



From the Ground Up

Aligning State Freight Plans to Enhance State Collaboration and Establish Regional and National Harmonization of Freight Priorities

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16. Abstract This project reviews MAFC state freight plans and current planning efforts and provides a catalogue of state practices, data and analysis techniques, stakeholder involvement and other planning elements. The project also identifies where states share similar goals and common priority corridors across borders, and where they can leverage a regional approach to freight planning. Freight planning best practices across the region are also identified. The federal recommendations and guidelines on freight planning are reviewed as well. The objectives of the research are to: maximize collaborative freight planning and sharing of best practices, ensure the MAASTO freight perspectives are reflected in national freight planning, and provide a better understanding of how greater collaboration can improve regional and state transportation development as well as increase logistics and economic development.			
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Executive Summary

The idea for a freight plan alignment project across the MAASTO states was driven by three factors: recent legislation that included a variety of freight initiatives and requirements that appeared in MAP-21 and the FAST Act, the MAASTO states' desire to collaborate and work regionally, and the desire to understand how others were completing their freight plans and then identify and rapidly adopt best practices. Ultimately, this project report addresses these three drivers by providing a catalogue of freight planning practices, data sources, analysis techniques, best practices, and collaborative opportunities across the ten MAFC member states. The report provides a baseline understanding of the freight planning processes for each of the states, it allows each state to look across their borders and see how their peers operate. Each of states involved openly shared practices, ideas and opportunities with the intent to assist other states in advancing their freight plan efforts and effectiveness. The planning teams across the MAASTO states are truly leaders in collaboration and freight planning innovation.

In chapter one of the report, the development of freight planning, from the ISTEA of 1991 to the recent FAST Act, is presented and the state of freight planning across the MAFC member states is reported. Table 1 presents freight planning status of the states based on FAST Act requirements. In chapter two, the critical elements of freight planning are identified and then assessed through literature and policy reviews and state activities in support of the planning element. Chapter two addresses a broad range of planning elements including: stakeholder outreach and freight advisory committees, multimodal funding programs, freight data sources, economic analysis, performance management, and project prioritization. Chapter two provides a tremendous resource for states to “look over the fence” and see what their neighbors are doing with freight planning. It's important to note that freight planning is a relatively new activity and guidance and standards have been few and far between. Just as these states set the bar with early adoption of freight planning and freight advisory committees, their efforts to fulfill the intent and regulatory extent of the FAST Act propelled their planning efforts rapidly forward. This report provides a freight planning and practice resource to these states and others to increase the efficiency and effectiveness of their freight planning.

In chapter three, states identify opportunities to collaborate in freight planning and operations. On the heels of the successful eight-state TIGER award for truck parking information systems across the region, corridor and ITS communication and collaboration were identified as an immediate opportunity. The states also listed collaborative opportunities in the areas of permit harmonization, maritime projects, bridges, regional planning, collaboration on data collection, purchasing and use, performance metrics, freight investment plans, developing a regional FAC perspective, and in expanding multistate corridor efforts.

This project was identified in the 2015-2016 MAFC workplan development process that included both technical representatives for the MAFC states and MAASTO planning committee. This project reflects the MAASTO regions desire to work collaboratively and their understanding that the freight corridor does not stop at the state line. These states continue to be leaders and innovators in a time of rapidly evolving freight and logistics landscape. It is a privilege to support the ten MAASTO states and their planning and technical staff in advancing innovation in freight planning and operations.

1. Introduction

Why Collaboration on Freight Planning is Important

In the next 30 years, the freight tonnage moving on America's transportation network will increase by 40% and the value of freight movements will increase by 92% (USDOT Federal Highway Administration 2016). By 2045, an estimated 25 billion tons of freight worth \$37 trillion will travel on America's freight infrastructure. The freight system plays a vital role in ensuring the United States' economic prosperity but such growth will soon push the system to its limits. The 2015 draft National Freight Strategic Plan identifies the trends and challenges facing freight infrastructure, and outlines strategies to maintain the system. In particular, it categorizes threats into three types of "bottleneck" categories that are restricting our ability to maintain and improve our freight network:

1. Infrastructure bottlenecks: physical locations that disrupt the free flow of goods
2. Institutional bottlenecks: coordination between multiple levels of government makes it difficult to plan, prioritize, implement, and fund freight-specific projects.
3. Financial bottlenecks: lack of federal freight transportation funding that is substantial, continuing, multimodal, reliable, and specifically dedicated to freight projects.

The plan also highlights major trends and challenges such as: the expected growth in freight traffic across all modes, underinvestment in the freight transportation system, difficulty planning and implementing freight projects in the current U.S. governance structure, safety and security problems, and an expected increase in international trade.

These challenges to our freight system have not gone unnoticed and are acknowledged in the current transportation spending bill, the Fixing America's Surface Transportation Act (commonly referred to as the FAST Act). The act created new freight funding programs and offers additional freight project funding for states that produce state freight plans meeting the act's requirements. This new requirement for freight planning gives Mid-America Freight Coalition (MAFC) states the opportunity to align their plans and create a regional vision for the freight system.

To advance freight planning across the MAFC region, this research will focus on three major areas:

1. Understanding state freight planning efforts, opportunities, and impediments
2. Best practices for planning and funding freight
3. Opportunities for freight-related research, planning, and project collaboration among MAFC member states

The goal of this research is to improve freight movement as well as the economic well-being of the Midwest through:

1. Improved understanding among the states of their colleagues' freight planning work
2. The sharing of successful practices across the states
3. The development of a regional vision for freight that leverages cross-border cooperation

The Policy Landscape: National-Level Freight Policy

While freight planning is a relatively new requirement for State DOTs, national transportation bills have been laying the groundwork for state-level freight planning since the early 1990s. The freight planning provisions of major federal transportation bills from the past 25 years are summarized below.

ISTEA (1991)

The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) provided some requirements for metropolitan-level planning. When creating planning documents, metropolitan planning organizations (MPOs) were instructed to consider methods to enhance the efficiency of freight, freight routes, and intermodal facilities. In addition to these considerations, ISTEA began to draw attention to freight as it emphasized the mobility of people and goods over level of service (LOS) when evaluating congestion (Coogan 1996). Some of ISTEA's other measures would unintentionally benefit freight; the act's increased funding flexibility made freight projects eligible for some aid programs (Giuliano, et al. 2013).

TEA-21 (1998)

The Transportation Equity Act for the 21st Century (TEA-21) appropriated funds for freight, with \$1.1 billion set aside for border crossings and trade corridors. The newly-created Transportation Infrastructure Finance and Investment Act (TIFIA) made select publicly-owned intermodal freight transfer facilities eligible for funding as well. In terms of freight planning, TEA-21 recommended that both states and MPOs consider freight in their planning process, but didn't specify how that should be accomplished (Cambridge Systematics, Inc. 2003).

SAFETEA-LU (2005)

The Safe Accountable Flexible Efficient Transportation Equity Act (SAFETEA-LU) built upon TEA-21 and ISTEA's plan requirements. It required MPOs to formally integrate freight planning in their processes and documents, but did not require states to do freight planning. SAFETEA-LU also created a program for research, training, and education to support enhancements in freight transportation planning. In regard to financing freight projects, the act lowered the requirements for some financing programs, making more freight projects eligible, and created the Freight Intermodal Distribution Pilot Program, which was intended to improve safety and relieve congestion (Furst, 2005).

MAP-21 (2012)

The Moving Ahead for Progress in the 21st Century Act (MAP-21) placed a new emphasis on freight transportation and planning. It articulated a new national freight policy with the goal "to improve the condition and performance of the national freight network to provide the foundation for the United States to compete in the global economy and achieve" goals related to economic competitiveness and efficiency. Under MAP-21, the USDOT would be responsible for developing the National Freight Strategic Plan and designating a National Multimodal Freight Network to assist with planning and investment decisions. To support the national freight policy and plan, states were encouraged to develop their own freight plans, and specific requirements for plan contents were given. If states produced a plan that complied with MAP-21's requirements, they were eligible for increased federal funding share on certain highway projects (FHWA, 2015).

The FAST Act (2015)

The Fixing America's Surface Transportation Act (referred to as the FAST Act) builds upon the freight policy and plans in MAP-21 by expanding federal freight programming. The National Multimodal Freight Policy was expanded to include more goals, and USDOT was required once again to develop a National Strategic Freight Plan at least every five years. The scope of the National Multimodal Freight Network was expanded to ultimately consist of 41,000 miles of roadway as well as essential rail lines, waterways, ports, airports, and other intermodal terminals.

The FAST Act repealed MAP-21's increased cost share and created two new funding programs, the Nationally-Significant Freight and Highway Projects program and the National Highway Freight Program. The Nationally-Significant Freight and Highway Projects Program is a discretionary grant program with \$4.5 billion available over five years for major highway and freight projects. Grant applications are solicited under the "Fostering Advancements in Shipping and Transportation for the Long-term Achievement of National Efficiencies (FASTLANE) program, which has been authorized to distribute \$800 million in 2016 (USDOT, 2016). Non-highway freight projects were limited to a maximum amount of \$500 million over the five-year period. The program also recognizes the importance of regionally-significant projects, and groups of states and other levels of government can apply jointly to receive money from the program. Given its regional element, the Nationally-Significant Freight and Highway Projects program could be a good resource for MAFC states looking to collaborate on infrastructure improvements.

The second funding source is the National Highway Freight Program, which allocates money to states based on their apportionments from the highway trust fund and the mileage of the national highway system in the state. This program has been allocated \$6.2 billion over five years. In order to receive funds from the National Highway Freight Program, states must have created a FAST-compliant freight plan. To give states time to modify or develop new plans in compliance with FAST's requirements, a two-year grace period was included for the program's funding restrictions.

The FAST Act also modified existing federal requirements for freight planning. Additional elements are now required for a plan to be FAST compliant. FAST's additional requirements are compared against MAP-21's requirements in Table 1. FAST's new requirements are:

- A list of multimodal critical facilities and corridors (if applicable)
- Consideration of congestion or delay caused by freight movements, and strategies to mitigate the congestion or delays
- A fiscally constrained freight investment plan
- Consultation with a state freight advisory committee (FAC), if applicable

Almost all MAASTO states anticipate creating either a new or revised plan to meet FAST Act requirements within the next two years. Current state plans meet the requirements of MAP-21 and the FAST Act to varying degrees. Table 1 compares each state's freight plan elements with the elements required in both the FAST Act and MAP-21.

Those interested in a more complete list of the FAST's freight policies can find a quick reference guide on the Mid-America Freight Coalition's website in the [Resources section](#).

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

FAST ACT	Significant system trends, needs, and issues	Policies, strategies, and performance measures	How plan will 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 (if applicable)	Consideration of congestion or delay caused by freight movements, and strategies to mitigate	Freight investment plan	Consultation with FAC (if applicable)
MAP-21	X	X	X	X	X	X				
IL 2012	X	X								
IN 2014	X	X	X	X	X	X				X
IA 2016	X	X	X	X	X	X	X	X		X
KS* 2016	X	X	X	X	X	X	X	X	X	X
KY 2007	X	X								
MI 2013	X	X	X	X	X	X				
MN 2016	X	X	X	X	X	X				X
MO 2014	X	X	X	X	X	X				X
OH 2013	X	X	X	X			X		X	
WI* 2016	X	X	X	X	X	X	X	X	X	X

* Planned efforts

The State of Freight Planning in the Mid-America Freight Coalition

The MAFC's member states have a long history with freight planning. Some, like **Minnesota** and **Kansas** have planning experience going back to the mid 2000s. Others, like **Iowa** and **Wisconsin**, have a history of supporting freight, but are in the process of developing their first true freight plans. Table 2 describes MAFC members' currently approved freight plans. It lists when the currently complete plan was finished, whether or not the plan was accepted as MAP-21 compliant by the FHWA, whether or not the state used the MAP-21 compliant plan to pursue an increased federal cost share, whether or not consultants were used to aid in production of the plan, the total plan cost, and whether or not the plan was intended to be a standalone document or integrated with a state's long range transportation plan (LRTP). A hyperlink to each state's freight plan or freight office is provided in the state name.

Table 2: Current Status of State Freight Plans

State	Date Finished	FHWA Accepted	Sought Increased Cost Share	Consultants Used	Total Cost	Relation to Other Plans
<u>Illinois</u>	2012	No	No	Yes	\$1,600,000	Integrated
<u>Indiana</u>	2014	Yes	Yes	Yes	\$92,000	Standalone
<u>Iowa</u>	2016	N/A	N/A	Yes	\$30,600	Standalone
<u>Kansas</u>	2009	No	No	Yes	\$800,000	Standalone
<u>Kentucky</u>	2016	No	No	No	\$270,000	Standalone
<u>Michigan</u>	2013	Yes	Yes	No	\$200,000	Standalone
<u>Minnesota</u>	2005	No	No	Yes	\$267,000	Standalone
<u>Missouri</u>	2015	Yes	Yes	Yes	\$2,000,000	Integrated
<u>Ohio*</u>	2013	No	No	Yes	\$895,000	Integrated
<u>Wisconsin</u>	N/A	N/A	N/A	N/A	N/A	N/A

*Ohio created a Freight Study in 2013.

