	How will plan help meet national freight policy goals	Innovative technology considered	Description of work to reduce road damage caused by heavy vehicles	Inventory of facilities with freight mobility issues, and solutions	List of multimodal critical facilities and corridors	Consideration of congestion or delay caused by freight movements, and strategies to mitigate	Freight investment plan	Consultation with FAC
Map-21	x	x	x	x	x	x				
Illinois	x	x	x	x	x	x	x	x	x	x
Indiana	x	x	x	x	x	x	x	x	x	x
Iowa	x	x	x	x	x	x	x	x	x	x
Kansas	x	x	x	x	x	x	x	x	x	x
Kentucky	x	x	x	x	x	x	x	x	x	x
Michigan	x	x	x	x	x	x	x	x	x	x
Minnesota	x	x	x	x	x	x	x	x	x	x
Missouri	x	x	x	x	x	x	x	x	x	
Ohio	x	x	x	x	x	x	x	x	x	x
Wisconsin	x	x	x	x	x	x	x	x	x	x

x Added/Updated in recent freight plan

3.5. Freight Planning in the Mid-America Freight Coalition

The MAASTO states have been leaders across the country in institutionalizing multimodal freight planning within their planning practices and agencies. Similarly, the MAASTO states have had successes in advancing innovation in planning, freight operations, policy, and competitive funding programs to support multimodal freight. The MAASTO states have demonstrated early adoption of FACs, innovative use of freight data, integration of freight activity into agency modeling, and integration of a multimodal freight perspective within the agency. The following tables and narratives represent a dataset of freight planning practices, processes, and programs across the ten states. The information is based on interviews with state freight planners and reviews of their efforts in working with agencies and industry. The narratives identify and describe freight best practices, innovative policies, and programs.

The MAFC technical representatives were first asked to address the status of their freight and multimodal plans and planning, the use of consultants in completing the work, and the estimated costs of the plans. Next, the importance of FACs', committee structure, and roles are outlined, followed by freight data use and the respective best practices. The availability, efficacy, and cost of freight data are addressed along with innovative data sources and analytics. State multimodal freight programs are also identified and described.

Importantly, this effort allows for a comparison to a 2016 MAFC state freight planning report as a step towards preparing for and completing their next official freight plan in 2022. Developing this longitudinal overview of freight planning provides at least three significant benefits. The experience and interaction of state freight planners in participating in this project require them to reflect on their and other's programs. Second, group teleconferences and meetings discussing the freight planning efforts support sharing of best practices, professional development and innovation. Finally, the report provides a record of the development of the freight planning process across MAASTO and how these states work towards supporting freight as well as working collaboratively across their borders.

Furthermore, best practices are identified in four categories based on their role in the freight planning process. Practices are classified under freight plan or planning process; practices in creating and maintaining the FAC; practices of data identification, creation, and use; and practices to support multistate collaboration.

Dictionary definitions of best practices refer to a procedure, process, or course of action that is correct or most efficient, or the most efficient and prudent approach. Simply put, agencies all prefer the safest, best answers and processes for the lowest cost in service to the public.

3.5.1. Freight Plan Status, Schedule, Cost, and Consultant Use

Prior to MAP-21 and FAST, MAASTO states were active in freight planning, as well as multimodal plans and studies. The abundance of natural resources and manufacturing, the Nation's crossroads for rail and interstates, the availability of the Inland and Great Lakes marine freight systems, along with major aviation hubs, has resulted in unique context for multistate collaboration. As such, all the MAASTO states have been active in overall freight planning and multimodal planning to ensure marine, rail, and aviation are included in the freight planning and operations processes.

Ohio, Kentucky, Michigan, Minnesota, and Kansas have freight planning experience going back to the 1990' and early 2000s. The remaining MAASTO states ramped up their freight planning soon afterwards. While states varied in their timing of adopting formal freight plans and processes, all MAASTO states have a long history of addressing freight issues through

interstate operations and development, modal freight studies, and multimodal programs that support freight.

Table 3-2 describes MAFC members' current freight plans. It summarizes information about the plan completion date, whether the plan is FAST Act/ MAP-21 compliant, whether consultants were used to aid in the production of the plan, its relation to other plans, and total planning cost. Much of this information is extracted from the 2016 report. Likewise, Table 3-3 summarizes information about states' future freight plans. When the next version of each state's plan is expected, whether the state plans to use consultants, estimated cost, and whether the plan will stand by itself or be combined with other plans are presented in Table 3-3.

Table 3-2: Current Status of State Freight Plans

State	Date Finished (Last Update)	Fast ACT Compliant	MAP21 Compliant	Relation to Other Plans				Consultants Used	Total Cost
				Freight Plan	Rail Plan	Marine Plan	Airport System Plan		
Illinois	2017	Yes	Yes	Stand alone	Stand alone	Stand alone	Stand alone	Yes	335,000
Indiana	2018	Yes	Yes	Stand alone	Stand alone	Combined	Stand alone	Yes	N/A
Iowa	2018	Yes	Yes	Stand alone	Stand alone	Stand alone	Stand alone	No	N/A
Kansas	2017	Yes	Yes	Stand alone	Stand alone	Combined*	Stand alone	Yes	600,000
Kentucky	2017	Yes	Yes	Stand alone	Stand alone	Combined	Stand alone	No	N/A
Michigan	2017	Yes	Yes	Stand alone	Stand alone	Combined	Stand alone	No	N/A
Minnesota	2018	Yes	Yes	Stand alone	Stand alone	Stand alone	Stand alone	Yes	700,000
Missouri	2017	Yes	Yes	Stand alone	Stand alone	Combined	Stand alone	Yes	1,000,000
Ohio	2020	Yes	Yes	Stand alone	Stand alone	Stand alone	Stand alone	Yes	2,000,000
Wisconsin	2018	Yes	Yes	Stand alone	Stand alone	Combined	Stand alone	Yes	N/A

* Incorporated into Statewide Multimodal Freight Plan

Table 3-3: Summary of Future Freight Plans

State	Date Expected	Consultant Used	Estimated Total Cost	Relation to other plans
Illinois	2022	Yes	NA	Stand alone
Indiana	2022	N/A	N/A	N/A
Iowa	2022	No	N/A	Stand alone
Kansas	2021	Yes	N/A	Stand alone
Kentucky	2022	Yes	N/A	Combined
Michigan	2021	Yes	N/A	Combined
Minnesota	2023	Yes	3,000,000	Stand alone
Missouri	2021	Yes	2,100,000	Combined
Ohio	2023	Yes	1,500,000	Stand alone
Wisconsin	2022	Partially	N/A	N/A

3.5.2. State Practices

With the next cycle of freight plans due in 2022, MAASTO states have begun or are in the process of developing their next freight plan. Based on interviews with MAFC technical representatives, the following narrative details each state's planning status.

3.5.2.1. Illinois

Illinois last completed a freight plan in 2017. With the legislatively prescribed five-year rotation, they expect to complete updates in 2022 and 2027. The organization and focus of the modal freight plans, like the highway and transit plans, fall under the overarching LRTP. Illinois completed its freight plan in combination with WSP consultants. WSP completed approximately 75% of the document, including the freight investment plan at the cost of $335,000. IDOT personnel completed the remaining 25%, including performance measures and a significant effort with the freight investment plan.

Illinois is currently completing a marine freight plan and is expected to begin a State Aviation Plan in early 2021. At this time, IDOT has not yet started the next iteration of their freight plan, so they cannot provide information concerning contracting, costs, and personnel at this point. As with all the MAASTO states, the geography and presence of waterways, especially as jurisdictional boundaries, require high levels of coordination between the states. States sharing major river crossings require high levels of state-to-state coordination for bridge construction and maintenance. Otherwise, they consider the collaborative goals and efforts outlined in the first plan as more aspirational.

However, with additional emphasis on freight in legislation, the freight plans which had previously been descriptive, have become more analytic and action driven. Changes included providing dedicated funding, linking the plan to performance measures, and data-driven analysis. The freight planning processes adopted by the states were designed to serve the

goals of the freight plan, LRTP, and overall organizational focus, as well as ensure the multimodal transportation and logistics needs are met.

With the available freight funding through the FAST Act, IDOT focused on investments in the Jane Byrne Interchange, a major freight bottleneck (see https://www.janebyrneinterchange.org/). IDOT then established a competitive freight program and created a ranking system to award funds to twenty-three projects. Seventeen of the projects were local. The state-level projects focused on correcting bottlenecks, intermodal connectivity, safety, and freight technology. Additionally, three port projects, two on the inland river system and on the GLs, were funded under the multimodal eligibility funding. Outside of the FAST freight funding, Illinois is developing a competitive funding program for ports and aviation facilities. The anticipated funding is at $150 million. The projects will be selected based on a ranking system currently under development. The overall project will be funded by Series B Bonds to be approved in legislation and administered by IDOT.

IDOT is also developing a rail needs assessment study and considering processes to change and add CRCs and CUCs to the highway delineations. In addressing the CRCs and CUCs, IDOT considers identifying routes in coordination with other states, especially when working on cross border freight corridors in major urban areas.

3.5.2.2. Indiana

Indiana is currently working from a freight plan completed in 2018. Their intentions are to complete a new freight plan every four years, within the five-year requirement, and the next is due in 2022. Indiana's freight, rail, and LRTP documents are standalone documents but linked together to ensure system cohesion. The 2018 freight plan was completed by a consultant with detailed oversight by the agency. The 2022 freight plan is expected to be completed in a similar manner. Cost and consultant details of the 2018 plan are listed in Table 3-3.

The 2018 plan addressed collaboration in freight development and operations on two fronts. First, Indiana is one of the eight leading states to implement the Truck Parking Information Management System (TPIMS) across the MAASTO region. They have also adapted rest areas policy to allow food trucks to provide service to truck operators during pandemic closings. The operators otherwise would have no place to stop for food. The freight planners anticipate refocusing the plan in 2022 to ensure they are current with best practices and regulatory guidance. Like other states, they have seen an increase in interest in freight movement and development within their agency and across the national transportation scene.

With the initial allocation of freight funding in the transportation authorization, Indiana selected current projects from its (State Transportation Improvement Plan (STIP) as qualifying projects. Internally, funding is available for a variety of railroad as well as port projects.

In terms of moving forward, Indiana freight planners have several items they would like to explore with their peers. Have other states allowed food trucks on parking facilities during emergencies, or how do they maintain services? Have any of the partners worked with municipalities to open or enlarge truck parking, especially in and around urban areas?

3.5.2.3. Iowa

Iowa's current freight plan was accepted by FHWA in July 2017. They are now planning an update for May 2022 based on the five-year reporting cycle. This schedule aligns with their work on the LRTP, also due in May 2022. This will allow for some of the efforts to serve both plans. For example, some stakeholder outreach feedback and information will provide information for both the LRTP and the freight plan.

The LRTP and Freight Rail plans are considered independent products. Information in the freight and rail plans is used in the LRTP, and their pattern has been to complete the rail and freight plans in support of the LRTP. The Iowa rail plan is on a four-year cycle, complicating complete plan integration across federal modal agency requirements. The current plan was completed in 2017 and will be updated in 2021. While Iowa does not have a marine or port plan, they have been an active lead-state in the redevelopment effort for marine infrastructure in the Upper Mississippi River basin. Additionally, marine considerations are included in their LRTP.

The respondents indicated that Iowa might examine combining the freight, rail, and LRTP efforts in 2027. They do not have a standalone marine plan; however, the freight component is combined with the freight plan and LRTP plan. Further, Iowa will likely complete future plan activities in-house as their personnel are capable of the technical and analytical requirements. Further, the planning group is familiar with the state's freight system and needs.

On February 27, 2018, the American Transportation Research Institute (ATRI) released its report on best practices in freight planning at the state level, and the Iowa State Freight Plan was ranked fourth among freight plans nationally.[43] It was also among the top twelve plans nominated as an innovative state freight plan from state DOT personnel and freight stakeholders nationwide. According to ATRI, Iowa provides an excellent multimodal network analysis in its plan. Iowa identifies priority corridors for in-depth study using an in-house developed Infrastructure Condition Evaluation (ICE) tool. Michigan and Ohio are also on the ATRI list, demonstrating the leadership in freight planning across the MAASTO states.

3.5.2.4. Kansas

The current freight plan for KDOT was approved in 2017 and they will begin the update soon to stay within the five-year planning document cycle. In terms of freight and multimodal plans, the Kansas rail plan is considered a standalone document, and considerable materials from the rail document are incorporated in the freight plan. Both plans are then incorporated into the LRTP. For the 2017 effort, both the rail and freight plans were updated at the cost of $600,000.

The rail planning effort kicked off in January 2021 and will be completed in late 2021. The freight plan will begin in the fall of 2021 and will be complete in December 2022. KDOT is known nationally for its progressive freight rail programs and outstanding stakeholder relations.

In terms of collaboration, the respondent feels that the last rail and freight plans, and their current operations in general, stress collaboration. When developing the transload facilities, rail programs, and planning documents, they included a broad range of stakeholders, including railroads, industry groups, communities, agencies, and bordering states. Collaboration provided an opportunity to share practices and planning ideas and expand the pool of available resources and knowledge. KDOT personnel's experiences are not uncommon; MAFC technical participants consistently cite the external interaction, sharing, and relationship development as a key component of MAFC activities as well.

KDOT is also the lead state for the MAASTO TPIMS effort and manages funding, federal and consultant relationships, and ensures the TPIMS project complies with TIGER grant requirements. This is major, multiyear task that Kansas should be commended for championing and managing.

KDOT respondents indicated that with FAST and MAP-21, there was an increased interest in freight policy and operations. In Kansas, all available freight modes have been incorporated into the planning process and public outreach. The increased stakeholder input has helped the agency identify problem areas in freight operations, as well as in the policy and regulatory areas. Overall, the interactions and collaboration help them serve their customers better.

The top issues KDOT indicated an interest in for peer sharing include rail car weight issues, including class 1's and short line railroads, using railroad funding as an economic development tool, and emerging technologies for rail and highway freight systems.

3.5.2.5. Kentucky

The current KYTC freight plan was accepted by FHWA in December 2017. They are now preparing for a LRTP update in 2021 and a freight plan update in 2022. Currently, all plans are standalone, but they are considering combining their rail and freight plan in their next updates. Except for the LRTP, all freight and modal plans are completed by consultants. While the modal plans are the responsibility for the freight, rail, and waterways group, the LRTP falls under the larger Planning section at KYTC. The current effort at KYTC is contracted for $1 million.

See this link to review the Kentucky effort: https://transportation.ky.gov/MultimodalFreight/Pages/Kentucky-Riverports,-Highway-and-Rail-Freight-Study.aspx.

In their previous plans, multistate freight collaboration was not listed or discussed specifically, and they considered the plans as inventories of the networks and modes to support programming decisions.

In terms of changes in freight planning and its role in the agency, the modal unit's primary responsibilities are modal program management. Some of the larger changes in planning and policy orientation are made at the upper management and Secretary's level.

The available freight funding from FAST was allocated to the KYTC STIP for freight-related projects which were selected by local districts. Additionally, the Kentucky legislative body allocates $500,000 annually to public ports and encourages KYTC to spend other discretionary funds on highway/rail crossings, as well as rail crossing gates and bells to support rail safety.

KYTC suggests that one prominent area that should be focused on by MAASTO partners is marine freight corridors and planning. Specifically, the independent efforts of Ohio and Kentucky on the Ohio River, as well as the state coordination on the Mississippi system, are promising but more could be done to support the overall system and benefit all the states. Currently, each state, or the ports of the states, are in a competitive environment along a shared corridor. By expanding their regional approach used on the highway system operations and planning for the waterways, the states can leverage the waterways and their ability to partner to achieve shared goals and projects.

KYTC is interested in the competitive multimodal freight funding programs that are being developed in peer MAASTO states. Understanding the funding, operation, and maintenance of a competitive grant program will help states establish new programs and refine existing programs. The respondent feels this might be a topic of interest to all and adds the state's share freely to the benefit of each state and the region.

3.5.2.6. Michigan

MDOT has developed an integrated, performance-based 2045 State Long-Range Transportation Plan (Michigan Mobility 2045) to guide the implementation of their vision for a 21st-century transportation system. The LRTP will support user needs for improved safety, infrastructure conditions, and system reliability to drive statewide economic investments. Cited as a twenty-five-year plan for transforming Michigan's transportation system, the plan is the first of its kind to incorporate not only an overall vision of the state's transportation system but to incorporate two additional federally required documents: the State Rail Plan and State Freight Plan. This innovative approach combines all three documents to provide a streamlined vision of the transportation future in Michigan across all modes. The plan was completed in 2021. See

the planning process detailed at https://midamericafreight.org/index.php/events/2020-virtual-annual-mtg/.

Michigan's work is a unique, first of its kind to combine three planning efforts and documents into a single, holistic approach. The project is in the second of two phases. Phase 1 addressed the integration of federal requirements into a single effort and brought the necessary agencies into the process. Phase 2 is ongoing and includes the actual development of the plan to be completed yet this year. After 2021, they will continue to follow a five-year planning update cycle.

The planners expressed that as the project has progressed, it was critical for the consultant to meet with the participating agencies to go through the process and document and describe how all the federal requirements will be addressed. One-hundred percent agency participation and buy-in were necessary to complete a combined planning process. Michigan has freight personnel experienced in advanced data management and analysis and currently conducts independent analysis of their in-house data, FAF, and Transearch data to refine Michigan planning and programs, and performance measures.

In terms of multistate collaboration, they feel their efforts are of interest to multiple stakeholders, but they did not directly include a section on multistate collaboration. In the current plan, a list of stakeholders and the process to involve them is included. Border states, Canada, Great Lakes Dredging Team, MAFC, MAASTO are all included as participants and stakeholders. With TPIMS success and the current interest in regional projects, they feel collaboration will play a bigger role in freight planning and overall operations of the agencies.

In the interview, it was noted that they feel the biggest changes in freight planning are not necessarily policy changes but the rapidly changing technologies that are being introduced. Processes and technologies such as blockchain logistics, CAV, platooning, home delivery, and COVID changes have demanded attention. When looking at freight as a whole, the respondent indicated that overall, there is an increased emphasis on freight with everyone they work with.

With the introduction of freight funding, all the formula funds available for freight were invested in existing highway projects, specifically I75 and I96. In addition to the federal freight funds, Michigan provides funding for economic development, rail, the state infrastructure bank, aeronautic loan program, a passenger and freight ferry program, and provides assistance to the Detroit/Wayne County Port.

Michigan's critical location on the Great Lakes has involved them with the Governor's and Premiers group Great Lakes and St. Lawrence Seaway, as well as regional Great Lakes groups involved in dredging and port development. In effect, Michigan's marine role is multinational, in association with Canada and through the St. Lawrence Seaway.

Lastly, in terms of sharing freight issues with partner states, the respondents would like to see more formula funding to stabilize programs and allow for longer-term planning. They are interested in how other states handle funding modal programs and funding variability. Michigan's integrated freight plan, involvement in the Great Lakes groups, and overall partnering efforts are worthy of note. The combined freight plan is a first in the nation and is exemplary in its coordination with agencies and stakeholders.

3.5.2.7. Minnesota

The 2017 Minnesota Statewide Freight System and Investment Plan represents the latest update to Minnesota's first State Freight Plan. As one of the leaders in freight planning, MnDOT originally developed a freight plan as early as 2005. The current plan is part of the family of

plans that integrates all modes and functions of the department into a holistic strategic approach titled Minnesota GO.

They plan to update their current freight plan in 2023 based on the federal five-year mandate and will decentralize the approach. To provide the diversity of freight needs across the state, they will continue to use the eight administrative districts across the state to develop eight distinct district level freight plans that are then combined into a larger statewide perspective. This process is considered more of a continuum of planning, and the reporting should reflect this as much as possible.

The respondents indicated that about 50% of their planning efforts are contracted out and estimate the total costs of the recent plan documents at nearly $700,000, approximately $600,00 for rail planning, and $100,000 for marine and port planning. There was an additional investment in the district freight plans at approximately $200,000 per district.

To date, MnDOT planning documents reflect their high-level efforts with adjoining states, participation in groups such as the Midwest High-Speed Rail, national and regional rail groups, work in the Great Lakes, the Upper Mississippi River Basin Association, and MAFC. They also reach out to Canadian provinces (Manitoba and Ontario) but have yet to develop a strong working connection.

The Minnesota respondents felt that freight planning has fundamentally changed with the FAST Act and MAP21. Prior to the legislation, freight planning was completed without basic regulatory guidance, most project activities were absent formula funding, and the focus areas were derived from need. However, now there is a tremendous interest in other freight factors such as freight funding, planning requirements, and the related economic development.

With the district level freight plans and the FAST Act funding, MnDOT was able to identify more precise freight funding needs and coupled with their competitive freight grant program (https://www.dot.state.mn.us/projectselection/lists/freight.html), they received $250 million in project funding requests with only $95 million available. They are currently considering another $55 million in solicitations. In terms of modal funding, the MnDOT Rail Service Improvement program is a grant program open to all railroad classes and accepts applications throughout the year. The Port Development Program uses state funding and supports the seven qualified ports in Minnesota. Like other states in the region, there is a historic and important role for ports in the state, and they are frequently funded through state allocations. Federal transportation dollars have been mostly reserved for the highway system and not considered funding for a multimodal system.

MnDOT cites several areas worthy of multistate collaboration and consideration across MAASTO: truck size and weight harmonization, truck parking, international border crossings, competitive rail service, precision railroading, the national freight plan, and regional goals and planning. Another suggestion is to expand MAFC technical members' exposure to external state and coalition activities through a continuation of annual meetings with external partners.

3.5.2.8. Missouri

The first Missouri freight plan was completed in 2012 in just nine months, to provide evidence of the need for freight funding prior to a state transportation funding ballot. Following updates to the 2012 plan, Missouri’s current freight plan was deemed FAST Act compliant on December 17, 2019. MoDOT is working under their current planning effort to meet the 2022 federal freight plan deadline. In the upcoming plan, their goals are to: (1) update the existing Statewide Freight Plan and Statewide Rail Plan into a combined Statewide Freight and Rail Plan that meets the requirements of the FAST Act, and (2) develop a passenger rail economic impact study.

The upcoming MoDOT State Freight and Rail Plan will be comprehensive, it will align with the LRTP, provide useful data, applicable analytical measures, and practical tools that can be used in decision-making and educating Missourians on the connection between freight transportation and the economy in Missouri. The plan will also focus on critical freight issues such as bottlenecks, identification of freight generators, improving the granularity of maps, expanding truck parking, and origin-destination by commodity or corridor. The respondent indicates this will support Missouri freight carriers and their need for greater efficiency to stay competitive. The plan is expected to cost $2.1 million.

While MoDOT has not yet completed a marine or ports plan, they completed an extensive port economic development study in 2018 and manage a state-funded port funding program that keeps the agency invested and active with the marine freight sector. While the Missouri Department of Natural Resources manages the state waterway plan, marine freight will be included in the MoDOT updated freight plan. However, legislative mandates focus funding on highways and place limits on investments beyond the highway system.

The respondent indicated they have considered blending their freight and LRTP plans, but it may be too large of a project cost-wise, and in terms of personnel demands. The respondent estimates that a combined plan would cost around $3-$4 million every three to five years. With either approach, the plans need to feel like one plan, one approach.

While the last freight plan did not address collaboration, they collaborate extensively Kansas City and St. Louis area MPOs. Both MPOs are located on state borders in major urban areas and share responsibilities across the two states. The current planning effort will include a great deal more multistate collaboration, especially with Illinois and Kentucky for multistate corridors.

The respondent feels there have been significant changes in freight planning since MAP21 and Fast Act. The current federal focus is clearly on economics. There is a broader recognition that freight movement is important to business success. There is a statewide and national focus to make sure the systems work for business. There is also additional awareness and support for freight, although the focus is predominantly on trucks.

The freight funding received through the FAST Act was primarily used on interstates, and secondly bridges, to reduce the number of posted bridges. At this point, freight was considered in the planning process, but there was no actual freight program. MoDOT has two successful multimodal funding programs for waterways/ports and rail. MoDOT administers a port program of approximately $600,000.00 per year and is working with the ports to create self-sustaining business entities. The money is allocated on a yearly basis by the state legislator.

Their rail grant program has awarded nearly $30 million in the past year and most significantly awarded funding for the Merchants Bridge, a critical terminal railroad bridge spanning the Mississippi River.

In terms of issues or practices to share across MAASTO peers, the respondent indicated everyone is working on getting past the pandemic and dramatic funding decreases, sharing information, and watching other states to see what they can learn.

3.5.2.9. Ohio

Ohio’s current State Freight Plan was ranked sixth among freight plans nationally based on ATRI report on best practices in freight planning and at the state level Ohio and was one of the first three states nationally to receive FHWA acceptance of their plan. Ohio implements planning as a process, with the 2016 plan receiving yearly updates to 2019. The 2016 plan included two consultant contracts worth approximately $2 million. The upcoming freight plan is budgeted for approximately $1.5 million, and the contract has been awarded a twenty-four-month timeframe.

Ohio ties the state's guiding policies for freight to existing goals in Access Ohio 2040, Ohio's LRTP. Ohio's performance measures are based on user input and preferences, representing a true user-driven approach to providing transportation services. This approach has great potential to involve stakeholders and personalize transportation for the user. This can eventually lead to a greater sense of ownership and awareness of these systems and can create public support for infrastructure investments.

All of Ohio's multimodal plans are considered separate, with a rail plan completed in 2018 and a waterways plan completed in 2019. The LRTP is currently underway. Considering the various plans, the respondent indicates very little collaboration was spelled out in the freight plan. The marine plan did include planning with Canada and the GSGP group.

The respondent states that multistate collaboration and the focus on multimodal freight systems has increased with MAP21 and FAST and will continue to increase. Legislatively requiring a freight plan makes a huge difference; it helps institutionalize freight, makes agencies look at all modes, and view it as an economic system, not just a road or port, for example. The respondent continues that the requirements have also driven planners to examine the data and even develop new data. Most public data sets do not provide the granularity needed to make decisions that impact critical economic and logistics systems. In response, states have created in-house data sets, contracted for complicated analytical approaches to existing data, explored mapping techniques to accurately portray freight and commodity movements, and developed new data collection techniques to capture stakeholder input.

The Fast Act allocated about $38 million for freight in Ohio, which was invested in planned highway projects that were also identified in the freight plan. They are working to develop a freight project list independent of the STIP.

In terms of peer-to-peer information sharing, Ohio is examining the tradeoffs between static weight stations that require large investments, and less expensive mobile operations. In Ohio's case, the estimated $150 million cost of a multiplex weigh station with an estimated 3% violation capture is currently under evaluation. Considering the potential efficiencies of mobile stations, are there peer states with research or experiences in evaluating these systems? Other areas of interest to peer states include the newly created Ohio statistical port district, and how they include pipelines in their freight planning.

3.5.2.10. Wisconsin

Wisconsin's current freight plan was approved in March 2018, and they will begin work on the next iteration soon. They intend to keep the freight plan timing aligned with the FHWA five-year schedule. As far as combining modal plans and the LRTP, at this point, WisDOT has no plans to combine the plans but will stay aware of how the other states are handling multiple plans and work to reduce duplicity in the work and documents. The workload on the freight plan has typically been split, 60% based on WisDOT, and around 40% consultant generated.

WisDOT completed Transportation Asset Management Plan (TAMP) in September 2019, which outlines WisDOT's efforts over the next ten years (to 2029) to keep the National Highway System safe, efficient, and in a state of good repair. Connections 2030 is also a part of WisDOT's long-range transportation plan, which identifies a series of system-level priority corridors. Connect 2050, the next plan iteration, is currently being prepared.

The respondents indicate that the 2018 freight plan did not directly address multistate collaboration, and what was included is not significant. However, given the direction of WisDOT and MAASTO, they expect collaboration to play a larger role in their future freight plans.

Other changes they have seen with legislative support for freight include increased communication levels regarding freight and freight technologies across MAASTO and within most states. WisDOT does not have a specific freight section but locates professionals in freight areas across the department that they draw upon in completing planning and freight development. With the dispersed freight personnel (in contrast with agencies with freight units), the respondents note there may be differences in communication flows and planning efforts.

Available funding through the FAST Act was used on projects specified in the freight plan and captured in the broader planning effort. Their process included identifying all projects and then selecting the freight projects within the larger group.