States are working to bring their plans into compliance with the FAST Act guidelines before 2017. Table 3 lists when the next version of each state's plan is expected, whether or not the state plans to use consultants, the estimated cost of the plan, and whether or not the plan will stand by itself or be integrated into the state's LRTP.

There are some unique circumstances that are not captured in the tables. For example, **Ohio** created a freight study in 2013, but the study was not intended to be MAP-21 compliant. They are currently using this freight study to create a FAST-compliant freight plan, noted in Table 3. **Iowa** recently completed its first plan, and **Wisconsin** is working on their very first freight plan. **Kentucky** has just released a new draft plan, which replaces a plan created in 2006. **Illinois**, **Kansas**, and **Minnesota** are performing major updates to their older freight plans, while **Indiana**, **Michigan**, and **Missouri** are performing updates to make their recent plans FAST compliant.

Table 3: Summary of Future Freight Planning—MAFC States

State	Date Expected	Consultants Used	Estimated Total Cost	Relation to other plans
Illinois	2017	No	TBD	Integrated
Indiana	2017	Yes	\$200,000	Standalone
Iowa	TBD	TBD	TBD	TBD
Kansas	TBD	TBD	TBD	Integrated
Kentucky	TBD	TBD	TBD	TBD
Michigan	2016	No	N/A	Standalone
Minnesota	2016	Yes	\$600,000	Standalone
Missouri	2017	TBD	TBD	TBD
Ohio	2016	Yes	\$200,000	Integrated
Wisconsin	2016	Yes	\$150,000	Standalone

To fully understand planning efforts in MAFC states, we also examined long-range and modal plans that could assist with freight planning. We recorded long-range (LRTP), rail, aviation, and marine plans. A comparison of each state’s long-range and modal plans is presented in table 4. Links to each plan are included when relevant. All states had some form of LRTP and rail plan, and either had an aviation plan or were in the process of updating their existing plan. **Kentucky**, **Michigan**, and **Minnesota** have developed plans for their waterway systems, and **Ohio** is currently in the process of developing a waterway plan. Some states, like **Kansas** are combining their freight plan update work with rail plan or LRTP updates. However, **Kentucky** cautions that creating LRTP, rail, and freight plans at the same time can be a slow and complex process.

Table 4: Associated Current Modal Plan Documents and Links

State	LRTP	Rail Plan	Waterway Plan	Aviation Plan
Illinois	2012	2012	None	In development
Indiana	2013	2016	None	2012
Iowa	2012	2016	None	2010
Kansas	2008	In development	None	2009
Kentucky	2014	2015	2007	In development
Michigan	2012	2011	2015	In development

Minnesota	<u>2012</u>	<u>2015</u>	<u>2014</u>	<u>2012</u>
Missouri	<u>2013</u>	<u>2012</u>	None	In development
Ohio	<u>2013</u>	<u>2010</u>	2016	<u>2014</u>
Wisconsin	<u>2009</u>	<u>2014</u>	None	<u>2015</u>

Many states have utilized consultants to assist with freight planning. Together, these ten states are estimated to have spent at least \$7.5 million on freight planning efforts, and this number will increase as FAST-compliant plans are produced. Table 5 lists the consultants used by each state, their tasks, and their cost. States used consultants to varying degrees. So far, only **Michigan** has created a plan without the aid of consultants, and many states complete portions of their plans in-house when expertise is available. **Iowa** used consultants solely for outreach, and did all production work in-house. States like **Illinois, Kansas, Missouri,** and **Ohio** that used consultants to produce an entire plan paid the most for their work. **Missouri's** high consultant cost is due to a need for a short turnaround to meet legislative timelines. For states that relied on consultants for a portion of the plan, data analysis and media production are the most common consultant tasks.

Table 5: Use of Consultants in MAFC State Freight Plans and Planning

State	Plan Version	Consultants Used	Tasks	Cost
IL	2012	Parsons Brinckerhoff	LTRP production, including freight plan	\$1,160,000
		CDM Smith	Rail plan, rail elements of freight plan	\$822,000
	2017	TBD	TBD	TBD
IN	2014	Corradino Group	Data analytics	\$92,000
IA	2016	HDR	Stakeholder outreach	\$30,685
KS	2009	Cambridge Systematics	Full production of plan	\$800,000
KY	2016	CDM Smith	Miscellaneous	\$235,000
		University of Kentucky	Miscellaneous	\$10,000
MI	No consultants used.			
MN	2005	Cambridge Systematics	Project management, overall work, economic analysis	\$267,000
		SRF Consulting	Highway performance measures and GIS work	
	2016	Cambridge Systematics	Scoping, building plan goals objectives	\$600,000
SRF Consulting	Highway-related work			
	Kimley Horn	Outreach		
Leo Penne	Restructuring FAC			
MO	2012	CDM Smith	Primary Contractor	\$2,000,000
		ATRI	Data provision	
		Burns & McDonnell	Strategic guidance, production of media releases	
		High Street	Performance metrics	
OH	2013	Parsons Brinckerhoff	Full production	\$980,000
	2016	Murphy Epton	Media consultant	\$200,000
WI	2016	SRF	Public outreach, environmental justice chapter of plan	\$300,000
		CPCS Transcom	Pipeline data	\$60,000
Estimated regional total amount spent on consultants:				\$7,557,000

MAFC states provided insight on how to effectively use consultants. **Missouri** needed a plan completed relatively quickly and suggested that weekly check-ins with consultants were helpful to keeping plan development on track and facilitated a much faster schedule. Weekly check-ins also made the consultants more likely to seek help and feedback from MoDOT on topics they were not familiar with. **Ohio** also noted that economic planning may be best done in-house where there is sufficient domain expertise and where the activity can benefit long-term relationships with industry and related agencies.

The following sections look at critical planning elements. Then, best practices across a variety of freight planning tasks are examined along with opportunities to share and collaborate. The planning elements and practices here were identified by MAFC member states, from the literature, and from our observations of innovation and effectiveness in the states' efforts.

2. Critical Elements of Freight Planning and Best Practices

Stakeholder Outreach and Freight Advisory Committees

“The Freight Advisory Council is not just a formality, but a necessity. It is the most important networking resource.” — Planning and Managing Intermodal Transportation Systems: A Guide to ISTEA Requirements (Capelle, 1994)

As the primary users of a state's freight network, industry stakeholders like shipping companies and major producers have practical insight into the strengths and weaknesses of a state's freight infrastructure. Their knowledge can help DOTs identify important projects and policies as well as inform freight planning work. Many MAFC states engage with private stakeholders through a body commonly referred to as a freight advisory committee (FAC). These advisory committees are comprised of both private and public stakeholders and are often tasked with providing feedback on freight plans, prioritizing projects, and advising on policy changes. This section will provide a legislative and literature background on the history and use of FACs, list the current FACs operating in the MAFC, and make recommendations for best practices based on the experiences of member states.

Policy Review

FACs had federal support since at least the 1990s, but support became more visible with MAP-21, which encouraged states to establish a FAC “made up of a representative cross-section of public- and private-sector freight stakeholders” (FHWA). The FAST Act continues support for this recommendation, and lays out five suggested roles for FAC and their members:

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 with other freight-related organizations.
4. Promoting information sharing between private and public sectors.
5. Participating in the development of the freight plan.

Literature Review

There is a growing body of literature describing best practices for engagement with the private sector within the framework of a FAC. Much of this literature focuses on operational differences between the private and public sector, and what actions can be taken to foster mutual trust and cooperation. To successfully create and engage with a FAC, departments of transportation must have a basic understanding of the private sector's perspectives and practices. Guo and Wittwer (2009) describe common barriers to industry involvement and means to overcoming these barriers:

- **Industry has shorter planning horizons.** Because of shorter horizons, private-sector stakeholders may not believe their input will be used, or may believe it will be used too late to yield benefits for their firm or industry.
- **Lack of understanding of public processes.** To the faster-moving private-sector stakeholders, government can appear to be a slow-moving “black box” of decision making, making it an unreliable partner. Educating industry stakeholders about how and why the DOT makes decisions can help build trust.
- **Competitive pressure between firms may play a role in the dynamics of the FAC.** It may be difficult for representatives of certain firms to participate and be open about their thoughts when there is a competitor at the table.

From the Coalition's work with MAFC states and their FACs, these concerns about privacy and return on time invested have mostly been overcome with a strong leadership presence, transparent processes, and honest conversations. The FACs are providing real relationships that benefit both private and public participants. Public relations, either through the FAC or through visits to industry by the DOT, help form a face-to-face relationship that facilitates trust. This also helps establish a recognized, go-to person for freight issues at the DOT, which makes engagement with the private sector easier. This way, private-sector stakeholders always know who to call and have a face to associate with the DOT's freight work (NCHRP Report 594). Another option is having DOT staff attend industry meetings and trade shows. Guo and Wittwer (2009) suggest there are four stages to making connections in the field:

1. Familiarity: face-to-face contact at first meetings to learn more.
2. Acceptance: getting to know people in the industry and attending more meetings.
3. Trust: consistency is displayed in the DOT's purpose and there is transparency in DOT processes. The DOT must also provide some useful service or product for engaged stakeholders.
4. Full participation: when requested, good information is received in a timely manner.

Reducing time and participation burdens may not be enough to entice stakeholders to participate. Schrank et al (2008) recommend that DOTs be ready to provide quick fixes to certain problems or be able to complete some faster, small-scale projects in response to the feedback they receive from stakeholders. Many MAFC states already use this technique, and their approaches to creating and sustaining valuable FAC connections will be discussed in the next section.

Literature Review Summary	
Barriers to Participation:	Ways to encourage participation:
<ul style="list-style-type: none"> • DOT moves too slowly relative to industry. • DOT is an uncertain “black box” for decision making – and thus a source of risk. • Competitive pressure and distrust of similar firms participating in FAC. • Limited time and resources to contribute to FAC meetings or programming. 	<ul style="list-style-type: none"> • Assign a single point of contact for freight issues at DOT. This makes it easier for the private sector to get in touch and get answers. • Limit time requirement of FAC membership to one-half day per quarter. • Use the Four Steps to Making Connections: <ul style="list-style-type: none"> ○ Meet FAC members face-to-face. ○ Attend industry meetings. ○ Be consistent and transparent. ○ Provide a useful service for partners. • Have action items that can be implemented quickly in response to feedback.

State Practices

The table below summarizes each state’s FAC involvement. Links to each state’s FAC (if applicable) are provided. As of this writing, **Kentucky**, **Ohio**, and **Missouri** do not have state-level FACs.

Table 6: Freight Advisory Councils and Similar Bodies

State	Name	Members	Schedule	Contact
Illinois	Freight Advisory Council	~42	2x-3x per year	Jim Durako (217) 785-2353 james.durako@illinois.gov
Indiana	Conexus Indiana Logistics Council	~50	3x-4x a year	David Holt (317) 638-2108 dholt@conexusindiana.com Katie England (317) 234-7911 Kengland1@indot.in.gov
Iowa	Iowa Freight Advisory Council	~32	Quarterly	Garrett Pedersen (515) 239-1520 Garrett.pedersen@dot.iowa.gov
Kansas	Freight Advisory Committee	24-30	Quarterly	John Maddox (785) 296-3228 johnm@ksdot.org
Kentucky	TBD	TBD	TBD	TBD – creating a FAC by August 2016
Michigan ¹	Commission for Logistics and Supply Chains	7	Quarterly	TBD, in transition.

¹ All members are appointed by the governor.

Minnesota	<u>Freight Advisory Committee</u>	39	Quarterly, with semi-annual events	John Tompkins (651) 366-3724 John.Tompkins@state.mn.us
Missouri	Freight Steering Committee	21	Monthly	Disbanded after plan completed. Currently setting up regional FACs including St. Louis, Kansas City, and Springfield. All seven DOT district offices will have their own FACs, which will make up a state FAC.
Wisconsin	<u>Freight Advisory Committee</u>	45	Biannual	Ken Brotheridge (608) 266-9476 Kenneth.Brotheridge@dot.wi.gov

Best Practices for FAC Outreach

FAC Outreach Best Practices	
<ul style="list-style-type: none"> • Use a manufacturers survey to get “low hanging fruit” action items – easy to build trust. • Implementation plan demonstrates that FAC feedback will be valued or useful. • Initiative/recognition from Governor makes attendance prestigious. • Have a single point of contact for freight-related issues • Attend industry events • Develop fast action response plan • FAC membership should reflect industries across the state 	

Minnesota was one of the first states in the nation to create a FAC. One of their best practices was creating a manufacturers survey, which helped identify easy action items that the DOT could work on to build trust. For example, some manufacturer surveys identified snow plow routes and schedules that could be modified or communicated to better meet business needs. Changing such items can be an easy task for the DOT and acting on them builds trust with the private sector. Additionally, FAC-supported manufacturer surveys helped supplement the FAF data that Minnesota uses to forecast freight flows and supported freight plan development.

Minnesota created small working groups and task forces within the body of their FAC so that interested members could engage more deeply on specific issues that matter to them. The FAC also creates whitepapers and is seen as a research resource that adds to MnDOT’s knowledge base.

In lieu of a more traditional FAC, **Missouri** created a Freight Steering Committee (FSC) to support the creation of their state freight plan. The FSC consisted of nine MoDOT staff, private sector representatives, and three additional ex officio members from MoDOT. The FSC met monthly to provide feedback, review materials, and connect MoDOT to other freight stakeholders. To get feedback from stakeholders at large, MoDOT conducted interviews with 53 key freight stakeholders in the state. This approach was employed because Missouri had limited time to involve industry in the freight plan, and had not yet developed an implementation plan. Like Minnesota, Missouri also used a survey to collect information from stakeholders. Missouri is also working to establish regional FACs in each of its seven district offices. These regional FACs will be used form a statewide FAC in the future.

Indiana also had a unique format for their FAC. INDOT relies on the Conexus Indiana Logistics Council, a privately organized group composed entirely of private sector stakeholders as their FAC. The Logistics Council is used to gather feedback on plans, policies, and legislation.

Minnesota, Missouri and Kentucky recommended creating an implementation plan as a way to increase stakeholder buy-in with the FAC. By showing exactly what will be done with the results of the state freight plan, the DOT can demonstrate that FAC members will receive some value for the time they contribute.

Kansas employs a “four meeting” approach to engagement with its FAC. Any topics or issues brought to the FAC must be solved or completed within four meetings. This approach helps demonstrate KDOT’s commitment to using FAC involvement in practical ways and demonstrates that FAC members’ feedback will have real-world results. One **Kansas** FAC member noted how membership in the FAC “put their faith back in government,” saying that was how they should work to invest and keep their efficiencies. (Maddox, 2015)

Iowa recommends getting feedback from the private sector early and often. They noted that frequency created dialogue, and then partnership and trust with private industry. Now, some private firms are considering using their resources to work together on freight policy. Iowa also emphasized having broad representation across transportation and industry was key to gathering useful information and fostering cooperation.

Best Practices for Collaboration within the Government

MAASTO states also provided insight into how to build relationships with freight stakeholders within the DOT and the state government. A common theme shared by Indiana, Iowa, and Kentucky was the importance of building connections within the DOT. Minnesota and Kansas stressed that they tried to include all DOT divisions in creation of the freight plan. Michigan also mentioned that working closely with the regional FHWA office will help ensure that the plan meets the current requirements. Table 7 lists the DOT divisions, state agencies, and miscellaneous stakeholders that are involved with each state’s freight work.

Table 7: Intragovernmental Stakeholders

State:	DOT Division	State Government	Miscellaneous
Illinois	<ul style="list-style-type: none"> • Planning 	<ul style="list-style-type: none"> • Agriculture • Commerce • Natural Resources 	<ul style="list-style-type: none"> • MPOs • USACE • Historical Preservation
Indiana	<ul style="list-style-type: none"> • Multimodal Freight • Technical Planning and Programming 	<ul style="list-style-type: none"> • Agriculture • Economic Development 	<ul style="list-style-type: none"> • Port of Indiana • Governor’s Blue Ribbon Panel
Iowa	<ul style="list-style-type: none"> • Performance and Technology • Planning Programming and Modal • Motor Vehicles – OSOW • Highway Division 	<ul style="list-style-type: none"> • Iowa Economic Development Authority • Department of Agriculture • Department of Natural Resources 	<ul style="list-style-type: none"> • Iowa Utility Board • MPOs and RPAs • USACE
Kansas	<ul style="list-style-type: none"> • Engineering • Operations • Planning • Fiscal/Asset Management <p><i>Works to include all divisions in freight plan</i></p>	<ul style="list-style-type: none"> • Commerce • Agriculture • Revenue 	<ul style="list-style-type: none"> • Local Partners • MPOs • Industry Associations • Class I and Shortline Railroads • Trucking • Agriculture • Manufacturing

State:	DOT Division	State Government	Miscellaneous
			<ul style="list-style-type: none"> • OSOW Stakeholders • FHWA • Chambers of Commerce • Economic Development Organization
Kentucky	<ul style="list-style-type: none"> • Planning • Commercial Vehicles • Enforcement • Maintenance 	<ul style="list-style-type: none"> • Economic Development • Environment 	<ul style="list-style-type: none"> • Homeland Security
Michigan	<ul style="list-style-type: none"> • Planning • Rail • Aeronautics • Operations • Public Involvement • Communications 	<ul style="list-style-type: none"> • Agriculture and Rural Development • Michigan Economic Development Corporation • Environmental Quality • Natural Resources 	<ul style="list-style-type: none"> • USDOT Modal Administrations • Customs and Border Protection
Minnesota	<ul style="list-style-type: none"> • Planning • Bridges • Pavement • Traffic Forecasting • “Every point in organization has touched freight planning” 	<ul style="list-style-type: none"> • Employment and Economic Development • Agriculture 	<ul style="list-style-type: none"> • Working Groups for Freight Plan • Freight Plan Steering Committee
Missouri	<ul style="list-style-type: none"> • Planning • Multimodal • Motor Carrier Services • Chief Engineer • Community Communications • Environmental • District Engineers 	<ul style="list-style-type: none"> • Agriculture • Economic Development 	<ul style="list-style-type: none"> • FHWA
Ohio	<ul style="list-style-type: none"> • Jobs and Commerce • OSOW Permitting • Port Authorities Council • Statewide Planning 	<ul style="list-style-type: none"> • Agriculture • Natural Resources • Public Safety • Economic Development (Jobs Ohio) • Development Services Agency 	<ul style="list-style-type: none"> • Ohio Rail Development Commission • Airport and River Port Authorities • Turnpike and Infrastructure Commission • Rail Development Commission • Development Services Agency • Public Utilities Commission • MPOs/RPOs
Wisconsin	<ul style="list-style-type: none"> • Investment Management (DTIM) • Planning and Econ Dev. • Transit, Local Roads, Rails & Harbors • Aeronautics • Public Safety (DSP) • Motor Vehicles (DMV) • Transportation System Development 	<ul style="list-style-type: none"> • Wisconsin Economic Development Corporation • Division of Agriculture, Trade, and Consumer Protection • Division of Natural Resources 	<ul style="list-style-type: none"> • EPA • Manufacturers and Commerce • Wis. Transportation Builders Assoc. • Motor Carriers Association • Transportation Development Assoc. • MPOs and RPCs • Tribal Governments

Most Common Intragovernmental Stakeholders and Partners	
Agency	Number of States
Commerce / Economic Development	10
Agriculture	9 – IL, IN, IA, KS, KY, MI, MN, MO, OH
Natural Resources / Environmental Protection	6 – IL, IA, MI, KY, OH, WI

Government Stakeholder Best Practices
<ul style="list-style-type: none"> • Get other agencies and divisions involved to create ownership in freight work. • Create an internal DOT freight stakeholder group. • Work to be freight experts, and recognized as such so you are included in other agency work. • Work closely with your regional FHWA office. • Consideration of freight and economic data other agencies might have. • Conduct value mapping of freight activities in agency.

Including other DOT divisions in the freight plan was identified as a significant way to support the institutionalization of freight across the agency and was mentioned by a number of states. **Indiana** noted that getting other agencies and divisions involved provided ownership in the freight component of freight planning, and **Kentucky** highlighted the potential of the freight planning as a means to getting the freight office included in other agency work. **Iowa, Michigan** and **Wisconsin** also mentioned how they had created internal freight stakeholder groups in the DOT, which helped keep everyone updated about freight-relevant work and streamlined executive approvals of plan sections. **Iowa** also created a “Freight Value Stream Map” to figure out what role everyone at the DOT plays in freight.

Another emerging theme is the need for public education about the value of freight and the importance of a robust freight system. In many states, portions of transportation and freight funding comes from the general fund, and must “compete” against other legislative priorities. **Ohio** noted that better outreach was necessary to help the public understand the funding dilemmas faced by the DOT and the importance of a well-maintained transportation system. This highlights a possible area for collaboration across the region: marketing the freight system, demonstrating its importance to the economy as well as the importance of good maintenance.

Conclusion

While previous concerns about private sector participation in FACs have mostly been resolved, it is important to show the value and the importance of private sector involvement. When possible, meeting summaries and annual reports to the FAC could overview the actions taken by the DOT to advance the FAC agenda. The next section will explore how MAFC states fund their freight infrastructure, and the evolving multimodal approached developing across the states.

Multimodal Funding Programs

Freight-specific infrastructure funding programs, especially multimodal programs, can give states flexibility in how they address the development and maintenance of the freight system. Additionally, a multimodal approach attracts private-sector participation with the DOT or FAC. This section describes the legislation and literature surrounding funding for freight infrastructure, summarizes each state's funding approaches for freight, and presents best practices for dedicated freight funding.

Policy Review

The National Freight Strategic Plan identifies a lack of funding as one of the major bottlenecks that threatens the U.S. freight system. The plan notes that investment has not kept up with aging infrastructure and increasing demand. Further, the disparity between needed investment and actual investment could make goods more expensive for consumers and put American industry at a disadvantage. The plan recommends enhancing existing freight funding sources, like TIGER and TIFIA, and developing new freight funding sources, like FASTLANE grants. These recommendations are supported by reports from the Government Accountability Office and the RAND Corporation, who both identified a lack of flexible, freight-specific funding as a major threat to the well-being of the freight system. Conversely, there is concern about the reliance on competitive programs as applications are resource-intensive for agencies, and their outcome is uncertain.

Federal support for funding freight began in 1995 with the creation of the State Infrastructure Bank (SIB) program. This was followed by the Transportation Infrastructure Finance and Innovation Act (TIFIA), which provided funding for improvements at publicly owned intermodal facilities. Funding options increased under SAFETEA-LU, which created the Freight Intermodal Distribution Pilot Program and the National Corridor Infrastructure Improvement Program, lowered the requirements for TIFIA funding, and expanded the SIB. MAP-21 offered increased federal cost share for highway projects identified in approved state freight plans, which was removed in the most recent FAST Act.

The FAST Act represents a major change in how the federal government approaches freight programs and funding. Over the next five years, National Highway Freight Program (allocated based on Highway Trust Fund apportionments) has been allocated \$6.2 billion, and the FASTLANE program (disbursed through grants) has been allocated \$4.5 billion. In a move that recognized the importance of regional cooperation, the federal government also allows Nationally Significant Freight and Highway Projects funding to be awarded to groups of states and local governments for regional projects.

MAASTO states now have more federal freight funding available than ever before. Over the next five years, MAFC states have been allocated a total of \$1.38 billion for National Highway Freight Program projects (AASHTO, 2015). This \$1.38 billion combined with the \$4.5 billion available for Nationally-Significant grants gives MAFC states an unprecedented opportunity to collaborate and improve the performance of their states and the region as a whole. In addition to National Highway funding, MARAD funding for the marine highways program remains active across the MAFC region and TIGER grants have been used on multimodal freight projects.

Table 8: Estimated National Freight Program apportionments for MAFC members, FY 2016-2020²

	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	State Total:
Illinois	\$41,247,000	\$39,453,000	\$43,040,000	\$48,420,000	\$53,800,000	\$225,961,000
Indiana	\$27,826,000	\$26,617,000	\$29,036,000	\$32,666,000	\$36,295,000	\$152,441,000
Iowa	\$14,373,000	\$13,748,000	\$14,998,000	\$16,873,000	\$18,748,000	\$78,741,000
Kansas	\$11,040,000	\$10,560,000	\$11,520,000	\$12,960,000	\$14,400,000	\$60,478,000
Kentucky	\$19,437,000	\$18,591,000	\$20,282,000	\$22,817,000	\$25,352,000	\$106,478,000
Michigan	\$30,613,000	\$29,282,000	\$31,944,000	\$35,937,000	\$39,930,000	\$167,704,000
Minnesota	\$19,014,000	\$18,187,000	\$19,840,000	\$22,321,000	\$24,801,000	\$104,162,000
Missouri	\$27,647,000	\$26,445,000	\$28,849,000	\$32,455,000	\$36,061,000	\$151,455,000
Ohio	\$39,020,000	\$37,324,000	\$40,717,000	\$45,806,000	\$50,896,000	\$213,763,000
Wisconsin	\$21,961,000	\$21,006,000	\$22,915,000	\$25,780,000	\$28,644,000	\$120,306,000
Year Total:	\$252,177,000	\$241,213,000	\$263,141,000	\$296,034,000	\$328,926,000	
Grand Total:						\$1,381,491,000

State Practices

The many different freight funding programs in place across the MAFC are described in the table below, which lists the name of the program, which modes are eligible to receive program funds, how much funding is available, and where that funding comes from. Links to each program, when available, are provided in their names.