One critical area for Wisconsin is maintaining rail access for much of the state, especially the northern half. The respondents are interested in learning whether any of their peers have experience in this area, or if the region as a whole could encourage greater rail access and service in rural areas or areas without current rail service. Could there be a region-wide collaborative effort to encourage rail development?

In summary of the planning efforts across the MAASTO region, Table 3-4 provides links to the freight, long-range (LRTP), rail, aviation, and marine plans for the states. All states had some form of freight, LRTP, and rail plan and either had an aviation plan or were in the process of updating their existing plan. However, Indiana, Minnesota, and Ohio are the only states with standalone marine transportation system plans**.** Kentucky and Illinois currently have marine freight plans underway and others have completed marine economic studies .

Table 3-4: Associated Current Modal Plan Documents and Links

States	Freight Plan	Marine Transportation System Plan	Rail Plan	Aviation System Plan	LRTP
Illinois	2017	2019	2017	2019	2019
Indiana	2018	None	2017	2012	2018
Iowa	2018	None	2021	2010	2020
Kansas	2017	None	2017	2016	2021
Kentucky	2017	None	2015	2017	2014
Michigan	2017	2015	2011	2017	2016
Minnesota	2018	2014	2015	2012	2011
Missouri	2017	None	2012	2019	2018
Ohio	2019	2017	2018	2006	2014
Wisconsin	2018	None	2009	2010	2009

3.6. Freight Planning Best Practices

The freight planning process is a recursive activity of developing information and ideas, understanding and applying those ideas, and refining the entire process as the planning context changes. Best practices can address and service an enormous range of activities. To best support the work at the DOTs, this report focuses on the institutional and operational practices and components of freight planning and how these practices are used to support freight planning. Ultimately, the freight planning process drives the implementation of programs and projects in support of freight.

3.6.1. District Freight Plans

The MAASTO states are characterized by geographical, economic, and industrial diversity within their borders. Different geographic areas within each of the states have different interests based on the mode and loads moved in that subarea. To capture this diversity, as well as explicitly capture statewide input, the administrative/operating districts within each state agency can be considered the primary geographic and economic area of analysis. These district level planning efforts are then combined into a state-level freight plan, which is included in the agencies overall planning document suite. This approach allows planners to dig deeper into local needs and understand them in the context of the overall state. It also provides connections and relationship building opportunities for agency personnel, the public, and freight and economic stakeholders.

3.6.2. The Freight Plan and FACs

Integrating the FAC into the development of the freight plan, the modal plans, and the LRTP has proven successful across the MAASTO states. A well developed and organized FAC can provide unparalleled information, access to industry data, and support for the freight plan and agency. While it is often the case there are planning, policy, and operations issues that a FAC can attend to throughout the year, there is no evidence that convening a FAC plan for specific activities, then disbanding, has any negative impacts. In fact, in cases where there is limited input from members required, this approach prevents participant attrition. In summary, the issue of tenure of the committee is overshadowed by the participation and input received through either method.

It is clear that FACs should be involved in the major freight, modal, and LRTP efforts at state DOTs. The FAC importantly provides the venue for developing those needed relationships with industry leaders, provides unique access to data and industry perspectives, and generally results in effective and mutually respecting partnerships.

3.6.3. Develop State Freight Plan Document Repository

Based on discussions with state planning personnel, MAFC will create a repository of freight and modal plans, along with freight contacts for the MAASTO states. It will provide for quick and easy access and encourage greater sharing of work across the region. This effort can be expanded to include the TPIMS data, sharable state data bases, and region wide performance measures and could be housed in a joint MAFC/MAASTO virtual site.

3.6.4. FACs and Data

With the limits to publicly available freight data, the stakeholder input and support states receive from their FACs has proven to be critical to understanding and planning for maintenance and growth of the freight systems. There are three major conduits through which a FAC provides input. First, the FAC member can directly contribute with their knowledge of industry or commodity trends, the practical details of operations of marine fleets, or the requirements for a cold storage warehouse. Many FACs utilize industry updates by members to set the stage for sharing. The information gathered from direct interaction at FAC meetings can provide important data and insight to support freight investment and planning. Secondly, FAC members are often surveyed about important topics, policies, and preferences. This results in a freight stakeholder database that can be used immediately, as well as tracked over time to understand trends in modal choices, business locations, and logistics strategies. Third, the FAC members can support greater freight data collection efforts by legitimatizing the effort to other stakeholders; if an industry or association leader supports survey participation or allows agency access to their members for a survey, the ability to collect useful and representative data increases. Collecting

quality data from web, mail, or phone surveys is always a challenge, but partitioning the respondents into smaller user groups and adding personal contacts and credibility increases the opportunity to collect quality data.

Further, some MAASTO states have formalized data collection processes with short line railroads, ports, and aviation facilities to circumvent delays in data availability. Personnel have developed relationships with industry personnel through the FAC or previous collaborative work. These FAC participants understand the use of the data for freight planning and the potential benefits for their business and the overall industrial/economic sector.

3.6.5. Tell the Freight Story

The movement of freight is critical to everything we do, social and economic systems, health care, social interaction, infrastructure, and education. The impact is tremendous but also ubiquitous. The public sees trucks all the time, mostly as traffic impediments. Fewer people see barge movements or realize the value of freight moved through aviation. The precision rail loads look like a blocked rail crossing to a motorist, just slowing them down, rather than the thousands of acres of export soybeans and critical farmer income it represents.

Using the freight plan and the planning process to create and increase awareness of the importance of freight is critical for informed stakeholder input. This should include the normal media campaigns and public involvement. This is also an opportunity to develop tools and presentation approaches to show where freight moves and why it is important to stakeholders to provide their input. As some states begin the next round of freight planning, they are investing in mapping and data presentation tools and approaches to support telling the freight story to a wide range of stakeholder interests. Adding graphics, multimedia, and detailed, easy to understand mapping, versus providing a data table and a presentation, can improve the agencies' chances of leaving a lasting impression about the importance of freight planning and transportation.

3.6.6. Focus on Economics

In interviews with state planners and STIC committee members, they emphasized the economic importance of freight and the potential economic consequences of the lack of action to support freight in our states and region. Efficient freight movement is an economic engine. Awareness of the importance of freight economic considerations should be the highlight (in addition to safety) of the planning process. Additionally, to create a greater consensus about the importance of freight, the DOTs and MAASTO should actively participate in larger economic efforts in TRB and AASHTO. A focus on economics aligns with the need to tell the freight story and the development and use of new mapping and visualization tools.

3.6.7. Design User-Driven Performance Measures

States are challenged in creating effective freight performance measures. In addition to the large range of activities to measure, and the ownership of those measures, there are difficulties acquiring timely and accurate data. Ohio has moved passed this hurdle by using stakeholders to define the performance measures and how they are measured. This is a creative approach that involves stakeholders and can provide a sense of ownership to the system. This is an effective and direct approach to serving the customer.

3.6.8. Consider the Process and Role of the Freight Plan

Across the MAASTO region there are a variety of approaches to how freight plans are conceived and implemented. The apparent distinctions across these states include independent

or combined plans, continuous updates, or a single five-year cycle, and statewide or district/division approach. There are variations within each of these broad categories, and these categories reflect that the planning process, the integration of the freight plan, and much of the context for the planning are suitable for customization per the needs of the agency. With ten distinct and world class planning agencies sharing information and planning processes, there is no shortage of innovation in freight planning and how freight planning is integrated within the agency. There are benefits and details particular to each situation and most importantly, any model should include a stable and consistent organizational context to support longer term freight partnerships and initiatives.

3.7. Freight Advisory Committees

As mentioned earlier, MAP-21 strongly encouraged states to establish a freight advisory committee consisting of representatives of public and private sector freight stakeholders from ports, freight railroads, shippers, carriers, freight-related associations, third-party logistics providers, the freight industry workforce, and local governments.[44] Freight Advisory Committees are also encouraged to invite a representative from neighboring states and nations (Canada and Mexico, and their subordinate Provinces and States) and organizations representing multi-state transportation corridors. Although FACs may vary significantly in size and composition, collaborative planning with multiple participants can generate solutions more representative of stakeholder needs and preferences. The FAST Act directs that FAC role shall include the items listed here:

1) Advising the state on freight-related priorities, issues, projects, and funding needs.
2) Serving as a forum for discussion for state transportation decisions affecting freight mobility.
3) Communicating and coordinating regional priorities with other organizations.
4) Promoting the sharing of information between the private and public sectors on freight issues.
5) Participating in the development of the freight plan.

3.7.1. State Practices

Among MAFC states, nine have a Freight Advisory committee. All the states have been very active in freight stakeholder outreach, including all modes, relevant industries, and local planning entities. Missouri created district based FACs during their freight planning process and disbanded the groups upon completion. The following discussion describes the FAC status, activities, successes, and BPs found across the MAASTO region.

3.7.1.1. Illinois

The Illinois State Freight Advisory Council (ISFAC) was established in September 2013 through an agency initiative. The committee has an important role in coordinating multimodal freight planning in the state of Illinois. This council includes a wide range of experts from railroad, port, airport operators, trucking firms, freight shippers and receivers, economic development organizations, public sector representatives, academic and professional organizations, manufacturing, agriculture, and energy. In terms of membership numbers, the FAC currently has thirty-five members. Members are not rotated, but turnover is regular due to changes in stakeholders from the participating businesses and agencies. The group meets quarterly. The ISFAC consists of a centralized committee that meets alternatively in Springfield, Chicago, and other areas of the state to accommodate members. There is no official hierarchy within the FAC,

and it is predominantly managed by IDOT with input from the FAC stakeholders. Meetings, agenda items, speakers, and overall meeting organization and focus of the meetings are driven by IDOT and are informed by issues identified in meetings by stakeholders, informal polls, and urgent issues facing the agency. Internally, the planning personnel are the most prevalent attendee and support staff for the meeting with attendance from operations and programming areas as well. IDOT's goal is to make FAC meetings more interactive and value-added for all stakeholders.

One of the major success stories of the Illinois FAC is in their support to create a ranking system to evaluate freight projects submitted to the competitive freight program. This system translates the goals of the program into the language and context of the private sector and ensures the program's acceptance and success. In the interview, the FAC was summarized as very much an evolving group in its orientation, its role in ensuring efficient freight operations, in technology, and safety.

3.7.1.2. Indiana

Indiana has a unique format for its FAC. Conexus Indiana Logistic Council is a privately organized group existing external to the DOT and has been active since 2007. It qualifies Indiana as one of the first states to develop a FAC. The group focuses on creating innovative strategies and programs that strengthen Indiana's advanced manufacturing and logistics industries.[45]

The group consists of three decentralized committees with that report to a central committee which allows for representation from across the state. Additionally, members represent industry, the public sector, and academia. The Connexus group is fully staffed in support of the group's activities. Agendas and planning for meetings and activities are identified jointly by the committee and leadership at Conexus. In the past, IDOT technical freight professionals attended the meetings, and staff is currently working to engage senior leadership in the committee.

The Conexus model has been very successful in driving state legislation that supports freight, logistics, and warehousing. The group's focus and approach to advocacy and action warrants examination. States working to create a new policy or change older policy to support innovation in freight should examine this model and its legislative work as a best practice. In terms of the success of Conexus, there are three major areas suggested as measures: industry and company support of Conexus, project success not only with warehousing but also in support of corridor projects, and longevity.

3.7.1.3. Iowa

The Iowa Freight Advisory Council (IFAC) was established in August 2012. Organizationally, a chair and vice-chair are elected to serve a two-year term, and the vice-chair assumes the chair position at the end of the chair's term. Membership predominately rotates based on the employment cycles of members. IFAC was established based on an agency initiative. Thirty members of IFAC meet quarterly. The chair cooperatively develops agendas with Iowa DOT staff through a brainstorming process to identify issues in seven clusters focused on: regulatory issues, infrastructure, labor (truck driver shortage), intermodal, and transload facilities. The issues and trends identified are incorporated in the freight plan.

One of their best practices is the Iowa DOT prioritization and scoping tool web application which creates an integrated approach for identifying, scoping, and associating potential projects with the agency's Highway Candidates list. This approach provides a prioritization process that supports capital program evaluation.

3.7.1.4. Kansas

The Kansas Freight Advisory Committee (KFAC) was established in January 2014 to advise and assist the Kansas Department of Transportation and the Kansas Turnpike Authority with identifying freight transportation issues, priority highway and rail freight corridors of significance, and identification of multimodal freight infrastructure improvement needs. KDOT implemented a FAC based on an agency initiative and early freight planning guidance. As of this writing, the KFAC is inactive, but planners expect the FAC to regroup in late 2021 in response to new funding and programming requiring stakeholder input. The DOT leadership leads and manages activities and meetings with co-chairs from the rail and motor carrier industries. Meeting topics and agendas are developed based on the agency's planning and information needs and through coordination with FAC membership.

Generally, their meetings have been held in different locations around the state. Around 40 people participate in the FAC in its previous format, and members represented entities such as SCRA, rail, motor carriers, key state, and federal agencies, including law enforcement and local planning groups. The KDOT CEO or a Deputy attends along with planning and operations staff. Membership can be rotated, but turnover in employees within participating agencies and industry has provided natural membership rotation. Originally, the KDOT FAC met quarterly, but then meetings moved to two times a year.

The respondent suggests that when they reestablish the FAC, they will likely convene a group of approximately 20 representatives and feel this will allow the group to be more efficient and just as effective.

The best examples of success for the KDOT FAC include developing and completing a transload facility site analysis throughout the state that resulted in the establishment of two facilities. They also completed a statewide truck parking analysis to identify current truck parking facilities (public and private), capacity, and potential future truck parking demand.

3.7.1.5. Kentucky

Kentucky created the Kentucky Freight Advisory Committee for Transportation (KFACT) in January 2017. The KFACT meets on an as-needed basis and meetings are open to the public. The respondent suggested that meeting twice a year would be optimum. The meeting agendas are usually set by KYTC with input from members. The FAC was initiated by the agency to support the development of their recent freight planning. The chair of the committee is the state transportation cabinet appointee. Membership in the FAC is based more on industry and modal representation than geographical representation. Currently, there are ten representatives on the FAC. Meeting are predominantly convened at the central office in Frankfort but are also held across the state. Membership reflects the spectrum of industry and modes in Kentucky; Toyota, KYTC, UPS, energy companies, and modal representatives. The planners feel adding representatives from economic development agencies would support the committee and potentially offer a partnership that can assist in work with modal and industry clients.

The interviewee referenced a common success story with FAC implementation and maturity; they experience an increased awareness of all things freight in their agency and across stakeholder groups. The FAC helped tremendously in providing input and guidance during the development of the KYTC freight plan.

3.7.1.6. Michigan

The Commission for Logistics and Supply Chain Collaboration (LSC) was created in 2008 under the state's economic development corporation. MDOT adopted the Commission as its FAC in 2013, and in 2017 the Commission was moved under the auspices of the DOT. The ten-

member Commission represents private business, transportation industries, border operators, local economic development agencies, and higher education. Mandated by the Governor, the Commission meets quarterly, two times in Lansing, and two meetings with tours across the state to expose its members to different industries. Management of the Commission is considered centralized and directed by agency personnel with input from the Commission. Similarly, future FAC meeting agendas and content are generated by members at FAC meetings and driven by issues of relevance to the DOT. The MDOT director, or MDOT Director of Rail, usually acts as chair of the Commission with participation by agency leads and personnel. Members are appointed by the Governor and if a member leaves, the Governor has to re-appoint a new member.

MDOT planners also reflected that they are involved in several FAC-like organizations related to Great Lakes Shipping and dredging, as well as border relations. Their participation provides additional support of freight in a multijurisdictional perspective and provides insight, input, and interaction with stakeholders. In terms of success, they feel that the MDOT Commission has helped engage members in freight advocacy. Through their participation, the members are becoming more strategic and aware of the issues and decisions facing different stakeholders in different logistics and industrial sectors. The respondents indicated that the FAC and other stakeholder outlets provided critical input to their freight plan and especially in their marine plan.

3.7.1.7. Minnesota

Minnesota FAC was established in 1997 and was the first state-level freight advisory committee in the country. The MFAC was originally created to provide support to the agency CEO and is considered an agency initiative. The respondents consider the FAC centralized in its operation and includes representatives from all relevant industries, communities, and modes. The committee meets quarterly with an annual Freight Summit in partnership with the University of Minnesota to culminate the year and provide updates and presentations on freight-related issues. The MFAC has matured to be a critical part of Minnesota freight transportation planning and operations, as demonstrated by its longevity, continued success, leadership in state transportation issues, and increasing awareness of the importance of freight. Recently the committee has initiated a freight newsletter to keep stakeholders informed of all things freight in Minnesota. MFAC is a successful and innovative FAC by all measures.

The MFAC operates with approximately 40 members and is led by the Committee Chair with support from the vice-chair and MnDOT staff. MnDOT does not rotate membership. New members generally result from employee changes in the participating entities, or when MnDOT identifies an additional stakeholder group. MnDOT has a history of strong private sector leadership on the MNFAC, and some of the members are considered the backbone of the group. The respondents indicated that MnDOT leads the development of the meeting agenda based on the agency's priorities and incorporates the input from the FAC members. Currently, interest is focused on the impacts and adaptations to Covid-19.

One of their best practices in 2019 was creating a working group on transportation infrastructure needs that has explored ways to share member expertise with policymakers. The efforts included tours of freight facilities and the development of informational materials to outline freight’s contributions to the economy and the need for infrastructure investments. Another successful practice was the 2019 Statewide Truck Parking Study, which MnDOT developed in collaboration with MFAC members. In this study, major strategies to address truck parking issues were identified during the MFAC quarterly meetings.

3.7.1.8. Missouri

Missouri does not currently have an active freight advisory committee. They used extensive district level stakeholder involvement in the 2012 baseline planning process. The respondent indicated that changes from COVID have halted their recent efforts to establish a committee. However, they do maintain industry stakeholder contact through funding programs, stakeholder forums, and normal work processes and expect to utilize a FAC where appropriate.

3.7.1.9. Ohio

Ohio kicked off their freight advisory committee in December 2020. The first virtual meeting included 30 participants and represented the major industries and modes in Ohio. Though previously without a FAC, Ohio has always been very active with regional MPOs and industry partners and has been operating a de facto FAC since their work in freight began. In the 2011 MAFC Annual meeting, FACs were discussed in a working session and featured three state approaches to FACs. At that time, FACs were not widely understood or implemented. The approaches included: MnDOTs traditional MFAC, Indiana's CONEXUS, an external, legislatively active group focused on logistics and logistics-related development; and Ohio. The original Ohio model focused on interaction with the regional MPOs and direct contact with industry and modes. While not formalized at that time, this approach to stakeholder participation proved quite effective for Ohio and is now institutionalized as a FAC.

3.7.1.10. Wisconsin

The Wisconsin Department of Transportation established their Freight Advisory Committee (FAC) in 2015 to involve representatives from freight sectors to support the development of freight-related policies, processes, and planning. The group consists of forty nonvoting members and meets a minimum of twice per year to advise and assist. WisDOT looks to these freight stakeholders to identify the emerging concerns and critical freight issues. The group was established based on agency initiative but with great interest from the governor at that time.

The FAC meetings are generally held in Madison at the central office, but they have also been held in other locations around the state. The January 2021 FAC meeting was held virtually and had nearly complete attendance. As with most states, WisDOT sets the meeting agendas and bases much of the committee direction on input from the committee members. The majority of the management from WisDOT attends the FAC meeting. The Secretary and Deputy Secretary generally introduce and close the meetings, as well as participates fully throughout. There is no official hierarchy within the committee; WisDOT personnel manage and run the meetings in collaboration with the stakeholders. Stakeholders on the committee represent all relevant industries, modes, and agencies. Members generally do not rotate, rather membership changes are based on employment changes in the participating associations or industries.

One of the best examples of successful incorporation of the FAC in support of agency planning and policy was the creation of an Intermodal Subcommittee within the FAC in 2017. The purpose of the group was to provide input and access to other industry stakeholders who then could complete a survey regarding the need for intermodal facilities in Wisconsin. The level of involvement of the stakeholders was impressive, and they played a very significant role in the effort. As a result, the Wisconsin Legislature has awarded funding for regional studies that assess the viability of intermodal facilities in regions of the state.

Table 3-5 summarizes each state's FAC information.

Table 3-5: Freight Advisory Councils and Similar Bodies

States	Name	Year of Establishment	Status	Geographical Structure	Number of Members	Frequency of Meeting	Contact
Illinois	Freight Advisory Council	2013	Active	Centralized	~35	Quarterly	Jim Durako (217) 785-2353 James.Durako@illinois.gov
Indiana	Conexus Indiana Logistics Council	2007	Active	Centralized	~19	Quarterly	Jennifer Mann jmann@conexusindiana.com
Iowa	Iowa Freight Advisory Council	2012	Active	Centralized	~30	Quarterly	Sam Hiscocks (515) 239-1004 samuel.hiscocks@iowadot.us
Kansas	Freight Advisory Committee	2014	Inactive	Centralized	~40	2x a year	John Maddox (785) 296-3228 john.maddox@ks.gov
Kentucky	Freight Advisory Committee	2017	Active	Centralized	~10	1x a year	Jeremy Edgeworth (502) 564-7183 jeremy.edgeworth@ky.gov
Michigan	https://www.michigan.gov/mdot/0,4616,7-151-9623_31969_80695---,00.html	2013	Active	Centralized	~10	Quarterly	Elisha Wulff (517) 241-4778 wulffe@michigan.gov
Minnesota	Freight Advisory Committee	1997	Active	Centralized	~40	Quarterly	Andrew Andrusko (651) 366-3644 andrew.andrusko@state.mn.us
Missouri	Under Development	N/A	N/A	N/A	N/A	N/A	Cheryl Ball (573) 526-5578 cheryl.ball@modot.mo.gov
Ohio	Under Development	N/A	N/A	N/A	N/A	N/A	Mark Locker (614) 466-2347 mark.locker@dot.ohio.gov
Wisconsin	Freight Advisory Committee	2015	Active	Centralized	~40	2x a year	Dean M. Prestegaard (608) 266-9910 dean.prestegaard@dot.wi.gov

3.8. Freight Advisory Committee Best Practices

As demonstrated throughout this report, FACs can provide tremendous levels of support, information, and guidance to the freight planning process. The following approaches and practices have been identified in the project interviews with state planners, as well as from participation observation of FACs, and discussions with MAFC participants. At the time of this publication, 9 of the 10 MAASTO states operate FACs.

3.8.1. Invite MAFC Peers to FAC Meetings

The planning practitioner's interaction with industry and modal representatives, as well as with other MAFC participants, are considered prime learning venues. Inviting peer state freight planners to FAC meetings is another way states can increase exposure to industry and modal representatives, learn more about the freight planning context of other states, and experience different approaches to FAC meetings. An additional benefit currently is that the external attendees can attend virtually without incurring travel costs. This is an easy, inexpensive way to support multiple state interests and provide truly valuable learning experiences with stakeholders across the region.

3.8.2. Importance of Participation of Agency Leadership

FAC meeting introductions, openings, and meeting participation by agency leadership ensures participating stakeholders that the FAC is an important investment for the agency. It demonstrates that freight and the FAC represent an area where their expertise is needed, respected, and appreciated. It also incentivizes the participants to provide input knowing that a high-level decision maker is participating in the meeting.

Across MAASTO, agency leadership titles take many forms, CEOs, Chief Engineers, Secretary, or Director. It is important, where possible, to have both senior leadership and the technical point of contacts attending and participating in meetings. The technical representatives provide an immediate point of contact and information, while the agency leadership provides additional legitimacy and a decision-making contact.

3.8.3. Allow for Flexibility in FAC Meeting Frequency and Duration of Responsibility

Many of the DOTs in MAASTO and across the U.S. have created active freight advisory committees that meet two or four times a year. These FAC operate with continuity and often with private sector FAC leadership. This approach has proven effective and even has expanded the role of some FACs to include newsletters, educational freight summits, and an institutionalized role in the organization.

Alternatively, FACs can and are often implemented as shorter-term committees, designed to solve issues, develop a plan, or assist in some freight policy or operations planning or decision. These groups may be topic-specific and focus on issues in their area of expertise, such a maritime economic study, the state freight plan, or an intermodal feasibility study. Further, there are cases where freight specific groups are also created and act as FACs during the LRTP process.

While the organization, the duration, and the focus of FACs may vary, the goal is the same: bring freight and logistics industry, business, manufacturing and agriculture, and all relevant agency personnel together to help create plans to serve the people and the economy of the state.

From participation and observation of MAASTO State FACs, the FACs exceed practitioners' expectations in the level of commitment, participation, information sharing, and goodwill that has been create through FACs.

3.8.4. Regional Freight Advisory Team (RFAC)

While not in existence yet, the idea of an RFAC has been repeatedly mentioned by MAFC participants as a potential best practice. The RFAC could provide information and input regarding cross-state freight movements and how the states could manage systems to increase efficiency and safety in freight movement. This group could be comprised of leadership from within the existing State FACs. The meetings could be convened virtually. The benefits of an RFAC would likely be similar to State FAC results: better communication, education about issues of others, relationships, and positive goodwill. Ultimately, the group could provide the guidance necessary to ensure the region is an efficient, seamless, harmonized, freight welcoming region.

3.8.5. Committee Size and Composition

The number of committee members varies across the states and is less likely to affect the effectiveness of the committee than other factors. What is important is the representation of industry and business, logistics, relevant state and federal agencies, and modal representatives. Secondly, this comprehensive stakeholder group must be created and managed without becoming an obstructively large committee. From observations across the MAASTO States, 20-40 members is common, smaller groups that focus on representation of associations could include as few as 10 external members. In summary, freight stakeholders are a rich resource with limited availability for unproductive meetings. Agencies should ensure representations of all modes, relevant agencies, and major logistics and business/industry. Meetings can be managed through breakout groups and sub committees as needed.

In terms of quality stakeholder input, the groups should not exceed 50 external stakeholders. This ensures an opportunity for networking and time for all to provide input. To the degree possible, agency participants should have roles in the meeting activities. This provides immediate availability and attention from an agency representative to answer questions or suggest ideas. Further, specialized subcommittees are often created to support interest in specific modes, projects or innovations.

A reasonable sized committee with full representation and active members provides the depth and range of knowledge and experiences needed by the agency, yet the group is small enough to encourage team-like approaches to issues and solutions.

3.9. Freight Data Sources

As freight planners have adopted the modal freight systems within their planning framework, there has been a continuous search for more timely, accurate, precise, and useful data to frame the analysis and planning. One of the critical activities that sets the stage for planning is analysis of the available data to provide an inventory of a state's freight assets. This is one of the required freight plan elements in federal legislation. In general, freight data consist of commodity tonnages and value, major freight corridors and facilities, and anticipated changes in demand and movements. Planners often use a combination of public and third-party data purchases to assess commodity movement and business establishments, often developing original data collection efforts such as surveys and stakeholder outreach. Solving the data issue is of continued interest, and according to The National Cooperative Highway Research Program (NCHRP) Synthesis 410 on Freight Transportation, included responses from 46 states, and cited "adequacy of funding" as a vital need for freight data collection and analysis programs.[46] Given the importance of this information, increased funding for data purchases and

development, regional data purchases, and regionally developed data sources should be considered to support more reliable, timely and accurate multimodal freight data.

3.9.1. Current Data Sources and Practices

Accurate, reliable, and timely information about freight movements generally requires several data components – a travel component (mode, location, origin, and destination), and a commodity component (type and origin of commodity, and value of commodity). To address this complexity, the Commodity Flow Survey (CFS) was first created in 1993. This survey has been conducted by the U.S. Census Bureau in partnership with the U.S. Department of Transportation's Bureau of Transportation Statistics.[47] The CFS is a dataset that provides comprehensive data of national freight flows. Although it is the only publicly available data source generated for economic as well as transportation analysis, it is limited by highly aggregated geography, and several complex industry breakouts for certain industries, including transportation, construction, and farming. These limitations have made CFS challenging to use at a state or local level to understand commodity movements and markets. Other proprietary data sources have been developed concurrently to resolve some of the aggregation issues but do require investments in the data and/or personnel with the capabilities to manage, analyze and interpret the data.