Table 9: MAFC State Multimodal Programs and Funding Sources

State	Program	Intended Modes	Amount Available	Funding Source
Illinois	State Loan Repayment Fund	Rail	\$2.7 million in 2016	Loan repayments (previously General Fund)
	Rail Freight Loan Repayment Fund	Rail	\$250,000 in 2016	Loan repayments, with grants from federal government
Indiana	<u>Grade Crossing Fund</u>	Rail, Road	\$500,000 - \$750,000 annually	General Fund (RRGC)
	<u>Industrial Rail Service Fund</u>	Rail	Approximately \$2 million annually	Dedicated tax

² Estimated values from AASHTO:
http://www.dot.ca.gov/hq/transprog/map21/implementation/aashto_sum_fastact_121615v2.pdf

State	Program	Intended Modes	Amount Available	Funding Source
	Ports of Indiana	Water	Varies by year and project	Port charges, facility leases, bonds
Iowa	<u>Revitalize Iowa's Sound Economy</u>	Local Roads	\$18 million	Road use tax
	<u>Railroad Revolving Loan and Grant</u>	Rail	Varies, depends on repayments	Loan repayment
	<u>Highway-Railroad Crossing Program</u>	Rail, Road	\$4.9 million	Federal Government
	<u>Railroad Rehabilitation and Improvement Program</u>	Rail, Intermodal	Varies	FRA Funds
	<u>Iowa Clean Air Attainment Program</u>	Road	\$4 million	CMAQ
	<u>State Airport Improvement Program</u>	Air	Varies, depending on size of airport.	Federal AIP
	<u>LIFTS – Linking Iowa's Freight Transportation Program</u>	Intermodal projects	\$2.6 million	One-time withdrawal from SIB, awarded as grants.
Kansas	<u>State Rail Services Improvement Fund</u>	Rail	\$5 million annually	Transfer from state highway funds.
	<u>Grade Crossing Improvement</u>	Rail, Road	\$10.5 million annually	Federal funding, General Fund
	<u>Economic Development</u>	All	\$10 million annually	KDOT Set-aside
Kentucky	KY Rail Assistance	Rail	\$1.6 million per year, FY17-18	General Fund
	KY Riverport Improvement	Water	\$500,000 per year FY17-18	General Fund
Michigan	<u>Transportation Economic Development Fund (TEDF)</u>	Road	~\$135 million (2014)	Michigan Transportation Fund (MTF) administered by MDOT
	<u>Freight Economic Development Program</u>	Rail connections	~\$1.5 million (2015), varies by year	Comprehensive Transportation Fund
	<u>Michigan Rail Loan Assistance Program</u>	Rail infrastructure maintenance	~\$6.4 million (2014)	Loan repayments
	<u>State Infrastructure Bank Loans</u>	All modes	Varies on repayment	Loan Repayments
	<u>Aeronautics Loan Program</u>	Airways	Max \$100,000 per project	Aeronautics Fund, General Fund
Minnesota	<u>Rail Service Improvement</u>	Rail	Loan repayments	Max \$200,000 per project
	<u>Port Development Assistance</u>	Water, intermodal connections	\$2.75 million (2014)	General Fund
	<u>Grade Crossing Safety</u>	Rail, Road	\$6 million	FHWA Section 130
	<u>Transportation Economic Development</u>	Road, Rail	\$30 million	Trunk highway funding, general obligation bond

State	Program	Intended Modes	Amount Available	Funding Source
Missouri	<u>Corridors of Commerce</u>	Road	\$25 million	Bonds
	<u>Freight Enhancement Program</u>	Rail, Water, Air, and equipment for freight movement at any facility	\$1 million	State Transportation Fund
	<u>Port Capital Improvement Fund</u>	Water	\$3 million	General Revenue
	<u>STAR Loans</u>	Multimodal Infrastructure	Varies based on repayment	Loan repayment (Started at \$2.5m)
	<u>Grade Crossing Safety Program</u>	Road, Rail	\$5.9m federal \$1.2m state	Federal funding, state grade crossing safety account
Wisconsin	<u>Transportation Economic Assistance</u>	All modes	\$6.8 million	Transportation Fund
	<u>Freight Rail Infrastructure Improvement Program</u>	Rail	Depends on loan repayment	Loan repayment
	<u>Freight Railroad Preservation Program</u>	Rail	\$52 million (2013-2015)	Bonds
	<u>Harbor Assistance Program</u>	Water	80% of eligible project cost, 50% of cost if USACE is financing	Bonds
	<u>Airport Improvement Program</u>	Air	Varies based on federal funds. Only MKE qualifies.	FAA Grants
	<u>State Infrastructure Bank</u>	Road, Rail, Water	Variable	Loan repayment

Table 10: MAFC State Multimodal Freight Category Funding Totals

Category	Total Amount Available
Estimated total amount available for <i>any</i> kind of freight ³	\$339 million
Estimated total amount available for ROAD	\$262 million
Estimated total amount available for RAIL	\$178 million
Estimated total amount available for MARITIME	\$26 million
Estimated total amount available for AIR CARGO	\$23 million

³ Calculation Method: only funds that had a discrete amount available were used to calculate totals. Therefore, no programs with amounts listed as “variable” were included in the totals. Amounts available were aggregated without regard for the year the amount was available, and only one year’s worth of funding was factored into the total.

In the MAFC, states have estimated that a minimum of \$339 million is available for freight-specific projects between 2014 and 2016. The true amount available for freight projects is higher as some projects rely on revolving loan funds, whose available funds vary from year to year and were not included in the tables.

Illinois has about \$3 million available for the freight system in 2016. Most of their freight funding is done via a revolving loan fund, with some grant support from the federal government.

Indiana offers funding for both rail and water programs. However, the Ports of Indiana is a semiprivate agency outside of the DOT that manages port improvements based on business at its three ports.

Iowa has a variety funding options. Their largest fund, the “Revitalize Iowa’s Sound Economy” or RISE program provides \$18,000,000 for local road improvements, and is managed by the Iowa Department of Transportation. Another unique program is the LIFTS – Linking Iowa’s Freight Transportation program, which is a onetime withdrawal from the State Infrastructure Bank meant to benefit intermodal projects.

Like Iowa, **Kansas** has a fund (\$10 million) available for all modes that is meant to facilitate the recruitment and growth of business through transportation improvements.

Kentucky recently created Shortline Rail and Riverport improvement programs.

Michigan has \$135 million Transportation Economic Development Fund, which is meant for road improvements, and is administered by MDOT’s economic development office. The state also funds projects in all other modes through a variety of smaller programs.

Minnesota offers a variety of programs, including a Port Development fund allocated for \$2.75 million in 2014, a Transportation Economic Development Fund for rail and road projects with \$30 million, and a Corridors of Commerce program for road projects totaling \$25 million.

Missouri also offers funding specifically for water, its Port Capital Improvement Fund has \$3 million for maritime projects. It also offers intermodal funding through the Freight Enhancement Program, which provides \$1 million for rail, water, air, or equipment for freight movement at any freight facility.

Wisconsin has a range of programs similar to **Michigan** and **Minnesota**. In particular, it has a well-funded Freight Railroad Preservation Program (FRPP) which was allocated \$52 million between 2013 and 2015, while the Freight Rail Infrastructure Improvement Program (FRIIP) provides loans on a revolving basis. Its Harbor Assistance Program (HAP) is also available to provide between 50% and 80% of the cost of improving harbor infrastructure.

Best Practices

Iowa, Kansas, Michigan, Minnesota, and Wisconsin have well-funded freight programs that are linked to economic development in the state. Connecting transportation system improvements to economic development is a means of ensuring that freight programs receive some funding, even if they must “compete” against other legislative priorities for general funds.

Indiana, Kentucky, Minnesota, Missouri, and Wisconsin all have funding programs dedicated solely to maritime infrastructure. As the cost of diesel fuel rises, and freight traffic increases on rail and road infrastructure, the potential value of the maritime transportation mode will rise. MAASTO states located on the Mississippi or Ohio river systems, or on the Great Lakes can expect to see increased port development in response to these trends.

Broadly, a best practice is to ensure that the state funds a variety of modes and that funding is relatively flexible. Multimodal funding promotes the agency to the full range of transportation

sectors, and in doing so provides options for new development and economic growth. It should also be recognized that there are spillover benefits to multimodal freight investments. For example, improving rail or maritime infrastructure may reduce truck traffic, improving service on roads. Another possible best practice is working with the state's economic development agency to leverage funds for economic development to include or improve freight infrastructure.

Multimodal Funding Best Practices

- Develop funding partnerships to link freight investment to economic development work
- System funding programs should cover all modes
- Consider maritime projects in funding programs
- Market importance of freight to economy to build support for multimodal funding

States were also asked to provide feedback on their most common freight funding challenges. A frequent concern was the relative inflexibility in federal-level funding, which focuses on the highway mode. While the Nationally Significant Highway and Freight Projects fund sets about \$500 million aside for non-road expenditures, the federal government's funding strategy still leans strongly towards road projects. Although funding programs vary across states, many MAFC members shared similar concerns and challenges around freight funding:

List of Freight Funding Challenges

- Federal funding is relatively inflexible, and focuses on highway mode
- Insufficient freight funding to support larger projects
- State highway funds may be constitutionally constrained to highway expenditures – even when expenditures on other modes would improve highway performance
- Difficult to compare projects across modes (comparing trains and barges)
- If discretionary money comes from the legislature, then it has to “compete” with other priorities
- Addressing all modes with funding programs
- Competitive grant programs that are resource intensive with no guaranteed outcome

Conclusion

Transportation funding and freight funding in particular has been challenging based on a very limited increase in funds and a very real increase in construction and maintenance costs. This is compounded by the fact that each state has a unique political and economic atmosphere that may enable or prevent action on certain types of funding. For example, some states are constitutionally constrained to only spend highway funds on highway projects, and some states have constitutional prohibitions on P3s. A well-designed and marketed freight plan combined with visible support from FAC members could be helpful in building political support for freight investment. In every one of the state interviews, increased awareness and education about the importance of freight transportation and its relationship to economic development was cited as a key function of their freight plan, and one of the values of creating a FAC.

Freight Data Sources

While data alone cannot guarantee good decisions, informed choices are not possible without good data. –Meyburg et al, 2003.

Accurate freight data is important to ensuring that sound freight policy decisions are made. There is a wealth of data available to guide plan creation and decision making, but states are often limited by resource constraints or by the fact that the benefits of the data have not been recognized. Further, open data sources are dated, such as the Commodity Flow Survey (every 5 years), and Waterborne Commerce Statistics (every 2 years). In the MAFC, freight data use varies widely, but there are some frequently used resources like the Freight Analysis Framework (FAF) and the Surface Transportation Board (STB) Waybill Sample. This section describes legislation and literature relevant to freight data and compares the types and costs of data currently used by MAASTO states.

Legislative Review

Freight data has been mentioned in federal legislation since ISTEA, which established the Office of Intermodalism and tasked it with creating a database tracking the volume and patterns of goods moved in intermodal transportation along with the investment in intermodal facilities.

TEA-21 and SAFETEA-LU continued these requirements for data collection. MAP-21 instructed the DOT to develop tools for evaluation of freight-related projects which included identifying freight data elements and consideration of freight flow data collection. The FAST Act renewed MAP-21's commitment and recommended that USDOT reexamine freight flow data collection to reduce gaps and deficiencies in freight transportation demand forecasting. Most recently, freight and operations data regarding trucking was deemed so inadequate as to be of no use for policy analysis (Singer 2016).

Policy Review

In the literature, authors agree that a lack of freight data is a common stumbling block for freight planning efforts (NCHRP Report 594). The literature has two major research areas on the use of data in freight planning. First is research related to data that captures the impact to economic development, and second is research on incorporating freight data into demand models.

When it comes to linking freight data collection to planning efforts, a Cambridge Systematics report suggests that the DOT should ensure that MPOs and other agencies have access to the same consistent set of commodity flow data. The DOT should also place an emphasis on the relationship between transportation and economic competitiveness, and use this emphasis to link transportation data collection with economic development efforts. Making stakeholders aware of the possible economic benefits of reliable, consistent freight data (like more accurate modeling, and better infrastructure planning) could also encourage cooperation from private stakeholders, which is discussed below. It is also important that freight data collection be linked to existing planning efforts, as that link may build support for freight planning (Cambridge, 2003).

The Texas DOT has produced a number of reports describing how data can be collected from the private sector. Gathering data from private stakeholders requires a certain level of trust, and TxDOT suggests that states should develop a formalized data sharing program that includes

certain protections for private stakeholders, like the ability to provide anonymized data. Another major consideration, as discussed in section 2.1 is the need to minimize administrative burden for private firms, who may be discouraged from participating if they have to clean their own data (Seedah, 2014).

State Practices

The table below illustrates the variety of data sources currently used in the MAFC. There are some commonalities among states. For example, many states use the USDOT-supplied Freight Analysis Framework to understand freight flows. Most other states use data from a variety of state agencies to help inform their freight plans. In general, states creating plans on their own are using freely provided external data and internally-generated data from partnering agencies. Consultant led plans generally relied on proprietary data such as TRANSEARCH or InfoUSA. **Iowa** had the most number of sources listed, at 16; this wide range of sources reflects the innovative modeling the state is currently doing. We estimate that MAFC members have spent at least \$2.2 million on data for freight planning between 2006 and today.