With the growing demand for freight activity and related data, the Freight Analysis Framework (FAF) has been introduced through a partnership between the Bureau of Transportation Statistics (BTS) and Federal Highway Administration (FHWA). The FAF integrates data from different sources to provide an inclusive dataset of all modes of freight transportation among states and major metropolitan areas. The first version of FAF was based on the 1997 Economic Census (which includes the CFS) and was released to the public in 2002. The FAF version 5 (FAF5) is the most recent edition that estimates tonnage and value of commodities by type and mode based on the 2017 CFS data. The latter version solves some of the limitations of CFS data, such as estimating out-of-scope industries and providing a more user-friendly tool for creating data summaries.

The Rail Waybill Sample from the Surface Transportation Board (STB), the Vehicle Inventory and Use Survey (VIUS) from the Census Bureau, and the Waterborne Commerce database from the U.S. Army Corps of Engineers are other federal databases providing freight transportation data at the national level which are free of charge.[48] However, some detailed commercially sensitive data may be confidential and may not be available.

In the following section, we will review the data sources that state planners commonly use in their planning and communications. For a complete review of freight data sources and use across MAASTO, see https://midamericafreight.org/wp-content/uploads/2019/03/MAFC20-Freight-Data-Inventory-and-Training.pdf

3.9.2. State Practices

Table 3-6 lists the variety of data sources the MAFC states used in their recent freight plan. Common across the states are the use of federal data sources such as FAF, STB Waybill Sample, Waterborne Commerce, and InfoUSA. MAFC states are using public data to their fullest, developing custom databases, accessing data from partnering agencies, and purchasing data to describe and communicate the details and importance of freight movements in their state. MAFC states use a wide range of resources and have paid more than $2 million for freight data between 2006 and 2019. Given the increasing cost of customized data, negotiating group discounts for mutual data services across MAASTO, or designing region-wide data sets (platform) could provide cost-savings. A regional approach could also provide greater insight into the regional flows of freight in the MAFC. This approach to collaborative and regional data

has been discussed numerous times within technical representatives and nominated as a possible area for collaboration.

Table 3-6: Common Freight Data Sources Used in the Most Recent Freight Plan and Supporting Materials

States	Data Source
Illinois	•STB Waybill Sample •FAF •TRANSEARCH •USACE Waterborne Commerce Statistics •InfoUSA •Air Carrier Statistics database(T-100)
Indiana	•REMI Forecast •FAF •INDOT Statewide Travel Demand Model •TREDIS •Major Corridor Investment Benefit Analysis System
Iowa	•Cass Information System •EDR Group •FAF •SMC3 Czarlite Rate •PC*Miler Rail •Misc. •InfoUSA •INRIX Traffic Data •Air cargo totals from IA commercial airports •US Census Bureau •US Bureau of Economic Analysis •USDOT Commodity Flow Survey •US Dept. of Agriculture •USACE •IA DOT •Railroad Annual Reports

States	Data Source
Kansas	•FAF •US Census •US Bureau of Economic Analysis •KS Department of Revenue •KDOT GIS files •USACE Waterborne Data •TRANSEARCH •AAR •FMCSA •National Agricultural Statistics Service •STB Waybill Sample •American Trucking Association (ATA) •INRIX •Piers Data Evaluation •Trucker Path Data •Data Axle •KS Department of Agriculture •US Department of Agriculture •KS Department of Commerce •NPMRDS
Kentucky	•FAF •STB Waybill Sample •Truck Percentage of Traffic •Volume Service Flow •Truck Data •Commodity Flow Survey •Annual coal haul reporting •NPMRDS •ASERL COE Database •ATRI
Michigan	•TRANSEARCH •FAF •InfoUSA •STB Waybill •USACE Waterborne Commerce Statistics •Air Cargo •INRIX Probe Data
Minnesota	•FAF •Past Studies •In-state manufacturing studies •Data from freight workshops •Data from FAC planning committee •Market research •InfoUSA •STB Railroad Waybill data •ATRI GPS Truck Probe data •Streetlight Insight

States	Data Source
Missouri	•TRANSEARCH •STB Waybill •USEIA •Cass data
Ohio	•FAF •TRANSEARCH •Tompkins Survey •Statewide Travel Demand Model •STB Waybill •FMCSA Data •Cargo Data •Crash Data •USACE Dataquery •Streetlight Insight •Master data source of infrastructure
Wisconsin	•TRANSEARCH •STB Waybill Sample •InfoUSA •Multimodal Network Tool •INRIX •TREDIS •IMPLAN •Airports data •Ports data •Rail companies data

Source: From the Ground Up, Aligning State Freight Plans to Enhance State Collaboration and Establish Regional and National Harmonization of Freight Priorities; Interviews; https://midamericafreight.org/wp-content/uploads/2020/06/MAFC15_AlignmentStudy_FinalReport.pdf

The most common data source mentioned by respondents is the Freight Analysis Framework (FAF), followed by the STB Waybill data, and TRANSEARCH data. INRIX and InfoUSA are other data sources that are each used by four states. New data sources are also being used and evaluated. StreetLight Data is an on-demand mobility analytics platform that is used by Minnesota, Iowa, and Ohio. Measures such as the volume of trips over different periods of time, differences by day and season, trip time, length, speed and circuity, and trip purpose could be identified via this platform. Several other states have expressed interest in similar data formats. New data sources and formats remain a common theme of discussions and information sharing in MAFC meetings.

3.9.2.1. Illinois

Illinois cites using most of the common freight data sets: FAF, AAR, FMCSA, census, STB Rail Waybill, marine commerce data, Transearch data, and Info USA. They also use in-house generated data on travel patterns, safety, and other operational parameters. In terms of a regional freight data set, IDOT concurs that it could prove beneficial, especially in understanding and planning corridors crossing state boundaries. There is a need to understand pass-thru freight better, and a database organized regionally could provide the needed insight.

Additionally, with so many traffic and freight movement changes due to the pandemic, IDOT questions if current traffic models capture the changes in the freight and logistics system. Have other states changed their model input to address the changes? And with new data sources

emerging, there is a need to understand the data sources, who is using them, how they are being used, and the benefits and limitations of the data. For example, StreetLight Data (www.streetlightdata.com) is currently undergoing informal vetting by agencies.

3.9.2.2. Indiana

Indiana DOT freight planners use publicly available data in their efforts such as FAF, census, STB Rail Waybill, AAR, Maritime Commerce data, and are considering the utility of data sets such as StreetLight Data in freight planning. Under their current planning scenario, they see regional datasets as a potential addition to their work but indicated that a larger regional agenda would be needed to drive the commitment. This echoes other's comments that several of the potential regional development projects are assumed to be part of a common regional goal. A larger, regional perspective makes regional data useful.

3.9.2.3. Iowa

Iowa freight planners use the common public freight data sources in addition to several specialized information sources. From FAF to the STB Rail data to the waterborne commerce data, Iowa, like all MAASTO States, relies heavily on public data to drive their analysis. They have also implemented a data-driven freight optimization tool, are using INRIX data to identify bottlenecks, and are currently considering StreetLight Data (as are several other states). Iowa did reflect that some of the data required to conduct the analysis can be cost-prohibitive. For example, the current INRIX data contract ending 2/28/2021 is $470,000. This contract also included the StreetLight Data contract for an additional $258,691.

Iowa considers a multistate, regional approach to freight data worth exploring for the MAASTO States. With a freight planning trajectory that includes multistate, regional planning, the regional data perspective will be needed to support the process. As Iowa has accelerated their data analysis capabilities, several models and approaches they have developed may be of interest to partner states. Notably, Iowa developed a VCAP index (volume, capacity, performance index) to support bottleneck analysis and performance measures.

3.9.2.4. Kansas

Kansas freight planners base their seminal description and analysis of their freight systems and movements on available public data such as the BTS, FAF, census, AAR, FAA, USACE, and FMSCA. Additional analysis is also provided by contractors using specialized data sets such as INRIX and Transearch. KDOT also has exceptional relationships with short line and class 1 railroads and requests and receives freight data directly from these businesses. Kansas' relationships and data sharing with rail, industry and communities is exemplary and time tested. Other states should consider the Kansas data model, especially the relationship-based approach with short line railroads.

3.9.2.5. Kentucky

Kentucky freight planners rely on the public data sets, including FAF, COE, FMSCA, STB Waybill, ATRI probe data, and in-house traffic data. They are considering StreetLight Data and truck parking data from ATRI as potential additions. In their recent modal planning work, KYTC spent approximately $125,000 out of the $1 million budget on advanced waterways data.

The respondent indicated that regional data sets capturing regional and state to state moves could assist MAASTO state planners in understanding their role in the region and how they can leverage the regional partnership for safety, efficient freight movement, and economic development. This potential development in regional data was linked to the idea of a regional

freight plan or set of goals or priority projects. This regional goal or priority would provide the focus that would provide full utility of the information in this reginal format.

3.9.2.6. Michigan

Michigan also leverages the range of public datasets such a FAF, AAR, FMCSA, STB rail data, marine commerce data. They also purchase INRIX data for all vehicle classes for use in performance measures and have purchased Transearch for almost 30 years.

The respondents indicated that purchasing freight data cooperatively for the region at a reduced cost could saves all states money and would provide uniformity across portions of the state analysis and reporting. As guidance for other data users, Michigan recommends purchasing state-specific data sets when the budget allows. They also recommend other states review their truck reliability performance measures and how they incorporated bottlenecks identification into project prioritization. These are two areas the respondents found useful beyond the normal applications.

Michigan has a 25-year history of advanced analysis of freight data, and the increasing complexity of today's data and freight systems makes data management and analysis a critical talent for agencies. They feel the in-house data capabilities allow them to know their state's freight systems and needs better than anyone else. With the increasing awareness of freight and the institutionalization of multimodal freight in agencies, the MAASTO states have increased their focus and investments in this area. Within the last ten years, MAASTO states have increased their analytical abilities, expanded participation and investment across the modes, and become experts in stakeholder involvement. All these activities result in 'data' that is used by the agency to support multimodal freight systems.

3.9.2.7. Minnesota

The Minnesota State Freight Plan incorporated a series of 26 different types of data that align with the District Freight Plans. The respondent mentioned that they do use the Freight Analysis Framework data for the plan background and to identify high-level trends. They also use the STB Railroad Waybill data for freight railroad trends, and for the waterways, MnDOT collects high-level freight data for commercial freight movements through relationships with Minnesota's ports and waterways representatives. They have also completed an economic analysis of each airport in Minnesota and will be integrating a summary of the aviation freight component in the next plan update.

Also, under consideration for use in the plan are big data products such as the StreetLight Data, Insight, the ATRI GPS Truck Probe data, data from the MnDOT Regional Traffic Monitoring Center, and the highway counting and monitoring programs as well as others. These data sets are readily available and can be tapped to better understand localized impacts related to recent and projected trends. In addition to these data sets, the respondents also suggested that statewide travel models can provide value in understand their investments in terms of maintenance activities, economic development, and future risks.

As far as the use of a regional freight data set to provide a fuller picture of the region's dynamics, MnDOT suggests that modal freight data would be very helpful to determine trends of commodity flow data at the multi-state and regional level. This data is not available currently, but it could help inform future mega-regional efforts such as the funding needs for the Great Lakes Locks and Dams, and the Upper Mississippi River investments. Similarly, cross-border and regional commodity flows would also be helpful in understanding each state's role in the overall multimodal system and which corridors should be considered as priority regional routes.

3.9.2.8. Missouri

Missouri, similar to the other states, uses the common public freight databases; STB, FAF, USACOE, AAR, FAA, FMSCA, and census. In the current planning process, they are incorporating Transearch and Cass freight data and are creating a data and mapping interface to allow the department to create different freight planning scenarios. These data purchases are part of the larger contract, and costs are not available. The respondent does see a need for a regional data set to help the agencies understand the region as a system. To paraphrase the response, 'half the freight tonnage passes through the state, it would be good to understand how we are each affected by these multistate movements and how we can help each other.'

3.9.2.9. Ohio

Ohio's public data use in their freight planning mirrors that of their peers. Common public data sets used in the plan include the standards; FAF, census, STB, Marine Commerce, AAR, FAA, and FMCSA. They also have an in-house statewide travel demand model and a master database of infrastructure and conditions that provided critical information for freight planning.

Ohio also incorporates several custom databases, including StreetLight at the cost of nearly $2 million, and INRIX at $900,000. They have previously purchased Dunn and Bradstreet data. The respondent indicated that most states are looking at StreetLight and INRIX data as potential new sources of refined information. Given Ohio's extensive experience with custom data sets, they do feel there could be a benefit with combined purchases of freight data sets and even customized data sets for the MAASTO region. Echoing their peer states, having access to these data sets regionally could provide the information the states need to understand how one state's operations and conditions, and commodity flows impact other states and how regional planning can be used to support these regional freight flows.

3.9.2.10. Wisconsin

Wisconsin's planners responded that they use much the same data and analytical techniques as other states. FAF, census, ACOE, FAA, AAR, STB, FMCSA are all used. They also use Transearch data for approximately $125,000.00 per year, with $65,000.00 for each additional year. WisDOT also uses TREDIS at the cost of $27,000.00 per year, and IMPLAN at approximately $5,000.00 per year. The economic analysis components of these models are used across the department and not exclusively in the freight area. They are considering an INRIX product and modeling software to complete their analysis abilities.

The respondents indicated that if the states could find reduced costs from a group purchase of data, it should be pursued. In terms of the data needed for the region, they state the biggest need is for data to understand cross-border shipments and how that affects each state. In Wisconsin's case, the Minneapolis, Madison, Chicago corridor is especially relevant to understand.

3.10. Freight Data Collection and Use Best Practices

3.10.1. Stakeholders are Data Sources

With the advent of FACs and increased relationships with modal and logistic operatives, freight planners find themselves looking to these professionals to provide context and perspective on agency operations and future planning. This information, while mostly informal, can be organized as freight data. This information can confirm or bring into question larger datasets and lead to solutions found only through local field experience. The data is not generally statically robust, but it does provide direct insight into a localized system.

Similarly, FAC members can provide access and legitimacy to agency efforts to collect data from larger groups of stakeholders. Members can provide letters of introduction to a freight survey, contact membership directly to promote participation, and discuss it at their meetings. As with most all indirect survey methods, the response rate is consistently a problem. Without a personal stake or relationship to drive participation, most respondents are reluctant to participate, resulting in almost unusable response rates. Response rates can be improved with FAC members directly contacting their constituents, and through continued efforts to educate stakeholders about the private and public interdependence in freight movement.

In some cases, it can also be beneficial to include partner agencies in the project. Adding economic development experts in survey efforts can provide an economic focus, legitimize the effort with their constituency, and share in the effort.

3.10.2. Formalize Informal Data

Where states have innovated and created their own databases, survey methods, and survey process and schedules, these activities and processes should be formalized within the agency. Making freight data collection, with short line railroads, FACs, and localized surveys formalized ensures the continuation of the data program, adds legitimacy, and supports data suitable for longitudinal analysis. The process can be formalized through operations manuals and training, scheduled dates for project activity and performance measures, and an identified place in the unit's budget.

3.10.3. Data Experts on Staff Provide Value

Professional freight staff with experience in managing and processing freight data can provide valuable insight into data trends. Data access, management, and processing are critical to freight planning and in-house personnel can take on this challenging role and avoid some of the data and analysis costs. The on-site availability of professional personnel, as well as the grounded parochial perspective of the data trends, can support the agency in understanding freight data and apply the information in the development of the state's multimodal freight plans.

3.10.4. Incorporate the Statewide Traffic Model

If the agency maintains a statewide traffic model, the information can be used to understand freight corridors, freight origin and destinations, bottlenecks, and the potential for expanding freight loads. The use of this state-generated data can assist in understanding trends in regional and national freight movements, as well support the identification of freight delays. Freight planners should work across their agencies to ensure they are aware of the range of available freight-related data that is collected across their agency.

3.10.5. Tell the Freight and Economic Story

MAASTO freight planners work tirelessly to locate, understand, and use various types of freight data. And it is important for stakeholders and the public to understand the critical role freight movement has in our economy. Communicating the importance of freight, as reflected in a broad range of data, can be difficult. Several of the respondents indicated that they are using, pursuing, or considering using some form of the data visualization tool. They intend that the tool(s) will help them explain complex economic relationships and benefits in a clear manner. And that the visualization will leave a lasting impression of the critical importance of freight movement. Some examples of advancing the efficacy of data communication include mapping of freight movements and scenarios, mapping economic sheds to demonstrate geographic extent, and identifying freight origin and destinations and related economic impacts.

3.10.6. Innovate in Data

MAASTO freight planners have long been leaders in the freight planning field and innovators in freight data. Leading in innovation comes with risk but also rewards. Examples of advancing new data to support freight development and investment include the TPIMS, localized stakeholder surveys, and the purchase of new data sets based on cell phone tracking. These innovations in data reflect advances in technology and advances in stakeholder participation.

The MAASTO TPIMS project is creating a large truck parking data set that can be used to assess the availability and capacity of truck parking on major corridors. The primary use of the data is to measure and track safe truck parking and incorporate this information into planning and operations decision-making. The effective use of this data can also propel MAASTO states ahead of other states in capturing funding for additional work in truck parking based on these innovative efforts.

Similarly, states have invested in new data based on cell phone technologies, as well as created survey methods to capture localized stakeholder data. These efforts required risk, and clearly demonstrated the value of the innovation in freight data.

3.10.7. Triangulate Data

MAASTO planners commonly use multiple data sets to describe, understand, and communicate freight and logistics. This is necessary due to the breadth of factors involved, and the need to compensate for the lack of a dataset that captures common planning scenarios. Triangulation of data is an effective approach to ensure perceptions of the data and context are correct. Even incorporating anecdotal information and information from FAC members provides legitimacy and real-world application to the data. Using multiple datasets can provide the needed insight, and in some cases, allows stakeholders to recognize their contribution in the process.

3.10.8. Regional Data for Regional Goals

Group purchases of commonly used freight databases, as well as development of a regional dataset are common themes in discussions regarding improving freight data across MAASTO. Group purchases may provide reduced prices and provide for uniform data usage across the region. A regional database could provide information about multistate freight movements and offer a deeper understanding of the region’s economic foundation. Unilaterally, the responding planners felt that regional goals and focus, with ranked priorities would truly provide for full utility of the regional datasets.

3.11. Multimodal Funding Programs

The MAASTO States are natural leaders in multimodal freight program development. With a substantial portion of all modal systems located in, or with an interchange in the region, there is an ever present need to work with all modes. Investment in multimodal systems is hampered on two administrative levels. Only recently has USDOT allowed federal surface transportation funds for multimodal freight projects at 10% of existing funds. Further, most state fuel taxes are considered user charges and restricted to investments to road and bridges. And like passenger transportation, adequate funding for freight transportation is a key challenge for all levels of government. On the federal level, national competitive grant programs like TIGER and TIFIA provide a venue to enhance freight funding sources. However, the programs are competitive, require extensive time and personnel investments to complete, and provide for a few rather than many projects. Similar to other programs, providing a dedicated freight funding program is a time-proven approach to addressing the nation’s transportation system problems.

Work has been progressing in the areas. The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) and the Transportation Equity Act for the 21st Century (TEA-21) allowed states more flexibility to use federal funds for freight projects and even nonhighway freight projects in certain circumstances. For example, States were able to fund intermodal freight projects that included improvements to rail lines and port facilities through the Congestion Mitigation and Air Quality Program (CMAQ). SAFETEA-LU continued the TEA-21 concept of guaranteed funding keyed to Highway Trust Fund receipts. Also, MAP-21 established a new approach to the distribution of formula funds. Previously each apportioned program had its own formula for distribution, and each State's total was the sum of the amount it received for each program.

The Fixing America's Surface Transportation Act (FAST Act), passed in late 2015, created a formula and discretionary grant programs to fund critical transportation projects that benefit freight. For the first time in U.S. history, the FAST Act provided a dedicated source of federal funding for freight projects, including intermodal projects. The FAST Act authorized $10.8 billion over five years in new funding specifically for freight and freight-related infrastructure, operational improvements, and planning. This amount includes $6.3 billion for the National Highway Freight Program (NHFP), which is distributed to states by formula, and $4.5 billion in funding for competitive discretionary grants under the new FASTLANE (Fostering Advancements in Shipping and Transportation for the Long-term Achievement of National Efficiencies) program to support both highway and other modal freight needs. This includes rail and port facilities, intermodal connectors, and railroad grade separations. The FAST Act maintains the majority of MAP-21's process for apportioning Federal-aid highway funds with a few modifications.

The Fast Act provided a five-year allocation of National Highway Freight Program (NHFP) formula funds to each state for 2016 through 2020. For MAFC states, the allocated amount of these freight formula funds is shown in Tables 3-7 and 3-8. MAFC states have been allocated a total of $327 million for the National Highway Freight Program (FY2020). With a new administration at the federal level, infrastructure investments are expected to increase with the initial proposal of a $2 trillion dollar infrastructure package.

Table 3-7: Estimated FY 2016 - FY 2020 Apportionments Under the Fixing America's Surface Transportation (FAST) Act

States	FY 2018	FY 2019	FY 2020	FY 2016 to 2020 Total	FY 2016 to 2020 Average
Illinois	1,503,747,647	1,537,687,978	1,574,514,759	7,530,044,230	1,506,008,846
Indiana	1,007,807,822	1,030,554,618	1,055,235,912	5,046,616,382	1,009,323,276
Iowa	519,804,234	531,536,542	544,266,622	2,602,929,364	520,585,873
Kansas	399,692,143	408,713,444	418,501,959	2,001,465,839	400,293,168
Kentucky	702,750,398	718,611,920	735,822,382	3,519,035,684	703,807,137
Michigan	1,113,601,188	1,138,735,743	1,166,007,859	5,576,378,610	1,115,275,722
Minnesota	689,690,575	705,257,282	722,147,855	3,453,638,357	690,727,671
Missouri	1,001,286,170	1,023,885,822	1,048,407,455	5,013,959,108	1,002,791,822
Ohio	1,417,731,235	1,449,730,162	1,484,450,429	7,099,315,462	1,419,863,09
Wisconsin	795,825,845	813,788,109	833,277,970	3,985,112,707	797,022,541

Source: U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION, https://www.asphaltpavement.org/uploads/documents/estfy20162020apports-1.pdf

Table 3-8: Estimated FY 2020 Apportionments Under the Fixing America's Surface Transportation (FAST) Act

States	National Highway Performance Program	Surface Transportation Block Grant Program	Highway Safety Improvement Program	Railway-Highway Crossing Program	Congestion Mitigation & Air Quality Improvement	Metropolitan Planning	National Highway Freight Program	Apportioned Total
Illinois	854,148,369	428,610,365	82,096,255	11,378,101	118,061,702	18,404,231	53,516,633	1,566,215,656
Indiana	594,777,804	297,524,632	57,135,272	7,961,587	50,525,029	5,645,449	36,104,102	1,049,673,875
Iowa	316,132,458	157,761,587	28,906,320	5,696,331	12,112,591	2,139,447	18,649,117	541,397,851
Kansas	242,235,322	120,917,351	20,004,259	6,509,648	10,204,923	2,100,918	14,323,658	416,296,079
Kentucky	428,567,666	213,825,070	42,886,877	4,022,841	14,690,724	2,732,368	25,218,395	731,943,941
Michigan	639,192,348	320,467,515	61,753,764	8,198,781	79,361,076	11,169,405	39,719,065	1,159,861,954
Minnesota	406,390,112	203,313,740	37,920,917	6,557,215	34,557,941	4,931,718	24,669,848	718,341,491
Missouri	606,806,615	302,902,609	60,376,693	6,041,419	25,277,065	5,606,369	35,870,641	1,042,881,411
Ohio	813,767,125	407,992,546	79,622,819	9,435,011	102,686,164	12,494,647	50,627,736	1,476,626,048
Wisconsin	476,081,816	237,891,534	45,855,013	6,252,793	29,380,173	4,931,298	28,493,221	828,885,848

Source: U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION, https://www.asphaltpavement.org/uploads/documents/estfy20162020apports-1.pdf

3.11.1. State Programs and Practices

The various multimodal freight programs across the states, along with their funding sources are provided in Table 3-9, following the program descriptions by state provided below.

3.11.1.1. Illinois

Illinois has a strong emphasis on rail partnerships and funding related to its critical role with Chicago in supporting efficient rail moves. One statewide economic program for rail service is the Illinois Rail Freight Loan Program, which was established in 1983. In FY 2017, the General Assembly provided $1.7 million for the Rail Freight Loan Program. The Chicago Region Environmental and Transportation Efficiency (CREATE) program is another innovative public-private partnership. CREATE has worked on over 70 projects to improve the efficiency and reliability of the rail service and reduce highway delay in the Chicago region. A total of $496 million is programmed for FY 2019-2024. According to the Illinois FY2019-2024 multimodal improvement program, federal sources make up 33.5% of total funding, while 12.9% and 6.5% of funding are projected from local and private sources.

3.11.1.2. Indiana

Indiana has several multimodal funding programs, including an Airport Improvement Program. This program is predominately funded by the Federal Aviation Administration. However, INDOT provides a 5% state match through the Airport Development Fund. And like most states, they manage a Railroad Grade Crossing Fund (RRGCF), and have created the Industrial Rail Service Fund, established by the Indiana General Assembly to provide funding for rail projects. (https://www.in.gov/indot/4033.htm)

3.11.1.3. Iowa

Iowa has numerous funding programs. One of their largest funding programs, the Revitalize Iowa's Sound Economy (RISE) was created in 1985 to promote economic development in Iowa through construction or improvement of roads and streets. This program currently receives approximately $41 million annually. Another program that focuses on projects not typically funded through highway funding programs is the Linking Iowa's Freight Transportation System Program (LIFTS program). This program awards $1.3 million through a competitive grant application. Iowa has not initiated additional freight programs. They continue to offer those identified in the 2016 regional freight study and shown in Table 3-9.

3.11.1.4. Kansas

With the initial allocation of FAST freight funding in the transportation authorization, KDOT dedicated $55 million towards the I-70 viaduct project in Kansas City, KS. This facility was outdated and considered a high-volume truck corridor. The guiding principle of the plan is to invest in highway corridors with high freight loads and the freight rail program. Other available freight programs include the Rail Service Improvement Fund (RSIF) authorized at $5 million annually for rail improvement projects; the Short Line Rail Improvement Fund (SLRIF) authorized at $5 million annually through SFY2023; the multimodal Local Cost Share Program (LCSP) and the multimodal Economic Development Program (EDP). Kansas is known for innovative partnership with the rail industry and recently initiated and completed a successful program to develop transload facilities across the state. The state saw a growing need and moved to ensure the safe and efficient movement of aggregates, cement, and agricultural products.

3.11.1.5. Kentucky

A major mover in marine freight, the Kentucky Riverport Improvement (KRI) Program was established to provide grants for dredging and maintenance of access to public riverports. This program will allocate $500,000 from the Kentucky General Fund to improve public riverport for FY2020-2021. KYTC also manages the rail crossing program and adds that the CMAQ program has also been used to advance freight projects.

3.11.1.6. Michigan

In Michigan**,** The Freight Economic Development Program offers low-interest competitive loans that are evaluated based on several factors, including the number of jobs that the projects will provide. The FEDP loans are designed to be forgiven if contractually obligated shipping commitments are met over the five-year repayment period. The State also funds all modes through a state rail loan assistance program, a state infrastructure bank, an aeronautic loans program, and two ferry programs (for passenger and freight movement). See Table 3-9 for more details.

3.11.1.7. Minnesota

Minnesota allocates approximately $5.3 million through the Minnesota Port Development Assistance Program to improve access to waterways, which directly and indirectly benefits Minnesota industries and the public. The Minnesota Rail Service Improvement Program also provides grants and loans for the improvement of rail service in the state through the construction and rehabilitation of railroads and rail facilities.

3.11.1.8. Missouri

The Missouri Freight Enhancement Program has received $1 million in FY 2017, 2018, and 2019 from the State Transportation Fund to improve and maintain the high priority freight assets and corridors that are critical to the movement of freight in the state. STAR is another cost share/loan program created in 1997 with an initial appropriation of $2.5 million. The program now offers $1 million each year. This fund only can be used for the development of non-highway transportation facilities. MoDOT also manages a successful state funded port program aimed at creating economically viable and independent ports.

3.11.1.9. Ohio

Ohio's multimodal freight programs include rail support through the State's Rail Development Commission and port support through their recently launched Maritime Assistance Program. So far, the agency has invested $23 million in the state's ports. Ohio's work in supporting ports has been remarkable. They also advocate and support other MAASTO states through their role on National Maritime Committee. Ohio also has a $6 million dollar program for aviation, but it is not defined as freight specific.

3.11.1.10. Wisconsin

Wisconsin has several multimodal funding programs. The Transportation Economic Assistance program provides $3.4 million each year for transportation improvement projects. The Freight Rail Infrastructure Improvement Program (FRIIP) and the Freight Rail Preservation Program (FRPP) are two important rail assistance programs. FRPP grants provide up to 80 percent of costs for the acquisition of abandoned rail lines for the purposes of retaining current or future use opportunities or for projects to rehabilitate tracks, bridges, and other facilities on publicly owned lines. Since 1980, FRPP and its predecessor

have provided $285 million in grants. The 2020-21 Wisconsin State Budget provided $30 million in bonding authority to the program for the biennium.

The FRIIP loan program provides up to 100 percent of funds for rail projects that connect businesses to the national rail network; that improve rail freight efficiency, safety, and movement; that rehabilitate lines; and/or facilitate economic development. Since 1992, FRIIP has provided $137 million in loans. Program funding is generated by repayment of loans from previous awards.

The State Infrastructure Bank (SIB) Program started with $1.5 million in federal funds and $375,000 in state funds. It currently has approximately $3 million in assets and only for federal aid eligible road projects.

One of the most notable programs in Wisconsin, and emulated by other states, is the HAP or Harbor Assistance Program. The program began in 1980; through 2019, almost $190 million was awarded through 123 grants. In 2020 the program awarded $19 million to ports across the state, public or private. Not only does this program provide funding for port and harbor improvements, but it also acts as a driver and organizer for the port managers. Each participant is required to provide updated port plans to be considered in the funding program. In addition, as the major funding source for marine assets in the state, the program and sponsored projects are the topics of much of the conversation and business at the annual state port association meetings.

While there is a continued need for increased freight funding, the range of programs available at WisDOT demonstrates a solid approach to ensure success with a multimodal freight system.

Table 3-9: MAFC State Multimodal Programs and Funding Sources

States	Program	Modes	Funding Source
Illinois	State Loan Repayment Fund	Rail	Loan repayments (previously General Fund)
	Rail Freight Loan Repayment Fund	Rail	Loan repayments, with grants from federal government
Indiana	Grade Crossing Fund	Rail	General Fund (RRGCF)
	Industrial Rail Service Fund	Rail	Dedicated tax
	Airport Improvement Program	Air	FAA Grants
Iowa	State Airport Improvement Program	Air	State Aviation Fund
	The federal Airport Improvement Program (AIP)	Air	Federal Funding
	General Aviation Vertical Infrastructure (GAVI) Program	Air	State Aviation Fund
	Commercial Service Vertical Infrastructure (CSVI) Program	Air	State Aviation Fund
	Highway-Railroad Crossing Safety Program	Rail, Road	Federal Funding
	Highway-Railroad Crossing Surface Repair Program	Rail, Road	Road Use Tax Fund
	Railroad Revolving Loan and Grant (RRLG) Program	Rail	Rail loan repayments and state appropriations fund
	Iowa Clean Air Attainment Program (ICAAP)	Rail	Federal Funding
	Linking Iowas Freight Transportation System Program(LIFTS)	Intermodal Projects	One-time withdrawal from SIB, awarded as grants.
	Revitalize Iowa's Sound Economy (RISE)	Road	Primary Road Fund
	Cooperative State Traffic Engineering Program	Road	Primary Road Fund
	The Living Roadway Trust Fund (LRTF)	Road	Road Use Tax Fund
Kansas	Economic Developement Program	Transportation Improvement	-
	Cost Share Program	All Modes	-
	State Rail Services Improvement Fund	Rail	Transfer from state highway funds.
	Major Railroad Rehabilitation Program	Rail	State Funding
	Short Line Rail Improvement Fund	Rail	-
	Grade Crossing Improvement	Rail, Road	Federal Funding, General Fund
Kentucky	Kentucky Railroad Crossing Improvement (KRCI) Program	Rail, Road	General Fund

States	Program	Modes	Funding Source
	Congestion Mitigation and Air Quality (CMAQ) Improvement Program	Rail	Federal Funding
	The Kentucky Riverport Improvement (KRI) Program	Water	General Fund
Michigan	Airport Capital Improvement Program (ACIP)	Air	FAA Grants
	Freight Economic Development Program	Rail	Comprehensive Transportation Fund
	the Transportation Economic Development Fund (TEDF)	Road	Michigan Transportation Fund (MTF) Administered by MDOT
	The Michigan Rail Loan Assistance Program (MiRLAP)	Rail	Loan repayments
	The Michigan State Infrastructure Bank (SIB) Loan	All Modes	Loan repayments
Minnesota	Essential Air Service Program	Air	U.S. DOT - Office of the Secretary (OST)
	Airport Improvement Program	Air	FAA Grants
	Hangar Loan Revolving Account Program	Air	Loan repayments
	Airport Construction Grant Program	Air	State General Fund
	Mississippi River & Tributaries Program	Water	U.S. Army Corps of Engineers
	Port Development Assistance Program	Water	State General Fund:
	Rail Safety Inspection Program	Rail	State General Fund
	Minnesota Rail Service Improvement Program	Rail	State General Fund
	Railroad-Grade Crossing Safety Improvement Program	Rail, Road	Federal General Fund
Missouri	the Federal Airport Improvement Program (AIP)	Air	Federal General Fund
	Highway/Rail Crossing Safety Program	Rail, Road	Federal Funding
	Port Authority Administrative Grants	Water	General Revenue
	Port Capital Improvement Program	Water	General Revenue
	Freight Enhancement Program	Road	State Transportation Fund
	STAR Loans	All Modes	Loan repayments
Ohio	Freight Rail Development	Rail	Federal General Fund
Wisconsin	The Transportation Economic Assistance (TEA)	All Modes	Transportation Fund
	Freight Rail Infrustructure Improvement program	Rail	Loan repayments
	Freight Railroad Preservation Program	Rail	Bonds

States	Program	Modes	Funding Source
	Railroad crossing improvements	Rail	Federal Funding
	https://wisconsindot.gov/Pages/doing-bus/loca	Water	Bonds
	Airport Improvement Program	Air	FAA Grants
	State Infrastructure Bank	Road	Loan repayments

Source: From the Ground Up, Aligning State Freight Plans to Enhance State Collaboration and Establish Regional and National Harmonization of Freight Priorities; Interviews; https://midamericafreight.org/wp-content/uploads/2020/06/MAFC15_AlignmentStudy_FinalReport.pdf

4. MOVING FORWARD WITH MULTISTATE COLLABORATION

4.1. Introduction

Freight movements are regional, national, and global in nature. It follows that successful freight planning programs require a high degree of coordination with other state agencies (natural resources, economic development for example), different government levels, and other state DOTs. Each MAFC state has its own planning and investment priorities based on the historic context of the state, available funding, and overall goals. However, the prosperity of the region depends on identifying common goals and cooperating to work towards those goals. This chapter identifies opportunities for multistate collaboration in freight planning, policy, and operations. It also recognizes different challenges and best practices that hinder or facilitate successful collaboration across these areas.

4.2. State Experiences and Perspectives on Collaboration

In the MAFC technical representative interviews, respondents were asked about the experiences of their agency in working collaboratively in the freight area. This information provides a baseline snapshot of collaboration practices, as well as the constraints and potential areas to focus future collaborative action.

4.2.1. Illinois

IDOT has been involved in a range of traditional multistate collaborative efforts. The agency has partnered on the development of marine highways and participated in the Great Lakes and St Lawrence Seaway Governor's and Premiers group. Importantly, IDOT has tremendous experience in working with bi-state arrangements and local planning organizations.

Illinois cites three major areas of leadership in multistate collaboration. Marine leadership on the Great Lakes and Inland System, Bi-state collaboration and the interrelated local planning involvement, and truck operations, specifically permitting and OSOW loads. They are also involved with a range of advocacy groups and associations such as IRPT, UMRBA, NASTO, AASHTO, and MAFC.

According to the interviewees, priority areas for regional collaboration include setting regional freight planning goals and priorities, agreement, and implementation of consistent truck regulations, permitting, and truck operations across the region and the U.S.

Benefits of increased collaboration and harmonized operations cited by respondents include greater efficiency in system maintenance and operations, increased safety, freight movement efficiencies, greater economic development, and business development. However, there are obstacles to greater collaboration, including a lack of a common focus on a regional plan. There is also a need for additional funding beyond existing funding. As one of the state participants stated, "we need more pie (funding), making more slices (more programs) of the same pie (funding) just hurts us all."

Interviewees in Illinois posited that multistate collaboration is only going to grow. The planners see freight policy beginning to rely on collaboration to capture and serve the array of user groups in both the private and public sectors. Considering most major freight corridors cross multiple states, providing a safer corridor with greater freight movement efficiency requires coordination across the states involved.

When asked how MAFC can support greater multistate collaboration in freight planning and operations, IDOT planners stated that the organization allows states to learn from one another.

The ability to see how their peers adapt to new regulations and provide or receive assistance in enacting new regulations is critical. They also feel that MAFC provides support in developing a single freight voice and reputation for the region. The interviewees see the next steps for the MAASTO region as developing a regional freight plan and goals that spawns projects and research needs.

4.2.2. Indiana

InDOT cites participation in TPIMS, MAASTO, SCOHT, and MAFC as their primary experiences with successful multistate collaboration. The success of TPIMS was driven by a visible, knowable need, cooperation, and leadership that transformed the cooperation into implementation. Awareness, broad support, and cooperation, along with the management directive, are seen as critical components to make any collaborative effort successful. They feel the wide support across MAASTO leadership helped push the TPIMS project to implementation success.

Additionally, InDOT sees comprehensive stakeholder inclusion as a priority to identify opportunities and roadblocks in achieving multistate projects. This involvement includes public agencies, as well as a range of private entities that comprise freight systems and logistics. In summary, the TPIMS project greatly expanded their professional networks and elevated all participants' status as leaders in innovation and collaboration in freight transportation.

The respondents also indicated that agency and industry perspectives on multistate collaboration have been changing with MAP-21 and FAST. The planners feel that most states are more than willing to work together and that there is less concern about agency boundaries than there is about the successful partnership and project. Additionally, they see a greater awareness of freight issues and operations, especially related to the economic development potential of these projects. Freight is now a priority.

When InDOT freight technical representatives were asked how MAFC can support the states in individual and regional freight development, they responded MAFC brings everyone together and focuses on freight. The coalition provides an opportunity to share how we have addressed freight guidance, as well as learn from others. The respondents commented they see three roles for MAFC now and in the future; keep our group together, focus on freight, encourage continued communication and exchange.

4.2.3. Iowa

Multistate collaboration experiences cited by Iowa freight planners include the TPIMS, truck size and weight harmonization, and extensive collaborative work on the Mississippi River. Iowa respondents indicated that the most common multistate work involves major bridge crossings. Across the region, river and lakes are common borders between states. Border projects, including international projects, truck permitting, and truck operations necessitate collaborative work. Iowa respondents suggest that truck and permit harmonization for OSOW moves, and agriculture are two critical areas for Iowa and MAASTO. Importantly, this input was provided directly from agricultural and trucking interests who were members of the Iowa FAC. Additionally, respondents see supply chain and infrastructure resiliency as critical areas for more research and investment. The upper Midwest has repeatedly experienced severe flooding, and now the pandemic demonstrates the importance of resiliency and redundancy in our systems.

Interviewees indicated they have always been in favor of greater multistate collaboration, and more can be done. They report no issues with any of the collaboration opportunities pursued with other states. Iowa has been able to pursue state funding for docking cell improvements on

the Mississippi River. However, the state fuel tax is specified for roads and bridges. Mutual funding on pooled, regional projects has not been addressed within the agency.

The planners do feel positive about future collaboration and the role of MAFC. The current agency leadership strongly supports operational collaboration to improve freight traffic operations across state lines. They also cite excellent relationships with local entities in joint planning efforts, and with FHWA.

Respondents indicated that MAFC provides a platform for freight planning, and a focus that allows us to work with our peers to leverage our regional knowledge and experiences. They feel MAFC promotes innovative thinking, regional freight systems, regional planning, and harmonized operations. As a state, they can benefit from others' research ideas and needs, and feel they also bring significant innovative thinking to the group. In summary, respondents conveyed that MAFC should keep doing what it is doing, keep us working together, keep up the research, and added that we can all do so much more.

4.2.4. Kansas

Kansas considers most projects collaborative. In most everything they do, they are partnering with states, communities, MPOs, or the private sector. On the state level, their most common collaboration includes work with MAFC, Mid-America Regional Council (MARC) (the bi-state MPO in the metro Kansas City Region), TPIMS, Wichita Area Metropolitan Planning Organization (WAMPO) in Sedgwick and surrounding counties and multistate rail projects. The respondent indicated that the experience working together is key to their and MAASTO's success. The degree of familiarity, and trust among personnel is exceptional. Trust and familiarity are needed to successfully work and take risks as partners. They feel MAFC fosters this collaborative relationship across the region.

In terms of upcoming collaboration opportunities, KDOT feels this is somewhat of a moving target based on emerging trends, technology and innovation, and the state abilities and priorities. The respondent feels there are trends or issues in every mode where collaborative solutions make sense. For the private sector, their experiences suggest that decisions to participate and collaborate are driven by return on investment and any comparative advantage they can secure. This may limit private participation in some sectors where information sharing required in collaboration contrasts with private sector interests. Additional limits to collaboration may come from DOTs as they must weigh their in-state priorities and resources against the investment required to participate in a regional project.

4.2.5. Kentucky

Kentucky actively reaches out to MAASTO peer states when they have questions on new policies, studies and research, freight planning, and freight operations. In the last year, they have used MAFC several times to support their information requests with other states, and in advancing a regional approach to marine planning. The KYTC respondent indicated that MAFC has facilitated and encouraged sharing across the states, and probably most importantly, it has created a network where everyone knows who to call for different freight needs. One of the greatest benefits of MAFC is getting to know peers and developing the trust to share and support all of us across MAASTO.

Collaborative action in Kentucky spans work on major river crossing, highway safety, operations communications, and in projects/processes that require coordination. TPIMS is cited as one of their, and the region's first real collaboration projects. They see success in operational and construction activities as a necessity. For broader effective collaboration, the respondent sees a benefit in relationships across the MAASTO states that are preexisting. It is also beneficial to

have a stable organizational model and leadership. They feel the partnerships are successful due to this experience and familiarity. They have worked with the states over time and know each other through the MAASTO committee structure. The rules and expectations are known, as well as the desired outcome.

While respondents see collaboration in planning and freight development as somewhat "untested waters", they feel there is tremendous potential to advance the area and the ensuing projects. More collaborative planning on major corridors is one area for more work. Consider the example provided by KYTC regarding the "127 Yard Sale". The "127" is literally an international garage sale running from Mexico to the Canadian border. These garage sales come complete with unexpected, stopped traffic, far greater turn movements, delay, and the related safety issues. KYTC feels we need to improve in sharing information - in this case, communication about a traffic event.

Regarding the future of collaboration, the respondent feels the states have the required trust, familiarity, and shared needs to move the group forward. However, it was expressed that it is important everyone sees the big picture and the possibilities of collaboration at a higher level. The interviewee referenced the success of the interstates, and the tremendous collaborative planning. That level of collaboration should drive everything we do in freight. Highways do not end at borders.

One collaborative area advanced by KYTC is regional marine freight and port planning. As MAASTO states increase efforts to support marine freight, several of the states are developing state marine freight and port plans. KYTC has proposed examining the state planning efforts, goals, and needs in each state marine/port plans and work to assess the efforts in terms of a regional perspective and application. In effect, we should treat the marine freight corridors just as highway freight corridors. We can work together on these corridors to benefit the system and all of us. The MAASTO peer states planners agreed that this is a regional opportunity, and the discussion has resulted in a MAFC project to address the possibility of collaborative work on marine freight corridors on the inland systems as well as the Great Lakes.

The respondent credits knowledge transfer between states and the ability to build off what other people have done as one of the biggest benefits of MAFC. There are impediments to increasing collaboration levels in some areas. Regional projects, policy-level decisions, and collaborative efforts frequently require greater administrative effort. However, increasing management participation in FACs, along with the AASHTO and MAASTO focus on freight has resulted in increased overall awareness of freight systems within the agencies.

Like other states, KYTC's limits to spending on multimodal and multistate projects could hinder their participation in mutually funded projects but does not impact their ability to collaborate regionally on other issues, processes, and policy. State gas taxes are generally aligned with road investments, rail funds are limited to safety and rail crossings, and river port funds come from the general funds. The stability and level of investment for multimodal work or multistate collaboration seems to depend upon continued interest and investments outside the control of user investments or needs. The system is funded and managed as distinct, separable modes, rather than a multimodal system.

KYTC feels that MAFC assists in collaboration and innovation in freight, and the annual meeting is cited across the states as one of the most beneficial activities of the coalition. The respondent expressed appreciation for their peers and stated they learn so much from their relationships and coalition activities. One suggestion in support of this benefit is to develop a way to meet face to face twice a year to advance our abilities to communicate and work together. The respondent feels MAFC is crucial to establishing and maintaining the relationships and networks that support innovation and successful collaboration.

4.2.6. Michigan

Michigan's participation in multistate collaboration addresses a wide range of modal partnerships. In addition to MAFC, they participate in the Great Lakes Dredging Team, Mega Region Activities with FHWA, MAASTO, and TPIMS. While these coalitions have been extremely helpful to Michigan, there are others they have participated in that have faded away. Some groups come and go with no real impact. They offer that the coalition focus needs to be of enough significance to retain political interest, funding, and participation.

The respondents also mentioned the commonality of partnering with other states and groups for multistate bridge and interstate projects, as well as when working with municipalities. Some of these programs and the partnership processes have been institutionalized due to frequency of the projects. They see the big multistate collaborative successes in Michigan as MAFC in the planning area, the motor carrier and permitting area with harmonization efforts, and the MAASTO STIC committee in policy harmonization and innovation. In summary, the planning, policy, and motor carrier areas tend to participate in a range of coalitions or public and private partnerships. The operations and project areas tend to partner and collaborate on the areas such as construction of a bridge at a major river crossing between two states or countries.

The respondents feel the MAFC model approach to regional collaborative goals and efforts reflects the interest of the larger group and is also embedded in the goals and actions of each state to provide equitable relationships. The states expect certain benefits from their personnel and financial participation in collaboratives, including:

- Operational cost savings
- Increased safety
- Networking and peer to peer professional development
- Greater user satisfaction
- Easier multistate travel
- Increased economic efficiency in freight movement

Respondents feel other benefits from multistate collaboration, specifically participation in a group like MAFC, are often overlooked. These benefits can include open communication and trust between personnel across an entire region. Just as the adoption-diffusion models of agriculture supports the adoption of new technologies, a collaborative environment in freight planning and operations allows quicker adoption of new technologies. Those participating in the group are more likely to see or hear of a new technology, more likely to trust a review and advice from a peer, and more likely to act on that advice. There is security in group exploration and adoption as efforts progress.

One freight focus area that affects all MAASTO state economies yet is unique to Michigan, and other northern tier states is the international border crossing with Canada. Commodities crossing between Canada and the U.S. create the third largest trade lane and partner for the U.S. Yet much of the state-based funding and management of these facilities falls on Michigan. Border crossings are one area that rely heavily on the host state for maintenance and operations yet benefit the entire multi-state trade region.

Michigan, like most MAASTO states, cannot invest transportation funding beyond the borders of Michigan. While investment into the broader system can make long-term and regional sense, Michigan, as most states, cannot fund projects outside of their boundaries even if they accrue benefits. They can, however, participate in regional planning, policy and operations activities as well as training and joint operations.

The Michigan respondents also pointed out that funding, timelines, and priorities are different across the MAASTO States and create barriers to collaboration. Complete harmonization of freight operations and planning across the states is unlikely and unnecessary. However, adoption of regionally harmonized focus areas can be accelerated through multistate collaboration without combined funding. Permit and weight harmonization, communications, CAV accommodation, and operations areas are prime for multistate collaboration. Similarly, in the planning area, Michigan cites an example of prioritizing collaboration in projects in MAFC; they state the priority of an issue or project drives interest and action, not the borders. Creation of regional marine highways and TPIMS are great examples. Everyone does what they can to accommodate each other and bring their state's resources to bear. The respondents stated that multistate collaboration, done right, is one of the most effective ways the region can work together to increase freight reliability, resiliency, and safety.

4.2.7. Minnesota

Minnesota is considered a strong collaborator internally, with industry stakeholders, and with planning entities across the region. Collaboration is considered a necessary input into MnDOT operations, planning, management, and with peers across agencies. MnDOT has attended the mega-region planning training/events provided by the FHWA Central Office of Transportation Planning and recently worked with Kansas, Iowa, and Wisconsin to share their approaches to rail studies.

The respondents commented that federal support for freight planning and projects is progressing, but it appears innovation at the state level outpaces the technological, financial, and organizational support at the federal level. In short, a concerted federal effort to recognize and support regional collaboration would help the states break down many barriers to even greater levels of regional collaboration.

Like other states, Minnesota invests state and federal funding within their state, based on legislative prescriptions, as well as public perception. They feel most of their efforts on multi-state projects are in peer funded research and coalitions such as through the MAFC, and the Great Northern Corridor. On the operations and project side, bridge projects at the state border, and multistate traffic communications are two areas of frequent collaboration.

With the advancement of freight planning in MAP21 and FAST, they feel this has brought about broader conversations across more groups about investing in freight. It also elevates freight as a major component of the transportation system. They indicated that federal legislation's direction to consult with neighboring states on planning and operations is already the standard practice for MnDOT and MAASTO States.

MnDOT respondents indicated MAFC provides an opportunity for peer groups across state DOTs and MPOs to collaborate on best practices and issues that affect each of the states. This is important as there are several freight-related issues that states cannot fully address alone. The interviewees added that two recent examples include the TPIMS and railroad safety. Both are issues that transcend political-administrative boundaries.

When asked how MAFC can support greater collaboration, they cited the importance of continuing face to face meetings after COVID-19 social and travel restrictions are lifted. They feel the benefits of face-to-face interaction extend far into the future once you have developed a trusted, stable network. MAFC should also continue the state driven freight research agenda that addresses the states' needs. The state-defined project approach works well in setting the MAFC research and activity agenda. Additionally, they stated that for agency employees new to freight, MAFC facilitates introductions and partnerships with other states and provides for peer-

to-peer learning and networking. These freight professional development and training benefits are inherent in MAFC's operations.

4.2.8. Missouri

Missouri has a long-standing history of multistate collaboration on the project level with Illinois, Kansas, Arkansas, Iowa, and Nebraska. Project collaborations tend to be the most common collaborative actions. In general, these efforts are fully funded, and have a known beginning and end. The respondent indicated that success in multistate collaboration is necessary, not just an added benefit for projects such as major bride crossings or freight corridors. The respondent notes that in more urban areas, MPOs, as the local experts, tend to drive collaboration across state lines. These relationships have become familiar across the local and state operations, and the processes have become institutionalized.

Multistate collaboration in the policy area is considered an evolving, elusive target. For example, each states' decision to move forward with a multistate collaborative action may be tempered by state legislative oversight, as is the case in Missouri and most all the MAASTO states. In contrast to the established collaboration in the project area, the policy area has been difficult to negotiate given the variance in state legislative oversight, historical patterns in each state, and concerns over very limited state resources.

Areas cited in the interview for further collaborative focus include multistate freight corridors such as I-70, locks and dams on the major rivers, connected and automated vehicles, and regional truck parking. The respondent feels this is in addition to the everyday focus on harmonization and operations. The respondent especially noted the potential benefits of a regional approach to truck parking where resources on parking could be allocated where needed across the region, rather than on a state-by-state basis.

During the interview, two major impediments to greater collaboration and a sense of a regionally managed system were identified: 1) state constitutional limits on funding allocation, and 2) most states are focusing on an internal asset management plan and limited revenues. As a result, the focus is on maintaining the existing system. In 2024/25, MoDOT anticipates spending 100% of their funding on maintenance. However, there is increased awareness of freight and its economic importance that is resulting in more discussions with the potential for greater collaboration and funding. Additionally, the respondent feels that federal agencies prefer multistate grant applications focusing on national connectivity rather than a single state application. Further, the MAASTO BOD encourages multistate collaboration. Rather than 50 states each creating their own set of regulations, multistate truck operations and regulations should be harmonized.

When asked how MAFC currently helps states and can further assist MAASTO states with freight planning and operations, the respondent indicated MAFC brings planners and operations people together and keep us focused on the region and not in our own world. The phone calls and meetings help bring us together. The Midwest culture was also credited with a sense of helping neighbors, in this case, peer state agencies. This response and several similar responses from other states reflects well on MAASTO and MAFC. While all states cooperate on state border projects, the MAASTO committees and groups have extended the collaboration to all areas of their work in freight planning and operations and have created trusted relationships across the states. These relationships and the trust across MAASTO States enable effective multistate collaboration.

The respondent has participated in several coalitions and state collaborations and feels MAFC and MAASTO are far more aligned and working in unison than any other groups. Additionally, many other states are now considering, or beginning to work regionally or on a multistate level,

beyond state border projects. The MAASTO region has shown how these groups can be effective. MAASTO should consider the committee structure and MAFC as successes in organizational innovation. Additionally, the respondent reflected on the historic priority for highways, and added that most states are still working to advance a multimodal freight perspective. Multimodal development may be another area in which focused collaboration could bring more rapid and uniform changes across the region.

4.2.9. Ohio

Ohio's multistate, university, and international collaboration efforts are impressive. The respondents cite collaborative efforts with MAASTO TPIMS, Drive Ohio, the Hyperloop application, MAASTO OSOW collaboration, Great Lakes and Ohio River development, as well as international work with Canada and Canadian ports. In the interview, the STIC committee, the SCOHT and MCC committees were cited for their efforts to collaborate and share information successfully. The STIC specifically is noted for its work in the policy area, especially with truck harmonization and new technologies. Similarly, MAFC is successful and importantly provides peer-to-peer networking and best practice sharing, research that serves the states' needs, leadership in technology, and helps everyone think regionally.

In the interview, one critical organizational factor to sustaining continued investment in freight and the collaborative agenda was identified as institutional / leadership continuity. Changing leadership with changing agendas can remove the support and legitimacy for freight cooperation and considerations in an agency. Similarly, overall changes in organizational dynamics due to politics, changes in funding, personal clashes, or emergency conditions can end the best of collaborative planning and emphasis on freight. These issues are common to large organizations and were mentioned as common potential threats to continued collaboration by several interviewees. Institutionalizing freight planning and improving internal communications regarding freight are two goals suggested by several states to lessen the impacts of organizational changes.

4.2.10. Wisconsin

Like several other states, Wisconsin's current freight plan does not include a discussion on multistate collaboration. However, the respondents indicate they stay in almost constant contact with their neighboring states, ports, MPOs, and transportation partners. Most of their previous collaboration was project-specific with border states and with local entities. Respondents indicate success for most of these project collaborations is due to the necessity of joint ownership. These relationships have also been active for some time, and all the processes and key activities are known. Their efforts on rail development in the Northwoods region of the state highlight their collaborative efforts within the state. In collaboration with local rail advocates, businesses, and industry, they have completed multiple studies, participated in stakeholder group meetings, and are actively seeking an approach to increasing rail service in Northern Wisconsin.

With most of the multistate collaboration efforts directed to projects, the respondents suggested a focus on permitting, truck weights, and consistent policies to make business and logistics more competitive for the State's industries and businesses. The respondents see multistate collaborative efforts potentially inhibited in that some states require legislative action to alter regulations and laws regarding the use of transportation funds or authority.

The respondents indicated that communications should be a priority across MAASTO and that committees and MAFC support these needs. In Wisconsin, freight professionals are located throughout the agency so additional effort is needed to align agency resources towards a single goal. On a regional level, they feel there are critical issues in the freight area at every turn, and it

would be optimal if MAASTO could prioritize and organize these issues. An organized, prioritized approach will support all of us working together for a regional goal.