Table 11: Freight Data Sources Used in the Most Recent Freight Plan and Supporting Materials

State	Data Source	Purpose	Cost
Illinois	FAF	Forecast, trucking data, air freight data	Free
	STB Waybill Sample	Railroad data	\$200*
	TRANSEARCH	Waterborne data, Rail data	Data unavailable
	USACE Waterborne Commerce Statistics	Waterborne data	Free
Indiana	REMI Forecast	Forecasting economic activity	\$700,000 purchase \$300,000 to maintain
	FAF 3.4	Economic activity	Free
	INDOT Statewide Travel Demand Model	Economic activity	Free (Developed in-house)
	TREDIS	Forecasting model from Purdue	\$25-30,000 annually
	Major Corridor Investment Benefit Analysis System	Cost-Benefit Analysis	Free (Developed in-house)
Iowa	Cass Information Systems	Freight index	Free
	EDR Group	Import/export freight flow data	\$15,000 annually for 1 login, \$500 for additional logins, \$10,000 for additional state data for adjacent states
	FAF	Domestic commodity flows and disaggregated data for statewide modeling.	Free
	SMC3 Czarlite Rate	Shipment data	\$5,000 annual
	PC*Miler Rail	Mileage data	\$2,656 annual
	Misc	Bill of lading data from contributing companies	Free
	InfoUSA	Used to disaggregate FAF data to county level	\$2,000
	INRIX Traffic Data	Bottleneck identification and highway improvement prioritization.	\$778,248 annual

	Air cargo totals from IA commercial airports	Air commodity flows	Free
	US Census Bureau	County business patterns data	Free
	US Bureau of Economic Analysis	County employment data	Free
	USDOT Commodity Flow Survey	Freight flow information	Free
	US Dept. of Agriculture	Grain Transportation Report	Free
	USACE	Lock Performance Monitoring Data, Waterborne Commerce Statistics	Free
	IA DOT	Truck traffic and mileage data	Free
	Railroad Annual Reports	Current conditions and trend information	Free
Kansas	Woods and Poole	Describing the industrial make up of Kansas economy, including geographic distribution and each industry's contribution to Kansas' output.	Data unavailable
	Moody's Economy.com		Data unavailable
	US Census		Free
	US Bureau of Economic Analysis		Free
	KS Department of Revenue		Free
	KDOT GIS files	Describing Kansas' multimodal freight infrastructure, including extent, performance, and operational characteristics.	Free
	USACE Waterborne Data		Free
	TRANSEARCH	Describing commodity type, volume, and value of freight movements relative to Kansas. Assigns freight movements to specific infrastructure.	Data unavailable
	County Agricultural Production Profiles		Free
	Industry Data		Free
	National Agricultural Statistics Service		Free
STB Waybill Sample	\$250*		
Kentucky	FAF	Flows and forecasts	Free
	STB Waybill Sample	Rail flows	Free
	Truck Percentage of Traffic	Analysis of freight highway network	Free
	Volume Service Flow		Free
	Truck Data		Free
	Commodity Flow Survey		Free
	Annual coal haul reporting		Free
NPMRDS	HERE data	Free	
Michigan	TRANSEARCH	Commodity flows and forecasts	N/A
	FAF	Commodity flows and forecasts	Free
	InfoUSA	Employment and economic info	\$24,000
	STB Waybill	Rail flows	\$250*
	USACE Waterborne Commerce Statistics	Waterborne flows	Free
	Air Cargo	MDOT Aeronautics provides information on air cargo	Free
Minnesota	FAF	Commodity flows and forecasts	Free
	Past Studies	Forecasting	
	In-state manufacturing studies		
	Data from freight workshops		
	Data from FAC planning committee		
Market research			
Missouri	Info USA	Business information	\$10,000
	TRANSEARCH	Commodity Flows	\$180,000

	STB Waybill	Rail data	\$200*
	USEIA	Pipeline data	Free
Ohio	FAF	Commodity flows	Free
	TRANSEARCH	Commodity flows	Included in consultant cost
	Tompkins Survey	Industry information	
	Statewide Highway Traffic Model	Economic Analysis: estimated impact of specific system investments	Free
Wisconsin	TRANSEARCH	Freight flows (purchase contained 3 years)	\$180,000
	STB Waybill Sample	Rail freight flows	\$200*
	InfoUSA	Business directory and data	\$2,000
	Multimodal Network Tool	Forecasts	Free
Estimated Total Regional Expenditures for Data:			\$2.2 million
* The STB Waybill Sample cost is \$200 for the dataset plus \$50 for each additional user.			

The most common data source is the Freight Analysis Framework (FAF), which is used by six MAFC states. The STB rail waybill sample and IHS TRANSEARCH are used by five states. The U.S. Army Corps of Engineers' Waterborne Commerce Data and InfoUSA are each used by three states. While free sources like the FAF and Waterborne Commerce Data are commonly used, paid sources like TRANSEARCH and InfoUSA are widely used, as well. In terms of cost, INRIX Traffic data, which costs \$778,000 annually is the most expensive source, with TRANSEARCH (at about \$100,000 for a one-year dataset) coming in second. The STB Waybill sample's cost varied between states based on the number of users; the data costs \$200 per state, with an additional \$50 charge for each authorized user.

Best Practices

1. Utilize open source data such as the FAF. It usually provides the required level of accuracy for federal reporting.
2. Another frequent suggestion is that states should integrate considerations of freight into their travel demand models. **Indiana** and **Iowa** have already done this. For those without considerations of freight elements (like truck VMT or truck travel time) in their models, additional data may be required first.
3. States should collect their own data, as is done by **Michigan, Minnesota, and Ohio**. **Minnesota** has demonstrated that valuable information can be gathered from existing stakeholders using manufacturer surveys. This data can be generated at a low cost and can reveal "low hanging fruit" that DOTs can act on quickly to demonstrate their commitment to stakeholder engagement. For example, Minnesota used data collected from industries to change snow plow routes and increase communication. States considering a more dedicated data collection system that draws from the private sector may want to consult the reports created by Texas DOT, which are listed in the additional reading appendix.
4. Partner with agencies and groups like the Department of Economic Development, State Port Authority, or Department of Agriculture to identify and utilize their data, which is often timely and accurate. All MAFC states indicated that they already partner with their

state's economic development agency. Almost all MAFC members partner with their Agriculture department, so the potential connections for data sharing often exist.

MAFC states have paid at least \$2.2 million for freight data in the past 10 years, and a possible best practice and area for cooperation could be negotiating group discounts for data services like TRANSEARCH or InfoUSA. Not only could group packages provide cost savings, states may have access to more data than they did previously, which could be used to further improve their own freight flow models, and help provide insight into regional flows of freight in the MAFC as a whole.

Best practices for freight data collection and use

- Utilize open source datasets, like the Freight Analysis Framework
- Integrate freight considerations into travel demand models\
- Consider in-house traffic counts, rest area traffic counts, and OSOW permit data as viable data sources.
- Collect your own data
- Collect data from other state agencies like Agriculture or Commerce.
- Consider purchase of region-wide data sets if discounts could apply.

Conclusion

Data is an essential ingredient for a successful freight plan, and MAFC member states use a wide range of free and paid data sources to support their freight planning efforts. The states' most commonly-used source was the Freight Analysis Framework, followed by the STB Waybill Sample and TRANSEARCH. For the MAFC, there may be potential benefits from collecting and sharing similar data across the region, *or* using economies of scale to negotiate region-wide discounts on certain sources.

Economic Analysis

Strong expected growth in freight volumes and cargo value means that maintaining America's freight system will be essential to ensuring future economic success. Investment in infrastructure can also have major economic benefits of its own. For example, every dollar of highway spending under the Recovery Act generated \$3 in output gains (National Economic Council, 2014). The Presidential Council of Economic Advisors also estimates that every \$1 billion of federal transportation investment supports 13,000 jobs for one year (FHWA, 2016). In the MAFC, a 2003 study commissioned by the Wisconsin Transportation Development Association estimated that a 21-year, \$3.2 billion highway system investment could yield \$9.7 billion in benefits over those 21 years (Cambridge Systematics, 2003).

While freight investment can yield economic benefits, DOTs are facing resource limits, and must educate their stakeholders about the value of freight and infrastructure. Economic analysis is an important aspect of freight planning because it demonstrates the value of the freight system. A broad-term economic analysis includes anything from simple summaries of a state's freight flows to highly specialized supply chain analyses. Economic analyses can also help determine the economic impacts of infrastructure investment, which is important for project prioritization.

Background

MAP-21 and the FAST Act acknowledge freight's essential role in economic success and recommend strategies to incorporate economic analysis into planning. Both acts made maintaining economic vitality national freight policy goals. Under MAP-21, the USDOT recommended (but did not require) that state freight plans include a description of freight transportation's relationship to the state's economy. States were encouraged to consider topics like identifying important industries and supply chains. MAP-21 also recommended that states prepare a 20-year freight forecast. Today, the FAST Act requires, "an identification of significant freight system trends, needs, and issues with respect to the State." This category could include considerations of freight flows and economic impacts.

State Practices

Economic analyses across MAASTO states ranges from descriptive statistics on commodity flows and value, and the cost of congestion, to analytical models of investments in light of existing traffic levels and predicted growth. Types of analyses also vary by mode. Highway investments are the most common area where economic analysis is applied, but analysis of multimodal investments is becoming more common as is end-to-end supply chain analysis.

Indiana's economic analysis is based on a tool called the Major Corridor Investment Benefit Analysis System, which draws information from the statewide travel demand model, benefit-cost models, and REMI Output. It is used to compare the cost of providing infrastructure improvements against long term changes in real personal income, employment changes, economic changes, and gross state product (GSP) changes. Single projects or entire investment programs can be evaluated, but the benefits of small-scale projects cannot be calculated. Economic measures quantified in Indiana's modeling include: total user benefit, GSP impact, personal income impact, new jobs, and benefit-cost ratio.

Iowa uses a Value, Condition, and Performance (VCAP) matrix to rank its freight projects. Part of the VCAP process includes estimating system travel times with and without certain system bottlenecks. Increases in travel time and distance can be monetized and help determine the economic impact of certain projects. Iowa has also worked to leverage supply chains. After the propane shortage of 2014, Iowa DOT created a Propane Supply Chain Optimization Strategy to understand how the propane market works and define contingencies for future shortages. The supply chain optimization is also used to identify potential supply chain efficiencies that can be used in business attraction.

Kansas was interested in spurring development of an additional truck and rail intermodal facility in the state, especially for agricultural products. KDOT recently completed a Transload Facility Site Analysis, wherein they solicited proposals for intermodal facility sites, ranked those sites, and a site selection committee recommended two sites for development.

Kentucky's next freight plan will have an economic analysis identifying the industries most important to the state and the supply chains that are critical to the state's industries. There will be a focus on supply chains that are important to exports.

Michigan has identified a variety of data measures that can be used to calculate the impact of a project on the movement of freight and the economy. They include: commercial average daily traffic, commodities by value and tonnage, project cost, remaining service life, and level of service. Michigan has also prepared a logistics and supply chain strategic plan to better understand the supply chain "ecosystem" of the state.

Minnesota is maintaining a simple approach for their 2016 plan, with the intention to do more advanced analysis in the future. The plan will describe commodity flows and values, as well as

origin/destination information. MnDOT has also conducted industry interviews and manufacturer surveys. The plan will also describe economic trends and their implications for the state's freight system.

Missouri uses the IMPLAN economic model to determine how freight movements generate economic impacts. These impacts are grouped into three categories:

1. Direct: impacts from transportation providers delivering transportation services as well as impacts from transportation users shipping and receiving goods.
2. Indirect: impacts associated with the supplies that provide intermediate goods and services to the directly impacted industries.
3. Induced: impacts associated with re-spending earned income from both the direct and indirect impacts in the study area.

These impacts are combined and used to estimate the total economic impact of freight movements in a given area. Each impact is measured in terms of employment, income, value added, output, and taxes.

Ohio has been focusing economic analyses on two-lane highways, rather than the interstate system, because two-lane highways have more critical connections to the state's industries. Starting with a pilot project on US-250, ODOT has been performing corridor studies on their highest-volume routes and using these studies to create a list of freight projects for each corridor. These corridor studies include meetings with major industries along the route. To estimate the economic effects of proposed projects, Ohio uses TRANSEARCH, the Tompkins Survey, and their statewide highway traffic model, which has economic analysis elements built into it.

Wisconsin's first freight plan will focus on providing an economic background, emphasize system preservation and provide context for freight movement in the state.

Best Practices

At minimum, a best practice is meeting the requirements of the FAST Act, which requires states to summarize their freight system's significant trends. For MAFC states like **Wisconsin**, **Minnesota**, and **Kentucky** a frequent approach to economic analysis is using commodity flow information to describe the economic context of freight in the state. This task is relatively straightforward, data is generally available, and the approach provides excellent context for the freight plan and can help market the importance of freight infrastructure to other stakeholders.

Conducting supply chain analysis for critical or vulnerable industries is an increasingly popular option. **Iowa** has prepared an in-depth supply chain analysis of their propane industry, while **Missouri's** plan had analyses of major industry chains important to the state. The industries included in the analyses are: soybeans, pesticides, and finished automobiles. **Michigan's** economic development agency has also produced a supply chain strategic plan that could be used to inform transportation investment. In-depth supply chain analysis can be time intensive, so this practice should be reserved for particularly important or vulnerable supply chains.