Respondents indicated that MAFC sets the context for freight planners to learn from each other and work together. Conditions for collaboration can be improved with increased communication. MAP21 and FAST have supported greater awareness and action on freight issues by increasing awareness, and institutionalizing freight with funding and freight plan requirements.

In this same context of raising awareness, a respondent indicated that all states should talk more about the economic connections between freight and transportation. Regionally and individually, there is more to be done with the economic contributions of freight. WisDOT recommends that peers examine Econ Works at the AASHTO website: https://planningtools.transportation.org/13/econworks.html.

4.3. Best Practices for Multistate Collaboration in the Freight Plan

Given that freight planning is relatively new, most of the collaboration demonstrated in previous and current freight plans reflect projects such as bridge crossings, major interstate corridors, and winter operations and communications. This type of construction and operations collaboration is common across the MAASTO States and has been part of the processes since interstate development. All interviewees referenced their responses of collaboration in their freight plans as minimal, and not where they should be given the efforts in collaboration now underway. Except for a few successful exceptions, there has been no sustained approach to supporting multistate collaboration beyond project and operations level actions, at the federal level or any government level.

The next steps in collaboration expand upon past expectations of good project partners and communication. Multistate collaboration as a way of working is moving to reconcile longstanding truck size and weight harmonization issues, establish parameters for the future with CAV, and solving problems through collaborative research. The MAASTO State Freight Network is a subset of the National Freight System, and therefore consistency in regulations, infrastructure, and communications is essential to provide users a safe, seamless, and efficient freight movement.

Examples and possibilities of current and potential multistate collaborative activities are discussed in the following section and provide opportunities for advances in freight planning, policy and operations for the MAASTO region.

4.4. Collaboration Opportunities

The MAASTO states have a proven history of collaboration, and the successes are evident. From the TPIMS, to emerging work in CAV, emergency divisible load harmonization, multistate operations communications, planning, grant collaboration, and collaboration in regional freight research, MAASTO multistate efforts work. Collaboration can enhance implementation and the overall effectiveness of a practice or technology through group assessment, adaption, and adoption. To further advance multistate collaboration in the freight planning, policy, and operations areas, interviews with the MAFC technical representatives, planning committee members, as well as interviews with other active MAASTO committees including the STIC, SCOHT, and MCC were conducted. These interviews address the opportunities, constraints, and the future of collaboration. MAASTO meeting events and summits have also provided critical information about the regional collaborative interests, as well as level of interest in the collaboration of the MAASTO BOD and DOT leadership. Additionally, FHWA freight planning professionals were interviewed about FHWA programs and the support available to advance and implement multistate activities and projects. AASHTO collaborative research products were

also referenced, however AASHTO personnel to address freight collaboration were not available at the time of this project.

In this project, directed interviews regarding collaboration opportunities with these different groups revealed four areas of collaborative focus based on the group's orientation in supporting freight transportation. For example, in interviews with STIC committee members and a discussion of collaboration with the STIC Committee, there is a clear focus on leading the adoption of national-level actives and innovations such as CAV, truck size and weight harmonization, and increased funding for freight. Given the strong working linkage between the MAASTO BOD and the STIC committee, the committee naturally gravitates towards national-level policy issues that tend to be innovative and include a degree of risk. The collaborative work of the STIC committee is in advancing the appropriate innovations and resolving the longstanding bureaucratic and legislative constraints to provide a more efficient and safe freight system.

At the direction of the STIC, MAFC has provided background studies on truck platooning (https://midamericafreight.org/wp-content/uploads/2018/08/MAFC-Truck-Platooning-2018-08-13.pdf) and information on the national freight networks during the development of transportation reauthorization. In early 2021, the STIC and SCOHT teamed together to champion an effort to harmonize truck weight disparities in emergency divisible loads across the MAASTO region. This level of coordination and integration across multiple states to promote and drive innovation and change is exceptional across the U.S. This reflects not only the effective committee structure and communications across MAASTO, but also the willingness of the states to work together to solve common issues.

Interviews with SCOHT and MCC representatives revealed high levels of motivation to collaborate. This is based on the continued success in their focus on truck size and weight harmonization across MAASTO states. It is important to note that the truck size and weight group has a long-standing history of working together to resolve interstate harmonization of truck size and weight laws. In observing and participating in the committee activities and research, the MAASTO states garner national recognition for success in harmonization and coordination. Coordination not only across the MAASTO states, but also nationally and with every level of the industry. At a minimum, the permit groups across MAASTO work with six different industry associations. The intense focus on truck size and weight harmonization reflects the continued need to resolve these long-standing differences in states' regulations. It also reflects the orientation of leadership and the tremendous and constant efforts of the SCOHT and MCC personnel in advancing these efforts.

The MAASTO Planning committee members and MAFC technical committee represent the core audience and champions of MAFC and manage the overall activities and direction for the coalition. Interestingly, there is a wide range of topic areas that these groups see as appropriate and ripe for multistate collaboration. This is likely related to their roles as planners and the need to address and include all factors likely to impact agency efforts. As demonstrated in the earlier discussions on collaborative activities of interest, the planning topic horizon ranges from understanding and promoting the adoption of advanced technologies to identifying and capturing shared benefits of collaborative purchases of freight data.

Their responsibilities to identify and include critical factors of change in their work helps drive innovation and collaboration. Further, many of these issues are correctly recognized as without borders and appropriate for multistate action. While the STIC focuses on national-level policy issues and innovation, the SCOHT focuses on truck size and weight, the planning areas tend to cast a broad net to capture and coordinate these innovations in a holistic yet actionable context.

FHWA personnel, on the other hand, sees collaboration as more project and facility-specific such as the I10 Corridor, cited in the interview. In FHWA parlance, a coalition represents and drives a distinct project development activity by states and entities. At the point, the states or entities make known their interest to develop a corridor project coalition, FHWA can offer advisory services. However, there is no identified funding or program to support or encourage multistate project efforts. Further, there is no funding to establish or maintain more general coalitions such as MAFC. Groups like MAFC are generally funded through the state transportation pooled fund process.

In summary, collaboration activities are seen as critical across the various functional work units in the agencies, and there are naturally differences in the focus of the different functional units. Coordinated efforts in freight planning, operations, and logistics create better regional decisions. Limiting coordination, or the lack of support for multistate coordination across freight planning leaves states isolated in the policy and regulatory areas and their ability to identify and adopt innovations.

4.5. Drivers of Collaboration

In the interviews and discussions, all respondents were asked about the drivers for and constraints to multistate collaboration. The responses reflect a wide range of organizational, financial, and coordination-related variables.

The drivers within agencies, or those conditions and actions that support multistate collaborative actions included:

1) Leadership and management are enthusiastic champions.
2) Leadership continuity provides stability to agreements and relationships.
3) Organizational continuity provides stability to agreements and relationships.
4) There is an organizational history of collaboration with trusted relationships.
5) Collaboration is the culture of the organization. Professionals partner within their agencies, local jurisdictions, other state agencies, other states, and across the industry and modal spectrum.
6) Leadership is open to innovation and risk-taking.
7) Funding cycles, state asset management, and project needs align.
8) Awareness of the need to address regional and national freight movements.
9) Awareness of the opportunity for increased efficiency with collaboration.
10) Presence of a supporting, multistate organization. MAASTO, MAFC, and the committee structure provide for and even encourage sharing and cooperation.

While this list is not intended as comprehensive, the core concepts of collaboration are represented. These factors combined with a problem or opportunity to improve safety, efficiency, and quality can result in successful multistate and regional projects.

4.6. Constraints to Greater Collaboration

Many of the identified constraints to greater multistate collaboration are simply the lack of a driver or identified need for collaboration as the solution. Of the ten factors listed above as drivers of collaboration, the lack of any or all these factors reduce that potential collaborative activity. In addition to the lack of these multistate collaboration drivers, several additional themes were observed in the interviews.

1) While state legislative limitations to using funding for multimodal and multistate activities are present, none of the respondents felt that the ability to share funding on regional projects was a limiting factor to greater multistate collaboration. Legislative defined state regulations can also be burdensome and nearly impossible to change in certain political climates.
2) Some respondents indicated that there are really no barriers to greater collaboration. It (collaboration) must become the way we work.
3) The COVID-19 shutdown was originally thought to slow down collaborative activities. While there are sensible travel and meeting limits still in place, the lack of travel has not limited the interaction needed to succeed. The trusted relationships, the history, and common language across the MAASTO states make it possible to plan and complete major projects over the phone.
4) There is a lack of funding for freight projects. Many potential collaborative projects will require multistate collaboration and investments.
5) The lack of funding to support DOT coalitions or efforts generated by coalitions was noted. Regional and national collaborative work should be funded to encourage greater speed in developing and adopting innovations and implementation in a multistate and multimodal setting.
6) Some states have decentralized freight operations, which make agency-level multi-state collaborations difficult to develop and sustain.

While most of the constraints and drivers to external collaboration can be seen across institutions of all types, there are also unique situational factors that can inhibit the expansion of multistate collaboration. Personality clashes across leadership, political pressure to focus on specific in-state conditions, or emergency projects often derail emerging collaborative efforts. Sometimes, the most subtle barriers consist of communication and language differences across groups within and outside of freight. Even in an industry known for acronyms, there is an increasing distance between the knowledge and communication distinct to functional groups and technologies. These subtle differences slow planning and project execution as time is spent to redefine terms, actions, and outcomes. Increased joint activity levels and familiarity through coalitions such as MAFC can bridge these communication constraints and provide the familiarity and appropriate venue to learn, collaborate, and implement.

MAASTO committees and MAFC act as idea and collaboration incubators similar to small business incubators. The affiliations bring the right people together, support the relationships, and provide for growth and innovation.

4.7. The Future of Collaboration

To understand the process of multistate collaboration and identify the range of possible collaborative opportunities, interviewees were asked about freight issue areas and projects that should be considered for multistate projects. These focus areas help identify projects and are part of a larger regional collaborative freight agenda. Most of these collaborative proposals will impact national freight policy and operations. These are significant activities that will help professionals understand, implement, and manage the rapidly developing innovations and technologies in the logistics and freight sectors.

The areas and project ideas are first summarized in bullet points below, then discussed and described in more detail. These ideas reflect the most significant potential and continued collaboration areas, as seen by the project participants.

4.7.1. Freight Planning

- Development of regional freight goals and plan with a priority list of initiatives.
- Development of regional freight databases
    - Group Purchase of freight data
    - Create Freight Planning web resource
- Development of regional freight advisory committee
    - Region-wide FAC survey
    - Peer state participation in FACs
- Development of multistate program for joint programs

4.7.2. Continue and Expand Collaboration in Innovation and Harmonization

- Connected and autonomous (automated) vehicles
- Truck Platooning
- Harmonization of truck size and weight regulation
    - harmonize emergency divisible loads
    - harmonization of a truck following distance in platooning and CAV environments

4.7.3. Continue and Expand Freight Corridor Collaboration and Management

- Regionally planned and managed freight highway corridors
- Regionally planned and managed marine corridors

4.7.4. Continue Focus on Collaboration and Expand Functional Areas for collaboration

- Retain MAASTO committee structure to support collaboration, including specialization and collaboration by topic and functional areas.
- Retain MAFC to support freight planning, policy, and operations collaboration.
- Encourage states to institutionalize collaboration and multistate working groups within their standard business practices.
- Initiate a Complete Corridor Management Group
- Create MAASTO Operations Coalition

The context, potential approaches, and expected outcomes of these potential collaborative opportunities are discussed below. Multistate managed freight corridors and current and future work in truck permitting are used as case studies to demonstrate how collaboration can effectively be expanded to additional projects. Additionally, the characteristics, practices, and context affecting the development and implementation of multistate projects are identified, and potential projects are described based on this collaborative model.

4.7.5. Collaborative Freight Planning

The development of regional freight goals and a freight plan with a priority list of initiatives was identified as a key component to moving forward with a regional freight focus. Several

respondents indicated they feel there is a need for MAASTO to coordinate the development of a regional freight plan. The plan would provide guidance, priorities, and project initiatives that MAASTO committees and MAFC can adopt as their regional freight development map. This approach also provides legitimation and greater awareness of multistate freight activities as critical to the states and regional freight systems and economies. A regional freight plan would provide a larger organizational and geographical context to create planning scenarios and goals.

MAASTO states are well aligned for the development of a regional freight plan. The freight status, movements, and commodity information for each state are readily available from state freight plans. Regional freight corridor data has been developed by MAFC. This information, combined with regional goals and prioritized actions created through MAASTO committee and BOD action, can ensure the MAASTO region has the safest and most efficient multimodal freight system in the nation.

In tandem with the development of a regional freight plan and driven by a need to understand regional freight movements, the development of regional freight databases was also identified in project discussions. Many of the currently used datasets could be expanded to address regional considerations. Currently, the TPIMS project is creating a regional truck parking dataset that can help define parking needs and identify areas in need of truck parking expansion on a regional as well state by state basis. Similarly, commodity movements, truck movements, and permitting patterns, for example, can provide beneficial information singly or when combined to support regional decision-making. The needed regional information and supporting state datasets could be identified and manipulated into regional datasets that include visualization tools. This creates an opportunity to improve state-level freight planning by allowing planners to better understand pass-through traffic and the origin and destinations of key state commodities. The regional datasets also support regional planning and operations decisions, freight movement and crash analysis, grant applications, and increased awareness of the need to operate regionally. Combined efforts by personnel from the planning, operations, and data management functional areas across the states can identify the information needs and databases, and provide the expertise needed to blend and create valuable regional datasets.

Most states purchase freight datasets customized by consultants to provide disaggregated data, specific telemetric data, modal data, or other data that has undergone some transformation to render it more useable. This data is either directly purchased or purchased by consultants and used in the freight plans and charged back to the agency. Costs for state efforts, depending on the number of variables included, aggregated to around $3,000,000.00 during the last round of freight plans and are expected to eclipse this amount for the 2021 plans. As these datasets are generally purchased from the same vendors, the idea of a group purchase of state and/or regional datasets is often mentioned. This is seen as one possible way to allow all states to incorporate the best data available systematically in each state and across the region. The group purchase may also provide leverage to reduce pricing.

Group data purchases could be coordinated through the MAFC technical representatives and planning committee members to identify the needed data and scope of the purchase. The data could be housed through MAFC and UW-Madison data management systems and accessed by states at any time. Analysis of interest for new issues, or innovative approaches to data could be shared across the data management forum to support greater collaboration across MAASTO with the data. Additionally, training could be included in the vendor contract to provide low-cost virtual training updates.

Creating a MAASTO freight planning clearing house on the MAFC webpage was identified as an additional way to provide peer-to-peer networking and sharing. With this project, the freight

planning clearing house page is currently under construction. Initially, the page will house the current multimodal and LRTP plans for each state, FAC information, and freight planning contact information. Technical representatives have also suggested that grant applications could also be tracked to provide model modal applications. This allows for peers to understand the nature, content, and structure of successful applications. The site can be viewed at: https://midamericafreight.org/index.php/resources/freight-planning/

A Regional Freight Advisory Committee (RFAC) was envisioned by practitioners to better understand stakeholder experiences, perspectives on state and regional freight movements, and issues in the MAASTO region. This represents a natural extension of state FACs. The original National FAC (https://www.transportation.gov/national-freight-advisory-committee) modeled this approach by combining the input from the states, industry, and federal agencies to provide a national perspective.

MAASTO respondents identified three different formats that would support the development of an RFAC or provide representation of the state FACs. The first approach convenes all available FAC members across MAASTO states at a MAASTO meeting. This would provide an opportunity for industries to see the culture and themes that drive transportation agencies. Similarly, a managed discussion with a breakout session on current freight issues would allow for unique and significant input from businesses, industries, and agencies across the region. This event could be held virtually to reduce costs. This approach could also be implemented with one or two stakeholders from each FAC attending as representatives for their state FAC at MAASTO meetings.

A second approach to secure regional stakeholder input includes a region wide FAC web survey application. Contents of the survey would be created in coordination with state FACs, freight planning and operations personnel, MAFC, and state communications personnel to develop a survey instrument. Then access to the survey would be shared through each FAC with an agency introduction on the importance of completing the survey.

Another effective way to expand practitioners' experiences with freight and stakeholders is for state FACs to invite other state freight planners to attend their FAC meetings. With the electronic communications and virtual FACs, peer state practitioners could join from their own desk without travel. This allows for even greater understanding of out-state issues and introduces the perspectives and practices of another state's FAC.

MAP-21 and FAST originally established freight advisory committees to maximize each state's freight planning and operations capabilities through direct stakeholder contact and participation. The establishment of a MAASTO RFAC would be helpful in collaboration efforts such as the development of a regional freight plan, regional project prioritization, development of regional investment plan, and in developing regional freight corridors. Like state FACs, an RFAC could include representatives of state DOTs, FHWA/USDOT staff, complimentary federal and state agencies, and industry, business, and modal representatives.

The development of a multistate mutual funding program for corridor projects is one of the most progressive collaborative actions mentioned in project interviews. As demonstrated in freight programs in the EU, regionally significant projects are identified and jointly funded through a cooperative freight fund (https://international.fhwa.dot.gov/scan/12023/). Currently, it is clear that such a program would require additional funding for a successful launch in the U.S. and does not match the current state funding approach.

However, this process of collaborative planning itself will result in the identification of opportunities for innovation and efficiency by identifying shared high-importance corridors, and high-priority projects to groups of states. A MAASTO leadership group could approve project

eligibility through a regional project prioritization process. Similarly, this approach could be incorporated with the current collaborative model. With a jointly selected priority corridor, each state would focus investments along the corridor within their own system. With all states participating, this approach provides corridor-wide benefits without the complications of joint or mutual funding. The ideal in this case, without pooled, specific funding, are joint collaborative investments by each state on a priority corridor with eventual harmonization of projects on freight corridors.

4.7.6. Continue and Expand Collaboration in Innovation and Harmonization

Sharing the risk related to the adoption of new technologies, succeeding with projects that require coordination, and addressing national-level policy issues are three critical areas where collaboration is not only necessary but generally supports greater project success and implementation. Currently, the MAASTO States are working in several areas to ensure that highway freight corridors are the safest and most efficient anywhere. Understanding advancing technologies and policies, and then implementing the technologies are top areas of consideration across the region.

Connected and autonomous (automated) vehicles are high on the innovation priority list of transportation agencies. Adopting these new technologies raises a number of new questions about user safety, user and facility interface, and any number of unanticipated consequences. This is an innovation that has a degree of risk and reward in its adoption and represents a national policy issue. Successful adoption of any of the concepts under CAV will require a collaborative process. MAASTO's current regional CAV approach has been a model of multistate collaboration. The process began with a series of two CAV forums to discuss the issues around the region and the status of CAV in each of the agencies. Based on these two meetings, the MAASTO CAV committee has identified breakout focus areas that will be the subject of strategic planning subgroups. The freight CAV subgroup is supported by MAFC members.

Truck platooning is one CAV theme of interest in the MAASTO region and would clearly benefit from multistate development and implementation. This is an opportunity to harmonize the regulations and operations of CAV technologies prior to implementation. This approach will avoid disparate policies and regulations across the states and allow for unhampered platoon travel across the MAASTO region. While the economics and suitability of the technology are still in question, platooning provides a template for a collaborative, multistate approach to the adoption of new technology. A recent study by MAFC (https://midamericafreight.org/index.php/2018/04/12/truck-platooning-a-report-from-the-maasto-working-group-and-mafc/) shows that a Midwest Truck Platooning Regulatory Model that provides uniform regulations, expectations, and operations across the MAASTO region is necessary for effective adoption of the technology. Collaboration among states will be required to develop for example, unified legislation in conflicting areas such as following distances of the second and after trucks in a platoon, the number of trucks allowed in a platoon, insurance needs and requirements, driver requirements, truck signs, and platoon planning. This study also identified the potential regional corridors for truck platooning. Harmonizing regulations and designating routes across the MAASTO region supports multistate platooning and most CAV technologies. This approach is also useful in identifying and avoiding the inefficiencies of variability related to state-by-state regulations.

Harmonization of truck size and weight regulations across MAASTO provides the cornerstone example of the need and effectiveness of regional and national collaboration to harmonize regulations. With the disparate truck size and weight limitations across the U.S., operators are

left changing trailer and axle configurations, waiting for escorts, or taking alternate routes to avoid constraints to their load. MAASTO States are leaders in multistate collaboration to support interstate truck movements. The SCOHT and MCC groups are very active and meet monthly. The groups also partner with the trucking and OSOW industry, logistics firms, state patrol offices, federal agencies, and private sector service providers to support interstate goods movement. The effort of both committees has been effective in creating policy and regulatory change and raising and maintaining awareness of OSOW needs and benefits. In addition to the harmonization of existing regulations, these committees are also working to advance the concept of a single permitting portal and a single permit across the MAASTO states. A one-stop-shop could drastically decrease the administrative burden for firms with interstate operations.

Past MAFC work with the SCOHT and MCC committees included mapping and detailing rest areas suitable for OSOW loads across the MAASTO region and specifically at the state borders and within adjacent state borders. Current work with the group is intended to harmonize emergency divisible load weights across the MAASTO States. As with most transportation issues, collaboration across functional areas in the agencies, across the states, and with regulators is needed for a successful project.

The current MAASTO EDL project reflects a project need appropriate for collaboration. There is a high level of collaborative project activity required, there is risk in resolving the issue individually, and resolution of a regional issue provides little benefit if implemented in only one state. Again, risk, geographical context, and the project's relation and challenge in alignment with a national policy, are key indicators of a project suitable and likely to require multistate collaboration and implementation. Importantly, the project was coordinated and initiated by representatives of the MAASTO BOD, the STIC, and the SCOHT. The BOD level project champion secures easier coordination and data collection as all parties are aware of the importance and urgency of the effort.

In summary, the EDL project includes representation from three MAASTO committees (STIC, MCC/SCOHT, and Planning), bridge division representation from all states, MAFC freight technical representatives, and federal representatives. This broad range of collaborators reflects the range of stakeholders and the potential broad impacts of harmonizing EDL across the MAASTO region. This project began in early 2021 and will close at the end of July.

A similar opportunity is the harmonization of a truck following distance in platooning and CAV environments. The range of definitions of legal truck following distance across the states are varied, for example, ranging from 500 ft to the distance perceived as safe by the attending officer. The current state regulations have been changed in several states to support CAV technology. However, even the additional, adapted definitions vary by states, the expectations, context, and regulatory framework for current truck operations were not designed to address the technologies and telematics available now and in the future. The regulatory framework and understanding of the capabilities and limitations of CAV must be modified if CAV applications are to advance and provide the expected safety, social, and economic returns. In addition to following distance, other areas of potential policy or regulatory conflict include notification of platooning vehicles during operation, hours of operation, the requirement for platooning travel plans, and the certification and number of drivers required per truck in a platoon. In earlier platooning work with the STIC committee, nine areas were identified that would require state by state legislative actions to harmonize. Without harmonization (collaboration) in these nine areas, the implementation of safe, efficient truck platoons and CAV overall are at a tremendous disadvantage to demonstrate their effectiveness and attract implementation.

4.7.7. Expanding Freight Corridor Collaboration and Management

Multistate corridor management could bring tremendous returns to state agencies, the freight industry, and the public. From coordination on work zones and reduced travel delay on major regional freight corridors, coordinated freight bottleneck elimination on major freight corridors, to the provision of corridor-wide telematics to provide completely connected trips that enable platooning and CAV; these are operative actions that can transform freight movement. All these technologies and new regulatory considerations are best addressed collaboratively and early in the adoption process in order to capture the potential CAV benefits of increased safety, greater efficiency, and reduced congestion. The possibilities with multistate freight corridor management are only limited by creativity and any willingness to work together.

Advances in regionally organized and managed highway freight corridors are most likely to provide the highest and best investment in terms of improvements in freight safety and freight movement efficiency. With around 64% of all freight moved on trucks in the region, modifications to corridor management to improve the efficiency of these freight movements can provide significant benefits. The EU model of coordinated corridor management generally involves mutual funding with contributions based on ability to pay. Thus, the project cost is not borne by a single country where the project provides benefits to the entire region. Shared funding is more complicated and possibly not appropriate for the United States given state legislative limitations and the coordinating role of the federal agencies. However, working within the region, there are several areas that could be coordinated across MAASTO to provide greater freight efficiency as well as overall reduced costs of freight corridor management.

A comprehensive tiered approach to developing a multistate corridor management concept of operations is presented below, combined with a case study using the TPIMS collaboration. This approach identifies the project and institutional considerations that can affect the implementation of multistate projects, policy development, or operational changes.

MAFC states already have successful experiences with corridor-oriented planning, operations, and outreach. The MAASTO Regional Truck Parking Information Management System (TPIMS) is one of those successful multistate collaborations. The project provides real-time parking availability information to commercial truck drivers, saving them time and money searching for parking. This project has been implemented along major freight corridors in eight out of ten MAFC states, including Indiana, Iowa, Kansas, Kentucky, Michigan, Minnesota, Ohio, and Wisconsin. With a $25 million federal TIGER grant and 20% matching state funds, the project was initiated as a multistate TIGER project managed by Kansas DOT. The communication, construction, technology, and implementation plans were unified across the eight participating states. The collaborative worked to involve stakeholders from across the region, design systems with the same end data structure, and simultaneously implement the project. The project was coordinated through a team of agency specialists in truck detection and data collection technologies, as well as roadside operations and highway operations. The resultant parking availability information is shared openly and provided through several private sector traffic information vendors. Additionally, the data is collected centrally by MAFC to provide project-level performance measures, as well as a database for truck parking research.

Importantly this cooperative model provides reinforcement of the successful project characteristics and collaboration practices that are most suitable for multistate collaboration. The project is innovative and involves risk that is reduced with group participation, the innovation requires broad geographical adoption for success, and is challenged or challenges national policy. The project also benefited from BOD level champions driving the effort to improve truck parking across the region. The technical personnel involved are experts and there is a history of organizational and personal collaboration. Additionally, funding was provided through

the TIGER grant, and there is a critical stakeholder need for action in truck parking. Most importantly the project will increase safety for truck operators and the motoring public.

In the example of multistate corridor management, the concept of operations presented allows for any number of factors to be included in the management program, from harmonized regional technology implementation, uniform regional communications, or coordinated development of facilities. All these areas can be managed singly or as a more comprehensive freight corridor plan. Additional factors that align with the collaborative approach include coordinated construction schedules, corridor-wide bottleneck reductions, coordinated truck parking implementation such as TPIMS, technology implementation such as with CAV, and corridor-wide communications, with the public and across the DOTs.

Considering region-wide and corridor-specific truck parking applications are well underway, as are communications for winter weather, one potential advancement to consider could be increasing efficiency and economic returns by a coordinated reduction of bottlenecks on multistate corridors. Based on a regional freight study of MAASTO's highest value corridors and with BOD defined priorities, freight corridors could be prioritized on a regional project list that is linked to each State's STIP. States agree that a portion of their interstate work will focus on reducing bottleneck delay on the priority corridor within their state. Performance measures would be developed and tracked to measure reductions in overall corridor delay or delay by state with periodic evaluations of a corridor economic status as compared to other corridors.

Approaching freight corridor management in this unified approach can be expected to provide demonstratable benefits, especially as more functions are considered regional, rather than state by state. MAASTO committee members and functional areas within each DOT would be charged to establish the management programs with the agency and in coordination with other states. States can manage and evaluate the data and information independently or concentrate the corridor data management as a single repository in a state or through MAFC. This effort would revolutionize freight corridor management for highways as well as have application in the marine freight environment. Similar to TPIMS, MAASTO could expect national adoption of this approach following demonstration of its effectiveness by the MAASTO States.

Managing multistate freight corridors in a unified manner can lead to economic impact beyond county and state boundaries. A regional planning approach to prioritizing projects would be advantageous to the economic well-being of a region and the states. The applicability of this project and collaborative alignment approach has been demonstrated through several multistate projects.

A regionally organized and managed approach to marine highways could also yield significant benefits to the MAASTO region with cascading benefits to highway facilities due to appropriate load diversion to the marine sector. Currently, MAFC's 2021-22 research agenda includes a regional marine freight study that would examine the marine planning efforts and planning studies generated across the states. The marine collaborative planning effort will incorporate the MAFC development model of comprehensive stakeholder input, project team development, problem definition, planning, implementation, and recursive feedback. Analyzing the marine freight plans will allow for identification of commonalities that can be used to organize and advance the industry and efficient freight movement. While the nature of the marine system's ownership is different from highways, there are apparent inroads to more efficient, economically viable, and reliable inland and Great Lakes shipping. Four potential benefits of multistate marine collaboration include increasing marine freight tonnage, increasing related marine freight economic development, decreasing freight loads on highways, and creating the safest system possible.