Best Practices

1. Use commodity flow information to describe the economic context
2. Conduct a supply chain analysis for industries of high importance
3. Survey industry and manufacturers to determine their concerns and needs
4. Work with other agencies (like Economic Development) to determine economic impacts
5. Include all modes in analysis so information is available for the entire freight system.

Conclusion

Economic analysis not only summarizes the economic context of freight in a state, it also can serve as a powerful narrative tool to demonstrate freight's value and to build support for freight investment. As a base, the FAST Act requires states to identify major trends, which include economic elements. As demonstrated across the MAASTO states, there is a wide range of economic analysis types from descriptive statistics on flows and value of goods moved, to the value or change in value based on projects, to end-to-end supply chain analyses. Economic analysis can also highlight sections of the freight system that are economically critical, a key part of freight network design, which will be discussed in the next section.

Freight Network Design

A defined statewide freight network identifies the key highways, railroads, marine facilities, pipelines, and intermodal connectors that are crucial to freight movement and to the economy of the state. A defined network can lay the groundwork for prioritizing projects based on their freight impact. It can also help with OSOW routing and economic development planning. The act of researching and defining the state's freight network can also help DOTs make connections and build trust with private stakeholders, as new routes and areas for investment may be identified. Many states conduct outreach and industry interviews, and rely on FACs to identify and confirm the significant freight system for the state. Eight MAFC states have designated freight networks, and the remaining two are working on creating networks. This section will provide a synthesis of legislation and literature related to network design and identify best practices.

Policy Review

The federal government has worked to identify important freight routes since at least ISTEA, under which congress began designating priority corridors within the National Highway System (NHS). MAP-21 and the FAST Act have established a Multimodal Freight Network (MFN). Under both pieces of legislation, the USDOT used truck volume, geography, population density, metropolitan areas, critical connections, and critical service to industries to inform development of the MFN. The highway portion of the MFN, referred to as the National Highway Freight Network, has undergone expansion from 27,000 miles under MAP-21 to 41,000 under the FAST Act.

Components of the FAST MFN include 41,000 highway miles as well as Class I railroads, major waterways, ports, airports, and other important intermodal facilities. Links to the current system map are available from the FHWA [here](#).

At the state level, MAP-21 recommended that states identify and inventory their freight system assets, and the FAST Act reaffirmed this recommendation. An important element of state-

identified freight assets are critical rural and urban freight corridors. These corridors are designated by states and are identified as corridors that connect to intermodal facilities, provide important alternate routes for freight movements, serve major freight generators or resource deposits, or are important to the overall movement of freight in a region.

Literature Review

Some of the best practices in planning show why designating a network is a good idea. NCHRP Report 594 suggests that a key element of integrating freight into the planning process is having an understanding of the statewide or regional freight system. It notes, “understanding the freight system allows these DOTs and MPOs to more successfully identify and consider freight improvements within the transportation planning and programming process, because they have a better understanding of how freight movements fit within (and affect) the statewide or regional system.” A Cambridge Systematics report from 2003 also notes that “one of the key elements found in the best statewide freight programs is inventory of its system.” The NCHRP report suggests that: 1) developing modal profiles can help determine system bottlenecks, and 2) developing commodity flow summaries from data like FAF or TRANSEARCH can help illustrate which corridors are most important to freight movement. The practices of MAFC members provide additional insight into best practices in network design.

State Practices

Table 12: Formal State Freight Networks

State	Name	Modes Included
Illinois	TBD – In process of creation	TBD
Indiana	Primary Freight Network	Road
Iowa	Iowa Multimodal Freight Network	All
Kansas	Freight Corridors of Significance	Road, Rail
Kentucky	Kentucky Freight Network	Road
Michigan	Michigan Truck Network	Road
Minnesota	Principal Freight Network	All
Missouri	Missouri Freight Network	All
Ohio	Ohio Strategic Freight System	All
Wisconsin	TBD. In process of creation	TBD

Best Practices

Most state freight networks in the MAFC have been created using a combination of economic data, traffic levels, outreach to industry stakeholders, coordination with the state’s FAC, and consideration of freight generators. States use this data to identify which segments of the transportation system are most important for freight movement and economic well-being. Once a network is defined, it is used to assist in prioritizing investments or conduct further research on freight corridors.

Kentucky, Minnesota, Missouri, and Michigan all noted data-driven analysis of networks as a key best practice. Additional support in network identification includes work in **Minnesota** and

Kansas that used stakeholder feedback to inform the designation process. **Minnesota's** industry surveys and working groups were created to understand key freight assets, but were also used as a tool for planning. **Missouri** informed its network designation by identifying census blocks where freight activity was most intense, and designated the top 100 most freight-intensive areas as "freight generators," which helped them understand why much of the rest of the network was performing the way it did. Overall, engaging with the private sector, and using freight flow data like that in the FAF or TRANSEARCH can help identify particularly important corridors.

Stakeholder outreach was another important element for network designation. Several states used their FACs to review data-based networks and identify network elements that were not found during the DOT's initial identification of the freight network. This network-related engagement helps to build a more complete view of the freight network, and helps to build trust with the private sector, as it can show the DOT's commitment to using the feedback provided by FAC members.

Network Designation Best Practices
<ul style="list-style-type: none">• Develop a multimodal network• Use a range of data sources (ex: FAF, volume, density)• Incorporate the FAC's perspective on the network• Vet your proposed network with a large group of stakeholders• Identify freight generators (including specific locations)

Conclusion

Network development helps to ensure the system addresses the state's needs. It is also important to align state and federal networks. For MAP-21 and the FAST Act, the majority of comments to the docket from MAFC states regarded multimodal network components that were not included at the federal level. Aligning these two systems ensures program eligibility for the state system in future freight programs.

Performance Management

Performance management is important for evaluating the DOT's progress toward its freight goals, be they a more reliable system or a greater distribution of freight across modes. Performance measures (PMs) can also be used to evaluate the performance of the national freight network. The FAST Act requires states to report on what performance measures they will use to guide freight investment. State feedback on PMs reflected the relative lack of attention they receive at the national level. In our query on best practices, none of the states identified their PMs or performance management as one of their noteworthy best practices, and adoption of freight-specific PMs has lagged behind the adoption of more generalized PMs. Development and implementation of measures is likely to accelerate once USDOT rules for freight performance management are finalized.

Evolution of Performance Management in Freight

For most of freight planning's existence, the federal government has acknowledged the importance of performance measures but did little to support their development or

implementation in the area of freight. The initial version of ISTEA required states to develop and monitor PMs for intermodal systems, but the bill was later revised to make management systems optional (Czerniak et al, 1996). Subsequent bills instructed USDOT to study model development with a focus on data acquisition and performance monitoring, but did not make any recommendations for measures in relation to freight.

MAP-21 required states to report on performance progress starting in October, 2016, with updates every two years. The report must include performance of the interstate system, progress in achieving all state performance targets, and ways in which congestion bottlenecks in the National Freight Plan are being addressed (Cambridge Systematics, 2015).

In April, 2016, the USDOT released draft rules for performance management with the purpose of supporting four national freight goals: 1) congestion reduction, 2) system reliability, 3) economic vitality, and, 4) environmental sustainability. The draft rules require states to establish targets that could be aggregated at the national level, report progress in a consistent manner, and make significant progress toward goals. The proposed measures are listed below. Additional information can be found [here](#).

Table 13: Proposed Measures from Federal Highway Administration

Generalized Area	Specific Freight-Relevant Measures
Traffic Congestion	<ul style="list-style-type: none"> • Annual Hours of Excessive Delay per Capita
On-Road Mobile Source Emissions	<ul style="list-style-type: none"> • Total Tons of Emissions Reduced from CMAQ Projects for Applicable Criteria Pollutants and Precursors
Freight Movement on the NHS	<ul style="list-style-type: none"> • Percent of the Interstate System Mileage Providing for Reliable Truck Time • Percent of the Interstate System Mileage Uncongested
Performance of the Interstate System	<ul style="list-style-type: none"> • Percent of the Interstate System Providing for Reliable Travel • Percent of the Interstate System Where Peak Hour Travel Times Meet Expectations
Performance of the Non-Interstate NHS	<ul style="list-style-type: none"> • Percent of the Non-Interstate NHS Providing for Reliable Travel • Percent of the Non-Interstate NHS Where Peak Hour Travel Times Meet Expectations
Source: Federal Register rulemaking announcement	

Under MAP-21, the USDOT obtained vehicle probe data, which includes average travel times, for use in performance management (FHWA, 2016). The FHWA uses this information to measure freight performance on certain “commodity corridors.” Measures like average speed, median speed, bottlenecks, and efficiency are used to calculate a freight efficiency index score (FHWA, 2016). In response to MAP-21, AASHTO developed a set of recommended freight performance measures. It recommended that states measure Annual Hours of Truck Delay (AHTD), and Truck Reliability, which would compare actual travel time against expected travel time.

The FAST Act directed the USDOT to establish a port performance statistics program for the nation’s top 25 ports by tonnage, container volume, and bulk volume, and reaffirmed the National Freight Strategic plan’s goal of monitoring and improving freight system performance. It also reaffirmed MAP-21’s requirement that states describe the performance measures that will guide freight-related transportation investment decisions. The National Highway Freight

Program also requires states to meet certain performance targets for freight movement within two years. States that fail to meet their targets must provide an explanation of how performance will be improved in the future.

Literature Review

Due to the historically low profile of freight performance measures, particularly within the national government, less information is available for freight performance measures than other topics of this report. From the start of modern performance management in the 1990s, most literature focused on *how* PMs should be used rather than *what* the measures should be. CFIRE's *Best Practices in Freight Planning* notes that freight measures should meet five major requirements:

1. They should be closely related to the organization's strategic goals
2. They should reflect the range of things important to the organization
3. They should reflect the significant aspects of an issue and be chosen carefully
4. They should be understood
5. They should be used correctly (Guo and Wittwer, 2009)

Another report made similar recommendations, indicating that performance measures should be measurable, efficient, able to be forecasted, and easy to understand (McMullen and Monsere). It is also important to note that performance measures are dependent on data, therefore, a lack of freight data may inhibit the development of effective measures.

State Practices:

As shown in Table 14, freight performance measures represent a broad spectrum of understanding of how the system works and the dimensions state DOTs can control. Three states have no measures currently in use, two more are developing measures, and the remaining five use PMs to varying degrees. While states are working to develop and implement measures in compliance with MAP-21, it appears that PMs are relatively low in priority relative to other freight planning practices. States do frequently track freight measures implicitly—truck crashes, travel time, and reliability—and all provide relevant system information that can be applied to freight. The table below compares the PMs in use, and in development in the MAFC states.

Missouri tracks nine measures related to freight transportation. One of their more unique measures is the truck reliability index, which compares expected vs. real travel times on four interstate corridors in the state. Another innovative measure is “goods movement competitiveness” or “goods movement time and cost.” MoDOT, with the assistance of a consultant, tracks the average movement time and cost for soybeans, pesticides, and finished automobiles. MoDOT believes that these products are a good representation of major Missouri industries, and their travel time and cost is indicative of the state's overall transportation system performance and competitiveness.

Minnesota incorporates some freight-specific safety measures; they monitor truck crash fatalities. One good example of implicit freight measures also comes from Minnesota, where other measures like bridge and pavement conditions are tracked as general PMs but not as specific freight issues. Measures for travel time or efficiency were used by **Indiana, Michigan, Minnesota, and Minnesota.**

Table 14: Performance Measures in Use and Desired

State	Measures in Use	Measures Desired or in Development
Illinois	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • Travel time reliability
Indiana	<ul style="list-style-type: none"> • Travel demand and efficiency • Safety 	<ul style="list-style-type: none"> • None
Iowa	<ul style="list-style-type: none"> • TBD 	<ul style="list-style-type: none"> • Airport LOS • Airport infrastructure condition • Highway conditions • Highway fuel use per vehicle-mile • Highway LOS • Crash Rate and fatalities • Propane storage levels • Delays at pipeline terminals • % of rail capable of 40 MPH or 286K • Crashes at grade crossings • Derailments per millions of ton miles • Lock closures/delays/availability
Kansas	<ul style="list-style-type: none"> • Grants and loans disbursed • Rail track miles improved 	<ul style="list-style-type: none"> • Measures linking impact of freight on economic performance of the state
Kentucky	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • Hours of delay • Congestion • Travel time reliability • Level of service on truck routes • Bottlenecks
Michigan	<ul style="list-style-type: none"> • Freight tonnages • Commercial Vehicle Miles Traveled (CVMT) • Travel time/speed • Crash rates 	<ul style="list-style-type: none"> • More robust bottleneck analysis
	<ul style="list-style-type: none"> • Travel time • Bridge condition • Pavement condition • Truck crash fatalities • Mode share 	<ul style="list-style-type: none"> • Reliability • Commodity value • NHS connections performance • Rail network congestion • Rail service improvement
Missouri	<ul style="list-style-type: none"> • Percent of major highways in good condition • Percent of structurally deficient area on NHS bridges • Number of CMV crashes resulting in injuries or fatalities • Rail crossing crashes or fatalities • Goods movement competitiveness • Goods movement time and cost: soybeans, pesticides, and finished automobiles from Ford and GM • Freight tonnage by mode • Annual hours of truck delay • Truck reliability index on 4 interstate corridors 	<ul style="list-style-type: none"> • None
Ohio	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • TBD

Wisconsin	<ul style="list-style-type: none"> • Delay • Reliability • Incident Response • Winter Response • TEA Grants • On-time Performance • Program Effectiveness • State Highway Pavement Condition (Backbone & Non-Backbone) • State and Local Bridge Conditions • State-owned Rail Condition • Airport Pavement Condition • Roadside Maintenance • Facilities • Injuries • Crashes • Safety & Weight Enforcement Facilities 	
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Best Practices

Looking toward the future, **Kansas** suggested a regional approach to evaluating system performance. With this approach, states would collaborate to identify a handful of commonly measured performance metrics that could be compared across the region. Another common recommendation was to keep performance measurement simple (as it is now), because there is relatively limited data available on the performance of the freight system.