The work across MAASTO can align with potential funding and federal support through MARAD's Marine Highway Program. The MAASTO States host a considerable portion of the nation's domestic maritime freight movement within and through these ten states. Illinois has the highest total marine freight trade (108 million tons in 2010) in the region.

MARAD's designated marine highways are navigable waterways that can be used as alternate options to traditional highway corridors. This approach can contribute to increased economic and commercial activity in the region by increasing development in marine freight transportation. These marine corridors are generally parallel to a major freight corridor. The ten MAFC states share key interstate corridors with parallel or adjacent inland waterways and Great Lakes. Marine highways so far designated in the region include M35 (Waterway of the Saints), M55 (Illinois and Mississippi rivers), M70 and M29 (Ohio, Mississippi, and Missouri river), and M90 (Great Lakes and Erie canal). These marine highways can help alleviate a portion of the congestion from the landside routes, reduce emissions, improve safety, and reduce overall roadway maintenance costs.

In the MAASTO region, I35 is one of the major corridors for freight tonnage transported by truck to the region's major metropolitan areas. By establishing a strong link and connections to the Gulf of Mexico with marine service, M35 promotes domestic and international trade. All states along this marine highway (Iowa, Illinois, Minnesota, Wisconsin, and Missouri) use the upper Mississippi River to ship their commodities to at least 15 adjacent states. In addition to individual and collective action of the MAFC states, these states also participate in the Upper Mississippi River Basin Association to provide a watershed approach to agency and stakeholder participation.

Similarly, Illinois, Indiana, Michigan, Ohio, Wisconsin, and Minnesota are members of the Council of Great Lakes and St. Lawrence Seaway Governors and Premiers. This organization works to improve the region's maritime system by completing a maritime asset inventory on a regional basis, developing regional maritime priorities, and creating a regional model for coordination in maritime planning and management. Recently $75.33 million was allocated for the construction of the new Soo lock. This is a major success for the region and a product of regional cooperation. State membership in such organizations brings new ideas to the coalition and could lead to opportunities for greater collaboration on specific freight systems or projects.

MAFC states' collaboration to improve and enhance these multistate marine highways supports congestion relief, alternative efficient transportation options, and increased surface transportation system performance. Also, much of the region's crucial maritime infrastructure is aged and needs replacement. Regional support for the proper maintenance of multistate waterways and their infrastructure is imperative and efforts are currently directed towards potential project support from the U.S. Army Corps of Engineers (USACE).

Importantly, MAASTO, its committees and MAFC support multistate collaborative freight planning, policy development, operations, and programming collaboration. State participation in MAFC provides the group dynamics to support innovative ideas and allows members to share and develop these ideas around marine freight. The participants are able to learn and create ideas in meetings, teleconferences, one-to-one communication, and emails. While the state technical representatives prefer face-to-face communication and the network development at MAFC annual meetings, these other methods also allow for successful coordination.

Given the role that the MAASTO committees and MAFC have in supporting multistate work, this approach to organization and implementation should be continued. This committee approach supports identifying innovations such as TPIMS and opportunities such as the marine freight planning project. The team and collaborative approach provide for the development of ideas, and in preparing for regional implementation of the innovation.

4.7.8. Continue Focus on Collaboration and Expand Functional Areas for Collaboration

The issues and context that require multistate action will change, as will the personnel, leadership, and organization structure across the MAASTO States. Providing for institutional continuity of collaboration is critical to ensure MAASTO states can continue to innovate and thrive as states and as a region. The MAASTO committee structure and use of subcommittees of technical specialists are effective organizational approaches and should be retained. The committee structure has created functional area teams of professionals responsible for the development and delivery of innovation and change on a regional basis. (http://www.maasto.net/docs/MAASTO-CEO-guide.pdf)

MAFC works with several MAASTO committees such as Planning, STIC, SCOHT, and MCC committees which are heavily involved in collaborative activities in the freight areas. The structure provides for representation from all ten states and critical freight functional areas. All states provide personnel to act as committee leadership on a rotating schedule. Projects and innovations are usually developed within these groups or through the MAASTO BOD and assigned to the appropriate committee. The structure and organization of MAASTO and its committees are critical to its ability to coordinate across ten different states with different agendas and budgets. The structure of the organization also supports peer-to-peer networking to identify and initiate innovation collaboratively.

States should also be encouraged to institutionalize collaboration and multistate working groups within their standard business practices:

- Retain MAASTO committee structure to support collaboration, including specialization and collaboration by topic and functional areas.
- Retain MAFC to support freight planning, policy, and operations collaboration. Consider a BOD directed group to solely focus on regional research and regional freight project development and coordination.
- Increase use of MAASTO structure to create and pursue grants in all relevant multistate freight issues.

The structure and operations of MAASTO committees support innovation, networking, and multistate collaboration. Changes and improvements should be considered carefully to ensure the alignment and functionality of these critical organization functions.

In addition to continuing the current multistate efforts, expanding functional area collaboration, and expanding the multistate collaborative practices to more types of projects could provide additional benefits. The following recommendations expand the concept of freight corridor management and the functions with recognized coalition activity in the region.

- Initiate a Complete Corridor Management Group.
- Create Operations Coalition for daily operations and innovation.

A corridor management committee could plan and coordinate harmonized construction schedules, truck parking improvements and information, emergency communications, CAV development, and other innovations across multistate corridors. This group could also act as the driver for corridor level improvements and provide an example of efficient and effective multistate corridor operation. The implementation of the innovations would be coordinated through appropriate functional units in the agencies.

Similarly, an operations coalition could coordinate the technical aspects of work zones, provide effective regional communications for travelers, and provide a network of peers to identify and

create innovation, provide professional development in freight corridor operations, and ensure efficiency interstate freight movements. Committees or working groups with clear goals and priorities are necessary to support multistate collaboration. The form of the working groups, the stability, and the charge are critical to ensure successful outcomes.

Based on recent collaborative efforts in the MAASTO region and the interviews and discussion conducted for this project, multistate collaboration provides greater opportunities for increased freight and trucking efficiency, potential reduction in agency management cost, increased adoption of innovations, and greater safety on the roadways.

In summary, the MAFC collaborative model includes two broad areas: the process of generating ideas and working through their development and implementation within the MAASTO committee structure, and the context and characteristics of the innovation. The MAASTO committee structure supports networking, peer to peer development, and innovation, while providing an environment suitable for a diverse range of innovations through the involvement of experts. The context and characteristics of the innovation or issue reflect the suitability and potential for implementation of the innovation, process, or changes.

Table 4-1 provides a matrix approach to understanding the development and implementation characteristics of an innovation.

Table 4-1: Matrix of Collaborative Projects

Projects	Project Characteristics								
	Level of Risk	Goals and Objective of the Project	Main Challenges of the Project	Identified by States	Economic Feasibility/Benefits	Stakeholder Need	Funding Availability	Safety	Innovation
Development of Regional Freight Plan	Low	*Providing guidance, priorities, and project initiatives *Provides legitimation and awareness of freight activities critical to regional freight systems and economies	Lack of Funding Initiative	x	x	x		x	x
Development of Regional Freight Databases	Low	*Support regional decision-making *Improve state-level freight planning *Allowing planners to better understand pass-through traffic and key state commodities' origin and destinations	Lack of Funding Initiative	x	x	x		x	
Development of Regional Freight Advisory Committee	Low	*Understanding stakeholder experiences and perspectives on regional freight movements and issues	Lack of Funding Managing sessions Time commitment Initiative	x	x	x		x	

Projects	Project Characteristics								
	Level of Risk	Goals and Objective of the Project	Main Challenges of the Project	Identified by States	Economic Feasibility/Benefits	Stakeholder Need	Funding Availability	Safety	Innovation
Development of Multistate Mutual Funding Program for joint programs	Moderate	*Providing funding opportunities for collaboration across states by identifying shared high-importance corridors or high-priority projects to groups of states	Lack of Funding Initiative	x	x	x		x	
CAV/Truck Platooning	High	*Multistate development and implementation of new technologies *Harmonizing the regulations and operations of CAV technologies prior to its implementation	*Lack of Funding *Variability in legislation and regulations	x	x	x		x	x
Harmonization of truck size and weight regulation	Low	*Support interstate goods movement *Harmonizing of existing regulations	NA	x	x	x	x	x	
Regional Freight Highway Corridors Management	Low	*Improvements in freight safety and freight movement efficiency	Lack of Funding Initiative	x	x	x		x	

Projects	Project Characteristics								
	Level of Risk	Goals and Objective of the Project	Main Challenges of the Project	Identified by States	Economic Feasibility/Benefits	Stakeholder Need	Funding Availability	Safety	Innovation
Regional Freight Marine Corridors Management	Low	*Identifying commonalities that can be used to organize and advance the industry and efficient freight movement	Lack of Funding Initiative	**x**	**x**	**x**		**x**	
Initiate a Corridor Management Committee	Moderate	*Plan and coordinate harmonized construction schedules, truck parking improvements and information, emergency communications, CAV development, and other innovations across multistate corridors	Lack of Funding Initiative	**x**	**x**	**x**		**x**	**x**

Projects	Project Characteristics								
	Level of Risk	Goals and Objective of the Project	Main Challenges of the Project	Identified by States	Economic Feasibility/Benefits	Stakeholder Need	Funding Availability	Safety	Innovation
Development of Operations Coalition	Moderate	*Coordinate the technical aspects of work zones *provide effective regional communications for travelers *Provide a network of peers to identify and create innovation *Provide professional development in freight corridor operations *Ensure efficiency interstate freight movements.	Lack of Funding Initiative	**x**	**x**	**x**		**x**	**x**

The context and characteristics of an innovation, project or policy can have a tremendous range of variability and the assignment of an innovation to a committee or working group for development is generally straightforward based on the functional area of impact. As can be seen across the range of possible collaborative actions or projects, most activities could be at least partially initiated and implemented with current resources.

The ten states of MAASTO are versed in collaboration and innovation, and well-positioned to continue developing and adopting innovation in freight planning, operations, and policy. The committee structure and strategically selected projects, along with motivated and professional personnel can be expected to provide continuous innovation in freight services, safety, and economic development.

MAASTO leadership and the states have created a successful collaborative model to support regional innovation and implementation. The region should accelerate current and future regional innovations through similar models. The approach should also be shared widely to support further adoption of new technology, processes and polices.

ENDNOTES

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APPENDIX

MID-AMERICA FREIGHT COALITION

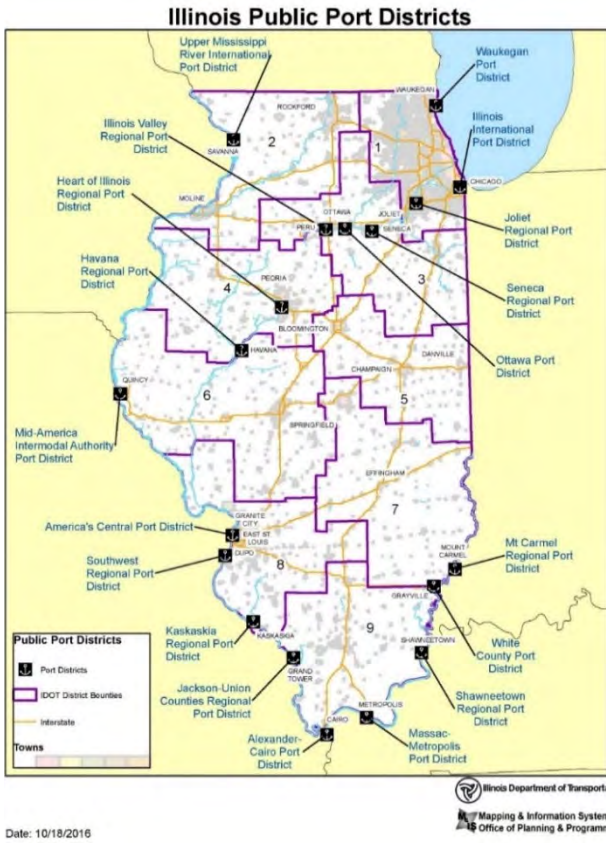
Regional Freight Plan Study 2020

Illinois

Illinois Multimodal Freight Network

National Highway Network [1]	Railroad Network [2]
	

Illinois

Ports and Harbors [3]	Airports [3]
	

General Facts:

Transportation Network					
Miles of Roadway [2]	Major Airports	Bridges	Major water ports	Miles of Freight Railroad	Miles of Waterway
15,968	17	26,809	3	7,151	1,100

Illinois

Highways:

Miles of Roadway by Functional System							
RURAL							
Interstate [4]	Other Freeways & Expressways	Other Principal Arterial	Minor Arterial	Major Collector	Minor Collector	Local	Total
1,243	48	2,360	4,729	11,673	4,713	71,420	96,187
URBAN							
Interstate [4]	Other Freeways & Expressways	Other Principal Arterial	Minor Arterial	Major Collector	Minor Collector	Local	Total
942	118	2,889	4,188	4,860	1,521	35,262	49,780

Top 5 Corridors based on total economic value [5]
I-57, I-80, I-55, I-39, I-90

Railways:

Miles of Freight Railroad Operated by Class of Railroad				
Class I [6]	Regional	Local		Total
		Line haul	Switching and terminal	
5,611	313	828	451	6,883

Maritime:

Tonnage of Top Freight Water Ports by Total Tons	
Major Freight Ports [7]	Total Weight (Million tons)
Port of St Louis	31.2
Illinois International Port	10.0
Joliet Regional Port	9.2

Aviation:

Tonnage of Top Freight Airports by Total Tons	
Major Freight Airports [8]	Landed Weight (Thousand tons)
Chicago O'Hare International Airport	2,968.1
Chicago/Rockford International	1,076
General Downing - Peoria International	57.9

Illinois

Plan Status:

Current Status of Freight Plans								
Year of most recent freight plan	Fast ACT Compliant	MAP21 Compliant	Relation to Other Plans					Total Cost
			Freight Plan	Rail Plan	Marine Plan	Airport System Plan	Consultants Used	
2017	Yes	Yes	stand alone	stand alone	stand alone	stand alone	Yes	335,000

Current Modal Plan Documents and Links					
Most recent Plan	Freight Plan	Marine Transportation System Plan	Rail Plan	Aviation System plan	Long-Range Transportation Plan

Freight Advisory Committee and Similar Bodies					
Name	Status	Geographical Structure	Frequency of meetings	Number of members	Contact
Freight Advisory Council	Active	Centralized	Quarterly	~35	Jim Durako (217) 785-2353 James.Durako@illinois.gov

Freight Flow by Mode [9]:

Shipments Within, Outbound, and Inbound by Total Tons			
Trade Mode	Domestic Only (Thousand tons)		
	Within	Outbound	Inbound
Total	574,518.40	283,659.10	340,547.10
Air (include truck-air)	0.4	107.5	50
Multiple modes & mail	9,869.40	16,155.80	9,732.50
Pipeline	30,986.80	59,483.10	108,524.40
Rail	40,751.30	70,892.80	88,774.50
Truck	488,032.90	116,739.50	129,087.90
Water	4,877.70	20,280.40	4,377.80

Illinois

	Export			Import		
Trade Mode	**Within**	**Outbound**	**Inbound**	**Within**	**Outbound**	**Inbound**
Total	593.9	33,163.70	496.2	4,098.20	4,499.00	105,109.90
Air (include truck-air)	0	62.1	272.5	0	290.5	79.9
Multiple modes & mail	0.6	4,347.40	11.3	28.4	27.6	6,023.50
Other and unknown	421.7	16.80	0.1	12.1	0.7	0.10
Pipeline	0	4,602.10	0	0.2	0	76,829.90
Rail	2	9,978.50	20.2	128.7	1,649.30	14,136.80
Truck	103.1	10,891.90	156.2	1,346.80	600.9	8,013.10
Water	66.5	3,264.80	35.9	2,582.00	1,930.00	26.6

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MID-AMERICA FREIGHT COALITION

Regional Freight Plan Study 2020

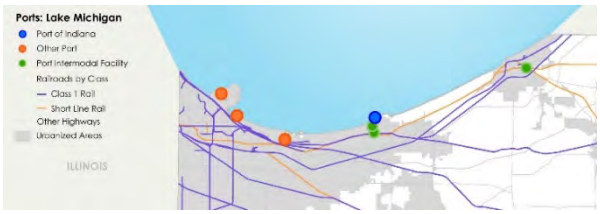
Indiana

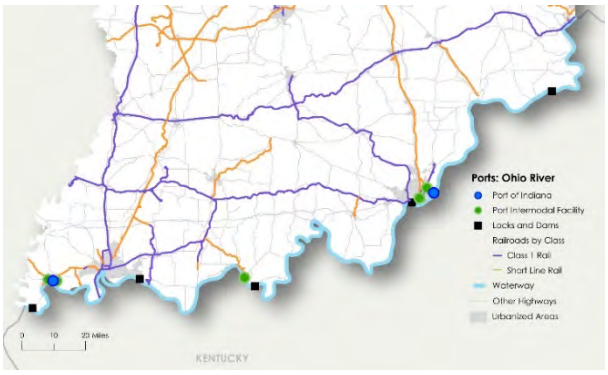
Indiana Multimodal Freight Network

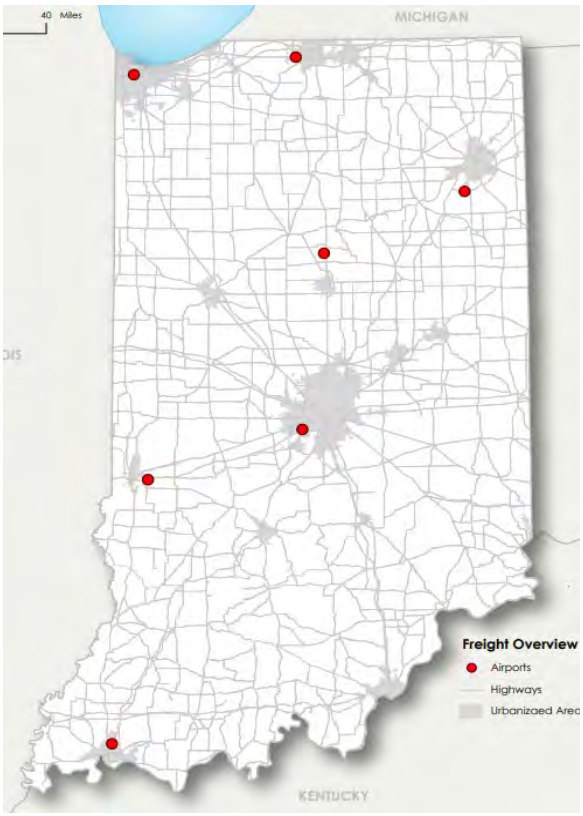
National Highway Network [1]	Railroad Network [2]
	

Indiana

Ports and Harbors [3]	Airports [3]







General Facts:

Transportation Network					
Miles of Roadway [2]	Major Airports	Bridges	Major water ports	Miles of Freight Railroad	Miles of Waterway
97,553	11	19,280	5	4,075	350

Indiana

Highways:

Miles of Roadway by Functional System							
RURAL							
Interstate [4]	Other Freeways & Expressways	Other Principal Arterial	Minor Arterial	Major Collector	Minor Collector	Local	Total
785	154	1,972	2,104	9,933	8,613	43,014	66,573
URBAN							
Interstate [4]	Other Freeways & Expressways	Other Principal Arterial	Minor Arterial	Major Collector	Minor Collector	Local	Total
493	161	1,773	3,098	3,409	844	20,555	30,333

Top 5 Corridors based on total economic value [5]
I-80, I-65, I-69, I-70, I-74

Railways:

Miles of Freight Railroad Operated by Class of Railroad				
Class I [6]	Regional	Local		Total
		Linehaul	Switching and terminal	
2,424	223	1,016	128	4,041

Maritime:

Tonnage of Top Freight Water Ports by Total Tons	
Major Freight Ports [7]	Total Weight (Million tons)
Indiana Harbor	12.2
Port of Mount Vernon	9.3
Ports Indiana - Burns Harbor	9.2
Port of Gary	8.0
port of Buffington	1.6

Aviation:

Tonnage of Top Freight Airports by Total Tons	
Major Freight Airports [8]	Landed Weight (Thousand tons)
Indianapolis International	2,404.9
Fort Wayne International	88.9
South Bend International	45.0

Indiana

Plan Status:

Current Status of Freight Plans								
Year of most recent freight plan	Fast ACT Compliant	MAP21 Compliant	Relation to Other Plans					Total Cost
			Freight Plan	Rail Plan	Marine Plan	Airport System Plan	Consultants Used	
2018	Yes	Yes	stand alone	stand alone	Combined	stand alone	Yes	N/A

Current Modal Plan Documents and Links					
Most recent Plan	Freight Plan	No Marine Freight Plan	Rail Plan	Aviation System plan	Long-Range Transportation Plan

Freight Advisory Committee and Similar Bodies					
Name	Status	Geographical Structure	Frequency of meetings	Number of members	Contact
Conexus Indiana Logistics Council	Active	Centralized	Quarterly	~19	Jennifer Mann jmann@conexusindiana.com

Freight Flow by Mode [9]:

Shipments Within, Outbound, and Inbound by Total Tons			
Trade Mode	Domestic Only (Thousand tons)		
	Within	Outbound	Inbound
Total	271,357.20	177,591.90	236,043.30
Air (include truck-air)	0.2	25.3	27.3
Multiple modes & mail	1,049.40	7,010.20	14,516.60
Pipeline	21,604.70	34,307.30	78,936.10
Rail	15,611.90	26,867.40	36,568.70
Truck	230,468.10	100,167.20	95,942.90
Water	2,623.00	9,214.60	10,051.80

Indiana

	Export			Import		
Trade Mode	**Within**	**Outbound**	**Inbound**	**Within**	**Outbound**	**Inbound**
Total	224.6	10,622.60	6.2	19.80	2.20	12,406.90
Air (include truck-air)	0	22.3	2.1	0	0.9	11.3
Multiple modes & mail	0.4	1,299.00	0	0	0	2,221.90
Other and unknown	217.1	2.00	0	1.2	0	0.20
Pipeline	0	2,277.70	0	0	0.00	15.60
Rail	4.4	2,344.70	1.3	0.10	0	6,711.30
Truck	2.7	4,315.10	1	18.60	1.30	3,327.60
Water	0	361.90	1.7	0	0	118.90

References

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Iowa

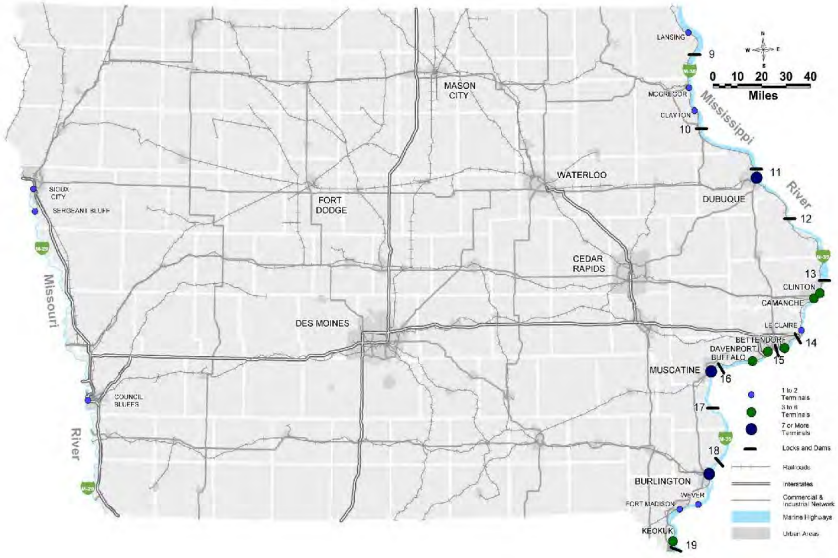
Iowa Multimodal Freight Network

National Highway Network [1]

Railroad Network [2]

Iowa

Ports and Harbors [3]



Airports [3]

General Facts:

Transportation Network					
Miles of Roadway [2]	**Major Airports**	**Bridges**	**Major water ports**	**Miles of Freight Railroad**	**Miles of Waterway**
114,637	8	25,000+	N/A	3,805	491

Iowa

Highways:

Miles of Roadway by Functional System							
RURAL							
Interstate [4]	Other Freeways & Expressways	Other Principal Arterial	Minor Arterial	Major Collector	Minor Collector	Local	Total
614	-	3,417	3,911	14,275	15,983	63,811	102,011
URBAN							
Interstate [4]	Other Freeways & Expressways	Other Principal Arterial	Minor Arterial	Major Collector	Minor Collector	Local	Total
186	-	914	1,674	1,338	0	8,679	12,792

Top 5 Corridors based on total economic value [5]
I-80, I-35, I-29, I-380, I-235

Railways:

Miles of Freight Railroad Operated by Class of Railroad				
Class I [6]	Regional	Local		Total
		Linehaul	Switching and terminal	
3,135	323	344	22	3,805

Maritime:

Tonnage of Top Freight Water Ports by Total Tons	
Major Freight Ports [7]	Total Weight (Million tons)
E Iowa and W Illinois	4.9
Port of Burlington	N/A
Port of Dubuque	N/A
Port of Keokuk	N/A

Aviation:

Tonnage of Top Freight Airports by Total Tons	
Major Freight Airports [8]	Landed Weight (Thousand tons)
The Eastern Iowa	171.2
Des Moines International	120.6

Iowa

Plan Status:

Current Status of Freight Plans								
Year of most recent freight plan	Fast ACT Compliant	MAP21 Compliant	Relation to Other Plans					Total Cost
			Freight Plan	Rail Plan	Marine Plan	Airport System Plan	Consultants Used	
2018	Yes	Yes	stand alone	stand alone	Combined	stand alone	No	N/A

Current Modal Plan Documents and Links					
Most recent Plan	Freight Plan	No Marine Freight Plan	Rail Plan	Aviation System plan	Long-Range Transportation Plan

Freight Advisory Committee and Similar Bodies					
Name	Status	Geographical Structure	Frequency of meetings	Number of members	Contact
Iowa Freight Advisory Council	Active	Centralized	Quarterly	~30	Sam Hiscocks (515) 239-1004 samuel.hiscocks@iowadot.us

Freight Flow by Mode [9]:

Shipments Within, Outbound, and Inbound by Total Tons			
Trade Mode	Domestic Only (Thousand tons)		
	Within	Outbound	Inbound
Total	290,717.90	160,302.50	130,286.50
Air (include truck-air)	0	11.5	39.4
Multiple modes & mail	699.90	15,900.80	1,520.80
Pipeline	119.70	33,498.50	42,067.90
Rail	8,713.40	33,021.20	35,911.10
Truck	280,566.20	74,207.90	50,537.20
Water	618.60	3,662.50	210.10

Iowa

	Export			Import		
Trade Mode	**Within**	**Outbound**	**Inbound**	**Within**	**Outbound**	**Inbound**
Total	100.3	14,749.40	0.2	19.80	2.20	12,406.90
Air (include truck-air)	0	9.7	0.2	0	0.9	11.3
Multiple modes & mail	0	1,103.50	0	0	0	2,221.90
Other and unknown	100.2	1.10	0	0	0.00	15.60
Rail	0	10,685.30	0	0.10	0	6,711.30
Truck	0.1	2,939.00	0	18.60	1.30	3,327.60
Water	0	10.90	0	0.00	0.00	157.40

References

[1] U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations,2015, https://ops.fhwa.dot.gov/freight/infrastructure/ismt/nhfn_states_list.htm

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[9] U.S. Department of Transportation, Bureau of Transportation Statics, Data from the Freight Analysis Framework Version 4.5.1, Shipments Within, Outbound, and Inbound U.S. States - Tons by Trade Type & Transportation Mode, 2018, https://www.bts.gov/faf