States recommended that future performance measures monitor indicators like system reliability, multistate performance on major highway corridors, impacts of freight on economic performance, mode share, commodity value, and other measures of freight flow. States also identified measures they felt were out of their agencies' control, or didn't reflect their work.

Michigan's thoughts were representative of many states. There is concern that indicators of economic activity, such as rail tonnage, and border crossing volume and tonnage, would be misapplied to freight, as DOTs have little control over the economy as a whole, and thus little control over those indicators. **Minnesota** reports freight tonnage with its performance measures but does not consider it a performance measure per se because tonnage is an output from the economy that MnDOT does not control.

Performance Measurement Best Practices
<ol style="list-style-type: none"> 1. Consider harmonizing performance measures across the MAFC 2. Consider group purchase of data to support PMs 3. Keep measures simple: use easily collected data and make them easy to understand 4. Track economic activity indicators to emphasize the importance of transportation supporting the economy.

Conclusion:

This section synthesized current laws, literature, and state views on performance measures and performance management. State-level development and implementation of PMs has been slow

as states wait for long-anticipated rules from USDOT. The area of performance management is a potential opportunity for collaboration between MAFC states, as common measures and data sources could be identified and synchronized to monitor performance of the state and regional network.

Performance measurement program progress is impacted by a lack of data as well as a limited ability to influence certain measures. The relative newness of performance management applied to freight currently inhibits the rapid and effective development of measures. These conditions are expected to change as performance management and freight planning mature.

Project Prioritization

Introduction

The average MAFC member state covers over 56,000 square miles and has about 251,000 lane-miles of roadways across local, state, and federal systems (USDOT). Maintaining a system of this size directly and in coordination with local entities requires states to carefully manage their priorities to yield the greatest benefits from limited financial resources. Correspondingly, USDOT recommends that states develop and present a decision-making process for their freight investments. MAFC states have developed a variety of methods for prioritizing and ranking the importance of their freight system investments as discussed below.

Project prioritization relies on network design, demand, condition, and funding. Project prioritization improves the state's ability to engage in strategic planning, maximizing the impact of limited funding and providing an opportunity for engagement between various levels of state and local government (NCDOT, 2014).

Policy and Literature Review

Project prioritization for freight projects did not become a federal policy consideration until the early 2010s. MAP-21 recommended and the FAST Act required that state freight plans include a list of priority projects. However, many states were hesitant to develop a project list without available funding. FAST also required that states describe how funds provided to carry out the National Freight Policy would be invested and matched. The FAST Act also required that the list of projects presented in state freight plans be fiscally constrained—a departure from MAP-21's unconstrained project lists. States must carefully consider which freight projects are most important to the continued health of the system and how the projects can be funded. Now that federal funding for freight accommodates more modes than just highway, there is a new imperative to prioritize improvements for the whole system.

Given that freight prioritization did not become an element of federal law until relatively recently, there is limited literature on freight prioritization. However, there is a rich literature for general transportation project prioritization. Recent peer exchanges from North Carolina highlight the major steps of general project prioritization (Middleton, 2015):

1. Identifying projects in a long-range plan;
2. Seeking public input;
3. Developing criteria and evaluation measures;
4. Reporting findings;
5. Adjusting rankings; and
6. Creating finalized lists for the state plan

The MAFC Regional Freight Study, based on MAP-21's 27,000-mile National Highway Freight Network, developed a three-tier highway system and identified critical waterways and rail systems as well as aviation facilities. A copy of the study can be found [here](#).

Many of the MAFC states already engage in freight prioritization, and the next section will highlight some of the best state practices found in the MAFC.

State Practices

State prioritization processes across the MAFC are data driven, based in analysis, and often rely on stakeholder input. Each state's process will be discussed in brief, and best practices will be described further in the following section. Some states are still developing a project prioritization process.

Indiana's governor created a Blue Ribbon Panel to provide a list of transportation projects that were of high priority, but initially no funding was identified. Recently, an additional \$230 million for state road and bridge preservation was made available, which will benefit Indiana's freight movements.

Iowa's VCAP (Value, Condition, And Performance) matrix is used to rank projects. After the initial ranking is complete, other planning organizations like MPOs, RPAs and the Iowa FAC provide feedback and refine the ranking. Iowa's approach will be discussed more in the best practices section.

Michigan uses a three-tiered system based on readily available data that reflects how projects fit into the structure of USDOT highway funding and MAP-21's project categories. The ranking system also relies on three basic criteria created by MDOT: 1) must be contained within a STIP or five-year transportation project, 2) must be located on a highly significant corridor (within 20 miles of it), and 3) must be located on the NHS.

Tier 1 projects must satisfy the basic criteria, be eligible for USDOT funding, and be identified as one of the federal priorities for freight. Tier 2 projects are defined as those that satisfy the base criteria and are eligible for funding, but *aren't* a top federal priority for freight. Tier 3 projects are identified as eligible for funding but do not meet the base criteria. The rest of the projects on MDOT's freight project list (like rail, water, and air projects) are also identified.

Missouri screens its project against four goals of maintenance, safety, economy, and connectivity and mobility. Potential projects are sorted into three tiers, and gap analyses are conducted to determine if any projects are missing from consideration. A prioritization framework is then created, and each project on the potential project list is analyzed and assigned a score based on how well it meets the prioritization framework. Feedback from stakeholders and DOT staff is used to refine the final list of projects.

Minnesota is exploring a model freight investment approach. They are capturing freight-related projects from existing lists or identifying new projects. A small committee, composed of MnDOT staff with a few city and MPO representatives, is working to select freight projects and to incorporate freight considerations into current projects. For example, they are examining whether bridge projects can be modified to accommodate OSOW traffic. In the future, MnDOT may attempt to broaden the scope of its freight investment planning to include all modes and multimodal-specific investments.

Ohio relies on an advisory body composed of representatives of state and local government, labor, and private industry, to score and rank potential projects. Freight is one factor the Transportation Review Advisory Council (TRAC) considers in scoring and ranking projects.

Best Practices

Prioritization Best Practices	
1.	Asking stakeholders to review prioritization lists for “missing” projects and to provide feedback on ranking.
2.	Using a data-driven process to produce an objective list of projects at the beginning of prioritization.
3.	Using a tiered system to categorize projects based on funding eligibility.
4.	Making multimodal considerations

From Best Practices to Collaboration

Aligning plans can help MAFC states understand how their neighbors engage in planning and what their policies and priorities are. Alignment has the potential to improve communication and understanding of freight issues across the region. It also sets the stage for greater collaboration on a number of topics, which will be discussed in the next chapter.

3. Opportunities for Planning Alignment

The MAFC member states, like all states, have different transportation policy and investment priorities. However, the prosperity of each member, the Midwest, and the nation as a whole depends on a shared freight infrastructure. Identifying, highlighting, and aligning similar goals and priorities across the region will help MAFC members understand each others’ transportation visions. This alignment will help inform regionally-relevant priorities, policies and projects. In this project, opportunities for multistate collaboration were explored and identified. Aligning components of these freight plans will provide for greater uniformity in policies, programs and operations across the region. This harmonization will reduce friction in logistics and create value and economic development across the states and region. Some key areas of cooperation were identified: communication, permitting, marine highways, bridges, and planning.

The Growing Importance of a Regional Vision

The federal government increasingly recognizes and rewards regional thinking for transportation investments. A good example is the FASTLANE grant program, which is open to groups of states and other governments. Another example is the recent TIGER grant that was awarded to eight MAFC states for a Truck Parking Information and Management System (TPIMS). Aligning plans and priorities, and identifying areas for cooperation can put MAFC members at an advantage when securing federal funding for regionally significant projects.

The new planning requirements for FAST present a unique opportunity for plan alignment. Most MAFC states are updating their plans to meet these new requirements. This is a chance to demonstrate not only the states’ roles, but also the potential of a collaborative state freight network.

MAFC members were asked to reflect on what they thought their highest priority areas for cooperation were. Their responses are listed in Table 15, below. The most common responses are aggregated in Table 16. Common areas were corridor and ITS communication, permit harmonization, maritime projects, and bridges.

Table 15: Opportunities for Collaboration on Freight Development Across MAFC States

State	Opportunity
Illinois	<ul style="list-style-type: none"> • Having a regional perspective to take to Washington D.C. • Bridge projects • CREATE projects • Collaboration on ITS architecture for traveler information
Indiana	<ul style="list-style-type: none"> • Understanding industry shifts—how and why they occur and what infrastructure needs to be in place to accommodate shifts • Great Lakes maritime infrastructure
Iowa	<ul style="list-style-type: none"> • Harmonizing regulations, especially related to OSOW permits • Freight Network identification across region (like what MAFC did) • Project identification—cross-border projects like highways and bridges • Marine Highways
Kansas	<ul style="list-style-type: none"> • Seamless movement of trucks, one stop permitting at multistate level and harmonization • ITS and information sharing for truckers • Freight data purchase or collection • Freight performance measures
Kentucky	<ul style="list-style-type: none"> • Bridge projects • TMA Freight Plans • Marine Highways (M-70, M-65, M-55) • TIGER grants • MAFC, ITTS, participation in NCHRP, AASHTO, TRB
Michigan	<ul style="list-style-type: none"> • Best areas for collaboration are issue- or project-driven topics, like the Soo Locks • Increase outreach to Canada • Council of Great Lakes Governors as a vehicle to work on maritime infrastructure • Eastern Border Transportation Coalition • Great Lakes Regional Traffic Operations Center (sharing of 411 and ITS info) • Trans-Border Working Group (TBWG) • Expansion of Truck Parking Information Management System (TPIMS) • Truck permitting harmonization • MAFC state participation in the Conference of Great Lakes and St. Lawrence Governors and Premiers Maritime Task Force.
Minnesota	<ul style="list-style-type: none"> • Truck permitting harmonization • Corridor management at a multi-state level, especially for border states • Truck parking study—continue work • Crude by rail and rail safety • Developing a model freight investment plan or guide. This will help with the use of FAST Act formula funds
Missouri	<ul style="list-style-type: none"> • Marine Highways • Truck parking • Border bridges • Freight data
Ohio	<ul style="list-style-type: none"> • Truck parking • Multi-state MPOs • Bridges • Council of Great Lakes and St. Lawrence Governors and Premiers Maritime Task Force

	<ul style="list-style-type: none"> • Corridor talks with neighboring states • Understanding industry connections • Freight data
Wisconsin	<ul style="list-style-type: none"> • Preparing for regionally-significant projects grant • Defining the criteria for truck permitting harmonization • Corridor identification, alignment and preservation (all modes) • ITS & Traffic Operations • Truck Parking • Freight data & potential modeling/forecasting improvements • Multistate collaboration • Bottleneck identification and remediation (example – OSOW) • ‘First/Last Mile’ • Intermodal facility opportunities

Table 16: Commonly Identified Opportunities for Collaboration across the Region

Rank	Topic	Mentioned by
1	Regional or corridor communication architecture (including truck parking)	IL, KS, MI, MN, MO, OH, WI
2	Truck permit harmonization	IA, KS, MI, MN, WI
3	Maritime infrastructure and corridors	IN, MI, MO, OH
3	Bridge projects	IL, KY, MI, OH
3	Freight data	KS, MO, OH, WI
5	Understanding regional impacts of industry	IN, OH, KS

Corridor and ITS Communication

Regional or corridor communication systems were the most-mentioned topic, and many of the comments focused on the use of ITS to collect and share information with roadway users. Of these responses, many specifically referenced the MAASTO Truck Parking Information and Management System (TPIMS) project. The work currently being done for the TPIMS could serve as a learning opportunity for the future application of other ITS projects across the MAFC and nation. The TPIMS was not only a product of leadership and champions across the states, but it was also facilitated by the new committee structure of MAASTO that created a planning committee and a chief engineers committee. This facilitated a critical mass in the right functional areas to move the project forward.

Permit Harmonization

Harmonizing truck permitting, especially for oversize-overweight (OSOW) loads was a collaborative area identified by five states. Different OSOW rules between states, or even simply having different permitting systems, can result in costly delays in moving OSOW freight through the MAFC. Some states, like **Wisconsin** and **Minnesota** have worked to issue shared permits through multiple states. However, there is much work to be done, especially since many states’ OSOW regulations are controlled by the state legislature, not the DOT.

Maritime Projects

Maritime infrastructure was very important to some MAFC states. **Iowa, Kentucky, and Missouri** specifically mentioned marine highway designations as important policy efforts. **Michigan and Ohio** mentioned membership in the Conference of Great Lakes and St. Lawrence Governors and Premiers Maritime Task Force as important “networking” opportunities for the MAFC. This category also includes support for regionally significant projects like the locks and dams controlling the Mississippi and Ohio rivers as well as the Soo Locks in Michigan.

Bridges

Bridge projects were a commonly identified opportunity that frequently requires multi-state collaboration where rivers are state borders. Members already cooperate on some topics and projects. Interstate bridges like the I-70 Stan Musial Bridge between Illinois and Missouri, and the Ohio River Bridges in Louisville between Indiana and Kentucky are good examples of well-established interstate cooperation that benefits the entire region.

Planning

MAASTO members have worked to gain a better understanding of their fellow members’ planning processes. This report is one product of this effort. Developing the next steps in a region-wide freight plan or establishing regional visions or goals could provide a venue for improved planning collaboration.

There are a variety of topics, projects, and corridors that benefit many or that will improve regional collaboration. There are five big categories:

1. Maritime collaboration. This includes aligning plans to emphasize the importance of marine assets, support for marine highway designations, and membership in organizations working on maritime issues.
2. Collaboration on data collection and use. This includes bulk discounts for paid data sources, region-wide performance management, and development of a regional freight model.
3. Operations collaboration. This includes creating interstate intelligent transportation systems and harmonized OSOW regulations.
4. Development of a model freight investment plan.
5. Creation of a regional FAC.

Each of these opportunities will be discussed in the following sections.

Maritime Collaboration

Maritime infrastructure is extremely important to the economic health of Coalition states and the nation as a whole. The Mississippi and Ohio rivers are essential for access to the Gulf of Mexico and exporting bulk goods to foreign markets, with the potential to accommodate a small but growing container trade. Utilizing these waterways for bulk (and possibly containerized) shipping helps reduce traffic on road and rail systems in MAFC states. The Great Lakes are crucial for raw materials movement between MAFC states and they hold future potential for containerized traffic from Europe. Both the Mississippi system and the Great Lakes and St. Lawrence Seaway should be emphasized as trade gateways, just as eastern, western, and Gulf Coast ports are considered gateways.

Without this maritime shipping capability, MAFC states and their freight network would be overwhelmed and at a comparative disadvantage to other states and nations. Consequences of a failure of this infrastructure, especially at critical bottlenecks like the Soo Locks or Chain of Rocks Lock on the Mississippi River would be severe. For example, a 2015 report by the Department of Homeland Security estimated that a six-month shutdown of the Soo Locks would result in the layoff of 11 million people due to production stoppages and cause a nearly complete shutdown of steel, automobile, and appliance production (2015).

Much of this crucial maritime infrastructure is maintained by the U.S. Army Corps of Engineers (USACE), which has failed to replace aging or obsolete lock and dam infrastructure throughout the Midwest. Aligning freight plans to emphasize the importance of these waterways and their infrastructure will build regional support for the proper maintenance of this infrastructure and could be used as a tool to examine the relevance of these systems to the Mid-America region as well as the nation.

Another area for maritime coordination is membership in organizations working on maritime issues. **Illinois, Indiana, Michigan, Ohio, Wisconsin, and Minnesota** are members of the Council of Great Lakes and St. Lawrence Seaway Governors and Premiers. Membership in organizations like this can bring the MAFC region's freight perspective to a wider audience and provide opportunities for greater collaboration on specific freight systems.

Iowa, Illinois, Minnesota, Wisconsin, and Missouri have collaborated to create the M35 marine highway corridor advisory group. Together with other partners, they have also participated in the Mississippi River Cities & Towns Initiative and the Upper Mississippi River Basin Association. On the Ohio River M70, **Illinois, Indiana, Kentucky, and Ohio** have been working to increase cargo and container movements on this portion of the system. MAFC states along the Great Lakes, M35, and M70 corridors all look to expand containerized cargoes and to have a more integral role in the import-export system as well as the regional movements of bulk products.

Collaboration on Data Collection and Use

MAFC states used a wide range of sources and spent at least \$2.2 million over the past decade on data to make their freight plans. Data were important for many of the planning tasks discussed earlier in, "Critical Elements of Freight Planning and Best Practices." These tasks include performance management, project prioritization, and network designation. Alignment of even just a few common data sources across states could yield benefits for two collaborative projects, 1) facilitating easier regional performance monitoring and 2) developing an in-depth and regional freight network.

Leveraging Regional Cooperation to Get "Bulk Discounts" for Paid Data Sources

Nine states currently use, or previously used a paid data source and at least \$2.2 million has been spent on data in the last decade. Given the large expenditures on data, the buying power of the 10 states combined was identified as a tool for negotiating a group discount for a paid data service like TRANSEARCH. Benefits of this approach might be obtaining a specific, region-wide dataset, or simply getting TRANSEARCH or InfoUSA data sets for less than they would otherwise cost.

Using Aligned Datasets to Facilitate Region-wide Performance Monitoring

Kansas suggested that if coalition states wanted to monitor the performance of the regional network across state lines, it would be helpful to have a handful of similarly counted measures

across the states. Some information is available through the truck probe data set provided by the federal government, which can be used to track travel time and travel time reliability. More information can be found on the FHWA's performance measurement page [here](#). Potential additional measures for regional tracking could include pavement and bridge quality, which would demonstrate the need for more investment in the freight system, and measures of modal share, which could show the regional distribution of freight share, and reveal trends or shifts between shares.

Development of a Regional Freight Model

A regional model could include all modes as well as major freight generators and destinations. The model would serve to predict the region-wide effects of infrastructure bottlenecks or projects as well as the potential impacts of industry shifts. The model would provide the benefit of demonstrating the region-wide impact and value of projects, which is highlighted in FASTLANE grants, and could also be used to help plan other collaborative projects like ITS infrastructure on specific corridors, which will be discussed later in this report.

Data alignment is a relatively simple task for states, made even easier by the existence of national-level public datasets like the truck probe, FAF, and TRANSEARCH. Aligning just one or two sources could provide the region with a way to track the system's overall health and performance, while aligning more sources could set the stage for development of a region-wide freight model. All of these options will require coordination by either states or a third party, like MAASTO or the MAFC.

Opportunities for Alignment and Collaboration on Operations

The prime example of current collaborative work is the MAASTO Truck Parking Information and Management System (TPIMS). The project includes eight MAFC states working to create a regional truck parking tool to reduce illegal or unsafe truck parking as well as to reduce accidents. This project was created in response to imbalances in utilization of truck parking across the region, which are partly attributed to limitations on truckers' hours of service.

Intelligent Transportation Systems

MAFC states are already leaders in the area of multistate ITS implementation, with ongoing work on the TPIMS. Many states specifically mentioned Truck Parking Information Management Systems (TPIMS) and use of ITS for truck parking solutions as good opportunities for collaboration, likely because the TIGER grant for the project had recently been awarded. More broadly, there are opportunities for multistate collaboration on ITS projects for both commercial and private roadway users.

Harmonizing Regulations, Especially for OSOW Road Traffic

Harmonization of OSOW regulations was a commonly mentioned theme for collaboration from many states. Differing permit and escort regulations between states are a barrier to efficient OSOW freight movement, which must adhere to differing levels of regulation as they travel through the region. So far, some states like **Minnesota** and **Wisconsin** have worked to simplify the interstate permitting process, but as a recent study from CPCS shows, there are major discrepancies in regulation nationwide. These discrepancies make freight movement less efficient and threaten the competitiveness of manufacturers in MAFC states (CITE, 2016).

A starting point for harmonizing regulations might be to designate specific interstate or key intermodal corridors as "regional priority routes" for OSOW and then harmonize regulations in

just those corridors. There are legislative and rulemaking issues across the states, however the issue is not insurmountable and harmonization could enhance economic development throughout the region by attracting manufacturers and their suppliers.

Developing a Model Freight Investment Plan

The FAST Act requires states to include a freight investment plan in their freight plans. The investment plan must be fiscally constrained, contain a list of priority projects, and describe how federal funds would be invested and matched. Many states, particularly those with MAP-21 compliant plans already included prioritized lists of projects in their plans, but these lists were not always fiscally constrained. **Minnesota** suggested that developing a model freight investment guide could be an opportunity for collaboration and plan alignment. Creating a model guide would help states pursue a more standardized approach to reporting on their investment plans. The effort could help clarify “freight projects” and “traditional projects with freight benefits” and what funds are allocated for each. This has benefits because a standardized approach would make it easier for states to identify where their investment priorities are similar and then work to identify shared corridors or projects of high importance to groups of states. In short, having similar investment plan formats throughout the region will make project collaboration easier and make specific collaborative project opportunities more visible.

Creation of a Regional Freight Advisory Committee

Establishment of a regional FAC could help identify major trends or bottlenecks across the region. It may also be useful for other collaboration efforts like the creation of a freight model or efforts to initiate region-wide data collection. The regional FAC could be composed of DOT staff, FHWA and USDOT staff, and representatives from national transportation companies and industries that serve the region. Meetings for this committee could be held in conjunction with MAASTO or MAFC meetings. **Minnesota** suggested that a precursor to a regional FAC could be having MAFC states collectively adopt a policy to identify major trends and address bottlenecks in the region. Each year, MAFC staff could facilitate discussion with each state’s FAC on important trends on bottlenecks, with the goal of addressing or mitigating problems. This approach may be beneficial in that it requires less work from volunteer FAC members than participation in a fully-fledged regional FAC.

Expand Multistate Corridor Work

Corridor planning and operations projects are increasing in frequency in the MAFC region. Bi-state collaborative projects, like bridges, yield some benefits for corridors, but collaboration among two or more states on longer corridors could improve the region’s freight mobility and economic competitiveness. MAFC states already have had success with a corridor mindset for planning, and further application of this approach in the future is likely.

MAASTO states already engage in some corridor-oriented planning and outreach, particularly in relation to system operations and support for marine highways. In the field of operations, two projects stand out, the Great Lakes Regional Traffic Operations Center (GLRTOC) and the Truck Parking Information and Management System (TPIMS). **Minnesota, Wisconsin, Illinois, Indiana, Michigan, and Ontario** participate in the GLRTOC, which focuses on improving mobility and traveler information on the I-94/401 Corridor between Minneapolis and Toronto. A similar organization, the I-95 Corridor Coalition works in improving the I-95 corridor between Florida and Maine. The TPIMS project, discussed above, is another example of ongoing corridor-oriented work in the MAFC. Truck parking shortages are often concentrated in certain

areas of interstate corridors like I-70 and I-80. Applying a corridor-oriented approach to informing truckers about parking availability across state lines has great potential to reduce parking shortages and improve highway safety. Eight MAASTO states are developing a regional TPIMS system using a \$25 million TIGER VII grant award and almost \$4 million in state matching funds.

A major area for corridor work has been support of marine highway designations for the Mississippi River and Great Lakes St. Lawrence Seaway. These maritime corridors serve as critical gateways to the MAFC region, are important elements for the region's economic competitiveness, and present the opportunity to relieve congestion on roads and railways. A greater discussion of maritime corridors and collaboration is provided above.

Looking forward, expanded corridor collaboration will likely be grounded in specific issues or topics, like truck parking, or maritime freight, or focus on specific corridors. A potential area for collaboration could be the creation of specific corridors with harmonized OSOW permits, or enlarged infrastructure like bridges allowing for quick and efficient transit of OSOW loads on specific routes through the region. Given the importance of the Great Lakes and Mississippi River as trade gateways, MAFC states will benefit from continued support for a corridor-based approach to infrastructure investment in waterways. Finally, the FASTLANE grant program, with its focus on regional projects presents another opportunity to improve infrastructure using a corridor-based approach.

4. Conclusion

The member states of the MAFC have diverse economies, populations, and geographies, but they are bound together by a shared transportation system that is a valuable asset for both the Midwest and the nation as a whole. Members have taken the forward-looking step of creating and supporting the MAFC, and this effort reflects their continued commitment to the creation of a regional vision for freight

Just as each state has a unique social, economic, and political context, each freight plan is unique as well. However, the new planning requirements of the FAST Act mean that, in the future, state plans will likely follow more similar formats and contain very similar elements. The new requirements for planning present MAFC states with an excellent opportunity to align their plans in an unprecedented fashion. In doing so, they will lay the groundwork for greater regional cooperation on freight programming.

For regional freight planning, the whole is greater than the sum of its parts. There are increasing incentives for regional thinking, like the FASTLANE grant program. Looking to the future, there are many potential areas for beneficial collaboration, such as support for maritime investments, cooperation on data collection, and the creation of a regional FAC. Together, the MAFC states' collaborative action has the potential to secure the economic competitiveness and prosperity of the Midwest for years to come.

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