MID-AMERICA FREIGHT COALITION

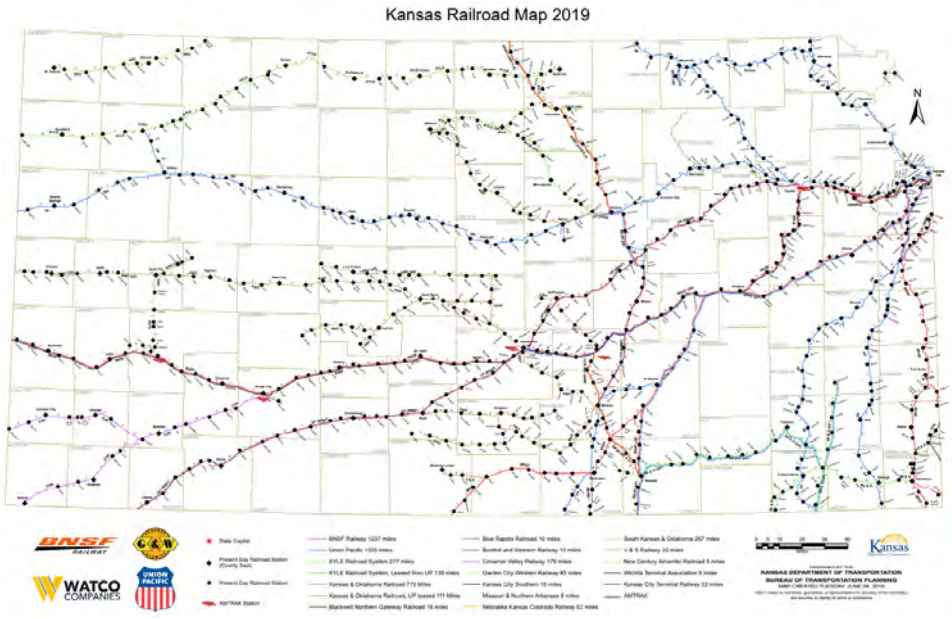
Regional Freight Plan Study 2020

Kansas

Kansas Multimodal Freight Network

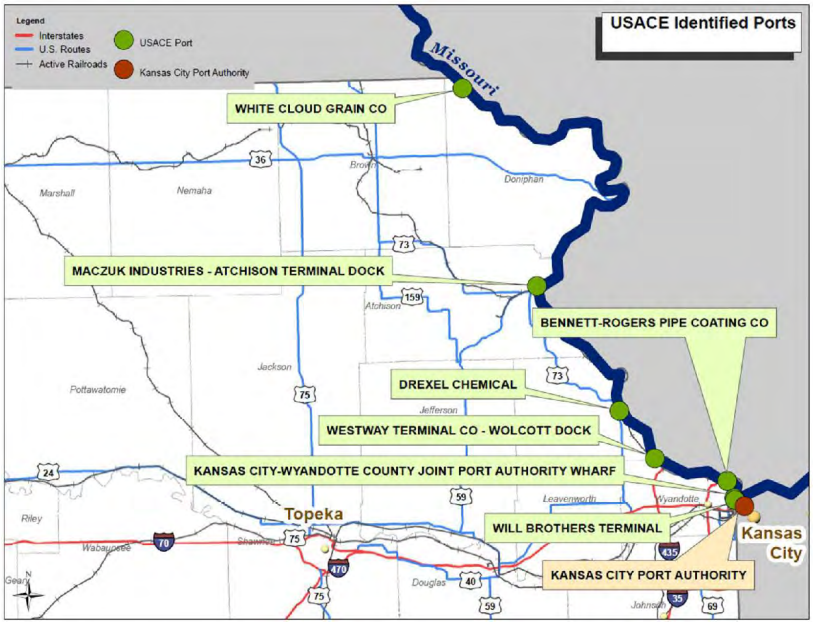
National Highway Network [1]

Railroad Network [2]

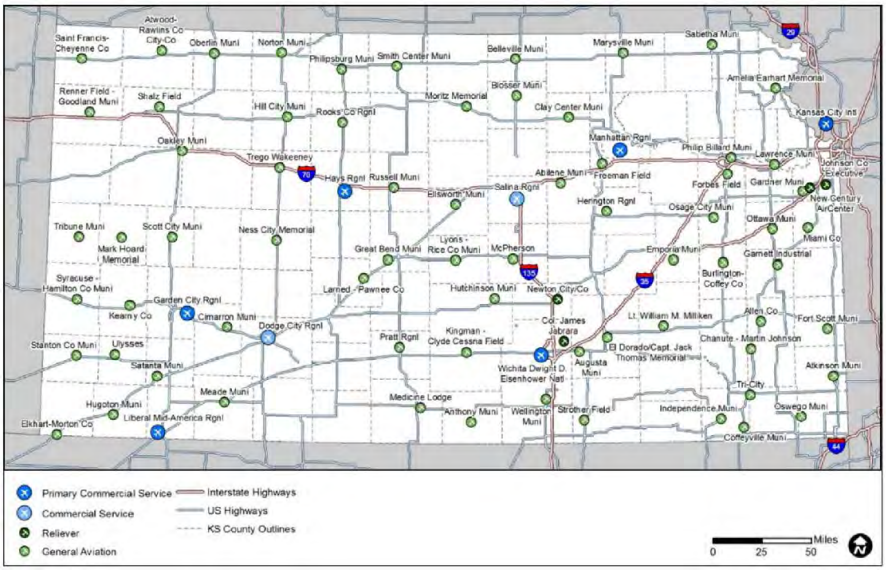


Kansas

Ports and Harbors [3]



Airports [3]



General Facts:

Transportation Network					
Miles of Roadway [2]	Major Airports	Bridges	Major water ports	Miles of Freight Railroad	Miles of Waterway
142,054	9	24,906	-	4,855	120

Kansas

Highways:

Miles of Roadway by Functional System							
RURAL							
Interstate [4]	Other Freeways & Expressways	Other Principal Arterial	Minor Arterial	Major Collector	Minor Collector	Local	Total
640	404	2,629	4,250	22,437	9,394	86,450	126,204
URBAN							
Interstate [4]	Other Freeways & Expressways	Other Principal Arterial	Minor Arterial	Major Collector	Minor Collector	Local	Total
235	193	306	1,361	1,775	460	9,838	14,168

Top 5 Corridors based on total economic value [5]
I-70, I-35, I-135, I-335, I-435

Railways:

Miles of Freight Railroad Operated by Class of Railroad				
Class I [6]	Regional	Local		Total
		Linehaul	Switching and terminal	
2,720	1,378	515	61	4,652

Maritime:

Tonnage of Top Freight Water Ports by Total Tons	
Major Freight Ports [7]	Total Weight (Million tons)
Port of Kansas City	1.6
Tulsa Port of Catoosa	2.6

Aviation:

Tonnage of Top Freight Airports by Total Tons	
Major Freight Airports [8]	Landed Weight (Thousand tons)
Wichita Dwight D Eisenhower National	113.2
Garden City Regional	3.6

Kansas

Plan Status:

Current Status of Freight Plans								
Year of most recent freight plan	Fast ACT Compliant	MAP21 Compliant	Relation to Other Plans					Total Cost
			Freight Plan	Rail Plan	Marine Plan	Airport System Plan	Consultants Used	
2017	Yes	Yes	stand alone	stand alone	Combined	stand alone	Yes	600,000

Current Modal Plan Documents and Links					
Most recent Plan	Freight Plan	No Marine Freight Plan	Rail Plan	Aviation System plan	Long-Range Transportation Plan

Freight Advisory Committee and Similar Bodies					
Name	Status	Geographical Structure	Frequency of meetings	Number of members	Contact
Freight Advisory Committee	Inactive	Centralized	2x a year	~40	John Maddox (785) 296-3228 john.maddox@ks.gov

Freight Flow by Mode [9]:

Shipments Within, Outbound, and Inbound by Total Tons			
Trade Mode	Domestic Only (Thousand tons)		
	Within	Outbound	Inbound
Total	184,261.80	144,508.80	131,087.20
Air (include truck-air)	0.3	24.7	23
Multiple modes & mail	80.50	13,841.00	2,181.20
Pipeline	6,273.00	39,167.00	59,965.30
Rail	1,510.90	37,679.30	17,143.90
Truck	176,397.20	53,784.50	51,773.80
Water	0.00	12.30	0.00

Kansas

	Export			Import		
Trade Mode	**Within**	**Outbound**	**Inbound**	**Within**	**Outbound**	**Inbound**
Total	38.3	7,792.50	0	1.50	0.20	3,826.00
Air (include truck-air)	0	20.2	0	0	0.1	24.7
Multiple modes & mail	0	482.90	0	0	0	848.70
Other and unknown	37.9	2.20	0	0.6	0	0.30
Pipeline	0	46.20	0	0	0.00	62.20
Rail	0	5,547.20	0	0.00	0	2,477.90
Truck	0.4	1,693.80	0	0.90	0.00	412.20
Water	0	0.00	0	0	0	0.00

References

[1] U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations,2015, https://ops.fhwa.dot.gov/freight/infrastructure/ismt/nhfn_states_list.htm

[2] Kansas Department of Transportation, Bureau of Transportation Planning, https://www.ksdot.org/Assets/wwwksdotorg/bureaus/burRail/Rail/publications/KansasRailroadMap2019.pdf

[3] Kansas State Freight Plan, 2017, https://www.ksdot.org/Assets/wwwksdotorg/bureaus/burRail/Rail/Documents/KDOTFreightPlan.pdf

[4] U.S. Department of Transportation, Bureau of Transportation Statics, Public Road Length, Miles by Functional System, 2018, https://www.bts.gov/content/us-public-road-and-street-mileage-functional-systema

[5] Identification and Characterization of the MAASTO Region's Multimodal Freight Network, https://midamericafreight.org/wp-content/uploads/2018/12/Report_ID-and-Charcteristics-of-Freight-Corridors_2018-12-06.pdf

[6] U.S. Department of Transportation, Bureau of Transportation Statics, Miles of Freight Railroad Operated by Class of Railroad, 2019, https://www.aar.org/wp-content/uploads/2021/02/AAR-Kansas-State-Fact-Sheet.pdf

[7] U.S. Army Corps of Engineers, Waterborne Commerce Statistics Center, 2019, https://usace.contentdm.oclc.org/digital/collection/p16021coll2/id/6753

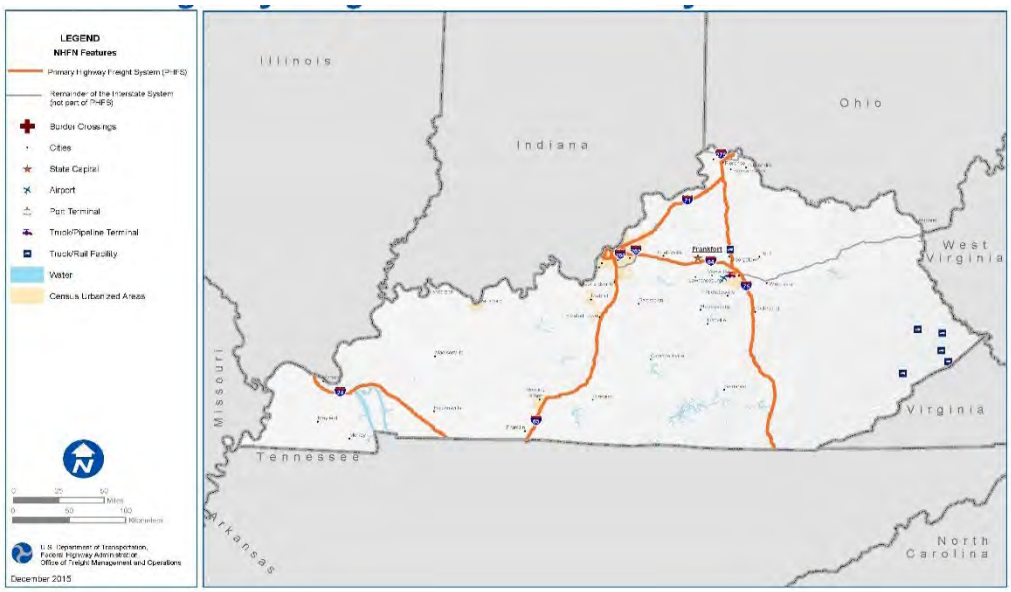
[8] Federal Aviation Administration, CY 2019 All-Cargo Airports by Landed Weight, https://www.faa.gov/airports/planning_capacity/passenger_allcargo_stats/passenger/

[9] U.S. Department of Transportation, Bureau of Transportation Statics, Data from the Freight Analysis Framework Version 4.5.1, Shipments Within, Outbound, and Inbound U.S. States - Tons by Trade Type & Transportation Mode, 2018, https://www.bts.gov/faf

Kentucky

Kentucky Multimodal Freight Network

National Highway Network [1]

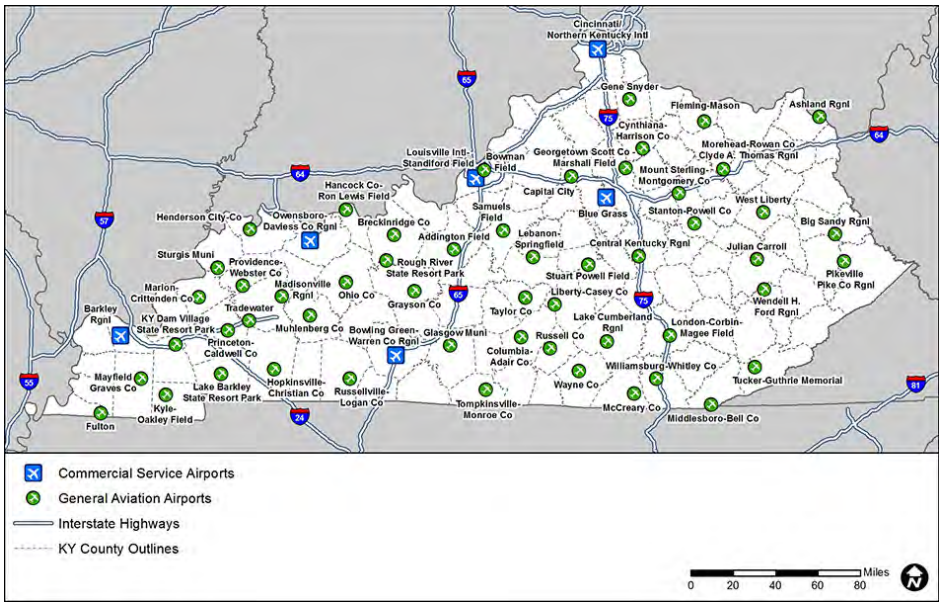


Railroad Network [2]

Kentucky

Ports and Harbors

Airports [3]



General Facts:

Transportation Network					
Miles of Roadway [2]	Major Airports	Bridges	Major water ports	Miles of Freight Railroad	Miles of Waterway
80,054	6	14,368	6	2,608	1,590

Kentucky

Highways:

Miles of Roadway by Functional System							
RURAL							
Interstate [4]	Other Freeways & Expressways	Other Principal Arterial	Minor Arterial	Major Collector	Minor Collector	Local	Total
711	398	1,233	2,334	5,848	9,341	45,145	65,009
URBAN							
Interstate [4]	Other Freeways & Expressways	Other Principal Arterial	Minor Arterial	Major Collector	Minor Collector	Local	Total
233	64	647	1,357	1,388	404	10,852	14,944

Top 5 Corridors based on total economic value [5]
I-65, I-75, I-71, I-64, I-24

Railways:

Miles of Freight Railroad Operated by Class of Railroad				
Class I [6]	Regional	Local		Total
		Linehaul	Switching and terminal	
2,057	280	270	0	2,583

Maritime:

Tonnage of Top Freight Water Ports by Total Tons	
Major Freight Ports [7]	Total Weight (Million tons)
Port of Cincinnati-Northern	36.8
Port of Louisville	6.4
Paducah-McCracken County Riverport	3.1
Owensboro Riverport	2.6
Henderson County Riverport	1.8
Hickman-Fulton County Riverport	1.1

Aviation:

Tonnage of Top Freight Airports by Total Tons	
Major Freight Airports [8]	Landed Weight (Thousand tons)
Louisville Muhammad Ali International	7,075.6
Cincinnati/Northern Kentucky International	3,283.4

Kentucky

Plan Status:

Current Status of Freight Plans								
Year of most recent freight plan	Fast ACT Compliant	MAP21 Compliant	Relation to Other Plans					Total Cost
			Freight Plan	Rail Plan	Marine Plan	Airport System Plan	Consultants Used	
2017	Yes	Yes	stand alone	stand alone	stand alone	stand alone	No	N/A

Current Modal Plan Documents and Links					
Most recent Plan	Freight Plan	Riverport Improvement Plan	Rail Plan	Aviation System plan	Long-Range Transportation Plan

Freight Advisory Committee and Similar Bodies					
Name	Status	Geographical Structure	Frequency of meetings	Number of members	Contact
Freight Advisory Committee	Active	Centralized	1x a year	~10	Jeremy Edgeworth (502) 564-7183 jeremy.edgeworth@ky.gov

Freight Flow by Mode [9]:

Shipments Within, Outbound, and Inbound by Total Tons			
Trade Mode	Domestic Only (Thousand tons)		
	Within	Outbound	Inbound
Total	174,463.60	166,890.00	144,446.80
Air (include truck-air)	0	48.7	15.7
Multiple modes & mail	332.60	7,117.20	5,061.60
Pipeline	6,224.10	49,618.60	48,795.80
Rail	5,493.30	28,732.90	20,124.20
Truck	145,332.80	53,898.60	61,360.80
Water	17,080.70	27,473.90	9,088.70

Kentucky

	Export			Import		
Trade Mode	**Within**	**Outbound**	**Inbound**	**Within**	**Outbound**	**Inbound**
Total	158.3	5,118.00	285.8	47.10	272.70	7,333.30
Air (include truck-air)	0	95.6	246.9	0	231.5	59.3
Multiple modes & mail	0.1	957.50	0	0	0	1,979.90
Other and unknown	134	0.80	0.2	2.9	0.00	0.10
Rail	0	1,252.90	0	0.00	0	2,250.40
Truck	24.2	2,807.10	38.7	44.20	41.20	2,980.20
Water	0	4.10	0	0.00	0.00	63.40

References

[1] U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, 2015, https://ops.fhwa.dot.gov/freight/infrastructure/ismt/nhfn_states_list.htm

[2] U.S. Department of Transportation, Bureau of Transportation Statics, 2020, https://www.bts.gov/content/state-transportation-numbers

[3] Kentucky State Freight Plan, 2017, https://transportation.ky.gov/MultimodalFreight/Documents/2017%20Kentucky%20Freight%20Plan/2017%20Kentucky%20Freight%20Plan%2012-4-2017.pdf

[4] U.S. Department of Transportation, Bureau of Transportation Statics, Public Road Length, Miles by Functional System, 2018, https://www.bts.gov/content/us-public-road-and-street-mileage-functional-systema

[5] Identification and Characterization of the MAASTO Region's Multimodal Freight Network, https://midamericafreight.org/wp-content/uploads/2018/12/Report_ID-and-Charcteristics-of-Freight-Corridors_2018-12-06.pdf

[6] U.S. Department of Transportation, Bureau of Transportation Statics, Miles of Freight Railroad Operated by Class of Railroad, 2019, https://www.aar.org/wp-content/uploads/2021/02/AAR-Kentucky-State-Fact-Sheet.pdf

[7] U.S. Army Corps of Engineers, Waterborne Commerce Statistics Center, 2019, https://usace.contentdm.oclc.org/digital/collection/p16021coll2/id/6753

[8] Federal Aviation Administration, CY 2019 All-Cargo Airports by Landed Weight, https://www.faa.gov/airports/planning_capacity/passenger_allcargo_stats/passenger/

[9] U.S. Department of Transportation, Bureau of Transportation Statics, Data from the Freight Analysis Framework Version 4.5.1, Shipments Within, Outbound, and Inbound U.S. States - Tons by Trade Type & Transportation Mode, 2018, https://www.bts.gov/faf

MID-AMERICA FREIGHT COALITION

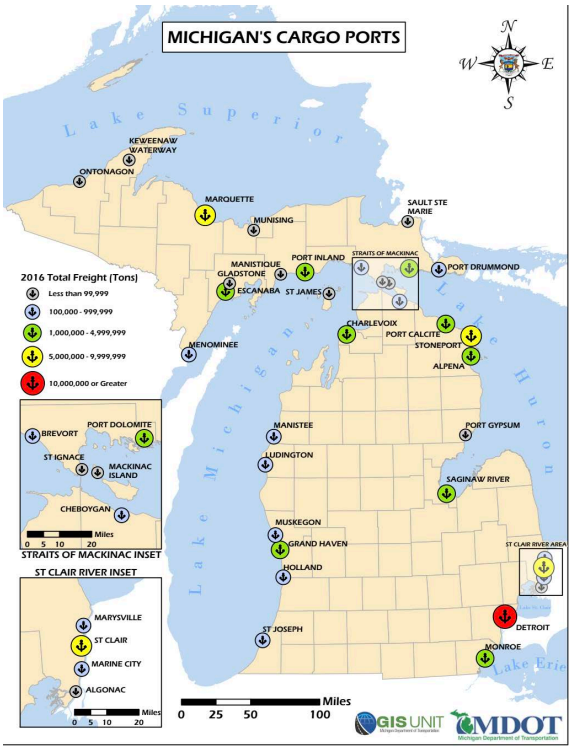
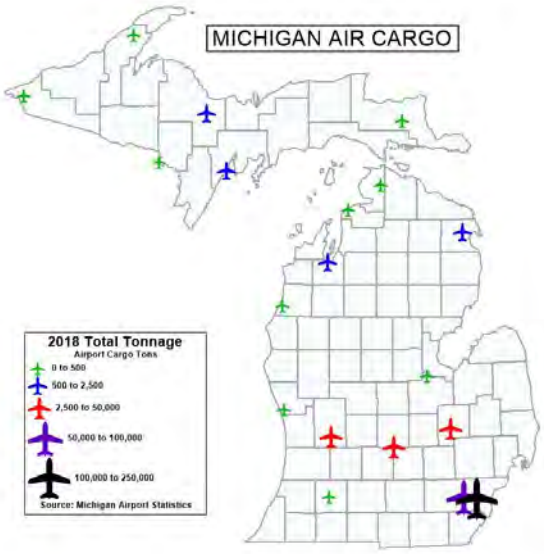
Regional Freight Plan Study 2020

Michigan

Michigan Multimodal Freight Network

National Highway Network [1]	Railroad Network [2]

Michigan

Ports and Harbors [3]	Airports [3]
	

General Facts:

Transportation Network					
Miles of Roadway [2]	Major Airports	Bridges	Major water ports	Miles of Freight Railroad	Coastline miles
122,181	19	11,244	31	3,567	3,200

Michigan

Highways:

Miles of Roadway by Functional System							
RURAL							
Interstate [4]	Other Freeways & Expressways	Other Principal Arterial	Minor Arterial	Major Collector	Minor Collector	Local	Total
562	343	2,130	4,887	16,371	4,240	55,627	84,161
URBAN							
Interstate [4]	Other Freeways & Expressways	Other Principal Arterial	Minor Arterial	Major Collector	Minor Collector	Local	Total
676	354	2,363	4,943	3,919	126	25,638	49,780

Top 5 Corridors based on total economic value [5]
I-75, I-94, I-96, I-69, I-196

Railways:

Miles of Freight Railroad Operated by Class of Railroad				
Class I	Regional	Local		Total
		Linehaul	Switching and terminal	
1,407	0	1,805	204	3,417

Maritime:

Tonnage of Top Freight Water Ports by Total Tons	
Major Freight Ports [7]	Total Weight (Million tons)
Port of Detroit	13.3
Port Calcite	8.1
Marquette	7.7
Port Inland	4.9
Stoneport	4.6

Aviation:

Tonnage of Top Freight Airports by Total Tons	
Major Freight Airports [8]	Landed Weight (Thousand tons)
Detroit Metropolitan Wayne County	405.4
Gerald R Ford International	122.1
Capital Region International	115.1
Willow Run	80.1
Bishop International	39.1

Michigan

Plan Status:

Current Status of Freight Plans								
Year of most recent freight plan	Fast ACT Compliant	MAP21 Compliant	Relation to Other Plans					Total Cost
			Freight Plan	Rail Plan	Marine Plan	Airport System Plan	Consultants Used	
2017	Yes	Yes	stand alone	stand alone	Combined	stand alone	No	N/A

Current Modal Plan Documents and Links					
Most recent Plan	Freight Plan	No Marine Freight Plan	Rail Plan	Aviation System plan	Long-Range Transportation Plan

Freight Advisory Committee and Similar Bodies					
Name	Status	Geographical Structure	Frequency of meetings	Number of members	Contact
https://www.michigan.gov/mdot/0,4616,7-151-9623_31969_80695---,00.html	Active	Centralized	Quarterly	~10	Elisha Wulff (517) 241-4778 WulffE@michigan.gov

Freight Flow by Mode [9]:

Shipments Within, Outbound, and Inbound by Total Tons			
Trade Mode	Domestic Only (Thousand tons)		
	Within	Outbound	Inbound
Total	231,169.70	126,503.70	156,069.00
Air (include truck-air)	0	122.7	26.5
Multiple modes & mail	6,101.10	11,644.80	5,467.90
Pipeline	9,982.00	9,421.50	62,678.20
Rail	28,553.70	12,176.50	29,235.70
Truck	176,578.90	65,791.60	58,563.50

Michigan

	Export			Import		
Trade Mode	**Within**	**Outbound**	**Inbound**	**Within**	**Outbound**	**Inbound**
Total	15,240.70	7,777.10	48,097.50	24,188.50	34,204.90	16,774.20
Air (include truck-air)	0	51.4	55.5	0	9.6	62.5
Multiple modes & mail	789	2,569.10	679.5	1,429.70	859	2,331.10
Other and unknown	484.9	5.20	37.2	4.8	0.1	0.30
Pipeline	3,074.40	252.30	13,924.40	7,894.70	3,348.30	540.10
Rail	2,195.90	1,901.40	11,857.90	2,850.10	15,159.80	7,921.30
Truck	4,894.80	2,932.50	21,255.60	8,947.20	14,577.60	5,428.80
Water	3,801.70	65.20	287.5	3,062.10	250.40	490.2

References

[1] U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, 2015, https://ops.fhwa.dot.gov/freight/infrastructure/ismt/nhfn_states_list.htm

[2] U.S. Department of Transportation, Bureau of Transportation Statics, 2020, https://www.bts.gov/content/state-transportation-numbers

[3] Michigan State Freight Plan, 2017, https://www.michigan.gov/documents/mdot/MDOT_DRAFT_StateFreightPlan2017_599148_7.pdf

[4] U.S. Department of Transportation, Bureau of Transportation Statics, Public Road Length, Miles by Functional System, 2018, https://www.bts.gov/content/us-public-road-and-street-mileage-functional-systema

[5] Identification and Characterization of the MAASTO Region's Multimodal Freight Network, https://midamericafreight.org/wp-content/uploads/2018/12/Report_ID-and-Charcteristics-of-Freight-Corridors_2018-12-06.pdf

[6] U.S. Department of Transportation, Bureau of Transportation Statics, Miles of Freight Railroad Operated by Class of Railroad, 2019, https://www.aar.org/wp-content/uploads/2021/02/AAR-Michigan-State-Fact-Sheet.pdf

[7] U.S. Army Corps of Engineers, Waterborne Commerce Statistics Center, 2019, https://usace.contentdm.oclc.org/digital/collection/p16021coll2/id/6753

[8] Federal Aviation Administration, CY 2019 All-Cargo Airports by Landed Weight, https://www.faa.gov/airports/planning_capacity/passenger_allcargo_stats/passenger/

[9] U.S. Department of Transportation, Bureau of Transportation Statics, Data from the Freight Analysis Framework Version 4.5.1, Shipments Within, Outbound, and Inbound U.S. States - Tons by Trade Type & Transportation Mode, 2018, https://www.bts.gov/faf

MID-AMERICA FREIGHT COALITION

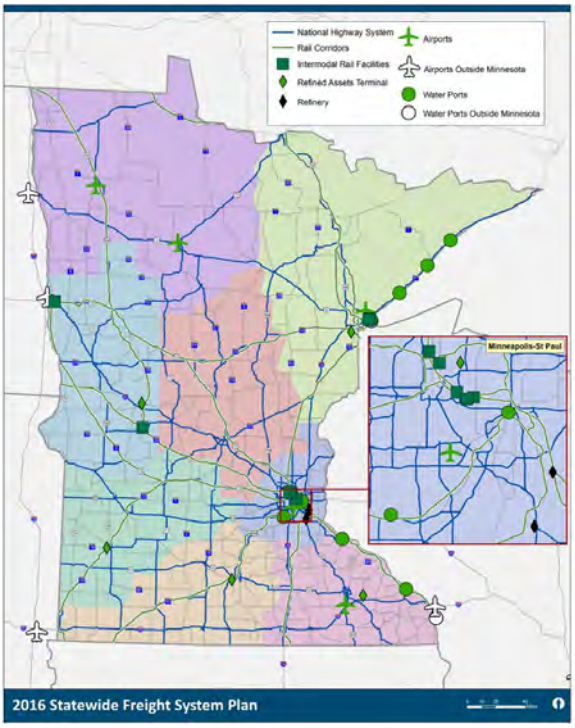
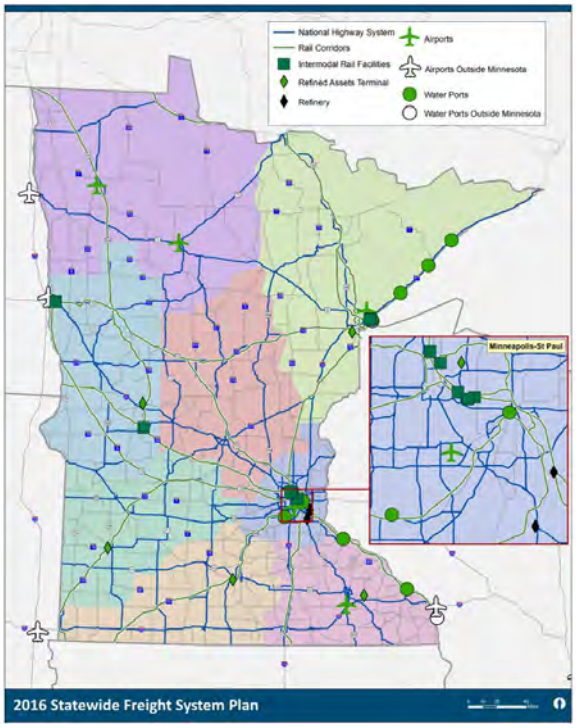
Regional Freight Plan Study 2020

Minnesota

Minnesota Multimodal Freight Network

National Highway Network [1]	Railroad Network [2]
	

Minnesota

Ports and Harbors [3]	Airports [3]
	

General Facts:

Transportation Network					
Miles of Roadway [2]	Major Airports	Bridges	Major water ports	Miles of Freight Railroad	Miles of Waterway
139,449	9	13,358	4	4,258	260

Minnesota

Highways:

Miles of Roadway by Functional System							
RURAL							
Interstate [4]	Other Freeways & Expressways	Other Principal Arterial	Minor Arterial	Major Collector	Minor Collector	Local	Total
588	34	3,454	6,673	15,633	12,026	79,709	118,116
URBAN							
Interstate [4]	Other Freeways & Expressways	Other Principal Arterial	Minor Arterial	Major Collector	Minor Collector	Local	Total
325	220	618	2,569	2,209	802	16,500	23,243

Top 5 Corridors based on total economic value [5]
I-94, I-35, I-90, I-494, I-694

Railways:

Miles of Freight Railroad Operated by Class of Railroad				
Class I [6]	Regional	Local		Total
		Linehaul	Switching and terminal	
3,411	46	597	102	4,233

Maritime:

Tonnage of Top Freight Water Ports by Total Tons	
Major Freight Ports [7]	Total Weight (Million tons)
Port of Duluth-Superior	33.7
Port of Two Harbors	16.9
Port of Silver Bay	5.6
Port of St. Paul	5.0

Aviation:

Tonnage of Top Freight Airports by Total Tons	
Major Freight Airports [8]	Landed Weight (Thousand tons)
Minneapolis-St Paul International/Wold-Chamberlain	506.2
Thief River Falls Regional	18.0

Minnesota

Plan Status:

Current Status of Freight Plans								
Year of most recent freight plan	Fast ACT Compliant	MAP21 Compliant	Relation to Other Plans					Total Cost
			Freight Plan	Rail Plan	Marine Plan	Airport System Plan	Consultants Used	
2018	Yes	Yes	stand alone	stand alone	stand alone	stand alone	Yes	700,000

Current Modal Plan Documents and Links					
Most recent Plan	Freight Plan	Marine Transportation System Plan	Rail Plan	Aviation System plan	Long-Range Transportation Plan

Freight Advisory Committee and Similar Bodies					
Name	Status	Geographical Structure	Frequency of meetings	Number of members	Contact
Freight Advisory Committee	Active	Centralized	Quarterly	~40	Andrew Andrusko (651) 366-3644 andrew.andrusko@state.mn.us

Freight Flow by Mode [9]:

Shipments Within, Outbound, and Inbound by Total Tons			
Trade Mode	Domestic Only (Thousand tons)		
	Within	Outbound	Inbound
Total	245,291.50	183,011.10	174,591.10
Air (include truck-air)	0	27.6	29.1
Multiple modes & mail	320.20	17,229.80	4,614.80
Pipeline	212.80	31,797.20	61,740.40
Rail	9,849.70	58,687.80	31,631.30
Truck	234,908.80	67,108.00	67,028.10
Water	0.00	8,160.70	9,547.40

Minnesota

	Export			Import		
Trade Mode	**Within**	**Outbound**	**Inbound**	**Within**	**Outbound**	**Inbound**
Total	5,079.00	7,386.30	6,925.60	1,260.90	22,697.70	27,460.20
Air (include truck-air)	0	76.6	6.4	0	2.7	34.4
Multiple modes & mail	10.2	1,142.00	712.1	8.60	306.4	3,004.30
Other and unknown	170.7	0.90	0.5	2.3	0	0.00
Pipeline	0.00	13.70	0.00	0.00	0.00	18,533.50
Rail	3,461.30	2,616.20	5,678.10	1,061.70	22,091.60	4,189.60
Truck	1,436.80	3,434.30	114.90	188.30	297.00	1,641.90
Water	0.00	102.60	413.6	0.00	0.00	56.5

References

[1] U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations,2015, https://ops.fhwa.dot.gov/freight/infrastructure/ismt/nhfn_states_list.htm

[2] U.S. Department of Transportation, Bureau of Transportation Statics, 2020, https://www.bts.gov/content/state-transportation-numbers

[3] Minnesota State Freight Plan, 2018, http://www.dot.state.mn.us/planning/freightplan/pdf/statewidefreightplanrevised2018.pdf

[4] U.S. Department of Transportation, Bureau of Transportation Statics, Public Road Length, Miles by Functional System, 2018, https://www.bts.gov/content/us-public-road-and-street-mileage-functional-systema

[5] Identification and Characterization of the MAASTO Region's Multimodal Freight Network, https://midamericafreight.org/wp-content/uploads/2018/12/Report_ID-and-Charcteristics-of-Freight-Corridors_2018-12-06.pdf

[6] U.S. Department of Transportation, Bureau of Transportation Statics, Miles of Freight Railroad Operated by Class of Railroad, 2019, https://www.aar.org/wp-content/uploads/2021/02/AAR-Minnesota-State-Fact-Sheet.pdf

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MID-AMERICA FREIGHT COALITION

Regional Freight Plan Study 2020

Missouri

Missouri Multimodal Freight Network

National Highway Network [1]	Railroad Network [2]
	

Missouri

Ports and Harbors [3]	Airports [3]
	

General Facts:

Transportation Network					
Miles of Roadway [2]	Major Airports	Bridges	Major water ports	Miles of Freight Railroad	Miles of Waterway
131,900	11	24,512	4	3,862	1,030

Missouri

Highways:

Miles of Roadway by Functional System							
RURAL							
Interstate [4]	Other Freeways & Expressways	Other Principal Arterial	Minor Arterial	Major Collector	Minor Collector	Local	Total
842	1,125	1,880	4,015	16,240	6,265	77,263	107,630
URBAN							
Interstate [4]	Other Freeways & Expressways	Other Principal Arterial	Minor Arterial	Major Collector	Minor Collector	Local	Total
538	494	866	2,155	2,318	388	17,865	24,624

Top 5 Corridors based on total economic value [5]
I-70, I-44, I-55, I-29, I-35

Railways:

Miles of Freight Railroad Operated by Class of Railroad				
Class I [6]	Regional	Local		Total
		Linehaul	Switching and terminal	
3,276	0	510	71	3,762

Maritime:

Tonnage of Top Freight Water Ports by Total Tons	
Major Freight Ports [7]	Total Weight (Million tons)
St. Louis	31.3
New Madrid County Port	2.3
Pemiscot County Port	1.6

Aviation:

Tonnage of Top Freight Airports by Total Tons	
Major Freight Airports [8]	Landed Weight (Thousand tons)
Kansas City International	261.5
St Louis Lambert International	183.3
Springfield-Branson National	62.5

Missouri

Plan Status:

Current Status of Freight Plans								
Year of most recent freight plan	Fast ACT Compliant	MAP21 Compliant	Relation to Other Plans					Total Cost
			Freight Plan	Rail Plan	Marine Plan	Airport System Plan	Consultants Used	
2017	Yes	Yes	stand alone	stand alone	Combined	stand alone	Yes	1,000,000

Current Modal Plan Documents and Links					
Most recent Plan	Freight Plan	Port Economic Study	Rail Plan	Aviation System plan	Long-Range Transportation Plan

Freight Advisory Committee and Similar Bodies					
Name	Status	Geographical Structure	Frequency of meetings	Number of members	Contact
Under Development	N/A	N/A	N/A	N/A	Cheryl Ball (573) 526-5578 cheryl.ball@modot.mo.gov

Freight Flow by Mode [9]:

Shipments Within, Outbound, and Inbound by Total Tons			
Trade Mode	Domestic Only (Thousand tons)		
	Within	Outbound	Inbound
Total	176,899.00	117,868.20	165,439.20
Air (include truck-air)	0.1	20.3	24.1
Multiple modes & mail	4,474.40	7,252.40	11,666.80
Pipeline	5.60	22,361.60	37,251.60
Rail	4,699.10	12,482.20	44,047.20
Truck	164,189.60	63,141.80	67,271.60
Water	3,530.20	12,609.80	5,177.90

Missouri

	Export			Import		
Trade Mode	**Within**	**Outbound**	**Inbound**	**Within**	**Outbound**	**Inbound**
Total	91.10	6,471.20	1.00	31.00	17.50	13,915.30
Air (include truck-air)	0	20.6	0	0	2.7	9.6
Multiple modes & mail	0.1	664.80	0	0.00	0	2,078.40
Other and unknown	90.8	5.40	0.9	20.5	9.2	0.10
Pipeline	0	0	0	0.00	0.00	7,644.80
Rail	0.00	3,081.10	0.00	0.00	0.00	2,298.30
Truck	0.20	2,688.90	0.10	10.50	5.60	1,860.90
Water	0.00	10.40	0.00	0.00	0.00	23.2

References

[1] U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations,2015, https://ops.fhwa.dot.gov/freight/infrastructure/ismt/nhfn_states_list.htm

[2] U.S. Department of Transportation, Bureau of Transportation Statics, 2020, https://www.bts.gov/content/state-transportation-numbers

[3] Missouri State Freight Plan, 2017, https://www.modot.org/sites/default/files/documents/Chapters1-10nov2017%5B1%5D.pdf

[4] U.S. Department of Transportation, Bureau of Transportation Statics, Public Road Length, Miles by Functional System, 2018, https://www.bts.gov/content/us-public-road-and-street-mileage-functional-systema

[5] Identification and Characterization of the MAASTO Region's Multimodal Freight Network, https://midamericafreight.org/wp-content/uploads/2018/12/Report_ID-and-Charcteristics-of-Freight-Corridors_2018-12-06.pdf

[6] U.S. Department of Transportation, Bureau of Transportation Statics, Miles of Freight Railroad Operated by Class of Railroad, 2019, https://www.aar.org/wp-content/uploads/2021/02/AAR-Missouri-State-Fact-Sheet.pdf

[7] U.S. Army Corps of Engineers, Waterborne Commerce Statistics Center, 2019, https://usace.contentdm.oclc.org/digital/collection/p16021coll2/id/6753

[8] Federal Aviation Administration, CY 2019 All-Cargo Airports by Landed Weight, https://www.faa.gov/airports/planning_capacity/passenger_allcargo_stats/passenger/

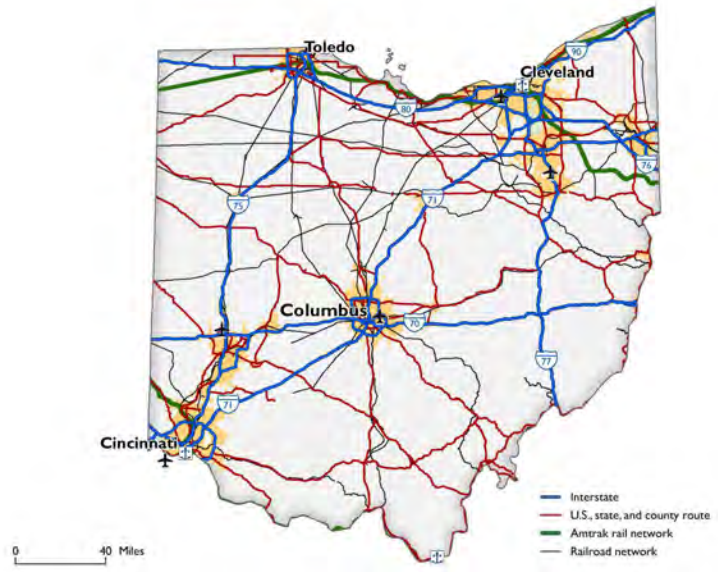
[9] U.S. Department of Transportation, Bureau of Transportation Statics, Data from the Freight Analysis Framework Version 4.5.1, Shipments Within, Outbound, and Inbound U.S. States - Tons by Trade Type & Transportation Mode, 2018, https://www.bts.gov/faf

Ohio

Ohio Multimodal Freight Network

National Highway Network [1]

Railroad Network [2]



Ohio

Ports and Harbors [3]

Airports [3]

General Facts:

Transportation Network					
Miles of Roadway [2]	Major Airports	Bridges	Major water ports	Miles of Freight Railroad	Miles of Waterway
122,987	12	27,277	8	5,132	440

Ohio

Highways:

Miles of Roadway by Functional System							
RURAL							
Interstate [4]	Other Freeways & Expressways	Other Principal Arterial	Minor Arterial	Major Collector	Minor Collector	Local	Total
643	334	1,523	2,664	11,010	6,302	53,014	75,489
URBAN							
Interstate [4]	Other Freeways & Expressways	Other Principal Arterial	Minor Arterial	Major Collector	Minor Collector	Local	Total
931	580	2,445	3,963	5,373	617	33,632	47,542

Top 5 Corridors based on total economic value [5]
I-80, I-71, I-70, I-75, I-77

Railways:

Miles of Freight Railroad Operated by Class of Railroad				
Class I [6]	Regional	Local		Total
		Linehaul	Switching and terminal	
3,026	392	1,546	226	5,330

Maritime:

Tonnage of Top Freight Water Ports by Total Tons	
Major Freight Ports [7]	Total Weight (Million tons)
Cleveland-Cuyahoga Port	11.9
Toledo-Lucas County Port	9.1
Ashtabula Port Authority	5.1
Port of Conneaut	3.9
Marblehead	2.9
Fairport Harbor	1.9

Aviation:

Tonnage of Top Freight Airports by Total Tons	
Major Freight Airports [8]	Landed Weight (Thousand tons)
Rickenbacker International	558.3
Cleveland-Hopkins International	197.1
James M Cox Dayton International	27.0

Ohio

Plan Status:

Current Status of Freight Plans								
Year of most recent freight plan	Fast ACT Compliant	MAP21 Compliant	Relation to Other Plans					Total Cost
			Freight Plan	Rail Plan	Marine Plan	Airport System Plan	Consultants Used	
2020	Yes	Yes	stand alone	stand alone	stand alone	stand alone	Yes	2,000,000

Current Modal Plan Documents and Links					
Most recent Plan	https://www.transportation.ohio.gov/wps/wcm/connect/gov/5a31ec2e-2be3-4518-855c-222f69902d5c/ODOTFreightPlan.pdf?MOD=AJPERES&CONVERT_TO=url&CACHEID=ROOTWORKSPACE.Z18_M1HGGIK0N0JO00QO9DDDDM3000-5a31ec2e-2be3-4518-855c-222f69902d5c-nBCRo4x	Marine Transportation System Plan	Rail Plan	Aviation System plan	Long-Range Transportation Plan

Freight Advisory Committee and Similar Bodies					
Name	Status	Geographical Structure	Frequency of meetings	Number of members	Contact
Under Development	N/A	N/A	N/A	N/A	Mark Locker (614) 466-2347 mark.locker@dot.ohio.gov

Freight Flow by Mode [9]:

Shipments Within, Outbound, and Inbound by Total Tons			
Trade Mode	Domestic Only (Thousand tons)		
	Within	Outbound	Inbound
Total	382,324.80	214,312.80	253,350.50
Air (include truck-air)	0.4	34.7	48.5
Multiple modes & mail	4,275.50	9,943.70	17,508.00
Pipeline	33,327.80	62,673.40	70,015.50
Rail	13,413.10	24,702.00	41,362.50
Truck	328,685.70	116,203.20	98,499.90
Water	2,622.20	755.80	25,916.10

Ohio

	Export			Import		
Trade Mode	**Within**	**Outbound**	**Inbound**	**Within**	**Outbound**	**Inbound**
Total	976.60	18,115.10	3,363.50	716.90	724.60	20,836.70
Air (include truck-air)	0	116.4	6.7	0	6.2	63
Multiple modes & mail	0.2	1,935.00	0.4	0.00	36.6	4,084.70
Other and unknown	557.1	3.20	0	4.6	0	0.90
Pipeline	0	0	0	0.00	0.00	3,346.20
Rail	170.30	7,155.60	3,342.00	303.00	611.10	6,147.10
Truck	16.90	8,847.60	1.80	49.10	4.50	6,901.60
Water	232.10	57.20	12.60	360.10	66.10	293.2

References

[1] U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, 2015, https://ops.fhwa.dot.gov/freight/infrastructure/ismt/nhfn_states_list.htm

[2] U.S. Department of Transportation, Bureau of Transportation Statics, 2020, https://www.bts.gov/content/state-transportation-numbers

[3] Ohio State Freight Plan, 2019, http://www.dot.state.oh.us/Divisions/Planning/SPR/StatewidePlanning/Documents/ODOT_FreightPlan_Updated%203.7.19.pdf

[4] U.S. Department of Transportation, Bureau of Transportation Statics, Public Road Length, Miles by Functional System, 2018, https://www.bts.gov/content/us-public-road-and-street-mileage-functional-systema

[5] Identification and Characterization of the MAASTO Region's Multimodal Freight Network, https://midamericafreight.org/wp-content/uploads/2018/12/Report_ID-and-Charcteristics-of-Freight-Corridors_2018-12-06.pdf

[6] U.S. Department of Transportation, Bureau of Transportation Statics, Miles of Freight Railroad Operated by Class of Railroad, 2019, https://www.aar.org/wp-content/uploads/2021/02/AAR-Ohio-State-Fact-Sheet.pdf

[7] U.S. Army Corps of Engineers, Waterborne Commerce Statistics Center, 2019, https://usace.contentdm.oclc.org/digital/collection/p16021coll2/id/6753

[8] Federal Aviation Administration, CY 2019 All-Cargo Airports by Landed Weight, https://www.faa.gov/airports/planning_capacity/passenger_allcargo_stats/passenger/

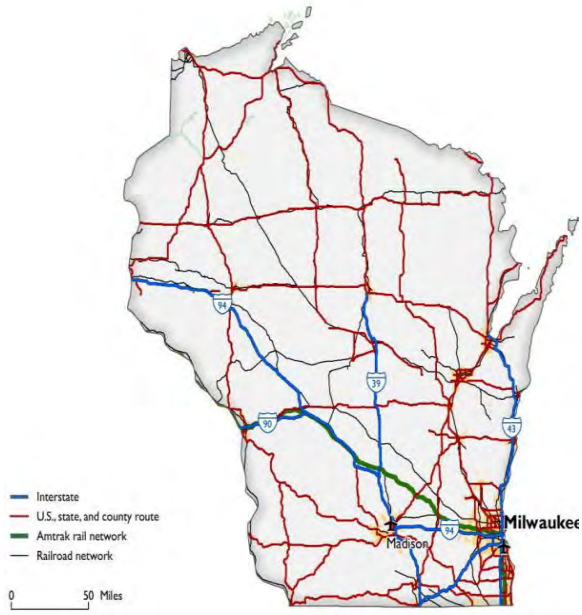
[9] U.S. Department of Transportation, Bureau of Transportation Statics, Data from the Freight Analysis Framework Version 4.5.1, Shipments Within, Outbound, and Inbound U.S. States - Tons by Trade Type & Transportation Mode, 2018, https://www.bts.gov/faf

MID-AMERICA FREIGHT COALITION

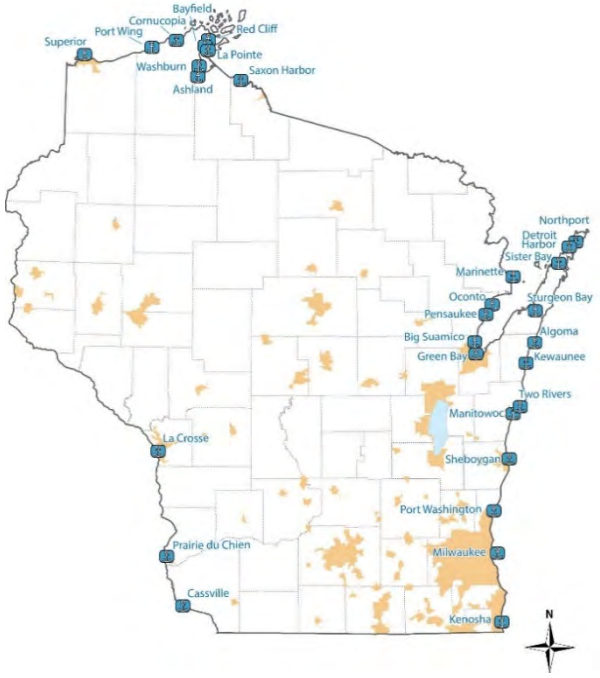
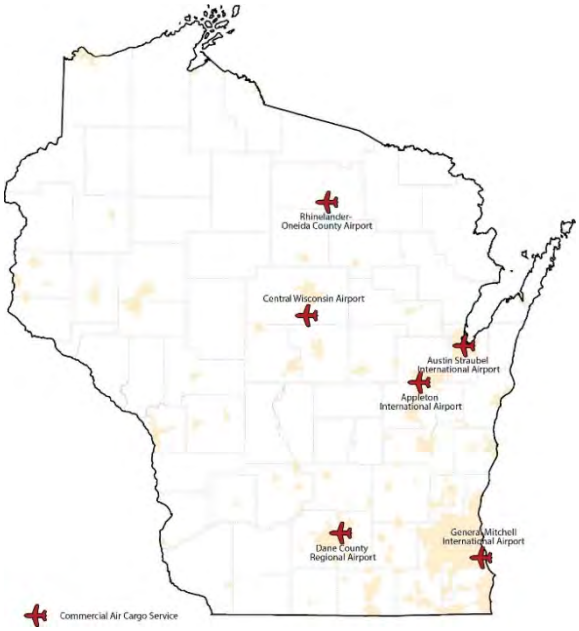
Regional Freight Plan Study 2020

Wisconsin

Wisconsin Multimodal Freight Network

National Highway Network [1]	Railroad Network [2]
	

Wisconsin

Ports and Harbors [3]	Airports [3]
	

General Facts:

Transportation Network					
Miles of Roadway [2]	Major Airports	Bridges	Major water ports	Miles of Freight Railroad	Miles of Waterway
115,609	9	14,275	3	3,254	230

Wisconsin

Highways:

Miles of Roadway by Functional System							
RURAL							
Interstate [4]	Other Freeways & Expressways	Other Principal Arterial	Minor Arterial	Major Collector	Minor Collector	Local	Total
513	203	2,870	4,765	12,142	8,356	62,861	91,711
URBAN							
Interstate [4]	Other Freeways & Expressways	Other Principal Arterial	Minor Arterial	Major Collector	Minor Collector	Local	Total
366	342	1,951	2,683	2,989	-	15,632	23,963

Top 5 Corridors based on total economic value [5]
I-94, I-90, I-43, I-39, I-894

Railways:

Miles of Freight Railroad Operated by Class of Railroad				
Class I [6]	Regional	Local		Total
		Linehaul	Switching and terminal	
2,503	583	182	1	3,254

Maritime:

Tonnage of Top Freight Water Ports by Total Tons	
Major Freight Ports [7]	Total Weight (Million tons)
Port of Duluth-Superior	33.7
Port of Milwaukee	2.8
Port of Green Bay	2.3

Aviation:

Tonnage of Top Freight Airports by Total Tons	
Major Freight Airports [8]	Landed Weight (Thousand tons)
General Mitchell International	273.0
Dane County Regional-Truax Field	84.7
Appleton International	55.9

Wisconsin

Plan Status:

Current Status of Freight Plans								
Year of most recent freight plan	Fast ACT Compliant	MAP21 Compliant	Relation to Other Plans					Total Cost
			Freight Plan	Rail Plan	Marine Plan	Airport System Plan	Consultants Used	
2018	Yes	Yes	stand alone	stand alone	Combined	stand alone	Yes	N/A

Current Modal Plan Documents and Links					
Most recent Plan	Freight Plan	No Marine Freight Plan	Rail Plan	Aviation System plan	Long-Range Transportation Plan

Freight Advisory Committee and Similar Bodies					
Name	Status	Geographical Structure	Frequency of meetings	Number of members	Contact
Freight Advisory Committee	Active	Centralized	2x a year	~40	Dean M. Prestegaard (608) 266-9910 dean.prestegaard@dot.wi.gov

Freight Flow by Mode [9]:

Shipments Within, Outbound, and Inbound by Total Tons			
Trade Mode	Domestic Only (Thousand tons)		
	Within	Outbound	Inbound
Total	217,576.80	100,800.40	131,109.00
Air (include truck-air)	0	31.2	25
Multiple modes & mail	244.20	4,988.20	2,362.40
Pipeline	2,258.50	17,101.60	14,887.50
Rail	3,224.60	14,726.00	43,975.00
Truck	211,359.90	63,898.60	63,414.10
Water	489.60	54.70	6,445.00

Wisconsin

	Export (Thousand tons)			Import (Thousand tons)		
Trade Mode	Within	Outbound	Inbound	Within	Outbound	Inbound
Total	301.60	9,516.70	4,162.40	1,270.60	767.90	9,056.40
Air (include truck-air)	0	32.3	0	0	0.3	15.5
Multiple modes & mail	0.1	1,581.80	0.4	1.20	0.3	1,643.70
Other and unknown	243.2	1.50	0	2.4	0	0.00
Pipeline	0	0.00	0	0.00	0.00	150.30
Rail	0	3,882.00	1,032.30	0.00	754.80	4,442.60
Truck	16.20	3,667.30	0.00	247.80	12.40	2,146.80
Water	42.00	351.70	3,129.70	1,019.30	0.10	657.6

Wisconsin's freight movement includes nearly 25% overhead traffic. 143,531,578 tons valued at $273,245,257,287.

References

[1] U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, 2015, https://ops.fhwa.dot.gov/freight/infrastructure/ismt/nhfn_states_list.htm

[2] U.S. Department of Transportation, Bureau of Transportation Statics, 2020, https://www.bts.gov/content/state-transportation-numbers

[3] Wisconsin State Freight Plan, 2018, https://wisconsindot.gov/Documents/projects/sfp/plan.pdf

[4] U.S. Department of Transportation, Bureau of Transportation Statics, Public Road Length, Miles by Functional System, 2018, https://www.bts.gov/content/us-public-road-and-street-mileage-functional-systema

[5] Identification and Characterization of the MAASTO Region's Multimodal Freight Network, https://midamericafreight.org/wp-content/uploads/2018/12/Report_ID-and-Charcteristics-of-Freight-Corridors_2018-12-06.pdf

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